

Workshop Manual - General Information

2011 - RX-8

General Information

- [VEHICLE IDENTIFICATION NUMBER \(VIN\) CODE](#)
- [VEHICLE IDENTIFICATION NUMBER \(VIN\)](#)
- [HOW TO USE THIS MANUAL](#)
- [UNITS](#)
- [SERVICE CAUTIONS](#)
- [INSTALLATION OF RADIO SYSTEM](#)
- [ELECTRICAL SYSTEM](#)
- [JACKING POSITIONS, VEHICLE LIFT \(2 SUPPORTS\) AND SAFETY STAND \(RIGID RACK\) POSITIONS](#)
- [TOWING](#)
- [TIEDOWN HOOK](#)
- [IDENTIFICATION NUMBER LOCATIONS](#)
- [SAE STANDARDS](#)
- [ABBREVIATIONS](#)
- [PRE-DELIVERY INSPECTION](#)
- [SCHEDULED MAINTENANCE](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - General Information

UNITS

Electric current	A (ampere)
Electric power	W (watt)
Electric resistance	ohm
Electric voltage	V (volt)
Length	mm (millimeter)
	in (inch)
Negative pressure	kPa (kilo pascal)
	mmHg (millimeters of mercury)
	inHg (inches of mercury)
Positive pressure	kPa (kilo pascal)
	kgf/cm ² (kilogram force per square centimeter)
	psi (pounds per square inch)
Number of revolutions	rpm (revolutions per minute)
	N·m (Newton meter)

Torque	kgf·m (kilogram force meter)
	kgf·cm (kilogram force centimeter)
	ft·lbf (foot pound force)
	in·lbf (inch pound force)
Volume	L (liter)
	US qt (U.S. quart)
	Imp qt (Imperial quart)
	ml (milliliter)
	cc (cubic centimeter)
	cu in (cubic inch)
	fl oz (fluid ounce)
Weight	g (gram)
	oz (ounce)

Conversion to SI Units (Système International d'Unités)

- All numerical values in this manual are based on SI units. Numbers shown in conventional units are converted from these values.

Rounding Off

- Converted values are rounded off to the same number of places as the SI unit value. For example, if the SI unit value is 17.2 and the value after conversion is 37.84, the converted value will be rounded off to 37.8.

Upper and Lower Limits

- When the data indicates upper and lower limits, the converted values are rounded down if the SI unit value is an upper limit and rounded up if the SI unit value is a lower limit. Therefore, converted values for the same SI unit value may differ after conversion. For example, consider 2.7 kgf/cm² in the following specifications:
- 210—260 kPa {2.1—2.7 kgf/cm², 30—38 psi}
- 270—310 kPa {2.7—3.2 kgf/cm², 39—45 psi}
- The actual converted values for 2.7 kgf/cm² are 264 kPa and 38.4 psi. In the first specification, 2.7 is used as an upper limit, so the converted values are rounded down to 260 and 38. In the second specification, 2.7 is used as a lower limit, so the converted values are rounded up to 270 and 39.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

[Next >](#)

2011 - RX-8 - General Information

VEHICLE IDENTIFICATION NUMBER (VIN) CODE

J	M	1	F	E	1	C	P	0	B	0	1	2	3	4	5	6
										Serial No.						
										Plant						
										0= Hiroshima 1= Hofu						
										Model year						
										B= 2011 ...						
										Check Digit						
										0 to 9, X						
										Engine						
										2= 13B-High power (California) 4= 13B-High power (Federal/Canada) M= 13B-Standard power (California) P= 13B-Standard power (Federal/Canada)						
										Body style						
										C, P, R, S, T, U= Coupe						
										Restraint system						
										1= Driver, Passenger Air bag, Side Air bag, Curtain Air bag						
										Carline, series						
										FE= MAZDA RX-8						
										World manufacturer identification						
										JM1= Mazda/passenger car						

[Next >](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - General Information

VEHICLE IDENTIFICATION NUMBER (VIN)

JM1 FE1*2*B# 400001—

JM1 FE1*4*B# 400001—

JM1 FE1*M*B# 400001—

JM1 FE1*P*B# 400001—

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - General Information

SAE STANDARDS

- In accordance with new regulations, SAE (Society of Automotive Engineers) standard names and abbreviations are now used in this manual. The table below lists the names and abbreviations that have been used in Mazda manuals up to now and their SAE equivalents.

SAE Standard		Remark	SAE Standard		Remark
Abbreviation	Name		Abbreviation	Name	
AP	Accelerator Pedal		MIL	Malfunction Indicator Lamp	
APP	Accelerator Pedal Position		MAP	Manifold Absolute Pressure	
ACL	Air Cleaner		MAF sensor	Mass Air Flow Sensor	
A/C	Air Conditioning		MFL	Multiport Fuel Injection	
A/F sensor	Air Fuel Ratio Sensor		OBD	On-board Diagnostic System	
BARO	Barometric Pressure		OL	Open Loop	
B+	Battery Positive Voltage		OC	Oxidation Catalytic Converter	
CMP sensor	Camshaft Position Sensor		O2S	Oxygen sensor	
CAC	Charge Air Cooler		PNP	Park/Neutral Position	
CLS	Closed Loop System		PSP	Power Steering Pressure	
CTP	Closed Throttle Position		PCM	Powertrain Control Module	#3

CPP	Clutch Pedal Position		PAIR	Pulsed Secondary Air Injection	Pulsed injection
CIS	Continuous Fuel Injection System				
CKP sensor	Crankshaft Position Sensor		AIR	Secondary Air Injection	Injection with air pump
DLC	Data Link Connector				
DTM	Diagnostic Test Mode	#1			
DTC	Diagnostic Test Code(s)		SAPV	Secondary Air Pulse Valve	
DI	Distributor Ignition		SFI	Sequential Multiport Fuel Injection	
DLI	Distributorless Ignition				
EI	Electronic Ignition	#2	3GR	Third Gear	
ECT	Engine Coolant Temperature		TWC	Three Way Catalytic Converter	
EM	Engine Modification		TB	Throttle Body	
EVAP	Evaporative Emission		TP sensor	Throttle Position Sensor	
EGR	Exhaust Gas Recirculation		TCC	Torque Converter Clutch	
FC	Fan Control		TCM	Transmission (Transaxle) Control Module	
FF	Flexible Fuel				
4GR	Fourth Gear		TR	Transmission (Transaxle) Range	
GEN	Generator		TC	Turbocharger	
GND	Ground		VSS	Vehicle Speed Sensor	

HO2S	Heated Oxygen Sensor	With heater	VR	Voltage Regulator	
			VAF sensor	Volume Air Flow Sensor	
IAC	Idle Air Control		WU-TWC	Warm Up Three Way Catalytic Converter	#4
IAT	Intake Air Temperature				
KS	Knock Sensor		WOT	Wide Open Throttle	

- #1: Diagnostic trouble codes depend on the diagnostic test mode.
- #2: Controlled by the PCM
- #3: Device that controls engine and powertrain
- #4: Directly connected to exhaust manifold

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - General Information

HOW TO USE THIS MANUAL

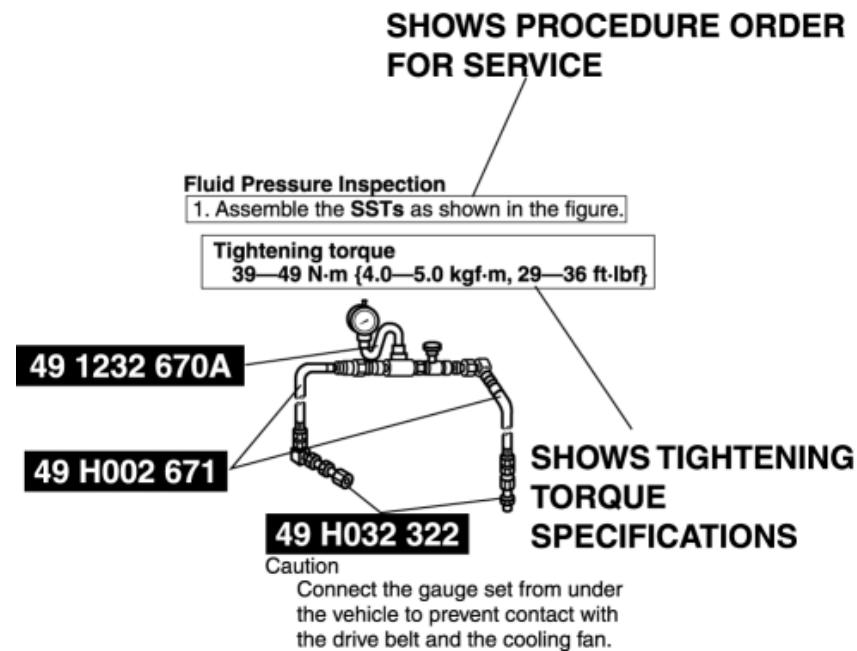
Range of Topics

- This manual contains procedures for performing all required service operations. The procedures are divided into the following five basic operations:
 - Removal/Installation
 - Disassembly/Assembly
 - Replacement
 - Inspection
 - Adjustment
- Simple operations which can be performed easily just by looking at the vehicle (i.e., removal/installation of parts, jacking, vehicle lifting, cleaning of parts, and visual inspection) have been omitted.

Service Procedure

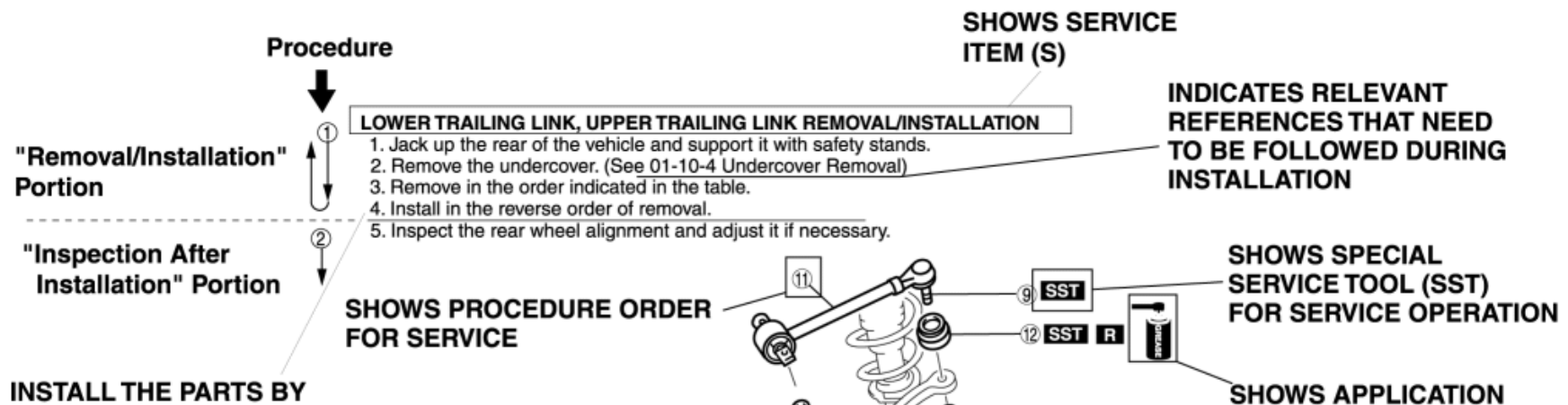
Inspection, adjustment

- Inspection and adjustment procedures are divided into steps. Important points regarding the location and contents of the procedures are explained in detail and shown in the illustrations.



Repair procedure

1. Most repair operations begin with an overview illustration. It identifies the components, shows how the parts fit together, and describes visual part inspection. However, only removal/installation procedures that need to be performed methodically have written instructions.
2. Expendable parts, tightening torques, and symbols for oil, grease, and sealant are shown in the overview illustration. In addition, symbols indicating parts requiring the use of special service tools or equivalent are also shown.
3. Procedure steps are numbered and the part that is the main point of that procedure is shown in the illustration with the corresponding number. Occasionally, there are important points or additional information concerning a procedure. Refer to this information when servicing the related part.



**PERFORMING STEPS
1—3 IN REVERSE ORDER**

**SHOWS TIGHTENING
TORQUE
SPECIFICATIONS**

POINTS OF GREASE, ETC.

SHOWS EXPENDABLE PARTS

SHOWS DETAILS

**SHOWS TIGHTENING
TORQUE UNITS**

**SHOWS REFERRAL
NOTES FOR SERVICE**

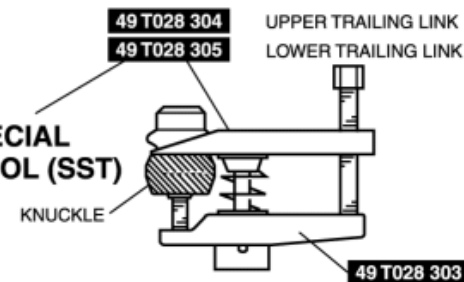
1	Split pin
2	Nut
3	Lower trailing link ball joint (See 02-14-5 Lower Trailing Link Ball Joint Removal Note)
4	Bolt
5	Lower trailing link
6	Dust boot (lower trailing link)

7	Split pin
8	Nut
9	Upper trailing link ball joint (See 02-14-5 Upper Trailing Link Ball Joint Removal Note)
10	Nut
11	Upper trailing link
12	Dust boot (upper trailing link)

**Lower Trailing Link Ball Joint, Upper Trailing Link
Ball Joint Removal Note**

- Remove the ball joint using the SSTs.

**SHOWS SPECIAL
SERVICE TOOL (SST)
NO.**











**SHOWS REFERRAL
NOTES FOR
SERVICE**

Symbols

- There are eight symbols indicating oil, grease, fluids, sealant, and the use of **SST** or equivalent. These symbols show application points or

use of these materials during service.

Symbol	Meaning	Kind
	Apply oil	New appropriate engine oil or gear oil
	Apply brake fluid	New appropriate brake fluid
	Apply automatic transaxle/transmission fluid	New appropriate automatic transaxle/transmission fluid
	Apply grease	Appropriate grease
	Apply sealant	Appropriate sealant
	Apply petroleum jelly	Appropriate petroleum jelly
	Replace part	O-ring, gasket, etc.
	Use SST or equivalent	Appropriate tools

Advisory Messages

- You will find several **Warnings, Cautions, Notes, Specifications** and **Upper and Lower Limits** in this manual.

Warning

- A Warning indicates a situation in which serious injury or death could result if the warning is ignored.

Caution

- A Caution indicates a situation in which damage to the vehicle or parts could result if the caution is ignored.

Note

- A Note provides added information that will help you to complete a particular procedure.

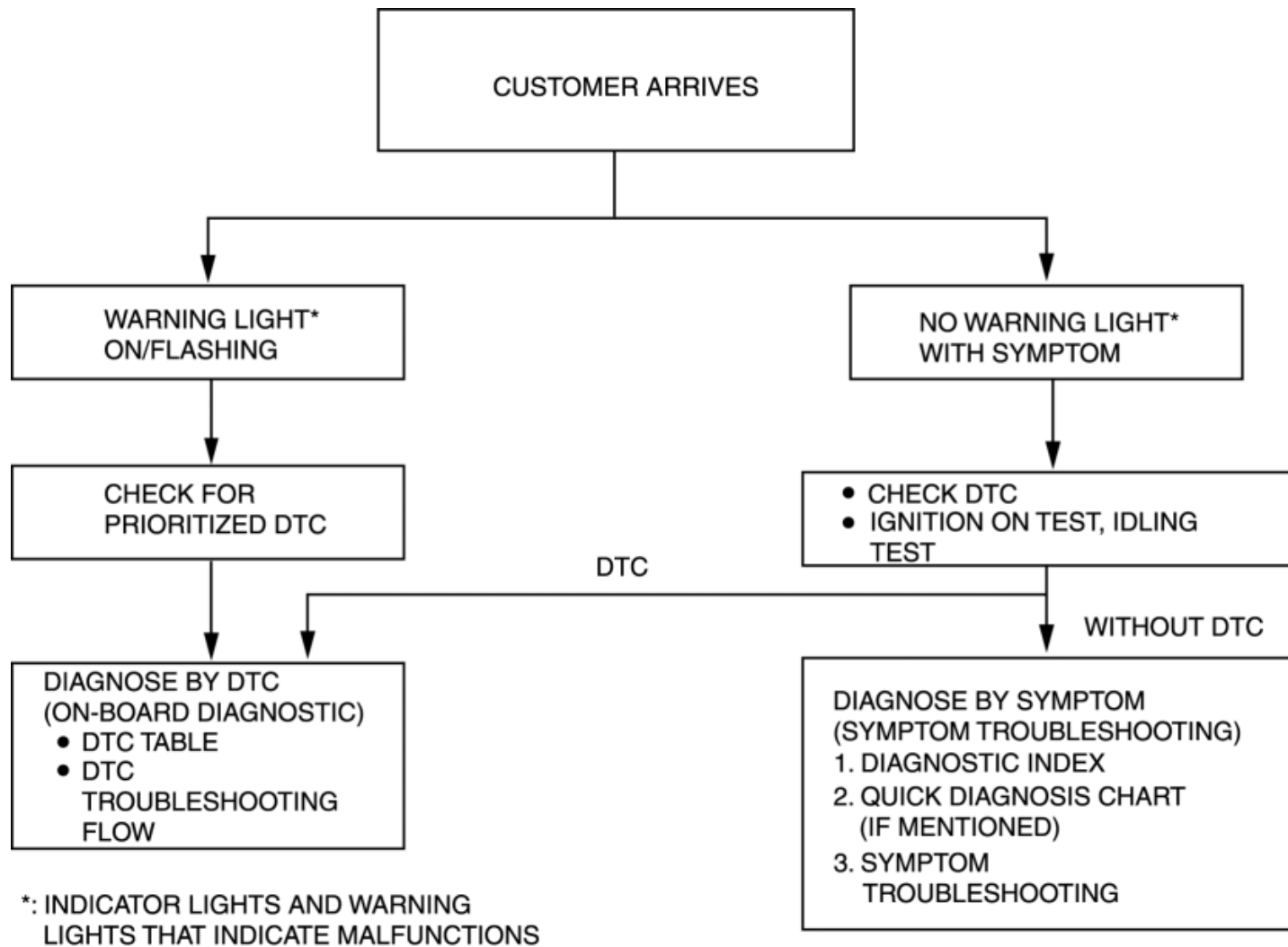
Specification

- The values indicate the allowable range when performing inspections or adjustments.

Upper and lower limits

- The values indicate the upper and lower limits that must not be exceeded when performing inspections or adjustments.

Troubleshooting Procedure**Basic flow of troubleshooting**



DTC troubleshooting flow (on-board diagnostic)

- Diagnostic trouble codes (DTCs) are important hints for repairing malfunctions that are difficult to simulate. Perform the specific DTC diagnostic inspection to quickly and accurately diagnose the malfunction.
- The on-board diagnostic function is used during inspection. When a DTC is shown specifying the cause of a malfunction, continue the diagnostic inspection according to the items indicated by the on-board diagnostic function.

- The diagnostic index lists the symptoms of specific malfunctions. Select the symptoms related or most closely relating to the malfunction.

Quick diagnosis chart (If mentioned)

- The quick diagnosis chart lists diagnosis and inspection procedures to be performed specifically relating to the cause of the malfunction.

Symptom troubleshooting

- Symptom troubleshooting quickly determines the location of the malfunction according to symptom type.

Procedures for Use

Using the basic inspection (section 05)

- Perform the basic inspection procedure before symptom troubleshooting.
- Perform each step in the order shown.
- The reference column lists the location of the detailed procedure for each basic inspection.
- Although inspections and adjustments are performed according to the reference column procedures, if the cause of the malfunction is discovered during basic inspection, continue the procedures as indicated in the action column.

SHOWS INSPECTION ORDER		SHOWS ITEM NAMES FOR DETAILED PROCEDURES		SHOW POINTS REQUIRING ATTENTION BASED ON INSPECTION RESULTS	
BASIC INSPECTION					
STEP	INSPECTION		ACTION		
1	Perform the mechanical system test. (See 05-13-3 MECHANICAL SYSTEM TEST.) Is mechanical system normal?	Yes	Go to the next step.		
		No	Repair or replace any malfunctioning parts according to the inspection result.		
2	Turn the ignition switch to the ON position. When the selector lever is moved, does the selector illumination indicate synchronized position to the lever location? Also, when other ranges are selected from N or P during idling, does the vehicle move within 1—2 s?	Yes	Go to next step.		
		No	Inspect the selector lever and TR switch. Repair or replace malfunctioning parts. (See 05-14-5 SELECTOR LEVER INSPECTION.) (See 05-13-10 TRANSMISSION RANGE (TR) SWITCH INSPECTION.) If the selector lever and TR switch are normal, go to the next step.		
3	Inspect the ATF color condition. (See 05-13-8 AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION.) Are ATF color and odor normal?	Yes	Go to the next step.		
		No	Repair or replace any malfunctioning parts according to the inspection result. Flush ATX and cooler line as necessary.		
4	Perform the line pressure test. (See 05-13-3 Line Pressure Test.) Is the line pressure normal?	Yes	Go to the next step.		
		No	Repair or replace any malfunctioning parts according to the inspection result.		
5	Perform the stall test. (See 05-13-4 Stall Speed Test.) Is the stall speed normal?	Yes	Go to the next step.		
		No	Repair or replace any malfunctioning parts according to the inspection result.		
	Inspect the voltage at the following TCM terminals. (See 05-13-29 TCM INSPECTION.) <ul style="list-style-type: none"> Terminal 2J (TFT sensor) Terminals 1D, 2B, 2C, 2E (TR switch) Terminal 2G (turbine sensor) Terminal 2D (down switch) Terminal 2I (up switch) Terminal 1E (M range switch) Terminal 1W (steering shift switch) Is the voltage normal?	Yes	Go to the next step.		
		No	Repair or replace any malfunctioning parts according to the inspection result.		

REFERENCE
COLUMN

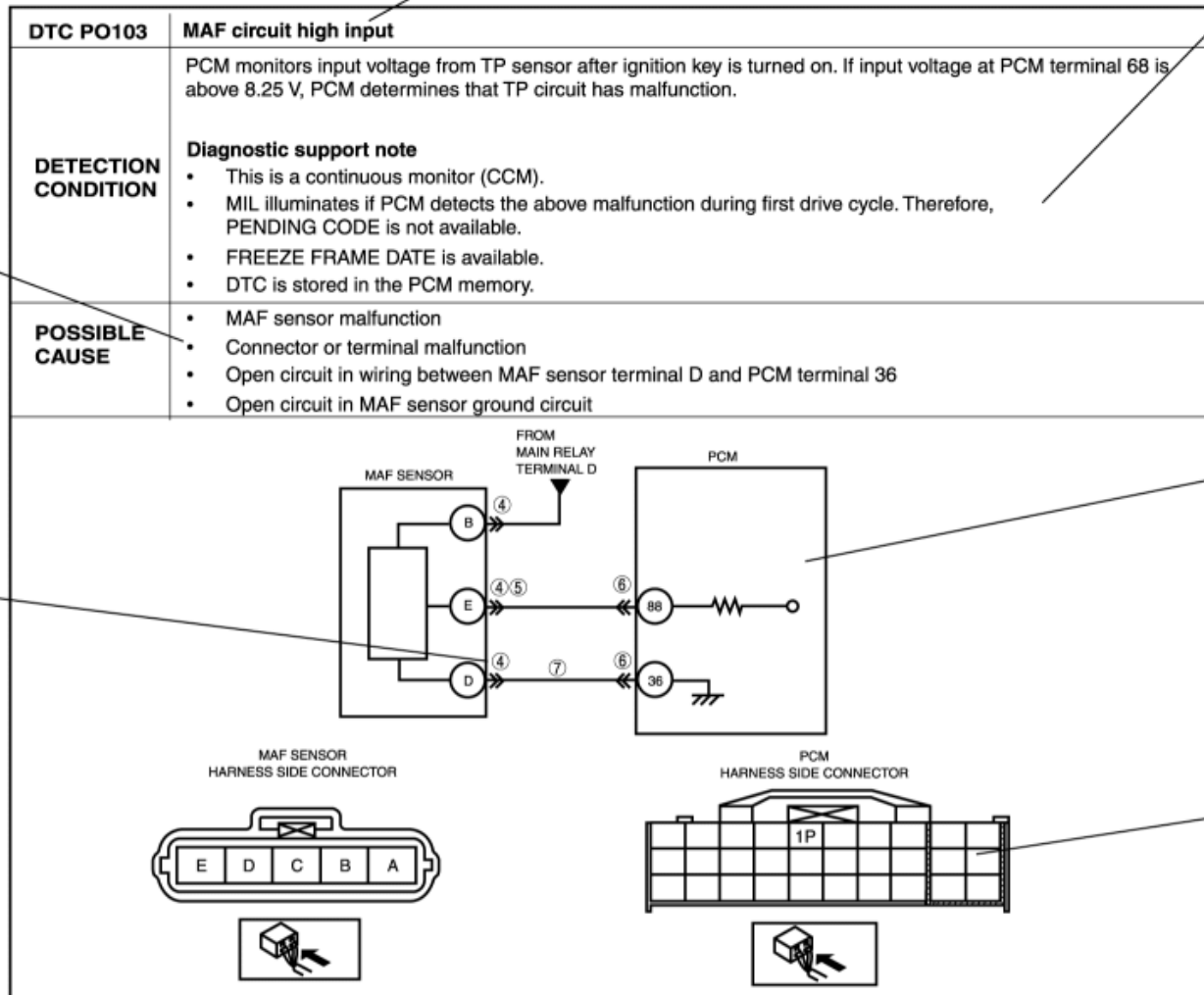
Using the DTC troubleshooting flow

- DTC troubleshooting flow shows diagnostic procedures, inspection methods, and proper action to take for each DTC.

TROUBLE CONDITION

DETECTION CONDITION
describes the condition
under which the DTC is
detected.

DTC P0103



POSSIBLE CAUSE describes possible point(s) of malfunction

Indicates the inspection step No. to be performed (01 and 05 section)

Indicates the circuit to be inspected (01 and 05 section)

Indicates the connector related to the inspection

STEP shows the order of troubleshooting

ACTION describes the appropriate action to be taken according to the result (Yes/No) of the INSPECTION.

INSPECTION describes the method to quickly determine the

Reference item(s) to perform ACTION.

Diagnostic procedure			
STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	Yes	Go to next step.
		No	Record FREEZE FRAME DATA on repair order, then go to next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Are related Service Bulletins and/or on-line repair information available? 	Yes	Perform repair or diagnosis according to available repair information. If vehicle is not repaired, then go to next step.
		No	Go to next step.
3	VERIFY CURRENT INPUT SIGNAL STATUS IS CONCERN INTERMITTENT OR CONSTANT <ul style="list-style-type: none"> Connect diagnostic tool to DLC-2. Start engine. Access MAF V PID using diagnostic tool. Is MAF V PID within 0.2 - 8.3 V? 	Yes	Intermittent concern is existing. Go to INTERMITTENT CONCERNS TROUBLESHOOTING procedure. (See 01-03-33 INTERMITTENT CONCERN TROUBLESHOOTING)
		No	Go to next step.
4	INSPECT POOR CONNECTION OF MAF SENSOR CONNECTOR	Yes	Repair or replace terminals, then go to Step 8.

malfunctioning part(s).

SENSOR CONNECTOR

- Turn ignition key to OFF.
- Disconnect MAF sensor connector.
- Check for poor connection (damaged, pulled-out terminals, corrosion etc.).
- Are there any malfunctions?

Using the diagnostic index

- Malfunction symptoms are listed in the diagnostic index under symptom troubleshooting.
- The exact malfunction symptoms can be selected by following the index.

No.	TROUBLESHOOTING ITEM		DESCRIPTION	Page
1	Melting of main or other fuses		—	(See 01-03-6 MELT NO.1 MAIN OR OTHER FUSE)
2	MIL comes on		MIL is illuminated incorrectly.	(See 01-03-7 NO.2 MIL COMES ON)
3	Will not crank		Starter does not work.	(See 01-03-8 NO. 3 WILL NOT CRANK)
4	Hard start/long crank/erratic start/erratic crank		Starter cranks engine at normal speed but engine requires excessive cranking time before starting.	(See 01-03-9 NO. 4 HARD START/ LONG CRANK/ERRATIC CRANK)
5	Engine stalls.	After start/at idle	Engine stops unexpectedly at idle and/or after start.	(See 01-03-11 NO. 5 ENGINE-STALLS AFTER START/AT IDLE)
6	Crank normally but will not start		Starter cranks engine at normal speed but engine will not run.	(See 01-03-15 NO.6 CRANKS NORMALLY BUT WILL NOT START)
7	Slow return to idle		Engine takes more time than normal to return to idle speed.	(See 01-03-19 NO. 7 SLOW RERUN TO IDLE)
8	Engine runs rough/rotling		Engine speed fluctuates between specified idle speed and lower speed and engine shakes excessively.	(See 01-03-20 NO. 8 ENGINE RUNS ROUGH/ROLLING IDLE)
9	Fast idle/runs on		Engine speed continues at fast idle after warm-up. Engine runs after ignition key is turned to OFF.	(See 01-03-23 NO. 9 FAST IDLE/RUNS ON)
10	Low idle/stalls during deceleration		Engine stops unexpectedly at beginning of deceleration or recovery from deceleration.	(See 01-03-24 NO. 10 LOW IDLE/ STALLS DURING DECELERATION)

Using the quick diagnosis chart

- The chart lists the relation between the symptom and the cause of the malfunction.
- The chart is effective in quickly narrowing down the relation between symptom and cause of the malfunction. It also specifies a range of common causes when multiple malfunction symptoms occur.
- The appropriate diagnostic inspection relating to a malfunction cause as specified by the symptoms can be selected by looking down the diagnostic inspection column of the chart.

②

SYMPTOM QUICK DIAGNOSTIC CHART

PART WHICH MAY BE THE SYMPTOM /

①

[illegible]

Reference item(s) for additional information to perform INSPECTION.

INSPECTION describes the method to quickly determine the malfunctioning part(s).

2	<ul style="list-style-type: none"> Is shift point okay? (See 05-17-5 ROAD TEST) 	Yes	Go to next step
		No	Go to symptom troubleshooting No.9 "Abnormal shift".
	<ul style="list-style-type: none"> Stop engine and turn ignition switch on. Connect diagnostic tool to DLC-2. Simulate SHIFT A, SHIFT B and SHIFT C PIDs for ON. Is operating sound of shift solenoids heard? 	Yes	<ul style="list-style-type: none"> Overhaul control valve body and repair or replace any defective parts. (See ATX Workshop Manual GF4A-EL (1666-1A-99F)) If problem remains, replace or overhaul transaxle and repair or replace defective parts. (See 05-17-15 AUTOMATIC TRANSAXLE REMOVEVAL/INSTALLATION)
		No	<ul style="list-style-type: none"> Inspect for bend, damage, corrosion or loose connection if shift solenoid A, B, or C terminal on ATX. Inspect for shift solenoid mechanical stuck. (See 05-17-14 Inspection of Operation) If shift solenoids are okay, inspect for open or short circuit between PCM connector terminal A, B or C.
4	<ul style="list-style-type: none"> Verify test results. <ul style="list-style-type: none"> If okay, return to diagnostic index to service any additional symptoms. If malfunction remains, inspect related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. If vehicle is repaired, troubleshooting completed. If vehicle is not repaired or additional diagnostic information is not available, replace or reprogram PCM. 		

taken according to the result (Yes/No) of the INSPECTION.

How to perform ACTION is described in the relative material shown.

Reference item(s) to perform ACTION.

[< Previous](#) [Next >](#)

2011 - RX-8 - General Information

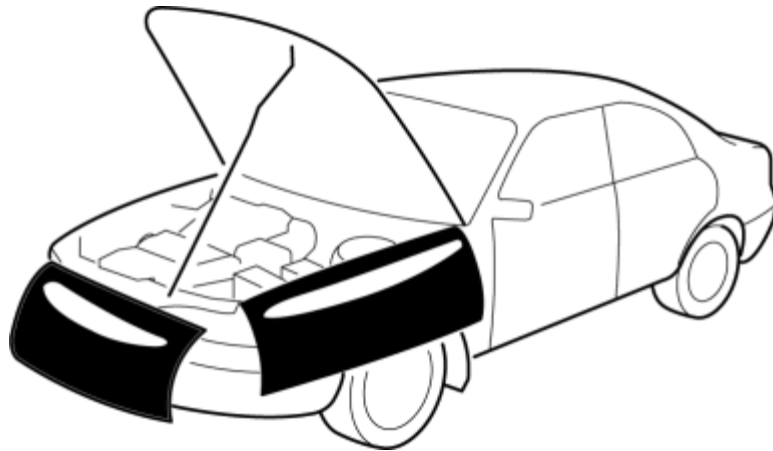
SERVICE CAUTIONS

Injury/damage Prevention Precautions

- Depending on the vehicle, the cooling fan may operate suddenly even when the ignition switch is turned off. Therefore, keep hands and tools away from the cooling fan even if the cooling fan is not operating to prevent injury to personnel or damage to the cooling fan. Always disconnect the negative battery cable when servicing the cooling fan or parts near the cooling fan.

Protection of the Vehicle

- Always be sure to cover fenders, seats and floor areas before starting work.



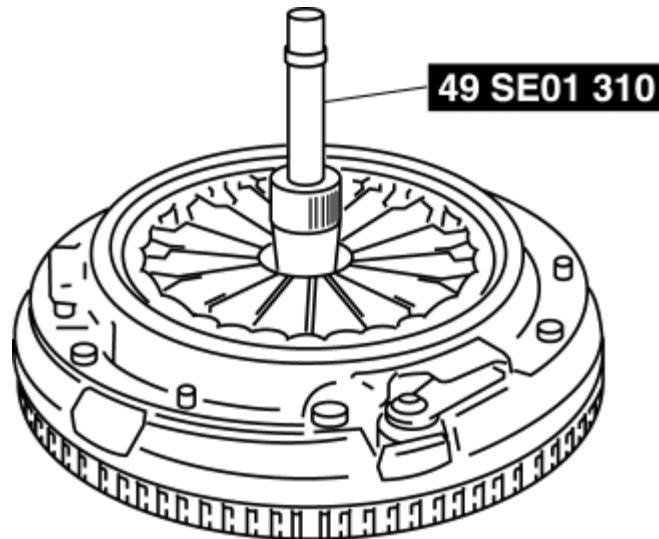
Preparation of Tools and Measuring Equipment

- Be sure that all necessary tools and measuring equipment are available before starting any work.



Special Service Tools

- Use special service tools or the equivalent when they are required.



Malfunction Diagnosis System

- Use the Mazda Modular Diagnostic System (M-MDS) or equivalent for malfunction diagnosis.

Negative Battery Cable Disconnection/Connection

- Perform the following system initialization after disconnecting the negative battery cable.

SYSTEM	PAGE

Steering angle sensor (Vehicles with DSC)	(See STEERING ANGLE SENSOR INITIALIZATION PROCEDURE.)
Power window system	(See POWER WINDOW INITIALIZATION PROCEDURE.)

Required procedure following negative battery cable disconnection

SAS control module

- Disconnect the negative battery cable and wait for 1 min. or more to allow the back-up power supply to deplete its stored power.

Clock and audio

- The clock and audio memory settings will be erased, therefore record the clock and audio settings prior to disconnecting, and reset them after reconnecting.

Oil Leakage Inspection

- Use either of the following procedures to identify the type of oil that is leaking:

Using UV light (black light)

1. Remove any oil on the engine or transaxle/transmission.

NOTE:

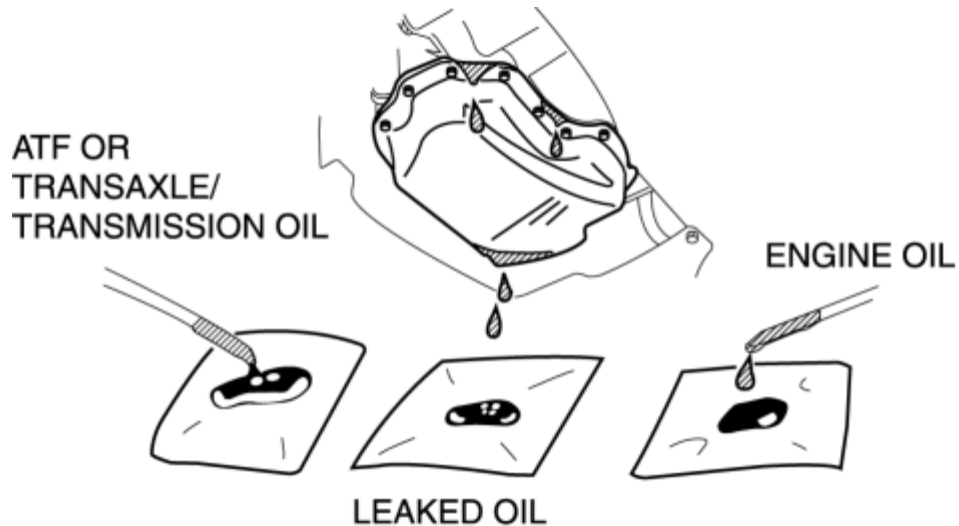
- Referring to the fluorescent dye instruction manual, mix the specified amount of dye into the engine oil or ATF (or transaxle/transmission oil).
2. Pour the fluorescent dye into the engine oil or ATF (or transaxle/transmission oil).
 3. Allow the engine to run for **30 min.**
 4. Inspect for dye leakage by irradiating with UV light (black light), and identify the type of oil that is leaking.
 5. If no dye leakage is found, allow the engine to run for another **30 min.** or drive the vehicle then reinspect.
 6. Find where the oil is leaking from, then make necessary repairs.

NOTE:

- To determine whether it is necessary to replace the oil after adding the fluorescent dye, refer to the fluorescent dye instruction manual.

Not using UV light (black light)

1. Gather some of the leaking oil using an absorbent white tissue.
2. Take samples of engine oil and ATF (or transaxle/transmission oil), both from the dipstick, and place them next to the leaked oil already on the tissue.
3. Compare the appearance and smell, and identify the type of oil that is leaking.



4. Remove any oil on the engine or transaxle/transmission.
5. Allow the engine to run for **30 min**.
6. Check the area where the oil is leaking, then make necessary repairs.

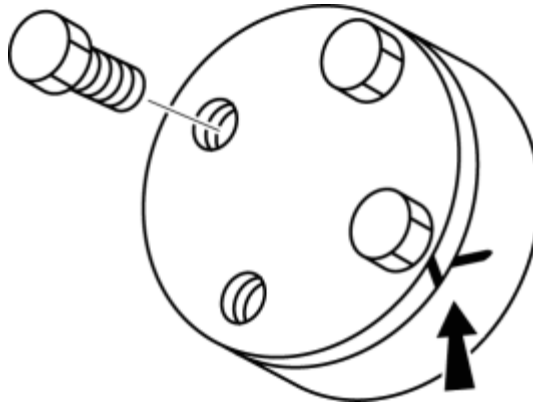
Removal of Parts

- While correcting a problem, also try to determine its cause. Begin work only after first learning which parts and sub-components must be removed and disassembled for replacement or repair. After removing the part, plug all holes and ports to prevent foreign material from entering.



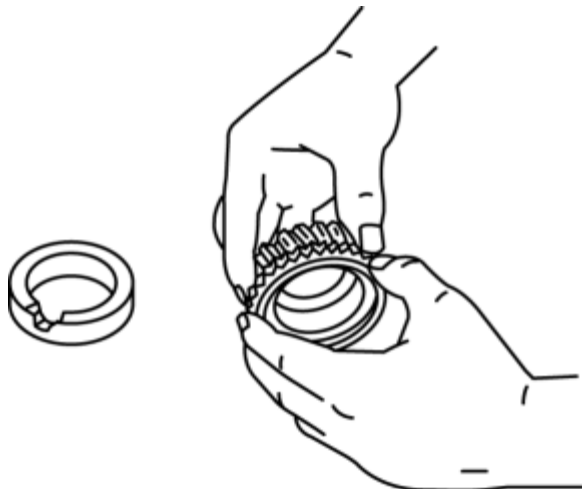
Disassembly

- If the disassembly procedure is complex, requiring many parts to be disassembled, all parts should be marked in a place that will not affect their performance or external appearance, and identified so that reassembly can be performed easily and efficiently.



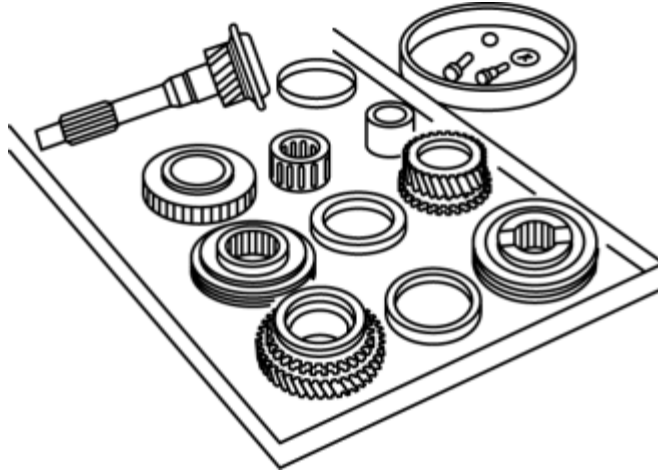
Inspection During Removal, Disassembly

- When removed, each part should be carefully inspected for malfunction, deformation, damage and other problems.



Arrangement of Parts

- All disassembled parts should be carefully arranged for reassembly.



- Be sure to separate or otherwise identify the parts to be replaced from those that will be reused.

Cleaning of Parts

- All parts to be reused should be carefully and thoroughly cleaned in the appropriate method.

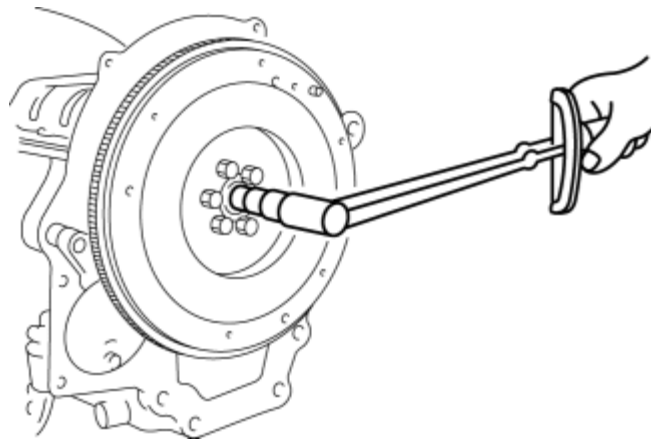


WARNING:

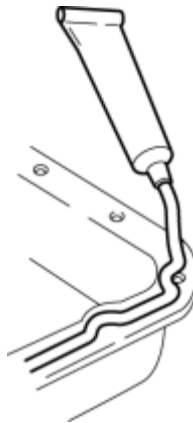
- Using compressed air can cause dirt and other particles to fly out causing injury to the eyes. Wear protective eye wear whenever using compressed air.

Reassembly

- Standard values, such as torques and certain adjustments, must be strictly observed in the reassembly of all parts.



- If removed, the following parts should be replaced with new ones:
 - Oil seals
 - Gaskets
 - O-rings
 - Lock washers
 - Cotter pins
 - Nylon nuts
- Depending on location:



- Sealant and gaskets, or both, should be applied to specified locations. When sealant is applied, parts should be installed before sealant hardens to prevent leakage.
- Oil should be applied to the moving components of parts.
- Specified oil or grease should be applied at the prescribed locations (such as oil seals) before reassembly.

Adjustment

- Use suitable gauges and testers when making adjustments.



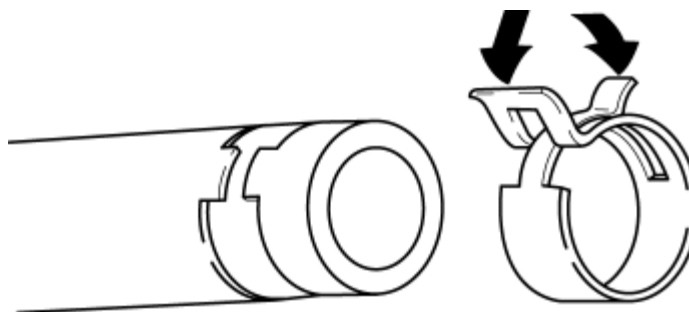
Rubber Parts and Tubing

- Prevent gasoline or oil from getting on rubber parts or tubing.



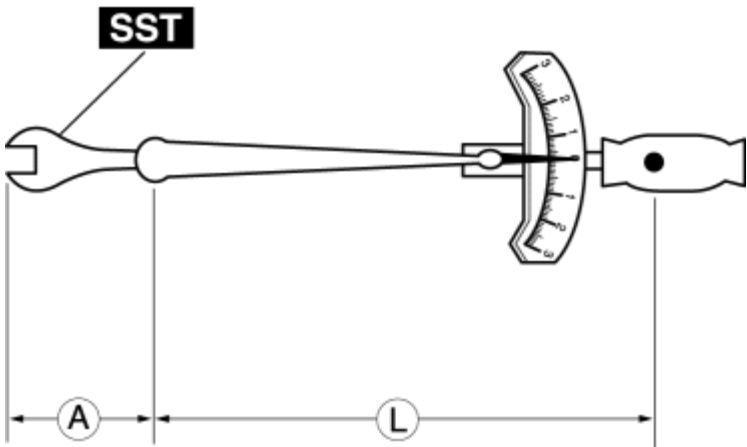
Hose Clamps

- When reinstalling, position the hose clamp in the original location on the hose and squeeze the clamp lightly with large pliers to ensure a good fit.



Torque Formulas

- When using a torque wrench–**SST** or equivalent combination, the specified torque must be recalculated due to the extra length that the **SST** or equivalent adds to the torque wrench. Recalculate the torque by using the following formulas. Choose the formula that applies to you.

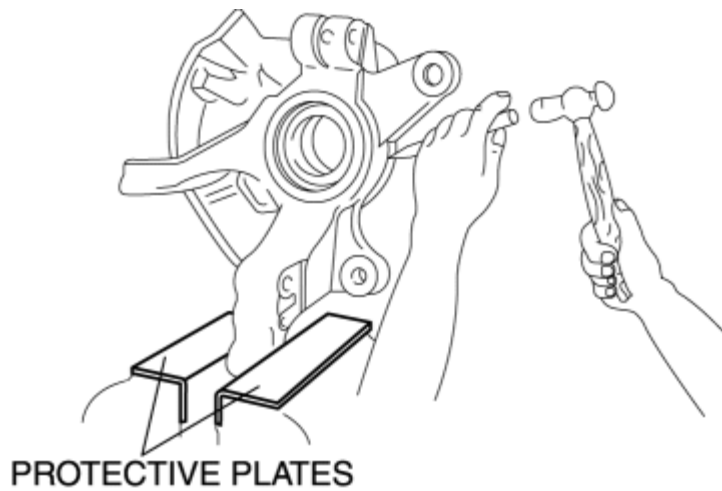


Torque Unit	Formula
N·m	$N \cdot m \times [L / (L + A)]$
kgf·m	$kgf \cdot m \times [L / (L + A)]$
kgf·cm	$kgf \cdot cm \times [L / (L + A)]$
ft·lbf	$ft \cdot lbf \times [L / (L + A)]$
in·lbf	$in \cdot lbf \times [L / (L + A)]$

- A The length of the SST past the torque wrench drive.
- L The length of the torque wrench.

Vise

- When using a vise, put protective plates in the jaws of the vise to prevent damage to parts.



Dynamometer

- When inspecting and servicing the power train on the dynamometer or speedometer tester, pay attention to the following:
 - Place a fan, preferably a vehicle–speed proportional type, in front of the vehicle.
 - Make sure the vehicle is in a facility with an exhaust gas ventilation system.
 - Since the rear bumper might deform from the heat, cool the rear with a fan. (Surface of the bumper must be below **70 °C {158 °F}**.)
 - Keep the area around the vehicle uncluttered so that heat does not build up.
 - Watch the water temperature gauge and do not overheat the engine.
 - Avoid added load to the engine and maintain normal driving conditions as much as possible.

NOTE:

- When only the front or rear wheels are rotated on a chassis dynamometer or equivalent, the ABS/DSC HU/CM determines that there is a malfunction in the ABS/DSC and illuminates the following lights:
 - Vehicles with ABS
 - ABS warning light
 - Brake system warning light
 - Vehicles with DSC
 - ABS warning light
 - Brake system warning light

- DSC indicator light
- If the above lights are illuminated, dismount the vehicle from the chassis dynamometer and turn the ignition switch to the LOCK position. Then, turn the ignition switch back to the ON position, run the vehicle at **10 km/h or more** and verify that the warning lights go out. In this case, a DTC will be stored in the memory. Clear the DTC from the memory by following the memory clearing procedure [ABS]/[DSC] in the on-board diagnostic system. (See [ON-BOARD DIAGNOSIS \[ABS\]](#))(See [ON-BOARD DIAGNOSIS \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#))

[< Previous](#) [Next >](#)

[Back to Top](#)

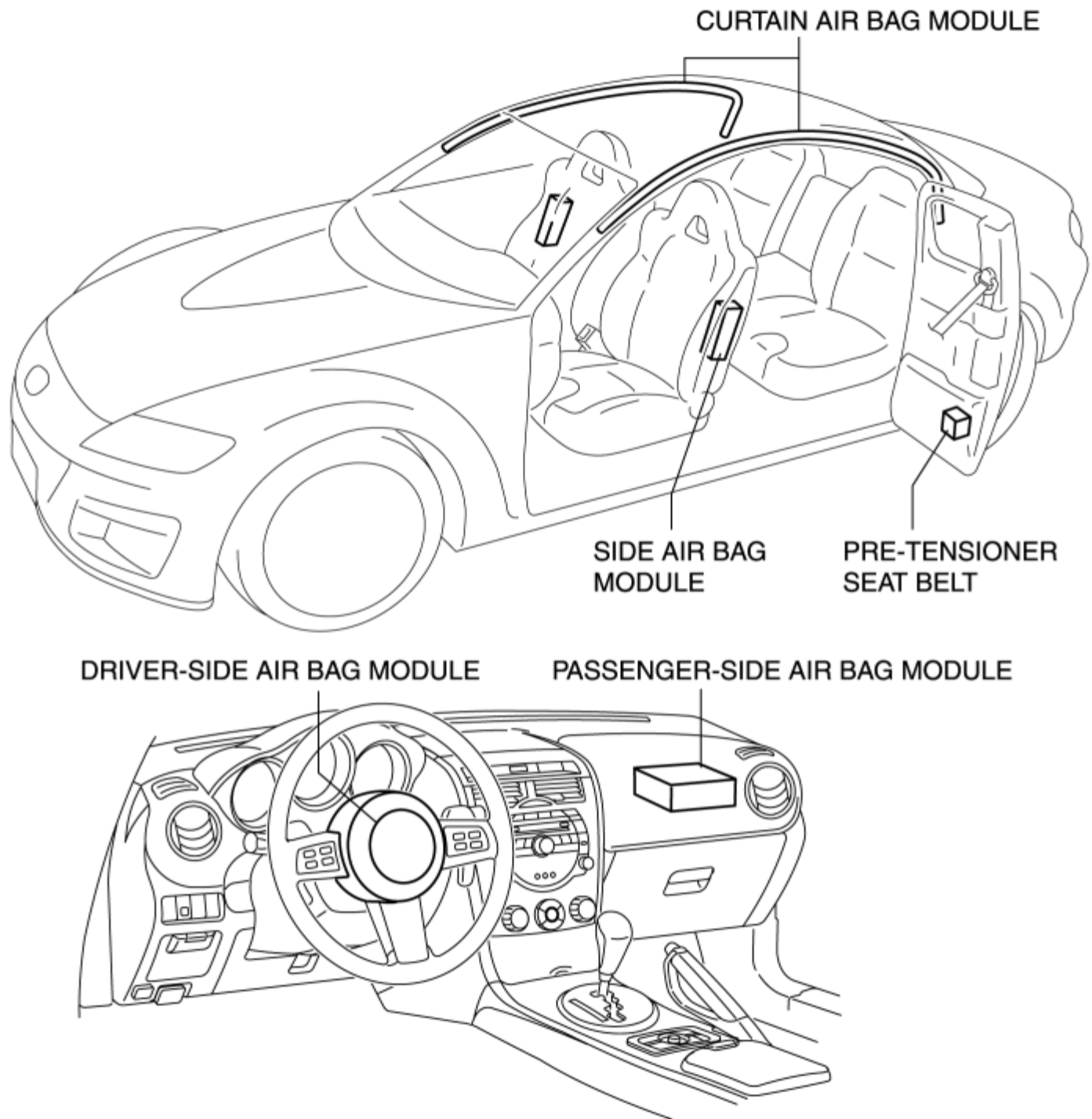
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - General Information

INSTALLATION OF RADIO SYSTEM

The control module and control unit have been designed with sufficient attention to radio wave disturbances from the outside. However, observe the following precautions when installing the radio set to the vehicle to prevent adverse effects on the control module and control unit.

- Install the radio set and its antenna as far away as possible from the control module and control unit.
- The antenna feeder and power cable generate radio waves, therefore, keep them **100 mm {3.94 in} or more** from the control module, control unit, and wiring harness. If the antenna feeder and power cable cross over the wiring harness, place them perpendicular to the wiring harness.
- Do not install a high output radio set.
- Do not use the control module and control unit power source for the radio set. In addition, do not use the cigar lighter and accessory socket power source.
- Do not attach the antenna feeder or wiring harness of the radio set to the wiring harness, fuel pipe, or brake tube of the vehicle.
- Do not install any radio set-related devices in the area where the air bag module deploys to prevent a secondary accident if the air bag were to deploy.



- After installing the radio set, perform a test transmission with the engine idling to verify that it does not affect engine control.

[< Previous](#) [Next >](#)

[Back to Top](#)

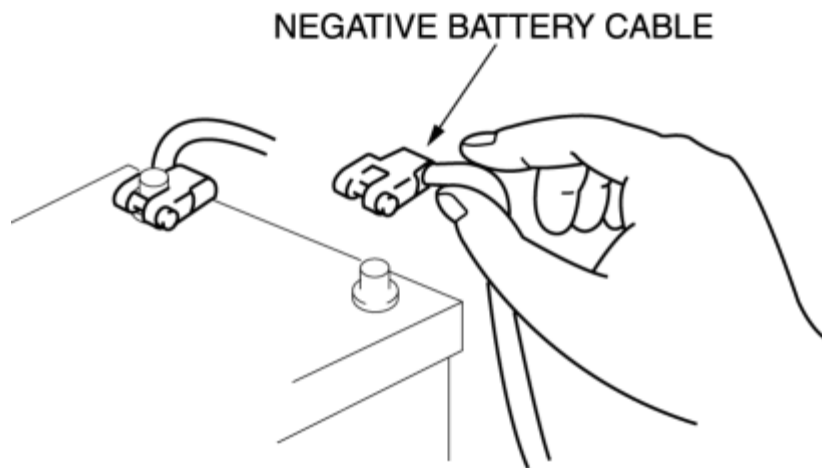
2011 - RX-8 - General Information

ELECTRICAL SYSTEM

Electrical Parts

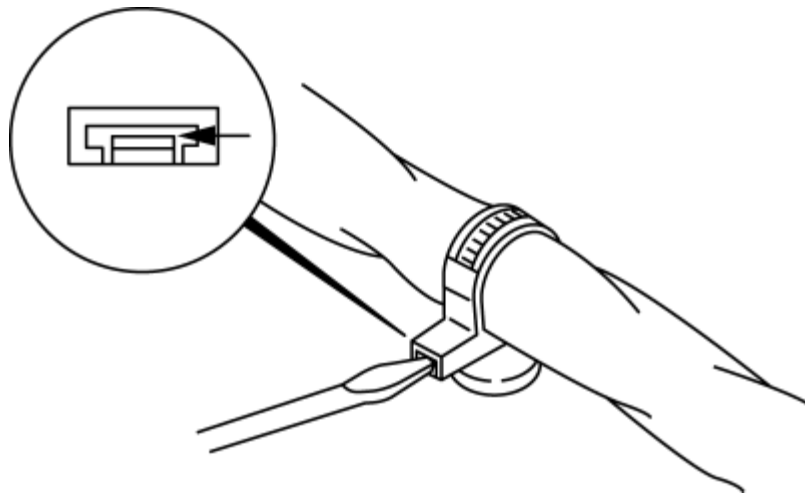
Battery cable

- Before disconnecting connectors or removing electrical parts, disconnect the negative battery cable.



Wiring Harness

- To remove the wiring harness from the clip in the engine room, pry up the hook of the clip using a flathead screwdriver.



CAUTION:

- Do not remove the harness protective tape. Otherwise, the wires could rub against the body, which could result in water penetration and electrical shorting.

NO GOOD

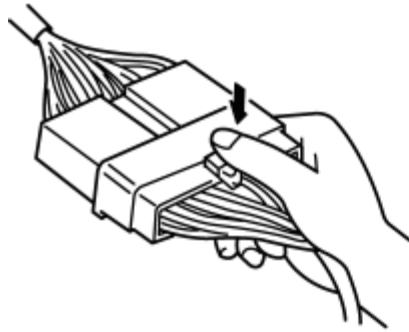


Connectors

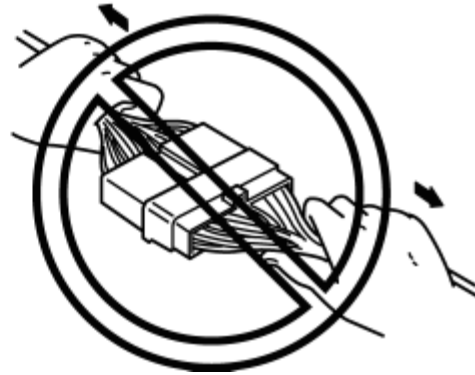
Disconnecting connectors

- When disconnecting connector, grasp the connectors, not the wires.

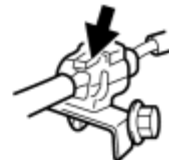
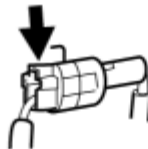
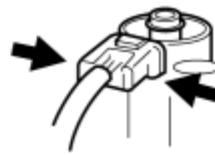
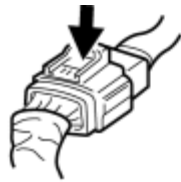
GOOD



NO GOOD

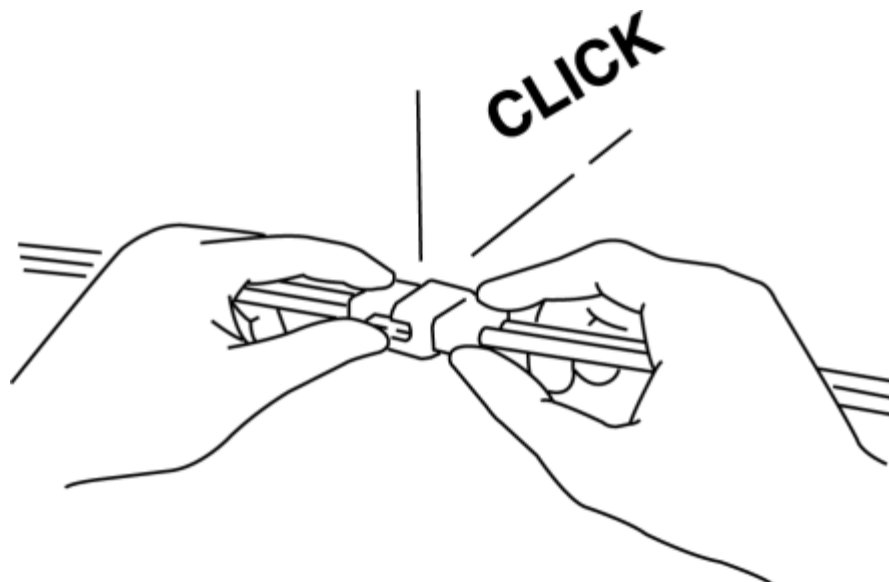


- Connectors can be disconnected by pressing or pulling the lock lever as shown.



Locking connector

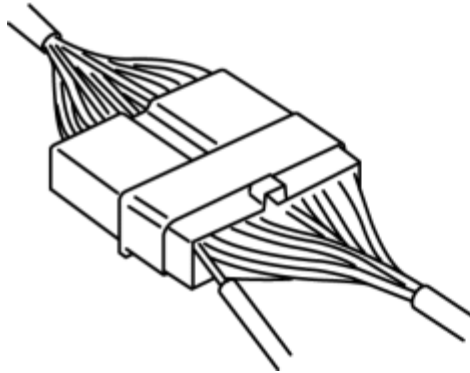
- When locking connectors, listen for a click indicating they are securely locked.



Inspection

- When a tester is used to inspect for continuity or measuring voltage, insert the tester probe from the wiring harness side.

GOOD



NO GOOD

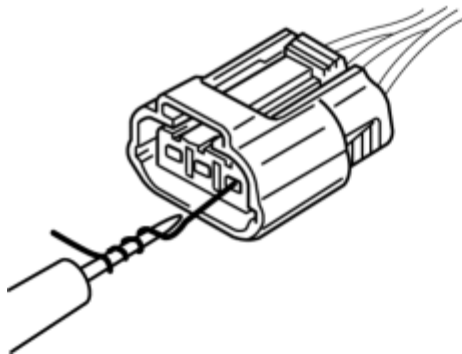


- Inspect the terminals of waterproof connectors from the connector side since they cannot be accessed from the wiring harness side.

CAUTION:

- To prevent damage to the terminal, wrap a thin wire around the tester probe before inserting into terminal.

GOOD



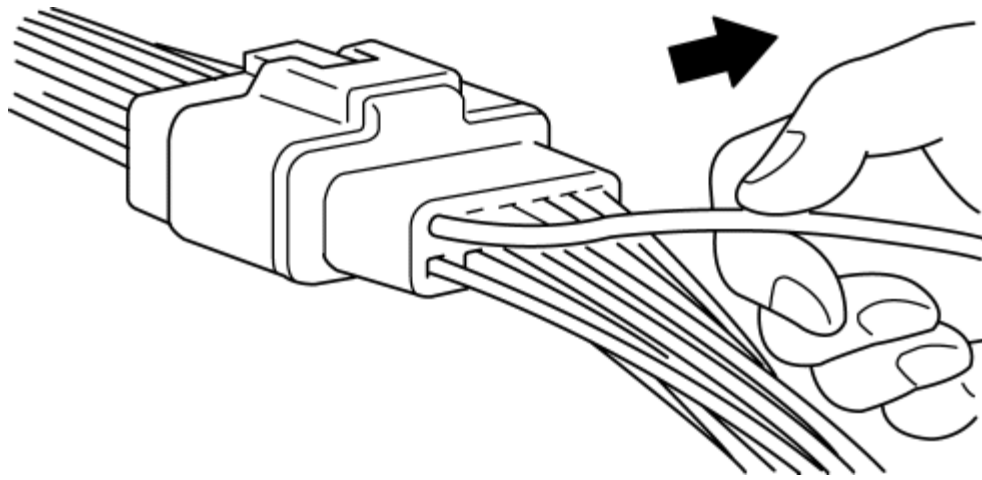
NO GOOD



Terminals

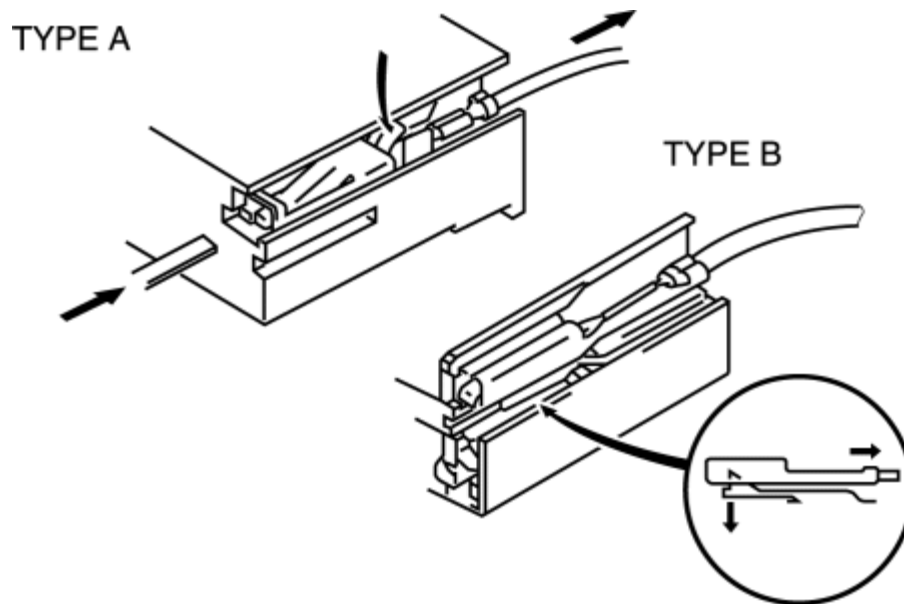
Inspection

- Pull lightly on individual wires to verify that they are secured in the terminal.



Replacement

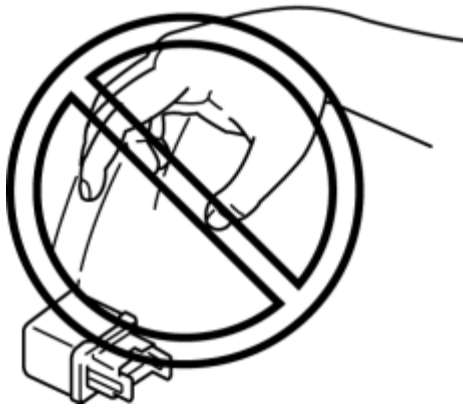
- Use the appropriate tools to remove a terminal as shown. When installing a terminal, be sure to insert it until it locks securely.
- Insert a thin piece of metal from the terminal side of the connector and with the terminal locking tab pressed down, pull the terminal out from the connector.



Sensors, Switches, and Relays

- Handle sensors, switches, and relays carefully. Do not drop them or strike them against other objects.

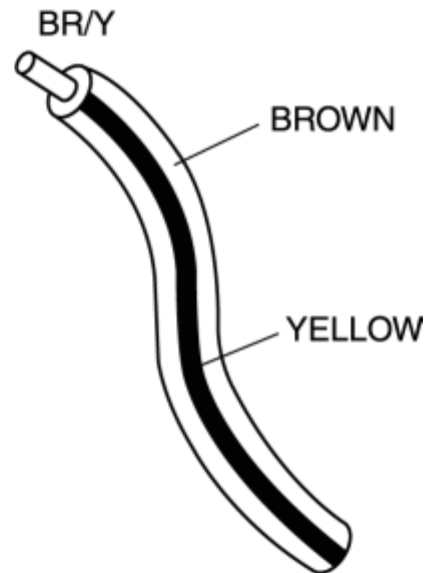
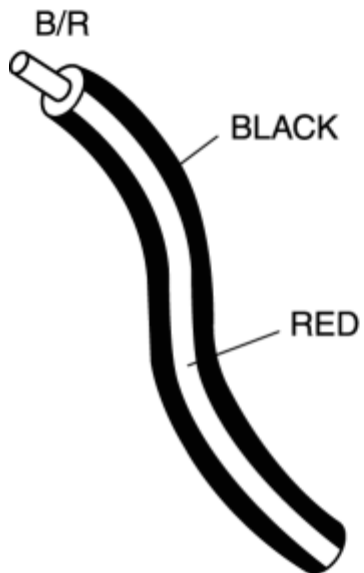
NO GOOD



Wiring Harness

Wiring color codes

- Two-color wires are indicated by a two-color code symbol.
- The first letter indicates the base color of the wire and the second the color of the stripe.



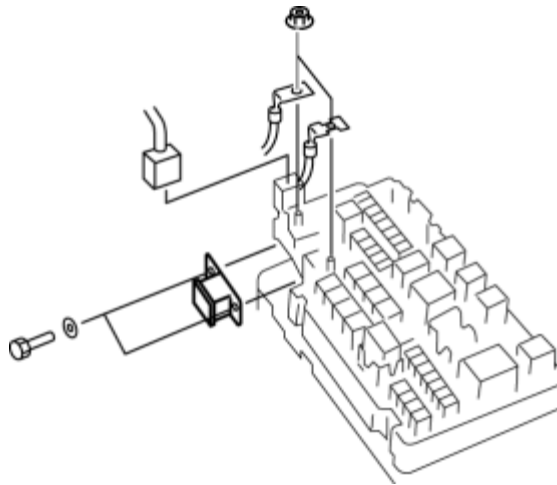
CODE	COLOR	CODE	COLOR
B	Black	O	Orange
BR	Brown	P	Pink

G	Green	R	Red
GY	Gray	V	Violet
L	Blue	W	White
LB	Light Blue	Y	Yellow
LG	Light Green	–	–

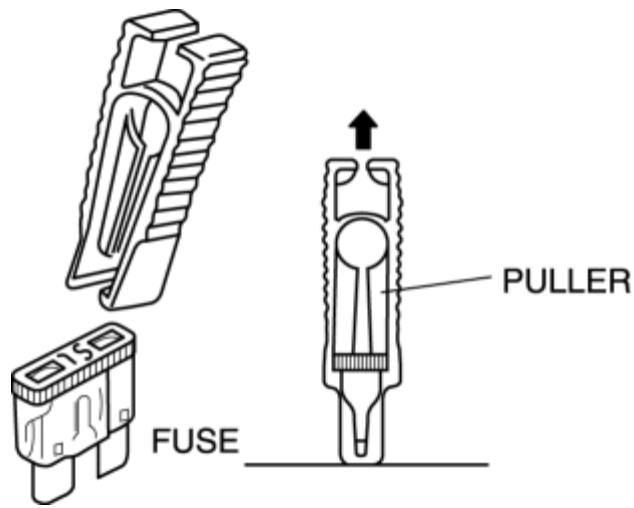
Fuse

Replacement

- When replacing a fuse, be sure to replace it with one of the same capacity. If a fuse fails again, the circuit probably has a short and the wiring should be inspected.
- Be sure the negative battery terminal is disconnected before replacing a main fuse.



- When replacing a pullout fuse, use the fuse puller.

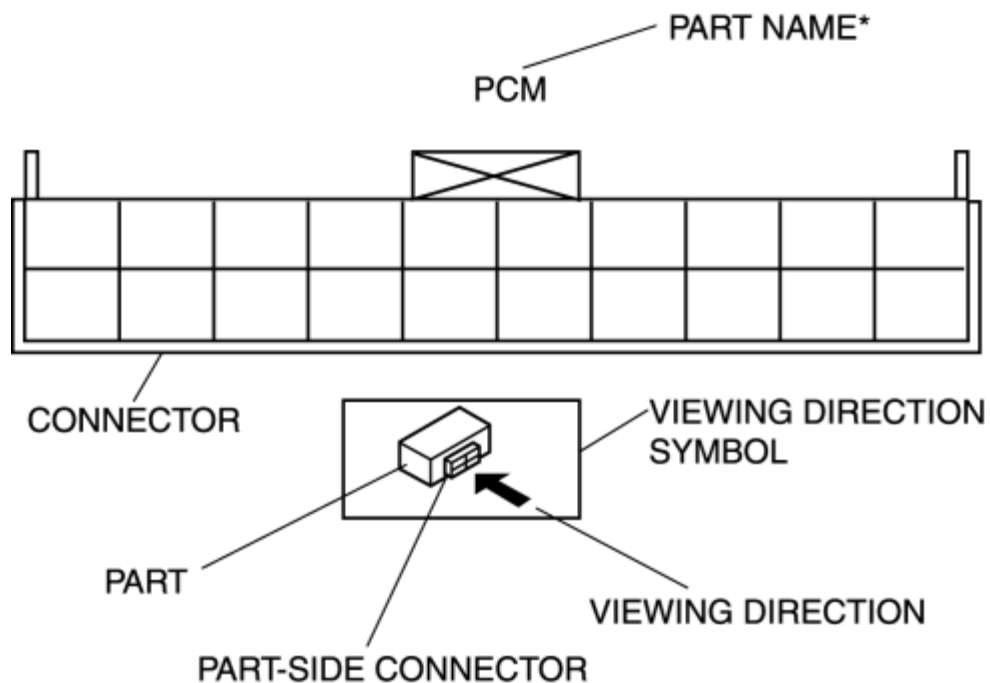


Direction of View for Connector

- The viewing direction of connectors is indicated with a symbol.
- The figures showing the viewing direction are the same as those used in Wiring Diagrams.
- The viewing directions are shown in the following three ways:

Part-side connector

The viewing direction of part-side connectors is from the terminal side.

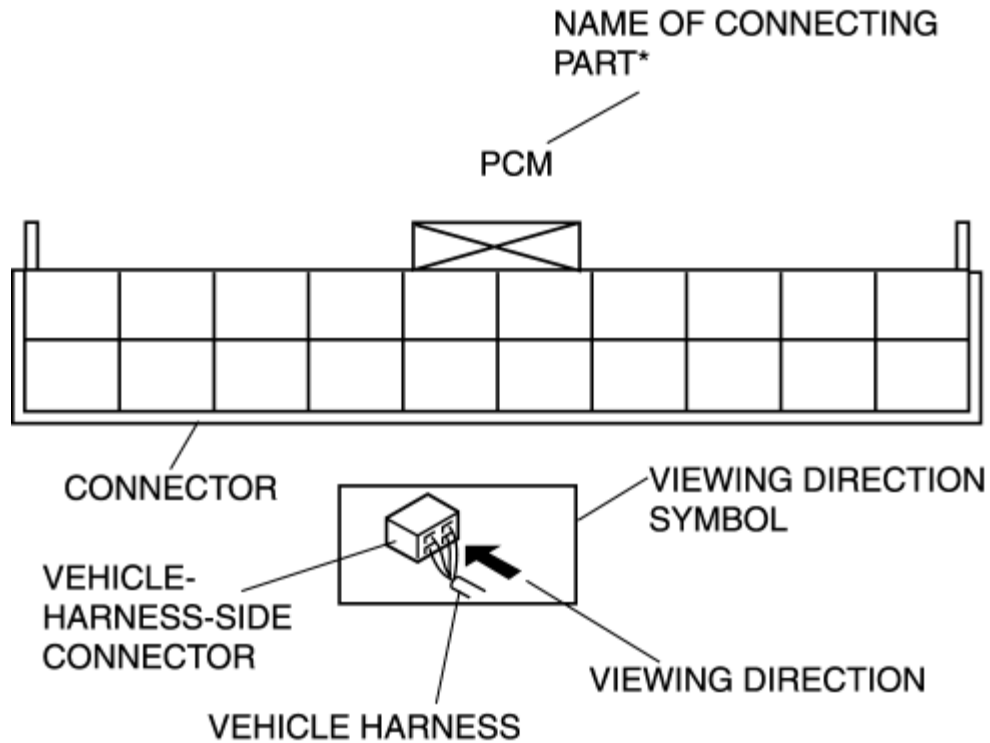


*

Part names are shown only when there are multiple connector drawings.

Vehicle harness-side connector

The viewing direction of vehicle harness-side connectors is from the harness side.



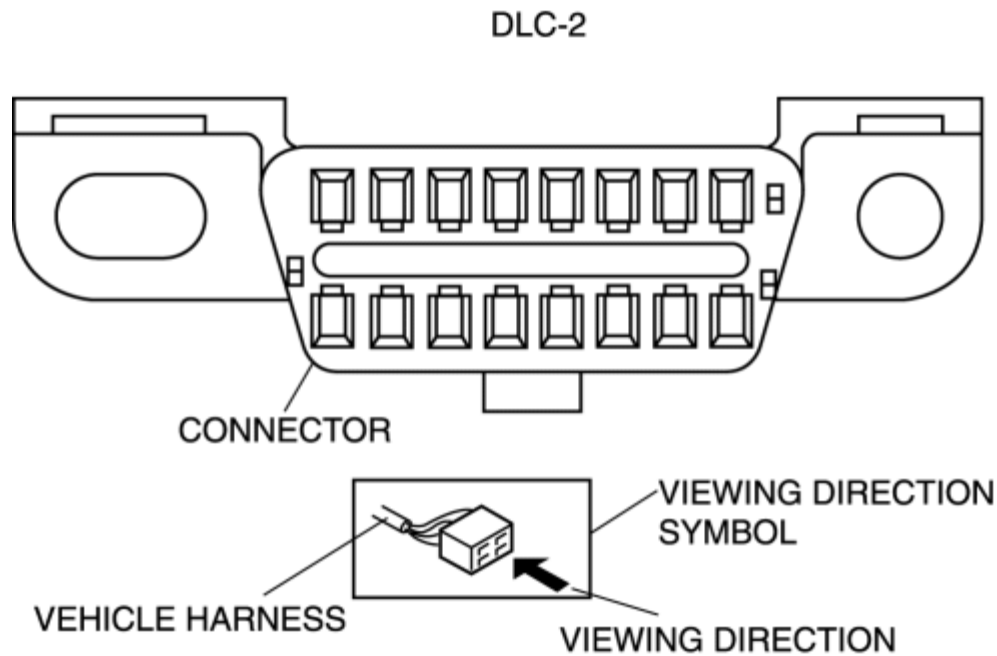
*

Part names are shown only when there are multiple connector drawings.

Other

When it is necessary to show the terminal side of vehicle harness-side connectors, such as the following connectors, the viewing direction is from the terminal side.

- Main fuse block and the main fuse block relays
- Data link connector
- Check connector
- Relay box

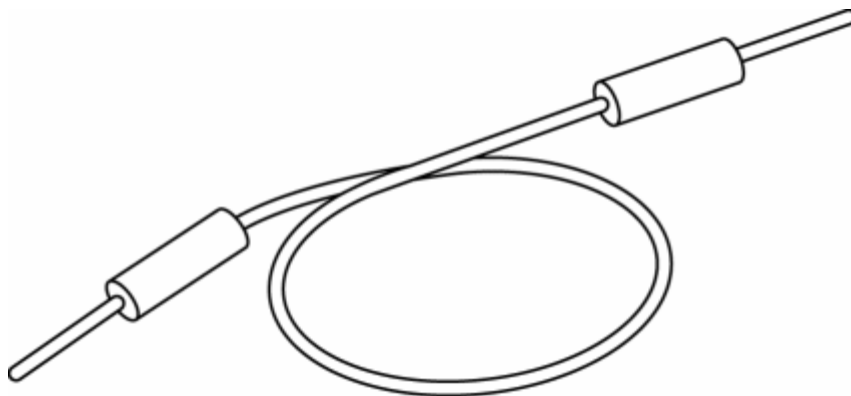


Electrical Troubleshooting Tools

Jumper wire

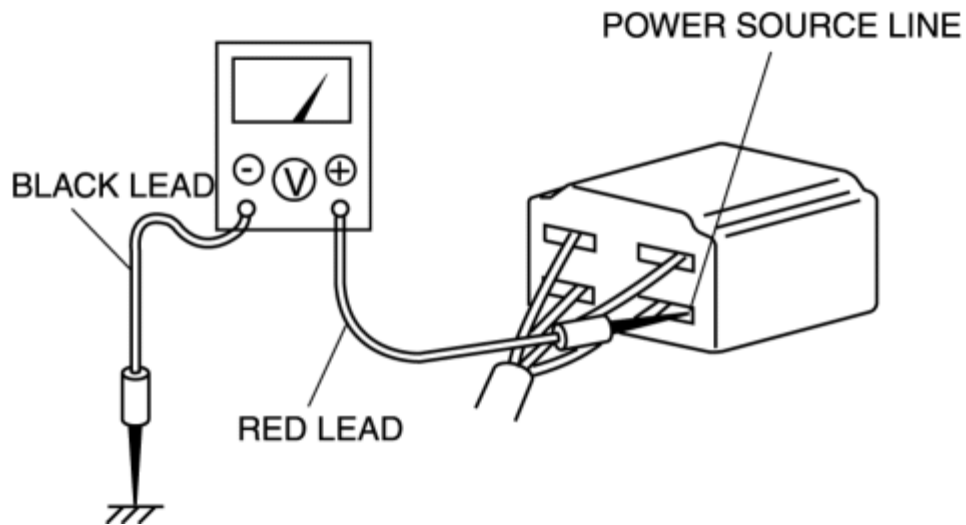
CAUTION:

- Do not connect a jumper wire from the power source line to a body ground. This may cause burning or other damage to wiring harnesses or electronic components.
- A jumper wire is used to create a temporary circuit. Connect the jumper wire between the terminals of a circuit to bypass a switch.



Voltmeter

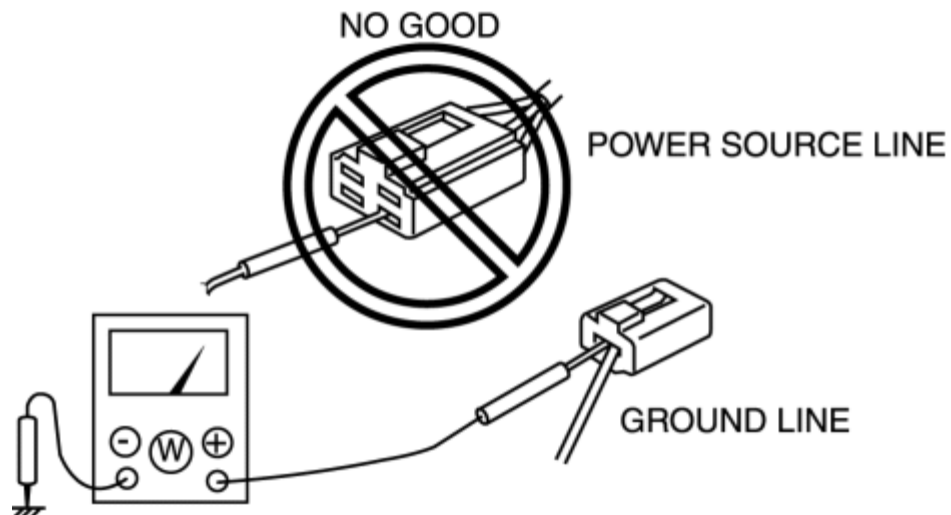
- The DC voltmeter is used to measure circuit voltage. A voltmeter with a range of **15 V or more** is used by connecting the positive (+) probe (red lead wire) to the point where voltage will be measured and the negative (-) probe (black lead wire) to a body ground.



Ohmmeter

CAUTION:

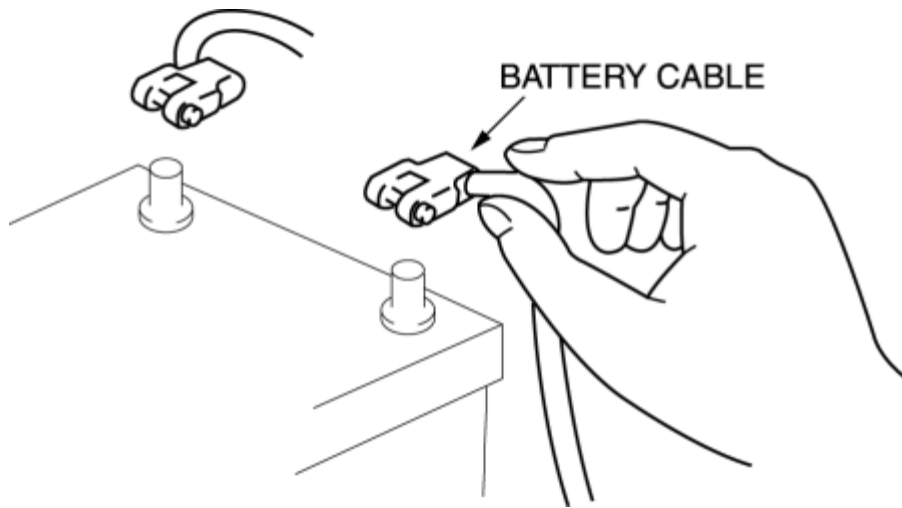
- Do not connect the ohmmeter to any circuit where voltage is applied. This will damage the ohmmeter.
- The ohmmeter is used to measure the resistance between two points in a circuit and to inspect for continuity and short circuits.



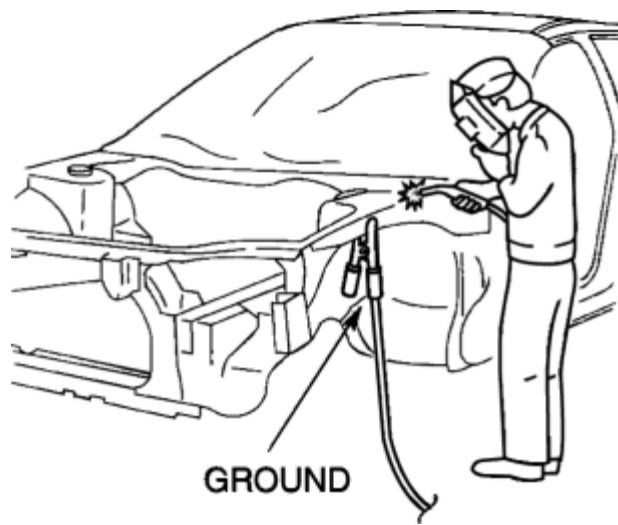
Precautions Before Welding

A vehicle has various electrical parts. To protect the parts from excessive current generated when welding, be sure to perform the following procedure.

1. Turn the ignition switch to the LOCK position.
2. Disconnect the battery cables.



3. Securely connect the welding machine ground near the welding area.



4. Cover the peripheral parts of the welding area to protect them from weld spatter.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - General Information

JACKING POSITIONS, VEHICLE LIFT (2 SUPPORTS) AND SAFETY STAND (RIGID RACK) POSITIONS

Jacking Positions

WARNING:

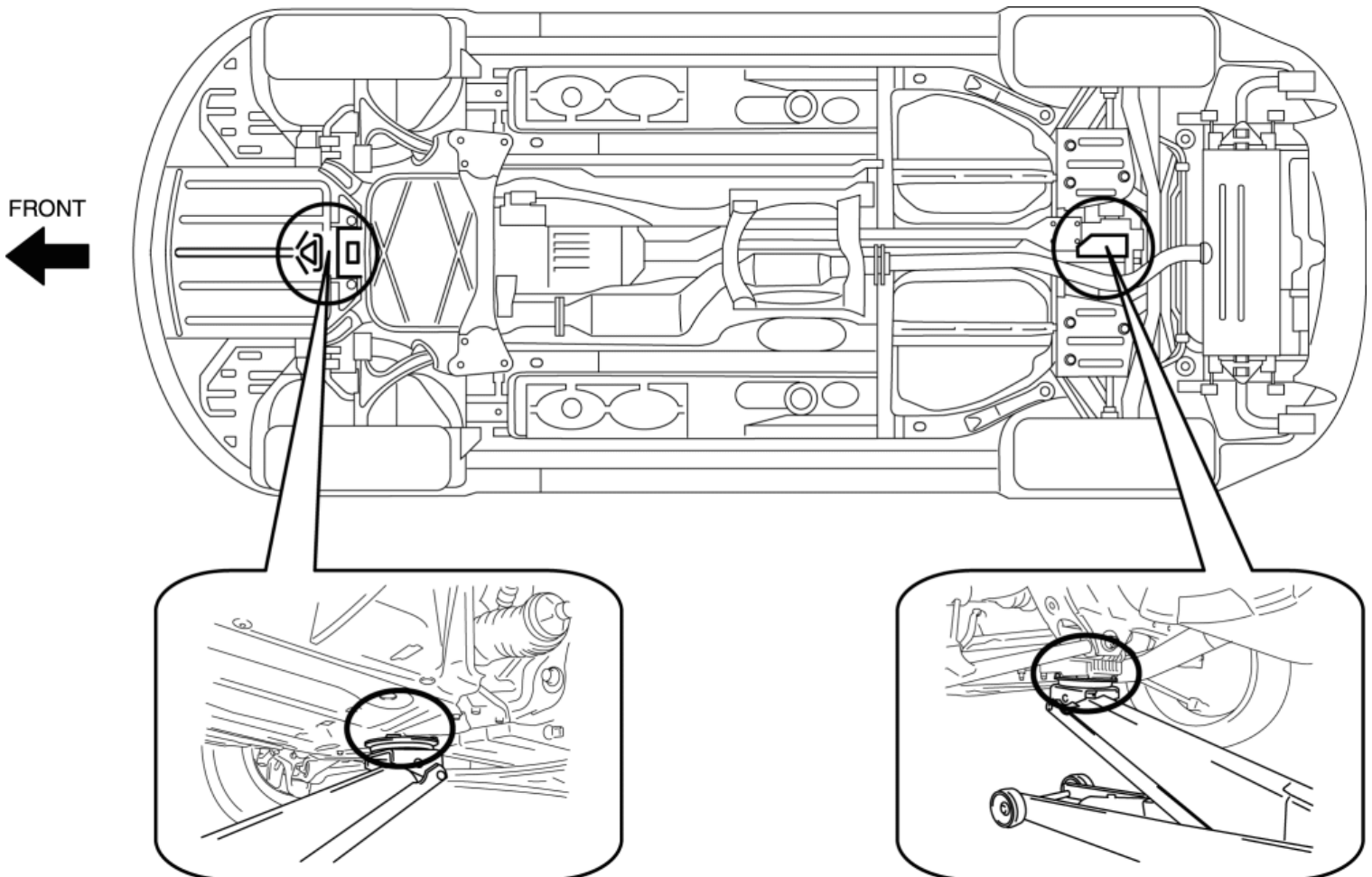
- Improperly jacking a vehicle is dangerous. The vehicle can slip off the jack and cause serious injury. Use only the correct front and rear jacking points and block the wheels.
- Use safety stands to support the vehicle after it has been lifted.

Front

- At the center of the front crossmember.

Rear

- At the center of the differential.



Vehicle Lift Positions

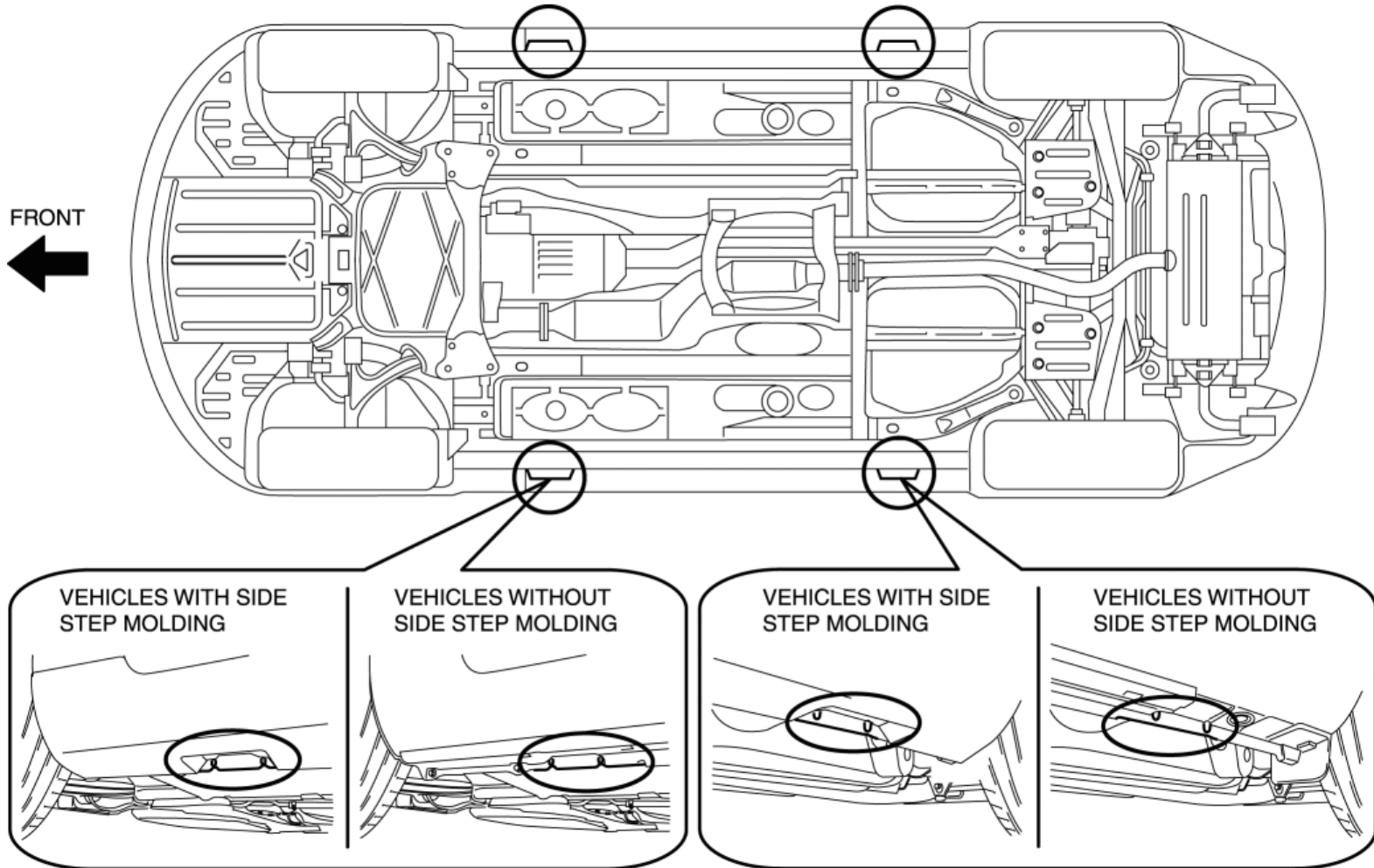
Front and rear

WARNING:

- Unstably lifting a vehicle is dangerous. The vehicle can slip off the lift and cause serious injury and/or vehicle damage. Make sure that the vehicle is on the lift horizontally by adjusting the height of support at the end of the arm of the lift.

CAUTION:

- For vehicles with side step molding, be careful not to damage the side step molding by hitting it with auto-lift arms or a safety stand.
- Both sides of the vehicle, on side sills.



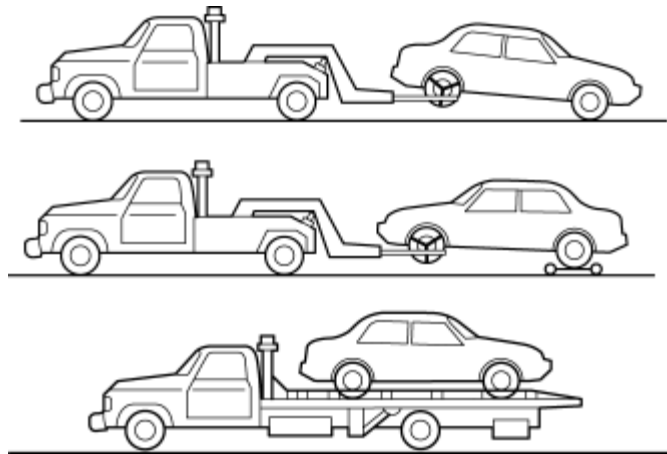
[< Previous](#) [Next >](#)

2011 - RX-8 - General Information

TOWING

Towing

- Proper lifting and towing are necessary to prevent damage to the vehicle. Government and local laws must be followed.
- A towed vehicle usually should have its drive wheels (rear wheels) off the ground. If excessive damage or other conditions prevent this, use wheel dollies.



CAUTION:

- Do not tow the vehicle pointed forward with driving wheels on the ground. This may cause internal damage to the transmission.

NO GOOD



CAUTION:

- Do not tow with sling-type equipment. This could damage your vehicle. Use wheel-lift or flatbed equipment.

NO GOOD



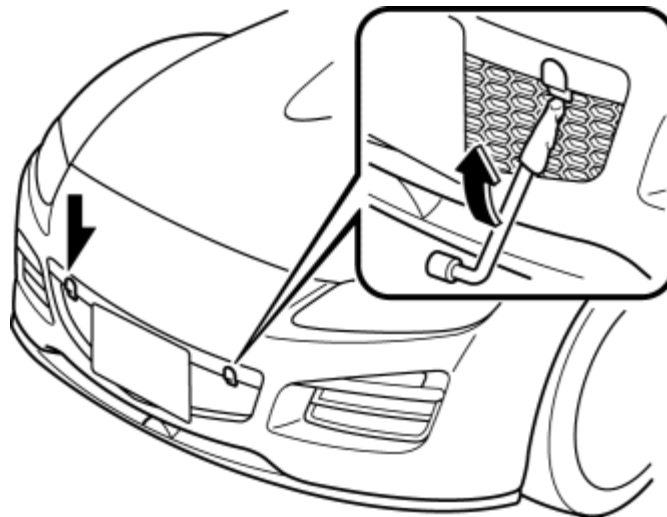
Tiedown

CAUTION:

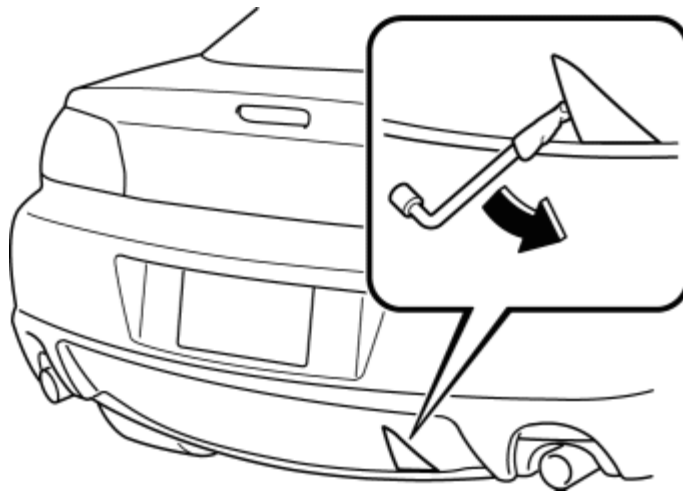
- Do not use the front and rear tiedown eyelets for towing the vehicle. They have been designed only for securing the vehicle to a transport vessel during shipping. Using the eyelets for any other purpose could result in the vehicle being damaged.

1. Wrap the wheel brace with a soft cloth to prevent damage to a painted bumper, and open the cap located on the front or rear bumper.

Front



Rear

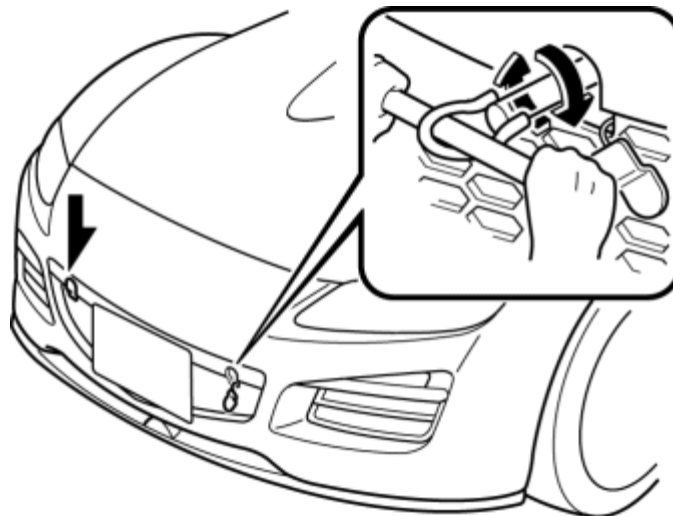


CAUTION:

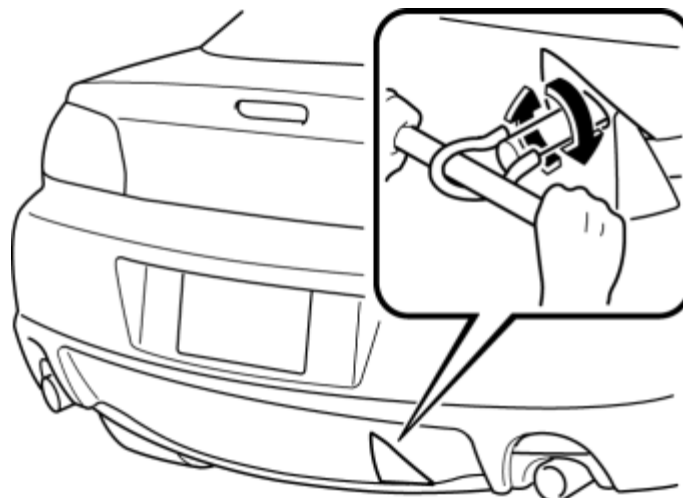
- The cap cannot be completely removed. Do not use excessive force as it may damage the cap or scratch the painted bumper surface.

2. Securely install the tiedown eyelet using the wheel brace.

Front

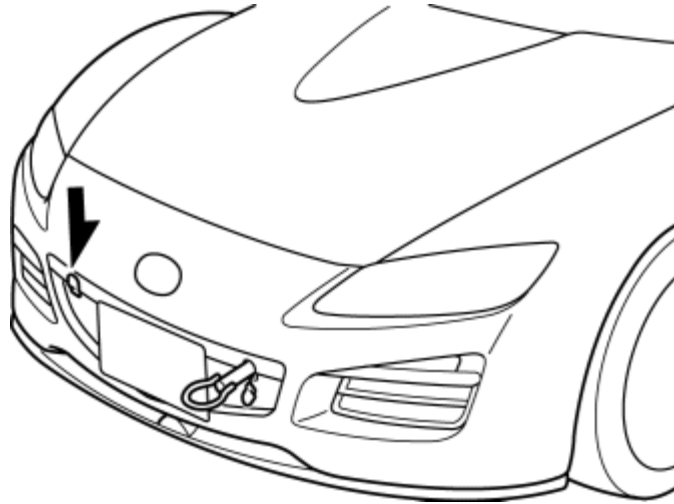


Rear

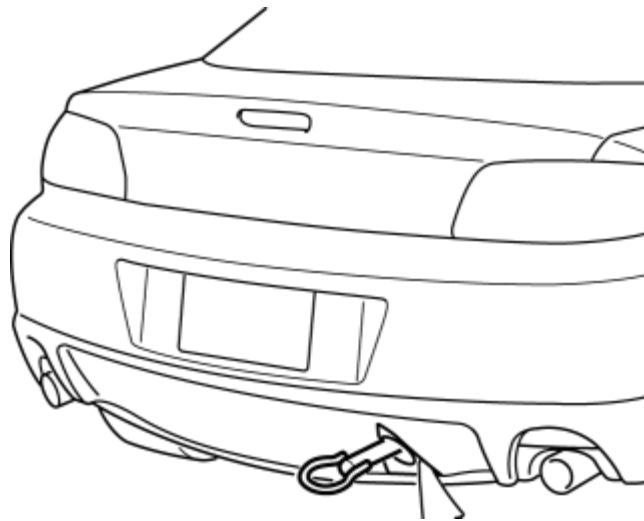


3. Hook the tying rope to the tiedown eyelet.

Front



Rear



CAUTION:

- If the tiedown eyelet is not securely tightened, it may loosen or disengage from the bumper when tying down the vehicle. Make sure that the tiedown eyelet is securely tightened to the bumper.

[< Previous](#) [Next >](#)

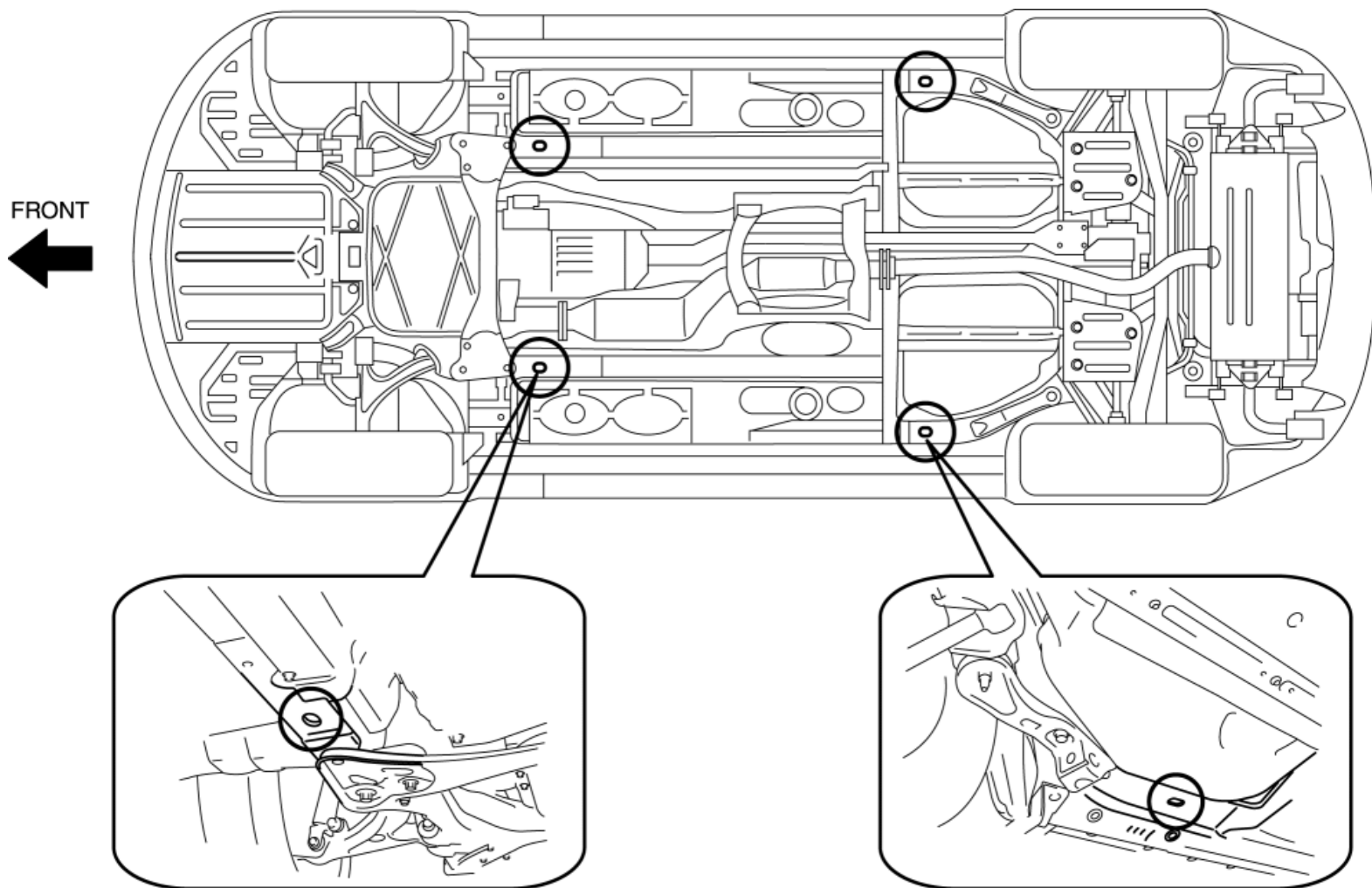
[Back to Top](#)

2011 - RX-8 - General Information

TIEDOWN HOOK

CAUTION:

- Do not use the tiedown hook for towing the vehicle. Use it only for securing the vehicle.

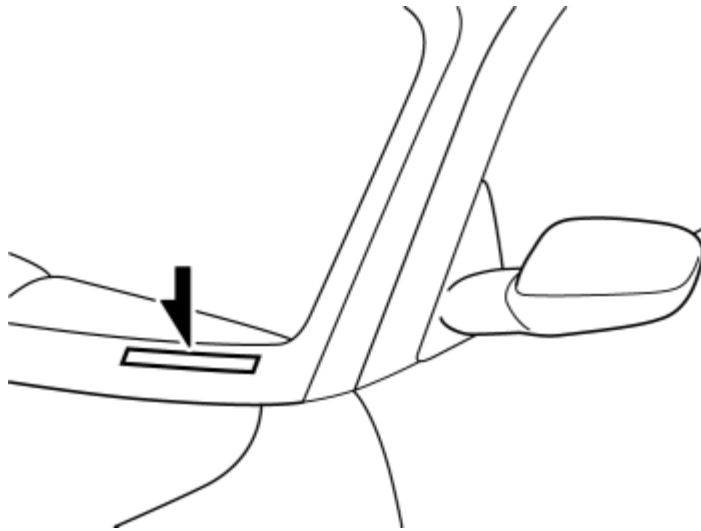


[< Previous](#) [Next >](#)

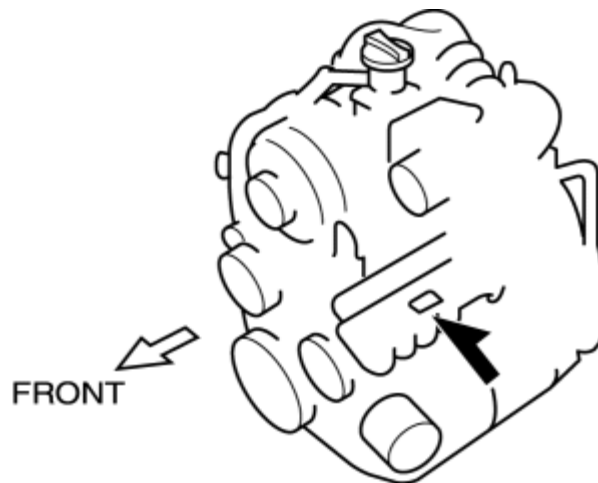
2011 - RX-8 - General Information

IDENTIFICATION NUMBER LOCATIONS

Vehicle Identification Number (VIN)



Engine Identification Number



[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - General Information

ABBREVIATIONS

AAS	Active Adaptive Shift
ABS	Antilock Brake System
ACC	Accessories
ALC	Auto Level Control
ALR	Automatic Locking Retractor
APV	Auxiliary Port Valve
AT	Automatic Transmission
ATF	Automatic Transmission Fluid
BTDC	Before Top Dead Center
CAN	Controller Area Network
CCM	Comprehensive Component Monitor
CM	Control Module
CPU	Central Processing Unit
DC	Drive Cycle
DSC	Dynamic Stability Control

EBD	Electronic Brakeforce Distribution
ELR	Emergency Locking Retractor
EPS	Electric Power Steering
FFD	Freeze Frame Data
F/P	Fuel Pump
FP	Front Primary
FS	Front Secondary
GPS	Global Positioning System
HF/TEL	Hands-Free Telephone
HI	High
HS	High Speed
HU	Hydraulic Unit
IDS	Integrated Diagnostic Software
IG	Ignition
INT	Intermittent
KOEO	Key ON Engine Off
KOER	Key ON Engine Running
LCD	Liquid Crystal Display
LED	Light Emitting Diode

LF	Left Front
LH	Left Hand
LO	Low
L/R	Leading Rear
LR	Left Rear
M	Motor
MAX	Maximum
MS	Middle Speed
MT	Manual Transmission
OCV	Oil Control Valve
PDS	Portable Diagnostic Software
PID	Parameter Identification
RAM	Random Access Memory
RF	Right Front
RH	Right Hand
ROM	Read Only Memory
RR	Right Rear
SAS	Sophisticated Air Bag Sensor
SAE	Society of Automotive Engineers
SST	Special Service Tool

SW	Switch
TCS	Traction Control System
TFT	Transmission Fluid Temperature
TNS	Tail Number Side Lights
TPMS	Tire Pressure Monitoring System
VDI	Variable Dynamic Effect Intake
VFAD	Variable Fresh Air Duct
1GR	First Gear
2GR	Second Gear
3GR	Third Gear
4GR	Fourth Gear
5GR	Fifth Gear
6GR	Sixth Gear

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - General Information

PRE-DELIVERY INSPECTION

Pre-Delivery Inspection Table

Exterior

INSPECT and **ADJUST**, if necessary, the following items to specification:

- ☐ Glass, exterior bright metal and paint for damage
- ☐ Wheel lug nuts
- ☐ All weatherstrips for damage or detachment
- ☐ Tire pressures
- ☐ Headlight cleaner and fluid level (if equipped)
- ☐ Operation of hood release and lock
- ☐ Operation of trunk lid and fuel-filler lid opener
- ☐ Door operation and alignment including side door and back door
- ☐ Headlight aiming

INSTALL the following parts:

- ☐ Flap (front)
- ☐ Wheel caps or rings (if equipped)

Under hood—engine off

INSPECT and **ADJUST**, if necessary, the following items to specification:

- ☐ Fuel, engine coolant, and hydraulic lines, fittings, connections, and components for leaks
- ☐ Engine oil level
- ☐ Brake and clutch fluid level
- ☐ Windshield washer reservoir fluid level
- ☐ Manual transmission oil level
- ☐ Radiator coolant level and specific gravity
- ☐ Tightness of water hose clamps
- ☐ Tightness of battery terminals, electrolyte level and specific gravity
- ☐ Differential oil level

Interior

INSTALL the following items:

- ☐ Fuse for accessories

INSPECT the operations of the following items:

- ☐ Seat controls (slide and recline) and headrests
 - ☐ Folding rear seat
 - ☐ Door locks, including childproof door locks
 - ☐ Seat belts and warning system
 - ☐ Ignition switch and steering lock
 - ☐ Transmission range switch
 - ☐ Warning buzzers
 - ☐ Ignition key reminder alarm
 - ☐ Air bag system using warning light
 - ☐ Cruise control system (if equipped)
 - ☐ Power door lock
 - ☐ Shift–lock system (if equipped)
 - ☐ Starter interlock
 - ☐ All lights including warning, and indicator lights
 - ☐ Horn, wipers, and washers
 - ☐ Wiper blades performance
- Clean wiper blades and windshield, if necessary
- ☐ Antenna
 - ☐ Audio system
 - ☐ Cigarette lighter and clock
 - ☐ Power windows (if equipped)
 - ☐ Heater, defroster, and air conditioner at various mode selections (if equipped)

INSPECT the following items:

- ☐ Presence of spare fuse
 - ☐ Upholstery and interior finish
- INSPECT** and **ADJUST**, if necessary, the following items:
- ☐ Operation and fit of windows
 - ☐ Pedal height and free play of clutch pedal
 - ☐ Parking brake

Under hood—engine running at operating temperature

INSPECT the following items:

- ☐ Automatic transmission fluid level
- ☐ Operation of idle–up system for electrical load, air conditioner or power steering (if equipped)
- ☐ Ignition timing
- ☐ Idle speed
- ☐ Operation of throttle position sensor

On hoist

INSPECT the following items:

- ☐ Manual transmission oil level
- ☐ Underside fuel, coolant and hydraulic lines, fittings, connections, and components for leaks
- ☐ Tires for cuts or bruises
- ☐ Steering linkage, suspension, exhaust system, and all underside hardware for looseness or damage

Road test

INSPECT the following items:

- ☐ Brake operation
- ☐ Clutch operation

- ☐Steering control
- ☐Operation of gauges
- ☐Squeaks, rattles, and unusual noises
- ☐Engine general performance
- ☐Emergency locking retractors and automatic locking retractors
- ☐Cruise control system (if equipped)
- ☐Operation of meters and gauges, squeaks, rattles, and abnormal noises

After road test

INSPECT for necessary owner information materials, tools, and spare tire in vehicle

The following items must be completed just before delivery to your customer.

- ☐Load test battery and charge if necessary (Load test result: Volts)
- ☐Adjust tire pressure to specification (Specified tire pressure is indicated on the door label.)
- ☐Clean outside of vehicle
- ☐Install fuses for accessories
- ☐Remove seat and cabin carpet protective covers
- ☐Vacuum inside of vehicle

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

[< Previous](#)

2011 - RX-8 - General Information

SCHEDULED MAINTENANCE

Scheduled Maintenance Table for U.S.A., CANADA, and Puerto Rico

Schedule 1 (Normal Driving Conditions) for USA

- The vehicle is mainly operated where none of the "unique driving conditions" apply.

Maintenance Interval	Number of months or kilometers (miles), whichever comes first								
	Months	6	12	18	24	30	36	42	48
	×1000 km	12	24	36	48	60	72	84	96
	×1000 miles	7.5	15	22.5	30	37.5	45	52.5	60
ENGINE									
Engine oil		R	R	R	R	R	R	R	R
Engine oil filter		R	R	R	R	R	R	R	R
Drive belts					I				I
COOLING SYSTEM									
		FL22 type ^{*1}			Replace at first 192,000 km (120,000 miles) or 10 years; after that, every 96,000 km (60,000 miles) or 5 years				

Engine coolant								
	Others	Replace at first 96,000 km (60,000 miles) or 4 years; after that, every 2 years						
FUEL SYSTEM								
Air cleaner element					R			
Fuel lines and hoses *2				I				I
Hoses and tubes for emission *2								I
IGNITION SYSTEM								
Spark plugs					R			
CHASSIS and BODY								
Brake lines, hoses and connections				I				I
Disc brakes		I		I		I		I
Tire (Rotation)	Rotate every 12,000 km (7,500 miles)							
Flat tire repair kit *3	Inspect annually							
Steering operation and linkages				I				I
Front and rear suspension, ball joints and wheel bearing axial play				I				I
Manual transmission oil								R
Rear differential oil								R
Drive shaft dust boots				I				I

Bolts and nuts on chassis and body				T				T
Exhaust system and heat shields	Inspect every 72,000 km (45,000 miles) or 5 years							
All locks and hinges	L	L	L	L	L	L	L	L
AIR CONDITIONER SYSTEM								
Cabin air filter	Replace every 40,000 km (25,000 miles) or 2 years							

Chart symbols:

- **I:** Inspect: Inspect and clean, repair, adjust, fill up or replace if necessary.
- **R:** Replace
- **L:** Lubricate
- **T:** Tighten

Remarks

- After the prescribed period, continue to follow the described maintenance at the recommended intervals.
- Refer below for a description of items marked* in the maintenance chart.
 - *1: Use FL22 type coolant in vehicles with the inscription "FL22" on the radiator cap itself or the surrounding area. Use FL22 when replacing the coolant.
 - *2: According to state/provincial and federal regulations, failure to perform maintenance on these items will not void your emissions warranties. However, Mazda recommends that all maintenance services be performed at the recommended time or mileage/kilometer period to ensure long-term reliability.
 - *3: Check the tire repair fluid expiration date every year when performing the periodic maintenance. Replace the tire repair fluid bottle with new one before the expiration date.

Schedule 2 CANADA, Puerto Rico, and (Unique Driving Conditions) for USA

- Repeated short-distance driving

- Driving in dusty conditions
- Driving with extended use of brakes
- Driving in areas where salt or other corrosive materials are used
- Driving on rough or muddy roads
- Extended periods of idling or low-speed operation
- Driving for long periods in cold temperatures or extremely humid climates
- Driving in extremely hot conditions
- Driving in mountainous conditions continually

Maintenance Interval	Number of months or kilometers (miles), whichever comes first												
	Months	4	8	12	16	20	24	28	32	36	40	44	48
	×1000 km	8	16	24	32	40	48	56	64	72	80	88	96
	×1000 miles	5	10	15	20	25	30	35	40	45	50	55	60
ENGINE													
Engine oil	Puerto Rico	Replace every 5,000 km (3,000 miles) or 3 months											
	Others	R	R	R	R	R	R	R	R	R	R	R	R
Engine oil filter		R	R	R	R	R	R	R	R	R	R	R	R
Drive belts							I						I
COOLING SYSTEM													
Engine coolant	FL22 type ^{*1}	Replace at first 192,000 km (120,000 miles) or 10 years; after that, every 96,000 km (60,000 miles) or 5 years											
		Replace at first 96,000 km (60,000 miles) or 4											

	Others	years; after that, every 2 years											
Engine coolant level		I	I	I	I	I	I	I	I	I	I	I	I
FUEL SYSTEM													
Air cleaner element							R						
Fuel lines and hoses ^{*2}							I						I
Hoses and tubes for emission ^{*2}													I
IGNITION SYSTEM													
Spark plugs							R						
ELECTRICAL SYSTEM													
Function of all lights		I	I	I	I	I	I	I	I	I	I	I	I
CHASSIS and BODY													
Brake lines, hoses and connections							I						I
Brake and clutch fluid level		I	I	I	I	I	I	I	I	I	I	I	I
Brake fluid							R						R
Disc brakes				I			I			I			I
Tire (Rotation)		Rotate every 8,000 km (5,000 miles)											
Tire inflation pressure and tire wear		I	I	I	I	I	I	I	I	I	I	I	I
Flat tire repair kit ^{*3}		Inspect annually											
Steering operation and linkages							I						I

Front and rear suspension, ball joints and wheel bearing axial play						I						I
Manual transmission oil						R						R
Rear differential oil						R						R
Drive shaft dust boots						I						I
Bolts and nuts on chassis and body						T						T
Exhaust system and heat shields	Inspect every 72,000 km (45,000 miles) or 5 years											
All locks and hinges	L	L	L	L	L	L	L	L	L	L	L	L
Washer fluid level	I	I	I	I	I	I	I	I	I	I	I	I
AIR CONDITIONER SYSTEM												
Cabin air filter	Replace every 40,000 km (25,000 miles) or 2 years											

Chart symbols:

- **I:** Inspect: Inspect and clean, repair, adjust, fill up or replace if necessary.
- **R:** Replace
- **L:** Lubricate
- **T:** Tighten

Remarks

- After the prescribed period, continue to follow the described maintenance at the recommended intervals.
- Refer below for a description of items marked* in the maintenance chart.
 - *1: Use FL22 type coolant in vehicles with the inscription "FL22" on the radiator cap itself or the surrounding area. Use FL22 when replacing the coolant.

- o *2: According to state/provincial and federal regulations, failure to perform maintenance on these items will not void your emissions warranties. However, Mazda recommends that all maintenance services be performed at the recommended time or mileage/kilometer period to ensure long-term reliability.
- o *3: Check the tire repair fluid expiration date every year when performing the periodic maintenance. Replace the tire repair fluid bottle with new one before the expiration date.

[< Previous](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

Workshop Manual - Engine

2011 - RX-8

On-Board Diagnostics

- [ON-BOARD DIAGNOSTIC WIRING DIAGRAM \[13B-MSP\]](#)
 - [MONITORING SYSTEM AND CONTROL SYSTEM DEVICE RELATIONSHIP CHART \[13B-MSP\]](#)
 - [OBD-II PENDING TROUBLE CODE \[13B-MSP\]](#)
 - [OBD-II FREEZE FRAME DATA \[13B-MSP\]](#)
 - [OBD-II ON-BOARD SYSTEM READINESS TEST \[13B-MSP\]](#)
 - [OBD-II DIAGNOSTIC MONITORING TEST RESULTS \[13B-MSP\]](#)
 - [OBD-II READ/CLEAR DIAGNOSTIC TEST RESULTS \[13B-MSP\]](#)
 - [OBD-II PARAMETER IDENTIFICATION \(PID\) ACCESS \[13B-MSP\]](#)
 - [ON-BOARD DIAGNOSTIC TEST \[13B-MSP\]](#)
 - [AFTER REPAIR PROCEDURE \[13B-MSP\]](#)
 - [KOE0/KOER SELF TEST \[13B-MSP\]](#)
 - [OBD-II DRIVE MODE \[13B-MSP\]](#)
 - [DIAGNOSTIC MONITORING TEST RESULTS \[13B-MSP\]](#)
 - [DTC TABLE \[13B-MSP\]](#)
 - [DTC B1342 \[13B-MSP\]](#)
 - [DTC P0030 \[13B-MSP\]](#)
 - [DTC P0031 \[13B-MSP\]](#)
 - [DTC P0032 \[13B-MSP\]](#)
 - [DTC P0037 \[13B-MSP\]](#)
 - [DTC P0038 \[13B-MSP\]](#)
 - [DTC P0053 \[13B-MSP\]](#)
 - [DTC P0054 \[13B-MSP\]](#)
 - [DTC P0076 \[13B-MSP\]](#)
 - [DTC P0077 \[13B-MSP\]](#)
 - [DTC P0101 \[13B-MSP\]](#)
 - [DTC P0102 \[13B-MSP\]](#)
 - [DTC P0103 \[13B-MSP\]](#)
 - [DTC P0107 \[13B-MSP\]](#)
 - [DTC P0108 \[13B-MSP\]](#)
 - [DTC P0111 \[13B-MSP\]](#)
 - [DTC P0112 \[13B-MSP\]](#)
 - [DTC P0113 \[13B-MSP\]](#)
 - [DTC P0116 \[13B-MSP\]](#)
 - [DTC P0117 \[13B-MSP\]](#)
 - [DTC P0118 \[13B-MSP\]](#)
 - [DTC P0122 \[13B-MSP\]](#)
 - [DTC P0123 \[13B-MSP\]](#)
-

- [DTC P0125 \[13B-MSP\]](#)
- [DTC P0126 \[13B-MSP\]](#)
- [DTC P0130 \[13B-MSP\]](#)
- [DTC P0131 \[13B-MSP\]](#)
- [DTC P0132 \[13B-MSP\]](#)
- [DTC P0133 \[13B-MSP\]](#)
- [DTC P0134 \[13B-MSP\]](#)
- [DTC P0137 \[13B-MSP\]](#)
- [DTC P0138 \[13B-MSP\]](#)
- [DTC P0139 \[13B-MSP\]](#)
- [DTC P0171 \[13B-MSP\]](#)
- [DTC P0172 \[13B-MSP\]](#)
- [DTC P0222 \[13B-MSP\]](#)
- [DTC P0223 \[13B-MSP\]](#)
- [DTC P0300 \[13B-MSP\]](#)
- [DTC P0301, P0302 \[13B-MSP\]](#)
- [DTC P0327 \[13B-MSP\]](#)
- [DTC P0328 \[13B-MSP\]](#)
- [DTC P0332 \[13B-MSP\]](#)
- [DTC P0333 \[13B-MSP\]](#)
- [DTC P0335 \[13B-MSP\]](#)
- [DTC P0336 \[13B-MSP\]](#)
- [DTC P0410, P0411 \[13B-MSP\]](#)
- [DTC P0420 \[13B-MSP\]](#)
- [DTC P0441 \[13B-MSP\]](#)
- [DTC P0442, P0455, P0456 \[13B-MSP\]](#)
- [DTC P0443 \[13B-MSP\]](#)
- [DTC P0446 \[13B-MSP\]](#)
- [DTC P0461 \[13B-MSP\]](#)
- [DTC P0462 \[13B-MSP\]](#)
- [DTC P0463 \[13B-MSP\]](#)
- [DTC P0480 \[13B-MSP\]](#)
- [DTC P0481 \[13B-MSP\]](#)
- [DTC P0482 \[13B-MSP\]](#)
- [DTC P0500 \[13B-MSP\]](#)
- [DTC P0505 \[13B-MSP\]](#)
- [DTC P0506 \[13B-MSP\]](#)
- [DTC P0507 \[13B-MSP\]](#)
- [DTC P050A \[13B-MSP\]](#)
- [DTC P0522 \[13B-MSP\]](#)
- [DTC P0523 \[13B-MSP\]](#)
- [DTC P0562 \[13B-MSP\]](#)
- [DTC P0564 \[13B-MSP\]](#)
- [DTC P0571 \[13B-MSP\]](#)
- [DTC P0601 \[13B-MSP\]](#)
- [DTC P0602 \[13B-MSP\]](#)
- [DTC P0604 \[13B-MSP\]](#)
- [DTC P0606 \[13B-MSP\]](#)
- [DTC P0610 \[13B-MSP\]](#)
- [DTC P0638 \[13B-MSP\]](#)
- [DTC P0661 \[13B-MSP\]](#)
- [DTC P0662 \[13B-MSP\]](#)
- [DTC P0703 \[13B-MSP\]](#)
- [DTC P0704 \[13B-MSP\]](#)
- [DTC P0850 \[13B-MSP\]](#)
- [DTC P1260 \[13B-MSP\]](#)
- [DTC P1680 \[13B-MSP\]](#)

- [DTC P1681 \[13B-MSP\]](#)
- [DTC P1682 \[13B-MSP\]](#)
- [DTC P1683 \[13B-MSP\]](#)
- [DTC P1684 \[13B-MSP\]](#)
- [DTC P1685 \[13B-MSP\]](#)
- [DTC P1686 \[13B-MSP\]](#)
- [DTC P1687 \[13B-MSP\]](#)
- [DTC P2004 \[13B-MSP\]](#)
- [DTC P2005 \[13B-MSP\]](#)
- [DTC P2006 \[13B-MSP\]](#)
- [DTC P2007 \[13B-MSP\]](#)
- [DTC P2009 \[13B-MSP\]](#)
- [DTC P2010 \[13B-MSP\]](#)
- [DTC P2067 \[13B-MSP\]](#)
- [DTC P2068 \[13B-MSP\]](#)
- [DTC P2070 \[13B-MSP\]](#)
- [DTC P2071 \[13B-MSP\]](#)
- [DTC P2096 \[13B-MSP\]](#)
- [DTC P2097 \[13B-MSP\]](#)
- [DTC P2101 \[13B-MSP\]](#)
- [DTC P2107 \[13B-MSP\]](#)
- [DTC P2108 \[13B-MSP\]](#)
- [DTC P2109 \[13B-MSP\]](#)
- [DTC P2112 \[13B-MSP\]](#)
- [DTC P2119 \[13B-MSP\]](#)
- [DTC P2122 \[13B-MSP\]](#)
- [DTC P2123 \[13B-MSP\]](#)
- [DTC P2127 \[13B-MSP\]](#)
- [DTC P2128 \[13B-MSP\]](#)
- [DTC P2135 \[13B-MSP\]](#)
- [DTC P2138 \[13B-MSP\]](#)
- [DTC P2195 \[13B-MSP\]](#)
- [DTC P2196 \[13B-MSP\]](#)
- [DTC P2299 \[13B-MSP\]](#)
- [DTC P2257 \[13B-MSP\]](#)
- [DTC P2258 \[13B-MSP\]](#)
- [DTC P2259 \[13B-MSP\]](#)
- [DTC P2260 \[13B-MSP\]](#)
- [DTC P2270 \[13B-MSP\]](#)
- [DTC P2271 \[13B-MSP\]](#)
- [DTC P2401 \[13B-MSP\]](#)
- [DTC P2402 \[13B-MSP\]](#)
- [DTC P2404 \[13B-MSP\]](#)
- [DTC P2405 \[13B-MSP\]](#)
- [DTC P2407 \[13B-MSP\]](#)
- [DTC P2502 \[13B-MSP\]](#)
- [DTC P2503 \[13B-MSP\]](#)
- [DTC P2504 \[13B-MSP\]](#)

Symptom Troubleshooting

- [SYMPTOM TROUBLESHOOTING WIRING DIAGRAM \[13B-MSP\]](#)
- [FOREWORD \[13B-MSP\]](#)
- [SYMPTOM DIAGNOSTIC INDEX \[13B-MSP\]](#)
- [QUICK DIAGNOSTIC CHART \[13B-MSP\]](#)
- [NO.1 MELTING OF MAIN OR OTHER FUSES \[13B-MSP\]](#)

- [NO.2 MIL ILLUMINATES \[13B-MSP\]](#)
- [NO.3 WILL NOT CRANK \[13B-MSP\]](#)
- [NO.4 HARD TO START/LONG CRANK/ERRATIC START/ERRATIC CRANK \[13B-MSP\]](#)
- [NO.5 ENGINE STALLS-AFTER START/AT IDLE \[13B-MSP\]](#)
- [NO.6 CRANKS NORMALLY BUT WILL NOT START \[13B-MSP\]](#)
- [NO.7 SLOW RETURN TO IDLE \[13B-MSP\]](#)
- [NO.8 ENGINE RUNS ROUGH/ROLLING IDLE \[13B-MSP\]](#)
- [NO.9 FAST IDLE/RUNS ON \[13B-MSP\]](#)
- [NO.10 LOW IDLE/STALLS DURING DECELERATION \[13B-MSP\]](#)
- [NO.11 ENGINE STALLS/QUITS, ENGINE RUNS ROUGH, MISSES, BUCK/JERK, HESITATION/STUMBLE, SURGES \[13B-MSP\]](#)
- [NO.12 LACK/LOSS OF POWER-ACCELERATION/CRUISE \[13B-MSP\]](#)
- [NO.13 KNOCKING/PINGING/DETONATION-ACCELERATION/CRUISE \[13B-MSP\]](#)
- [NO.14 POOR FUEL ECONOMY \[13B-MSP\]](#)
- [NO.15 EMISSION COMPLIANCE \[13B-MSP\]](#)
- [NO.16 HIGH OIL CONSUMPTION/LEAKAGE \[13B-MSP\]](#)
- [NO.17 COOLING SYSTEM CONCERNS-OVERHEATING \[13B-MSP\]](#)
- [NO.18 COOLING SYSTEM CONCERNS-RUNS COLD \[13B-MSP\]](#)
- [NO.19 EXHAUST SMOKE \[13B-MSP\]](#)
- [NO.20 FUEL ODOR \(IN ENGINE COMPARTMENT\) \[13B-MSP\]](#)
- [NO.21 ENGINE NOISE \[13B-MSP\]](#)
- [NO.22 VIBRATION CONCERNS \(ENGINE\) \[13B-MSP\]](#)
- [NO.23 A/C DOES NOT WORK SUFFICIENTLY \[13B-MSP\]](#)
- [NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY \[13B-MSP\]](#)
- [NO.25 A/C IS NOT CUT OFF UNDER WIDE OPEN THROTTLE CONDITIONS \[13B-MSP\]](#)
- [NO.26 EXHAUST SULPHUR SMELL \[13B-MSP\]](#)
- [NO.27 FUEL REFILL CONCERNS \[13B-MSP\]](#)
- [NO.28 FUEL FILLING SHUT OFF CONCERNS \[13B-MSP\]](#)
- [NO.29 SPARK PLUG CONDITION \[13B-MSP\]](#)
- [INTERMITTENT CONCERN TROUBLESHOOTING \[13B-MSP\]](#)
- [ENGINE CONTROL SYSTEM OPERATION INSPECTION \[13B-MSP\]](#)

Mechanical

- [ENGINE LOCATION INDEX \[13B-MSP\]](#)
- [ENGINE TUNE-UP \[13B-MSP\]](#)
- [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [DRIVE BELT DEFLECTION/TENSION INSPECTION \[13B-MSP\]](#)
- [DRIVE BELT REPLACEMENT \[13B-MSP\]](#)
- [COMPRESSION INSPECTION \[13B-MSP\]](#)
- [FRONT OIL SEAL REPLACEMENT \[13B-MSP\]](#)
- [REAR OIL SEAL REPLACEMENT \[13B-MSP\]](#)
- [ENGINE REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [ENGINE DISASSEMBLY/ASSEMBLY \[13B-MSP\]](#)

Lubrication

- [LUBRICATION SYSTEM LOCATION INDEX \[13B-MSP\]](#)
- [ENGINE OIL LEVEL INSPECTION \[13B-MSP\]](#)
- [ENGINE OIL REPLACEMENT \[13B-MSP\]](#)
- [OIL FILTER REPLACEMENT \[13B-MSP\]](#)
- [OIL PRESSURE INSPECTION \[13B-MSP\]](#)
- [OIL COOLER REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [OIL PAN REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [OIL PAN UPPER BLOCK REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [METERING OIL PUMP REMOVAL/INSTALLATION \[13B-MSP\]](#)

- [OIL NOZZLE REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [METERING OIL PUMP INSPECTION \[13B-MSP\]](#)
- [OIL CONTROL VALVE \(OCV\) INSPECTION \[13B-MSP\]](#)
- [OIL CONTROL VALVE \(OCV\) REMOVAL/INSTALLATION \[13B-MSP\]](#)

Cooling System

- [COOLING SYSTEM LOCATION INDEX \[13B-MSP\]](#)
- [COOLING SYSTEM SERVICE WARNINGS \[13B-MSP\]](#)
- [ENGINE COOLANT LEVEL INSPECTION \[13B-MSP\]](#)
- [ENGINE COOLANT PROTECTION INSPECTION \[13B-MSP\]](#)
- [ENGINE COOLANT REPLACEMENT \[13B-MSP\]](#)
- [ENGINE COOLANT LEAKAGE INSPECTION \[13B-MSP\]](#)
- [COOLING SYSTEM CAP INSPECTION \[13B-MSP\]](#)
- [COOLANT RESERVE TANK REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [RADIATOR REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [THERMOSTAT REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [THERMOSTAT INSPECTION \[13B-MSP\]](#)
- [WATER PUMP REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [COOLING FAN COMPONENT REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [FAN MOTOR INSPECTION \[13B-MSP\]](#)

In-Take Air System

- [INTAKE-AIR SYSTEM VACUUM HOSE ROUTING DIAGRAM \[13B-MSP\]](#)
- [INTAKE-AIR SYSTEM LOCATION INDEX \[13B-MSP\]](#)
- [INTAKE-AIR SYSTEM DIAGRAM \[13B-MSP\]](#)
- [INTAKE MANIFOLD VACUUM INSPECTION \[13B-MSP\]](#)
- [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [INTAKE-AIR SYSTEM INSPECTION \[13B-MSP\]](#)
- [AIR CLEANER ELEMENT INSPECTION \[13B-MSP\]](#)
- [THROTTLE BODY INSPECTION \[13B-MSP\]](#)
- [INTAKE MANIFOLD REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [INTAKE MANIFOLD DISASSEMBLY/ASSEMBLY \[13B-MSP\]](#)
- [SECONDARY SHUTTER VALVE \(SSV\) SOLENOID VALVE INSPECTION \[13B-MSP\]](#)
- [SECONDARY SHUTTER VALVE \(SSV\) REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [SECONDARY SHUTTER VALVE \(SSV\) ACTUATOR INSPECTION \[13B-MSP\]](#)
- [VARIABLE FRESH AIR DUCT \(VFAD\) SOLENOID VALVE INSPECTION \[13B-MSP\]](#)
- [VARIABLE FRESH AIR DUCT \(VFAD\) ACTUATOR INSPECTION \[13B-MSP\]](#)
- [VARIABLE DYNAMIC EFFECT INTAKE-AIR \(VDI\) SOLENOID VALVE INSPECTION \[13B-MSP\]](#)
- [VARIABLE DYNAMIC EFFECT INTAKE-AIR \(VDI\) VALVE REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [VARIABLE DYNAMIC EFFECT INTAKE-AIR \(VDI\) ACTUATOR INSPECTION \[13B-MSP\]](#)
- [AUXILIARY PORT VALVE \(APV\) MOTOR INSPECTION \[13B-MSP\]](#)
- [CHECK VALVE \(ONE-WAY\) INSPECTION \[13B-MSP\]](#)
- [ACCELERATOR PEDAL REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [VACUUM CHAMBER INSPECTION \[13B-MSP\]](#)

Fuel System

- [FUEL SYSTEM LOCATION INDEX \[13B-MSP\]](#)
- [FUEL SYSTEM DIAGRAM \[13B-MSP\]](#)
- [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#)
- [AFTER SERVICE PRECAUTION \[13B-MSP\]](#)
- [FUEL LINE PRESSURE INSPECTION \[13B-MSP\]](#)
- [FUEL TANK REMOVAL/INSTALLATION \[13B-MSP\]](#)

- [FUEL TANK INSPECTION \[13B-MSP\]](#)
- [NONRETURN VALVE INSPECTION \[13B-MSP\]](#)
- [FUEL PUMP UNIT REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [FUEL PUMP UNIT DISASSEMBLY/ASSEMBLY \[13B-MSP\]](#)
- [FUEL PUMP UNIT INSPECTION \[13B-MSP\]](#)
- [FUEL PUMP RESISTOR REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [FUEL PUMP RESISTOR INSPECTION \[13B-MSP\]](#)
- [QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [FUEL INJECTOR REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [FUEL INJECTOR INSPECTION \[13B-MSP\]](#)
- [PULSATION DAMPER REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [PULSATION DAMPER INSPECTION \[13B-MSP\]](#)

Exhaust System

- [EXHAUST SYSTEM INSPECTION \[13B-MSP\]](#)
- [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [EXHAUST MANIFOLD INSPECTION \[13B-MSP\]](#)

Emissions System

- [EMISSION SYSTEM LOCATION INDEX \[13B-MSP\]](#)
- [EMISSION SYSTEM DIAGRAM \[13B-MSP\]](#)
- [FUEL-FILLER CAP INSPECTION \[13B-MSP\]](#)
- [AIR FILTER INSPECTION \[13B-MSP\]](#)
- [EVAPORATIVE EMISSION \(EVAP\) CONTROL SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [CHARCOAL CANISTER INSPECTION \[13B-MSP\]](#)
- [EVAPORATIVE EMISSION \(EVAP\) SYSTEM LEAK DETECTION PUMP INSPECTION \[13B-MSP\]](#)
- [PURGE SOLENOID VALVE INSPECTION \[13B-MSP\]](#)
- [CATCH TANK INSPECTION \[13B-MSP\]](#)
- [THREE-WAY CATALYTIC CONVERTER \(TWC\) INSPECTION \[13B-MSP\]](#)
- [FUEL SHUT-OFF/ROLLOVER VALVE INSPECTION \[13B-MSP\]](#)
- [QUICK RELEASE CONNECTOR \(EMISSION SYSTEM\) REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [EVAPORATIVE CHAMBER INSPECTION \[13B-MSP\]](#)
- [SECONDARY AIR INJECTION \(AIR\) CONTROL VALVE REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [SECONDARY AIR INJECTION \(AIR\) CONTROL VALVE INSPECTION \[13B-MSP\]](#)
- [SECONDARY AIR INJECTION \(AIR\) SOLENOID VALVE REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [SECONDARY AIR INJECTION \(AIR\) SOLENOID VALVE INSPECTION \[13B-MSP\]](#)
- [SECONDARY AIR INJECTION \(AIR\) PUMP REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [SECONDARY AIR INJECTION \(AIR\) PUMP INSPECTION \[13B-MSP\]](#)

Charging System

- [CHARGING SYSTEM LOCATION INDEX \[13B-MSP\]](#)
- [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [BATTERY INSPECTION \[13B-MSP\]](#)
- [BATTERY RECHARGING \[13B-MSP\]](#)
- [GENERATOR REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [GENERATOR INSPECTION \[13B-MSP\]](#)
- [GENERATOR DISASSEMBLY/ASSEMBLY \[13B-MSP\]](#)

Ignition System

- [IGNITION SYSTEM LOCATION INDEX \[13B-MSP\]](#)
- [IGNITION COIL REMOVAL/INSTALLATION \[13B-MSP\]](#)

- [IGNITION COIL INSPECTION \[13B-MSP\]](#)
- [SPARK PLUG REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [SPARK PLUG INSPECTION \[13B-MSP\]](#)
- [HIGH-TENSION LEAD REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [HIGH-TENSION LEAD INSPECTION \[13B-MSP\]](#)

Starting System

- [STARTING SYSTEM LOCATION INDEX \[13B-MSP\]](#)
- [STARTER REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [STARTER INSPECTION \[13B-MSP\]](#)
- [STARTER DISASSEMBLY/ASSEMBLY \[13B-MSP\]](#)
- [STARTER INTERLOCK SWITCH INSPECTION \[13B-MSP\]](#)

Cruise Control System

- [CRUISE CONTROL SWITCH INSPECTION \[13B-MSP\]](#)

Control System

- [CONTROL SYSTEM LOCATION INDEX \[13B-MSP\]](#)
- [CONTROL SYSTEM DIAGRAM \[13B-MSP\]](#)
- [CONTROL SYSTEM WIRING DIAGRAM \[13B-MSP\]](#)
- [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [PCM INSPECTION \[13B-MSP\]](#)
- [PCM CONFIGURATION \[13B-MSP\]](#)
- [CLUTCH PEDAL POSITION \(CPP\) SWITCH INSPECTION \[13B-MSP\]](#)
- [NEUTRAL SWITCH INSPECTION \[13B-MSP\]](#)
- [AUXILIARY PORT VALVE \(APV\) POSITION SENSOR REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [AUXILIARY PORT VALVE \(APV\) POSITION SENSOR INSPECTION \[13B-MSP\]](#)
- [SECONDARY SHUTTER VALVE \(SSV\) SWITCH INSPECTION \[13B-MSP\]](#)
- [SECONDARY SHUTTER VALVE \(SSV\) SWITCH REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [ENGINE COOLANT TEMPERATURE \(ECT\) SENSOR REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [ENGINE COOLANT TEMPERATURE \(ECT\) SENSOR INSPECTION \[13B-MSP\]](#)
- [MASS AIR FLOW \(MAF\)/INTAKE AIR TEMPERATURE \(IAT\) SENSOR REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [MASS AIR FLOW \(MAF\) SENSOR INSPECTION \[13B-MSP\]](#)
- [INTAKE AIR TEMPERATURE \(IAT\) SENSOR INSPECTION \[13B-MSP\]](#)
- [BAROMETRIC PRESSURE \(BARO\) SENSOR INSPECTION \[13B-MSP\]](#)
- [THROTTLE POSITION \(TP\) SENSOR INSPECTION \[13B-MSP\]](#)
- [ACCELERATOR PEDAL POSITION \(APP\) SENSOR INSPECTION \[13B-MSP\]](#)
- [AIR FUEL RATIO \(A/F\) SENSOR REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [AIR FUEL RATIO \(A/F\) SENSOR INSPECTION \[13B-MSP\]](#)
- [HEATED OXYGEN SENSOR \(HO2S\) REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [HEATED OXYGEN SENSOR \(HO2S\) INSPECTION \[13B-MSP\]](#)
- [KNOCK SENSOR \(KS\) REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [KNOCK SENSOR \(KS\) INSPECTION \[13B-MSP\]](#)
- [ECCENTRIC SHAFT POSITION PLATE REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [ECCENTRIC SHAFT POSITION SENSOR INSPECTION \[13B-MSP\]](#)
- [ECCENTRIC SHAFT POSITION PLATE INSPECTION \[13B-MSP\]](#)
- [ECCENTRIC SHAFT POSITION SENSOR REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [PCM TEMPERATURE SENSOR INSPECTION \[13B-MSP\]](#)
- [OIL PRESSURE SENSOR REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [OIL PRESSURE SENSOR INSPECTION \[13B-MSP\]](#)
- [METERING OIL PUMP DRIVER REMOVAL/INSTALLATION \[13B-MSP\]](#)
- [METERING OIL PUMP DRIVER INSPECTION \[13B-MSP\]](#)

Technical Data

- [ENGINE TECHNICAL DATA \[13B-MSP\]](#)

Maintenance/Service Tools

- [ENGINE SST \[13B-MSP\]](#)

2011 - RX-8 - Engine

DTC P0441 [13B-MSP]

DTC P0441	EVAP system incorrect purge flow
DETECTION CONDITION	<ul style="list-style-type: none">The PCM monitors the purge line vacuum, when the following conditions are met. If the vacuum between the charcoal canister and the intake manifold does not reach the specification, the PCM determines that the EVAP system purge flow is incorrect. <p style="text-align: center;">MONITORING CONDITIONS</p> <ul style="list-style-type: none">Vehicle speed: 70.1—130 km/h {43.5—80.8 mph}Engine speed: 1,200—4,000 rpmThrottle valve opening angle: 10.2—27.7 % (changes by engine speed) <p>Diagnostic support note</p> <ul style="list-style-type: none">This is an intermittent monitor (EVAP system).The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.FREEZE FRAME DATA (Mode 2/Mode 12) is available.The DTC is stored in the PCM memory.
POSSIBLE	<ul style="list-style-type: none">Blockage in EVAP system<ul style="list-style-type: none">EVAP hose damaged or looseEVAP pipe damagedCatch tank malfunctionCharcoal canister malfunction

CAUSE	<ul style="list-style-type: none"> • Purge solenoid valve malfunction • Leakage in EVAP system • Evaporative emission system leak detection pump malfunction • Fuel pump unit poor seal • PCM malfunction
--------------	--

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (EVAP system related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> • Turn the ignition switch off, then to the ON position (engine off). • Verify the related PENDING CODE or stored DTCs. • Is the DTC P0443 present? 	Yes	Go to the DTC P0443 inspection. (See DTC P0443 [13B-MSP].)
		No	Go to the next step.
4	DETERMINE IF THERE IS BLOCKAGE <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Perform the KOER self test. (See KOEK/KOER SELF TEST [13B-MSP].) 	Yes	Go to Step 6.
		No	Go to the next step.

	<ul style="list-style-type: none"> Is the DTC P0441 present? 		
5	INSPECT IF MALFUNCTION IS BLOCKAGE OR LEAKAGE IN PURGE SOLENOID VALVE NOTE: <ul style="list-style-type: none"> Carefully handle the evaporative system when disconnecting and connecting hoses. Do not use any lubricant around the system. Foreign material can cause a system malfunction. Remove the purge solenoid valve and cool it down in a refrigerator for 1 hour. Install the purge solenoid valve and perform the KOER self test using the M-MDS. (See KOE/O/KOER SELF TEST [13B-MSP].) <ul style="list-style-type: none"> Is the DTC P0441 present? 	Yes	Replace the purge solenoid valve, then go to Step 12.
		No	Go to Step 7.
6	INSPECT FOR LOCATION OF BLOCKAGE <ul style="list-style-type: none"> Apply vacuum to the following parts using a vacuum pump. Verify that the system does not hold vacuum at the following locations: <ul style="list-style-type: none"> Hoses and pipes between intake manifold and charcoal canister Catch tank Charcoal canister Is there any blockage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 12.
		No	Replace the purge solenoid valve, then go to Step 12.
7	DETERMINE LEAKAGE EXISTENCE <ul style="list-style-type: none"> Perform the Evaporative Emission (EVAP) System Leak Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Is the DTC P0442 recorded? 	Yes	Go to the next step.
		No	Go to Step 12.
8	INSPECT IF PURGE SOLENOID VALVE IS STUCK OPEN <ul style="list-style-type: none"> Inspect whether the purge solenoid valve is stuck open. 	Yes	Go to the next step.
		No	Replace the purge solenoid valve, then

	<p>(See PURGE SOLENOID VALVE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is the purge solenoid valve normal? 		go to Step 12.
9	<p>INSPECT FOR LOCATION OF LEAKAGE</p> <ul style="list-style-type: none"> Inspect the following for leakage using the evaporative leak detector. <ul style="list-style-type: none"> Between purge solenoid valve and check valve Between check valve and charcoal canister Is there any leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 12.
		No	Go to the next step.
10	<p>INSPECT EVAP SYSTEM LEAK DETECTION PUMP</p> <p>NOTE:</p> <ul style="list-style-type: none"> Be careful to not apply a shock to the evaporative system leak detection pump, otherwise the results of the leak inspection could be incorrect. Connect all disconnected connectors and hoses. Place a clamp on the evaporative system leak detection pump hose between the evaporative system leak detection pump and the air filter. Perform the Evaporative Emission (EVAP) System Leak Inspection. <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is the DTC P2404 recorded? 	Yes	Go to the next step.
		No	Replace the evaporative system leak detection pump, then go to Step 13.
11	<p>INSPECT FUEL PUMP UNIT INSTALLATION</p> <ul style="list-style-type: none"> Remove the fuel tank. Visually inspect for damage, insufficient sealing or a poorly installed pump unit. Is there any malfunction? 	Yes	Repair or replace the fuel tank or sealing, then go to the next step.
		No	Go to the next step.
12	<p>PERFORM KOER SELF TEST TO DETERMINE OTHER RELATED MALFUNCTION OTHER THAN BLOCKAGE LOCATION</p> <p>NOTE:</p>	Yes	<p>Blockage still exists.</p> <p>Locate blockage position and repair, then go to the next step.</p>

	<ul style="list-style-type: none"> Carefully handle the evaporative system when disconnecting and connecting hoses. Do not use any lubricant around the system. Foreign material can cause a system malfunction. Connect all disconnected connectors and hoses. Perform the KOER self test. (See KOE/O/KOER SELF TEST [13B-MSP].) Is the DTC P0441 still recorded? 	No	Go to the next step.
13	PERFORM LEAK INSPECTION <ul style="list-style-type: none"> Connect all disconnected connectors and hoses. Perform the Evaporative Emission (EVAP) System Leak Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the test result fail (red light turns on)? 	Yes	Leakage still exists. Locate leak the point and repair, then go to the next step.
		No	Go to the next step.
14	VERIFY TROUBLESHOOTING OF DTC P0441 COMPLETED <ul style="list-style-type: none"> Start the engine and let it idle. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Turn the ignition switch off. Perform the KOER self test. (See KOE/O/KOER SELF TEST [13B-MSP].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
15	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

- | | | |
|--|---|--|
| | <ul style="list-style-type: none">• Are any DTCs present? | |
|--|---|--|

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

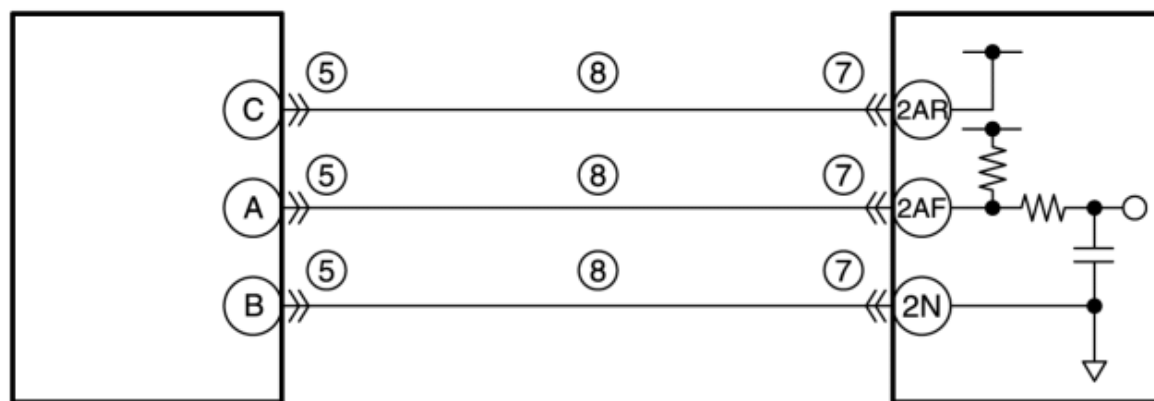
2011 - RX-8 - Engine

DTC P2005 [13B-MSP]

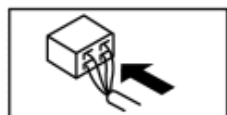
DTC P2005	APV stuck open (No.2)
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the APV position sensor No.2 when the APV is closed. If the input voltage is more than 1.0 V, the PCM determines that the APV is stuck open. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• APV control malfunction• APV motor malfunction• APV position sensor No.2 connector or terminals malfunction• APV position sensor No.2 malfunction• PCM connector or terminals malfunction• Open circuit in wiring harness between APV position sensor No.2 terminal C and PCM terminal 2AR• Open circuit in wiring harness between APV position sensor No.2 terminal A and PCM terminal 2AF• Open circuit in wiring harness between APV position sensor No.2 terminal B and PCM terminal 2N• PCM malfunction

⑥

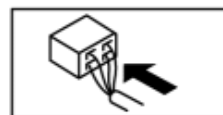
APV POSITION SENSOR NO.2



APV POSITION SENSOR NO.2 WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT APV CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> Perform the Auxiliary Port Valve (APV) Control 	Yes Repair or replace the malfunctioning part according to the inspection results, then go

	<p>Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>to Step 9.</p> <p>No Go to the next step.</p>
4	<p>INSPECT APV MOTOR</p> <ul style="list-style-type: none"> Turn the ignition switch off. Inspect the APV motor. <p>(See AUXILIARY PORT VALVE (APV) MOTOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Replace the APV motor, then go to Step 9.</p> <p>(See INTAKE MANIFOLD DISASSEMBLY/ASSEMBLY [13B-MSP].)</p> <p>No Go to the next step.</p>
5	<p>INSPECT APV POSITION SENSOR NO.2 CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the APV position sensor No.2 connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 9.</p> <p>No Go to the next step.</p>
6	<p>INSPECT APV POSITION SENSOR NO.2</p> <ul style="list-style-type: none"> Inspect the APV position sensor No.2. <p>(See AUXILIARY PORT VALVE (APV) POSITION SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Replace the APV position sensor No.2, then go to Step 9.</p> <p>(See AUXILIARY PORT VALVE (APV) POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
7	<p>INSPECT PCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 9.</p> <p>No Go to the next step.</p>
8	<p>INSPECT APV POSITION SENSOR NO.2 CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> APV position sensor No.2 and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between the following circuits: 	<p>Yes Go to the next step.</p> <p>No Repair or replace the wiring harness for a possible open circuit, then go to the next step.</p>

	<ul style="list-style-type: none"> ▪ APV position sensor No.2 terminal C (wiring harness-side) and PCM terminal 2AR (wiring harness-side) ▪ APV position sensor No.2 terminal A (wiring harness-side) and PCM terminal 2AF (wiring harness-side) ▪ APV position sensor No.2 terminal B (wiring harness-side) and PCM terminal 2N (wiring harness-side) <ul style="list-style-type: none"> • Is there continuity? 		
9	VERIFY TROUBLESHOOTING OF DTC P2005 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) • Is the PENDING CODE same as DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)	
		No DTC troubleshooting completed.	

2011 - RX-8 - Engine

DTC P2299 [13B-MSP]

DTC P2299	Accelerator pedal: spring back malfunction
DETECTION CONDITION	<ul style="list-style-type: none">• Brake override system operates. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (other).• The MIL does not illuminate.• FREEZE FRAME DATA is not available.• Snapshot data is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<p>NOTE:</p> <ul style="list-style-type: none">• If the brake override system operates, the PCM detects DTC P2299.• Driver depresses accelerator and brake pedals simultaneously (during braking operation using left foot)• Accelerator pedal is pressed in due to object such as floor mat• Accelerator pedal sticking• APP sensor signal malfunction<ul style="list-style-type: none">▪ APP sensor malfunction▪ Related connector or terminals malfunction▪ Related wiring harness malfunction• Brake switch signal malfunction<ul style="list-style-type: none">▪ Brake switch malfunction▪ Related connector or terminals malfunction

	<ul style="list-style-type: none"> ▪ Related wiring harness malfunction ▪ Brake pedal malfunction (increase in play due to joint pin wear)
	<ul style="list-style-type: none"> • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY SNAPSHOT DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the snapshot data been recorded? 	Yes Go to the next step.
		No Record the snapshot data on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY VEHICLE USE CONDITION <ul style="list-style-type: none"> • Verify the vehicle use condition. <ul style="list-style-type: none"> ▪ The floor mat is doubled over ▪ The floor mat is spread against the accelerator pedal ▪ The accelerator and brake pedals are being depressed simultaneously • Are any of the conditions above applicable to vehicle use condition? 	Yes <p>There is a malfunction in a related floor mat</p> <ul style="list-style-type: none"> • Explain to the customer that the floor mat may prevent the accelerator pedal from springing back after release, then go to Step 11. <p>There is a malfunction in the pedal operation</p> <ul style="list-style-type: none"> • Give the customer advice on how to depress the accelerator and brake pedals while driving the vehicle, then go to Step 11.
		No Go to the next step.
4	INSPECT APP SENSOR <ul style="list-style-type: none"> • Is the condition of the accelerator pedal one of the following? 	Yes Replace the accelerator pedal, then go to Step 11. (See ACCELERATOR PEDAL)

	<p>Accelerator pedal sticking has occurred when operated</p> <ul style="list-style-type: none"> There is evidence of accelerator pedal disassembly 	<p>REMOVAL/INSTALLATION [13B-MSP].)</p>	<p>No Go to the next step.</p>
5	<p>VERIFY CURRENT INPUT SIGNAL STATUS OF APP SENSOR</p> <ul style="list-style-type: none"> Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) <ul style="list-style-type: none"> IVS APP1 APP2 Is the value for PID IVS Idle when the accelerator pedal is not depressed? Do the values for PIDs APP1 and APP2 change when the accelerator pedal is continually depressed? 	<p>Yes Go to the next step.</p>	<p>No Go to Step 7.</p>
6	<p>INSPECT APP SENSOR RELATED WIRING HARNESS AND CONNECTOR</p> <ul style="list-style-type: none"> Inspect the wiring harness related to the APP sensor for connector disconnection, short circuit, and poor contact. Is there any malfunction? 	<p>Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 11.</p>	<p>No APP sensor malfunction.</p> <ul style="list-style-type: none"> Replace the accelerator pedal, then go to Step 11. <p>(See ACCELERATOR PEDAL REMOVAL/INSTALLATION [13B-MSP].)</p>
7	<p>VERIFY CURRENT INPUT SIGNAL STATUS OF BRAKE SWITCH</p> <ul style="list-style-type: none"> Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) 	<p>Yes Go to Step 10.</p>	<p>No Go to the next step.</p>

	<ul style="list-style-type: none"> ▪ BOO <ul style="list-style-type: none"> • Are all PIDs normal? 		
8	INSPECT BRAKE SWITCH <ul style="list-style-type: none"> • Inspect the brake switch. (See BRAKE SWITCH INSPECTION.) • Is there any malfunction? 	Yes Replace the brake switch, then go to Step 11. (See BRAKE PEDAL REMOVAL/INSTALLATION .)	
		No Go to the next step.	
9	INSPECT BRAKE PEDAL PLAY AMOUNT <ul style="list-style-type: none"> • Inspect the brake pedal play amount. (See BRAKE PEDAL INSPECTION.) • Is the amount of brake pedal play normal? 	Yes Inspect the wiring harness related to the brake switch for connector disconnection, short circuit, and poor contact. <ul style="list-style-type: none"> • If there is any malfunction: <ul style="list-style-type: none"> ▪ Repair or replace the malfunctioning part according to the inspection results, then go to Step 11. 	
		No Repair or replace the malfunctioning part according to the inspection results, then go to Step 11.	
10	VERIFY IF A DTC RELATED TO DRIVE-BY-WIRE CONTROL IS DETECTED <ul style="list-style-type: none"> • Perform the KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) • Is a DTC related to the drive-by-wire control present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)	
		No Go to the next step.	
11	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) 	Yes Repeat the inspection from Step 1. If the malfunction recurs, replace the PCM. (See PCM REMOVAL/INSTALLATION [13B-MSP] .) Go to the next step.	
		No Go to the next step.	

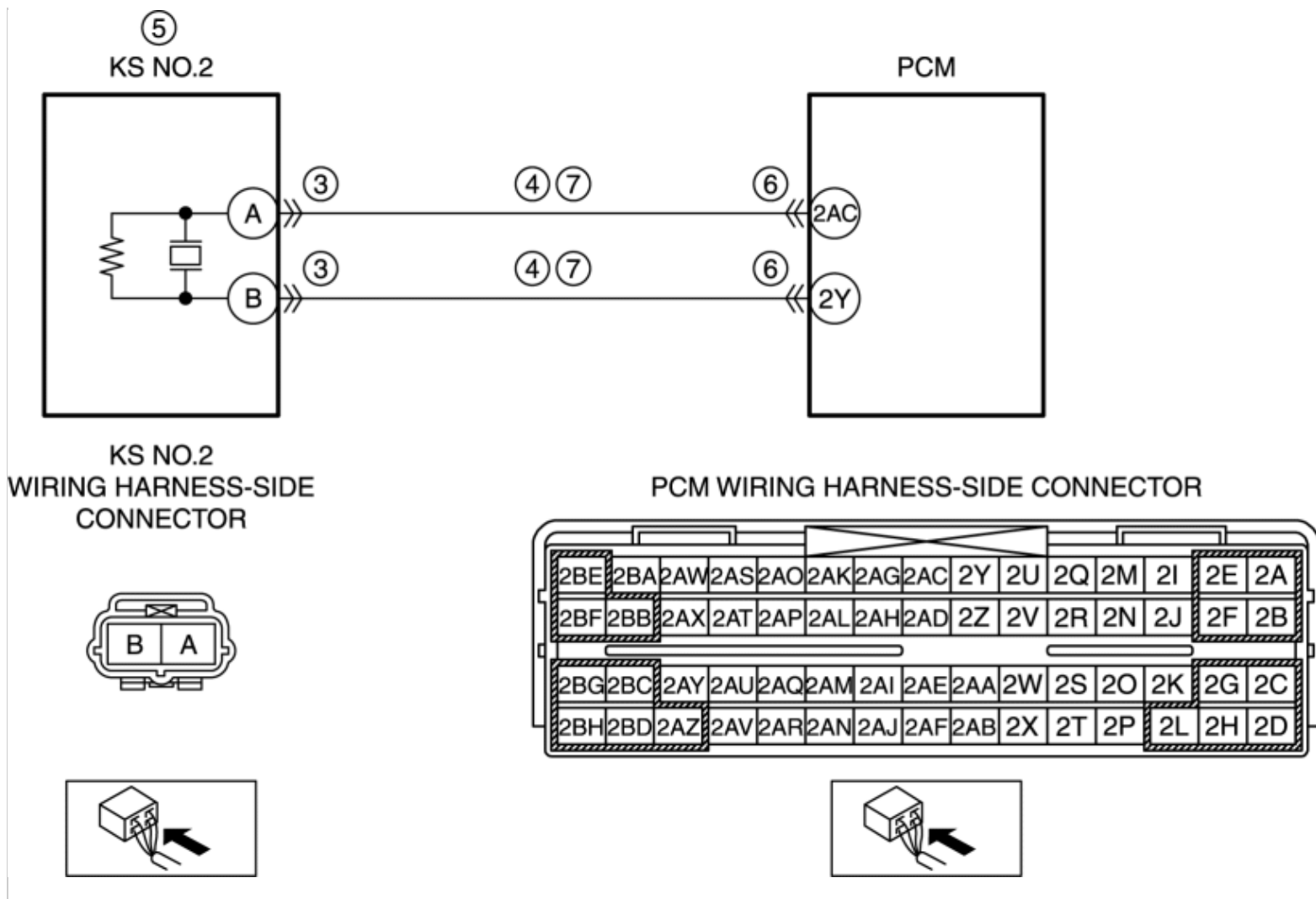
CAUTION:

	<ul style="list-style-type: none"> • While performing this step, always operate the vehicle in a safe and lawful manner. • When the M-MDS is used to observe monitor system status while driving, be sure to have another technician with you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD capturing function and inspect later. • Drive the vehicle under the snapshot data condition. • Perform the KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) • Is the same DTC present? 		
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0332 [13B-MSP]

DTC P0332	KS No.2 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the KS No.2 when the engine is running. If the input voltage is less than 1.2 V, the PCM determines that the KS No.2 circuit input voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• KS No.2 connector or terminals malfunction• Short to ground in wiring harness between KS No.2 terminal A and PCM terminal 2AC• Short to ground in wiring harness between KS No.2 terminal B and PCM terminal 2Y• KS No.2 malfunction• PCM connector or terminals malfunction• Open circuit in wiring harness between KS No.2 terminal A and PCM terminal 2AC• Open circuit in wiring harness between KS No.2 terminal B and PCM terminal 2Y• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT KS NO.2 CONNECTOR FOR POOR CONNECTION	Yes Repair or replace the connector and/or

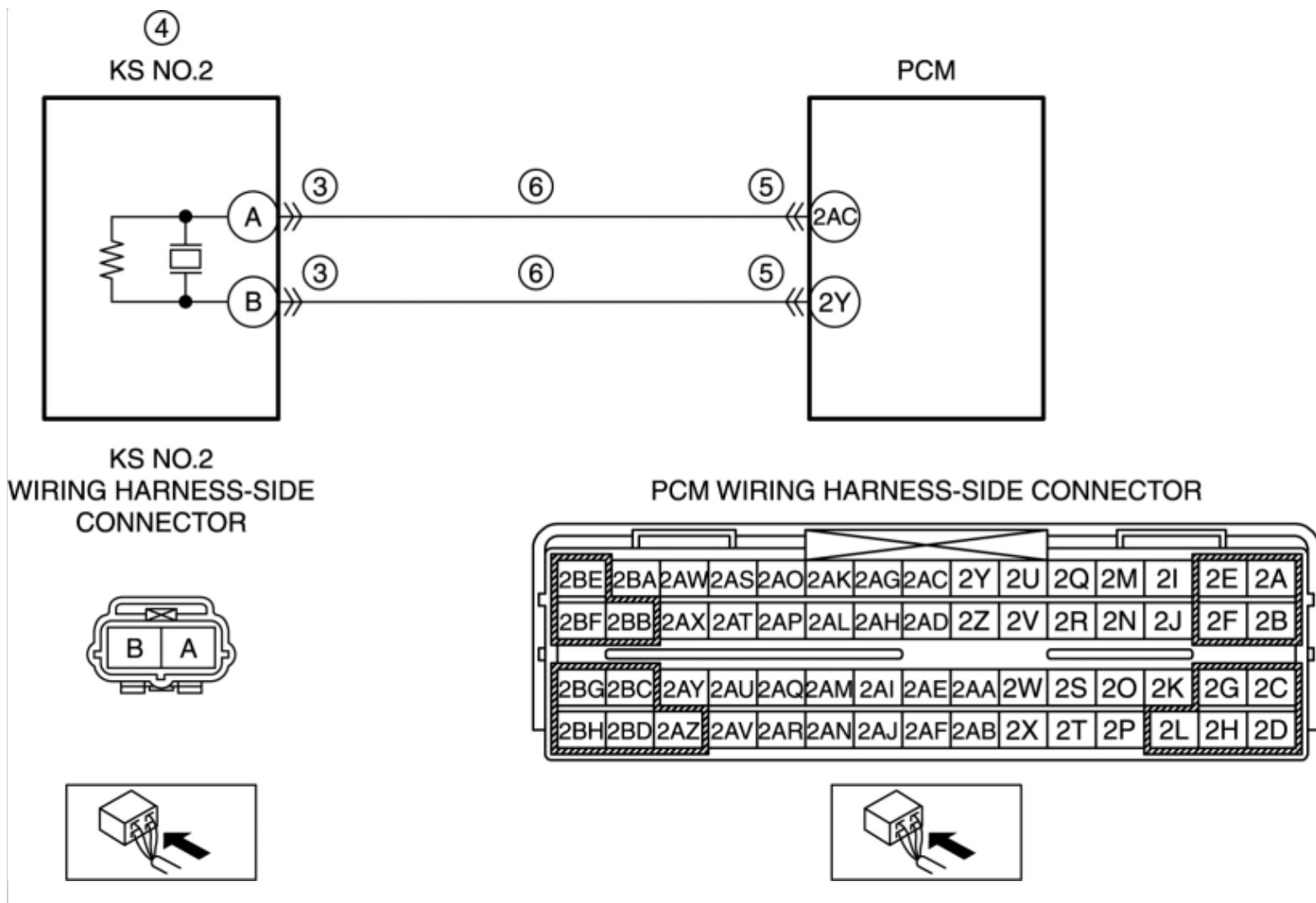
	<ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the KS No.2 connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	<p>terminals, then go to Step 8.</p> <p>No Go to the next step.</p>
4	<p>INSPECT KS NO.2 CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • KS No.2 connector is disconnected. • Turn the ignition switch off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> ▪ KS No.2 terminal A (wiring harness-side) and body ground ▪ KS No.2 terminal B (wiring harness-side) and body ground • Is there continuity? 	<p>Yes If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> • Replace the PCM (short to ground in the PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to Step 8.</p> <p>No Go to the next step.</p>
5	<p>INSPECT KS NO.2</p> <ul style="list-style-type: none"> • Inspect the KS No.2. <p>(See KNOCK SENSOR (KS) INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	<p>Yes Replace the KS No.2, then go to Step 8.</p> <p>(See KNOCK SENSOR (KS) REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
6	<p>INSPECT PCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 8.</p> <p>No Go to the next step.</p>
7	<p>INSPECT KS NO.2 CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • KS No.2 and PCM connectors are disconnected. • Turn the ignition switch off. 	<p>Yes Go to the next step.</p> <p>No Repair or replace the wiring harness for a possible open circuit, then go to the next step.</p>

	<ul style="list-style-type: none"> Inspect for continuity between the following circuits: <ul style="list-style-type: none"> KS No.2 terminal A (wiring harness-side) and PCM terminal 2AC (wiring harness-side) KS No.2 terminal B (wiring harness-side) and PCM terminal 2Y (wiring harness-side) Is there continuity? 		
8	VERIFY TROUBLESHOOTING OF DTC P0332 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)	
		No DTC troubleshooting completed.	

2011 - RX-8 - Engine

DTC P0333 [13B-MSP]

DTC P0333	KS No.2 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the KS No.2 when the engine is running. If the input voltage is more than 4.0 V, the PCM determines that the KS No.2 circuit input voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• KS No.2 connector or terminals malfunction• KS No.2 malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between KS No.2 terminal A and PCM terminal 2AC• Short to power supply in wiring harness between KS No.2 terminal B and PCM terminal 2Y• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT KS NO.2 CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. 	Yes Repair or replace the connector and/or terminals, then go to Step 7. No Go to the next step.

	<ul style="list-style-type: none"> • Disconnect the KS No.2 connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	No	Go to the next step.
4	INSPECT KS NO.2 <ul style="list-style-type: none"> • Inspect the KS No.2. (See KNOCK SENSOR (KS) INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes	Replace the KS No.2, then go to Step 7. (See KNOCK SENSOR (KS) REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
6	INSPECT KS NO.2 CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • KS No.2 and PCM connectors are disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between the following circuits: <ul style="list-style-type: none"> ▪ KS No.2 terminal A (wiring harness-side) and body ground ▪ KS No.2 terminal B (wiring harness-side) and body ground • Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No	Go to the next step.
7	VERIFY TROUBLESHOOTING OF DTC P0333 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)

	<ul style="list-style-type: none">• Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].)• Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].)• Is the same DTC present?	No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the “AFTER REPAIR PROCEDURE”. (See AFTER REPAIR PROCEDURE [13B-MSP].)• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

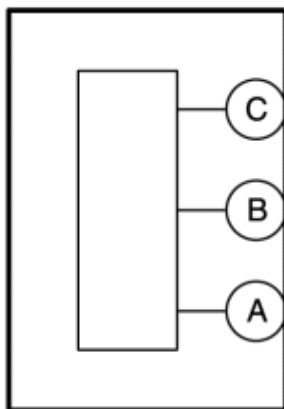
2011 - RX-8 - Engine

DTC P0522 [13B-MSP]

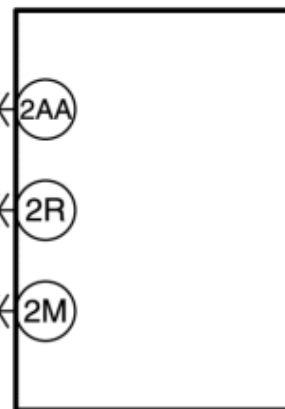
DTC P0522	Oil pressure sensor circuit low input
DETECTION CONDITION	<ul style="list-style-type: none">• The voltage of oil pressure sensor input terminal is less than 0.2 V for 0.5 s or more. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (other).• The MIL does not illuminate.• FREEZE FRAME DATA (Mode 2/Mode 12) is not available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Oil pressure sensor connector or terminals malfunction• Short to ground in wiring harness between oil pressure sensor terminal C and PCM terminal 2AA• Short to ground in wiring harness between oil pressure sensor terminal B and PCM terminal 2R• PCM connector or terminals malfunction• Open circuit in wiring harness between oil pressure sensor terminal C and PCM terminal 2AA• Open circuit in wiring harness between oil pressure sensor terminal B and PCM terminal 2R• Oil pressure sensor malfunction• PCM malfunction

⑥

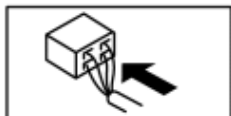
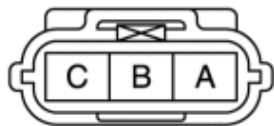
OIL PRESSURE SENSOR



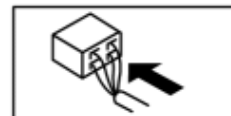
PCM



OIL PRESSURE SENSOR WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
2	INSPECT OIL PRESSURE SENSOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the oil pressure sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 7.</p> <p>No Go to the next step.</p>

	<ul style="list-style-type: none"> Is there any malfunction? 		
3	INSPECT OIL PRESSURE SENSOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Oil pressure sensor connector is disconnected. Turn the ignition switch off. Inspect for continuity between the following circuits: <ul style="list-style-type: none"> Oil pressure sensor terminal C (wiring harness-side) and body ground Oil pressure sensor terminal B (wiring harness-side) and body ground Is there continuity? 	YesIf the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [13B-MSP] .) <p>Go to Step 7.</p>	
		No	Go to the next step.
4	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	YesRepair or replace the connector and/or terminals, then go to Step 7.	
		No	Go to the next step.
5	INSPECT OIL PRESSURE SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Oil pressure sensor and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between the following circuits: <ul style="list-style-type: none"> Oil pressure sensor terminal C (wiring harness-side) and PCM terminal 2AA (wiring harness-side) Oil pressure sensor terminal B (wiring harness-side) and PCM terminal 2R (wiring harness-side) Is there continuity? 	YesGo to the next step.	
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 7.
	INSPECT OIL PRESSURE SENSOR		

6	<ul style="list-style-type: none">Inspect the oil pressure sensor. (See OIL PRESSURE SENSOR INSPECTION [13B-MSP].)Is there any malfunction?	Yes Replace the oil pressure sensor, then go to the next step. (See OIL PRESSURE SENSOR REMOVAL/INSTALLATION [13B-MSP] .)	No Go to the next step.
7	VERIFY TROUBLESHOOTING OF DTC P0522 COMPLETED <ul style="list-style-type: none">Make sure to reconnect all disconnected connectors.Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].)Perform the KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].)Is the same DTC present?	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP] .)	No Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].)Are any DTCs present?	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)	No DTC troubleshooting completed.

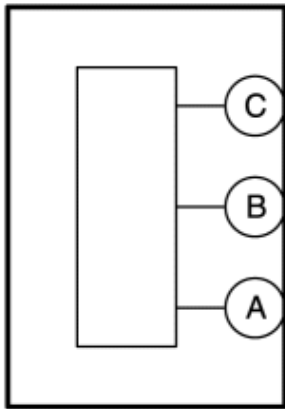
2011 - RX-8 - Engine

DTC P0523 [13B-MSP]

DTC P0523	Oil pressure sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none">• The voltage of oil pressure sensor input terminal is more than 4.8 V for 0.5 s or more. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (other).• The MIL does not illuminate.• FREEZE FRAME DATA (Mode 2/Mode 12) is not available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Oil pressure sensor connector or terminals malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between oil pressure sensor terminal B and PCM terminal 2R• Open circuit in wiring harness between oil pressure sensor terminal A and PCM terminal 2M• Oil pressure sensor malfunction• PCM malfunction

⑥

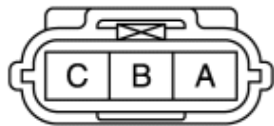
OIL PRESSURE SENSOR



PCM



OIL PRESSURE SENSOR WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
2	INSPECT OIL PRESSURE SENSOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the oil pressure sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 7.</p> <p>No Go to the next step.</p>

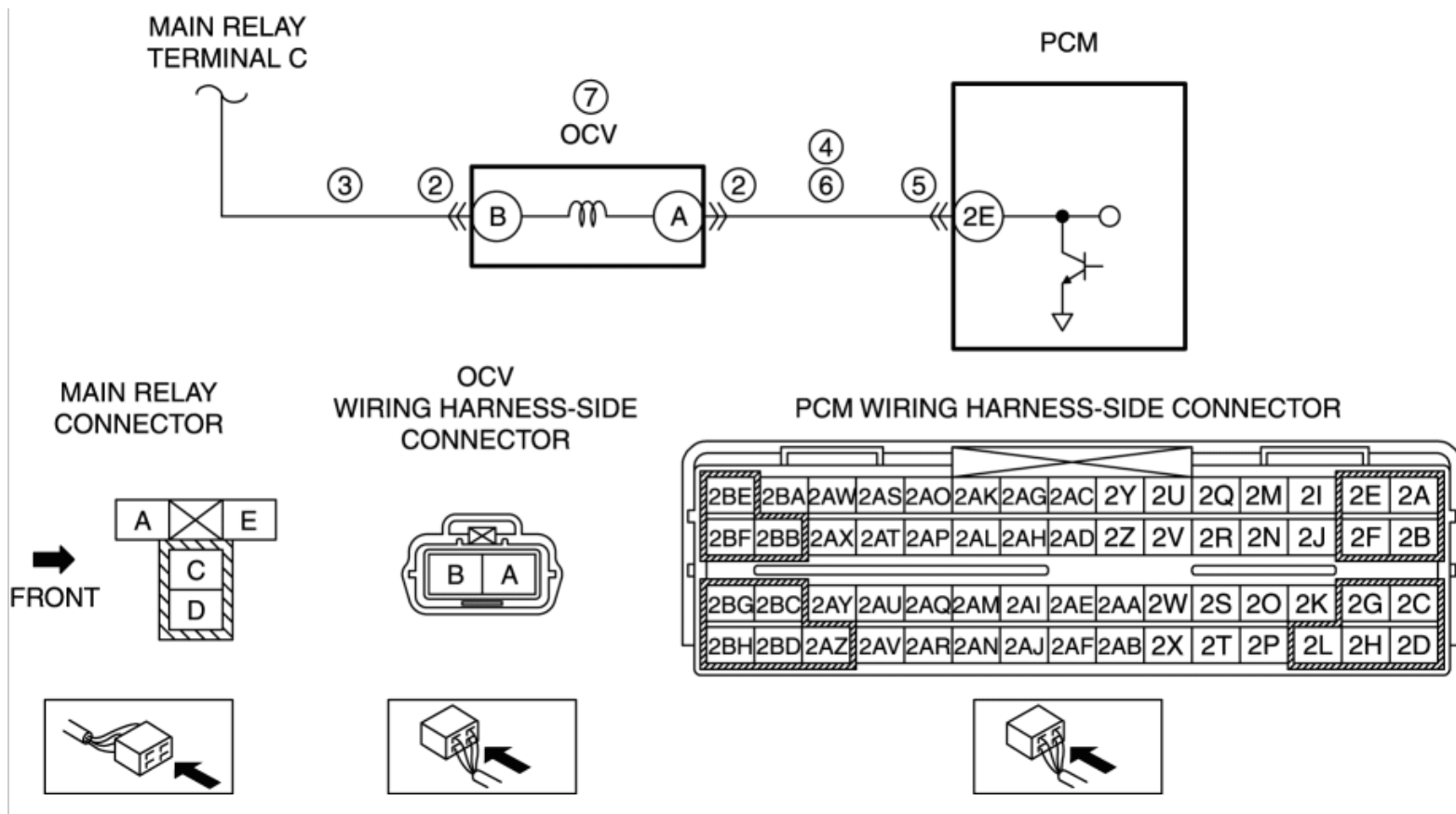
	<ul style="list-style-type: none"> Is there any malfunction? 		
3	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
4	INSPECT OIL PRESSURE SENSOR SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Oil pressure sensor and PCM connectors are disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between oil pressure sensor terminal B (wiring harness-side) and body ground. Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 7.
		No	Go to the next step.
5	INSPECT OIL PRESSURE SENSOR GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Oil pressure sensor and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between oil pressure sensor terminal A (wiring harness-side) and PCM terminal 2M (wiring harness-side). Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 7.
6	INSPECT OIL PRESSURE SENSOR <ul style="list-style-type: none"> Inspect the oil pressure sensor. (See OIL PRESSURE SENSOR INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Replace the oil pressure sensor, then go to the next step. (See OIL PRESSURE SENSOR REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
7	VERIFY TROUBLESHOOTING OF DTC P0523 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.

	<ul style="list-style-type: none">• Perform the KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].)• Is the same DTC present?		
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the “AFTER REPAIR PROCEDURE”. (See AFTER REPAIR PROCEDURE [13B-MSP].)• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P1680 [13B-MSP]

DTC P1680	OCV circuit low input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors input voltage from the OCV. If the voltage of the OCV input terminal is less than the specification for 1 s when the battery voltage is more than 10 V, the PCM determines the OCV circuit voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (other).• The MIL does not illuminate.• FREEZE FRAME DATA (Mode 2/Mode 12) is not available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• OCV connector or terminals malfunction• Short to ground or open circuit in OCV power supply circuit<ul style="list-style-type: none">▪ Short to ground in wiring harness between main relay terminal C and OCV terminal B▪ OCV related fuse malfunction▪ Open circuit in wiring harness between main relay terminal C and OCV terminal B• Short to ground in wiring harness between OCV terminal A and PCM terminal 2E• PCM connector or terminals malfunction• Open circuit in wiring harness between OCV terminal A and PCM terminal 2E• OCV malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
2	INSPECT OCV CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the OCV connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 8.
		No Go to the next step.
3	INSPECT OCV POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> OCV connector is disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between OCV terminal B (wiring harness-side) and body ground. 	Yes Go to the next step.
		No Inspect the OCV related fuse. <ul style="list-style-type: none"> If the fuse is melt: <ul style="list-style-type: none"> Repair or replace the wiring

	<ul style="list-style-type: none"> Is the voltage B+? 	<p>harness for a possible short to ground.</p> <ul style="list-style-type: none"> Replace the fuse. <ul style="list-style-type: none"> If the fuse is deterioration: <ul style="list-style-type: none"> Replace the fuse. If the fuse is normal: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible open circuit. <p>Go to Step 8.</p>
4	INSPECT OCV CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> OCV connector is disconnected. Turn the ignition switch off. Inspect for continuity between OCV terminal A (wiring harness-side) and body ground. Is there continuity? 	<p>Yes If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> Replace the PCM (short to ground in the PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to Step 8.</p> <p>No Go to the next step.</p>
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 8.</p> <p>No Go to the next step.</p>
6	INSPECT OCV CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> OCV and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between OCV terminal A (wiring harness-side) and PCM terminal 2E (wiring harness-side). Is there continuity? 	<p>Yes Go to the next step.</p> <p>No Repair or replace the wiring harness for a possible open circuit, then go to Step 8.</p>
	INSPECT OCV	

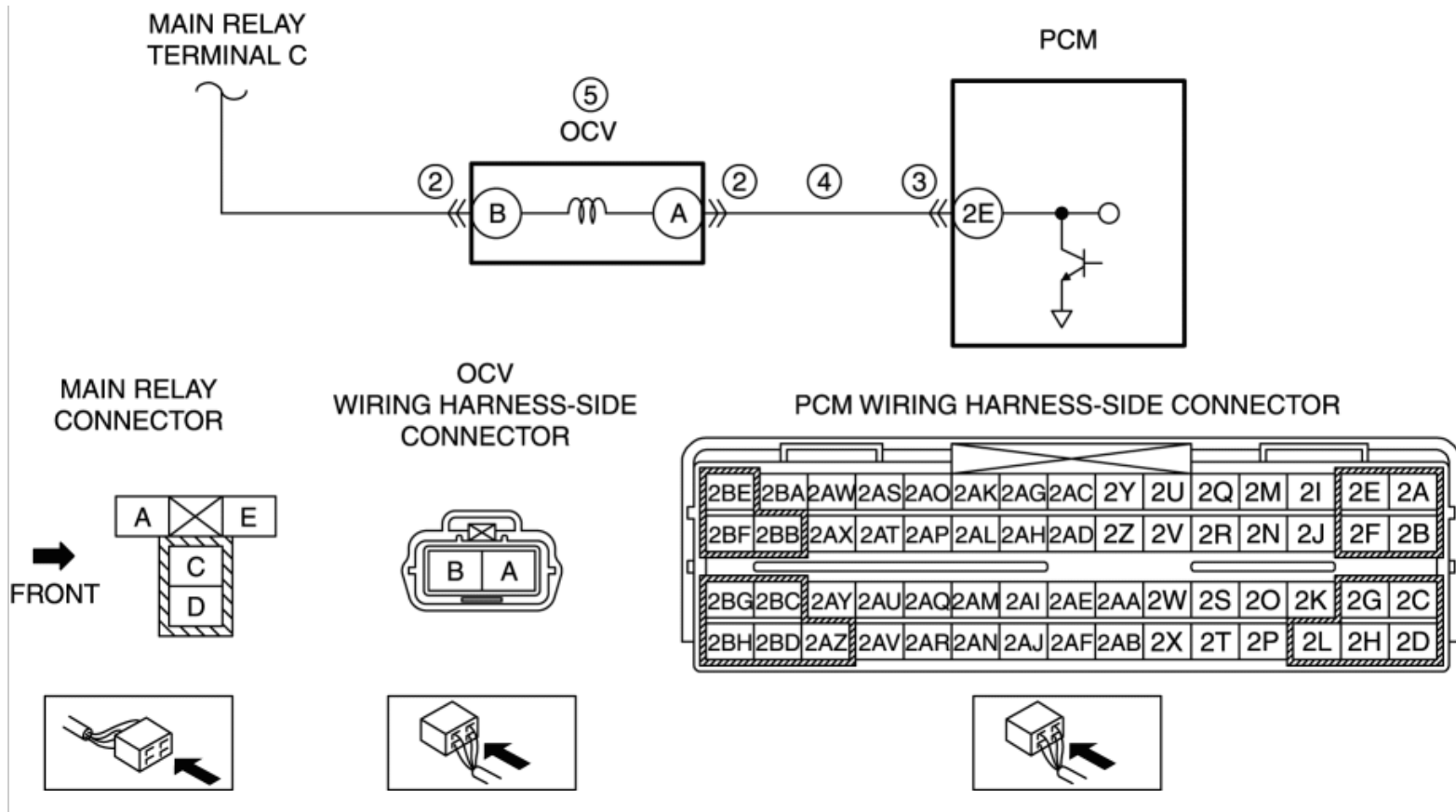
7	<ul style="list-style-type: none"> Inspect the OCV. (See OIL CONTROL VALVE (OCV) INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Replace the OCV, then go to the next step. (See OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
8	VERIFY TROUBLESHOOTING OF DTC P1680 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOER self test. (See KOE/O/KOER SELF TEST [13B-MSP].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

DTC P1681 [13B-MSP]

DTC P1681	OCV circuit high input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors input voltage from the OCV. If the OCV current is more than 3.5 A for 2 s when the battery voltage is more than 10 V, the PCM determines the OCV circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (other).• The MIL does not illuminate.• FREEZE FRAME DATA (Mode 2/Mode 12) is not available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• OCV connector or terminals malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between OCV terminal A and PCM terminal 2E• OCV malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
2	INSPECT OCV CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the OCV connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 6.</p> <p>No Go to the next step.</p>
3	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 6.</p> <p>No Go to the next step.</p>

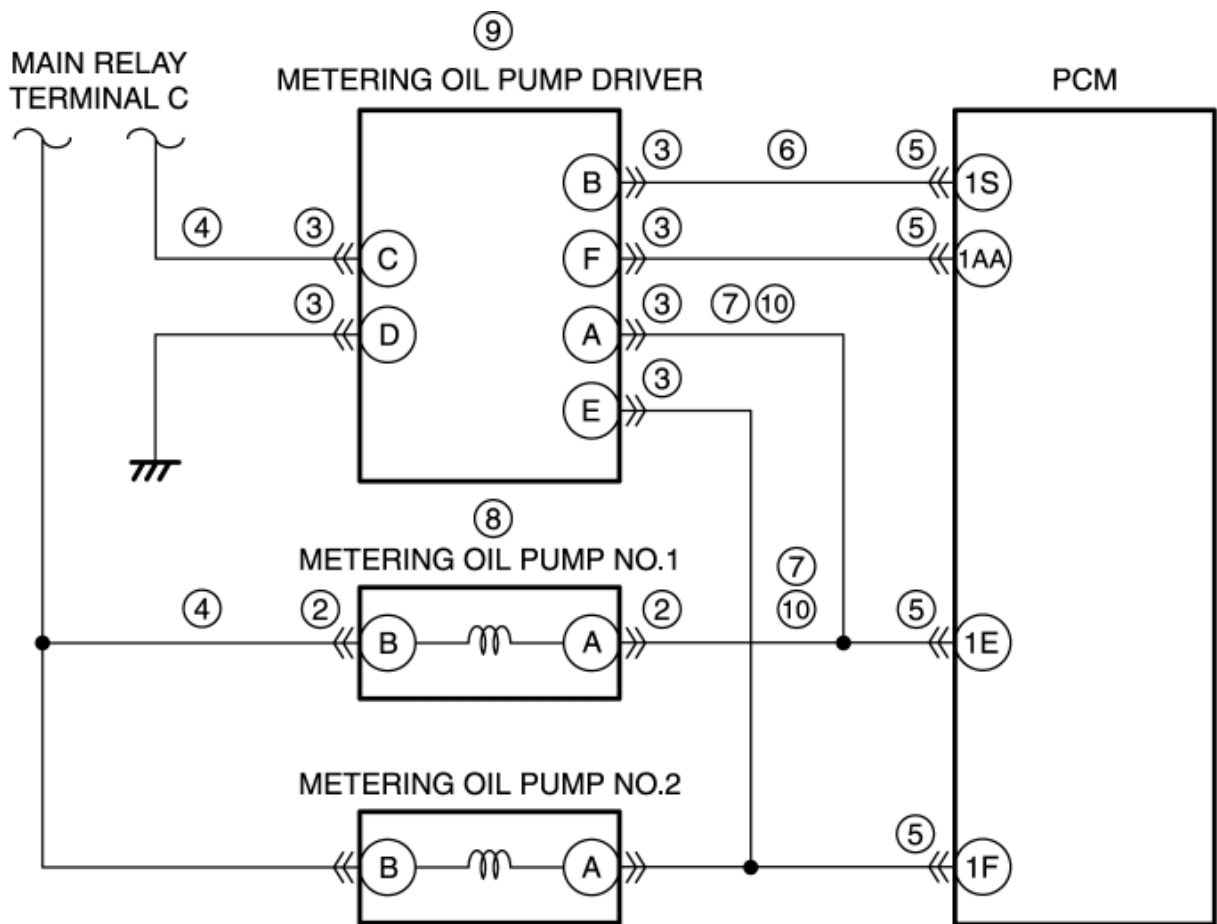
4	INSPECT OCV CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> OCV and PCM connectors are disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between OCV terminal A (wiring harness-side) and body ground. Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 6.
		No	Go to the next step.
5	INSPECT OCV <ul style="list-style-type: none"> Inspect the OCV. (See OIL CONTROL VALVE (OCV) INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Replace the OCV, then go to the next step. (See OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING OF DTC P1681 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOER self test. (See KOE/KOER SELF TEST [13B-MSP].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P1682 [13B-MSP]

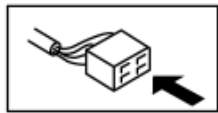
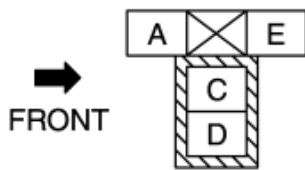
DTC P1682	Metering oil pump No.1 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the metering oil pump No.1 when the battery voltage is more than 8 V and the metering oil pump No.1 control signal turned from ON to OFF. If the input voltage is less than the specification, the PCM determines that the metering oil pump No.1 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2/Mode 12) is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Metering oil pump No.1 connector or terminals malfunction Metering oil pump driver connector or terminals malfunction Short to ground or open circuit in metering oil pump No.1 power supply circuit <ul style="list-style-type: none"> Short to ground in wiring harness between main relay terminal C and metering oil pump No.1 terminal B Metering oil pump No.1 related fuse malfunction Open circuit in wiring harness between main relay terminal C and metering oil pump No.1 terminal B Short to ground or open circuit in metering oil pump driver power supply circuit <ul style="list-style-type: none"> Short to ground in wiring harness between main relay terminal C and metering oil pump driver terminal C Metering oil pump driver related fuse malfunction Open circuit in wiring harness between main relay terminal C and metering oil pump driver terminal C PCM connector or terminals malfunction Short to power supply in wiring harness between metering oil pump driver terminal B and PCM terminal 1S Short to ground in wiring harness between metering oil pump No.1 terminal A and PCM terminal 1E

- Short to ground in wiring harness between metering oil pump driver terminal A and PCM terminal 1E
- Metering oil pump No.1 malfunction
- Metering oil pump driver malfunction
- Open circuit in wiring harness between metering oil pump No.1 terminal A and PCM terminal 1E
- Open circuit in wiring harness between metering oil pump driver terminal A and PCM terminal 1E
- PCM malfunction

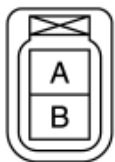


MAIN RELAY CONNECTOR

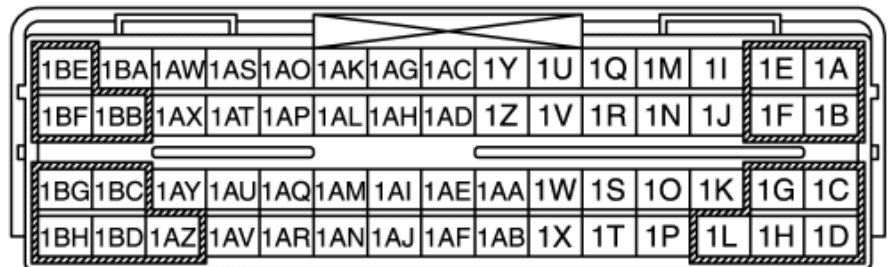
METERING OIL PUMP DRIVER WIRING HARNESS-SIDE CONNECTOR



METERING OIL PUMP NO.1/NO.2
WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT METERING OIL PUMP NO.1 CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the metering oil pump No.1 connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 11.
		No	Go to the next step.
3	INSPECT METERING OIL PUMP DRIVER CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the metering oil pump driver connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 11.
		No	Go to the next step.
4	INSPECT METERING OIL PUMP NO.1 AND METERING OIL PUMP DRIVER POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> Metering oil pump No.1 and metering oil pump driver connectors are disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between the following circuits: <ul style="list-style-type: none"> Metering oil pump No.1 terminal B (wiring harness-side) and body ground Metering oil pump driver terminal C (wiring harness-side) and body ground Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the metering oil pump No.1 and metering oil pump driver related fuse. <ul style="list-style-type: none"> If the fuse is melt: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. Replace the fuse. If the fuse is deterioration:

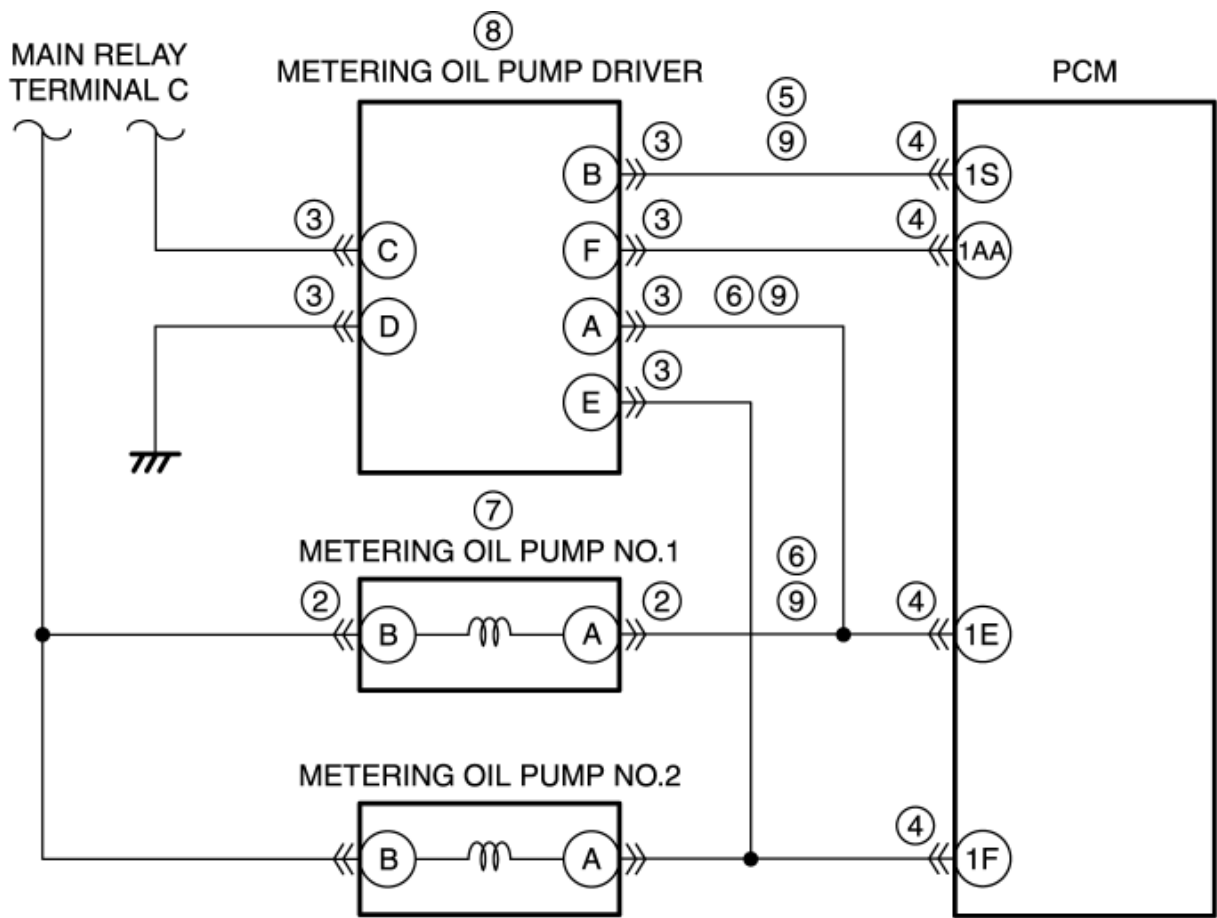
			<ul style="list-style-type: none"> ▪ Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> ▪ Repair or replace the wiring harness for a possible open circuit. <p>Go to Step 11.</p>
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 11.</p> <p>No Go to the next step.</p>	
6	INSPECT METERING OIL PUMP DRIVER CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Metering oil pump No.1, metering oil pump driver and PCM connectors are disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between metering oil pump driver terminal B (wiring harness-side) and body ground. • Is there any voltage? 	<p>Yes Repair or replace the wiring harness for a possible short to power supply, then go to Step 11.</p> <p>No Go to the next step.</p>	
7	INSPECT METERING OIL PUMP NO.1 AND METERING OIL PUMP DRIVER CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Metering oil pump No.1, metering oil pump driver and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect the continuity between metering oil pump driver terminal A (wiring harness-side) and body ground. • Is there continuity? 	<p>Yes Repair or replace the wiring harness for a possible short to ground following:</p> <ul style="list-style-type: none"> • Between metering oil pump No.1 terminal A and PCM terminal 1E • Between metering oil pump driver terminal A and PCM terminal 1E <p>Go to Step 11.</p> <p>No Go to the next step.</p>	
8	INSPECT METERING OIL PUMP NO.1	Yes Replace the metering oil pump No.1, then	

	<ul style="list-style-type: none"> Inspect the metering oil pump No.1. <p>(See METERING OIL PUMP INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>go to Step 11.</p> <p>(See METERING OIL PUMP REMOVAL/INSTALLATION [13B-MSP].)</p>
		No Go to the next step.
9	INSPECT METERING OIL PUMP DRIVER <ul style="list-style-type: none"> Inspect the metering oil pump driver. <p>(See METERING OIL PUMP DRIVER INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Replace the metering oil pump driver, then go to Step 11.</p> <p>(See METERING OIL PUMP DRIVER REMOVAL/INSTALLATION [13B-MSP].)</p>
		No Go to the next step.
10	INSPECT METERING OIL PUMP NO.1 AND METERING OIL PUMP DRIVER CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Metering oil pump No.1, metering oil pump driver and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between the following circuits: <ul style="list-style-type: none"> Metering oil pump No.1 terminal A (wiring harness-side) and PCM terminal 1E (wiring harness-side) Metering oil pump driver terminal A (wiring harness-side) and PCM terminal 1E (wiring harness-side) Is there continuity? 	<p>Yes Go to the next step.</p>
		No Repair or replace the wiring harness for a possible open circuit, then go to the next step.
11	VERIFY TROUBLESHOOTING OF DTC P1682 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Perform the KOER self test. <p>(See KOE0/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none"> Is the same DTC present? 	<p>Yes Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p>
		No Go to the next step.
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	<p>Yes Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p>
		No DTC troubleshooting completed.

2011 - RX-8 - Engine

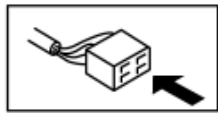
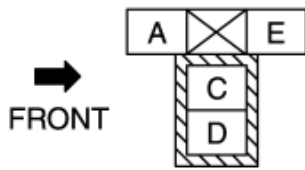
DTC P1683 [13B-MSP]

DTC P1683	Metering oil pump No.1 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the metering oil pump No.1 when the battery voltage is more than 8 V and the metering oil pump No.1 control signal turned from ON to OFF. If the input voltage is more than the specification, the PCM determines that the metering oil pump No.1 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (other).• The MIL does not illuminate.• FREEZE FRAME DATA (Mode 2/Mode 12) is not available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Metering oil pump No.1 connector or terminals malfunction• Metering oil pump driver connector or terminals malfunction• PCM connector or terminals malfunction• Short to ground in wiring harness between metering oil pump driver terminal B and PCM terminal 1S• Short to power supply in wiring harness between metering oil pump No.1 terminal A and PCM terminal 1E• Short to power supply in wiring harness between metering oil pump driver terminal A and PCM terminal 1E• Metering oil pump No.1 malfunction• Metering oil pump driver malfunction• Open circuit in wiring harness between metering oil pump No.1 terminal A and metering oil pump driver terminal A• Open circuit in wiring harness between metering oil pump driver terminal B and PCM terminal 1S• PCM malfunction

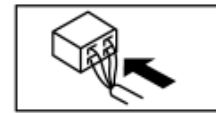
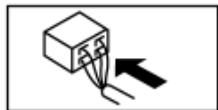
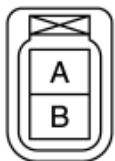


MAIN RELAY CONNECTOR

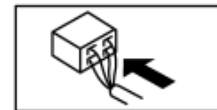
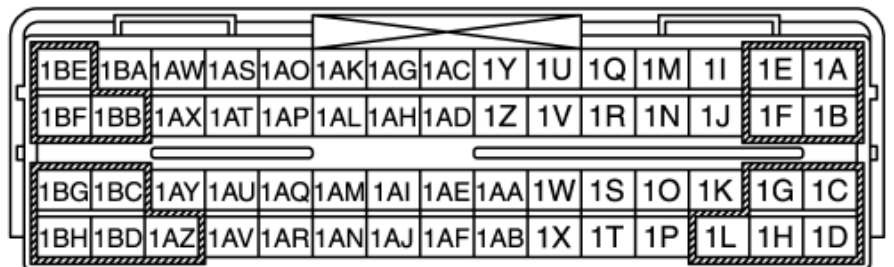
METERING OIL PUMP DRIVER WIRING HARNESS-SIDE CONNECTOR



METERING OIL PUMP NO.1/NO.2
WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT METERING OIL PUMP NO.1 CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the metering oil pump No.1 connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.
3	INSPECT METERING OIL PUMP DRIVER CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the metering oil pump driver connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.
5	INSPECT METERING OIL PUMP DRIVER CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Metering oil pump No.1, metering oil pump driver and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between metering oil pump driver terminal B (wiring harness-side) and body ground. Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 10.
		No	Go to the next step.
6	INSPECT METERING OIL PUMP NO.1 AND METERING OIL PUMP DRIVER CONTROL CIRCUIT FOR SHORT TO POWER	Yes	Repair or replace the wiring harness for

	SUPPLY <ul style="list-style-type: none">• Metering oil pump No.1, metering oil pump driver and PCM connectors are disconnected.• Turn the ignition switch to the ON position (engine off).• Measure the voltage between metering oil pump driver terminal A (wiring harness-side) and body ground.• Is there any voltage?	a possible short to power supply following: <ul style="list-style-type: none">• Between metering oil pump No.1 terminal A and PCM terminal 1E• Between metering oil pump driver terminal A and PCM terminal 1E Go to Step 10.
		No Go to the next step.
7	INSPECT METERING OIL PUMP NO.1 <ul style="list-style-type: none">• Inspect the metering oil pump No.1. (See METERING OIL PUMP INSPECTION [13B-MSP].)• Is there any malfunction?	Yes Replace the metering oil pump No.1, then go to Step 10. (See METERING OIL PUMP REMOVAL/INSTALLATION [13B-MSP].)
		No Go to the next step.
8	INSPECT METERING OIL PUMP DRIVER <ul style="list-style-type: none">• Inspect the metering oil pump driver. (See METERING OIL PUMP DRIVER INSPECTION [13B-MSP].)• Is there any malfunction?	Yes Replace the metering oil pump driver, then go to Step 10. (See METERING OIL PUMP DRIVER REMOVAL/INSTALLATION [13B-MSP].)
		No Go to the next step.
9	INSPECT METERING OIL PUMP NO.1 AND METERING OIL PUMP DRIVER CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none">• Metering oil pump No.1, metering oil pump driver and PCM connectors are disconnected.• Turn the ignition switch off.• Inspect the continuity between the following circuits:<ul style="list-style-type: none">▪ Metering oil pump No.1 terminal A (wiring harness-side) and metering oil pump driver terminal A (wiring harness-side)▪ Metering oil pump driver terminal B (wiring harness-side) and PCM terminal 1S (wiring harness-side)• Is there continuity?	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to the next step.
10	VERIFY TROUBLESHOOTING OF DTC P1683 COMPLETED <ul style="list-style-type: none">• Make sure to reconnect all disconnected connectors.• Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].)	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)

	<ul style="list-style-type: none">• Perform the KOER self test. (See KOE0/KOER SELF TEST [13B-MSP].)• Is the same DTC present?	No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the “AFTER REPAIR PROCEDURE”. (See AFTER REPAIR PROCEDURE [13B-MSP].)• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P1684 [13B-MSP]

DTC P1684	Metering oil pump oil pressure sensor–oil pressure is low
DETECTION CONDITION	<ul style="list-style-type: none">It is that the oil pressure at the metering oil pump system is less than 40 kPa {0.41 kgf/cm², 5.8 psi} continues for 10 s, after specified period passes after the engine starts. <p>Diagnostic support note</p> <ul style="list-style-type: none">This is a continuous monitor (other).The MIL does not illuminate.FREEZE FRAME DATA (Mode 2/Mode 12) is not available.The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">Low engine oil levelEngine oil leakage (oil hose and/or drain hose looseness)Oil pressure sensor malfunction (abnormal characteristic)Oil pump malfunction (oil pressure regulator stuck open)Engine oil leakage between OCV and metering oil pump drain line (quick connector poor connection or comes off)Looseness of oil pressure sensorLooseness of OCVOCV malfunction (stuck close)PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
------	------------	--------

1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No Go to the next step.
2	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> • Turn the ignition switch off, then to the ON position (engine off). • Verify the related PENDING CODE or stored DTCs. • Are other DTCs present? 	Yes Go to the appropriate DTC inspection. (See DTC TABLE [13B-MSP] .)
		No Go to the next step.
3	VERIFY THAT METERING OIL PUMP SYSTEM RELATED DTC <ul style="list-style-type: none"> • Turn the ignition switch off, then to the ON position (engine off). • Verify the related PENDING CODE or stored DTCs. • Is the DTC P0522, P0523, P1680, P1681, P1682, P1683, P1686 or P1687 present? 	Yes Go to the appropriate DTC inspection. (See DTC P0522 [13B-MSP] .) (See DTC P0523 [13B-MSP] .) (See DTC P1680 [13B-MSP] .) (See DTC P1681 [13B-MSP] .) (See DTC P1682 [13B-MSP] .) (See DTC P1683 [13B-MSP] .) (See DTC P1686 [13B-MSP] .) (See DTC P1687 [13B-MSP] .)
		No Go to the next step.
4	VERIFY ENGINE OIL LEVEL <ul style="list-style-type: none"> • Verify that the engine oil level. (See ENGINE OIL LEVEL INSPECTION [13B-MSP].) • Is the engine oil level normal? 	Yes Go to the next step.
		No Refill the engine oil to specified level, then go to the next step. (See ENGINE OIL REPLACEMENT [13B-MSP] .)
5	VERIFY THAT ENGINE OIL LEAKAGE FROM ENGINE COMPONENT	Yes Repair or replace the malfunctioning part according to

	<ul style="list-style-type: none"> Verify that leakage the engine oil from following: <ul style="list-style-type: none"> Oil filter component Oil pan Housing Oil cooler hose joint Drain plug (looseness) Does the engine oil leakage detected? 	<p>the inspection results, then go to Step 12.</p> <p>No Go to the next step.</p>
6	<p>VERIFY WHETHER MALFUNCTION IS IN OIL PRESSURE SENSOR ABNORMAL CHARACTER OR ELSEWHERE</p> <ul style="list-style-type: none"> Access the MOP_P_ACT PID using the M-MDS while the ignition switch is ON position (engine off). (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Is the MOP_P_ACT PID value less than 0 kPa? 	<p>Yes Replace the oil pressure sensor, then go to Step 12. (See OIL PRESSURE SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
7	<p>INSPECT OIL PRESSURE</p> <ul style="list-style-type: none"> Perform the "OIL PRESSURE INSPECTION". (See OIL PRESSURE INSPECTION [13B-MSP].) Is the oil pressure within the specification? 	<p>Yes Go to the next step.</p> <p>No Inspect the oil pump.</p> <ul style="list-style-type: none"> If the oil pump is normal, replace the oil pressure regulator, then go to Step 12.
8	<p>VERIFY THAT METERING OIL PUMP SYSTEM RELATED PART</p> <ul style="list-style-type: none"> Verify that the joint point condition for the metering oil pump system (between engine and metering oil pump system drain through the metering oil pump). Are there poor connection, loose and/or the engine oil leakage detected? 	<p>Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 12.</p> <p>No Go to the next step.</p>
9	<p>VERIFY OIL PRESSURE SENSOR INSTALLATION</p> <ul style="list-style-type: none"> Verify that the installation oil pressure sensor. Is the oil pressure sensor installed properly? 	<p>Yes Go to the next step.</p> <p>No Install the oil pressure sensor properly, then go to Step 12.</p>

		(See OIL PRESSURE SENSOR REMOVAL/INSTALLATION [13B-MSP].)
10	VERIFY OCV INSTALLATION <ul style="list-style-type: none"> Verify that the OCV installation. Is the OCV installed properly? 	<p>Yes Go to the next step.</p> <p>No Install the OCV properly, then go to Step 12.</p> <p>(See OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [13B-MSP].)</p>
11	INSPECT OCV <ul style="list-style-type: none"> Inspect the OCV. <p>(See OIL CONTROL VALVE (OCV) INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Replace the OCV, then go to the next step.</p> <p>(See OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
12	VERIFY TROUBLESHOOTING OF DTC P1684 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Start the engine and warm it up completely. Perform the KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none"> Is the same DTC present? 	<p>Yes Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
13	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	<p>Yes Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p> <p>No DTC troubleshooting completed.</p>

2011 - RX-8 - Engine

DTC P1685 [13B-MSP]

DTC P1685	Metering oil pump oil pressure sensor–oil pressure is high
DETECTION CONDITION	<ul style="list-style-type: none"> It is that the oil pressure at the metering oil pump system is more than 180 kPa {1.84 kgf/cm², 26.1 psi} continues for 10 s, after specified period passes after the engine starts. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2/Mode 12) is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Oil pressure sensor malfunction (abnormal characteristic) Oil pump malfunction (oil pressure regulator stuck close) Metering oil pump drain passage clogged OCV malfunction (stuck open) PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<p>VERIFY RELATED REPAIR INFORMATION AVAILABILITY</p> <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.

		No	Go to the next step.
2	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> • Turn the ignition switch off, then to the ON position (engine off). • Verify the related PENDING CODE or stored DTCs. • Are other DTCs present? 	Yes	Go to the appropriate DTC inspection. (See DTC TABLE [13B-MSP].)
		No	Go to the next step.
3	VERIFY THAT METERING OIL PUMP SYSTEM RELATED DTC <ul style="list-style-type: none"> • Turn the ignition switch off, then to the ON position (engine off). • Verify the related PENDING CODE or stored DTCs. • Is the DTC P0522, P0523, P1680, P1681, P1682, P1683, P1686 or P1687 present? 	Yes	Go to the appropriate DTC inspection. (See DTC P0522 [13B-MSP].) (See DTC P0523 [13B-MSP].) (See DTC P1680 [13B-MSP].) (See DTC P1681 [13B-MSP].) (See DTC P1682 [13B-MSP].) (See DTC P1683 [13B-MSP].) (See DTC P1686 [13B-MSP].) (See DTC P1687 [13B-MSP].)
		No	Go to the next step.
4	VERIFY WHETHER MALFUNCTION IS IN OIL PRESSURE SENSOR ABNORMAL CHARACTER OR ELSEWHERE <ul style="list-style-type: none"> • Access the MOP_P_ACT PID using the M-MDS while the ignition switch is ON position (engine off). (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) • Is the MOP_P_ACT PID value more than 0 kPa? 	Yes	Replace the oil pressure sensor, then go to Step 8. (See OIL PRESSURE SENSOR REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
5	INSPECT OIL PRESSURE <ul style="list-style-type: none"> • Perform the "OIL PRESSURE INSPECTION". (See OIL PRESSURE INSPECTION [13B-MSP].) • Is the oil pressure within the 	Yes	Go to the next step.
		No	Replace the oil pressure regulator, then go to Step 8.

	specification?		
6	VERIFY THAT METERING OIL PUMP DRAIN PASSAGE <ul style="list-style-type: none"> Verify that the metering oil pump drain passage for clogged. Is there a clog in the oil drain passage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 8.
		No	Go to the next step.
7	INSPECT OCV <ul style="list-style-type: none"> Inspect the OCV. (See OIL CONTROL VALVE (OCV) INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Replace the OCV, then go to the next step. (See OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
8	VERIFY TROUBLESHOOTING OF DTC P1685 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Start the engine and warm it up completely. Perform the KOER self test. (See KOE0/KOER SELF TEST [13B-MSP].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P050A [13B-MSP]

DTC P050A	Cold start IAC system performance
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors actual idle speed while fast idle up correction operating. If the idle speed is out of specified range, the PCM determines that the idle air control has performance problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CSERS). The MIL illuminates if PCM detects the above malfunctioning condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction conditions during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> VSS malfunction Air suction in intake-air system Electronic throttle control system malfunction Throttle valve stuck or blockage PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Is the DTC P050A on FREEZE 	YesGo to the next step.

	FRAME DATA (Mode 2)?	No	Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [13B-MSP].)
2	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (CSERS related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	VERIFY CURRENT INPUT SIGNAL STATUS OF VSS <ul style="list-style-type: none"> Start the engine. Access the VSS PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Inspect the VSS PID. Is the PID normal? (See PCM INSPECTION [13B-MSP].) 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 8.
5	CHECK AIR SUCTION IN INTAKE-AIR SYSTEM <ul style="list-style-type: none"> Start the engine. Check air suction between MAF sensor and intake manifold. Is there any air suction in the intake-air system? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 8.
		No	Go to the next step.
6	VERIFY ELECTRONIC THROTTLE CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> Perform the Drive-by-wire Control System Inspection. 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part

	<p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Does the electronic throttle control system operate properly? 	according to the inspection results, then go to Step 8.
7	<p>VERIFY THROTTLE VALVE</p> <ul style="list-style-type: none"> Turn the ignition switch off. Remove the throttle valve with connector connected. Access the ETC_DSD PID using the M-MDS. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Move the throttle valve using the ETC_DSD PID simulation function. Dose the throttle valve move smoothly? 	<p>Yes Go to the next step.</p> <p>No Clean the throttle valve and retest.</p> <p>If the problem does not resolve:</p> <ul style="list-style-type: none"> Replace the throttle body, then go to the next step. <p>(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)</p>
8	<p>VERIFY TROUBLESHOOTING OF DTC P050A COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Cool down the engine. Start the engine and warm it up normal operating temperature. Retrieve the DTC using the M-MDS. Is the PENDING CODE for this DTC present? 	<p>Yes Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
9	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". 	<p>Yes Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p>

	(See AFTER REPAIR PROCEDURE [13B-MSP] .)		No DTC troubleshooting completed.
	<ul style="list-style-type: none">• Are any DTCs present?		

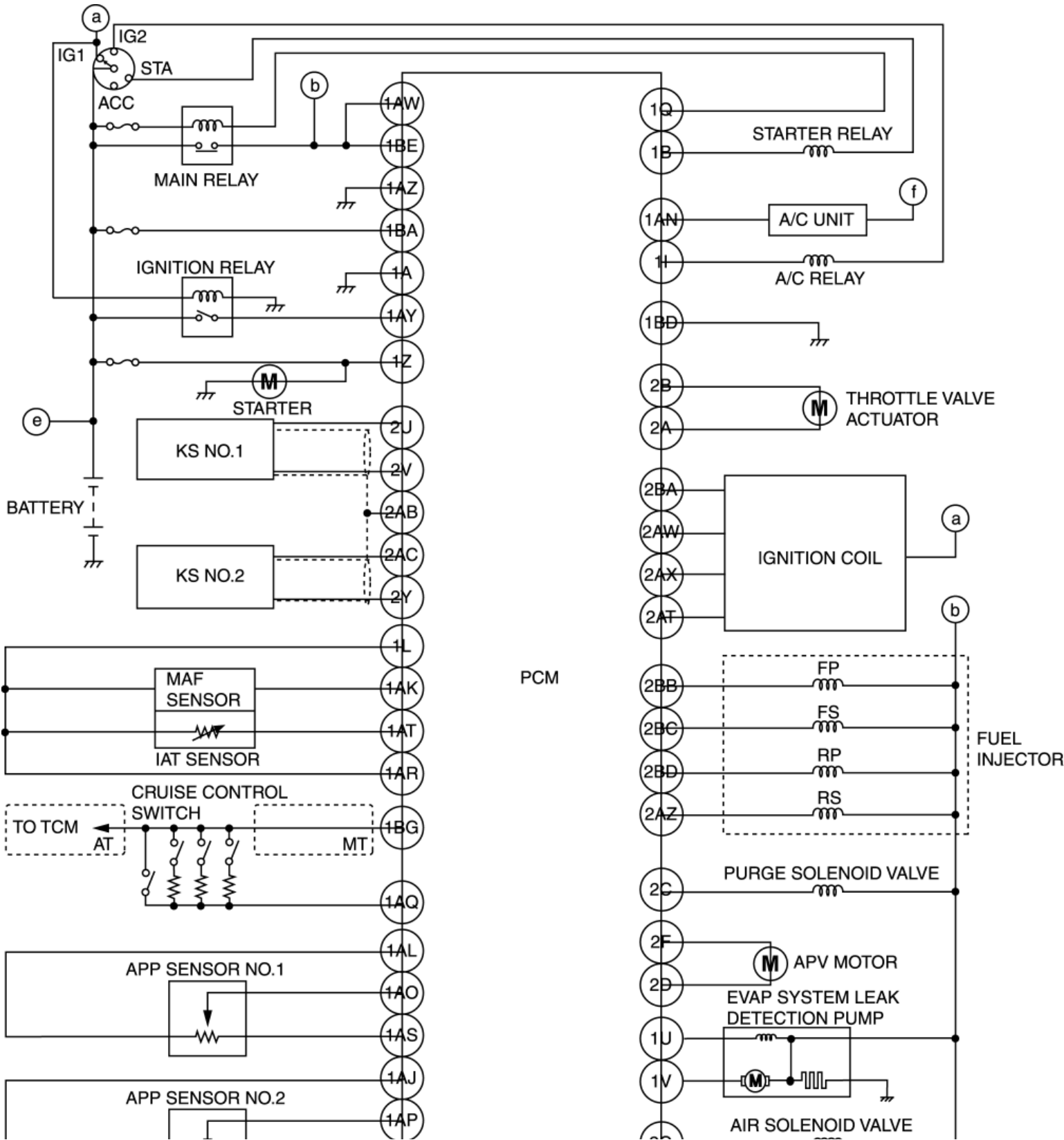
[< Previous](#) [Next >](#)

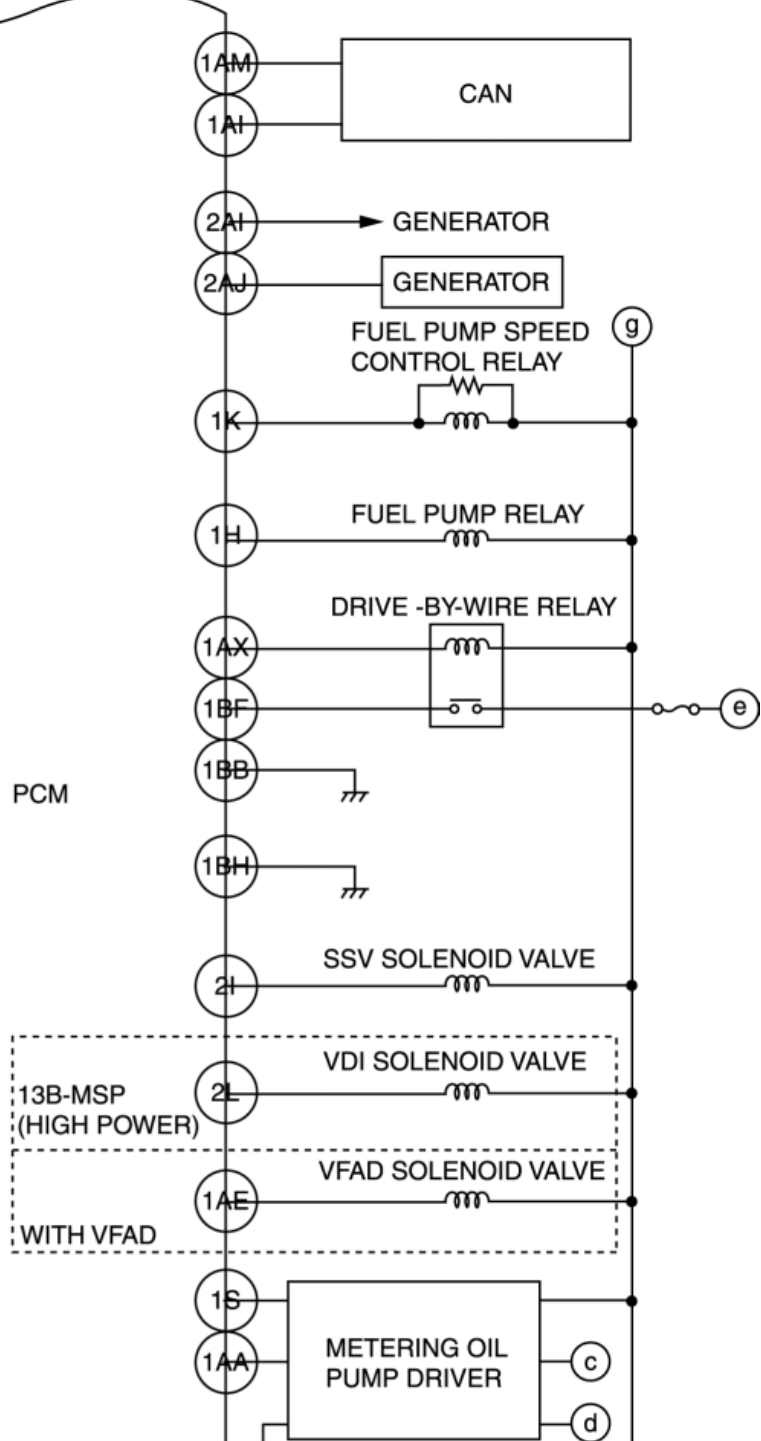
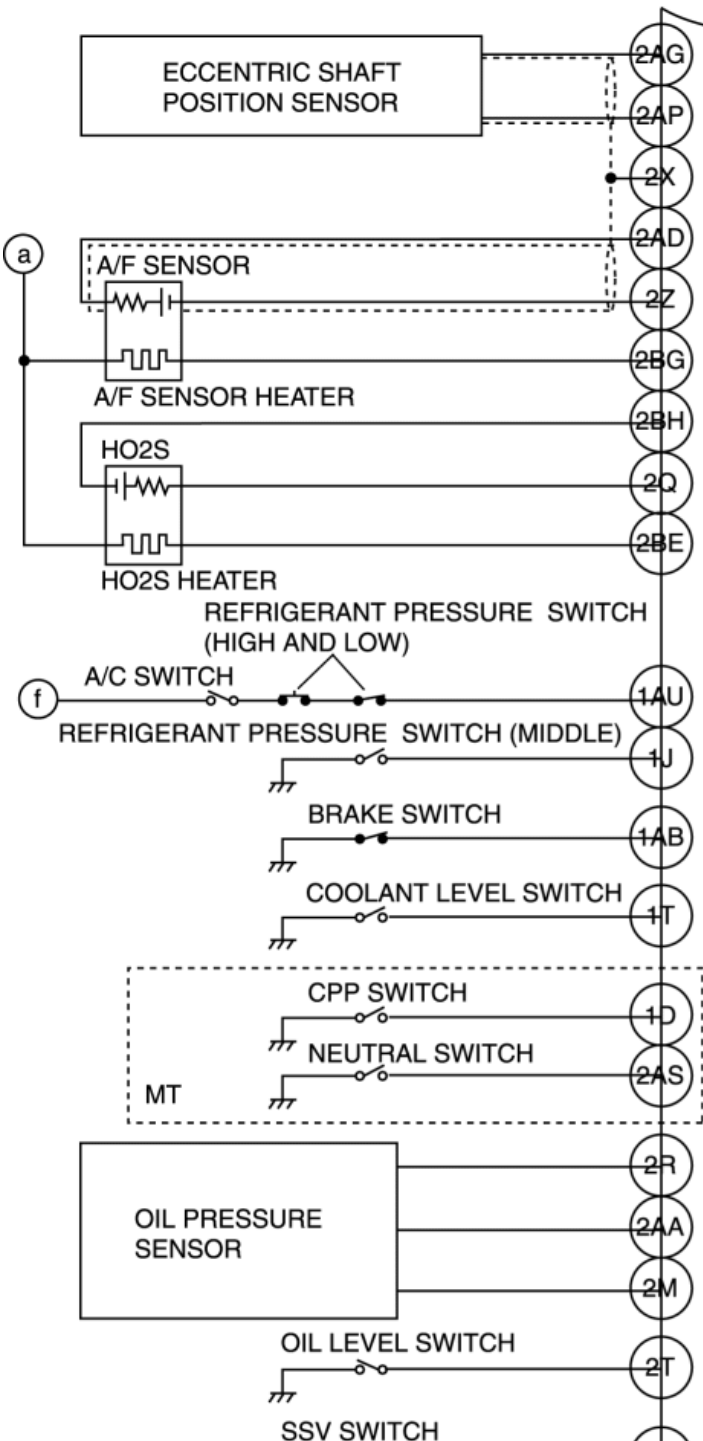
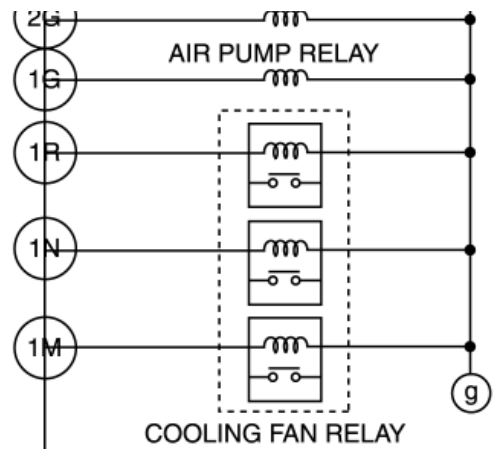
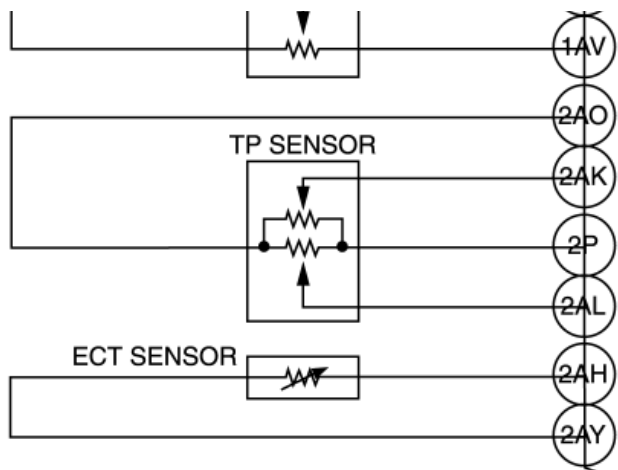
[Back to Top](#)

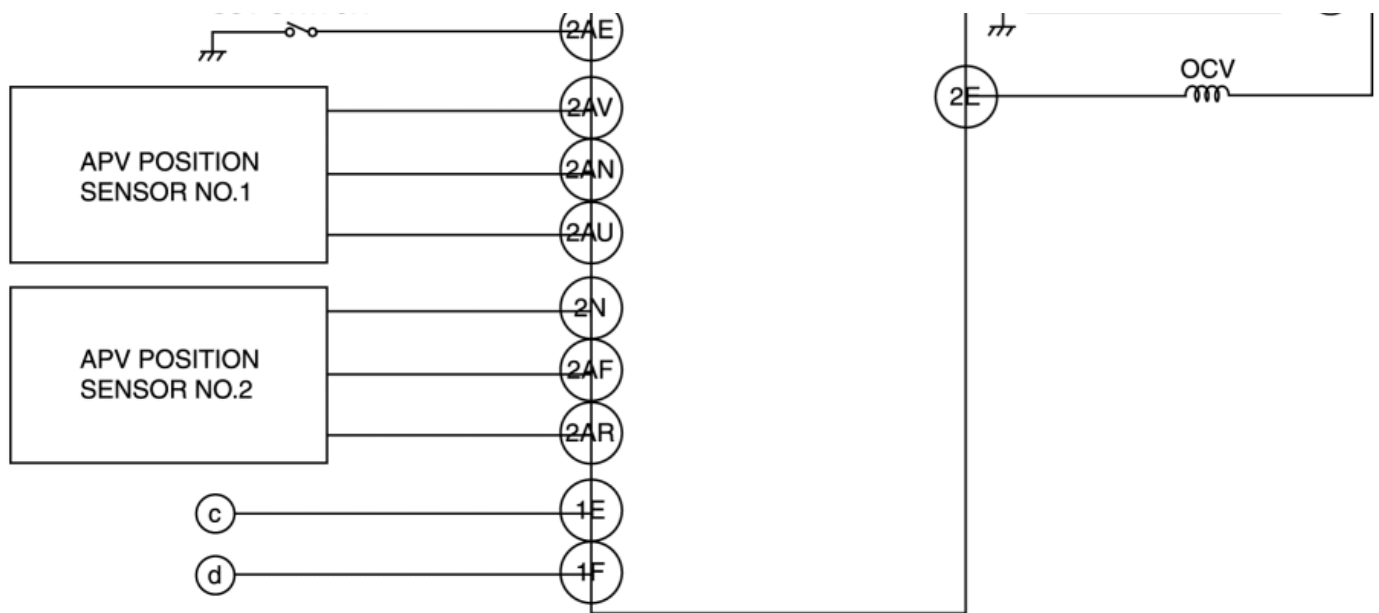
[Next >](#)

2011 - RX-8 - Engine

ON-BOARD DIAGNOSTIC WIRING DIAGRAM [13B-MSP]







[Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

MONITORING SYSTEM AND CONTROL SYSTEM DEVICE RELATIONSHIP CHART [13B-MSP]

×: Applicable

Component	A/F sensor, HO2S	A/F sensor heater, HO2S heater	Thermostat	Fuel system	Misfire	AIR system	Catalyst	EVAP system
Input								
Battery		×			×			×
Ignition switch	×	×						×
A/C switch, refrigerant pressure switch (high, low pressure)			×					
TP sensor	×			×	×		×	×
ECT sensor	×	×	×	×	×	×	×	×
IAT sensor	×	×	×	×	×	×	×	×
MAF sensor	×	×	×	×	×	×	×	
A/F sensor	×	×		×		×	×	

H02S	×	×		×			×	
BARO sensor	×	×	×	×	×		×	×
Eccentric shaft position sensor	×	×	×	×	×	×	×	×
Fuel gauge sender unit					×			×
ABS HU/CM or DSC HU/CM					×			
Output								
Fuel injector				×				
A/F sensor heater		×						
H02S heater		×						
Purge solenoid valve	×			×			×	×
AIR solenoid valve						×		
EVAP system leak detection pump								×
AIR pump relay						×		
Cooling fan relay (No.1, No.2, No.3, No.4 and No.5)								×
MIL	×	×	×	×	×	×	×	×

[< Previous](#) [Next >](#)

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

OBD-II PENDING TROUBLE CODE [13B-MSP]

- These appear when a problem is detected in a monitored system. The code for a failed system is stored in the PCM memory in the first drive cycle. This code is called the pending code. If the problem is not found in a second drive cycle, the PCM judges that the system returned to normal or the problem was mistakenly detected, and deletes the pending code. If the problem is found in a second drive cycle too, the PCM judges that the system has failed, and the DTC is stored.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

OBD-II FREEZE FRAME DATA [13B-MSP]

- This is the technical data which indicates the engine condition at the time of the first malfunction. This data will remain in the memory even if another emission-related DTC is stored, with the exception of Fuel system or Misfire DTCs. Once freeze frame data for Fuel system or Misfire DTC is stored, it will overwrite any previous data and the freeze frame will not be overwritten again.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

OBD-II ON-BOARD SYSTEM READINESS TEST [13B-MSP]

- This shows the OBD-II systems operating status. If any monitor function is incomplete, M-MDS will identify which monitor function has not been completed. The Fuel system, Misfire and CCM are continuous monitoring-type functions. The A/F sensor, HO2S, Thermostat, AIR system, Catalyst and EVAP system will be monitored under drive cycles. The OBD-II diagnostic system is initialized by performing the DTC cancellation procedure or disconnecting the negative battery cable.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

OBD-II DIAGNOSTIC MONITORING TEST RESULTS [13B-MSP]

- The results from the technical data of the intermittent monitor system are used to determine whether the system is normal or not. They also display the system thresholds and diagnostic results. The intermittent monitor system monitors the A/F sensor, HO2S, Thermostat, AIR system, Catalyst and EVAP system.

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

OBD-II READ/CLEAR DIAGNOSTIC TEST RESULTS [13B-MSP]

- This retrieves all stored DTCs in the PCM and clears the on-board readiness test results, freeze frame data, DTC, diagnostic monitoring test results and pending trouble code.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

OBD-II PARAMETER IDENTIFICATION (PID) ACCESS [13B-MSP]

- The PID mode allows access to certain data values, analog and digital inputs and outputs, calculated values and system status information. Since the PID values for output devices are the PCM internal data values, inspect each device to identify which output devices are malfunctioning.

[< Previous](#) [Next >](#)

[Back to Top](#)

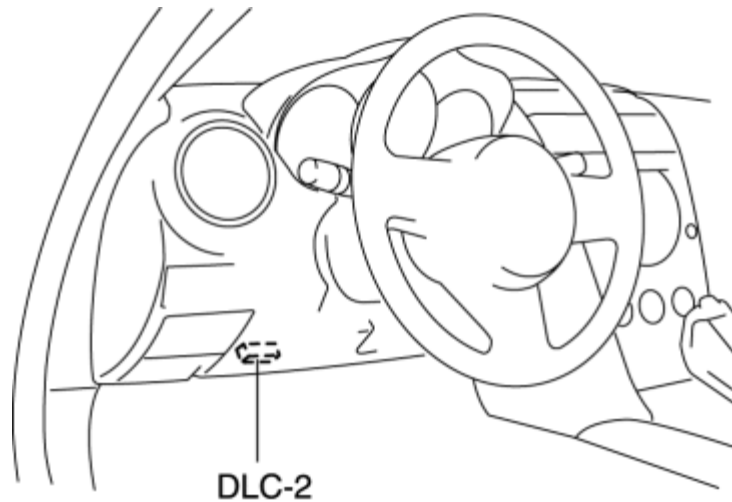
© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

ON-BOARD DIAGNOSTIC TEST [13B-MSP]

DTC Reading Procedure

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 - Select "Self Test".
 - Select "Modules".
 - Select "PCM".
- When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "PCM".
 - Select "Self Test".

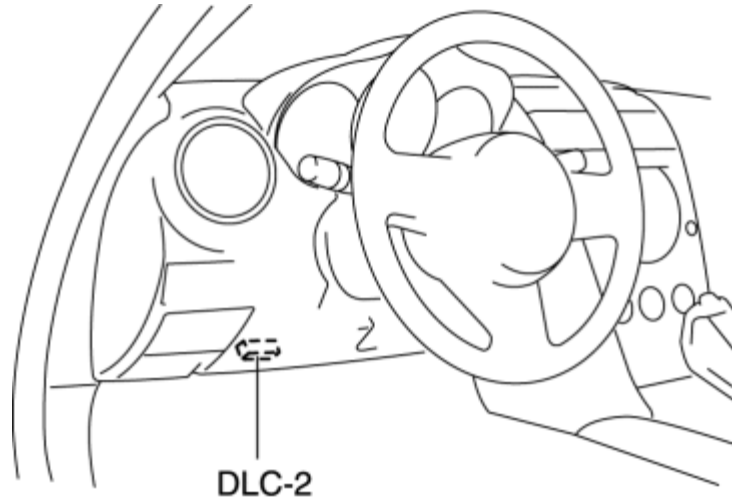
3. Verify the DTC according to the directions on the M-MDS screen.

- If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.

4. After completion of repairs, clear all DTCs stored in the PCM, while referring to "AFTER REPAIR PROCEDURE".

Pending Trouble Code Access Procedure

1. Connect the M-MDS to the DLC-2.



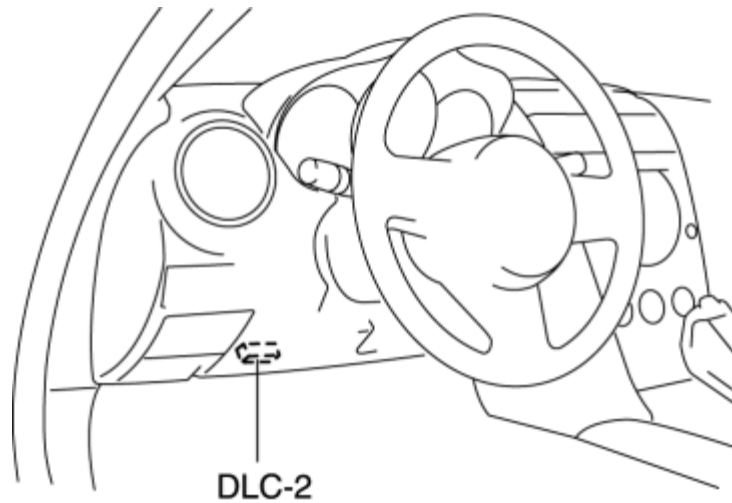
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 - Select "Self Test".
 - Select "Modules".
 - Select "PCM".
- When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "PCM".
 - Select "Self Test".

3. Retrieve the pending trouble codes according to the directions on the M-MDS screen.

Freeze Frame PID Data Access Procedure

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 - Select "Self Test".
 - Select "Modules".
 - Select "PCM".
- When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "PCM".
 - Select "Self Test".

3. Then, select the "Retrieve CMDTCs" and perform procedures according to directions on the M-MDS screen.

4. Retrieve the freeze frame PID data according to the directions on the M-MDS screen.

NOTE:

- Freeze frame data appears at the top of the help screen when the displayed DTC is selected.
- The freeze frame data consists of data for vehicle and engine control system operation conditions when malfunctions in the engine control system are detected and stored in the PCM.
- There are modes 2 and 12 in the freeze frame data.

Freeze frame data (mode 2)

- Freeze frame data is stored at the instant the malfunction indicator lamp illuminates, and only a part of the DTC data is stored.
- For the freeze frame data, if there are several malfunctions in the engine control system, the data for the malfunction which occurred initially is stored.

Thereafter, if a misfire or fuel injection control malfunction occurs, data from the misfire or fuel injection control malfunction is written over the initially stored data. However, if the initially stored freeze frame data is a misfire or fuel injection control malfunction, it is not overwritten.

Freeze frame data (mode 12)

- The data for DTCs currently detected is stored.
- The DTC recording timing differs depending on the number of DTC drive cycles.
 - For a DTC with a drive cycle number 1, only the malfunction determination data is recorded.
 - For a DTC with a drive cycle number 2, both the malfunction determination and undetermined data is recorded.

Freeze frame data table (mode2, mode12) table

NOTE:

- Refer to PID monitor table for confirm the engine control system operation status while the PCM does not store the DTC. (See [PCM INSPECTION \[13B-MSP\]](#))
- Freeze frame data items are not displayed, according to detected DTC.

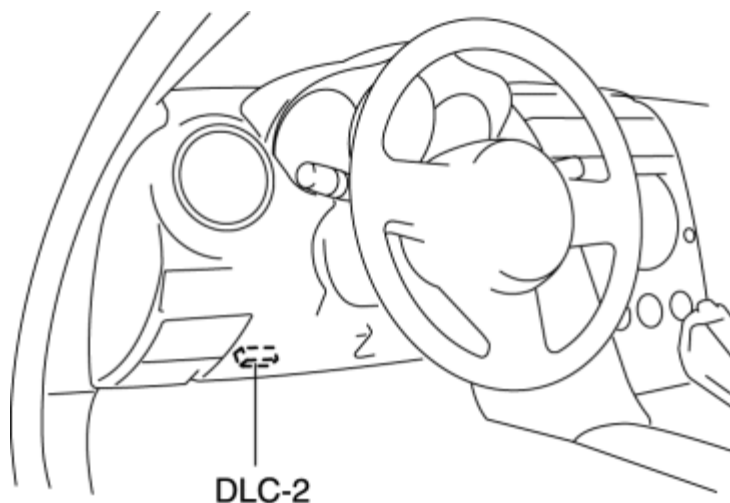
Freeze frame data item	Unit	Description	Corresponding PID data monitor item
FUELSYS1	Open Loop/Closed Loop/OL-Drive/OL-Fault/CL-Fault	Fuel system status	FUELSYS
LOAD	%	Engine load	—
ECT	°C	Engine coolant temperature	ECT
SFT1	%	Short term fuel trim	SHRTFT1
LFT1	%	Long term fuel trim	LONGFT1
RPM	RPM	Engine speed	RPM
VS	KPH	Vehicle speed	VSS

SPARKADV	°	Ignition timing	SPARK-L
IAT	°C	Intake air temperature	IAT
MAF	g/sec	Mass airflow	MAF
TP	%	Throttle valve position No.1	TP1
SAIR_COM	UPS/DNS/Off	Secondary air control status	—
O2S12	V	HO2S voltage	O2S12
RUNTM	hh:mm:ss	Time from engine start	—
EVAPPCT	%	Purge solenoid valve controlled value	EVAPCP
FLI	%	Remaining fuel amount	FLI
WARMUPS	—	Number of warm-up cycles after DTC cleared	—
CLRDIST	Km	Mileage after DTC cleared	—
BARO	kPa	Barometric pressure	BARO
CATTEMP11	°C	Estimated catalytic converter temperature	CATT11_DSD
VPWR	V	Module supply voltage	VPWR
ALV	%	Engine load	LOAD
TP_REL	%	Relative throttle position	TP REL
AAT	°C	Ambient air temperature	—
TP_B	%	Throttle valve position No.2	TP2
		Accelerator pedal position	

APP_D	%	No.1	APP1
APP_E	%	Accelerator pedal position No.2	APP2
TAC_PCT	%	Target throttle valve position	ETC_DSD

On-Board System Readiness Tests Access Procedure

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 - Select "Powertrain".
 - Select "OBD Test Modes".
 - Select "Mode 1 Powertrain Data".
 - Select "PCM".
- When using the PDS (Pocket PC)
 - Select "OBDII Modes".
 - Select "Mode 1 Powertrain Data".
 - Select "PCM".

3. Then, select the "****SUP" and "****EVAL" PIDs in the PID selection screen.

4. Monitor those PIDs and check it system monitor is completed.

NOTE:

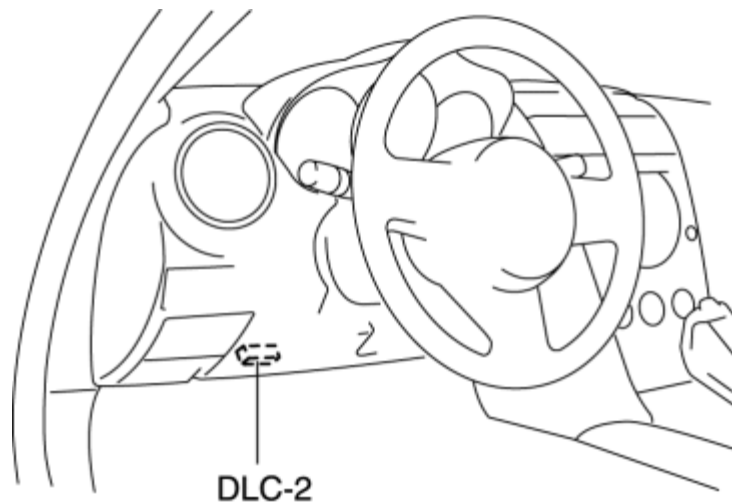
- If the on-board system readiness tests are not completed the PCM stores DTC P1000.

PID/DATA Monitor and Record Procedure

NOTE:

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

1. Connect the M-MDS to the DLC-2.



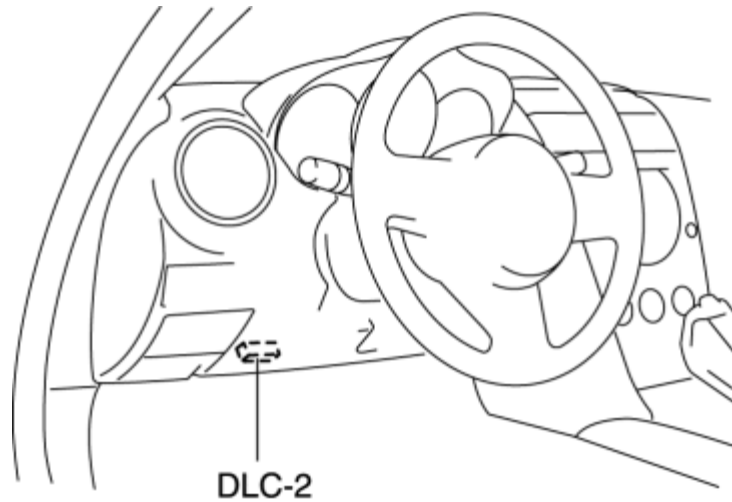
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 - Select "DataLogger".
 - Select "Modules".
 - Select "PCM".
- When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "PCM".
 - Select "DataLogger".

3. Select the applicable PID from the PID table.
4. Verify the PID data according to the directions on the screen.

Diagnostic Monitoring Test Results Access Procedure

1. Connect the M-MDS to the DLC-2.



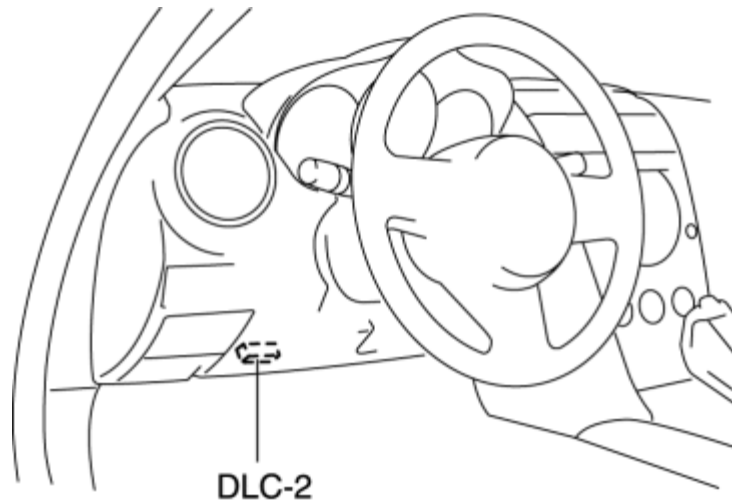
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 - Select "Powertrain".
 - Select "OBD Test Modes".
 - Select "Mode 6 On-Board Test Results".
- When using the PDS (Pocket PC)
 - Select "OBDII Modes".
 - Select "Mode 6 On-Board Test Results".

3. Verify the diagnostic monitoring test result according to the directions on the screen.

Active Command Modes Procedure

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 - Select "DataLogger".
 - Select "Modules".
 - Select "PCM".
- When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "PCM".
 - Select "DataLogger".

3. Select the simulation items from the PID table.

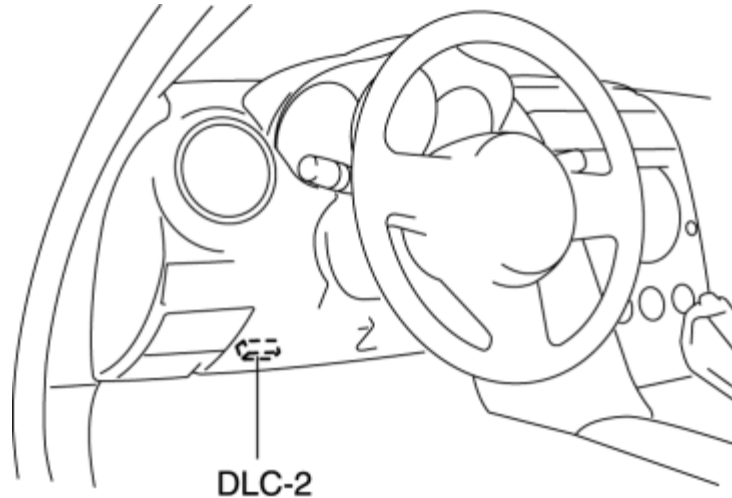
4. Perform the simulation function, inspect the operations for each parts.

- If the operation of output parts cannot be verified after the active command mode inspection is performed, this could indicate the possibility of an open or short circuit, sticking, or operation malfunction in the output parts.

2011 - RX-8 - Engine

AFTER REPAIR PROCEDURE [13B-MSP]

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 - Select "Self Test".
 - Select "Modules".
 - Select "PCM".
 - Select "Retrieve CMDTCs".
- When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "PCM".
 - Select "Self Test".
 - Select "Retrieve CMDTCs".

3. Verify the DTC according to the directions on the M-MDS screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Verify that no DTCs are displayed.

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

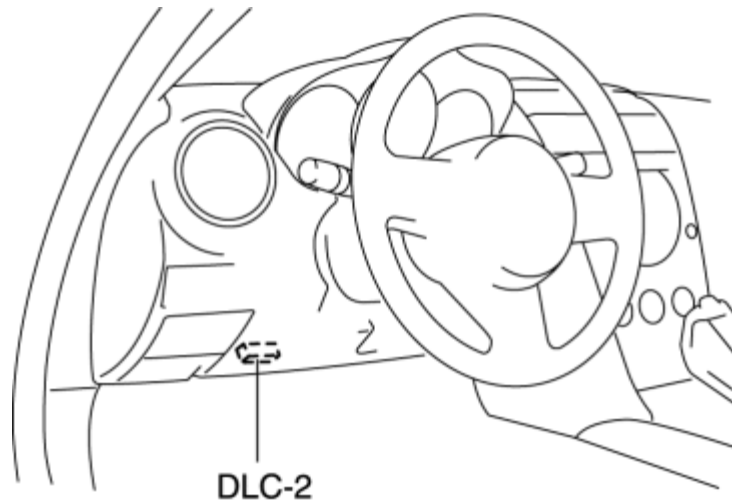
[Back to Top](#)

2011 - RX-8 - Engine

KOEO/KOER SELF TEST [13B-MSP]

KOEO self test

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 - Select "Self Test".
 - Select "Modules".
 - Select "PCM".
- When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "PCM".
 - Select "Self Test".

3. Then, select the "KOEO On Demand Self Test" and perform procedures according to directions on the M-MDS screen.

4. Verify the DTC according to the directions on the M-MDS screen.

- If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.

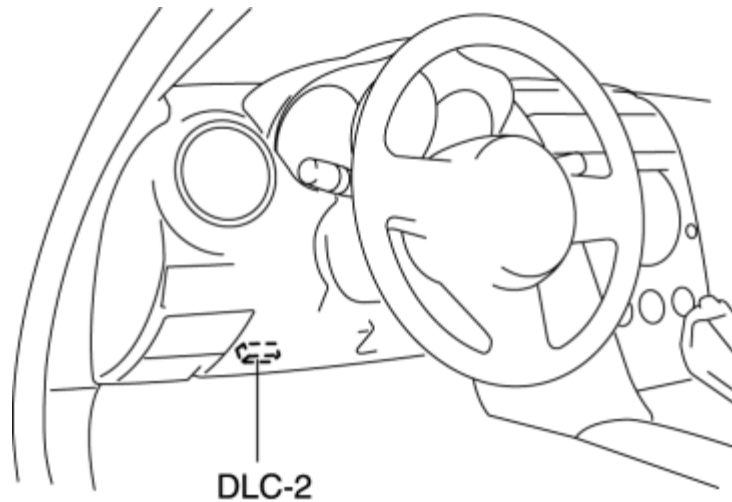
5. After completion of repairs, clear all DTCs stored in the PCM, while referring to "AFTER REPAIR PROCEDURE".

KOER self test

NOTE:

- Warm up until the engine coolant temperature (ECT PID) is **80 °C {176 °F} or more** before performing "KOER self test".

1. Connect the M-MDS to the DLC-2.



2. Idle the engine.

3. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 - Select "Self Test".
 - Select "Modules".
 - Select "PCM".
- When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "PCM".
 - Select "Self Test".

4. Then, select the "KOER On Demand Self Test" and perform procedures according to directions on the M-MDS screen.

5. Verify the DTC according to the directions on the M-MDS screen.

- If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.

6. After completion of repairs, clear all DTCs stored in the PCM, while referring to "AFTER REPAIR PROCEDURE".

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

OBD-II DRIVE MODE [13B-MSP]

- Using the OBD-II drive mode, the monitoring item requested by OBD-II regulations can be easily diagnosed.
- Performing the Drive Mode inspects the OBD-II system for proper operation and must be performed to ensure that no additional DTCs are present.
- The OBD-II drive mode is divided into the specific drive mode and single drive mode.
- For the specific drive mode, specified drive modes have been set for each individual monitoring item requested by OBD-II regulations, and they can be diagnosed individually. For the single drive mode, the entire monitoring item requested by OBD-II regulations can be diagnosed.
- The following modes are in the specific drive mode. The applicable system is diagnosed by driving in the following drive modes.
 - Mode 3 (A/F sensor heater, HO2S heater, A/F sensor, HO2S, and TWC Repair Verification Drive Mode)
 - Mode 5 (AIR System Repair Verification Drive Mode)
 - Mode 6 (EVAP System Repair Verification Drive Mode)
- The following systems are diagnosed with the single drive mode.
 - A/F sensor heater, HO2S heater
 - A/F sensor, HO2S
 - TWC
 - AIR System
 - EVAP System

CAUTION:

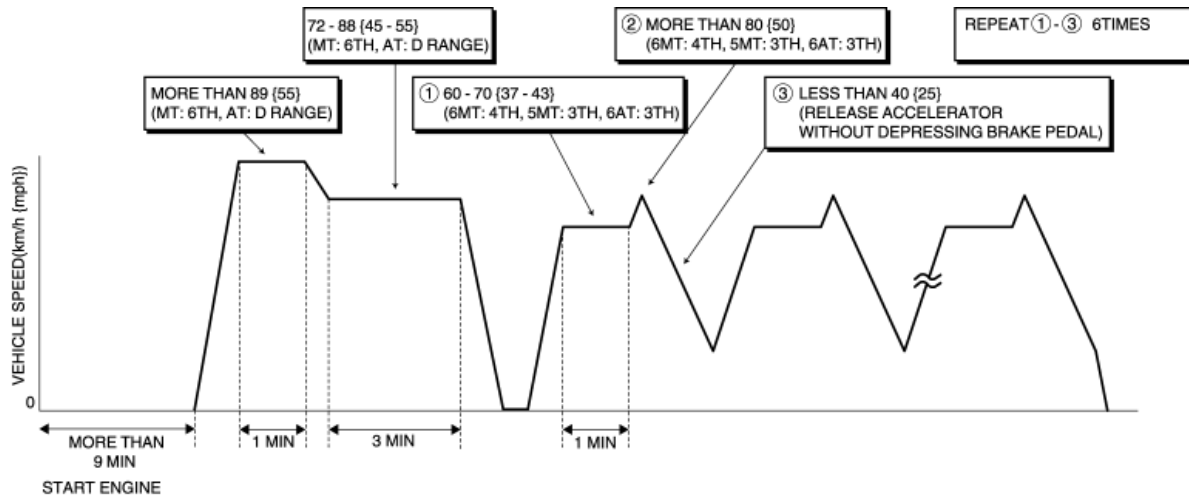
- While performing the Drive Mode, always operate the vehicle in a safe and lawful manner.
- When the M-MDS is used to observe monitor system status while driving, be sure to have another technician with you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD function and inspect later.

NOTE:

- Vehicle speed and engine speed detected by the PCM may differ from that indicated by the speedometer and tachometer. Use the M-MDS to monitor vehicle speed and engine speed.
- If the OBD-II system inspection is not completed during the Drive Mode, the following causes are considered:
 - The OBD-II system detected a malfunction.
 - The Drive Mode procedure was not completed correctly.
- Disconnecting the battery will reset the memory. Do not disconnect the battery during and after the Drive Mode.
- The M-MDS can be used at anytime through the course of the Drive Mode to monitor the completion status. Monitoring can be done by viewing the ON BOARD SYSTEM READINESS menu.
- The RFC diagnostic status can be confirmed with the Ignition switch operation. During KOEO, the MIL illuminates for a fail-light inspection for **approx. 17 s**. The RFC diagnostic status is confirmed after the fail-light inspection.
 - If all of the RFC diagnostic is completed even one time, the MIL will continue to illuminate.
 - If all of the RFC diagnostic is not completed, the MIL flashes for **approx. 7 s**, and then it illuminates until the engine is started.

Mode 3 (A/F sensor heater, HO2S heater, A/F sensor, HO2S, and TWC Repair Verification Drive Mode)

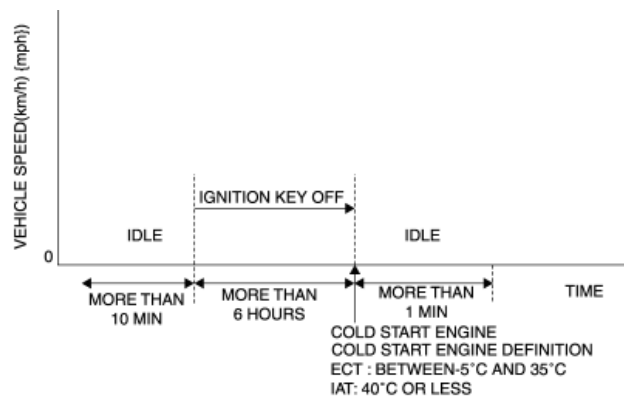
1. Verify that all accessory loads (A/C, headlights, blower fan, rear window defroster) are off.
2. Drive the vehicle as shown in the graph. The driving condition before driving at constant speed is not specified.



3. Stop the vehicle and access the ON BOARD SYSTEM READINESS to inspect the Drive Mode completion status.
 - If completed, RFC changes from No to Yes.
 - If not completed, turn the ignition switch off, then go back to Step 2.
4. Access the DIAGNOSTIC MONITORING TEST RESULTS to inspect the monitor results.
 - If detect values are not within specification, repair has not been completed.
5. Verify that no DTCs are available.

Mode 5 (AIR System Repair Verification Drive Mode)

1. Verify that all accessory loads (A/C, headlights, blower fan, rear window defroster) are off.
2. Drive the vehicle as shown in the graph. The driving condition before driving at constant speed is not specified.



3. Stop the vehicle and access the ON BOARD SYSTEM READINESS to inspect the Drive Mode completion status.
 - If completed, RFC changes from No to Yes.
 - If not completed, turn the ignition switch off, then go back to Step 2.
4. Access the DIAGNOSTIC MONITORING TEST RESULTS to inspect the monitor results.
 - If detect values are not within specification, repair has not been completed.
5. Verify that no DTCs are available.

Mode 6 (EVAP System Repair Verification Drive Mode)

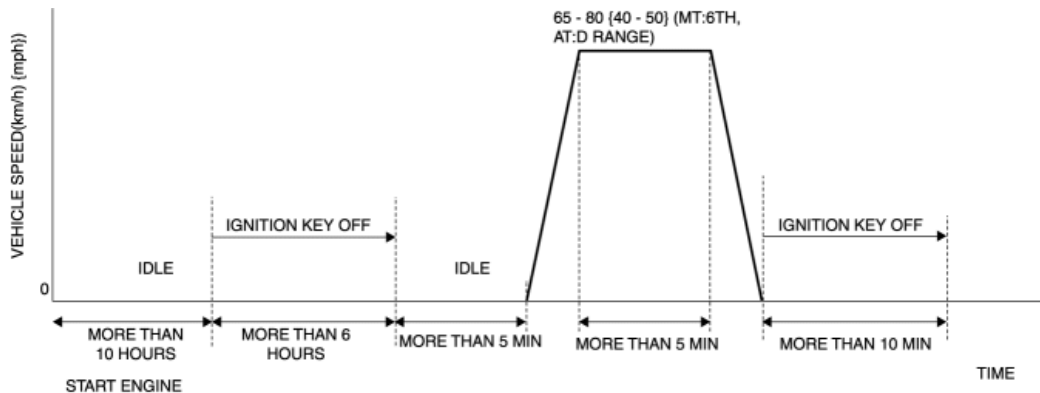
NOTE:

- If the Mode 6 cannot be performed (you cannot drive the vehicle under the Mode 6 condition), perform the “Evaporative System Test” as an alternative. (See [ENGINE CONTROL SYSTEM OPERATION INSPECTION \[13B-MSP\].](#))

NOTE:

- If the Mode 6 cannot be performed (you cannot drive the vehicle under the Mode 6 condition), perform the “Evaporative System Test” as an alternative. (See [ENGINE CONTROL SYSTEM OPERATION INSPECTION \[13B-MSP\].](#))

1. Drive the vehicle as shown in the graph. The driving condition before driving at constant speed is not specified.



2. Stop the vehicle and access the ON BOARD SYSTEM READINESS to inspect the Drive Mode completion status.

- If completed, RFC changes from No to Yes.
- If not completed, turn the ignition switch off, then go back to Step 1.

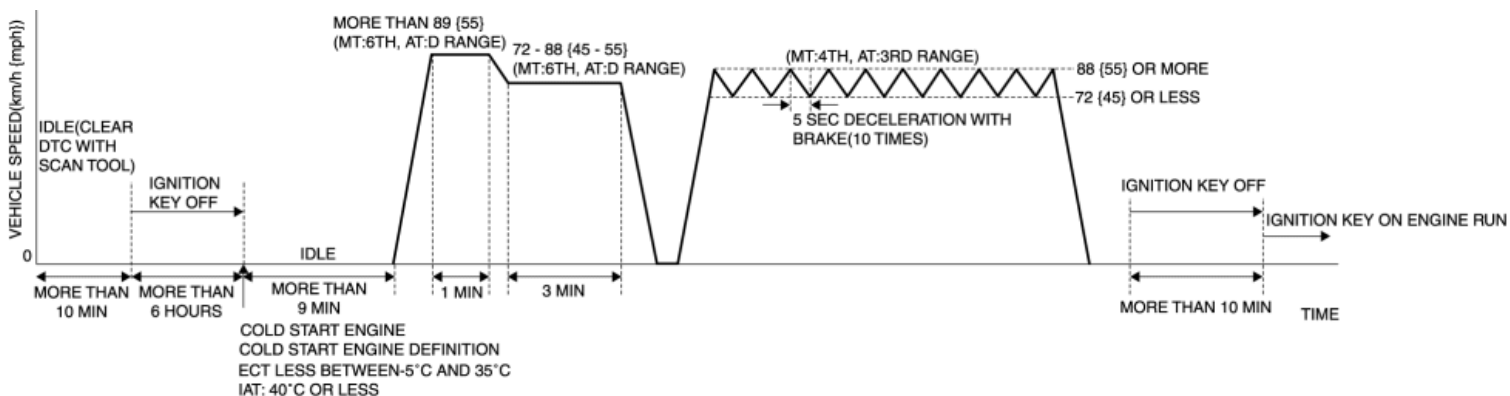
3. Access the DIAGNOSTIC MONITORING TEST RESULTS to inspect the monitor results.

- If detect values are not within specification, repair has not been completed.

4. Verify that no DTCs are available.

Single Drive Mode

1. Verify that all accessory loads (A/C, headlights, blower fan, rear window defroster) are off.
2. Clear the DTC and from the PCM memory using the M-MDS.
3. Drive the vehicle as shown in the graph. The driving condition before driving at constant speed is not specified.



4. Stop the vehicle and access the ON BOARD SYSTEM READINESS to inspect the Drive Mode completion status.

- If completed, all of RFC changes from No to Yes.

If not completed, turn the ignition switch off, then for the monitoring item that was not in the detection condition, perform the applicable specific drive mode.

5. Access the DIAGNOSTIC MONITORING TEST RESULTS to inspect the monitor results.

- If detect values are not within specification, repair has not been completed.

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

DIAGNOSTIC MONITORING TEST RESULTS [13B-MSP]

- The purpose of this test mode is to confirm the result of OBD-II monitor diagnostic test results. The result values stored when a particular monitor is completed are displayed. If the monitor is not completed, the initial value is displayed.

OBD monitor ID	Test ID	Description	Related system	Scaling ID	Unit
01	80	Response lean to rich	A/F sensor	20	Ratio
01	81	Response rich to lean		20	Ratio
01	82	Response lean to rich delayed		10	Time
01	83	Response rich to lean delayed		10	Time
02	03	Low sensor voltage for switch time calculation	HO2S	0A	Voltage
02	04	High sensor voltage for switch time calculation		0A	Voltage
02	05	Rich to lean sensor switching time		10	Time
02	80	Response timeout		10	Time
21	80	Rear to front switching ratio	Catalyst	20	Ratio
3A	80	Large leak check	EVAP system	0D	Current
3B	80	Small leak check		0D	Current
3C* ¹	80	Very small leak check		05	Raw value

3D	80	Purge flow monitor		0D	Current
41	80	Oxygen sensor heater monitor bank 1 sensor 1	A/F sensor heater	13	Mohm
42	80	Oxygen sensor heater monitor bank 1 sensor 2	HO2S heater	14	Ohm
71	80	Secondary air functional check	AIR system	10	Time
71	81	Secondary air flow rate check		86	Raw value
A2	0B	Exponentially weighted moving average misfire counts for last 10 driving cycles (front rotor)	Misfire	24	Counts
A2	0C	Misfire counts for last/current driving cycles (front rotor)		24	Counts
A3	0B	Exponentially weighted moving average misfire counts for last 10 driving cycles (rear rotor)		24	Counts
A3	0C	Misfire counts for last/current driving cycles (rear rotor)		24	Counts

*1

California emission regulation applicable model

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

DTC TABLE [13B-MSP]

×: Applicable—: Not applicable

DTC No.	Condition	MIL	Generator warning light	DC	Monitor item ^{*1}	Self test type ^{*2}	Memory function	Page
B1342	PCM malfunction	—	OFF	—	—	C, O	—	(See DTC B1342 [13B-MSP].)
P0030	A/F sensor heater control circuit problem	ON	OFF	2	A/F sensor heater, HO2S heater	C, O, R	×	(See DTC P0030 [13B-MSP].)
P0031	A/F sensor heater control circuit low input	ON	OFF	2	A/F sensor heater, HO2S heater	C, O, R	×	(See DTC P0031 [13B-MSP].)
P0032	A/F sensor heater control circuit high input	ON	OFF	2	A/F sensor heater, HO2S heater	C, O, R	×	(See DTC P0032 [13B-MSP].)
P0037	HO2S heater control circuit low input	ON	OFF	2	A/F sensor heater, HO2S heater	C, O, R	×	(See DTC P0037 [13B-MSP].)
P0038	HO2S heater control circuit high input	ON	OFF	2	A/F sensor heater, HO2S heater	C, O, R	×	(See DTC P0038 [13B-MSP].)
P0053	A/F sensor heater performance fail	ON	OFF	2	A/F sensor heater, HO2S	C, R	×	(See DTC P0053 [13B-MSP].)

					heater			
P0054	HO2S heater performance fail	ON	OFF	2	A/F sensor heater, HO2S heater	C, R	×	(See DTC P0054 [13B-MSP].)
P0076*6	VDI solenoid valve control circuit low input	OFF	OFF	2	Other	C, O, R	×	(See DTC P0076 [13B-MSP].)
P0077*6	VDI solenoid valve control circuit high input	OFF	OFF	2	Other	C, O, R	×	(See DTC P0077 [13B-MSP].)
P0101	MAF sensor circuit range/performance problem	ON	OFF	2	CCM	C	×	(See DTC P0101 [13B-MSP].)
P0102	MAF sensor circuit low input	ON	OFF	1	CCM	C, O, R	×	(See DTC P0102 [13B-MSP].)
P0103	MAF sensor circuit high input	ON	OFF	1	CCM	C, O, R	×	(See DTC P0103 [13B-MSP].)
P0107	BARO sensor circuit low input	ON	OFF	1	CCM	C, O, R	×	(See DTC P0107 [13B-MSP].)
P0108	BARO sensor circuit high input	ON	OFF	1	CCM	C, O, R	×	(See DTC P0108 [13B-MSP].)
P0111	IAT sensor circuit range/performance problem	ON	OFF	2	CCM	C	×	(See DTC P0111 [13B-MSP].)
P0112	IAT sensor circuit low input	ON	ON	1	CCM	C, O, R	×	(See DTC P0112 [13B-MSP].)
P0113	IAT sensor circuit high input	ON	ON	1	CCM	C, O, R	×	(See DTC P0113 [13B-MSP].)
P0116	ECT sensor circuit range/performance problem	ON	OFF	2	Engine cooling system	C	×	(See DTC P0116 [13B-MSP].)
P0117	ECT sensor circuit low input	ON	OFF	1	CCM	C, O, R	×	(See DTC P0117 [13B-MSP].)

P0118	ECT sensor circuit high input	ON	OFF	1	CCM	C, O, R	×	(See DTC P0118 [13B-MSP].)
P0122	TP sensor No.1 circuit low input	ON	OFF	1	CCM	C, O, R	×	(See DTC P0122 [13B-MSP].)
P0123	TP sensor No.1 circuit high input	ON	OFF	1	CCM	C, O, R	×	(See DTC P0123 [13B-MSP].)
P0125	Insufficient coolant temperature for closed loop fuel control	ON	OFF	2	Engine cooling system	C	×	(See DTC P0125 [13B-MSP].)
P0126	Insufficient coolant temperature for stable operation	ON	OFF	2	Thermostat	C	×	(See DTC P0126 [13B-MSP].)
P0130	A/F sensor circuit problem	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See DTC P0130 [13B-MSP].)
P0131	A/F sensor circuit low input	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See DTC P0131 [13B-MSP].)
P0132	A/F sensor circuit high input	ON	OFF	2	A/F sensor, HO2S	C, O, R	×	(See DTC P0132 [13B-MSP].)
P0133	A/F sensor circuit slow response	ON	OFF	2	A/F sensor, HO2S	C	×	(See DTC P0133 [13B-MSP].)
P0134	A/F sensor no activity detected	ON	OFF	2	A/F sensor, HO2S	C, R	×	(See DTC P0134 [13B-MSP].)
P0137	HO2S circuit low input	ON	OFF	2	A/F sensor, HO2S	C	×	(See DTC P0137 [13B-MSP].)
P0138	HO2S circuit high input	ON	OFF	2	A/F sensor, HO2S	C, R	×	(See DTC P0138 [13B-MSP].)
P0139	HO2S circuit slow response	ON	OFF	2	A/F sensor, HO2S	C, R	×	(See DTC P0139 [13B-MSP].)
P0171	System too lean	ON	OFF	2	Fuel system	C, R	×	(See DTC P0171 [13B-MSP].)

P0172	System too rich	ON	OFF	2	Fuel system	C, R	×	(See DTC P0172 [13B-MSP].)
P0222	TP sensor No.2 circuit low input	ON	OFF	1	CCM	C, O, R	×	(See DTC P0222 [13B-MSP].)
P0223	TP sensor No.2 circuit high input	ON	OFF	1	CCM	C, O, R	×	(See DTC P0223 [13B-MSP].)
P0300	Random misfire detected	Flash/ON	OFF	1 or 2	Misfire	C	×	(See DTC P0300 [13B-MSP].)
P0301	Front rotor misfire detected	Flash/ON	OFF	1 or 2	Misfire	C	×	(See DTC P0301, P0302 [13B-MSP].)
P0302	Rear rotor misfire detected	Flash/ON	OFF	1 or 2	Misfire	C	×	
P0327	KS No.1 circuit low input	ON	OFF	1	CCM	C, O, R	×	(See DTC P0327 [13B-MSP].)
P0328	KS No.1 circuit high input	ON	OFF	1	CCM	C, O, R	×	(See DTC P0328 [13B-MSP].)
P0332	KS No.2 circuit low input	ON	OFF	1	CCM	C, O, R	×	(See DTC P0332 [13B-MSP].)
P0333	KS No.2 circuit high input	ON	OFF	1	CCM	C, O, R	×	(See DTC P0333 [13B-MSP].)
P0335	Eccentric shaft position sensor circuit problem	ON	OFF	1	CCM	C	×	(See DTC P0335 [13B-MSP].)
P0336	Eccentric shaft position sensor circuit range/performance problem	ON	OFF	1	CCM	C, R	×	(See DTC P0336 [13B-MSP].)
P0410	Secondary air injection system problem	ON	OFF	2	AIR system	C, R	×	(See DTC P0410, P0411 [13B-MSP].)
P0411	Secondary air injection system	ON	OFF	2	AIR system	C	×	

	incorrect upstream flow							
P0420	Catalyst system efficiency below threshold	ON	OFF	2	Catalyst	C	×	(See DTC P0420 [13B-MSP].)
P0441	EVAP system incorrect purge flow	ON	OFF	2	EVAP system	C, R	×	(See DTC P0441 [13B-MSP].)
P0442	EVAP system leak detected (small leak)	ON	OFF	2	EVAP system	C, R	×	(See DTC P0442, P0455, P0456 [13B-MSP].)
P0443	Purge solenoid valve circuit problem	ON	OFF	2	CCM	C, R	×	(See DTC P0443 [13B-MSP].)
P0446	EVAP system vent control circuit problem	ON	OFF	2	EVAP system	C, R	×	(See DTC P0446 [13B-MSP].)
P0455	EVAP system leak detected (large leak)	ON	OFF	2	EVAP system	C, R	×	(See DTC P0442, P0455, P0456 [13B-MSP].)
P0456 *3	EVAP system leak detected (very small leak)	ON	OFF	2	EVAP system	C, R	×	(See DTC P0442, P0455, P0456 [13B-MSP].)
P0461	Fuel gauge sender unit (main) circuit range/performance problem	ON	OFF	2	CCM	C	×	(See DTC P0461 [13B-MSP].)
P0462	Fuel gauge sender unit (main) circuit low input	ON	OFF	2	CCM	C, O, R	×	(See DTC P0462 [13B-MSP].)
P0463	Fuel gauge sender unit (main) circuit high input	ON	OFF	2	CCM	C, O, R	×	(See DTC P0463 [13B-MSP].)
P0480	Cooling fan relay No.1 control circuit problem	OFF	OFF	2	Other	C, O, R	×	(See DTC P0480 [13B-MSP].)
P0481	Cooling fan relay No.2 and No.3 control circuit problem	OFF	OFF	2	Other	C, O, R	×	(See DTC P0481 [13B-MSP].)
P0482	Cooling fan relay No.4 and No.5 control circuit problem	OFF	OFF	2	Other	C, O, R	×	(See DTC P0482 [13B-MSP].)

P0500	VSS circuit problem	ON	OFF	2	CCM	C	×	(See DTC P0500 [13B-MSP].)
P0505*8	IAC system problem	OFF	OFF	—	—	R	—	(See DTC P0505 [13B-MSP].)
P0506	IAC system RPM lower than expected	ON	OFF	2	CCM	C	×	(See DTC P0506 [13B-MSP].)
P0507	IAC system RPM higher than expected	ON	OFF	2	CCM	C	×	(See DTC P0507 [13B-MSP].)
P050A	Cold start IAC system performance	ON	OFF	2	CSERS	C	×	(See DTC P050A [13B-MSP].)
P0522	Oil pressure sensor circuit low input	OFF	OFF	1	Other	C, R	×	(See DTC P0522 [13B-MSP].)
P0523	Oil pressure sensor circuit high input	OFF	OFF	1	Other	C, R	×	(See DTC P0523 [13B-MSP].)
P0562	System voltage low (KAM)	ON	OFF	1	CCM	C, O, R	×	(See DTC P0562 [13B-MSP].)
P0564	Cruise control switch input circuit problem	OFF	OFF	1	Other	C, O, R	×	(See DTC P0564 [13B-MSP].)
P0571	Brake switch input circuit problem	OFF	OFF	1	Other	C, O, R	×	(See DTC P0571 [13B-MSP].)
P0601	PCM memory check sum error	ON	OFF	1	CCM	C, O, R	×	(See DTC P0601 [13B-MSP].)
P0602	PCM programming error	ON	OFF	1	CCM	C, O, R	×	(See DTC P0602 [13B-MSP].)
P0604	PCM RAM error	ON	OFF	1	CCM	C, O, R	×	(See DTC P0604 [13B-MSP].)
P0606	PCM processor error	ON	OFF	1	CCM	C, O, R	×	(See DTC P0606 [13B-MSP].)
						C, O,		(See DTC P0610)

P0610	PCM vehicle options error	ON	OFF	1	CCM	R	×	[13B-MSP].)
P0638	Throttle actuator control circuit range/performance problem	ON	OFF	1	CCM	C	×	(See DTC P0638 [13B-MSP].)
P0661	SSV solenoid valve control circuit low	ON	OFF	2	CCM	C, O, R	×	(See DTC P0661 [13B-MSP].)
P0662	SSV solenoid valve control circuit high	ON	OFF	2	CCM	C, O, R	×	(See DTC P0662 [13B-MSP].)
P0703	Brake switch input circuit problem	ON	OFF	2	CCM	C	×	(See DTC P0703 [13B-MSP].)
P0704 ^{*4}	CPP switch input circuit problem	ON	OFF	2	CCM	C	×	(See DTC P0704 [13B-MSP].)
P0850 ^{*4}	Neutral switch input circuit problem	ON	OFF	2	CCM	C	×	(See DTC P0850 [13B-MSP].)
P1260	Immobilizer system problem	OFF	OFF	1	Other	C, O	—	(See DTC P1260 [13B-MSP].)
P1680	OCV circuit low input	OFF ^{*7}	OFF	1	Other	C, R	×	(See DTC P1680 [13B-MSP].)
P1681	OCV circuit high input	OFF ^{*7}	OFF	1	Other	C, R	×	(See DTC P1681 [13B-MSP].)
P1682	Metering oil pump No.1 circuit low input	OFF ^{*7}	OFF	1	Other	C, R	×	(See DTC P1682 [13B-MSP].)
P1683	Metering oil pump No.1 circuit high input	OFF ^{*7}	OFF	1	Other	C, R	×	(See DTC P1683 [13B-MSP].)
P1684	Metering oil pump oil pressure sensor—oil pressure is low	OFF ^{*7}	OFF	1	Other	C, R	×	(See DTC P1684 [13B-MSP].)
P1685	Metering oil pump oil pressure sensor—oil pressure is high	OFF ^{*7}	OFF	1	Other	C, R	×	(See DTC P1685 [13B-MSP].)
P1686	Metering oil pump No.2 circuit low input	OFF ^{*7}	OFF	1	Other	C, R	×	(See DTC P1686 [13B-MSP].)

P1687	Metering oil pump No.2 circuit high input	OFF*7	OFF	1	Other	C, R	×	(See DTC P1687 [13B-MSP].)
P2004	APV stuck open (No.1)	ON	OFF	2	CCM	C, O, R	×	(See DTC P2004 [13B-MSP].)
P2005	APV stuck open (No.2)	ON	OFF	2	CCM	C, O, R	×	(See DTC P2005 [13B-MSP].)
P2006	APV stuck closed (No.1)	ON	OFF	2	CCM	C, O, R	×	(See DTC P2006 [13B-MSP].)
P2007	APV stuck closed (No.2)	ON	OFF	2	CCM	C, O, R	×	(See DTC P2007 [13B-MSP].)
P2009	APV motor control circuit low input	ON	OFF	2	CCM	C, O, R	×	(See DTC P2009 [13B-MSP].)
P2010	APV motor control circuit high input	ON	OFF	2	CCM	C, O, R	×	(See DTC P2010 [13B-MSP].)
P2067	Fuel gauge sender unit (sub) circuit low input	ON	OFF	2	CCM	C, O, R	×	(See DTC P2067 [13B-MSP].)
P2068	Fuel gauge sender unit (sub) circuit high input	ON	OFF	2	CCM	C, O, R	×	(See DTC P2068 [13B-MSP].)
P2070	SSV stuck open	ON	OFF	2	CCM	C, O, R	×	(See DTC P2070 [13B-MSP].)
P2071	SSV stuck closed	ON	OFF	2	CCM	C, O, R	×	(See DTC P2071 [13B-MSP].)
P2096	Target A/F feedback system too lean	ON	OFF	2	Fuel system	C, R	×	(See DTC P2096 [13B-MSP].)
P2097	Target A/F feedback system too rich	ON	OFF	2	Fuel system	C, R	×	(See DTC P2097 [13B-MSP].)
P2101	Throttle actuator circuit range/performance	ON	OFF	1	CCM	C, O, R	×	(See DTC P2101 [13B-MSP].)

P2107	Throttle actuator control module processor error	ON	OFF	1	CCM	C, O, R	×	(See DTC P2107 [13B-MSP].)
P2108	Throttle actuator control module performance error	ON	OFF	1	CCM	C	×	(See DTC P2108 [13B-MSP].)
P2109	TP sensor minimum stop range/performance problem	ON	OFF	1	CCM	C	×	(See DTC P2109 [13B-MSP].)
P2112	Throttle actuator control system range/performance problem	ON	OFF	1	CCM	C	×	(See DTC P2112 [13B-MSP].)
P2119	Throttle actuator control throttle body range/performance problem	ON	OFF	2	CCM	C, O, R	×	(See DTC P2119 [13B-MSP].)
P2122	APP sensor No.1 circuit low input	ON	OFF	1	CCM	C, O, R	×	(See DTC P2122 [13B-MSP].)
P2123	APP sensor No.1 circuit high input	ON	OFF	1	CCM	C, O, R	×	(See DTC P2123 [13B-MSP].)
P2127	APP sensor No.2 circuit low input	ON	OFF	1	CCM	C, O, R	×	(See DTC P2127 [13B-MSP].)
P2128	APP sensor No.2 circuit high input	ON	OFF	1	CCM	C, O, R	×	(See DTC P2128 [13B-MSP].)
P2135	TP sensor No.1/No.2 voltage correlation problem	ON	OFF	1	CCM	C, O, R	×	(See DTC P2135 [13B-MSP].)
P2138	APP sensor No.1/No.2 voltage correlation problem	ON	OFF	1	CCM	C, O, R	×	(See DTC P2138 [13B-MSP].)
P2195	A/F sensor signal stuck lean	ON	OFF	2	A/F sensor, HO2S	C, R	×	(See DTC P2195 [13B-MSP].)
P2196	A/F sensor signal stuck rich	ON	OFF	2	A/F sensor, HO2S	C, R	×	(See DTC P2196 [13B-MSP].)
P2257	AIR pump relay control circuit low	ON	OFF	2	AIR system	C, O, R	×	(See DTC P2257 [13B-MSP].)

P2258	AIR pump relay control circuit high	ON	OFF	2	AIR system	C, O, R	×	(See DTC P2258 [13B-MSP].)
P2259	AIR solenoid valve control circuit low	ON	OFF	2	AIR system	C, O, R	×	(See DTC P2259 [13B-MSP].)
P2260	AIR solenoid valve control circuit high	ON	OFF	2	AIR system	C, O, R	×	(See DTC P2260 [13B-MSP].)
P2270	HO2S signal stuck lean	ON	OFF	2	A/F sensor, HO2S	C, R	×	(See DTC P2270 [13B-MSP].)
P2271	HO2S signal stuck rich	ON	OFF	2	A/F sensor, HO2S	C, R	×	(See DTC P2271 [13B-MSP].)
P2299	Accelerator pedal: spring back malfunction	OFF	OFF	1	Other	C, R	×	(See DTC P2299 [13B-MSP].)
P2401	EVAP system leak detection pump control circuit low	ON	OFF	2	EVAP system	C, O, R	×	(See DTC P2401 [13B-MSP].)
P2402	EVAP system leak detection pump control circuit high	ON	OFF	2	EVAP system	C, O, R	×	(See DTC P2402 [13B-MSP].)
P2404	EVAP system leak detection pump sense circuit range/performance problem	ON	OFF	2	EVAP system	C	×	(See DTC P2404 [13B-MSP].)
P2405	EVAP system leak detection pump sense circuit low	ON	OFF	2	EVAP system	C, O, R	×	(See DTC P2405 [13B-MSP].)
P2407	EVAP system leak detection pump sense circuit intermittent/erratic problem	ON	OFF	2	EVAP system	C, O, R	×	(See DTC P2407 [13B-MSP].)
P2502	Charging system voltage problem	OFF	ON	1	Other	C, R	×	(See DTC P2502 [13B-MSP].)
P2503	Charging system voltage low	OFF	ON	1	Other	C, R	×	(See DTC P2503 [13B-MSP].)
P2504	Charging system voltage high	OFF	ON	1	Other	C, R	×	(See DTC P2504 [13B-MSP].)

U0073	CAN system communication error	OFF	OFF	1	Other	C, O, R	×	(See FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U0101 ^{*5}	Communication error to TCM	ON	OFF	1	Other	C, O, R	×	
U0121	Communication error to ABS HU/CM or DSC HU/CM	ON	OFF	1	Other	C, O, R	×	
U0155	Communication error to instrument cluster	ON	OFF	1	Other	C, O, R	×	
U0167	Communication error to keyless control module	ON	OFF	1	Other	C, O, R	×	

*1

Indicates the applicable item in the On Board System Readiness Test as defined by CARB

*2

C: CMDTC self test, O: KOEO self test, R: KOER self test

*3

California emission regulation applicable model

*4

MT

*5

AT

*6

13B-MSP (high power)

*7

Oil level warning light flashes

*8

KOER self test only

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

DTC P0030 [13B-MSP]

DTC P0030	A/F sensor heater control circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the A/F sensor impedance when under the A/F sensor heater control for 190 s. If the impedance is more than 44 ohms while PCM turns A/F sensor heater on, the PCM determines that there is a A/F sensor heater control circuit problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (A/F sensor heater, HO2S heater). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/F sensor connector or terminals malfunction A/F sensor heater malfunction PCM connector or terminals malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED	<div>Yes</div> Go to the next step.
	<ul style="list-style-type: none"> Have the FREEZE FRAME DATA 	<div>No</div> Record the FREEZE FRAME DATA (Mode

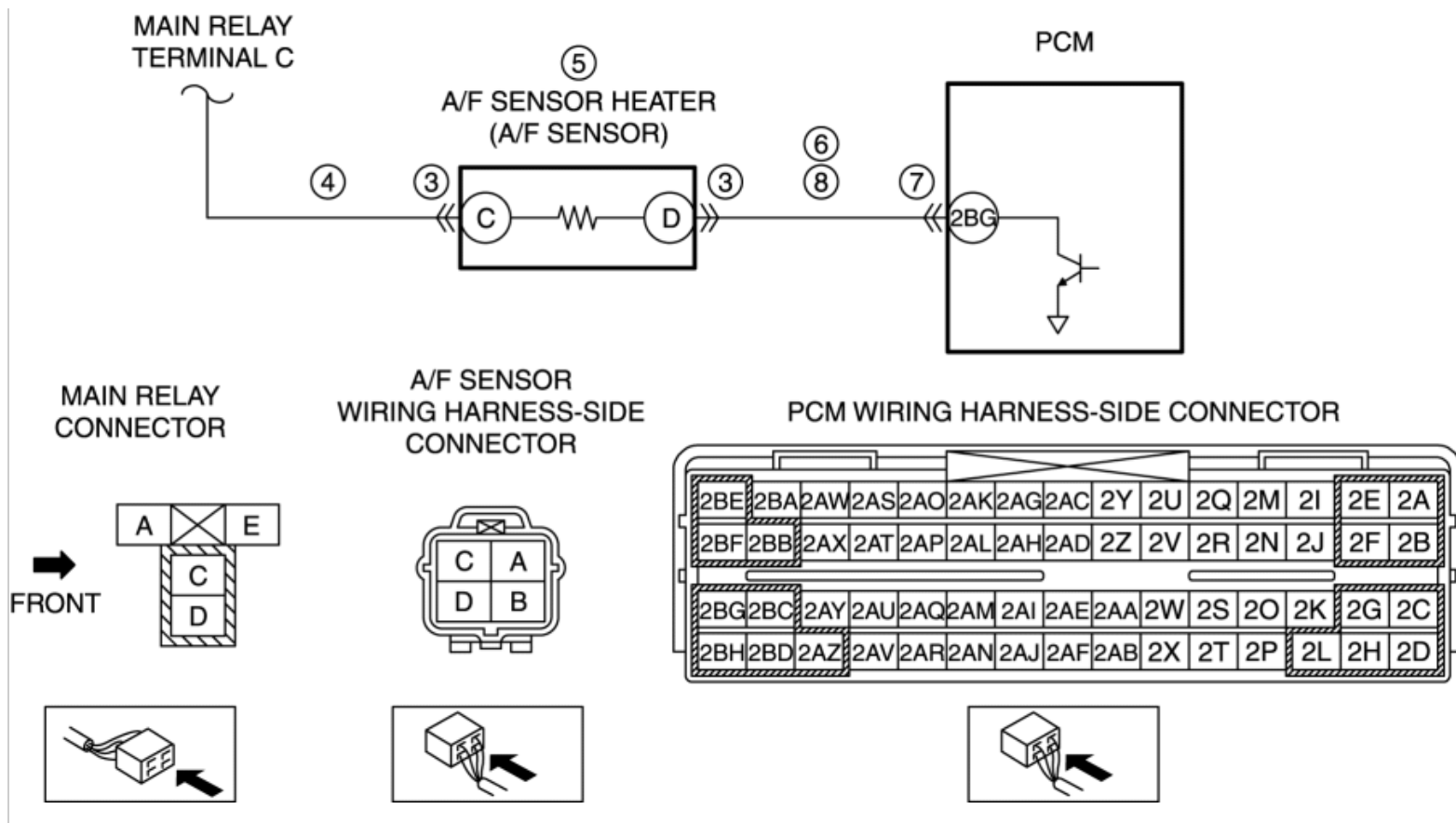
	(Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater, HO2S heater related) been recorded?		12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. 	
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> Turn the ignition switch off, then to the ON position (engine off). Verify the related PENDING CODE or stored DTCs. Are other DTCs present? 	Yes Go to the appropriate DTC inspection. (See DTC TABLE [13B-MSP].)	
		No	Go to the next step.
4	INSPECT A/F SENSOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the A/F sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 7.	
		No	Go to the next step.
5	INSPECT A/F SENSOR HEATER <ul style="list-style-type: none"> Inspect the A/F sensor heater. (See AIR FUEL RATIO (A/F) SENSOR INSPECTION [13B-MSP].) Is there any malfunction? 	Yes Replace the A/F sensor, then go to Step 7. (See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP].)	
		No	Go to the next step.
6	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and 	Yes Repair or replace the connector and/or terminals, then go to the next step.	
		No	Go to the next step.

	corrosion).		
	<ul style="list-style-type: none">Is there any malfunction?		
7	VERIFY TROUBLESHOOTING OF DTC P0030 COMPLETED <ul style="list-style-type: none">Make sure to reconnect all disconnected connectors.Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].)Perform the DRIVE MODE 3. (See OBD-II DRIVE MODE [13B-MSP].)Is the PENDING CODE same as the DTC present?	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].)Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0031 [13B-MSP]

DTC P0031	A/F sensor heater control circuit low input
DETECTION CONDITION	<ul style="list-style-type: none">The input voltage to the A/F sensor heater drive terminal in the PCM is at the set value or less for 1 s or more even though the A/F sensor heater is duty-controlled at under 90% by the PCM. <p>Diagnostic support note</p> <ul style="list-style-type: none">This is a continuous monitor (A/F sensor heater, HO2S heater).The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.FREEZE FRAME DATA (Mode 2/Mode 12) is available.The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">A/F sensor connector or terminals malfunctionShort to ground or open circuit in A/F sensor heater power supply circuit<ul style="list-style-type: none">Short to ground in wiring harness between main relay terminal C and A/F sensor terminal CA/F sensor heater related fuse malfunctionOpen circuit in wiring harness between main relay terminal C and A/F sensor terminal CA/F sensor heater malfunctionShort to ground in wiring harness between A/F sensor terminal D and PCM terminal 2BGPCM connector or terminals malfunctionOpen circuit in wiring harness between A/F sensor terminal D and PCM terminal 2BGPCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater, HO2S heater related) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT A/F SENSOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the A/F sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 9.
		No Go to the next step.

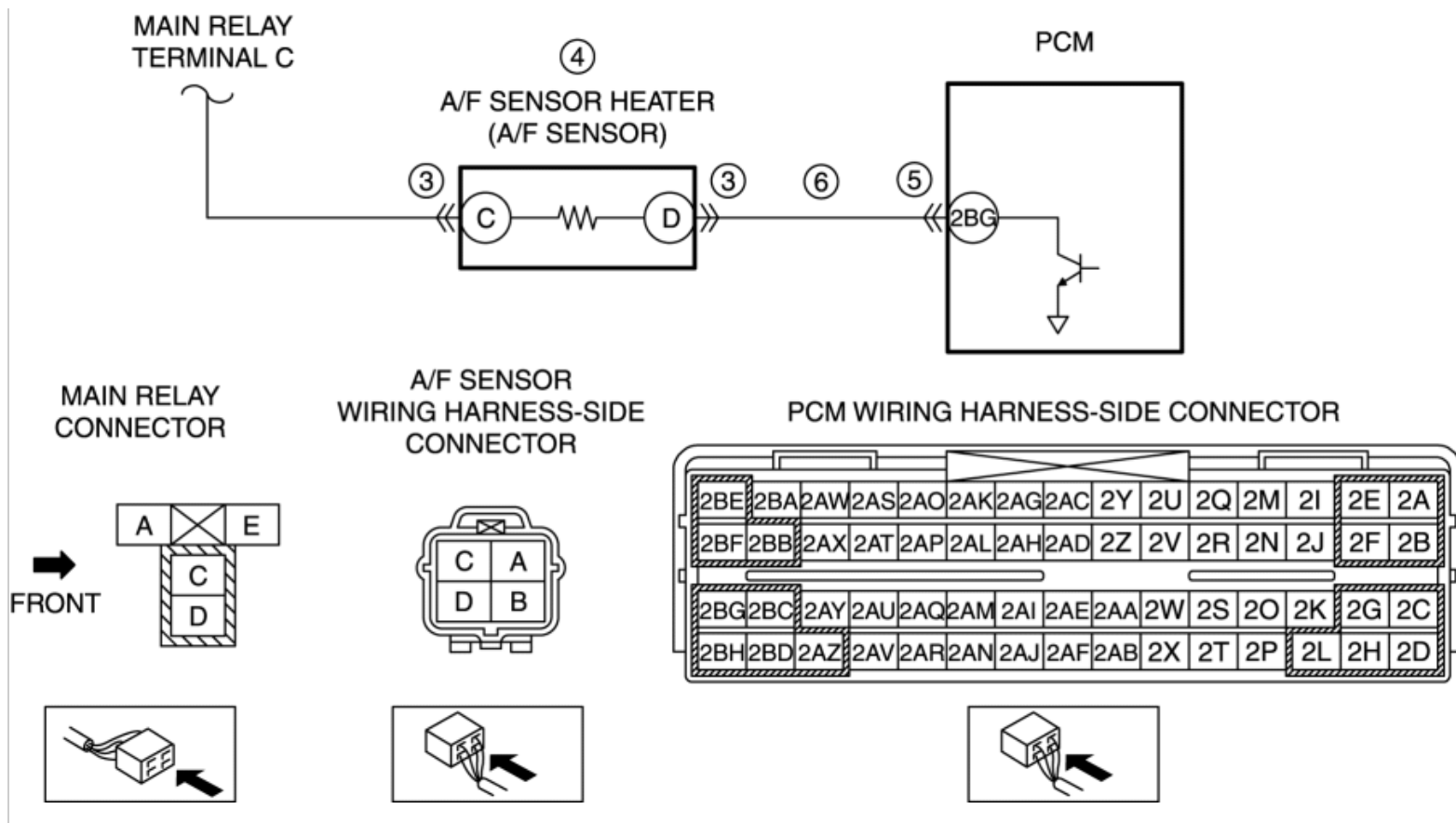
4	INSPECT A/F SENSOR HEATER POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • A/F sensor connector is disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between A/F sensor terminal C (wiring harness-side) and body ground. • Is the voltage B+? 	<p>Yes Go to the next step.</p> <p>No Inspect the A/F sensor heater related fuse.</p> <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> ▪ Repair or replace the wiring harness for a possible short to ground. ▪ Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> ▪ Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> ▪ Repair or replace the wiring harness for a possible open circuit. <p>Go to Step 9.</p>
5	INSPECT A/F SENSOR HEATER <ul style="list-style-type: none"> • Inspect the A/F sensor heater. (See AIR FUEL RATIO (A/F) SENSOR INSPECTION [13B-MSP].) • Is there any malfunction? 	<p>Yes Replace the A/F sensor, then go to Step 9. (See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
6	INSPECT A/F SENSOR HEATER CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • A/F sensor connector is disconnected. • Turn the ignition switch off. • Inspect for continuity between A/F sensor terminal D (wiring harness-side) and body ground. • Is there continuity? 	<p>Yes If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> • Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [13B-MSP].) <p>Go to Step 9.</p> <p>No Go to the next step.</p>
7	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 9.</p> <p>No Go to the next step.</p>

	<p>damaged/pulled-out pins, and corrosion).</p> <ul style="list-style-type: none"> Is there any malfunction? 		
8	<p>INSPECT A/F SENSOR HEATER CONTROL CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> A/F sensor and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between A/F sensor terminal D (wiring harness-side) and PCM terminal 2BG (wiring harness-side). Is there continuity? 	<p>Yes Go to the next step.</p> <p>No Repair or replace the wiring harness for a possible open circuit, then go to the next step.</p>	
9	<p>VERIFY TROUBLESHOOTING OF DTC P0031 COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the PENDING CODE same as the DTC present? 	<p>Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>	
10	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	<p>Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)</p> <p>No DTC troubleshooting completed.</p>	

2011 - RX-8 - Engine

DTC P0032 [13B-MSP]

DTC P0032	A/F sensor heater control circuit high input
DETECTION CONDITION	<ul style="list-style-type: none">• The input voltage to the A/F sensor heater drive terminal in the PCM is at the set value or more for 1 s or more even though the A/F sensor heater is duty-controlled at 10% or more by the PCM.• If the current flowing to the A/F sensor heater circuit in the PCM is high when the A/F sensor heater is off, the PCM detects DTC P0032. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (A/F sensor heater, HO2S heater).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• A/F sensor connector or terminals malfunction• A/F sensor heater malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between A/F sensor terminal D and PCM terminal 2BG• PCM malfunction



Diagnostic procedure

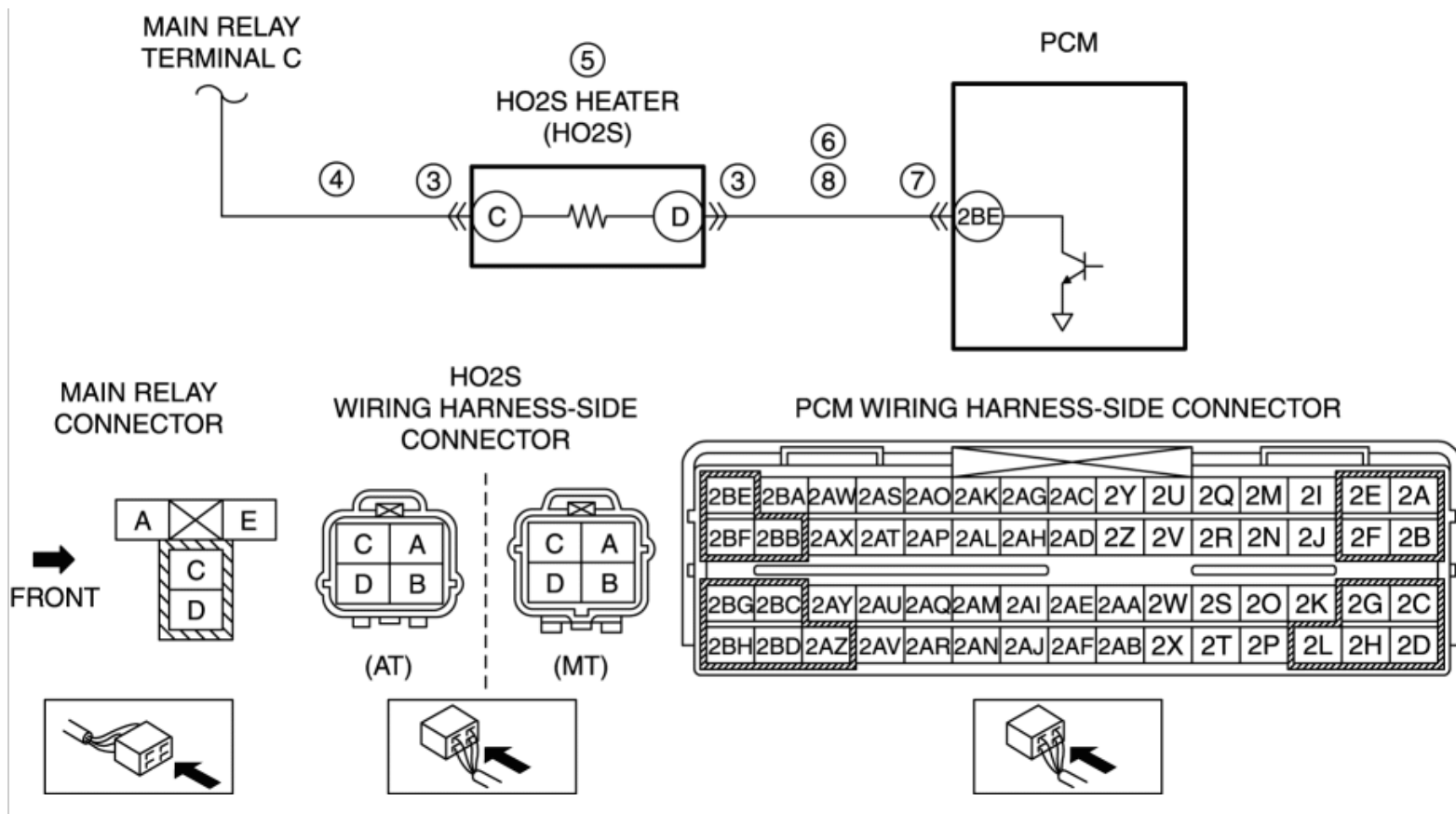
STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater, HO2S heater related) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT A/F SENSOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the A/F sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 7. No Go to the next step.

4	INSPECT A/F SENSOR HEATER <ul style="list-style-type: none"> Inspect the A/F sensor heater. (See AIR FUEL RATIO (A/F) SENSOR INSPECTION [13B-MSP].) Is there any malfunction? 	Yes Replace the A/F sensor, then go to Step 7. (See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP] .) No Go to the next step.
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 7. No Go to the next step.
6	INSPECT A/F SENSOR HEATER CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> A/F sensor and PCM connectors are disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between A/F sensor terminal D (wiring harness-side) and body ground. Is the voltage B+? 	Yes Repair or replace the wiring harness for a possible short to power supply, then go to the next step. No Go to the next step.
7	VERIFY TROUBLESHOOTING OF DTC P0032 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the PENDING CODE same as the DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP] .) No Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .) No DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0037 [13B-MSP]

DTC P0037	HO2S heater control circuit low input
DETECTION CONDITION	<ul style="list-style-type: none">The input voltage to the HO2S heater drive terminal in the PCM is at the set value or less for 0.5 s or more even though the HO2S heater is duty-controlled at under 90 % by the PCM. <p>Diagnostic support note</p> <ul style="list-style-type: none">This is a continuous monitor (A/F sensor heater, HO2S heater).The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.FREEZE FRAME DATA (Mode 2/Mode 12) is available.The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">HO2S connector or terminals malfunctionShort to ground or open circuit in HO2S heater power supply circuit<ul style="list-style-type: none">Short to ground in wiring harness between main relay terminal C and HO2S terminal CHO2S heater related fuse malfunctionOpen circuit in wiring harness between main relay terminal C and HO2S terminal CHO2S heater malfunctionShort to ground in wiring harness between HO2S terminal D and PCM terminal 2BEPCM connector or terminals malfunctionOpen circuit in wiring harness between HO2S terminal D and PCM terminal 2BEPCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater, HO2S heater related) been recorded? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.</p>
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
3	INSPECT HO2S CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the HO2S connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 9.</p> <p>No Go to the next step.</p>
	INSPECT HO2S HEATER POWER SUPPLY CIRCUIT FOR	

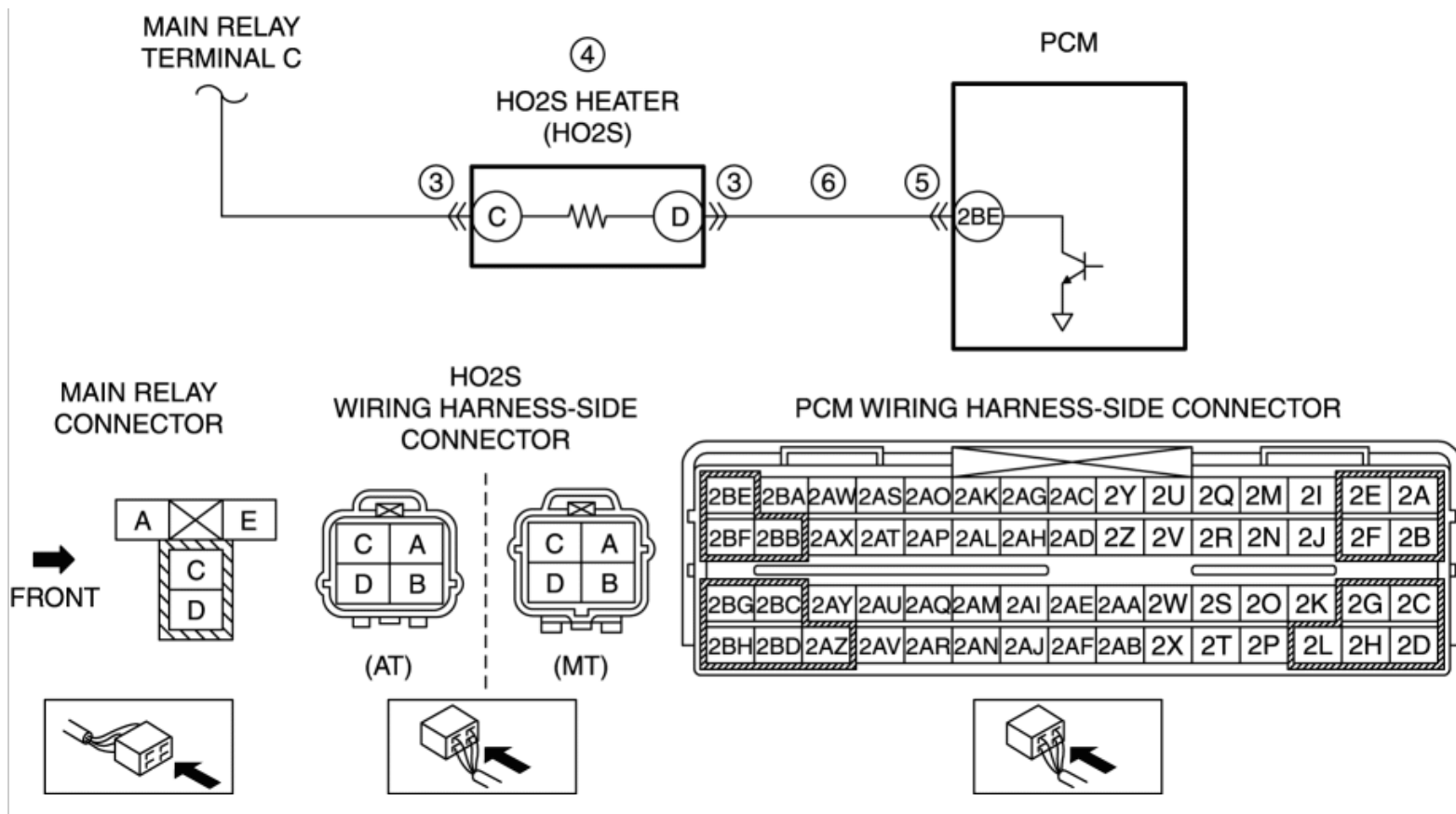
4	<p>SHORT TO GROUND OR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • HO2S connector is disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between HO2S terminal C (wiring harness-side) and body ground. • Is the voltage B+? 	<p>Yes Go to the next step.</p> <p>No Inspect the HO2S heater related fuse.</p> <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> ▪ Repair or replace the wiring harness for a possible short to ground. ▪ Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> ▪ Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> ▪ Repair or replace the wiring harness for a possible open circuit. <p>Go to Step 9.</p>
5	<p>INSPECT HO2S HEATER</p> <ul style="list-style-type: none"> • Inspect the HO2S heater. (See HEATED OXYGEN SENSOR (HO2S) INSPECTION [13B-MSP].) • Is there any malfunction? 	<p>Yes Replace the HO2S, then go to Step 9. (See HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
6	<p>INSPECT HO2S HEATER CONTROL CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • HO2S connector is disconnected. • Turn the ignition switch off. • Inspect for continuity between HO2S terminal D (wiring harness-side) and body ground. • Is there continuity? 	<p>Yes If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> • Replace the PCM (short to ground in the PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to Step 9.</p> <p>No Go to the next step.</p>
7	<p>INSPECT PCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 9.</p> <p>No Go to the next step.</p>

8	INSPECT HO2S HEATER CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • HO2S and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect for continuity between HO2S terminal D (wiring harness-side) and PCM terminal 2BE (wiring harness-side). • Is there continuity? 		Yes Go to the next step. No Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P0037 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) • Is the PENDING CODE same as the DTC present? 		Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].) No Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 		Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].) No DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0038 [13B-MSP]

DTC P0038	HO2S heater control circuit high input
DETECTION CONDITION	<ul style="list-style-type: none">• The input voltage to the HO2S heater drive terminal in the PCM is at the set value or more for 0.5 s or more even though the HO2S heater is duty-controlled at 10 % or more by the PCM.• If the current flowing to the HO2S heater circuit in the PCM is high when the HO2S heater is off, the PCM detects DTC P0038. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (A/F sensor heater, HO2S heater).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• HO2S connector or terminals malfunction• HO2S heater malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between HO2S terminal D and PCM terminal 2BE• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater, HO2S heater related) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT HO2S CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the HO2S connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 7. No Go to the next step.
	INSPECT HO2S HEATER	

4	<ul style="list-style-type: none"> Inspect the HO2S heater. (See HEATED OXYGEN SENSOR (HO2S) INSPECTION [13B-MSP].) Is there any malfunction? 	Yes Replace the HO2S, then go to Step 7. (See HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [13B-MSP].) No Go to the next step.
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 7. No Go to the next step.
6	INSPECT HO2S HEATER CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> HO2S and PCM connectors are disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between HO2S terminal D (wiring harness-side) and body ground. Is the voltage B+? 	Yes Repair or replace the wiring harness for a possible short to power supply, then go to the next step. No Go to the next step.
7	VERIFY TROUBLESHOOTING OF DTC P0038 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the PENDING CODE same as the DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].) No Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].) No DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0101 [13B-MSP]

DTC P0101	MAF sensor circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM compares the actual MAF amount with the expected MAF amount when the engine is running. <ul style="list-style-type: none"> If the throttle opening angle is more than 50% and the MAF amount is less than 9 g/s {1.2 lb/min} (less than 1.4 V), the PCM determines that there is a MAF sensor circuit range/performance problem. If the ECT is more than 70 °C {158 °F}, the engine speed is less than 2,000 rpm and the MAF amount is more than 65 g/s {8.6 lb/min} (more than 2.8 V), the PCM determines that there is a MAF sensor circuit range/performance problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAF sensor malfunction Eccentric shaft position sensor malfunction PCM malfunction

Diagnostic procedure

--	--	--

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED	Yes Go to the next step.
	<ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
	<ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	No Go to the next step.
3	VERIFY CURRENT INPUT SIGNAL STATUS	Yes Verify that the TP REL PID changes smoothly while gradually opening throttle valve. <ul style="list-style-type: none"> If it changes smoothly, go to Step 5. If it does not change smoothly, replace the throttle body and go to Step 5. (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)
	<ul style="list-style-type: none"> Start the engine. Access the TP REL and MAF PIDs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Read the MAF PID when the TP REL PID is more than 50 %. Is the MAF PID less than 9 g/s {1.2 lb/min}? 	No Go to the next step.
4	VERIFY CURRENT INPUT SIGNAL STATUS	Yes Go to Step 6.
	<ul style="list-style-type: none"> Start the engine. Access the ECT, RPM and MAF PIDs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Warm-up the engine until the ECT PID is more than 70 °C {158 °F}. Read the MAF PID when the RPM PID is less than 2,000 rpm. 	No Intermittent concern exists. Perform the "INTERMITTENT CONCERNS TROUBLESHOOTING". (See INTERMITTENT CONCERN TROUBLESHOOTING [13B-MSP].)

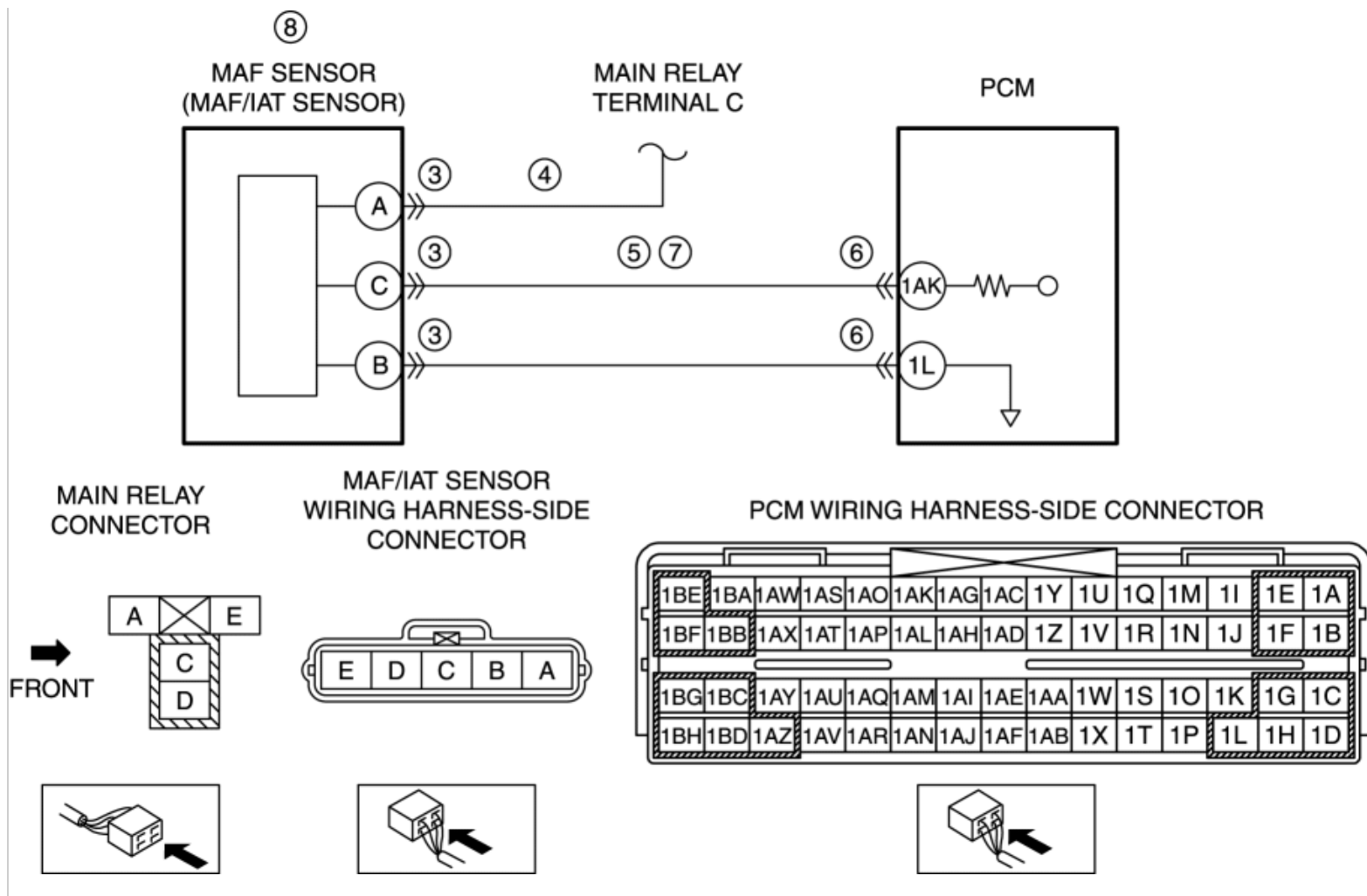
	<ul style="list-style-type: none"> Is the MAF PID more than 65 g/s {8.6 lb/min}? 		
5	VERIFY TROUBLESHOOTING OF DTC P0101 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Start the engine. Access the TP REL PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Drive the vehicle for 5 s or more when the TP REL PID is more than 50 %. Perform the Pending Trouble Code Access Procedure. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Is the PENDING CODE same as the DTC present? 	Yes Replace the PCM, then go to Step 9. (See PCM REMOVAL/INSTALLATION [13B-MSP] .)	
		No Go to Step 9.	
6	INSPECT MAF SENSOR <ul style="list-style-type: none"> Inspect the MAF sensor. (See MASS AIR FLOW (MAF) SENSOR INSPECTION [13B-MSP].) Is there any malfunction? 	Yes Replace the MAF/IAT sensor, then go to Step 8. (See MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR REMOVAL/INSTALLATION [13B-MSP] .)	
		No Go to the next step.	
7	INSPECT ECCENTRIC SHAFT POSITION SENSOR <ul style="list-style-type: none"> Inspect the eccentric shaft position sensor. (See ECCENTRIC SHAFT POSITION SENSOR INSPECTION [13B-MSP].) 	Yes Replace the eccentric shaft position sensor, then go to the next step. (See ECCENTRIC SHAFT POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP] .)	
		No Go to the next step.	

	<ul style="list-style-type: none"> Is there any malfunction? 		
8	VERIFY TROUBLESHOOTING OF DTC P0101 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Start the engine. Access the ECT and RPM PIDs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Warm-up the engine until the ECT PID is more than 70 °C {158 °F}. Drive the vehicle for 5 s or more when the RPM PID is less than 2,000 rpm. Perform the Pending Trouble Code Access Procedure. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Is the PENDING CODE same as the DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)	
		No DTC troubleshooting completed.	

2011 - RX-8 - Engine

DTC P0102 [13B-MSP]

DTC P0102	MAF sensor circuit low input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the MAF sensor when the engine is running. If the input voltage is less than 0.64 V, the PCM determines that the MAF sensor circuit input voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• MAF/IAT sensor connector or terminals malfunction• Short to ground or open circuit in MAF sensor power supply circuit<ul style="list-style-type: none">▪ Short to ground in wiring harness between main relay terminal C and MAF/IAT sensor terminal A▪ MAF/IAT sensor related fuse malfunction▪ Open circuit in wiring harness between main relay terminal C and MAF/IAT sensor terminal A• Short to ground in wiring harness between MAF/IAT sensor terminal C and PCM terminal 1AK• PCM connector or terminals malfunction• Open circuit in wiring harness between MAF/IAT sensor terminal C and PCM terminal 1AK• MAF sensor malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT MAF/IAT SENSOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the MAF/IAT sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). 	Yes Repair or replace the connector and/or terminals, then go to Step 9.
		No Go to the next step.

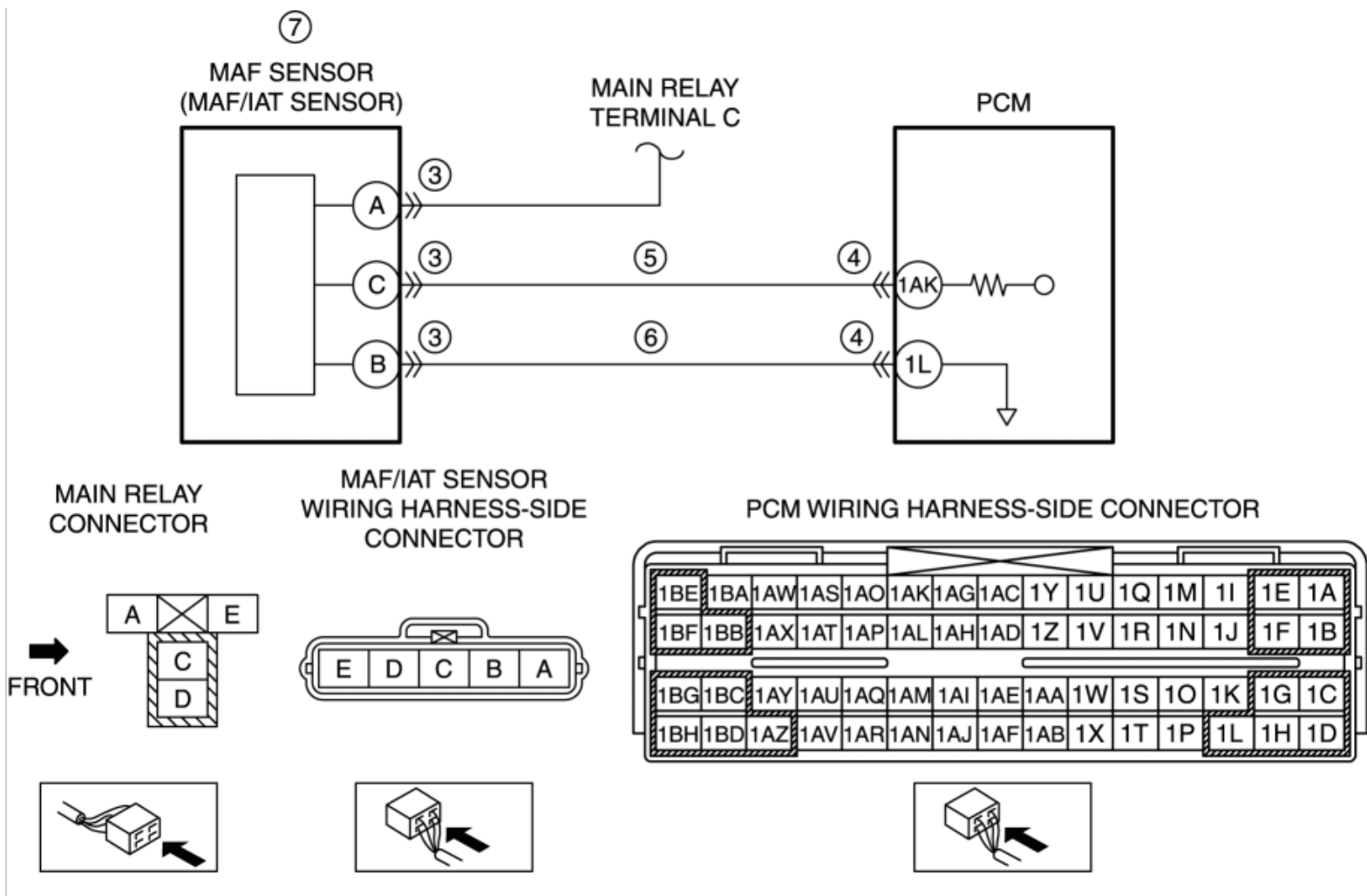
	<ul style="list-style-type: none"> Is there any malfunction? 		
4	INSPECT MAF SENSOR POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> MAF/IAT sensor connector is disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between MAF/IAT sensor terminal A (wiring harness-side) and body ground. Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the MAF/IAT sensor related fuse. <ul style="list-style-type: none"> If the fuse is melt: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. Replace the fuse. If the fuse is deterioration: <ul style="list-style-type: none"> Replace the fuse. If the fuse is normal: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
5	INSPECT MAF SENSOR SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> MAF/IAT sensor connector is disconnected. Turn the ignition switch off. Inspect for continuity between MAF/IAT sensor terminal C (wiring harness-side) and body ground. Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [13B-MSP] .) Go to Step 9.
		No	Go to the next step.
6	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.

7	INSPECT MAF SENSOR SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> MAF/IAT sensor and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between MAF/IAT sensor terminal C (wiring harness-side) and PCM terminal 1AK (wiring harness-side). Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
8	INSPECT MAF SENSOR <ul style="list-style-type: none"> Inspect the MAF sensor. (See MASS AIR FLOW (MAF) SENSOR INSPECTION [13B-MSP].) <ul style="list-style-type: none"> Is there any malfunction? 	Yes	Replace the MAF/IAT sensor, then go to the next step. (See MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P0102 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) <ul style="list-style-type: none"> Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) <ul style="list-style-type: none"> Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0103 [13B-MSP]

DTC P0103	MAF sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the MAF sensor when the engine is running. If the input voltage is more than 5.0 V, the PCM determines that the MAF sensor circuit input voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• MAF/IAT sensor connector or terminals malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between MAF/IAT sensor terminal C and PCM terminal 1AK• Open circuit in wiring harness between MAF/IAT sensor terminal B and PCM terminal 1L• MAF sensor malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	YesGo to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	YesPerform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT MAF/IAT SENSOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the MAF/IAT sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). 	YesRepair or replace the connector and/or terminals, then go to Step 8.
		No Go to the next step.

	<ul style="list-style-type: none"> Is there any malfunction? 		
4	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
5	INSPECT MAF SENSOR SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> MAF/IAT sensor and PCM connectors are disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between MAF/IAT sensor terminal C (wiring harness-side) and body ground. Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
6	INSPECT MAF SENSOR GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> MAF/IAT sensor and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between MAF/IAT sensor terminal B (wiring harness-side) and PCM terminal 1L (wiring harness-side). Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	INSPECT MAF SENSOR <ul style="list-style-type: none"> Inspect the MAF sensor. <p>(See MASS AIR FLOW (MAF) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	Replace the MAF/IAT sensor, then go to the next step.
			(See MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
8	VERIFY TROUBLESHOOTING OF DTC P0103 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p>	Yes	Replace the PCM, then go to the next step.
			(See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.

	<ul style="list-style-type: none">Is the same DTC present?		
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].)Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0107 [13B-MSP]

DTC P0107	BARO sensor circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the BARO sensor when the engine is running. If the input voltage is less than 2.09 V, the PCM determines that the BARO sensor circuit input voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> BARO sensor malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED	YesGo to the next step.
	<ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	NoRecord the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. 	YesPerform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.

	<ul style="list-style-type: none"> Is any related repair information available? 	No	Go to the next step.
3	INSPECT BARO SENSOR MALFUNCTION <ul style="list-style-type: none"> Start the engine. Access the BARO PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Inspect that the BARO PID within the specification. (See PCM INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
4	VERIFY TROUBLESHOOTING OF DTC P0107 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0108 [13B-MSP]

DTC P0108	BARO sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the BARO sensor when the engine is running. If the input voltage is more than 4.02 V, the PCM determines that the BARO sensor circuit input voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> BARO sensor malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED	YesGo to the next step.
	<ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	NoRecord the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. 	YesPerform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.

	<ul style="list-style-type: none"> Is any related repair information available? 	No	Go to the next step.
3	INSPECT BARO SENSOR MALFUNCTION <ul style="list-style-type: none"> Start the engine. Access the BARO PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Inspect that the BARO PID within the specification. (See PCM INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
4	VERIFY TROUBLESHOOTING OF DTC P0108 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0111 [13B-MSP]

DTC P0111	IAT sensor circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM compares the IAT with the ECT when the engine is running. If the IAT is higher than the ECT by 40 °C {72 °F}, the PCM determines that there is an IAT sensor circuit range/performance problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAF/IAT sensor connector or terminals malfunction IAT sensor malfunction PCM connector or terminals malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.</p>

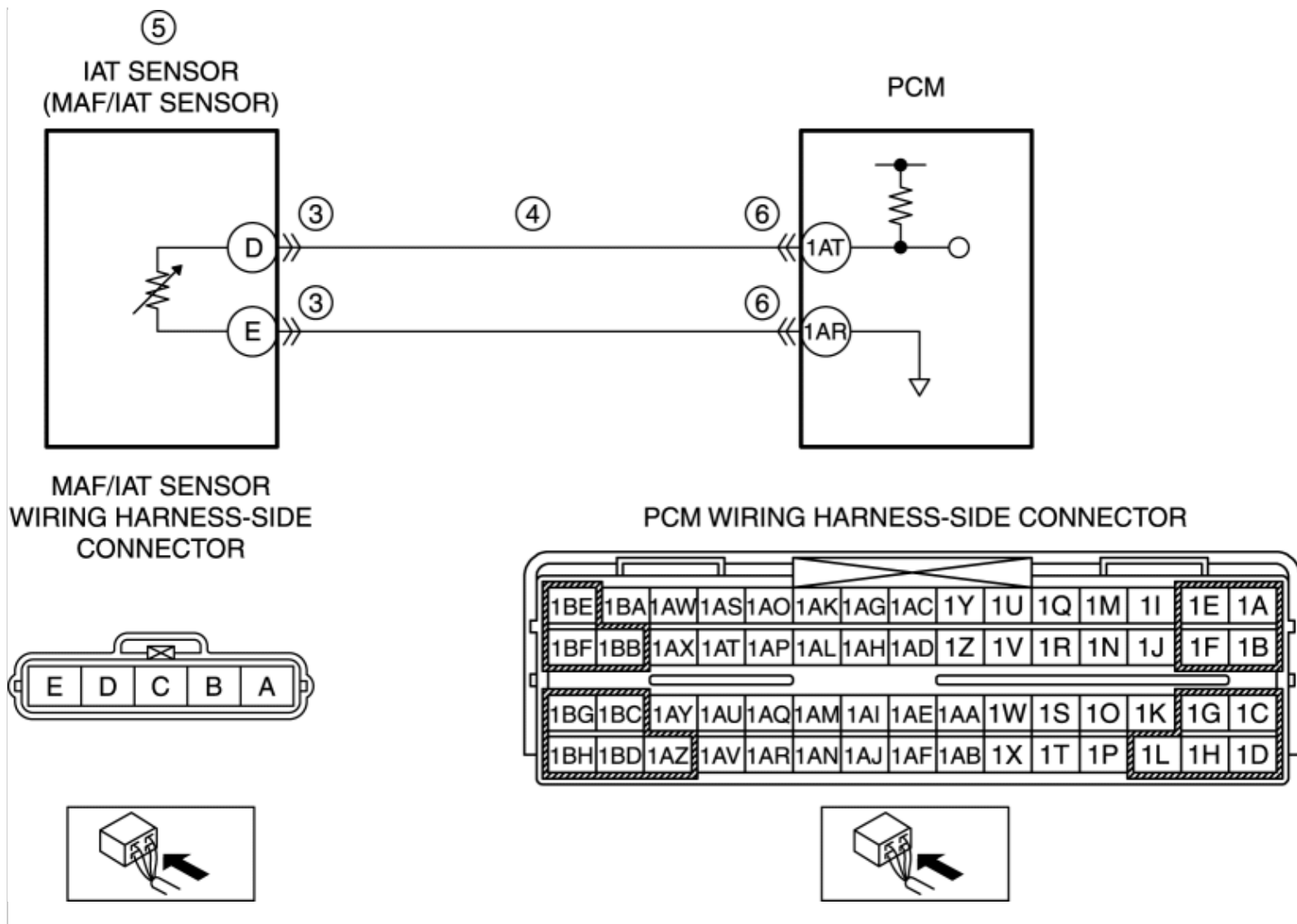
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
3	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> • Turn the ignition switch off, then to the ON position (engine off). • Verify the related PENDING CODE or stored DTCs. • Are other DTCs present? 	Yes	Go to the appropriate DTC inspection. (See DTC TABLE [13B-MSP].)
4	INSPECT MAF/IAT SENSOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the MAF/IAT sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
5	INSPECT IAT SENSOR <ul style="list-style-type: none"> • Inspect the IAT sensor. (See INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes	Replace the MAF/IAT sensor, then go to Step 7. (See MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
6	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection 	Yes	Repair or replace the connector and/or terminals, then go to the next step.
		No	Go to the next step.

	<p>(such as damaged/pulled-out pins, corrosion).</p> <ul style="list-style-type: none"> Is there any malfunction? 		
7	<p>VERIFY TROUBLESHOOTING OF DTC P0111 COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Start the engine and warm it up completely. Perform the Pending Trouble Code Access Procedure. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none"> Is the PENDING CODE same as the DTC present? 	<p>Yes Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>	
8	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	<p>Yes Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p> <p>No DTC troubleshooting completed.</p>	

2011 - RX-8 - Engine

DTC P0112 [13B-MSP]

DTC P0112	IAT sensor circuit low input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the IAT sensor when the engine is running. If the input voltage is less than 0.16 V, the PCM determines that the IAT sensor circuit input voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• MAF/IAT sensor connector or terminals malfunction• Short to ground in wiring harness between MAF/IAT sensor terminal D and PCM terminal 1AT• IAT sensor malfunction• PCM connector or terminals malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED	Yes Go to the next step.
	<ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY	Yes Perform repair or diagnosis according to the available repair information.
	<ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT MAF/IAT SENSOR CONNECTOR FOR POOR CONNECTION	Yes Repair or replace the connector and/or terminals, then go to Step 7.

	<ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the MAF/IAT sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 		No Go to the next step.
4	INSPECT IAT SENSOR SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • MAF/IAT sensor connector is disconnected. • Turn the ignition switch off. • Inspect for continuity between MAF/IAT sensor terminal D (wiring harness-side) and body ground. • Is there continuity? 	Yes	<p>If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> • Replace the PCM (short to ground in the PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to Step 7.</p>
		No	Go to the next step.
5	INSPECT IAT SENSOR <ul style="list-style-type: none"> • Inspect the IAT sensor. <p>(See INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	<p>Replace the MAF/IAT sensor, then go to Step 7.</p> <p>(See MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.
6	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to the next step.
		No	Go to the next step.
7	VERIFY TROUBLESHOOTING OF DTC P0112 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. 	Yes	<p>Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p>

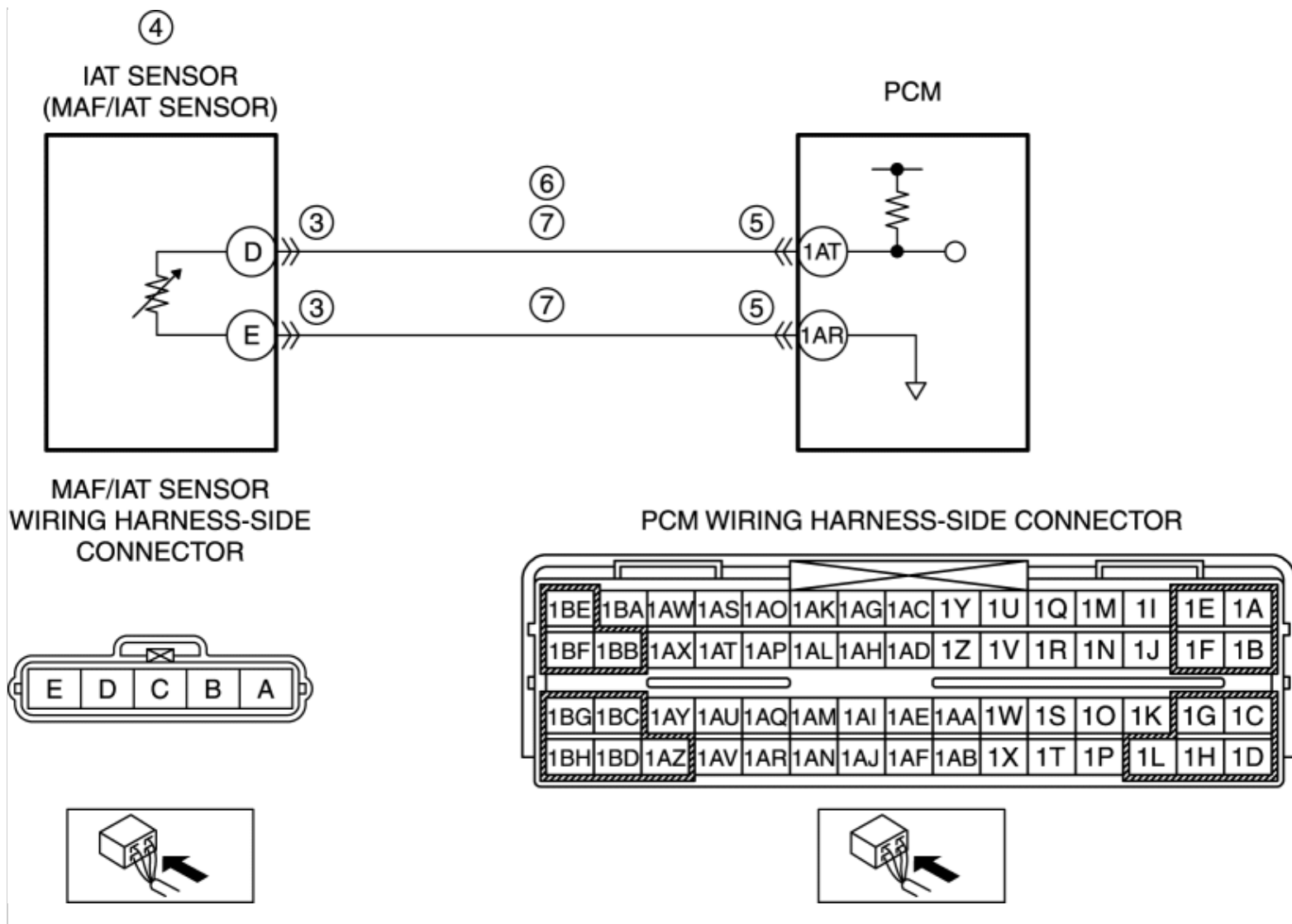
	<ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • Is the same DTC present? 	No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the “AFTER REPAIR PROCEDURE”. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

DTC P0113 [13B-MSP]

DTC P0113	IAT sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the IAT sensor when the engine is running. If the input voltage is more than 4.8 V, the PCM determines that the IAT sensor circuit input voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• MAF/IAT sensor connector or terminals malfunction• IAT sensor malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between MAF/IAT sensor terminal D and PCM terminal 1AT• Open circuit in wiring harness between MAF/IAT sensor terminal D and PCM terminal 1AT• Open circuit in wiring harness between MAF/IAT sensor terminal E and PCM terminal 1AR• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT MAF/IAT SENSOR CONNECTOR FOR POOR CONNECTION	Yes Repair or replace the connector and/or

	<ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the MAF/IAT sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 		terminals, then go to Step 8.
		No	Go to the next step.
4	INSPECT IAT SENSOR <ul style="list-style-type: none"> • Inspect the IAT sensor. <p>(See INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	Replace the MAF/IAT sensor, then go to Step 8.
			(See MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
6	INSPECT IAT SENSOR SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • MAF/IAT sensor and PCM connectors are disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between MAF/IAT sensor terminal D (wiring harness-side) and body ground. • Is the voltage more than 4.8 V? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
7	INSPECT IAT SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • MAF/IAT sensor and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> ▪ MAF/IAT sensor 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.

	<p>terminal D (wiring harness-side) and PCM terminal 1AT (wiring harness-side)</p> <ul style="list-style-type: none"> ■ MAF/IAT sensor terminal E (wiring harness-side) and PCM terminal 1AR (wiring harness-side) <ul style="list-style-type: none"> • Is there continuity? 		
8	<p>VERIFY TROUBLESHOOTING OF DTC P0113 COMPLETED</p> <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • Is the same DTC present? 	<p>Yes Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p>	
		<p>No Go to the next step.</p>	
9	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Are any DTCs present? 	<p>Yes Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p>	
		<p>No DTC troubleshooting completed.</p>	

2011 - RX-8 - Engine

DTC P0116 [13B-MSP]

DTC P0116	ECT sensor circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the maximum value and minimum value of engine coolant temperature when the engine is started and 5 min have been passed after leaving the vehicle 6 h or more. If difference between maximum and minimum values of engine coolant temperature is below 5.6 °C {42.1 °F} the PCM determines that there is an ECT circuit range/performance problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor. (engine cooling system) The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> ECT connector or terminals malfunction PCM connector or terminals malfunction ECT sensor malfunction Coolant thermostat malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2)	Yes Go to the next step.

	<ul style="list-style-type: none"> Is the DTC P0116 on FREEZE FRAME DATA (Mode 2)? 	No	Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [13B-MSP].)
2	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (engine cooling system related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	INSPECT ECT SENSOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect ECT sensor connector. Inspect for poor connection (such as damaged/ pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/ pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
6	INSPECT ECT SENSOR <ul style="list-style-type: none"> Inspect the ECT sensor. 	Yes	Replace the ECT sensor, then go to Step 8. (See ENGINE COOLANT TEMPERATURE

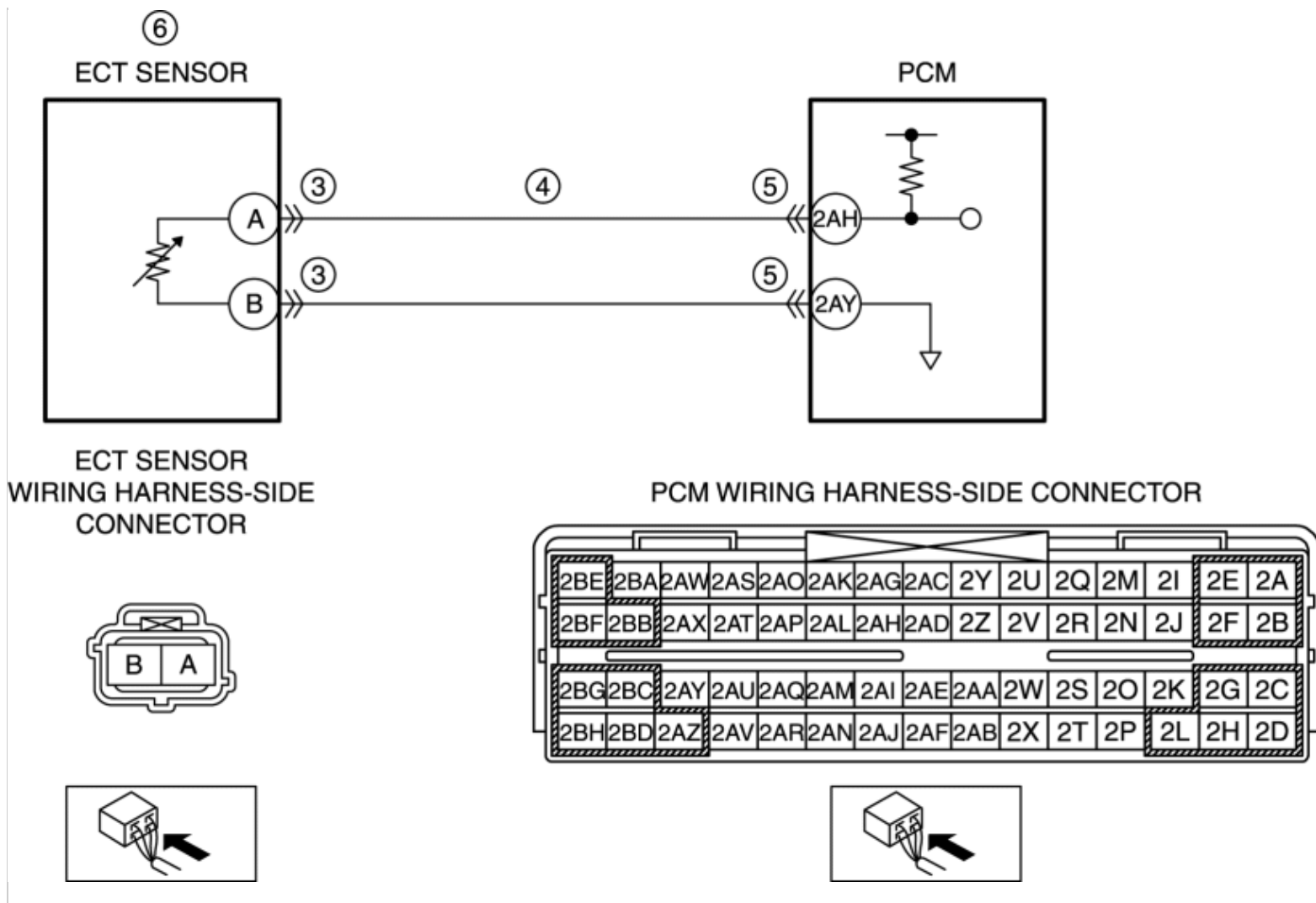
	<p>(See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none">• Is there any malfunction?	<p>(ECT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
7	<p>COMPARE ECT PID VALUE</p> <ul style="list-style-type: none">• Prepare a new ECT sensor.• Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Connect the ECT sensor connector to the new ECT sensor without installing to the engine.• Turn the ignition switch to the ON position and record the ECT PID value.• Replace the malfunction ECT sensor with new one.• Start the engine and wait for 5 min.• Record the ECT PID value.• Is the difference between ECT PID values more than 5.6 °C {42.1 °F}?	<p>Yes Go to the next step.</p> <p>No Inspect the thermostat.</p> <ul style="list-style-type: none">• If the thermostat is normal, go to the next step.• If the thermostat is not normal, replace the thermostat, then go to the next step. <p>(See THERMOSTAT REMOVAL/INSTALLATION [13B-MSP].)</p>
8	<p>VERIFY TROUBLESHOOTING OF DTC P0116 COMPLETED</p> <ul style="list-style-type: none">• Make sure to reconnect all disconnected connectors.• Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Start the engine and warm it up completely.• Perform the Pending Trouble Code Access Procedure. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none">• Is the PENDING CODE for this DTC	<p>Yes Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>

	present?		
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the “AFTER REPAIR PROCEDURE”. (See AFTER REPAIR PROCEDURE [13B-MSP].) <ul style="list-style-type: none">• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0117 [13B-MSP]

DTC P0117	ECT sensor circuit low input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the ECT sensor when the engine is running. If the input voltage is less than 0.2 V, the PCM determines that the ECT sensor circuit input voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Engine overheating• ECT sensor connector or terminals malfunction• Short to ground in wiring harness between ECT sensor terminal A and PCM terminal 2AH• PCM connector or terminals malfunction• ECT sensor malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT ECT SENSOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. 	Yes Repair or replace the connector and/or terminals, then go to Step 7.

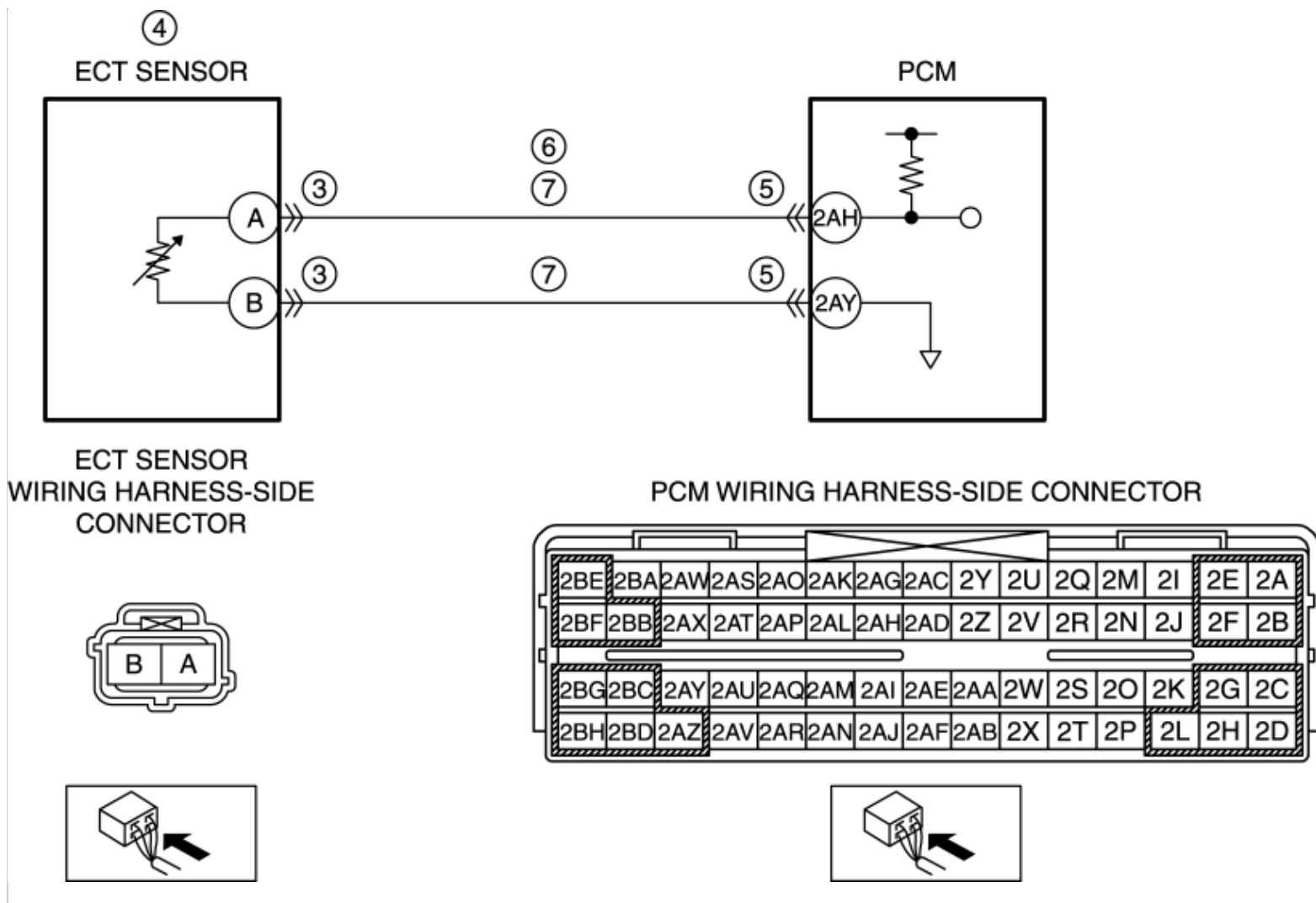
	<ul style="list-style-type: none"> • Disconnect the ECT sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	No	Go to the next step.
4	INSPECT ECT SENSOR SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • ECT sensor connector is disconnected. • Turn the ignition switch off. • Inspect for continuity between ECT sensor terminal A (wiring harness-side) and body ground. • Is there continuity? 	Yes	<p>If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> • Replace the PCM (short to ground in the PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to Step 7.</p>
		No	Go to the next step.
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
6	INSPECT ECT SENSOR <ul style="list-style-type: none"> • Inspect the ECT sensor. <p>(See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	<p>Replace the ECT sensor, then go to the next step.</p> <p>(See ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.
7	VERIFY TROUBLESHOOTING OF DTC P0117 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. 	Yes	<p>Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p>

	<ul style="list-style-type: none">• Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].)• Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].)• Is the same DTC present?	No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the “AFTER REPAIR PROCEDURE”. (See AFTER REPAIR PROCEDURE [13B-MSP].)• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0118 [13B-MSP]

DTC P0118	ECT sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the ECT sensor when the engine is running. If the input voltage is more than 4.8 V, the PCM determines that the ECT sensor circuit input voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• ECT sensor connector or terminals malfunction• ECT sensor malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between ECT sensor terminal A and PCM terminal 2AH• Open circuit in wiring harness between ECT sensor terminal A and PCM terminal 2AH• Open circuit in wiring harness between ECT sensor terminal B and PCM terminal 2AY• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT ECT SENSOR CONNECTOR FOR POOR CONNECTION	Yes Repair or replace the connector and/or

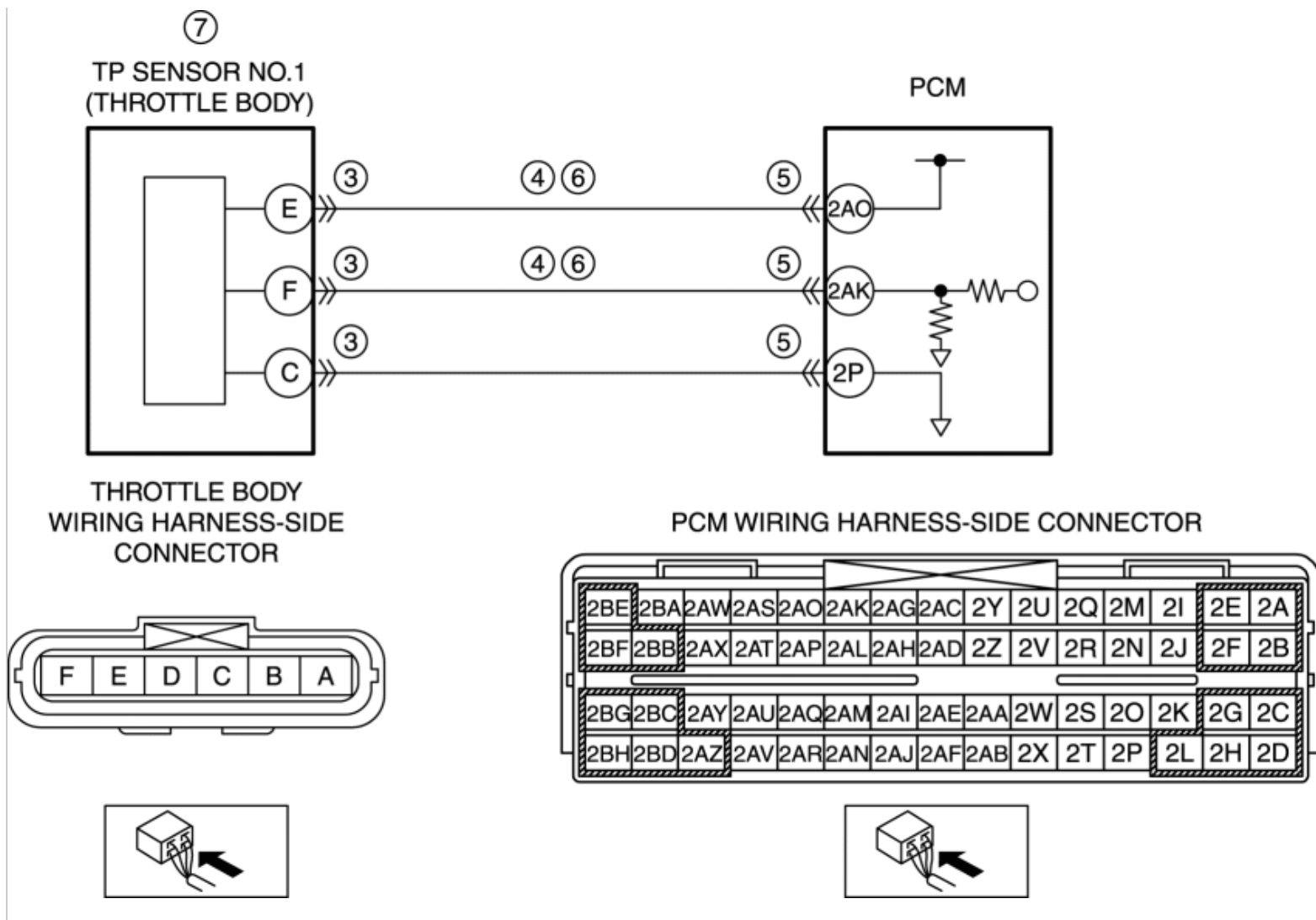
	<ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the ECT sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	terminals, then go to Step 8.
		No Go to the next step.
4	CLASSIFY ECT SENSOR MALFUNCTION OR WIRING HARNESS MALFUNCTION <ul style="list-style-type: none"> • Access the ECT PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) • Connect a jumper wire between ECT sensor terminal A and B (wiring harness-side). • Verify the ECT PID value. • Is the voltage 4.58 V or below? 	Yes Replace the ECT sensor, then go to Step 8. (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
		No Go to the next step.
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 8.
		No Go to the next step.
6	INSPECT ECT SENSOR SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • ECT sensor and PCM connectors are disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between ECT sensor terminal A (wiring harness-side) and body ground. • Is the voltage B+? 	Yes Repair or replace the wiring harness for a possible power supply, then go to Step 8.
		No Go to the next step.
7	INSPECT ECT SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • ECT sensor and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect for continuity between the following circuits: 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to the next step.

	<ul style="list-style-type: none"> ▪ ECT sensor terminal A (wiring harness-side) and PCM terminal 2AH (wiring harness-side) ▪ ECT sensor terminal B (wiring harness-side) and PCM terminal 2AY (wiring harness-side) <ul style="list-style-type: none"> • Is there continuity? 		
8	VERIFY TROUBLESHOOTING OF DTC P0118 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) • Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)	
		No DTC troubleshooting completed.	

2011 - RX-8 - Engine

DTC P0122 [13B-MSP]

DTC P0122	TP sensor No.1 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the TP sensor No.1 when the engine is running. If the input voltage is less than 0.3 V, the PCM determines that the TP sensor No.1 circuit input voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Throttle body connector or terminals malfunction• Short to ground in wiring harness between throttle body terminal E and PCM terminal 2AO• Short to ground in wiring harness between throttle body terminal F and PCM terminal 2AK• PCM connector or terminals malfunction• Open circuit in wiring harness between throttle body terminal E and PCM terminal 2AO• Open circuit in wiring harness between throttle body terminal F and PCM terminal 2AK• TP sensor No.1 malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT THROTTLE BODY CONNECTOR FOR POOR CONNECTION	Yes Repair or replace the connector and/or

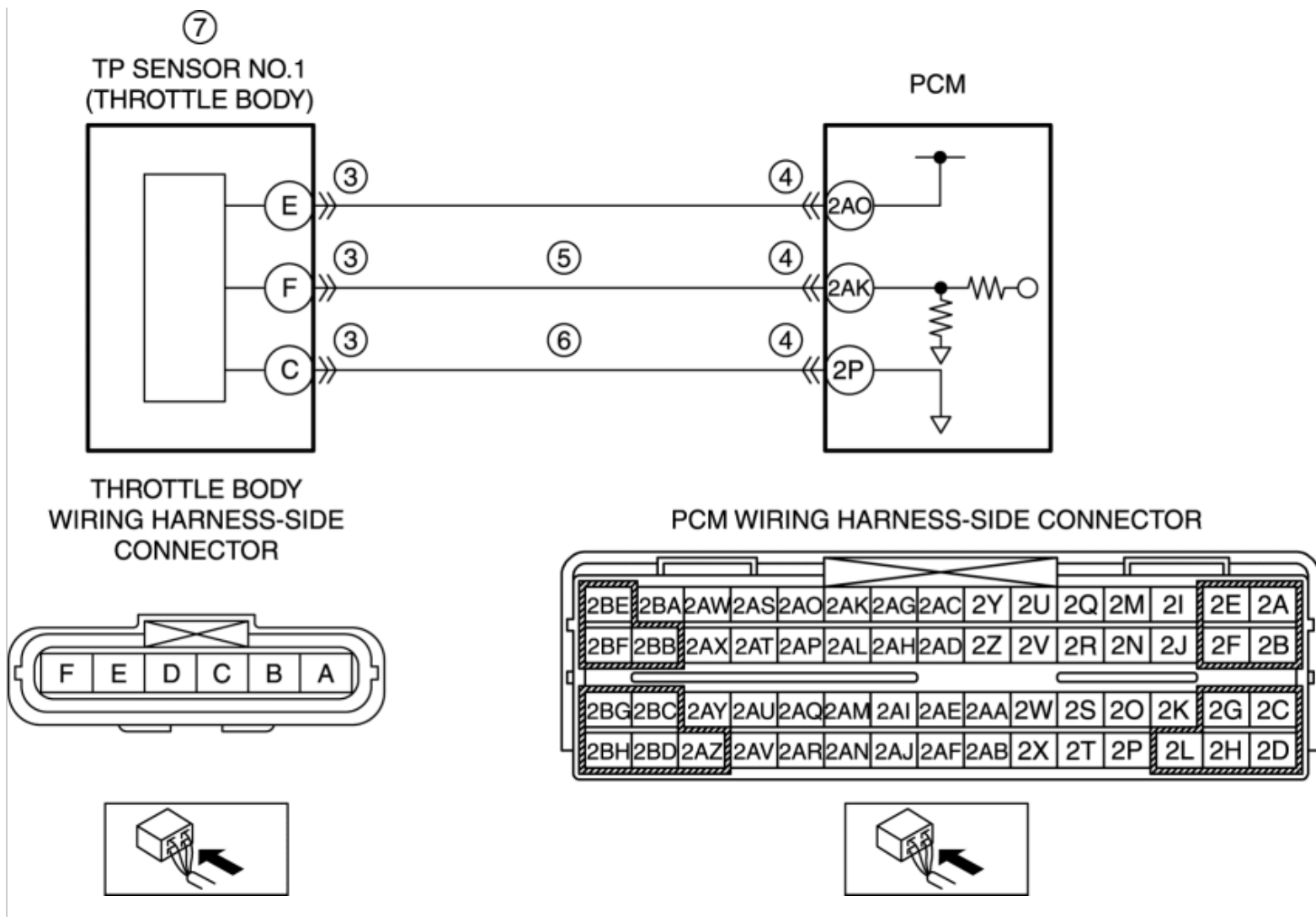
	<ul style="list-style-type: none"> • Turn the Ignition switch off. • Disconnect the throttle body connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	<p>terminals, then go to Step 8.</p> <p>No Go to the next step.</p>
4	<p>INSPECT TP SENSOR NO.1 CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • Throttle body connector is disconnected. • Turn the ignition switch off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> ▪ Throttle body terminal E (wiring harness-side) and body ground ▪ Throttle body terminal F (wiring harness-side) and body ground • Is there continuity? 	<p>Yes If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> • Replace the PCM (short to ground in the PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to Step 8.</p> <p>No Go to the next step.</p>
5	<p>INSPECT PCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Turn the Ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 8.</p> <p>No Go to the next step.</p>
6	<p>INSPECT TP SENSOR NO.1 CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> ▪ Throttle body terminal E (wiring harness-side) and PCM terminal 2AO (wiring harness-side) ▪ Throttle body terminal F (wiring harness-side) and 	<p>Yes Go to the next step.</p> <p>No Repair or replace the wiring harness for a possible open circuit, then go to Step 8.</p>

	PCM terminal 2AK (wiring harness-side) <ul style="list-style-type: none"> Is there continuity? 		
7	INSPECT TP SENSOR NO.1 <ul style="list-style-type: none"> Inspect the TP sensor No.1. (See THROTTLE POSITION (TP) SENSOR INSPECTION [13B-MSP].) Is there any malfunction? 	Yes Replace the throttle body, then go to the next step. (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
8	VERIFY TROUBLESHOOTING OF DTC P0122 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)	
		No DTC troubleshooting completed.	

2011 - RX-8 - Engine

DTC P0123 [13B-MSP]

DTC P0123	TP sensor No.1 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the TP sensor No.1 when the engine is running. If the input voltage is more than 4.8 V, the PCM determines that the TP sensor No.1 circuit input voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Throttle body connector or terminals malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between throttle body terminal F and PCM terminal 2AK• Open circuit in wiring harness between throttle body terminal C and PCM terminal 2P• TP sensor No.1 malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT THROTTLE BODY CONNECTOR FOR POOR CONNECTION	Yes Repair or replace the connector and/or

	<ul style="list-style-type: none"> • Turn the Ignition switch off. • Disconnect the throttle body connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 		terminals, then go to Step 8.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the Ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
5	INSPECT TP SENSOR NO.1 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between throttle body terminal F (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
6	INSPECT TP SENSOR NO.1 GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect for continuity between throttle body terminal C (wiring harness-side) and PCM terminal 2P (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	INSPECT TP SENSOR NO.1 <ul style="list-style-type: none"> • Inspect the TP sensor No.1. (See THROTTLE POSITION (TP) SENSOR INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes	Replace the throttle body, then go to the next step. (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
8	VERIFY TROUBLESHOOTING OF DTC P0123 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected 	Yes	Replace the PCM, then go to the next step.

	connectors.		(See PCM REMOVAL/INSTALLATION [13B-MSP].)
	<ul style="list-style-type: none">• Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none">• Is the same DTC present?	No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?	Yes	Go to the applicable DTC inspection.
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0125 [13B-MSP]

DTC P0125	Insufficient coolant temperature for closed loop fuel control
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the ECT after cold engine start. If the ECT does not reach the specification in a certain period, the PCM determines that the coolant temperature for closed loop fuel control is insufficient. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (engine cooling system). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MAF sensor malfunction ECT sensor malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none">Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (engine cooling system related)	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.

	been recorded?		
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. 	
		No Go to the next step.	
3	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none"> • Start the engine and warm it up completely. • Access the ECT PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) <ul style="list-style-type: none"> • Is the ECT PID more than 70 °C {158 °F}? 	Yes Intermittent concern exists. Perform the "INTERMITTENT CONCERN TROUBLESHOOTING". (See INTERMITTENT CONCERN TROUBLESHOOTING [13B-MSP].)	
		No Go to the next step.	
4	INSPECT MAF SENSOR <ul style="list-style-type: none"> • Inspect the MAF sensor. (See MASS AIR FLOW (MAF) SENSOR INSPECTION [13B-MSP].) <ul style="list-style-type: none"> • Is there any malfunction? 	Yes Replace the MAF/IAT sensor, then go to Step 6. (See MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
5	INSPECT ECT SENSOR <ul style="list-style-type: none"> • Inspect the ECT sensor. (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [13B-MSP].) <ul style="list-style-type: none"> • Is there any malfunction? 	Yes Replace the ECT sensor, then go to the next step. (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
6	VERIFY TROUBLESHOOTING OF DTC P0125 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	

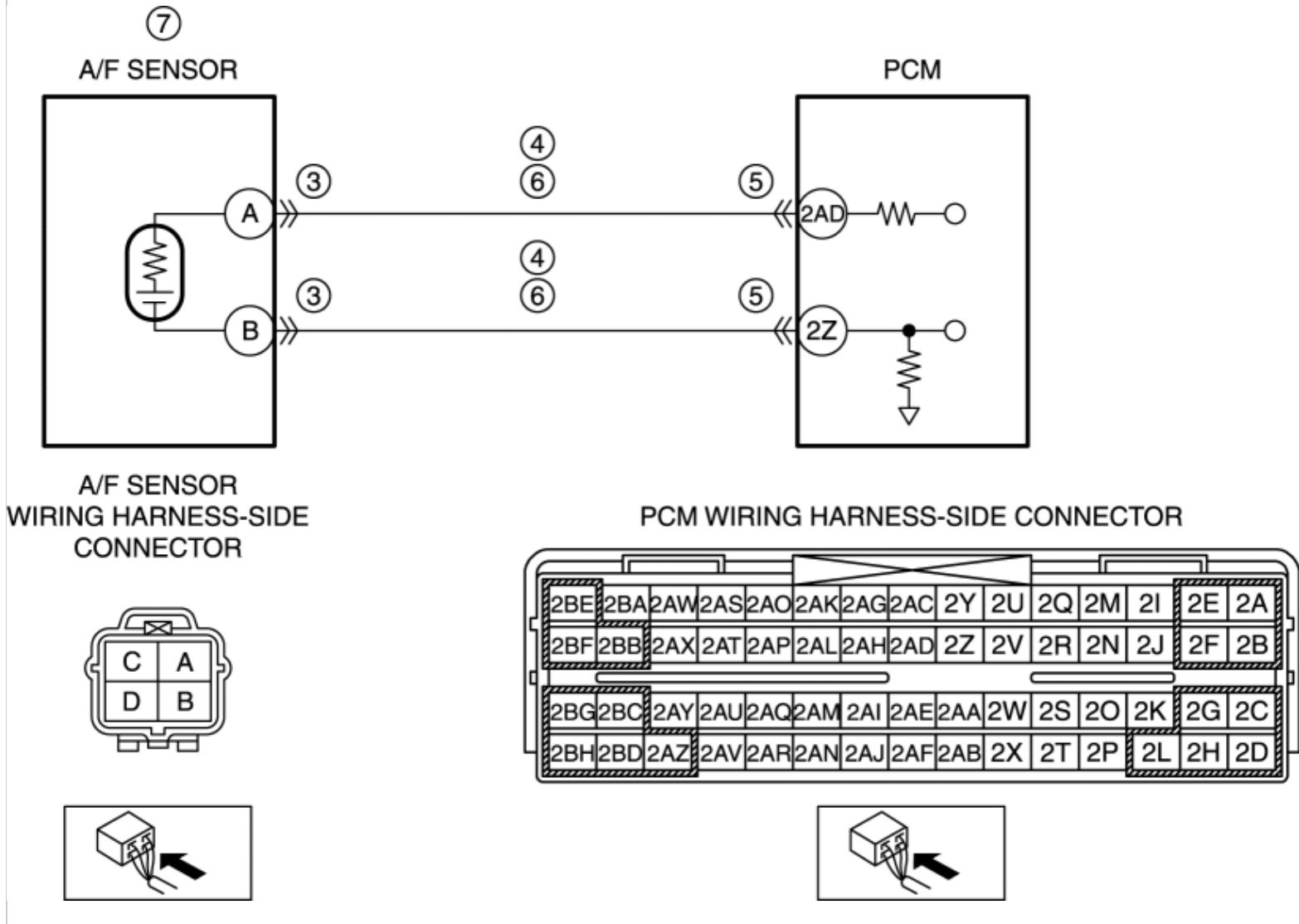
	<p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Access the ECT PID using the M-MDS. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none">• Wait until the ECT PID less than 20 °C {68 °F}.• Start the engine and warm it up completely.• Perform the Pending Trouble Code Access Procedure. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none">• Is the PENDING CODE same as the DTC present?		
7	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none">• Perform the “AFTER REPAIR PROCEDURE”. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0131 [13B-MSP]

DTC P0131	A/F sensor circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> • Detect any of the following condition: <ul style="list-style-type: none"> ▪ The input voltage to the A/F sensor positive terminal is 1.128 V or less. ▪ The input voltage to the A/F sensor negative terminal is 0.044 V or less. ▪ The electric potential difference between the A/F sensor positive and negative terminals is 0 V or less. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (A/F sensor, HO2S). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2/Mode 12) is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/F sensor connector or terminals malfunction • Short to ground in wiring harness between A/F sensor terminal A and PCM terminal 2AD • Short to ground in wiring harness between A/F sensor terminal B and PCM terminal 2Z • PCM connector or terminals malfunction • Open circuit in wiring harness between A/F sensor terminal A and PCM terminal 2AD • Open circuit in wiring harness between A/F sensor terminal B and PCM terminal 2Z • A/F sensor malfunction

- PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.</p>
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.

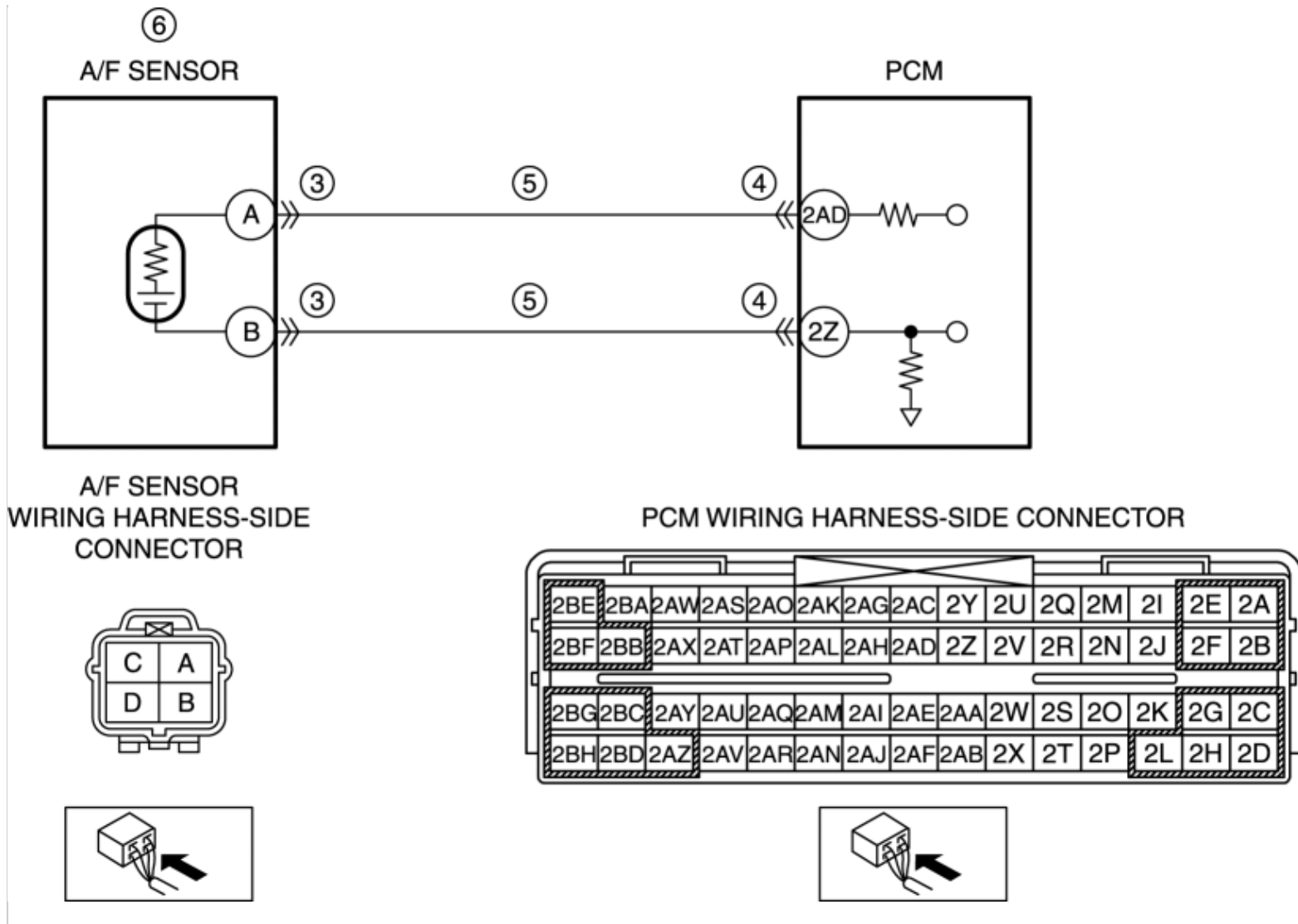
	available?	No	Go to the next step.
3	INSPECT A/F SENSOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
4	INSPECT A/F SENSOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • A/F sensor connector is disconnected. • Turn the ignition switch off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> ▪ A/F sensor terminal A (wiring harness-side) and body ground ▪ A/F sensor terminal B (wiring harness-side) and body ground • Is there continuity? 	Yes	<p>If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> • Replace the PCM (short to ground in the PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to Step 8.</p>
		No	Go to the next step.
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
6	INSPECT A/F SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • A/F sensor and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect for continuity between the following circuits: 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.

	<ul style="list-style-type: none"> ▪ A/F sensor terminal A (wiring harness-side) and PCM terminal 2AD (wiring harness-side) ▪ A/F sensor terminal B (wiring harness-side) and PCM terminal 2Z (wiring harness-side) <ul style="list-style-type: none"> • Is there continuity? 		
7	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Inspect the A/F sensor. <p>(See AIR FUEL RATIO (A/F) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	Replace the A/F sensor, then go to the next step.
			(See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
8	VERIFY TROUBLESHOOTING OF DTC P0131 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • Is the PENDING CODE same as the DTC present? 	Yes	Replace the PCM, then go to the next step.
			(See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection.
			(See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0132 [13B-MSP]

DTC P0132	A/F sensor circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> • Detect any of the following condition: <ul style="list-style-type: none"> ▪ The input voltage to the A/F sensor positive terminal is 3.589 V or more. ▪ The input voltage to the A/F sensor negative terminal is 3.541 V or more. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is an intermittent monitor (A/F sensor, HO2S). • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2/Mode 12) is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • A/F sensor connector or terminals malfunction • PCM connector or terminals malfunction • Short to power supply in wiring harness between A/F sensor terminal A and PCM terminal 2AD • Short to power supply in wiring harness between A/F sensor terminal B and PCM terminal 2Z • A/F sensor malfunction • PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED	Yes Go to the next step.
	<ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
	<ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	No Go to the next step.
INSPECT A/F SENSOR CONNECTOR FOR POOR		

3	CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the A/F sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	<div> YesRepair or replace the connector and/or terminals, then go to Step 7. </div> <div> NoGo to the next step. </div>
4	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	<div> YesRepair or replace the connector and/or terminals, then go to Step 7. </div> <div> NoGo to the next step. </div>
5	INSPECT A/F SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • A/F sensor and PCM connectors are disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between the following circuits: <ul style="list-style-type: none"> ▪ A/F sensor terminal A (wiring harness-side) and body ground ▪ A/F sensor terminal B (wiring harness-side) and body ground • Is the voltage B+? 	<div> YesRepair or replace the wiring harness for a possible short to power supply, then go to Step 7. </div> <div> NoGo to the next step. </div>
6	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Inspect the A/F sensor. <p>(See AIR FUEL RATIO (A/F) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	<div> YesReplace the A/F sensor, then go to the next step.</div> <div> (See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP].) </div> <div> NoGo to the next step. </div>
7	VERIFY TROUBLESHOOTING OF DTC P0132 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. 	<div> YesReplace the PCM, then go to the next step.</div> <div> (See PCM REMOVAL/INSTALLATION [13B-MSP].) </div>

	<ul style="list-style-type: none">• Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].)• Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].)• Is the PENDING CODE same as the DTC present?	No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the “AFTER REPAIR PROCEDURE”. (See AFTER REPAIR PROCEDURE [13B-MSP].)• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0133 [13B-MSP]

DTC P0133	A/F sensor circuit slow response
DETECTION CONDITION	<ul style="list-style-type: none"> The A/F sensor output signal reacts at a slower timing than expected from the fuel feedback amount. <p style="text-align: center;">MONITORING CONDITIONS</p> <ul style="list-style-type: none"> ▪ A/F sensor heater monitor: completed ▪ Fuel system loop status: closed loop fuel control ▪ Engine speed: 1,500—4,000 rpm ▪ LOAD: 21.7—64.7 % <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is an intermittent monitor (A/F sensor, HO2S). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
	<ul style="list-style-type: none"> Looseness of A/F sensor Leakage exhaust gas A/F sensor malfunction Fuel line pressure malfunction <ul style="list-style-type: none"> ▪ Leakage fuel ▪ Fuel pump unit malfunction

POSSIBLE CAUSE	<ul style="list-style-type: none"> ▪ Pressure regulator (built-in fuel pump unit) malfunction • AIR system malfunction • TP sensor malfunction • Eccentric shaft position sensor malfunction • Leakage engine coolant • Purge solenoid valve malfunction • PCM malfunction
-----------------------	---

Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Is the DTC P0133 on FREEZE FRAME DATA (Mode 2)? 	Yes Go to the next step.
		No Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [13B-MSP].)
2	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. • If the vehicle is not repaired, go to the next step.
		No Go to the next step.
4	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> • Turn the ignition switch off, then to the ON position (engine off). • Verify the related PENDING CODE or stored DTCs. 	Yes Go to the DTC P0443 inspection. (See DTC P0443 [13B-MSP].)
		No Go to the next step.

	<ul style="list-style-type: none"> Is the DTC P0443 also present? 		
5	INSPECT INSTALLATION OF A/F SENSOR <ul style="list-style-type: none"> Inspect if the A/F sensor is loosely installed. Is the A/F sensor installed securely? 	Yes	Go to the next step.
		No	Retighten the A/F sensor, then go to Step 15. (See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
6	INSPECT GAS LEAKAGE FROM EXHAUST SYSTEM <ul style="list-style-type: none"> Visually inspect if there is any gas leakage between the exhaust manifold and A/F sensor. Is there gas leakage? 	Yes	Repair or replace any malfunctioning exhaust part, then go to Step 15.
		No	Go to the next step.
7	INSPECT A/F SENSOR <ul style="list-style-type: none"> Inspect the A/F sensor. (See AIR FUEL RATIO (A/F) SENSOR INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Replace the A/F sensor, then go to Step 15. (See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
8	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> Turn the ignition switch off. Inspect the fuel line pressure while the engine running. (See FUEL LINE PRESSURE INSPECTION [13B-MSP].) Is the fuel line pressure normal? 	Yes	Go to Step 10.
		No	Go to the next step.
9	INSPECT FUEL SYSTEM FOR FUEL LEAKAGE <ul style="list-style-type: none"> Visually inspect fuel leakage in the fuel system. Is there fuel leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 15.
		No	Replace the fuel pump unit, then go to Step 15. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)
10	INSPECT AIR SYSTEM OPERATION <ul style="list-style-type: none"> Perform the Secondary Air Injection (AIR) System Inspection. 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 15.

	<p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 		No Go to the next step.
11	<p>INSPECT TP SENSOR</p> <ul style="list-style-type: none"> Inspect the TP sensor. <p>(See THROTTLE POSITION (TP) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Replace the throttle body, then go to Step 15.</p> <p>(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)</p>	
		No Go to the next step.	
12	<p>INSPECT ECCENTRIC SHAFT POSITION SENSOR</p> <ul style="list-style-type: none"> Inspect the eccentric shaft position sensor. <p>(See ECCENTRIC SHAFT POSITION SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Replace the eccentric shaft position sensor, then go to Step 15.</p> <p>(See ECCENTRIC SHAFT POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p>	
		No Go to the next step.	
13	<p>INSPECT SEALING OF ENGINE COOLANT PASSAGE</p> <ul style="list-style-type: none"> Perform the “ENGINE COOLANT LEAKAGE INSPECTION”. <p>(See ENGINE COOLANT LEAKAGE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 15.</p>	
		No Go to the next step.	
14	<p>INSPECT PURGE SOLENOID VALVE</p> <ul style="list-style-type: none"> Inspect the purge solenoid valve. <p>(See PURGE SOLENOID VALVE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Replace the purge solenoid valve, then go to the next step.</p>	
		No Go to the next step.	
15	<p>VERIFY TROUBLESHOOTING OF DTC P0133 COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE</p>	<p>Yes Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p>	
		No Go to the next step.	

	<p>[13B-MSP].)</p> <ul style="list-style-type: none">• Perform the DRIVE MODE 3 (A/F sensor heater, HO2S heater, A/F sensor, HO2S, and TWC Repair Verification Drive Mode). <p>(See OBD-II DRIVE MODE [13B-MSP].)</p> <ul style="list-style-type: none">• Is the PENDING CODE for this DTC present?		
16	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none">• Perform the “AFTER REPAIR PROCEDURE”. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0134 [13B-MSP]

DTC P0134	A/F sensor no activity detected
DETECTION CONDITION	<ul style="list-style-type: none">The PCM monitors the A/F sensor element impedance when the following conditions are met. If the A/F sensor element impedance is 50 ohms or more, the PCM determines that A/F sensor is not activated. <p style="text-align: center;">MONITORING CONDITIONS</p> <ul style="list-style-type: none">A/F sensor heater, HO2S heater, A/F sensor, HO2S, and TWC Repair Verification Drive ModeFollowing conditions are met:<ul style="list-style-type: none">Time from engine start is above 40 s (ECT when engine start is 20 °C {68 °F}). <p style="text-align: center;">Diagnostic support note</p> <ul style="list-style-type: none">This is an intermittent monitor (A/F sensor, HO2S).The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.FREEZE FRAME DATA (Mode 2/Mode 12) is available.The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">Looseness of A/F sensorA/F sensor heater malfunctionPCM connector or terminals malfunctionA/F sensor malfunctionPCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Is the DTC P0134 on FREEZE FRAME DATA (Mode 2)? 	Yes Go to the next step.
		No Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [13B-MSP].)
2	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
4	VERIFY RELATED PENDING CODE OR STORED DTC NOTE: <ul style="list-style-type: none"> If fuel monitor DTC, DTC P0132 is retrieved, ignore it until P0134 is fixed. Turn the ignition switch off, then to the ON position (engine off). Verify the related PENDING CODE or stored DTCs. Are other DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No Go to the next step.
5	INSPECT INSTALLATION OF A/F SENSOR <ul style="list-style-type: none"> Inspect if the A/F sensor is loosely installed. 	Yes Go to the next step.
		No Retighten the A/F sensor, then go to Step 9.

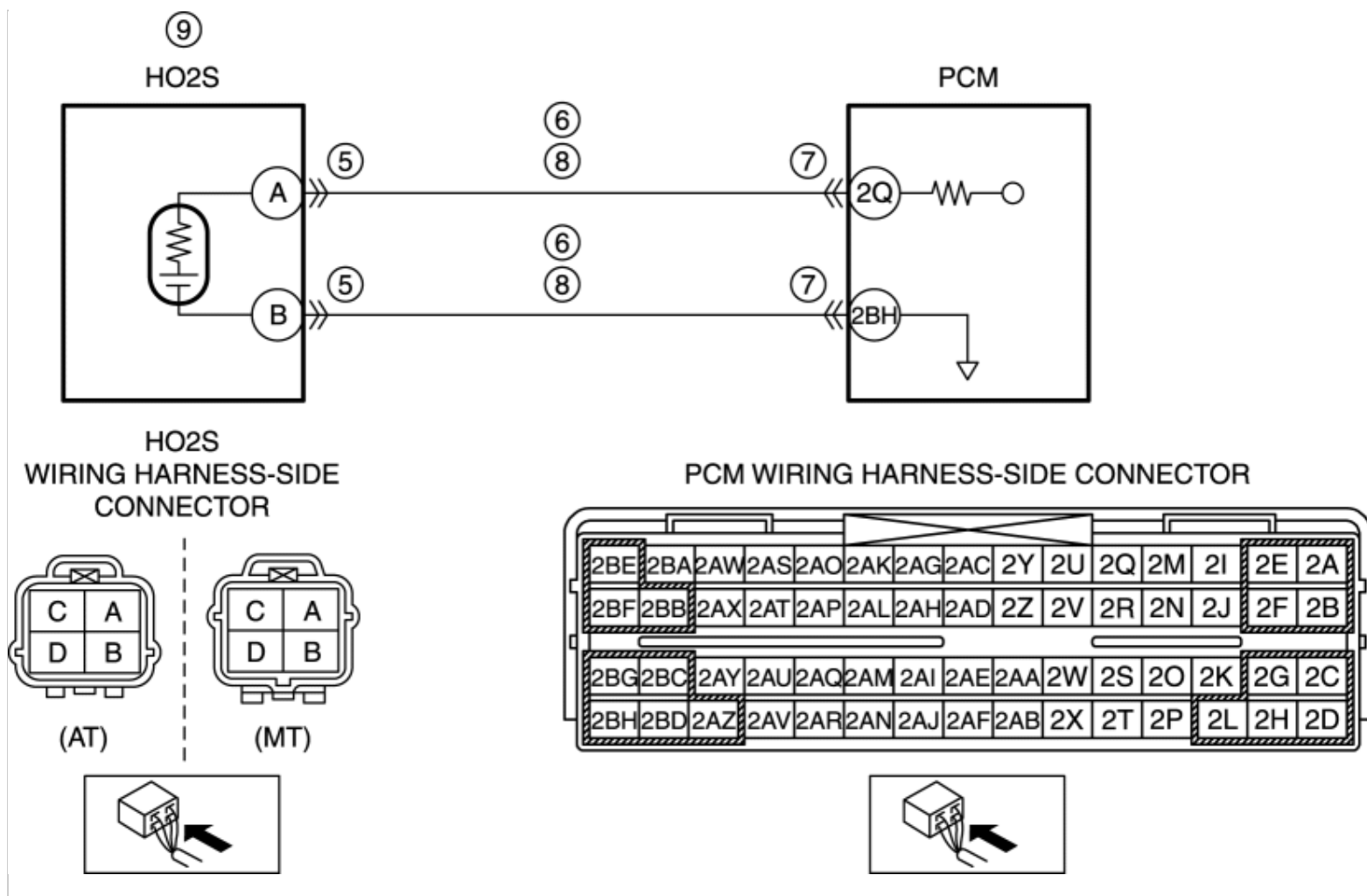
	<ul style="list-style-type: none"> Is the A/F sensor installed securely? 		(See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
6	INSPECT A/F SENSOR HEATER <ul style="list-style-type: none"> Inspect the A/F sensor heater. (See AIR FUEL RATIO (A/F) SENSOR INSPECTION [13B-MSP].)	Yes	Replace the A/F sensor, then go to Step 9.
	<ul style="list-style-type: none"> Is there any malfunction? 	No	Go to the next step.
7	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
8	INSPECT A/F SENSOR <ul style="list-style-type: none"> Inspect the A/F sensor. (See AIR FUEL RATIO (A/F) SENSOR INSPECTION [13B-MSP].)	Yes	Replace the A/F sensor, then go to the next step.
	<ul style="list-style-type: none"> Is there any malfunction? 		(See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P0134 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].)	Yes	Replace the PCM, then go to the next step.
	<ul style="list-style-type: none"> Perform the KOER self test. (See KOE/KOER SELF TEST [13B-MSP].)		
	<ul style="list-style-type: none"> Is the PENDING CODE for this DTC present? 	No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE	Yes	Go to the applicable DTC inspection.

	<ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?		(See DTC TABLE [13B-MSP].)
			No DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0137 [13B-MSP]

DTC P0137	HO2S circuit low input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors input voltage from the HO2S. If the input voltage from the HO2S is below –0.95 V for 5 s while the HO2S is active or HO2S bias voltage below 1.3 V for 5 s, the PCM determines that circuit input is low. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (A/F sensor, HO2S).• The MIL illuminates if PCM detects the above malfunctioning condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if PCM detects the above malfunction conditions during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• HO2S connector or terminals malfunction• Short to ground in wiring harness between HO2S terminal A and PCM terminal 2Q• Short to ground in wiring harness between HO2S terminal B and PCM terminal 2BH• PCM connector or terminals malfunction• Open circuit in wiring harness between HO2S terminal A and PCM terminal 2Q• Open circuit in wiring harness between HO2S terminal B and PCM terminal 2BH• HO2S malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Is the DTC P0137 on FREEZE FRAME DATA (Mode 2)? 	YesGo to the next step.
		No Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [13B-MSP] .)
2	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	YesGo to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. 	YesPerform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go

	<ul style="list-style-type: none"> Is any related repair information available? 		to the next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> Turn the ignition switch off, then ON position (engine off). Verify the related PENDING CODE or stored DTCs using M-MDS. Is other DTC present? 	Yes	Go to appropriate DTC troubleshooting procedure. (See DTC TABLE [13B-MSP] .)
		No	Go to the next step.
5	INSPECT HO2S CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the HO2S connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.
6	INSPECT HO2S SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> HO2S connector is disconnected. Turn the ignition switch off. Inspect for continuity between the following circuits: <ul style="list-style-type: none"> HO2S terminal A (wiring harness-side) and body ground HO2S terminal B (wiring harness-side) and body ground Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [13B-MSP] .) Go to Step 10.
		No	Go to the next step.
7	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.

	Is there any malfunction?		
8	INSPECT HO2S CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> HO2S and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between the following circuits: <ul style="list-style-type: none"> HO2S terminal A (wiring harness-side) and PCM terminal 2Q (wiring harness-side) HO2S terminal B (wiring harness-side) and PCM terminal 2BH (wiring harness-side) Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 10.
9	INSPECT HO2S <ul style="list-style-type: none"> Inspect the HO2S. (See HEATED OXYGEN SENSOR (HO2S) INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Replace the HO2S, then go to the next step. (See HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
10	VERIFY TROUBLESHOOTING OF DTC P0137 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the DRIVE MODE 3 (A/F sensor heater, HO2S heater, A/F sensor, HO2S, and TWC Repair Verification Drive Mode). (See OBD-II DRIVE MODE [13B-MSP].) Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B- 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)

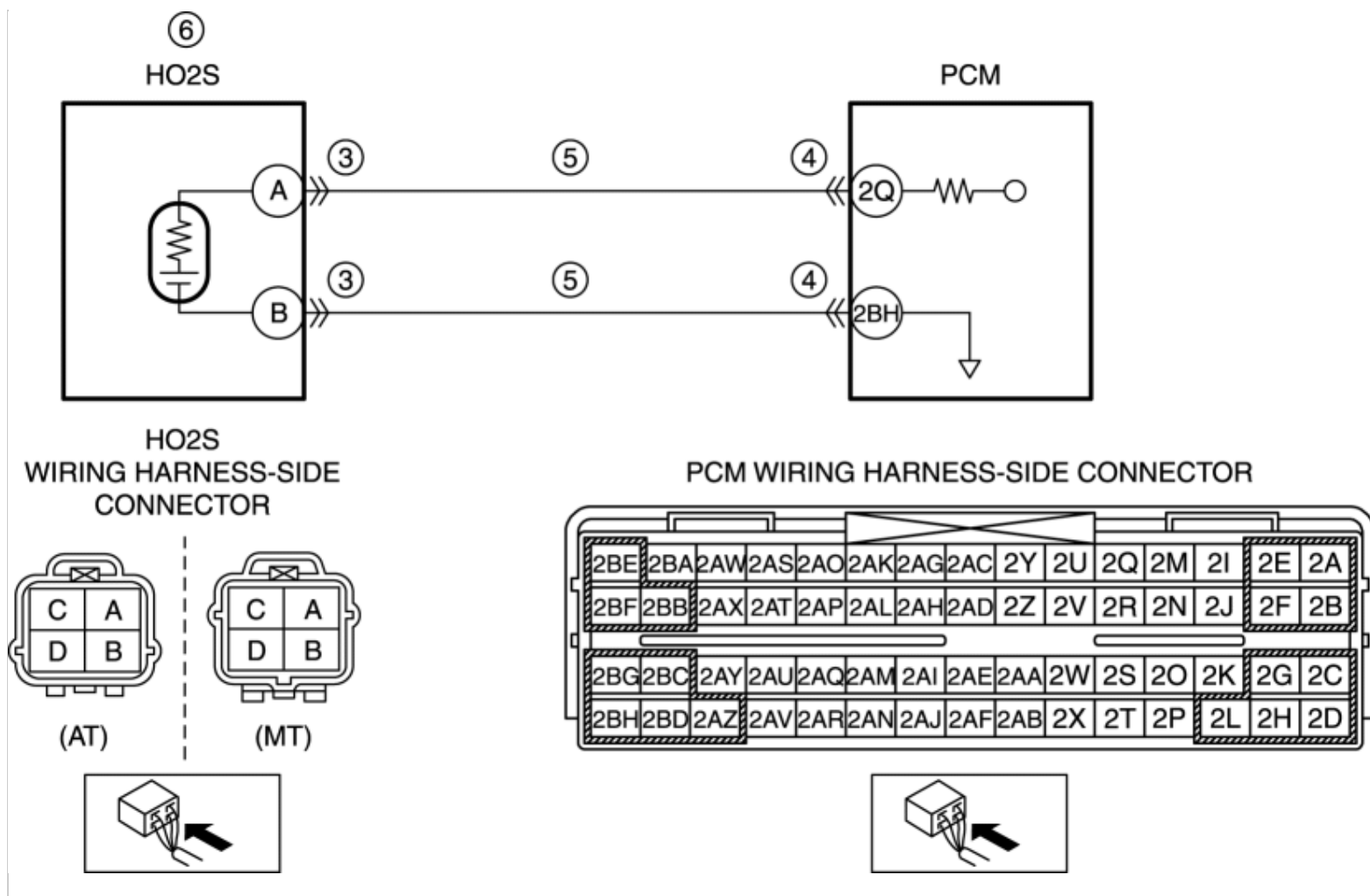
	MSP1 .)	No DTC troubleshooting completed.
	<ul style="list-style-type: none">• Are any DTCs present?	

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

DTC P0138 [13B-MSP]

DTC P0138	HO2S circuit high input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the HO2S. If the input voltage from the HO2S is above 1.2 V or HO2S bias voltage is above 1.7 V for 5 s, the PCM determines that the circuit input is high. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (A/F sensor, HO2S).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• HO2S connector or terminals malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between HO2S terminal A and PCM terminal 2Q• Short to power supply in wiring harness between HO2S terminal B and PCM terminal 2BH• HO2S malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.</p>
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
3	INSPECT HO2S CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 7.</p>

	<ul style="list-style-type: none"> • Disconnect the HO2S connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	No	Go to the next step.
4	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
5	INSPECT HO2S CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • HO2S and PCM connectors are disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between the following circuits: <ul style="list-style-type: none"> ▪ HO2S terminal A (wiring harness-side) and body ground ▪ HO2S terminal B (wiring harness-side) and body ground • Is the voltage more than 1.2 V? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 7.
		No	Go to the next step.
6	INSPECT HO2S <ul style="list-style-type: none"> • Inspect the HO2S. (See HEATED OXYGEN SENSOR (HO2S) INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes	Replace the HO2S, then go to the next step. (See HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
7	VERIFY TROUBLESHOOTING OF DTC P0138 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.

	<ul style="list-style-type: none">• Perform the KOER self test. (See KOE0/KOER SELF TEST [13B-MSP].)• Is the PENDING CODE same as the DTC present?		
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].)• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0139 [13B-MSP]

DTC P0139	HO2S circuit slow response
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the HO2S inversion cycle period and rich-to-lean response time while under the open loop fuel control (fuel cut off control). If the average response time is more than the specification, the PCM determines that the HO2S circuit response is slow. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is an intermittent monitor (A/F sensor, HO2S).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Looseness of HO2S• Leakage exhaust gas• HO2S malfunction• Fuel line pressure malfunction<ul style="list-style-type: none">▪ Leakage fuel▪ Fuel pump unit malfunction▪ Pressure regulator (built-in fuel pump unit) malfunction• AIR system malfunction• TP sensor malfunction• Eccentric shaft position sensor malfunction

- Leakage engine coolant
- Purge solenoid valve malfunction
- PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Is the DTC P0139 on FREEZE FRAME DATA (Mode 2)? 	Yes Go to the next step.
		No Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [13B-MSP].)
2	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none">• If the vehicle is not repaired, go to the next step.
		No Go to the next step.
4	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> • Turn the ignition switch off, then to the ON position (engine off). • Verify the related PENDING CODE or stored DTCs. • Is the DTC P0443 also present? 	Yes Go to the DTC P0443 inspection. (See DTC P0443 [13B-MSP].)
		No Go to the next step.
5	INSPECT INSTALLATION OF HO2S <ul style="list-style-type: none"> • Inspect if the HO2S is loosely installed. 	Yes Go to the next step.
		No Retighten the HO2S, then go to Step 15.

	<ul style="list-style-type: none"> Is the HO2S installed securely? 		(See HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [13B-MSP].)
6	INSPECT GAS LEAKAGE FROM EXHAUST SYSTEM <ul style="list-style-type: none"> Visually inspect if there is any gas leakage between the exhaust manifold and HO2S. Is there gas leakage? 	Yes	Repair or replace any malfunctioning exhaust part, then go to Step 15.
		No	Go to the next step.
7	INSPECT HO2S <ul style="list-style-type: none"> Inspect the HO2S. (See HEATED OXYGEN SENSOR (HO2S) INSPECTION [13B-MSP].)	Yes	Replace the HO2S, then go to Step 15.
	<ul style="list-style-type: none"> Is there any malfunction? 	No	Go to the next step.
8	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> Turn the ignition switch off. Inspect the fuel line pressure while the engine running. (See FUEL LINE PRESSURE INSPECTION [13B-MSP].)	Yes	Go to Step 10.
	<ul style="list-style-type: none"> Is the fuel line pressure normal? 	No	Go to the next step.
9	INSPECT FUEL SYSTEM FOR FUEL LEAKAGE <ul style="list-style-type: none"> Visually inspect fuel leakage in the fuel system. Is there fuel leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 15.
		No	Replace the fuel pump unit, then go to Step 15.
			(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)
10	INSPECT AIR SYSTEM OPERATION <ul style="list-style-type: none"> Perform the Secondary Air Injection (AIR) System Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 15.
	<ul style="list-style-type: none"> Is there any malfunction? 	No	Go to the next step.
	INSPECT TP SENSOR		

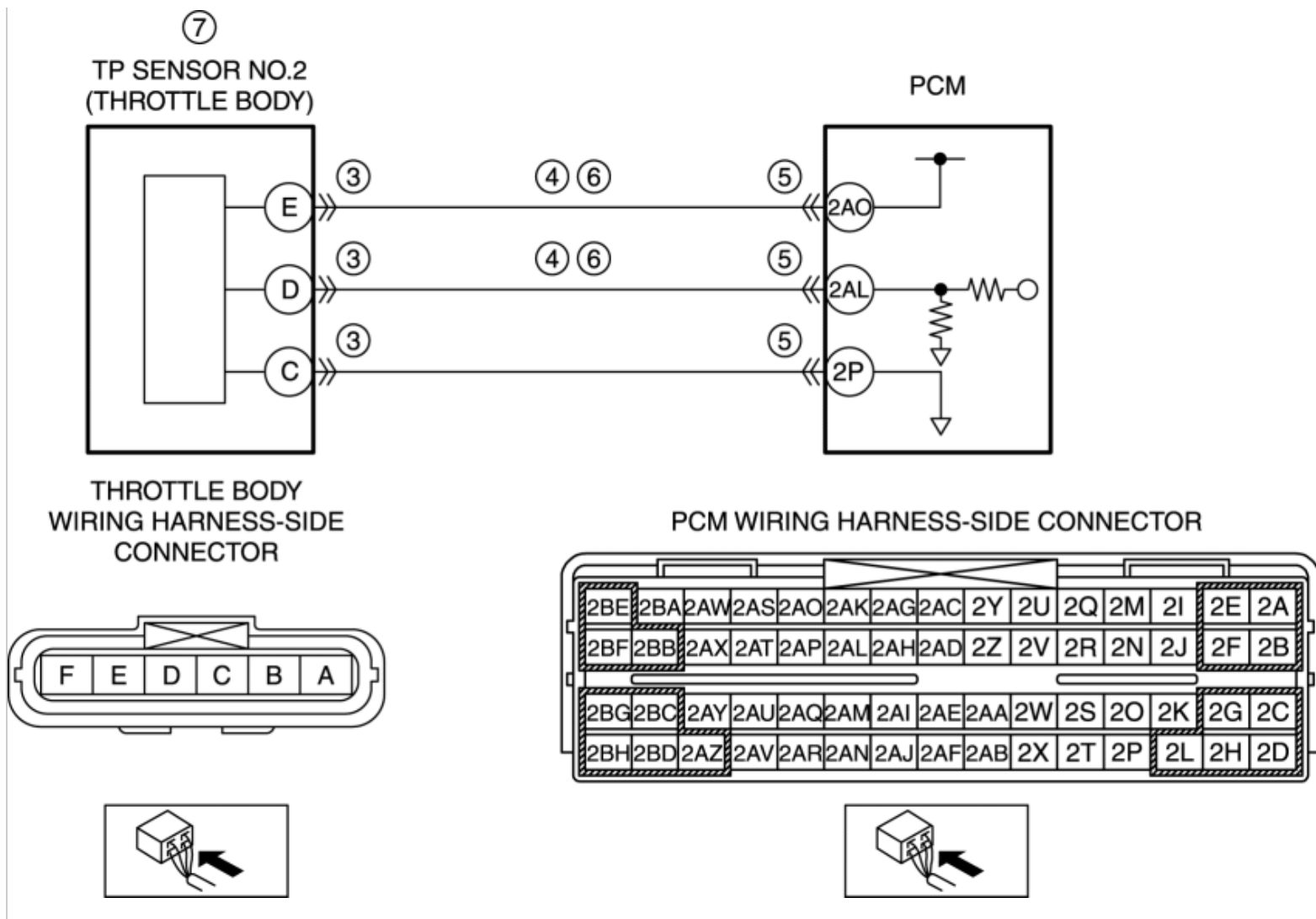
11	<ul style="list-style-type: none"> Inspect the TP sensor. <p>(See THROTTLE POSITION (TP) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Replace the throttle body, then go to Step 15.</p> <p>(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
12	<p>INSPECT ECCENTRIC SHAFT POSITION SENSOR</p> <ul style="list-style-type: none"> Inspect the eccentric shaft position sensor. <p>(See ECCENTRIC SHAFT POSITION SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Replace the eccentric shaft position sensor, then go to Step 15.</p> <p>(See ECCENTRIC SHAFT POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
13	<p>INSPECT SEALING OF ENGINE COOLANT PASSAGE</p> <ul style="list-style-type: none"> Perform the "ENGINE COOLANT LEAKAGE INSPECTION". <p>(See ENGINE COOLANT LEAKAGE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 15.</p> <p>No Go to the next step.</p>
14	<p>INSPECT PURGE SOLENOID VALVE</p> <ul style="list-style-type: none"> Inspect the purge solenoid valve. <p>(See PURGE SOLENOID VALVE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Replace the purge solenoid valve, then go to the next step.</p> <p>No Go to the next step.</p>
15	<p>VERIFY TROUBLESHOOTING OF DTC P0139 COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS or equivalent. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Perform the DRIVE MODE 3 (A/F sensor heater, HO2S heater, A/F sensor, HO2S, and TWC Repair Verification Drive Mode). 	<p>Yes Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>

	<p>(See OBD-II DRIVE MODE [13B-MSP].)</p> <ul style="list-style-type: none">Is the PENDING CODE for this DTC present?		
16	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none">Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0222 [13B-MSP]

DTC P0222	TP sensor No.2 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the TP sensor No.2 when the engine is running. If the input voltage is less than 0.7 V, the PCM determines that the TP sensor No.2 circuit input voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Throttle body connector or terminals malfunction• Short to ground in wiring harness between throttle body terminal E and PCM terminal 2AO• Short to ground in wiring harness between throttle body terminal D and PCM terminal 2AL• PCM connector or terminals malfunction• Open circuit in wiring harness between throttle body terminal E and PCM terminal 2AO• Open circuit in wiring harness between throttle body terminal D and PCM terminal 2AL• TP sensor No.2 malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT THROTTLE BODY CONNECTOR FOR POOR CONNECTION	Yes Repair or replace the connector and/or

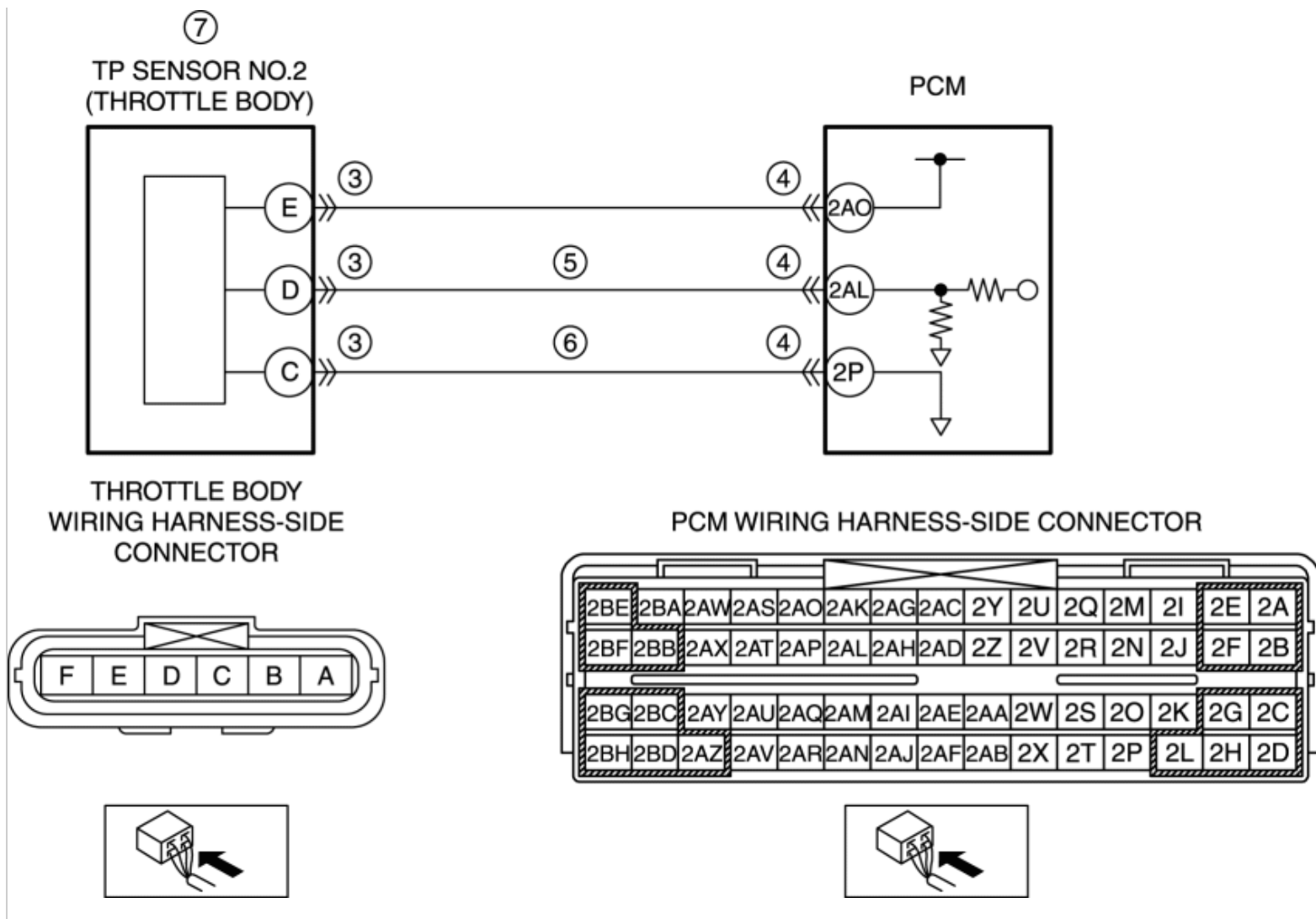
	<ul style="list-style-type: none"> • Turn the Ignition switch off. • Disconnect the throttle body connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	<p>terminals, then go to Step 8.</p> <p>No Go to the next step.</p>
4	<p>INSPECT TP SENSOR NO.2 CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • Throttle body connector is disconnected. • Turn the ignition switch off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> ▪ Throttle body terminal E (wiring harness-side) and body ground ▪ Throttle body terminal D (wiring harness-side) and body ground • Is there continuity? 	<p>Yes If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> • Replace the PCM (short to ground in the PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to Step 8.</p> <p>No Go to the next step.</p>
5	<p>INSPECT PCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Turn the Ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 8.</p> <p>No Go to the next step.</p>
6	<p>INSPECT TP SENSOR NO.2 CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> ▪ Throttle body terminal E (wiring harness-side) and PCM terminal 2AO (wiring harness-side) ▪ Throttle body terminal D (wiring harness-side) and 	<p>Yes Go to the next step.</p> <p>No Repair or replace the wiring harness for a possible open circuit, then go to Step 8.</p>

	PCM terminal 2AL (wiring harness-side) <ul style="list-style-type: none"> Is there continuity? 		
7	INSPECT TP SENSOR NO.2 <ul style="list-style-type: none"> Inspect the TP sensor No.2. (See THROTTLE POSITION (TP) SENSOR INSPECTION [13B-MSP].) Is there any malfunction? 	Yes Replace the throttle body, then go to the next step. (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
8	VERIFY TROUBLESHOOTING OF DTC P0222 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)	
		No DTC troubleshooting completed.	

2011 - RX-8 - Engine

DTC P0223 [13B-MSP]

DTC P0223	TP sensor No.2 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the TP sensor No.2 when the engine is running. If the input voltage is more than 4.8 V, the PCM determines that the TP sensor No.2 circuit input voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Throttle body connector or terminals malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between throttle body terminal D and PCM terminal 2AL• Open circuit in wiring harness between throttle body terminal C and PCM terminal 2P• TP sensor No.2 malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT THROTTLE BODY CONNECTOR FOR POOR CONNECTION	Yes Repair or replace the connector and/or

	<ul style="list-style-type: none"> • Turn the Ignition switch off. • Disconnect the throttle body connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 		terminals, then go to Step 8.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the Ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
5	INSPECT TP SENSOR NO.2 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between throttle body terminal D (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
6	INSPECT TP SENSOR NO.2 GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Throttle body and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect for continuity between throttle body terminal C (wiring harness-side) and PCM terminal 2P (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	INSPECT TP SENSOR NO.2 <ul style="list-style-type: none"> • Inspect the TP sensor No.2. (See THROTTLE POSITION (TP) SENSOR INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes	Replace the throttle body, then go to the next step. (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
8	VERIFY TROUBLESHOOTING OF DTC P0223 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected 	Yes	Replace the PCM, then go to the next step.

	connectors.		(See PCM REMOVAL/INSTALLATION [13B-MSP].)
	<ul style="list-style-type: none">• Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].)	No	Go to the next step.
	<ul style="list-style-type: none">• Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].)		
	<ul style="list-style-type: none">• Is the same DTC present?		
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].)	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
	<ul style="list-style-type: none">• Are any DTCs present?	No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0300 [13B-MSP]

DTC P0300	Random misfire detected
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the eccentric shaft position sensor input signal interval time. The PCM calculates the change of the interval time for each rotor. If the change of interval time exceeds the preprogrammed criteria, the PCM detects a misfire in the corresponding rotor. While the engine is running, the PCM counts the number of misfires that occurred at 200 eccentric shaft revolutions and 1,000 eccentric shaft revolutions and calculates the misfire ratio for each eccentric shaft revolution. If the ratio exceeds the preprogrammed criteria, the PCM determines that a misfire, which can damage the catalytic converter or affect emission performance, has occurred. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (misfire). The MIL illuminates if the PCM detects the misfire which affects emission performance in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. The MIL flashes if the PCM detects the misfire which can damage the catalytic converter during the first drive cycle. Therefore, PENDING CODE is not available while the MIL flashes. PENDING CODE is available if the PCM detects the misfire which affects emission performance during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
	<ul style="list-style-type: none"> Erratic signal to PCM <ul style="list-style-type: none"> APP sensor signal malfunction ECT sensor signal malfunction MAF sensor signal malfunction TP sensor signal malfunction

**POSSIBLE
CAUSE**

- VSS signal malfunction
- Eccentric shaft position sensor malfunction
- Ignition system malfunction
 - High-tension lead malfunction
 - Incorrect power supply to ignition coil
 - Ignition coil malfunction
- Spark plug malfunction
- Excess air suction in intake-air system
- MAF sensor malfunction
- Fuel line pressure malfunction
 - Leakage fuel
 - Fuel pump unit malfunction
 - Pressure regulator (built-in fuel pump unit) malfunction
- Insufficient compression
 - Metering oil pump malfunction
 - Engine oil condition malfunction
 - Increased oil pressure
 - Oil passage malfunction
 - Engine malfunction
- Purge control system malfunction
- Leakage engine coolant
- PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED	Yes Go to the next step.
	<ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (misfire related) been 	No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to

	recorded?		the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. 	
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> • Turn the ignition switch off, then to the ON position (engine off). • Verify the related PENDING CODE or stored DTCs. • Are other DTCs present? 	Yes Go to the appropriate DTC inspection. (See DTC TABLE [13B-MSP] .)	
		No	Go to the next step.
4	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none"> • Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) <ul style="list-style-type: none"> ▪ APP ▪ ECT ▪ MAF ▪ TP REL ▪ VSS • Are the PIDs normal? (See PCM INSPECTION [13B-MSP].) 	Yes Go to the next step.	
		No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.
5	VERIFY CURRENT INPUT SIGNAL STATUS UNDER FREEZE FRAME DATA (MODE 2) CONDITION CAUTION: <ul style="list-style-type: none"> • While performing this step with vehicle driving, always operate the vehicle in a safe and lawful manner. • When the M-MDS is used to observe monitor system status while driving, be sure to have another technician with 	Yes Go to the next step.	
		No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.

	<p>you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD function and inspect later.</p> <ul style="list-style-type: none">• Access the following PIDs using the M-MDS under the FREEZE FRAME DATA (Mode 2) condition: <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none">▪ APP▪ ECT▪ MAF▪ TP REL▪ VSS <ul style="list-style-type: none">• Are the PIDs normal? <p>(See PCM INSPECTION [13B-MSP].)</p>		
6	<p>INSPECT ECCENTRIC SHAFT POSITION SENSOR</p> <ul style="list-style-type: none">• Inspect the eccentric shaft position sensor. <p>(See ECCENTRIC SHAFT POSITION SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none">• Is there any malfunction?	Yes	Replace the eccentric shaft position sensor, then go to Step 23.
			(See ECCENTRIC SHAFT POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
7	<p>INSPECT IGNITION COIL OPERATION AND HIGH-TENSION LEAD WITH TIMING LIGHT</p> <ul style="list-style-type: none">• Inspect the blinking condition on each high-tension leads using timing light at idle.• Do all high-tension leads show blinking condition?	Yes	Go to Step 11.
		No	Go to the next step.
8	<p>INSPECT HIGH-TENSION LEAD OF NO BLINKING HIGH-TENSION LEAD</p> <ul style="list-style-type: none">• Inspect the high-tension leads. <p>(See HIGH-TENSION LEAD INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none">• Is there any malfunction?	Yes	Replace the malfunctioning high-tension lead, then go to Step 23.
			(See HIGH-TENSION LEAD REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
9	<p>INSPECT IGNITION COIL POWER CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND</p>	Yes	Go to the next step.

	<ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off). • Measure the voltage between ignition coil terminal C (wiring harness-side) and body ground. • Is the voltage B+? 	No	Repair or replace the wiring harness for a possible open circuit or short to ground, then go to Step 23.
10	INSPECT IGNITION COIL <ul style="list-style-type: none"> • Inspect the ignition coil. <p>(See IGNITION COIL INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	Replace the ignition coil, then go to Step 23.
		No	Inspect for open circuit in wiring harness between ignition coil terminal B and ground. Repair or replace the wiring harness for a possible open circuit, then go to Step 23.
11	INSPECT SPARK PLUG <ul style="list-style-type: none"> • Inspect the spark plug. <p>(See SPARK PLUG INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	Replace the spark plug, then go to Step 23.
		No	Go to the next step.
12	VERIFY CURRENT INPUT SIGNAL STATUS OF MAF SENSOR <ul style="list-style-type: none"> • Start the engine. • Access the MAF PID using the M-MDS. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • Verify that the MAF PID changes quickly according to the RPM when the engine is raced. • Is the PID normal? <p>(See PCM INSPECTION [13B-MSP].)</p>	Yes	Go to Step 14.
		No	Go to the next step.
13	INSPECT INTAKE-AIR SYSTEM FOR EXCESSIVE AIR SUCTION <ul style="list-style-type: none"> • Visually inspect for looseness, cracks or damaged hoses in intake-air system. 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.

	<ul style="list-style-type: none"> Is there any malfunction? 	No	Replace the MAF/IAT sensor, then go to Step 23. (See MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
14	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> Perform the "FUEL LINE PRESSURE INSPECTION". (See FUEL LINE PRESSURE INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	<ul style="list-style-type: none"> If the fuel line pressure is too low, go to the next step. If the fuel line pressure is too high, replace the fuel pump unit, then go to Step 23. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to Step 16.
15	INSPECT FUEL SYSTEM FOR FUEL LEAKAGE <ul style="list-style-type: none"> Visually inspect fuel leakage in the fuel system. Is there fuel leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.
		No	Replace the fuel pump unit, then go to Step 23. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)
16	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> Inspect the engine compression. (See COMPRESSION INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 21.
17	INSPECT METERING OIL PUMP <ul style="list-style-type: none"> Inspect the metering oil pump. (See METERING OIL PUMP INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results. Overhaul or replace the engine, then go to Step 23.
		No	Go to the next step.
18	INSPECT ENGINE OIL CONDITION	Yes	Go to the next step.

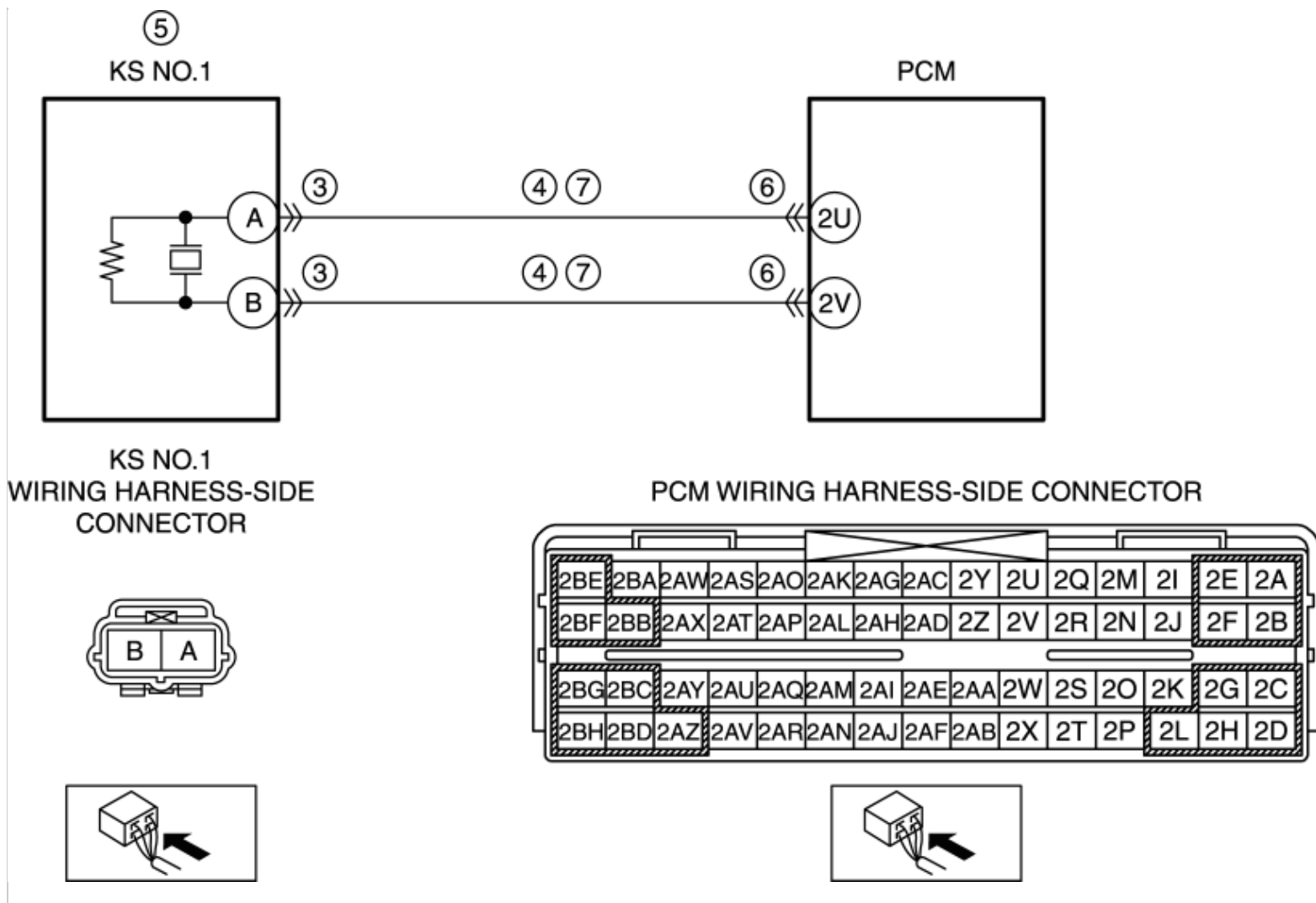
	<ul style="list-style-type: none"> Inspect the engine oil condition. Is the engine oil condition normal? 	No	<p>Replace the engine oil.</p> <p>Overhaul or replace the engine, then go to Step 23.</p>
19	INSPECT OIL PRESSURE <ul style="list-style-type: none"> Inspect the oil pressure. <p>(See OIL PRESSURE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	<p>Repair or replace the malfunctioning part according to the inspection results.</p> <p>Overhaul or replace the engine, then go to Step 23.</p>
		No	Go to the next step.
20	INSPECT OIL PASSAGE <ul style="list-style-type: none"> Inspect the oil pipe between metering oil pump and metering oil nozzle. Is there any malfunction? 	Yes	<p>Inspect for leakage or clogging in the engine oil passage.</p> <p>Repair or replace the malfunctioning part according to the inspection results.</p> <p>Overhaul or replace the engine, then go to Step 23.</p>
		No	Overhaul or replace the engine, then go to Step 23.
21	INSPECT PURGE CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> Perform the Purge Control System Inspection. <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 23.
		No	Go to the next step.
22	INSPECT ENGINE COOLANT PASSAGE FOR ENGINE COOLANT LEAKAGE <ul style="list-style-type: none"> Perform the "ENGINE COOLANT LEAKAGE INSPECTION". <p>(See ENGINE COOLANT LEAKAGE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to the next step.
		No	Go to the next step.
23	VERIFY TROUBLESHOOTING OF DTC P0300 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. 	Yes	<p>Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p>

	<ul style="list-style-type: none">• Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].)• Start the engine and warm it up completely.• Perform the Pending Trouble Code Access Procedure. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)• Is the PENDING CODE same as the DTC present?		No Go to the next step.
24	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].)• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0327 [13B-MSP]

DTC P0327	KS No.1 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the KS No.1 when the engine is running. If the input voltage is less than 1.2 V, the PCM determines that the KS No.1 circuit input voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• KS No.1 connector or terminals malfunction• Short to ground in wiring harness between KS No.1 terminal A and PCM terminal 2U• Short to ground in wiring harness between KS No.1 terminal B and PCM terminal 2V• KS No.1 malfunction• PCM connector or terminals malfunction• Open circuit in wiring harness between KS No.1 terminal A and PCM terminal 2U• Open circuit in wiring harness between KS No.1 terminal B and PCM terminal 2V• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT KS NO.1 CONNECTOR FOR POOR CONNECTION	Yes Repair or replace the connector and/or

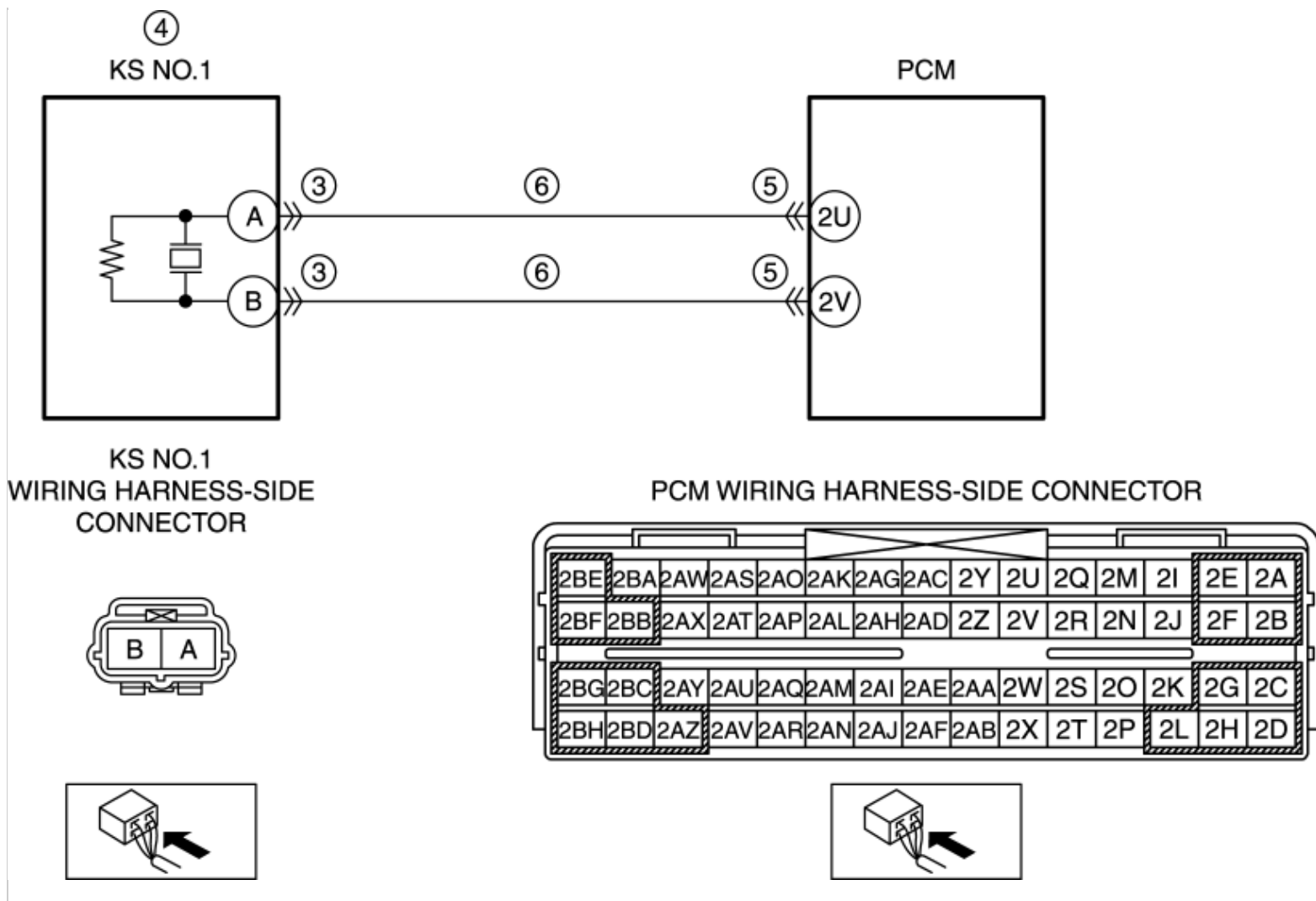
	<ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the KS No.1 connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	<p>terminals, then go to Step 8.</p> <p>No Go to the next step.</p>
4	<p>INSPECT KS NO.1 CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • KS No.1 connector is disconnected. • Turn the ignition switch off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> ▪ KS No.1 terminal A (wiring harness-side) and body ground ▪ KS No.1 terminal B (wiring harness-side) and body ground • Is there continuity? 	<p>Yes If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> • Replace the PCM (short to ground in the PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to Step 8.</p> <p>No Go to the next step.</p>
5	<p>INSPECT KS NO.1</p> <ul style="list-style-type: none"> • Inspect the KS No.1. <p>(See KNOCK SENSOR (KS) INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	<p>Yes Replace the KS No.1, then go to Step 8.</p> <p>(See KNOCK SENSOR (KS) REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
6	<p>INSPECT PCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 8.</p> <p>No Go to the next step.</p>
7	<p>INSPECT KS NO.1 CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • KS No.1 and PCM connectors are disconnected. • Turn the ignition switch off. 	<p>Yes Go to the next step.</p> <p>No Repair or replace the wiring harness for a possible open circuit, then go to the next step.</p>

	<ul style="list-style-type: none"> Inspect for continuity between the following circuits: <ul style="list-style-type: none"> KS No.1 terminal A (wiring harness-side) and PCM terminal 2U (wiring harness-side) KS No.1 terminal B (wiring harness-side) and PCM terminal 2V (wiring harness-side) Is there continuity? 		
8	VERIFY TROUBLESHOOTING OF DTC P0327 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)	
		No DTC troubleshooting completed.	

2011 - RX-8 - Engine

DTC P0328 [13B-MSP]

DTC P0328	KS No.1 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the KS No.1 when the engine is running. If the input voltage is more than 4.0 V, the PCM determines that the KS No.1 circuit input voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• KS No.1 connector or terminals malfunction• KS No.1 malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between KS No.1 terminal A and PCM terminal 2U• Short to power supply in wiring harness between KS No.1 terminal B and PCM terminal 2V• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT KS NO.1 CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. 	Yes Repair or replace the connector and/or terminals, then go to Step 7.

	<ul style="list-style-type: none"> • Disconnect the KS No.1 connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	No	Go to the next step.
4	INSPECT KS NO.1 <ul style="list-style-type: none"> • Inspect the KS No.1. (See KNOCK SENSOR (KS) INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes	Replace the KS No.1, then go to Step 7. (See KNOCK SENSOR (KS) REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
6	INSPECT KS NO.1 CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • KS No.1 and PCM connectors are disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between the following circuits: <ul style="list-style-type: none"> ▪ KS No.1 terminal A (wiring harness-side) and body ground ▪ KS No.1 terminal B (wiring harness-side) and body ground • Is the voltage more than 4.0 V? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No	Go to the next step.
7	VERIFY TROUBLESHOOTING OF DTC P0328 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)

	<ul style="list-style-type: none">• Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].)• Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].)• Is the same DTC present?	No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the “AFTER REPAIR PROCEDURE”. (See AFTER REPAIR PROCEDURE [13B-MSP].)• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

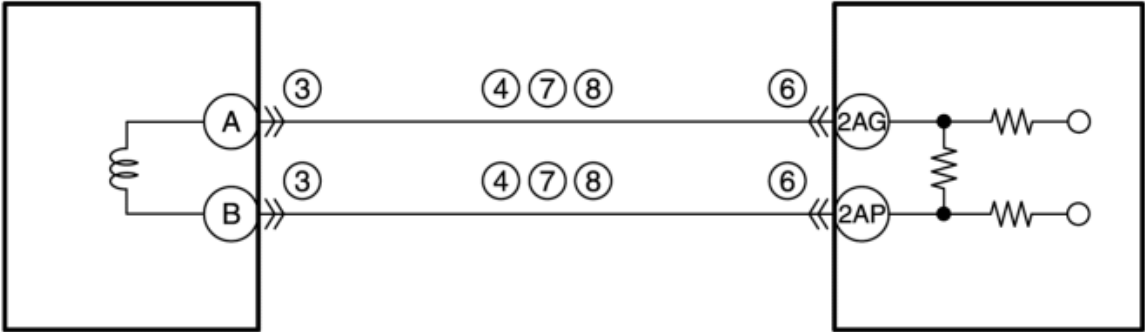
2011 - RX-8 - Engine

DTC P0335 [13B-MSP]

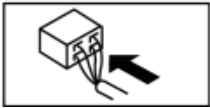
DTC P0335	Eccentric shaft position sensor circuit problem
DETECTION CONDITION	<ul style="list-style-type: none">The PCM monitors the input signal from the eccentric shaft position sensor when the mass intake airflow amount is more than 2 g/s {0.26 lb/min}. If the input signal is not input, the PCM determines that there is an eccentric shaft position sensor circuit malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none">This is a continuous monitor (CCM).The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.FREEZE FRAME DATA (Mode 2/Mode 12) is available.The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">Eccentric shaft position sensor connector or terminals malfunctionShort to ground in wiring harness between eccentric shaft position sensor terminal A and PCM terminal 2AGShort to ground in wiring harness between eccentric shaft position sensor terminal B and PCM terminal 2APEccentric shaft position sensor is dirtyEccentric shaft position sensor malfunctionPCM connector or terminals malfunctionShort to power supply in wiring harness between eccentric shaft position sensor terminal A and PCM terminal 2AGShort to power supply in wiring harness between eccentric shaft position sensor terminal B and PCM terminal 2APOpen circuit in wiring harness between eccentric shaft position sensor terminal A and PCM terminal 2AGOpen circuit in wiring harness between eccentric shaft position sensor terminal B and PCM terminal 2APPCM malfunction

⑤

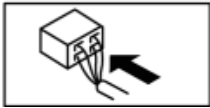
ECCENTRIC SHAFT POSITION SENSOR



ECCENTRIC SHAFT POSITION SENSOR
WIRING HARNESS-SIDE
CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.</p>
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
3	INSPECT ECCENTRIC SHAFT POSITION SENSOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the eccentric shaft position sensor connector. 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 9.</p> <p>No Go to the next step.</p>

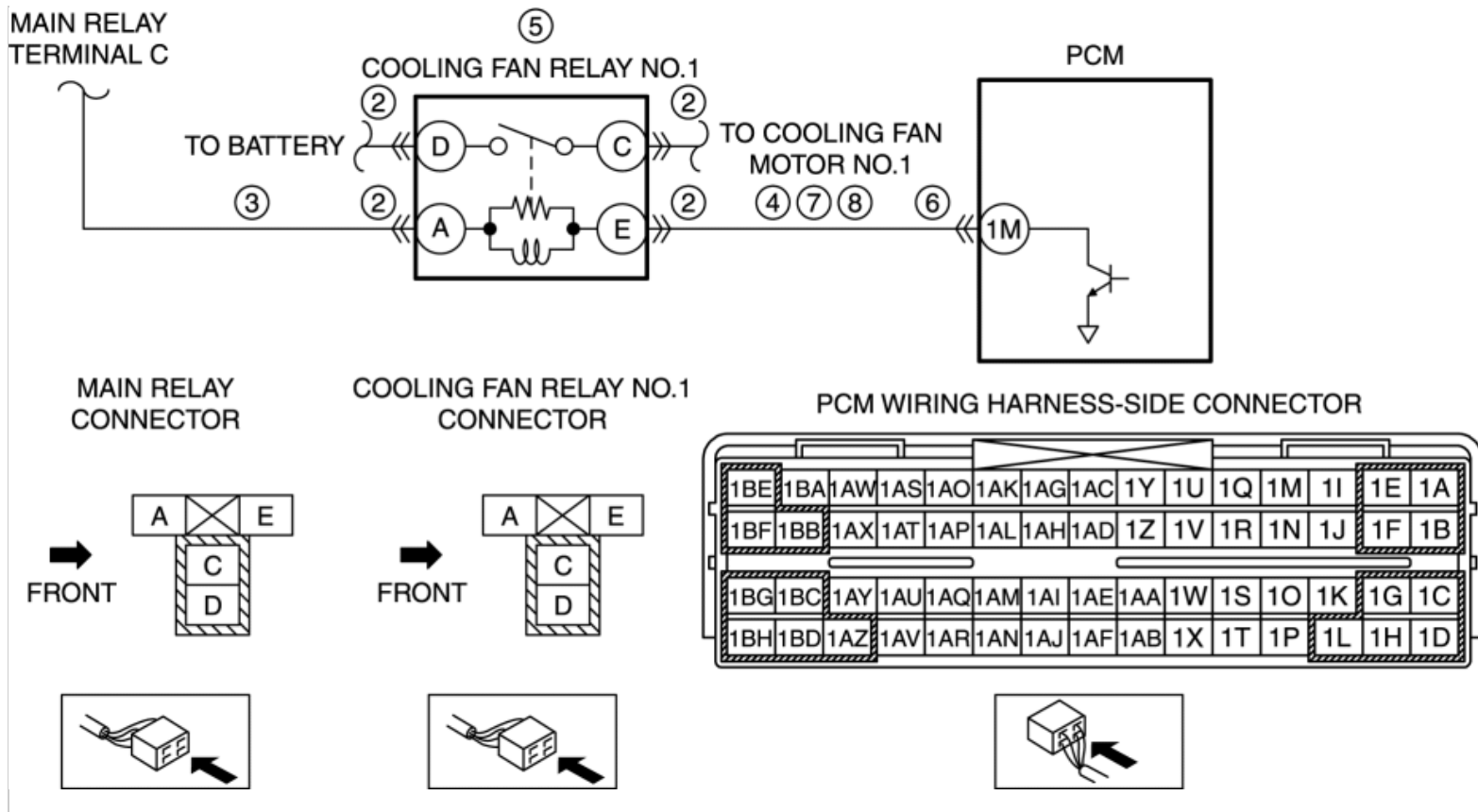
	<p>Inspect for poor connection (such as damaged/pulled-out pins, corrosion).</p> <ul style="list-style-type: none"> Is there any malfunction? 		
4	<p>INSPECT ECCENTRIC SHAFT POSITION SENSOR CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> Eccentric shaft position sensor connector is disconnected. Turn the ignition switch off. Inspect for continuity between the following circuits: <ul style="list-style-type: none"> Eccentric shaft position sensor terminal A (wiring harness-side) and body ground Eccentric shaft position sensor terminal B (wiring harness-side) and body ground Is there continuity? 	<p>Yes If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> Replace the PCM (short to ground in the PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to Step 9.</p>	
		No Go to the next step.	
5	<p>INSPECT ECCENTRIC SHAFT POSITION SENSOR</p> <ul style="list-style-type: none"> Inspect the eccentric shaft position sensor. <p>(See ECCENTRIC SHAFT POSITION SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Replace the eccentric shaft position sensor, then go to Step 9.</p> <p>(See ECCENTRIC SHAFT POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p>	
		No Go to the next step.	
6	<p>INSPECT PCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 9.</p>	
		No Go to the next step.	
7	<p>INSPECT ECCENTRIC SHAFT POSITION SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY</p> <ul style="list-style-type: none"> Eccentric shaft position sensor and PCM connectors are disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between the following circuits: <ul style="list-style-type: none"> Eccentric shaft position sensor terminal A (wiring harness-side) and body ground Eccentric shaft position sensor 	<p>Yes Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.</p>	
		No Go to the next step.	

	<p>terminal B (wiring harness-side) and body ground</p> <ul style="list-style-type: none"> Is the voltage B+? 		
8	<p>INSPECT ECCENTRIC SHAFT POSITION SENSOR CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> Eccentric shaft position sensor and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between the following circuits: <ul style="list-style-type: none"> Eccentric shaft position sensor terminal A (wiring harness-side) and PCM terminal 2AG (wiring harness-side) Eccentric shaft position sensor terminal B (wiring harness-side) and PCM terminal 2AP (wiring harness-side) Is there continuity? 	<p>Yes Go to the next step.</p> <p>No Repair or replace the wiring harness for a possible open circuit, then go to the next step.</p>	
9	<p>VERIFY TROUBLESHOOTING OF DTC P0335 COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Start the engine and run the engine for 5 s or more. Perform the DTC Reading Procedure. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none"> Is the same DTC present? 	<p>Yes Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>	
10	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	<p>Yes Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p> <p>No DTC troubleshooting completed.</p>	

2011 - RX-8 - Engine

DTC P0480 [13B-MSP]

DTC P0480	Cooling fan relay No.1 control circuit problem
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the cooling fan relay No.1 control voltage when the PCM turns the cooling fan relay No.1 off. If the control voltage is low, the PCM determines that the cooling fan No.1 control circuit voltage is low.• The PCM monitors the cooling fan relay No.1 control voltage when the PCM turns the cooling fan relay No.1 on. If the control voltage is high, the PCM determines that the cooling fan No.1 control circuit voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (other).• The MIL does not illuminate.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is not available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Cooling fan relay No.1 terminal malfunction• Short to ground or open circuit in cooling fan relay No.1 power supply circuit<ul style="list-style-type: none">▪ Short to ground in wiring harness between main relay terminal C and cooling fan relay No.1 terminal A▪ Cooling fan relay No.1 related fuse malfunction▪ Open circuit in wiring harness between main relay terminal C and cooling fan relay No.1 terminal A• Short to ground in wiring harness between cooling fan relay No.1 terminal E and PCM terminal 1M• Cooling fan relay No.1 malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between cooling fan relay No.1 terminal E and PCM terminal 1M• Open circuit in wiring harness between cooling fan relay No.1 terminal E and PCM terminal 1M• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
2	INSPECT COOLING FAN RELAY NO.1 CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Remove the cooling fan relay No.1. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal, then go to Step 9. No Go to the next step.
3	INSPECT COOLING FAN RELAY NO.1 POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> Cooling fan relay No.1 is removed. Turn the ignition switch to the ON position (engine off). Measure the voltage between cooling fan relay No.1 terminal A (wiring harness-side) and body ground. 	Yes Go to the next step. No Inspect the cooling fan relay No.1 related fuse. <ul style="list-style-type: none"> If the fuse is melt: <ul style="list-style-type: none"> Repair or replace the

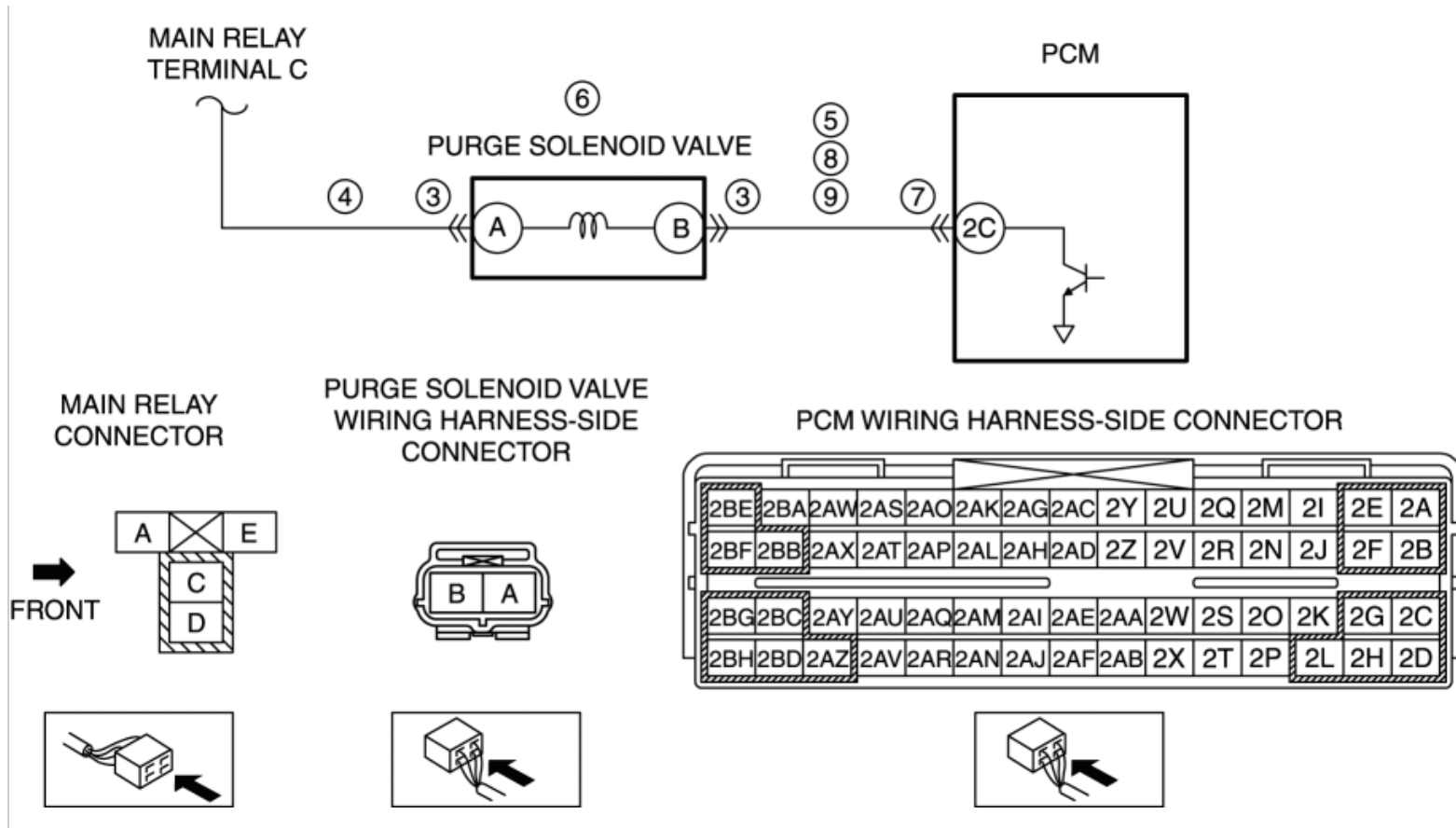
	<ul style="list-style-type: none"> Is the voltage B+? 	<p>wiring harness for a possible short to ground.</p> <ul style="list-style-type: none"> Replace the fuse. <ul style="list-style-type: none"> If the fuse is deterioration: <ul style="list-style-type: none"> Replace the fuse. If the fuse is normal: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible open circuit. <p>Go to Step 9.</p>
4	INSPECT COOLING FAN RELAY NO.1 CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Cooling fan relay No.1 is removed. Turn the ignition switch off. Inspect for continuity between cooling fan relay No.1 terminal E (wiring harness-side) and body ground. Is there continuity? 	<p>Yes If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> Replace the PCM (short to ground in the PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to Step 9.</p> <p>No Go to the next step.</p>
5	INSPECT COOLING FAN RELAY NO.1 <ul style="list-style-type: none"> Inspect the cooling fan relay No.1. (See RELAY INSPECTION.) Is there any malfunction? 	<p>Yes Replace the cooling fan relay No.1, then go to Step 9. (See RELAY LOCATION.)</p> <p>No Go to the next step.</p>
6	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 9.</p> <p>No Go to the next step.</p>
	INSPECT COOLING FAN RELAY NO.1 CONTROL CIRCUIT FOR	

7	SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Cooling fan relay No.1 is removed and PCM connector is disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between cooling fan relay No.1 terminal E (wiring harness-side) and body ground. Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.
		No	Go to the next step.
8	INSPECT COOLING FAN RELAY NO.1 CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Cooling fan relay No.1 is removed and PCM connector is disconnected. Turn the ignition switch off. Inspect for continuity between cooling fan relay No.1 terminal E (wiring harness-side) and PCM terminal 1M (wiring harness-side). Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P0480 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the PENDING CODE same as DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0443 [13B-MSP]

DTC P0443	Purge solenoid valve circuit problem
DETECTION CONDITION	<ul style="list-style-type: none">• Detect any of the following condition:<ul style="list-style-type: none">▪ The control voltage of the purge solenoid valve is less than specification even though the purge solenoid valve is off.▪ The current in the output driver IC over-current detection circuit above 3.5 A even though the purge solenoid valve is ON. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Purge solenoid valve connector or terminals malfunction• Short to ground or open circuit in purge solenoid valve power supply circuit<ul style="list-style-type: none">▪ Short to ground in wiring harness between main relay terminal C and purge solenoid valve terminal A▪ Purge solenoid valve related fuse malfunction▪ Open circuit in wiring harness between main relay terminal C and purge solenoid valve terminal A• Short to ground in wiring harness between purge solenoid valve terminal B and PCM terminal 2C• Purge solenoid valve malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between purge solenoid valve terminal B and PCM terminal 2C• Open circuit in wiring harness between purge solenoid valve terminal B and PCM terminal 2C• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	YesGo to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	YesPerform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT PURGE SOLENOID VALVE CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the purge solenoid valve connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	YesRepair or replace the connector and/or terminals, then go to Step 10.
		No Go to the next step.
4	INSPECT PURGE SOLENOID VALVE POWER SUPPLY CIRCUIT	YesGo to the next step.

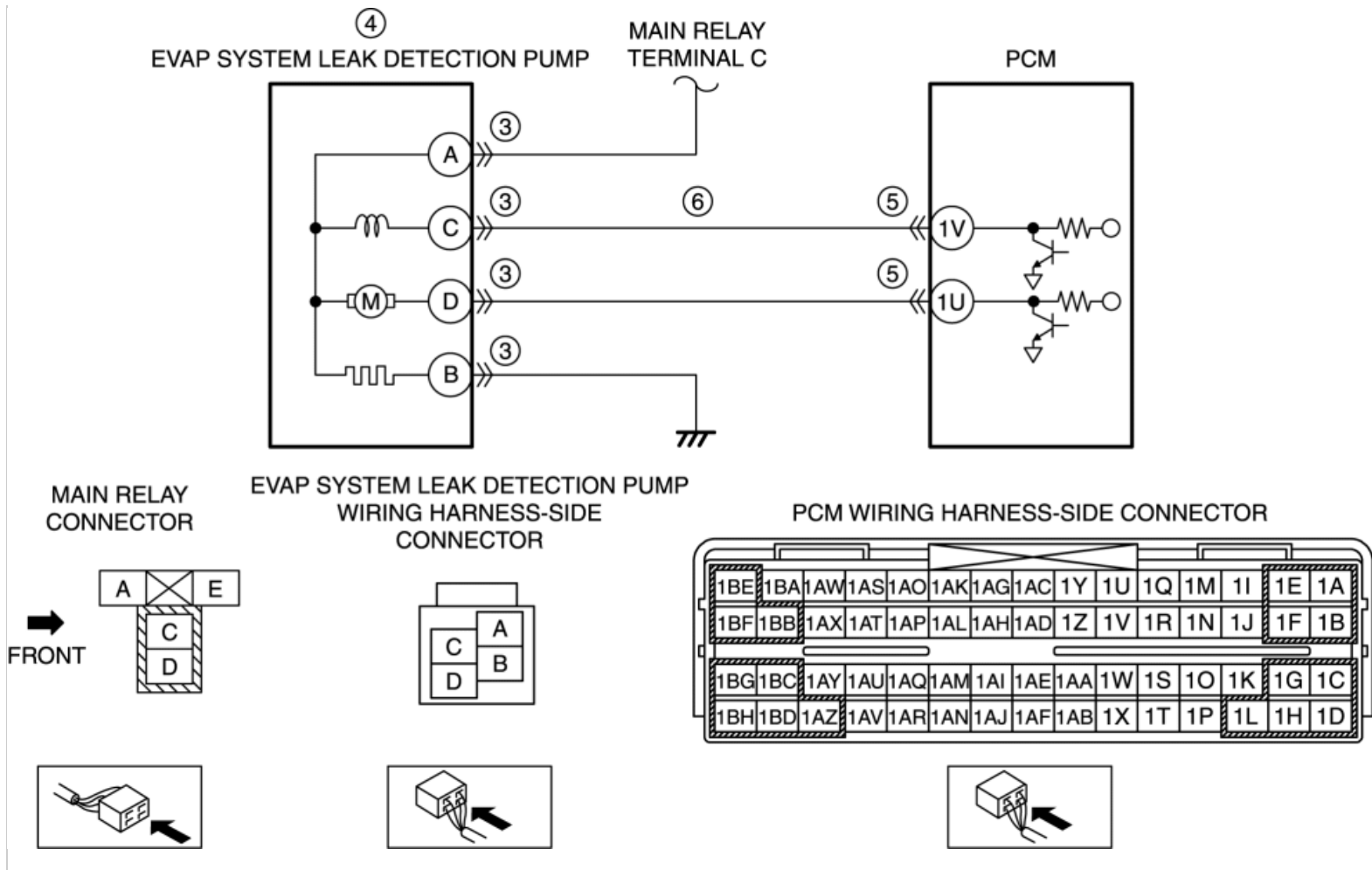
	FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Purge solenoid valve connector is disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between purge solenoid valve terminal A (wiring harness-side) and body ground. • Is the voltage B+? 		
		No Inspect the purge solenoid valve related fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> ▪ Repair or replace the wiring harness for a possible short to ground. ▪ Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> ▪ Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> ▪ Repair or replace the wiring harness for a possible open circuit. Go to Step 10.	
5	INSPECT PURGE SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Purge solenoid valve connector is disconnected. • Turn the ignition switch off. • Inspect for continuity between purge solenoid valve terminal B (wiring harness-side) and body ground. • Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [13B-MSP].) Go to Step 10.	
		No Go to the next step.	
6	INSPECT PURGE SOLENOID VALVE <ul style="list-style-type: none"> • Inspect the purge solenoid valve. (See PURGE SOLENOID VALVE INSPECTION [13B-MSP].) <ul style="list-style-type: none"> • Is there any malfunction? 	Yes Replace the purge solenoid valve, then go to Step 10.	
		No Go to the next step.	
	INSPECT PCM CONNECTOR FOR POOR CONNECTION		

7	<ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.
8	INSPECT PURGE SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Purge solenoid valve and PCM connectors are disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between purge solenoid valve terminal B (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 10.
		No	Go to the next step.
9	INSPECT PURGE SOLENOID VALVE CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Purge solenoid valve and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect for continuity between purge solenoid valve terminal B (wiring harness-side) and PCM terminal 2C (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
10	VERIFY TROUBLESHOOTING OF DTC P0443 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Perform the KOER self test. (See KOE/O/KOER SELF TEST [13B-MSP].) • Is the PENDING CODE same as DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0446 [13B-MSP]

DTC P0446	EVAP system vent control circuit problem
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors pump load current (EVAP line pressure) when the evaporative leak monitor is operating. If the decrease in pump load current is less than the specification after the reference current value has been obtained, the PCM determines that the change over valve in the EVAP system leak detection pump has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is an intermittent monitor (EVAP system).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• EVAP system leak detection pump connector or terminals malfunction• Change over valve malfunction (in EVAP system leak detection pump)• PCM connector or terminals malfunction• Short to power supply in wiring harness between EVAP system leak detection pump terminal C and PCM terminal 1V• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (EVAP system related) been recorded? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.</p>
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
3	INSPECT EVAP SYSTEM LEAK DETECTION PUMP CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the EVAP system leak detection pump connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 7.</p> <p>No Go to the next step.</p>

	Is there any malfunction?		
4	INSPECT CHANGE OVER VALVE (IN EVAP SYSTEM LEAK DETECTION PUMP) <ul style="list-style-type: none"> Inspect change over valve (in EVAP system leak detection pump). <p>(See EVAPORATIVE EMISSION (EVAP) SYSTEM LEAK DETECTION PUMP INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes Replace the EVAP system leak detection pump, then go to Step 7. (See EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM REMOVAL/INSTALLATION [13B-MSP] .)	
		No Go to the next step.	
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 7.	
		No Go to the next step.	
6	INSPECT EVAP SYSTEM LEAK DETECTION PUMP CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> EVAP system leak detection pump and PCM connectors are disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between EVAP system leak detection pump terminal C (wiring harness-side) and body ground. Is the voltage B+? 	Yes Repair or replace the wiring harness for a possible short to power supply, then go to the next step.	
		No Go to the next step.	
7	VERIFY TROUBLESHOOTING OF DTC P0446 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Perform the evaporative emission test using the M-MDS. <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is the same DTC present? <p>NOTE:</p> <ul style="list-style-type: none"> If the evaporative system test function is not available, perform the following procedure: Perform the DRIVE MODE 6 (EVAP System Repair Verification Drive Mode). <p>(See OBD-II DRIVE MODE [13B-MSP].)</p> <ul style="list-style-type: none"> Is the PENDING CODE the same as the DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP] .)	
		No Go to the next step.	
	VERIFY AFTER REPAIR PROCEDURE		

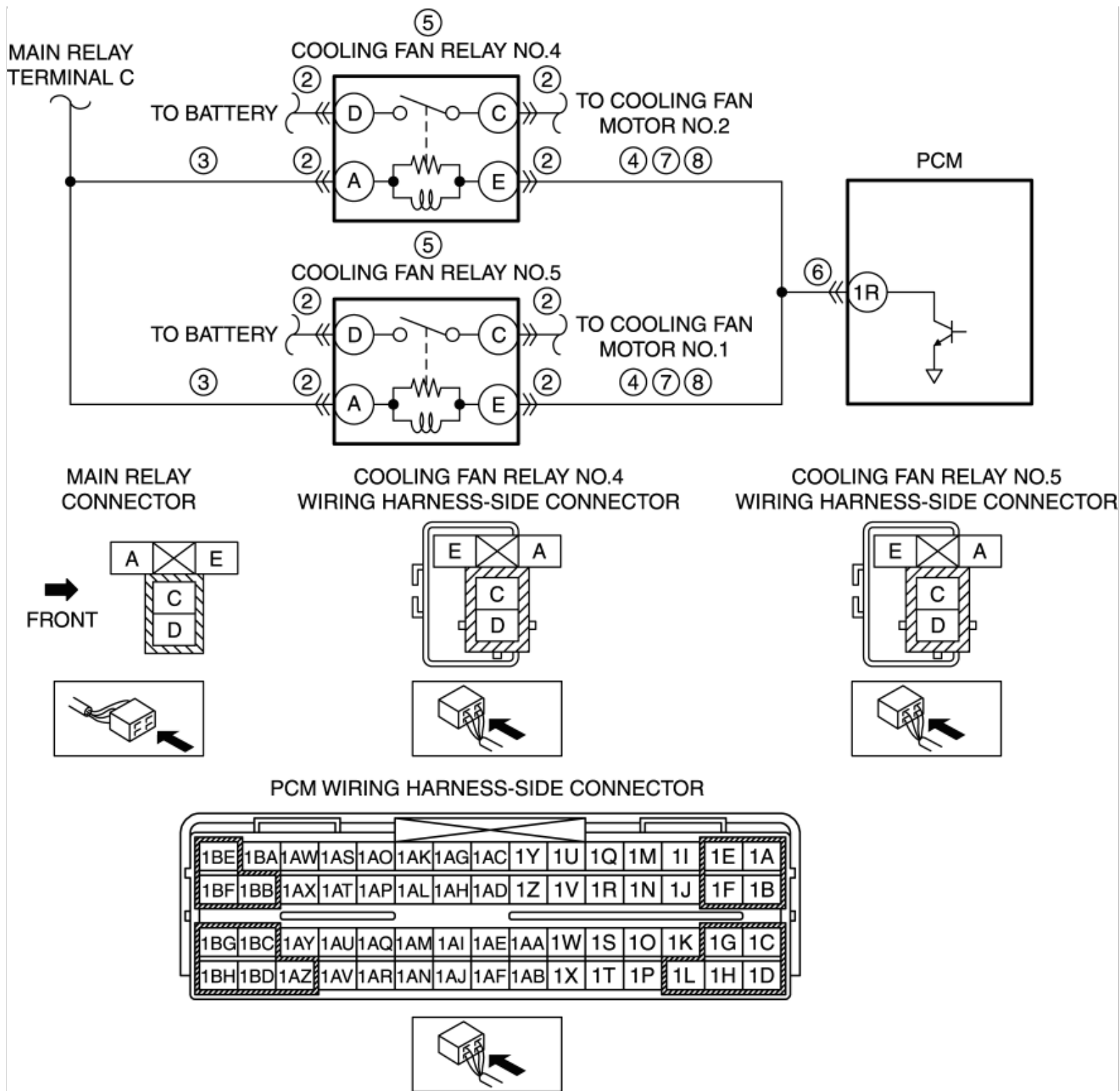
8	<ul style="list-style-type: none">Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].)Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0482 [13B-MSP]

DTC P0482	Cooling fan relay No.4 and No.5 control circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> • The PCM monitors the cooling fan relay No.4/No.5 control voltage when the PCM turns the cooling fan relay No.4/No.5 off. If the control voltage is low, the PCM determines that the cooling fan No.4/No.5 control circuit voltage is low. • The PCM monitors the cooling fan relay No.4/No.5 control voltage when the PCM turns the cooling fan relay No.4/No.5 on. If the control voltage is high, the PCM determines that the cooling fan No.4/No.5 control circuit voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor (other). • The MIL does not illuminate. • PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2/Mode 12) is not available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Cooling fan relay No.4/No.5 terminal malfunction • Short to ground or open circuit in cooling fan relay No.4/No.5 power supply circuit <ul style="list-style-type: none"> ▪ Short to ground in wiring harness between main relay terminal C and cooling fan relay No.4 terminal A ▪ Short to ground in wiring harness between main relay terminal C and cooling fan relay No.5 terminal A ▪ Cooling fan relay No.4/No.5 related fuse malfunction ▪ Open circuit in wiring harness between main relay terminal C and cooling fan relay No.4 terminal A ▪ Open circuit in wiring harness between main relay terminal C and cooling fan relay No.5 terminal A • Short to ground in wiring harness between cooling fan relay No.4 terminal E and PCM terminal 1R • Short to ground in wiring harness between cooling fan relay No.5 terminal E and PCM terminal 1R • Cooling fan relay No.4/No.5 malfunction

- PCM connector or terminals malfunction
- Short to power supply in wiring harness between cooling fan relay No.4 terminal E and PCM terminal 1R
- Short to power supply in wiring harness between cooling fan relay No.5 terminal E and PCM terminal 1R
- Open circuit in wiring harness between cooling fan relay No.4 terminal E and PCM terminal 1R
- Open circuit in wiring harness between cooling fan relay No.5 terminal E and PCM terminal 1R
- PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.

		No	Go to the next step.
2	INSPECT COOLING FAN RELAY No.4/No.5 CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Remove the cooling fan relay No.4/No.5. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
		No	Go to the next step.
3	INSPECT COOLING FAN RELAY NO.4/NO.5 POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Cooling fan relay No.4/No.5 relay are removed. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between the following circuits: <ul style="list-style-type: none"> ▪ Cooling fan relay No.4 terminal A (wiring harness-side) and body ground ▪ Cooling fan relay No.5 terminal A (wiring harness-side) and body ground • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the cooling fan relay No.4/No.5 related fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> ▪ Repair or replace the wiring harness for a possible short to ground. ▪ Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> ▪ Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> ▪ Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
4	INSPECT COOLING FAN RELAY No.4/No.5 CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Cooling fan relay No.4/No.5 relay are removed. • Turn the ignition switch off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> ▪ Cooling fan relay No.4 terminal E (wiring harness-side) and body ground ▪ Cooling fan relay No.5 terminal E (wiring harness-side) and 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION)

	<p>body ground</p> <ul style="list-style-type: none"> Is there continuity? 	<p>[13B-MSP].)</p> <p>Go to Step 9.</p>	
		No	Go to the next step.
5	<p>INSPECT COOLING FAN RELAY No.4/No.5</p> <ul style="list-style-type: none"> Inspect the cooling fan relay No.4/No.5. <p>(See RELAY INSPECTION.)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	<p>Replace the cooling fan relay No.4/No.5, then go to Step 9.</p> <p>(See RELAY LOCATION.)</p>
		No	Go to the next step.
6	<p>INSPECT PCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	<p>Repair or replace the connector and/or terminals, then go to Step 9.</p>
		No	Go to the next step.
7	<p>INSPECT COOLING FAN RELAY No.4/No.5 CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY</p> <ul style="list-style-type: none"> Cooling fan relay No.4/No.5 relay are removed and PCM connector is disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between the following circuits: <ul style="list-style-type: none"> Cooling fan relay No.4 terminal E (wiring harness-side) and body ground Cooling fan relay No.5 terminal E (wiring harness-side) and body ground Is the voltage B+? 	Yes	<p>Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.</p>
		No	Go to the next step.
8	<p>INSPECT COOLING FAN RELAY No.4/No.5 CONTROL CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> Cooling fan relay No.4/No.5 relay are removed and PCM connector is disconnected. Turn the ignition switch off. Inspect for continuity between the following circuits: <ul style="list-style-type: none"> Cooling fan relay No.4 terminal E (wiring harness-side) and PCM terminal 1R (wiring harness-side) 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.

	<ul style="list-style-type: none"> ▪ Cooling fan relay No.5 terminal E (wiring harness-side) and PCM terminal 1R (wiring harness-side) <ul style="list-style-type: none"> • Is there continuity? 		
9	VERIFY TROUBLESHOOTING OF DTC P0482 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) • Is the PENDING CODE same as DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0461 [13B-MSP]

DTC P0461	Fuel gauge sender unit (main) circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the fuel tank level difference before and after the PCM-calculated fuel consumption has reached more than 21 L {22.2 US qt, 18.5 Imp qt}. If the difference is less than 5%, the PCM determines that there is a fuel gauge sender unit (main) circuit range/performance problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Instrument cluster malfunction Fuel gauge sender unit (main) malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	<div>Yes</div> Go to the next step.
		<div>No</div> Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.

2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
3	INSPECT INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Perform the "INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE". <p>(See INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE.)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 5.
4	INSPECT FUEL GAUGE SENDER UNIT (MAIN) <ul style="list-style-type: none"> • Inspect the fuel gauge sender unit (main). <p>(See FUEL GAUGE SENDER UNIT INSPECTION.)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	Replace the fuel gauge sender unit (main), then go to the next step. <p>(See FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION.)</p>
5	VERIFY TROUBLESHOOTING OF DTC P0461 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Start the engine. • Drive the vehicle under the FREEZE FRAME DATA (Mode 2) condition. • Perform the Pending Trouble Code Access Procedure. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • Is the PENDING CODE same as DTC present? 	Yes	Replace the PCM, then go to the next step. <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.

6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?		Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
			No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0462 [13B-MSP]

DTC P0462	Fuel gauge sender unit (main) circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the fuel tank level and input voltage from the fuel gauge sender unit (main) when the engine is running. If the input voltage is less than 0.78 V and fuel tank level is full, the PCM determines that the fuel gauge sender unit (main) circuit input voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Instrument cluster malfunction Fuel gauge sender unit (main) malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.

2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	<div> Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. </div> <div> No Go to the next step. </div>
3	INSPECT INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Perform the "INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE". <p>(See INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE.)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	<div> Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 5. </div> <div> No Go to the next step. </div>
4	INSPECT FUEL GAUGE SENDER UNIT (MAIN) <ul style="list-style-type: none"> • Inspect the fuel gauge sender unit (main). <p>(See FUEL GAUGE SENDER UNIT INSPECTION.)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	<div> Yes Replace the fuel gauge sender unit (main), then go to the next step. <p>(See FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION.)</p> </div> <div> No Go to the next step. </div>
5	VERIFY TROUBLESHOOTING OF DTC P0462 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Start the engine. • Drive the vehicle under the FREEZE FRAME DATA (Mode 2) condition. • Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • Is the PENDING CODE same as DTC present? 	<div> Yes Replace the PCM, then go to the next step. <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> </div> <div> No Go to the next step. </div>

6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?		Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
			No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0463 [13B-MSP]

DTC P0463	Fuel gauge sender unit (main) circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the fuel tank level and input voltage from the fuel gauge sender unit (main) when the engine is running. If the input voltage is more than 4.9 V and fuel tank level is empty, the PCM determines that the fuel gauge sender unit (main) circuit input voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Instrument cluster malfunction Fuel gauge sender unit (main) malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.</p>

2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
3	INSPECT INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Perform the "INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE". <p>(See INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE.)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 5.
4	INSPECT FUEL GAUGE SENDER UNIT (MAIN) <ul style="list-style-type: none"> • Inspect the fuel gauge sender unit (main). <p>(See FUEL GAUGE SENDER UNIT INSPECTION.)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	Replace the fuel gauge sender unit (main), then go to the next step. <p>(See FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION.)</p>
5	VERIFY TROUBLESHOOTING OF DTC P0463 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Start the engine. • Drive the vehicle under the FREEZE FRAME DATA (Mode 2) condition. • Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • Is the PENDING CODE same as DTC present? 	Yes	Replace the PCM, then go to the next step. <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.

6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?		Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
			No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0500 [13B-MSP]

DTC P0500	VSS circuit problem
DETECTION CONDITION	<ul style="list-style-type: none">The PCM monitors the input signal from the vehicle speed sensor when the following conditions are met. If the input signal is less than 3.7 km/h {2.3 mph}, the PCM determines that there is a VSS circuit malfunction. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none">Shift lever position: gear is not in neutral positionEngine speed: more than 2,500 rpmLOAD: more than 40.0% <p>Diagnostic support note</p> <ul style="list-style-type: none">This is a continuous monitor (CCM).The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.FREEZE FRAME DATA (Mode 2/Mode 12) is available.The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">ABS HU/CM malfunction (with ABS HU/CM)DSC HU/CM malfunction (with DSC HU/CM)PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION

1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none"> Start the engine. Access the VSS PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Read the VSS PID when the vehicle is driving. Is the VSS PID normal? (See PCM INSPECTION [13B-MSP].) 	Yes	Intermittent concern exists. Perform the "INTERMITTENT CONCERN TROUBLESHOOTING". (See INTERMITTENT CONCERN TROUBLESHOOTING [13B-MSP] .)
		No	Go to the next step.
4	INSPECT ABS HU/CM OR DSC HU/CM <ul style="list-style-type: none"> Inspect the ABS HU/CM (with ABS HU/CM). (See ABS HU/CM INSPECTION.) Inspect the DSC HU/CM (with DSC HU/CM). (See DSC HU/CM INSPECTION.) Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to the next step.
		No	Go to the next step.
5	VERIFY TROUBLESHOOTING OF DTC P0500 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP] .)
		No	Go to the next step.

	<p>memory using the M-MDS.</p> <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Drive the vehicle under the FREEZE FRAME DATA (Mode 2) condition.• Perform the Pending Trouble Code Access Procedure. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none">• Is the PENDING CODE same as the DTC present?		
6	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none">• Perform the “AFTER REPAIR PROCEDURE”. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0505 [13B-MSP]

DTC P0505	IAC system problem
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM cannot control idle speed at the target idle speed during the KOER self test. <p>Diagnostic support note</p> <ul style="list-style-type: none">• The MIL does not illuminate.• PENDING CODE is not available.• FREEZE FRAME DATA (Mode 2/Mode 12) is not available.• The DTC is not stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Drive-by-wire control system malfunction• A/C cut-off control malfunction• Generator control system malfunction• Intake-air line clogged<ul style="list-style-type: none">▪ Air cleaner clogged▪ Throttle body clogged• Insufficient compression<ul style="list-style-type: none">▪ Metering oil pump malfunction▪ Engine oil malfunction▪ Oil pressure decrease▪ Oil passage malfunction▪ Engine malfunction• Fuel line pressure malfunction

	<ul style="list-style-type: none"> ▪ Fuel pump unit malfunction ▪ Pressure regulator (built-in fuel pump unit) malfunction
	<ul style="list-style-type: none"> • PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> • Turn the ignition switch off, then to the ON position (engine off). • Verify the related PENDING CODE or stored DTCs. • Are other DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	Go to the next step.
3	INSPECT DRIVE-BY-WIRE CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> • Perform the Drive-by-wire Control System Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 14.
		No	Go to the next step.
4	INSPECT A/C MAGNETIC CLUTCH OPERATION <ul style="list-style-type: none"> • Turn the blower motor switch off. • Is the magnetic clutch still on? 	Yes	Go to the "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY". (See NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [13B-MSP].)
		No	Go to the next step.

5	INSPECT GENERATOR CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> • Apply the electrical load at idle. • Is the engine speed increased? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible short to power supply, then go to Step 14.
6	INSPECT AIR CLEANER ELEMENT <ul style="list-style-type: none"> • Remove the air cleaner element with the engine running. (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].) • Is the engine speed increased? 	Yes	Clean or replace the air cleaner element, then go to Step 14. (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP] .)
		No	Go to the next step.
7	INSPECT THROTTLE BODY PASSAGE <ul style="list-style-type: none"> • Remove the throttle body. (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].) • Is the throttle body clogged? 	Yes	Clean the throttle body passage or replace the throttle body, then go to Step 14. (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP] .)
		No	Go to the next step.
8	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. (See COMPRESSION INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 13.
9	INSPECT METERING OIL PUMP <ul style="list-style-type: none"> • Inspect the metering oil pump. (See METERING OIL PUMP INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results. Overhaul or replace the engine, then go to Step 14.
		No	Go to the next step.
10	INSPECT ENGINE OIL CONDITION <ul style="list-style-type: none"> • Inspect the engine oil condition. • Is the engine oil condition normal? 	Yes	Go to the next step.
		No	Replace the engine oil. Overhaul or replace the engine, then go to Step 14.

11	INSPECT OIL PRESSURE <ul style="list-style-type: none"> Inspect the oil pressure. <p>(See OIL PRESSURE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results. Overhaul or replace the engine, then go to Step 14.
12	INSPECT OIL PASSAGE <ul style="list-style-type: none"> Inspect the oil pipe between metering oil pump and metering oil nozzle. Is there any malfunction? 	Yes	Inspect for leakage or clogging in the engine oil passage. Repair or replace the malfunctioning part according to the inspection results. Overhaul or replace the engine, then go to Step 14.
13	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> Perform the "FUEL LINE PRESSURE INSPECTION". <p>(See FUEL LINE PRESSURE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	Replace the fuel pump unit, then go to the next step. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)
14	VERIFY TROUBLESHOOTING OF DTC P0505 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Perform the KOER self test. <p>(See KOE/O/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none"> Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
15	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)

(See [AFTER REPAIR
PROCEDURE \[13B-MSP\]](#).)

- Are any DTCs present?

No DTC troubleshooting completed.

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

DTC P0506 [13B-MSP]

DTC P0506	IAC system RPM lower than expected
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM compares the actual idle speed with the target idle speed when the engine is running. If the actual idle speed is lower than targeted by 100 rpm, the PCM determines that the IAC system RPM is lower than expected. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
	<ul style="list-style-type: none">• VSS malfunction• Drive-by-wire control system malfunction• A/C cut-off control malfunction• Generator control system malfunction• Intake-air line clogged<ul style="list-style-type: none">▪ Air cleaner clogged▪ Throttle body clogged• Purge solenoid valve malfunction• IAT sensor malfunction• ECT sensor malfunction

POSSIBLE CAUSE

- APP sensor malfunction
- Eccentric shaft position sensor malfunction
- Insufficient compression
 - Metering oil pump malfunction
 - Engine oil malfunction
 - Oil pressure decrease
 - Oil passage malfunction
 - Engine malfunction
- Fuel line pressure malfunction
 - Fuel pump unit malfunction
 - Pressure regulator (built-in fuel pump unit) malfunction
- PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED	Yes Go to the next step.
	<ul style="list-style-type: none"> • Has the FREEZE FRAME DATA (Mode 12) been recorded? 	No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY	Yes Perform repair or diagnosis according to the available repair information.
	<ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	<ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. No Go to the next step.
3	VERIFY RELATED PENDING CODE OR STORED DTC	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
	<ul style="list-style-type: none"> • Turn the ignition switch off, then to the ON position (engine off). • Verify the related PENDING CODE or stored DTCs. • Are other DTCs present? 	No Go to the next step.

4	<p>VERIFY CURRENT INPUT SIGNAL STATUS OF VSS</p> <ul style="list-style-type: none"> • Start the engine. • Access the VSS PID using the M-MDS. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • Inspect the VSS PID. • Is the PID normal? <p>(See PCM INSPECTION [13B-MSP].)</p>		<p>Yes Go to the next step.</p> <p>No Repair or replace the malfunctioning part according to the inspection results, then go to Step 21.</p>
5	<p>INSPECT DRIVE-BY-WIRE CONTROL SYSTEM OPERATION</p> <ul style="list-style-type: none"> • Perform the Drive-by-wire Control System Inspection. <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 		<p>Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 21.</p> <p>No Go to the next step.</p>
6	<p>INSPECT A/C MAGNETIC CLUTCH OPERATION</p> <ul style="list-style-type: none"> • Turn the blower motor switch off. • Is the magnetic clutch still on? 		<p>Yes Go to the "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY".</p> <p>(See NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [13B-MSP].)</p> <p>No Go to the next step.</p>
7	<p>INSPECT GENERATOR CONTROL SYSTEM OPERATION</p> <ul style="list-style-type: none"> • Apply the electrical load at idle. • Is the engine speed increased? 		<p>Yes Go to the next step.</p> <p>No Repair or replace the wiring harness for a possible short to power supply, then go to Step 21.</p>
8	<p>INSPECT AIR CLEANER ELEMENT</p> <ul style="list-style-type: none"> • Remove the air cleaner element with the engine running. • Is the engine speed increased? 		<p>Yes Clean or replace the air cleaner element, then go to Step 21.</p> <p>(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)</p>

		No	Go to the next step.
9	INSPECT THROTTLE BODY PASSAGE <ul style="list-style-type: none"> Remove the throttle body. <p>(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)</p> <ul style="list-style-type: none"> Is the throttle body clogged? 	Yes	Clean the throttle body passage or replace the throttle body, then go to Step 21. <p>(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.
10	INSPECT PURGE SOLENOID VALVE <ul style="list-style-type: none"> Inspect the purge solenoid valve. <p>(See PURGE SOLENOID VALVE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	Replace the purge solenoid valve, then go to Step 21.
		No	Go to the next step.
11	INSPECT IAT SENSOR <ul style="list-style-type: none"> Inspect the IAT sensor. <p>(See INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	Replace the MAF/IAT sensor, then go to Step 21. <p>(See MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.
12	INSPECT ECT SENSOR <ul style="list-style-type: none"> Inspect the ECT sensor. <p>(See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	Replace the ECT sensor, then go to Step 21. <p>(See ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.
13	INSPECT APP SENSOR <ul style="list-style-type: none"> Inspect the APP sensor. <p>(See ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	Replace the accelerator pedal, then go to Step 21. <p>(See ACCELERATOR PEDAL REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.
14	INSPECT ECCENTRIC SHAFT POSITION SENSOR <ul style="list-style-type: none"> Inspect the eccentric shaft 	Yes	Replace the eccentric shaft position sensor, then go to Step 21.

	<p>position sensor.</p> <p>(See ECCENTRIC SHAFT POSITION SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>(See ECCENTRIC SHAFT POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p>	
		No	Go to the next step.
15	<p>INSPECT ENGINE COMPRESSION</p> <ul style="list-style-type: none"> Inspect the engine compression. <p>(See COMPRESSION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 20.
16	<p>INSPECT METERING OIL PUMP</p> <ul style="list-style-type: none"> Inspect the metering oil pump. <p>(See METERING OIL PUMP INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	<p>Repair or replace the malfunctioning part according to the inspection results.</p> <p>Overhaul or replace the engine, then go to Step 21.</p>
		No	Go to the next step.
17	<p>INSPECT ENGINE OIL CONDITION</p> <ul style="list-style-type: none"> Inspect the engine oil condition. Is the engine oil condition normal? 	Yes	Go to the next step.
		No	<p>Replace the engine oil.</p> <p>Overhaul or replace the engine, then go to Step 21.</p>
18	<p>INSPECT OIL PRESSURE</p> <ul style="list-style-type: none"> Inspect the oil pressure. <p>(See OIL PRESSURE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	<p>Repair or replace the malfunctioning part according to the inspection results.</p> <p>Overhaul or replace the engine, then go to Step 21.</p>
		No	Go to the next step.
19	<p>INSPECT OIL PASSAGE</p> <ul style="list-style-type: none"> Inspect the oil pipe between metering oil pump and metering oil nozzle. Is there any malfunction? 	Yes	<p>Inspect for leakage or clogging in the engine oil passage.</p> <p>Repair or replace the malfunctioning part according to the inspection results.</p> <p>Overhaul or replace the engine, then go to Step 21.</p>

		No	Overhaul or replace the engine, then go to Step 21.
20	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> Perform the "FUEL LINE PRESSURE INSPECTION". (See FUEL LINE PRESSURE INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Replace the fuel pump unit, then go to the next step. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
21	VERIFY TROUBLESHOOTING OF DTC P0506 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Start the engine. Perform the Pending Trouble Code Access Procedure. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Is the PENDING CODE same as DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
22	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0507 [13B-MSP]

DTC P0507	IAC system RPM higher than expected
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM compares the actual idle speed with the target idle speed when the engine is running. If the actual idle speed is higher than targeted by 200 rpm, the PCM determines that the IAC system RPM is higher than expected. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• VSS malfunction• Improper connection of vacuum hoses• Drive-by-wire control system malfunction• IAT sensor malfunction• APP sensor malfunction• Eccentric shaft position sensor malfunction• ECT sensor malfunction• PCM malfunction

Diagnostic procedure

--	--	--

STEP	INSPECTION	ACTION	
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> Turn the ignition switch off, then to the ON position (engine off). Verify the related PENDING CODE or stored DTCs. Are other DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	Go to the next step.
4	VERIFY CURRENT INPUT SIGNAL STATUS OF VSS <ul style="list-style-type: none"> Start the engine. Access the VSS PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Inspect the VSS PID. Is the PID normal? (See PCM INSPECTION [13B-MSP].) 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 11.
5	INSPECT VACUUM HOSE FOR POOR CONNECTION <ul style="list-style-type: none"> Are the vacuum hoses connecting correctly? (See INTAKE-AIR SYSTEM VACUUM HOSE ROUTING DIAGRAM [13B-MSP].) 	Yes	Go to the next step.
		No	Connect the vacuum hose correctly, then go to Step 11. (See INTAKE-AIR SYSTEM VACUUM HOSE ROUTING DIAGRAM [13B-MSP].)

6	INSPECT DRIVE-BY-WIRE CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> Perform the Drive-by-wire Control System Inspection. <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 11.
		No Go to the next step.
7	INSPECT IAT SENSOR <ul style="list-style-type: none"> Inspect the IAT sensor. <p>(See INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes Replace the MAF/IAT sensor, then go to Step 11. (See MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
		No Go to the next step.
8	INSPECT APP SENSOR <ul style="list-style-type: none"> Inspect the APP sensor. <p>(See ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes Replace the accelerator pedal, then go to Step 11. (See ACCELERATOR PEDAL REMOVAL/INSTALLATION [13B-MSP].)
		No Go to the next step.
9	INSPECT ECCENTRIC SHAFT POSITION SENSOR <ul style="list-style-type: none"> Inspect the eccentric shaft position sensor. <p>(See ECCENTRIC SHAFT POSITION SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes Replace the eccentric shaft position sensor, then go to Step 11. (See ECCENTRIC SHAFT POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP].)
		No Go to the next step.
10	INSPECT ECT SENSOR <ul style="list-style-type: none"> Inspect the ECT sensor. <p>(See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes Replace the ECT sensor, then go to the next step. (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
		No Go to the next step.
11	VERIFY TROUBLESHOOTING OF DTC P0507 COMPLETED	Yes Replace the PCM, then go to the next step.

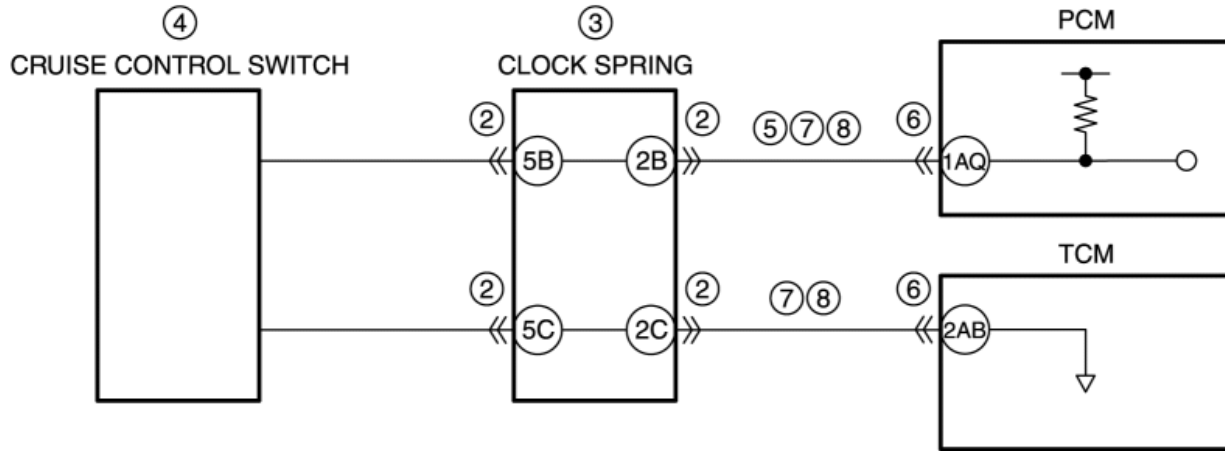
	<ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Start the engine. • Perform the Pending Trouble Code Access Procedure. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) • Is the PENDING CODE same as DTC present? 		(See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the “AFTER REPAIR PROCEDURE”. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

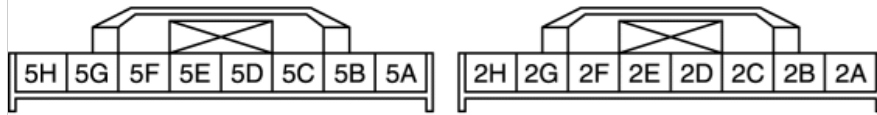
DTC P0564 [13B-MSP]

DTC P0564	Cruise control switch input circuit problem
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the cruise control switch when the engine is running. If the input voltage is less than 3.0 V for more than 2 min, the PCM determines that there is a cruise control switch input circuit problem. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (other).• The MIL does not illuminate.• FREEZE FRAME DATA (Mode 2/Mode 12) is not available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Clock spring connector or terminals malfunction• Clock spring malfunction• Cruise control switch malfunction• Short to ground in wiring harness between clock spring terminal 2B and PCM terminal 1AQ• PCM connector or terminals malfunction• TCM connector or terminals malfunction (AT)• Short to power supply in wiring harness between the following terminals:<ul style="list-style-type: none">▪ Clock spring terminal 2B—PCM terminal 1AQ▪ Clock spring terminal 2C—PCM terminal 1BG (MT)▪ Clock spring terminal 2C—TCM terminal 2AB (AT)• Open circuit in wiring harness between the following terminals:<ul style="list-style-type: none">▪ Clock spring terminal 2B—PCM terminal 1AQ▪ Clock spring terminal 2C—PCM terminal 1BG (MT)▪ Clock spring terminal 2C—TCM terminal 2AB (AT)• PCM malfunction

(AT)

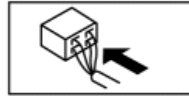


CLOCK SPRING CONNECTOR

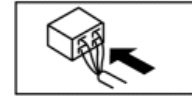
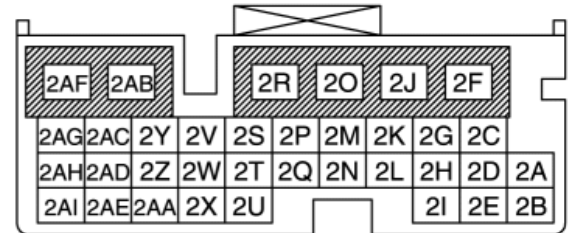


(PART WIRING HARNESS-SIDE)

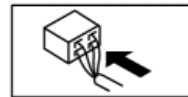
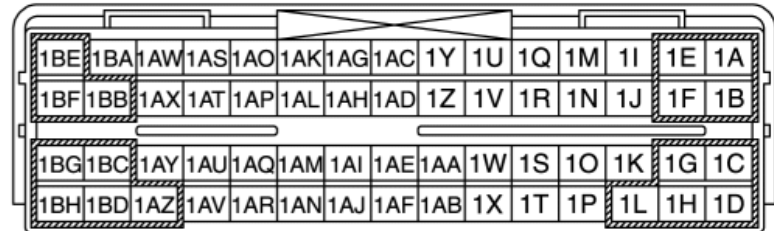
(WIRING HARNESS-SIDE)

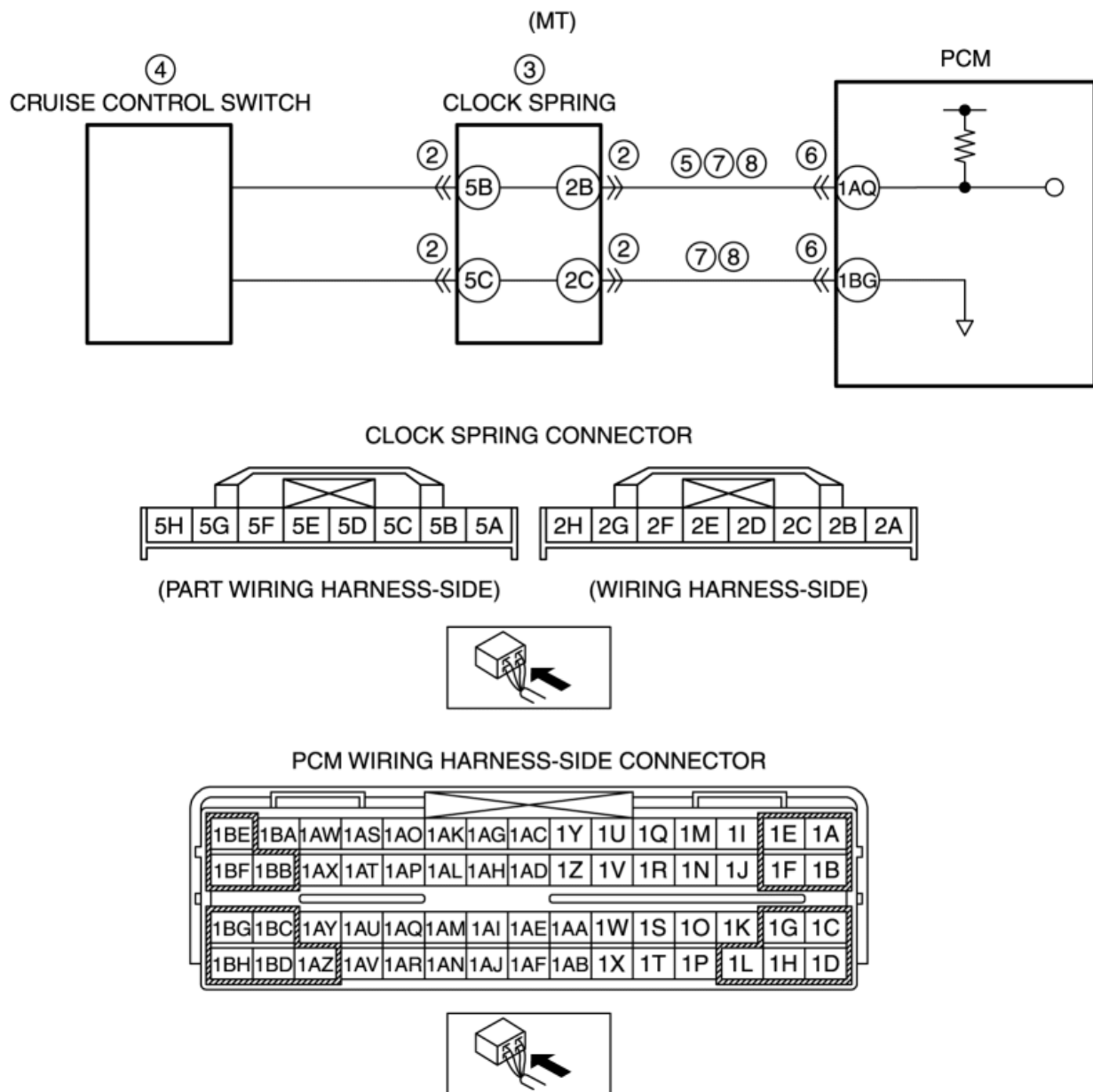


TCM WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR





Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
2	INSPECT CLOCK SPRING CONNECTOR FOR POOR CONNECTION <p>WARNING:</p> <ul style="list-style-type: none"> Handling the air bag system components improperly can accidentally deploy the air bag modules and pre-tensioner seat belts, which may seriously injure you. Read the air bag system service warnings and cautions before handling the air bag system components. 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 9.</p> <p>No Go to the next step.</p>

	<p>(See AIR BAG SYSTEM SERVICE WARNINGS.)</p> <p>(See AIR BAG SYSTEM SERVICE CAUTIONS.)</p> <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the clock spring connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 		
3	<p>INSPECT CLOCK SPRING</p> <ul style="list-style-type: none"> • Inspect the clock spring. <p>(See CLOCK SPRING INSPECTION.)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	<p>Yes Replace the clock spring, then go to Step 9.</p> <p>(See CLOCK SPRING REMOVAL/INSTALLATION.)</p>	
		No Go to the next step.	
4	<p>INSPECT CRUISE CONTROL SWITCH</p> <ul style="list-style-type: none"> • Inspect the cruise control switch. <p>(See CRUISE CONTROL SWITCH INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	<p>Yes Replace the cruise control switch, then go to Step 9.</p> <p>(See AUDIO CONTROL SWITCH REMOVAL/INSTALLATION.)</p>	
		No Go to the next step.	
5	<p>INSPECT CRUISE CONTROL SWITCH CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • Clock spring connector is disconnected. • Inspect for continuity between clock spring terminal 2B (wiring harness-side) and body ground. • Is there continuity? 	<p>Yes If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> • Replace the PCM (short to ground in PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to Step 9.</p>	
		No Go to the next step.	
6	<p>INSPECT PCM AND/OR TCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Disconnect the PCM and TCM (AT) connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 9.</p>	
		No Go to the next step.	
7	<p>INSPECT CRUISE CONTROL SWITCH CIRCUIT FOR SHORT TO POWER SUPPLY</p> <ul style="list-style-type: none"> • Clock spring, PCM and TCM connectors are disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between the following terminals (wiring harness-side) and body ground: 	<p>Yes Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.</p>	
		No Go to the next step.	

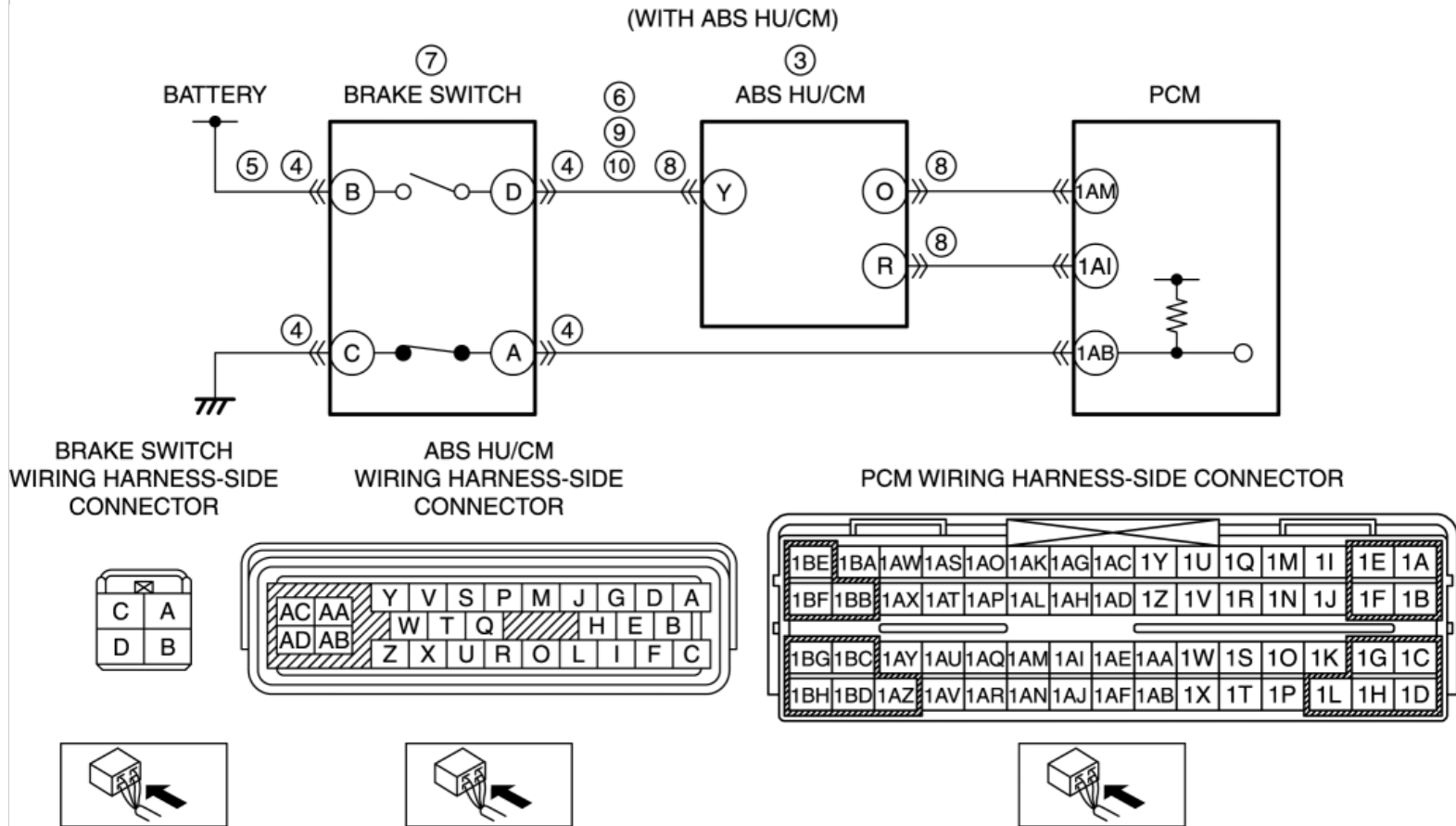
	<ul style="list-style-type: none"> ▪ Clock spring terminal 2B ▪ Clock spring terminal 2C • Is there any voltage? 		
8	INSPECT CRUISE CONTROL SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Clock spring, PCM and TCM connectors are disconnected. • Turn the ignition switch off. • Inspect for continuity between the following terminals (wiring harness-side): <ul style="list-style-type: none"> ▪ Clock spring terminal 2B—PCM terminal 1AQ ▪ Clock spring terminal 2C—PCM terminal 1BG (MT) ▪ Clock spring terminal 2C—TCM terminal 2AB (AT) • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P0564 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Start the engine. • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

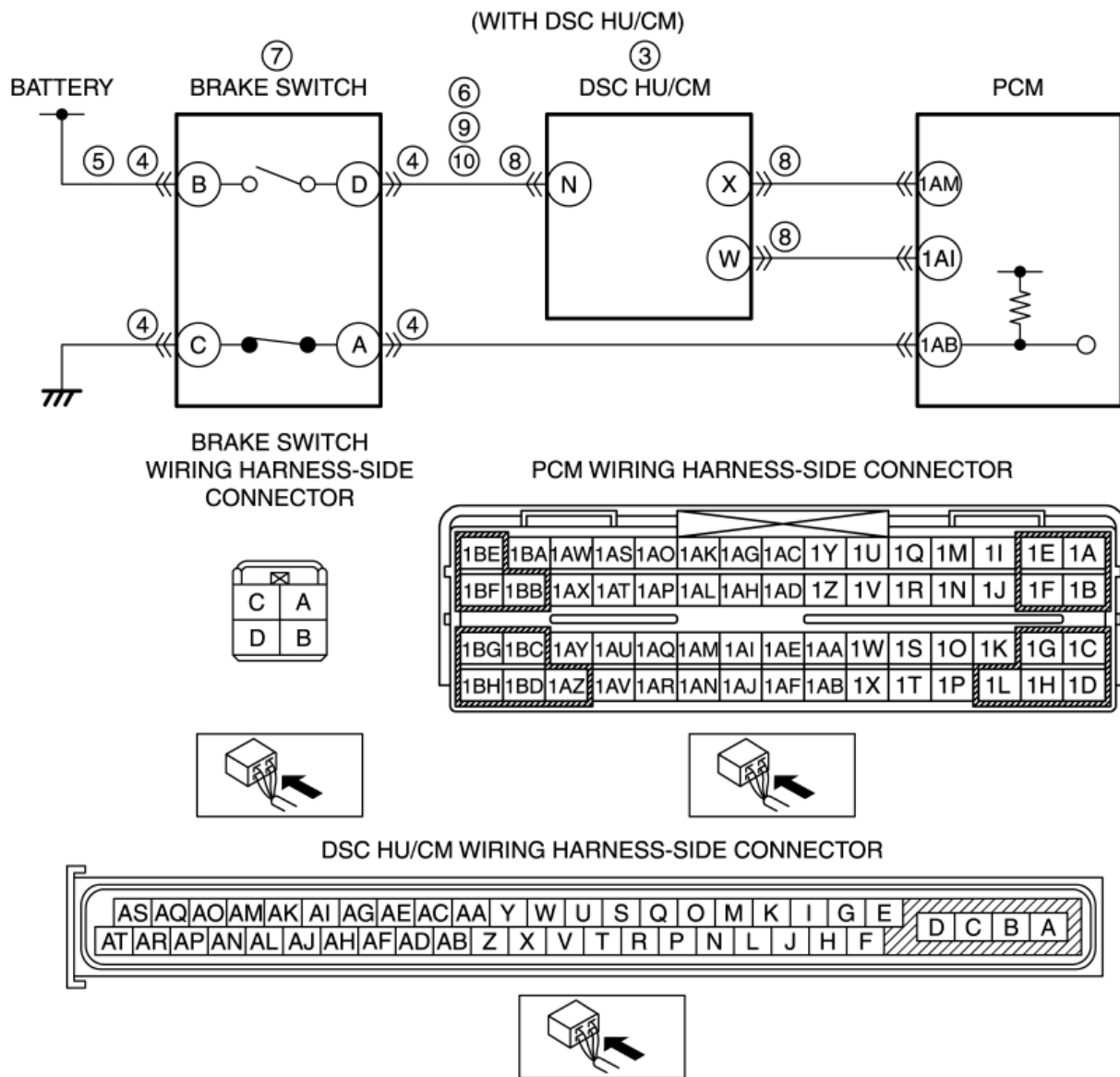
2011 - RX-8 - Engine

DTC P0571 [13B-MSP]

DTC P0571	Brake switch input circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors switching in conjunction with brake switches No.1 and No.2. If either No.1 or No.2 do not switch for a continuous five times even though either No.1 or No.2 is switched from off to on or from on to off, P0571 is detected. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2/Mode 12) is not available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<p>With ABS HU/CM</p> <ul style="list-style-type: none"> ABS HU/CM malfunction Brake switch connector or terminals malfunction Short to ground or open circuit in brake switch No.1 power supply circuit <ul style="list-style-type: none"> Short to ground in wiring harness between battery positive terminal and brake switch terminal B Brake switch No.1 related fuse malfunction Open circuit in wiring harness between battery positive terminal and brake switch terminal B Short to ground in wiring harness between brake switch terminal D and ABS HU/CM terminal Y Brake switch malfunction ABS HU/CM connector or terminals malfunction Short to power supply in wiring harness between brake switch terminal D and ABS HU/CM terminal Y Open circuit in wiring harness between brake switch terminal D and ABS HU/CM terminal Y PCM malfunction <p>With DSC HU/CM</p> <ul style="list-style-type: none"> DSC HU/CM malfunction Brake switch connector or terminals malfunction Short to ground or open circuit in brake switch No.1 power supply circuit <ul style="list-style-type: none"> Short to ground in wiring harness between battery positive terminal and brake switch terminal B Brake switch No.1 related fuse malfunction Open circuit in wiring harness between battery positive terminal and brake switch terminal B Short to ground in wiring harness between brake switch terminal D and DSC HU/CM terminal N Brake switch malfunction

- DSC HU/CM connector or terminals malfunction
- Short to power supply in wiring harness between brake switch terminal D and DSC HU/CM terminal N
- Open circuit in wiring harness between brake switch terminal D and DSC HU/CM terminal N
- PCM malfunction





Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
2	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> Turn the ignition switch off, then to the ON position (engine off). Verify the related PENDING CODE or stored DTCs. Are other DTCs present? 	<p>Yes Go to the appropriate DTC inspection. (See DTC TABLE [13B-MSP].)</p> <p>No Go to the next step.</p>
3	VERIFY STORED DTC FOR ABS HU/CM OR DSC HU/CM <ul style="list-style-type: none"> Verify stored DTC for the ABS HU/CM or DSC HU/CM. 	<p>Yes Go to the appropriate DTC inspection. (See ON-BOARD DIAGNOSIS [ABS].)</p>

	<p>(See ON-BOARD DIAGNOSIS [ABS].)</p> <p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p> <ul style="list-style-type: none"> Are DTCs stored? 	<p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p>
		No Go to the next step.
4	<p>INSPECT BRAKE SWITCH CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the brake switch connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 11.</p> <p>No Go to the next step.</p>
5	<p>INSPECT BRAKE SWITCH NO.1 POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT</p> <ul style="list-style-type: none"> Brake switch connector is disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between brake switch terminal B (wiring harness-side) and body ground. Is the voltage B+? 	<p>Yes Go to the next step.</p> <p>No Inspect the brake switch No.1 related fuse.</p> <ul style="list-style-type: none"> If the fuse is melt: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. Replace the fuse. If the fuse is deterioration: <ul style="list-style-type: none"> Replace the fuse. If the fuse is normal: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible open circuit. <p>Go to Step 11.</p>
6	<p>INSPECT BRAKE SWITCH NO.1 SIGNAL CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> Brake switch connector is disconnected. Turn the ignition switch off. Inspect for continuity between brake switch terminal D (wiring harness-side) and body ground. Is there continuity? 	<p>Yes If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> Replace the PCM (short to ground in the PCM internal circuit).

			(See PCM REMOVAL/INSTALLATION [13B-MSP].)
			Go to Step 11.
		No	Go to the next step.
7	INSPECT BRAKE SWITCH NO.1 CAUTION: <ul style="list-style-type: none"> If the brake switch is removed from the brake pedal or the interlock unit, its proper functioning cannot be guaranteed when reinstalled. Therefore, inspect the brake switch with it still installed, or replace the brake switch if it is removed. Inspect the brake switch No.1. (See BRAKE SWITCH INSPECTION.) <ul style="list-style-type: none"> Is there any malfunction? 	Yes	Replace the brake switch, then go to Step 11. (See BRAKE PEDAL REMOVAL/INSTALLATION.)
		No	Go to the next step.
8	INSPECT ABS HU/CM OR DSC HU/CM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the ABS HU/CM or DSC HU/CM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 11.
		No	Go to the next step.
9	INSPECT BRAKE SWITCH NO.1 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Brake switch and PCM connectors are disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between brake switch terminal D (wiring harness-side) and body ground. Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 11.
		No	Go to the next step.
10	INSPECT BRAKE SWITCH NO.1 SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Brake switch and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between the following circuits: <ul style="list-style-type: none"> Brake switch terminal D (wiring harness-side) and ABS HU/CM terminal Y (wiring harness-side) (with ABS HU/CM) Brake switch terminal D (wiring harness-side) and DSC HU/CM terminal N (wiring harness-side) (with DSC HU/CM) Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
11	VERIFY TROUBLESHOOTING OF DTC P0571 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Depress the brake pedal more than 5 times. Perform the KOEO or KOER self test. 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.

	(See KOE0/KOER SELF TEST [13B-MSP].)		
	<ul style="list-style-type: none">Is the same DTC present?		
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">Perform the “AFTER REPAIR PROCEDURE”. (See AFTER REPAIR PROCEDURE [13B-MSP].)	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
	<ul style="list-style-type: none">Are any DTCs present?	No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0601 [13B-MSP]

DTC P0601	PCM memory check sum error
DETECTION CONDITION	<ul style="list-style-type: none"> PCM internal memory check sum error. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM internal memory malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
	VERIFY TROUBLESHOOTING OF P0601	

3	COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) • Is the same DTC present? 		Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
			No Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 		Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
			No DTC troubleshooting completed.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

DTC P0602 [13B-MSP]

DTC P0602	PCM programming error
DETECTION CONDITION	<ul style="list-style-type: none"> No configuration data in the PCM. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Configuration has not been completed PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED	Yes Go to the next step.
	<ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY	Yes Perform repair or diagnosis according to the available repair information.
	<ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.

3	PERFORM PCM CONFIGURATION <ul style="list-style-type: none"> Perform the PCM configuration. (See PCM CONFIGURATION [13B-MSP].) Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the same DTC present? 		Yes Perform the PCM configuration again, then go to the next step. (See PCM CONFIGURATION [13B-MSP].)
		No	Go to Step 5.
4	VERIFY TROUBLESHOOTING OF DTC P0602 COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the same DTC present? 		Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 		Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0604 [13B-MSP]

DTC P0604	PCM RAM error
DETECTION CONDITION	<ul style="list-style-type: none"> PCM internal RAM error. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM internal RAM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
	VERIFY TROUBLESHOOTING OF P0604	

3	COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none"> Is the same DTC present? 	Yes	Replace the PCM, then go to the next step.
		No	Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection.
		No	DTC troubleshooting completed.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

DTC P0606 [13B-MSP]

DTC P0606	PCM processor error
DETECTION CONDITION	<ul style="list-style-type: none"> PCM internal CPU malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM internal CPU malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
	VERIFY TROUBLESHOOTING OF P0606	

3	COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) • Is the same DTC present? 		Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
			No Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 		Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
			No DTC troubleshooting completed.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

DTC P0610 [13B-MSP]

DTC P0610	PCM vehicle options error
DETECTION CONDITION	<ul style="list-style-type: none"> PCM data configuration error. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Configuration procedure has not been completed PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED	Yes Go to the next step.
	<ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY	Yes Perform repair or diagnosis according to the available repair information.
	<ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.

3	PERFORM PCM CONFIGURATION <ul style="list-style-type: none"> Perform the PCM configuration. (See PCM CONFIGURATION [13B-MSP].) Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the same DTC present? 		Yes Perform the PCM configuration again, then go to the next step. (See PCM CONFIGURATION [13B-MSP].)
			No Go to Step 5.
4	VERIFY TROUBLESHOOTING OF DTC P0610 COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the same DTC present? 		Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
			No Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 		Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
			No DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0638 [13B-MSP]

DTC P0638	Throttle actuator control circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM compares the actual TP with the target TP when the engine is running. If the difference is more than the specification, the PCM determines that there is a throttle actuator control circuit range/performance problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Drive-by-wire control system malfunction Throttle actuator malfunction Throttle valve malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED	Yes Go to the next step.
	<ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY	Yes Perform repair or diagnosis according to the available repair information.

	<ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 		<ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> • Turn the ignition switch off, then to the ON position (engine off). • Verify the related PENDING CODE or stored DTCs. • Are other DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
		No	Go to the next step.
4	INSPECT DRIVE-BY-WIRE CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> • Perform the Drive-by-wire Control System Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 7.
		No	Go to the next step.
5	INSPECT THROTTLE ACTUATOR <ul style="list-style-type: none"> • Inspect the throttle actuator. (See THROTTLE BODY INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes	Replace the throttle body, then go to Step 7. (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP] .)
		No	Go to the next step.
6	INSPECT THROTTLE VALVE <ul style="list-style-type: none"> • Inspect the throttle valve. (See THROTTLE BODY INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes	Replace the throttle body, then go to the next step. (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP] .)
		No	Go to the next step.
7	VERIFY TROUBLESHOOTING OF P0638 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP] .)
		No	Go to the next step.

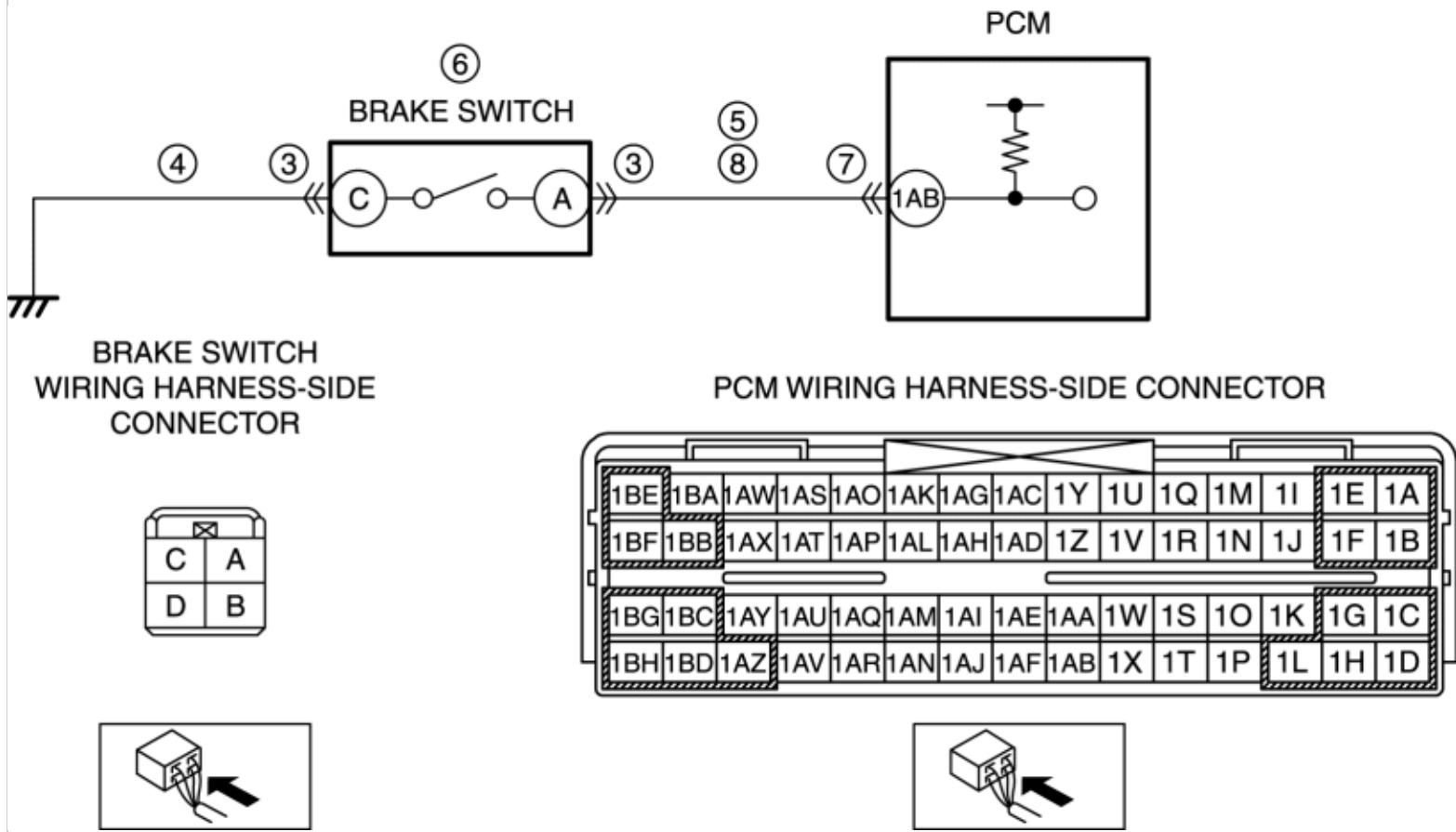
	<p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Start the engine.• Perform the DTC Reading Procedure. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none">• Is the same DTC present?		
8	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0703 [13B-MSP]

DTC P0703	Brake switch input circuit problem
DETECTION CONDITION	<ul style="list-style-type: none">The PCM monitors the input signal from the brake switch when the following conditions are met. If the input signal does not change while alternately accelerating and decelerating 8 times, the PCM determines that there is a brake switch input circuit malfunction. <p style="text-align: center;">MONITORING CONDITIONS</p> <ul style="list-style-type: none">Vehicle speed: decelerating more than 30 km/h {19 mph} to 0 km/h {0 mph}Deceleration: more than 4 km/h {2 mph} pers <p>Diagnostic support note</p> <ul style="list-style-type: none">This is a continuous monitor (CCM).The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.FREEZE FRAME DATA (Mode 2/Mode 12) is available.The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">Brake switch connector or terminals malfunctionOpen circuit in wiring harness between brake switch terminal C and body groundShort to ground in wiring harness between brake switch terminal A and PCM terminal 1ABBrake switch malfunctionPCM connector or terminals malfunctionOpen circuit in wiring harness between brake switch terminal A and PCM terminal 1AB

PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.</p>
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
3	INSPECT BRAKE SWITCH CONNECTOR FOR POOR CONNECTION	<p>Yes Repair or replace the connector and/or terminals, then go to Step 9.</p>

	<p>Turn the Ignition switch off.</p> <ul style="list-style-type: none">• Disconnect the brake switch connector.• Inspect for poor connection (such as damaged/pulled-out pins, corrosion).• Is there any malfunction?		
		No	Go to the next step.
4	INSPECT BRAKE SWITCH GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none">• Brake switch connector is disconnected.• Turn the Ignition switch off.• Inspect for continuity between brake switch terminal C (wiring harness-side) and body ground.• Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
5	INSPECT BRAKE SWITCH SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none">• Brake switch connector is disconnected.• Turn the Ignition switch off.• Inspect for continuity between brake switch terminal A (wiring harness-side) and body ground.• Is there continuity?	Yes	<p>If the short to ground circuit could be detected:</p> <ul style="list-style-type: none">• Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none">• Replace the PCM (short to ground in the PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to Step 9.</p>
		No	Go to the next step.
6	INSPECT BRAKE SWITCH CAUTION: <ul style="list-style-type: none">• If the brake switch is removed from the brake pedal or the interlock unit, its proper functioning cannot be guaranteed when reinstalled. Therefore, inspect the brake switch with it still installed, or replace the brake switch if it is removed.• Inspect the brake switch. <p>(See BRAKE SWITCH INSPECTION.)</p>	Yes	<p>Replace the brake switch, then go to Step 9.</p> <p>(See BRAKE PEDAL REMOVAL/INSTALLATION.)</p>
		No	Go to the next step.

	<ul style="list-style-type: none"> Is there any malfunction? 		
7	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 9.	
		No Go to the next step.	
8	INSPECT BRAKE SWITCH SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Brake switch and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between brake switch terminal A (wiring harness-side) and PCM terminal 1AB (wiring harness-side). Is there continuity? 	Yes Go to the next step.	
		No Repair or replace the wiring harness for a possible open circuit, then go to the next step.	
9	VERIFY TROUBLESHOOTING OF DTC P0703 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the following procedures 8 times alternately. <ul style="list-style-type: none"> Drive the vehicle more than 30 km/h {19 mph}. Decelerate to 0 km/h {0 mph} within 7 s. Perform the Pending Trouble Code Access Procedure. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Is the PENDING CODE same as DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
10	VERIFY AFTER REPAIR PROCEDURE	Yes Go to the applicable DTC inspection.	

	<ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].)• Are any DTCs present?		(See DTC TABLE [13B-MSP] .)
			No DTC troubleshooting completed.

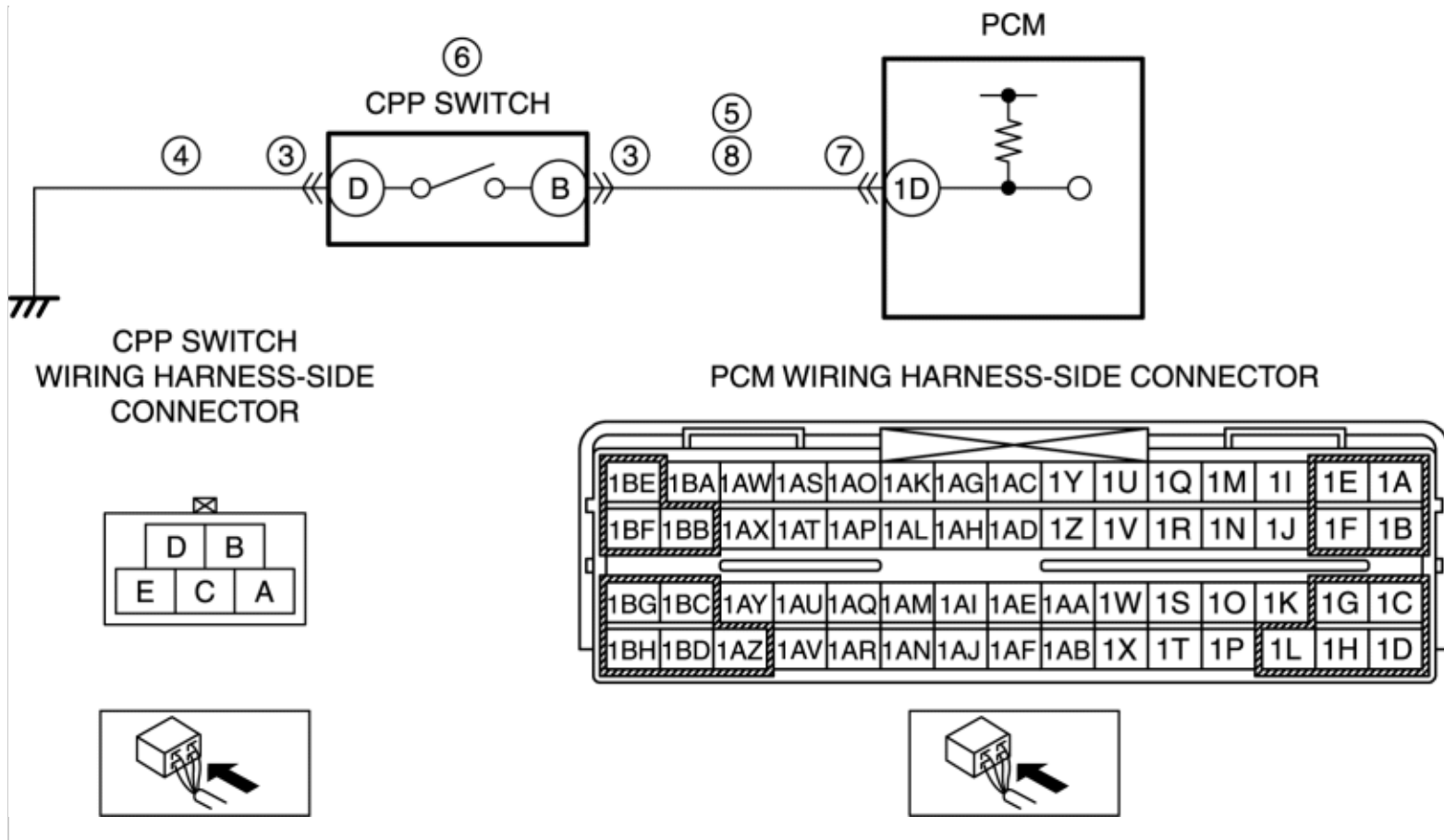
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

DTC P0704 [13B-MSP]

DTC P0704	CPP switch input circuit problem
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input signal from the CPP switch when the vehicle speed is more than 30 km/h {19 mph}. If the input signal does not change while alternately accelerating and decelerating 10 times, the PCM determines that there is a CPP switch input circuit malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• CPP switch connector or terminals malfunction• Open circuit in wiring harness between CPP switch terminal D and body ground• Short to ground in wiring harness between CPP switch terminal B and PCM terminal 1D• CPP switch malfunction• PCM connector or terminals malfunction• Open circuit in wiring harness between CPP switch terminal B and PCM terminal 1D• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT CPP SWITCH CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the CPP switch connector. 	Yes Repair or replace the connector and/or terminals, then go to Step 9.
		No Go to the next step.

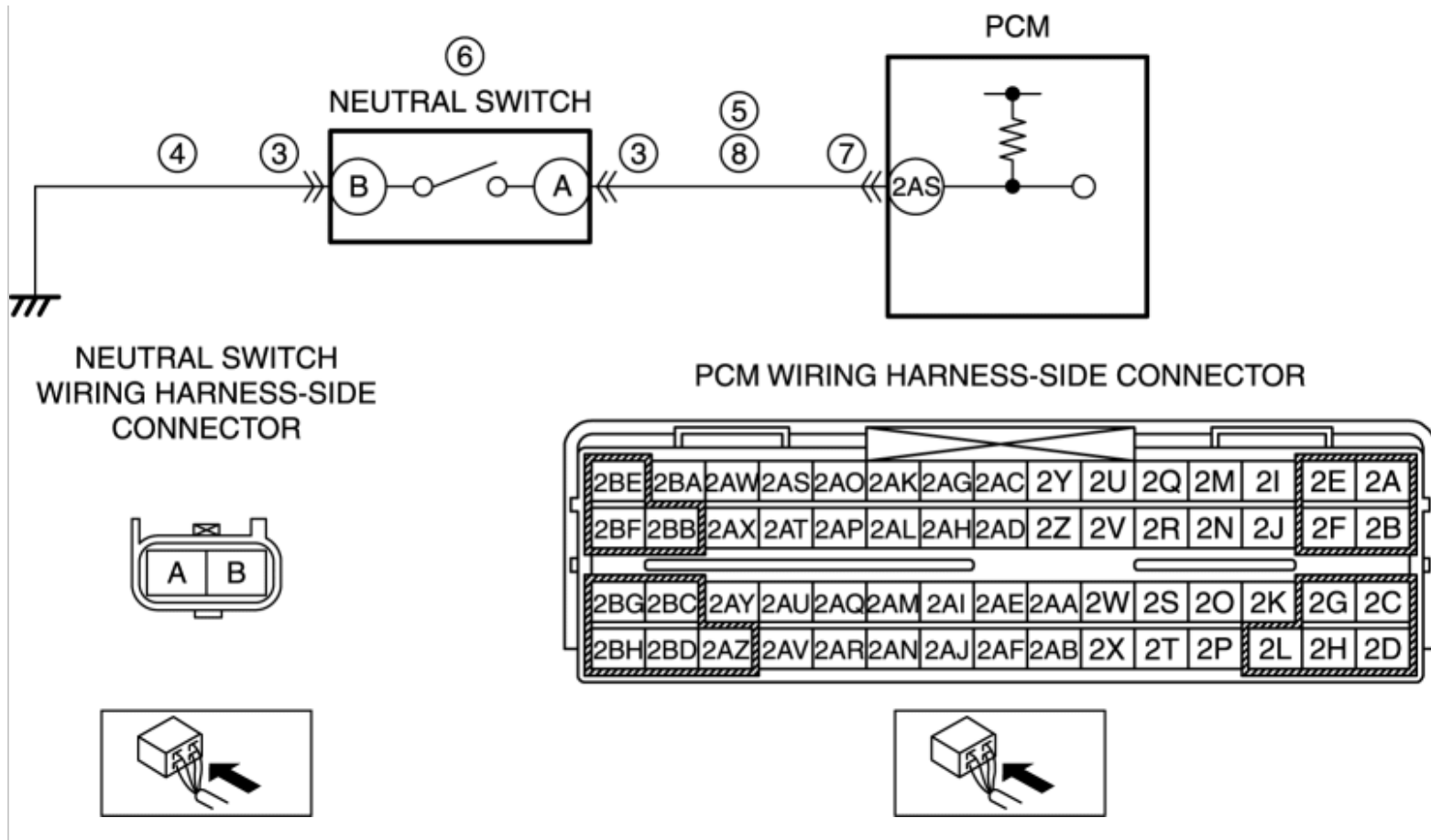
	<ul style="list-style-type: none"> Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 		
4	INSPECT CPP SWITCH GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> CPP switch connector is disconnected. Turn the ignition switch off. Inspect for continuity between CPP switch terminal D (wiring harness-side) and body ground. Is there continuity? 	Yes Go to the next step.	
		No Repair or replace the wiring harness for a possible open circuit, then go to Step 9.	
5	INSPECT CPP SWITCH SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> CPP switch connector is disconnected. Turn the ignition switch off. Inspect for continuity between CPP switch terminal B (wiring harness-side) and body ground. Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [13B-MSP].) Go to Step 9.	
		No Go to the next step.	
6	INSPECT CPP SWITCH <ul style="list-style-type: none"> Inspect the CPP switch. (See CLUTCH PEDAL POSITION (CPP) SWITCH INSPECTION [13B-MSP].) <ul style="list-style-type: none"> Is there any malfunction? 	Yes Replace the CPP switch, then go to Step 9. (See CLUTCH PEDAL REMOVAL/INSTALLATION.)	
		No Go to the next step.	
7	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). 	Yes Repair or replace the connector and/or terminals, then go to Step 9.	
		No Go to the next step.	

	<ul style="list-style-type: none"> Is there any malfunction? 		
8	INSPECT CPP SWITCH SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> CPP switch and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between CPP switch terminal B (wiring harness-side) and PCM terminal 1D (wiring harness-side). Is there continuity? 	Yes Go to the next step.	
		No Repair or replace the wiring harness for a possible open circuit, then go to the next step.	
9	VERIFY TROUBLESHOOTING OF DTC P0704 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Operate the clutch pedal when drive the vehicle more than 30 km/h {19 mph} 10 times alternately. Perform the Pending Trouble Code Access Procedure. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Is the PENDING CODE same as DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)	
		No DTC troubleshooting completed.	

2011 - RX-8 - Engine

DTC P0850 [13B-MSP]

DTC P0850	Neutral switch input circuit problem
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input signal from the neutral switch when the vehicle is running. If the input signal does not change while alternately running more than 30 km/h {19 mph} 8 times, the PCM determines that there is a neutral switch input circuit malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Neutral switch connector or terminals malfunction• Open circuit in wiring harness between neutral switch terminal B and body ground• Short to ground in wiring harness between neutral switch terminal A and PCM terminal 2AS• Neutral switch malfunction• PCM connector or terminals malfunction• Open circuit in wiring harness between neutral switch terminal A and PCM terminal 2AS• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT NEUTRAL SWITCH CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the neutral switch connector. 	Yes Repair or replace the connector and/or terminals, then go to Step 9.
		No Go to the next step.

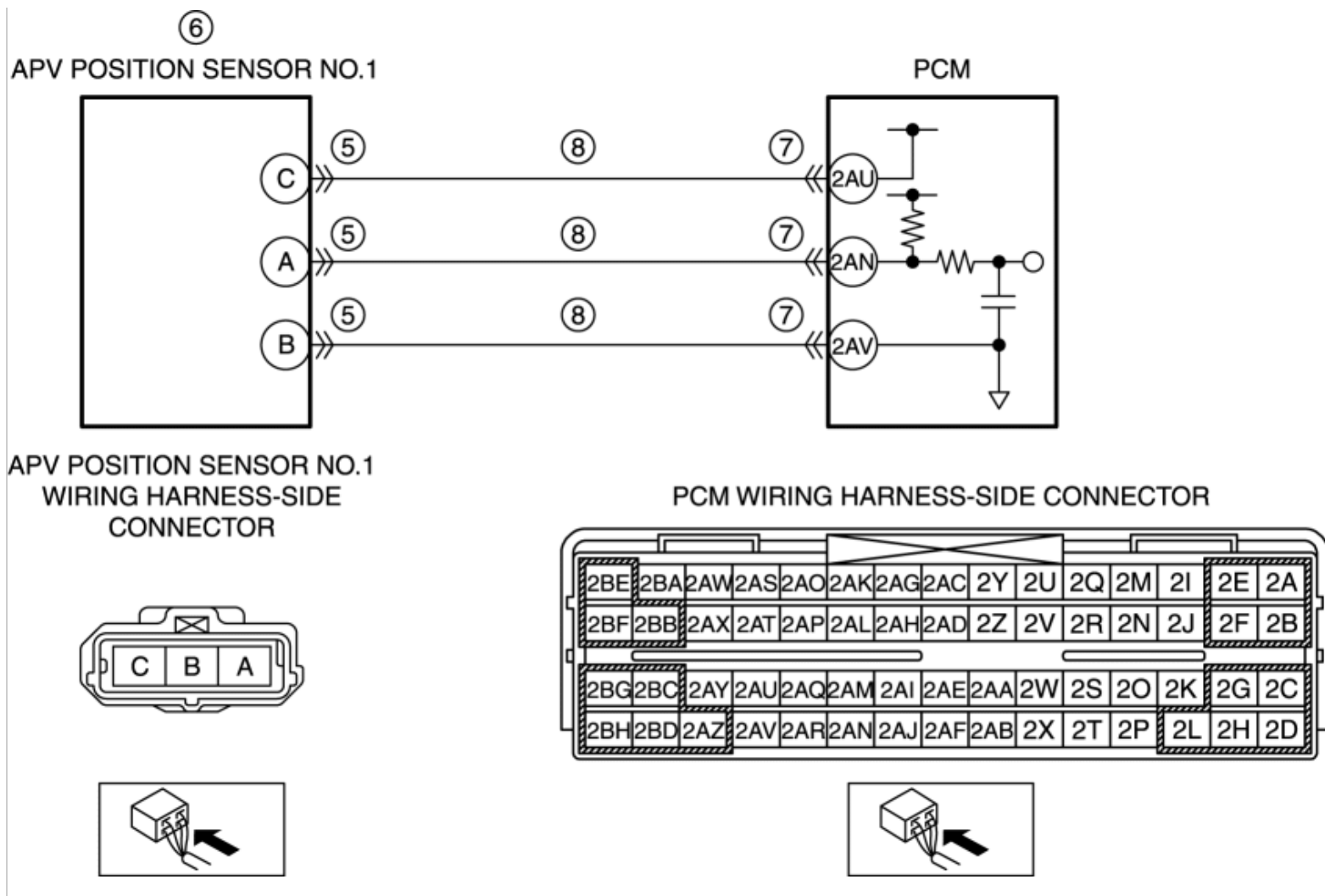
	<ul style="list-style-type: none"> Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 		
4	INSPECT NEUTRAL SWITCH GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Neutral switch connector is disconnected. Turn the ignition switch off. Inspect for continuity between neutral switch terminal B (wiring harness-side) and body ground. Is there continuity? 	Yes Go to the next step.	No Repair or replace the wiring harness for a possible open circuit, then go to Step 9.
5	INSPECT NEUTRAL SWITCH SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Neutral switch connector is disconnected. Turn the ignition switch off. Inspect for continuity between neutral switch terminal A (wiring harness-side) and body ground. Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [13B-MSP].) Go to Step 9.	No Go to the next step.
6	INSPECT NEUTRAL SWITCH <ul style="list-style-type: none"> Inspect the neutral switch. (See NEUTRAL SWITCH INSPECTION [13B-MSP].) <ul style="list-style-type: none"> Is there any malfunction? 	Yes Replace the neutral switch, then go to Step 9. (See NEUTRAL SWITCH REMOVAL/INSTALLATION [P66M-D].)	No Go to the next step.
7	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. 	Yes Repair or replace the connector and/or terminals, then go to Step 9.	No Go to the next step.

	<ul style="list-style-type: none"> Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 		
8	INSPECT NEUTRAL SWITCH SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Neutral switch and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between neutral switch terminal A (wiring harness-side) and PCM terminal 2AS (wiring harness-side). Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P0850 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Operate the shift lever when drive the vehicle more than 30 km/h {19 mph} 8 times alternately. Perform the Pending Trouble Code Access Procedure. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none"> Is the PENDING CODE same as DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP] .)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2004 [13B-MSP]

DTC P2004	APV stuck open (No.1)
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the APV position sensor No.1 when the APV is closed. If the input voltage is more than 1.0 V, the PCM determines that the APV is stuck open. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• APV control malfunction• APV motor malfunction• APV position sensor No.1 connector or terminals malfunction• APV position sensor No.1 malfunction• PCM connector or terminals malfunction• Open circuit in wiring harness between APV position sensor No.1 terminal C and PCM terminal 2AU• Open circuit in wiring harness between APV position sensor No.1 terminal A and PCM terminal 2AN• Open circuit in wiring harness between APV position sensor No.1 terminal B and PCM terminal 2AV• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT APV CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> Perform the Auxiliary Port Valve (APV) Control 	Yes Repair or replace the malfunctioning part according to the inspection results, then go

	<p>Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>to Step 9.</p> <p>No Go to the next step.</p>
4	<p>INSPECT APV MOTOR</p> <ul style="list-style-type: none"> Turn the ignition switch off. Inspect the APV motor. <p>(See AUXILIARY PORT VALVE (APV) MOTOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Replace the APV motor, then go to Step 9.</p> <p>(See INTAKE MANIFOLD DISASSEMBLY/ASSEMBLY [13B-MSP].)</p> <p>No Go to the next step.</p>
5	<p>INSPECT APV POSITION SENSOR NO.1 CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the APV position sensor No.1 connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 9.</p> <p>No Go to the next step.</p>
6	<p>INSPECT APV POSITION SENSOR NO.1</p> <ul style="list-style-type: none"> Inspect the APV position sensor No.1. <p>(See AUXILIARY PORT VALVE (APV) POSITION SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Replace the APV position sensor No.1, then go to Step 9.</p> <p>(See AUXILIARY PORT VALVE (APV) POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
7	<p>INSPECT PCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 9.</p> <p>No Go to the next step.</p>
8	<p>INSPECT APV POSITION SENSOR NO.1 CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> APV position sensor No.1 and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between the following circuits: 	<p>Yes Go to the next step.</p> <p>No Repair or replace the wiring harness for a possible open circuit, then go to the next step.</p>

	<ul style="list-style-type: none"> ▪ APV position sensor No.1 terminal C (wiring harness-side) and PCM terminal 2AU (wiring harness-side) ▪ APV position sensor No.1 terminal A (wiring harness-side) and PCM terminal 2AN (wiring harness-side) ▪ APV position sensor No.1 terminal B (wiring harness-side) and PCM terminal 2AV (wiring harness-side) <ul style="list-style-type: none"> • Is there continuity? 		
9	VERIFY TROUBLESHOOTING OF DTC P2004 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) • Is the PENDING CODE same as DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)	
		No DTC troubleshooting completed.	

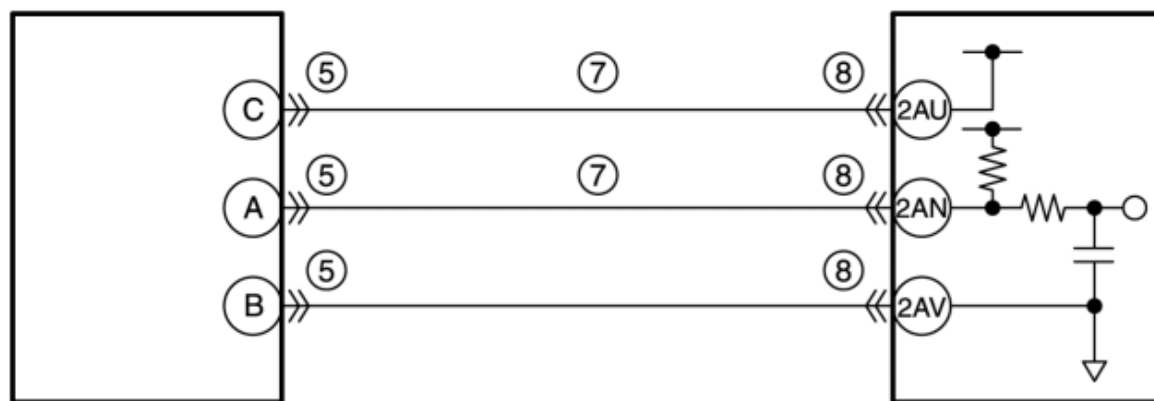
2011 - RX-8 - Engine

DTC P2006 [13B-MSP]

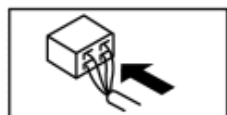
DTC P2006	APV stuck closed (No.1)
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the APV position sensor No.1 when the APV is opened. If the input voltage is less than 1.0 V, the PCM determines that the APV is stuck closed. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• APV control malfunction• APV motor malfunction• APV position sensor No.1 connector or terminals malfunction• APV position sensor No.1 malfunction• Short to ground in wiring harness between APV position sensor No.1 terminal C and PCM terminal 2AU• Short to ground in wiring harness between APV position sensor No.1 terminal A and PCM terminal 2AN• PCM connector or terminals malfunction• PCM malfunction

⑥

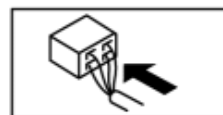
APV POSITION SENSOR NO.1



APV POSITION SENSOR NO.1 WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.</p>
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
3	INSPECT APV CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> Perform the Auxiliary Port Valve (APV) Control Inspection. 	<p>Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 9.</p>

	<p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	No	Go to the next step.
4	<p>INSPECT APV MOTOR</p> <ul style="list-style-type: none"> Turn the ignition switch off. Inspect the APV motor. <p>(See AUXILIARY PORT VALVE (APV) MOTOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	<p>Replace the APV motor, then go to Step 9.</p> <p>(See INTAKE MANIFOLD DISASSEMBLY/ASSEMBLY [13B-MSP].)</p>
		No	Go to the next step.
5	<p>INSPECT APV POSITION SENSOR NO.1 CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the APV position sensor No.1 connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
6	<p>INSPECT APV POSITION SENSOR NO.1</p> <ul style="list-style-type: none"> Inspect the APV position sensor No.1. <p>(See AUXILIARY PORT VALVE (APV) POSITION SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	<p>Replace the APV position sensor No.1, then go to Step 9.</p> <p>(See AUXILIARY PORT VALVE (APV) POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.
7	<p>INSPECT APV POSITION SENSOR NO.1 CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> APV position sensor No.1 connector is disconnected. Turn the ignition switch off. Inspect for continuity between the following circuits: <ul style="list-style-type: none"> APV position sensor No.1 terminal C (wiring harness-side) and body ground APV position sensor No.1 terminal A (wiring harness-side) and body ground Is there continuity? 	Yes	<p>If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> Replace the PCM (short to ground in the PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to Step 9.</p>
		No	Go to the next step.
	INSPECT PCM CONNECTOR FOR POOR		

8	CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to the next step.
		No	Go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P2006 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) • Is the PENDING CODE same as DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP] .)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
		No	DTC troubleshooting completed.

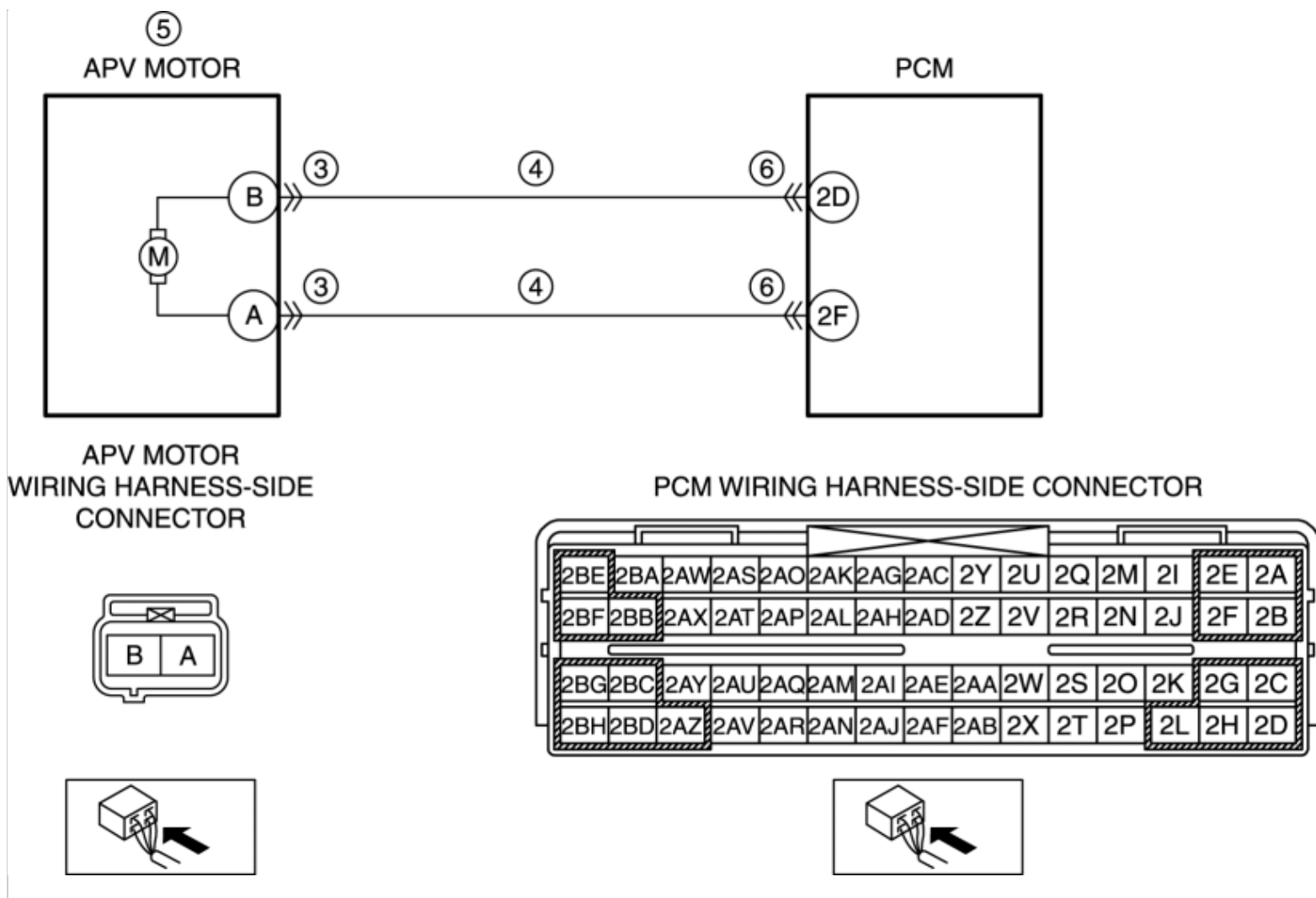
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

DTC P2009 [13B-MSP]

DTC P2009	APV motor control circuit low input
DETECTION CONDITION	<ul style="list-style-type: none">• Detect any of the following conditions:<ul style="list-style-type: none">▪ The PCM terminal 2D voltage is not within 3.6 to 4.39 V when the APV motor is operating (open).▪ The PCM terminal 2F voltage is not within 3.6 to 4.39 V when the APV motor is operating (closed).▪ The PCM terminal 2D, 2F voltage is 4.39 V or more respectively when the APV motor is not operating. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• APV motor connector or terminals malfunction• Short to ground in wiring harness between APV motor terminal B and PCM terminal 2D• Short to ground in wiring harness between APV motor terminal A and PCM terminal 2F• APV motor malfunction• PCM connector or terminals malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED	Yes Go to the next step.
	<ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY	Yes Perform repair or diagnosis according to the available repair information.
	<ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	No Go to the next step.
3	INSPECT APV MOTOR CONNECTOR FOR POOR CONNECTION	Yes Repair or replace the connector and/or terminals, then go to Step 7.
	<ul style="list-style-type: none"> Turn the ignition switch off. 	

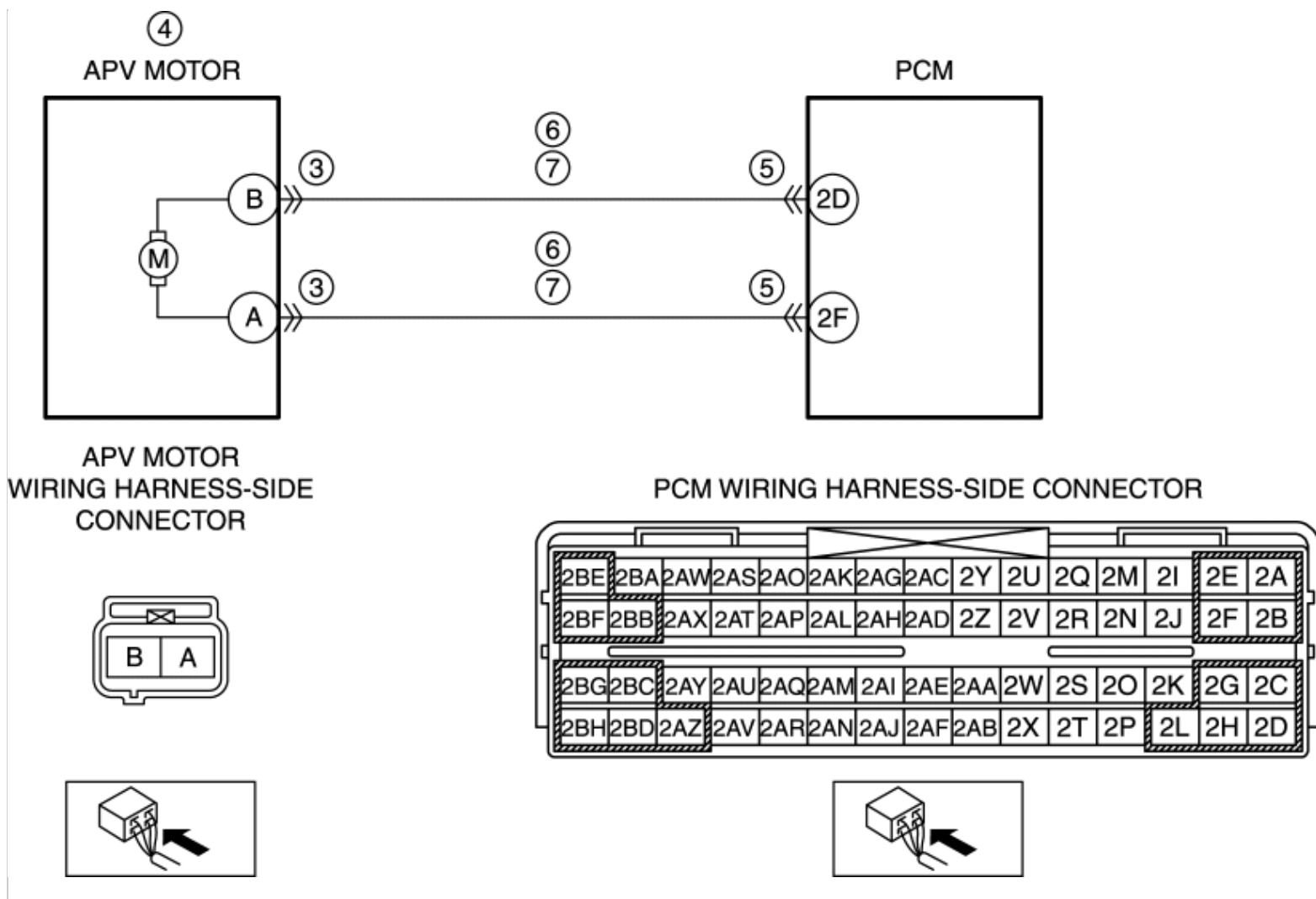
	<ul style="list-style-type: none"> • Disconnect the APV motor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	No	Go to the next step.
4	INSPECT APV MOTOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • APV motor connector is disconnected. • Turn the ignition switch off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> ▪ APV motor terminal B (wiring harness-side) and body ground ▪ APV motor terminal A (wiring harness-side) and body ground • Is there continuity? 	Yes	<p>If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> • Replace the PCM (short to ground in the PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to Step 7.</p>
		No	Go to the next step.
5	INSPECT APV MOTOR <ul style="list-style-type: none"> • Inspect the APV motor. <p>(See AUXILIARY PORT VALVE (APV) MOTOR INSPECTION [13B-MSP].)</p> • Is there any malfunction?	Yes	<p>Replace the APV motor, then go to Step 7.</p> <p>(See INTAKE MANIFOLD DISASSEMBLY/ASSEMBLY [13B-MSP].)</p>
		No	Go to the next step.
6	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to the next step.
		No	Go to the next step.
7	VERIFY TROUBLESHOOTING OF DTC P2009 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE</p>	Yes	<p>Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.

	<p>[13B-MSP].)</p> <ul style="list-style-type: none">• Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none">• Is the PENDING CODE same as DTC present?		
8	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?	Yes	Go to the applicable DTC inspection.
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2010 [13B-MSP]

DTC P2010	APV motor control circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the APV motor control current when the engine is running. If the driver IC current is more than 10 A for 5 s, the PCM determines that there is an APV motor control circuit malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> APV motor connector or terminals malfunction APV motor malfunction PCM connector or terminals malfunction Short to power supply in wiring harness between APV motor terminal B and PCM terminal 2D Short to power supply in wiring harness between APV motor terminal A and PCM terminal 2F Open circuit in wiring harness between APV motor terminal B and PCM terminal 2D Open circuit in wiring harness between APV motor terminal A and PCM terminal 2F PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT APV MOTOR CONNECTOR FOR POOR CONNECTION	Yes Repair or replace the connector and/or

	<ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the APV motor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	terminals, then go to Step 8.
		No Go to the next step.
4	INSPECT APV MOTOR <ul style="list-style-type: none"> • Inspect the APV motor. (See AUXILIARY PORT VALVE (APV) MOTOR INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes Replace the APV motor, then go to Step 8. (See INTAKE MANIFOLD DISASSEMBLY/ASSEMBLY [13B-MSP].)
		No Go to the next step.
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 8.
		No Go to the next step.
6	INSPECT APV MOTOR CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • APV motor and PCM connectors are disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between the following circuits: <ul style="list-style-type: none"> ■ APV motor terminal B (wiring harness-side) and body ground ■ APV motor terminal A (wiring harness-side) and body ground • Is the voltage B+? 	Yes Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No Go to the next step.
7	INSPECT APV MOTOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • APV motor and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect for continuity between the following circuits: 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to the next step.

	<ul style="list-style-type: none"> ▪ APV motor terminal B (wiring harness-side) and PCM terminal 2D (wiring harness-side) ▪ APV motor terminal A (wiring harness-side) and PCM terminal 2F (wiring harness-side) <ul style="list-style-type: none"> • Is there continuity? 		
8	VERIFY TROUBLESHOOTING OF DTC P2010 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) • Is the PENDING CODE same as DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)	
		No DTC troubleshooting completed.	

2011 - RX-8 - Engine

DTC P2096 [13B-MSP]

DTC P2096	Target A/F feedback system too lean
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the target A/F fuel trim when under the target A/F feedback control. If the fuel trim is less than the specification, the PCM determines that the target A/F feedback system is too lean. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (fuel system). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
	<ul style="list-style-type: none"> Leakage exhaust gas HO2S malfunction Air suction in intake-air system Erratic signal to PCM <ul style="list-style-type: none"> APP sensor signal malfunction ECT sensor signal malfunction MAF sensor signal malfunction TP sensor signal malfunction VSS signal malfunction AIR system malfunction

**POSSIBLE
CAUSE**

- Loose installation of A/F sensor
- Leakage exhaust gas
- A/F sensor malfunction
- MAF sensor malfunction
- Air suction in intake-air system
- Fuel line pressure malfunction
 - Leakage fuel
 - Fuel pump unit malfunction
 - Pressure regulator (built-in fuel pump unit) malfunction
- Ignition system malfunction
 - High-tension lead malfunction
 - Incorrect power supply to ignition coil
 - Ignition coil malfunction
- Insufficient compression
 - Metering oil pump malfunction
 - Engine oil condition malfunction
 - Increased oil pressure
 - Oil passage malfunction
 - Engine malfunction
- Fuel injector malfunction
- PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Is the DTC P2096 on FREEZE FRAME DATA (Mode 2)? 	Yes Go to the next step.
		No Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [13B-MSP].)
	VERIFY FREEZE FRAME DATA (MODE 12) AND	

2	DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (fuel system related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> Turn the ignition switch off, then to the ON position (engine off). Verify the related PENDING CODE or stored DTCs. Is the DTC P0171 also present? 	Yes	Go to the DTC P0171 inspection. (See DTC P0171 [13B-MSP].)
		No	If misfire DTC is present or drivability concern exists, go to Step 10. If misfire DTC is not present and drivability concern does not exist, go to the next step.
5	INSPECT HO2S <ul style="list-style-type: none"> Inspect the HO2S. (See HEATED OXYGEN SENSOR (HO2S) INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Visually inspect for the gas leakage between TWC and HO2S. <ul style="list-style-type: none"> If there is no leakage, replace the HO2S, then go to Step 24. (See HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
6	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none"> Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) <ul style="list-style-type: none"> APP 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 24.

	<ul style="list-style-type: none">▪ ECT▪ MAF▪ TP REL▪ VSS <ul style="list-style-type: none">• Are the PIDs normal? <p>(See PCM INSPECTION [13B-MSP].)</p>		
7	VERIFY CURRENT INPUT SIGNAL STATUS UNDER FREEZE FRAME DATA (MODE 2) CONDITION CAUTION: <ul style="list-style-type: none">• While performing this step with vehicle driving, always operate the vehicle in a safe and lawful manner.• When the M-MDS is used to observe monitor system status while driving, be sure to have another technician with you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD function and inspect later.• Access the following PIDs using the M-MDS under the FREEZE FRAME DATA (Mode 2) condition: (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)<ul style="list-style-type: none">▪ APP▪ ECT▪ MAF▪ TP REL▪ VSS• Are the PIDs normal? <p>(See PCM INSPECTION [13B-MSP].)</p>	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 24.
8	INSPECT AIR SYSTEM OPERATION <ul style="list-style-type: none">• Perform the Secondary Air Injection (AIR) System Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)• Does the AIR system operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 24.

<p>9</p>	<p>INSPECT A/F SENSOR</p> <ul style="list-style-type: none"> Inspect the A/F sensor. <p>(See AIR FUEL RATIO (A/F) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Inspect the following:</p> <ul style="list-style-type: none"> Air suction at following due to cracks, damages and loosing parts: <ul style="list-style-type: none"> From air cleaner to throttle body From throttle body to intake manifold Vacuum hoses <p>NOTE:</p> <ul style="list-style-type: none"> Engine speed may change when rust penetrating agent is sprayed on the air suction area. Loose installation of A/F sensor Exhaust gas leakage between exhaust manifold and A/F sensor <p>If there is no malfunction detected, replace the A/F sensor.</p> <p>(See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p> <p>If there is a malfunction detected, repair or replace the malfunctioning part according to the inspection results.</p> <p>Go to Step 24.</p>
<p>10</p>	<p>VERIFY CURRENT INPUT SIGNAL STATUS OF MAF SENSOR</p> <ul style="list-style-type: none"> Start the engine. 	<p>No Go to the next step.</p> <p>Yes Go to Step 12.</p> <p>No Go to the next step.</p>

	<ul style="list-style-type: none"> Access the MAF PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Verify that the MAF PID changes quickly according to engine speed. Is the PID normal? (See PCM INSPECTION [13B-MSP].) 		
11	INSPECT INTAKE-AIR SYSTEM FOR EXCESSIVE AIR SUCTION NOTE: <ul style="list-style-type: none"> Engine speed may change when rust penetrating agent (cab cleaner etc.) is sprayed on the air suction area. Visually inspect for looseness, cracks or damaged hoses in intake-air system. Is there any malfunction? 	Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 24. No Replace the MAF/IAT sensor, then go to Step 24. (See MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)	
12	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> Perform the "FUEL LINE PRESSURE INSPECTION". (See FUEL LINE PRESSURE INSPECTION [13B-MSP].) Is there any malfunction? 	Yes <ul style="list-style-type: none"> If the fuel line pressure is too low, go to the next step. If the fuel line pressure is too high, replace the fuel pump unit, then go to Step 24. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].) No Go to Step 14.	
13	INSPECT FUEL SYSTEM FOR FUEL LEAKAGE <ul style="list-style-type: none"> Visually inspect fuel leakage in the fuel system. Is there fuel leakage? 	Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 24. No Replace the fuel pump unit, then go to Step 24. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)	
14	INSPECT IGNITION COIL OPERATION AND HIGH-TENSION LEAD WITH TIMING LIGHT	Yes Go to Step 18.	

	<ul style="list-style-type: none"> Inspect the blinking condition on each high-tension lead using timing light at idle. Do all high-tension leads show blinking condition? 	No	Go to the next step.
15	INSPECT HIGH-TENSION LEAD OF NON BLINKING HIGH-TENSION LEAD <ul style="list-style-type: none"> Inspect the high-tension leads. (See HIGH-TENSION LEAD INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Replace the malfunctioning high-tension lead, then go to Step 24. (See HIGH-TENSION LEAD REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
16	INSPECT IGNITION COIL POWER CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Measure the voltage between ignition coil terminal C (wiring harness-side) and body ground. Is the voltage B+? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit or short to ground, then go to Step 24.
17	INSPECT IGNITION COIL <ul style="list-style-type: none"> Inspect the ignition coil. (See IGNITION COIL INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Replace the ignition coil, then go to Step 24. (See IGNITION COIL REMOVAL/INSTALLATION [13B-MSP].)
		No	Inspect for open circuit in wiring harness between ignition coil terminal B and ground. Repair or replace the wiring harness for a possible open circuit, then go to Step 24.
18	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> Inspect the engine compression. (See COMPRESSION INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 23.
19	INSPECT METERING OIL PUMP <ul style="list-style-type: none"> Inspect the metering oil pump. (See METERING OIL PUMP 	Yes	Repair or replace the malfunctioning part according to the inspection results. Overhaul or replace the engine, then go

	INSPECTION [13B-MSP].) <ul style="list-style-type: none"> Is there any malfunction? 	to Step 24.
		No Go to the next step.
20	INSPECT ENGINE OIL CONDITION <ul style="list-style-type: none"> Inspect the engine oil condition. Is the engine oil condition normal? 	Yes Go to the next step.
		No Replace the engine oil. Overhaul or replace the engine, then go to Step 24.
21	INSPECT OIL PRESSURE <ul style="list-style-type: none"> Inspect the oil pressure. (See OIL PRESSURE INSPECTION [13B-MSP].) <ul style="list-style-type: none"> Is there any malfunction? 	Yes Repair or replace the malfunctioning part according to the inspection results. Overhaul or replace the engine, then go to Step 24.
		No Go to the next step.
22	INSPECT OIL PASSAGE <ul style="list-style-type: none"> Inspect the oil pipe between metering oil pump and metering oil nozzle. Is there any malfunction? 	Yes Inspect for leakage or clogging in the engine oil passage. Repair or replace the malfunctioning part according to the inspection results. Overhaul or replace the engine, then go to Step 24.
		No Overhaul or replace the engine, then go to Step 24.
23	INSPECT FUEL INJECTOR <ul style="list-style-type: none"> Inspect the fuel injector. (See FUEL INJECTOR INSPECTION [13B-MSP].) <ul style="list-style-type: none"> Is there any malfunction? 	Yes Replace the fuel injector, then go to the next step. (See FUEL INJECTOR REMOVAL/INSTALLATION [13B-MSP].)
		No Go to the next step.
24	VERIFY TROUBLESHOOTING OF DTC P2096 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No Go to the next step.

	<p>MSP].)</p> <ul style="list-style-type: none">• Maintain the engine speed at 2,500—3,500 rpm for 15 s or more, then increase it to 4,500—5,000 rpm and maintain it for 15 s or more.• Idle the engine until the cooling fan stops, then maintain the engine idling for 60 s or more.• Perform the KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none">• Is the PENDING CODE same as DTC present?		
25	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none">• Perform the “AFTER REPAIR PROCEDURE”. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2097 [13B-MSP]

DTC P2097	Target A/F feedback system too rich
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the target A/F fuel trim when under the target A/F feedback control. If the fuel trim is more than the specification, the PCM determines that the target A/F feedback system is too rich. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (fuel system). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
	<ul style="list-style-type: none"> Leakage exhaust gas HO2S malfunction Erratic signal to PCM <ul style="list-style-type: none"> APP sensor signal malfunction ECT sensor signal malfunction MAF sensor signal malfunction TP sensor signal malfunction VSS signal malfunction Loose installation of A/F sensor Leakage exhaust gas

POSSIBLE CAUSE

- A/F sensor malfunction
- Fuel pump speed control malfunction
- Fuel line pressure malfunction
 - Fuel pump unit malfunction
 - Pressure regulator (built-in fuel pump unit) malfunction
- Purge solenoid valve malfunction
- Insufficient compression
 - Metering oil pump malfunction
 - Engine oil condition malfunction
 - Increased oil pressure
 - Oil passage malfunction
 - Engine malfunction
- PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2)	Yes Go to the next step.
	<ul style="list-style-type: none"> • Is the DTC P2097 on FREEZE FRAME DATA (Mode 2)? 	No Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [13B-MSP].)
2	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED	Yes Go to the next step.
	<ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (fuel system related) been recorded? 	No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
	<ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	

		No	Go to the next step.
4	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> • Turn the ignition switch off, then to the ON position (engine off). • Verify the related PENDING CODE or stored DTCs. • Is the DTC P0172 also present? 	Yes Go to the DTC P0172 inspection. (See DTC P0172 [13B-MSP].)	
		No	If misfire DTC is present or drivability concern exists, go to Step 11. If misfire DTC is not present and drivability concern does not exist, go to the next step.
5	INSPECT HO2S <ul style="list-style-type: none"> • Inspect the HO2S. (See HEATED OXYGEN SENSOR (HO2S) INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes Visually inspect for the gas leakage between TWC and HO2S. <ul style="list-style-type: none"> • If there is no leakage, replace the HO2S, then go to Step 17. (See HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [13B-MSP].) 	
		No	Go to the next step.
6	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none"> • Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) <ul style="list-style-type: none"> ▪ APP ▪ ECT ▪ MAF ▪ TP REL ▪ VSS • Are the PIDs normal? (See PCM INSPECTION [13B-MSP].) 	Yes Go to the next step.	
		No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 17.
7	VERIFY CURRENT INPUT SIGNAL STATUS UNDER FREEZE FRAME DATA (MODE 2) CONDITION CAUTION:	Yes	Go to the next step.

	<ul style="list-style-type: none">• While performing this step with vehicle driving, always operate the vehicle in a safe and lawful manner.• When the M-MDS is used to observe monitor system status while driving, be sure to have another technician with you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD function and inspect later.• Access the following PIDs using the M-MDS under the FREEZE FRAME DATA (Mode 2) condition: (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)<ul style="list-style-type: none">▪ APP▪ ECT▪ MAF▪ TP REL▪ VSS• Are the PIDs normal? (See PCM INSPECTION [13B-MSP].)	No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 17.
8	INSPECT A/F SENSOR <ul style="list-style-type: none">• Inspect the A/F sensor. (See AIR FUEL RATIO (A/F) SENSOR INSPECTION [13B-MSP].)• Is there any malfunction?	Yes	<p>Inspect the following:</p> <ul style="list-style-type: none">• Loose installation of A/F sensor• Exhaust gas leakage between exhaust manifold and A/F sensor <p>If there is no malfunction detected, replace the A/F sensor.</p> <p>(See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p> <p>If there is a malfunction detected, repair or replace the malfunctioning part according to the inspection results.</p> <p>Go to Step 17.</p>
		No	Go to the next step.

9	INSPECT FUEL PUMP SPEED CONTROL OPERATION <ul style="list-style-type: none"> Perform the Fuel Pump Speed Control Operation Inspection. <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<div>YesRepair or replace the malfunctioning part according to the inspection results, then go to Step 17.</div> <div>NoGo to the next step.</div>
10	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> Perform the "FUEL LINE PRESSURE INSPECTION". <p>(See FUEL LINE PRESSURE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<div>Yes <ul style="list-style-type: none"> If the fuel line pressure is too low, go to the next step. If the fuel line pressure is too high, replace the fuel pump unit, then go to Step 17. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p> </div> <div>NoGo to Step 13.</div>
11	INSPECT LONG TERM FUEL TRIM <ul style="list-style-type: none"> Access the LONGFT1 PID using the M-MDS. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none"> Compare the LONGFT1 PID with recorded FREEZE FRAME DATA (Mode 12) at Step 2. Is the LONGFT1 PID above FREEZE FRAME DATA (Mode 12)? 	<div>YesInspect the purge solenoid valve.</div> <div>(See PURGE SOLENOID VALVE INSPECTION [13B-MSP].)</div> <div> <ul style="list-style-type: none"> If there is any malfunction, replace the purge solenoid valve, then go to Step 17. </div> <div>NoGo to the next step.</div>
12	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> Inspect the engine compression. <p>(See COMPRESSION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<div>YesGo to the next step.</div> <div>NoGo to Step 17.</div>
13	INSPECT METERING OIL PUMP <ul style="list-style-type: none"> Inspect the metering oil pump. <p>(See METERING OIL PUMP INSPECTION [13B-MSP].)</p>	<div>YesRepair or replace the malfunctioning part according to the inspection results.</div> <div>Overhaul or replace the engine, then go to Step 17.</div>

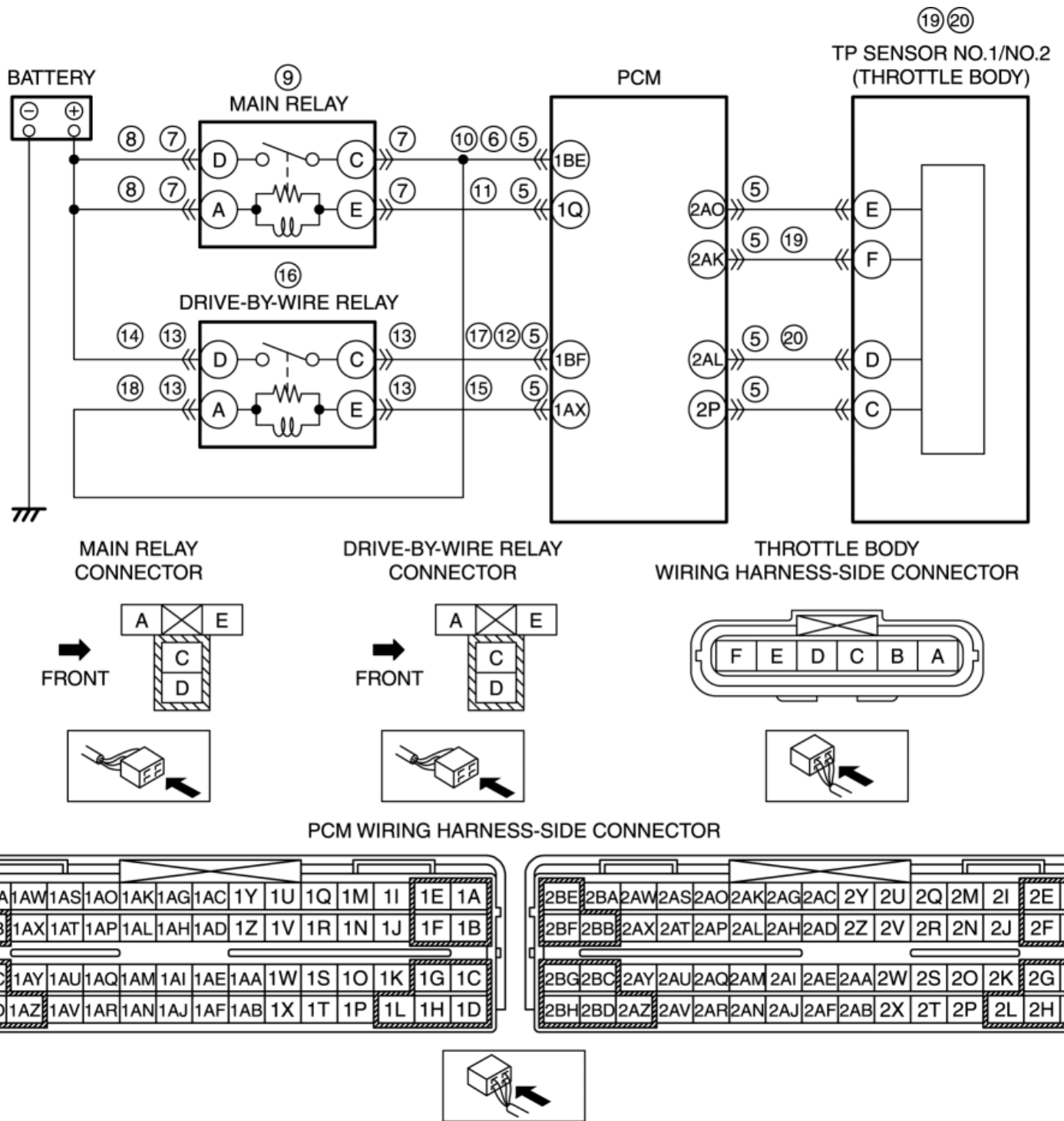
	<ul style="list-style-type: none"> Is there any malfunction? 	No	Go to the next step.
14	INSPECT ENGINE OIL CONDITION <ul style="list-style-type: none"> Inspect the engine oil condition. Is the engine oil condition normal? 	Yes	Go to the next step.
		No	Replace the engine oil. Overhaul or replace the engine, then go to Step 17.
15	INSPECT OIL PRESSURE <ul style="list-style-type: none"> Inspect the oil pressure. (See OIL PRESSURE INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results. Overhaul or replace the engine, then go to Step 17.
		No	Go to the next step.
16	INSPECT OIL PASSAGE <ul style="list-style-type: none"> Inspect the oil pipe between metering oil pump and metering oil nozzle. Is there any malfunction? 	Yes	Inspect for leakage or clogging in the engine oil passage. Repair or replace the malfunctioning part according to the inspection results. Overhaul or replace the engine, then go to the next step.
		No	Overhaul or replace the engine, then go to the next step.
17	VERIFY TROUBLESHOOTING OF DTC P2097 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Maintain the engine speed at 2,500—3,500 rpm for 15 s or more, then increase it to 4,500—5,000 rpm and maintain it for 15 s or more. Idle the engine until the cooling fan stops, then maintain the engine idling for 60 s or more. 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.

	<ul style="list-style-type: none">• Perform the KOER self test. <p>(See KOE0/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none">• Is the PENDING CODE same as DTC present?		
18	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2101 [13B-MSP]

DTC P2101	Throttle actuator circuit range/performance
DETECTION CONDITION	<ul style="list-style-type: none">• Detect any of the following condition:<ul style="list-style-type: none">▪ The voltage is not supplied to throttle body even though the drive-by-wire power supply is ON.▪ The voltage is supplied to throttle body even though the drive-by-wire power supply is off. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor. (CCM)• The MIL illuminates if the PCM detects the above malfunction conditions during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• PCM connector or terminals malfunction• Main relay and related circuit malfunction• Drive-by-wire relay and related circuit malfunction• TP sensor No.1 and related circuit malfunction• TP sensor No.2 and related circuit malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Is the DTC P2101 on FREEZE FRAME DATA (Mode 2)? 	<p>Yes Go to the next step.</p> <p>No Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [13B-MSP].)</p>
2	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED	<p>Yes Go to the next step.</p>

	<ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 		No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> Turn the ignition switch off, then to the ON position (engine off). Verify the related PENDING CODE or stored DTCs. Are other DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 21.
		No	Go to the next step.
6	INSPECT MAIN RELAY OUTPUT VOLTAGE <ul style="list-style-type: none"> PCM connector is disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between PCM terminal 1BE (wiring harness-side) and body ground. Is the voltage B+? 	Yes	Go to Step 12.
		No	Go to the next step.
7	INSPECT MAIN RELAY CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Remove the main relay. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 21.
		No	Go to the next step.
8	INSPECT POWER SUPPLY FOR CONTROL CIRCUIT OF MAIN RELAY <ul style="list-style-type: none"> Main relay is removed. PCM connector is disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between the following circuits: <ul style="list-style-type: none"> Main relay terminal D (wiring harness-side) and body ground Main relay terminal A (wiring harness-side) and body ground Is the voltage B+? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 21.

9	INSPECT MAIN RELAY <ul style="list-style-type: none"> Inspect the main relay. (See RELAY INSPECTION.) Is there any malfunction? 	Yes	Replace the main relay, then go to Step 21. (See RELAY LOCATION.)
		No	Go to the next step.
10	INSPECT POWER CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Main relay is removed. PCM connector is disconnected. Turn the ignition switch off. Inspect for continuity between main relay terminal C (wiring harness-side) and PCM terminal 1BE (wiring harness-side). Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 21.
11	INSPECT CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Main relay is removed. PCM connector is disconnected. Turn the ignition switch off. Inspect for continuity between main relay terminal E (wiring harness-side) and PCM terminal 1Q (wiring harness-side). Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 21.
12	INSPECT DRIVE-BY-WIRE RELAY OUTPUT VOLTAGE <ul style="list-style-type: none"> PCM connector is disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between PCM terminal 1BF (wiring harness-side) and body ground. Is the voltage B+? 	Yes	Go to Step 19.
		No	Go to the next step.
13	INSPECT DRIVE-BY-WIRE RELAY CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Remove the drive-by-wire relay. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 21.
		No	Go to the next step.
14	INSPECT POWER SUPPLY OF DRIVE-BY-WIRE RELAY <ul style="list-style-type: none"> Drive-by-wire relay is removed. PCM connector is disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between drive-by-wire relay terminal D (wiring harness-side) and body ground. Is the voltage B+? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 21.
15	INSPECT POWER SUPPLY FOR CONTROL CIRCUIT OF DRIVE-BY-WIRE RELAY <ul style="list-style-type: none"> Drive-by-wire relay is removed. 	Yes	Go to the next step.

	<ul style="list-style-type: none"> • PCM connector is disconnected. • Turn the ignition switch off. • Install the drive-by-wire relay. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between drive-by-wire relay terminal E (wiring harness-side) and body ground. • Is the voltage B+? 	No	Repair or replace the wiring harness for a possible open circuit, then go to Step 21.
16	INSPECT DRIVE-BY-WIRE RELAY <ul style="list-style-type: none"> • Inspect the drive-by-wire relay. (See RELAY INSPECTION.) • Is there any malfunction? 	Yes	Replace the drive-by-wire relay, then go to Step 21. (See RELAY LOCATION.)
		No	Go to the next step.
17	INSPECT POWER CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • PCM connector is disconnected. • Turn the ignition switch off. • Remove the drive-by-wire relay. • Inspect for continuity between drive-by-wire relay terminal C (wiring harness-side) and PCM terminal 1BF (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 21.
18	INSPECT CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Drive-by-wire relay is removed. • PCM connector is disconnected. • Turn the ignition switch off. • Inspect for continuity between drive-by-wire relay A (wiring harness-side) and PCM terminal 1BE (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 21.
19	INSPECT TP SENSOR NO.1 OUTPUT VOLTAGE <ul style="list-style-type: none"> • PCM connector is disconnected. • Turn the ignition switch off. • Reconnect the PCM connector. • Turn the ignition switch to the ON position (engine off). • Inspect the voltage between PCM terminal 2AK (wiring harness-side) and body ground. • Is the voltage 0.40—0.60 V? 	Yes	Go to the next step.
		No	Inspect the TP sensor No.1 and the related circuits and terminals. (See THROTTLE POSITION (TP) SENSOR INSPECTION [13B-MSP].) Repair or replace if necessary, then go to Step 21.
20	INSPECT TP SENSOR NO.2 OUTPUT VOLTAGE <ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off). • Inspect the voltage between PCM terminal 2AL (wiring harness-side) and body ground. • Is the voltage 4.40—4.60 V? 	Yes	Go to the next step.
		No	Inspect the TP sensor No.2 and the related circuits and terminals. (See THROTTLE POSITION (TP) SENSOR INSPECTION [13B-MSP].)

			Repair or replace if necessary, then go to the next step.
21	VERIFY TROUBLESHOOTING OF DTC P2101 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Start the engine and idle it. • Turn the ignition switch off, then to the ON position (engine off). • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) • Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No	Go to the next step.
22	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)	
		No	DTC troubleshooting completed.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

DTC P2107 [13B-MSP]

DTC P2107	Throttle actuator control module processor error
DETECTION CONDITION	<ul style="list-style-type: none"> Throttle actuator control module internal processor error. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
	VERIFY TROUBLESHOOTING OF P2107	

3	COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • Is the same DTC present? 		<p>Yes Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Are any DTCs present? 		<p>Yes Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p> <p>No DTC troubleshooting completed.</p>

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

DTC P2108 [13B-MSP]

DTC P2108	Throttle actuator control module performance error
DETECTION CONDITION	<ul style="list-style-type: none"> Throttle actuator control module internal communication error. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
	VERIFY TROUBLESHOOTING OF P2108	

3	COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Start the engine. • Perform the DTC Reading Procedure. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • Is the same DTC present? 		<p>Yes Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Are any DTCs present? 		<p>Yes Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p> <p>No DTC troubleshooting completed.</p>

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

DTC P2119 [13B-MSP]

DTC P2119	Throttle actuator control throttle body range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM compares the TP with default TP when the ignition switch is turned off. If the TP is higher than the default TP, the PCM determines that there is a throttle valve return spring malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Drive-by-wire control system malfunction Throttle actuator malfunction Throttle valve malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.</p>

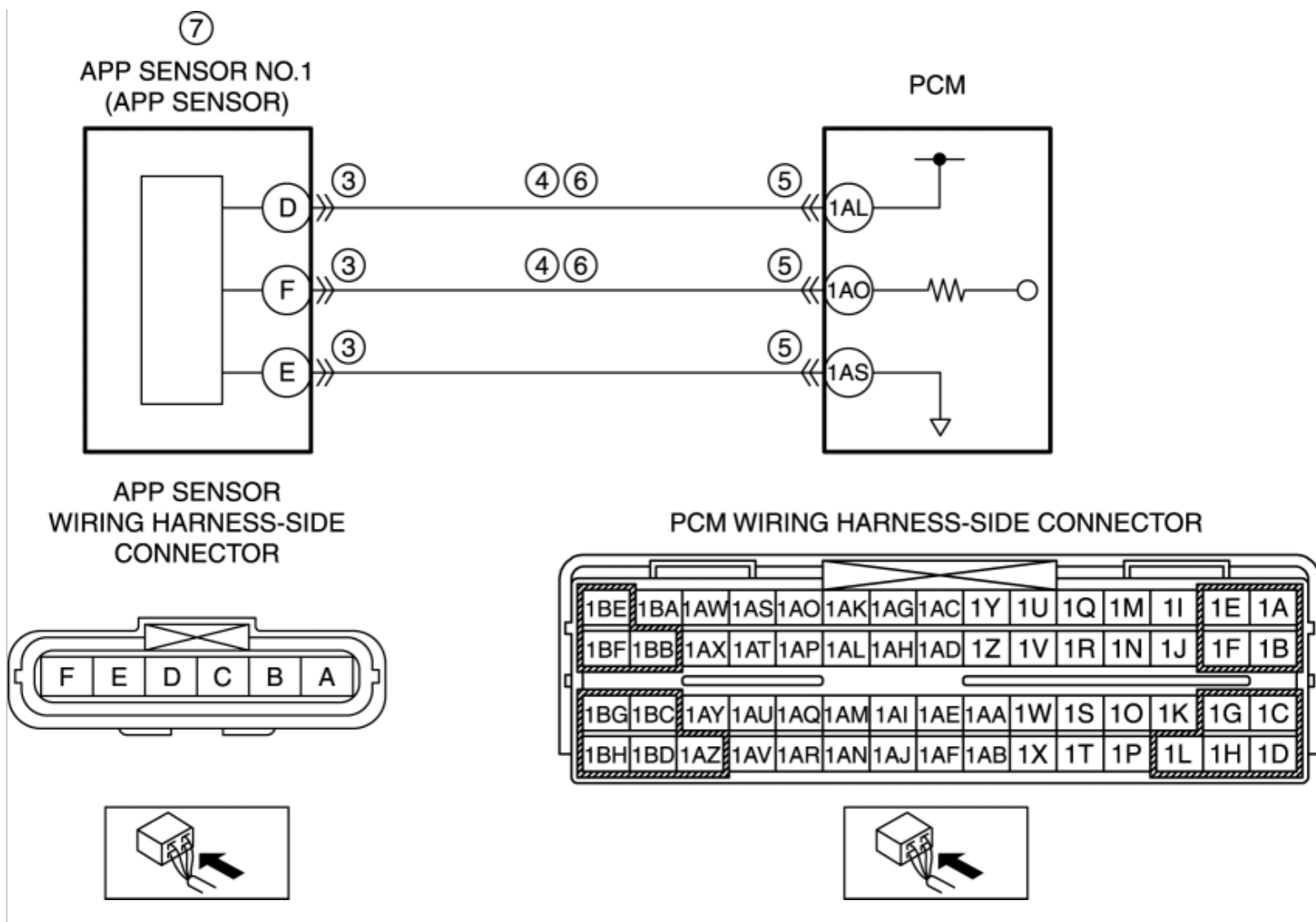
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
3	INSPECT DRIVE-BY-WIRE CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> • Perform the Drive-by-wire Control System Inspection. <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 6.
4	INSPECT THROTTLE ACTUATOR <ul style="list-style-type: none"> • Inspect the throttle actuator. <p>(See THROTTLE BODY INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	Replace the throttle body, then go to Step 6. <p>(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)</p>
5	INSPECT THROTTLE VALVE <ul style="list-style-type: none"> • Inspect the throttle valve. <p>(See THROTTLE BODY INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	Replace the throttle body, then go to the next step. <p>(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)</p>
6	VERIFY TROUBLESHOOTING OF DTC P2119 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off), then off. 	Yes	Replace the PCM, then go to the next step. <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.

	<ul style="list-style-type: none">• Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none">• Is the same DTC present?		
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2122 [13B-MSP]

DTC P2122	APP sensor No.1 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the APP sensor No.1 when the engine is running. If the input voltage is less than 0.3 V, the PCM determines that the APP sensor No.1 circuit input voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• APP sensor connector or terminals malfunction• Short to ground in wiring harness between APP sensor terminal D and PCM terminal 1AL• Short to ground in wiring harness between APP sensor terminal F and PCM terminal 1AO• PCM connector or terminals malfunction• Open circuit in wiring harness between APP sensor terminal D and PCM terminal 1AL• Open circuit in wiring harness between APP sensor terminal F and PCM terminal 1AO• APP sensor No.1 malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT APP SENSOR CONNECTOR FOR POOR CONNECTION	Yes Repair or replace the connector and/or

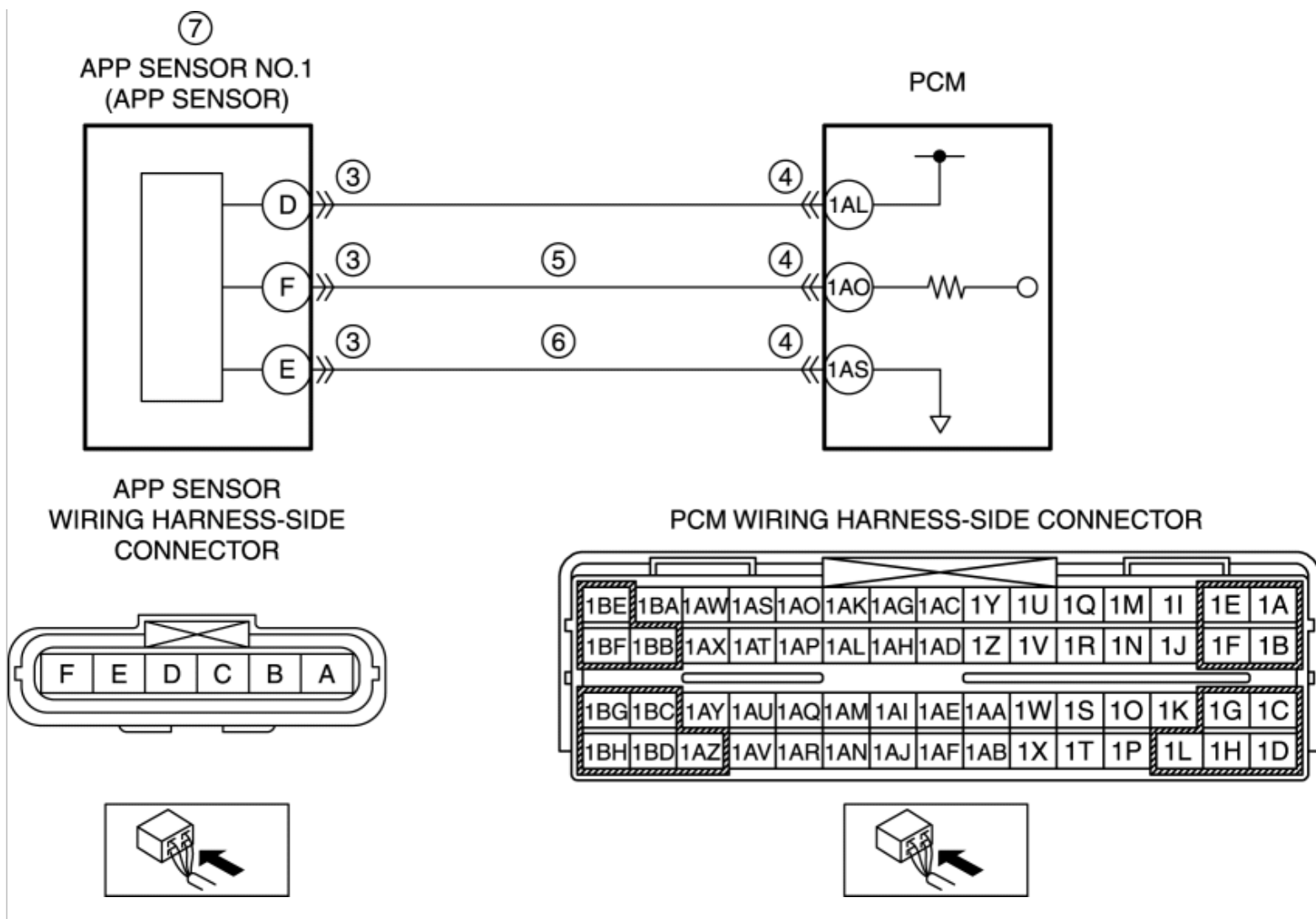
	<ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the APP sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	terminals, then go to Step 8.
		No Go to the next step.
4	INSPECT APP SENSOR NO.1 CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • APP sensor connector is disconnected. • Turn the ignition switch off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> ▪ APP sensor terminal D (wiring harness-side) and body ground ▪ APP sensor terminal F (wiring harness-side) and body ground • Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [13B-MSP].) Go to Step 8.
		No Go to the next step.
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 8.
		No Go to the next step.
6	INSPECT APP SENSOR NO.1 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> ▪ APP sensor terminal D (wiring harness-side) and PCM terminal 1AL (wiring harness-side) ▪ APP sensor terminal F (wiring harness-side) and PCM 	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to Step 8.

	terminal 1AO (wiring harness-side)		
	<ul style="list-style-type: none"> Is there continuity? 		
7	INSPECT APP SENSOR NO.1 <ul style="list-style-type: none"> Inspect the APP sensor No.1. (See ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [13B-MSP].) Is there any malfunction? 	Yes Replace the accelerator pedal, then go to the next step. (See ACCELERATOR PEDAL REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
8	VERIFY TROUBLESHOOTING OF DTC P2122 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)	
		No DTC troubleshooting completed.	

2011 - RX-8 - Engine

DTC P2123 [13B-MSP]

DTC P2123	APP sensor No.1 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the APP sensor No.1 when the engine is running. If the input voltage is more than 4.8 V, the PCM determines that the APP sensor No.1 circuit input voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• APP sensor connector or terminals malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between APP sensor terminal F and PCM terminal 1AO• Open circuit in wiring harness between APP sensor terminal E and PCM terminal 1AS• APP sensor No.1 malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.</p>
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
3	INSPECT APP SENSOR CONNECTOR FOR POOR CONNECTION	<p>Yes Repair or replace the connector and/or</p>

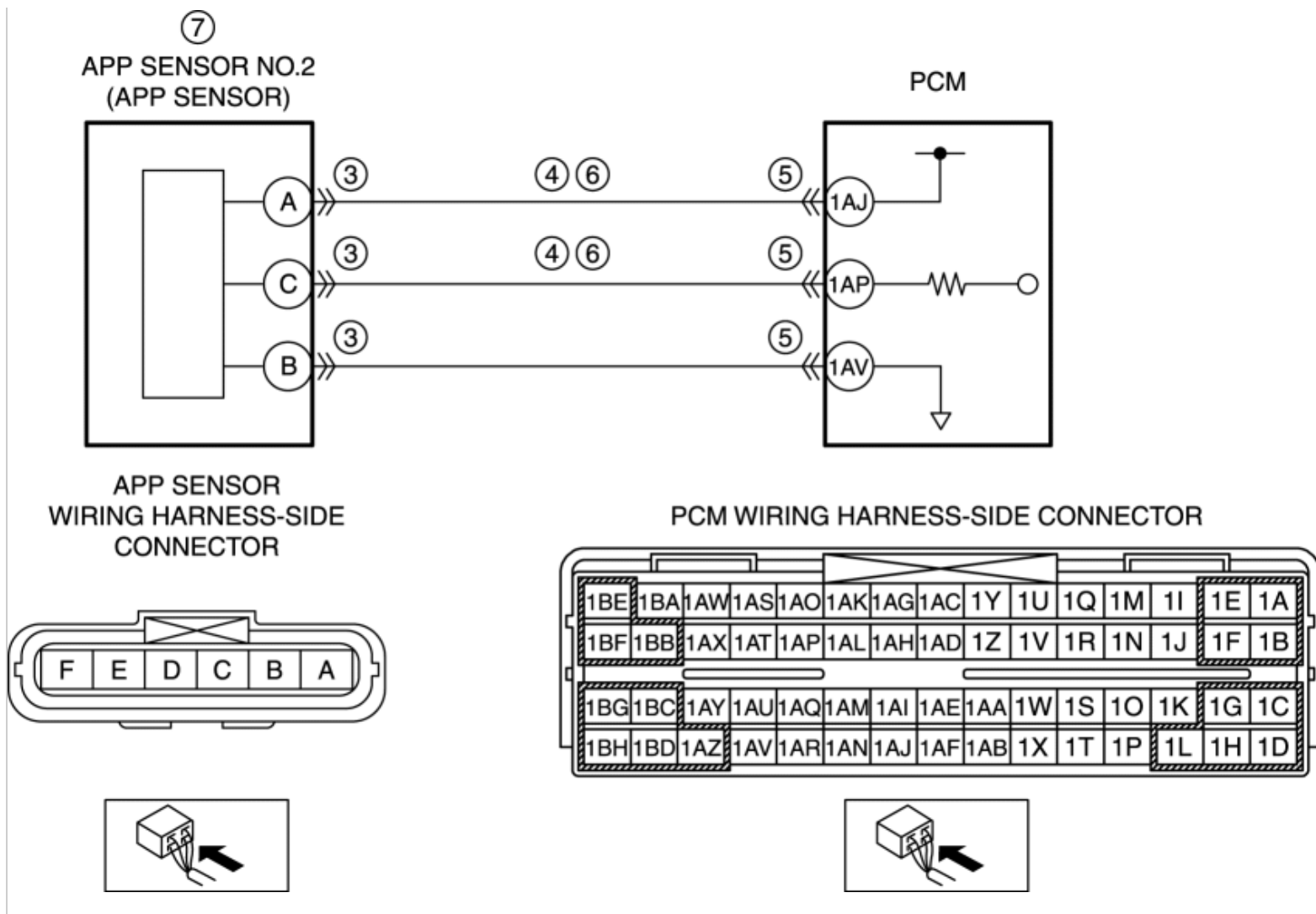
	<ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the APP sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 		terminals, then go to Step 8.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
5	INSPECT APP SENSOR NO.1 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between APP sensor terminal F (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
6	INSPECT APP SENSOR NO.1 GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect for continuity between APP sensor terminal E (wiring harness-side) and PCM terminal 1AS (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	INSPECT APP SENSOR NO.1 <ul style="list-style-type: none"> • Inspect the APP sensor No.1. (See ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes	Replace the accelerator pedal, then go to the next step. (See ACCELERATOR PEDAL REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
8	VERIFY TROUBLESHOOTING OF DTC P2123 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected 	Yes	Replace the PCM, then go to the next step.

	<p>connectors.</p> <ul style="list-style-type: none">• Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none">• Is the same DTC present?		<p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?	Yes	Go to the applicable DTC inspection.
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2127 [13B-MSP]

DTC P2127	APP sensor No.2 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the APP sensor No.2 when the engine is running. If the input voltage is less than 0.3 V, the PCM determines that the APP sensor No.2 circuit input voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• APP sensor connector or terminals malfunction• Short to ground in wiring harness between APP sensor terminal A and PCM terminal 1AJ• Short to ground in wiring harness between APP sensor terminal C and PCM terminal 1AP• PCM connector or terminals malfunction• Open circuit in wiring harness between APP sensor terminal A and PCM terminal 1AJ• Open circuit in wiring harness between APP sensor terminal C and PCM terminal 1AP• APP sensor No.2 malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.</p>
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
3	INSPECT APP SENSOR CONNECTOR FOR POOR CONNECTION	<p>Yes Repair or replace the connector and/or terminals, then go to Step 8.</p>

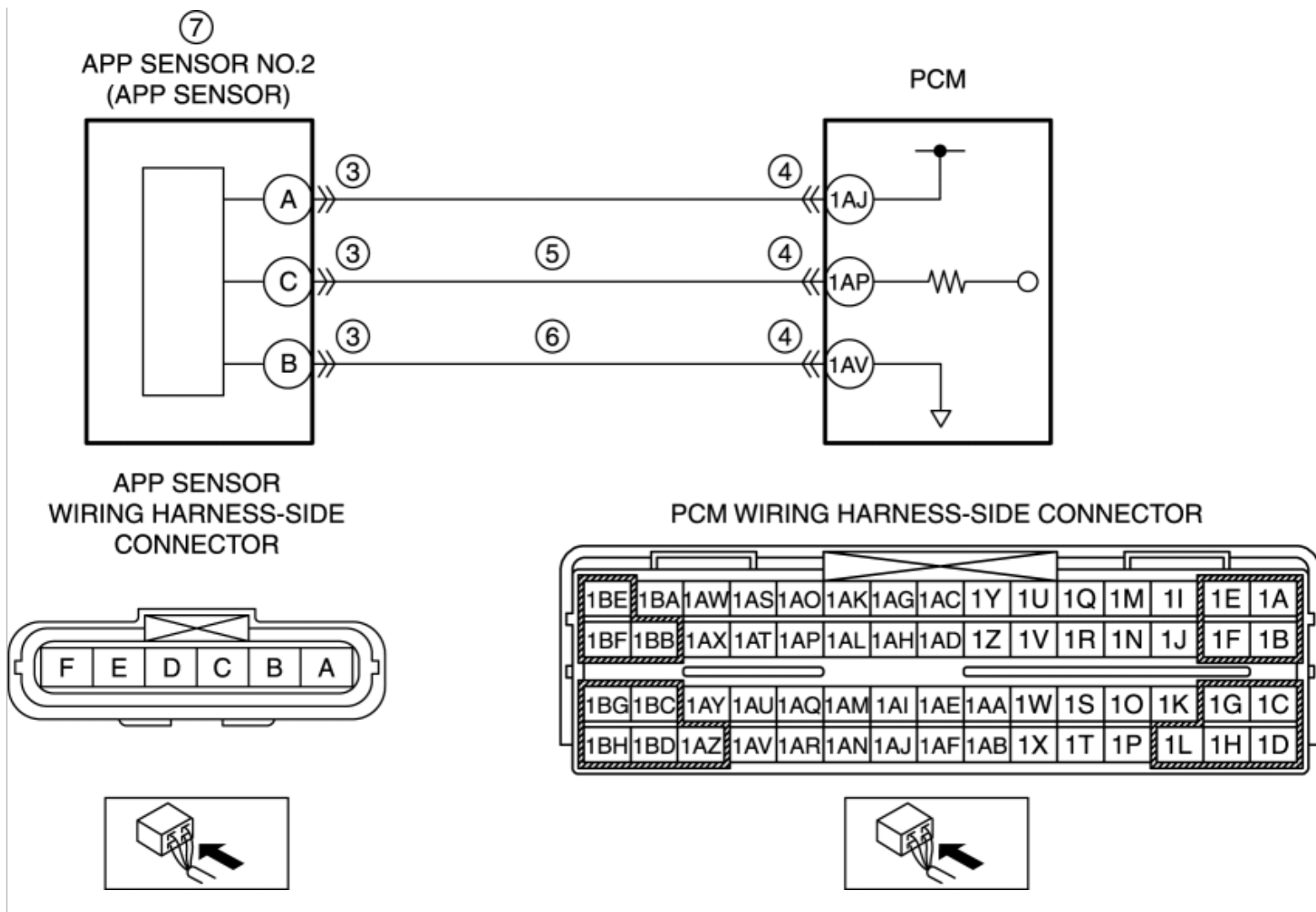
	<ul style="list-style-type: none"> • Turn the Ignition switch off. • Disconnect the APP sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 		No Go to the next step.
4	INSPECT APP SENSOR NO.2 CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • APP sensor connector is disconnected. • Turn the ignition switch off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> ▪ APP sensor terminal A (wiring harness-side) and body ground ▪ APP sensor terminal C (wiring harness-side) and body ground • Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> • Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [13B-MSP].) <p>Go to Step 8.</p>	No Go to the next step.
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the Ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 8.	No Go to the next step.
6	INSPECT APP SENSOR NO.2 CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> ▪ APP sensor terminal A (wiring harness-side) and PCM terminal 1AJ (wiring harness-side) ▪ APP sensor terminal C (wiring harness-side) and PCM terminal 1AP (wiring harness- 	Yes Go to the next step.	No Repair or replace the wiring harness for a possible open circuit, then go to Step 8.

	side)		
	<ul style="list-style-type: none"> Is there continuity? 		
7	INSPECT APP SENSOR NO.2 <ul style="list-style-type: none"> Inspect the APP sensor No.2. (See ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [13B-MSP].) Is there any malfunction? 	Yes Replace the accelerator pedal, then go to the next step. (See ACCELERATOR PEDAL REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
8	VERIFY TROUBLESHOOTING OF DTC P2127 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)	
		No DTC troubleshooting completed.	

2011 - RX-8 - Engine

DTC P2128 [13B-MSP]

DTC P2128	APP sensor No.2 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the APP sensor No.2 when the engine is running. If the input voltage is more than 4.8 V, the PCM determines that the APP sensor No.2 circuit input voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• APP sensor connector or terminals malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between APP sensor terminal C and PCM terminal 1AP• Open circuit in wiring harness between APP sensor terminal B and PCM terminal 1AV• APP sensor No.2 malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.</p>
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
3	INSPECT APP SENSOR CONNECTOR FOR POOR CONNECTION	<p>Yes Repair or replace the connector and/or terminals, then go to Step 8.</p>

	<ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the APP sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 		No Go to the next step.
4	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
5	INSPECT APP SENSOR NO.2 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between APP sensor terminal C (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 8.
		No	Go to the next step.
6	INSPECT APP SENSOR NO.2 GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • APP sensor and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect for continuity between APP sensor terminal B (wiring harness-side) and PCM terminal 1AV (wiring harness-side). • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 8.
7	INSPECT APP SENSOR NO.2 <ul style="list-style-type: none"> • Inspect the APP sensor No.2. (See ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes	Replace the accelerator pedal, then go to the next step. (See ACCELERATOR PEDAL REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
8	VERIFY TROUBLESHOOTING OF DTC P2128 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. 	Yes	Replace the PCM, then go to the next step.

	<ul style="list-style-type: none">• Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none">• Is the same DTC present?	(See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the “AFTER REPAIR PROCEDURE”. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?	YesGo to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2135 [13B-MSP]

DTC P2135	TP sensor No.1/No.2 voltage correlation problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM compares the input voltage from TP sensor No.1 with the input voltage from TP sensor No.2 when the engine is running. If the difference is more than the specification, the PCM determines that there is a TP sensor No.1/No.2 voltage correlation problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Throttle body connector or terminals malfunction PCM connector or terminals malfunction TP sensor No.1 malfunction TP sensor No.2 malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.</p>

2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	<div> Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. </div> <div> No Go to the next step. </div>
3	INSPECT THROTTLE BODY CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the throttle body connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	<div> Yes Repair or replace the connector and/or terminals, then go to Step 6. </div> <div> No Go to the next step. </div>
4	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	<div> Yes Repair or replace the connector and/or terminals, then go to Step 6. </div> <div> No Go to the next step. </div>
5	INSPECT TP SENSOR <ul style="list-style-type: none"> • Inspect the TP sensor No.1 and No.2. (See THROTTLE POSITION (TP) SENSOR INSPECTION [13B-MSP].) • Is there any malfunction? 	<div> Yes Replace the throttle body, then go to the next step. (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].) </div> <div> No Go to the next step. </div>
6	VERIFY TROUBLESHOOTING OF DTC P2135 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE 	<div> Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].) </div> <div> No Go to the next step. </div>

	<p>[13B-MSP].)</p> <ul style="list-style-type: none">• Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none">• Is the same DTC present?		
7	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2138 [13B-MSP]

DTC P2138	APP sensor No.1/No.2 voltage correlation problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM compares the input voltage from APP sensor No.1 with the input voltage from APP sensor No.2 when the engine is running. If the difference is more than the specification, the PCM determines that there is a APP sensor No.1/No.2 voltage correlation problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> APP sensor connector or terminals malfunction PCM connector or terminals malfunction APP sensor No.1 malfunction APP sensor No.2 malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.

2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	<div> Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. </div> <div> No Go to the next step. </div>
3	INSPECT APP SENSOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the APP sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	<div> Yes Repair or replace the connector and/or terminals, then go to Step 6. </div> <div> No Go to the next step. </div>
4	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	<div> Yes Repair or replace the connector and/or terminals, then go to Step 6. </div> <div> No Go to the next step. </div>
5	INSPECT APP SENSOR <ul style="list-style-type: none"> • Inspect the APP sensor No.1 and No.2. <p>(See ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	<div> Yes Replace the accelerator pedal, then go to the next step. (See ACCELERATOR PEDAL REMOVAL/INSTALLATION [13B-MSP].) </div> <div> No Go to the next step. </div>
6	VERIFY TROUBLESHOOTING OF DTC P2138 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE)</p>	<div> Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].) </div> <div> No Go to the next step. </div>

	<p>[13B-MSP].)</p> <ul style="list-style-type: none">• Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none">• Is the same DTC present?		
7	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2195 [13B-MSP]

DTC P2195	A/F sensor signal stuck lean
DETECTION CONDITION	<ul style="list-style-type: none">The PCM monitors the A/F sensor output current when the following conditions are met. If the average output current is more than 1.15 A for 25 s, the PCM determines that the A/F sensor signal remains lean. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none">ECT: more than 70 °C {158 °F}Engine speed: 1,000—3,200 rpmMAF amount: 6—80 g/s {0.80—10.58 lb/min}Target A/F feedback system status: feedback controlInput voltage from the HO2S: more than 0.7 V <p>Diagnostic support note</p> <ul style="list-style-type: none">This is an intermittent monitor (A/F sensor, HO2S).The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.FREEZE FRAME DATA (Mode 2/Mode 12) is available.The DTC is stored in the PCM memory.
	<ul style="list-style-type: none">Erratic signal to PCM<ul style="list-style-type: none">APP sensor signal malfunctionECT sensor signal malfunctionMAF sensor signal malfunction

POSSIBLE CAUSE	<ul style="list-style-type: none"> ▪ TP sensor signal malfunction ▪ VSS signal malfunction • Loose installation of A/F sensor • Leakage exhaust gas • A/F sensor malfunction • Fuel injector malfunction • Fuel line pressure malfunction <ul style="list-style-type: none"> ▪ Fuel leakage from fuel system ▪ Fuel pump unit malfunction ▪ Pressure regulator (built-in fuel pump unit) malfunction • PCM malfunction
-----------------------	--

Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Is the DTC P2195 on FREEZE FRAME DATA (Mode 2)? 	YesGo to the next step.
		NoGo to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [13B-MSP].)
2	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	YesGo to the next step.
		NoRecord the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	YesPerform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.

		No	Go to the next step.
4	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> • Turn the ignition switch off, then to the ON position (engine off). • Verify the related PENDING CODE or stored DTCs. • Are other DTCs present? 	Yes	Go to the appropriate DTC inspection. (See DTC TABLE [13B-MSP].)
		No	Go to the next step.
5	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none"> • Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) <ul style="list-style-type: none"> ▪ APP ▪ ECT ▪ MAF ▪ TP REL ▪ VSS • Are the PIDs normal? (See PCM INSPECTION [13B-MSP].) 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 10.
6	VERIFY CURRENT INPUT SIGNAL STATUS UNDER FREEZE FRAME DATA (MODE 2) CONDITION CAUTION: <ul style="list-style-type: none"> • While performing this step with vehicle driving, always operate the vehicle in a safe and lawful manner. • When the M-MDS is used to observe monitor system status while driving, be sure to have another technician with you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD function and inspect later. • Access the following PIDs using the M-MDS under the FREEZE FRAME DATA (Mode 2) condition: (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) <ul style="list-style-type: none"> ▪ APP ▪ ECT 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 10.

	<ul style="list-style-type: none"> ▪ MAF ▪ TP REL ▪ VSS <ul style="list-style-type: none"> • Are the PIDs normal? <p>(See PCM INSPECTION [13B-MSP].)</p>		
7	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Inspect the A/F sensor. <p>(See AIR FUEL RATIO (A/F) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes Inspect the following: <ul style="list-style-type: none"> • Loose installation of A/F sensor • Exhaust gas leakage between exhaust manifold and A/F sensor <p>If there is no malfunction detected, replace the A/F sensor.</p> <p>(See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p> <p>If there is a malfunction detected, repair or replace the malfunctioning part according to the inspection results.</p> <p>Go to Step 10.</p>	
		No Go to the next step.	
8	INSPECT FUEL INJECTOR <ul style="list-style-type: none"> • Inspect the fuel injector. <p>(See FUEL INJECTOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes Replace the fuel injector, then go to Step 10. (See FUEL INJECTOR REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
9	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> • Perform the "FUEL LINE PRESSURE INSPECTION". <p>(See FUEL LINE PRESSURE INSPECTION [13B-MSP].)</p>	Yes Repair or replace the malfunctioning part according to the inspection results, then go to the next step.	

	<ul style="list-style-type: none"> Is there any malfunction? 	No	Go to the next step.
10	VERIFY TROUBLESHOOTING OF DTC P2195 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the DRIVE MODE 3 (A/F sensor heater, HO2S heater, A/F sensor, HO2S, and TWC Repair Verification Drive Mode). (See OBD-II DRIVE MODE [13B-MSP].) Is the PENDING CODE same as DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2196 [13B-MSP]

DTC P2196	A/F sensor signal stuck rich
DETECTION CONDITION	<ul style="list-style-type: none">The PCM monitors the A/F sensor output current when the following conditions are met. If the average output current is less than 0.85 A for 25 s, the PCM determines that the A/F sensor signal remains rich. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none">ECT: more than 70 °C {158 °F}Engine speed: 1,000—3,200 rpmMAF amount: 6—80 g/s {0.80—10.58 lb/min}Target A/F feedback system status: feedback controlInput voltage from the HO2S: less than 0.2 V <p>Diagnostic support note</p> <ul style="list-style-type: none">This is an intermittent monitor (A/F sensor, HO2S).The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.FREEZE FRAME DATA (Mode 2/Mode 12) is available.The DTC is stored in the PCM memory.
	<ul style="list-style-type: none">Erratic signal to PCM<ul style="list-style-type: none">APP sensor signal malfunctionECT sensor signal malfunctionMAF sensor signal malfunction

POSSIBLE CAUSE	<ul style="list-style-type: none"> ▪ TP sensor signal malfunction ▪ VSS signal malfunction • Loose installation of A/F sensor • Leakage exhaust gas • A/F sensor malfunction • Fuel injector malfunction • Fuel line pressure malfunction <ul style="list-style-type: none"> ▪ Fuel pump unit malfunction ▪ Pressure regulator (built-in fuel pump unit) malfunction • PCM malfunction
-----------------------	---

Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Is the DTC P2196 on FREEZE FRAME DATA (Mode 2)? 	YesGo to the next step.
		No Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [13B-MSP].)
2	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	YesGo to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	YesPerform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No Go to the next step.

4	<p>VERIFY RELATED PENDING CODE OR STORED DTC</p> <ul style="list-style-type: none"> • Turn the ignition switch off, then to the ON position (engine off). • Verify the related PENDING CODE or stored DTCs. • Are other DTCs present? 	<p>Yes Go to the appropriate DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p> <p>No Go to the next step.</p>
5	<p>VERIFY CURRENT INPUT SIGNAL STATUS</p> <ul style="list-style-type: none"> • Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) <ul style="list-style-type: none"> ▪ APP ▪ ECT ▪ MAF ▪ TP REL ▪ VSS • Are the PIDs normal? (See PCM INSPECTION [13B-MSP].) 	<p>Yes Go to the next step.</p> <p>No Repair or replace the malfunctioning part according to the inspection results, then go to Step 10.</p>
6	<p>VERIFY CURRENT INPUT SIGNAL STATUS UNDER FREEZE FRAME DATA (MODE 2) CONDITION</p> <p>CAUTION:</p> <ul style="list-style-type: none"> • While performing this step with vehicle driving, always operate the vehicle in a safe and lawful manner. • When the M-MDS is used to observe monitor system status while driving, be sure to have another technician with you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD function and inspect later. • Access the following PIDs using the M-MDS under the FREEZE FRAME DATA (Mode 2) condition: (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) <ul style="list-style-type: none"> ▪ APP ▪ ECT ▪ MAF 	<p>Yes Go to the next step.</p> <p>No Repair or replace the malfunctioning part according to the inspection results, then go to Step 10.</p>

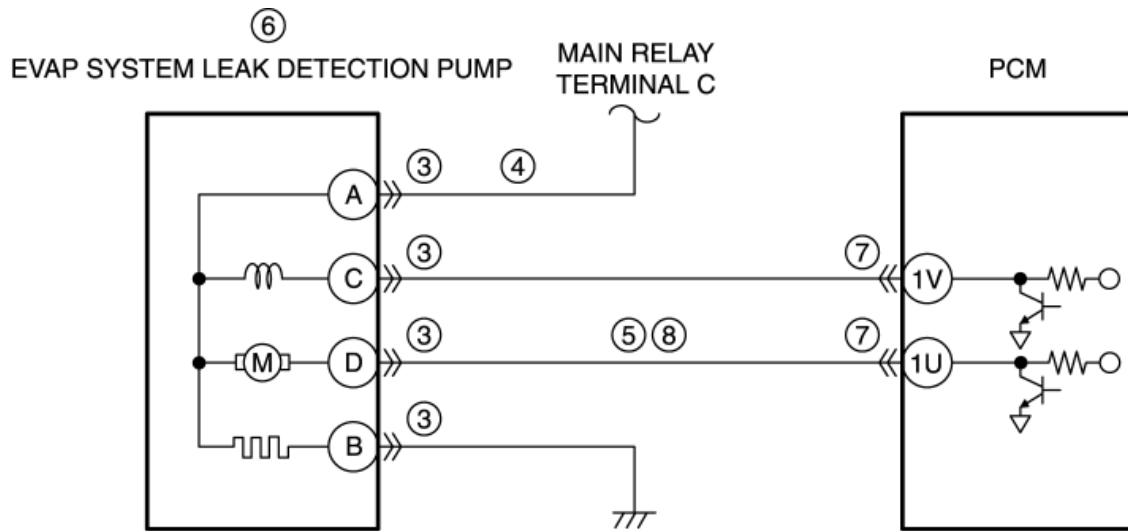
	<ul style="list-style-type: none"> ▪ TP REL ▪ VSS • Are the PIDs normal? (See PCM INSPECTION [13B-MSP].) 		
7	INSPECT A/F SENSOR <ul style="list-style-type: none"> • Inspect the A/F sensor. (See AIR FUEL RATIO (A/F) SENSOR INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes Inspect the following: <ul style="list-style-type: none"> • Loose installation of A/F sensor • Exhaust gas leakage between exhaust manifold and A/F sensor <p>If there is no malfunction detected, replace the A/F sensor. (See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p> <p>If there is a malfunction detected, repair or replace the malfunctioning part according to the inspection results. Go to Step 10.</p>	
		No Go to the next step.	
8	INSPECT FUEL INJECTOR <ul style="list-style-type: none"> • Inspect the fuel injector. (See FUEL INJECTOR INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes Replace the fuel injector, then go to Step 10. (See FUEL INJECTOR REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
9	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> • Perform the "FUEL LINE PRESSURE INSPECTION". (See FUEL LINE PRESSURE INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes Repair or replace the malfunctioning part according to the inspection results, then go to the next step.	
		No Go to the next step.	

10	VERIFY TROUBLESHOOTING OF DTC P2196 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Perform the DRIVE MODE 3 (A/F sensor heater, HO2S heater, A/F sensor, HO2S, and TWC Repair Verification Drive Mode). <p>(See OBD-II DRIVE MODE [13B-MSP].)</p> <ul style="list-style-type: none"> • Is the PENDING CODE same as DTC present? 		<p>Yes Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Are any DTCs present? 		<p>Yes Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p> <p>No DTC troubleshooting completed.</p>

2011 - RX-8 - Engine

DTC P2401 [13B-MSP]

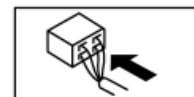
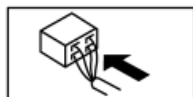
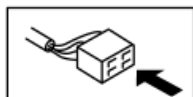
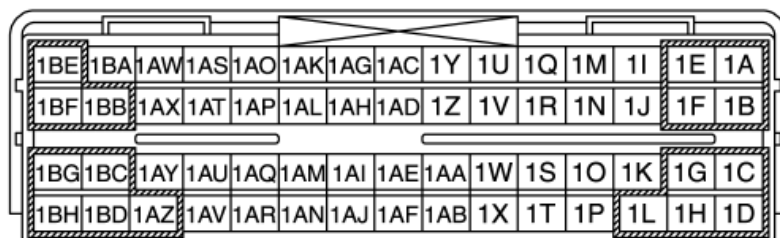
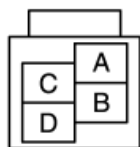
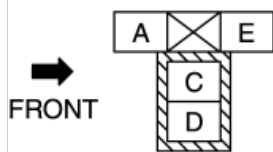
DTC P2401	EVAP system leak detection pump control circuit low
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the pump load current (EVAP line pressure) when the evaporative leak monitor is operating. If the pump load current is less than the specification, the PCM determines that the EVAP system leak detection pump control circuit voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is an intermittent monitor (EVAP system).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• EVAP system leak detection pump connector or terminals malfunction• Short to ground or open circuit in EVAP system leak detection pump power supply circuit<ul style="list-style-type: none">▪ Short to ground in wiring harness between main relay terminal C and EVAP system leak detection pump terminal A▪ EVAP system leak detection pump related fuse malfunction▪ Open circuit in wiring harness between main relay terminal C and EVAP system leak detection pump terminal A• Short to ground in wiring harness between EVAP system leak detection pump terminal D and PCM terminal 1U• EVAP system leak detection pump malfunction• PCM connector or terminals malfunction• Open circuit in wiring harness between EVAP system leak detection pump terminal D and PCM terminal 1U• PCM malfunction



MAIN RELAY CONNECTOR

EVAP SYSTEM LEAK DETECTION PUMP WIRING HARNESS-SIDE CONNECTOR

PCM WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (EVAP system related) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT EVAP SYSTEM LEAK DETECTION PUMP CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the EVAP system leak detection pump connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). 	Yes Repair or replace the connector and/or terminals, then go to Step 9. No Go to the next step.

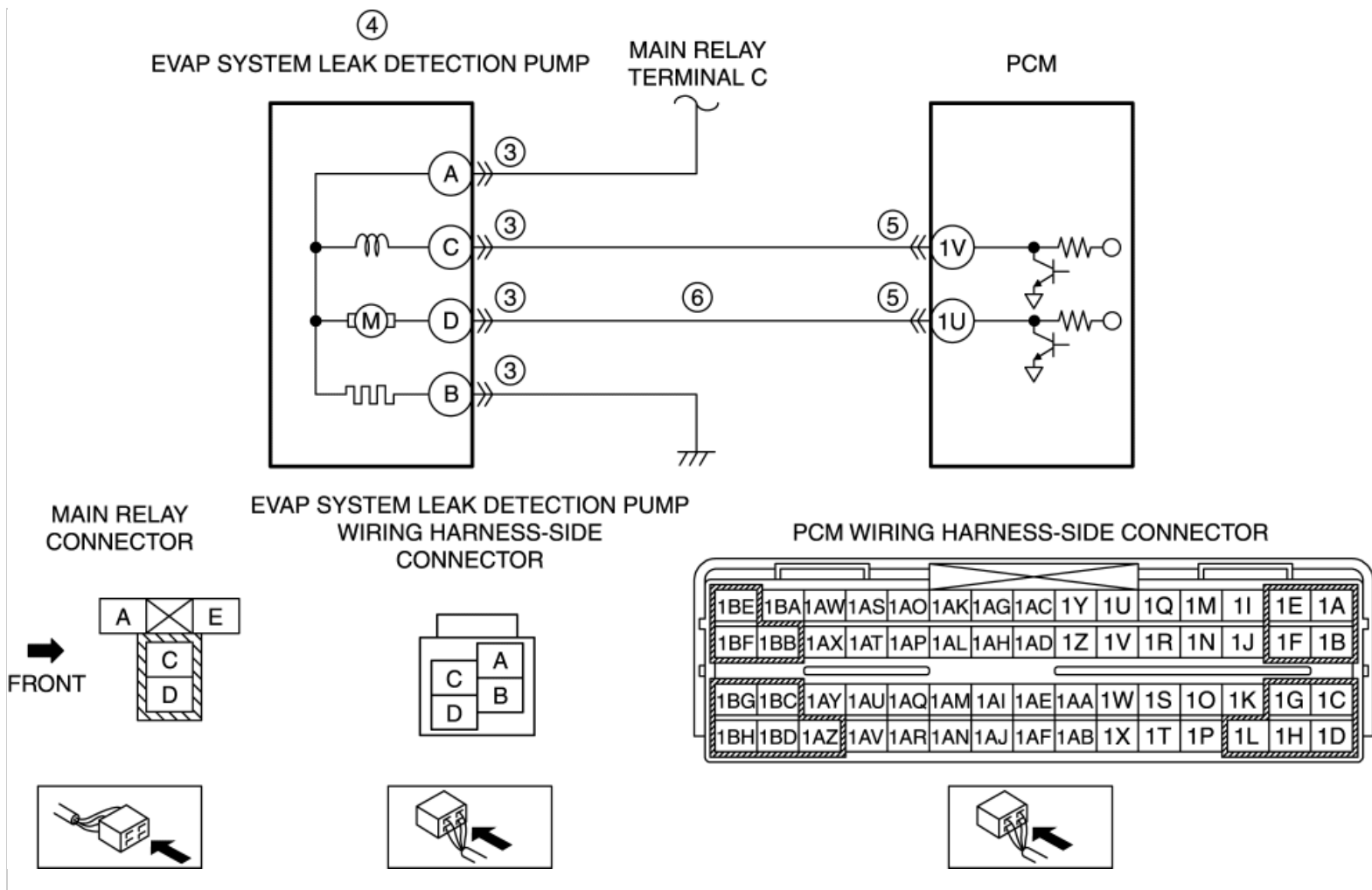
	<ul style="list-style-type: none"> Is there any malfunction? 		
4	INSPECT EVAP SYSTEM LEAK DETECTION PUMP POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> EVAP system leak detection pump connector is disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between EVAP system leak detection pump terminal A (wiring harness-side) and body ground. Is the voltage B+? 	YesGo to the next step.	
		No Inspect the EVAP system leak detection pump related fuse. <ul style="list-style-type: none"> If the fuse is melt: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. Replace the fuse. If the fuse is deterioration: <ul style="list-style-type: none"> Replace the fuse. If the fuse is normal: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible open circuit. Go to Step 9.	
5	INSPECT EVAP SYSTEM LEAK DETECTION PUMP CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> EVAP system leak detection pump connector is disconnected. Turn the ignition switch off. Inspect for continuity between EVAP system leak detection pump terminal D (wiring harness-side) and body ground. Is there continuity? 	YesIf the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [13B-MSP].) Go to Step 9.	
		No Go to the next step.	
6	INSPECT EVAP SYSTEM LEAK DETECTION PUMP <ul style="list-style-type: none"> Inspect the EVAP system leak detection pump. (See EVAPORATIVE EMISSION (EVAP) SYSTEM LEAK DETECTION PUMP INSPECTION [13B-MSP].) <ul style="list-style-type: none"> Is there any malfunction? 	YesReplace the EVAP system leak detection pump, then go to Step 9. (See EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
7	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	YesRepair or replace the connector and/or terminals, then go to Step 9.	
		No Go to the next step.	
8	INSPECT EVAP SYSTEM LEAK DETECTION PUMP CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> EVAP system leak detection pump and PCM 	YesGo to the next step.	

	<p>connectors are disconnected.</p> <ul style="list-style-type: none"> • Turn the ignition switch off. • Inspect for continuity between EVAP system leak detection pump terminal D (wiring harness-side) and PCM terminal 1U (wiring harness-side). • Is there continuity? 	No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	<p>VERIFY TROUBLESHOOTING OF DTC P2401 COMPLETED</p> <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Perform the evaporative system test using the M-MDS. <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP])</p> <ul style="list-style-type: none"> • Is the same DTC present? <p>NOTE:</p> <ul style="list-style-type: none"> • If the evaporative system test function is not available, perform the following procedure. <ul style="list-style-type: none"> • Perform the DRIVE MODE 6 (EVAP System Repair Verification Drive Mode). <p>(See OBD-II DRIVE MODE [13B-MSP])</p> <ul style="list-style-type: none"> • Is the PENDING CODE the same as the DTC present? 	Yes	<p>Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.
10	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	<p>Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p>
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2402 [13B-MSP]

DTC P2402	EVAP system leak detection pump control circuit high
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the pump load current (EVAP line pressure) when the evaporative leak monitor is operating. If the pump load current is more than the specification, the PCM determines that the EVAP system leak detection pump control circuit voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is an intermittent monitor (EVAP system).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• EVAP system leak detection pump connector or terminals malfunction• EVAP system leak detection pump malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between EVAP system leak detection pump terminal D and PCM terminal 1U• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (EVAP system related) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT EVAP SYSTEM LEAK DETECTION PUMP CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the EVAP system leak detection pump connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). 	Yes Repair or replace the connector and/or terminals, then go to Step 7. No Go to the next step.

	<ul style="list-style-type: none"> Is there any malfunction? 		
4	INSPECT EVAP SYSTEM LEAK DETECTION PUMP <ul style="list-style-type: none"> Inspect the EVAP system leak detection pump. (See EVAPORATIVE EMISSION (EVAP) SYSTEM LEAK DETECTION PUMP INSPECTION [13B-MSP].) Is there any malfunction? 	Yes Replace the EVAP system leak detection pump, then go to Step 7. (See EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 7.	
		No Go to the next step.	
6	INSPECT EVAP SYSTEM LEAK DETECTION PUMP CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> EVAP system leak detection pump and PCM connectors are disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between EVAP system leak detection pump terminal D (wiring harness-side) and body ground. Is the voltage B+ ? 	Yes Repair or replace the wiring harness for a possible short to power supply, then go to the next step.	
		No Go to the next step.	
7	VERIFY TROUBLESHOOTING OF DTC P2402 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the evaporative system test using the M-MDS. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Is the same DTC present? <p>NOTE:</p> <ul style="list-style-type: none"> If the evaporative system test function is not available, perform the following procedure. Perform the DRIVE MODE 6 (EVAP System Repair Verification Drive Mode). (See OBD-II DRIVE MODE [13B-MSP]) Is the PENDING CODE the same as the DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". 	Yes Go to the applicable DTC inspection.	

	(See AFTER REPAIR PROCEDURE [13B-MSP] .)	(See DTC TABLE [13B-MSP] .)
	<ul style="list-style-type: none">• Are any DTCs present?	No DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2404 [13B-MSP]

DTC P2404	EVAP system leak detection pump sense circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none">The PCM monitors the pump load current (EVAP line pressure) when the evaporative leak monitor is operating. If the time in which the pump load current reaches the reference current value is not within the specification after the PCM obtains the reference current value, the PCM determines that there is an EVAP system leak detection pump sense circuit range/performance problem. <p>Diagnostic support note</p> <ul style="list-style-type: none">This is an intermittent monitor (EVAP system).The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.FREEZE FRAME DATA (Mode 2/Mode 12) is available.The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">EVAP hose bendingAir filter cloggingPCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED	YesGo to the next step.
	<ul style="list-style-type: none">Have the FREEZE FRAME DATA	NoRecord the FREEZE FRAME DATA (Mode 12)

	(Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (EVAP system related) been recorded?		and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. 	
		No	Go to the next step.
3	INSPECT EVAP HOSE FOR BENDING <ul style="list-style-type: none"> Inspect the EVAP hose for bending. Is there any malfunction? 	Yes Repair or replace the malfunctioning EVAP hose, then go to Step 5.	
		No	Go to the next step.
4	INSPECT AIR FILTER FOR CLOGGING <ul style="list-style-type: none"> Inspect the air filter for clogging. (See AIR FILTER INSPECTION [13B-MSP].) <ul style="list-style-type: none"> Is there any malfunction? 	Yes Replace the air filter, then go to the next step. (See EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM REMOVAL/INSTALLATION [13B-MSP].)	
		No	Go to the next step.
5	VERIFY TROUBLESHOOTING OF DTC P2404 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) <ul style="list-style-type: none"> Perform the evaporative system test using the M-MDS. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) <ul style="list-style-type: none"> Is the same DTC present? NOTE: <ul style="list-style-type: none"> If the evaporative system test function is not 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No	Go to the next step.

	<p>available, perform the following procedure.</p> <ul style="list-style-type: none"> Perform the DRIVE MODE 6 (EVAP System Repair Verification Drive Mode). <p>(See OBD-II DRIVE MODE [13B-MSP])</p> <ul style="list-style-type: none"> Is the PENDING CODE the same as the DTC present? 		
6	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> Perform the “AFTER REPAIR PROCEDURE”. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2405 [13B-MSP]

DTC P2405	EVAP system leak detection pump sense circuit low
DETECTION CONDITION	<ul style="list-style-type: none">The PCM monitors the pump load current (EVAP line pressure) when the evaporative leak monitor is operating. If the pump load current is less than the specification while the PCM obtains the reference current value, the PCM determines that the EVAP system leak detection pump sense circuit voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none">This is an intermittent monitor (EVAP system).The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.FREEZE FRAME DATA (Mode 2/Mode 12) is available.The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">EVAP system leak detection pump malfunction<ul style="list-style-type: none">Orifice fallen offPump malfunctionPCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED	YesGo to the next step.

	<ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (EVAP system related) been recorded? 	No	Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT EVAP SYSTEM LEAK DETECTION PUMP <ul style="list-style-type: none"> Inspect the EVAP system leak detection pump. <p>(See EVAPORATIVE EMISSION (EVAP) SYSTEM LEAK DETECTION PUMP INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	Replace the EVAP system leak detection pump, then go to the next step. <p>(See EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.
4	VERIFY TROUBLESHOOTING OF DTC P2405 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Perform the evaporative system test using the M-MDS. <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is the same DTC present? <p>NOTE:</p> <ul style="list-style-type: none"> If the evaporative system test function is not available, perform the following procedure. 	Yes	Replace the PCM, then go to the next step. <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.

	<ul style="list-style-type: none">• Perform the DRIVE MODE 6 (EVAP System Repair Verification Drive Mode). <p>(See OBD-II DRIVE MODE [13B-MSP].)</p> <ul style="list-style-type: none">• Is the PENDING CODE the same as the DTC present?		
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2407 [13B-MSP]

DTC P2407	EVAP system leak detection pump sense circuit intermittent/erratic problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the pump load current (EVAP line pressure) when the evaporative leak monitor is operating. If the change in pump load current is more than the specification while the PCM obtains the reference current value 6 times, the PCM determines that there is an EVAP system leak detection pump sense circuit intermittent/erratic problem. The PCM monitors the pump load current (EVAP line pressure) when the evaporative leak monitor is operating. If the pump load current is kept less than the maximum pump load current after the PCM obtains the reference current value 6 times, the PCM determines that there is an EVAP system leak detection pump sense circuit intermittent/erratic problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is an intermittent monitor (EVAP system). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> EVAP system leak detection pump malfunction <ul style="list-style-type: none"> Heater malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
------	------------	--------

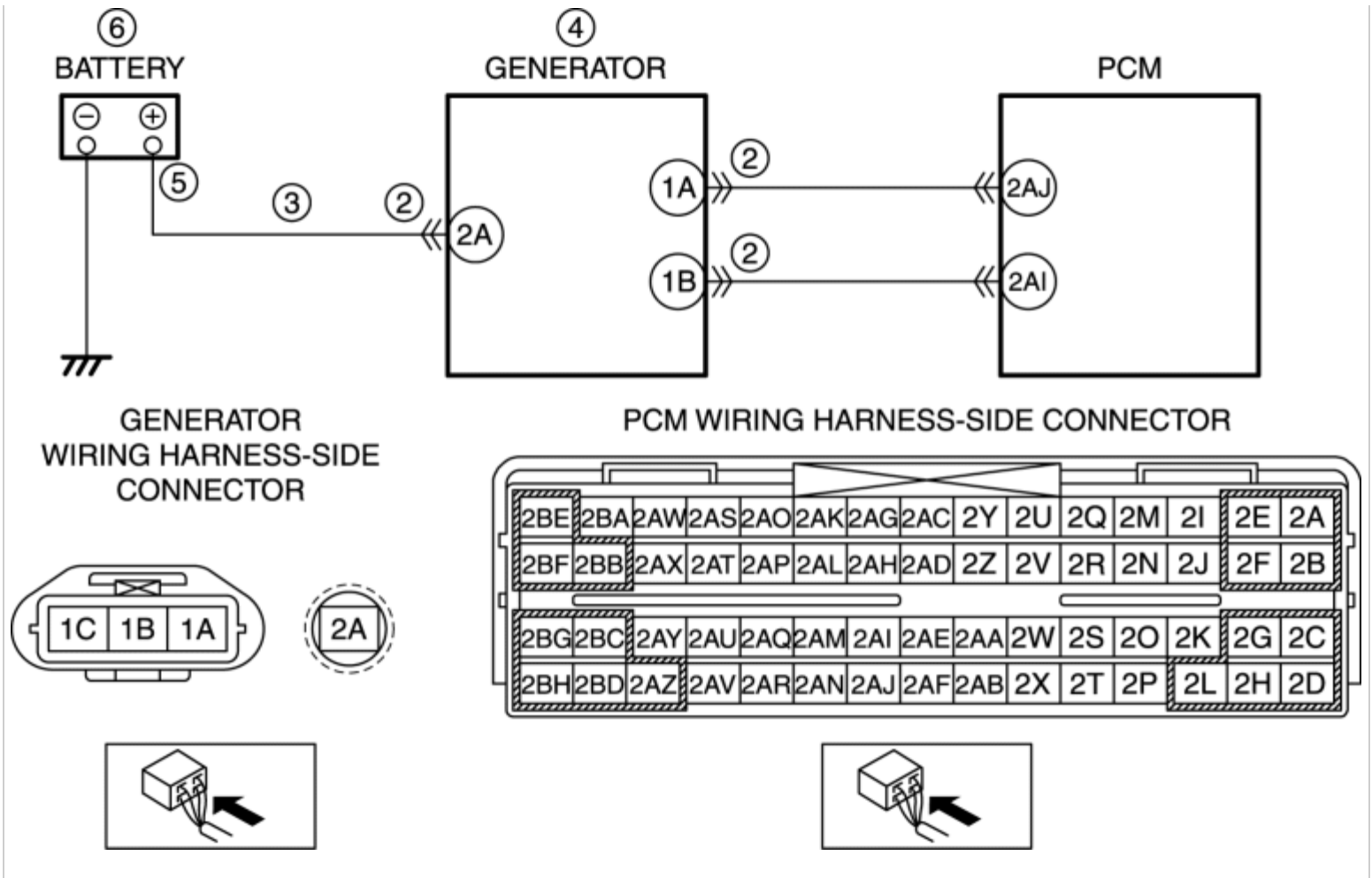
1	<p>VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED</p> <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (EVAP system related) been recorded? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.</p>
2	<p>VERIFY RELATED REPAIR INFORMATION AVAILABILITY</p> <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
3	<p>INSPECT EVAP SYSTEM LEAK DETECTION PUMP</p> <ul style="list-style-type: none"> Inspect the EVAP system leak detection pump. <p>(See EVAPORATIVE EMISSION (EVAP) SYSTEM LEAK DETECTION PUMP INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Replace the EVAP system leak detection pump, then go to the next step.</p> <p>(See EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
4	<p>VERIFY TROUBLESHOOTING OF DTC P2407 COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Perform the evaporative system test using the M-MDS. <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is the same DTC present? <p>NOTE:</p> <ul style="list-style-type: none"> If the evaporative system test function is not 	<p>Yes Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>

	<p>available, perform the following procedure.</p> <ul style="list-style-type: none"> Perform the DRIVE MODE 6 (EVAP System Repair Verification Drive Mode). <p>(See OBD-II DRIVE MODE [13B-MSP])</p> <ul style="list-style-type: none"> Is the PENDING CODE the same as the DTC present? 		
5	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2502 [13B-MSP]

DTC P2502	Charging system voltage problem
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the generator output voltage and the battery voltage when the engine is running. If the generator output voltage is more than 16.9 V and the battery voltage is less than 10.9 V, the PCM determines that there is a charging system voltage malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (other).• The MIL does not illuminate.• FREEZE FRAME DATA (Mode 2/Mode 12) is not available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Generator connector or terminals malfunction• Short to ground or open circuit in generator power supply circuit<ul style="list-style-type: none">▪ Short to ground in wiring harness between battery positive terminal and generator terminal 2A▪ MAIN 120 A fuse malfunction▪ Open circuit in wiring harness between battery positive terminal and generator terminal 2A• Generator malfunction• Battery positive terminal poor installation• Battery malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
2	INSPECT GENERATOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the generator connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). 	Yes Repair or replace the connector and/or terminals, then go to Step 7.
		No Go to the next step.

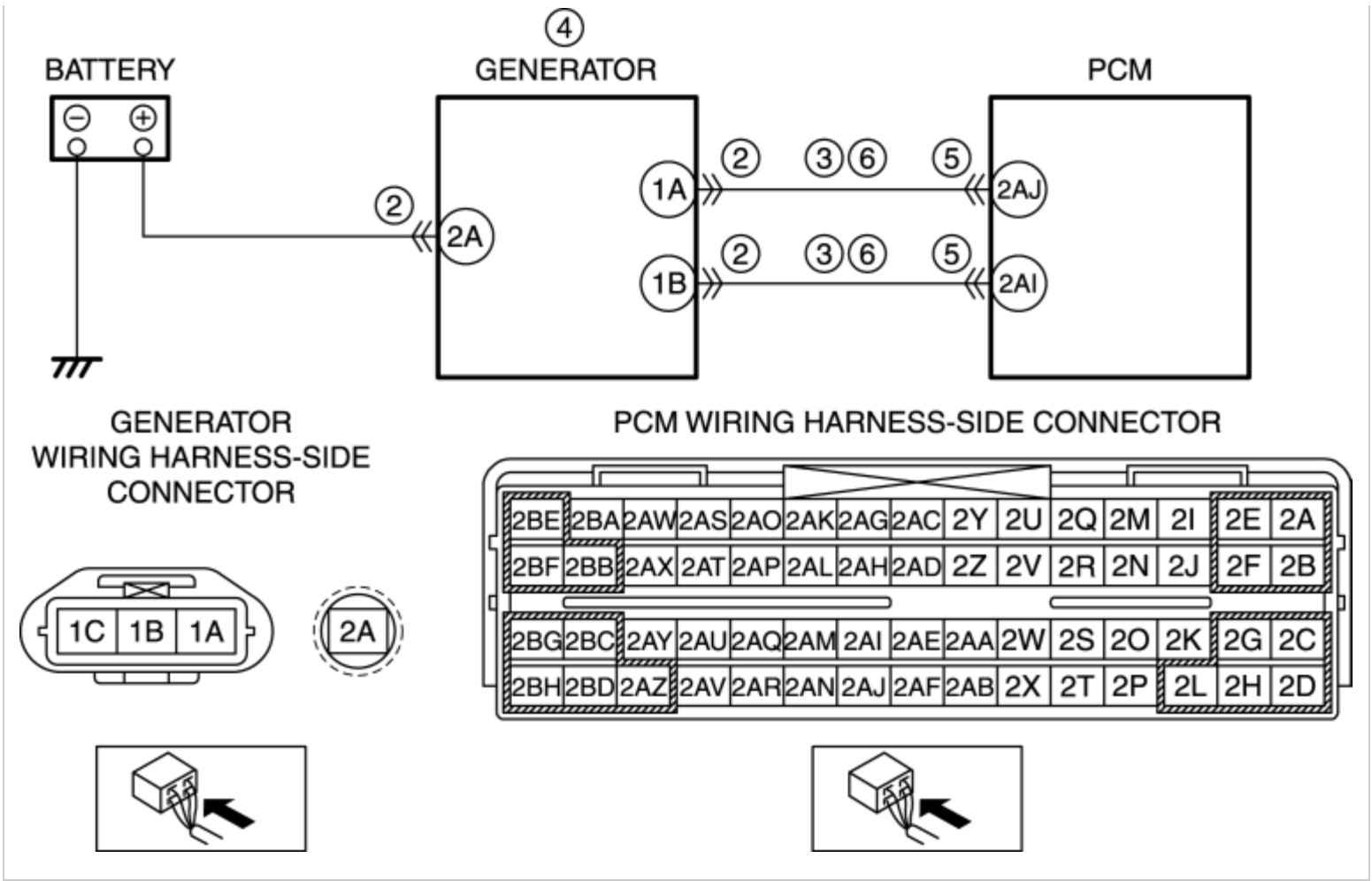
	<ul style="list-style-type: none"> Is there any malfunction? 		
3	INSPECT BATTERY CHARGING CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> Generator connector is disconnected. Measure the voltage between generator terminal 2A (wiring harness-side) and body ground. Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the MAIN 120 A fuse. <ul style="list-style-type: none"> If the fuse is melt: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. Replace the fuse. If the fuse is deterioration: <ul style="list-style-type: none"> Replace the fuse. If the fuse is normal: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible open circuit.
			Go to Step 7.
4	INSPECT GENERATOR <ul style="list-style-type: none"> Inspect the generator. (See GENERATOR INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Replace the generator, then go to Step 7. (See GENERATOR REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
5	INSPECT BATTERY POSITIVE TERMINAL FOR POOR INSTALLATION <ul style="list-style-type: none"> Turn the ignition switch off. Inspect for looseness of the battery positive terminal. Is there any malfunction? 	Yes	Connect the battery positive terminal correctly, then go to Step 7.
		No	Go to the next step.
6	INSPECT BATTERY	Yes	Replace the battery, then go to the next step.

	<ul style="list-style-type: none"> Inspect the battery. (See BATTERY INSPECTION [13B-MSP].) 		(See BATTERY REMOVAL/INSTALLATION [13B-MSP].)
	<ul style="list-style-type: none"> Is there any malfunction? 	No	Go to the next step.
7	VERIFY TROUBLESHOOTING OF DTC P2502 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOER self test. (See KOE/O/KOER SELF TEST [13B-MSP].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2503 [13B-MSP]

DTC P2503	Charging system voltage low
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the generator output voltage when the engine is running. If the generator output voltage is less than 8.5 V while the PCM needs more than 19.5 A from the generator, the PCM determines that the charging system voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (other).• The MIL does not illuminate.• FREEZE FRAME DATA (Mode 2/Mode 12) is not available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Generator connector or terminals malfunction• Short to ground in wiring harness between generator terminal 1A and PCM terminal 2AJ• Short to ground in wiring harness between generator terminal 1B and PCM terminal 2AI• Generator malfunction• PCM connector or terminals malfunction• Open circuit in wiring harness between generator terminal 1A and PCM terminal 2AJ• Open circuit in wiring harness between generator terminal 1B and PCM terminal 2AI• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
2	INSPECT GENERATOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the generator connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). 	Yes Repair or replace the connector and/or terminals, then go to Step 7.
		No Go to the next step.

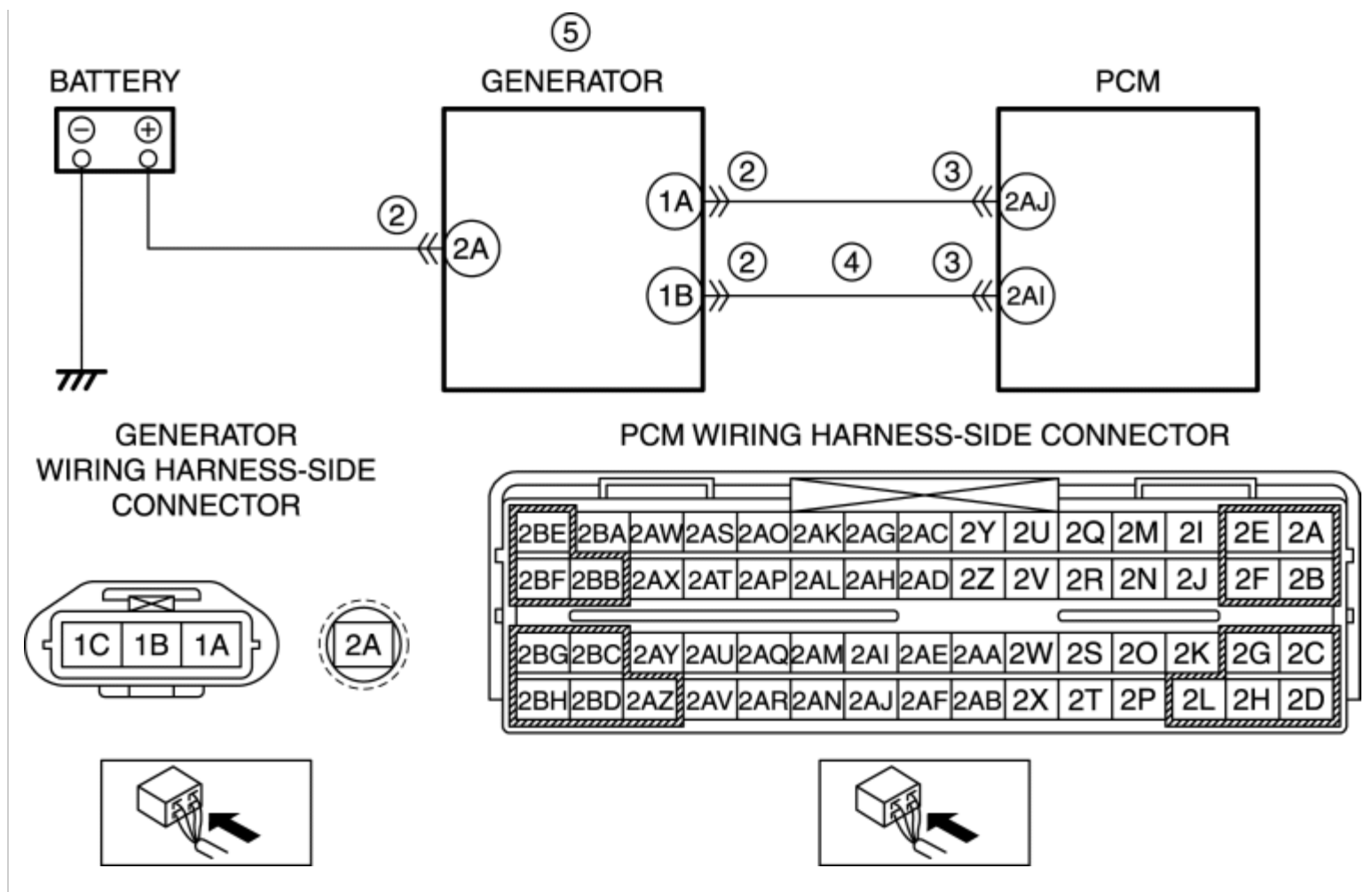
	<ul style="list-style-type: none"> Is there any malfunction? 		
3	INSPECT GENERATOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Generator connector is disconnected. Turn the ignition switch off. Inspect for continuity between the following circuits: <ul style="list-style-type: none"> Generator terminal 1A (wiring harness-side) and body ground Generator terminal 1B (wiring harness-side) and body ground Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [13B-MSP].) <p>Go to Step 7.</p>	
		No	Go to the next step.
4	INSPECT GENERATOR <ul style="list-style-type: none"> Inspect the generator. (See GENERATOR INSPECTION [13B-MSP].) <ul style="list-style-type: none"> Is there any malfunction? 	Yes Replace the generator, then go to Step 7. (See GENERATOR REMOVAL/INSTALLATION [13B-MSP].)	
		No	Go to the next step.
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 7.	
		No	Go to the next step.
6	INSPECT GENERATOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Generator and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between the following circuits: 	Yes Go to the next step.	
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.

	<ul style="list-style-type: none"> ▪ Generator terminal 1A (wiring harness-side) and PCM terminal 2AJ (wiring harness-side) ▪ Generator terminal 1B (wiring harness-side) and PCM terminal 2AI (wiring harness-side) <ul style="list-style-type: none"> • Is there continuity? 		
7	VERIFY TROUBLESHOOTING OF DTC P2503 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Perform the KOER self test. (See KOE/O/KOER SELF TEST [13B-MSP].) • Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)	
		No DTC troubleshooting completed.	

2011 - RX-8 - Engine

DTC P2504 [13B-MSP]

DTC P2504	Charging system voltage high
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the generator output voltage and the battery voltage when the engine is running. If the generator output voltage is more than 18.4 V or the battery voltage is more than 15.9 V, the PCM determines that the charging system voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (other).• The MIL does not illuminate.• FREEZE FRAME DATA (Mode 2/Mode 12) is not available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Generator connector or terminals malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between generator terminal 1B and PCM terminal 2AI• Generator malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
2	INSPECT GENERATOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the generator connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). 	Yes Repair or replace the connector and/or terminals, then go to Step 6.
		No Go to the next step.

	<ul style="list-style-type: none"> Is there any malfunction? 		
3	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT GENERATOR CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Generator and PCM connectors are disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between generator terminal 1B (wiring harness-side) and body ground. Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 6.
		No	Go to the next step.
5	INSPECT GENERATOR <ul style="list-style-type: none"> Inspect the generator. (See GENERATOR INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Replace the generator, then go to the next step. (See GENERATOR REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING OF DTC P2504 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOER self test. (See KOE0/KOER SELF TEST [13B-MSP].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.

7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P1260 [13B-MSP]

DTC P1260	Immobilizer system problem
DETECTION CONDITION	<p>Vehicle with advanced keyless and start system:</p> <ul style="list-style-type: none"> The keyless control module detects an immobilizer system malfunction. <p>Vehicle with keyless entry system:</p> <ul style="list-style-type: none"> The instrument cluster detects an immobilizer system malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (other). The MIL does not illuminate. FREEZE FRAME DATA (Mode 2/Mode 12) is not available. The DTC is not stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Immobilizer system malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<p>VERIFY RELATED REPAIR INFORMATION AVAILABILITY</p> <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.

		No	Go to the next step.
2	VERIFY STORED DTC FOR IMMOBILIZER SYSTEM <ul style="list-style-type: none"> Verify stored DTCs. (See DTC INSPECTION (IMMOBILIZER SYSTEM) [IMMOBILIZER SYSTEM].) Are any DTCs stored? 	Yes	Go to the appropriate DTC inspection. (See DTC TABLE (IMMOBILIZER SYSTEM) [IMMOBILIZER SYSTEM].)
		No	Go to the next step.
3	VERIFY TROUBLESHOOTING OF DTC P1260 COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

DTC B1342 [13B-MSP]

DTC B1342	PCM malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Malfunction in the PCM internal circuit.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM internal malfunction

Diagnostic procedure

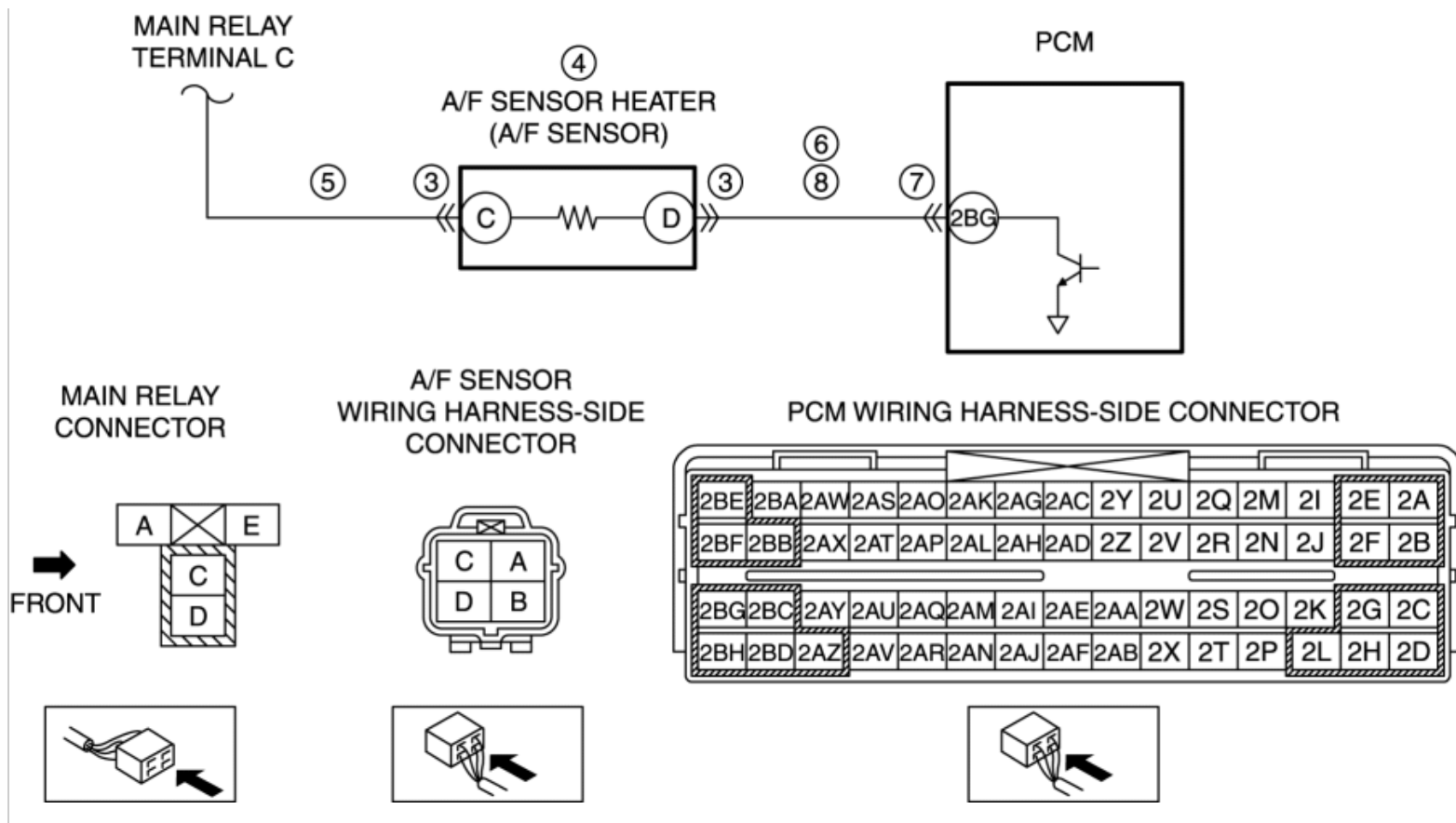
STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
2	VERIFY TROUBLESHOOTING OF B1342 COMPLETED <ul style="list-style-type: none"> Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the PENDING CODE same as DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No Go to the next step.

3	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0053 [13B-MSP]

DTC P0053	A/F sensor heater performance fail
DETECTION CONDITION	<ul style="list-style-type: none">• If the A/F sensor heater resistance is the specified value or more, or less when the duty value of the A/F sensor heater control is between 0% and 90%, the PCM detects the DTC P0053. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is an intermittent monitor (A/F sensor heater, HO2S heater).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• A/F sensor connector or terminals malfunction• A/F sensor heater malfunction• Short to ground or open circuit in A/F sensor heater power supply circuit<ul style="list-style-type: none">▪ Short to ground in wiring harness between main relay terminal C and A/F sensor terminal C▪ A/F sensor heater related fuse malfunction▪ Open circuit in wiring harness between main relay terminal C and A/F sensor terminal C• Short to ground in wiring harness between A/F sensor terminal D and PCM terminal 2BG• PCM connector or terminals malfunction• Open circuit in wiring harness between A/F sensor terminal D and PCM terminal 2BG• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater, HO2S heater related) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT A/F SENSOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the A/F sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 9.
		No Go to the next step.

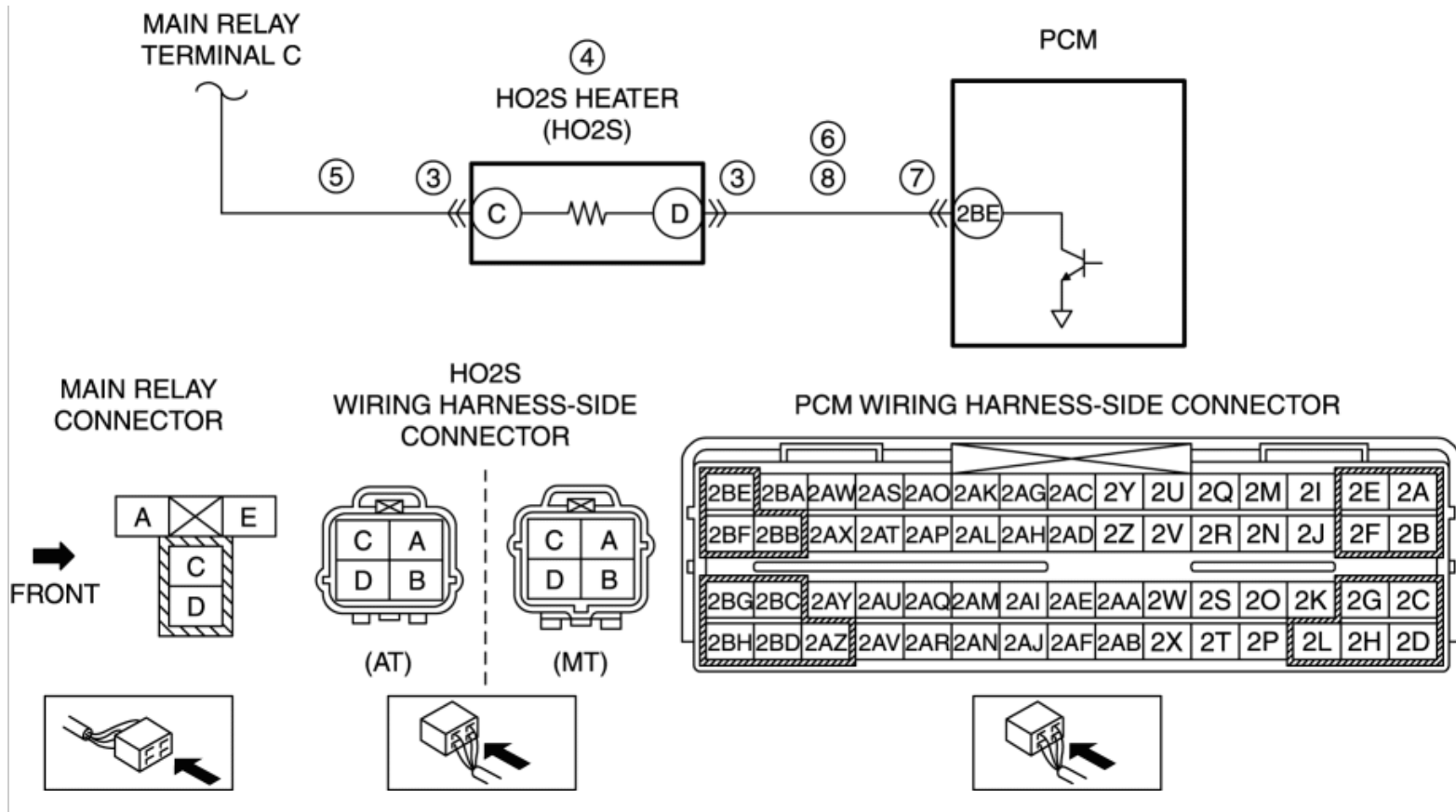
4	INSPECT A/F SENSOR HEATER <ul style="list-style-type: none"> Inspect the A/F sensor heater. (See AIR FUEL RATIO (A/F) SENSOR INSPECTION [13B-MSP].) Is there any malfunction? 	Yes Replace the A/F sensor, then go to Step 9. (See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
5	INSPECT A/F SENSOR HEATER POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> A/F sensor connector is disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between A/F sensor terminal C (wiring harness-side) and body ground. Is the voltage B+? 	Yes Go to the next step. No Inspect the A/F sensor heater related fuse. <ul style="list-style-type: none"> If the fuse is melt: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. Replace the fuse. If the fuse is deterioration: <ul style="list-style-type: none"> Replace the fuse. If the fuse is normal: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
6	INSPECT A/F SENSOR HEATER CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> A/F sensor connector is disconnected. Turn the ignition switch off. Inspect for continuity between A/F sensor terminal D (wiring harness-side) and body ground. Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [13B-MSP].) Go to Step 9.
7	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as 	Yes Repair or replace the connector and/or terminals, then go to Step 9. No Go to the next step.

	<p>damaged/pulled-out pins, and corrosion).</p> <ul style="list-style-type: none"> Is there any malfunction? 		
8	<p>INSPECT A/F SENSOR HEATER CONTROL CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> A/F sensor and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between A/F sensor terminal D (wiring harness-side) and PCM terminal 2BG (wiring harness-side). Is there continuity? 	<p>Yes Go to the next step.</p> <p>No Repair or replace the wiring harness for a possible open circuit, then go to the next step.</p>	
9	<p>VERIFY TROUBLESHOOTING OF DTC P0053 COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the PENDING CODE same as the DTC present? 	<p>Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>	
10	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	<p>Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)</p> <p>No DTC troubleshooting completed.</p>	

2011 - RX-8 - Engine

DTC P0054 [13B-MSP]

DTC P0054	HO2S heater performance fail
DETECTION CONDITION	<ul style="list-style-type: none">If the HO2S heater resistance is the specified value or more, or less when the duty value of the HO2S heater control is between 10% and 90%, the PCM detects DTC P0054. <p>Diagnostic support note</p> <ul style="list-style-type: none">This is an intermittent monitor (A/F sensor heater, HO2S heater).The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.FREEZE FRAME DATA (Mode 2/Mode 12) is available.The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">HO2S connector or terminals malfunctionHO2S heater malfunctionShort to ground or open circuit in HO2S heater power supply circuit<ul style="list-style-type: none">Short to ground in wiring harness between main relay terminal C and HO2S terminal CHO2S heater related fuse malfunctionOpen circuit in wiring harness between main relay terminal C and HO2S terminal CShort to ground in wiring harness between HO2S terminal D and PCM terminal 2BEPCM connector or terminals malfunctionOpen circuit in wiring harness between HO2S terminal D and PCM terminal 2BEPCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor heater, HO2S heater related) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT HO2S CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the HO2S connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 9. No Go to the next step.
	INSPECT HO2S HEATER	

4	<ul style="list-style-type: none"> Inspect the HO2S heater. (See HEATED OXYGEN SENSOR (HO2S) INSPECTION [13B-MSP].) Is there any malfunction? 	<p>Yes Replace the HO2S, then go to Step 9. (See HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
5	<p>INSPECT HO2S HEATER POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT</p> <ul style="list-style-type: none"> HO2S connector is disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between HO2S terminal C (wiring harness-side) and body ground. Is the voltage B+? 	<p>Yes Go to the next step.</p> <p>No Inspect the HO2S heater related fuse.</p> <ul style="list-style-type: none"> If the fuse is melt: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. Replace the fuse. If the fuse is deterioration: <ul style="list-style-type: none"> Replace the fuse. If the fuse is normal: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible open circuit. <p>Go to Step 9.</p>
6	<p>INSPECT HO2S HEATER CONTROL CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> HO2S connector is disconnected. Turn the ignition switch off. Inspect for continuity between HO2S terminal D (wiring harness-side) and body ground. Is there continuity? 	<p>Yes If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> Replace the PCM (short to ground in the PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to Step 9.</p> <p>No Go to the next step.</p>
7	<p>INSPECT PCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 9.</p> <p>No Go to the next step.</p>

8	INSPECT HO2S HEATER CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • HO2S and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect for continuity between HO2S terminal D (wiring harness-side) and PCM terminal 2BE (wiring harness-side). • Is there continuity? 		Yes Go to the next step. No Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P0054 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Perform the KOER self test. (See KOE0/KOER SELF TEST [13B-MSP].) • Is the PENDING CODE same as the DTC present? 		Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].) No Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 		Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].) No DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0171 [13B-MSP]

DTC P0171	System too lean
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the short term fuel trim (SHRTFT) and long term fuel trim (LONGFT) when under closed loop fuel control. If the fuel trim is more than the specification, the PCM determines that the system is too lean. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (fuel system). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
	<ul style="list-style-type: none"> Erratic signal to PCM <ul style="list-style-type: none"> APP sensor signal malfunction ECT sensor signal malfunction MAF sensor signal malfunction TP sensor signal malfunction VSS signal malfunction Excess air suction in intake-air system Leakage exhaust gas A/F sensor malfunction MAF sensor malfunction

POSSIBLE CAUSE	<ul style="list-style-type: none"> Fuel line pressure malfunction <ul style="list-style-type: none"> Leakage fuel Fuel pump unit malfunction Pressure regulator (built-in fuel pump unit) malfunction Ignition system malfunction <ul style="list-style-type: none"> High-tension lead malfunction Incorrect power supply to ignition coil Ignition coil malfunction AIR system malfunction Insufficient compression <ul style="list-style-type: none"> Metering oil pump malfunction Engine oil condition malfunction Increased oil pressure Oil passage malfunction Engine malfunction Fuel injector malfunction PCM malfunction
----------------	--

Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Is the DTC P0171 on FREEZE FRAME DATA (Mode 2)? 	YesGo to the next step.
		No Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [13B-MSP].)
2	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (fuel system related) been recorded? 	YesGo to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.

3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	<div> YesPerform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. </div> <div> NoGo to the next step. </div>
4	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> • Turn the ignition switch off, then to the ON position (engine off). • Verify the related PENDING CODE or stored DTCs. • Are other DTCs present? 	<div> Yes <ul style="list-style-type: none"> • If misfire DTC is present, go to Step 9. • If other DTC is present, go to the appropriate DTC inspection. (See DTC TABLE [13B-MSP].) </div> <div> No <ul style="list-style-type: none"> • If drive ability concern is present, go to Step 9. • If other, go to the next step. </div>
5	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none"> • Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) <ul style="list-style-type: none"> ▪ APP ▪ ECT ▪ MAF ▪ TP REL ▪ VSS • Are the PIDs normal? (See PCM INSPECTION [13B-MSP].) 	<div> YesGo to the next step. </div> <div> NoRepair or replace the malfunctioning part according to the inspection results, then go to Step 24. </div>
6	VERIFY CURRENT INPUT SIGNAL STATUS UNDER FREEZE FRAME DATA (MODE 2) CONDITION CAUTION: <ul style="list-style-type: none"> • While performing this step with vehicle driving, always operate the vehicle in a 	<div> YesGo to the next step. </div> <div> NoRepair or replace the malfunctioning part according to the inspection results, then go to Step 24. </div>

	<p>safe and lawful manner.</p> <ul style="list-style-type: none">• When the M-MDS is used to observe monitor system status while driving, be sure to have another technician with you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD function and inspect later.• Access the following PIDs using the M-MDS under the FREEZE FRAME DATA (Mode 2) condition: (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)<ul style="list-style-type: none">▪ APP▪ ECT▪ MAF▪ TP REL▪ VSS• Are the PIDs normal? (See PCM INSPECTION [13B-MSP].)	
7	<p>INSPECT A/F SENSOR</p> <ul style="list-style-type: none">• Inspect the A/F sensor. (See AIR FUEL RATIO (A/F) SENSOR INSPECTION [13B-MSP].)• Is there any malfunction?	<p>Yes Inspect for following:</p> <ul style="list-style-type: none">• Air suction at following due to cracks, damages and loosing parts:<ul style="list-style-type: none">▪ From air cleaner to throttle body▪ From throttle body to dynamic chamber▪ From dynamic chamber and intake manifold▪ Vacuum hoses

		<p>NOTE:</p> <ul style="list-style-type: none"> • Engine speed may change when rust penetrating agent is sprayed on the air suction area. • Loose installation of A/F sensor. <p>If there is no malfunction detected, go to the next step.</p> <p>If there are malfunctions detected, repair or replace the malfunctioning part, then go to Step 24.</p>
		No Go to Step 9.
8	<p>INSPECT EXHAUST SYSTEM FOR EXHAUST GAS LEAKAGE</p> <ul style="list-style-type: none"> • Visually inspect exhaust gas leakage in the exhaust system. • Is there exhaust gas leakage? 	<p>Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 24.</p>
		<p>No Replace the A/F sensor, then go to Step 24.</p> <p>(See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p>
9	<p>VERIFY CURRENT INPUT SIGNAL STATUS OF MAF SENSOR</p> <ul style="list-style-type: none"> • Start the engine. • Access the MAF PID using the M-MDS. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • Verify that the MAF PID changes quickly according to RPM when the engine is raced. • Is the PID normal? <p>(See PCM INSPECTION [13B-MSP].)</p>	<p>Yes Go to Step 11.</p>
		No Go to the next step.
10	<p>INSPECT INTAKE-AIR SYSTEM FOR EXCESSIVE AIR SUCTION</p> <ul style="list-style-type: none"> • Visually inspect for looseness, cracks or damaged hoses in the intake-air system. 	<p>Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 24.</p>

	<ul style="list-style-type: none"> Is there any malfunction? 	No	Replace the MAF/IAT sensor, then go to Step 24. (See MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
11	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> Perform the "FUEL LINE PRESSURE INSPECTION". (See FUEL LINE PRESSURE INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	<ul style="list-style-type: none"> If the fuel line pressure is too low, go to the next step. If the fuel line pressure is too high, replace the fuel pump unit, then go to Step 24. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to Step 13.
12	INSPECT FUEL SYSTEM FOR FUEL LEAKAGE <ul style="list-style-type: none"> Visually inspect for fuel leakage in the fuel system. Is there fuel leakage? 	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 24.
		No	Replace the fuel pump unit, then go to Step 24. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)
13	INSPECT IGNITION COIL OPERATION AND HIGH-TENSION LEAD WITH TIMING LIGHT <ul style="list-style-type: none"> Inspect the blinking condition on each high-tension lead using timing light at idle. Do all high-tension leads show blinking condition? 	Yes	Go to Step 17.
		No	Go to the next step.
14	INSPECT HIGH-TENSION LEAD OF NON BLINKING HIGH-TENSION LEAD <ul style="list-style-type: none"> Inspect the high-tension leads. (See HIGH-TENSION LEAD INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Replace the malfunctioning high-tension lead, then go to Step 24. (See HIGH-TENSION LEAD REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
15	INSPECT IGNITION COIL POWER CIRCUIT FOR	Yes	Go to the next step.

	OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off). • Measure the voltage between ignition coil terminal C (wiring harness-side) and body ground. • Is the voltage B+? 		
16	INSPECT IGNITION COIL <ul style="list-style-type: none"> • Inspect the ignition coil. <p>(See IGNITION COIL INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes Replace the ignition coil, then go to Step 24. (See IGNITION COIL REMOVAL/INSTALLATION [13B-MSP].)	
		No Inspect for open circuit in wiring harness between ignition coil terminal B and ground. Repair or replace the wiring harness for a possible open circuit, then go to Step 24.	
17	INSPECT AIR SYSTEM OPERATION <ul style="list-style-type: none"> • Perform the Secondary Air Injection (AIR) System Inspection. <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Does the AIR system operate properly? 	Yes Go to the next step.	
		No Repair or replace the malfunctioning part according to the inspection results, then go to Step 24.	
18	INSPECT ENGINE COMPRESSION <ul style="list-style-type: none"> • Inspect the engine compression. <p>(See COMPRESSION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes Go to the next step.	
		No Go to Step 23.	
19	INSPECT METERING OIL PUMP <ul style="list-style-type: none"> • Inspect the metering oil pump. <p>(See METERING OIL PUMP INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes Repair or replace the malfunctioning part according to the inspection results. Overhaul or replace the engine, then go to Step 24.	
		No Go to the next step.	
20	INSPECT ENGINE OIL CONDITION <ul style="list-style-type: none"> • Inspect the engine oil condition. 	Yes Go to the next step.	

	<ul style="list-style-type: none"> Is the engine oil condition normal? 	No	<p>Replace the engine oil.</p> <p>Inspect the ECT sensor and related harnesses.</p> <p>(See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [13B-MSP].)</p> <p>Overhaul or replace the engine, then go to Step 24.</p>
21	INSPECT OIL PRESSURE <ul style="list-style-type: none"> Inspect the oil pressure. <p>(See OIL PRESSURE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	<p>Repair or replace the malfunctioning part according to the inspection results.</p> <p>Overhaul or replace the engine, then go to Step 24.</p>
		No	<p>Go to the next step.</p>
22	INSPECT OIL PASSAGE <ul style="list-style-type: none"> Inspect the oil pipe between metering oil pump and metering oil nozzle. Is there any malfunction? 	Yes	<p>Inspect for leakage or clogging in the engine oil passage.</p> <p>Repair or replace the malfunctioning part according to the inspection results.</p> <p>Overhaul or replace the engine, then go to Step 24.</p>
		No	<p>Overhaul or replace the engine, then go to Step 24.</p>
23	INSPECT FUEL INJECTOR <ul style="list-style-type: none"> Inspect the fuel injector. <p>(See FUEL INJECTOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	<p>Replace the fuel injector, then go to the next step.</p> <p>(See FUEL INJECTOR REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	<p>Go to the next step.</p>
24	VERIFY TROUBLESHOOTING OF DTC P0171 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p>	Yes	<p>Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	<p>Go to the next step.</p>

	<ul style="list-style-type: none">• Perform the KOER self test. <p>(See KOE0/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none">• Is the PENDING CODE same as the DTC present?		
25	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0172 [13B-MSP]

DTC P0172	System too rich
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the short term fuel trim (SHRTFT) and long term fuel trim (LONGFT) when under closed loop fuel control. If the fuel trim is less than the specification, the PCM determines that the system is too rich. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (fuel system).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Erratic signal to PCM<ul style="list-style-type: none">▪ APP sensor signal malfunction▪ ECT sensor signal malfunction▪ MAF sensor signal malfunction▪ TP sensor signal malfunction▪ VSS signal malfunction• Excess air suction in intake-air system• Leakage exhaust gas• A/F sensor looseness• A/F sensor malfunction

- Fuel line pressure malfunction
 - Fuel pump unit malfunction
 - Pressure regulator (built-in fuel pump unit) malfunction
- Purge solenoid valve malfunction
- Fuel pump speed control malfunction
- PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Is the DTC P0172 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [13B-MSP].)
2	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (fuel system related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> Turn the ignition switch off, then to the ON position (engine off). Verify the related PENDING CODE or stored DTCs. Are other DTCs present? 	Yes	<ul style="list-style-type: none"> If misfire DTC is present, go to Step 8. If other DTC is present, go to the appropriate DTC inspection. (See DTC TABLE [13B-MSP].)

		No	<ul style="list-style-type: none">• If drive ability concern is present, go to Step 8.• If other, go to the next step.
5	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none">• Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)<ul style="list-style-type: none">▪ APP▪ ECT▪ MAF▪ TP REL▪ VSS• Are the PIDs normal? (See PCM INSPECTION [13B-MSP].)	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 11.
6	VERIFY CURRENT INPUT SIGNAL STATUS UNDER FREEZE FRAME DATA (MODE 2) CONDITION CAUTION: <ul style="list-style-type: none">• While performing this step with vehicle driving, always operate the vehicle in a safe and lawful manner.• When the M-MDS is used to observe monitor system status while driving, be sure to have another technician with you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD function and inspect later.• Access the following PIDs using the M-MDS under the FREEZE FRAME DATA (Mode 2) condition: (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)<ul style="list-style-type: none">▪ APP▪ ECT▪ MAF	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 11.

	<ul style="list-style-type: none">▪ TP REL▪ VSS <ul style="list-style-type: none">• Are the PIDs normal? <p>(See PCM INSPECTION [13B-MSP].)</p>		
7	<p>INSPECT A/F SENSOR</p> <ul style="list-style-type: none">• Inspect the A/F sensor. <p>(See AIR FUEL RATIO (A/F) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none">• Is there any malfunction?	Yes	<p>Inspect for following:</p> <ul style="list-style-type: none">• Air suction at following due to cracks, damages and losing parts:<ul style="list-style-type: none">▪ From air cleaner to throttle body▪ From throttle body to dynamic chamber▪ From dynamic chamber and intake manifold▪ Vacuum hoses <p>NOTE:</p> <ul style="list-style-type: none">• Engine speed may change when rust penetrating agent is sprayed on the air suction area.• Exhaust gas leakage between exhaust manifold and A/F sensor.• Loose installation of A/F sensor. <p>If there is no malfunction detected, replace the A/F sensor, then go to Step 11.</p> <p>(See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p>

		If there are malfunctions detected, repair or replace the malfunctioning part, then go to Step 11.
		No Go to the next step.
8	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> Perform the "FUEL LINE PRESSURE INSPECTION". <p>(See FUEL LINE PRESSURE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Replace the fuel pump unit, then go to Step 11.</p> <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
9	INSPECT LONG TERM FUEL TRIM <ul style="list-style-type: none"> Access the LONGFT1 PID using the M-MDS. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none"> Compare the LONGFT1 PID with recorded FREEZE FRAME DATA (Mode 12) at Step 2. Is the LONGFT1 PID above FREEZE FRAME DATA (Mode 12)? 	<p>Yes Inspect the purge solenoid valve.</p> <p>(See PURGE SOLENOID VALVE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> If there is any malfunction, replace the purge solenoid valve, then go to Step 11. <p>No Go to the next step.</p>
10	INSPECT FUEL PUMP SPEED CONTROL OPERATION <ul style="list-style-type: none"> Perform the Fuel Pump Speed Control Operation Inspection. <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Repair or replace the malfunctioning part according to the inspection results, then go to the next step.</p> <p>No Go to the next step.</p>
11	VERIFY TROUBLESHOOTING OF DTC P0172 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Perform the KOER self test. 	<p>Yes Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>

	<p>(See KOE0/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none"> Is the PENDING CODE same as the DTC present? 		
12	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0420 [13B-MSP]

DTC P0420	Catalyst system efficiency below threshold
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input voltage from the HO2S and the A/F sensor output current when the following conditions are met. If the input voltage change is extremely large compared to the output current change, the PCM determines that the catalyst system has deteriorated. <p style="text-align: center;">MONITORING CONDITIONS</p> <ul style="list-style-type: none"> ▪ ECT: more than 70 °C {158 °F} ▪ Catalyst converter temperature: more than 400 °C {752 °F} ▪ Engine speed: less than 5,000 rpm ▪ LOAD: 20— 50 % (maximum calculated load value varies depending on engine speed) ▪ Time with purge control system does not operate: more than 20 s <p style="text-align: center;">Diagnostic support note</p> <ul style="list-style-type: none"> This is an intermittent monitor (catalyst). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
	<ul style="list-style-type: none"> Looseness of A/F sensor Leakage exhaust gas

POSSIBLE CAUSE	<ul style="list-style-type: none"> • Purge control system malfunction • VSS malfunction • Eccentric shaft position sensor malfunction • TWC malfunction • ECT sensor malfunction • PCM malfunction
-----------------------	--

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED	Yes Go to the next step.
	<ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (catalyst related) been recorded? 	No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
	<ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	No Go to the next step.
3	VERIFY RELATED PENDING CODE OR STORED DTC	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
	<ul style="list-style-type: none"> • Turn the ignition switch off, then to the ON position (engine off). • Verify the related PENDING CODE or stored DTCs. • Are other DTCs present? 	No Go to the next step.
4	INSPECT INSTALLATION OF A/F SENSOR	Yes Go to the next step.
	<ul style="list-style-type: none"> • Inspect if the A/F sensor is loosely installed. • Is the A/F sensor installed securely? 	No Retighten the A/F sensor, then go to Step 11. (See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP].)

5	INSPECT EXHAUST SYSTEM FOR EXHAUST GAS LEAKAGE <ul style="list-style-type: none"> • Visually inspect exhaust gas leakage in the exhaust system. • Is there exhaust gas leakage? 	Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 11.	No Go to the next step.
6	INSPECT PURGE CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> • Perform the Purge Control System Operation Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) • Does the purge control system operate properly? 	Yes Go to the next step.	No Repair or replace the malfunctioning part according to the inspection results, then go to Step 11.
7	VERIFY CURRENT INPUT SIGNAL STATUS OF VSS <ul style="list-style-type: none"> • Start the engine. • Access the VSS PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) • Inspect the VSS PID. • Is the PID normal? (See PCM INSPECTION [13B-MSP].) 	Yes Go to the next step.	No Repair or replace the malfunctioning part according to the inspection results, then go to Step 11.
8	INSPECT ECCENTRIC SHAFT POSITION SENSOR <ul style="list-style-type: none"> • Inspect the eccentric shaft position sensor. (See ECCENTRIC SHAFT POSITION SENSOR INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes Replace the eccentric shaft position sensor, then go to Step 11. (See ECCENTRIC SHAFT POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP] .)	No Go to the next step.
9	INSPECT TWC <ul style="list-style-type: none"> • Inspect the TWC. (See THREE-WAY CATALYTIC CONVERTER (TWC) INSPECTION [13B-MSP].) 	Yes Replace the TWC, then go to Step 11. (See EXHAUST SYSTEM REMOVAL/INSTALLATION [13B-MSP] .)	

	<ul style="list-style-type: none"> Is there any malfunction? 	No	Go to the next step.
10	INSPECT ECT SENSOR <ul style="list-style-type: none"> Inspect the ECT sensor. <p>(See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [13B-MSP].)</p>	Yes	Replace the ECT sensor, then go to the next step. (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
	<ul style="list-style-type: none"> Is there any malfunction? 	No	Go to the next step.
11	VERIFY TROUBLESHOOTING OF DTC P0420 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Perform the DRIVE MODE 3 (A/F sensor heater, HO2S heater, A/F sensor, HO2S, and TWC Repair Verification Drive Mode). <p>(See OBD-II DRIVE MODE [13B-MSP].)</p> <ul style="list-style-type: none"> Is the PENDING CODE same as the DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p>	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
	<ul style="list-style-type: none"> Are any DTCs present? 	No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0481 [13B-MSP]

DTC P0481	Cooling fan relay No.2 and No.3 control circuit problem
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the cooling fan relay No.2/No.3 control voltage when the PCM turns the cooling fan relay No.2/No.3 off. If the control voltage is low, the PCM determines that the cooling fan No.2/No.3 control circuit voltage is low.• The PCM monitors the cooling fan relay No.2/No.3 control voltage when the PCM turns the cooling fan relay No.2/No.3 on. If the control voltage is high, the PCM determines that the cooling fan No.2/No.3 control circuit voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (other).• The MIL does not illuminate.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is not available.• The DTC is stored in the PCM memory.
POSSIBLE	<ul style="list-style-type: none">• Cooling fan relay No.2/No.3 terminal malfunction• Short to ground or open circuit in cooling fan relay No.2/No.3 power supply circuit<ul style="list-style-type: none">▪ Short to ground in wiring harness between main relay terminal C and cooling fan relay No.2 terminal A▪ Short to ground in wiring harness between main relay terminal C and cooling fan relay No.3 terminal A▪ Cooling fan relay No.2/No.3 related fuse malfunction▪ Open circuit in wiring harness between main relay terminal C and cooling fan relay No.2 terminal A▪ Open circuit in wiring harness between main relay terminal C and cooling fan relay No.3 terminal A• Short to ground in wiring harness between cooling fan relay No.2 terminal E and PCM terminal 1N

CAUSE

- Short to ground in wiring harness between cooling fan relay No.3 terminal E and PCM terminal 1N
- Cooling fan relay No.2/No.3 malfunction
- PCM connector or terminals malfunction
- Short to power supply in wiring harness between cooling fan relay No.2 terminal E and PCM terminal 1N
- Short to power supply in wiring harness between cooling fan relay No.3 terminal E and PCM terminal 1N
- Open circuit in wiring harness between cooling fan relay No.2 terminal E and PCM terminal 1N
- Open circuit in wiring harness between cooling fan relay No.3 terminal E and PCM terminal 1N
- PCM malfunction

1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
2	INSPECT COOLING FAN RELAY NO.2/NO.3 CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Remove the cooling fan relay No.2/No.3. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
3	INSPECT COOLING FAN RELAY NO.2/NO.3 POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Cooling fan relay No.2/No.3 relay are removed. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between the following circuits: <ul style="list-style-type: none"> ▪ Cooling fan relay No.2 terminal A (wiring harness-side) and body ground ▪ Cooling fan relay No.3 terminal A (wiring harness-side) and body ground • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the cooling fan relay No.2/No.3 related fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> ▪ Repair or replace the wiring harness for a possible short to ground. ▪ Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> ▪ Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> ▪ Repair or replace the wiring harness for a possible open circuit.

			Go to Step 9.
4	INSPECT COOLING FAN RELAY NO.2/NO.3 CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Cooling fan relay No.2/No.3 relay are removed. Turn the ignition switch off. Inspect for continuity between the following circuits: <ul style="list-style-type: none"> Cooling fan relay No.2 terminal E (wiring harness-side) and body ground Cooling fan relay No.3 terminal E (wiring harness-side) and body ground Is there continuity? 	Yes If the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [13B-MSP].) <p>Go to Step 9.</p>	
		No	Go to the next step.
5	INSPECT COOLING FAN RELAY NO.2/NO.3 <ul style="list-style-type: none"> Inspect the cooling fan relay No.2/No.3. (See RELAY INSPECTION.) <ul style="list-style-type: none"> Is there any malfunction? 	Yes Replace the cooling fan relay No.2/No.3, then go to Step 9.	(See RELAY LOCATION.)
		No	Go to the next step.
6	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 9.	
		No	Go to the next step.
7	INSPECT COOLING FAN RELAY NO.2/NO.3 CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Cooling fan relay No.2/No.3 relay are removed and PCM connector is disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between the following circuits: 	Yes Repair or replace the wiring harness for a possible short to power supply, then go to Step 9.	
		No	Go to the next step.

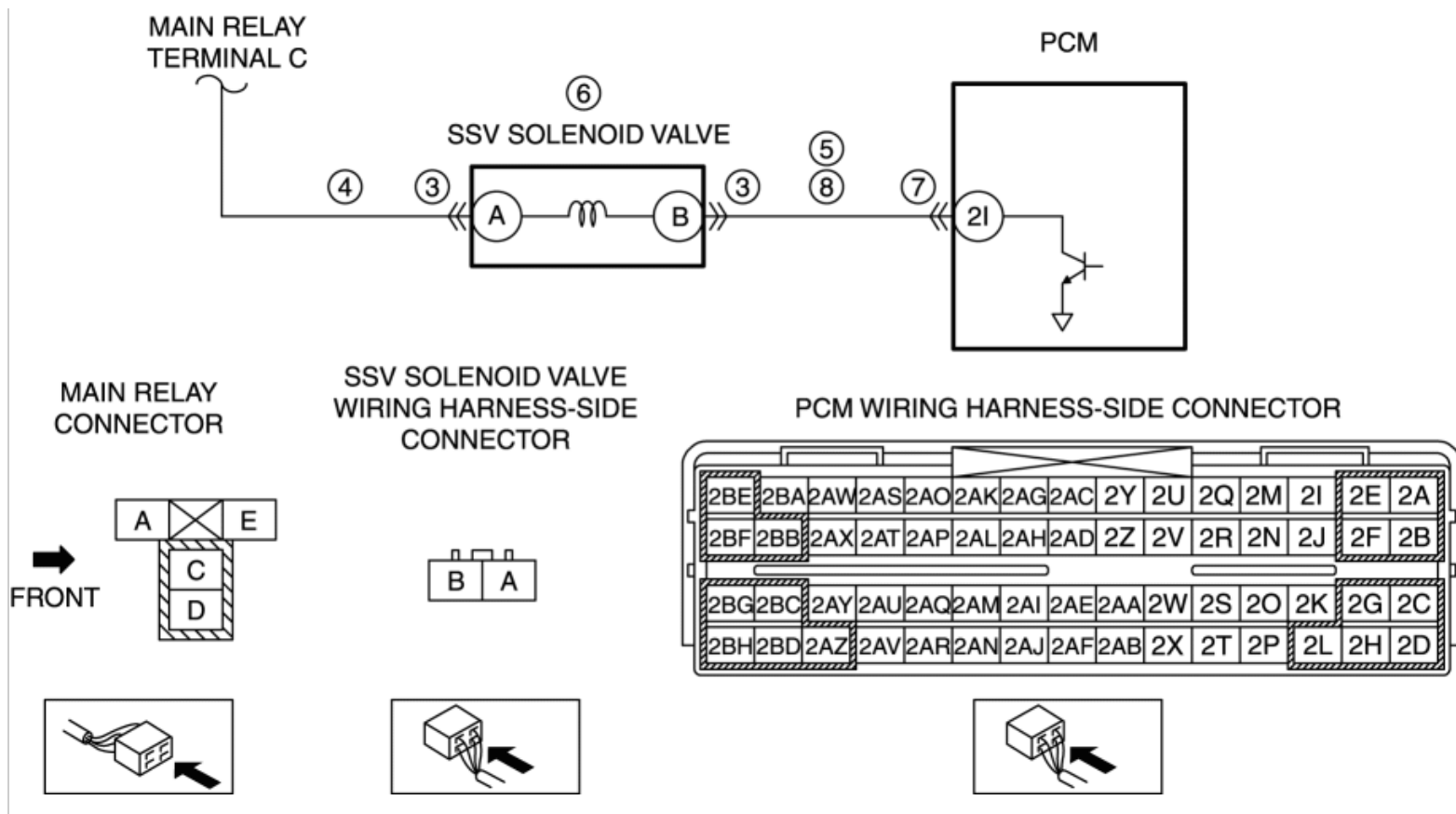
	<ul style="list-style-type: none"> ▪ Cooling fan relay No.2 terminal E (wiring harness-side) and body ground ▪ Cooling fan relay No.3 terminal E (wiring harness-side) and body ground <ul style="list-style-type: none"> • Is the voltage B+? 		
8	INSPECT COOLING FAN RELAY NO.2/NO.3 CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Cooling fan relay No.2/No.3 relay are removed and PCM connector is disconnected. • Turn the ignition switch off. • Inspect for continuity between the following circuits: <ul style="list-style-type: none"> ▪ Cooling fan relay No.2 terminal E (wiring harness-side) and PCM terminal 1N (wiring harness-side) ▪ Cooling fan relay No.3 terminal E (wiring harness-side) and PCM terminal 1N (wiring harness-side) • Is there continuity? 	YesGo to the next step.	No Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P0481 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) • Is the PENDING CODE same as DTC present? 	YesReplace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	NoGo to the next step.
10	VERIFY AFTER REPAIR PROCEDURE	YesGo to the applicable DTC inspection.	

	Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP] .) • Are any DTCs present?		(See DTC TABLE [13B-MSP] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0661 [13B-MSP]

DTC P0661	SSV solenoid valve control circuit low
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the SSV solenoid valve control voltage when the PCM turns the SSV solenoid valve off. If the control voltage is less than 5.8 V, the PCM determines that the SSV solenoid valve control circuit voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• SSV solenoid valve connector or terminals malfunction• Short to ground or open circuit in SSV solenoid valve power supply circuit<ul style="list-style-type: none">▪ Short to ground in wiring harness between main relay terminal C and SSV solenoid valve terminal A▪ SSV solenoid valve related fuse malfunction▪ Open circuit in wiring harness between main relay terminal C and SSV solenoid valve terminal A• Short to ground in wiring harness between SSV solenoid valve terminal B and PCM terminal 2I• SSV solenoid valve malfunction• PCM connector or terminals malfunction• Open circuit in wiring harness between SSV solenoid valve terminal B and PCM terminal 2I• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT SSV SOLENOID VALVE CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the SSV solenoid valve connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 9. No Go to the next step.
4	INSPECT SSV SOLENOID VALVE POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT	Yes Go to the next step.

	<ul style="list-style-type: none"> • SSV solenoid valve connector is disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between SSV solenoid valve terminal A (wiring harness-side) and body ground. • Is the voltage B+? 	<p>No Inspect the SSV solenoid valve related fuse.</p> <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> ▪ Repair or replace the wiring harness for a possible short to ground. ▪ Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> ▪ Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> ▪ Repair or replace the wiring harness for a possible open circuit. <p>Go to Step 9.</p>
5	<p>INSPECT SSV SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • SSV solenoid valve connector is disconnected. • Turn the ignition switch off. • Inspect for continuity between SSV solenoid valve terminal B (wiring harness-side) and body ground. • Is there continuity? 	<p>Yes If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> • Replace the PCM (short to ground in the PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to Step 9.</p> <p>No Go to the next step.</p>
6	<p>INSPECT SSV SOLENOID VALVE</p> <ul style="list-style-type: none"> • Inspect the SSV solenoid valve. <p>(See SECONDARY SHUTTER VALVE (SSV) SOLENOID VALVE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	<p>Yes Replace the SSV solenoid valve, then go to Step 9.</p> <p>(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
7	<p>INSPECT PCM CONNECTOR FOR POOR CONNECTION</p>	<p>Yes Repair or replace the connector and/or</p>

	<p>Turn the ignition switch off.</p> <ul style="list-style-type: none"> • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	<p>terminals, then go to Step 9.</p>
		<p>No Go to the next step.</p>
8	<p>INSPECT SSV SOLENOID VALVE CONTROL CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • SSV solenoid valve and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect for continuity between SSV solenoid valve terminal B (wiring harness-side) and PCM terminal 2I (wiring harness-side). • Is there continuity? 	<p>YesGo to the next step.</p>
		<p>No Repair or replace the wiring harness for a possible open circuit, then go to the next step.</p>
9	<p>VERIFY TROUBLESHOOTING OF DTC P0661 COMPLETED</p> <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • Is the PENDING CODE same as DTC present? 	<p>YesReplace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p>
		<p>No Go to the next step.</p>
10	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Are any DTCs present? 	<p>YesGo to the applicable DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p>
		<p>No DTC troubleshooting completed.</p>

2011 - RX-8 - Engine

DTC P0662 [13B-MSP]

DTC P0662	SSV solenoid valve control circuit high
DETECTION CONDITION	<ul style="list-style-type: none">• The current in the output driver IC over-current detection circuit above 1.5 A even though the SSV solenoid valve is ON. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• SSV solenoid valve connector or terminals malfunction• SSV solenoid valve malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between SSV solenoid valve terminal B and PCM terminal 2I• PCM malfunction

	<ul style="list-style-type: none"> Inspect the SSV solenoid valve. (See SECONDARY SHUTTER VALVE (SSV) SOLENOID VALVE INSPECTION [13B-MSP].) Is there any malfunction? 	(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].) No Go to the next step.
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 7. No Go to the next step.
6	INSPECT SSV SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> SSV solenoid valve and PCM connectors are disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between SSV solenoid valve terminal B (wiring harness-side) and body ground. Is the voltage B+? 	Yes Repair or replace the wiring harness for a possible short to power supply, then go to the next step. No Go to the next step.
7	VERIFY TROUBLESHOOTING OF DTC P0662 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the PENDING CODE same as DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].) No Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].) No DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2270 [13B-MSP]

DTC P2270	HO2S signal stuck lean
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the HO2S when the following conditions are met. If the input voltage is less than 0.4 V for 40 s, the PCM determines that the HO2S signal remains lean. <p style="text-align: center;">MONITORING CONDITIONS</p> <ul style="list-style-type: none">▪ ECT: more than 70 °C {158 °F}▪ Engine speed: more than 1,500 rpm▪ MAF amount: more than 10 g/s {1.32 lb/min}▪ Short term fuel trim: –20—20%▪ Long term fuel trim: –50—50%▪ Target A/F feedback system status: feedback control <p style="text-align: center;">Diagnostic support note</p> <ul style="list-style-type: none">• This is an intermittent monitor (A/F sensor, HO2S).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
	<ul style="list-style-type: none">• Loose installation of HO2S• Leakage exhaust gas• HO2S malfunction

POSSIBLE CAUSE

- Purge solenoid valve malfunction
- AIR system malfunction
- Fuel line pressure malfunction
 - Leakage fuel
 - Fuel pump unit malfunction
 - Pressure regulator (built-in fuel pump unit) malfunction
- Ignition system malfunction
 - High-tension lead malfunction
 - Incorrect power supply to ignition coil
 - Ignition coil malfunction
- Insufficient compression
 - Metering oil pump malfunction
 - Engine oil condition malfunction
 - Increased oil pressure
 - Oil passage malfunction
 - Engine malfunction
- Fuel injector malfunction
- Leakage engine coolant
- PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> • Is the DTC P2270 on FREEZE FRAME DATA (Mode 2)? 	Yes Go to the next step.
		No Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [13B-MSP].)
2	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12)

	(Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded?		and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> Turn the ignition switch off, then to the ON position (engine off). Verify the related PENDING CODE or stored DTCs. Are other DTCs present? 	Yes	Go to the appropriate DTC inspection. (See DTC TABLE [13B-MSP].)
		No	Go to the next step.
5	INSPECT HO2S <ul style="list-style-type: none"> Inspect the HO2S. (See HEATED OXYGEN SENSOR (HO2S) INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Inspect the following: <ul style="list-style-type: none"> Loose installation of HO2S Exhaust gas leakage between TWC and HO2S <p>If there is no malfunction detected, replace the HO2S.</p> <p>(See HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [13B-MSP].)</p> <p>If there is a malfunction detected, repair or replace the malfunctioning part according to the inspection results.</p> <p>Go to Step 21.</p>
		No	Go to the next step.
6	INSPECT PURGE SOLENOID VALVE <ul style="list-style-type: none"> Inspect the purge solenoid valve. (See PURGE SOLENOID VALVE INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Replace the purge solenoid valve, then go to Step 21.
		No	Go to the next step.

7	INSPECT AIR SYSTEM OPERATION <ul style="list-style-type: none"> Perform the Secondary Air Injection (AIR) System Inspection. <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Does the AIR system operate properly? 	YesGo to the next step.
8	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> Perform the "FUEL LINE PRESSURE INSPECTION". <p>(See FUEL LINE PRESSURE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	YesGo to the next step. NoGo to Step 10.
9	INSPECT FUEL SYSTEM FOR FUEL LEAKAGE <ul style="list-style-type: none"> Visually inspect fuel leakage in the fuel system. Is there fuel leakage? 	YesRepair or replace the malfunctioning part according to the inspection results, then go to Step 21. NoReplace the fuel pump unit, then go to Step 21. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP] .)
10	INSPECT IGNITION COIL OPERATION AND HIGH-TENSION LEAD WITH TIMING LIGHT <ul style="list-style-type: none"> Inspect the blinking condition on each high-tension lead using timing light at idle. Do all high-tension leads show blinking condition? 	YesGo to Step 14. NoGo to the next step.
11	INSPECT HIGH-TENSION LEAD OF NO BLINKING HIGH-TENSION LEAD <ul style="list-style-type: none"> Inspect the high-tension leads. <p>(See HIGH-TENSION LEAD INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	YesReplace the malfunctioning high-tension lead, then go to Step 21. (See HIGH-TENSION LEAD REMOVAL/INSTALLATION [13B-MSP] .) NoGo to the next step.
12	INSPECT IGNITION COIL POWER CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND <ul style="list-style-type: none"> Turn the ignition switch to the ON 	YesGo to the next step.

	<p>position (engine off).</p> <ul style="list-style-type: none"> • Measure the voltage between ignition coil terminal C (wiring harness-side) and body ground. • Is the voltage B+? 	No	Repair or replace the wiring harness for a possible open circuit or short to ground, then go to Step 21.
13	<p>INSPECT IGNITION COIL</p> <ul style="list-style-type: none"> • Inspect the ignition coil. <p>(See IGNITION COIL INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	<p>Replace the ignition coil, then go to Step 21.</p> <p>(See IGNITION COIL REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	<p>Inspect for open circuit in wiring harness between ignition coil terminal B and ground.</p> <p>Repair or replace the wiring harness for a possible open circuit, then go to Step 21.</p>
14	<p>INSPECT ENGINE COMPRESSION</p> <ul style="list-style-type: none"> • Inspect the engine compression. <p>(See COMPRESSION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	Go to the next step.
		No	Go to Step 19.
15	<p>INSPECT METERING OIL PUMP</p> <ul style="list-style-type: none"> • Inspect the metering oil pump. <p>(See METERING OIL PUMP INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	<p>Repair or replace the malfunctioning part according to the inspection results.</p> <p>Overhaul or replace the engine, then go to Step 21.</p>
		No	Go to the next step.
16	<p>INSPECT ENGINE OIL CONDITION</p> <ul style="list-style-type: none"> • Inspect the engine oil condition. • Is the engine oil condition normal? 	Yes	Go to the next step.
		No	<p>Replace the engine oil.</p> <p>Overhaul or replace the engine, then go to Step 21.</p>
17	<p>INSPECT OIL PRESSURE</p> <ul style="list-style-type: none"> • Inspect the oil pressure. <p>(See OIL PRESSURE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	<p>Repair or replace the malfunctioning part according to the inspection results.</p> <p>Overhaul or replace the engine, then go to Step 21.</p>
		No	Go to the next step.

18	INSPECT OIL PASSAGE <ul style="list-style-type: none"> Inspect the oil pipe between metering oil pump and metering oil nozzle. Is there any malfunction? 	<div> Yes Inspect for leakage and/or clogged in oil passage at the engine. Repair or replace the malfunctioning part according to the inspection results. Overhaul or replace the engine, then go to Step 21. </div> <div> No Overhaul or replace the engine, then go to Step 21. </div>
19	INSPECT FUEL INJECTOR <ul style="list-style-type: none"> Inspect the fuel injector. <p>(See FUEL INJECTOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<div> Yes Replace the fuel injector, then go to Step 21. (See FUEL INJECTOR REMOVAL/INSTALLATION [13B-MSP].) </div> <div> No Go to the next step. </div>
20	INSPECT ENGINE COOLANT PASSAGE FOR ENGINE COOLANT LEAKAGE <ul style="list-style-type: none"> Perform the “ENGINE COOLANT LEAKAGE INSPECTION”. <p>(See ENGINE COOLANT LEAKAGE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<div> Yes Repair or replace the malfunctioning part according to the inspection results, then go to the next step. </div> <div> No Go to the next step. </div>
21	VERIFY TROUBLESHOOTING OF DTC P2270 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Perform the DRIVE MODE 3 (A/F sensor heater, HO2S heater, A/F sensor, HO2S, and TWC Repair Verification Drive Mode). <p>(See OBD-II DRIVE MODE [13B-MSP].)</p> <ul style="list-style-type: none"> Is the PENDING CODE same as DTC present? 	<div> Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].) </div> <div> No Go to the next step. </div>

22	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2271 [13B-MSP]

DTC P2271	HO2S signal stuck rich
DETECTION CONDITION	<ul style="list-style-type: none">The PCM monitors the input voltage from the HO2S when the following conditions are met. If the input voltage is more than 0.85 V for 40 s, the PCM determines that the HO2S signal remains rich. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none">ECT: more than 70 °C {158 °F}Engine speed: more than 1,500 rpmMAF amount: more than 10 g/s {1.32 lb/min}Short term fuel trim: –20—20%Long term fuel trim: –50—50%Target A/F feedback system status: feedback control <p>Diagnostic support note</p> <ul style="list-style-type: none">This is an intermittent monitor (A/F sensor, HO2S).The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.FREEZE FRAME DATA (Mode 2/Mode 12) is available.The DTC is stored in the PCM memory.
	<ul style="list-style-type: none">Loose installation of HO2SLeakage exhaust gasHO2S malfunction

POSSIBLE CAUSE	<ul style="list-style-type: none"> Fuel line pressure malfunction <ul style="list-style-type: none"> Fuel pump unit malfunction Pressure regulator (built-in fuel pump unit) malfunction Purge solenoid valve malfunction Fuel injector malfunction Leakage engine coolant PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Is the DTC P2271 on FREEZE FRAME DATA (Mode 2)? 	Yes	Go to the next step.
		No	Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [13B-MSP].)
2	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded? 	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> Turn the ignition switch off, then to the ON position (engine off). Verify the related PENDING CODE or stored DTCs. 	Yes	Go to the appropriate DTC inspection. (See DTC TABLE [13B-MSP].)
		No	Go to the next step.

	<ul style="list-style-type: none"> Are other DTCs present? 		
5	INSPECT HO2S <ul style="list-style-type: none"> Inspect the HO2S. (See HEATED OXYGEN SENSOR (HO2S) INSPECTION [13B-MSP].) Is there any malfunction? 	Yes Inspect the following: <ul style="list-style-type: none"> Loose installation of HO2S Exhaust gas leakage between TWC and HO2S If there is no malfunction detected, replace the HO2S. (See HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [13B-MSP].) If there is a malfunction detected, repair or replace the malfunctioning part according to the inspection results. Go to Step 10.	
		No Go to the next step.	
6	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> Perform the "FUEL LINE PRESSURE INSPECTION". (See FUEL LINE PRESSURE INSPECTION [13B-MSP].) Is there any malfunction? 	Yes Replace the fuel pump unit, then go to Step 10. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
7	INSPECT PURGE SOLENOID VALVE OPERATION <ul style="list-style-type: none"> Perform the Purge Control System Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the purge solenoid valve work properly? 	Yes Go to the next step.	
		No Repair or replace the malfunctioning part according to the inspection results, then go to Step 10.	
8	INSPECT FUEL INJECTOR <ul style="list-style-type: none"> Inspect the fuel injector. (See FUEL INJECTOR INSPECTION [13B-MSP].) Is there any malfunction? 	Yes Replace the fuel injector, then go to Step 10. (See FUEL INJECTOR REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
	INSPECT ENGINE COOLANT PASSAGE FOR		

9	ENGINE COOLANT LEAKAGE <ul style="list-style-type: none">Perform the “ENGINE COOLANT LEAKAGE INSPECTION”.(See ENGINE COOLANT LEAKAGE INSPECTION [13B-MSP].)Is there any malfunction?	YesRepair or replace the malfunctioning part according to the inspection results, then go to the next step.
		NoGo to the next step.
10	VERIFY TROUBLESHOOTING OF DTC P2271 COMPLETED <ul style="list-style-type: none">Make sure to reconnect all disconnected connectors.Clear the DTC from the PCM memory using the M-MDS.(See AFTER REPAIR PROCEDURE [13B-MSP].)Perform the DRIVE MODE 3 (A/F sensor heater, HO2S heater, A/F sensor, HO2S, and TWC Repair Verification Drive Mode).(See OBD-II DRIVE MODE [13B-MSP].)Is the PENDING CODE same as DTC present?	YesReplace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		NoGo to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">Perform the “AFTER REPAIR PROCEDURE”.(See AFTER REPAIR PROCEDURE [13B-MSP].)Are any DTCs present?	YesGo to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		NoDTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0130 [13B-MSP]

DTC P0130	A/F sensor circuit problem
DETECTION CONDITION	<ul style="list-style-type: none">The PCM monitors the A/F sensor impedance when under the A/F sensor heater control. If the impedance is more than 500 ohms, the PCM determines that there is a A/F sensor circuit problem. <p>Diagnostic support note</p> <ul style="list-style-type: none">This is an intermittent monitor (A/F sensor, HO2S).The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.FREEZE FRAME DATA (Mode 2/Mode 12) is available.The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">A/F sensor connector or terminals malfunctionPCM connector or terminals malfunctionA/F sensor malfunctionPCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED	Yes Go to the next step.
	<ul style="list-style-type: none">Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC	No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST

	MONITORING TEST RESULTS (A/F sensor, HO2S related) been recorded?		RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	INSPECT A/F SENSOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the A/F sensor connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 6.
		No	Go to the next step.
4	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 6.
		No	Go to the next step.
5	INSPECT A/F SENSOR <ul style="list-style-type: none"> Inspect the A/F sensor. (See AIR FUEL RATIO (A/F) SENSOR INSPECTION [13B-MSP].) <ul style="list-style-type: none"> Is there any malfunction? 	Yes	Replace the A/F sensor, then go to the next step. (See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING OF DTC P0130 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)

	<p>memory using the M-MDS.</p> <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none">• Is the PENDING CODE same as the DTC present?	No	Go to the next step.
7	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?	Yes	Go to the applicable DTC inspection.
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0336 [13B-MSP]

DTC P0336	Eccentric shaft position sensor circuit range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the input signal from the eccentric shaft position sensor when the engine is running. If the input signal is not the proper pulse pattern, the PCM determines that there is an eccentric shaft position sensor circuit range/performance problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Eccentric shaft position plate malfunction Eccentric shaft position sensor connector or terminals malfunction Eccentric shaft position sensor is dirty Eccentric shaft position sensor malfunction PCM connector or terminals malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED	
	<ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12)

		on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT ECCENTRIC SHAFT POSITION PLATE <ul style="list-style-type: none"> • Inspect the eccentric shaft position plate. (See ECCENTRIC SHAFT POSITION PLATE INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes Replace the eccentric shaft position plate, then go to Step 7. (See ECCENTRIC SHAFT POSITION PLATE REMOVAL/INSTALLATION [13B-MSP].)
		No Go to the next step.
4	INSPECT ECCENTRIC SHAFT POSITION SENSOR CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the eccentric shaft position sensor connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 7.
		No Go to the next step.
5	INSPECT ECCENTRIC SHAFT POSITION SENSOR <ul style="list-style-type: none"> • Inspect the eccentric shaft position sensor. (See ECCENTRIC SHAFT POSITION SENSOR INSPECTION [13B-MSP].) • Is there any malfunction? 	Yes Replace the eccentric shaft position sensor, then go to Step 7. (See ECCENTRIC SHAFT POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP].)
		No Go to the next step.
6	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). 	Yes Repair or replace the connector and/or terminals, then go to the next step.
		No Go to the next step.

	<ul style="list-style-type: none"> Is there any malfunction? 		
7	VERIFY TROUBLESHOOTING OF DTC P0336 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOER self test. (See KOEK/KOER SELF TEST [13B-MSP].) Is the same DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)	
		No DTC troubleshooting completed.	

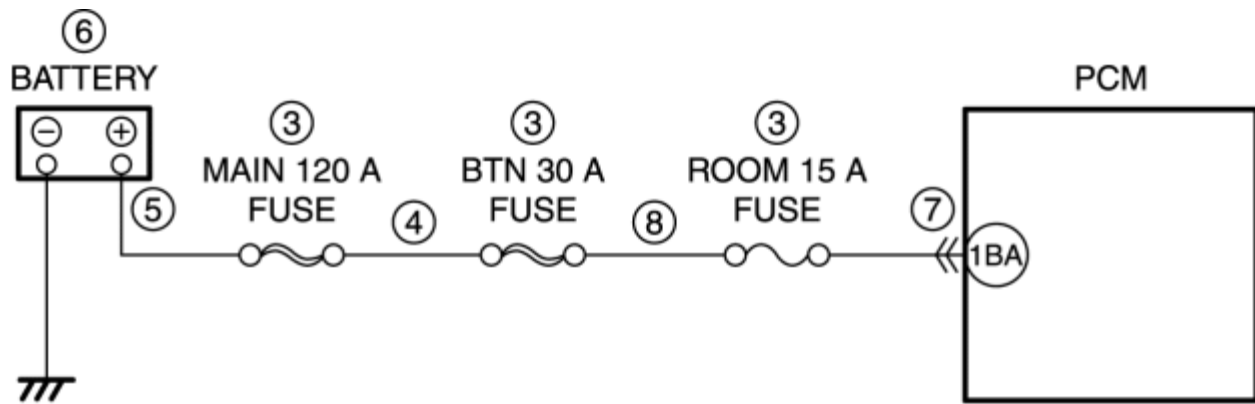
[< Previous](#) [Next >](#)

[Back to Top](#)

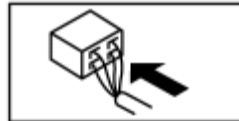
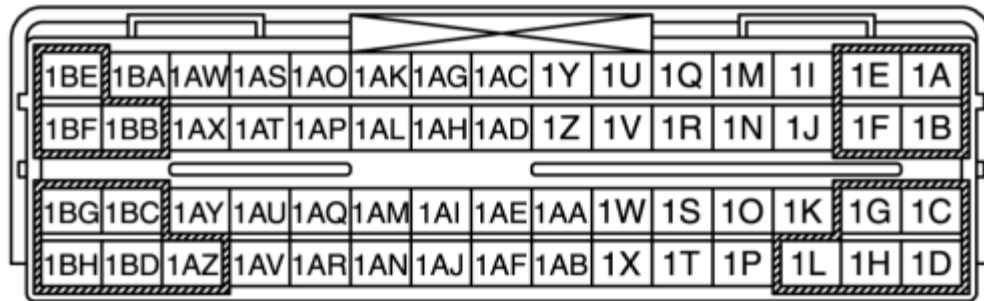
2011 - RX-8 - Engine

DTC P0562 [13B-MSP]

DTC P0562	System voltage low (KAM)
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the battery voltage when the engine is running. If the voltage is less than 2.5 V, the PCM determines that the system voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Fuse malfunction• Short to ground in wiring harness between battery positive terminal and PCM terminal 1BA• Looseness of battery positive terminal• Battery malfunction• PCM connector or terminals malfunction• Open circuit in wiring harness between battery positive terminal and PCM terminal 1BA• PCM malfunction



PCM WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT FUSE <ul style="list-style-type: none"> Inspect the fuse. 	Yes If the fuse is melting:

	<ul style="list-style-type: none"> Is there any malfunction? 	<ul style="list-style-type: none"> Go to the next step. <p>If the fuse is deterioration:</p> <ul style="list-style-type: none"> Replace the suspected fuse, then go to Step 9.
		No Go to Step 5.
4	INSPECT BATTERY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the battery positive and negative posts. Inspect for continuity between battery positive terminal (wiring harness-side) and body ground. Is there continuity? 	<p>Yes Repair or replace the wiring harness for a possible short to ground or replace the suspected fuse, then go to Step 9.</p> <p>No Inspect for continuity between battery positive terminal and other wiring harness.</p> <p>Repair or replace the suspected wiring harness or replace the suspected fuse, then go to Step 9.</p>
5	INSPECT BATTERY POSITIVE TERMINAL FOR POOR INSTALLATION <ul style="list-style-type: none"> Turn the ignition switch off. Inspect for looseness of the battery positive terminal. Is there any malfunction? 	<p>Yes Connect the battery positive terminal correctly, then go to Step 9.</p> <p>No Go to the next step.</p>
6	INSPECT BATTERY <ul style="list-style-type: none"> Inspect the battery. <p>(See BATTERY INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Recharge or replace the battery, then go to Step 9.</p> <p>(See BATTERY RECHARGING [13B-MSP].)</p> <p>(See BATTERY REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
7	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 9.</p> <p>No Go to the next step.</p>

8	INSPECT BATTERY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Battery positive terminal and PCM connector are disconnected. • Turn the ignition switch off. • Inspect for continuity between battery positive terminal (wiring harness-side) and PCM terminal 1BA (wiring harness-side). • Is there continuity? 		Yes Go to the next step. No Repair or replace the wiring harness for a possible open circuit, then go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P0562 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) • Is the same DTC present? 		Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].) No Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 		Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].) No DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2109 [13B-MSP]

DTC P2109	TP sensor minimum stop range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the minimum TP when the closed TP learning is completed. If the TP is less than 11.5 % or more than 24.3 %, the PCM determines that there is a TP sensor minimum stop range/performance problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Drive-by-wire control system malfunction Throttle actuator malfunction Throttle valve malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED	YesGo to the next step.
	<ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY	YesPerform repair or diagnosis according to the

	<ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	<p>available repair information.</p> <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT DRIVE-BY-WIRE CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> • Perform the Drive-by-wire Control System Inspection. <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	<p>Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 6.</p> <p>No Go to the next step.</p>
4	INSPECT THROTTLE ACTUATOR <ul style="list-style-type: none"> • Inspect the throttle actuator. <p>(See THROTTLE BODY INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	<p>Yes Replace the throttle body, then go to Step 6.</p> <p>(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
5	INSPECT THROTTLE VALVE <ul style="list-style-type: none"> • Inspect the throttle valve. <p>(See THROTTLE BODY INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	<p>Yes Replace the throttle body, then go to the next step.</p> <p>(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>
6	VERIFY TROUBLESHOOTING OF DTC P2109 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Start the engine. • Perform the DTC Reading Procedure. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p>	<p>Yes Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>

	<ul style="list-style-type: none">• Is the same DTC present?		
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].)• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2112 [13B-MSP]

DTC P2112	Throttle actuator control system range/performance problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the throttle actuator control duty ratio when the engine is running. If the duty ratio is more than 95 %, the PCM determines that there is a throttle actuator control system range/performance problem. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED	YesGo to the next step.
	<ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY	YesPerform repair or diagnosis according to the available repair information.
	<ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information 	<ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.

	available?	No	Go to the next step.
3	VERIFY TROUBLESHOOTING OF P2112 COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Start the engine. • Perform the DTC Reading Procedure. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • Is the same DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

DTC P0442, P0455, P0456 [13B-MSP]

DTC P0442	EVAP system leak detected (small leak)
DTC P0455	EVAP system leak detected (large leak)
DTC P0456	EVAP system leak detected (very small leak)
DETECTION CONDITION	<p>DTC P0455, DTC P0442, DTC P0456</p> <ul style="list-style-type: none">• The PCM measures the pump load current (EVAP line pressure) after a specified period has elapsed since the EVAP system is sealed when monitoring conditions are met. If the load does not reach the reference load value, or the rate of the load increase is lower than the specification within a specified period, the PCM determines that the EVAP system has a very small leak. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none">▪ The ignition switch is turned off.▪ IAT: 5—40 °C {41—104 °F}▪ Battery voltage: 11.0—20.0 V▪ Atmospheric pressure: 72 kPa {542 mmHg, 21.33 inHg} or above▪ Fuel tank level: 15—85%▪ Time from engine off: more than 6 h. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is an intermittent monitor (EVAP system).• The MIL illuminates if the PCM detects above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.

	<ul style="list-style-type: none"> • The DTC is stored in the PCM memory. • DIAGNOSTIC MONITORING TEST RESULT is available.
POSSIBLE CAUSE	<p>DTC P0442, P0456</p> <ul style="list-style-type: none"> • After-market EVAP hardware (such as fuel-filler cap) not conforming to required specifications. • Small holes or cuts in fuel vapor hoses/tubes (P0442, P0456). • Change over valve stays partially open on closed command. • Damaged, cross-threaded or loosely installed fuel-filler cap. • EVAP system component seals leaking. • Purge solenoid leaking <p>DTC P0455</p> <ul style="list-style-type: none"> • After-market EVAP hardware (such as fuel-filler cap) not conforming to required specifications. • Disconnected or cracked change over valve, purge solenoid valve outlet tube, or EVAP return tube. • Loose, malfunctioning, damaged or missing fuel-filler cap. • Loose fuel vapor hose/tube connections to EVAP system components. • Change over valve stuck open. • Damaged charcoal canister.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<p>VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED</p> <ul style="list-style-type: none"> • Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (EVAP system related) been recorded? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.</p>
2	<p>VERIFY RELATED REPAIR INFORMATION AVAILABILITY</p> <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p>

			<ul style="list-style-type: none">• If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	VERIFY RELATED PENDING CODE OR STORED DTCs <ul style="list-style-type: none">• Turn the ignition switch off, then to the ON position (engine off).• Verify related pending code or stored DTCs.• Are any other DTCs present?	Yes	Go to the appropriate DTC troubleshooting. (See DTC TABLE [13B-MSP] .)
		No	Go to the next step.
4	PRELIMINARY EVAP SYSTEM TEST <ul style="list-style-type: none">• Perform the EVAP system leak inspection using the M-MDS. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)• Verify that all PIDs are within the following specifications: NOTE:<ul style="list-style-type: none">• To successfully perform this procedure, all PIDs must be within specification before proceeding to the next step.<ul style="list-style-type: none">▪ Select the following items from the initialization screen of the M-MDS.▪ Select "Powertrain".▪ Select "Fuel".▪ Select "EVAP Test".▪ Verify that ECT and IAT are within the specification on the confirmation screen. To successfully perform this procedure, ECT and IAT must be within the specification before proceeding to the next step.▪ The fuel level must be maintained within 15%—85%. The PCM will cancel	Yes	Go to the appropriate DTC troubleshooting. (See DTC TABLE [13B-MSP] .)
		No	Go to the next step.

	<p>the EVAP test If the fuel level is lower than 15% or higher than 85%.</p> <ul style="list-style-type: none">▪ Allow the M-MDS to run the EVAP test. <p>• Are DTCs besides P0455, P0442 or P0456 present?</p>		
5	VERIFY EVAP DTCs <ul style="list-style-type: none">• Did the M-MDS EVAP test produce DTCs P0455, P0442 or P0456?	Yes	Go to the next step.
		No	Go to Step 8.
6	SECONDARY EVAP SYSTEM TEST <ul style="list-style-type: none">• Tighten the fuel-filler cap then perform the EVAP system leak inspection using the M-MDS again. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)• Verify that all PIDs are within the following specifications: NOTE:<ul style="list-style-type: none">• To successfully perform this procedure, all PIDs must be within the specification before proceeding to the next step.<ul style="list-style-type: none">▪ Select the following items from the initialization screen of the M-MDS.▪ Select "Powertrain".▪ Select "Fuel".▪ Select "EVAP Test".▪ Verify that ECT and IAT are within the specification on the confirmation screen. To successfully perform this procedure, ECT and IAT must be within the specification before proceeding to the next step.▪ The fuel level must be maintained within 15%—85%. The PCM will cancel the EVAP test If the fuel level is lower than 15% or higher than 85%.▪ Allow the M-MDS to run the EVAP test.	Yes	Go to the next step.
		No	Fuel-filler cap was not properly tightened. Go to Step 11.

	<ul style="list-style-type: none">Does the M-MDS still indicate that an EVAP system leak exists?		
7	VISUALLY INSPECT COMPONENTS FOR LEAKS <ul style="list-style-type: none">Visually inspect for cut or loose connections to the fuel vapor hoses/tubes in the following locations:<ul style="list-style-type: none">Charcoal canister to EVAP leak detection pump.Charcoal canister to evaporative emission valve component.Evaporative emission valve component to the fuel tank (if applicable).Check for fuel-filler pipe damage.Is a concern with a hose, tube, connection or valve visually evident?	Yes	Repair or install a new component if necessary. Afterwards, verify that the leak is repaired by performing diagnostic Step 8.
		No	Go to the next step.
8	CALIBRATE THE LEAK TESTER FOR DIAGNOSIS <ul style="list-style-type: none">Verify that the control valve on the panel is in the HOLD position then open the nitrogen bottle valve.Connect the vehicle interface hose (part of the SST) to the SELF-TEST port located on the control panel. Hand tighten the fitting. (Do not overtighten.)Turn the control valve to the TEST position; the gauge should read 331—381 mm {13—15 in} of water. NOTE: <ul style="list-style-type: none">If the gauge is not reading in this range, adjust the pressure by turning the black knob on the low pressure regulator at the nitrogen bottle.After verifying the regulator is properly calibrated, turn the control valve to the HOLD position.Verify that the gauge holds pressure and that the flow meter reads no flow.Does the gauge hold pressure and the flow meter read no flow?	Yes	Go to the next step.
		No	Refer to the tester operator's manual for tester repair instructions.
9	PRESSURIZE THE EVAP SYSTEM WITH NITROGEN <ul style="list-style-type: none">Verify that the control valve on the panel is in the HOLD position.Remove the fuel-filler cap from the vehicle.<ul style="list-style-type: none">If the fuel-filler cap is not a MAZDA part or equivalent, replace it.	Yes	Disconnect the purge solenoid valve hose (to intake manifold side), then go to the next step.
		No	Go to Step 11.

NOTE:

- INSPECT FUEL-FILLER CAP AND FILLER NECK
 - Visually inspect for damage, insufficient sealing, rust, cracks or warps for fuel-filler cap and fuel-filler neck
 - Repair or replace if necessary
- Connect the receiver assembly (**SST**: 134-01059) to the vehicle cap test hose assembly (part of the **SST**) and the fuel-filler cap from the vehicle.
- Connect the cap adaptor (**SST**: 134-01058) to the vehicle cap test hose assembly (part of the **SST**) and to the fuel-filler neck.
- Connect the vehicle interface hose (part of the **SST**) to the center fitting of the vehicle cap test hose assembly (part of the **SST**).
- Connect the M-MDS to the DLC-2.
- Turn the ignition switch to the ON position (engine off).
- Request PCM on-board device control (Mode 08) using M-MDS to close the change over valve.

NOTE:

- The change over valve is closed for 10 min unless either of the following is done:
 - The engine is started.
 - The ignition switch is turned to the off position.
- Verify the valve on the nitrogen bottle is still open.
- Turn the control valve to the open position and let the system fill. You should note a drop in the gauge pressure along with the flow meter being pegged at maximum flow for several minutes depending on how full or empty the fuel tank is, and how long it takes to completely fill and pressurize the evaporative emissions system hoses.

	<ul style="list-style-type: none"> Does the test indicate that a leak exists? 		
10	LOCATE LEAKAGE POINT <ul style="list-style-type: none"> Verify that the control valve on the panel is in the HOLD position and the valve on the nitrogen bottle is open. Connect the 12 volt power connector leads on the smoke generation unit to the vehicle's battery. Make sure to connect the red lead to the positive (+) terminal or power, and black lead to vehicle's chassis ground. Turn the ignition switch to the ON position (engine off). Request PCM on-board device control (Mode 08) using the M-MDS to close the change over valve. <p>NOTE:</p> <ul style="list-style-type: none"> The change over valve is closed for 10 min unless either of the following occur: <ul style="list-style-type: none"> The engine is started. The ignition switch is turned to the off position. Turn the control valve to the open position. <p>NOTE:</p> <ul style="list-style-type: none"> NEVER depress the remote smoke trigger before opening the nitrogen tank valve and setting the tester control valve to TEST Press the remote smoke trigger on the smoke generation unit and let the system fill with smoke. <p>NOTE:</p> <ul style="list-style-type: none"> It may be necessary to lift the vehicle to provide sufficient clearance underneath to conduct a proper visual inspection of the fuel and EVAP system. Use a 12-volt, 400,000 candle power spotlight (part # 4410000-100) or equivalent to help locate the smoke. Is a leak detected? 	Yes	Repair or install a new component if necessary. Go to the next step.
		No	Check all EVAP connections. Conduct diagnosis of intermittent concerns, then go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting

		completed.
--	--	------------

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

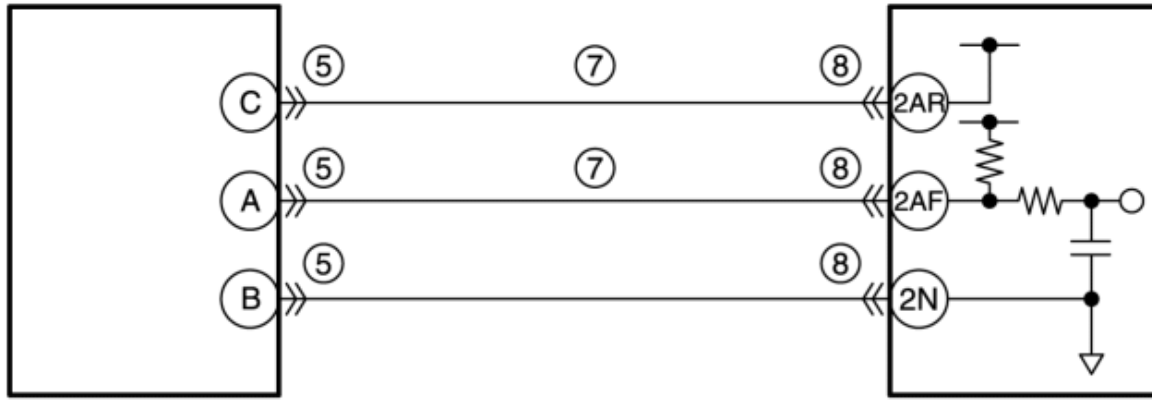
2011 - RX-8 - Engine

DTC P2007 [13B-MSP]

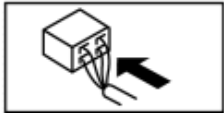
DTC P2007	APV stuck closed (No.2)
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the APV position sensor No.2 when the APV is opened. If the input voltage is less than 1.0 V, the PCM determines that the APV is stuck closed. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• APV control malfunction• APV motor malfunction• APV position sensor No.2 connector or terminals malfunction• APV position sensor No.2 malfunction• Short to ground in wiring harness between APV position sensor No.2 terminal C and PCM terminal 2AR• Short to ground in wiring harness between APV position sensor No.2 terminal A and PCM terminal 2AF• PCM connector or terminals malfunction• PCM malfunction

⑥

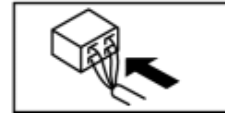
APV POSITION SENSOR NO.2



APV POSITION SENSOR NO.2 WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT APV CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> Perform the Auxiliary Port Valve (APV) Control Inspection. 	Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 9.

	<p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	No	Go to the next step.
4	<p>INSPECT APV MOTOR</p> <ul style="list-style-type: none"> Turn the ignition switch off. Inspect the APV motor. <p>(See AUXILIARY PORT VALVE (APV) MOTOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	<p>Replace the APV motor, then go to Step 9.</p> <p>(See INTAKE MANIFOLD DISASSEMBLY/ASSEMBLY [13B-MSP].)</p>
		No	Go to the next step.
5	<p>INSPECT APV POSITION SENSOR NO.2 CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the APV position sensor No.2 connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
6	<p>INSPECT APV POSITION SENSOR NO.2</p> <ul style="list-style-type: none"> Inspect the APV position sensor No.2. <p>(See AUXILIARY PORT VALVE (APV) POSITION SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	<p>Replace the APV position sensor No.2, then go to Step 9.</p> <p>(See AUXILIARY PORT VALVE (APV) POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.
7	<p>INSPECT APV POSITION SENSOR NO.2 CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> APV position sensor No.2 connector is disconnected. Turn the ignition switch off. Inspect for continuity between the following circuits: <ul style="list-style-type: none"> APV position sensor No.2 terminal C (wiring harness-side) and body ground APV position sensor No.2 terminal A (wiring harness-side) and body ground Is there continuity? 	Yes	<p>If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> Replace the PCM (short to ground in the PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to Step 9.</p>
		No	Go to the next step.
	INSPECT PCM CONNECTOR FOR POOR		

8	CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to the next step.
		No	Go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P2007 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) • Is the PENDING CODE same as DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

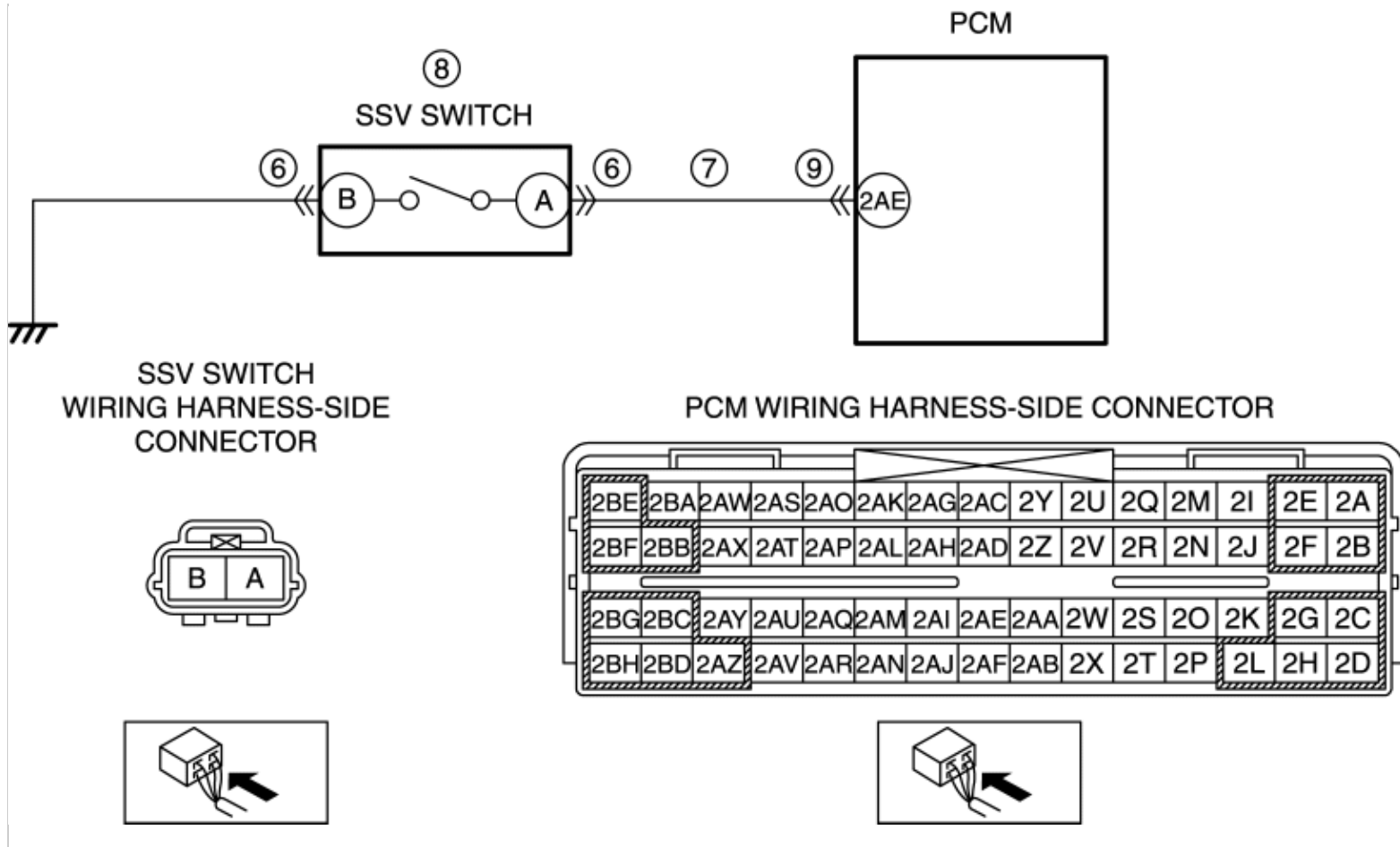
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

DTC P2071 [13B-MSP]

DTC P2071	SSV stuck closed
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input signal from the SSV switch when the PCM turns the SSV solenoid valve on. If the input signal is off, the PCM determines that the SSV is stuck closed. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• SSV control system malfunction• SSV actuator malfunction• SSV solenoid valve malfunction• SSV switch connector or terminals malfunction• Short to ground in wiring harness between SSV switch terminal A and PCM terminal 2AE• SSV switch malfunction• PCM connector or terminals malfunction• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT SSV CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> Perform the Secondary Shutter Valve (SSV) Operation Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP] .)	Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 10. No Go to the next step.

	<ul style="list-style-type: none"> Is there any malfunction? 		
4	INSPECT SSV ACTUATOR <ul style="list-style-type: none"> Turn the ignition switch off. Inspect the SSV actuator. <p>(See SECONDARY SHUTTER VALVE (SSV) ACTUATOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	Replace the intake manifold, then go to Step 10. (See INTAKE MANIFOLD REMOVAL/INSTALLATION [13B-MSP] .)
		No	Go to the next step.
5	INSPECT SSV SOLENOID VALVE <ul style="list-style-type: none"> Inspect the SSV solenoid valve. <p>(See SECONDARY SHUTTER VALVE (SSV) SOLENOID VALVE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	Replace the SSV solenoid valve, then go to Step 10. (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP] .)
		No	Go to the next step.
6	INSPECT SSV SWITCH CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the SSV switch connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.
7	INSPECT SSV SWITCH POWER SUPPLY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> SSV switch connector is disconnected. Turn the ignition switch off. Inspect for continuity between SSV switch terminal A (wiring harness-side) and body ground. Is there continuity? 	Yes	If the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in the PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> Go to Step 10.
		No	Go to the next step.

8	INSPECT SSV SWITCH <ul style="list-style-type: none"> Inspect the SSV switch. (See SECONDARY SHUTTER VALVE (SSV) SWITCH INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Replace the SSV switch, then go to Step 10. (See SECONDARY SHUTTER VALVE (SSV) SWITCH REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
9	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to the next step.
		No	Go to the next step.
10	VERIFY TROUBLESHOOTING OF DTC P2071 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Start the engine and warm up it completely. Run the engine at high engine speed and high load. Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the PENDING CODE same as DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

[< Previous](#) [Next >](#)

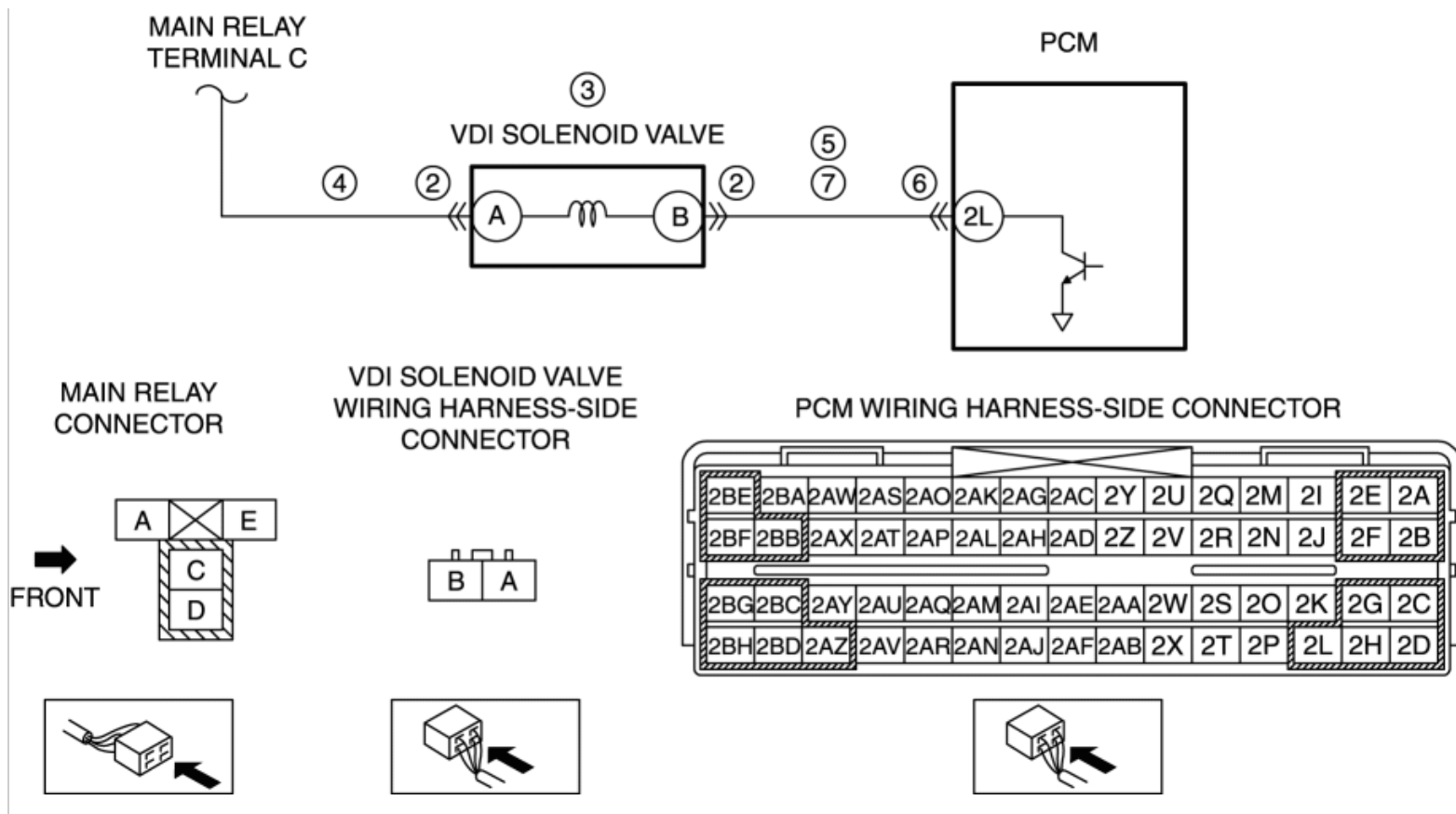
© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

DTC P0076 [13B-MSP]

DTC P0076	VDI solenoid valve control circuit low input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the VDI solenoid valve control voltage when the PCM turns the VDI solenoid valve off. If the control voltage is low, the PCM determines that the VDI solenoid valve control circuit voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (other).• The MIL does not illuminate.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is not available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• VDI solenoid valve connector or terminals malfunction• VDI solenoid valve malfunction• Short to ground or open circuit in VDI solenoid valve power supply circuit<ul style="list-style-type: none">▪ Short to ground in wiring harness between main relay terminal C and VDI solenoid valve terminal A▪ VDI solenoid valve related fuse malfunction▪ Open circuit in wiring harness between main relay terminal C and VDI solenoid valve terminal A• Short to ground in wiring harness between VDI solenoid valve terminal B and PCM terminal 2L• PCM connector or terminals malfunction• Open circuit in wiring harness between VDI solenoid valve terminal B and PCM terminal 2L• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
2	INSPECT VDI SOLENOID VALVE CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the VDI solenoid valve connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 8.</p> <p>No Go to the next step.</p>
3	INSPECT VDI SOLENOID VALVE <ul style="list-style-type: none"> Inspect the VDI solenoid valve. <p>(See VARIABLE DYNAMIC EFFECT INTAKE-AIR (VDI) SOLENOID VALVE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Replace the VDI solenoid valve, then go to Step 8.</p> <p>(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>No Go to the next step.</p>

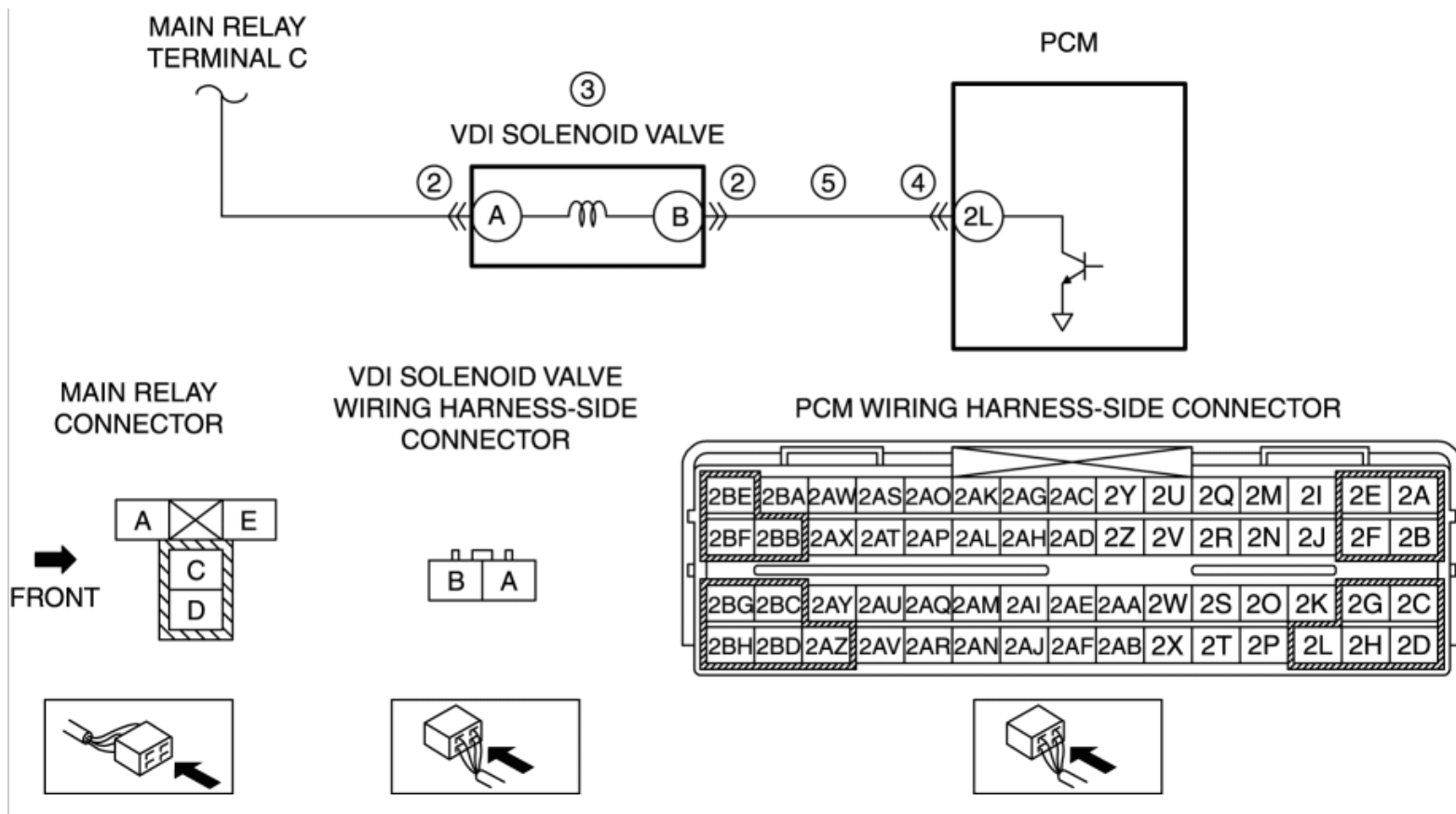
4	<p>INSPECT VDI SOLENOID VALVE POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • VDI solenoid valve connector is disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between VDI solenoid valve terminal A (wiring harness-side) and body ground. • Is the voltage B+? 	<p>Yes Go to the next step.</p> <p>No Inspect the VDI solenoid valve related fuse.</p> <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> ▪ Repair or replace the wiring harness for a possible short to ground. ▪ Replace the fuse. • If the fuse is deterioration: <ul style="list-style-type: none"> ▪ Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> ▪ Repair or replace the wiring harness for a possible open circuit. <p>Go to Step 8.</p>
5	<p>INSPECT VDI SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • VDI solenoid valve connector is disconnected. • Turn the ignition switch off. • Inspect for continuity between VDI solenoid valve terminal B (wiring harness-side) and body ground. • Is there continuity? 	<p>Yes If the short to ground circuit could be detected:</p> <ul style="list-style-type: none"> • Repair or replace the wiring harness for a possible short to ground. <p>If the short to ground circuit could not be detected:</p> <ul style="list-style-type: none"> • Replace the PCM (short to ground in the PCM internal circuit). <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to Step 8.</p> <p>No Go to the next step.</p>
6	<p>INSPECT PCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 8.</p> <p>No Go to the next step.</p>

	Is there any malfunction?		
7	INSPECT VDI SOLENOID VALVE CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • VDI solenoid valve and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect for continuity between VDI solenoid valve terminal B (wiring harness-side) and PCM terminal 2L (wiring harness-side). • Is there continuity? 	Yes Go to the next step.	
		No Repair or replace the wiring harness for a possible open circuit, then go to the next step.	
8	VERIFY TROUBLESHOOTING OF DTC P0076 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) • Is the PENDING CODE same as the DTC present? 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	
		No Go to the next step.	
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)	
		No DTC troubleshooting completed.	

2011 - RX-8 - Engine

DTC P0077 [13B-MSP]

DTC P0077	VDI solenoid valve control circuit high input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the VDI solenoid valve control voltage when the PCM turns the VDI solenoid valve on. If the control voltage is high, the PCM determines that the VDI solenoid valve control circuit voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (other).• The MIL does not illuminate.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is not available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• VDI solenoid valve connector or terminals malfunction• VDI solenoid valve malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between VDI solenoid valve terminal B and PCM terminal 2L• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
2	INSPECT VDI SOLENOID VALVE CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the VDI solenoid valve connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 6. No Go to the next step.
3	INSPECT VDI SOLENOID VALVE <ul style="list-style-type: none"> Inspect the VDI solenoid valve. (See VARIABLE DYNAMIC EFFECT INTAKE-AIR (VDI) SOLENOID VALVE INSPECTION [13B-MSP].) Is there any malfunction? 	Yes Replace the VDI solenoid valve, then go to Step 6. (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].) No Go to the next step.

4	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 6.
		No	Go to the next step.
5	INSPECT VDI SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • VDI solenoid valve and PCM connectors are disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between VDI solenoid valve terminal B (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No	Go to the next step.
6	VERIFY TROUBLESHOOTING OF DTC P0077 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) • Start the engine and warm it up completely. • Race the engine above 7,650 rpm or more. • Is the PENDING CODE same as the DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0126 [13B-MSP]

DTC P0126	Insufficient coolant temperature for stable operation
DETECTION CONDITION	<ul style="list-style-type: none">The PCM monitors the ECT after the engine start for a certain period. If the ECT never exceeds 71 °C {160 °F} when the following conditions are met, the PCM determines that the coolant thermostat is stuck open. <p style="text-align: center;">MONITORING CONDITIONS</p> <ul style="list-style-type: none">ECT at engine start: less than 51°C {123 °F}Estimated ambient temperature: more than –10 °C {14 °F} <p>Diagnostic support note</p> <ul style="list-style-type: none">This is a continuous monitor (thermostat).The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.FREEZE FRAME DATA (Mode 2/Mode 12) is available.The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">VSS malfunctionIAT sensor malfunctionECT sensor malfunctionCoolant thermostat malfunctionPCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (thermostat related) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY FOR OTHER STORED DTC <ul style="list-style-type: none"> Turn the ignition switch off, then to the ON position (engine off). Verify for the other stored DTCs. Are other DTCs present? 	Yes Go to the appropriate DTC inspection. (See DTC TABLE [13B-MSP].)
		No Go to the next step.
4	VERIFY CURRENT INPUT SIGNAL STATUS OF VSS <ul style="list-style-type: none"> Start the engine. Access the VSS PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Inspect the VSS PID. Is the PID normal? (See PCM INSPECTION [13B-MSP].) 	Yes Go to the next step.
		No Repair or replace the malfunctioning part according to the inspection results, then go to Step 9.
5	INSPECT IAT SENSOR <ul style="list-style-type: none"> Inspect the IAT sensor. (See INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [13B-MSP].) 	Yes Replace the MAF/IAT sensor, then go to Step 9. (See MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR

	<ul style="list-style-type: none"> Is there any malfunction? 	REMOVAL/INSTALLATION [13B-MSP].)
		No Go to the next step.
6	INSPECT ECT SENSOR <ul style="list-style-type: none"> Inspect the ECT sensor. <p>(See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes Replace the ECT sensor, then go to Step 9. (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
		No Go to the next step.
7	INSPECT COOLANT THERMOSTAT <ul style="list-style-type: none"> Inspect the coolant thermostat. <p>(See THERMOSTAT INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes Replace the coolant thermostat, then go to Step 9. (See THERMOSTAT REMOVAL/INSTALLATION [13B-MSP].)
		No Go to the next step.
8	VERIFY MONITORING CONDITION FOR REPAIR VERIFICATION <ul style="list-style-type: none"> Leave the vehicle in a place that is at a temperature of approx. 25 °C {77 °F} for more than 6 hours. Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Access the ECT and IAT PIDs using the M-MDS. Verify that each PID is within following specifications. <ul style="list-style-type: none"> IAT: more than -10 °C {14 °F} ECT: less than 51°C {123 °F} Are the ECT and IAT PIDs normal? 	Yes Go to the next step. No Repair or replace the malfunctioning part according to the inspection results, then repeat this step.
9	VERIFY TROUBLESHOOTING OF DTC P0126 COMPLETED	Yes Go to the next step.

	<ul style="list-style-type: none"> Start the engine and turn off E/L and A/C. Access and monitor PIDs TH_M (temp unit) and TH_M_MIN (temp unit) using the M-MDS. <p>NOTE:</p> <ul style="list-style-type: none"> This test requires actual driving. Chassis roller cannot be used for this test. During the test drive, constant speed should be maintained, although 2 or 3 stops during every 5 min of driving time (e.g. for traffic signals) is acceptable. Stop-and-go (e.g. in case of traffic congestion) is not acceptable during the test period. Test period depends on ECT at the engine start. (e.g. if ECT is – 10 °C {14 °F}, monitoring period is 38 min and ECT is 30 °C {86 °F}, monitoring period is 8 min) Verify the PIDs TH_M and TH_M_MIN values. Is the TH_M value above TH_M_MIN value? 		<p>No Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p>
10	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> Perform the “AFTER REPAIR PROCEDURE”. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	Yes	<p>Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p>
		No	<p>DTC troubleshooting completed.</p>

2011 - RX-8 - Engine

DTC P0301, P0302 [13B-MSP]

DTC P0301	Front rotor misfire detected
DTC P0302	Rear rotor misfire detected
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the eccentric shaft position sensor input signal interval time. The PCM calculates the change of the interval time for each rotor. If the change of interval time exceeds the preprogrammed criteria, the PCM detects a misfire in the corresponding rotor. While the engine is running, the PCM counts the number of misfires that occurred at 200 eccentric shaft revolutions and 1,000 eccentric shaft revolutions and calculates the misfire ratio for each eccentric shaft revolution. If the ratio exceeds the preprogrammed criteria, the PCM determines that a misfire, which can damage the catalytic converter or affect emission performance, has occurred. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (misfire). The MIL illuminates if the PCM detects the misfire which affects emission performance in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. The MIL flashes if the PCM detects the misfire which can damage the catalytic converter during the first drive cycle. Therefore, PENDING CODE is not available while the MIL flashes. PENDING CODE is available if the PCM detects the misfire which affects emission performance during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
	<ul style="list-style-type: none"> Erratic signal to PCM <ul style="list-style-type: none"> APP sensor signal malfunction ECT sensor signal malfunction

POSSIBLE CAUSE

- MAF sensor signal malfunction
- TP sensor signal malfunction
- VSS signal malfunction
- Eccentric shaft position sensor malfunction
- Spark plug malfunction
- High-tension lead malfunction
- Excess air suction in intake-air system
- Fuel injector related wiring harness malfunction
- Leakage engine coolant
- Insufficient compression
 - Metering oil pump malfunction
 - Engine oil condition malfunction
 - Increased oil pressure
 - Oil passage malfunction
 - Engine malfunction
- Fuel line pressure malfunction
 - Fuel pump unit malfunction
 - Pressure regulator (built-in fuel pump unit) malfunction
- Fuel injector malfunction
- PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (misfire related) been recorded? 	YesGo to the next step.
		NoRecord the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY	YesPerform repair or diagnosis

	<ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	<p>according to the available repair information.</p> <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> • Turn the ignition switch off, then to the ON position (engine off). • Verify the related PENDING CODE or stored DTCs. • Are other DTCs present? 	<p>Yes Go to the appropriate DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p>
		No Go to the next step.
4	VERIFY CURRENT INPUT SIGNAL STATUS <ul style="list-style-type: none"> • Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) <ul style="list-style-type: none"> ▪ APP ▪ ECT ▪ MAF ▪ TP REL ▪ VSS • Are the PIDs normal? (See PCM INSPECTION [13B-MSP].) 	<p>Yes Go to the next step.</p>
		No Repair or replace the malfunctioning part according to the inspection results, then go to Step 19.
5	VERIFY CURRENT INPUT SIGNAL STATUS UNDER FREEZE FRAME DATA (MODE 2) CONDITION CAUTION: <ul style="list-style-type: none"> • While performing this step with vehicle driving, always operate the vehicle in a safe and lawful manner. • When the M-MDS is used to observe monitor system status while driving, be sure to have another technician with you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD function and inspect later. • Access the following PIDs using the M-MDS under the FREEZE FRAME DATA (Mode 2) 	<p>Yes Go to the next step.</p>
		No Repair or replace the malfunctioning part according to the inspection results, then go to Step 19.

	<p>condition:</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none"> ▪ APP ▪ ECT ▪ MAF ▪ TP REL ▪ VSS <ul style="list-style-type: none"> • Are the PIDs normal? <p>(See PCM INSPECTION [13B-MSP].)</p>		
6	<p>INSPECT ECCENTRIC SHAFT POSITION SENSOR</p> <ul style="list-style-type: none"> • Inspect the eccentric shaft position sensor. <p>(See ECCENTRIC SHAFT POSITION SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	<p>Replace the eccentric shaft position sensor, then go to Step 19.</p> <p>(See ECCENTRIC SHAFT POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.
7	<p>INSPECT SPARK PLUG</p> <ul style="list-style-type: none"> • Inspect the spark plug. <p>(See SPARK PLUG INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	<p>Replace the spark plug, then go to Step 19.</p> <p>(See SPARK PLUG REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.
8	<p>INSPECT HIGH-TENSION LEAD</p> <ul style="list-style-type: none"> • Inspect the high-tension leads. <p>(See HIGH-TENSION LEAD INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	Yes	<p>Replace the malfunctioning high-tension lead, then go to Step 19.</p> <p>(See HIGH-TENSION LEAD REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.
9	<p>INSPECT INTAKE-AIR SYSTEM FOR EXCESSIVE AIR SUCTION</p> <ul style="list-style-type: none"> • Visually inspect for looseness, cracks or 	Yes	<p>Repair or replace the malfunctioning part according to the inspection results, then go to</p>

	<p>damaged hoses in intake-air system.</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Step 19.</p>
		<p>No Go to the next step.</p>
10	<p>INSPECT FUEL INJECTOR RELATED WIRING HARNESS</p> <ul style="list-style-type: none"> Disconnect the fuel injector connector. Connect the noid light to the fuel injector connector terminals. Remove the fuel pump relay. Inspect the light dim during cranking. Does the noid light illuminate? 	<p>Yes Go to the next step.</p>
		<p>No Inspect for fuel injector related wiring harness.</p> <ul style="list-style-type: none"> If there is any malfunction, replace the suspected wiring harness, then go to Step 19.
11	<p>INSPECT ENGINE COOLANT PASSAGE FOR ENGINE COOLANT LEAKAGE</p> <ul style="list-style-type: none"> Perform the "ENGINE COOLANT LEAKAGE INSPECTION". <p>(See ENGINE COOLANT LEAKAGE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 19.</p>
		<p>No Go to the next step.</p>
12	<p>INSPECT ENGINE COMPRESSION</p> <ul style="list-style-type: none"> Inspect the engine compression. <p>(See COMPRESSION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Go to the next step.</p>
		<p>No Go to Step 17.</p>
13	<p>INSPECT METERING OIL PUMP</p> <ul style="list-style-type: none"> Inspect the metering oil pump. <p>(See METERING OIL PUMP INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Repair or replace the malfunctioning part according to the inspection results.</p> <p>Overhaul or replace the engine, then go to Step 19.</p>
		<p>No Go to the next step.</p>
14	<p>INSPECT ENGINE OIL CONDITION</p> <ul style="list-style-type: none"> Inspect the engine oil condition. Is the engine oil condition normal? 	<p>Yes Go to the next step.</p>
		<p>No Replace the engine oil.</p> <p>Overhaul or replace the engine, then go to Step 19.</p>

15	INSPECT OIL PRESSURE <ul style="list-style-type: none"> Inspect the oil pressure. (See OIL PRESSURE INSPECTION [13B-MSP].) Is there any malfunction? 	Yes Repair or replace the malfunctioning part according to the inspection results. Overhaul or replace the engine, then go to Step 19. No Go to the next step.
16	INSPECT OIL PASSAGE <ul style="list-style-type: none"> Inspect the oil pipe between metering oil pump and metering oil nozzle. Is there any malfunction? 	Yes Inspect for leakage and/or clogged in oil passage at the engine. Repair or replace the malfunctioning part according to the inspection results. Overhaul or replace the engine, then go to Step 19. No Overhaul or replace the engine, then go to Step 19.
17	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> Perform the "FUEL LINE PRESSURE INSPECTION". (See FUEL LINE PRESSURE INSPECTION [13B-MSP].) Is there any malfunction? 	Yes Replace the fuel pump unit, then go to Step 19. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].) No Go to the next step.
18	INSPECT FUEL INJECTOR <ul style="list-style-type: none"> Inspect the fuel injector. (See FUEL INJECTOR INSPECTION [13B-MSP].) Is there any malfunction? 	Yes Replace the fuel injector, then go to the next step. (See FUEL INJECTOR REMOVAL/INSTALLATION [13B-MSP].) No Go to the next step.
19	VERIFY TROUBLESHOOTING OF DTC P0301 OR DTC P0302 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. 	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)

	<p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Start the engine and warm it up completely.• Perform the Pending Trouble Code Access Procedure. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none">• Is the PENDING CODE same as the DTC present?	No	Go to the next step.
20	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?	Yes	Go to the applicable DTC inspection.
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P0410, P0411 [13B-MSP]

DTC P0410	Secondary air injection system problem
DTC P0411	Secondary air injection system incorrect upstream flow
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the A/F sensor output current when the secondary air injection system is operating. If the output current is less than the specification, the PCM determines that there is a secondary air injection system problem. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is an intermittent monitor (AIR system).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Secondary air injection system malfunction<ul style="list-style-type: none">▪ Secondary air injection control valve malfunction▪ Secondary air injection solenoid valve malfunction▪ Secondary air injection pump malfunction• Restrict or damaged in exhaust system• Restrict in TWC• PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2) <ul style="list-style-type: none"> Is the DTC P0410 or P0411 on FREEZE FRAME DATA (Mode 2)? 	Yes Go to the next step.
		No Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [13B-MSP] .)
2	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (AIR system related) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
4	VERIFY RELATED PENDING CODE OR STORED DTC <ul style="list-style-type: none"> Turn the ignition switch off, then ON position (engine off). Verify the related PENDING CODE or stored DTCs using M-MDS. Is other DTC present? 	Yes Go to appropriate DTC troubleshooting procedure. (See DTC TABLE [13B-MSP] .)
		No Go to the next step.
5	INSPECT SECONDARY AIR INJECTION SYSTEM OPERATION <ul style="list-style-type: none"> Perform the Secondary Air Injection (AIR) System Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Perform the "SECONDARY AIR INJECTION (AIR) CONTROL VALVE INSPECTION". 	Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 8.
		No Go to the next step.

	<p>(See SECONDARY AIR INJECTION (AIR) CONTROL VALVE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none">Perform the "SECONDARY AIR INJECTION (AIR) SOLENOID VALVE INSPECTION". <p>(See SECONDARY AIR INJECTION (AIR) SOLENOID VALVE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none">Perform the "SECONDARY AIR INJECTION (AIR) PUMP INSPECTION". <p>(See SECONDARY AIR INJECTION (AIR) PUMP INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none">Is there any malfunction?		
6	<p>VISUALLY INSPECT THE EXHAUST SYSTEM PARTS</p> <ul style="list-style-type: none">Is there any deformed exhaust system part?	Yes	Replace the suspected part, then go to Step 8.
		No	Go to the next step.
7	<p>INSPECT FOR RESTRICTION AT THE TWC</p> <ul style="list-style-type: none">Visually inspect for restriction at the TWC. <p>(See THREE-WAY CATALYTIC CONVERTER (TWC) INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none">Is there any restriction at the TWC?	Yes	Replace the TWC, then go to the next step.
		No	Go to the next step.
8	<p>VERIFY TROUBLESHOOTING OF DTC P0410 OR P0411 COMPLETED</p> <ul style="list-style-type: none">Make sure to reconnect all disconnected connectors.Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">If P0410 diagnosis is completed:<ul style="list-style-type: none">Perform the KOER self test. <p>(See KOE/O/KOER</p>	Yes	Replace the PCM, then go to the next step.
		No	Go to the next step.

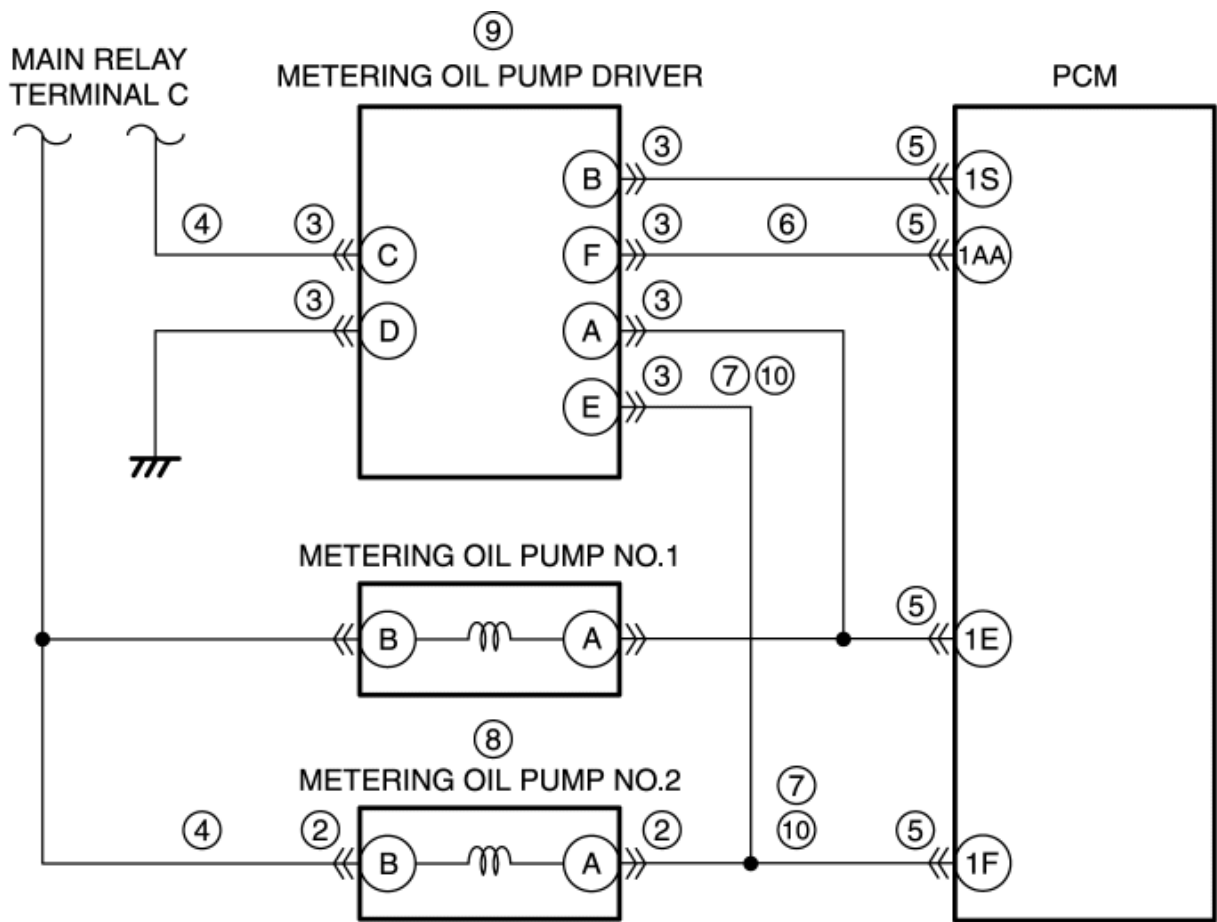
	<p>SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • If P0411 diagnosis is completed: <ul style="list-style-type: none"> ▪ Perform the DRIVE MODE 5 (AIR System Repair Verification Drive Mode). <p>(See OBD-II DRIVE MODE [13B-MSP].)</p> <ul style="list-style-type: none"> • Is the PENDING CODE same as the DTC present? 		
9	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Are any DTCs present? 	<p>YesGo to the applicable DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p>	
		<p>No DTC troubleshooting completed.</p>	

2011 - RX-8 - Engine

DTC P1686 [13B-MSP]

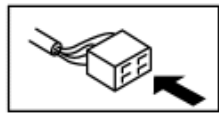
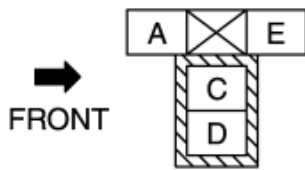
DTC P1686	Metering oil pump No.2 circuit low input
DETECTION CONDITION	<ul style="list-style-type: none">The PCM monitors the input voltage from the metering oil pump No.2 when the battery voltage is more than 8 V and the metering oil pump No.2 control signal turned from ON to OFF. If the input voltage is less than the specification, the PCM determines that the metering oil pump No.2 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none">This is a continuous monitor (other).The MIL does not illuminate.FREEZE FRAME DATA (Mode 2/Mode 12) is not available.The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">Metering oil pump No.2 connector or terminals malfunctionMetering oil pump driver connector or terminals malfunctionShort to ground or open circuit in metering oil pump No.2 power supply circuit<ul style="list-style-type: none">Short to ground in wiring harness between main relay terminal C and metering oil pump No.2 terminal BMetering oil pump No.2 related fuse malfunctionOpen circuit in wiring harness between main relay terminal C and metering oil pump No.2 terminal BShort to ground or open circuit in metering oil pump driver power supply circuit<ul style="list-style-type: none">Short to ground in wiring harness between main relay terminal C and metering oil pump driver terminal CMetering oil pump driver related fuse malfunctionOpen circuit in wiring harness between main relay terminal C and metering oil pump driver terminal CPCM connector or terminals malfunctionShort to power supply in wiring harness between metering oil pump driver terminal F and PCM terminal 1AAShort to ground in wiring harness between metering oil pump No.2 terminal A and PCM terminal 1F

- Short to ground in wiring harness between metering oil pump driver terminal E and PCM terminal 1F
- Metering oil pump No.2 malfunction
- Metering oil pump driver malfunction
- Open circuit in wiring harness between metering oil pump No.2 terminal A and PCM terminal 1F
- Open circuit in wiring harness between metering oil pump driver terminal E and PCM terminal 1F
- PCM malfunction

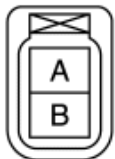


MAIN RELAY CONNECTOR

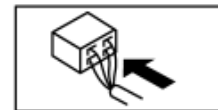
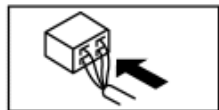
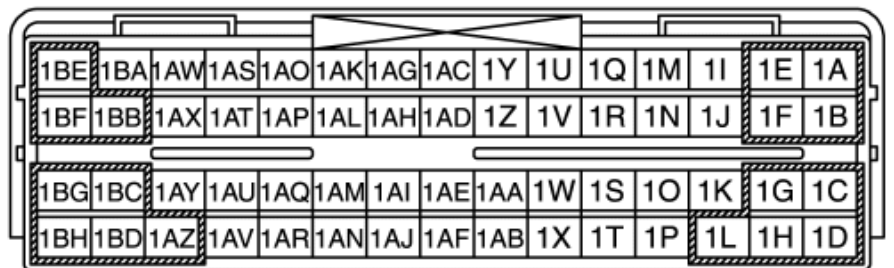
METERING OIL PUMP DRIVER WIRING HARNESS-SIDE CONNECTOR



METERING OIL PUMP NO.1/NO.2 WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



STEP	INSPECTION	ACTION	
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	INSPECT METERING OIL PUMP NO.2 CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the metering oil pump No.2 connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 11.
		No	Go to the next step.
3	INSPECT METERING OIL PUMP DRIVER CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the metering oil pump driver connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 11.
		No	Go to the next step.
4	INSPECT METERING OIL PUMP NO.2 AND METERING OIL PUMP DRIVER POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> • Metering oil pump No.2 and metering oil pump driver connectors are disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between the following circuits: <ul style="list-style-type: none"> ▪ Metering oil pump No.2 terminal B (wiring harness-side) and body ground ▪ Metering oil pump driver terminal C (wiring harness-side) and body ground • Is the voltage B+? 	Yes	Go to the next step.
		No	Inspect the metering oil pump No.2 and metering oil pump driver related fuse. <ul style="list-style-type: none"> • If the fuse is melt: <ul style="list-style-type: none"> ▪ Repair or replace the wiring harness for a possible short to ground. ▪ Replace the fuse. • If the fuse is deterioration:

			<ul style="list-style-type: none"> ▪ Replace the fuse. • If the fuse is normal: <ul style="list-style-type: none"> ▪ Repair or replace the wiring harness for a possible open circuit. <p>Go to Step 11.</p>
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	<p>Yes Repair or replace the connector and/or terminals, then go to Step 11.</p> <p>No Go to the next step.</p>	
6	INSPECT METERING OIL PUMP DRIVER CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Metering oil pump No.2, metering oil pump driver and PCM connectors are disconnected. • Turn the ignition switch to the ON position (engine off). • Measure the voltage between metering oil pump driver terminal F (wiring harness-side) and body ground. • Is there any voltage? 	<p>Yes Repair or replace the wiring harness for a possible short to power supply, then go to Step 11.</p> <p>No Go to the next step.</p>	
7	INSPECT METERING OIL PUMP NO.2 AND METERING OIL PUMP DRIVER CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Metering oil pump No.2, metering oil pump driver and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect the continuity between metering oil pump driver terminal E (wiring harness-side) and body ground. • Is there continuity? 	<p>Yes Repair or replace the wiring harness for a possible short to ground following:</p> <ul style="list-style-type: none"> • Between metering oil pump No.2 terminal A and PCM terminal 1F • Between metering oil pump driver terminal E and PCM terminal 1F <p>Go to Step 11.</p> <p>No Go to the next step.</p>	
8	INSPECT METERING OIL PUMP NO.2	<p>Yes Replace the metering oil pump No.2, then</p>	

	<ul style="list-style-type: none"> Inspect the metering oil pump No.2. <p>(See METERING OIL PUMP INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>go to Step 11.</p> <p>(See METERING OIL PUMP REMOVAL/INSTALLATION [13B-MSP].)</p>
		No Go to the next step.
9	INSPECT METERING OIL PUMP DRIVER <ul style="list-style-type: none"> Inspect the metering oil pump driver. <p>(See METERING OIL PUMP DRIVER INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	<p>Yes Replace the metering oil pump driver, then go to Step 11.</p> <p>(See METERING OIL PUMP DRIVER REMOVAL/INSTALLATION [13B-MSP].)</p>
		No Go to the next step.
10	INSPECT METERING OIL PUMP NO.2 AND METERING OIL PUMP DRIVER CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Metering oil pump No.2, metering oil pump driver and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between the following circuits: <ul style="list-style-type: none"> Metering oil pump No.2 terminal A (wiring harness-side) and PCM terminal 1F (wiring harness-side) Metering oil pump driver terminal E (wiring harness-side) and PCM terminal 1F (wiring harness-side) Is there continuity? 	<p>Yes Go to the next step.</p>
		No Repair or replace the wiring harness for a possible open circuit, then go to the next step.
11	VERIFY TROUBLESHOOTING OF DTC P1686 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Perform the KOER self test. <p>(See KOE/O/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none"> Is the same DTC present? 	<p>Yes Replace the PCM, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p>
		No Go to the next step.
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	<p>Yes Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p>
		No DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P1687 [13B-MSP]

DTC P1687	Metering oil pump No.2 circuit high input
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input voltage from the metering oil pump No.2 when the battery voltage is more than 8 V and the metering oil pump No.2 control signal turned from OFF to ON. If the input voltage is more than the specification, the PCM determines that the metering oil pump No.2 circuit has a malfunction. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (other).• The MIL does not illuminate.• FREEZE FRAME DATA (Mode 2/Mode 12) is not available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Metering oil pump No.2 connector or terminals malfunction• Metering oil pump driver connector or terminals malfunction• PCM connector or terminals malfunction• Short to ground in wiring harness between metering oil pump driver terminal F and PCM terminal 1AA• Short to power supply in wiring harness between metering oil pump No.2 terminal A and PCM terminal 1F• Short to power supply in wiring harness between metering oil pump driver terminal E and PCM terminal 1F• Metering oil pump No.2 malfunction• Metering oil pump driver malfunction• Open circuit in wiring harness between metering oil pump No.2 terminal A and metering oil pump driver terminal E• Open circuit in wiring harness between metering oil pump driver terminal F and PCM terminal 1AA• PCM malfunction

STEP	INSPECTION	ACTION
1	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
2	INSPECT METERING OIL PUMP NO.2 CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the metering oil pump No.2 connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 10.
		No Go to the next step.
3	INSPECT METERING OIL PUMP DRIVER CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the metering oil pump driver connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 10.
		No Go to the next step.
4	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 10.
		No Go to the next step.
5	INSPECT METERING OIL PUMP DRIVER CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Metering oil pump No.2, metering oil pump driver and PCM connectors are disconnected. Turn the ignition switch off. Inspect for continuity between metering oil pump driver terminal F (wiring harness-side) and body ground. Is there continuity? 	Yes Repair or replace the wiring harness for a possible short to ground, then go to Step 10.
		No Go to the next step.
6	INSPECT METERING OIL PUMP NO.2 AND METERING OIL PUMP DRIVER CONTROL CIRCUIT FOR SHORT TO POWER	Yes Repair or replace the wiring harness for

	SUPPLY <ul style="list-style-type: none">• Metering oil pump No.2, metering oil pump driver and PCM connectors are disconnected.• Turn the ignition switch to the ON position (engine off).• Measure the voltage between metering oil pump driver terminal E (wiring harness-side) and body ground.• Is there any voltage?	a possible short to power supply following: <ul style="list-style-type: none">• Between metering oil pump No.2 terminal A and PCM terminal 1F• Between metering oil pump driver terminal E and PCM terminal 1F Go to Step 10.
		No Go to the next step.
7	INSPECT METERING OIL PUMP NO.2 <ul style="list-style-type: none">• Inspect the metering oil pump No.2. (See METERING OIL PUMP INSPECTION [13B-MSP].)• Is there any malfunction?	Yes Replace the metering oil pump No.2, then go to Step 10. (See METERING OIL PUMP REMOVAL/INSTALLATION [13B-MSP].)
		No Go to the next step.
8	INSPECT METERING OIL PUMP DRIVER <ul style="list-style-type: none">• Inspect the metering oil pump driver. (See METERING OIL PUMP DRIVER INSPECTION [13B-MSP].)• Is there any malfunction?	Yes Replace the metering oil pump driver, then go to Step 10. (See METERING OIL PUMP DRIVER REMOVAL/INSTALLATION [13B-MSP].)
		No Go to the next step.
9	INSPECT METERING OIL PUMP NO.2 AND METERING OIL PUMP DRIVER CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none">• Metering oil pump No.2, metering oil pump driver and PCM connectors are disconnected.• Turn the ignition switch off.• Inspect the continuity between the following circuits:<ul style="list-style-type: none">▪ Metering oil pump No.2 terminal A (wiring harness-side) and metering oil pump driver terminal E (wiring harness-side)▪ Metering oil pump driver terminal F (wiring harness-side) and PCM terminal 1AA (wiring harness-side)• Is there continuity?	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to the next step.
10	VERIFY TROUBLESHOOTING OF DTC P1687 COMPLETED <ul style="list-style-type: none">• Make sure to reconnect all disconnected connectors.• Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].)	Yes Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)

	<ul style="list-style-type: none">• Perform the KOER self test. (See KOE0/KOER SELF TEST [13B-MSP].)• Is the same DTC present?	No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the “AFTER REPAIR PROCEDURE”. (See AFTER REPAIR PROCEDURE [13B-MSP].)• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2067 [13B-MSP]

DTC P2067	Fuel gauge sender unit (sub) circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the fuel tank level and input voltage from the fuel gauge sender unit (sub) when the engine is running. If the input voltage is less than 0.78 V and fuel tank level is full, the PCM determines that the fuel gauge sender unit (sub) circuit input voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Instrument cluster malfunction Fuel gauge sender unit (sub) malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED	Yes Go to the next step.
	<ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.

2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	<div> Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. </div> <div> No Go to the next step. </div>
3	INSPECT INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Perform the "INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE". <p>(See INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE.)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	<div> Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 5. </div> <div> No Go to the next step. </div>
4	INSPECT FUEL GAUGE SENDER UNIT (SUB) <ul style="list-style-type: none"> • Inspect the fuel gauge sender unit (sub). <p>(See FUEL GAUGE SENDER UNIT INSPECTION.)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	<div> Yes Replace the fuel gauge sender unit (sub), then go to the next step. <p>(See FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION.)</p> </div> <div> No Go to the next step. </div>
5	VERIFY TROUBLESHOOTING OF DTC P2067 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Start the engine. • Drive the vehicle under the FREEZE FRAME DATA (Mode 2) condition. • Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • Is the PENDING CODE same as DTC present? 	<div> Yes Replace the PCM, then go to the next step. <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> </div> <div> No Go to the next step. </div>

6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2068 [13B-MSP]

DTC P2068	Fuel gauge sender unit (sub) circuit high input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors the fuel tank level and input voltage from the fuel gauge sender unit (sub) when the engine is running. If the input voltage is more than 4.9 V and fuel tank level is empty, the PCM determines that the fuel gauge sender unit (sub) circuit input voltage is high. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA (Mode 2/Mode 12) is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Instrument cluster malfunction Fuel gauge sender unit (sub) malfunction PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	<div>Yes</div> Go to the next step.
		<div>No</div> Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.

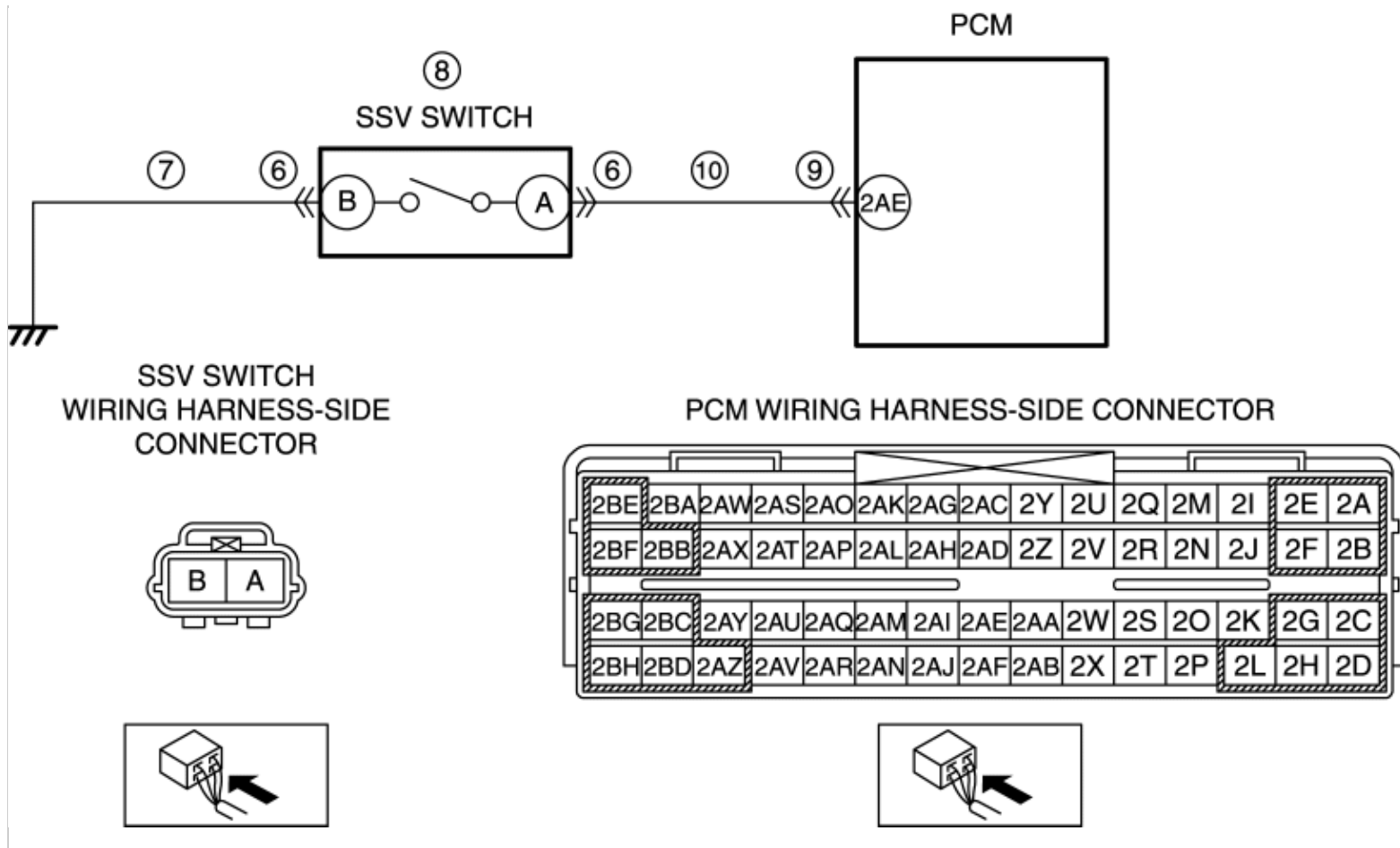
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	<div> <div>Yes</div> <div>Perform repair or diagnosis according to the available repair information.</div> <div> <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. </div> </div> <div> <div>No</div> <div>Go to the next step.</div> </div>
3	INSPECT INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Perform the "INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE". <p>(See INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE.)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	<div> <div>Yes</div> <div>Repair or replace the malfunctioning part according to the inspection results, then go to Step 5.</div> </div> <div> <div>No</div> <div>Go to the next step.</div> </div>
4	INSPECT FUEL GAUGE SENDER UNIT (SUB) <ul style="list-style-type: none"> • Inspect the fuel gauge sender unit (sub). <p>(See FUEL GAUGE SENDER UNIT INSPECTION.)</p> <ul style="list-style-type: none"> • Is there any malfunction? 	<div> <div>Yes</div> <div>Replace the fuel gauge sender unit (sub), then go to the next step.</div> <div> <p>(See FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION.)</p> </div> </div> <div> <div>No</div> <div>Go to the next step.</div> </div>
5	VERIFY TROUBLESHOOTING OF DTC P2068 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Drive the vehicle under the FREEZE FRAME DATA (Mode 2) condition. • Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • Is the PENDING CODE same as DTC present? 	<div> <div>Yes</div> <div>Replace the PCM, then go to the next step.</div> <div> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> </div> </div> <div> <div>No</div> <div>Go to the next step.</div> </div>
6	VERIFY AFTER REPAIR PROCEDURE	<div> <div>Yes</div> <div>Go to the applicable DTC inspection.</div> </div>

	<ul style="list-style-type: none">• Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none">• Are any DTCs present?		(See DTC TABLE [13B-MSP].)
			No DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2070 [13B-MSP]

DTC P2070	SSV stuck open
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the input signal from the SSV switch when the PCM turns the SSV solenoid valve off. If the input signal is on, the PCM determines that the SSV is stuck open. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (CCM).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• SSV control system malfunction• SSV actuator malfunction• SSV solenoid valve malfunction• SSV switch connector or terminals malfunction• Open circuit in wiring harness between SSV switch terminal B and body ground• SSV switch malfunction• PCM connector or terminals malfunction• Open circuit in wiring harness between SSV switch terminal A and PCM terminal 2AE• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA (Mode 12) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT SSV CONTROL SYSTEM OPERATION <ul style="list-style-type: none"> Perform the Secondary Shutter Valve (SSV) Operation Inspection. <p>(See ENGINE CONTROL SYSTEM)</p>	Yes Repair or replace the malfunctioning part according to the inspection results, then go to Step 11.

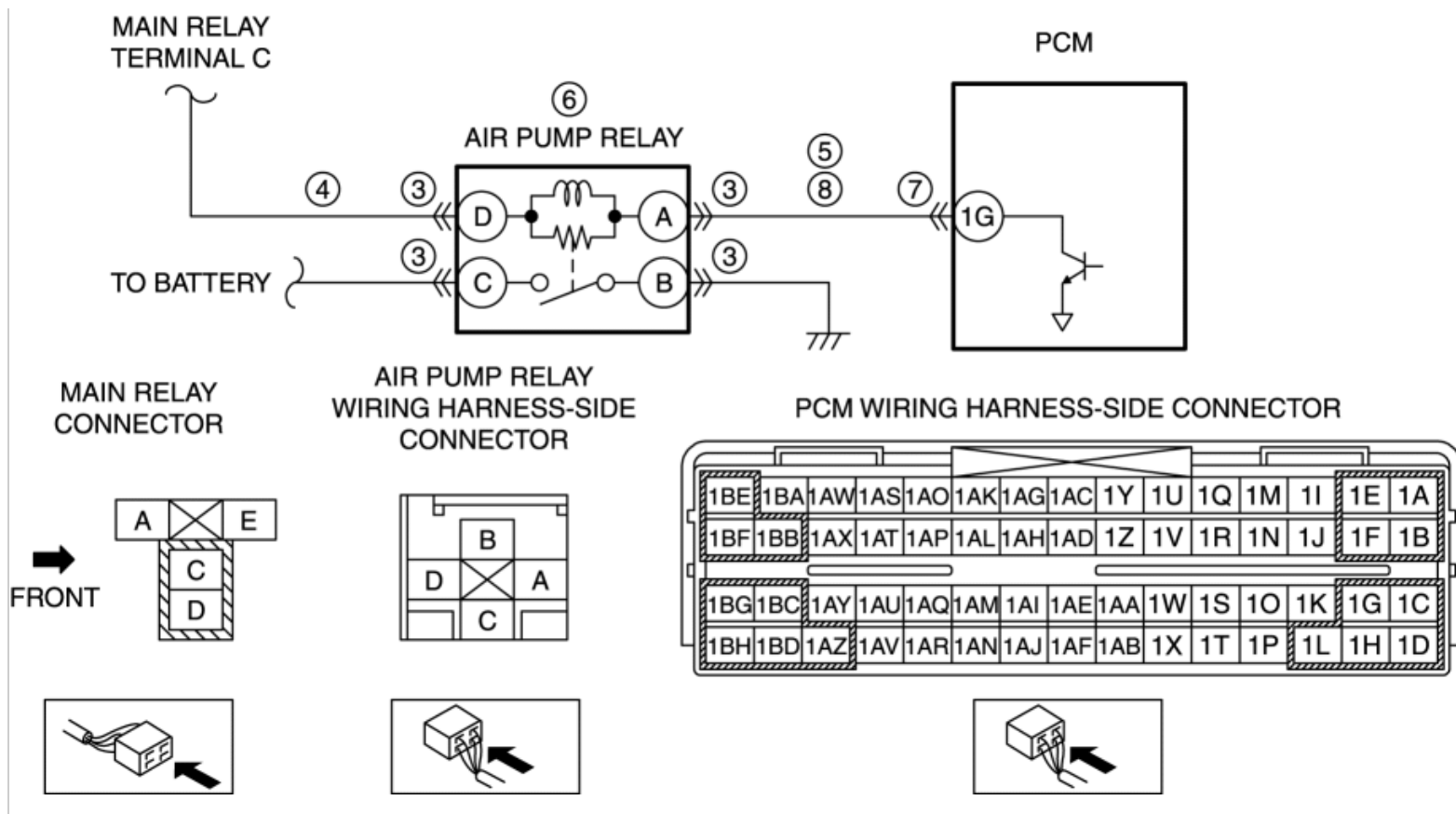
	<p>OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	No	Go to the next step.
4	<p>INSPECT SSV ACTUATOR</p> <ul style="list-style-type: none"> Turn the ignition switch off. Inspect the SSV actuator. <p>(See SECONDARY SHUTTER VALVE (SSV) ACTUATOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	<p>Replace the intake manifold, then go to Step 11.</p> <p>(See INTAKE MANIFOLD REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.
5	<p>INSPECT SSV SOLENOID VALVE</p> <ul style="list-style-type: none"> Inspect the SSV solenoid valve. <p>(See SECONDARY SHUTTER VALVE (SSV) SOLENOID VALVE INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	<p>Replace the SSV solenoid valve, then go to Step 11.</p> <p>(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.
6	<p>INSPECT SSV SWITCH CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the SSV switch connector. Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 11.
		No	Go to the next step.
7	<p>INSPECT SSV SWITCH GROUND CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> SSV switch connector is disconnected. Turn the ignition switch off. Inspect for continuity between SSV switch terminal B (wiring harness-side) and body ground. Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 11.
8	<p>INSPECT SSV SWITCH</p> <ul style="list-style-type: none"> Inspect the SSV switch. <p>(See SECONDARY SHUTTER VALVE (SSV) SWITCH INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is there any malfunction? 	Yes	<p>Replace the SSV switch, then go to Step 11.</p> <p>(See SECONDARY SHUTTER VALVE (SSV) SWITCH REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	Go to the next step.

9	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, and corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 11.
10	INSPECT SSV SWITCH POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • SSV switch and PCM connectors are disconnected. • Turn the ignition switch off. • Inspect for continuity between SSV switch terminal A (wiring harness-side) and PCM terminal 2AE (wiring harness-side). • Is there continuity? 	No	Go to the next step.
11	VERIFY TROUBLESHOOTING OF DTC P2070 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Start the engine and warm up it completely. • Run the engine at high engine speed and high load. • Perform the KOEO or KOER self test. <p>(See KOEO/KOER SELF TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • Is the PENDING CODE same as DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP] .)
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "AFTER REPAIR PROCEDURE". <p>(See AFTER REPAIR PROCEDURE [13B-MSP].)</p> <ul style="list-style-type: none"> • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2257 [13B-MSP]

DTC P2257	AIR pump relay control circuit low
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the AIR pump relay control voltage when the AIR pump is not operating. If the control voltage is less than the specification, the PCM determines that the AIR pump relay control circuit voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (AIR system).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• AIR pump relay terminal malfunction• Short to ground or open circuit in AIR pump relay power supply circuit<ul style="list-style-type: none">▪ Short to ground in wiring harness between main relay terminal C and AIR pump relay terminal D▪ AIR pump relay related fuse malfunction▪ Open circuit in wiring harness between main relay terminal C and AIR pump relay terminal D• Short to ground in wiring harness between AIR pump relay terminal A and PCM terminal 1G• AIR pump relay malfunction• PCM connector or terminals malfunction• Open circuit in wiring harness between AIR pump relay terminal A and PCM terminal 1G• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (AIR system related) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT AIR PUMP RELAY CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Remove the AIR pump relay. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal, then go to Step 9. No Go to the next step.

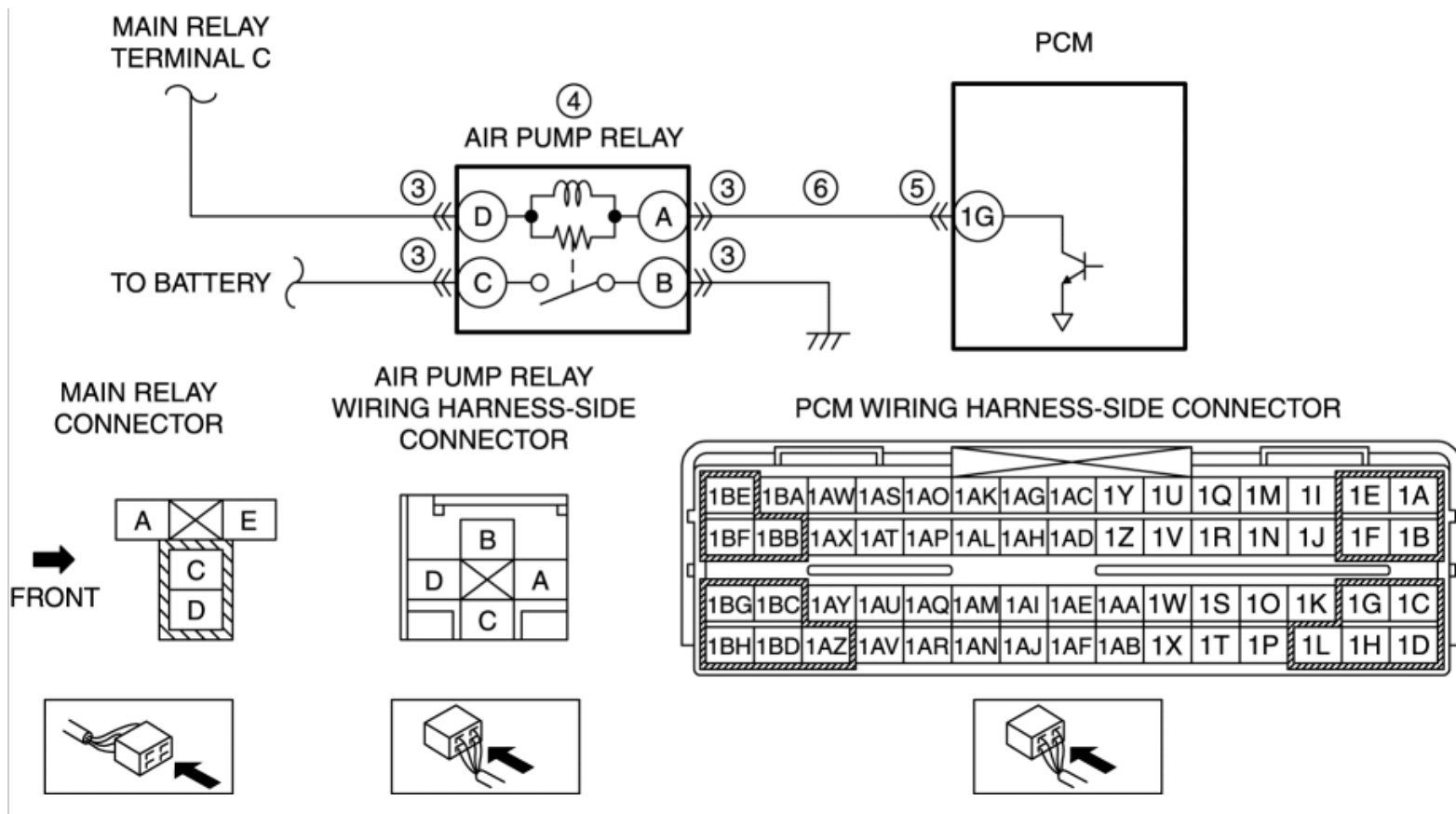
4	INSPECT AIR PUMP RELAY POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> AIR pump relay is removed. Turn the ignition switch to the ON position (engine off). Measure the voltage between AIR pump relay terminal D (wiring harness-side) and body ground. Is the voltage B+? 	<div>YesGo to the next step.</div> <div>NoInspect the AIR pump relay related fuse. <ul style="list-style-type: none"> If the fuse is melt: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. Replace the fuse. If the fuse is deterioration: <ul style="list-style-type: none"> Replace the fuse. If the fuse is normal: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible open circuit. Go to Step 9. </div>
5	INSPECT AIR PUMP RELAY CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> AIR pump relay is removed. Turn the ignition switch off. Inspect for continuity between AIR pump relay terminal A (wiring harness-side) and body ground. Is there continuity? 	<div>YesIf the short to ground circuit could be detected: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: <ul style="list-style-type: none"> Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [13B-MSP].) Go to Step 9. </div> <div>NoGo to the next step.</div>
6	INSPECT AIR PUMP RELAY <ul style="list-style-type: none"> Inspect the AIR pump relay. (See RELAY INSPECTION.) Is there any malfunction? 	<div>YesReplace the AIR pump relay, then go to Step 9. (See RELAY LOCATION.)</div> <div>NoGo to the next step.</div>
7	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	<div>YesRepair or replace the connector and/or terminals, then go to Step 9.</div> <div>NoGo to the next step.</div>
8	INSPECT AIR PUMP RELAY CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> AIR pump relay is removed and PCM connector is disconnected. 	<div>YesGo to the next step.</div> <div>NoRepair or replace the wiring harness for a possible open</div>

	<ul style="list-style-type: none"> Inspect for continuity between AIR pump relay terminal A (wiring harness-side) and PCM terminal 1G (wiring harness-side). Is there continuity? 		circuit, then go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P2257 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the PENDING CODE same as DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2258 [13B-MSP]

DTC P2258	AIR pump relay control circuit high
DETECTION CONDITION	<ul style="list-style-type: none">• Detect the 1.5 A or more in the output driver IC over-current detection circuit even though the AIR pump is not operating. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (AIR system).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• AIR pump relay terminal malfunction• AIR pump relay malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between AIR pump relay terminal A and PCM terminal 1G• PCM malfunction



Diagnostic procedure

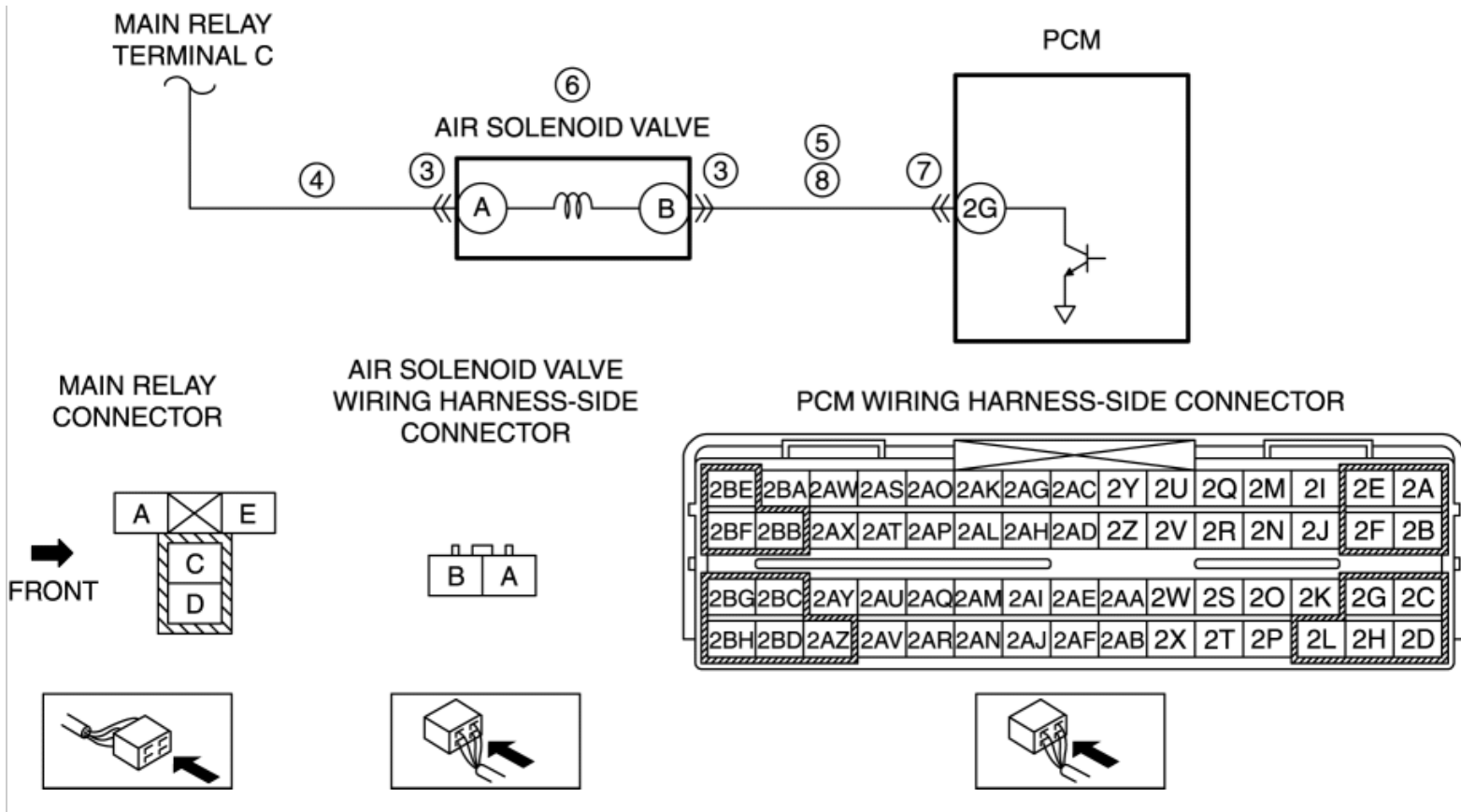
STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (AIR system related) been recorded? 	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT AIR PUMP RELAY CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Remove the AIR pump relay. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the terminal, then go to Step 7. No Go to the next step.

4	INSPECT AIR PUMP RELAY <ul style="list-style-type: none"> Inspect the AIR pump relay. (See RELAY INSPECTION.) Is there any malfunction? 	Yes	Replace the AIR pump relay, then go to Step 7. (See RELAY LOCATION .)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
6	INSPECT AIR PUMP RELAY CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> AIR pump relay is removed and PCM connector is disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between AIR pump relay terminal A (wiring harness-side) and body ground. Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No	Go to the next step.
7	VERIFY TROUBLESHOOTING OF DTC P2258 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the PENDING CODE same as DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP] .)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

DTC P2259 [13B-MSP]

DTC P2259	AIR solenoid valve control circuit low
DETECTION CONDITION	<ul style="list-style-type: none">• The PCM monitors the AIR solenoid valve control voltage when the AIR pump is not operating. If the control voltage is less than 3.5 V, the PCM determines that the AIR solenoid valve control circuit voltage is low. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (AIR system).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• AIR solenoid valve connector or terminals malfunction• Short to ground or open circuit in AIR solenoid valve power supply circuit<ul style="list-style-type: none">▪ Short to ground in wiring harness between main relay terminal C and AIR solenoid valve terminal A▪ AIR solenoid valve related fuse malfunction▪ Open circuit in wiring harness between main relay terminal C and AIR solenoid valve terminal A• Short to ground in wiring harness between AIR solenoid valve terminal B and PCM terminal 2G• AIR solenoid valve malfunction• PCM connector or terminals malfunction• Open circuit in wiring harness between AIR solenoid valve terminal B and PCM terminal 2G• PCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED	YesGo to the next step.
	<ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (AIR system related) been recorded? 	No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY	YesPerform repair or diagnosis according to the available repair information.
	<ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
3	INSPECT AIR SOLENOID VALVE CONNECTOR FOR POOR CONNECTION	No Go to the next step.
	<ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the AIR solenoid valve connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	YesRepair or replace the connector and/or terminals, then go to Step 9.
		No Go to the next step.

4	INSPECT AIR SOLENOID VALVE POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT	Yes	Go to the next step.
	<ul style="list-style-type: none"> AIR solenoid valve connector is disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between AIR solenoid valve terminal A (wiring harness-side) and body ground. Is the voltage B+? 	No	Inspect the AIR solenoid valve related fuse. <ul style="list-style-type: none"> If the fuse is melt: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible short to ground. Replace the fuse. If the fuse is deterioration: <ul style="list-style-type: none"> Replace the fuse. If the fuse is normal: <ul style="list-style-type: none"> Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
5	INSPECT AIR SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> AIR solenoid valve connector is disconnected. Turn the ignition switch off. Inspect for continuity between AIR solenoid valve terminal B (wiring harness-side) and body ground. Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to ground, then go to Step 9.
		No	Go to the next step.
6	INSPECT AIR SOLENOID VALVE <ul style="list-style-type: none"> Inspect the AIR solenoid valve. (See SECONDARY AIR INJECTION (AIR) SOLENOID VALVE INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Replace the AIR solenoid valve, then go to Step 9. (See SECONDARY AIR INJECTION (AIR) SOLENOID VALVE REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
7	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 9.
		No	Go to the next step.
8	INSPECT AIR SOLENOID VALVE CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> AIR solenoid valve and PCM connectors are disconnected. Inspect for continuity between AIR solenoid valve terminal B (wiring harness-side) and 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.

	PCM terminal 2G (wiring harness-side).		
	<ul style="list-style-type: none"> Is there continuity? 		
9	VERIFY TROUBLESHOOTING OF DTC P2259 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the PENDING CODE same as DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

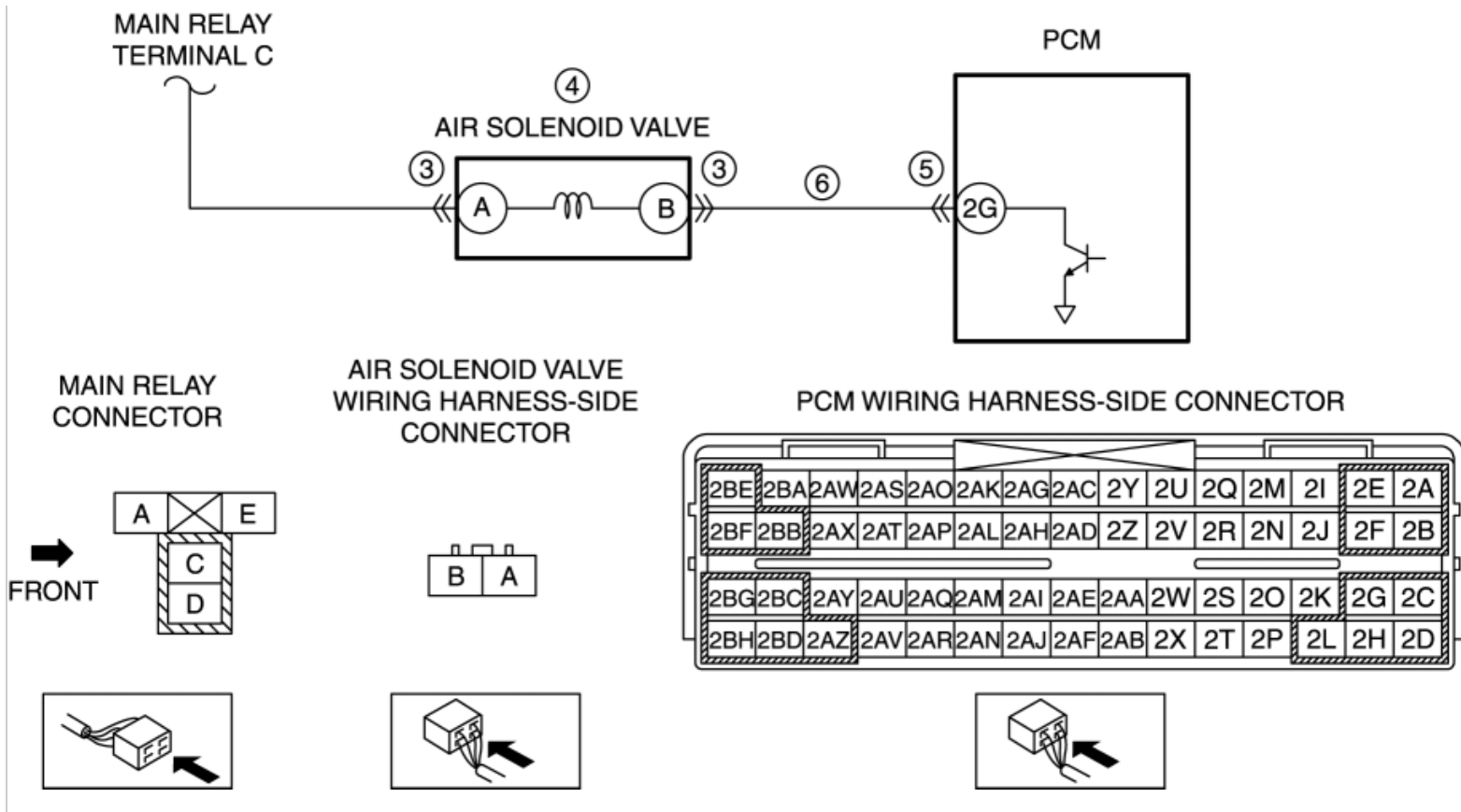
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

DTC P2260 [13B-MSP]

DTC P2260	AIR solenoid valve control circuit high
DETECTION CONDITION	<ul style="list-style-type: none">• Detect the 3 A or more in the output driver IC over-current detection circuit even though the AIR pump is operating. <p>Diagnostic support note</p> <ul style="list-style-type: none">• This is a continuous monitor (AIR system).• The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM.• PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle.• FREEZE FRAME DATA (Mode 2/Mode 12) is available.• The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• AIR solenoid valve connector or terminals malfunction• AIR solenoid valve malfunction• PCM connector or terminals malfunction• Short to power supply in wiring harness between AIR solenoid valve terminal B and PCM terminal 2G• PCM malfunction



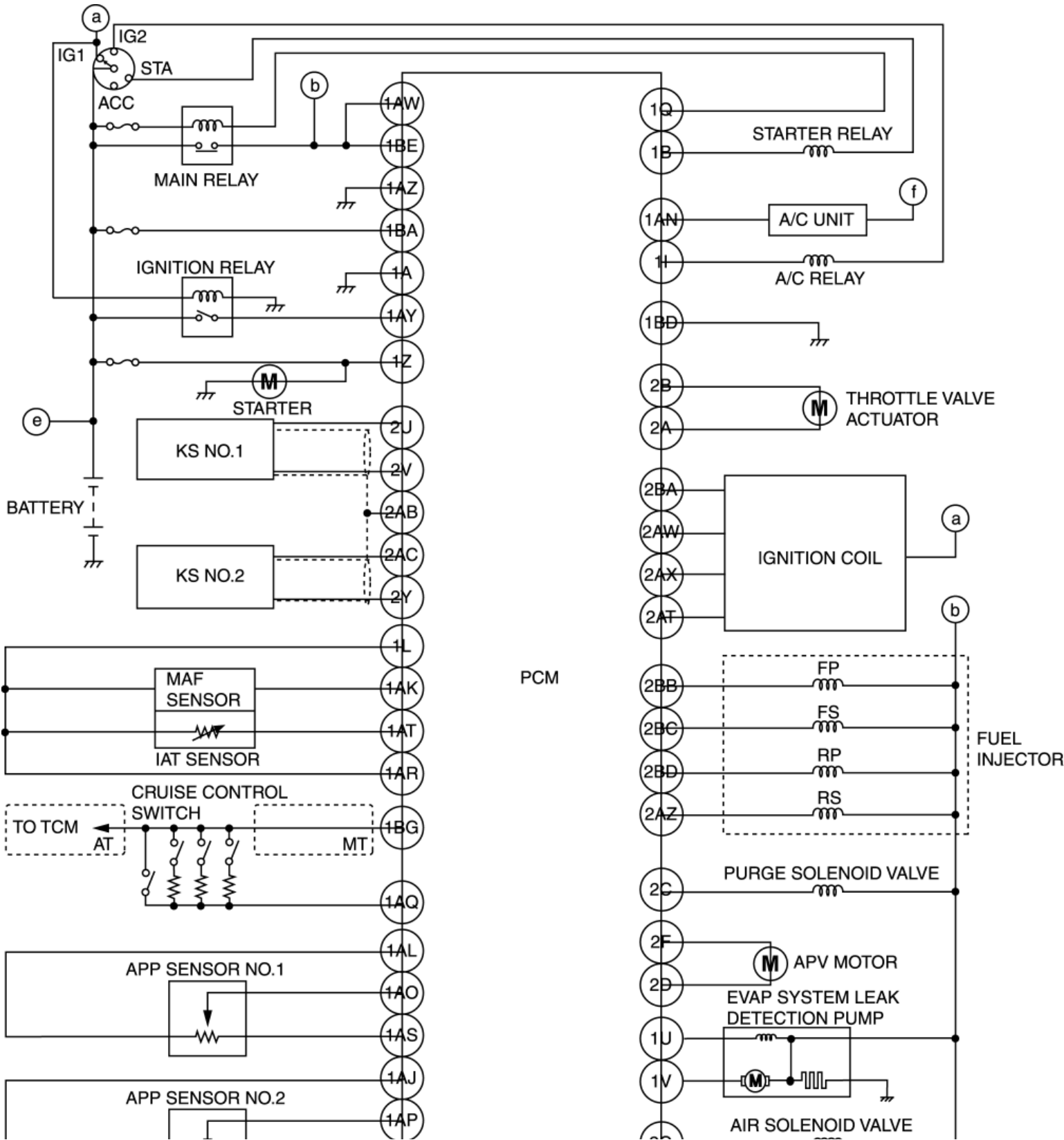
Diagnostic procedure

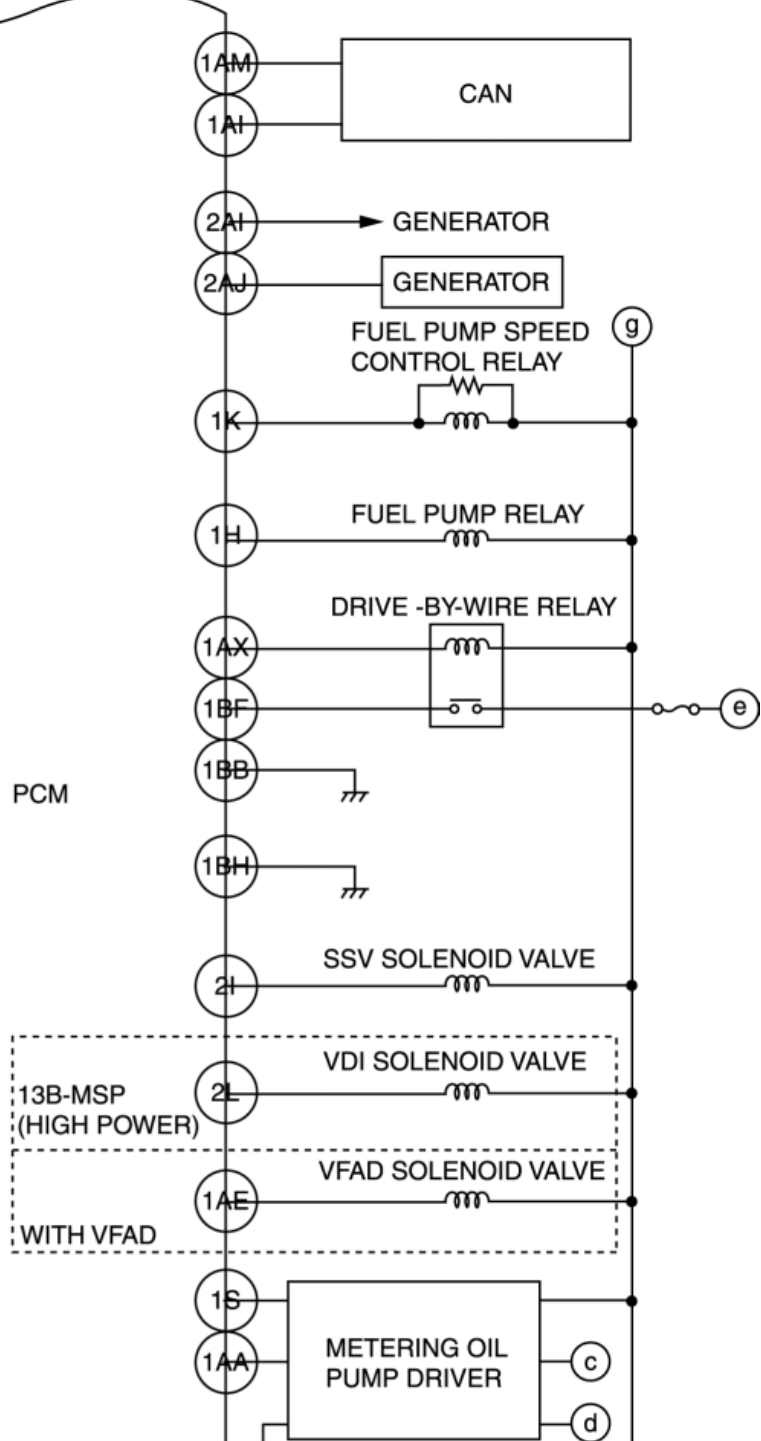
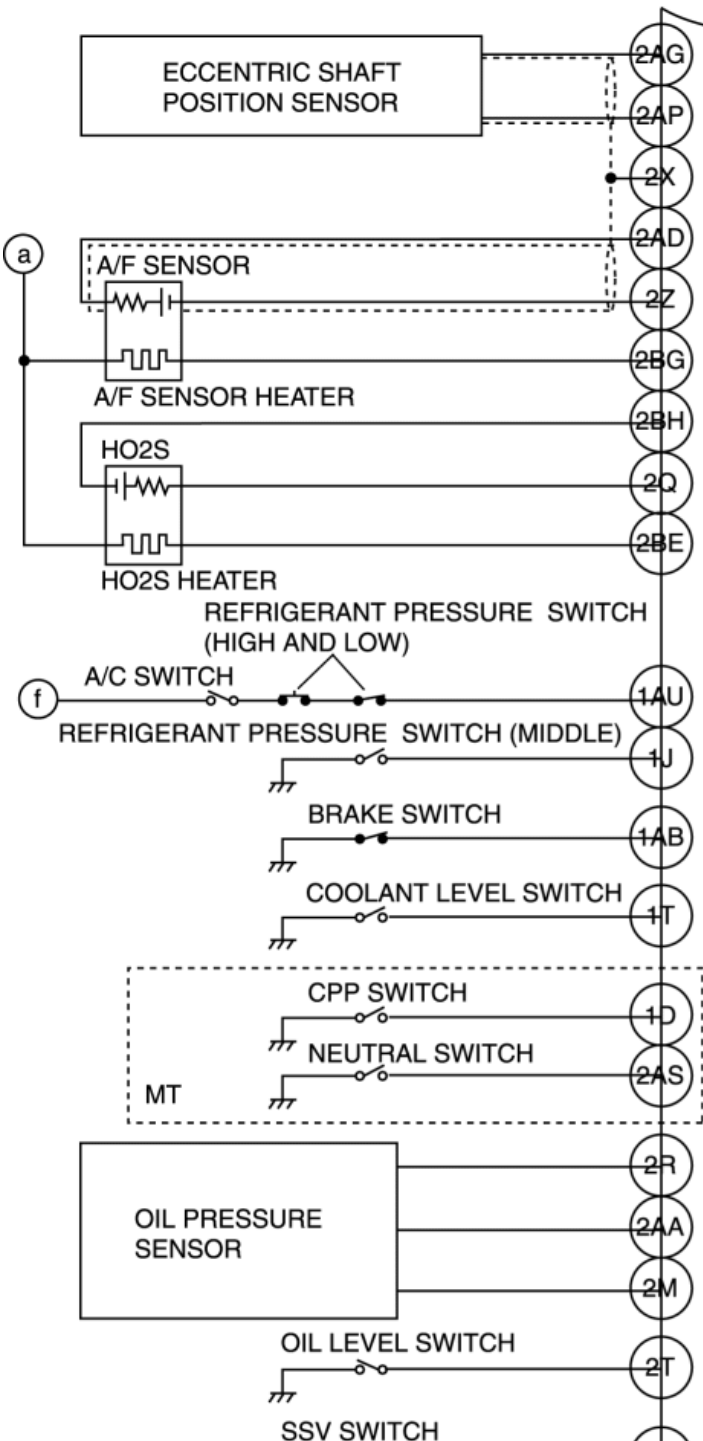
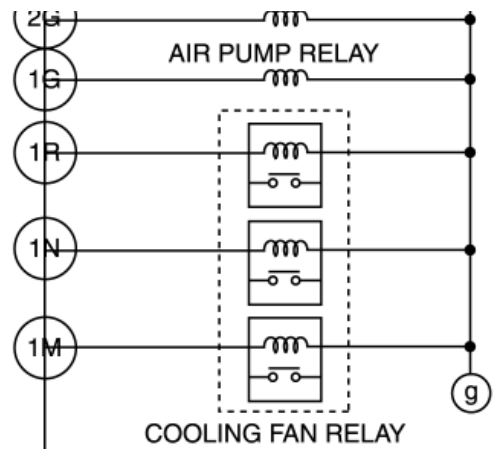
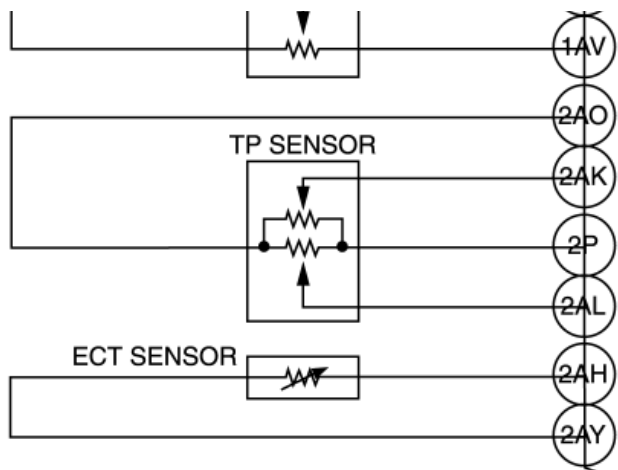
STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 12) AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED <ul style="list-style-type: none"> Have the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS (AIR system related) been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA (Mode 12) and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT AIR SOLENOID VALVE CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the AIR solenoid valve connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes Repair or replace the connector and/or terminals, then go to Step 7.
		No Go to the next step.

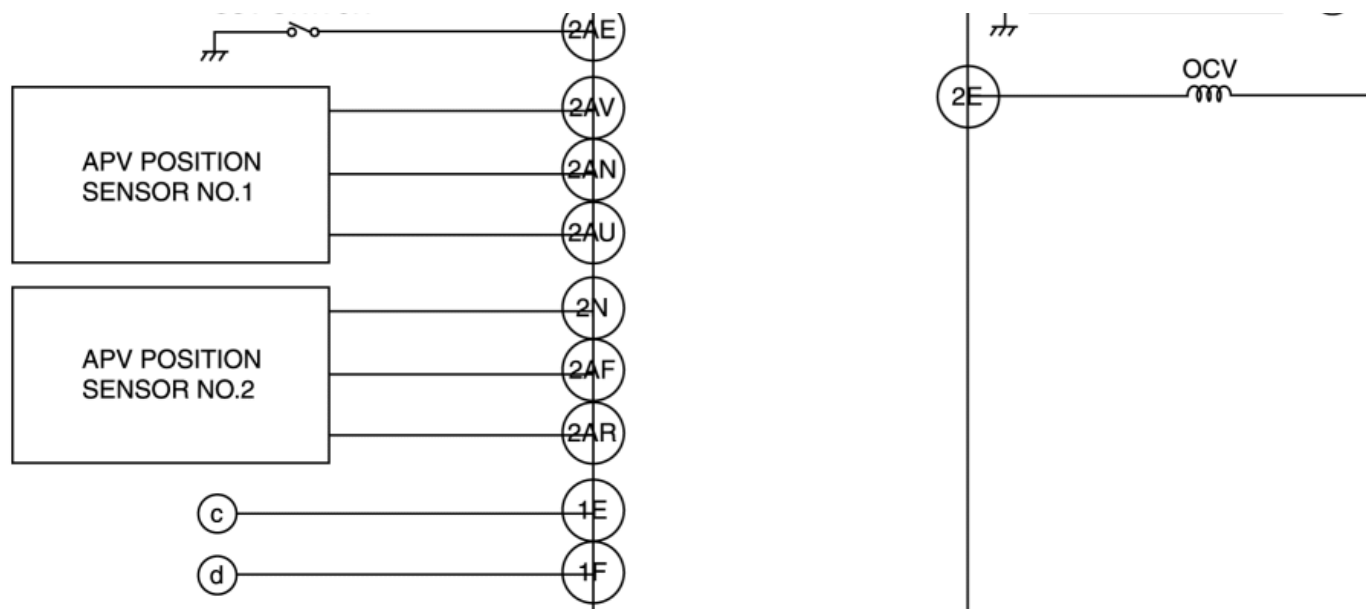
4	INSPECT AIR SOLENOID VALVE <ul style="list-style-type: none"> Inspect the AIR solenoid valve. (See SECONDARY AIR INJECTION (AIR) SOLENOID VALVE INSPECTION [13B-MSP].) Is there any malfunction? 	Yes	Replace the AIR solenoid valve, then go to Step 7. (See SECONDARY AIR INJECTION (AIR) SOLENOID VALVE REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
5	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Disconnect the PCM connector. Inspect for poor connection (such as damaged/pulled-out pins, corrosion). Is there any malfunction? 	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
6	INSPECT AIR SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> AIR solenoid valve and PCM connectors are disconnected. Turn the ignition switch to the ON position (engine off). Measure the voltage between AIR solenoid valve terminal B (wiring harness-side) and body ground. Is the voltage B+? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No	Go to the next step.
7	VERIFY TROUBLESHOOTING OF DTC P2260 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [13B-MSP].) Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [13B-MSP].) Is the PENDING CODE same as DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [13B-MSP].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Engine

SYMPTOM TROUBLESHOOTING WIRING DIAGRAM [13B-MSP]







[< Previous](#) [Next >](#)

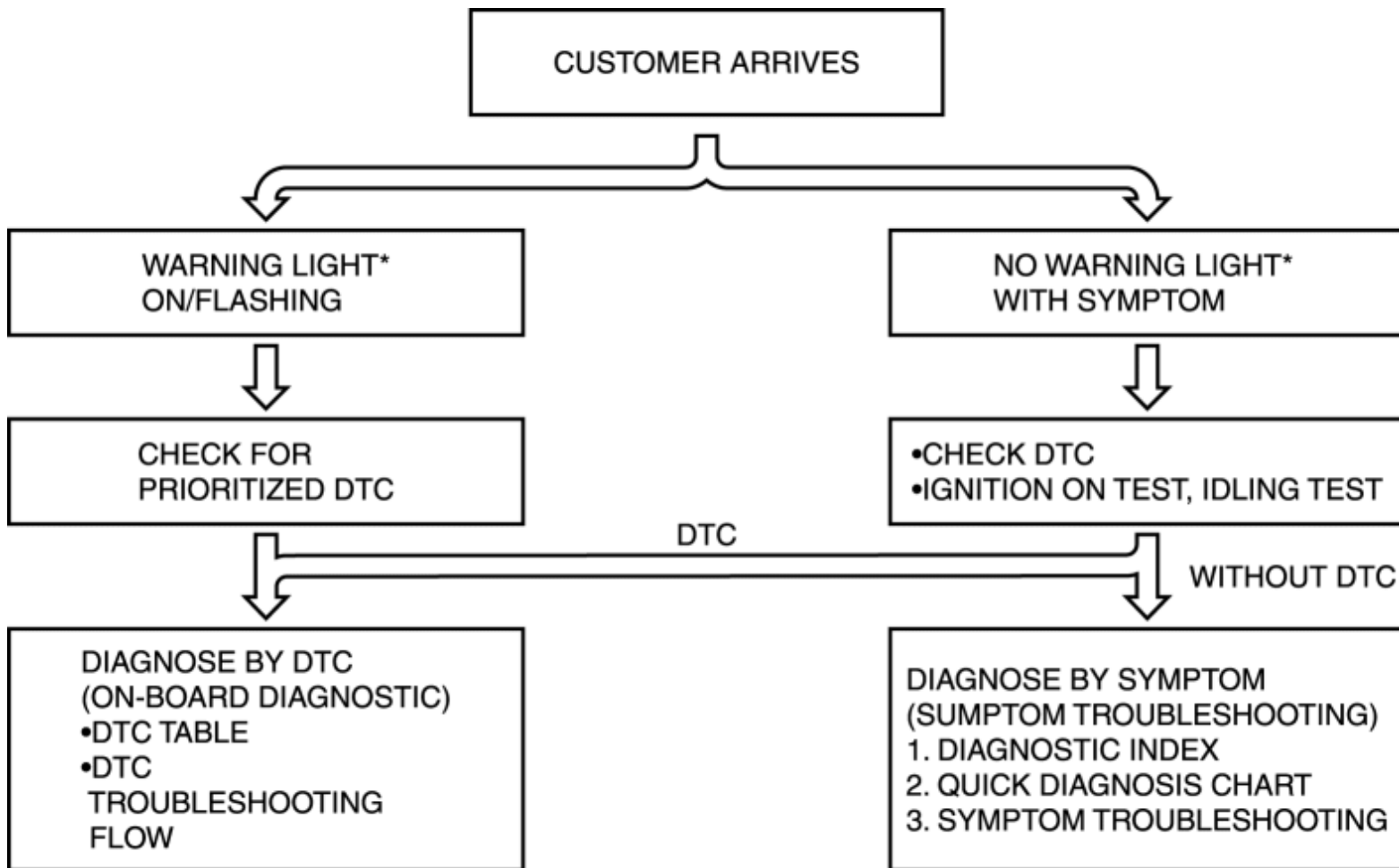
© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

FOREWORD [13B-MSP]

- When the customer reports a vehicle malfunction, check the malfunction indicator lamp (MIL) indication and diagnostic trouble code (DTC), then diagnose the malfunction according to the following flowchart:
 - If a DTC exists, diagnose the applicable DTC inspection. (See [DTC TABLE \[13B-MSP\]](#).)
 - If no DTC exists and the MIL does not illuminate or flash, diagnose the applicable symptom troubleshooting. (See [QUICK DIAGNOSTIC CHART \[13B-MSP\]](#).)



*: Malfunction Indicator Lamp (MIL), Generator Warning Light, Security Light

2011 - RX-8 - Engine

INTERMITTENT CONCERN TROUBLESHOOTING [13B-MSP]

Vibration Method

- If a malfunction occurs or becomes worse while driving on a rough road or when the engine is vibrating, perform the steps below.

NOTE:

- There are several reasons why vehicle or engine vibration could cause an electrical malfunction. Some of the things to check for are:
 - Connectors not fully seated.
 - Wiring harnesses not having full play.
 - Wires laying across brackets or moving parts
 - Wires routed too close to hot parts.
- An improperly routed, improperly clamped, or loose wiring harness can cause wiring to become pinched between parts.
- The connector joints, points of vibration, and places where wiring harnesses pass such as through the firewall and body panels are the major areas to be checked.

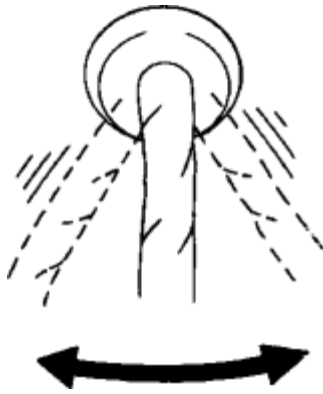
Inspection Method for Switch Connectors or Wires

1. Connect the M-MDS to the DLC-2.
2. Turn the ignition switch to the ON position (engine off).

NOTE:

- If the engine starts and runs, perform the following steps at idle.
3. Access the PIDs for the switch you are inspecting.
 4. Turn the switch on manually.
 5. Shake each connector or wiring harness a bit vertically and horizontally while monitoring the PID.

- If the PID value is unstable, check for poor connection.

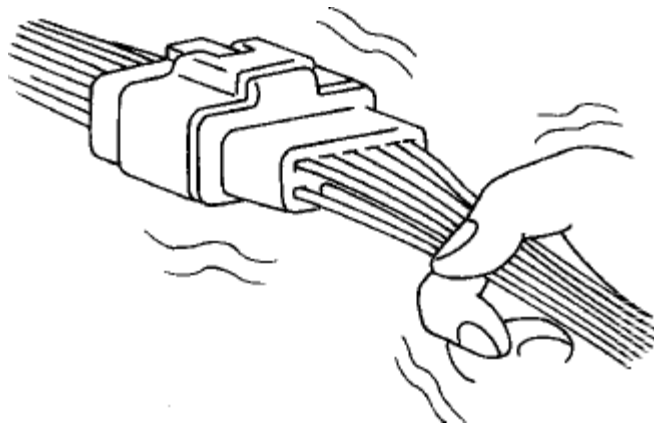


Inspection Method for Sensor Connectors or Wires

1. Connect the M-MDS to the DLC-2.
2. Turn the ignition switch to the ON position (engine off).

NOTE:

- If the engine starts and runs, perform the following steps at idle.
3. Access the PIDs for the switch you are inspecting.
 4. Shake each connector or wiring harness a bit vertically and horizontally while monitoring the PID.
- If the PID value is unstable, check for poor connection.



Inspection Method for Sensors

1. Connect the M-MDS to the DLC-2.
2. Turn the ignition switch to the ON position (engine off).

NOTE:

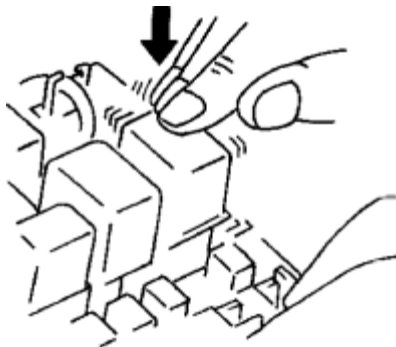
- If the engine starts and runs, perform the following steps at idle.
3. Access the PIDs for the switch you are inspecting.
 4. Vibrate the sensor slightly with your finger.
 - If the PID value is unstable or malfunction occurs, check for poor connection or poorly mounted sensor or both.

Inspection Method for Actuators or Relays

1. Connect the M-MDS to the DLC-2.
2. Turn the ignition switch to the ON position (engine off).

NOTE:

- If the engine starts and runs, perform the following steps at idle.
3. Prepare the output state control function for actuators or relays that you are inspecting.
 4. Vibrate the actuator or relay with your finger for **3 s** after output state control function is activated.
 - If a variable click sound is heard, check for poor connection or poorly mounted actuator or both, or the relay.



NOTE:

- Moving the relays too strongly may result in open relays.

Water Sprinkling Method

CAUTION:

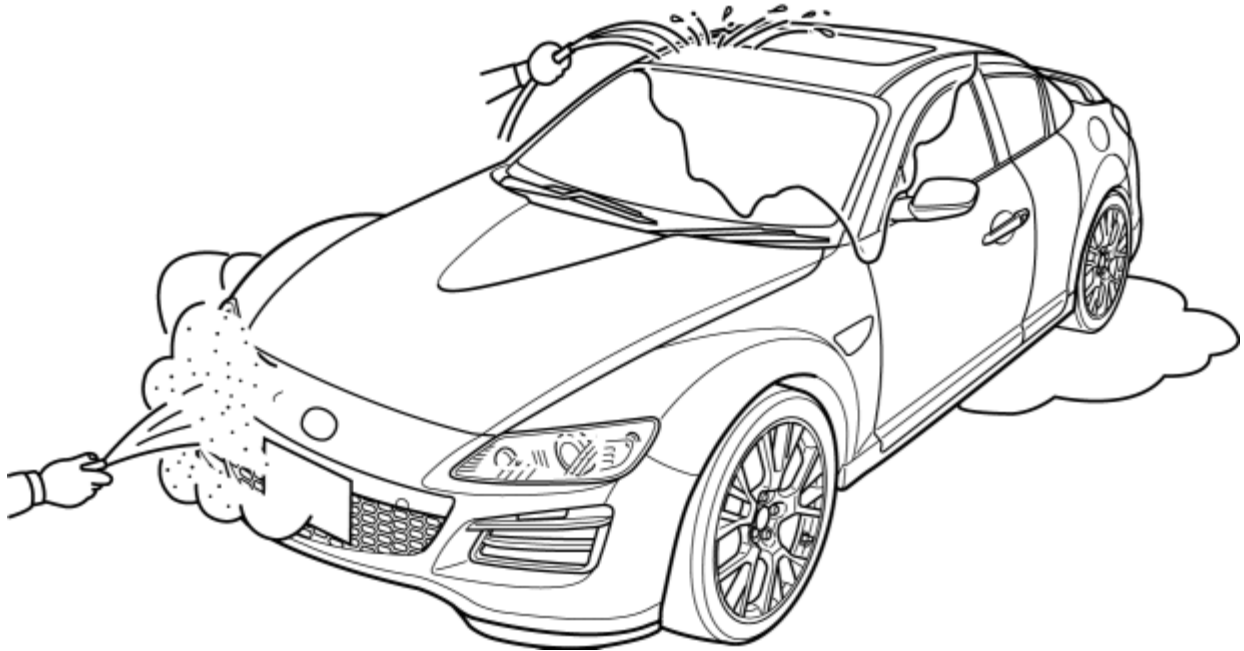
- Indirectly change the temperature and humidity by spraying water onto the front of the radiator.
- If a vehicle is subject to water leakage, the leakage may damage the control module. When testing a vehicle with a water leakage problem, special caution must be used.

If the malfunction occurs only during high humidity or rainy/snowy weather, perform the following steps:

1. Connect the M-MDS to the DLC-2 if you are inspecting sensors or switches.
2. Turn the ignition switch to the ON position (engine off).

NOTE:

- If the engine starts and runs, perform the following steps at idle.
3. Access the PIDs for sensors or switches if you are inspecting sensors or switches.
 4. If you are inspecting the switch, turn it on manually.
 5. Spray water onto the vehicle or run it through a car wash.
- If the PID value is unstable or malfunction occurs, repair or replace the part if necessary.



[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

SYMPTOM DIAGNOSTIC INDEX [13B-MSP]

- Confirm trouble symptom using the following diagnostic index, then go to the applicable troubleshooting chart.

Diagnostic Index

No.	TROUBLESHOOTING ITEM		DESCRIPTION	PAGE
1	Melting of main or other fuses		—	(See NO.1 MELTING OF MAIN OR OTHER FUSES [13B-MSP].)
2	MIL illuminates		<ul style="list-style-type: none"> • The MIL is illuminated incorrectly. 	(See NO.2 MIL ILLUMINATES [13B-MSP].)
3	Will not crank		<ul style="list-style-type: none"> • The starter does not work. 	(See NO.3 WILL NOT CRANK [13B-MSP].)
4	Hard to start/long crank/erratic start/erratic crank		<ul style="list-style-type: none"> • The starter cranks engine at the normal speed but the engine requires excessive cranking time before starting. • The battery is in the normal condition. 	(See NO.4 HARD TO START/LONG CRANK/ERRATIC START/ERRATIC CRANK [13B-MSP].)
5	Engine stalls	After start/at idle	<ul style="list-style-type: none"> • Engine stops unexpectedly. 	(See NO.5 ENGINE STALLS-AFTER START/AT IDLE [13B-MSP].)
6	Crank normally but will not start		<ul style="list-style-type: none"> • The starter cranks the engine at normal speed but the engine will not run. • Refer to the symptom troubleshooting "No.5 Engine stalls" if this symptom appears after engine stall. • The fuel is in the tank. • The battery is in normal condition. 	(See NO.6 CRANKS NORMALLY BUT WILL NOT START [13B-MSP].)
7	Slow return to idle		<ul style="list-style-type: none"> • The engine takes more time than normal to return to idle speed. 	(See NO.7 SLOW RETURN TO IDLE [13B-MSP].)
8	Engine runs rough/rolling idle		<ul style="list-style-type: none"> • The engine speed fluctuates between the specified idle speed and a lower speed, and the engine shakes 	(See NO.8 ENGINE RUNS

			<ul style="list-style-type: none"> excessively. The idle speed is too slow and the engine shakes excessively. 	ROUGH/ROLLING IDLE [13B-MSP].)
9	Fast idle/runs on		<ul style="list-style-type: none"> The engine speed continues at fast idle after warm-up. The engine runs after the ignition switch is turned off. 	(See NO.9 FAST IDLE/RUNS ON [13B-MSP].)
10	Low idle/stalls during deceleration		<ul style="list-style-type: none"> The engine stops unexpectedly at the beginning of deceleration or recovery from deceleration. 	(See NO.10 LOW IDLE/STALLS DURING DECELERATION [13B-MSP].)
11	Engine stalls/quits	Acceleration/cruise	<ul style="list-style-type: none"> The engine stops unexpectedly at the beginning of acceleration or during acceleration. The engine stops unexpectedly while cruising. 	(See NO.11 ENGINE STALLS/QUITS, ENGINE RUNS ROUGH, MISSES, BUCK/JERK, HESITATION/STUMBLE, SURGES [13B-MSP].)
	Engine runs rough	Acceleration/cruise	<ul style="list-style-type: none"> The engine speed fluctuates during acceleration or cruising. 	
	Misses	Acceleration/cruise	<ul style="list-style-type: none"> The engine misses during acceleration or cruising. 	
	Buck/jerk	Acceleration/cruise/deceleration	<ul style="list-style-type: none"> The vehicle bucks/jerks during acceleration, cruising, or deceleration. 	
	Hesitation/stumble	Acceleration	<ul style="list-style-type: none"> The momentary pause at the beginning of acceleration or during acceleration. 	
	Surges	Acceleration/cruise	<ul style="list-style-type: none"> The momentary minor irregularity in the engine output. 	
12	Lack/loss of power	Acceleration/cruise	<ul style="list-style-type: none"> The performance is poor under load (e.g. power down when climbing hills). 	(See NO.12 LACK/LOSS OF POWER-ACCELERATION/CRUISE [13B-MSP].)
13	Knocking/pinging/detonation	Acceleration/cruise	<ul style="list-style-type: none"> A sound is produced when the air/fuel mixture is ignited by something other than the spark plug (e.g. 	(See NO.13 KNOCKING/PINGING/DETONATION-ACCELERATION/CRUISE [13B-

			hot spot in combustion chamber).	MSP].)
14	Poor fuel economy		<ul style="list-style-type: none"> The fuel economy is unsatisfactory. 	(See NO.14 POOR FUEL ECONOMY [13B-MSP].)
15	Emission compliance		<ul style="list-style-type: none"> Fails emissions test. 	(See NO.15 EMISSION COMPLIANCE [13B-MSP].)
16	High oil consumption/leakage		<ul style="list-style-type: none"> The oil consumption is excessive. 	(See NO.16 HIGH OIL CONSUMPTION/LEAKAGE [13B-MSP].)
17	Cooling system concerns	Overheating	<ul style="list-style-type: none"> The engine runs at higher than normal temperature/overheats. 	(See NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [13B-MSP].)
18	Cooling system concerns	Runs cold	<ul style="list-style-type: none"> The engine takes excessive time to reach the normal operating temperature. 	(See NO.18 COOLING SYSTEM CONCERNS-RUNS COLD [13B-MSP].)
19	Exhaust smoke		<ul style="list-style-type: none"> Blue, black, or white smoke from the exhaust system. 	(See NO.19 EXHAUST SMOKE [13B-MSP].)
20	Fuel odor (in engine compartment)		<ul style="list-style-type: none"> Gasoline fuel odor or visible leakage. 	(See NO.20 FUEL ODOR (IN ENGINE COMPARTMENT) [13B-MSP].)
21	Engine noise		<ul style="list-style-type: none"> Engine noise from under the hood. 	(See NO.21 ENGINE NOISE [13B-MSP].)
22	Vibration concerns (engine)		<ul style="list-style-type: none"> Vibration from under hood or driveline. 	(See NO.22 VIBRATION CONCERNS (ENGINE) [13B-MSP].)
23	A/C does not work sufficiently		<ul style="list-style-type: none"> The A/C compressor magnetic clutch does not engage when the A/C switch is turned on. 	(See NO.23 A/C DOES NOT WORK SUFFICIENTLY [13B-MSP].)
24	A/C is always on or A/C compressor runs continuously		<ul style="list-style-type: none"> The A/C compressor magnetic clutch does not disengage. 	(See NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [13B-MSP].)
25	A/C is not cut off under wide open throttle conditions		<ul style="list-style-type: none"> The A/C compressor magnetic clutch does not disengage under wide open throttle. 	(See NO.25 A/C IS NOT CUT OFF UNDER WIDE OPEN THROTTLE CONDITIONS [13B-MSP].)
26	Exhaust sulphur smell		<ul style="list-style-type: none"> Rotten egg smell (sulphur) from exhaust. 	(See NO.26 EXHAUST SULPHUR SMELL [13B-MSP].)
27	Fuel refill concerns		<ul style="list-style-type: none"> The fuel tank does not fill smoothly. 	(See NO.27 FUEL REFILL CONCERNS [13B-MSP].)
28	Fuel filling shut off concerns		<ul style="list-style-type: none"> The fuel does not shut 	(See NO.28 FUEL FILLING SHUT

			off properly.	OFF CONCERNS [13B-MSP].)
29	Spark plug condition		<ul style="list-style-type: none">• Incorrect spark plug condition.	(See NO.29 SPARK PLUG CONDITION [13B-MSP].)
30	AT concerns	Upshift/downshift engagement	<ul style="list-style-type: none">• AT concerns not related to engine performance.	(See SYMPTOM TROUBLESHOOTING ITEM TABLE [SJ6A-EL].)

2011 - RX-8 - Engine

QUICK DIAGNOSTIC CHART [13B-MSP]

Possible factor																				
Troubleshooting item			Catalyst converter malfunction	Nonreturn valve malfunction	EVAP pipe clogging	Fuel shut-off valve malfunction	Improper air/fuel ratio control	ECT sensor malfunction (abnormal signal to PCM)	Erratic signal from eccentric shaft position sensor	No signal from eccentric shaft position sensor	MAF sensor malfunction (abnormal signal to PCM)	APP sensor malfunction	TP sensor malfunction	Improper fuel injection control operation	MAF sensor improper installation	IAT sensor malfunction (abnormal signal to PCM)	Improper load signal input (neutral/CPP switch, TR switch etc.)	Improper ignition timing	Brake switch malfunction (abnormal signal to PCM)	
1	Melting of main or other fuses																			
2	MIL illuminates		x				x	x	x		x	x	x	x		x	x		x	
3	Will not crank																x			
4	Hard to start/long crank/erratic start/erratic crank						x	x	x		x				x					
5	Engine stalls	After start/at idle					x	x	x						x	x				
6	Crank normally but will not start						x	x	x	x	x	x	x	x						
7	Slow return to idle							x												
8	Engine runs rough/rolling idle							x	x		x	x	x	x	x	x	x	x		
9	Fast idle/runs on							x				x		x			x			
10	Low idle/stalls during deceleration										x	x	x		x	x	x		x	
11	Engine stalls/quits	Acceleration/cruise					x	x	x		x	x	x		x	x	x			
	Engine runs rough	Acceleration/cruise					x	x	x		x	x	x		x	x	x			
	Misses	Acceleration/cruise/ deceleration					x	x	x		x	x	x		x	x	x			
	Buck/jerk	Acceleration/cruise/ deceleration					x	x	x		x	x	x		x	x	x			
	Hesitation/stumble	Acceleration					x	x	x		x	x	x		x	x	x			
	Surges	Acceleration/cruise					x	x	x		x	x	x		x	x	x			
12	Lack/loss of power							x	x		x	x	x	x	x	x		x		
13	Knocking/pinging/ detonation							x	x		x			x	x	x		x		
14	Poor fuel economy							x			x			x	x	x		x		
15	Emissions compliance		x				x		x											
16	High oil consumption/leakage																			
17	Cooling system concerns	Overheating																		
18	Cooling system concerns	Runs cold																		
19	Exhaust smoke																			
20	Fuel odor (in engine compartment)																			
21	Engine noise																			
22	Vibration concerns (engine)																			
23	A/C does not work sufficiently																			
24	A/C is always on or A/C compressor runs continuously																			
25	A/C is not cut off under wide open throttle conditions											x								
26	Exhaust sulphur smell																			
27	Fuel refill concerns			x	x															
28	Fuel filling shut off concerns			x	x	x														
29	Spark plug condition						x	x			x									
30	AT concerns	Upshift/downshift engagement	See Section 05-03. SYMPTOM TROUBLESHOOTING.																	

Possible factor																										
Troubleshooting item			Improper vehicle speed signal input	Main relay malfunction	A/F sensor malfunction (abnormal signal to PCM)	HO2S malfunction (abnormal signal to PCM)	KS malfunction (abnormal signal to PCM)	Instrument cluster malfunction	Starting system malfunction	Low or dead battery	Charging system malfunction	Starter interlock switch malfunction (MT)	Improper engine compression	Engine internal parts malfunction	Excessive carbon built up in combustion chamber or intake port	Improper metering oil pump control operation	Metering oil pump malfunction	Oil nozzle malfunction (leakage/clogging)	Low oil pressure	Oil passage leakage/clogging	Air mixed in oil passage	Improper dipstick	No PCM power supply	Open PCM and/or vehicle GND		
1	Melting of main or other fuses																									
2	MIL illuminates				x	x	x	x																		
3	Will not crank								x	x	x	x	x	x			x	x	x	x	x	x				
4	Hard to start/long crank/erratic start/erratic crank								x				x	x			x	x	x	x	x	x				
5	Engine stalls	After start/at idle											x	x			x	x	x	x	x	x		x		
6	Crank normally but will not start												x	x			x	x	x	x	x	x		x		
7	Slow return to idle																									
8	Engine runs rough/rolling idle												x	x	x		x	x	x	x	x	x				
9	Fast idle/runs on												x	x			x	x	x	x	x	x				
10	Low idle/stalls during deceleration												x	x			x	x	x	x	x	x				
11	Engine stalls/quits	Acceleration/cruise	x	x	x	x							x	x			x	x	x	x	x	x				
	Engine runs rough	Acceleration/cruise	x	x	x	x							x	x			x	x		x	x	x				
	Misses	Acceleration/cruise/ deceleration	x	x	x	x							x	x			x	x		x	x	x				
	Buck/jerk	Acceleration/cruise/ deceleration	x	x	x	x							x	x			x	x		x	x	x				
	Hesitation/stumble	Acceleration	x	x	x	x							x	x			x	x		x	x	x				
	Surges	Acceleration/cruise	x	x	x	x							x	x			x	x		x	x	x				
12	Lack/loss of power	Acceleration/cruise			x	x							x	x			x	x	x	x	x	x				
13	Knocking/pinging/ detonation	Acceleration/cruise					x						x	x	x		x	x	x	x	x	x				
14	Poor fuel economy				x	x	x						x	x			x	x	x	x	x	x				
15	Emissions compliance												x	x	x		x	x	x	x	x	x				
16	High oil consumption/leakage													x			x	x					x			
17	Cooling system concerns	Overheating																								
18	Cooling system concerns	Runs cold																								
19	Exhaust smoke												x	x			x	x	x	x	x	x				
20	Fuel odor (in engine compartment)																									
21	Engine noise																									
22	Vibration concerns (engine)																									
23	A/C does not work sufficiently																									
24	A/C is always on or A/C compressor runs continuously																									
25	A/C is not cut off under wide open throttle conditions																									
26	Exhaust sulphur smell																									
27	Fuel refill concerns																									
28	Fuel filling shut off concerns																									
29	Spark plug condition				x								x	x			x	x	x	x	x	x				
30	AT concerns	Upshift/downshift engagement																								
			See Section 05-03. SYMPTOM TROUBLESHOOTING.																							

See Section 05-03, SYMPTOM TROUBLESHOOTING.

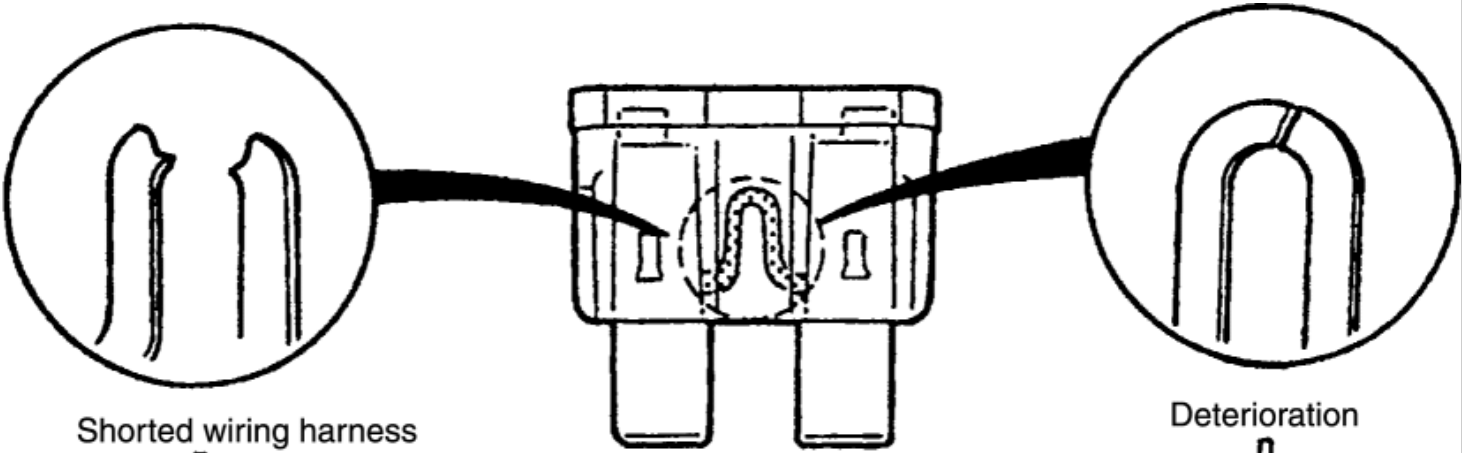
x: Applied

Troubleshooting item			Possible factor	Cooling system malfunction	Eccentric shaft bypass valve stuck open or close	Improper engine oil viscosity/amount/deterioration	Clutch slippage (MT)	Improper TCC control operation (AT)	AT malfunction (AT)	Improper shift point (AT)	Brake dragging	Tire pressure	Low tire pressure	Improper cruise control system operation	Loose installation of engine mounts	Inadequate fuel filling speed	Improper use of fuel nozzle	Oil pump noise (gear and/drive chain)	Loose parts (exhaust, suspension, mounts etc.)	Drive belt malfunction (improper tension, damage)
1	Melting of main or other fuses																			
2	MIL illuminates		x																	
3	Will not crank				x															
4	Hard to start/long crank/erratic start/erratic crank				x															
5	Engine stalls	After start/at idle			x															
6	Crank normally but will not start				x															
7	Slow return to idle			x																
8	Engine runs rough/rolling idle				x															
9	Fast idle/runs on													x						
10	Low idle/stalls during deceleration				x		x								x					
11	Engine stalls/quits	Acceleration/cruise			x	x	x	x	x											
	Engine runs rough	Acceleration/cruise			x	x	x	x	x											
	Misses	Acceleration/cruise/deceleration			x	x	x	x	x											
	Buck/jerk	Acceleration/cruise/deceleration			x	x	x	x	x											
	Hesitation/stumble	Acceleration			x	x	x	x	x											
	Surges	Acceleration/cruise			x	x	x	x	x											
12	Lack/loss of power	Acceleration/cruise			x	x	x	x		x		x								
13	Knocking/pinging/detonation	Acceleration/cruise	x	x	x															
14	Poor fuel economy			x	x	x		x		x	x	x								
15	Emissions compliance		x		x															
16	High oil consumption/leakage																			
17	Cooling system concerns	Overheating	x	x																x
18	Cooling system concerns	Runs cold	x	x																
19	Exhaust smoke		x		x															
20	Fuel odor (in engine compartment)																			
21	Engine noise				x													x	x	x
22	Vibration concerns (engine)																	x		
23	A/C does not work sufficiently																			
24	A/C is always on or A/C compressor runs continuously																			
25	A/C is not cut off under wide open throttle conditions																			
26	Exhaust sulphur smell																			
27	Fuel refill concerns															x	x			
28	Fuel filling shut off concerns															x	x			
29	Spark plug condition				x															
30	AT concerns	Upshift/downshift engagement																		

See Section 05-03. SYMPTOM TROUBLESHOOTING.

2011 - RX-8 - Engine

NO.1 MELTING OF MAIN OR OTHER FUSES [13B-MSP]

1	MELTING OF MAIN OR OTHER FUSES
[TROUBLESHOOTING HINTS]	
Inspect condition of fuse.	
	

Damaged fuse	Related wiring harness
MAIN	<div>MAIN fuse</div> <ul style="list-style-type: none">• FAN1 fuse• FAN2 fuse• Generator• ACC fuse• AIR PUMP fuse• BTN fuse
FAN1	<div>FAN1 fuse</div>

	<ul style="list-style-type: none"> • Cooling fan relay No.1 • Cooling fan relay No.5
FAN2	FAN2 fuse <ul style="list-style-type: none"> • Cooling fan relay No.3 • Cooling fan relay No.4
ACC	ACC fuse <ul style="list-style-type: none"> • Starter relay <ul style="list-style-type: none"> ▪ ST fuse
ST	ST fuse <ul style="list-style-type: none"> • PCM
AIR PUMP	AIR PUMP fuse <ul style="list-style-type: none"> • Secondary air injection pump relay
BTN	BTN fuse <ul style="list-style-type: none"> • ROOM fuse
ROOM	ROOM fuse <ul style="list-style-type: none"> • PCM • DLC-2
FUEL PUMP	FUEL PUMP fuse <ul style="list-style-type: none"> • Fuel pump relay (low pressure)
IG	IG fuse <ul style="list-style-type: none"> • Ignition relay <ul style="list-style-type: none"> ▪ ENGINE fuse ▪ TCM fuse ▪ WIPER fuse
ENGINE	ENGINE fuse <ul style="list-style-type: none"> • Steering angle sensor (with DSC) • Combined sensor (with DSC) • Coil (immobilizer system) • Seat weight sensor control module

	<ul style="list-style-type: none"> • EPS control module • SAS control module • ABS HU/CM (with ABS) • DSC HU/CM (with DSC) • Condenser • PCM • Ignition coil (L/F) • Ignition coil (T/F) • Ignition coil (L/R) • Ignition coil (T/R)
TCM	TCM fuse <ul style="list-style-type: none"> • TCM
WIPER	WIPER fuse <ul style="list-style-type: none"> • Windshield wiper and washer switch • Auto light/wiper control module • Windshield wiper motor
IG KEY	IG KEY fuse <ul style="list-style-type: none"> • Ignition switch
ETV	ETV fuse <ul style="list-style-type: none"> • Main relay • Drive-by-wire relay
EGI COMP1	EGI COMP1 fuse <ul style="list-style-type: none"> • Purge solenoid valve • SSV solenoid valve • Air solenoid valve • VDI solenoid valve • HO2S heater • Metering oil pump No.1 • Metering oil pump No.2 • A/F sensor heater

	OCV
EGI COMP2	EGI COMP2 fuse <ul style="list-style-type: none"> • PCM • Air pump relay • Fuel pump speed control relay • MAF sensor • Metering oil pump driver • EVAP system leak detection pump • Cooling fan relay No.1 • Cooling fan relay No.2 • Cooling fan relay No.3 • Cooling fan relay No.4 • Cooling fan relay No.5 • VFAD solenoid valve (with VFAD)
EGI INJ	EGI INJ fuse <ul style="list-style-type: none"> • Fuel pump relay (low pressure) • Drive-by-wire relay • Fuel injector (FP) • Fuel injector (FS) • Fuel injector (RP) • Fuel injector (RS)

2011 - RX-8 - Engine

NO.3 WILL NOT CRANK [13B-MSP]

3	WILL NOT CRANK
DESCRIPTION	<ul style="list-style-type: none">• The starter does not work.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Open starter circuit between ignition switch and starter• TR switch malfunction (AT)• TR switch misadjustment (AT)• Low or dead battery• Charging system malfunction• Starter interlock switch malfunction (MT)• Starter malfunction• Seized or hydrolock engine, flywheel or drive plate (excessive mechanical loss)• Air mixed in oil passage• Abnormal engine oil condition (viscosity, amount, deterioration)• Immobilizer system and/or circuit malfunction• Immobilizer system operating properly (Key is not registered)• Advanced keyless entry and start system malfunction (if equipped) <p>WARNING:</p> <p>The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:</p> <ul style="list-style-type: none">• Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.• Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes.

To prevent this, always complete “BEFORE SERVICE PRECAUTION” and “AFTER SERVICE PRECAUTION” described in this manual. (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).) (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)

CAUTION:

- Disconnecting/connecting quick release connector without cleaning it may possibly cause damage to fuel pipe and quick release connector. Always clean quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	NOTE: <ul style="list-style-type: none"> • The following test should be performed on the advanced keyless entry and start system. If not equipped, go to the next step. <p>Start the engine using the mechanical ignition key.</p> <p>Does the engine start?</p>	Yes	<p>Inspect the advanced keyless entry and start system and repair or replace according to inspection result.</p> <p>(See SYMPTOM TROUBLESHOOTING INDEX [KEYLESS ENTRY SYSTEM].)</p>
		No	Go to the next step.
2	<p>Do the following conditions appear?</p> <ul style="list-style-type: none"> • The engine is not completely started. • DTC P1260 is displayed. 	Yes	<p>Both conditions appear:</p> <p>Go to Step 5.</p>
		No	<p>Either or other condition appears:</p> <p>Go to the next step.</p>
3	<p>Are the ignition coil connectors securely connected to the coil?</p>	Yes	Go to the next step.
		No	<p>Connect the coil connectors securely.</p> <p>Return to Step 1.</p>
4	<p>Does the security light flash?</p>	Yes	Go to the next step.
		No	<p>Inspect the instrument cluster and the related wiring harness.</p> <p>(See INSTRUMENT CLUSTER INSPECTION.)</p>

5	<p>Retrieve any DTCs using the M-MDS.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Are any of the following DTCs displayed?</p> <p>DTC</p> <ul style="list-style-type: none"> • Keyless control module: B1213, B1342, B1600, B1601, B1602, B1681, B2103, B2139, B2431, U1147, U2510 • Instrument cluster: B1342, B2477, U1900, U2516 	Yes	<p>Go to the applicable DTC inspection.</p> <p>(See DTC TABLE (IMMOBILIZER SYSTEM) [IMMOBILIZER SYSTEM].)</p> <p>(See DTC TABLE [INSTRUMENT CLUSTER].)</p>
		No	<p>Go to the next step.</p>
6	<p>Inspect the following wiring harnesses and connectors for an open or short circuit:</p> <ul style="list-style-type: none"> • Between coil terminal A and keyless control module terminal 3V^{*1}, 3F^{*2} • Between coil terminal B and keyless control module terminal 3W^{*1}, 3E^{*2} <p>Are there any malfunctions?</p>	Yes	<p>Repair or replace the suspected wiring harnesses and connectors.</p>
		No	<p>Go to the next step.</p>
7	<p>Inspect the following wiring harnesses and connectors for an open or short circuit:</p> <ul style="list-style-type: none"> • Between keyless control module terminal 3X^{*1}, 3A^{*2} and PCM terminal 1AM • Between keyless control module terminal 3W^{*1}, 3B^{*2} and PCM terminal 1AI <p>Are there any malfunctions?</p>	Yes	<p>Repair or replace the suspected wiring harnesses and connectors.</p>
		No	<p>Go to the next step.</p>
8	<p>Is there continuity between PCM terminal 1B and the starter relay with the clutch pedal depressed (MT), P or N position (AT)?</p>	Yes	<p>Go to the next step.</p>
		No	<p>Repair or replace the suspected wiring harness.</p>

9	<p>Inspect the following:</p> <ul style="list-style-type: none"> • Battery connection • Battery condition • Transmission is in P or N position. (AT) • Clutch is fully depressed. (MT) • Fuses <p>Are all items normal?</p>	Yes	Go to the next step.
		No	Service if necessary. Repeat Step 9.
10	Is clicking sound heard from starter relay when the ignition switch is turned to START?	Yes	Go to Step 15.
		No	AT: Go to the next step. MT: Go to Step 12.
11	<p>Turn the ignition switch to the ON position (engine off).</p> <p>Access the TR PID.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Is the TR PID indicated P/N when selecting P or N position?</p>	Yes	Go to Step 13.
		No	<p>Inspect the TR switch is adjusted properly, inspect for open or short circuit between TR switch and TCM.</p> <p>Repair or replace components as required.</p> <p>Repeat Step 10.</p>
12	<p>Inspect the starter interlock switch.</p> <p>(See STARTER INTERLOCK SWITCH INSPECTION [13B-MSP].)</p> <p>Is the starter interlock switch normal?</p>	Yes	Go to the next step.
		No	<p>Inspect the related wiring harnesses.</p> <p>Repair or replace components as required.</p> <p>Repeat Step 10.</p>
13	<p>Inspect the starter relay and following harnesses.</p> <p>(See RELAY INSPECTION.)</p> <ul style="list-style-type: none"> • Between starter relay and PCM • Between starter relay and ignition switch <p>Are they normal?</p>	Yes	Go to the next step.
		No	<p>Repair or replace components as required.</p> <p>Repeat Step 10.</p>

14	<p>Inspect the ignition switch and related harnesses.</p> <p>(See IGNITION SWITCH INSPECTION [WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <p>Are they normal?</p>	Yes	Go to the next step.
		No	Repair or replace components required. Repeat Step 10.
15	<p>Inspect the following harnesses.</p> <ul style="list-style-type: none"> Between starter relay and battery Between starter relay and starter <p>Are they normal?</p>	Yes	Go to the next step.
		No	Repair or replace as required. Go to the next step.
16	<p>Inspect the starting system.</p> <p>(See STARTER INSPECTION [13B-MSP].)</p> <p>Is the starting system normal?</p>	Yes	Go to the next step.
		No	Repair or replace components as required.
17	<p>Inspect for seized or hydrolock engine or flywheel.</p> <p>Is the engine seized or hydrolock?</p>	Yes	Repair or replace components as required.
		No	Go to the next step.
18	<p>Retrieve any continuous memory DTCs.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Are there any continuous memory DTCs displayed?</p>	Yes	<p>DTC is displayed:</p> <ul style="list-style-type: none"> Go to the appropriate DTC inspection. <p>(See DTC TABLE [13B-MSP].)</p> <p>Communication error message is displayed:</p> <ul style="list-style-type: none"> Inspect the following: <ul style="list-style-type: none"> Open circuit in wiring harness between main relay and PCM terminal 1AW or

			<div>1BE</div> <div><ul style="list-style-type: none">▪ Open circuit in wiring harness between main relay terminal E and PCM terminal 1Q▪ Main relay is stuck open▪ Open or short circuit in wiring harness between the DLC-2 and PCM terminals 1AM or 1AI▪ Open or poor GND circuit (PCM terminal 1A, 1BB, 1AZ, 1BH or 1BD)▪ Poor connection of vehicle body GND</div>
		No	Go to the next step.
19	Retrieve any KOEO DTCs using the M-MDS. Are there DTCs displayed during KOEO inspection?	Yes	Go to the appropriate DTC inspection. (See DTC TABLE [13B-MSP] .)
		No	Go to the next step.
20	Verify test results.		

If normal, return to the diagnostic index to service any additional symptoms.

- If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.
 - If the vehicle is repaired, troubleshooting is completed.
 - If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.

*1

With advanced keyless entry and start system equipped model.

*2

Without advanced keyless entry and start system equipped model.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

NO.4 HARD TO START/LONG CRANK/ERRATIC START/ERRATIC CRANK [13B-MSP]

4	HARD TO START/LONG CRANK/ERRATIC START/ERRATIC CRANK
DESCRIPTION	<ul style="list-style-type: none">• The starter cranks engine at the normal speed but the engine requires excessive cranking time before starting.• The battery is in the normal condition.
	<ul style="list-style-type: none">• Vacuum leakage• Air leakage from intake-air system• Air suction at intake-air system (between MAF sensor and intake ports)• Air cleaner restriction• Improper operation of drive-by-wire control system• Drive-by-wire control system operates in fail-safe mode• Throttle body malfunction (stuck open)• SSV stuck open• SSV solenoid valve malfunction (stuck open)• APV stuck open• APV motor malfunction• APV position sensor No.1, No.2 malfunction• Poor fuel quality• Jet air mixing system malfunction (restriction or leakage in air passage)• Inadequate fuel pressure• Pressure regulator malfunction (integrated in fuel pump)• Fuel injector (FP) (RP) is clogged

POSSIBLE CAUSE

- Open or short in fuel injector (FP) (RP) control signal circuit
- Restriction in exhaust system
- Purge solenoid valve malfunction (stuck open)
- Improper air/fuel ratio control (abnormal ECT signal to PCM)
- Erratic signal from eccentric shaft position sensor
- MAF sensor contamination (abnormal signal to PCM)
- MAF sensor improper installation
- Low engine compression
 - Engine internal malfunction
 - Abnormal engine oil condition (viscosity, deterioration)
 - Low oil pressure
 - Excessive fuel pressure
 - Air mixed in oil line
 - Metering oil pump malfunction
 - Leakage or clogging in oil pipe
 - Leakage or clogging in oil nozzle
- Starting system malfunction
- Spark leakage from high-tension leads
- Spark plug malfunction

WARNING:

The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:

- Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).) (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)

CAUTION:

- Disconnecting/connecting quick release connector without cleaning it may possibly cause damage to fuel pipe and quick release connector. Always

clean quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Does the engine knock/ping/detonate?	Yes	Go to the symptom troubleshooting "NO.13 KNOCKING/PINGING/DETONATION-ACCELERATION/CRUISE". (See NO.13 KNOCKING/PINGING/DETONATION-ACCELERATION/CRUISE [13B-MSP] .)
		No	Go to the next step.
2	Inspect for the following: <ul style="list-style-type: none">• Vacuum leak• Proper fuel quality (e.g. proper octane, contamination, winter/summer blend)• Blockage at intake-air system (between MAF sensor and intake ports)• Loose bands on intake-air system hoses• Cracks in intake-air system• Air cleaner restriction• Jet air mixing system air passage (clogging or leakage)• MAF sensor installation	Yes	Go to the next step.
		No	Service if necessary. Repeat Step 2.

	Are all items normal?		
3	Turn the ignition switch to the ON position (engine off). Retrieve any DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Are there any DTCs displayed?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	Go to the next step.
4	Access the ECT PID. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Inspect the readings on both the ECT PID and the water temperature gauge on the instrument cluster readings. Does the ECT PID indicate the same temperature as the gauge readings?	Yes	Go to the next step.
		No	If the water temperature gauge is in the normal range but the ECT PID is not same as the water temperature gauge reading, inspect the ECT sensor. (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [13B-MSP].) If the water temperature gauge on instrument cluster indicates the cold range but the ECT PID is normal, inspect the water temperature gauge. (See INSTRUMENT CLUSTER INSPECTION.)
5	Is the engine overheating?	Yes	Go to the symptom troubleshooting "NO.17 COOLING SYSTEM CONCERNS-OVERHEATING". (See NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [13B-MSP].)
		No	Go to the next step.
6	Inspect for cracks on the high-tension leads. (See HIGH-TENSION LEAD INSPECTION [13B-MSP].) Are there any cracks on the high-tension leads?	Yes	Repair the suspected high-tension leads.
		No	Go to the next step.
7	Inspect the spark plug conditions. (See SPARK PLUG INSPECTION [13B-MSP].)	Yes	Spark plug is wet or covered with carbon: Inspect for fuel leakage from fuel injector. Spark plug is grayish white:

	Is the spark plug wet, covered with carbon or grayish white?		Inspect for clogging fuel injector (FP) (RP).
		No	Install spark plugs in the original positions. Go to the next step.
8	Visually inspect the eccentric shaft position sensor and the teeth of the pulse wheel. Are the eccentric shaft position sensor and the teeth of the pulse wheel normal?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
9	Attempt to start the engine at part throttle. Does the engine run smoothly at part throttle?	Yes	Inspect the Drive-by-wire Control System Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)
		No	Go to the next step.
10	Inspect the fuel line pressure. (See FUEL LINE PRESSURE INSPECTION [13B-MSP].) Is the fuel line pressure correct?	Yes	Go to the next step.
		No	Zero or low: <ul style="list-style-type: none"> Inspect the fuel pump relay and the fuel pump circuit. Inspect for clogged fuel line. <ul style="list-style-type: none"> If normal, replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].) High: <ul style="list-style-type: none"> Replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)
11	Is the fuel line pressure held after the ignition switch is turned off? (See FUEL LINE PRESSURE INSPECTION [13B-MSP].)	Yes	Go to the next step.
		No	Inspect the fuel injector. (See FUEL INJECTOR INSPECTION [13B-MSP].)

			<ul style="list-style-type: none"> If the fuel injector is normal, replace the fuel pump unit. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p>
12	Disconnect the vacuum hose from the purge solenoid valve and plug the opening end of the vacuum hose. Attempt to start the engine. Is the starting condition improved?	Yes	Inspect if the purge solenoid valve sticks open.
		No	Go to the next step.
13	Inspect the MAF sensor for contamination. Is there any contamination?	Yes	Replace the MAF/IAT sensor. (See MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
14	Visually inspect the exhaust system part. Is there any deformed exhaust system part?	Yes	Replace the suspected part.
		No	Go to the next step.
15	Inspect the starting system. (See STARTER INSPECTION [13B-MSP].) Is the starting system normal?	Yes	Go to the next step.
		No	Repair or replace components if required.
16	Inspect the engine compression. (See COMPRESSION INSPECTION [13B-MSP].) Is it normal?	Yes	Go to Step 22.
		No	Go to the next step.
17	Perform the Metering Oil Pump Control Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the metering oil pump control operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. After that overhaul or replace the engine.

18	Check the engine oil condition. Is the engine oil low viscosity and/or is there a gasoline odor?	Yes	Replace the engine oil. After that overhaul or replace the engine.
		No	Go to the next step.
19	Turn the ignition switch off. Disconnect the fuel line quick release connector and install the fuel gauge to the fuel line. NOTE: <ul style="list-style-type: none"> If the engine won't start, inspect the fuel line pressure with the ignition switch ON while cranking. Start the engine and run it at idle. Measure the fuel line pressure at idle. Is the fuel line pressure correct at idle? (See FUEL LINE PRESSURE INSPECTION [13B-MSP] .)	Yes	Go to the next step.
		No	Replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP] .) After that overhaul or replace the engine.
20	Check the oil pipe between the metering oil pump and the metering oil nozzle. Is there air and/or clogging in oil pipe?	Yes	Inspect and repair for leakage and/or clogging in the oil passage at the engine. After that overhaul or replace the engine.
		No	Overhaul or replace the engine.
21	Check the oil pipe between the metering oil pump and the metering oil nozzle. Is there air and/or clogging in oil pipe?	Yes	Inspect and repair for leakage and/or clogging in the oil passage at the engine.
		No	Go to the next step.
22	Perform the Fuel Injector Operation Inspection.	Yes	Go to the next step.

	(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the fuel injector operate properly?	No	Repair or replace the malfunctioning part according to the inspection results.
23	Inspect the fuel injectors. (See FUEL INJECTOR INSPECTION [13B-MSP].) Are the fuel injectors normal?	Yes	Inspect the engine oil condition (viscosity, amount deterioration).
		No	Repair or replace the suspected fuel injector. (See FUEL INJECTOR REMOVAL/INSTALLATION [13B-MSP].)
24	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting is completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

NO.5 ENGINE STALLS-AFTER START/AT IDLE [13B-MSP]

5	ENGINE STALLS—AFTER START/AT IDLE
DESCRIPTION	<ul style="list-style-type: none">• Engine stops unexpectedly.
	<ul style="list-style-type: none">• No battery power supply to PCM or poor GND• Vacuum leakage• Air leakage from intake-air system parts• Air suction at intake-air system (between MAF sensor and intake ports)• Air cleaner restriction• Improper operation of drive-by-wire control system• Throttle body malfunction (stuck closed)• Poor fuel pressure• Inadequate fuel pressure• Pressure regulator malfunction (integrated in fuel pump unit)• Fuel pump body mechanical malfunction• Fuel pump resistor malfunction (open)• Fuel leakage from fuel injector• Fuel injector (FP) (RP) clogging• Jet air mixing system malfunction (restriction or leakage at air passage)• Open or short circuit in fuel pump body and related wiring harness• Restriction in exhaust system• Purge solenoid valve malfunction (stuck open)• Improper air/fuel ratio control (abnormal signal from ECT sensor to PCM)

**POSSIBLE
CAUSE**

- MAF sensor improper installation
- No signal from eccentric shaft position sensor due to sensor, related wire or wrong installation
- Electrical connector disconnected
- Low engine compression
 - Engine internal malfunction
 - Abnormal engine oil condition (viscosity, deterioration)
 - Low oil pressure
 - Excessive fuel pressure
 - Air mixed in oil line
 - Metering oil pump malfunction
 - Leakage or clogging in oil pipe
 - Leakage or clogging in oil nozzle
- A/C system operation is improper
- Engine overheating
- Abnormal engine oil condition (viscosity, amount, deterioration)
- Spark leakage from high-tension leads
- Ignition coil malfunction
- Immobilizer system and/or circuit malfunction
- Immobilizer system operates properly (Key is not registered)

WARNING:

The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:

- Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).) (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)

CAUTION:

- Disconnecting/connecting quick release connector without cleaning it may possibly cause damage to fuel pipe and quick release connector. Always

clean quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Do the following conditions appear? <ul style="list-style-type: none"> The engine is not completely started. DTC P1260 is displayed. 	Yes	Both conditions appear: Go to Step 3.
		No	Either or other condition appears: Go to the next step.
2	Does the engine stall after approx. 2 s after the engine is started?	Yes	Go to the next step.
		No	The immobilizer system is normal. Go to Step 9.
3	Is the coil connector securely connected to the coil?	Yes	Go to the next step.
		No	Connect the coil connector securely. Return to Step 2.
4	Does the security light flash?	Yes	Go to the next step.
		No	Inspect the instrument cluster and the related wiring harness. (See INSTRUMENT CLUSTER INSPECTION .)
5	Retrieve any DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP] .) Are any of the following DTCs displayed? DTC <ul style="list-style-type: none"> Keyless 	Yes	Go to the applicable DTC inspection. (See DTC TABLE (IMMOBILIZER SYSTEM) [IMMOBILIZER SYSTEM] .) (See DTC TABLE [INSTRUMENT CLUSTER] .)
		No	Go to the next step.

	control module: B1213, B1342, B1600, B1601, B1602, B1681, B2103, B2139, B2431, U1147, U2510		
	<ul style="list-style-type: none"> • Instrument cluster: B1342, B2477, U1900, U2516 		
6	Inspect the following wiring harnesses and connectors for an open or short circuit: <ul style="list-style-type: none"> • Between coil terminal A and keyless control module terminal 3V^{*1}, 3F^{*2} • Between coil terminal B and keyless control module terminal 3W^{*1}, 3E^{*2} Are there any malfunctions?	Yes	Repair or replace the suspected wiring harnesses and connectors.
		No	Go to the next step.
7	Inspect the following wiring harnesses and connectors for an open or short circuit: <ul style="list-style-type: none"> • Between keyless control module terminal 3X^{*1}, 3A^{*2} and PCM terminal 1AM • Between keyless control module terminal 3W^{*1}, 3B^{*2} and PCM terminal 1AI Are there any malfunctions?	Yes	Repair or replace the suspected wiring harnesses and connectors.
		No	Go to the next step.
8	Does the engine knock/ping/detonate?	Yes	Go to the symptom troubleshooting "NO.13 KNOCKING/PINGING/DETONATION-ACCELERATION/CRUISE".

			(See NO.13 KNOCKING/PINGING/DETONATION-ACCELERATION/CRUISE [13B-MSP].)
		No	Go to the next step.
9	Verify the following:	Yes	Go to the next step.
	<ul style="list-style-type: none"> • Vacuum connection • Air cleaner element • No air leakage from intake-air system • Blockage at intake-air system (between MAF sensor and intake ports) • No restriction of intake-air system • Jet air mixing system passage (clogging or leakage) • Proper sealing of intake manifold • Ignition wiring • MAF sensor installation • Fuel quality: proper octane, contamination, winter/summer blend • Electrical connections • Smooth operation of throttle valve <p>Are all items normal?</p>	No	Service if necessary. Repeat Step 9.

10	Turn the ignition switch to the ON position (engine off).	Yes	DTC is displayed: <ul style="list-style-type: none"> Go to the appropriate DTC inspection. (See DTC TABLE [13B-MSP].) Communication error message is displayed: <ul style="list-style-type: none"> Inspect for the following: <ul style="list-style-type: none"> Open circuit between main relay and PCM terminal 1AW and 1BE Open main relay GND circuit The main relay is stuck open Open or poor GND circuit (PCM terminal 1A, 1BB, 1AZ, 1BH or 1BD) Poor connection of vehicle body GND
	Retrieve any DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Are there any DTCs displayed?	No	Go to the next step.
11	Access the APP1 and APP2 PIDs.	Yes	Go to the next step.
	(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Crank the engine with the accelerator pedal released. Are the APP1 and APP2 PIDs indicating that the accelerator pedal is in the released position?	No	Inspect the following: <ul style="list-style-type: none"> APP sensor (See ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [13B-MSP].) Wiring harnesses and connectors between PCM and APP sensor <ul style="list-style-type: none"> PCM terminal 1AL—APP sensor terminal D PCM terminal 1AO—APP sensor terminal F PCM terminal 1AS—APP sensor terminal E PCM terminal 1AJ—APP sensor terminal A PCM terminal 1AP—APP sensor terminal C

			<ul style="list-style-type: none"> PCM terminal 1AV—APP sensor terminal B
12	<p>Access the TP REL PID.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Crank the engine with the accelerator pedal released.</p> <p>Does the TP REL PID indicate the closed throttle position?</p>	Yes	Go to the next step.
		No	<p>Inspect the following:</p> <ul style="list-style-type: none"> TP sensor <p>(See THROTTLE POSITION (TP) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Wiring harnesses and connectors between PCM and throttle body <ul style="list-style-type: none"> PCM terminal 2AO—throttle body terminal E PCM terminal 2AK—throttle body terminal F PCM terminal 2P—throttle body terminal C PCM terminal 2AL—throttle body terminal D
13	<p>Access the ECT PID.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Does the ECT PID indicate the proper engine coolant temperature?</p> <p>(See PCM INSPECTION [13B-MSP].)</p>	Yes	Go to the next step.
		No	<p>Inspect the following:</p> <ul style="list-style-type: none"> ECT sensor <p>(See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Open or short circuit between ECT sensor and PCM terminal 2AH or 2AY
14	<p>Attempt to start the engine at part throttle.</p> <p>Does the engine run smoothly at part throttle?</p>	Yes	<p>Inspect the Drive-by-wire Control System Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p>
		No	Go to the next step.
15	<p>Access the RPM PID.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p>	Yes	Go to the next step.
		No	Inspect the following:

	Does the RPM PID indicate the engine speed during engine cranking?		<ul style="list-style-type: none"> • Open or short circuit in eccentric shaft position sensor • Open or short circuit between eccentric shaft position sensor and PCM terminal 2AG or 2AP • Open or short circuit in eccentric shaft position sensor harnesses <ul style="list-style-type: none"> ▪ If the eccentric shaft position sensor and the wiring harness are normal, go to the next step.
16	Visually inspect the eccentric shaft position sensor and the teeth of the pulse wheel. Are the eccentric shaft position sensor and the teeth of the pulse wheel normal?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
17	Inspect for cracks on the high-tension leads. (See HIGH-TENSION LEAD INSPECTION [13B-MSP] .) Are there any cracks on the high-tension leads?	Yes	Repair the suspected high-tension leads.
		No	Go to the next step.
18	Is a strong blue spark visible at each disconnected high-tension lead while cranking the engine?	Yes	If the symptom occurs with the A/C on, go to Step 23. If not, go to the next step.
		No	Inspect the following: <ul style="list-style-type: none"> • Open or short circuit in ignition coil • Open circuit in high-tension leads • Open circuit between ignition coil connector GND terminal and body GND • Open circuit between ignition switch and ignition coil • Open circuit between ignition coil terminal A and PCM terminal 2AT, 2AX, 2AW or 2BA

19	<p>Inspect the spark plug conditions.</p> <p>(See SPARK PLUG INSPECTION [13B-MSP].)</p> <p>Is the spark plug wet, covered with carbon or grayish white?</p>	Yes	<p>Spark plug is wet or covered with carbon:</p> <p>Inspect for fuel leakage from fuel injector.</p> <p>Spark plug is grayish white:</p> <p>Inspect for clogging fuel injector (FP) (RP).</p>
		No	<p>Install spark plugs in the original positions.</p> <p>Go to the next step.</p>
20	<p>Perform the Fuel Pump Speed Control Operation Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the fuel pump speed control operate properly?</p>	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
21	<p>Inspect the fuel line pressure.</p> <p>(See FUEL LINE PRESSURE INSPECTION [13B-MSP].)</p> <p>Is the fuel line pressure correct?</p>	Yes	Go to the next step.
		No	<p>Zero or low:</p> <ul style="list-style-type: none"> Inspect the fuel pump relay and the fuel pump circuit. Inspect for clogged fuel line. Inspect the fuel pump resister. <ul style="list-style-type: none"> If normal, replace the fuel pump unit. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p> <p>High:</p> <ul style="list-style-type: none"> Replace the fuel pump unit. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p>
22	<p>Visually inspect for fuel leakage at the fuel injector, O-ring and fuel line.</p> <p>Service if necessary.</p>	Yes	Go to the next step.
		No	<p>Inspect the fuel injector.</p> <p>(See FUEL INJECTOR INSPECTION [13B-MSP].)</p>

	Is the fuel line pressure held after the ignition switch is turned off? (See FUEL LINE PRESSURE INSPECTION [13B-MSP].)		If the fuel injector is normal, replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)
23	NOTE: <ul style="list-style-type: none"> The following test is for stall concerns with the A/C on. If other symptoms exist, go to the next step. <p>Connect pressure gauges to the A/C low and high pressure side lines.</p> <p>Turn the A/C on and measure the low side and high side pressures.</p> <p>Are pressures within the specifications?</p> <p>(See REFRIGERANT PRESSURE CHECK.)</p>	Yes	Go to the next step.
		No	<p>If the A/C is always on, go to the symptom troubleshooting "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY".</p> <p>(See NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [13B-MSP].)</p> <p>For other symptoms, inspect the following:</p> <ul style="list-style-type: none"> Refrigerant charging amount Condenser fan operation
24	<p>Disconnect the vacuum hose between the purge solenoid valve and intake manifold at the quick release connector.</p> <p>Plug the opening end of the vacuum hose.</p> <p>Start the engine.</p> <p>Is the engine stall now eliminated?</p>	Yes	<p>Inspect if purge solenoid valve is stuck open.</p> <p>Inspect the evaporative emission control system.</p>
		No	Go to the next step.
25	<p>Perform the Secondary Shutter Valve (SSV) Operation Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the SSV operate properly?</p>	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
26	Perform the Auxiliary Port Valve (APV) Control Inspection.	Yes	Go to the next step.

	<p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the APV control operate properly?</p>	No	Repair or replace the malfunctioning part according to the inspection results.
27	Is air leakage felt or heard at intake-air system components while racing the engine to a higher speed?	Yes	Repair or replace the malfunctioning parts.
		No	Go to the next step.
28	<p>Check the oil pipe between the metering oil pump and the metering oil nozzle.</p> <p>Is there air and/or clogging in oil pipe?</p>	Yes	Inspect and repair for leakage and/or clogging in the oil passage at the engine.
		No	Go to the next step.
29	<p>NOTE:</p> <ul style="list-style-type: none"> If the engine stalls in this step, perform the "FUEL INJECTOR INSPECTION". <p>(See FUEL INJECTOR INSPECTION [13B-MSP].)</p> <p>Perform the Fuel Injector Operation Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the fuel injector operate properly?</p>	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
30	<p>Inspect the engine compression.</p> <p>(See COMPRESSION INSPECTION [13B-MSP].)</p> <p>Is it normal?</p>	Yes	Visually inspect the exhaust system part.
		No	<p>If the engine keeps running:</p> <ul style="list-style-type: none"> Go to the next step. <p>If the engine stalls:</p> <ul style="list-style-type: none"> Go to Step 32.

31	Perform the Metering Oil Pump Control Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the metering oil pump control operate properly?	Yes	Go to Step 34.
		No	Repair or replace the malfunctioning part according to the inspection results. After that overhaul or replace the engine.
32	Inspect the metering oil pump driver. (See METERING OIL PUMP DRIVER INSPECTION [13B-MSP].) Is the metering oil pump driver normal?	Yes	Go to the next step.
		No	Replace the metering oil pump driver. (See METERING OIL PUMP DRIVER REMOVAL/INSTALLATION [13B-MSP].) After that overhaul or replace the engine.
33	Inspect the metering oil pumps. (See METERING OIL PUMP INSPECTION [13B-MSP].) Are both metering oil pumps normal?	Yes	Go to the next step.
		No	Replace the suspected metering oil pump. (See METERING OIL PUMP REMOVAL/INSTALLATION [13B-MSP].) After that overhaul or replace the engine.
34	Check the engine oil condition. Is the engine oil low viscosity and/or is there a gasoline odor?	Yes	Replace the engine oil. After that overhaul or replace the engine.
		No	Go to the next step.
35	Inspect the oil pressure. (See OIL PRESSURE INSPECTION [13B-MSP].) Is the oil pressure within the specification?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. After that overhaul or replace the engine.
36	Turn the ignition switch off. Disconnect the fuel line quick release connector and install the fuel gauge to the fuel line.	Yes	Go to the next step.
		No	Replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-

	Start the engine and run it at idle. Measure the fuel line pressure at idle. Is the fuel line pressure correct at idle? (See FUEL LINE PRESSURE INSPECTION [13B-MSP].)		MSP].) After that overhaul or replace the engine.
37	Check the oil pipe between metering oil pump and metering oil nozzle. Is there air and/or clogging in oil pipe?	Yes	Inspect and repair for leakage and/or clogging in the oil passage at the engine. After that overhaul or replace the engine.
		No	Overhaul or replace the engine.
38	Verify test results. <ul style="list-style-type: none">• If normal, return to the diagnostic index to service any additional symptoms.• If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.<ul style="list-style-type: none">▪ If the vehicle is repaired, troubleshooting is completed.▪ If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.		

*1

With advanced keyless entry and start system equipped module.

*2

Without advanced keyless entry and start system equipped module.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

NO.6 CRANKS NORMALLY BUT WILL NOT START [13B-MSP]

6	CRANKS NORMALLY BUT WILL NOT START
DESCRIPTION	<ul style="list-style-type: none">• The starter cranks the engine at normal speed but the engine will not run.• Refer to the symptom troubleshooting "No.5 Engine stalls" if this symptom appears after engine stall.• The fuel is in the tank.• The battery is in normal condition.
	<ul style="list-style-type: none">• No battery power supply to PCM• Open PCM GND or vehicle body GND• Air cleaner restriction• Air leakage from intake-air system• Vacuum leakage• Improper operation of drive-by-wire control system• Drive-by-wire control system operates in fail-safe mode (abnormal accelerator position and TP signal to PCM)• Poor fuel quality• Open or short circuit in fuel pump body and related wiring harness• Inadequate fuel pressure• Fuel pump relay malfunction (stuck open)• Fuel pump mechanical malfunction• Pressure regulator (integrated in fuel pump unit) malfunction• Fuel injector malfunction (leakage, clogging, improper injection amount)• Open or short in fuel injector control signal circuit

POSSIBLE CAUSE

- Purge solenoid valve malfunction (stuck open)
- Restriction in exhaust system
- Disconnected electrical connector
- No signal from eccentric shaft position sensor, related wiring harness or incorrect installation
- Improper air/fuel ratio control at starting (abnormal ECT signal to PCM)
- APP sensor malfunction (de-chock control operating due to abnormal accelerator position signal to PCM)
- Low engine compression
 - Engine internal malfunction
 - Abnormal engine oil condition (viscosity, deterioration)
 - Low oil pressure
 - Excessive fuel pressure
 - Air mixed in oil line
 - Metering oil pump malfunction
 - Leakage or clogging in oil pipe
 - Leakage or clogging in oil nozzle
- Engine overheating
- Spark leakage from high-tension leads
- Spark plug malfunction
- Ignition coil malfunction
- Immobilizer system and/or circuit malfunction
- Immobilizer system operates properly (Key is not registered)

WARNING:

The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:

- Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).) (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)

CAUTION:

- Disconnecting/connecting quick release connector without cleaning it may possibly cause damage to fuel pipe and quick release connector. Always clean quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Do any of the following conditions appear? <ul style="list-style-type: none"> • The engine does not completely start. • DTC P1260 is displayed. 	Yes	Both conditions appear: Go to Step 3.
		No	Either or other condition appears: Go to the next step.
2	Does the engine stall after approx. 2 s from when it is started?	Yes	Go to the next step.
		No	The immobilizer system is normal. Go to Step 8.
3	Are the ignition coil connectors securely connected to the coils?	Yes	Go to the next step.
		No	Connect the coil connectors securely. Return to Step 2.
4	Does the security light flash?	Yes	Go to the next step.
		No	Inspect the instrument cluster and the related wiring harness. (See INSTRUMENT CLUSTER INSPECTION .)
5	Retrieve any DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP] .) Are any of the following DTCs	Yes	Go to the applicable DTC inspection. (See DTC TABLE (IMMOBILIZER SYSTEM) [IMMOBILIZER SYSTEM] .) (See DTC TABLE [INSTRUMENT CLUSTER] .)

	<p>displayed?</p> <p>DTC</p> <ul style="list-style-type: none"> • Keyless control module: B1213, B1342, B1600, B1601, B1602, B1681, B2103, B2139, B2431, U1147, U2510 • Instrument cluster: B1342, B2477, U1900, U2516 	No	Go to the next step.
6	<p>Inspect the following wiring harnesses and connectors for an open or short circuit:</p> <ul style="list-style-type: none"> • Between coil terminal A and keyless control module terminal 3V^{*1}, 3F^{*2} • Between coil terminal B and keyless control module terminal 3W^{*1}, 3E^{*2} <p>Are there any malfunctions?</p>	Yes	Repair or replace the suspected wiring harnesses and connectors.
		No	Go to the next step.
7	<p>Inspect the following wiring harnesses and connectors for an open or short circuit:</p> <ul style="list-style-type: none"> • Between keyless control module terminal 3X^{*1}, 3A^{*2} and PCM terminal 1AM • Between keyless control module terminal 3W^{*1}, 3B^{*2} and PCM terminal 1AI <p>Are there any malfunctions?</p>	Yes	Repair or replace the suspected wiring harnesses and connectors.
		No	Go to the next step.

8	<p>Verify the following:</p> <ul style="list-style-type: none"> • Vacuum connection • External fuel shut off or accessory (such as kill switch, alarm.) • Fuel quality: proper octane, contamination, winter/summer blend • No air leakage from intake-air system • Proper sealing of intake manifold • Ignition wiring • Electrical connections • Fuses • Smooth operation of throttle valve <p>Are all items normal?</p>	<p>Yes</p> <p>No</p>	<p>Go to the next step.</p> <p>Service if necessary.</p> <p>Repeat Step 8.</p>
9	<p>Turn the ignition switch to the ON position (engine off).</p> <p>Retrieve any DTCs using the M-MDS.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Are there any DTCs displayed?</p>	<p>Yes</p>	<p>DTC is displayed:</p> <ul style="list-style-type: none"> • Go to the applicable DTC inspection. <p>(See DTC TABLE [13B-MSP].)</p> <p>Communication error message is displayed:</p> <ul style="list-style-type: none"> • Inspect for the following: <ul style="list-style-type: none"> ▪ Open circuit between main relay and PCM terminal 1AW or 1BE ▪ Open main relay GND circuit ▪ Main relay is stuck open

			<ul style="list-style-type: none"> ▪ Open or poor GND circuit (PCM terminal 1A, 1BB, 1AZ, 1BH or 1BD) ▪ Poor connection of vehicle body GND
		No	Go to the next step.
10	<p>Access the APP1 and APP2 PIDs.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Crank the engine with the accelerator pedal released.</p> <p>Are the APP1 and APP2 PIDs indicating that the accelerator pedal is in the released position?</p>	Yes	Go to the next step.
		No	<p>Inspect the following:</p> <ul style="list-style-type: none"> • APP sensor <p>(See ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Wiring harnesses and connectors between PCM and APP sensor <ul style="list-style-type: none"> ▪ PCM terminal 1AL—APP sensor terminal D ▪ PCM terminal 1AO—APP sensor terminal F ▪ PCM terminal 1AS—APP sensor terminal E ▪ PCM terminal 1AJ—APP sensor terminal A ▪ PCM terminal 1AP—APP sensor terminal C ▪ PCM terminal 1AV—APP sensor terminal B
11	<p>Access the TP REL PID.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Crank the engine with the accelerator pedal released.</p> <p>Does the TP REL PID indicate the closed throttle position?</p>	Yes	Go to the next step.
		No	<p>Inspect the following:</p> <ul style="list-style-type: none"> • TP sensor <p>(See THROTTLE POSITION (TP) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> • Wiring harnesses and connectors between PCM and throttle body <ul style="list-style-type: none"> ▪ PCM terminal 2AO—throttle body terminal E

			<ul style="list-style-type: none"> ▪ PCM terminal 2AK—throttle body terminal F ▪ PCM terminal 2P—throttle body terminal C ▪ PCM terminal 2AL—throttle body terminal D
12	Access the ECT PID. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Does the ECT PID indicate the proper engine coolant temperature? (See PCM INSPECTION [13B-MSP].)	Yes	Go to the next step.
		No	Inspect the following: <ul style="list-style-type: none"> • ECT sensor (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [13B-MSP].) • Open or short circuit between ECT sensor and PCM terminal 2AH or 2AY
13	Will the engine start and run smoothly at part throttle?	Yes	Inspect the Drive-by-wire Control System Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)
		No	Go to the next step.
14	Access the RPM PID. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Does the RPM PID indicate the engine speed during engine cranking?	Yes	Go to the next step.
		No	Inspect the following: <ul style="list-style-type: none"> • Open or short circuit in eccentric shaft position sensor • Open or short circuit between eccentric shaft position sensor and PCM terminal 2AG or 2AP • Open or short circuit in eccentric shaft position sensor harnesses <ul style="list-style-type: none"> ▪ If the eccentric shaft position sensor and the wiring harness are normal, go to the next step.
15	Visually inspect the eccentric shaft position sensor and the	Yes	Go to the next step.

	teeth of the pulse wheel. Are the eccentric shaft position sensor and the teeth of the pulse wheel normal?	No	Repair or replace the malfunctioning part according to the inspection results.
16	Inspect for cracks on the high-tension leads. (See HIGH-TENSION LEAD INSPECTION [13B-MSP] .) Are there any cracks on the high-tension leads?	Yes	Repair the suspected high-tension leads.
		No	Go to the next step.
17	Is a strong blue spark visible at each disconnected high-tension lead while cranking the engine?	Yes	Go to the next step.
		No	Inspect the following: <ul style="list-style-type: none"> • Open or short circuit in ignition coil • Open circuit in high-tension leads • Open circuit between ignition coil connector GND terminal and GND • Open circuit between ignition switch and ignition coil • Open circuit between ignition coils terminal C and PCM terminal 2AT, 2AX, 2AW or 2BA
18	Inspect the spark plug conditions. (See SPARK PLUG INSPECTION [13B-MSP] .) Is the spark plug wet, covered with carbon or grayish white?	Yes	Spark plug is wet or covered with carbon: Inspect for fuel leakage from fuel injector. Spark plug is grayish white: Inspect for clogging fuel injector (FP) (RP).
		No	Install spark plugs in the original positions. Go to the next step.
19	Perform the Fuel Pump Speed Control Operation Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP] .)	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.

	Does the fuel pump speed control operate properly?		
20	Inspect the fuel line pressure. (See FUEL LINE PRESSURE INSPECTION [13B-MSP].) Is the fuel line pressure correct?	Yes	Go to the next step.
		No	Zero or low: <ul style="list-style-type: none"> Inspect the fuel pump relay and the fuel pump circuit. Inspect for clogged fuel line. <ul style="list-style-type: none"> If normal, replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].) High: <ul style="list-style-type: none"> Replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)
21	Visually inspect for fuel leakage at the fuel injector, O-ring and fuel line. Service if necessary. Is the fuel line pressure held after the ignition switch is turned off? (See FUEL LINE PRESSURE INSPECTION [13B-MSP].)	Yes	Go to the next step.
		No	Inspect the fuel injector. (See FUEL INJECTOR INSPECTION [13B-MSP].) If the fuel injector is normal, replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)
22	Disconnect the vacuum hose between the purge solenoid valve and the intake manifold at the quick release connector. Plug the opening end of vacuum hose. Attempt to start the engine. Is the starting condition improved?	Yes	Inspect if the purge solenoid valve sticks open mechanically. Inspect the evaporative emission control system.
		No	Go to the next step.
23	Inspect the fuel injectors.	Yes	Go to the next step.

	<p>(See FUEL INJECTOR INSPECTION [13B-MSP].)</p> <p>Are the fuel injectors normal?</p>	No	<p>Repair or replace the suspected fuel injector.</p> <p>(See FUEL INJECTOR REMOVAL/INSTALLATION [13B-MSP].)</p>
24	<p>Inspect the engine compression.</p> <p>(See COMPRESSION INSPECTION [13B-MSP].)</p> <p>Is it normal?</p>	Yes	Go to Step 31.
		No	Go to the next step.
25	<p>Apply the engine oil to front and rear rotors from plug hole approx. 3—5 ml {3—5 cc, 0.11—0.16 fl-oz}.</p> <p>Inspect the engine compression.</p> <p>(See COMPRESSION INSPECTION [13B-MSP].)</p> <p>Is it normal?</p>	Yes	Go to the next step.
		No	Go to Step 27.
26	<p>Clean the spark plugs.</p> <p>Crank the engine.</p> <p>Does the engine start?</p>	Yes	Remove the carbon or foreign material inside the engine using the carburetor cleaner.
		No	Go to the next step.
27	<p>Inspect the metering oil pump driver.</p> <p>(See METERING OIL PUMP DRIVER INSPECTION [13B-MSP].)</p> <p>Is the metering oil pump driver normal?</p>	Yes	Go to the next step.
		No	<p>Replace the metering oil pump driver.</p> <p>(See METERING OIL PUMP DRIVER REMOVAL/INSTALLATION [13B-MSP].)</p> <p>After that overhaul or replace the engine.</p>
28	<p>Inspect the metering oil pumps.</p> <p>(See METERING OIL PUMP INSPECTION [13B-MSP].)</p> <p>Are both metering oil pumps normal?</p>	Yes	Go to the next step.
		No	<p>Replace the suspected metering oil pump.</p> <p>(See METERING OIL PUMP REMOVAL/INSTALLATION [13B-MSP].)</p> <p>After that overhaul or replace the engine.</p>

29	Check the engine oil condition. Is the engine oil low viscosity and/or is there a gasoline odor?	Yes	Replace the engine oil. After that overhaul or replace the engine.
		No	Go to the next step.
30	Check the oil pipe between metering oil pump and metering oil nozzle. Is there air and/or clogging in oil pipe?	Yes	Inspect and repair for leakage and/or clogging in the oil passage at the engine. After that overhaul or replace the engine.
		No	Overhaul or replace the engine.
31	Retrieve any continuous memory DTCs. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Are there any continuous memory DTCs displayed?	Yes	DTC is displayed: <ul style="list-style-type: none"> Go to the appropriate DTC inspection. (See DTC TABLE [13B-MSP].) Communication error message is displayed: <ul style="list-style-type: none"> Inspect the following: <ul style="list-style-type: none"> Open circuit in wiring harness between main relay and PCM terminal 1AW or 1BE Open circuit in wiring harness between main relay terminal E and PCM terminal 1Q Main relay is stuck open Open or short circuit in wiring harness between the DLC-2 and PCM terminals 1AM or 1AI Open or poor GND circuit (PCM terminal 1A, 1BB, 1AZ, 1BH or 1BD) Poor connection of vehicle body GND
		No	Go to the next step.
32	Verify test results. <ul style="list-style-type: none"> If normal, return to the diagnostic index to service any additional symptoms. 		

- If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.
 - If the vehicle is repaired, troubleshooting is completed.
 - If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.

*1

With advanced keyless entry and start system equipped model.

*2

Without advanced keyless entry and start system equipped model.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

NO.7 SLOW RETURN TO IDLE [13B-MSP]

7	SLOW RETURN TO IDLE
DESCRIPTION	<ul style="list-style-type: none">• The engine takes more time than normal to return to idle speed.
POSSIBLE CAUSE	<ul style="list-style-type: none">• ECT sensor malfunction• The thermostat is stuck open• Throttle body malfunction• Air leakage from intake-air system• Eccentric shaft bypass valve stuck open

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Turn the ignition switch to the ON position (engine off). Retrieve any DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Are there any DTCs displayed?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	Go to the next step.
2	Is the throttle body free of contamination?	Yes	Go to the next step.
		No	Clean or replace the throttle body. (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)

3	<p>Remove the thermostat and inspect operation.</p> <p>(See THERMOSTAT REMOVAL/INSTALLATION [13B-MSP].)</p> <p>(See THERMOSTAT INSPECTION [13B-MSP].)</p> <p>Is the thermostat normal?</p>	Yes	<p>The ECT and the thermostat are normal.</p> <p>Go to the next step.</p>
		No	<p>Access the ECT PID using the M-MDS.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Inspect the readings on both ECT PID and the water temperature gauge on the instrument cluster.</p> <p>If the water temperature gauge on the instrument cluster indicates the normal range but the ECT PID is not the same as the water temperature gauge reading, inspect the ECT sensor.</p> <p>(See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [13B-MSP].)</p> <p>If the water temperature gauge on the instrument cluster indicates the cold range but the ECT PID is normal, inspect the water temperature gauge.</p> <p>(See INSTRUMENT CLUSTER INSPECTION.)</p>
4	<p>Inspect for air leakage from the intake-air system components while racing the engine to a higher speed.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • Engine speed may change when rust penetrating agent is sprayed on the air suction area. <p>Is there air leakage from intake-air system?</p>	Yes	<p>Repair or replace the malfunctioning part according to the inspection results.</p>
		No	<p>Inspect the eccentric shaft bypass valve.</p>
5	<p>Verify test results.</p> <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting is completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

NO.8 ENGINE RUNS ROUGH/ROLLING IDLE [13B-MSP]

8	ENGINE RUNS ROUGH/ROLLING IDLE
DESCRIPTION	<ul style="list-style-type: none">• The engine speed fluctuates between the specified idle speed and a lower speed, and the engine shakes excessively.• The idle speed is too slow and the engine shakes excessively.
	<ul style="list-style-type: none">• Vacuum leakage• Air leakage from intake-air system parts• Air suction at intake-air system (between MAF sensor and intake ports)• Air cleaner restriction• Air cleaner improper installation• Improper operation of drive-by-wire control system (abnormal signals from APP sensor, TP sensor and load signal to PCM)• SSV stuck open• SSV solenoid valve malfunction (stuck open)• APV stuck open• APV motor malfunction• Carbon or foreign materials on primary intake port• APV position sensor malfunction• Poor fuel quality• Inadequate fuel pressure• Pressure regulator (integrated in fuel pump unit) malfunction• Fuel pump body mechanical malfunction• Fuel line restriction or clogging

**POSSIBLE
CAUSE**

- Fuel leakage from fuel injector
- Fuel injector (FP) (RP) malfunction (leakage, clogging, improper injector amount)
- Jet air mixing system malfunction (restriction or leakage in air passage)
- Restriction in exhaust system
- Improper operation of AIR system
- Purge solenoid valve malfunction (stuck open)
- Improper fuel injection control operation (abnormal signals from MAF, ECT and IAT sensors to PCM)
- Erratic signal from eccentric shaft position sensor
- Damaged or improperly installed eccentric shaft position sensor pulse wheel
- Disconnected electrical connectors
- Improper load signal input
- Engine overheating
- Low engine compression
 - Engine internal malfunction
 - Abnormal engine oil condition (viscosity, deterioration)
 - Low oil pressure
 - Excessive fuel pressure
 - Air mixed in oil line
 - Metering oil pump malfunction
 - Leakage or clogging in oil pipe
 - Leakage or clogging in oil nozzle
- Excessive engine mechanical loss
- Metering oil pump improper operation (in fail-safe mode)
- A/C system operation is improper
- Spark leakage from high-tension leads
- Spark plug malfunction
- Improper spark plug heat range
- Ignition coil malfunction

- Improper ignition timing

WARNING:

The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:

- Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).) (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)

CAUTION:

- Disconnecting/connecting quick release connector without cleaning it may possibly cause damage to fuel pipe and quick release connector. Always clean quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Does the engine knock/ping/detonate?	Yes	Go to the symptom troubleshooting "NO.13 KNOCKING/PINGING/DETONATION-ACCELERATION/CRUISE". (See NO.13 KNOCKING/PINGING/DETONATION-ACCELERATION/CRUISE [13B-MSP] .)
		No	Go to the next step.
2	Verify the following: <ul style="list-style-type: none"> • External fuel shut off or accessory (such as kill switch, alarm.) • Fuel quality (e.g. proper octane, contamination, winter/summer blend) • No air leakage 	Yes	Go to the next step.
		No	Service if necessary. Repeat Step 2.

	<p>from intake-air system</p> <ul style="list-style-type: none">• Air cleaner element (restriction, improper installation)• Blockage at intake-air system (between MAF sensor and intake ports)• MAF sensor installation• Ignition wiring• Electrical connections• Fuses• Smooth operation of throttle valve <p>Are all items normal?</p>		
3	<p>Turn the ignition switch to the ON position (engine off).</p> <p>Retrieve any DTCs using the M-MDS.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Are there any DTCs displayed?</p>	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	Go to the next step.
4	<p>Is the engine overheating?</p>	Yes	Go to the symptom troubleshooting “NO.17 COOLING SYSTEM CONCERNS-OVERHEATING”. (See NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [13B-MSP].)
		No	Go to the next step.
5	<p>NOTE:</p> <ul style="list-style-type: none">• The following test is for an	Yes	Go to the next step.
		No	If the A/C is always on, go to the symptom troubleshooting

	<p>engine running at rough idle with the A/C on. If other symptoms exist, go to the next step.</p> <p>Connect the pressure gauge to the A/C low and high pressure side lines.</p> <p>Start the engine and run it at idle.</p> <p>Turn the A/C switch on.</p> <p>Measure the low side and high side pressures.</p> <p>Are the pressures within the specifications?</p> <p>(See REFRIGERANT PRESSURE CHECK.)</p>		<p>"NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY".</p> <p>(See NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [13B-MSP].)</p> <p>For other symptoms, inspect the following:</p> <ul style="list-style-type: none">• Refrigerant charging amount• Cooling fans operation
6	<p>NOTE:</p> <ul style="list-style-type: none">• The following test is for an engine running rough with the P/S on. If other symptoms exist, go to the next step. <p>Turn the ignition switch to the ON position (engine off).</p> <p>Retrieve any DTCs for EPS CM.</p> <p>Are there any DTCs displayed?</p>	Yes	<p>Go to the applicable DTC inspection.</p> <p>(See ELECTRIC POWER STEERING (EPS) ON-BOARD DIAGNOSIS.)</p>
		No	<p>Go to the next step.</p>
7	<p>Visually inspect the eccentric shaft position sensor and the teeth of the pulse wheel.</p> <p>Are the eccentric shaft position sensor and the teeth of the pulse wheel normal?</p>	Yes	<p>Go to the next step.</p>
		No	<p>Repair or replace the malfunctioning part according to the inspection results.</p>
8	<p>WARNING:</p> <ul style="list-style-type: none">• High-voltage in	Yes	<p>Go to Step 13.</p>

	<p>ignition system can cause strong electrical shock which can result in serious injury. Avoid direct contact to the vehicle body during the rotor balance test.</p> <ul style="list-style-type: none">• High-voltage spark will negatively effect the engine control. To prevent this, the high-tension leads keep away from sensors and wiring harnesses. <p>CAUTION:</p> <ul style="list-style-type: none">• Rotor balance test can overheat and damage the three-way catalytic converter. <p>Perform the Rotor Balance Test.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Is the engine speed drop value the same for each rotor?</p>	No	Go to the next step.
9	<p>Inspect the high-tension lead for the rotor where the engine speed did not drop in Step 8 for cracks.</p> <p>Are there any cracks on high-tension lead?</p>	Yes	Repair the suspected high-tension lead.
		No	Go to the next step.
10	<p>Is a strong blue spark visible while cranking at each disconnected high-tension lead for the rotor where the engine speed does not drop in Step 8?</p>	Yes	Go to the next step.
		No	<p>Inspect the following:</p> <ul style="list-style-type: none">• Open or short circuit in ignition coil

			<ul style="list-style-type: none"> • Open circuit in high-tension leads • Open circuit between ignition coil connector GND terminal and GND • Open circuit between ignition switch and ignition coil • Open circuit between ignition coils terminal A and PCM terminal 2AT, 2AX, 2AW or 2BA
11	<p>Inspect the spark plug for the rotor where the engine speed did not drop in Step 8.</p> <p>Is the spark plug wet, covered with carbon or grayish white?</p>	Yes	<p>Spark plug is wet or covered with carbon:</p> <p>Inspect for fuel leakage from the injector.</p> <p>Spark plug is grayish white:</p> <p>Inspect for clogged fuel injector (FP) (RP).</p>
		No	Go to the next step.
12	<p>Perform the Drive-by-wire Control System Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the drive-by-wire control system work properly?</p>	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
13	<p>Inspect for cracks on the high-tension leads.</p> <p>(See HIGH-TENSION LEAD INSPECTION [13B-MSP].)</p> <p>Are there any cracks on the high-tension leads?</p>	Yes	Repair the suspected high-tension leads.
		No	Go to the next step.
14	<p>Is a strong blue spark visible at each disconnected high-tension lead while cranking the engine?</p>	Yes	Go to the next step.
		No	<p>Inspect the following:</p> <ul style="list-style-type: none"> • Open or short circuit in ignition coil • Open circuit in high-tension leads • Open circuit between ignition coil connector GND terminal and GND

			<ul style="list-style-type: none"> • Open circuit between ignition switch and ignition coil • Open circuit between ignition coils terminal A and PCM terminal 2AT, 2AX, 2AW or 2BA
15	<p>Inspect the spark plug conditions.</p> <p>(See SPARK PLUG INSPECTION [13B-MSP].)</p> <p>Is the spark plug wet, covered with carbon or grayish white?</p>	Yes	<p>Spark plug is wet or covered with carbon:</p> <p>Inspect for fuel leakage from fuel injector.</p> <p>Spark plug is grayish white:</p> <p>Inspect for clogging fuel injector (FP) (RP).</p>
		No	<p>Install spark plugs in the original positions.</p> <p>Go to the next step.</p>
16	<p>Perform the Secondary Shutter Valve (SSV) Operation Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the SSV operate properly?</p>	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
17	<p>Perform the Auxiliary Port Valve (APV) Control Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the APV control operate properly?</p>	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
18	<p>Disconnect the fuel line quick release connector and install the fuel gauge to the fuel line.</p> <p>Start the engine and run it at idle.</p> <p>Measure the fuel line pressure at idle.</p> <p>Is the fuel line pressure correct at idle?</p> <p>(See FUEL LINE PRESSURE INSPECTION [13B-MSP].)</p>	Yes	Go to the next step.
		No	<p>Zero or low:</p> <ul style="list-style-type: none"> • Inspect for clogged fuel line. <ul style="list-style-type: none"> ▪ If normal, replace the fuel pump unit. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p> <p>High:</p>

			<ul style="list-style-type: none"> Replace the fuel pump unit. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p>
19	<p>Visually inspect for fuel leakage at the fuel injector, O-ring and fuel line.</p> <p>Service if necessary.</p> <p>Does the fuel line pressure hold after the ignition switch is turned off?</p> <p>(See FUEL LINE PRESSURE INSPECTION [13B-MSP].)</p>	Yes	Go to the next step.
		No	<p>Inspect the fuel injector.</p> <p>(See FUEL INJECTOR INSPECTION [13B-MSP].)</p> <p>If the fuel injector is normal, replace the fuel pump unit.</p> <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p>
20	<p>Access the ECT PID.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Does the ECT PID indicate the proper engine coolant temperature?</p> <p>(See PCM INSPECTION [13B-MSP].)</p>	Yes	Go to the next step.
		No	<p>Inspect the following:</p> <ul style="list-style-type: none"> ECT sensor <p>(See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Open or short circuit between ECT sensor and PCM terminal 2AH or 2AY
21	<p>Start the engine and run it at idle.</p> <p>Access the LONGFT1 PID.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Measure the LONGFT1 PID at idle.</p> <p>Is the PID value between -14% and +14%?</p>	Yes	Go to the next step.
		No	<p>The LONGFT1 PID is out of the specification.</p> <ul style="list-style-type: none"> LONGFT1 PID less than -14% (too rich): <ul style="list-style-type: none"> Inspect the EVAP control system. If the system is normal, go to Step 27. LONGFT1 PID more than +14% (too lean): <ul style="list-style-type: none"> Inspect for air leakage at intake-air system

			<p>components.</p> <ul style="list-style-type: none"> If the system is normal, go to the next step.
22	Visually inspect the exhaust system part.	Yes	Repair or replace the suspected part.
	Is there any deformed exhaust system part?	No	Go to the next step.
23	Perform the Metering Oil Pump Control Inspection.	Yes	Go to the next step.
	<p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the metering oil pump control operate properly?</p>	No	Repair or replace the malfunctioning part according to the inspection results.
24	Perform the fuel injector (FP) (RP) operation inspection.	Yes	Go to the next step.
	<p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Are the fuel injectors (FP) (RP) operating properly?</p>	No	Repair or replace the malfunctioning part according to the inspection results.
25	Perform the Secondary Air Injection (AIR) System Inspection.	Yes	Go to the next step.
	<p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the AIR system operate properly?</p>	No	Repair or replace the malfunctioning part according to the inspection results.
26	Inspect the engine compression.	Yes	Go to Step 32.
	<p>(See COMPRESSION INSPECTION [13B-MSP].)</p> <p>Is it normal?</p>	No	Go to the next step.

27	Perform the Metering Oil Pump Control Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the metering oil pump control operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. After that overhaul or replace the engine.
28	Check the engine oil condition. Is the engine oil low viscosity and/or is there a gasoline odor?	Yes	Replace the engine oil. After that overhaul or replace the engine.
		No	Go to the next step.
29	Inspect the oil pressure. (See OIL PRESSURE INSPECTION [13B-MSP].) Is the oil pressure within the specification?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. After that overhaul or replace the engine.
30	Turn the ignition switch off. Disconnect the fuel line quick release connector and install the fuel gauge to the fuel line. Start the engine and run it at idle. Measure the fuel line pressure at idle. Is the fuel line pressure correct at idle? (See FUEL LINE PRESSURE INSPECTION [13B-MSP].)	Yes	Go to the next step.
		No	Replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].) After that overhaul or replace the engine.
31	Check the oil pipe between metering oil pump and metering oil nozzle. Is there air and/or clogging in oil pipe?	Yes	Inspect and repair for leakage and/or clogging in the oil passage at the engine. After that overhaul or replace the engine.
		No	Overhaul or replace the engine.

32	Disconnect the vacuum hose between the purge solenoid valve and the intake manifold at the quick release connector.	Yes	Check if the purge solenoid valve sticks open mechanically. Inspect the EVAP control system.
	Plug the opening end of vacuum hose. Start the engine. Does the engine condition improve?	No	Inspect the following: <ul style="list-style-type: none"> • Jet air mixing system (clogged or leakage) • Primary intake port (deposited carbon or foreign materials) • Eccentric shaft position sensor pulse wheel (damaged, improper installation)
33	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting is completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

2011 - RX-8 - Engine

NO.9 FAST IDLE/RUNS ON [13B-MSP]

9	FAST IDLE/RUNS ON
DESCRIPTION	<ul style="list-style-type: none"> The engine speed continues at fast idle after warm-up. The engine runs after the ignition switch is turned off.
POSSIBLE CAUSE	<ul style="list-style-type: none"> ECT sensor malfunction Air leakage from intake-air system Throttle body malfunction (stuck open) APP sensor malfunction Cruise control system operation improperly Improper load signal input Improper operation of drive-by-wire control system

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Access the ECT PID. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Start and warm up the engine to normal operating temperature. Is the ECT PID reading between 82—112 °C {180—234 °F} ?	Yes	Go to the next step.
		No	ECT PID is higher than 112 °C {234 °F}: <ul style="list-style-type: none"> Go to the symptom troubleshooting “NO.17 COOLING SYSTEM CONCERNS-OVERHEATING”. (See NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [13B-MSP].)

			<p>ECT PID is less than 82 °C {180 °F}:</p> <ul style="list-style-type: none"> Go to the symptom troubleshooting "NO.18 COOLING SYSTEM CONCERNS-RUNS COLD". <p>(See NO.18 COOLING SYSTEM CONCERNS-RUNS COLD [13B-MSP].)</p>
2	<p>Turn the ignition switch to the ON position (engine off).</p> <p>Retrieve any DTCs for the PCM, TCM, ABS HU/CM, DSC HU/CM and the EPS CM.</p> <p>Are there any DTCs displayed?</p>	Yes	<p>Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p>
		No	<p>Go to the next step.</p>
3	<p>Access the following PIDs using the M-MDS.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>(See PID/DATA MONITOR INSPECTION [SJ6A-EL].)</p> <p>PCM PIDs:</p> <ul style="list-style-type: none"> ACCS AC_REQ CPP (MT) CPP/PNP (MT) <p>TCM PID:</p> <ul style="list-style-type: none"> PNP_TCM (AT) <p>Are the PID values normal?</p> <p>(See PCM INSPECTION [13B-MSP].)</p> <p>(See PID/DATA MONITOR INSPECTION [SJ6A-EL].)</p>	Yes	<p>Go to the next step.</p>
		No	<p>If the ACCS, ACSW PID is not normal:</p> <ul style="list-style-type: none"> Inspect the A/C switch, refrigerant pressure switch, and fan switch, and related wiring harness for vibration or intermittent open/short circuit. <p>If the CPP PID is not normal:</p> <ul style="list-style-type: none"> Inspect the clutch position switch and related wiring harness for vibration or intermittent open/short circuit. <p>If the CPP/PNP PID is not normal:</p> <ul style="list-style-type: none"> Inspect the neutral position switch and related wiring harness for vibration or intermittent open/short circuit. <p>If the PNP_TCM PID is not normal:</p> <ul style="list-style-type: none"> Inspect the TR switch and related wiring harness for vibration or intermittent open/short circuit.
4	<p>Is there air leakage felt or heard at the intake-air system components while the racing engine to a higher speed?</p>	Yes	<p>Repair or replace parts if necessary.</p>
		No	<p>Inspect the following:</p>

			<ul style="list-style-type: none">• Drive-by-wire control system operation <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none">• APP sensor <p>(See ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [13B-MSP].)</p>
5	Verify test results.		
	<ul style="list-style-type: none">• If normal, return to the diagnostic index to service any additional symptoms.• If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.<ul style="list-style-type: none">▪ If the vehicle is repaired, troubleshooting is completed.▪ If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.		

2011 - RX-8 - Engine

NO.10 LOW IDLE/STALLS DURING DECELERATION [13B-MSP]

10	LOW IDLE/STALLS DURING DECELERATION
DESCRIPTION	<ul style="list-style-type: none">• The engine stops unexpectedly at the beginning of deceleration or recovery from deceleration.
	<ul style="list-style-type: none">• Vacuum leakage• Air leakage from intake-air system• Air suction at intake-air system (between MAF sensor and intake part)• Improper operation of drive-by-wire control system (abnormal accelerator position and TP signals to PCM)• Drive-by-wire control system operates in fail-safe mode (abnormal accelerator position and TP signal to PCM)• Throttle body malfunction (restriction, stuck closed)• Evaporative emission control system malfunction• Improper operation of fuel cut control• Fuel injector improper operation• Fuel injector malfunction (leakage, clogging, improper injection amount)• Inadequate fuel pressure• Pressure regulator (integrated in fuel pump unit)• Fuel pump mechanical malfunction• Fuel line restriction or clogging• MAF sensor improper installation• MAF sensor or related circuit malfunction (abnormal signal to PCM)• Brake switch or related circuit malfunction (abnormal signal to PCM)

**POSSIBLE
CAUSE**

- Neutral/CPP switch or related circuit malfunction (abnormal signal to PCM) (MT)
- TR switch or related circuit malfunction (abnormal signal to PCM from TCM) (AT)
- Low engine compression
 - Engine internal malfunction
 - Abnormal engine oil condition (viscosity, deterioration)
 - Low oil pressure
 - Excessive fuel pressure
 - Air mixed in oil line
 - Metering oil pump malfunction
 - Leakage or clogging in oil pipe
 - Leakage or clogging in oil nozzle
- Improper A/C magnetic clutch malfunction
- Misfire
- Improper operation of torque converter clutch control (AT)
- Loose installation of engine mounts

WARNING:

The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:

- Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).) (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)

CAUTION:

- Disconnecting/connecting quick release connector without cleaning it may possibly cause damage to fuel pipe and quick release connector. Always clean quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

--	--	--	--

STEP	INSPECTION	RESULTS	ACTION
1	Does the engine idle roughly?	Yes	Go to the symptom troubleshooting "NO.8 ENGINE RUNS ROUGH/ROLLING IDLE". (See NO.8 ENGINE RUNS ROUGH/ROLLING IDLE [13B-MSP].)
		No	Go to the next step.
2	Turn off the A/C switch and the fan switch. Does the A/C magnetic clutch engage?	Yes	Go to the symptom troubleshooting "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY". (See NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [13B-MSP].)
		No	Go to the next step.
3	Does the engine knock/ping/detonate?	Yes	Go to the symptom troubleshooting "NO.13 KNOCKING/PINGING/DETONATION-ACCELERATION/CRUISE". (See NO.13 KNOCKING/PINGING/DETONATION-ACCELERATION/CRUISE [13B-MSP].)
		No	Go to the next step.
4	Verify the following: <ul style="list-style-type: none"> • Proper routing of and no damage to vacuum lines • No air leakage from intake-air system • Engine mount installation condition (loose) Are all items normal?	Yes	Go to the next step.
		No	Service if necessary. Repeat Step 4.
5	Turn the ignition switch to the ON position (engine off). Retrieve any DTCs using the M-MDS.	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	Go to the next step.

	<p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Are there any DTCs displayed?</p>		
6	<p>Perform the Drive-by-wire Control System Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the drive-by-wire control system work properly?</p>	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
7	<p>Disconnect the vacuum hose between the purge solenoid valve and the intake manifold at quick release connector.</p> <p>Plug the opening end of the vacuum hose.</p> <p>Drive the vehicle.</p> <p>Does the engine condition improve?</p>	Yes	Inspect the evaporative emission control system.
		No	Go to the next step.
8	<p>Access the following PIDs using the M-MDS.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • APP1 • APP2 • TP REL • MAF • VSS <p>Are the PID values normal?</p> <p>(See PCM INSPECTION [13B-MSP].)</p>	Yes	Go to the next step.
		No	<p>If the APP1, APP2 PIDs are not normal:</p> <ul style="list-style-type: none"> • Inspect the APP sensor. <p>(See ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [13B-MSP].)</p> <p>If the TP REL PID is not normal:</p> <ul style="list-style-type: none"> • Inspect the TP sensor. <p>(See THROTTLE POSITION (TP) SENSOR INSPECTION [13B-MSP].)</p> <p>If the MAF PID is not normal:</p> <ul style="list-style-type: none"> • Inspect the MAF sensor. <p>(See MASS AIR FLOW (MAF) SENSOR INSPECTION [13B-MSP].)</p> <p>If the VSS PID is not normal:</p> <ul style="list-style-type: none"> • Inspect the ABS HU/CM or DSC HU/CM.

			<p>(See ABS HU/CM INSPECTION.)</p> <p>(See DSC HU/CM INSPECTION.)</p>
9	<p>Access the following PIDs using the M-MDS.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>(See PID/DATA MONITOR INSPECTION [SJ6A-EL].)</p> <p>PCM PIDs:</p> <ul style="list-style-type: none"> • BOO • CPP (MT) • CPP/PNP (MT) <p>TCM PID:</p> <ul style="list-style-type: none"> • PNP_TCM (AT) <p>Are the PID values normal?</p> <p>(See PCM INSPECTION [13B-MSP].)</p> <p>(See PID/DATA MONITOR INSPECTION [SJ6A-EL].)</p>	Yes	Go to the next step.
		No	<p>If the BOO PID is not normal:</p> <ul style="list-style-type: none"> • Inspect the brake switch, and related wiring harness for vibration or intermittent open/short circuit. <p>If the CPP PID is not normal:</p> <ul style="list-style-type: none"> • Inspect the clutch position switch and related wiring harness for vibration or intermittent open/short circuit. <p>If the CPP/PNP PID is not normal:</p> <ul style="list-style-type: none"> • Inspect the neutral position switch and related wiring harness for vibration or intermittent open/short circuit. <p>If the PNP_TCM PID is not normal:</p> <ul style="list-style-type: none"> • Inspect the TR switch and related wiring harness for vibration or intermittent open/short circuit.
10	<p>Inspect the fuel line pressure.</p> <p>(See FUEL LINE PRESSURE INSPECTION [13B-MSP].)</p> <p>Is the fuel line pressure correct?</p>	Yes	Go to the next step.
		No	<p>Zero or low:</p> <ul style="list-style-type: none"> • Inspect for clogged fuel line. <ul style="list-style-type: none"> ▪ If normal, replace the fuel pump unit. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p> <p>High:</p> <ul style="list-style-type: none"> • Replace the fuel pump unit. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p>

11	Perform the Fuel Injector Operation Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the fuel injector operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
12	Inspect the engine compression. (See COMPRESSION INSPECTION [13B-MSP].) Is it normal?	Yes	Go to step 18.
		No	Go to the next step.
13	Perform the Metering Oil Pump Control Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the metering oil pump control operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. After that overhaul or replace the engine.
14	Check the engine oil condition. Is the engine oil low viscosity and/or is there a gasoline odor?	Yes	Replace the engine oil. After that overhaul or replace the engine.
		No	Go to the next step.
15	Inspect the oil pressure. (See OIL PRESSURE INSPECTION [13B-MSP].) Is the oil pressure within the specification?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. After that overhaul or replace the engine.
16	Turn the ignition switch off. Disconnect the fuel line quick release connector and install the fuel gauge to the fuel line. Start the engine and run it at idle. Measure the fuel line pressure at idle.	Yes	Go to the next step.
		No	Replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].) After that overhaul or replace the engine.

	Is the fuel line pressure correct at idle? (See FUEL LINE PRESSURE INSPECTION [13B-MSP].)		
17	Check the oil pipe between metering oil pump and metering oil nozzle. Is there air and/or clogging in oil pipe?	Yes	Inspect and repair for leakage and/or clogging in the oil passage at the engine. After that overhaul or replace the engine.
		No	Overhaul or replace the engine.
18	Inspect the torque converter clutch control. (See ROAD TEST [SJ6A-EL].) Does the torque converter clutch control operate properly?	Yes	Inspect the following: <ul style="list-style-type: none"> • Blockage at intake-air system (between MAF sensor and intake ports) • MAF sensor installation
		No	Repair or replace the malfunctioning part according to the inspection results.
19	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting is completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

2011 - RX-8 - Engine

NO.11 ENGINE STALLS/QUITS, ENGINE RUNS ROUGH, MISSES, BUCK/JERK, HESITATION/STUMBLE, SURGES [13B-MSP]

11	<p>ENGINE STALLS/QUITS—ACCELERATION/CRUISE</p> <p>ENGINE RUNS ROUGH—ACCELERATION/CRUISE</p> <p>MISSES—ACCELERATION/CRUISE</p> <p>BUCK/JERK—ACCELERATION/CRUISE/DECELERATION</p> <p>HESITATION/STUMBLE—ACCELERATION</p> <p>SURGES—ACCELERATION/CRUISE</p>		
DESCRIPTION	<ul style="list-style-type: none"> • The engine stops unexpectedly at the beginning of acceleration or during acceleration. • The engine stops unexpectedly while cruising. • The engine speed fluctuates during acceleration or cruising. • The engine misses during acceleration or cruising. • The vehicle bucks/jerks during acceleration, cruising, or deceleration. • The momentary pause at the beginning of acceleration or during acceleration. • The momentary minor irregularity in the engine output. 		
	<table border="0"> <tr> <td> <ul style="list-style-type: none"> • Drive-by-wire control system operates in brake override system • Vacuum leakage • Air leakage from intake-air </td><td> <ul style="list-style-type: none"> • Improper ignition timing control (abnormal ECT, IAT, MAF and knock signals to PCM) • Improper fuel injection control (abnormal MAF, ECT, A/F sensor and HO2S signals to PCM) • Improper load signal (neutral/CPP switch (MT), TR switch (AT)) to PCM • Main relay intermittent malfunction </td></tr> </table>	<ul style="list-style-type: none"> • Drive-by-wire control system operates in brake override system • Vacuum leakage • Air leakage from intake-air 	<ul style="list-style-type: none"> • Improper ignition timing control (abnormal ECT, IAT, MAF and knock signals to PCM) • Improper fuel injection control (abnormal MAF, ECT, A/F sensor and HO2S signals to PCM) • Improper load signal (neutral/CPP switch (MT), TR switch (AT)) to PCM • Main relay intermittent malfunction
<ul style="list-style-type: none"> • Drive-by-wire control system operates in brake override system • Vacuum leakage • Air leakage from intake-air 	<ul style="list-style-type: none"> • Improper ignition timing control (abnormal ECT, IAT, MAF and knock signals to PCM) • Improper fuel injection control (abnormal MAF, ECT, A/F sensor and HO2S signals to PCM) • Improper load signal (neutral/CPP switch (MT), TR switch (AT)) to PCM • Main relay intermittent malfunction 		

**POSSIBLE
CAUSE**

system

- Air cleaner restriction
- Air suction at intake-air system (between MAF sensor and intake ports)
- Improper operation of drive-by-wire control system (abnormal accelerator position and TP signals to PCM)
- Throttle body malfunction (stuck close)
- Improper SSV operation
- Improper APV operation
- Poor fuel quality
- Inadequate fuel pressure
- Fuel pump mechanical malfunction
- Fuel leakage from fuel injector
- Fuel injector clogging
- Fuel line restriction or clogging
- Pressure regulator (integrated in fuel pump unit) malfunction
- Low engine compression
 - Engine internal malfunction
 - Abnormal engine oil condition (viscosity, deterioration)
 - Low oil pressure
 - Excessive fuel injector
 - Air mixed in oil line
 - Metering oil pump malfunction
 - Leakage or clogging in oil pipe
 - Leakage or clogging in oil nozzle
- Metering oil pump malfunction
- Improper metering oil pump control operation
- Engine overheating
- Spark leakage from high-tension leads
- Spark plug malfunction
- Improper A/C system operation
- Improper torque converter clutch control operation (AT)
- Improper shift point (AT)
- AT malfunction (AT)
- Clutch slippage (MT)

- Intermittent open or short in fuel pump body circuit
- Fuel pump relay malfunction (stuck open)
- Restriction in exhaust system
- Purge solenoid valve malfunction
- Improper air/fuel ratio control
- MAF sensor improper installation
- Intermittent open or short of MAF sensor, TP sensor, APP sensor and VSS
- Erratic signal from eccentric shaft position sensor

WARNING:

The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:

- Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).) (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)

CAUTION:

- Disconnecting/connecting quick release connector without cleaning it may possibly cause damage to fuel pipe and quick release connector. Always clean quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Retrieve any PCM DTC using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)	Yes	Go to the P2299 troubleshooting procedure. (Drive-by-wire system operates with brake override system.) (See DTC P2299 [13B-MSP].)
	Is the DTC P2299 presented?	No	Go to the next step.
2	Does the engine knock/ping/detonate?	Yes	Go to the symptom troubleshooting "NO.13 KNOCKING/PINGING/DETONATION-ACCELERATION/CRUISE". (See NO.13 KNOCKING/PINGING/DETONATION-ACCELERATION/CRUISE [13B-MSP].)
		No	Go to the next step.
3	Verify the following: <ul style="list-style-type: none">• Vacuum connection• Air cleaner element• No air leakage from intake-air system• No restriction of intake-air system• Blockage of intake-air system (between MAF sensor and intake ports)• Ignition wiring• Fuel quality (e.g. proper octane, contamination, winter/summer blend)• MAF sensor	Yes	Go to the next step.
		No	Service if necessary. Repeat Step 3.

	<p>installation</p> <ul style="list-style-type: none"> • Electrical connections • Smooth operation of throttle valve <p>Are all items normal?</p>		
4	<p>Turn the ignition switch to the ON position (engine off).</p> <p>Retrieve any DTCs using the M-MDS.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Are there any DTCs displayed?</p>	Yes	<p>Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p>
		No	<p>Go to the next step.</p>
5	<p>Is the engine overheating?</p>	Yes	<p>Go to the symptom troubleshooting "NO.17 COOLING SYSTEM CONCERNS-OVERHEATING".</p> <p>(See NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [13B-MSP].)</p>
		No	<p>Go to the next step.</p>
6	<p>CAUTION:</p> <ul style="list-style-type: none"> • While performing this step, always operate the vehicle in a safe and lawful manner. • When observe monitor system status while driving, be sure to have another technician with you, or record the data in the M-MDS using the PID/DATA MONITOR AND RECORD capturing 	Yes	<p>Go to the next step.</p>
		No	<p>If the APP1, APP2 PIDs are not normal:</p> <ul style="list-style-type: none"> • Inspect if the output signal from the APP sensor changes smoothly. <p>If the RPM PID is not normal:</p> <ul style="list-style-type: none"> • Inspect the eccentric shaft position sensor and the related wiring harness for vibration or an intermittent open/short circuit. <ul style="list-style-type: none"> ▪ If normal, go to Step 8. <p>If the VPWR PID is not normal:</p> <ul style="list-style-type: none"> • Inspect for an intermittent open circuit. <p>If the MAF PID is not normal:</p> <ul style="list-style-type: none"> • Inspect for an intermittent open circuit of

	<p>function and inspect later.</p> <p>Access the following PIDs using the M-MDS.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • APP1 • APP2 • RPM • VPWR • MAF • TP REL • O2S11 • O2S12 • VSS <p>Drive the vehicle while monitoring PIDs.</p> <p>Are the PID values normal?</p> <p>(See PCM INSPECTION [13B-MSP].)</p>		<p>the MAF sensor and the related wiring harness.</p> <p>If the TP REL PID is not normal:</p> <ul style="list-style-type: none"> • Inspect if the output signal from the TP sensor changes smoothly. <p>If the O2S11 PID is not normal:</p> <ul style="list-style-type: none"> • Inspect the A/F sensor and the related wiring harness for vibration or an intermittent open or short circuit or both. <ul style="list-style-type: none"> ▪ If normal, go to Step 9. <p>If the O2S12 PID is not normal:</p> <ul style="list-style-type: none"> • Inspect the HO2S and the related wiring harness for vibration or an intermittent open or short circuit or both. <ul style="list-style-type: none"> ▪ If normal, go to Step 9. <p>If the VSS PID is not normal:</p> <ul style="list-style-type: none"> • Inspect the ABS HU/CM or DSC HU/CM. <p>(See ABS HU/CM INSPECTION.)</p> <p>(See DSC HU/CM INSPECTION.)</p>
7	<p>Inspect the KS.</p> <p>(See KNOCK SENSOR (KS) INSPECTION [13B-MSP].)</p> <p>Is the KS normal?</p>	Yes	Go to the next step.
		No	<p>Replace the KS.</p> <p>(See KNOCK SENSOR (KS) REMOVAL/INSTALLATION [13B-MSP].)</p>
8	<p>Visually inspect the eccentric shaft position sensor and the teeth of the pulse wheel.</p> <p>Are the eccentric shaft position sensor and the teeth of the pulse wheel normal?</p>	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
9	<p>Is a strong blue spark visible at each disconnected high-tension lead while cranking the engine?</p>	Yes	<p>Inspect the following:</p> <ul style="list-style-type: none"> • Spark plugs malfunction

			<ul style="list-style-type: none"> • Spark plugs heat range • Pulse wheel damaged on eccentric shaft • Open or short circuit on eccentric shaft position sensor • Open or short between eccentric shaft position sensor and PCM terminal 2AG and 2AP <ul style="list-style-type: none"> ▪ If they are normal, go to the next step.
		No	Inspect the following: <ul style="list-style-type: none"> • High-tension leads • Ignition coils or connectors
10	Inspect the spark plug conditions. (See SPARK PLUG INSPECTION [13B-MSP].) Is the spark plug wet, covered with carbon or grayish white?	Yes	Spark plug is wet or covered with carbon: Inspect for fuel leakage from fuel injector. Spark plug is grayish white: Inspect for clogged fuel injector.
		No	Install the spark plugs on original positions. Go to the next step.
11	Perform the Drive-by-wire Control System Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the drive-by-wire control system work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
12	Visually inspect the exhaust system part. Is there any deformed exhaust system part?	Yes	Replace the suspected part.
		No	Go to the next step.
13	Perform the Fuel Pump Speed Control Operation Inspection. (See ENGINE CONTROL SYSTEM	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the

	OPERATION INSPECTION [13B-MSP].) Does the fuel pump speed control operate properly?		inspection results.
14	Inspect the fuel line pressure. (See FUEL LINE PRESSURE INSPECTION [13B-MSP].) Is the fuel line pressure correct?	Yes	Go to the next step.
		No	Zero or low: <ul style="list-style-type: none"> Inspect the fuel pump relay and the fuel pump circuit. Inspect for clogged fuel line. <ul style="list-style-type: none"> If normal, replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].) High: <ul style="list-style-type: none"> Replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)
15	Visually inspect for fuel leakage at the fuel injector, O-ring and fuel line. Service if necessary. Is the fuel line pressure held after the ignition switch is turned off? (See FUEL LINE PRESSURE INSPECTION [13B-MSP].)	Yes	Go to the next step.
		No	Inspect the fuel injector. (See FUEL INJECTOR INSPECTION [13B-MSP].) If the fuel injector is normal, replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)
16	Perform the Fuel Injector Operation Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the fuel injector operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
17	NOTE:	Yes	Go to the next step.

	<ul style="list-style-type: none"> The following test is for an engine stalling with the A/C on. If other symptom exists, go to the next step. <p>Connect a pressure gauge to the A/C low and high pressure side lines.</p> <p>Turn the A/C on and measure the low side and high side pressure.</p> <p>Are the pressures within the specifications?</p> <p>(See REFRIGERANT PRESSURE CHECK.)</p>	No	<p>If the A/C is always on, go to the symptom troubleshooting "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY".</p> <p>(See NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [13B-MSP].)</p> <p>For other symptoms, inspect the following:</p> <ul style="list-style-type: none"> Refrigerant charging amount Condenser fan operation
18	<p>NOTE:</p> <ul style="list-style-type: none"> The following test should be performed for a symptom with the cruise control on. If other symptoms exist, go to the next step. <p>Inspect the cruise control system.</p> <p>Is the cruise control system normal?</p>	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
19	<p>Perform the Secondary Shutter Valve (SSV) Operation Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the SSV operate properly?</p>	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
20	<p>Perform the Auxiliary Port Valve (APV) Control Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p>	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.

	Does the APV control operate properly?		
21	Disconnect the vacuum hose between the purge solenoid valve and the intake manifold at the quick release connector. Plug the opening end of the vacuum hose. Drive the vehicle. Does the engine condition improve?	Yes	Inspect if the purge solenoid valve sticks open mechanically. Inspect the evaporative emission control system.
		No	Go to the next step.
22	Inspect the ignition timing. (See ENGINE TUNE-UP [13B-MSP].) Does the ignition timing operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
23	Perform the Metering Oil Pump Control Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the metering oil pump control operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
24	Inspect the engine compression. (See COMPRESSION INSPECTION [13B-MSP].) Is it normal?	Yes	Inspect the following: <ul style="list-style-type: none"> • Internal transmission components (AT) • Torque converter clutch control (AT) • Shift point (AT) • Clutch (MT) • Brake system for dragging • Engine mounts • KS
		No	Go to the next step.

25	Perform the Metering Oil Pump Control Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the metering oil pump control operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. After that overhaul or replace the engine.
26	Check the engine oil condition. Is the engine oil low viscosity and/or is there a gasoline odor?	Yes	Replace the engine oil. After that overhaul or replace the engine.
		No	Go to the next step.
27	Inspect the oil pressure. (See OIL PRESSURE INSPECTION [13B-MSP].) Is the oil pressure within the specification?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. After that overhaul or replace the engine.
28	Turn the ignition switch off. Disconnect the fuel line quick release connector and the release fuel gauge to the fuel line. Start the engine and run it at idle. Measure the fuel line pressure at idle. Is the fuel line pressure correct at idle? (See FUEL LINE PRESSURE INSPECTION [13B-MSP].)	Yes	Go to the next step.
		No	Replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].) After that overhaul or replace the engine.
29	Check the oil pipe between metering oil pump and metering oil nozzle. Is there air and/or clogging in oil pipe?	Yes	Inspect and repair for leakage and/or clogging in the oil passage at the engine. After that overhaul or replace the engine.
		No	Overhaul or replace the engine.
30	Verify test results.		

- If normal, return to the diagnostic index to service any additional symptoms.
- If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.
 - If the vehicle is repaired, troubleshooting is completed.
 - If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

NO.14 POOR FUEL ECONOMY [13B-MSP]

14	POOR FUEL ECONOMY
DESCRIPTION	<ul style="list-style-type: none">• The fuel economy is unsatisfactory.
	<ul style="list-style-type: none">• Contaminated air cleaner element• Air suction at intake-air system (between MAF sensor and intake ports)• Poor fuel quality• Inadequate fuel pressure• Pressure regulator (integrated in fuel pump unit) malfunction• Fuel pump relay stuck closed• Fuel leakage from fuel injector• Restriction in exhaust system• Erratic signal from eccentric shaft position sensor• Improper MAF sensor installation• Improper fuel injector control operation (abnormal signals from MAF, ECT, A/F sensor, HO2S and IAT sensors to PCM)• KS malfunction (abnormal signal to PCM)• Contaminated MAF sensor• Improper engine compression<ul style="list-style-type: none">▪ Engine internal malfunction▪ Abnormal engine oil condition (viscosity, deterioration)▪ Low oil pressure▪ Excessive fuel pressure

**POSSIBLE
CAUSE**

- Metering oil pump malfunction
 - Leakage or clogging in oil pipe
 - Leakage or clogging in oil nozzle
- Eccentric shaft bypass valve malfunction (stuck open)
- Improper cooling fan control system operation
- Thermostat malfunction (stuck open)
- Improper engine coolant level
- Improper ignition timing
- Weak spark
- Spark plug malfunction
- Brake dragging
- Insufficient tire pressure
- Low tire pressure
- Clutch slippage (MT)
- Improper ATF level (AT)
- Improper A/C operation (A/C cut-off control does not operate)

WARNING:

The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:

- Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).) (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)

CAUTION:

- Disconnecting/connecting quick release connector without cleaning it may possibly cause damage to fuel pipe and quick release connector. Always clean quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

--	--	--	--

STEP	INSPECTION	RESULTS	ACTION
1	Does the engine knock/ping/detonate?	Yes	Go to the symptom troubleshooting “NO.13 KNOCKING/PINGING/DETONATION-ACCELERATION/CRUISE”. (See NO.13 KNOCKING/PINGING/DETONATION-ACCELERATION/CRUISE [13B-MSP] .)
		No	Go to the next step.
2	Inspect the following: <ul style="list-style-type: none"> • Air cleaner element for contamination • Air suction at intake-air system (between MAF sensor and intake ports) • ATF level (AT) • Fuel quality • Coolant level • Brake dragging • Tire pressure • Clutch slippage (MT) • MAF sensor installation Are all items normal?	Yes	Go to the next step.
		No	Service if necessary. Repeat Step 2.
3	Turn the ignition switch to the ON position (engine off). Retrieve any DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP] .) Are there any DTCs displayed?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
		No	Go to the next step.
4	Access the ECT PID.	Yes	Go to the next step.

	<p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Drive the vehicle while monitoring the PID.</p> <p>Is the PID within the specification?</p> <p>(See PCM INSPECTION [13B-MSP].)</p>	No	Inspect for coolant leakage, cooling fan operation or thermostat operation.
5	Is a strong blue spark visible at each disconnected high-tension lead while cranking the engine?	Yes	<p>Inspect the following:</p> <ul style="list-style-type: none"> • Spark plugs malfunction • Eccentric shaft position sensor is improperly installed. • Pulse wheel damaged on eccentric shaft • Open or short circuit on eccentric shaft position sensor • Open or short circuit between eccentric shaft position sensor and PCM terminal 2AG and 2AP <p>Repair or replace the malfunctioning part according to the inspection results.</p> <p>If normal, go to the next step.</p>
		No	<p>Inspect the following:</p> <ul style="list-style-type: none"> • High-tension leads • Ignition coils and connectors
6	<p>Perform the Fuel Pump Speed Control Operation Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the fuel pump speed control operate properly?</p>	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
7	<p>Inspect the MAF sensor for contamination.</p> <p>Is there any contamination?</p>	Yes	<p>Replace the MAF sensor.</p> <p>(See MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p>

		No	Go to the next step.
8	<p>Access the following PIDs using the M-MDS.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <ul style="list-style-type: none"> • MAF • O2S11 • O2S12 • IAT <p>Are the PID values normal?</p> <p>(See PCM INSPECTION [13B-MSP].)</p>	Yes	Go to the next step.
		No	<p>If the MAF PID is not normal:</p> <ul style="list-style-type: none"> • Inspect the MAF sensor. <p>(See MASS AIR FLOW (MAF) SENSOR INSPECTION [13B-MSP].)</p> <p>If the O2S11 PID is not normal:</p> <ul style="list-style-type: none"> • Inspect the A/F sensor. <p>(See AIR FUEL RATIO (A/F) SENSOR INSPECTION [13B-MSP].)</p> <p>If the O2S12 PID is not normal:</p> <ul style="list-style-type: none"> • Inspect the HO2S. <p>(See HEATED OXYGEN SENSOR (HO2S) INSPECTION [13B-MSP].)</p> <p>If the IAT PID is not normal:</p> <ul style="list-style-type: none"> • Inspect the IAT sensor. <p>(See INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [13B-MSP].)</p>
9	<p>Inspect the KS.</p> <p>(See KNOCK SENSOR (KS) INSPECTION [13B-MSP].)</p> <p>Is the KS normal?</p>	Yes	Go to the next step.
		No	<p>Replace the KS.</p> <p>(See KNOCK SENSOR (KS) REMOVAL/INSTALLATION [13B-MSP].)</p>
10	<p>Visually inspect the exhaust system part.</p> <p>Is there any deformed exhaust system part?</p>	Yes	Replace the suspected part.
		No	Go to the next step.
11	<p>Disconnect the fuel line quick release connector and install the fuel gauge to the fuel line.</p> <p>Start the engine and run it at idle.</p>	Yes	Go to the next step.
		No	<p>Zero or low:</p> <ul style="list-style-type: none"> • Inspect the fuel pump relay and the fuel

	<p>Measure the fuel line pressure at idle.</p> <p>Is the fuel line pressure correct at idle?</p> <p>(See FUEL LINE PRESSURE INSPECTION [13B-MSP].)</p>		<p>pump circuit.</p> <ul style="list-style-type: none"> Inspect for clogged fuel line. <ul style="list-style-type: none"> If normal, replace the fuel pump unit. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p> <p>High:</p> <ul style="list-style-type: none"> Replace the fuel pump unit. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p>
12	<p>Perform the Fuel Injector Operation Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the fuel injector operate properly?</p>	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
13	<p>Perform the A/C Cut-off Control System Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the A/C cut-off control operate properly?</p>	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
14	<p>Inspect the engine compression.</p> <p>(See COMPRESSION INSPECTION [13B-MSP].)</p> <p>Is it normal?</p>	Yes	Inspect the eccentric shaft bypass valve.
		No	Go to the next step.
15	<p>Perform the Metering Oil Pump Control Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the metering oil pump control operate properly?</p>	Yes	Go to the next step.
		No	<p>Repair or replace the malfunctioning part according to the inspection results.</p> <p>After that overhaul or replace the engine.</p>

16	<p>Check the engine oil condition.</p> <p>Is the engine oil low viscosity and/or is there a gasoline odor?</p>	Yes	<p>Replace the engine oil.</p> <p>After that overhaul or replace the engine.</p>
		No	Go to the next step.
17	<p>Inspect the oil pressure.</p> <p>(See OIL PRESSURE INSPECTION [13B-MSP].)</p> <p>Is the oil pressure within the specification?</p>	Yes	Go to the next step.
		No	<p>Repair or replace the malfunctioning part according to the inspection results.</p> <p>After that overhaul or replace the engine.</p>
18	<p>Turn the ignition switch off.</p> <p>Disconnect the fuel line quick release connector and install the fuel gauge to the fuel line.</p> <p>Start the engine and run it at idle.</p> <p>Measure the fuel line pressure at idle.</p> <p>Is the fuel line pressure correct at idle?</p> <p>(See FUEL LINE PRESSURE INSPECTION [13B-MSP].)</p>	Yes	Go to the next step.
		No	<p>Replace the fuel pump unit.</p> <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p> <p>After that overhaul or replace the engine.</p>
19	<p>Check the oil pipe between metering oil pump and metering oil nozzle.</p> <p>Is there air and/or clogging in the oil pipe?</p>	Yes	<p>Inspect and repair for leakage and/or clogging in the oil passage at the engine.</p> <p>After that overhaul or replace the engine.</p>
		No	Overhaul or replace the engine.
20	<p>Verify test results.</p> <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting is completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. 		

	Retest.
--	---------

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

NO.15 EMISSION COMPLIANCE [13B-MSP]

15	EMISSION COMPLIANCE
DESCRIPTION	<ul style="list-style-type: none">• Fails emissions test.
POSSIBLE	<ul style="list-style-type: none">• Vacuum lines leakage or blockage• Cooling system malfunction• Spark plug malfunction• Leakage from intake manifold• Erratic signal from eccentric shaft position sensor• Inadequate fuel pressure• Exhaust system clogging• Fuel tank ventilation system malfunction• Charcoal canister damage• Air cleaner element clogging or restriction• Throttle body malfunction• Jet air mixing system line blockage• Spark leakage from high-tension leads• Improper air/fuel mixture ratio control operation• Catalyst converter malfunction• Engine internal parts malfunction• Excessive carbon is built up in combustion chamber• Improper engine compression<ul style="list-style-type: none">▪ Engine internal malfunction

<p>CAUSE</p>	<ul style="list-style-type: none"> ▪ Abnormal engine oil condition (viscosity, deterioration) ▪ Low oil pressure ▪ Excessive fuel pressure ▪ Air mixed in oil line ▪ Metering oil pump malfunction <ul style="list-style-type: none"> • Leakage or clogging in oil pipe • Leakage or clogging in oil nozzle <p>WARNING:</p> <p>The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:</p> <ul style="list-style-type: none"> • Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. • Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See BEFORE SERVICE PRECAUTION [13B-MSP].) (See AFTER SERVICE PRECAUTION [13B-MSP].) <p>CAUTION:</p> <ul style="list-style-type: none"> • Disconnecting/connecting quick release connector without cleaning it may possibly cause damage to fuel pipe and quick release connector. Always clean quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.
---------------------	--

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect the following: <ul style="list-style-type: none"> • Vacuum lines for leakage or blockage • Jet air mixing system line blockage • Electrical connections 	Yes	Go to the next step.
		No	Service if necessary. Repeat Step 1.

	<p>Proper maintenance schedule followed</p> <ul style="list-style-type: none"> Intake–air system and air cleaner element concerns: obstructions, leakage or dirtiness <p>Are all items normal?</p>		
2	<p>Turn the ignition switch to the ON position (engine off).</p> <p>Retrieve any DTCs using the M-MDS.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Are there any DTCs displayed?</p>	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	Go to the next step.
3	<p>Is any other drivability concern present?</p>	Yes	Go to the applicable symptom troubleshooting. (See SYMPTOM DIAGNOSTIC INDEX [13B-MSP].)
		No	Go to the next step.
4	<p>Access the ECT PID.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Warm up the engine and run it at idle.</p> <p>Verify the ECT PID is correct.</p> <p>Is the ECT PID correct?</p> <p>(See PCM INSPECTION [13B-MSP].)</p>	Yes	Go to the next step.
		No	Inspect for coolant leakage, cooling fan operation or thermostat operation.
5	<p>Is a strong blue spark visible at each disconnected high–tension lead while cranking the engine?</p>	Yes	<p>Inspect the following:</p> <ul style="list-style-type: none"> Spark plugs malfunction Improperly installed eccentric shaft position sensor

			<ul style="list-style-type: none"> • Damaged trigger wheel on eccentric shaft • Open or short circuit on eccentric shaft position sensor • Open or short circuit between eccentric shaft position sensor and PCM terminal 2AG and 2AP <p>Repair or replace the malfunctioning part according to the inspection results.</p> <p>If normal, go to the next step.</p>
		No	<p>Inspect the following:</p> <ul style="list-style-type: none"> • High-tension leads • Ignition coil and connector
6	<p>Disconnect the fuel line quick release connector and install the fuel gauge to the fuel line.</p> <p>Start the engine and run it at idle.</p> <p>Measure the fuel line pressure at idle.</p> <p>Is the fuel line pressure correct at idle?</p> <p>(See FUEL LINE PRESSURE INSPECTION [13B-MSP].)</p>	Yes	Go to the next step.
		No	<p>Zero or low:</p> <ul style="list-style-type: none"> • Inspect for clogged fuel line. <ul style="list-style-type: none"> ▪ If normal, replace the fuel pump unit. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p> <p>High:</p> <ul style="list-style-type: none"> • Replace the fuel pump unit. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p>
7	<p>Inspect for fuel saturation inside the charcoal canister.</p> <p>Is there an excess amount of liquid fuel present in the charcoal canister?</p>	Yes	<p>Replace the charcoal canister.</p> <p>(See EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM REMOVAL/INSTALLATION [13B-MSP].)</p>
		No	<p>Inspect the fuel tank vent system.</p> <p>Go to the next step.</p>
8	Inspect for restriction and leakage at the catalytic converter.	Yes	Go to the next step.

	Is there any restriction or leakage at the catalytic converter?	No	Replace the catalytic converter.
9	Inspect the engine compression. (See COMPRESSION INSPECTION [13B-MSP] .) Is it normal?	Yes	Visually inspect the exhaust system part.
		No	Go to the next step.
10	Perform the Metering Oil Pump Control Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP] .) Does the metering oil pump control operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. After that overhaul or replace the engine.
11	Check the engine oil condition. Is the engine oil low viscosity and/or is there a gasoline odor?	Yes	Replace the engine oil. After that overhaul or replace the engine.
		No	Go to the next step.
12	Inspect the oil pressure. (See OIL PRESSURE INSPECTION [13B-MSP] .) Is the oil pressure within the specification?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. After that overhaul or replace the engine.
13	Check the oil pipe between metering oil pump and metering oil nozzle. Is there air and/or clogging in the oil pipe?	Yes	Inspect and repair for leakage and/or clogging in the oil passage at the engine. After that overhaul or replace the engine.
		No	Overhaul or replace the engine.
14	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting is completed. 		

- If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

NO.16 HIGH OIL CONSUMPTION/LEAKAGE [13B-MSP]

16	HIGH OIL CONSUMPTION/LEAKAGE
DESCRIPTION	<ul style="list-style-type: none"> The oil consumption is excessive.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Air cleaner element malfunction (damage, poor installation) Improper dipstick Improper engine oil viscosity Engine internal parts malfunction Metering oil pump malfunction Improper operation of metering oil pump control system Oil leakage from lubrication system parts and them joints (oil pump, oil filter, oil cooler, housing oil nozzle, manifold oil nozzle etc.)

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect the following: <ul style="list-style-type: none"> External leakage (lubrication system parts and their joints.) Proper dipstick Proper engine oil viscosity Damaged and/or poor installation of air cleaner element Are all items normal?	Yes	Go to the next step.
		No	Service if necessary. Repeat Step 1.

2	Perform the Metering Oil Pump Control Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the metering oil pump control operate properly?	Yes	Overhaul the engine and repair or replace the malfunctioning part.
		No	Repair or replace the malfunctioning part according to the inspection results.
3	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting is completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [13B-MSP]

17	COOLING SYSTEM CONCERNS—OVERHEATING
DESCRIPTION	<ul style="list-style-type: none">• The engine runs at higher than normal temperature/overheats.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Improper coolant level• Blown fuses• Coolant leakage• Excessive A/C system pressure• A/C system operation is improper• Improper water/anti-freeze mixture• Fans reverse rotation• Cooling air passage to radiator blockage• Poor radiator condition• Thermostat malfunction• Radiator hose damage• Improper or damaged radiator cap• Cooling fans are inoperative• Coolant overflow system malfunction• Improper tension of drive belt• Drive belt damage• Eccentric shaft bypass valve malfunction (stuck closed)

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect the following: <ul style="list-style-type: none"> • Engine coolant level • Coolant leakage • Water and anti-freeze mixture • Radiator condition • Collapsed or restricted radiator hoses • Radiator pressure cap • Overflow system • Fan rotational direction • Cooling air passage to radiator • Fuses Are all items normal?	Yes	Go to the next step.
		No	Service if necessary. Repeat Step 1.
2	Turn the ignition switch to the ON position (engine off). Retrieve any DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Are there any DTCs displayed?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	Go to the next step.
3	Start the engine and run it at idle speed. Turn the A/C switch on and the set blower fan to any speed. Does the A/C compressor engage?	Yes	Go to Step 5.
		No	Inspect the following: <ul style="list-style-type: none"> • Refrigerant charging amount • Open circuit between A/C relay and PCM terminal 1I • Seized A/C magnetic clutch • A/C magnetic clutch malfunction Repair or replace if necessary.

			If all items are normal, go to the next step.
4	Start the engine and run it at idle speed.	Yes	Go to the next step.
	<p>Turn the A/C switch on and the set blower fan to any speed.</p> <p>Measure the voltage at the PCM terminal 1AU.</p> <p>Is the voltage normal?</p> <p>(See PCM INSPECTION [13B-MSP].)</p>	No	<p>Inspect the following:</p> <ul style="list-style-type: none"> • Refrigerant pressure switch operation • A/C switch is stuck open • Open or short circuit between refrigerant pressure switch and PCM terminal 1AU • Open circuit of blower motor fan switch and resistor (if blower motor does not operate) • Evaporator temperature sensor and A/C amplifier
5	Inspect the cooling fan control system operation.	Yes	Go to the next step.
	<p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the cooling fan control system work properly?</p>	No	Repair or replace the malfunctioning part according to the inspection results.
6	Is the drive belt normal?	Yes	Go to the next step.
	<p>(See DRIVE BELT DEFLECTION/TENSION INSPECTION [13B-MSP].)</p>	No	<p>Replace the drive belt.</p> <p>(See DRIVE BELT REPLACEMENT [13B-MSP].)</p>
7	Is there any leakage around the heater unit in the passenger compartment?	Yes	Inspect and service the heater for leakage.
		No	Go to the next step.
8	Is there any leakage from coolant hoses and/or radiator?	Yes	Repair or replace the malfunctioning part according to the inspection results.
		No	Go to the next step.
9	Cool down the engine.	Yes	Install the thermostat.

	Remove the thermostat and inspect operation. (See THERMOSTAT REMOVAL/INSTALLATION [13B-MSP].)		(See THERMOSTAT REMOVAL/INSTALLATION [13B-MSP].) Go to the next step.
	(See THERMOSTAT INSPECTION [13B-MSP].) Is the thermostat normal?	No	Replace the thermostat. (See THERMOSTAT REMOVAL/INSTALLATION [13B-MSP].)
10	Access the ECT PID. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Inspect the readings on both the ECT PID and the water temperature gauge on the instrument cluster. Is the ECT PID indication the same as the water temperature gauge readings?	Yes	Inspect the eccentric shaft bypass valve.
		No	If the water temperature gauge is in the normal range but the ECT PID is not the same as the water temperature gauge reading, inspect the ECT sensor. (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [13B-MSP].) If the water temperature gauge on the instrument cluster indicates the cold range but the ECT PID is normal, inspect the water temperature gauge. (See INSTRUMENT CLUSTER INSPECTION.)
11	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting is completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

2011 - RX-8 - Engine

NO.18 COOLING SYSTEM CONCERNS-RUNS COLD [13B-MSP]

18	COOLING SYSTEM CONCERNS—RUNS COLD
DESCRIPTION	<ul style="list-style-type: none"> The engine takes excessive time to reach the normal operating temperature.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Thermostat malfunction Eccentric shaft bypass malfunction (stuck open) Cooling fan system malfunction

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Is the customer complaint "Lack of passenger compartment heat" only?	Yes	Inspect the A/C and heater system.
		No	Go to the next step.
2	Does the engine speed continue at fast idle?	Yes	Go to the symptom troubleshooting "NO.9 FAST IDLE/RUNS ON". (See NO.9 FAST IDLE/RUNS ON [13B-MSP] .)
		No	Go to the next step.
3	Inspect the cooling fan control system operation. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP] .) Does the cooling fan control system work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.

4	<p>Cool down the engine.</p> <p>Remove the thermostat and inspect operation.</p> <p>(See THERMOSTAT REMOVAL/INSTALLATION [13B-MSP].)</p> <p>(See THERMOSTAT INSPECTION [13B-MSP].)</p> <p>Is the thermostat normal?</p>	Yes	<p>Install the thermostat.</p> <p>(See THERMOSTAT REMOVAL/INSTALLATION [13B-MSP].)</p> <p>Go to the next step.</p>
		No	<p>Replace the thermostat.</p> <p>(See THERMOSTAT REMOVAL/INSTALLATION [13B-MSP].)</p>
5	<p>Access the ECT PID.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Inspect the readings on both the ECT PID and the water temperature gauge on the instrument cluster.</p> <p>Is the ECT PID indication the same as the water temperature gauge readings?</p>	Yes	<p>Inspect the eccentric shaft bypass valve.</p>
		No	<p>If the water temperature gauge is in the normal range but the ECT PID is not the same as the water temperature gauge reading, inspect the ECT sensor.</p> <p>(See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [13B-MSP].)</p> <p>If the water temperature gauge on the instrument cluster indicates the cold range but the ECT PID is normal, inspect the water temperature gauge.</p> <p>(See INSTRUMENT CLUSTER INSPECTION.)</p>
6	<p>Verify test results.</p> <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting is completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

2011 - RX-8 - Engine

NO.20 FUEL ODOR (IN ENGINE COMPARTMENT) [13B-MSP]

20	FUEL ODOR (IN ENGINE COMPARTMENT)
DESCRIPTION	<ul style="list-style-type: none"> Gasoline fuel odor or visible leakage.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Excessive fuel pressure Purge solenoid valve malfunction Fuel tank vent system blockage/restriction or opening Charcoal canister malfunction Charcoal canister improper installation Fuel leakage from fuel system <p>WARNING:</p> <p>The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:</p> <ul style="list-style-type: none"> Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See BEFORE SERVICE PRECAUTION [13B-MSP].) (See AFTER SERVICE PRECAUTION [13B-MSP].) <p>CAUTION:</p> <ul style="list-style-type: none"> Disconnecting/connecting quick release connector without cleaning it may possibly cause damage to fuel pipe and quick release connector. Always clean quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect for blockage/restriction or opening between engine vacuum port and charcoal canister. Inspect for blockage/restriction or opening in the fuel tank vent system. Is fault indicated?	Yes	Replace the vacuum hose.
		No	Go to the next step.
2	Inspect the purge solenoid valve. (See PURGE SOLENOID VALVE INSPECTION [13B-MSP] .) Is the solenoid operating properly?	Yes	Go to the next step.
		No	Replace the purge solenoid valve.
3	Visually inspect for fuel leakage at the fuel injector, O-ring and the fuel line. Service if necessary. Install the fuel pressure gauge between the fuel pipe and the fuel distributor. Start the engine and run it at idle. Measure the fuel line pressure at idle. Is the fuel line pressure correct at idle? (See FUEL LINE PRESSURE INSPECTION [13B-MSP] .)	Yes	Go to the next step.
		No	Replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP] .)
4	Verify that the charcoal canister is installed properly. Is the charcoal canister installed properly?	Yes	Go to the next step.
		No	Install the charcoal canister properly.
5	Inspect for air leakage from the charcoal canister. (See CHARCOAL CANISTER INSPECTION [13B-MSP] .) Is there air leakage from the charcoal canister?	Yes	Replace the charcoal canister.
		No	Go to the next step.
6	Turn the ignition switch to the ON position (engine off). Retrieve any DTCs using the M-MDS.	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)

	(See ON-BOARD DIAGNOSTIC TEST [13B-MSP] .) Are there any DTCs displayed?	No	Inspect the charcoal canister for fuel saturation. If there is an excess amount of liquid fuel present, replace the charcoal canister.
7	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting is completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

NO.21 ENGINE NOISE [13B-MSP]

21	ENGINE NOISE
DESCRIPTION	<ul style="list-style-type: none">• Engine noise from under the hood.
POSSIBLE CAUSE	<p>Squeal, click or chirp noise:</p> <ul style="list-style-type: none">• Improper engine oil level• Improper drive belt tension <p>Rattle sound noise:</p> <ul style="list-style-type: none">• Loose parts <p>Hissing noise:</p> <ul style="list-style-type: none">• Vacuum leakage• Loose spark plug• Air leakage from intake–air system• Improper VFAD control system operation (with VFAD) <p>Rumble or grind noise:</p> <ul style="list-style-type: none">• Improper drive belt tension <p>Rap or roar noise:</p> <ul style="list-style-type: none">• Exhaust system looseness <p>Other noise:</p> <ul style="list-style-type: none">• Oil pump drive gear noise• Oil pump drive chain noise

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Is a squeal, click or chirp sound present?	Yes	Inspect the engine oil level or drive belts.
		No	Go to the next step.
2	Is a rumble or grinding noise present?	Yes	Inspect the drive belts.
		No	Go to the next step.
3	Is a rattle noise present?	Yes	Inspect the location of rattle for loose parts.
		No	Go to the next step.
4	Is a hissing noise present?	Yes	Inspect the following: <ul style="list-style-type: none"> • Vacuum leakage • Spark plug looseness • Intake–air system leakage • VFAD control system operation (with VFAD) (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)
		No	Go to the next step.
5	Is a rap or roar noise present?	Yes	Inspect the exhaust system for loose parts.
		No	Go to the next step.
6	Is a knocking noise present?	Yes	Go to the symptom troubleshooting “NO.13 KNOCKING/PINGING/DETONATION-ACCELERATION/CRUISE”. (See NO.13 KNOCKING/PINGING/DETONATION-ACCELERATION/CRUISE [13B-MSP].)
		No	If the noise comes from the engine internally, inspect for oil pump drive gear or chain noise.
7	Verify test results.		

If normal, return to the diagnostic index to service any additional symptoms.

- If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.
 - If the vehicle is repaired, troubleshooting is completed.
 - If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

NO.22 VIBRATION CONCERNS (ENGINE) [13B-MSP]

22	VIBRATION CONCERNS (ENGINE)
DESCRIPTION	<ul style="list-style-type: none"> Vibration from under hood or driveline.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Loose installation bolts or worn parts Components malfunction such as worn parts

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect the following components for loose installation bolts or worn parts: <ul style="list-style-type: none"> Cooling fan No.1 Cooling fan No.2 Drive belt and pulleys Engine mounts Are all items normal?	Yes	Inspect the following systems: <ul style="list-style-type: none"> Wheels MT AT Driveline Suspension
		No	Readjust or retighten the engine mount installation position. Service if necessary for other parts.
2	Verify test results. <ul style="list-style-type: none"> If normal, return to the diagnostic index to service any additional symptoms. If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. 		

- If the vehicle is repaired, troubleshooting is completed.
- If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

NO.23 A/C DOES NOT WORK SUFFICIENTLY [13B-MSP]

23	A/C DOES NOT WORK SUFFICIENTLY
DESCRIPTION	<ul style="list-style-type: none"> The A/C compressor magnetic clutch does not engage when the A/C switch is turned on.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Improper refrigerant charging amount Open A/C magnetic clutch Open circuit between A/C relay and A/C magnetic clutch Poor GND of A/C magnetic clutch Refrigerant pressure switch is stuck open A/C relay is stuck open Seized A/C compressor Open circuit between PCM through both refrigerant pressure switch and A/C amplifier Open or short circuit between climate control unit and A/C amplifier Climate control unit malfunction (A/C switch is stuck OFF)

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Turn the ignition switch to the ON position (engine off). Retrieve any DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	Go to the next step.

	Are there any DTCs displayed?		
2	Disconnect the A/C compressor connector.	Yes	Go to the next step.
	<p>Start the engine and turn the A/C switch on.</p> <p>Is there correct voltage at the terminal of the A/C compressor magnetic clutch connector?</p> <p>Specification</p> <ul style="list-style-type: none"> • 10.5 V or more 	No	<p>Inspect for GND condition of magnetic clutch on the A/C compressor.</p> <p>If the GND condition is normal, inspect for an open circuit in the magnetic clutch coil.</p>
3	Disconnect the refrigerant pressure switch connector.	Yes	<p>Inspect the refrigerant pressure switch operation.</p> <p>If the switch is normal, go to the next step.</p>
	<p>Connect the jumper wire between the terminals of the A/C high pressure switch connector.</p> <p>Connect the jumper wires between the terminals of the refrigerant pressure switch connector.</p> <p>Turn the ignition switch to the ON position.</p> <p>Turn the A/C switch on and set the blower fan to any speed.</p> <p>Does the A/C work?</p>	No	<p>Inspect the following:</p> <ul style="list-style-type: none"> • Open circuit between refrigerant pressure switch and PCM terminal 1AU • Open circuit between blower motor fan switch and A/C amplifier (if blower motor does not operate) (Manual air conditioner) • Open or short circuit between climate control unit and A/C amplifier (if blower motor does not operate) (Full-auto air conditioner) • Evaporator temperature sensor and A/C amplifier <p>If there are normal, replace the climate control unit (A/C switch is stuck OFF).</p> <p>(See CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)</p> <p>(See CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)</p>
4	<p>Remove the jumper wire from the switch connector.</p> <p>Reconnect the connector to the</p>	Yes	<p>Inspect whether the A/C relay is stuck open.</p> <p>Replace if necessary.</p>

	refrigerant pressure switch. Start the engine and turn the A/C switch on. Does the fan operate?	No	Inspect the following: <ul style="list-style-type: none"> • Refrigerant charging amount • A/C compressor for seizure Repair or replace if necessary.
5	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting is completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

2011 - RX-8 - Engine

NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [13B-MSP]

24	A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY
DESCRIPTION	<ul style="list-style-type: none"> The A/C compressor magnetic clutch does not disengage.
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/C compressor magnetic clutch engagement is stuck A/C relay is stuck closed Short to GND between A/C switch and PCM Short to GND circuit between A/C relay and PCM A/C relay to magnetic clutch circuit shorted to battery power

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Turn the ignition switch to the ON position (engine off). Retrieve any DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP] .) Are there any DTCs displayed?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
		No	Go to the next step.
2	Start the engine and run it at idle. Turn the A/C switch on. Remove the A/C relay. Does the A/C magnetic clutch disengage?	Yes	Inspect the following: <ul style="list-style-type: none"> The A/C relay is stuck closed Short to GND circuit between A/C relay and PCM terminal 11

			If both items normal, go to the next step.
		No	<p>Inspect if the circuit between A/C relay and magnetic clutch shorts to the battery power circuit.</p> <p>If the circuit is normal, inspect the magnetic clutch for stuck engagement or clearance.</p>
3	<p>Disconnect the refrigerant pressure switch connector.</p> <p>Start the engine and turn the A/C switch on.</p> <p>NOTE:</p> <ul style="list-style-type: none"> The A/C should not work when disconnecting the connector. If the A/C remains working, a short to GND circuit may be present. <p>Does the A/C remain working?</p>	Yes	Inspect for short to GND circuit between refrigerant pressure switch and PCM terminal 1AU.
		No	Go to the next step.
4	<p>Reconnect the refrigerant pressure switch connector.</p> <p>Disconnect the A/C amplifier connector.</p> <p>NOTE:</p> <ul style="list-style-type: none"> The A/C should not work when disconnecting the connector. If the A/C remains working, a short to GND circuit may be present. <p>Does the A/C remain working?</p>	Yes	Inspect for short to GND circuit between A/C amplifier and refrigerant pressure switch.
		No	<p>Inspect for open or short circuit between climate control unit and A/C amplifier.</p> <p>If the wiring harnesses are normal, replace the climate control unit (A/C switch is stuck ON).</p> <p>(See CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)</p> <p>(See CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)</p>
5	<p>Verify test results.</p> <ul style="list-style-type: none"> If normal, return to the diagnostic index to service any additional symptoms. If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. 		

If the vehicle is repaired, troubleshooting is completed.

- If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

NO.26 EXHAUST SULPHUR SMELL [13B-MSP]

26	EXHAUST SULPHUR SMELL
DESCRIPTION	<ul style="list-style-type: none">• Rotten egg smell (sulphur) from exhaust.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Electrical connectors are disconnected or connected poorly• Charcoal canister malfunction• Vacuum lines are disconnected or connected improperly• Improper fuel pressure• Poor fuel quality <p>WARNING:</p> <p>The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:</p> <ul style="list-style-type: none">• Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.• Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See BEFORE SERVICE PRECAUTION [13B-MSP].) (See AFTER SERVICE PRECAUTION [13B-MSP].) <p>CAUTION:</p> <ul style="list-style-type: none">• Disconnecting/connecting quick release connector without cleaning it may possibly cause damage to fuel pipe and quick release connector. Always clean quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
------	------------	---------	--------

1	Are any drivability or exhaust smoke concerns present?	Yes	Go to the applicable flow chart. (See SYMPTOM DIAGNOSTIC INDEX [13B-MSP].)
		No	Go to the next step.
2	Inspect the following: <ul style="list-style-type: none"> • Electrical connections • Vacuum lines • Fuel quality Are all items normal?	Yes	Go to the next step.
		No	Service if necessary. Repeat Step 2.
3	Turn the ignition switch to the ON position (engine off). Retrieve any DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Are there any DTCs displayed?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	Go to the next step.
4	Disconnect the fuel line quick release connector and install the fuel gauge to the fuel line. Start the engine and run it at idle. Is the fuel line pressure correct at idle? (See FUEL LINE PRESSURE INSPECTION [13B-MSP].)	Yes	Go to the next step.
		No	Zero or low: <ul style="list-style-type: none"> • Inspect the fuel pump relay and the fuel pump circuit. • Inspect for clogged fuel line. <ul style="list-style-type: none"> ▪ If normal, replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].) High: <ul style="list-style-type: none"> • Replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)

5	Inspect the charcoal canister for fuel saturation.	Yes	Replace the charcoal canister.
	Is there an excess amount of liquid fuel present in the canister?	No	<p>Inspect the fuel tank vent system.</p> <p>If the fuel tank vent system is normal, suggest trying a different brand since the sulfur content can vary in different fuels.</p> <p>If the fuel tank vent system is not normal, repair or replace the malfunctioning part according to the inspection results.</p>
6	<p>Verify test results.</p> <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting is completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

NO.27 FUEL REFILL CONCERNS [13B-MSP]

27	FUEL REFILL CONCERNS
DESCRIPTION	<ul style="list-style-type: none"> The fuel tank does not fill smoothly.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Clogged EVAP pipes Nonreturn valve malfunction Improper use of fuel nozzle Inadequate fuel filling speed <p>WARNING:</p> <p>The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:</p> <ul style="list-style-type: none"> Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See BEFORE SERVICE PRECAUTION [13B-MSP].) (See AFTER SERVICE PRECAUTION [13B-MSP].) <p>CAUTION:</p> <ul style="list-style-type: none"> Disconnecting/connecting quick release connector without cleaning it may possibly cause damage to fuel pipe and quick release connector. Always clean quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION

1	<p>Turn the ignition switch to the ON position (engine off).</p> <p>Retrieve any DTCs using the M-MDS.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Are there any DTCs displayed?</p>	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
		No	Go to the next step.
2	<p>Remove the fuel-filler pipe.</p> <p>Make sure the nonreturn valve is installed properly.</p> <p>Inspect the nonreturn valve operation.</p> <p>Is the nonreturn valve normal?</p>	Yes	<p>Inspect the following:</p> <ul style="list-style-type: none"> • Improper use of fuel nozzle • Inadequate fuel filling speed
		No	<p>Nonreturn valve is installed improperly:</p> <p>Reinstall the nonreturn valve to the proper position.</p> <p>Nonreturn valve does not operate properly:</p> <p>Replace the nonreturn valve.</p>
3	<p>Verify test results.</p> <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting is completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

2011 - RX-8 - Engine

NO.28 FUEL FILLING SHUT OFF CONCERNS [13B-MSP]

28	FUEL FILLING SHUT OFF CONCERNS
DESCRIPTION	<ul style="list-style-type: none"> The fuel does not shut off properly.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Clogged EVAP pipes Nonreturn valve malfunction Fuel shut-off valve malfunction Fuel nozzle malfunction Fuel nozzle is not inserted correctly <p>WARNING:</p> <p>The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:</p> <ul style="list-style-type: none"> Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel. Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See BEFORE SERVICE PRECAUTION [13B-MSP].) (See AFTER SERVICE PRECAUTION [13B-MSP].) <p>CAUTION:</p> <ul style="list-style-type: none"> Disconnecting/connecting quick release connector without cleaning it may possibly cause damage to fuel pipe and quick release connector. Always clean quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
------	------------	---------	--------

1	<p>Turn the ignition switch to the ON position (engine off).</p> <p>Retrieve any DTCs using the M-MDS.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Are there any DTCs displayed?</p>	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
		No	Go to the next step.
2	<p>Remove the fuel-filler pipe.</p> <p>Make sure the nonreturn valve is installed properly.</p> <p>Inspect the nonreturn valve operation.</p> <p>Is the nonreturn valve normal?</p>	Yes	<p>Inspect the following:</p> <ul style="list-style-type: none"> • Improper use of fuel nozzle • Fuel is not inserted correctly. • Inspect fuel shut-off valve.
		No	<p>Nonreturn valve is installed improperly:</p> <p>Reinstall the nonreturn valve to the proper position.</p> <p>Nonreturn valve does not operate properly:</p> <p>Replace the nonreturn valve.</p>
3	<p>Verify test results.</p> <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting is completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

2011 - RX-8 - Engine

NO.29 SPARK PLUG CONDITION [13B-MSP]

29	SPARK PLUG CONDITION
DESCRIPTION	<ul style="list-style-type: none">• Incorrect spark plug condition.
POSSIBLE CAUSE	<p>NOTE:</p> <ul style="list-style-type: none">• Inspecting the spark plugs condition can determine whether the problem is related to a specific spark plug or possibly all spark plugs. <p>Wet/carbon stuck on specific plug:</p> <ul style="list-style-type: none">• Spark—Weak, not visible• Air/fuel mixture—Excessive fuel injection volume• Compression—No compression, low compression• Faulty spark plug <p>Grayish white with specific plug:</p> <ul style="list-style-type: none">• Air/fuel mixture—Insufficient fuel injection volume• Faulty spark plug <p>Wet/carbon is stuck on all plugs:</p> <ul style="list-style-type: none">• Spark—Spark weak• Air/fuel mixture—Too rich• Compression—Low compression• Clogging in intake/exhaust system <p>Grayish white with all plugs:</p> <ul style="list-style-type: none">• Air/fuel mixture—Too lean <p>WARNING:</p>

The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:

- Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).) (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)

CAUTION:

- Disconnecting/connecting quick release connector without cleaning it may possibly cause damage to fuel pipe and quick release connector. Always clean quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Remove all spark plugs. (See SPARK PLUG REMOVAL/INSTALLATION [13B-MSP] .) Inspect the spark plug condition. (See SPARK PLUG INSPECTION [13B-MSP] .) Is the spark plug condition normal?	Yes	Troubleshooting completed.
		No	Specific plug is wet or covered with carbon: Go to the next step. Specific plug looks grayish white: Go to Step 13. All plugs are wet or covered with carbon: Go to Step 15. All plugs look grayish white: Go to Step 26.
2	Is the spark plug wet/covered with carbon by the engine oil?	Yes	Working up and down inspect all areas related to the oil.
		No	Go to the next step.
3	Inspect the spark plug for the following: <ul style="list-style-type: none"> • Cracked insulator 	Yes	Go to the next step.
		No	Replace the spark plug.

	<ul style="list-style-type: none"> • Heat range • Air gap • Worn electrode <p>Is the spark plug normal?</p>		(See SPARK PLUG REMOVAL/INSTALLATION [13B-MSP].)
4	<p>Inspect the engine compression.</p> <p>(See COMPRESSION INSPECTION [13B-MSP].)</p> <p>Is it normal?</p>	Yes	Go to Step 10.
		No	Go to the next step.
5	<p>Perform the Metering Oil Pump Control Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the metering oil pump control operate properly?</p>	Yes	Go to the next step.
		No	<p>Repair or replace the malfunctioning part according to the inspection results.</p> <p>After that overhaul or replace the engine.</p>
6	<p>Check the engine oil condition.</p> <p>Is the engine oil low viscosity and/or is there a gasoline odor?</p>	Yes	<p>Replace the engine oil.</p> <p>After that overhaul or replace the engine.</p>
		No	Go to the next step.
7	<p>Inspect the oil pressure.</p> <p>(See OIL PRESSURE INSPECTION [13B-MSP].)</p> <p>Is the oil pressure within the specification?</p>	Yes	Go to the next step.
		No	<p>Repair or replace the malfunctioning part according to the inspection results.</p> <p>After that overhaul or replace the engine.</p>
8	<p>Turn the ignition switch off.</p> <p>Disconnect the fuel line quick release connector and install fuel gauge to fuel line.</p> <p>Start the engine and run it at idle.</p> <p>Measure the fuel line pressure at idle.</p>	Yes	Go to the next step.
		No	<p>Replace the fuel pump unit.</p> <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p> <p>After that overhaul or replace the engine.</p>

	Is the fuel line pressure correct at idle? (See FUEL LINE PRESSURE INSPECTION [13B-MSP].)		
9	Check the oil pipe between metering oil pump and metering oil nozzle. Is there any air and/or clogging in the oil pipe?	Yes	Inspect and repair for leakage and/or clogging in the oil passage at the engine. After that overhaul or replace the engine.
		No	Overhaul or replace the engine.
10	Install all spark plugs. (See SPARK PLUG REMOVAL/INSTALLATION [13B-MSP].) Perform the Spark Test at the suspected faulty rotor. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Is a strong blue spark visible? (compare with normal rotor.)	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
11	Perform the Fuel Pump Control System Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the fuel pump control system operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
12	Inspect the fuel line pressure. (See FUEL LINE PRESSURE INSPECTION [13B-MSP].) Is the fuel line pressure correct?	Yes	Inspect the fuel injector for the following: (See FUEL INJECTOR INSPECTION [13B-MSP].) <ul style="list-style-type: none"> • Open or short in injector • Leakage
		No	Zero or low: <ul style="list-style-type: none"> • Inspect the fuel pump relay and the fuel pump circuit.

			<ul style="list-style-type: none"> Inspect for clogged fuel line. <ul style="list-style-type: none"> If normal, replace the fuel pump unit. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p> <p>High:</p> <ul style="list-style-type: none"> Replace the fuel pump unit. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p>
13	Inspect the spark plug for the following: <ul style="list-style-type: none"> Heat range Air gap Is the spark plug normal?	Yes	Go to the next step.
		No	Replace the spark plug. (See SPARK PLUG REMOVAL/INSTALLATION [13B-MSP].)
14	Perform the Fuel Injector Operation Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the fuel injector operate properly?	Yes	Inspect for restrict suspect rotor side fuel injectors. Service if necessary.
		No	Repair or replace the malfunctioning part according to the inspection results.
15	Is the air cleaner element free of restrictions?	Yes	Go to the next step.
		No	Replace the air cleaner element.
16	Perform the Spark Test. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Is a strong blue spark visible at each spark plug?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
17	Perform the Fuel Pump Control System Inspection. (See ENGINE CONTROL SYSTEM	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the

	OPERATION INSPECTION [13B-MSP].) Does the fuel pump control system operate properly?		inspection results.
18	Inspect the fuel line pressure. (See FUEL LINE PRESSURE INSPECTION [13B-MSP].) Is the fuel line pressure correct?	Yes	Go to the next step.
		No	Zero or low: <ul style="list-style-type: none"> Inspect the fuel pump relay and the fuel pump circuit. Inspect for clogged fuel line. <ul style="list-style-type: none"> If normal, replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].) High: <ul style="list-style-type: none"> Replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)
19	Perform the Purge Control System Inspection when the engine can be started. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Is the purge control correct?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
20	Inspect the engine compression. (See COMPRESSION INSPECTION [13B-MSP].) Is it normal?	Yes	Inspect the following PIDs: (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) <ul style="list-style-type: none"> ECT O2S11 (When the engine can be started.) O2S12 (When the engine can be started.) MAF Repair or replace the malfunctioning part according to the inspection results.

		No	Go to the next step.
21	Perform the Metering Oil Pump Control Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the metering oil pump control operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. After that overhaul or replace the engine.
22	Check the engine oil condition. Is the engine oil low viscosity and/or is there a gasoline odor?	Yes	Replace the engine oil. After that overhaul or replace the engine.
		No	Go to the next step.
23	Inspect the oil pressure. (See OIL PRESSURE INSPECTION [13B-MSP].) Is the oil pressure within the specification?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. After that overhaul or replace the engine.
24	Turn the ignition switch off. Disconnect the fuel line quick release connector and install the fuel gauge to the fuel line. Start the engine and run it at idle. Measure the fuel line pressure at idle. Is the fuel line pressure correct at idle? (See FUEL LINE PRESSURE INSPECTION [13B-MSP].)	Yes	Go to the next step.
		No	Replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].) After that overhaul or replace the engine.
25	Check the oil pipe between metering oil pump and metering oil nozzle. Is there any air and/or clogging in the oil pipe?	Yes	Inspect and repair for leakage and/or clogging in the oil passage at the engine. After that overhaul or replace the engine.
		No	Overhaul or replace the engine.

26	When the engine cannot be started, inspect the intake-air system for air leakage.	Yes	Repair or replace the malfunctioning part according to the inspection results.
	When the engine can be started, perform the Intake Manifold Vacuum Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Is air sucked in from the intake-air system?	No	Go to the next step.
27	Perform the Fuel Pump Control System Inspection.	Yes	Go to the next step.
	(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the fuel pump control system operate properly?	No	Repair or replace the malfunctioning part according to the inspection results.
28	Inspect the fuel line pressure. (See FUEL LINE PRESSURE INSPECTION [13B-MSP].) Is the fuel line pressure correct?	Yes	Inspect the following PIDs: (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) <ul style="list-style-type: none"> • ECT • O2S11 • O2S12 • MAF Inspect the PCM GND condition.
		No	Zero or low: <ul style="list-style-type: none"> • Inspect the fuel pump relay and the fuel pump circuit. • Inspect for clogged fuel line. <ul style="list-style-type: none"> ▪ If normal, replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].) High:

- | | | | |
|--|--|--|---|
| | | | <ul style="list-style-type: none">• Replace the fuel pump unit. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p> |
|--|--|--|---|

29 Verify test results.

- If normal, return to the diagnostic index to service any additional symptoms.
- If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.
 - If the vehicle is repaired, troubleshooting is completed.
 - If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP]

Input Signal System Investigation Procedure

1. Find an unusual signal. (See [Finding unusual signals.](#))
2. Locate its source. (See [Locating the source of unusual signals.](#))
3. Repair or replace the defective part.
4. Confirm that the unusual signal has been erased.

Finding unusual signals

While referring to ON-BOARD DIAGNOSTIC TEST, use the PID/DATA monitor and record function to inspect the input signal system relating to the problem.

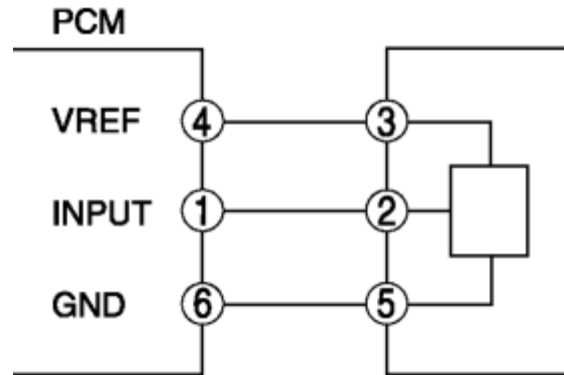
1. Start the engine and idle the vehicle. You can assume that any signals that are out of the specifications by a wide margin are unusual.
2. When recreating the problem, any sudden change in monitor input signals that is not consciously created by the driver can be judged as unusual.

Locating the source of unusual signals

CAUTION:

- Compare the M-MDS monitor voltage with the measurement voltage using the digital measurement system function. If you use another tester, misreading may occur.
- When measuring voltage, attach the tester GND to the GND of the PCM that is being tested, or to the engine itself. If this is not done, the measured voltage and actual voltage may differ.
- After connecting the pin to a waterproof coupler, confirming continuity and measuring the voltage, inspect the waterproof connector for cracks. If there are any, use sealant to fix them. Failure to do this may result in deterioration of the wiring harness or terminal from water damage, leading to problems with the vehicle.

Hall or piezo-electric type (TP sensor, APP sensor and BARO sensor)



Investigate the input signal system for hall or piezo-electric type

1. When you get an unusual signal, measure the #1 PCM terminal voltage.
 - If the #1 terminal voltage and the M-MDS monitor voltage are the same, proceed to the next step.
 - If there is a difference of **0.5 V or more**, inspect for the following points concerning the PCM connector:
 - Female terminal opening is loose.
 - Coupler (pin holder) damage
 - Pin discoloration (blackness)
 - Wiring harness/pin crimp is loose or disconnected.
2. Measure the #2 sensor terminal voltage.
 - If there is a **0.5 V or more** difference between the sensor and the M-MDS voltages, inspect the wiring harness for an open or short circuits.
 - If the sensor and the M-MDS voltages are the same, inspect for the following points concerning the sensor connector:
 - Female terminal opening is loose.
 - Coupler (pin holder) damage
 - Pin discoloration (blackness)
 - If there are no problems, proceed to next investigation.

Investigate the standard power supply system for hall or piezo-electric type

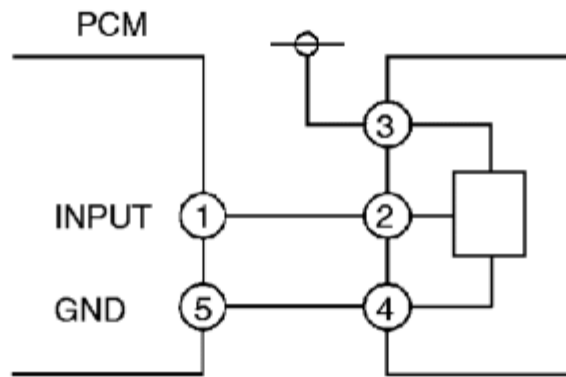
- Confirm that the #3 terminal is at **5 V**.

- If the measured voltage on the #3 terminal is **5 V**, inspect the following points on the sensor connector.
 - Female terminal opening loose
 - Coupler (pin holder) damage
 - Pin discoloration (blackness)
- If there is no problem, inspect for the following:
 - Open or short circuit in wiring harness
 - Wiring harness/pin crimp is loose or disconnected.
- If the #3 terminal measures other than **5 V**, inspect for the following:
 - Open or short circuit in wiring harness
 - Wiring harness/pin crimp is loose or disconnected.

Investigate the GND system for hall or piezo-electric type

- Confirm that terminal sensor #5 is at **0 V**.
 - If it is at **0 V**, inspect the sensor.
 - If necessary, replace the sensor.
 - If not, inspect for the following:
 - Open or short circuit in wiring harness
 - Female terminal opening is loose causing an open or short circuit in wiring harness
 - Coupler (pin holder) damage
 - Pin discoloration (blackness)
 - Wiring harness/pin crimp is loose or disconnected.

Hot wire type (fuel tank level sensor and mass air flow (MAF) sensor)



Investigate the GND system for hot wire type

- Confirm that terminal sensor #4 is at **0 V**.
 - If it is at **0 V**, inspect the sensor.
 - If necessary, replace the sensor.
 - If not at **0 V**, inspect for the following:
 - Open circuit in wiring harness
 - Female terminal opening is loose.
 - Coupler (pin holder) damage
 - Pin discoloration (blackness)
 - Wiring harness/pin crimp is loose or disconnected.

Investigate the input signal system for hot wire type

1. When you get an unusual signal, measure the #1 PCM terminal voltage.
 - If the #1 terminal voltage and the M-MDS monitor voltage are the same, proceed to the next step.
 - If there is a difference of **0.5 V or more**, inspect for the following points concerning the PCM connector:
 - Female terminal opening is loose.
 - Coupler (pin holder) damage
 - Pin discoloration (blackness)

Wiring harness/pin crimp is loose or disconnected.

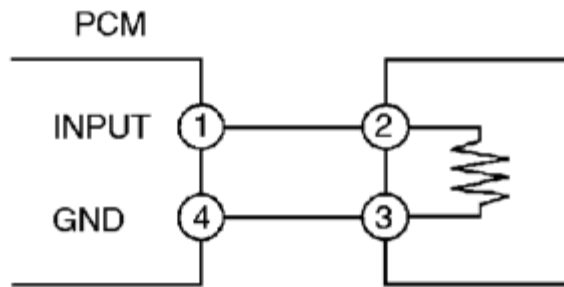
2. Measure the #2 sensor terminal voltage.

- If there is a **0.5 V or more** difference between the sensor and the M-MDS voltages, inspect the wiring harness for an open or short circuits.
- If the sensor and the M-MDS voltages are the same, inspect the following points concerning the sensor connector:
 - Female terminal opening is loose.
 - Coupler (pin holder) damage
 - Pin discoloration (blackness)
 - Wiring harness/pin crimp is loose or disconnected.
- If there are no problems, proceed to next investigation.

Investigate the electrical supply system for hot wire type

- Confirm that the sensor #3 terminal is **B+**.
 - If the measured voltage on the #3 terminal is **B+**, inspect the following points on the sensor connector.
 - If there is no problem, inspect for the following:
 - Female terminal opening is loose.
 - Coupler (pin holder) damage
 - Pin discoloration (blackness)
 - If the #3 terminal measures other than **B+**, inspect the following:
 - Open or short circuit in wiring harness
 - Wiring harness/pin crimp is loose or disconnected.

Thermistor type (IAT sensor and ECT sensor)



Investigate the input signal system for thermistor type

1. When you get an unusual signal, measure the #1 PCM terminal voltage.
 - If the #1 terminal voltage and the M-MDS monitor voltage are the same, proceed to the next step.
 - If there is a difference of **0.5 V or more**, inspect the following points concerning the PCM connector:
 - Female terminal opening loose
 - Coupler (pin holder) damage
 - Pin discoloration (blackness)
 - Wiring harness/pin crimp is loose or disconnected.
2. Measure the #2 sensor terminal voltage.
 - If there is a **0.5 V or more** difference between the sensor and the M-MDS voltages, inspect the wiring harness for an open or short circuits.
 - If the sensor and the M-MDS voltages are the same, inspect the following points concerning the sensor connector:
 - Female terminal opening is loose.
 - Coupler (pin holder) damage
 - Pin discoloration (blackness)
 - Wiring harness/pin crimp is loose or disconnected.
 - If there are no problems, proceed to next investigation.

Investigate the GND system for thermistor type

- Confirm that terminal sensor #3 is at **0 V**.
 - If it is at **0 V**, inspect the sensor. If necessary, replace the sensor.
 - If not, inspect for the following:
 - Open circuit in wiring harness
 - Female terminal opening is loose.
 - Coupler (pin holder) damage
 - Pin discoloration (blackness)
 - Wiring harness/pin crimp is loose or disconnected.

Main Relay Operation Inspection

1. Verify that the main relay clicks when the ignition switch is turned to the ON position and off.
 - If there is no operation sound, inspect the following:
 - Main relay (See [RELAY INSPECTION](#).)
 - Wiring harness and connector between battery and main relay terminal A.
 - Wiring harness and connector between PCM terminal 1AW, 1BE and main relay terminal C.
 - Wiring harness and connector between PCM terminal 1Q and main relay terminal E.
 - Wiring harness and connector between PCM terminal 1AY and engine fuse.

Intake Manifold Vacuum Inspection

1. Verify air intake hoses are installed properly.
2. Start the engine and run it at idle.
3. Disconnect the vacuum hose between the intake manifold and purge solenoid valve from the intake manifold side.
4. Connect a vacuum gauge to the intake manifold and measure the intake manifold vacuum.
 - If not as specified, inspect the following:
 - Air suction at throttle body and intake manifold installation points

- Fuel injector insulator
- Engine compression

(See [COMPRESSION INSPECTION \[13B-MSP\].](#))

Specification

- MT: -66.7—56.0 kPa {-500—421 mmHg, -19.6—16.6 inHg}
- AT: -66.9—53.1 kPa {-501—399 mmHg, -19.7—15.7 inHg}

NOTE:

- Air suction can be located by engine speed change when lubricant is sprayed on the area where suction is occurring.

Drive-by-wire Control System Inspection

Engine coolant temperature compensation inspection

1. Connect the M-MDS to the DLC-2.
2. Select the following PIDs:
 - ECT
 - IAT
 - RPM
3. Verify that the engine is cold, then start the engine.
4. Verify that the engine speed decreases as the engine warms up.
 - If the engine speed does not decrease or decreases slowly, inspect the following:
 - ECT sensor and related wiring harness
(See [ENGINE COOLANT TEMPERATURE \(ECT\) SENSOR INSPECTION \[13B-MSP\].](#))
 - Throttle body and related wiring harness
(See [THROTTLE BODY INSPECTION \[13B-MSP\].](#))

Load compensation inspection

1. Start the engine and run it at idle.

- 2. Connect the M-MDS to the DLC-2.
- 3. Verify that P0506 or P0507 is not displayed.
 - If P0506 or P0507 are displayed, perform DTC inspection.
(See [DTC TABLE \[13B-MSP\].](#))

4. Select the RPM PID.

NOTE:

- Excludes temporary idle speed drop just after the loads are turned on.
5. Verify that the engine speed is within the specification under each load condition.
- If load condition is not as specified, inspect the following:
 - TR switch (AT)
(See [TRANSMISSION RANGE \(TR\) SWITCH INSPECTION \[SJ6A-EL\].](#))
 - Neutral switch/CPP switch (MT)
(See [NEUTRAL SWITCH INSPECTION \[13B-MSP\].](#))
(See [CLUTCH PEDAL POSITION \(CPP\) SWITCH INSPECTION \[13B-MSP\].](#))
 - Climate control unit (A/C switch and blower fan switch)
(See [CLIMATE CONTROL UNIT INSPECTION \[MANUAL AIR CONDITIONER\].](#))
(See [CLIMATE CONTROL UNIT INSPECTION \[FULL-AUTO AIR CONDITIONER\].](#))
 - A/C amplifier
(See [A/C AMPLIFIER INSPECTION \[MANUAL AIR CONDITIONER\].](#))
(See [A/C AMPLIFIER INSPECTION \[FULL-AUTO AIR CONDITIONER\].](#))
 - CAN signal and related wiring harness (P/S operation signal)
 - Charging system (battery and generator)
(See [BATTERY INSPECTION \[13B-MSP\].](#))
(See [GENERATOR INSPECTION \[13B-MSP\].](#))

Standard

	Idling speed (rpm)
--	--------------------

Load status	N, D, R position (AT), Neutral position (MT)			
	AT			MT
	N position	D position	R position	
No load	760—860	760—860	760—860	770—870
Electrical loads on ^{*1}	780—880	760—860	740—840	760—860
A/C on (standard)	780—880	760—860	750—850	760—860
A/C on (standard)+ electrical loads on ^{*1}	780—880	760—860	750—850	790—890
A/C on (heavy load)	800—900	780—880	780—880	790—890

^{*1}

The headlight, rear window defroster, blower fan (2-step or more) are on.

Throttle position (TP) sweep inspection

1. Connect the M-MDS to the DLC-2.
2. Turn the ignition switch to the ON position.
3. Verify that none of the following DTC are displayed:
 - P0122, P0123, P0222, P0223, P2101, P2107, P2108, P2109, P2112, P2119, P2122, P2123, P2127, P2128, P2135, P2138
 - If any one DTC is displayed, perform DTC inspection.
4. Access the TP REL PID.
5. Verify that the PID reading is within the CTP value. (See [PCM INSPECTION \[13B-MSP\].](#))
 - If the PID reading is out of range, perform the following:
 - Remove the air duct from throttle valve body.

- Verify that the throttle valve opens when accelerator pedal is depressed.
 - If the throttle valve opens, inspect the throttle position sensor and the related wiring harness.
 - If the throttle valve does not open, inspect the throttle actuator control motor and the related wiring harness.

6. Gradually depress the throttle pedal and verify that the PID reading increases linearly.

- If the PID reading drops momentarily, inspect the following:
 - TP sensor

7. Fully depress the throttle pedal and verify that the PID reading is within the WOT value. (See [PCM INSPECTION \[13B-MSP\]](#).)

- If the PID reading is out of range, perform the following:
 - Remove the air duct from throttle valve body.
 - Verify that the throttle valve opens when throttle pedal is depressed.
 - If the throttle valve opens, inspect the throttle position sensor and the related wiring harness.
 - If the throttle valve does not open, inspect the throttle actuator control motor and the related wiring harness.

Brake override system operation inspection

NOTE:

- If the brake override system operates normally after performing the following inspection, the PCM detects DTC P2299.
1. Start the engine and idle it.
 2. Verify that the engine speed is approx. 1,200 rpm (MT)/ idle speed (AT) while the all of the following conditions are met.
 - Neutral or CPP switch ON (MT)
 - P, or N position (AT)
 - Engine speed is above 1,200 rpm while not idling.
 - Brake pedal is depressed.

- If the engine speed is approx.1,200 rpm (MT)/ idle speed (AT), clear the PCM DTC using the M-MDS. (System operation is normal.)
- If the engine speed is not approx.1,200 rpm (MT)/ idle speed (AT), inspect the following:
 - APP sensor
(See [ACCELERATOR PEDAL POSITION \(APP\) SENSOR INSPECTION \[13B-MSP\].](#))
 - Neutral switch (MT)
(See [NEUTRAL SWITCH INSPECTION \[13B-MSP\].](#))
 - Clutch switch (MT)
(See [CLUTCH PEDAL POSITION \(CPP\) SWITCH INSPECTION \[13B-MSP\].](#))
 - TR switch (AT)
(See [TRANSMISSION RANGE \(TR\) SWITCH INSPECTION \[SJ6A-EL\].](#))
 - Brake switch (No.1 signal)
(See [BRAKE SWITCH INSPECTION.](#))
 - Brake switch (No.2 signal)
(See [BRAKE SWITCH INSPECTION.](#))
 - Communication between PCM and TCM (AT)
(See [FOREWORD \[MULTIPLEX COMMUNICATION SYSTEM\].](#))

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

NO.13 KNOCKING/PINGING/DETONATION-ACCELERATION/CRUISE [13B-MSP]

13	KNOCKING/PINGING/DETONATION—ACCELERATION/CRUISE
DESCRIPTION	<ul style="list-style-type: none">• A sound is produced when the air/fuel mixture is ignited by something other than the spark plug (e.g. hot spot in combustion chamber).
POSSIBLE CAUSE	<ul style="list-style-type: none">• Air suction at intake-air system• Poor fuel quality• Inadequate fuel pressure• Pressure regulator (integrated in fuel pump unit) malfunction• Fuel pump relay stuck closed• Fuel injector malfunction (clogging, lack of injection amount)• Erratic signal from eccentric shaft position sensor• Improper ignition timing control (ECT, IAT, MAF and knock signals to PCM)• Incorrect spark plug heat range• Improper operation of eccentric shaft bypass valve• Engine overheating due to cooling system malfunction• Excessive carbon is built up in combustion chamber• Inadequate engine compression<ul style="list-style-type: none">▪ Engine internal malfunction▪ Abnormal engine oil condition (viscosity, deterioration)▪ Low oil pressure▪ Excessive fuel pressure▪ Air mixed in oil malfunction

- Metering oil pump malfunction
 - Leakage or clogging in oil pipe
 - Leakage or clogging in oil nozzle

WARNING:

The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:

- Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).) (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)

CAUTION:

- Disconnecting/connecting quick release connector without cleaning it may possibly cause damage to fuel pipe and quick release connector. Always clean quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Inspect air suction between MAF sensor and intake-port.	Yes	Repair or replace the air suction at the intake-air system.
	Is there any air suction?	No	Go to the next step.
2	Access the ECT PID. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP] .)	Yes	Go to the next step.
	Verify that the ECT PID is less than 116 °C {241 °F} during driving. Is the ECT PID less than the specification? (See PCM INSPECTION [13B-MSP] .)	No	Inspect the cooling system for the cause of overheating.
3	Access the IAT and the MAF	Yes	Go to the next step.

	<p>PIDs.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Monitor each PID.</p> <p>Are PIDs normal?</p> <p>(See PCM INSPECTION [13B-MSP].)</p>	No	<p>If the IAT PID is not normal:</p> <ul style="list-style-type: none"> Inspect the IAT sensor. <p>(See INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [13B-MSP].)</p> <p>If the MAF PID is not normal:</p> <ul style="list-style-type: none"> Inspect the MAF sensor. <p>(See MASS AIR FLOW (MAF) SENSOR INSPECTION [13B-MSP].)</p>
4	<p>Turn the ignition switch to the ON position (engine off).</p> <p>Retrieve any DTCs using the M-MDS.</p> <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>Are there any DTCs displayed?</p>	Yes	<p>Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p>
		No	<p>Go to the next step.</p>
5	<p>Perform the Fuel Pump Speed Control Operation Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the fuel pump speed control operate properly?</p>	Yes	<p>Go to the next step.</p>
		No	<p>Repair or replace the malfunctioning part according to the inspection results.</p>
6	<p>Is the strong blue spark visible at each disconnected high-tension lead while cranking the engine?</p>	Yes	<p>Inspect the following:</p> <ul style="list-style-type: none"> Spark plugs malfunction Spark plugs heat range Pulse wheel damaged on eccentric shaft Open or short circuit on eccentric shaft position sensor Open or short circuit between eccentric shaft position sensor and PCM terminal 2AG and 2AP <p>If they are normal, go to the next step.</p>

		No	Inspect the following: <ul style="list-style-type: none"> • High-tension leads • Ignition coils or connectors
7	Inspect the KS. (See KNOCK SENSOR (KS) INSPECTION [13B-MSP].) Is the KS normal?	Yes	Go to the next step.
		No	Replace the KS. (See KNOCK SENSOR (KS) REMOVAL/INSTALLATION [13B-MSP].)
8	Inspect the engine compression. (See COMPRESSION INSPECTION [13B-MSP].) Is it normal?	Yes	Go to Step 14.
		No	Go to the next step.
9	Perform the Metering Oil Pump Control Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the metering oil pump control operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. After that overhaul or replace the engine.
10	Check the engine oil condition. Is the engine oil low viscosity and/or is there a gasoline odor?	Yes	Replace the engine oil. After that overhaul or replace the engine.
		No	Go to the next step.
11	Inspect the oil pressure. (See OIL PRESSURE INSPECTION [13B-MSP].) Is the oil pressure within the specification?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. After that overhaul or replace the engine.
12	Turn the ignition switch off. Disconnect the fuel line quick release connector and install the fuel gauge to the fuel line.	Yes	Go to the next step.
		No	Replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-

	<p>Start the engine and run it at idle.</p> <p>Measure the fuel line pressure at idle.</p> <p>Is the fuel line pressure correct at idle?</p> <p>(See FUEL LINE PRESSURE INSPECTION [13B-MSP].)</p>		<p>MSP].)</p> <p>After that overhaul or replace the engine.</p>
13	<p>Check the oil pipe between metering oil pump and metering oil nozzle.</p> <p>Is there any air and/or clogging in the oil pipe?</p>	Yes	<p>Inspect and repair for leakage and/or clogging in the oil passage at the engine.</p> <p>After that overhaul or replace the engine.</p>
		No	Overhaul or replace the engine.
14	<p>Disconnect the fuel line quick release connector and install the fuel gauge to the fuel line.</p> <p>Start the engine and run it at idle.</p> <p>Measure the fuel line pressure at idle.</p> <p>Is the fuel line pressure correct at idle?</p> <p>(See FUEL LINE PRESSURE INSPECTION [13B-MSP].)</p>	Yes	Go to the next step.
		No	<p>Zero or low:</p> <ul style="list-style-type: none"> Inspect the fuel pump relay and the fuel pump circuit. Inspect for clogged fuel line. <ul style="list-style-type: none"> If normal, replace the fuel pump unit. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p> <p>High:</p> <ul style="list-style-type: none"> Replace the fuel pump unit. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p>
15	<p>Perform the Fuel Injector Operation Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the fuel injector operate properly?</p>	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.

16	Inspect the ignition timing. (See ENGINE TUNE-UP [13B-MSP] .) Does the ignition timing operate properly?	Yes	Inspect the eccentric bypass valve operation and carbon build-up in the combustion chamber.
		No	Repair or replace the malfunctioning part according to the inspection results.
17	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting is completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

NO.19 EXHAUST SMOKE [13B-MSP]

19	EXHAUST SMOKE
DESCRIPTION	<ul style="list-style-type: none"> • Blue, black, or white smoke from the exhaust system.
	<p>Pale smoke from tailpipe (Engine oil is being burned)</p> <ul style="list-style-type: none"> • Oil leakage from oil seal into combustion chamber <ul style="list-style-type: none"> ▪ Oil seal • Engine oil entering combustion chamber through intake port <ul style="list-style-type: none"> ▪ Oil reaching intake-air system <ul style="list-style-type: none"> • Increase in oil pan internal pressure • Excessive engine oil • Excessive engine oil supply to combustion chamber through oil discharge hole (metering oil pump malfunction) <ul style="list-style-type: none"> ▪ Metering oil tube internal pressure is high (exceeds oil nozzle valve opening pressure) <ul style="list-style-type: none"> • Metering oil pump malfunction (stuck plunger, internal circuit disabled) • Metering oil pump circuit malfunction (open/short circuits) • Oil pressure sensor malfunction (improper characteristics, internal circuit disabled) • Oil pressure sensor circuit malfunction (open/short circuits) • OCV malfunction (stuck open, not operating smoothly) • OCV circuit malfunction (short circuit)

- Metering oil pump drive voltage is low
- OCV drive voltage is low
- Oil nozzle valve opening pressure is low
 - Oil nozzle malfunction (spring force low, foreign material trapped)

White smoke from tailpipe (engine coolant leakage into combustion chamber)

- Cooling system malfunction
 - Engine coolant leakage inside engine

Black smoke from tailpipe (concentrated fuel)

- Air cleaner clogging
- Intake-air system clogging or perforation
- Fuel pressure is high
- Engine compression pressure is low
 - Engine oil (soiling or improper amount/viscosity/type)
 - Oil pressure is low
 - Fuel pressure is high
 - Pressure regulator malfunction
 - Air penetrating into oil passages
 - Metering oil pump malfunction
 - Oil pipe clogging or perforation
 - Oil nozzle clogging
- Fuel injector (leakage)
- Ignition system malfunction

POSSIBLE CAUSE

WARNING:

- The following diagnostic procedure includes fuel system related servicing. Always make sure to follow the warnings for each procedure when inspecting or repairing the fuel system.
 - Fuel vapor is hazardous. It can very easily ignite and cause serious injury or death, and damage to equipment. Always keep sparks and flames away from fuel.
 - Fuel line spills and leakage from the pressurized fuel system are dangerous. Fuel can ignite and cause serious

injury or death, and damage to equipment. Fuel can also irritate skin and eyes. To prevent this, always execute the "Fuel Line Inspection". (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).)

- Fuel is highly flammable and dangerous. Fuel line spills and leakage can cause serious injury or death, and damage to equipment. Always refer to the "Quick Release Connector Removal/Installation" before performing the fuel pump unit installation, and execute the "Fuel Leakage Inspection After Fuel Pump Unit Installation" after installation. (See [QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION \[13B-MSP\]](#).) (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)

CAUTION:

- Foreign material on the connecting area of the quick release connector might cause damage to the connector or fuel pipe. To prevent this, clean the connecting area before disconnecting/connecting the connector.

Step	Inspection	Results	Action
1	Verify the color of the exhaust gas.	Pale	Go to the next step.
		White	Go to Step 9.
		Black	Go to Step 10.
2	Verify DTCs using the M-MDS. (See DTC TABLE [13B-MSP] .) Are any of the following DTCs displayed? <ul style="list-style-type: none"> • P0552, P0523, P1680, P1681, P1682, P1683, P1684, P1685, P1686, P1687 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP] .)
		No	Go to the next step.
3	Verify if oil is reaching the following intake-air system related parts. <ul style="list-style-type: none"> • Between the air intake hose and the ventilation hose. 	Yes	Verify the oil level. <ul style="list-style-type: none"> • If the dipstick indicates H or more, adjust the oil level to H or less. • If the dipstick indicates H or less, the

	<ul style="list-style-type: none"> Between the oil filler pipe and the intake manifold. 		vehicle may have been repeatedly cornered or operated in a similar manner which exposed it to high G-forces (0.9 G or more).
	Is the oil present?	No	Go to the next step.
4	Verify the battery positive voltage. Is the battery positive voltage 10 V or more ?	Yes	Go to the next step.
		No	Inspect the battery. (See BATTERY INSPECTION [13B-MSP].)
5	Verify the monitor item MOP_P_ACT using the M-MDS. Verify the value of the monitored item MOP_P_ACT when the ignition switch is turned to the ON position. Is the monitor value between –35 kPa {–0.36 kgf/cm², –5.1 psi} and 35 kPa {0.36 kgf/cm², 5.1psi} ?	Yes	Go to the next step.
		No	Replace the oil pressure sensor. (See OIL PRESSURE SENSOR REMOVAL/INSTALLATION [13B-MSP].)
6	Start the engine and warm it up. Verify the monitor item MOP_P_ACT using the M-MDS. Verify the value of the monitor item MOP_P_ACT when racing the engine at 2,000 rpm . Is the monitor value 180 kPa {1.84 kgf/cm², 26.1 psi} or more ?	Yes	Inspect the OCV. (See OIL CONTROL VALVE (OCV) INSPECTION [13B-MSP].) Repair or replace the malfunctioning part according to the inspection results. (See OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [13B-MSP].)
		No	Go to the next step.
7	Perform the Metering Oil Pump Control Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the metering oil pump control operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
8	Inspect the oil nozzle.	Yes	Verify that there is no oil leakage from the oil seal into

	(See METERING OIL PUMP INSPECTION [13B-MSP].) Is the oil nozzle normal?		the combustion chamber.
		No	Replace the oil nozzle. (See OIL NOZZLE REMOVAL/INSTALLATION [13B-MSP].)
9	Does the cooling system hold the coolant pressure?	Yes	Inspect the following: <ul style="list-style-type: none"> • Engine coolant leakage from gasket. • Engine coolant leakage from intake manifold gasket. • Engine coolant leakage due to damaged or improper rotor housing Repair or replace the malfunctioning part according to the inspection results. If there is other driveability-related malfunction, perform the applicable diagnostic procedure.
		No	Repair or replace the malfunctioning part according to the inspection results.
10	Inspect the intake-air system for the following: <ul style="list-style-type: none"> • Air cleaner clogging • Intake-air system part clogging or perforation Is the intake-air system normal?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results. After repair, go to the next step.
11	Perform the KOER self test using the M-MDS. (See KOE0/KOER SELF TEST [13B-MSP].) Are any DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	Go to the next step.
12	Measure the fuel pressure. (See FUEL LINE PRESSURE INSPECTION [13B-MSP].) Is the fuel pressure normal?	Yes	Go to the next step.
		No	Replace the fuel pump unit. (See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)

13	<p>Inspect the compression pressure.</p> <p>(See COMPRESSION INSPECTION [13B-MSP].)</p> <p>Is the compression pressure normal?</p>	Yes	Go to Step 18.
		No	Go to the next step.
14	<p>Perform the Metering Oil Pump Control Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the metering oil pump control operate properly?</p>	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
15	<p>Inspect the engine oil condition (viscosity, odor).</p> <p>Is the engine oil thinned, or is there an abnormal fuel odor?</p>	Yes	<p>Replace the engine oil.</p> <p>After that overhaul or replace the engine.</p>
		No	Go to the next step.
16	<p>Inspect the oil pressure.</p> <p>(See OIL PRESSURE INSPECTION [13B-MSP].)</p> <p>Is the oil pressure normal?</p>	Yes	Go to the next step.
		No	<p>Repair or replace the malfunctioning part according to the inspection results.</p> <p>Repair the engine.</p>
17	<p>Inspect the oil pump between metering oil pump and oil nozzle.</p> <p>Is there air suction or clogging inside the oil pump?</p>	Yes	<p>Inspect the oil passage for leakage and clogging.</p> <p>If any, repair or replace the malfunctioning part according to the inspection results.</p> <p>Repair the engine.</p>
		No	Repair the engine.
18	<p>Does the following occur when cranking the engine?</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Blue sparks can be seen from each high-tension lead 	Yes	<p>Inspect the spark plug and eccentric shaft position sensor.</p> <p>(See SPARK PLUG INSPECTION [13B-MSP].)</p> <p>(See ECCENTRIC SHAFT POSITION SENSOR INSPECTION [13B-MSP].)</p>
		No	Inspect the following:

	disconnected from the spark plug.		<ul style="list-style-type: none">• High-tension lead (See HIGH-TENSION LEAD INSPECTION [13B-MSP].)• Ignition coil (See IGNITION COIL INSPECTION [13B-MSP].)• Ignition coil connector
19	Verify test results. <ul style="list-style-type: none">• If normal, return to the diagnostic index to service any additional symptoms.• If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.<ul style="list-style-type: none">▪ If the vehicle is repaired, troubleshooting is completed.▪ If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.		

2011 - RX-8 - Engine

NO.2 MIL ILLUMINATES [13B-MSP]

2	MIL ILLUMINATES
DESCRIPTION	<ul style="list-style-type: none"> The MIL is illuminated incorrectly.
POSSIBLE CAUSE	<ul style="list-style-type: none"> MIL illuminates for emission-related concern (DTC is stored in the PCM) Instrument cluster malfunction <p>NOTE:</p> <ul style="list-style-type: none"> If the MIL blinks at steady rate, misfire condition could exist.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Turn the ignition switch to the ON position (engine off). Retrieve any DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Are there any DTCs displayed?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	Go to the next step.
2	Inspect the wiring harness between the following terminals (wiring harness-side): <ul style="list-style-type: none"> PCM terminal 1AM—Instrument cluster terminal 1J PCM terminal 1AI—Instrument cluster terminal 1L Are they normal?	Yes	Inspect the instrument cluster operation. (See INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE.)
		No	Repair or replace the suspected wiring harness.

3 Verify test results.

- If normal, return to the diagnostic index to service any additional symptoms.
- If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.
 - If the vehicle is repaired, troubleshooting is completed.
 - If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

NO.25 A/C IS NOT CUT OFF UNDER WIDE OPEN THROTTLE CONDITIONS [13B-MSP]

25	A/C IS NOT CUT OFF UNDER WIDE OPEN THROTTLE CONDITIONS
DESCRIPTION	<ul style="list-style-type: none"> The A/C compressor magnetic clutch does not disengage under wide open throttle.
POSSIBLE CAUSE	<ul style="list-style-type: none"> APP sensor malfunction

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Does the A/C compressor disengage when the A/C switch is turned off?	Yes	Go to the next step.
		No	Go to the symptom troubleshooting "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY". (See NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY [13B-MSP].)
2	Turn the ignition switch to the ON position (engine off). Retrieve any DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) Are there any DTCs displayed?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No	Inspect the APP sensor. (See ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [13B-MSP].)
3	Verify test results.		

- If normal, return to the diagnostic index to service any additional symptoms.
- If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.
 - If the vehicle is repaired, troubleshooting is completed.
 - If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest.

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

NO.12 LACK/LOSS OF POWER-ACCELERATION/CRUISE [13B-MSP]

12	LACK/LOSS OF POWER—ACCELERATION/CRUISE	
DESCRIPTION	<ul style="list-style-type: none"> The performance is poor under load (e.g. power down when climbing hills). 	
	<ul style="list-style-type: none"> Drive-by-wire control system operates in brake override system Vacuum leakage Air leakage from intake-air system Air cleaner restriction Air suction at intake-air system (between MAF sensor and intake ports) Throttle body malfunction Improper SSV operation Improper APV operation Improper VDI operation (13B-MSP (high-power)) 	<ul style="list-style-type: none"> Improper ignition timing control (abnormal ECT, IAT, MAF and knock sensor signals to PCM) Improper fuel injection control (abnormal MAF, ECT, A/F sensor, HO2S and knock sensor signals to PCM) MAF sensor improper installation Spark leakage from high-tension leads Spark plug malfunction Incorrect spark plug heat range Engine overheating Low engine compression <ul style="list-style-type: none"> Engine internal malfunction Abnormal engine oil condition (viscosity, deterioration) Low oil pressure Excessive fuel pressure Air mixed in oil line Metering oil pump malfunction

**POSSIBLE
CAUSE**

- Improper operation of drive-by-wire control system (abnormal accelerator position and TP signals to PCM)
- Drive-by-wire control system operates in fail-safe mode (abnormal accelerator position and TP signal to PCM)
- Poor fuel quality
- Inadequate fuel pressure
- Pressure regulator (integrated in fuel pump unit)
- Fuel pump mechanical malfunction
- Fuel line restriction or clogging
- Fuel injector improper operation
- Fuel injector malfunction (leakage, clogging, improper injection amount)
- Intermittent open or short in fuel pump related circuit
- Restriction in exhaust system
- Leakage or clogging in oil pipe
- Leakage or clogging in oil nozzle
- Metering oil pump malfunction
- Improper metering oil pump control operation
- Improper A/C system operation
- Brake dragging
- Low tire pressure
- AT malfunction (AT)
- Improper operation of torque converter clutch control (AT)
- Clutch malfunction (MT)

- Leakage or damaged exhaust manifold
- Purge solenoid valve malfunction (stuck open)
- Erratic signal from eccentric shaft position sensor

WARNING:

The following troubleshooting flow chart contains fuel system diagnosis and repair procedures. Read the following warnings before servicing the fuel system:

- Fuel vapor is hazardous. It can easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete "BEFORE SERVICE PRECAUTION" and "AFTER SERVICE PRECAUTION" described in this manual. (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).) (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)

CAUTION:

- Disconnecting/connecting quick release connector without cleaning it may possibly cause damage to fuel pipe and quick release connector. Always clean quick release connector joint area before disconnecting/connecting, and make sure that it is free of foreign material.

Diagnostic procedure

STEP	INSPECTION	RESULTS	ACTION
1	Retrieve any PCM DTC using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP] .)	Yes	Go to the P2299 troubleshooting procedure. (Drive-by-wire system operates with brake override system.) (See DTC P2299 [13B-MSP] .)
	Is the DTC P2299 presented?	No	Go to the next step.
2	Does the engine knock/ping/detonate?	Yes	Go to the symptom troubleshooting "NO.13 KNOCKING/PINGING/DETONATION-ACCELERATION/CRUISE".

			(See NO.13 KNOCKING/PINGING/DETONATION-ACCELERATION/CRUISE [13B-MSP].)
		No	Go to the next step.
3	<p>Verify the following:</p> <ul style="list-style-type: none"> • Vacuum connection • Air cleaner element • Fresh air duct • Air cleaner • No air leakage from intake-air system • No restriction of intake-air system • Blockage of intake-air system (between MAF sensor and intake ports) • MAF sensor installation • Exhaust manifold (leakage, damaged) • Fuel quality (e.g. proper octane, contamination, winter/summer blend) • Tire pressure <p>Are all items normal?</p>	Yes	Go to the next step.
		No	<p>Service if necessary.</p> <p>Repeat Step 3.</p>
4	<p>Turn the ignition switch to the ON position (engine off).</p> <p>Retrieve any DTCs using the M-MDS.</p> <p>(See ON-BOARD DIAGNOSTIC</p>	Yes	<p>Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [13B-MSP].)</p>
		No	Go to the next step.

	TEST [13B-MSP].) Are there any DTCs displayed?		
5	Is the engine overheating?	Yes	Go to the symptom troubleshooting "NO.17 COOLING SYSTEM CONCERNS-OVERHEATING". (See NO.17 COOLING SYSTEM CONCERNS-OVERHEATING [13B-MSP].)
		No	Go to the next step.
6	Access the following PIDs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) <ul style="list-style-type: none"> • APP1 • APP2 • RPM • MAF • TP REL • O2S11 • O2S12 • VSS Drive the vehicle while monitoring PIDs. Are the PIDs within the specifications? (See PCM INSPECTION [13B-MSP].)	Yes	Go to the next step.
		No	<p>If the APP1, APP2 PIDs are not normal:</p> <ul style="list-style-type: none"> • Inspect if the output signal from the APP sensor changes smoothly. <p>If the RPM PID is not normal:</p> <ul style="list-style-type: none"> • Inspect the eccentric shaft position sensor and the related wiring harness for vibration or an intermittent open/short circuit or both. <ul style="list-style-type: none"> ▪ If normal, go to Step 8. <p>If the MAF PID is not normal:</p> <ul style="list-style-type: none"> • Inspect for an intermittent open circuit of the MAF sensor and the related wiring harness. <p>If the TP REL PID is not normal:</p> <ul style="list-style-type: none"> • Inspect if the output signal from the TP sensor changes smoothly. <p>If the O2S11 PID is not normal:</p> <ul style="list-style-type: none"> • Inspect the A/F sensor and the related wiring harness for vibration or an intermittent open or short circuit or both. <ul style="list-style-type: none"> ▪ If normal, go to Step 9. <p>If the O2S12 PID is not normal:</p> <ul style="list-style-type: none"> • Inspect the HO2S and the related wiring harness for vibration or an intermittent open or short circuit or both. <ul style="list-style-type: none"> ▪ If normal, go to Step 9.

			If the VSS PID is not normal: <ul style="list-style-type: none"> Inspect the ABS HU/CM or DSC HU/CM. (See ABS HU/CM INSPECTION.) (See DSC HU/CM INSPECTION.)
7	Inspect the KS. (See KNOCK SENSOR (KS) INSPECTION [13B-MSP] .) Is the KS normal?	Yes	Go to the next step.
		No	Replace the KS. (See KNOCK SENSOR (KS) REMOVAL/INSTALLATION [13B-MSP] .)
8	Visually inspect the eccentric shaft position sensor and the teeth of the pulse wheel. Are the eccentric shaft position sensor and the teeth of the pulse wheel normal?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
9	Is a strong blue spark visible at each disconnected high-tension lead while cranking the engine?	Yes	Inspect the following: <ul style="list-style-type: none"> Spark plugs malfunction Spark plugs heat range Pulse wheel damaged on eccentric shaft Open or short circuit on eccentric shaft position sensor Open or short between eccentric shaft position sensor and PCM terminal 2AG and 2AP If they are normal, go to the next step.
		No	Inspect the following: <ul style="list-style-type: none"> High-tension leads Ignition coils or connectors
10	Inspect the spark plug conditions. (See SPARK PLUG INSPECTION [13B-MSP] .)	Yes	Spark plug is wet or covered with carbon: Inspect for fuel leakage from the fuel injector. Inspect the spark plug and the high-tension lead.

	Is the spark plug wet, covered with carbon or grayish white?		Spark plug is grayish white: Inspect for clogged fuel injector.
		No	Install the spark plugs on original rotors. Go to the next step.
11	Perform the Drive-by-wire Control System Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the drive-by-wire control system work properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
12	Visually inspect the exhaust system part. Is there any deformed exhaust system part?	Yes	Replace the suspected part.
		No	Go to the next step.
13	Perform the Fuel Pump Speed Control Operation Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the fuel pump speed control operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
14	Inspect the fuel line pressure. (See FUEL LINE PRESSURE INSPECTION [13B-MSP].) Is the fuel line pressure correct?	Yes	Go to the next step.
		No	Zero or low: <ul style="list-style-type: none"> Inspect the fuel pump relay and the fuel pump circuit. Inspect for clogged fuel line. <ul style="list-style-type: none"> If normal, replace the fuel pump unit. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p> High:

			<ul style="list-style-type: none"> Replace the fuel pump unit. <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p>
15	Perform the Fuel Injector Operation Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the fuel injector operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
16	Perform the Secondary Shutter Valve (SSV) Operation Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the SSV operate properly?	Yes	Go to the next step. (13B-MSP (high-power)) Go to Step 18. (13B-MSP (standard-power))
		No	Repair or replace the malfunctioning part according to the inspection results.
17	Perform the Variable Dynamic Effect Intake-air (VDI) Operation Inspection (13B-MSP (high-power)). (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the VDI operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
18	Perform the Auxiliary Port Valve (APV) Control Inspection. (See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].) Does the APV control operate properly?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
19	NOTE: <ul style="list-style-type: none"> The following test is for engine stalling with A/C on concern. If other symptoms exist, go to the 	Yes	Go to the next step.
		No	If the A/C is always on, go to the symptom troubleshooting "NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR RUNS CONTINUOUSLY". (See NO.24 A/C IS ALWAYS ON OR A/C COMPRESSOR

	<p>next step.</p> <p>Connect the pressure gauge to the A/C low and high side pressure lines.</p> <p>Turn the A/C on and measure the low side and high side pressures.</p> <p>Are the pressures within the specifications?</p> <p>(See REFRIGERANT PRESSURE CHECK.)</p>		<p>RUNS CONTINUOUSLY [13B-MSP].)</p> <p>For other symptoms, inspect the following:</p> <ul style="list-style-type: none"> • Refrigerant charging amount • Condenser fan operation
20	<p>Inspect for A/C cut off operation.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the A/C cut-off work properly?</p>	Yes	Go to the next step.
		No	Inspect the A/C cut off system components.
21	<p>Disconnect the vacuum hose between the purge solenoid valve and the intake manifold at the quick release connector.</p> <p>Plug the opening end of the vacuum hose.</p> <p>Drive the vehicle.</p> <p>Does the engine condition improve?</p>	Yes	<p>Inspect if the purge solenoid valve is stuck open mechanically.</p> <p>Inspect the evaporative emission control system.</p>
		No	Go to the next step.
22	<p>Perform the Metering Oil Pump Control Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the metering oil pump control operate properly?</p>	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to the inspection results.
23	<p>Inspect the engine compression.</p> <p>(See COMPRESSION INSPECTION [13B-MSP].)</p> <p>Is it normal?</p>	Yes	<p>Inspect the following:</p> <ul style="list-style-type: none"> • Ignition timing • Internal transmission components (AT)

			<ul style="list-style-type: none"> • Torque converter clutch control (AT) • Clutch (MT) • Brake system for dragging • KS
		No	Go to the next step.
24	<p>Perform the Metering Oil Pump Control Inspection.</p> <p>(See ENGINE CONTROL SYSTEM OPERATION INSPECTION [13B-MSP].)</p> <p>Does the metering oil pump control operate properly?</p>	Yes	Go to the next step.
		No	<p>Repair or replace the malfunctioning part according to the inspection results.</p> <p>After that overhaul or replace the engine.</p>
25	<p>Check the engine oil condition.</p> <p>Is the engine oil low viscosity and/or is there a gasoline odor?</p>	Yes	<p>Replace the engine oil.</p> <p>After that overhaul or replace the engine.</p>
		No	Go to the next step.
26	<p>Inspect the oil pressure.</p> <p>(See OIL PRESSURE INSPECTION [13B-MSP].)</p> <p>Is the oil pressure within the specification?</p>	Yes	Go to the next step.
		No	<p>Repair or replace the malfunctioning part according to the inspection results.</p> <p>After that overhaul or replace the engine.</p>
27	<p>Turn the ignition switch off.</p> <p>Disconnect the fuel line quick release connector and install the fuel gauge to the fuel line.</p> <p>Start the engine and run it at idle.</p> <p>Measure the fuel line pressure at idle.</p> <p>Is the fuel line pressure correct at idle?</p> <p>(See FUEL LINE PRESSURE INSPECTION [13B-MSP].)</p>	Yes	Go to the next step.
		No	<p>Replace the fuel pump unit.</p> <p>(See FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP].)</p> <p>After that overhaul or replace the engine.</p>

28	Check the oil pipe between metering oil pump and metering oil nozzle. Is there any air and/or clogging in the oil pipe?	Yes	Inspect and repair for leakage and/or clogging in the oil passage at the engine. After that overhaul or replace the engine.
		No	Overhaul or replace the engine.
29	Verify test results. <ul style="list-style-type: none"> • If normal, return to the diagnostic index to service any additional symptoms. • If the malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> ▪ If the vehicle is repaired, troubleshooting is completed. ▪ If the vehicle is not repaired or additional diagnostic information is not available, reprogram the PCM if a later calibration is available. Retest. 		

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

COMPRESSION INSPECTION [13B-MSP]

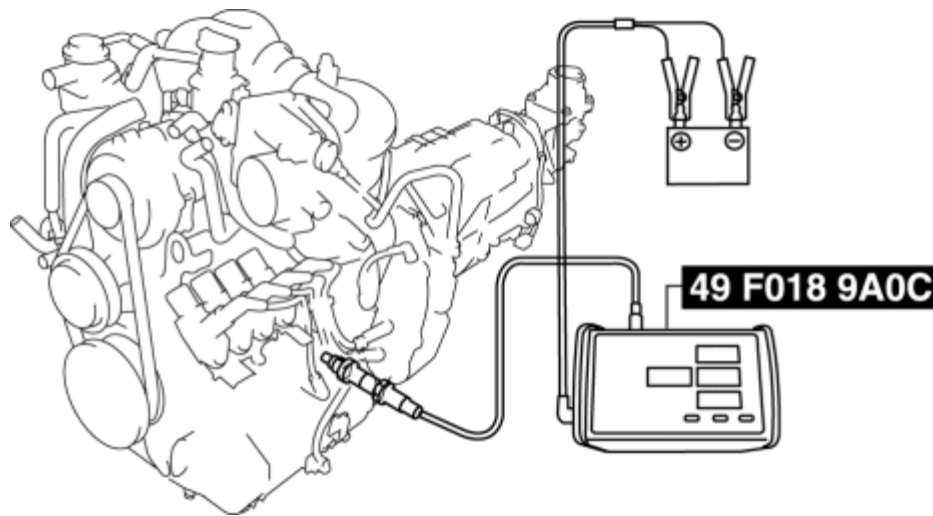
[COMPRESSION TESTER INSTRUCTIONS](#) [COMPRESSION CALCULATOR](#)

WARNING:

- Hot engines can cause severe burns. Be careful not to burn yourself during removal/installation of each component.
 - Fuel vapor is hazardous. It can very easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Verify that the battery is fully charged. (See [BATTERY INSPECTION \[13B-MSP\]](#).)
 3. Warm up the engine.
 4. Remove the trailing or leading side spark plug of the front and rear rotors. (See [SPARK PLUG REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 5. Disconnect the eccentric shaft position sensor connector. (See [ECCENTRIC SHAFT POSITION SENSOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)

CAUTION:

- To cut the fuel injection and ignition, make sure the eccentric shaft position sensor connector is disconnected.
6. Measure the compression pressure using one of the following procedures:
 - a. Install the **SST (49 F018 9A0C)** to the trailing or leading side plug hole of the rotor housing.



b. Depress the accelerator pedal fully and crank for **7 s or more**.

c. Read the compression and engine speed.

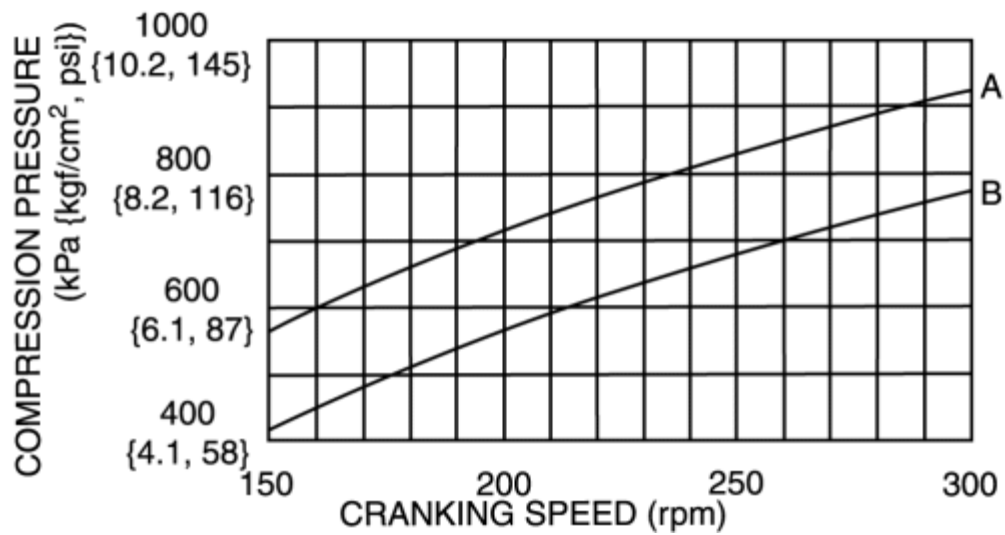
- Compression pressure
 - Standard: 830 kPa {8.5 kgf·cm², 120 psi} [250 rpm]
 - Minimum: 680 kPa {6.9 kgf·cm², 98.6 psi} [250 rpm]
 - Standard difference in chambers: Within 150 kPa {1.5 kgf·cm², 21.8psi}
 - Standard difference in rotors: Within 100 kPa {1.0 kgf·cm², 14.5 psi}

d. Perform the same procedure for the other rotor housing.

e. If the compression is at the minimum or less, or the difference in the chambers and difference in the rotors exceed the specifications, replace or overhaul.

CAUTION:

- If the engine speed when measuring compression differs from the standard, adjust according to the graph.



A

Standard compression pressure

B

Minimum compression pressure

7. Install the spark plugs. (See [SPARK PLUG REMOVAL/INSTALLATION \[13B-MSP\]](#).)
8. Connect the eccentric shaft position sensor connector. (See [ECCENTRIC SHAFT POSITION SENSOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
9. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

ENGINE REMOVAL/INSTALLATION [13B-MSP]

WARNING:

- Fuel vapor is hazardous. It can very easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage from the pressurized fuel system are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure" when servicing the fuel system. (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).)
- After disconnecting the steering shaft joint, always set the EPS system to the neutral position to prevent system malfunction. (See [EPS SYSTEM NEUTRAL POSITION SETTING](#).)

NOTE:

- Remove the engine, transmission, and crossmember component as a single unit from under the vehicle.
1. Remove the following parts:
 - a. Front wheel and tires (See [GENERAL PROCEDURES \(SUSPENSION\)](#))
 - b. Engine cover (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 - c. Front suspension tower bar (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[MT\]](#).) (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[AT\]](#).)
 - d. Battery cover, battery, battery box and battery tray (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 - e. Air cleaner, air hose and air cleaner insulator (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 - f. PCM (See [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 - g. AIR pump. (See [SECONDARY AIR INJECTION \(AIR\) CONTROL VALVE REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Drain the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\]](#).)
 3. Disconnect the brake vacuum hose.
 4. Disconnect the quick release connector going to the charcoal canister from the engine room side. (See [QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 5. Disconnect the fuel hose from the fuel distributor (housing side). (See [FUEL INJECTOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 6. Remove the ignition coil and ignition coil bracket as a single unit.

Ignition coil bracket tightening torque

 1. 7.8—10.8 N·m {80—110 kgf·cm, 69.1—95.5 in·lbf}
 7. Remove the A/C belt. (See [DRIVE BELT REPLACEMENT \[13B-MSP\]](#).)
 8. Remove the A/C compressor with the pipes connected and secure the A/C compressor using wire or rope so that it is out of the way. (See [A/C COMPRESSOR REMOVAL/INSTALLATION](#).)
 9. Disconnect the engine wiring harness from the main fuse block side.
 10. Remove the aerodynamic under cover. (See [AERODYNAMIC UNDER COVER REMOVAL/INSTALLATION](#).)
 11. Disconnect front ABS wheel speed sensor connector. (See [FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION](#).)
 12. Disconnect the radiator hose, the heater hose and coolant reserve tank hose.
 13. Disconnect the selector link. (AT) (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)
 14. Remove the clutch release cylinder with the pipes connected and secure the clutch release cylinder using wire or rope so that it is out of the way. (MT) (See [CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION](#).)
 15. Remove the shift lever component. (MT) (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#).)
 16. Remove the engine, transmission, and crossmember component using an engine lifter in the order indicated in the table.

78.2—103.4
{8.0—10.5, 57.7—76.2}

78.4—101.9
{8.0—10.3, 57.9—75.1}

38—51
{3.9—5.2, 28.1—37.6}

17.6—26.5
{1.8—2.7, 13.0—19.5}

17.6—26.5
{1.8—2.7, 13.0—19.5}

127—157
{13—16, 93.7—115.7}

127—157
{13—16, 93.7—115.7}

127—157
{13—16, 93.7—115.7}

78.9—104.3
{8.1—10.6, 58.2—76.9}

98.0—127.5 {10—13, 72.3—94.0}

127—157 {13—16, 93.7—115.7}

17.7—26.5
{1.81—2.70, 13.1—19.5}

126—154
{12.9—15.7, 93.0—113.5}

49—59
{5—6, 36.2—43.5}

74.5—93.2
{7.6—9.5, 55.0—68.7}

21.6—30.4
{2.2—3.1, 16.0—22.4}

18.6—25.5
{1.9—2.6, 13.8—18.8}

17.6—26.4
{1.8—2.6, 13.0—19.4}

12

13

10

11

9

8

7

6

5

4

3

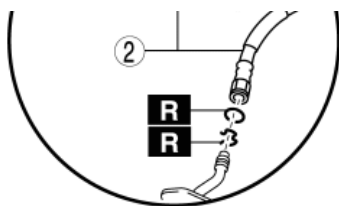
AT

R

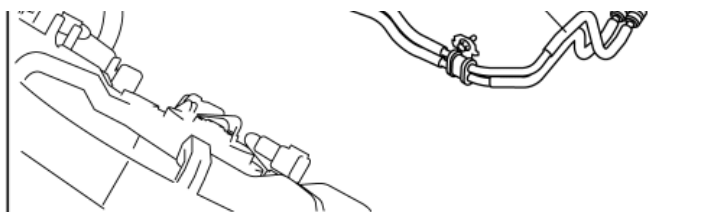
R

R

- Remove the engine, transmission and crossmember carefully, holding it steady. If the transmission falls it could be damaged or cause injury.



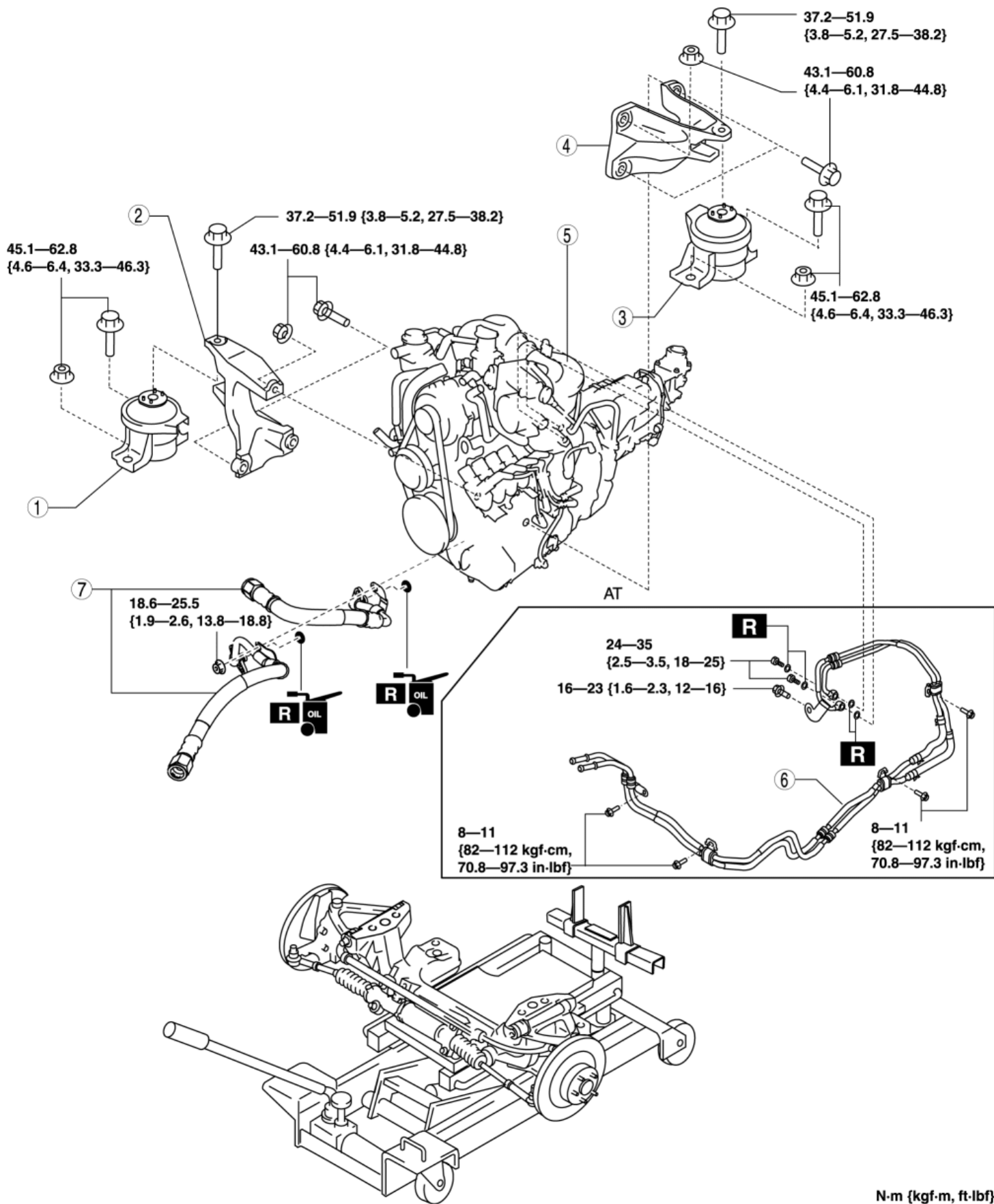
2017-11-01



N·m {kgf·m, ft·lbf}

1 Universal joint (See STEERING GEAR AND LINKAGE REMOVAL/INSTALLATION.) (See EPS SYSTEM NEUTRAL POSITION SETTING.)
2 Oil hose (See Oil Hose Removal Note.) (See Oil Hose Installation Note.)
3 Oil pipe, oil hose (AT) (See OIL COOLER REMOVAL/INSTALLATION [SJ6A-EL].)
4 Caliper and mounting support
5 Shock absorber bolt (lower)
6 Front tunnel member
7 Rear tunnel member
8 Catalytic converter, middle pipe, main silencer (See EXHAUST SYSTEM REMOVAL/INSTALLATION [13B-MSP].)
9 Heat insulator
10 Power plant frame (See Power Plant Frame, Crossmember Bolt Removal/Installation Note.) (See TRANSMISSION REMOVAL/INSTALLATION [P66M-D].) (See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION [SJ6A-EL].)
11 Propeller shaft (See PROPELLER SHAFT REMOVAL/INSTALLATION.)
12 Under cover
13 Transverse member
14 Engine, transmission, crossmember component (See Power Plant Frame, Crossmember Bolt Removal/Installation Note.)

17. Remove the engine and transmission from the crossmember component lifter in the order indicated in the table by suspending them with a crane.



1 Engine mount rubber (RH)

2	Engine mount bracket (RH)
3	Engine mount rubber (LH)
4	Engine mount bracket (LH)
5	Engine, transmission
6	Oil pipe, oil hose (AT) (See OIL COOLER REMOVAL/INSTALLATION [SJ6A-EL].)
7	Oil hose

18. Install in the reverse order of removal.

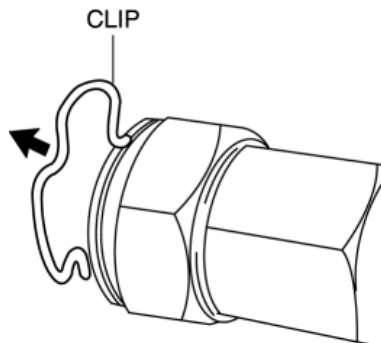
19. Start the engine and inspect and adjust the following:

- Pulley and belt for runout, tension, and contact
- Leakage of engine oil, engine coolant, ATF, MT oil, and fuel
- Ignition timing, idle speed, and idle mixture (CO and HC) (See [ENGINE TUNE-UP \[13B-MSP\].](#))
- Front wheel alignment (See [FRONT WHEEL ALIGNMENT.](#))
- Engine-driven accessories operation

20. Perform the on-road test and verify that there is no vibration or noise.

Oil Hose Removal Note

1. Remove the clip as shown in the figure and disconnect the oil hose.



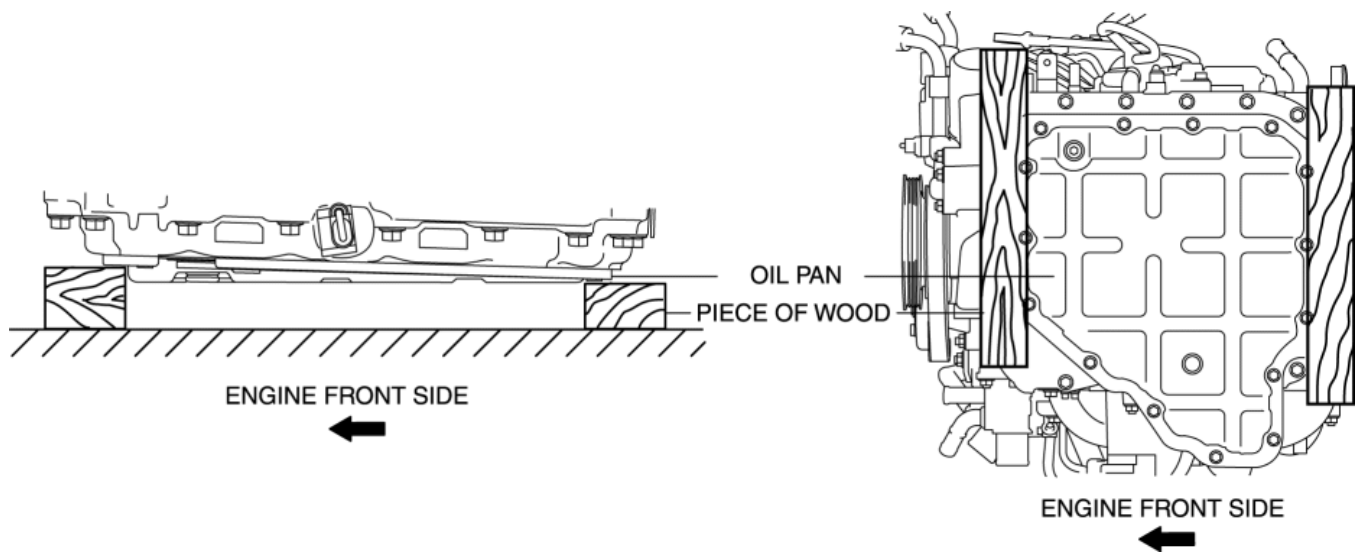
CAUTION:

- Catch the remaining engine oil in the oil cooler using a plate pipe to prevent spillage.

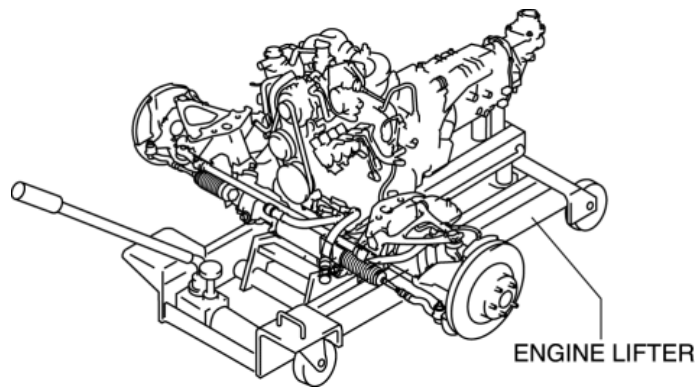
Power Plant Frame, Crossmember Bolt Removal/Installation Note

CAUTION:

- The oil pan could be damaged or dented if the engine's own weight is subjected to an impact against a level surface. Always set two pieces of wood in the positions shown in the figure to prevent the oil pan from being dented. If the oil pan is dented, the amount of intake oil and the fluid pressure will decrease.



1. Secure the engine, transmission, and crossmember component using an engine lifter.

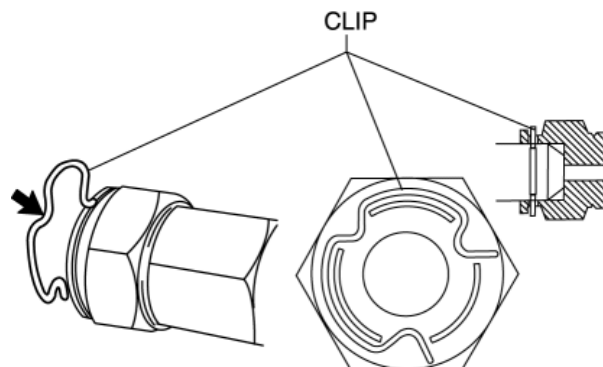


NOTE:

- When installing the power plant frame, tighten the bolts and nuts temporarily at this time, and after installing all parts, adjust the transmission installation positions referring to "Power Plant Frame Installation Note" and then tighten them completely. (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-DJ\]](#).) (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)

Oil Hose Installation Note

1. Connect the oil hose as shown in the figure.



CAUTION:

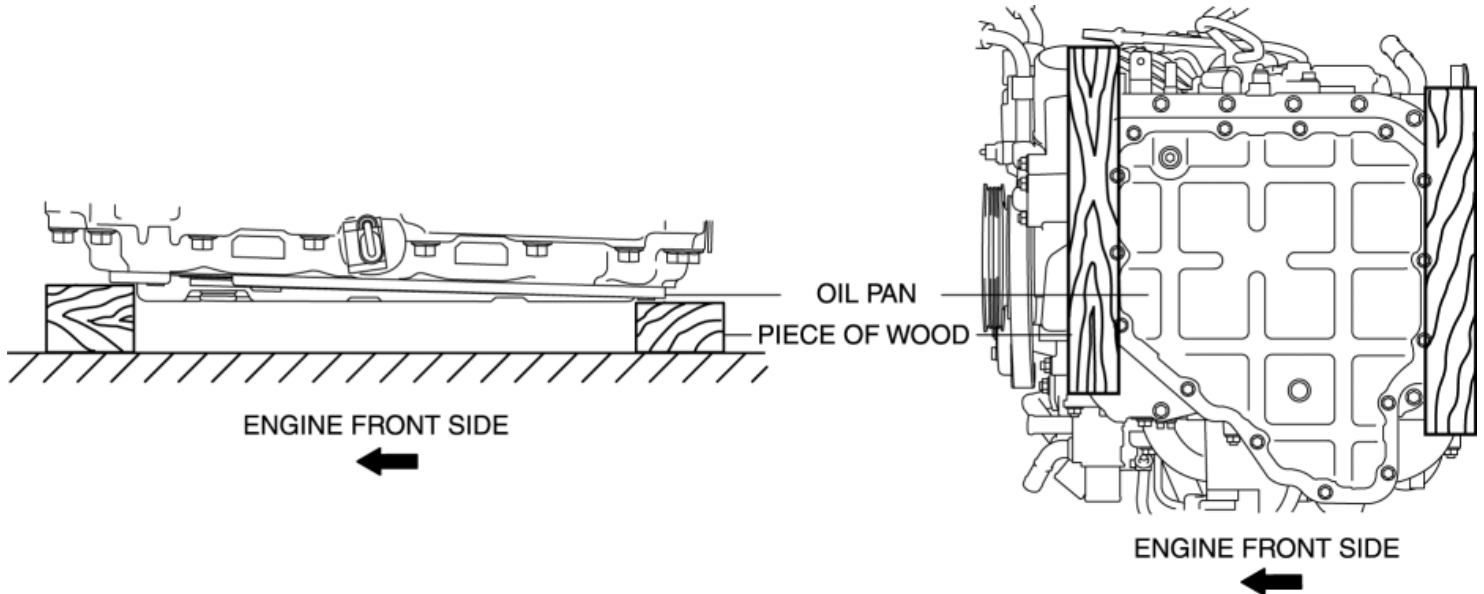
- Always install the oil hose with the three holes on the oil hose grooves and the three clip projections aligned.

2011 - RX-8 - Engine

ENGINE DISASSEMBLY/ASSEMBLY [13B-MSP]

CAUTION:

- The oil pan could be damaged or dented if the engine's own weight is subjected to an impact against a level surface. Always set two pieces of wood in the positions shown in the figure to prevent the oil pan from being dented. If the oil pan is dented, the amount of intake oil and the fluid pressure will decrease.



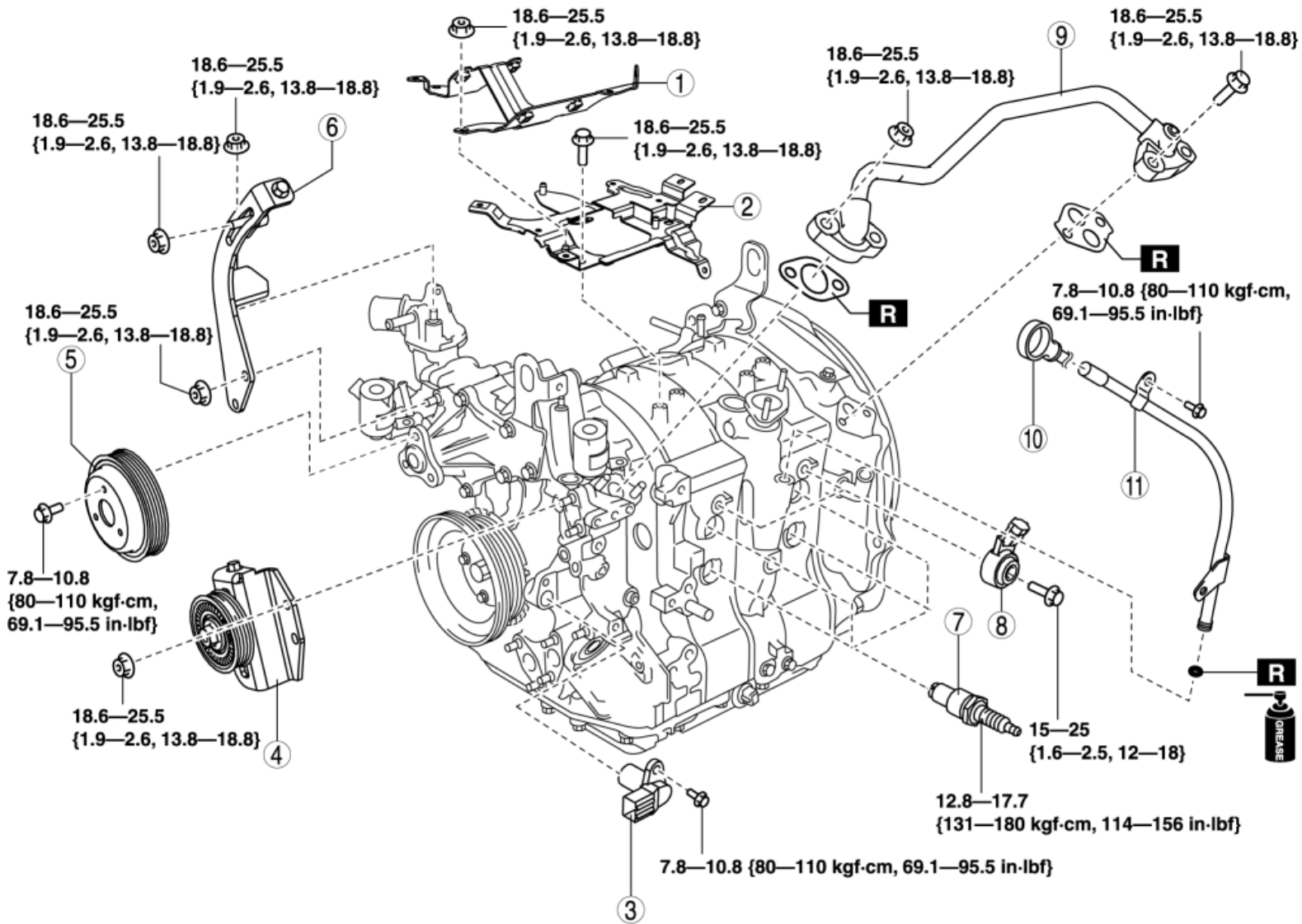
1. Remove the engine from the transmission. (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#).) (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)

2. Remove the following parts:

- a. Clutch unit (MT) (See [CLUTCH UNIT REMOVAL/INSTALLATION](#).)
- b. Drive plate (AT) (See [DRIVE PLATE REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)
- c. Exhaust manifold (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- d. Extension manifold (upper and lower) (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- e. Oil filler pipe (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- f. Metering oil pump (No.1 and No.2) (See [METERING OIL PUMP REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- g. Oil nozzle (See [OIL NOZZLE REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- h. Fuel distributor (intake manifold side and housing side) (See [FUEL INJECTOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- i. Intake manifold (See [INTAKE MANIFOLD REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- j. Generator (See [GENERATOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- k. Wiring harness
- l. Oil filter (See [OIL FILTER REPLACEMENT \[13B-MSP\]](#).)

3. Remove in the order indicated in the table.

4. Install in the reverse order of removal.



N·m {kgf·m, ft·lbf}

1	Metering oil pump bracket No.1
2	Metering oil pump bracket No.2 (See Metering Oil Pump Bracket Installation Note.)
3	Eccentric shaft position sensor (See ECCENTRIC SHAFT POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP].)
4	A/C drive belt tensioner
5	Water pump pulley
6	Generator strap

7	Spark plug (See SPARK PLUG REMOVAL/INSTALLATION [13B-MSP].)
8	Knock sensor (See KNOCK SENSOR (KS) REMOVAL/INSTALLATION [13B-MSP].)
9	Oil pipe
10	Dipstick
11	Dipstick pipe (See Dipstick Pipe Installation Note.)

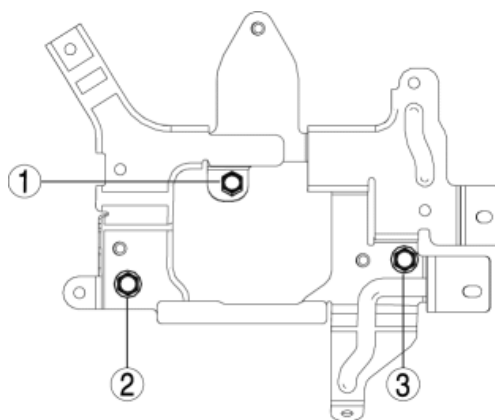
Dipstick Pipe Installation Note

CAUTION:

- Lubricate the new O-ring with the grease included in the O-ring packaging.

Metering Oil Pump Bracket Installation Note

1. Tighten the metering oil pump bracket No.2 installation bolts in the order shown.



Tightening torque

1. 18.6—25.5 N·m {1.9—2.6 kgf·m, 13.8—18.8 ft·lbf}

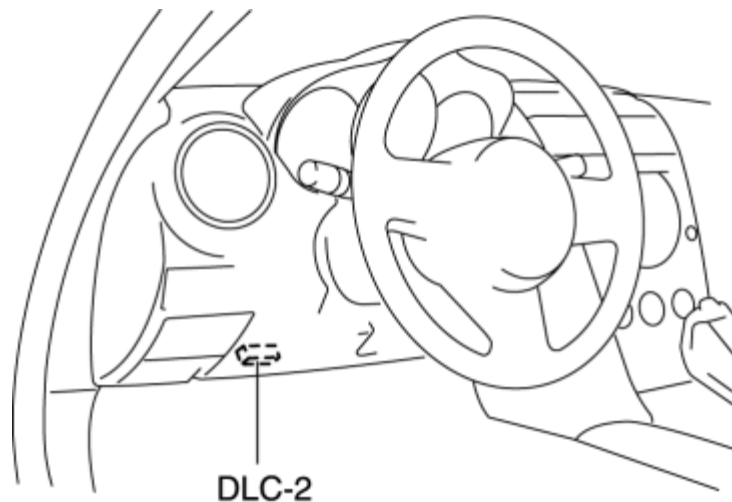
[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

ENGINE TUNE-UP [13B-MSP]

Engine Tune-up Preparation

1. Verify the following:
 - AT: Selector lever is in P or N position.
 - MT: Shift lever is in neutral position.
2. Turn off all electrical loads.
3. Warm up the engine.
 - a. Increase the engine speed to **2,500—3,000 rpm** until cooling fans start running.
 - b. When the cooling fans start running, release the accelerator pedal and wait until the cooling fans stop running.
4. Connect the M-MDS to the DLC-2.



5. Verify that the idling speed (M-MDS: RPM PID) is within the specification using the M-MDS function.

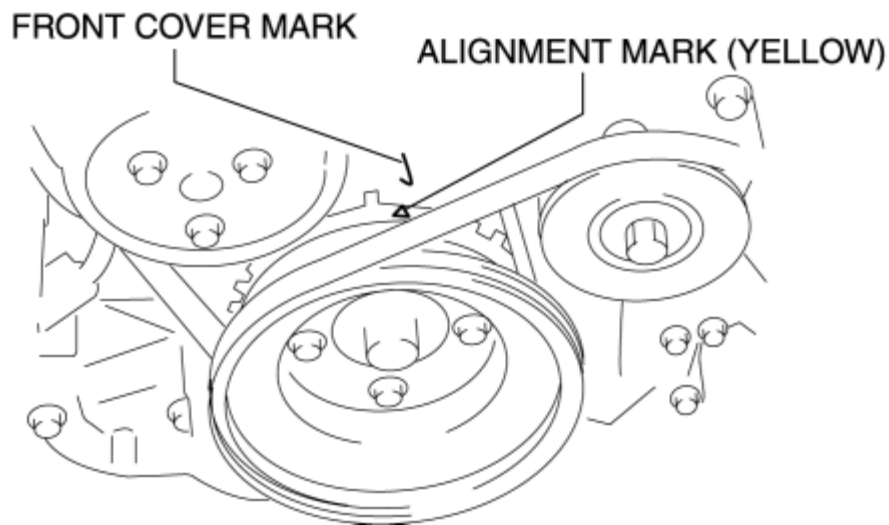
Standard (no load)

- AT: 760—860 rpm
- MT: 770—870 rpm

Ignition Timing Inspection

NOTE:

- The ignition timing cannot be adjusted.
 - The M-MDS is required to verify the ignition timing.
1. Complete the engine tune-up preparation. (See [Engine Tune-up Preparation](#).)
 2. Connect the timing light to the front rotor housing on the leading side.
 3. Turn the test mode on using the test simulation function.
 4. Verify that the eccentric shaft position plate alignment mark (yellow) and the front cover mark is aligned.



NOTE:

- When using the M-MDS, verify that the ignition timing (M-MDS: SPARK-T or SPARK-L PID) is as follows:

Ignition timing

- Trailing side: BTDC 10°
 - Leading side: BTDC -5°
 - If there is malfunction, refer to "ENGINE SYMPTOM TROUBLESHOOTING". (See [SYMPTOM DIAGNOSTIC INDEX \[13B-MSP\]](#).)
5. Turn the test mode off using the test simulation function.

Idle Speed Inspection

NOTE:

- The idling speed cannot be adjusted.
 - The M-MDS is required to verify the idling speed.
1. Complete the engine tune-up preparation. (See [Engine Tune-up Preparation](#).)
 2. Turn the test mode on using the “test” simulation function.
 3. Verify that the engine speed using the RPM DATA MONITOR function is as follows.
 - If there is malfunction, refer to “ENGINE SYMPTOM TROUBLESHOOTING”. (See [SYMPTOM DIAGNOSTIC INDEX \[13B-MSP\]](#).)

Standard

Load status	Idling speed (rpm)			
	N, D, R position (AT), Neutral position (MT)			
	AT			MT
	N position	D position	R position	
No load	760—860	760—860	760—860	770—870
Electrical loads on ^{*1}	780—880	760—860	740—840	760—860
A/C on (standard)	780—880	760—860	750—850	760—860
A/C on (standard)+ electrical loads on ^{*1}	780—880	760—860	750—850	790—890
A/C on (heavy load)	800—900	780—880	780—880	790—890

^{*1}

The headlight, rear window defroster, blower fan (2-step or more) are on.

Idle Mixture Inspection

1. Verify that idle speed and ignition timing are within the specification. (See [Idle Speed Inspection](#).) (See [Ignition Timing Inspection](#).)
2. Insert an exhaust gas analyzer into the tailpipe.
3. Verify that the CO and HC concentration are within the regulation.
 - If there is malfunction, refer to “ENGINE SYMPTOM TROUBLESHOOTING”. (See [SYMPTOM DIAGNOSTIC INDEX \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

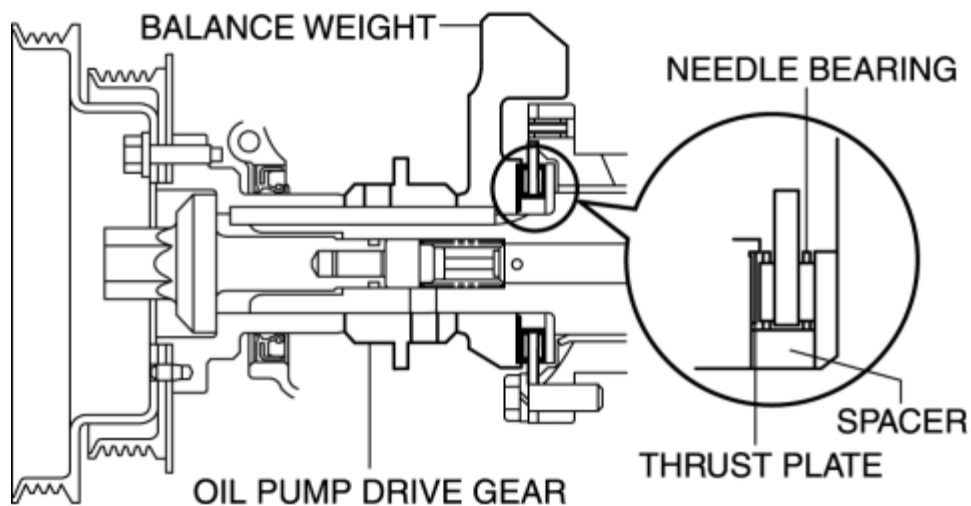
© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

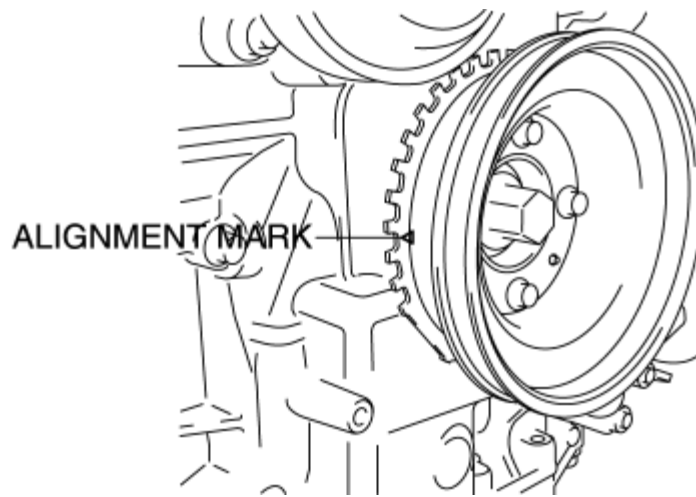
FRONT OIL SEAL REPLACEMENT [13B-MSP]

CAUTION:

- Do not allow the pulley lockbolt to get hit or jolted as it could cause the balance weight and oil pump drive gear to deviate resulting in the thrust plate and needle bearing falling in between the balance weight and spacer.



- If the thrust plate and needle bearing fall off, perform disassembly.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Remove the front suspension tower bar. (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[MT\]](#).) (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[AT\]](#).)
 3. Remove the battery cover, battery, battery box and battery tray. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 4. Remove the air cleaner component, air hose and air cleaner insulator. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 5. Remove the A/C drive belt and generator drive belt. (See [DRIVE BELT REPLACEMENT \[13B-MSP\]](#).)
 6. Rotate the eccentric shaft clockwise and align the eccentric shaft position plate alignment mark to the 9 o'clock position.



7. Remove the starter. (See [STARTER REMOVAL/INSTALLATION \[13B-MSP\]](#).)

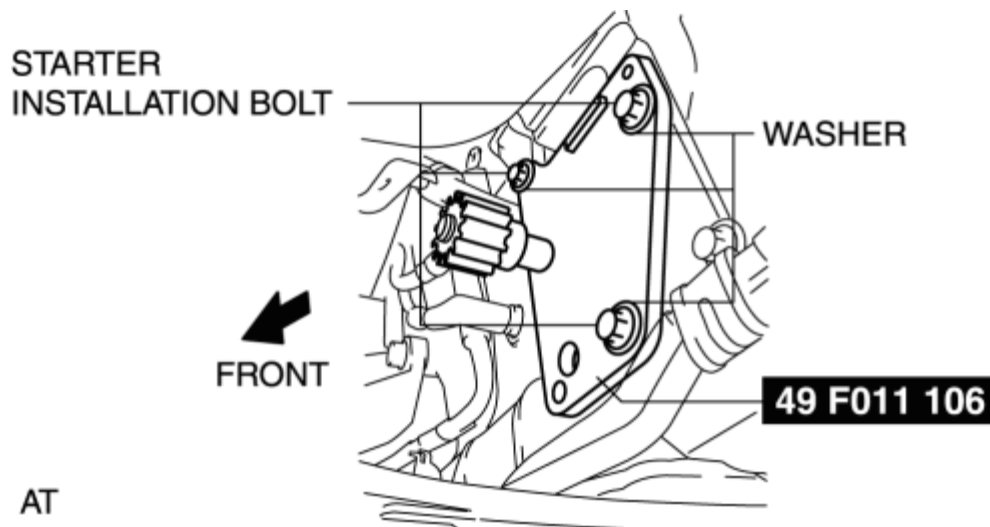
8. Install the SST to the starter installation area according to the following procedure and lock the eccentric shaft again rotation.

CAUTION:

- To prevent faulty bolt installation, install the bolts with appropriate washers of 3 mm {0.11 in} or more.

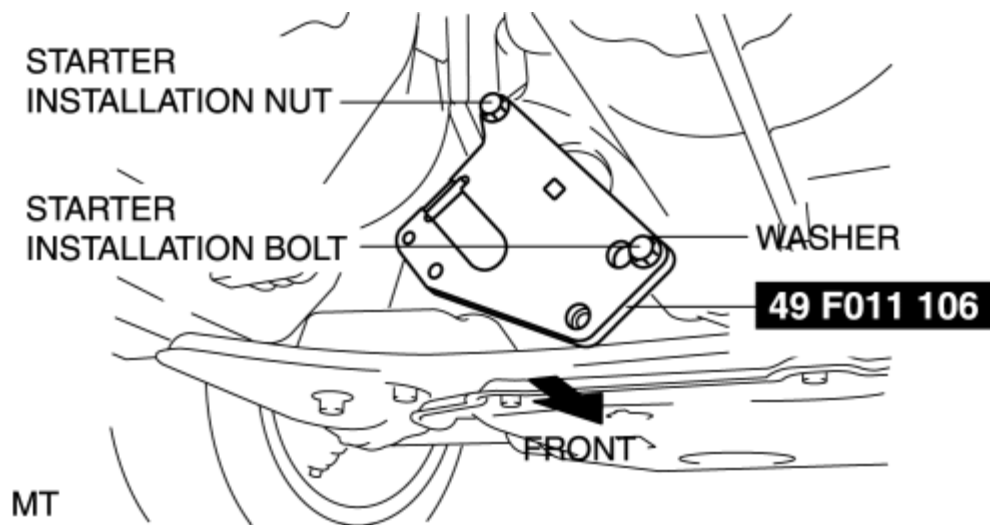
AT

- Install the SST using the starter installation bolts and appropriate washers.



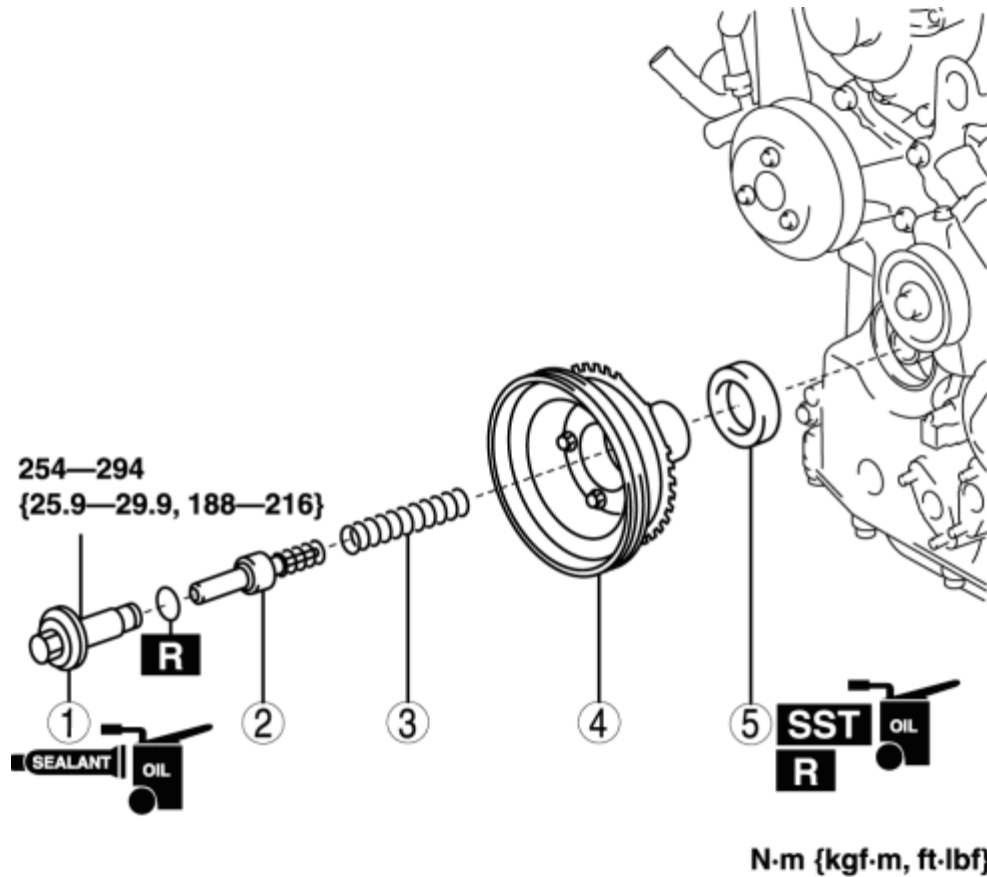
MT

- Install the SST using the starter installation bolt, nut and appropriate washer.



9. Remove in the order shown in the figure.

10. Install in the reverse order of removal.



1 Pulley lockbolt

(See [Pulley Lockbolt Installation Note.](#))

2 Eccentric shaft bypass valve

3	Spring
4	Pulley component (See Pulley Component Removal Note.)
5	Front oil seal (See Front Oil Seal Removal Note.) (See Front Oil Seal Installation Note.)

Pulley Component Removal Note

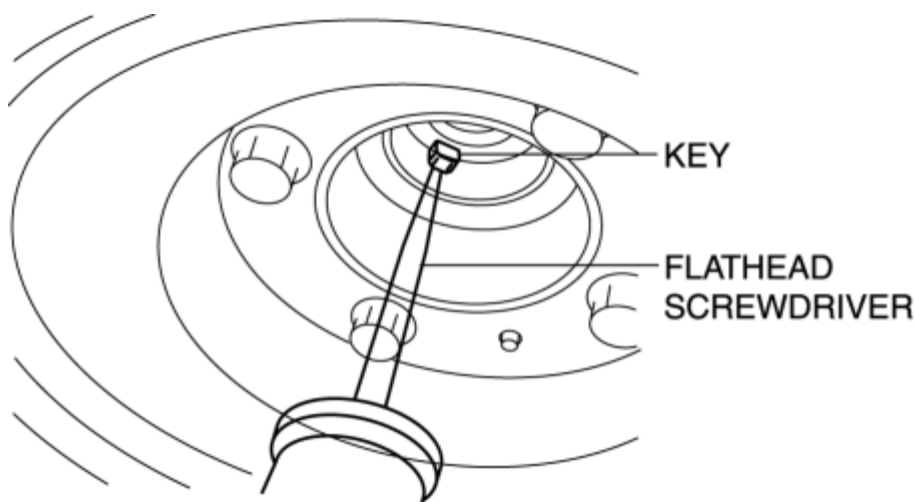
1. Remove the pulley component using a flathead screwdriver to hold the key in place.

CAUTION:

- The key must be held in place while removing the pulley. Failure to secure key in place will cause severe engine damage.

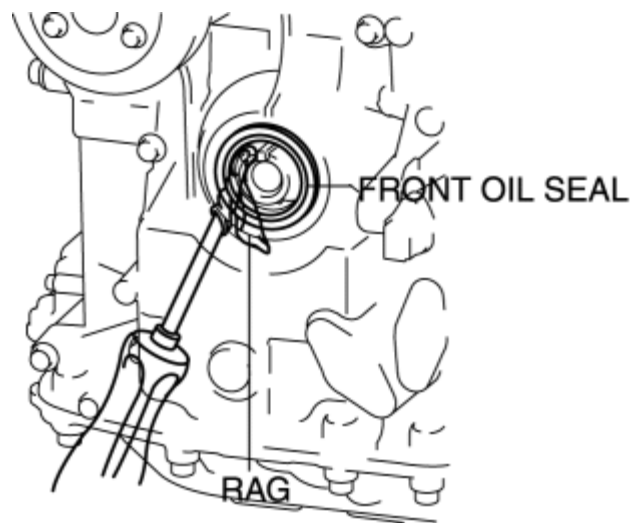
NOTE:

- If the key has deviated, return it to its original position. If it has not been returned to its original position, perform disassembly and install the key.



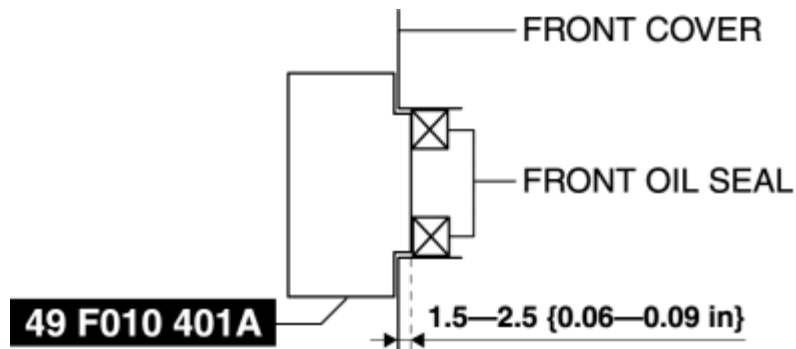
Front Oil Seal Removal Note

1. Remove the front oil seal using a flathead screwdriver with the tip wrapped in a clean rag.



Front Oil Seal Installation Note

1. Apply engine oil to the lip of a new front oil seal.
2. Tap the front oil seal in using the SST and a hammer.



Pressing distance for the front oil seal (from edge of front cover)

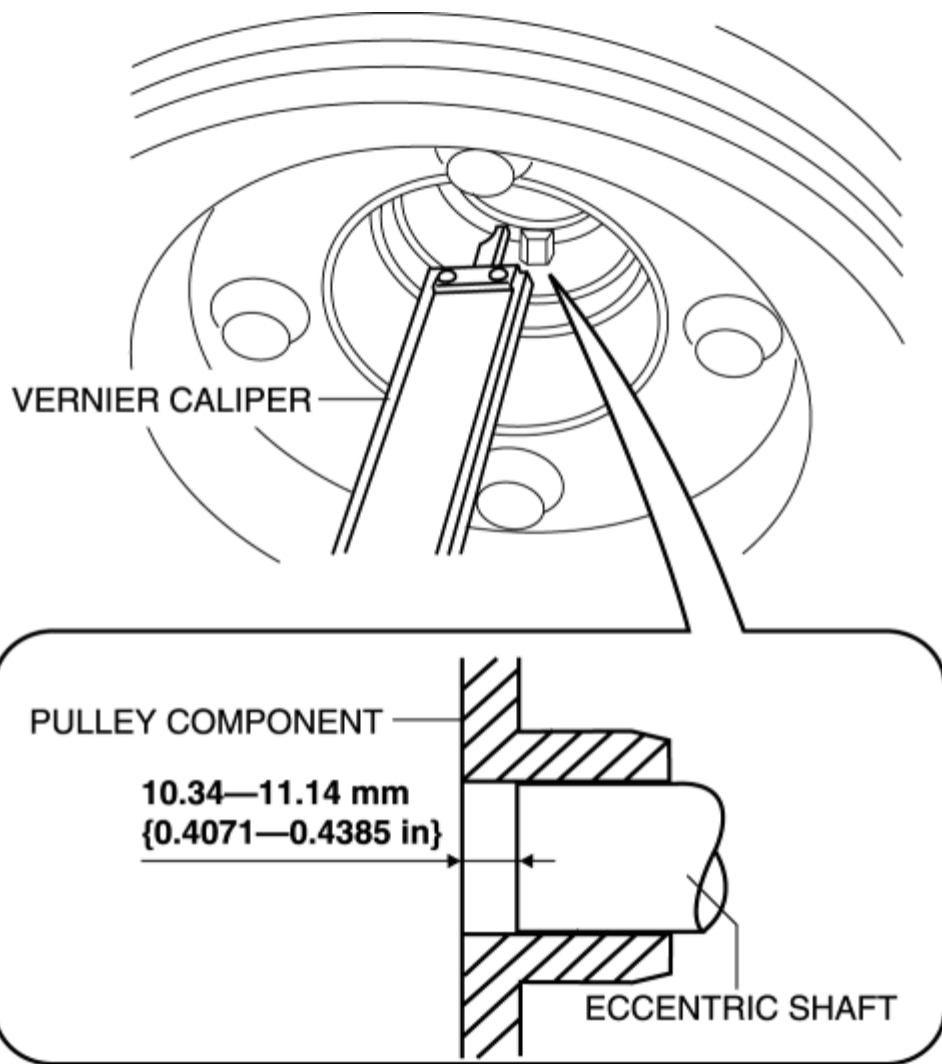
- 1.5—2.5 mm {0.06—0.09 in}

Pulley Lockbolt Installation Note

1. Temporarily tighten the pulley lockbolt.

NOTE:

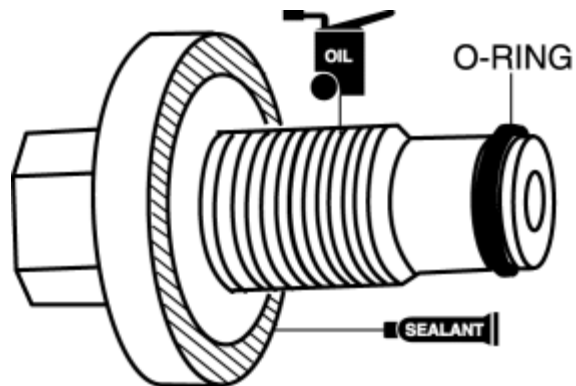
- Press in the pulley component by temporarily tightening the pulley lock bolt, and press the part on the eccentric shaft to the normal position.
2. Remove the pulley lockbolt.
 3. Measure the position shown in the figure.
 - If not within the specification, perform overhaul servicing.



Standard

- 10.34—11.14 mm {0.4071—0.4385 in}

4. Apply engine oil to the pulley lockbolt threads.



5. Assemble a new O-ring.

6. Apply silicone sealant to the seating face.

7. Tighten the pulley lockbolt.

Tightening torque

- 254—294 N·m {25.9—29.9 kgf·m, 188—216 ft·lbf}

[< Previous](#) [Next >](#)

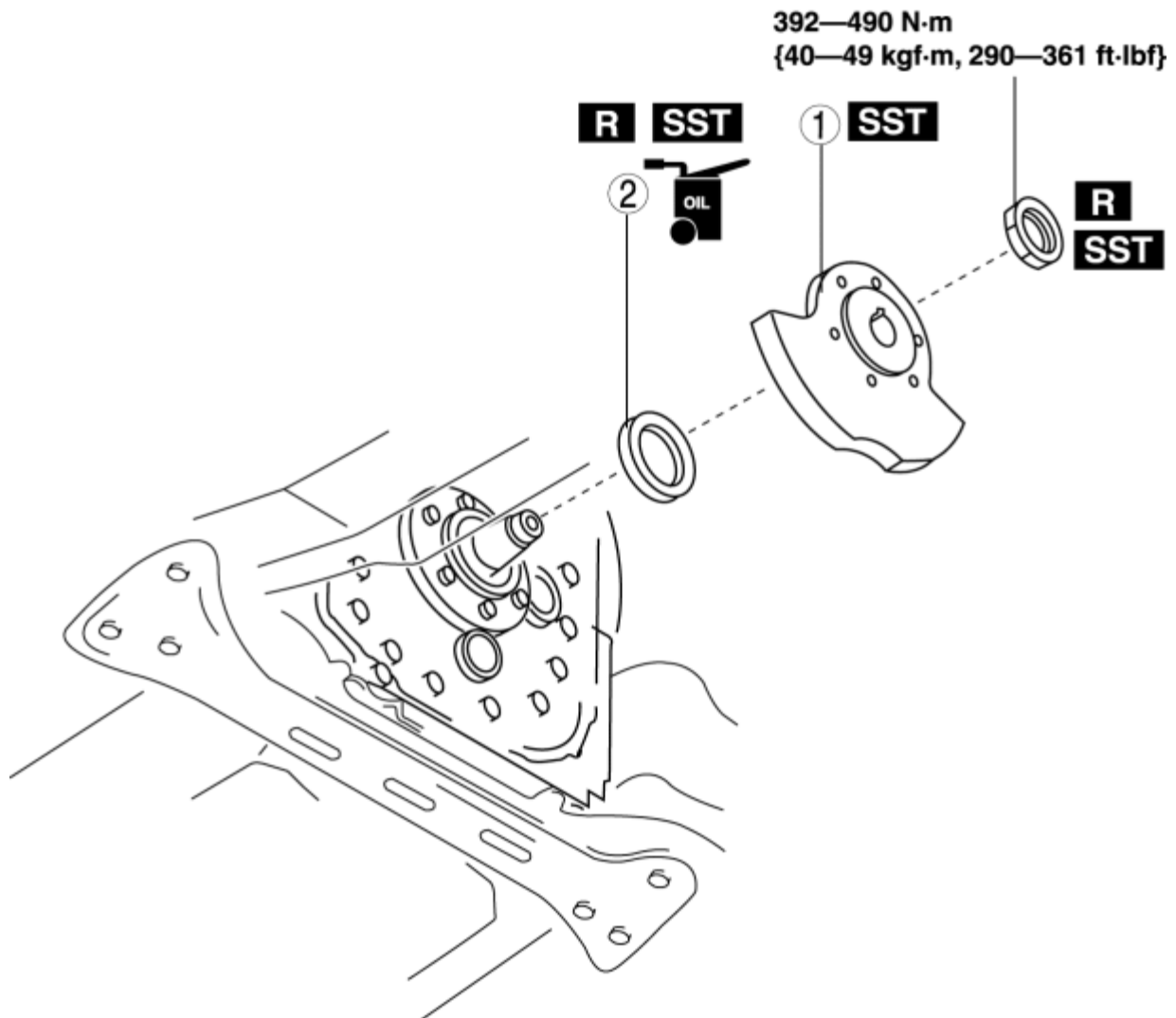
[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

REAR OIL SEAL REPLACEMENT [13B-MSP]

1. Remove the transmission. (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#).) (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)
2. Remove the flywheel. (MT) (See [CLUTCH UNIT REMOVAL/INSTALLATION](#).)
3. Remove the drive plate. (AT) (See [DRIVE PLATE REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)
4. Remove in the order indicated in the table.
5. Install in the reverse order of removal.



1 Counterweight (AT)

(See [Counterweight Removal Note](#).)

(See [Counterweight Installation Note](#).)

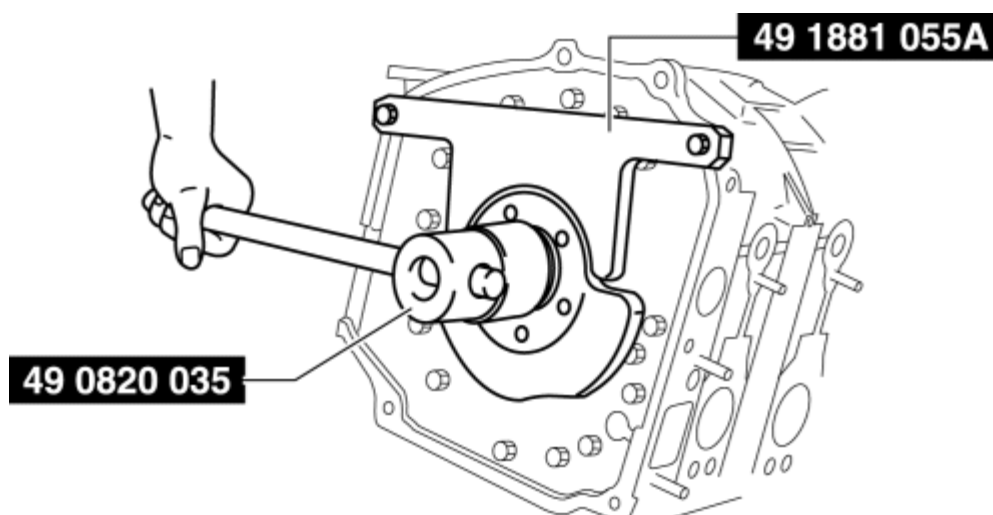
2 Rear oil seal

(See [Rear Oil Seal Removal Note](#).)

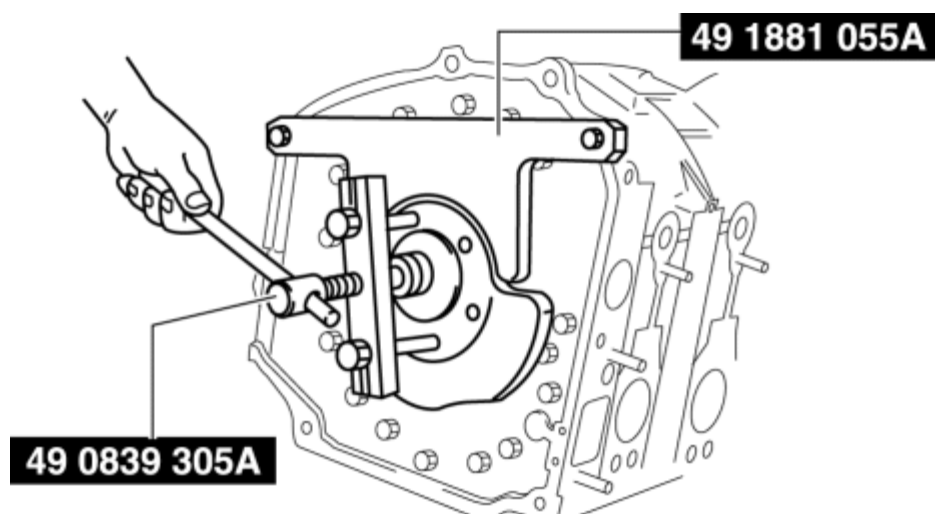
(See [Rear Oil Seal Installation Note](#).)

Counterweight Removal Note

1. Remove the locknut by locking the counterweight against rotation using the **SST**.



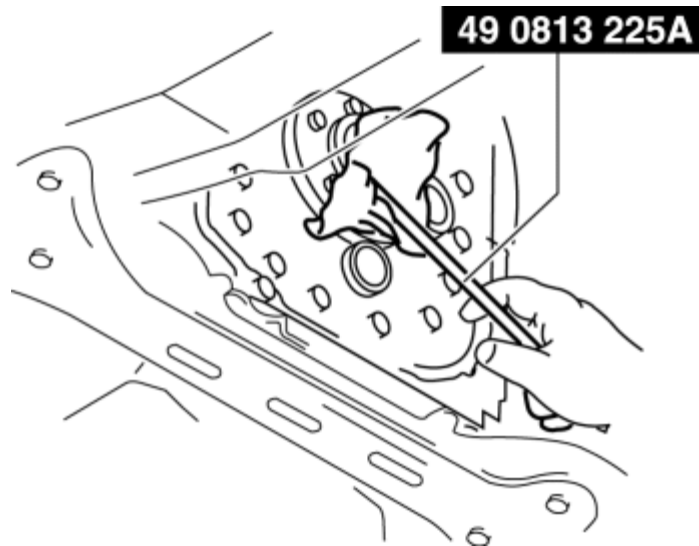
2. Remove the counterweight using the **SST**.



3. Remove the **SST**.

Rear Oil Seal Removal Note

1. Protect the eccentric shaft with cloth and remove the oil seal using the **SST**.

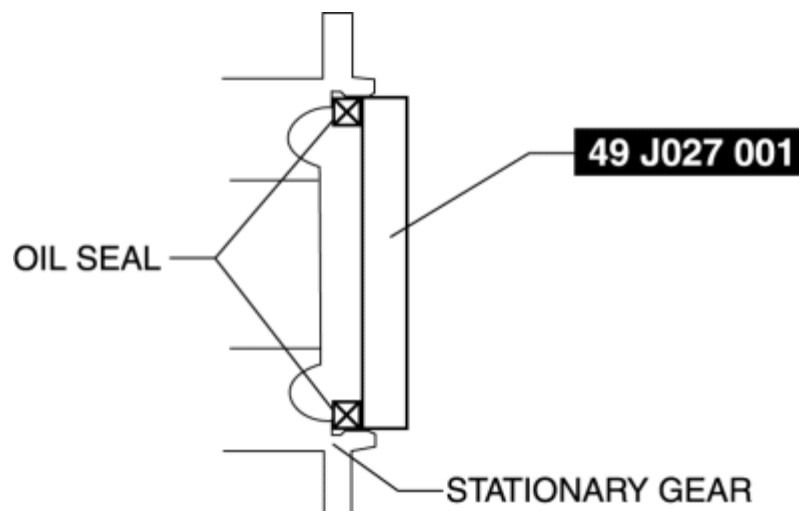


CAUTION:

- Do not damage the contact area of the rear oil seal at the stationary gear and eccentric shaft.

Rear Oil Seal Installation Note

1. Apply engine oil to the lip of a new rear oil seal.
2. Tap the rear oil seal evenly in the stationary gear using the **SST**.



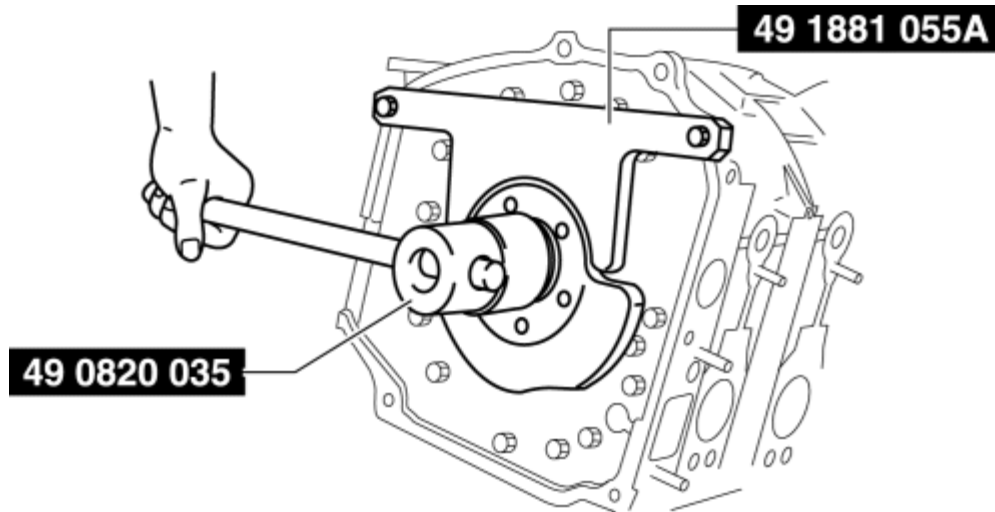
CAUTION:

- Insert until it is attached to the seating face.

Do not damage the oil seal lip by catching it on the eccentric shaft and the key.

Counterweight Installation Note

1. Verify that the key is installed securely.
2. Install the counterweight to the eccentric shaft.
3. Install the locknut to the eccentric shaft and temporarily tighten.
4. Lock the counterweight against rotation using the **SST**, and tighten it to the specified torque.



Tightening torque

- 392—490 N·m {40—49 kgf·m, 290—361 ft·lbf}

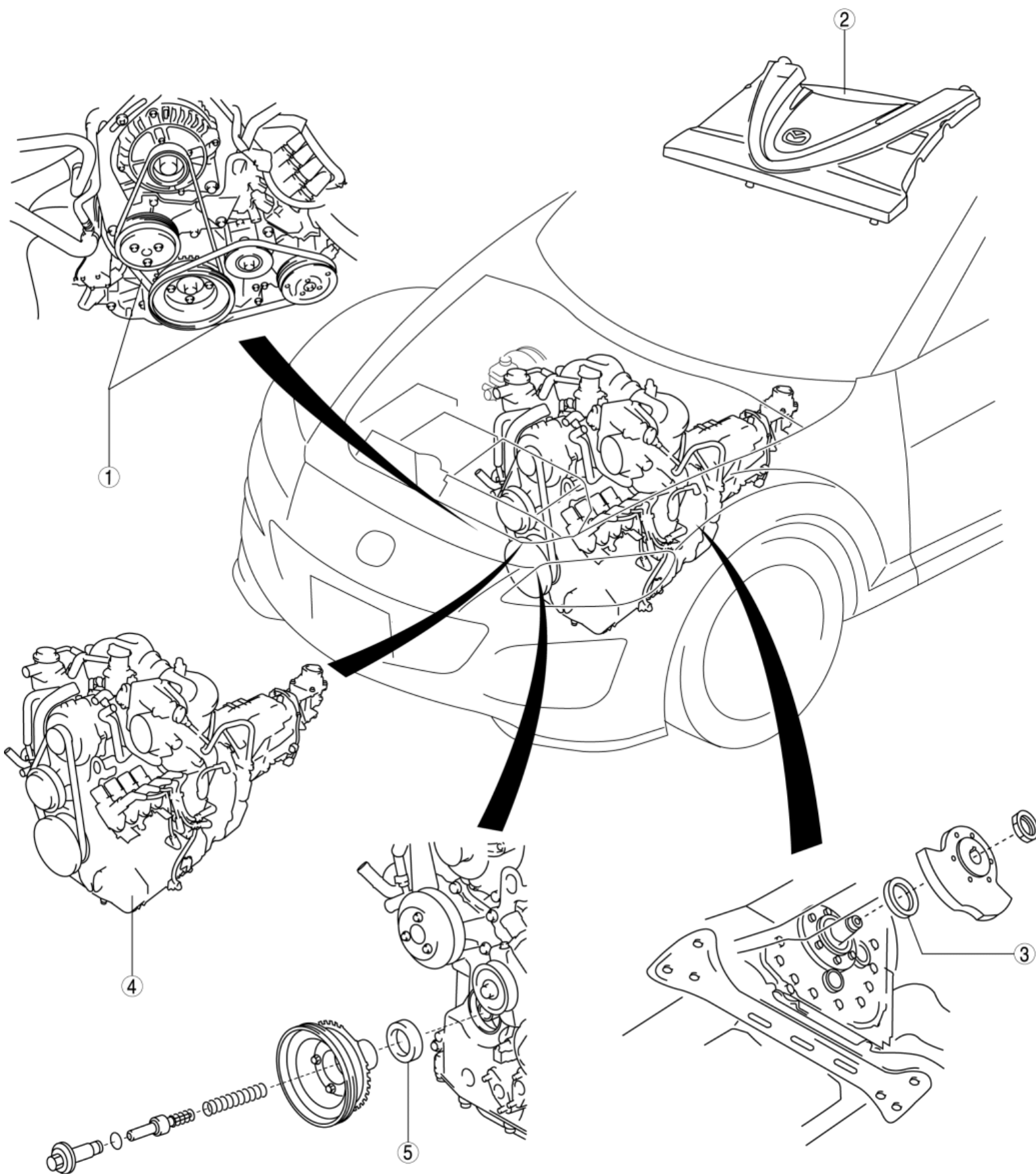
[< Previous](#) [Next >](#)

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

ENGINE LOCATION INDEX [13B-MSP]



1 Drive belt

(See [DRIVE BELT DEFLECTION/TENSION INSPECTION \[13B-MSPI.\]](#).)

	(See DRIVE BELT REPLACEMENT [13B-MSP].)
2	Engine cover (See ENGINE COVER REMOVAL/INSTALLATION [13B-MSP].)
3	Rear oil seal (See REAR OIL SEAL REPLACEMENT [13B-MSP].)
4	Engine (See COMPRESSION INSPECTION [13B-MSP].) (See ENGINE REMOVAL/INSTALLATION [13B-MSP].) (See ENGINE DISASSEMBLY/ASSEMBLY [13B-MSP].) (See ENGINE TUNE-UP [13B-MSP].)
5	Front oil seal (See FRONT OIL SEAL REPLACEMENT [13B-MSP].)

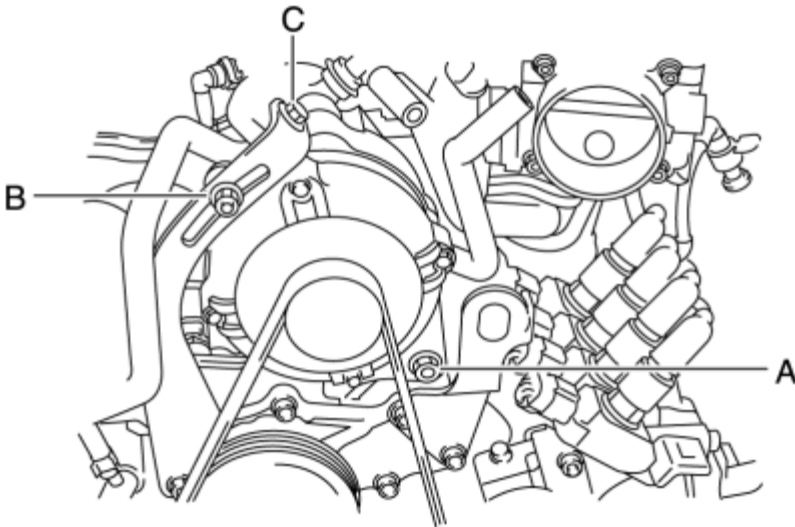
[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

DRIVE BELT REPLACEMENT [13B-MSP]

Generator Drive Belt

- 1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- 2. Remove the A/C drive belt. (See [A/C Drive Belt](#).)
- 3. Loosen generator installation bolt A and locknut B.



- 4. Loosen adjusting bolt C and remove the drive belt.
- 5. Install the drive belt and adjust the drive belt deflection/tension by tightening adjusting bolt C to the specification.

CAUTION:

- After replacing with a the new drive belt, assemble with the deflection/tension for new drive belt and operate the drive belt for 1 min or more while idling the engine. Then adjust it to the deflection/tension used when adjusting.

Drive belt deflection (with pressure of 98 N {10 kgf, 22 lbf})

New (mm {in})	When adjusting (mm {in})
4.0—4.5 {0.16—0.17}	4.5—5.0 {0.18—0.19}

Drive belt tension (when using the SST)

New (N {kgf, lbf})	When adjusting (N {kgf, lbf})
620—767 {63.3—78.2, 140—172}	519—666 {53.0—67.9, 117—149}

6. Tighten generator installation bolt A and locknut B to the specified torque. Tightening torque A: 38—51 N·m {3.9—5.2 kgf·m, 29—37 ft·lbf} B: 18.6—25.5 N·m {1.90—2.60 kgf·m, 13.8—18.8 ft·lbf}

7. Crank the engine and measure the deflection/tension again. If not within the specification, repeat from Step 3 again.

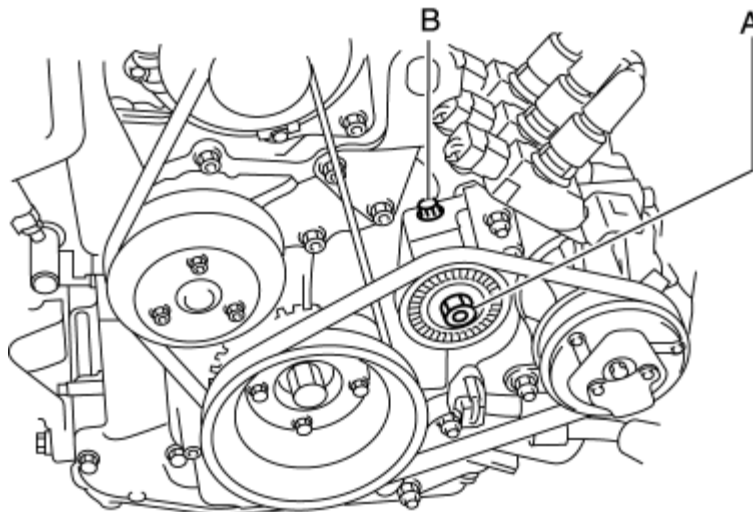
8. Install the A/C drive belt. (See [A/C Drive Belt](#).)

9. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)

A/C Drive Belt

1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)

2. Loosen A/C drive belt tensioner pulley locknut A.



3. Loosen adjusting bolt B and remove the belt.

4. Install the drive belt and adjust the drive belt deflection/tension by tightening adjusting bolt B to the specification.

CAUTION:

- After replacing with a the new drive belt, assemble with the deflection/tension for new drive belt and operate the drive belt for 5 min or more while idling the engine. Then adjust it to the deflection/tension used when adjusting.

Drive belt deflection (with pressure of 98 N {10 kgf, 22 lbf})

New (mm {in})	When adjusting (mm {in})
3.0—3.8 {0.11—0.14}	3.3—4.0 {0.13—0.15}

Drive belt tension (when using the SST)

New (N {kgf, lbf})	When adjusting (N {kgf, lbf})
559—706 {57.1—71.9, 126—158}	519—617 {53.0—62.9, 117—138}

5. Tighten A/C drive belt tensioner pulley locknut A to the specified torque.

Tightening torque

- 37.2—51.9 N·m {3.80—5.29 kgf·m, 27.5—38.2 ft·lbf}

6. Crank the engine and measure the deflection/tension again. If not within the specification, repeat from Step 2 again.

7. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))

[< Previous](#) [Next >](#)

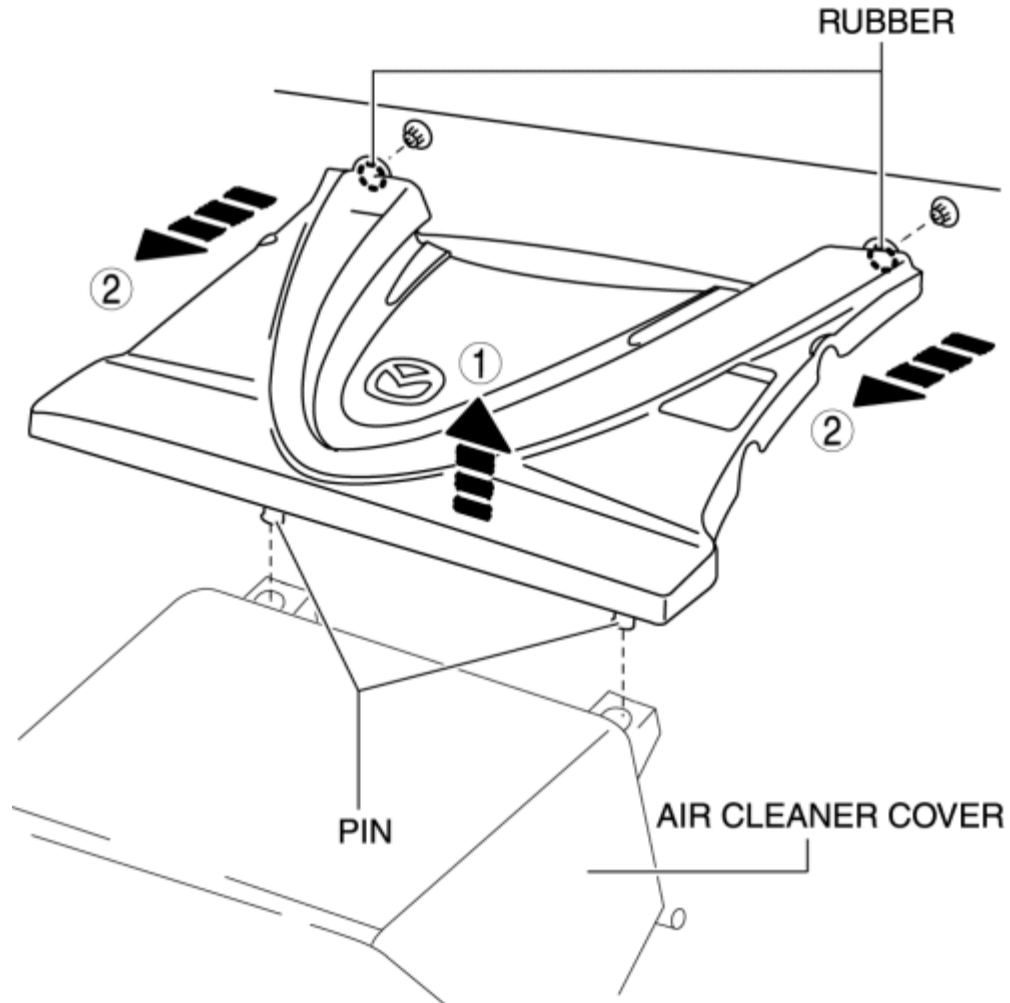
[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

ENGINE COVER REMOVAL/INSTALLATION [13B-MSP]

1. Remove in the order shown in the figure.



2. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

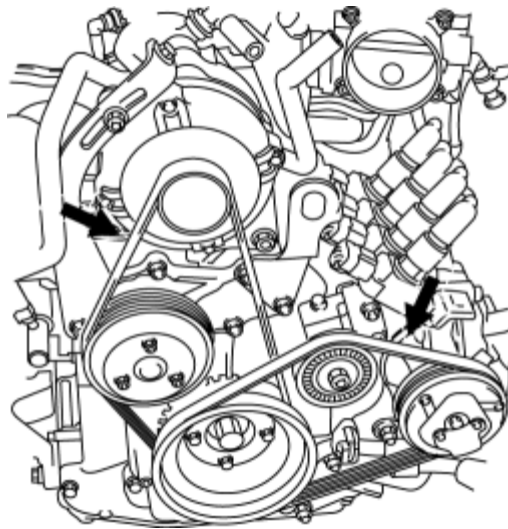
[Back to Top](#)

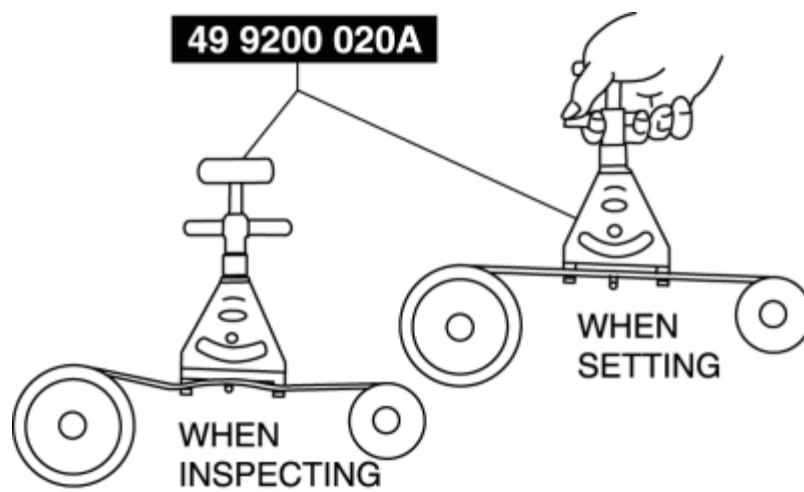
2011 - RX-8 - Engine

DRIVE BELT DEFLECTION/TENSION INSPECTION [13B-MSP]

CAUTION:

- The drive belt deflection can be inspected only between specified pulleys.
 - Perform the drive belt deflection/tension inspection when the engine is cold, or at least 30 min after the engine has stopped.
 - If the drive belt that is being used exceeds the deflection/tension limit, adjust it to the deflection/tension used when adjusting.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Apply a pressure of **98 N {10 kgf, 22 lbf}** to the back of the drive belt in the middle of the pulleys shown in the figure and inspect the deflection. Otherwise, inspect the tension using the **SST**.





NOTE:

- The drive belt tension can be inspected anywhere between the pulleys. The drive belt deflection can be inspected only between specified pulleys.
- If the drive belt deflection is at the deflection limit or more, or the drive belt tension is at the tension limit or less, adjust the drive belt deflection/tension.

Drive belt deflection (with pressure of 98 N {10 kgf, 22lbf})

Item	New (mm {in})	When adjusting (mm {in})	Deflection limit (mm {in})
Generator	4.0—4.5 {0.16—0.17}	4.5—5.0 {0.18—0.19}	6.0 {0.23} or more
A/C	3.0—3.8 {0.11—0.14}	3.3—4.0 {0.13—0.15}	5.5 {0.21} or more

Drive belt tension (when using the SST)

Item	New (N {kgf, lbf})	When adjusting (N {kgf, lbf})	Tension limit (N {kgf, lbf})
Generator	620—767 {63.3—78.2, 140—172}	519—666 {53.0—67.9, 117—149}	344 {35.1, 77.3}

			or less
A/C	559—706 {57.1—71.9, 126—158}	519—617 {53.0—62.9, 117—138}	265 {27.1, 59.6} or less

3. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

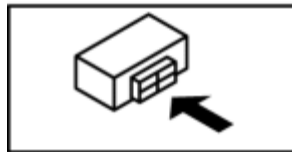
© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

OIL CONTROL VALVE (OCV) INSPECTION [13B-MSP]

Coil Resistance Inspection

1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
2. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
3. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
4. Remove the OCV. (See [OIL CONTROL VALVE \(OCV\) REMOVAL/INSTALLATION \[13B-MSP\].](#))
5. Measure the coil resistance between terminals A and B using a tester.



- If not within the specification, replace the OCV.

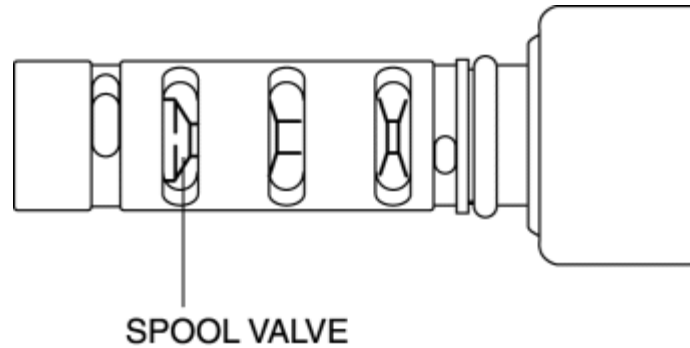
OCV standard resistance

- 6.9—7.9 ohms [20°C {68°F}]
6. Install the OCV. (See [OIL CONTROL VALVE \(OCV\) REMOVAL/INSTALLATION \[13B-MSP\].](#))
 7. Connect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 8. Install the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 9. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))

Spool Valve Operation Inspection

1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))

2. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
3. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
4. Remove the OCV. (See [OIL CONTROL VALVE \(OCV\) REMOVAL/INSTALLATION \[13B-MSP\].](#))
5. Verify that the spool valve inside the OCV is at the position shown in the figure (position where it is pulled).

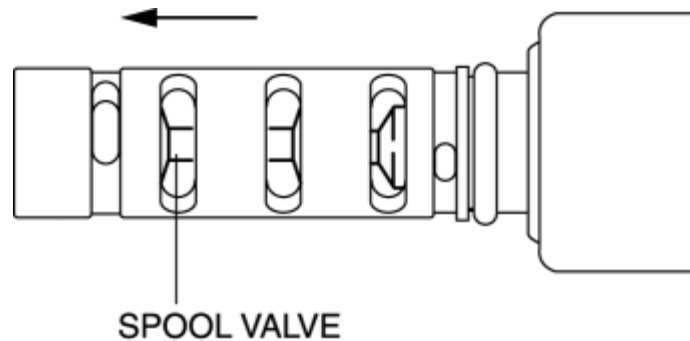


- If it cannot be verified, replace the OCV.

6. Verify that the battery is fully charged.

NOTE:

- When applying battery positive voltage between the oil control valve terminals, the connection of the negative and positive cable can be either the A or B terminal.
7. Verify that the spool valve moves to the position shown in the figure (position where it projects) when battery positive voltage is applied between terminals A and B.



- If it cannot be verified, replace the OCV.
8. Stop applying battery positive voltage and verify that the spool valve returns to the original position.
 - If it cannot be verified, replace the OCV.
 9. Install the OCV. (See [OIL CONTROL VALVE \(OCV\) REMOVAL/INSTALLATION \[13B-MSP\].](#))
 10. Connect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 11. Install the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 12. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

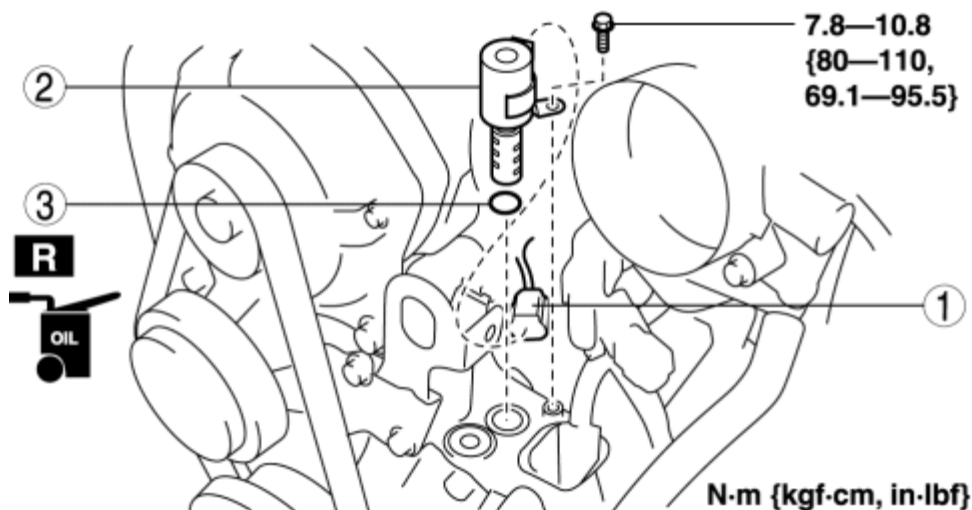
OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [13B-MSP]

WARNING:

- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
 - Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 3. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 4. Remove the air hose and air cleaner component. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 5. Remove the throttle body with the water hoses still connected. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 6. Remove the ignition coil and ignition coil bracket as a single unit.

Ignition coil bracket tightening torque

1. 7.8—10.8 N·m {80—110 kgf·cm, 69.1—95.5 in·lbf}
7. Remove in the order indicated in the table.
 8. Install in the reverse order of removal.



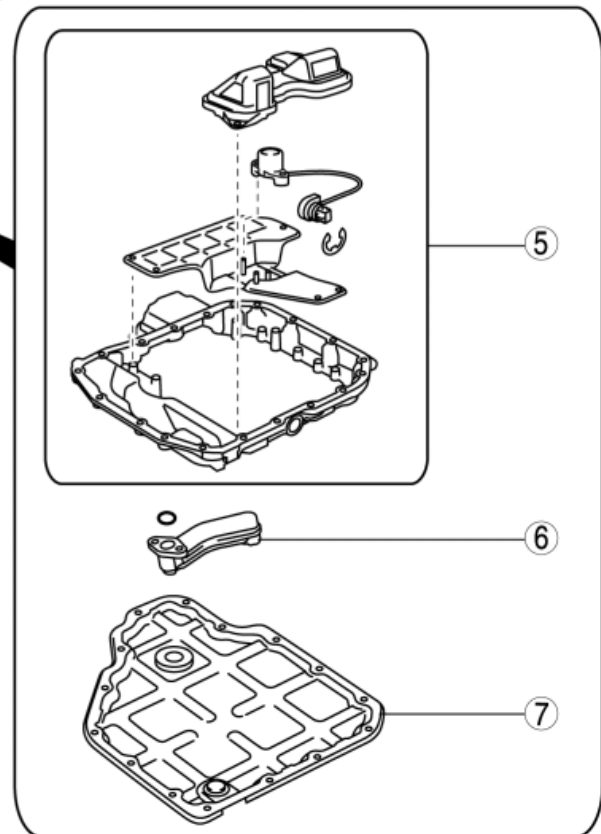
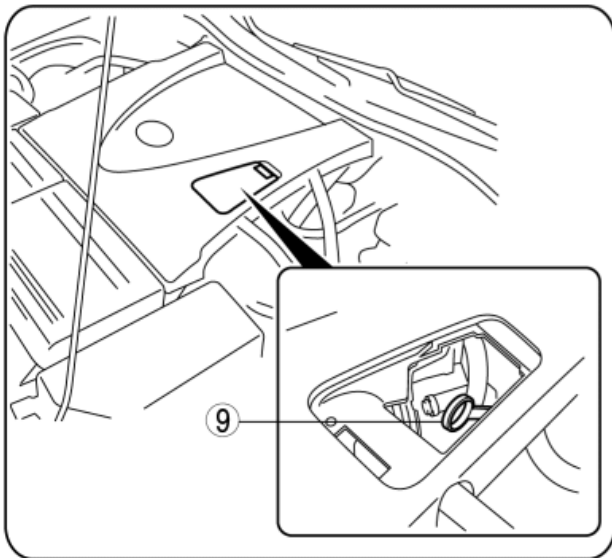
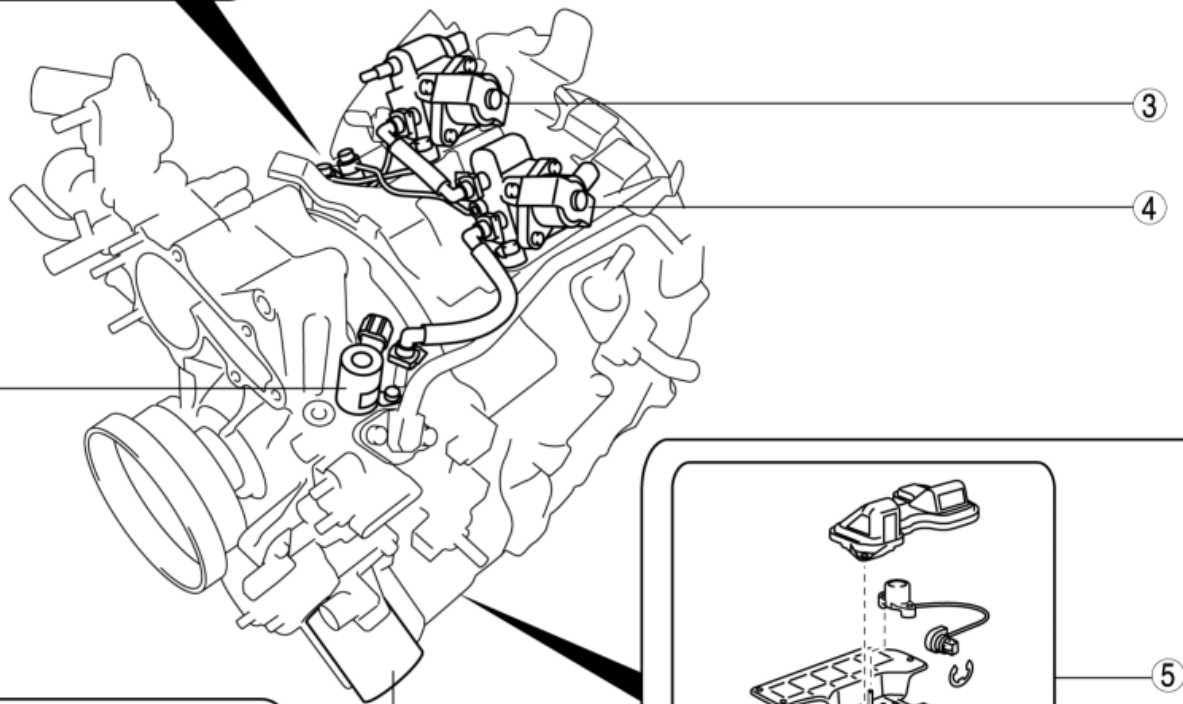
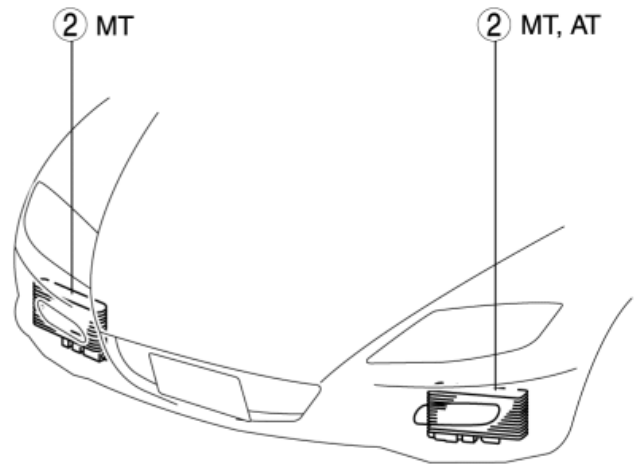
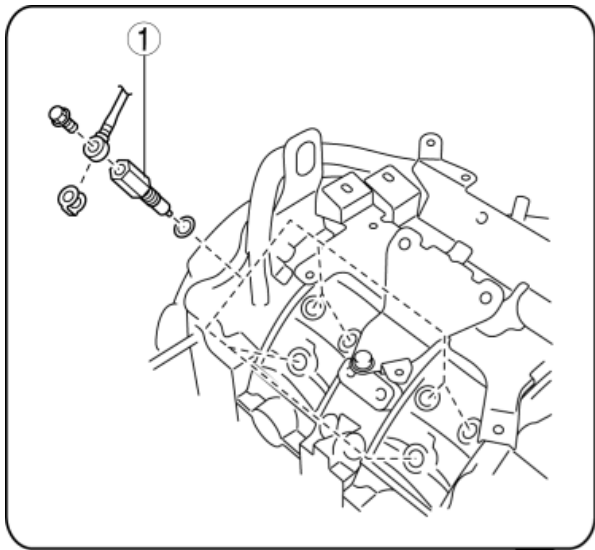
1	Connector
2	OCV
3	O-ring

[< Previous](#) [Next >](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

LUBRICATION SYSTEM LOCATION INDEX [13B-MSP]



1	Oil nozzle (See OIL NOZZLE REMOVAL/INSTALLATION [13B-MSP].) (See METERING OIL PUMP INSPECTION [13B-MSP].)
2	Oil cooler (See OIL COOLER REMOVAL/INSTALLATION [13B-MSP].)
3	Metering oil pump No.1 (See METERING OIL PUMP REMOVAL/INSTALLATION [13B-MSP].) (See METERING OIL PUMP INSPECTION [13B-MSP].)
4	Metering oil pump No.2 (See METERING OIL PUMP REMOVAL/INSTALLATION [13B-MSP].) (See METERING OIL PUMP INSPECTION [13B-MSP].)
5	Oil pan upper block component (See OIL PAN UPPER BLOCK REMOVAL/INSTALLATION [13B-MSP].)
6	Oil strainer (See OIL PAN REMOVAL/INSTALLATION [13B-MSP].)
7	Oil pan (See OIL PAN REMOVAL/INSTALLATION [13B-MSP].)
8	Oil filter (See OIL FILTER REPLACEMENT [13B-MSP].)
9	Dipstick (See ENGINE OIL LEVEL INSPECTION [13B-MSP] .) (See ENGINE OIL REPLACEMENT [13B-MSP].)
10	OCV (See OIL CONTROL VALVE (OCV) REMOVAL/INSTALLATION [13B-MSP].) (See OIL CONTROL VALVE (OCV) INSPECTION [13B-MSP].)

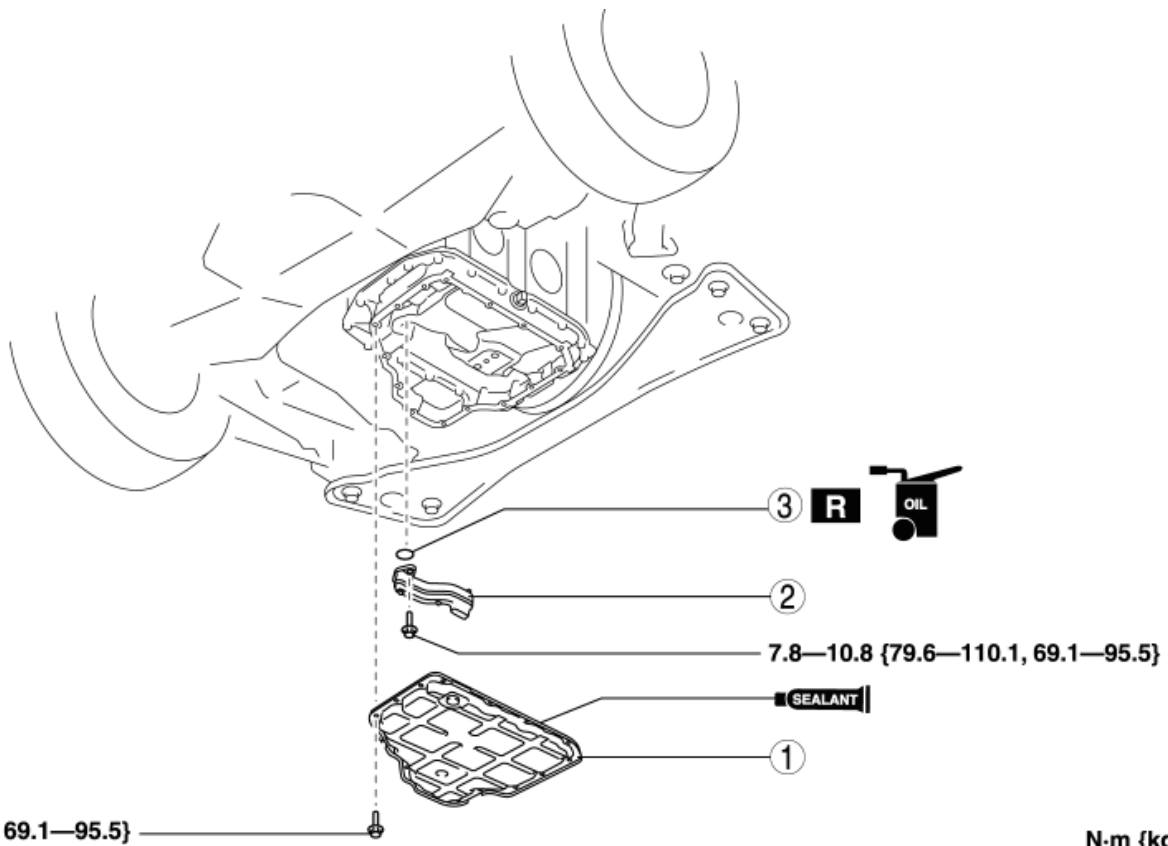
[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

OIL PAN REMOVAL/INSTALLATION [13B-MSP]

WARNING:

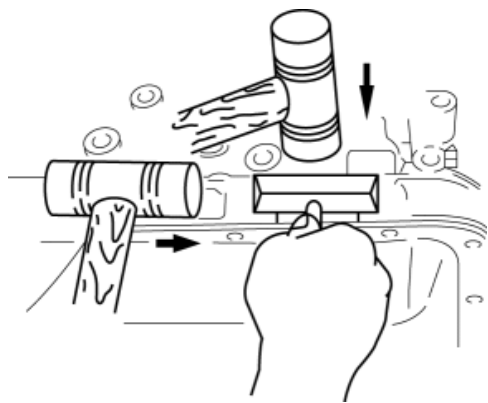
- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
 - A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
 - Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Drain the engine oil. (See [ENGINE OIL REPLACEMENT \[13B-MSP\]](#).)
 3. Remove the under cover. (See [OIL FILTER REPLACEMENT \[13B-MSP\]](#).)
 4. Remove in the order indicated in the table.
 5. Install in the reverse order of removal.
 6. Refill with the specified type and amount of the engine oil. (See [ENGINE OIL REPLACEMENT \[13B-MSP\]](#).)
 7. Start the engine and confirm that there is no oil leakage.
 - If there is oil leakage, repair or replace the applicable part.
 8. Inspect the oil level. (See [ENGINE OIL LEVEL INSPECTION \[13B-MSP\]](#).)



1	Oil pan
	(See Oil Pan Removal Note.)
	(See Oil Pan Installation Note.)
2	Oil strainer
3	O-ring

Oil Pan Removal Note

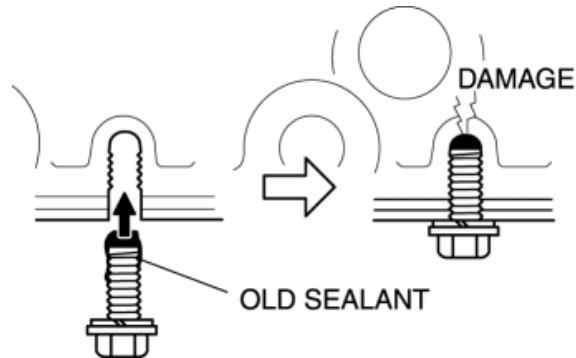
1. Remove the oil pan using a separator tool.



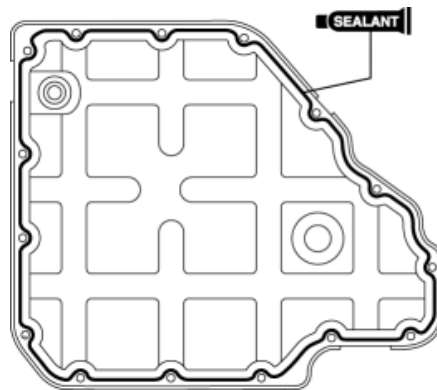
Oil Pan Installation Note

CAUTION:

1. Apply the silicon sealant in a single, unbroken line around the whole perimeter.
2. Install the oil pan before the applied sealant starts to harden.
3. Using bolts with the old seal adhering could cause cracks in the housing.



1. Completely clean and remove any oil, dirt, sealant or other foreign material that may be adhering to the oil pan upper block and oil pan.
2. When reusing the oil pan installation bolts, clean any old sealant from the bolts.
3. Apply silicone sealant to the areas as shown in the figure.



Thickness

1. 2.5—6.5 mm {0.10—0.26 in}
4. Install the oil pan to the oil pan upper block.
5. Tighten the oil pan installation bolts.

Tightening torque

1. 7.8—10.8 N·m {79.6—110.1 kgf·cm, 69.1—95.5 in·lbf}

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

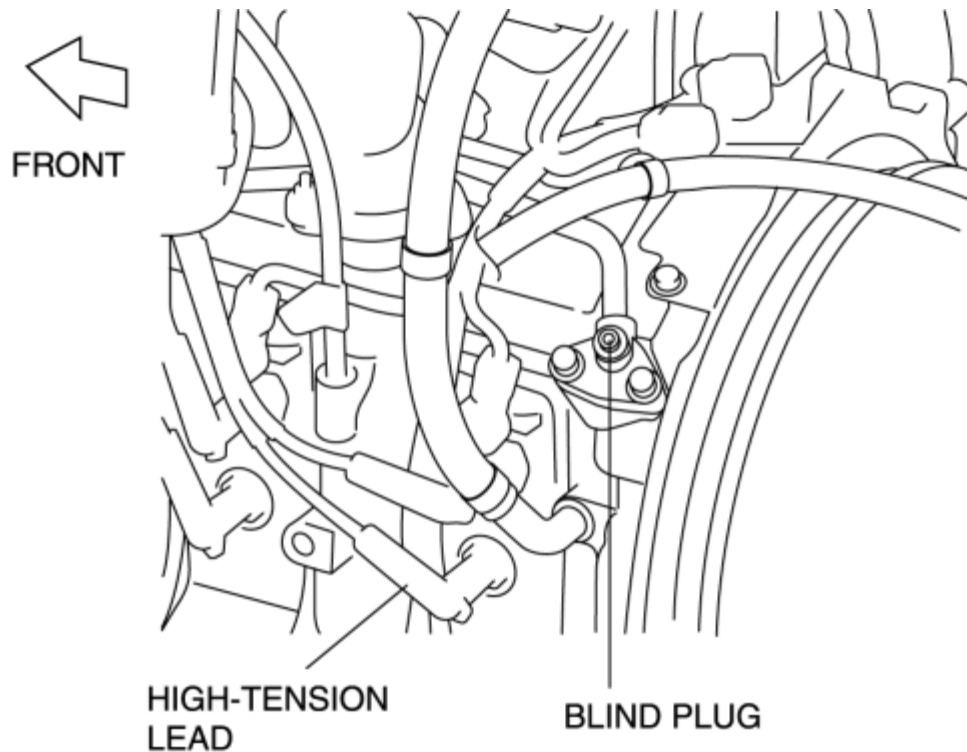
OIL PRESSURE INSPECTION [13B-MSP]

WARNING:

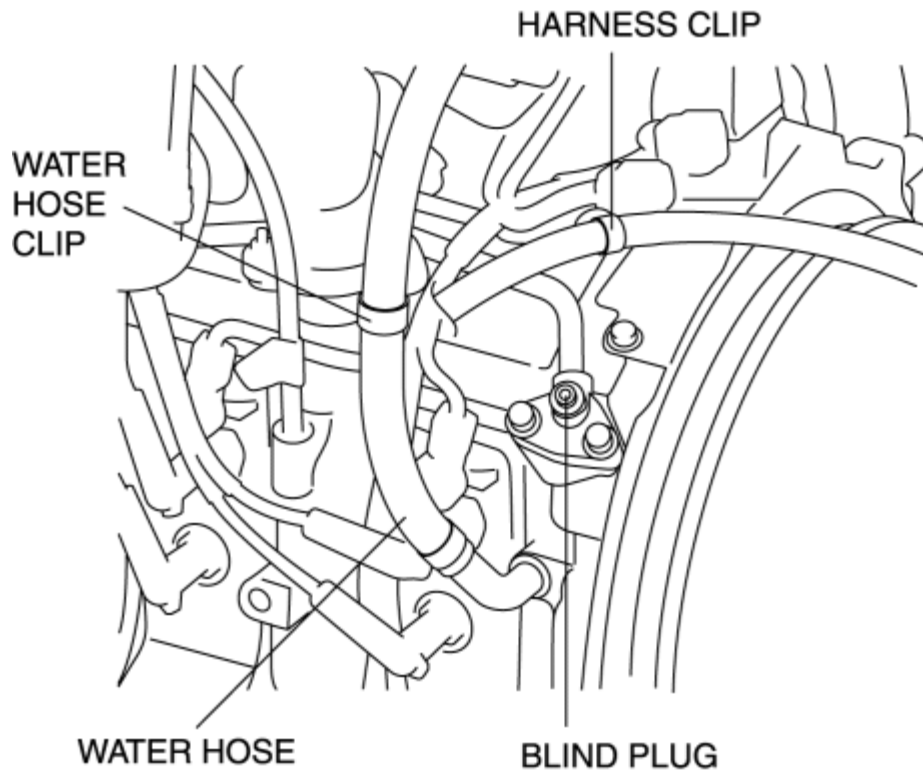
- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
- Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.

NOTE:

- When measuring the oil pressure, remove the blind plug from the oil pressure measurement hole on the rear left surface of the engine.



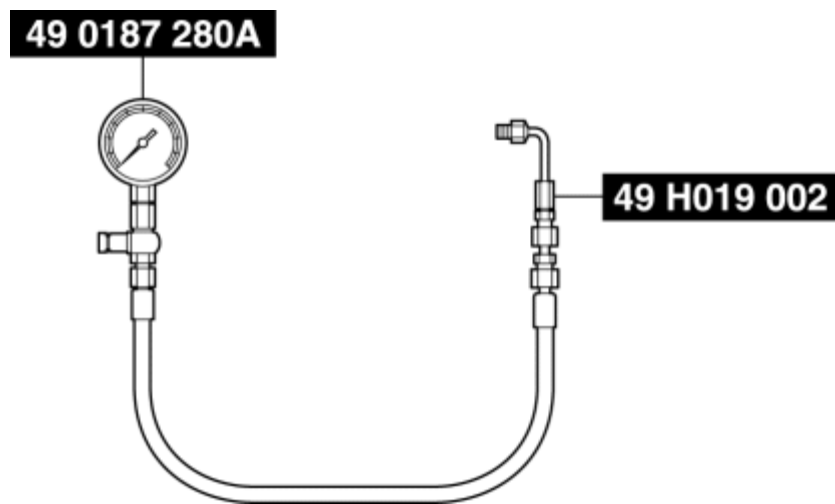
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
2. Remove the front suspension tower bar. (MT) (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[MT\].](#))
3. Perform the following procedure to secure a sufficient space for removing/installing the blind plug.



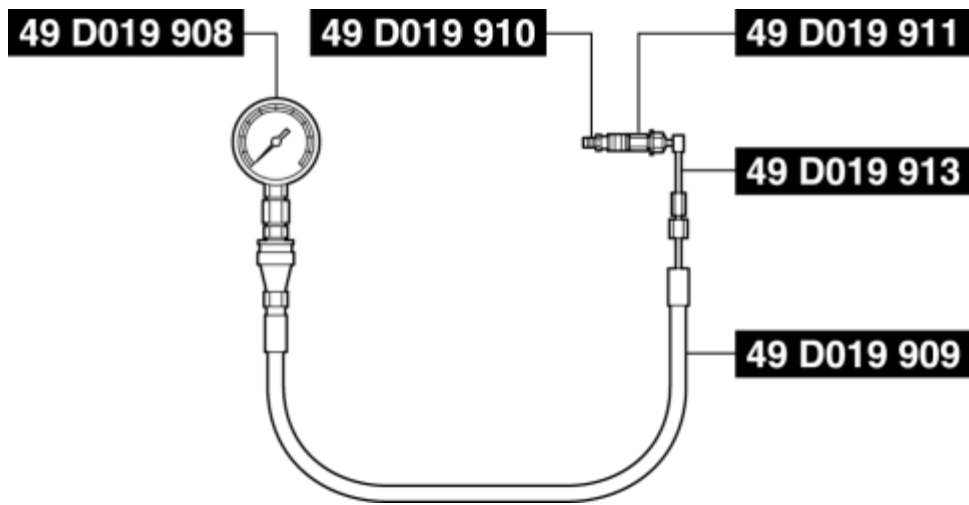
- a. Remove the water hose from the clip and set it out of the way.
 - b. Remove the wiring harness clip from the bracket and set the wiring harness out of the way.
4. Remove the blind plug using a hexagonal wrench.

NOTE:

- This inspection can be performed using a combination of **SSTs 49 0187 280A** (oil pressure gauge) and **49 H019 002** (adapter), or using the following combination of the **SSTs**.



- **49 D019 908** (gauge), **49 D019 909** (hose), **49 D019 910** (adapter), **49 D019 911** (adapter), and **49 D019 913** (adapter)



5. Install the **SSTs** to the oil pressure measurement hole using the following procedure.

Using SSTs 49 0187 280A and 49 H019 002

- Assemble **SSTs 49 0187 280A** and **49 H019 002** outside of the engine compartment beforehand.
- Install **SST 49 H019 002** to the oil pressure measurement hole.

Using SSTs 49 D019 908, 49 D019 909, 49 D019 910, 49 D019 911, and 49 D019 913

- First install only **SST 49 D019 910** to the oil pressure measurement hole.
- Install the remaining **SSTs**.

6. Warm up the engine to normal operating temperature.

7. Run the engine at the specified speed, and note the gauge readings.

- If not as specified, inspect for the cause and repair or replace if necessary.

NOTE:

- The oil pressure can vary with oil viscosity and temperature.

Oil pressure (reference value) [oil temperature: 100 °C {212 °F}]

- 500 kPa {5.10 kgf/cm², 72.5 psi} [3,000 rpm]

8. Stop the engine and wait until it is cool.

9. Remove the **SSTs**.

10. Apply silicone sealant to the blind plug threads.

CAUTION:

- Install the blind plug before the applied sealant starts to harden.

11. Install the blind plug.

Tightening torque

- 11.8—17.6 N·m {121—179 kgf·cm, 105—155 in·lbf}

12. Install the wiring harness clip to the bracket.

13. Install the water hose to the clip.

14. Start the engine and confirm that there is no oil leakage.

- If there is oil leakage, repair or replace the applicable part.

15. Install the front suspension tower bar. (MT) (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[MT\]](#).)

16. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

ENGINE OIL REPLACEMENT [13B-MSP]

WARNING:

- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
- A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
- Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.

CAUTION:

- If engine oil is spilled on the exhaust system, wipe it off completely. If you fail to wipe the spilled engine oil, it will produce fumes because of the heat.
- Because engine starting performance could worsen, do not use either synthetic or semi-synthetic motor oil.

1. Position the vehicle on level ground.
2. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
3. Remove the oil filler cap.
4. Remove the oil pan drain plug.
5. Drain the engine oil into a container.
6. Install the oil pan drain plug with a new gasket.

Oil pan drain plug tightening torque




- 29.4—41.2 N·m {3.00—4.20 kgf·m, 21.7—30.3 ft·lbf}

NOTE:

- The amount of residual oil in the engine can vary according to factors such as the replacement method and oil temperature. Verify the oil level after engine oil replacement.

7. Refill with the following type and amount of the engine oil. **Engine oil specification**

Item	U.S.A. and CANADA	Except U.S.A. and CANADA

Engine oil grade		 
Engine oil viscosity		API SL, SM or ILSAC

Engine oil capacity (approx. quantity)

- Oil replacement: 4.2 L {4.4 US qt, 3.7 Imp qt}
- Oil and oil filter replacement: 4.4 L {4.6 US qt, 3.9 Imp qt}
- Engine overhaul: 5.6 L {5.9 US qt, 4.9 Imp qt}
- Total (dry engine): 7.1 L {7.5 US qt, 6.2 Imp qt} (MT), 6.4 L {6.8 US qt, 5.6 Imp qt} (AT)

8. Install the oil filler cap.

9. Start the engine and confirm that there is no oil leakage.

- If there is oil leakage, repair or replace the applicable part.

10. Inspect the oil level. (See [ENGINE OIL LEVEL INSPECTION \[13B-MSP\].](#))

11. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))

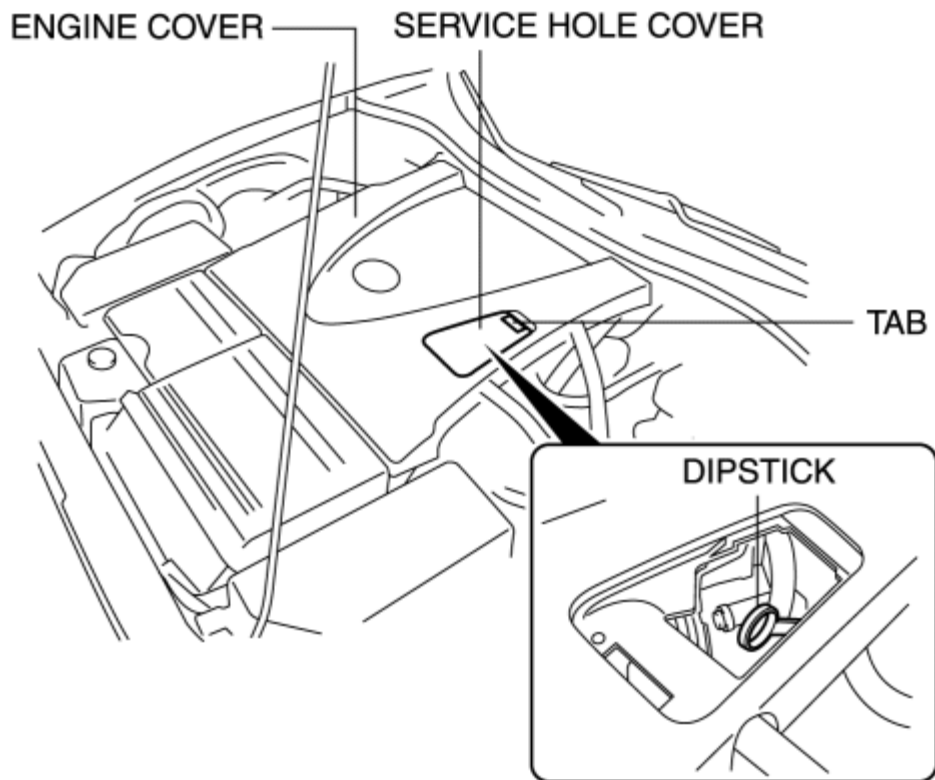
[< Previous](#) [Next >](#)

[Back to Top](#)

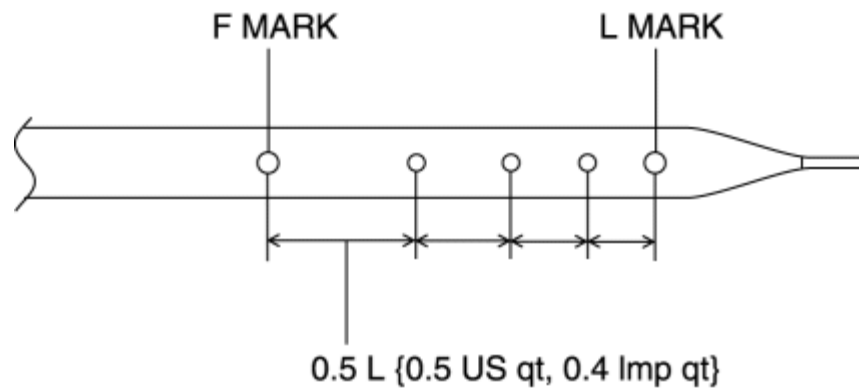
2011 - RX-8 - Engine

ENGINE OIL LEVEL INSPECTION [13B-MSP]

1. Position the vehicle on level ground.
2. Warm up the engine.
3. Stop the engine and allow **at least 5 min** before continuing.
4. Remove the service hole cover attached to the engine cover using the following procedure.



- a. Press the tab of the service hole cover toward the vehicle front.
 - b. Lift up the service hole cover.
5. Remove the dipstick, wipe it cleanly, and reinstall it fully.
 6. Remove the dipstick and verify that the oil level is between the F and L marks on the dipstick.



- If the oil level is below the L mark, add engine oil.

NOTE:

- The dipstick is graduated in 0.5 L {0.5 US qt, 0.4 Imp qt} intervals as a reference for oil replenishment.

7. Install the dipstick.

8. Install the service hole cover.

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

OIL FILTER REPLACEMENT [13B-MSP]

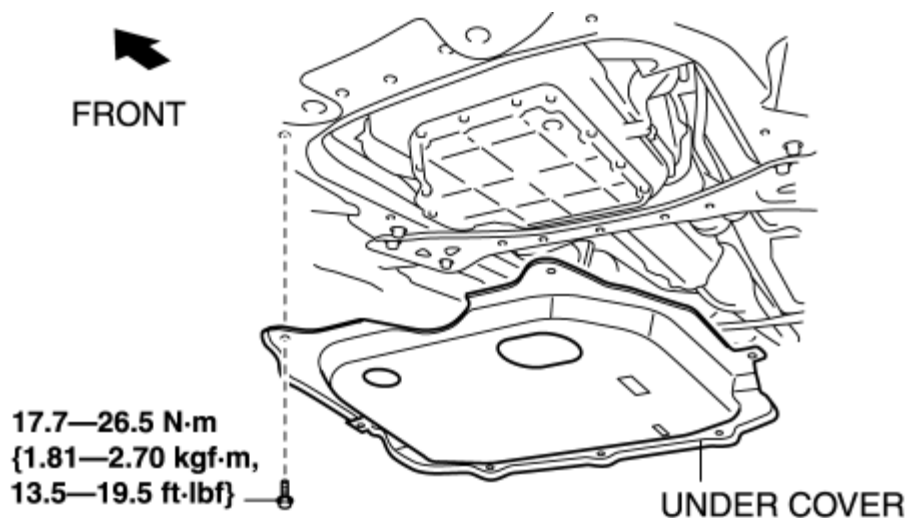
WARNING:

- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
- A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
- Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.

CAUTION:

1. When removing the oil filter, cover up the surrounding area with cloth to prevent oil in the filter from spilling on other parts.
2. If engine oil is spilled on the exhaust system, wipe it off completely. If you fail to wipe the spilled engine oil, it will produce fumes because of the heat.

1. Remove the under cover.



2. Remove the oil filter using the **SST**.

49 G014 001



3. Clean the installation surface of the oil filter.
4. Apply clean engine oil to the O-ring of a new oil filter.
5. Tighten the oil filter using the **SST** and according to the instructions on the package or side of the oil filter.

Tightening torque (reference value)

1. 12—15 N·m {123—152 kgf·cm, 107—132 in·lbf}
6. Wipe off the spilled engine oil from the surrounding area.
7. Start the engine and confirm that there is no oil leakage.
 - If there is oil leakage, repair or replace the applicable part.
8. Inspect the oil level. (See [ENGINE OIL LEVEL INSPECTION \[13B-MSP\].](#))
9. Install the under cover.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

OIL COOLER REMOVAL/INSTALLATION [13B-MSP]

WARNING:

- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
- A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
- Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.

1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Remove the following.
 - a. Front tire (LH)
 - b. Front tire (RH) (MT)
 - c. Splash shield
 - d. Aerodynamic under cover (See [AERODYNAMIC UNDER COVER REMOVAL/INSTALLATION](#).)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.
5. Start the engine and confirm that there is no oil leakage.
 - If there is oil leakage, repair or replace the applicable part.
6. Inspect the oil level. (See [ENGINE OIL LEVEL INSPECTION \[13B-MSP\]](#).)

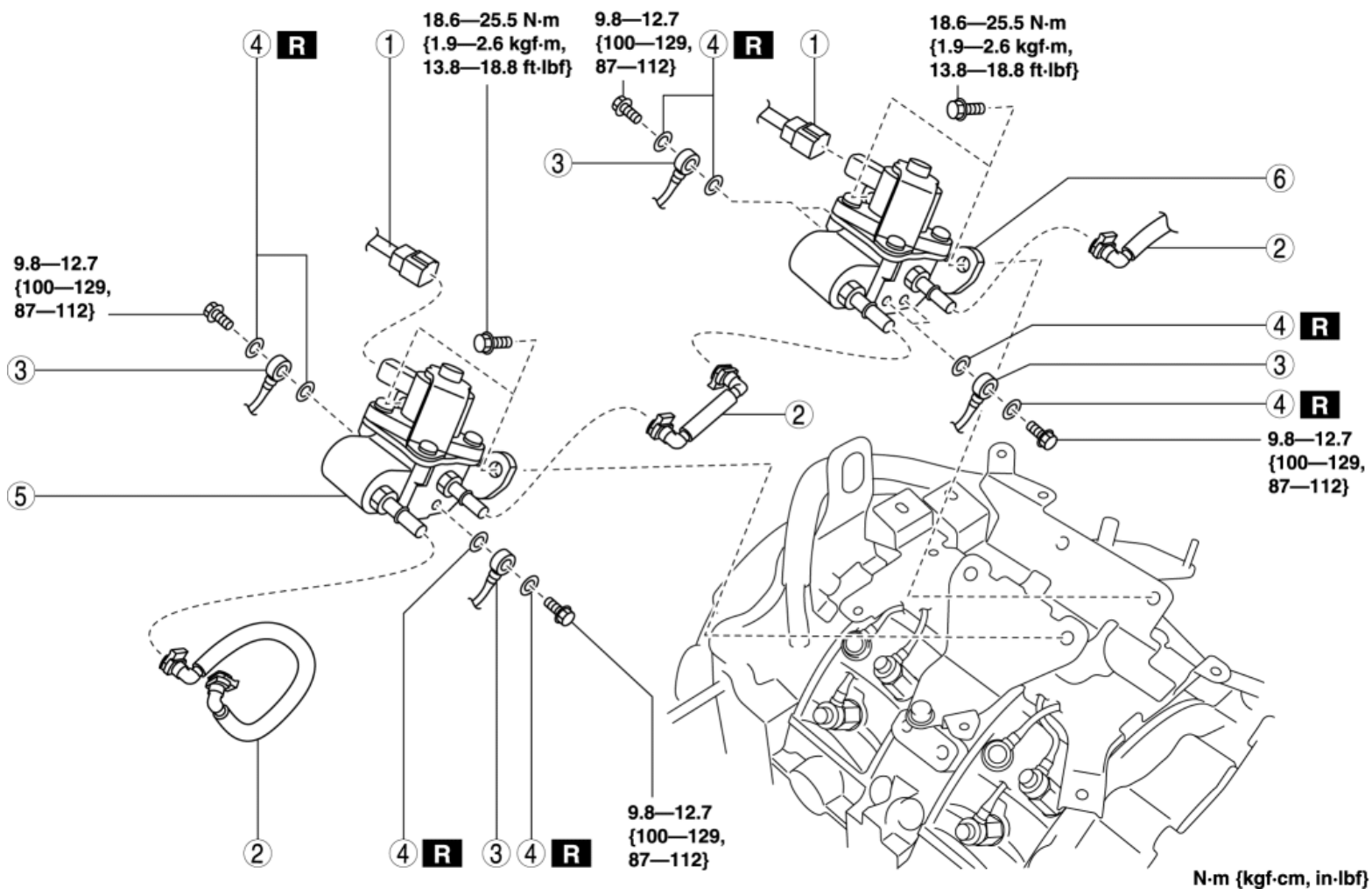
2011 - RX-8 - Engine

METERING OIL PUMP REMOVAL/INSTALLATION [13B-MSP]

WARNING:

- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
- A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
- Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.

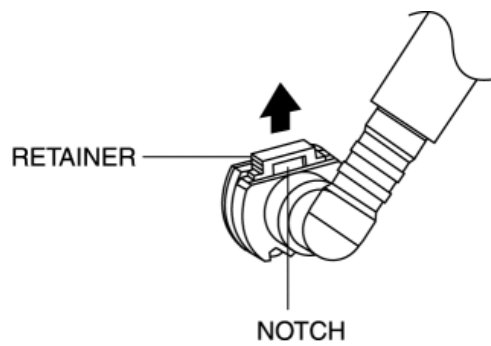
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
2. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
3. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
4. Drain the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\].](#))
5. Remove the front suspension tower bar. (MT) (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[MT\].](#))
6. Remove the extension manifold (upper, lower) and oil filler pipe. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))
7. Remove the oil pressure sensor. (See [OIL PRESSURE SENSOR REMOVAL/INSTALLATION \[13B-MSP\].](#))
8. Remove in the order indicated in the table.
9. Install in the reverse order of removal.
10. Refill the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\].](#))
11. Start the engine and confirm that there is no oil leakage.
 - If there is oil leakage, repair or replace the applicable part.
12. Inspect the oil level. (See [ENGINE OIL LEVEL INSPECTION \[13B-MSP\].](#))
13. Inspect for engine coolant leakage. (See [ENGINE COOLANT LEAKAGE INSPECTION \[13B-MSP\].](#))



1	Connector
2	Oil hose (See Oil Hose Removal Note.) (See Oil Hose Installation Note.)
3	Oil tube (metering oil pump side)
4	Washer
5	Metering oil pump No.1
6	Metering oil pump No.2

Oil Hose Removal Note

1. Insert a flathead screwdriver into the notch of the oil hose retainer, and pull up the retainer in the direction of the arrow shown in the figure to unlock.



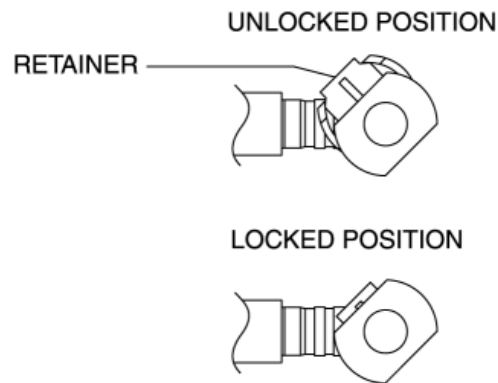
CAUTION:

- Cover the areas around the oil hoses and metering oil pumps before disconnecting the oil hoses so that the oil remaining in the oil hoses and the metering oil pumps does not get on surrounding parts.

2. Disconnect the oil hose.

Oil Hose Installation Note

1. Verify that the oil hose retainer is in the unlocked position.



2. Insert the oil hose into the pipe completely.

3. Press down the retainer to lock the oil hose.

4. Move the oil hose back and forth in the axial direction a few times and verify that it is securely locked.

[< Previous](#) [Next >](#)

[Back to Top](#)

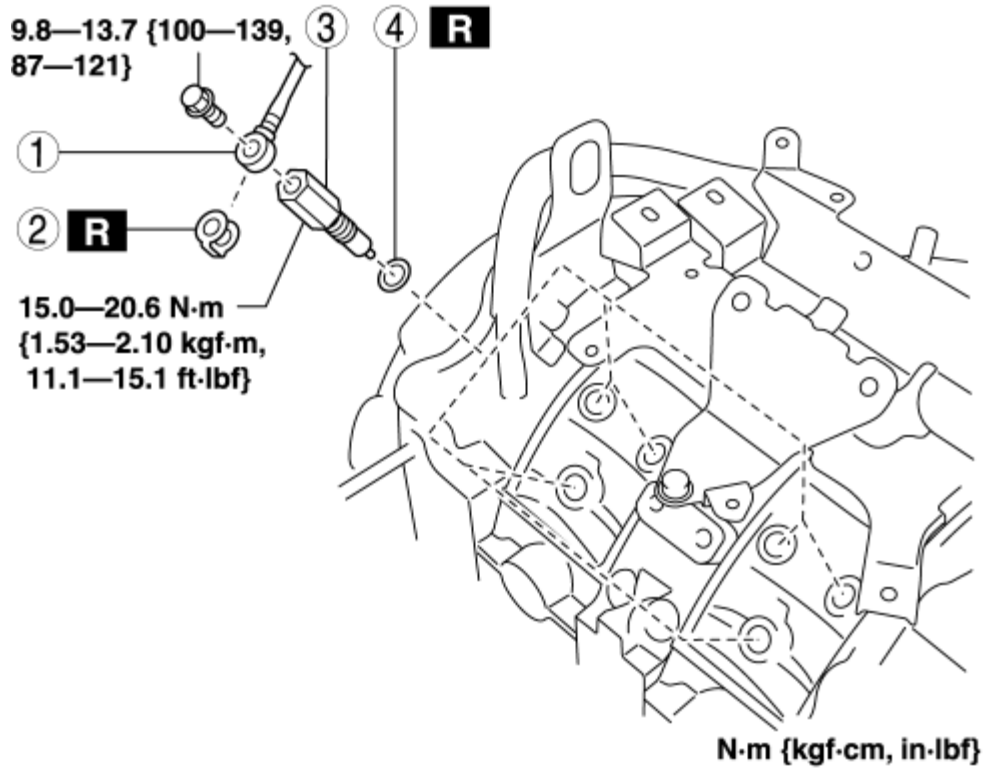
2011 - RX-8 - Engine

OIL NOZZLE REMOVAL/INSTALLATION [13B-MSP]

WARNING:

- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
 - A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
 - Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.
1. Complete the BEFORE SERVICE PRECAUTION. (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).)
 2. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 3. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 4. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 5. Drain the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\]](#).)
 6. Remove the front suspension tower bar. (MT) (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[MT\]](#).)
 7. Remove the extension manifold (upper, lower) and oil filler pipe. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 8. Remove the metering oil pump No.1 and No.2. (See [METERING OIL PUMP REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 9. Remove the fuel injector and fuel distributor component (intake manifold side). (See [FUEL INJECTOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 10. Remove in the order indicated in the table.
 11. Install in the reverse order of removal.
 12. Refill the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\]](#).)
 13. Start the engine and confirm that there is no oil leakage.
 - If there is oil leakage, repair or replace the applicable part.
 14. Inspect the oil level. (See [ENGINE OIL LEVEL INSPECTION \[13B-MSP\]](#).)

15. Inspect for engine coolant leakage. (See [ENGINE COOLANT LEAKAGE INSPECTION \[13B-MSP\]](#).)



1	Oil tube (See Oil Tube Removal Note.)
2	Gasket
3	Oil nozzle
4	Washer

Oil Tube Removal Note

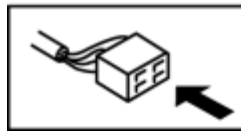
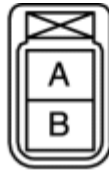
1. Record the routing of the oil tubes when removing so that they can be re-installed in the same routing condition.
2. Remove the oil tubes.

2011 - RX-8 - Engine

METERING OIL PUMP INSPECTION [13B-MSP]

Metering Oil Pump Voltage Inspection

1. Disconnect the metering oil pump No.1 and No.2 connectors (2 terminals). (See [METERING OIL PUMP REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Measure the voltage at terminal B using a tester.



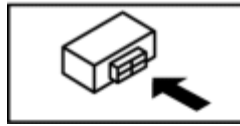
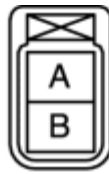
1. If not as specified, repair or replace the related wiring harnesses.

Metering oil pump No.1, No.2 standard voltage

1. B+ [IG-ON, 20°C {68 °F}]

Metering Oil Pump Resistance Inspection

1. Disconnect the metering oil pump No.1 and No.2 connectors (2 terminals). (See [METERING OIL PUMP REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Measure the resistance between terminals A—B using a tester.



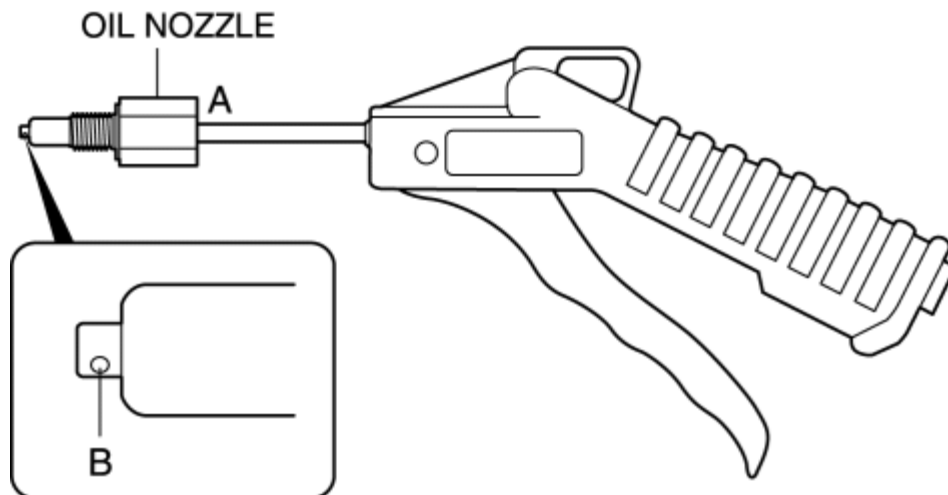
1. If not within the specification, replace the metering oil pump.

Metering oil pump No.1, No.2 standard resistance

1. 3.6—4.1 ohms [20°C {68 °F}]

Oil Nozzle Inspection

1. Remove the oil nozzle. (See [OIL NOZZLE REMOVAL/INSTALLATION \[13B-MSP\].](#))
2. Blow compressed air into area A while applying water to area B and verify that bubbles form on area B.



1. If not as specified, replace the oil nozzle.

Specification

Compressed air (kPa {kgf/cm ² , psi})	Condition
Below 200 {2.04, 29.0}	Bubbles not exist
350 {3.57, 50.8} or more	Bubbles exist

Oil Leakage Inspection

1. Verify that there is no oil leakage from the following metering oil pump system parts.

1. If there is oil leakage, repair or replace the applicable part.

- Metering oil pumps (junction with oil tube/hose)
- Oil nozzles (junction with oil tube/rotor housing)
- OCV (installation position)
- Oil pressure sensor (installation position)

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

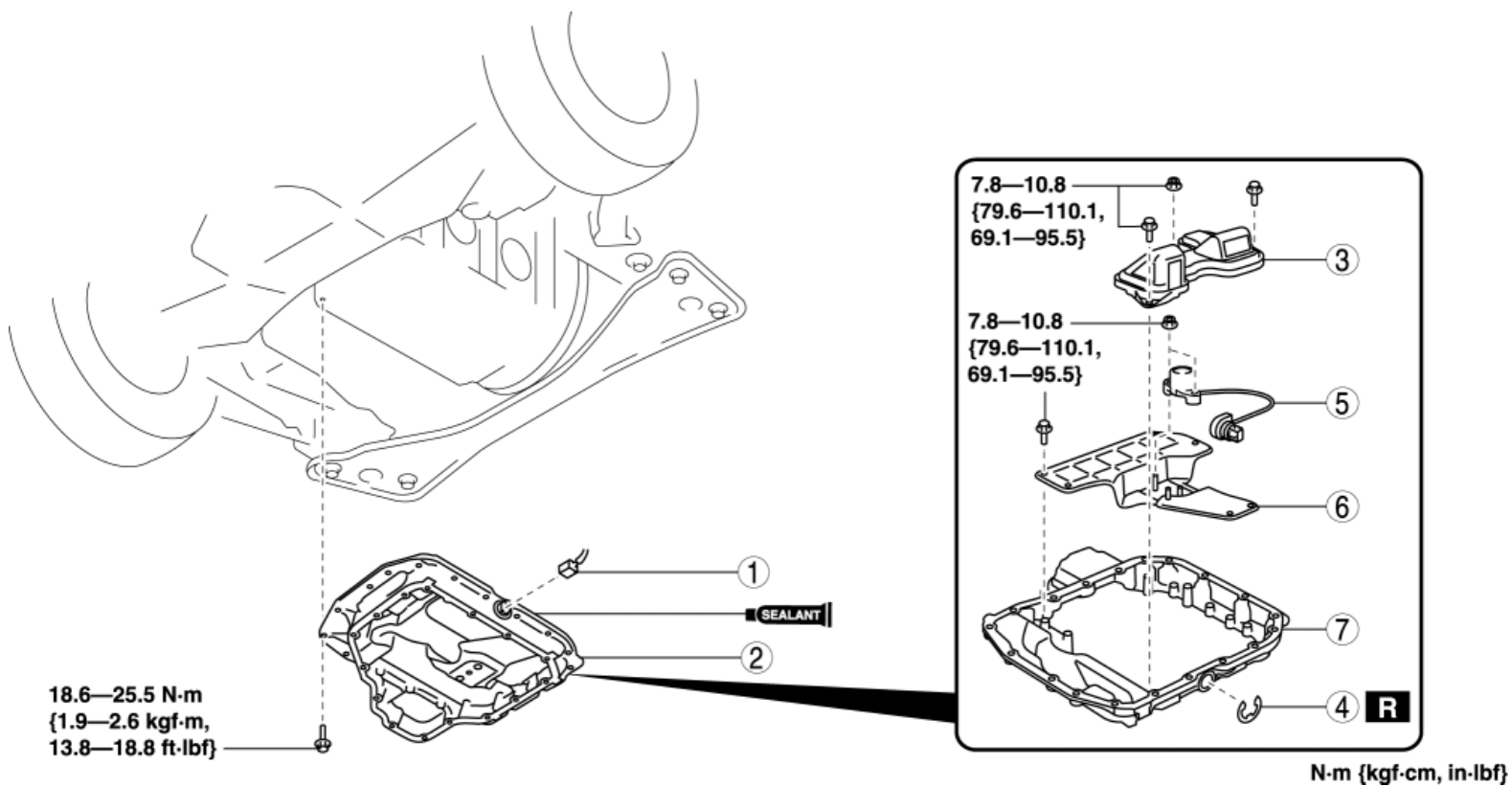
[Back to Top](#)

2011 - RX-8 - Engine

OIL PAN UPPER BLOCK REMOVAL/INSTALLATION [13B-MSP]

WARNING:

- Hot engines and engine oil can cause severe burns. Turn off the engine and wait until it and the engine oil have cooled.
 - A vehicle that is lifted but not securely supported on safety stands is dangerous. It can slip or fall, causing death or serious injury. Never work around or under a lifted vehicle if it is not securely supported on safety stands.
 - Continuous exposure to USED engine oil has caused skin cancer in laboratory mice. Protect your skin by washing with soap and water immediately after working with engine oil.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 3. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 4. Drain the engine oil. (See [ENGINE OIL REPLACEMENT \[13B-MSP\]](#).)
 5. Remove the under cover. (See [OIL FILTER REPLACEMENT \[13B-MSP\]](#).)
 6. Remove the oil pan. (See [OIL PAN REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 7. Remove in the order indicated in the table.
 8. Install in the reverse order of removal.
 9. Refill with the specified type and amount of the engine oil. (See [ENGINE OIL REPLACEMENT \[13B-MSP\]](#).)
 10. Start the engine and confirm that there is no oil leakage.
 - If there is oil leakage, repair or replace the applicable part.
 11. Inspect the oil level. (See [ENGINE OIL LEVEL INSPECTION \[13B-MSP\]](#).)

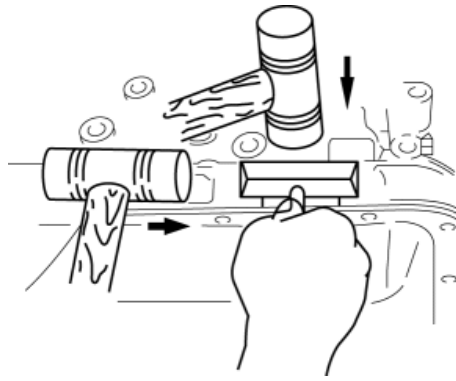


1	Connector
2	Oil pan upper block component (See Oil Pan Upper Block Component Removal Note.) (See Oil Pan Upper Block Component Installation Note.)
3	Baffle plate
4	Clip
5	Oil level switch
6	Baffle plate
7	Oil pan upper block

Oil Pan Upper Block Component Removal Note

CAUTION:

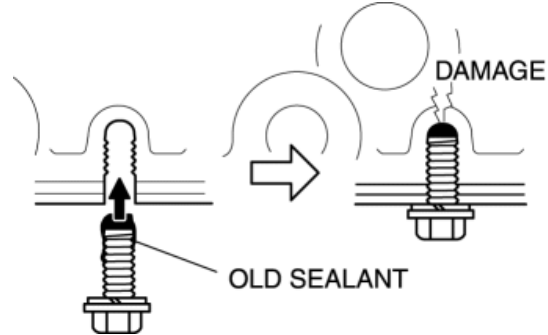
- Be careful not to damage the installation surface of the housing and oil pan upper block.
1. Remove the oil pan upper block component using a separator tool.



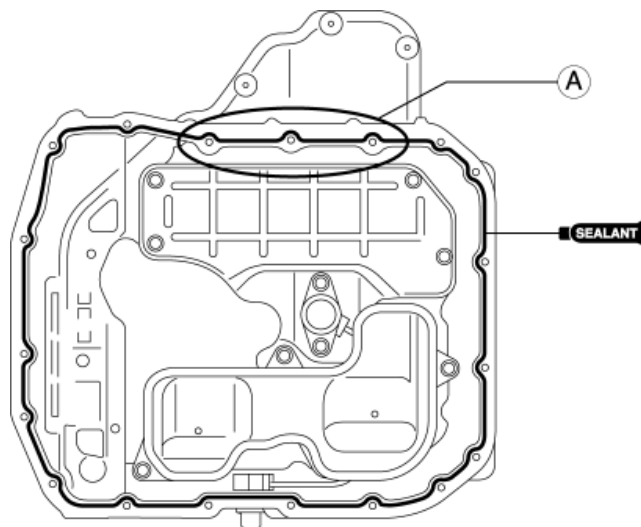
Oil Pan Upper Block Component Installation Note

CAUTION:

1. Apply the silicon sealant in a single, unbroken line around the whole perimeter.
2. Install the oil pan upper block before the applied sealant starts to harden.
3. Using bolts with the old seal adhering could cause cracks in the housing.



1. Completely clean and remove any oil, dirt, sealant or other foreign material that may be adhering to the oil pan upper block and housing.
2. When reusing the oil pan upper block installation bolts, clean any old sealant from the bolts.
3. Apply silicone sealant to the areas as shown in the figure.



CAUTION:

- Apply silicone sealant to the outer circumference of the bolt hole at locations A shown in the figure.

Thickness

1. 2.5—6.5 mm {0.10—0.26 in}
4. Install the oil pan upper block component to the housing.
5. Tighten the oil pan upper block installation bolts.

Tightening torque

1. 18.6—25.5 N·m {1.9—2.6 kgf·m, 13.8—18.8 ft·lbf}

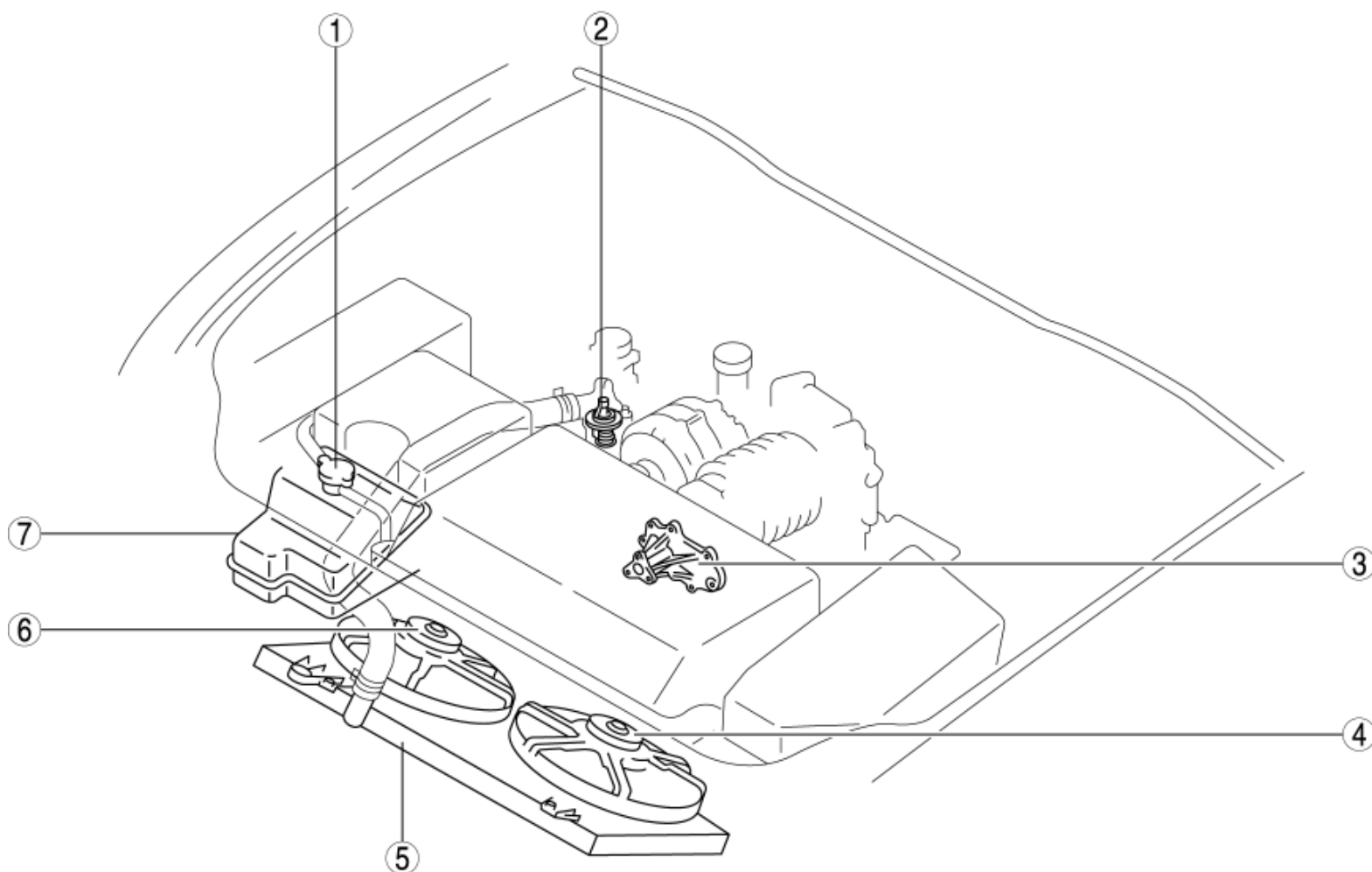
[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

COOLING SYSTEM LOCATION INDEX [13B-MSP]



1 Cooling system cap

(See [COOLING SYSTEM CAP INSPECTION \[13B-MSP\]](#).)

2 Thermostat

(See [THERMOSTAT REMOVAL/INSTALLATION \[13B-MSP\]](#).)

(See [THERMOSTAT INSPECTION \[13B-MSP\]](#).)

3 Water pump

(See [WATER PUMP REMOVAL/INSTALLATION \[13B-MSP\]](#).)

4 Cooling fan motor No.1

(See [COOLING FAN COMPONENT REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [FAN MOTOR INSPECTION \[13B-MSP\].](#))

5 Radiator

(See [ENGINE COOLANT PROTECTION INSPECTION \[13B-MSP\].](#))

(See [ENGINE COOLANT REPLACEMENT \[13B-MSP\].](#))

(See [ENGINE COOLANT LEAKAGE INSPECTION \[13B-MSP\].](#))

(See [RADIATOR REMOVAL/INSTALLATION \[13B-MSP\].](#))

6 Cooling fan motor No.2

(See [COOLING FAN COMPONENT REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [FAN MOTOR INSPECTION \[13B-MSP\].](#))

7 Coolant reserve tank

(See [ENGINE COOLANT LEVEL INSPECTION \[13B-MSP\].](#))

(See [COOLANT RESERVE TANK REMOVAL/INSTALLATION \[13B-MSP\].](#))

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

COOLING SYSTEM SERVICE WARNINGS [13B-MSP]

WARNING:

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise to the first stop. Step back while the pressure escapes.
- When you are sure all the pressure is gone, press down on the cap using the cloth, turn it, and remove it.
- Depending on the vehicle, the cooling fan may operate suddenly even when the ignition switch is turned off. Therefore, keep hands and tools away from the cooling fan even if the cooling fan is not operating to prevent injury to personnel or damage to the cooling fan. Always disconnect the negative battery cable when servicing the cooling fan or parts near the cooling fan.

2011 - RX-8 - Engine

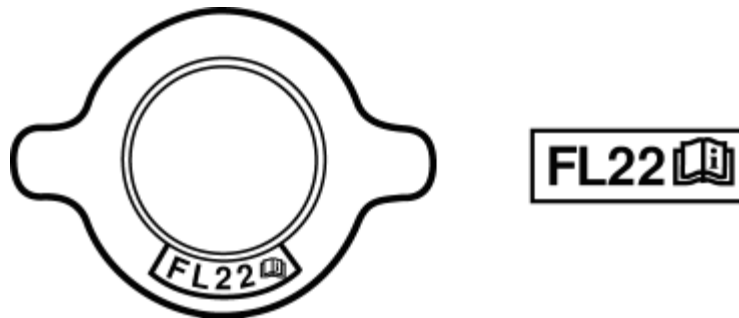
ENGINE COOLANT LEVEL INSPECTION [13B-MSP]

WARNING:

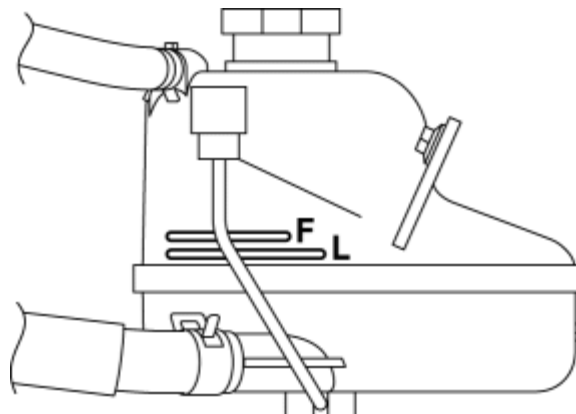
- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise to the first stop. Step back while the pressure escapes.
- When you are sure all the pressure is gone, press down on the cap using the cloth, turn it, and remove it.

NOTE:

- If the "FL22" mark is shown on or near the cooling system cap, use Mazda Genuine FL22 engine coolant.
- FL22 type engine coolant is shipped as a diluted solution. Use the solution as is when replacing coolant.



1. Verify that the engine coolant level in the coolant reserve tank is between the F and L marks.



- If the engine coolant level is below the L mark, add engine coolant.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

ENGINE COOLANT PROTECTION INSPECTION [13B-MSP]

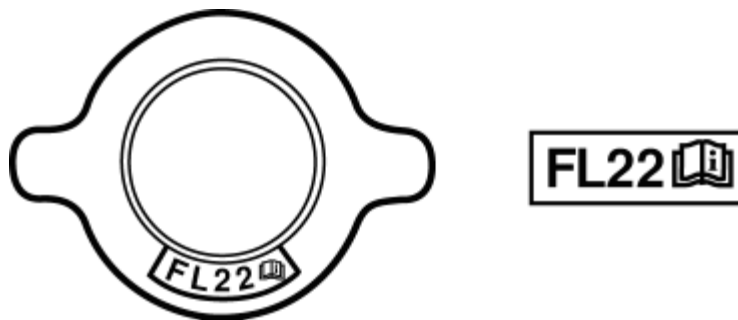
1. Measure the coolant temperature and specific gravity using a thermometer and a hydrometer.

CAUTION:

1. Use engine coolant at a concentration that meets the environmental conditions in which the vehicle is driven, otherwise engine damage could occur.
2. The engine has aluminum parts and must be protected by an ethylene-glycol-based coolant to prevent corrosion and freezing.
3. Do not use coolants containing Alcohol, Methanol, Borate or Silicate. These coolants could damage the cooling system.
4. Use only soft (demineralized) water in the coolant mixture. Water that contains minerals will cut down on the coolant's effectiveness.
5. Engine coolant damages paint. If engine coolant does get on a painted surface, rinse it off quickly.

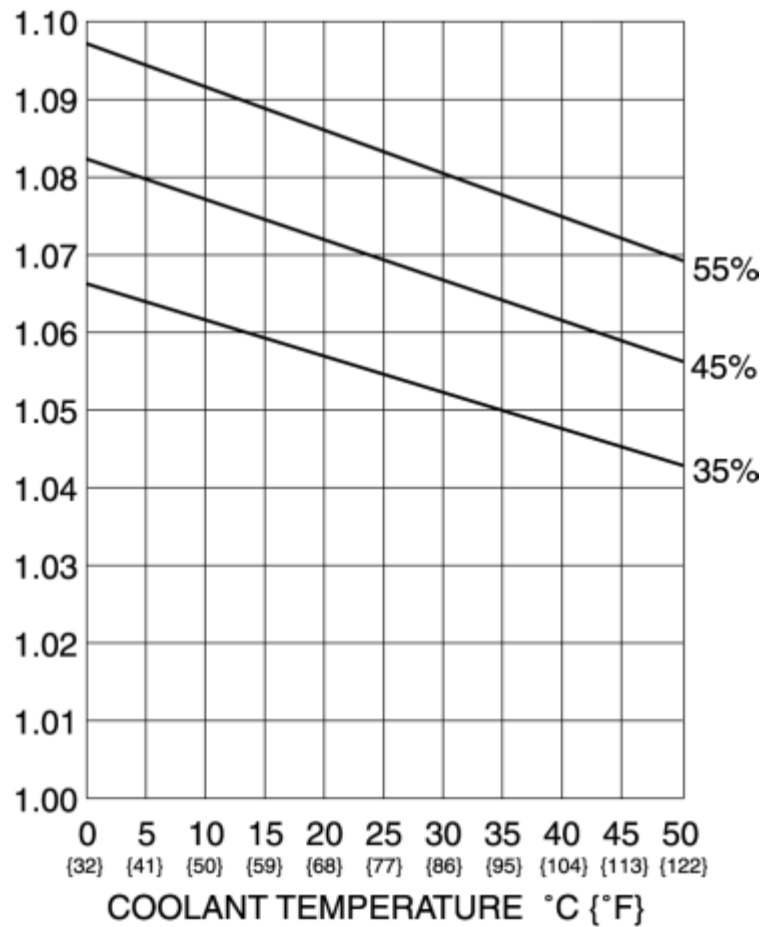
NOTE:

- If the "FL22" mark is shown on or near the cooling system cap, use Mazda Genuine FL22 engine coolant.
- FL22 type engine coolant is shipped as a diluted solution. Use the solution as is when replacing coolant.



2. Determine the engine coolant protection level by referring to the graph shown in the figure.

SPECIFIC GRAVITY **COOLANT PROTECTION** (EXCEPT FL22 TYPE ENGINE COOLANT)



- If the engine coolant protection level is not correct, add water or engine coolant.

[< Previous](#) [Next >](#)

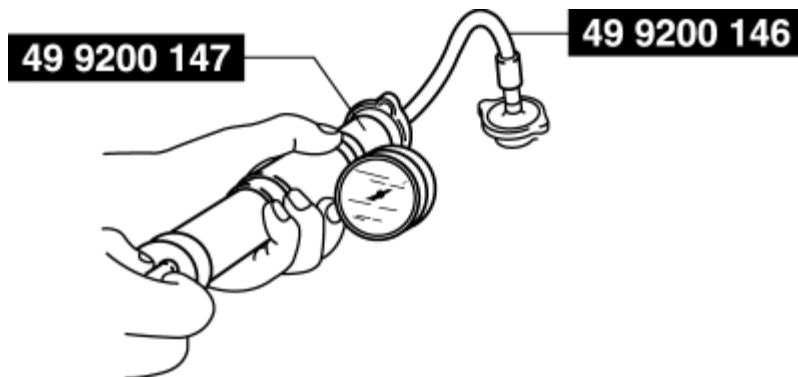
[Back to Top](#)

2011 - RX-8 - Engine

ENGINE COOLANT LEAKAGE INSPECTION [13B-MSP]

WARNING:

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
 - Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise to the first stop. Step back while the pressure escapes.
 - When you are sure all the pressure is gone, press down on the cap using the cloth, turn it, and remove it.
1. Inspect the engine coolant level. (See [ENGINE COOLANT LEVEL INSPECTION \[13B-MSP\]](#).)
 2. Remove the cooling system cap.
 3. Install the **SST** and a radiator cap tester to the coolant reserve tank filler port.



4. Apply pressure using the radiator cap tester.

CAUTION:

- Applying more than 103 kPa {1.05 kgf/cm², 14.9 psi} can damage the hoses, fittings, and other components, and cause leakage.

Engine coolant leakage inspection pressure

- 103 kPa {1.05 kgf/cm², 14.9 psi} [1 min]
5. When pressurizing the cooling system, verify that the pressure is maintained.
 - If the gauge needle drops, it may indicate water leakage. Repair or replace the

applicable part.

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

ENGINE COOLANT REPLACEMENT [13B-MSP]

WARNING:

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise to the first stop. Step back while the pressure escapes.
- When you are sure all the pressure is gone, press down on the cap using the cloth, turn it, and remove it.


CAUTION:

1. Use engine coolant at a concentration that meets the environmental conditions in which the vehicle is driven, otherwise engine damage could occur.
2. The engine has aluminum parts and must be protected by an ethylene-glycol-based coolant to prevent corrosion and freezing.
3. Do not use coolants containing Alcohol, Methanol, Borate or Silicate. These coolants could damage the cooling system.
4. Use only soft (demineralized) water in the coolant mixture. Water that contains minerals will cut down on the coolant's effectiveness.
5. Engine coolant damages paint. If engine coolant does get on a painted surface, rinse it off quickly.

NOTE:

- If the "FL22" mark is shown on or near the cooling system cap, use Mazda Genuine FL22 engine coolant.
- FL22 type engine coolant is shipped as a diluted solution. Use the solution as is when replacing coolant.

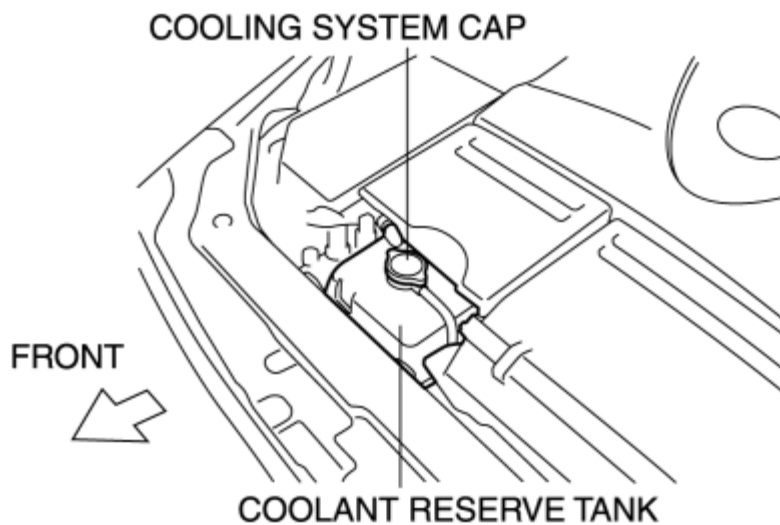


FL22 

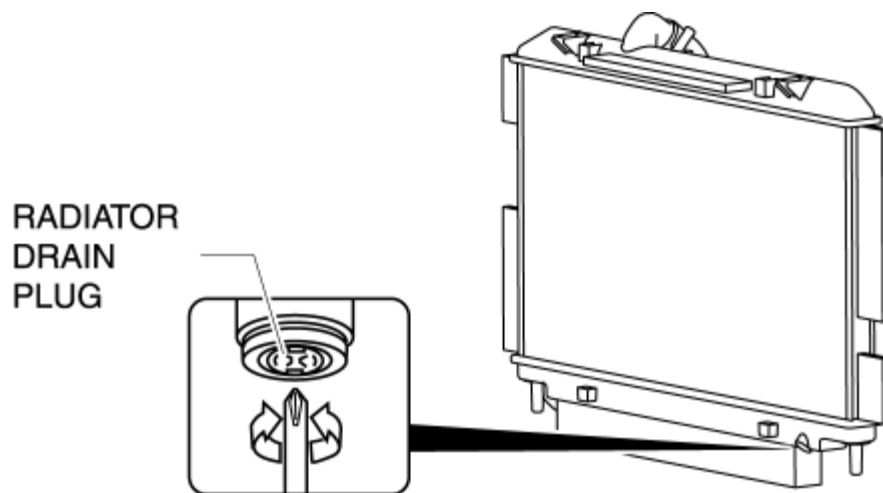
Engine coolant capacity (approx. quantity)

- MT: 10.0 L {10.6 US qt, 8.80 Imp qt}
- AT: 9.8 L {10 US qt, 8.6 Imp qt}

1. Remove the cooling system cap.



2. Loosen the radiator drain plug and drain the engine coolant into a container.



3. Flush the cooling system with water until all traces of color are gone.

4. Let the system drain completely.

5. Tighten the radiator drain plug.

6. Referring to the following chart, select the correct volume percentage of the water and engine coolant. **Antifreeze solution mixture percentage (Except FL22 type engine coolant)**

Engine coolant protection	Volume percentage (%)		Gravity at 20 °C {68 °F}
	Water	Coolant	
Above -16 °C {3.2 °F}	65	35	1.057
Above -26 °C {-15 °F}	55	45	1.072
Above -40 °C {-40 °F}	45	55	1.086

7. Refill the engine coolant into the coolant reserve tank up to the F mark.

8. Install the cooling system cap.

CAUTION:

- If the water temperature gauge rises too high, stop the engine and decrease the engine coolant temperature to prevent overheating. Then, verify the malfunctioning part and repair or replace it.

9. Start the engine and warm up the engine by idling.

10. After the engine warms up, perform the following steps. At this time, be careful of the engine coolant temperature to prevent overheating.

- a. Run the engine at **approx. 2,500 rpm** for **5 min.**
- b. Run the engine at **approx. 3,000 rpm** for **5 s**, then return to idling.
- c. Repeat step (2) several times.

11. Stop the engine, and inspect the engine coolant level after the engine coolant temperature decreases. If it is low, repeat steps 7—10.

12. Inspect for engine coolant leakage. (See [ENGINE COOLANT LEAKAGE INSPECTION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

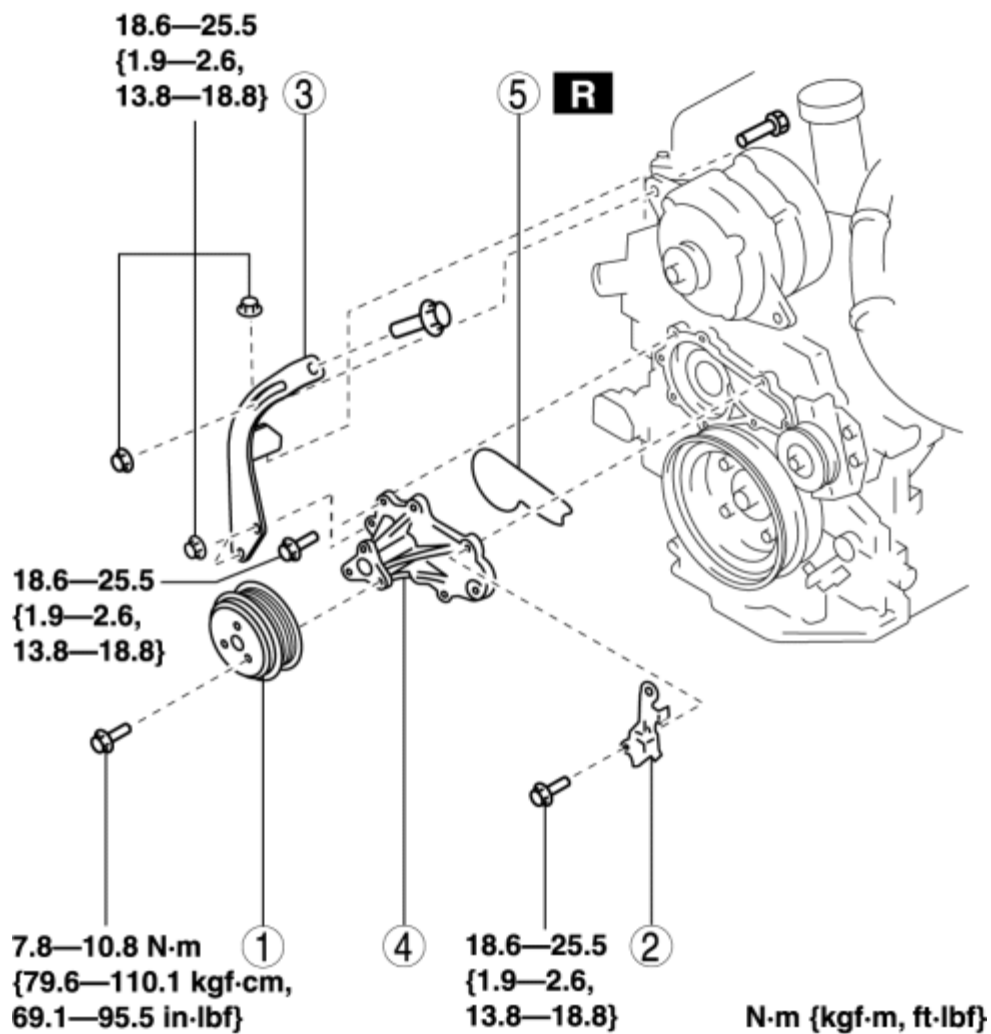
[Back to Top](#)

2011 - RX-8 - Engine

WATER PUMP REMOVAL/INSTALLATION [13B-MSP]

WARNING:

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
 - Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise to the first stop. Step back while the pressure escapes.
 - When you are sure all the pressure is gone, press down on the cap using the cloth, turn it, and remove it.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
 2. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 3. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 4. Drain the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\].](#))
 5. Remove the battery, battery box, battery tray. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 6. Loosen the water pump pulley installation bolt.
 7. Position the drive belt out of the way. (See [DRIVE BELT REPLACEMENT \[13B-MSP\].](#))
 8. Remove in the order indicated in the table.
 9. Install in the reverse order of removal.
 10. Refill the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\].](#))
 11. Inspect for engine coolant leakage. (See [ENGINE COOLANT LEAKAGE INSPECTION \[13B-MSP\].](#))



1	Water pump pulley
2	Engine hanger (engine front side)
3	Generator strap
4	Water pump
5	O-ring (See O-ring Installation Note .)

O-ring Installation Note

1. Apply engine coolant to a new O-ring.

2. Install the O-ring.

[< Previous](#) [Next >](#)

[Back to Top](#)

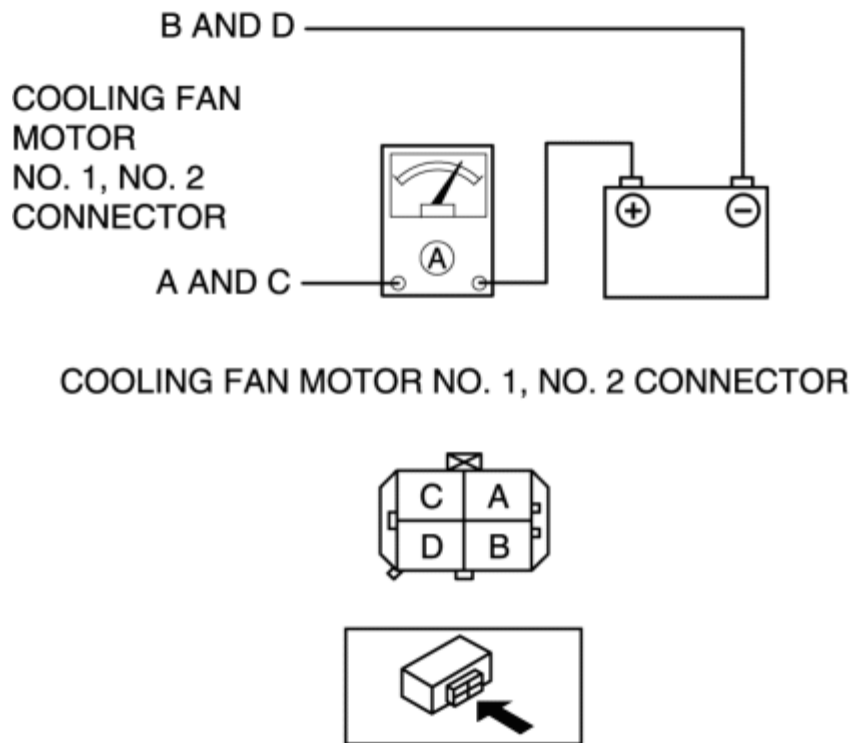
© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

FAN MOTOR INSPECTION [13B-MSP]

Part Inspection

1. Verify that the battery is fully charged. (See [BATTERY INSPECTION \[13B-MSP\]](#).)
2. Disconnect the cooling fan motor connector (4 terminals).
3. Install a tester and battery to the cooling fan motor connector (4 terminals) as shown in the figure.



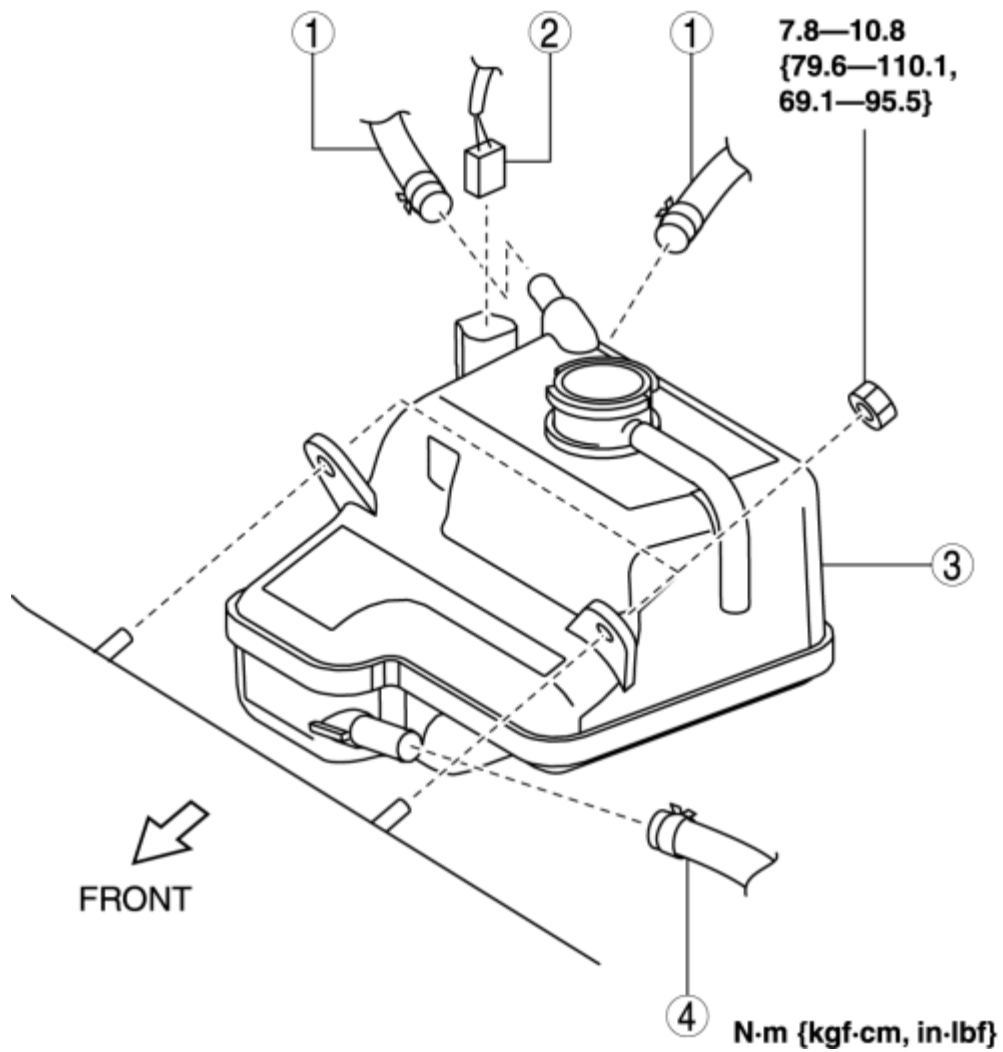
4. Verify that each fan motors operate smoothly at the standard current.
 - If there is any malfunction, replace the applicable part.
- Cooling fan motor No.1, No.2 standard current**
- 7.7—10.7 A [12V]

2011 - RX-8 - Engine

COOLANT RESERVE TANK REMOVAL/INSTALLATION [13B-MSP]

WARNING:

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
 - Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise to the first stop. Step back while the pressure escapes.
 - When you are sure all the pressure is gone, press down on the cap using the cloth, turn it, and remove it.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 3. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 4. Remove the battery, battery box. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 5. Remove the air cleaner component, air cleaner insulator. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 6. Drain the engine coolant until the coolant reserve tank becomes empty. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\]](#).)
 7. Remove in the order indicated in the table.
 8. Install in the reverse order of removal.
 9. Refill the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\]](#).)
 10. Inspect for engine coolant leakage. (See [ENGINE COOLANT LEAKAGE INSPECTION \[13B-MSP\]](#).)



1	Hose
2	Connector
3	Coolant reserve tank
4	Hose

[< Previous](#) [Next >](#)

[Back to Top](#)

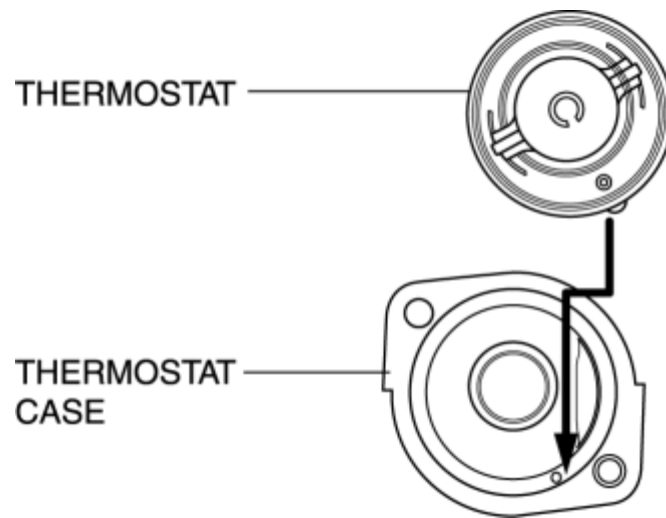
2011 - RX-8 - Engine

THERMOSTAT REMOVAL/INSTALLATION [13B-MSP]

WARNING:

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
 - Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise to the first stop. Step back while the pressure escapes.
 - When you are sure all the pressure is gone, press down on the cap using the cloth, turn it, and remove it.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
 2. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 3. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 4. Drain the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\].](#))
 5. Remove the battery, battery box. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 6. Remove the secondary air control valve. (See [SECONDARY AIR INJECTION \(AIR\) CONTROL VALVE REMOVAL/INSTALLATION \[13B-MSP\].](#))
 7. Loosen the water pump pulley installation bolt.
 8. Position the drive belt out of the way. (See [DRIVE BELT REPLACEMENT \[13B-MSP\].](#))
 9. Remove the water pump pulley. (See [WATER PUMP REMOVAL/INSTALLATION \[13B-MSP\].](#))
 10. Remove in the order indicated in the table.
 11. Install in the reverse order of removal.
 12. Refill the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\].](#))
 13. Inspect for engine coolant leakage. (See [ENGINE COOLANT LEAKAGE INSPECTION \[13B-MSP\].](#))

thermostat case.



[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

THERMOSTAT INSPECTION [13B-MSP]

1. Remove the thermostat. (See [THERMOSTAT REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Visually check that the thermostat valve is closed.
3. Place the thermostat in water.

WARNING:

- During inspection, the thermostat and water are extremely hot and can cause severe burns. Do not touch the thermostat and water.
4. Heat the water and check the following.
 - Opening temperature and valve lift
 - If there is a malfunction, replace the thermostat. (See [THERMOSTAT REMOVAL/INSTALLATION \[13B-MSP\]](#).)

Thermostat initial-opening temperature

- 80—84 °C {176—183 °F}

Thermostat full-open temperature

- 95 °C {203 °F}

Thermostat full-open lift

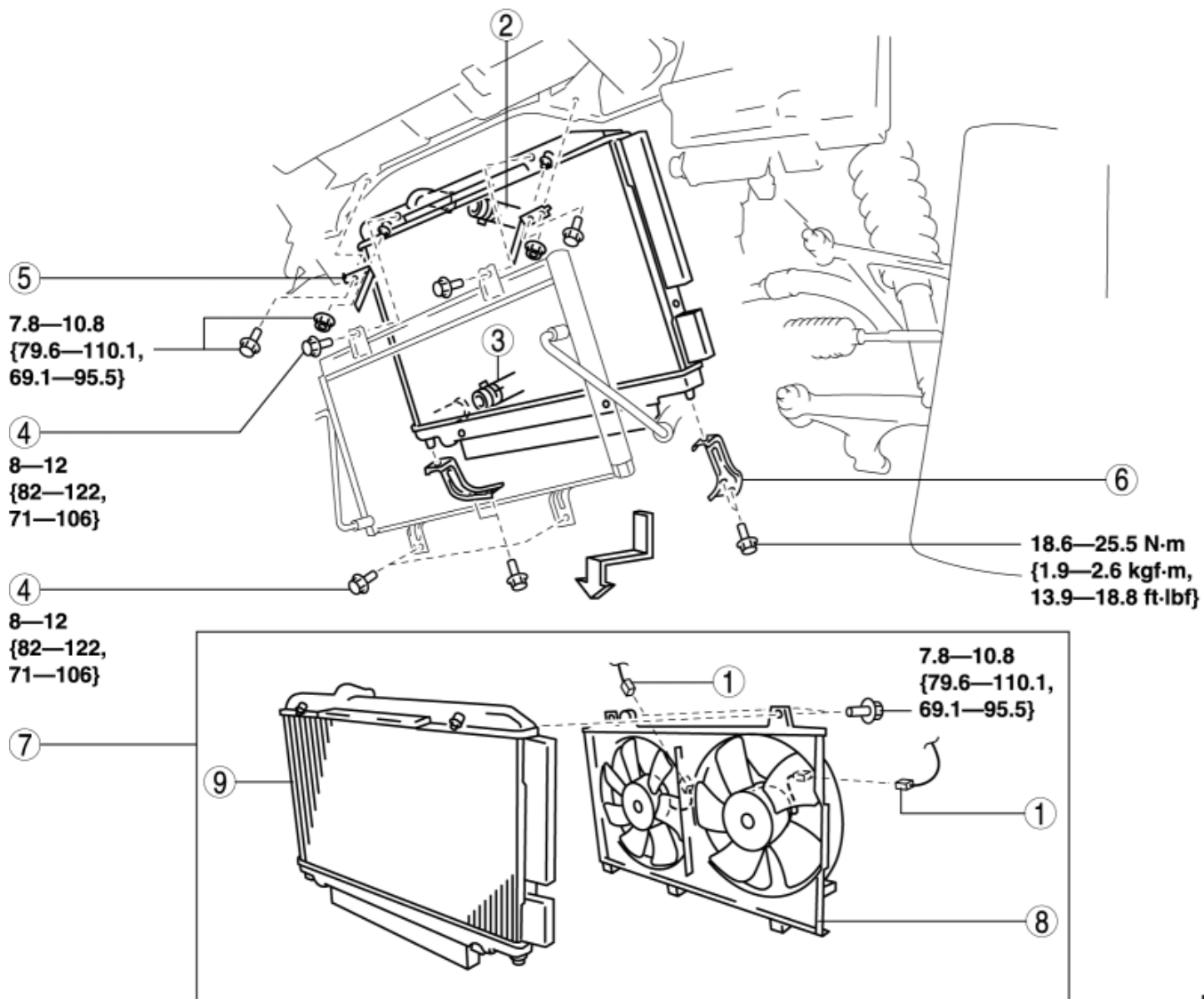
- More than 8.5 mm {0.33 in}

2011 - RX-8 - Engine

RADIATOR REMOVAL/INSTALLATION [13B-MSP]

WARNING:

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
 - Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise to the first stop. Step back while the pressure escapes.
 - When you are sure all the pressure is gone, press down on the cap using the cloth, turn it, and remove it.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 3. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 4. Drain the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\]](#).)
 5. Remove the following.
 - a. Splash shield
 - b. Aerodynamic under cover (See [AERODYNAMIC UNDER COVER REMOVAL/INSTALLATION](#).)
 - c. Battery, battery box, battery tray, battery duct (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 - d. Air cleaner component, air cleaner insulator (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 6. Position the coolant reserve tank out of the way. (See [COOLANT RESERVE TANK REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 7. Disconnect the ATF oil cooler hose from the radiator. (AT)
 8. Remove in the order indicated in the table.
 9. Install in the reverse order of removal.
 10. Refill the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\]](#).)
 11. Inspect for engine coolant leakage. (See [ENGINE COOLANT LEAKAGE INSPECTION \[13B-MSP\]](#).)
 12. Inspect the ATF level. (AT) (See [AUTOMATIC TRANSMISSION FLUID \(ATF\) INSPECTION \[SJ6A-EL\]](#).)



N·m {kgf·cm, in·lbf}

1 Cooling fan motor connector

2 Upper radiator hose

3 Lower radiator hose

4 Condenser fitting bolt
(See [Condenser Fitting Bolt Removal Note.](#))

5 Bracket

6 Radiator bracket

7 Radiator and cooling fan component

8 Cooling fan component

Condenser Fitting Bolt Removal Note

1. Remove the condenser fitting bolt, and position the condenser out of the way with the cooler pipes still connected.

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

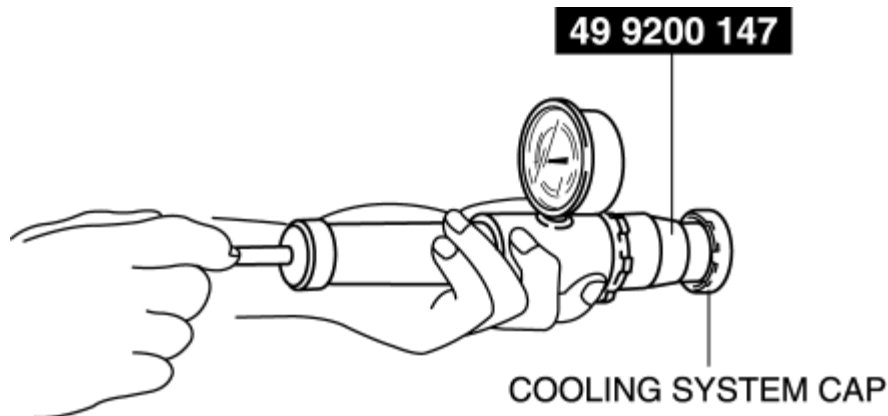
[Back to Top](#)

2011 - RX-8 - Engine

COOLING SYSTEM CAP INSPECTION [13B-MSP]

WARNING:

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
 - Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise to the first stop. Step back while the pressure escapes.
 - When you are sure all the pressure is gone, press down on the cap using the cloth, turn it, and remove it.
1. Clean the cooling system cap and the sealed part.
 2. Inspect the cooling system cap for cracks or everted seal.
 - If there is any malfunction, replace the cooling system cap.
 3. Attach the cooling system cap to the **SST** and a radiator cap tester.



4. Hold the cooling system cap downward and apply pressure gradually. Verify that the pressure is held stable for **10 s**.
 - If the pressure is not held stable, replace the cooling system cap.

Cooling system cap valve opening pressure

- 73.6—103 kPa {0.75—1.05 kgf/cm², 10.7—14.9 psi}

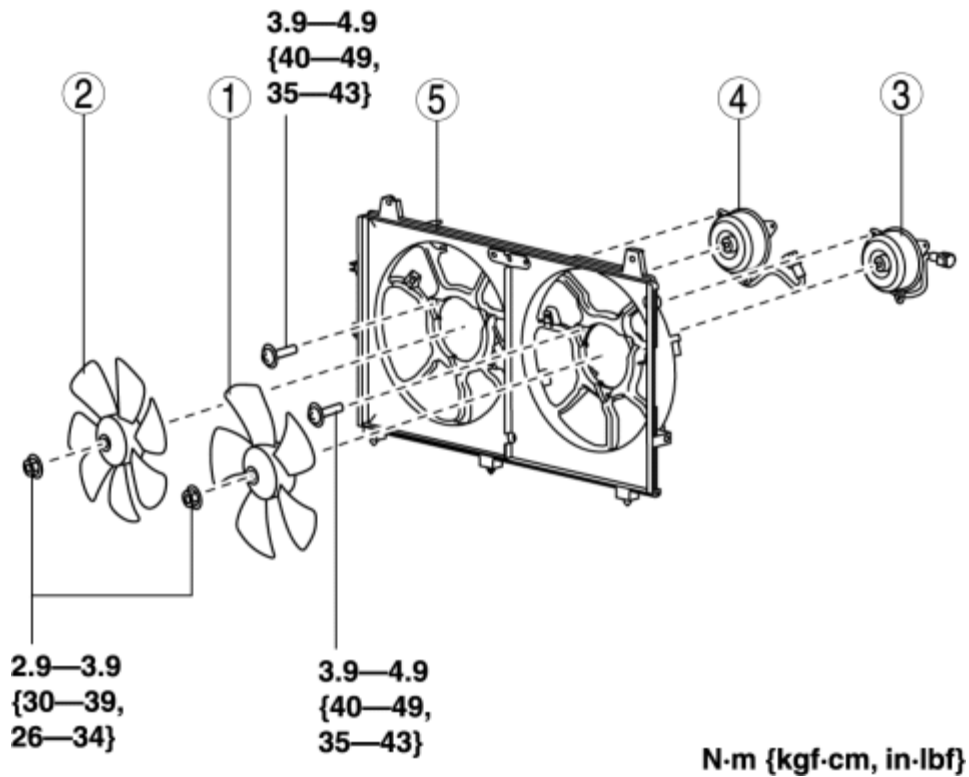
2011 - RX-8 - Engine

COOLING FAN COMPONENT REMOVAL/INSTALLATION [13B-MSP]

WARNING:

- Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury. It may also damage the engine and cooling system.
 - Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise to the first stop. Step back while the pressure escapes.
 - When you are sure all the pressure is gone, press down on the cap using the cloth, turn it, and remove it.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
 2. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 3. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 4. Drain the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\].](#))
 5. Remove the following.
 - a. Splash shield
 - b. Aerodynamic under cover (See [AERODYNAMIC UNDER COVER REMOVAL/INSTALLATION.](#))
 - c. Battery, battery box, battery tray, battery duct (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 - d. Air cleaner component, air cleaner insulator (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))
 6. Position the coolant reserve tank out of the way. (See [COOLANT RESERVE TANK REMOVAL/INSTALLATION \[13B-MSP\].](#))
 7. Disconnect the ATF oil cooler hose from the radiator. (AT)
 8. Remove the radiator and cooling fan component. (See [RADIATOR REMOVAL/INSTALLATION \[13B-MSP\].](#))
 9. Remove in the order indicated in the table.
 10. Install in the reverse order of removal.

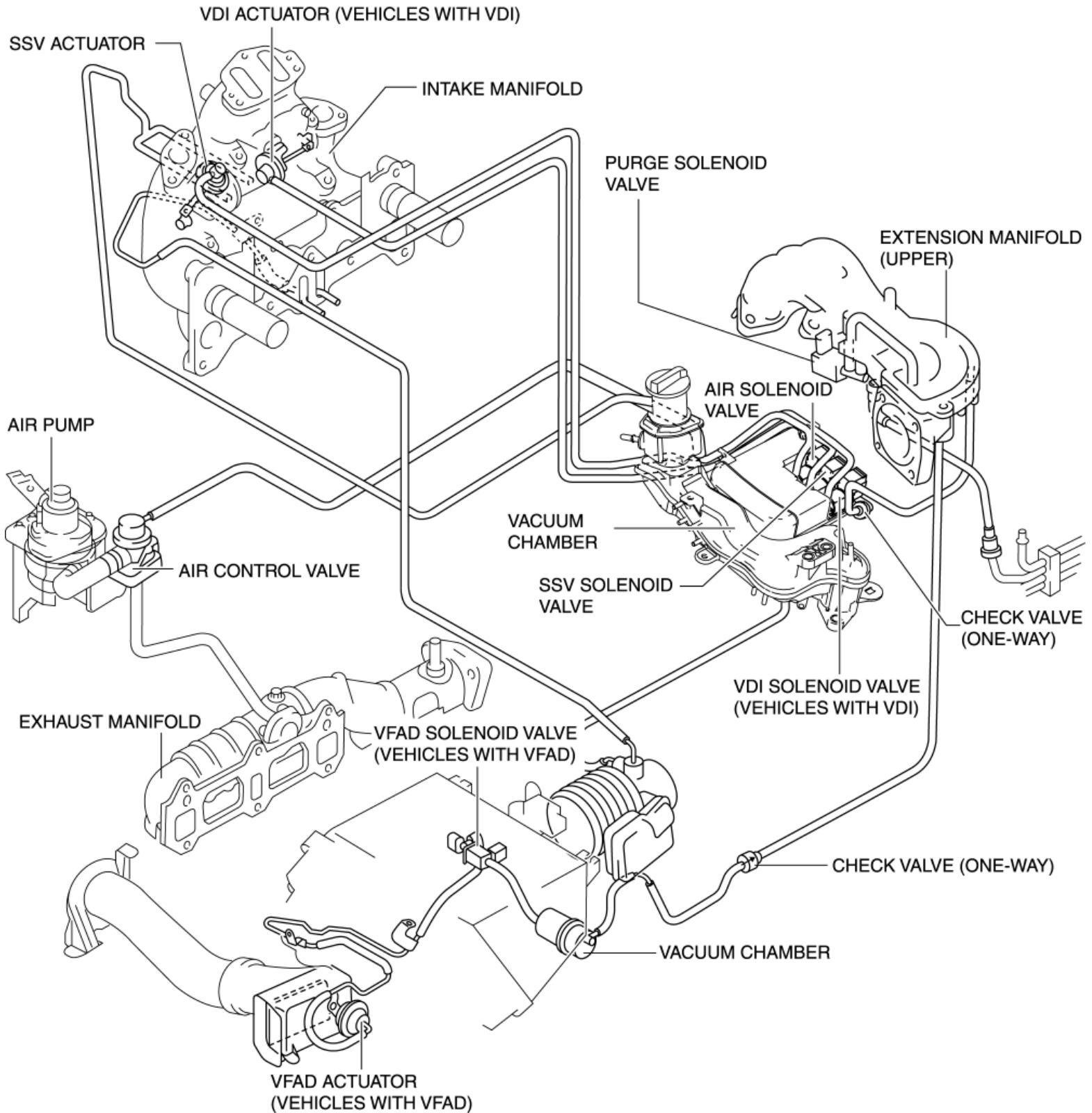
11. Refill the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\].](#))
12. Inspect for engine coolant leakage. (See [ENGINE COOLANT LEAKAGE INSPECTION \[13B-MSP\].](#))
13. Inspect the ATF level. (AT) (See [AUTOMATIC TRANSMISSION FLUID \(ATF\) INSPECTION \[SJ6A-EL\].](#))



1	Cooling fan No.1
2	Cooling fan No.2
3	Cooling fan motor No.1
4	Cooling fan motor No.2
5	Radiator cowling

2011 - RX-8 - Engine

INTAKE-AIR SYSTEM VACUUM HOSE ROUTING DIAGRAM [13B-MSP]

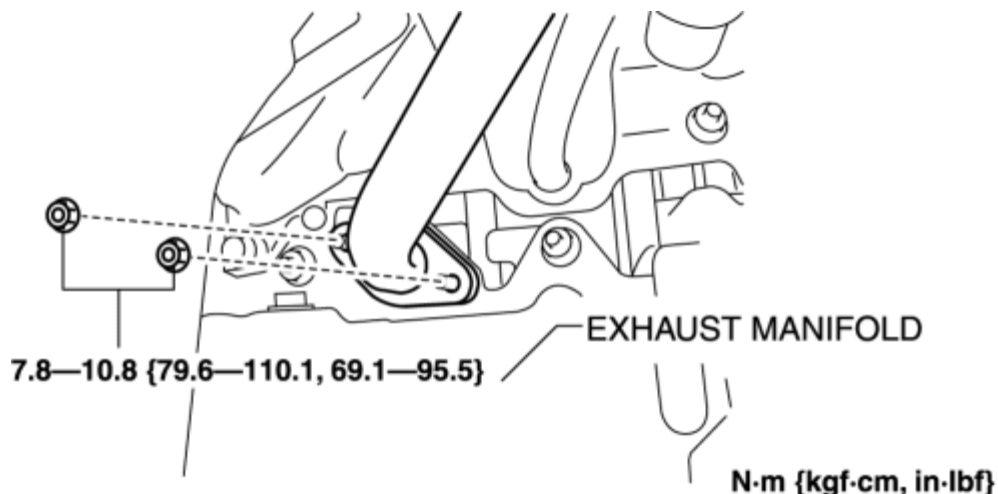


2011 - RX-8 - Engine

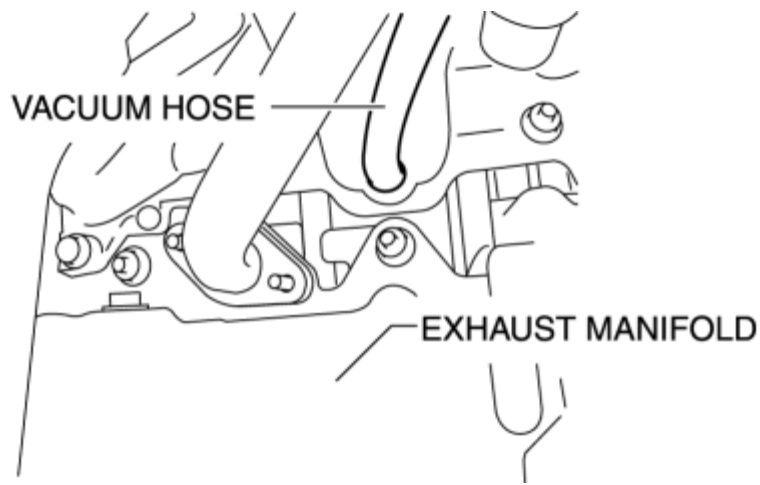
SECONDARY SHUTTER VALVE (SSV) REMOVAL/INSTALLATION [13B-MSP]

WARNING:

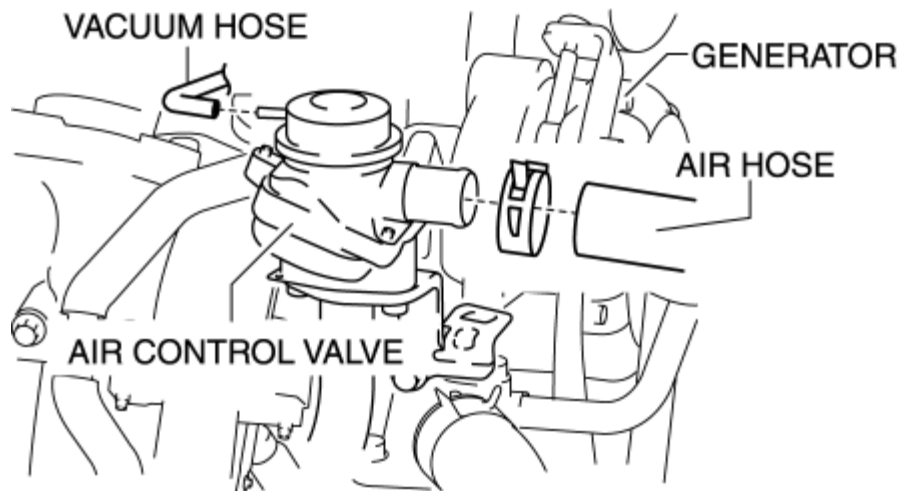
- A hot engine and intake-air system can cause severe burns. Turn off the engine and wait until they are cool before removing the intake-air system.
 - Fuel line spills and leakage from the pressurized fuel system are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure", while referring to the "BEFORE SERVICE PRECAUTION".
1. Turn the steering wheel to the left to secure an operation space.
 2. Complete the "BEFORE SERVICE PRECAUTION". (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).)
 3. Remove the engine cover. (See. [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#))
 4. Remove the battery cover, battery and battery box. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 5. Drain the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\]](#).)
 6. Remove the aerodynamic under cover. (See [AERODYNAMIC UNDER COVER REMOVAL/INSTALLATION](#).)
 7. Remove the front splash shield (RH).
 8. Remove the secondary air injection (AIR) pipe installation nuts.



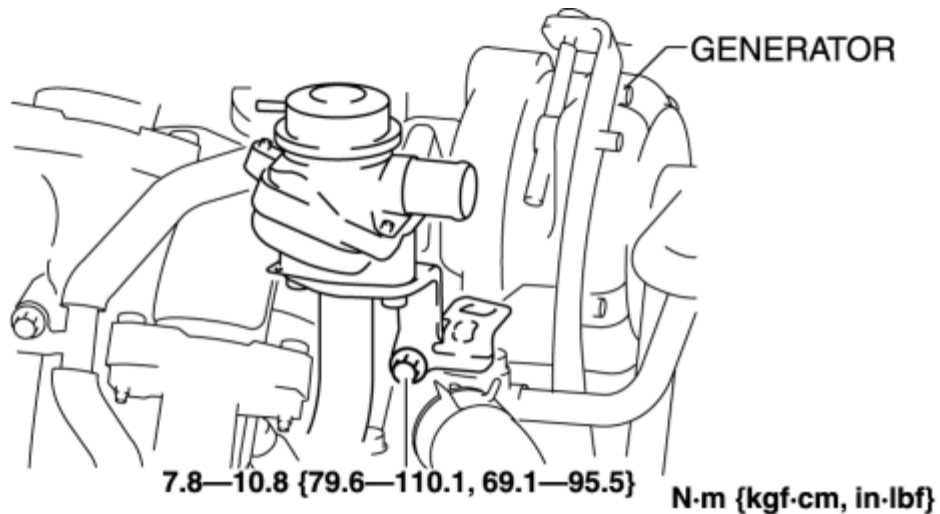
9. Disconnect the vacuum hose.



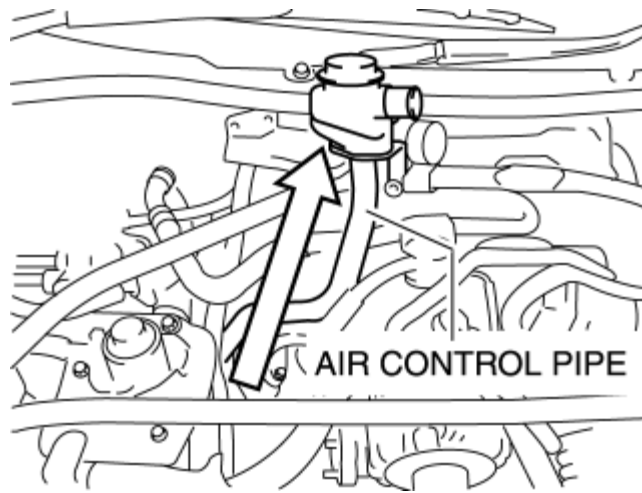
10. Disconnect the air hose and vacuum hose.



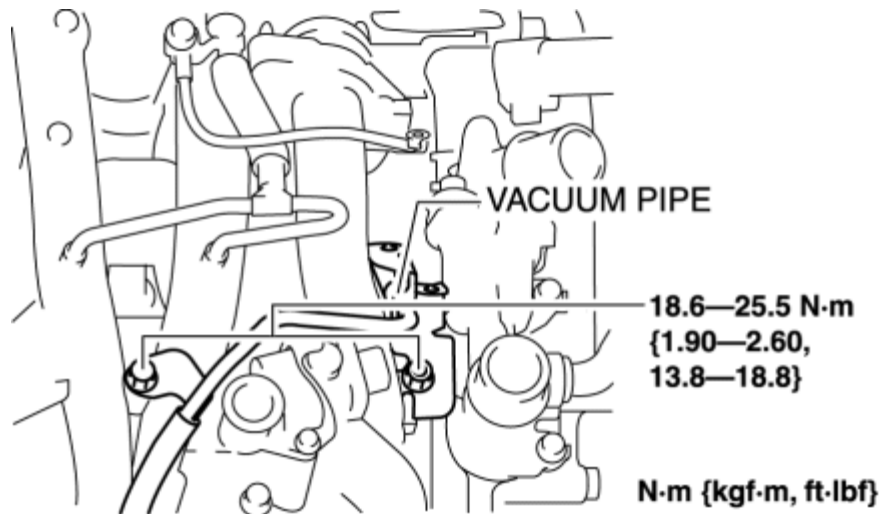
11. Remove the AIR pipe installation bolt.



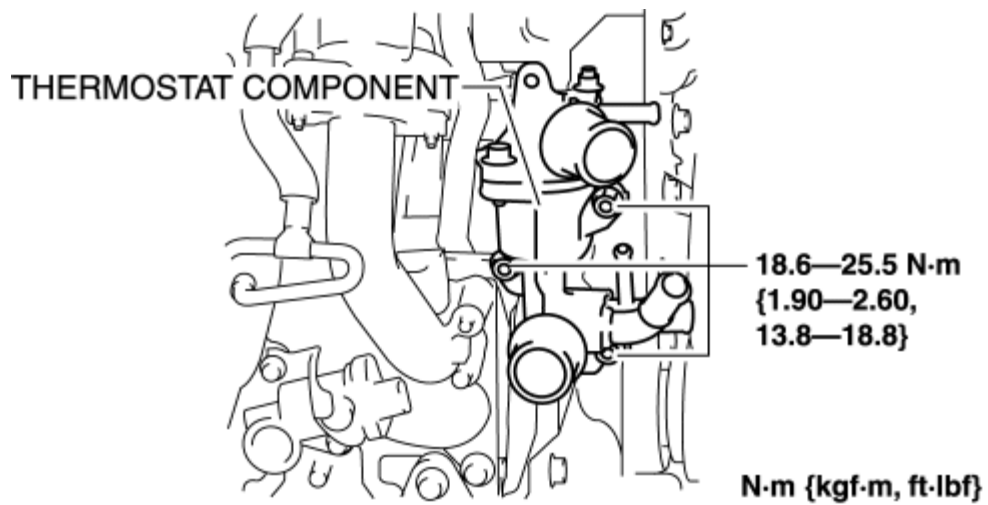
12. Pull up the AIR pipe and set it aside.



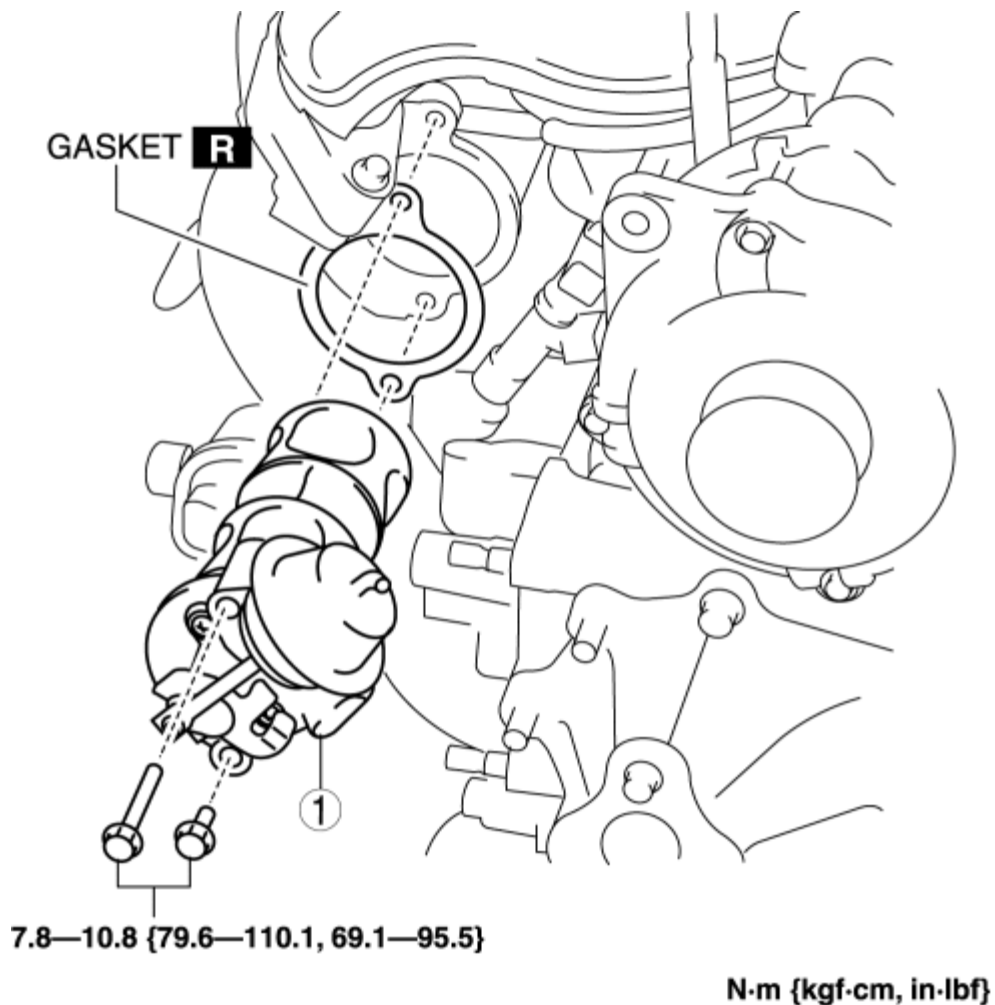
13. Loosen the water pump pulley installation bolt.
14. Position the generator drive belt out of the way.
15. Remove the water pump pulley. (See [WATER PUMP REMOVAL/INSTALLATION \[13B-MSP\].](#))
16. Remove the generator strap. (See [THERMOSTAT REMOVAL/INSTALLATION \[13B-MSP\].](#))
17. Disconnect the hoses from the thermostat cover and thermostat case.
18. Remove the vacuum pipe installation bolt and nut, and set the vacuum pipe aside.



19. Remove the thermostat component.

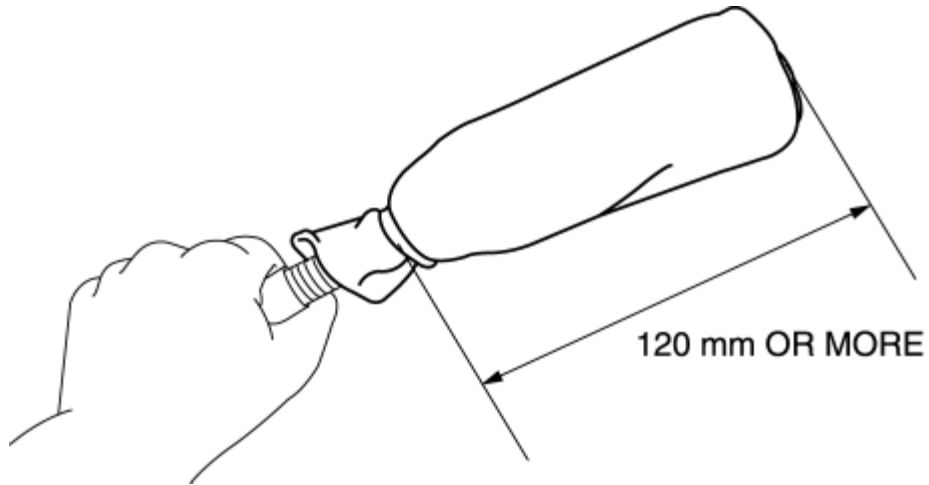


20. Set aside the main wiring harness to the battery side.
21. Remove in the order shown in the figure.
22. Install in the reverse order of removal.
23. Complete the "AFTER SERVICE PRECAUTION". (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)

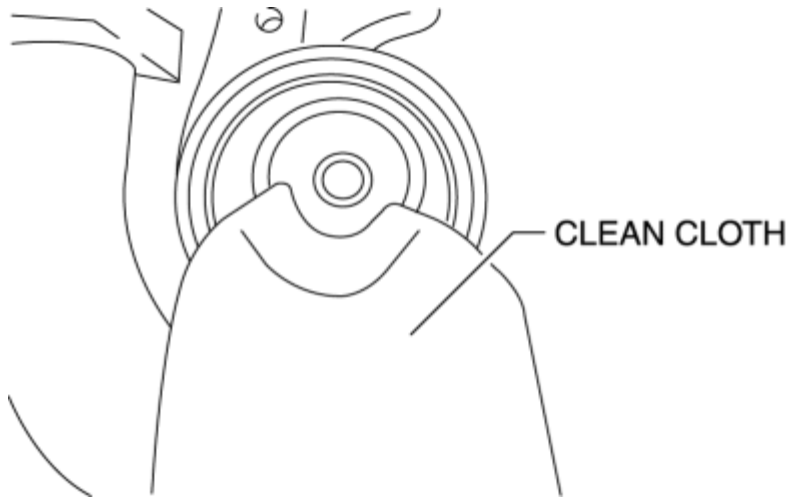


SSV Installation Note

1. Remove the carbon adhering to the internal SSV port of the intake manifold.
 - a. Wrap a clean cloth around the driver shaft (120 mm or more).



- b. Spread a clean cloth underneath the internal SSV port of the intake manifold and cover the secondary port.



- c. Set the engine cleaner perpendicularly and spray it to the bottom surface of the internal SSV port.
 - d. Wait 5 min after spraying.
 - e. Clean the bottom surface of the internal SSV port using (1).

NOTE:

- Be careful that carbon does not fall into the secondary port.

2. Install a new gasket and the SSV.

Tightening torque

- 7.8—10.8 N·m {79.6—110.1 kgf·cm, 69.1—95.5 in·lbf}

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

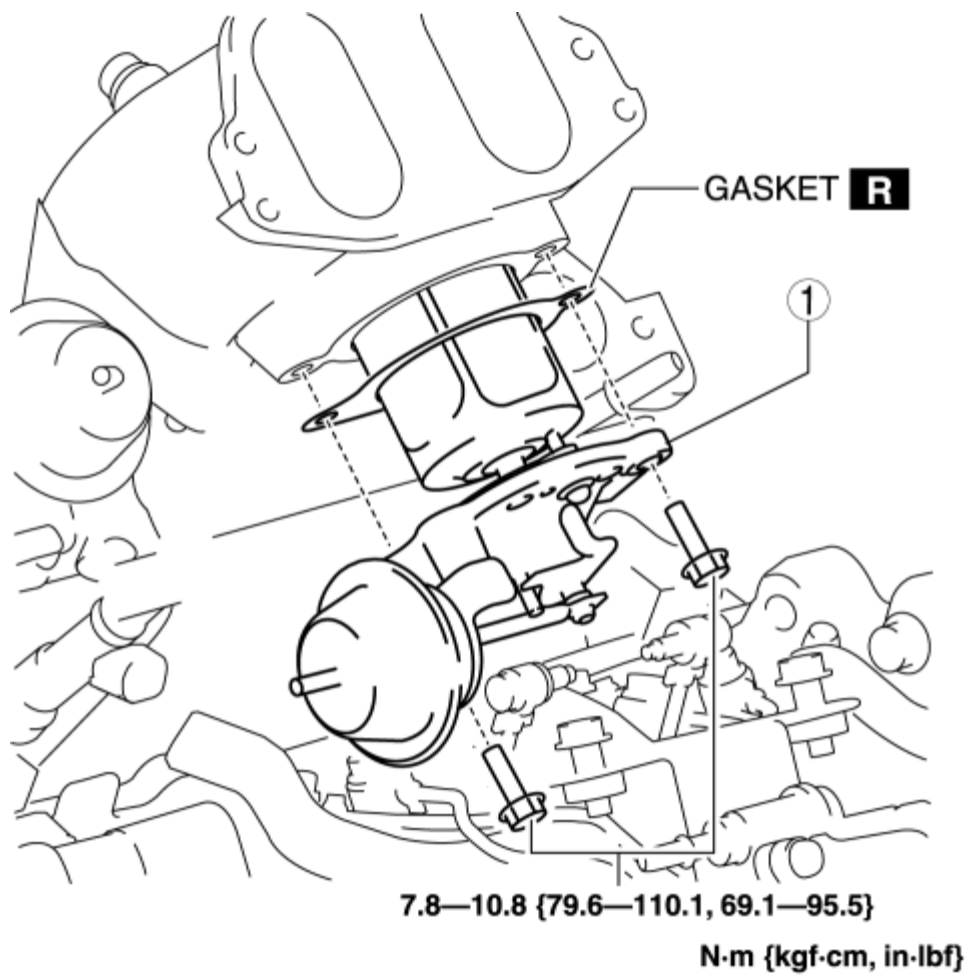
2011 - RX-8 - Engine

VARIABLE DYNAMIC EFFECT INTAKE-AIR (VDI) VALVE REMOVAL/INSTALLATION [13B-MSP]

WARNING:

- A hot engine and intake-air system can cause severe burns. Turn off the engine and wait until they are cool before removing the intake-air system.
- Fuel line spills and leakage from the pressurized fuel system are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure", while referring to the "BEFORE SERVICE PRECAUTION".

1. Complete the "BEFORE SERVICE PRECAUTION". (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).)
2. Remove the engine cover. (See. [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#))
3. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
4. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
5. Drain the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\]](#).)
6. Remove the air hose and throttle body. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
7. Remove the dipstick pipe installation bolt. (See [ENGINE DISASSEMBLY/ASSEMBLY \[13B-MSP\]](#).)
8. Remove the extension manifold and oil filler pipe. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
9. Remove the metering oil pump No.1 (See [METERING OIL PUMP REMOVAL/INSTALLATION \[13B-MSP\]](#).)
10. Remove the clip securing wiring harness from the metering oil pump bracket and set the wiring harness aside.
11. Remove in the order shown in the figure.
12. Install in the reverse order of removal.
13. Complete the "AFTER SERVICE PRECAUTION". (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)



1VDI valve

[< Previous](#) [Next >](#)

[Back to Top](#)

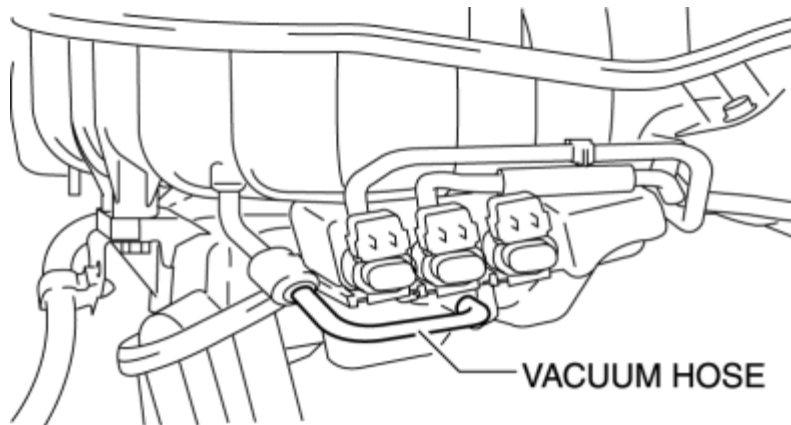
© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

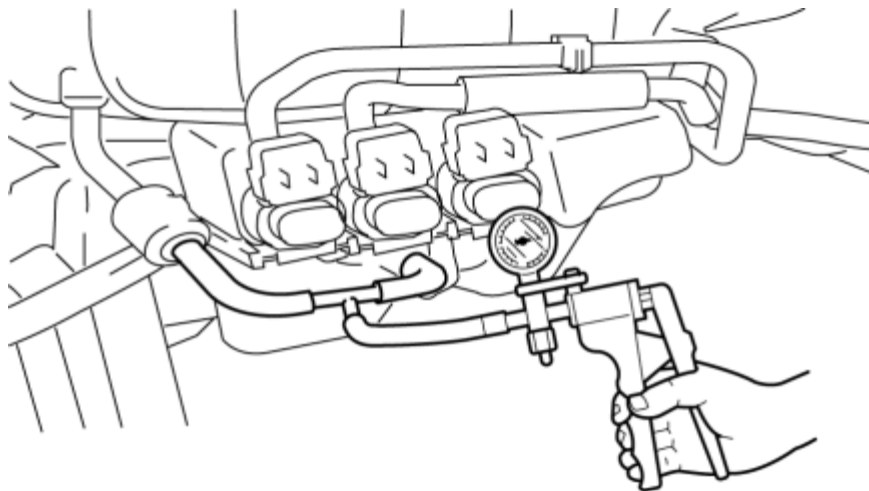
VACUUM CHAMBER INSPECTION [13B-MSP]

Vacuum Hold Inspection

1. Remove the extension manifold and oil filler pipe. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Remove the vacuum hose.



3. Install the vacuum pump as shown in the figure.



4. Inspect using the following procedure:
 - a. Apply vacuum until it reaches -60 kPa $\{-450$ mmHg, -18 inHg $\}$.
 - b. If it reaches -60 kPa $\{-450$ mmHg, -18 inHg $\}$, stop applying vacuum.

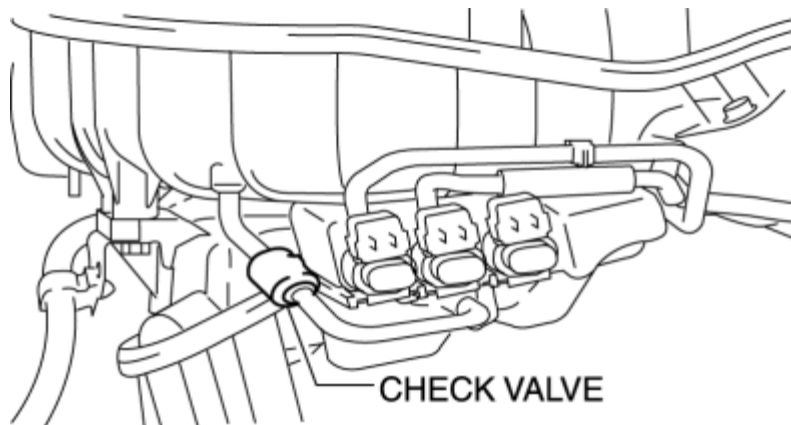
c. Verify the displayed vacuum after 10 s.

Standard

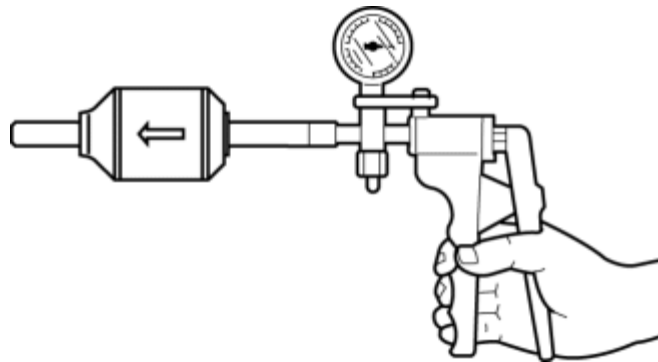
- $-60 - -50$ kPa { $-450 - -375$ mmHg, $-18 - -15$ inHg}
- If it is not within the specification, inspect the check valve. (See [Check valve](#).)

Check valve

1. Remove the check valve.



2. Install the vacuum pump as shown in the figure.



3. Inspect using the following procedure:

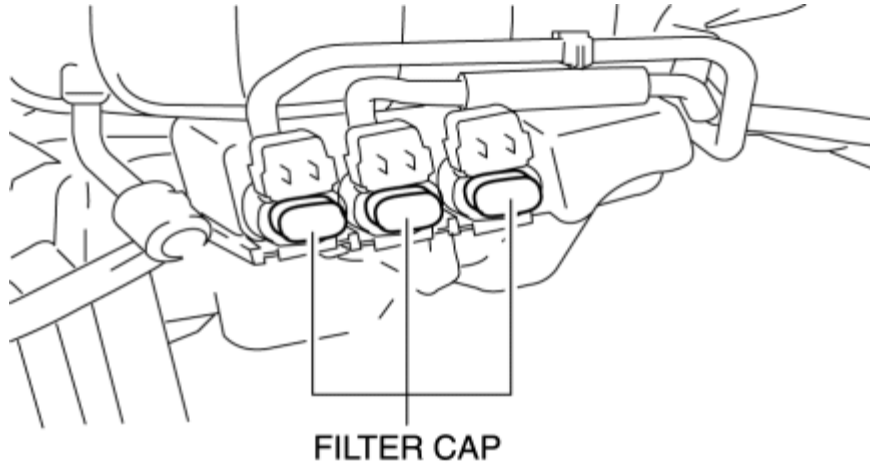
- Apply vacuum until it reaches -60 kPa { -450 mmHg, -18 inHg}.
- If it reaches -60 kPa { -450 mmHg, -18 inHg}, stop applying vacuum.
- Verify the displayed vacuum after 10 s.

Standard

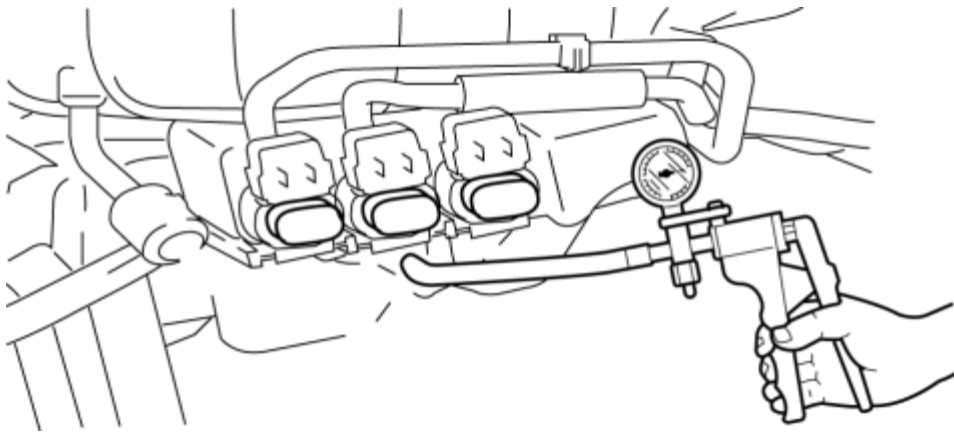
- $-60 - -50$ kPa { $-450 - -375$ mmHg, $-18 - -15$ inHg}
- If not within the specification, replace the check valve.
- If it is within the specification, inspect the solenoid valve. (See

Solenoid valve

1. Remove the filter caps from two of the solenoid valves and install blind caps (1010-13104) to the removed positions.



2. Install the vacuum pump as shown in the figure.



3. Inspect using the following procedure:
 - a. Apply vacuum until it reaches -60 kPa $\{-450 \text{ mmHg}, -18 \text{ inHg}\}$.
 - b. If it reaches -60 kPa $\{-450 \text{ mmHg}, -18 \text{ inHg}\}$, stop applying vacuum.
 - c. Verify the displayed vacuum after 10 s.

Standard

- $-60 - -50 \text{ kPa}$ $\{-450 - -375 \text{ mmHg}, -18 - -5 \text{ inHg}\}$

4. Perform the same inspection for the remaining two solenoid valves.

- Replace the solenoid valve which is not within the specification.
- If all of the solenoid valves are not within the specification, replace the oil filler pipe as a single component.

[< Previous](#) [Next >](#)

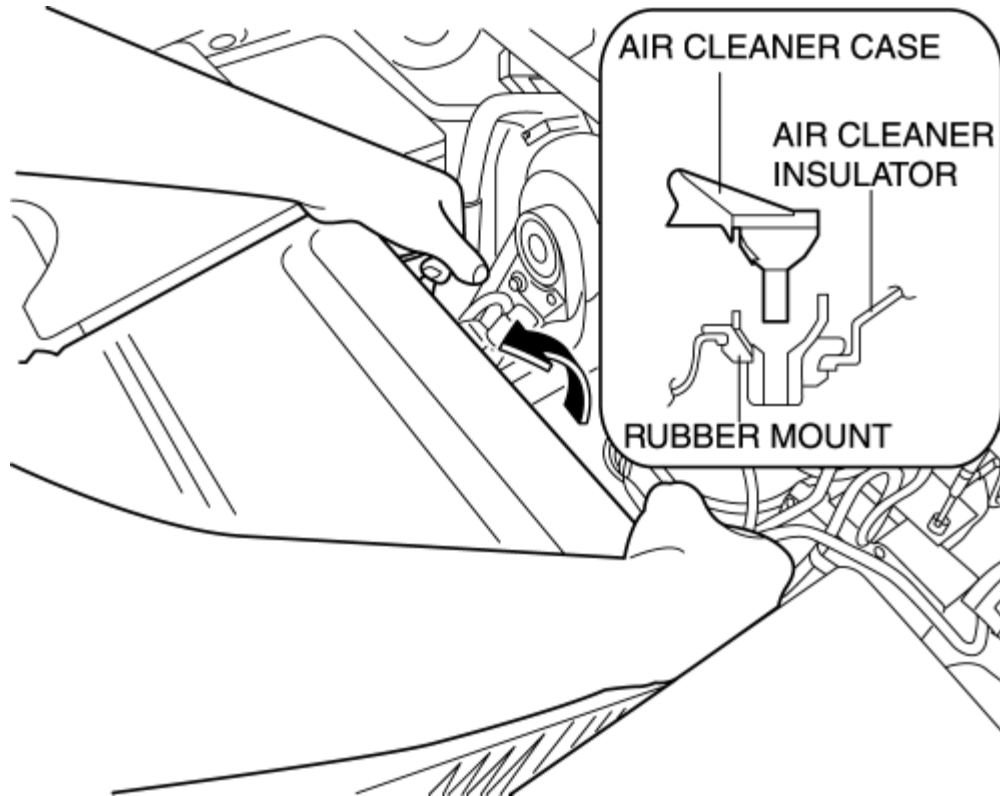
© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

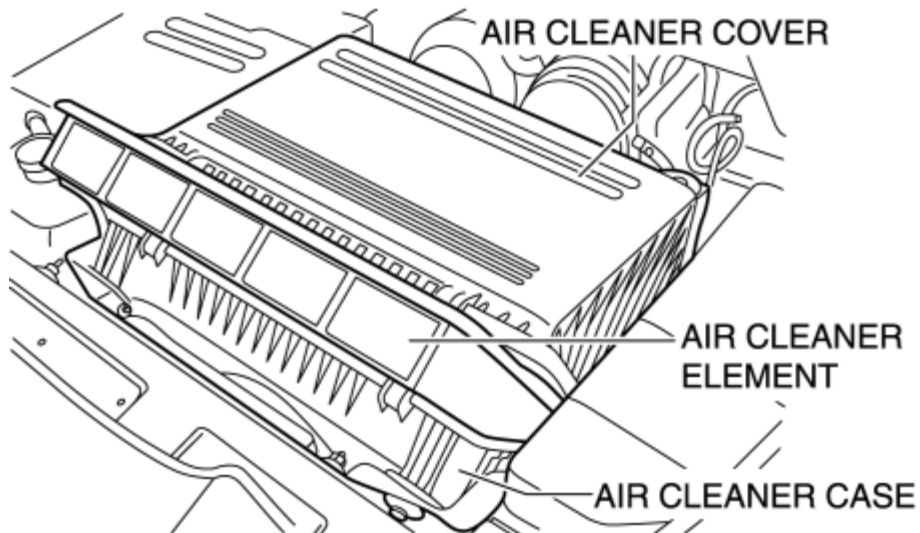
2011 - RX-8 - Engine

AIR CLEANER ELEMENT INSPECTION [13B-MSP]

1. Hold up the air cleaner as shown in the figure to remove the rubber from the air cleaner case.



2. Remove the air cleaner element from the air cleaner.



3. Inspect the following items:

- If there is any abnormality, clean or replace the air cleaner element.
 - Has the replacement interval come?
 - Is the air cleaner element soiled, damaged, or bent?
 - Are the air cleaner case and the air cleaner element correctly sealed?
 - Is the correct air cleaner element installed?

[< Previous](#) [Next >](#)

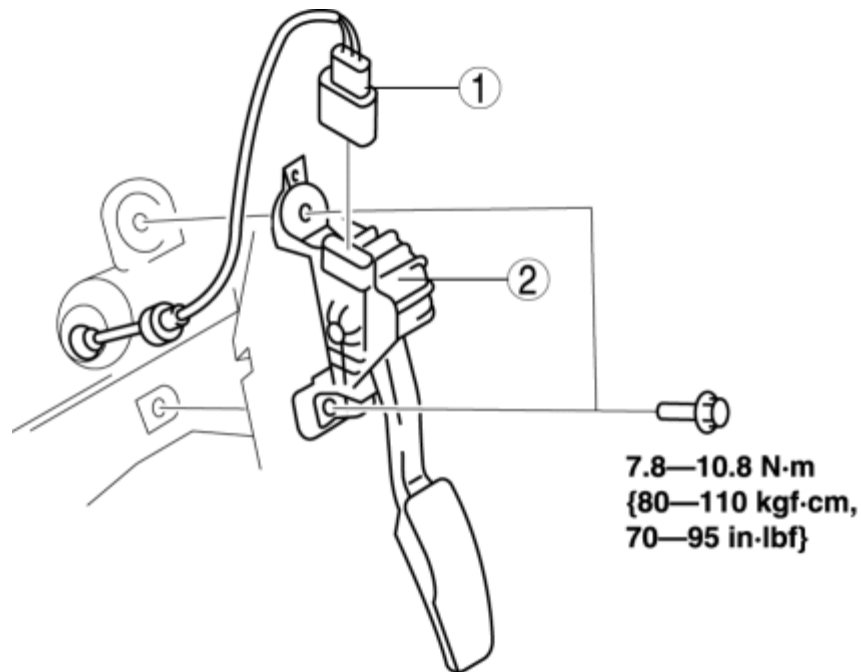
[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

ACCELERATOR PEDAL REMOVAL/INSTALLATION [13B-MSP]

1. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Remove in the order indicated in the table.

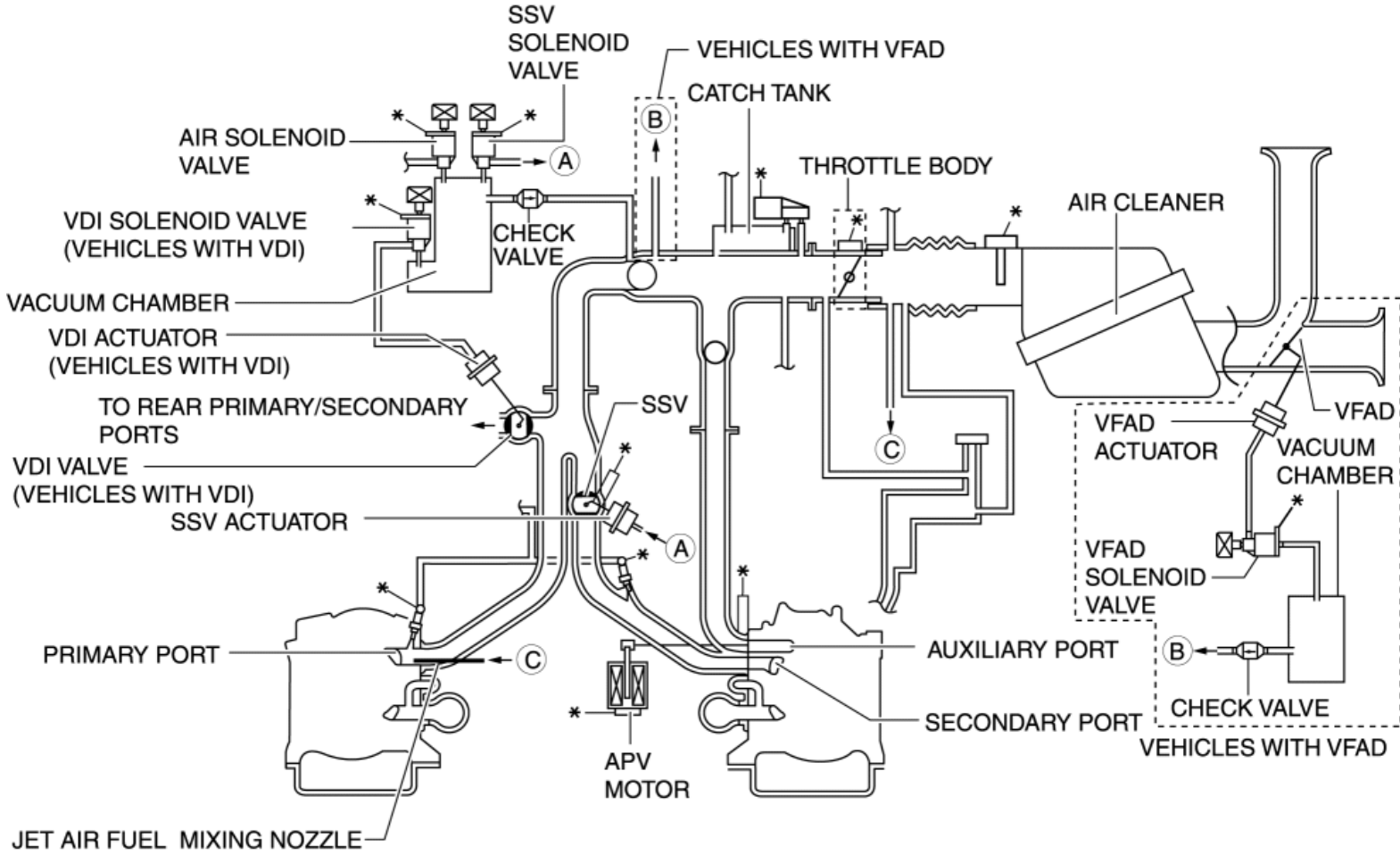


1	Connector
2	Accelerator pedal

3. Install in the reverse order of removal.

2011 - RX-8 - Engine

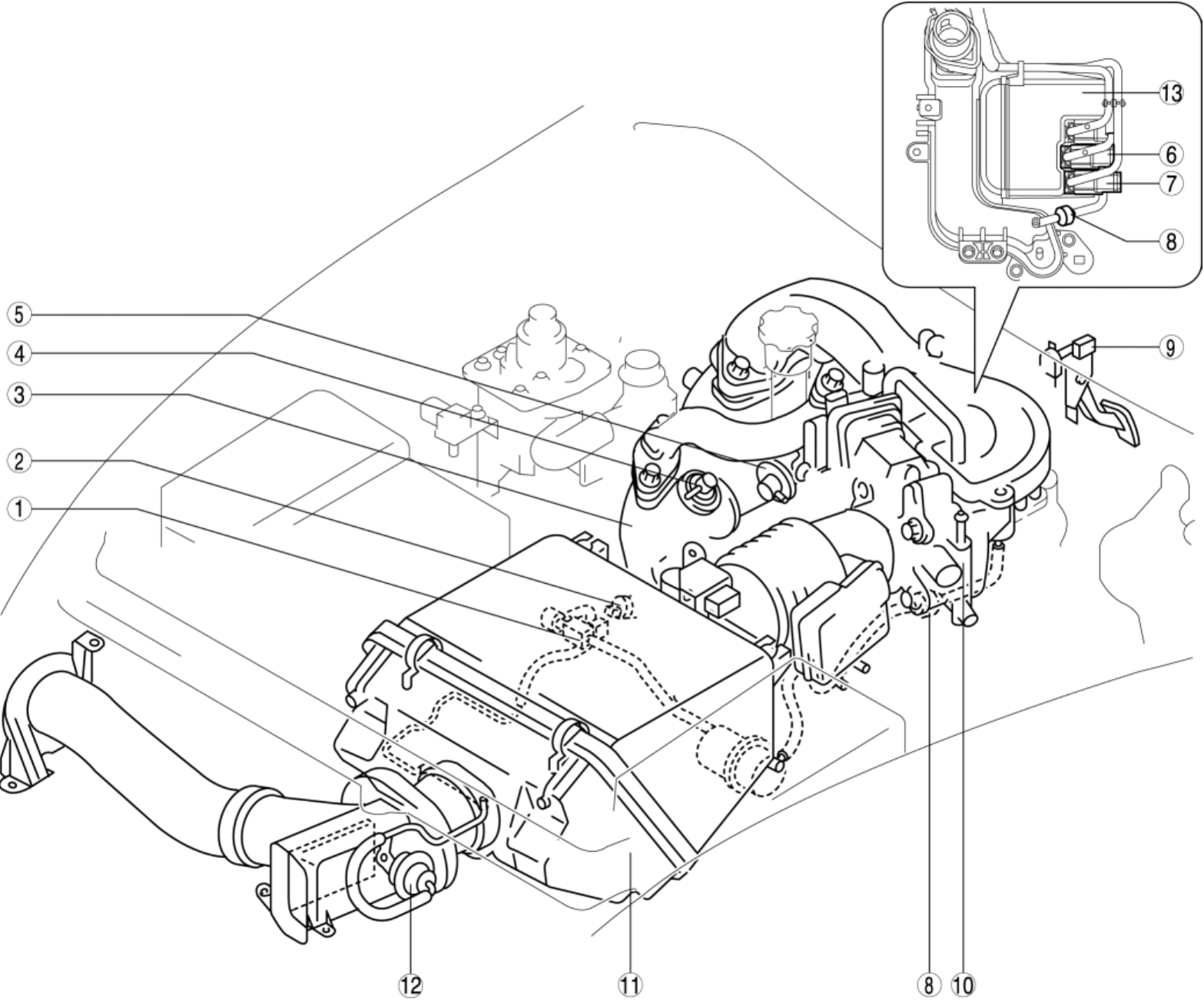
INTAKE-AIR SYSTEM DIAGRAM [13B-MSP]



*:TO PCM

2011 - RX-8 - Engine

INTAKE-AIR SYSTEM LOCATION INDEX [13B-MSP]



1 VFAD solenoid valve (Vehicles with VFAD)

(See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [VARIABLE FRESH AIR DUCT \(VFAD\) SOLENOID VALVE INSPECTION \[13B-MSP\].](#))

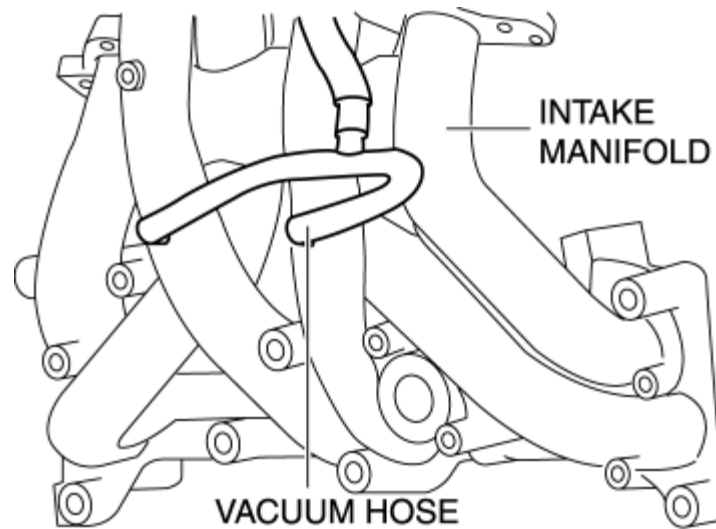
2 APV motor

	(See INTAKE MANIFOLD REMOVAL/INSTALLATION [13B-MSP].) (See AUXILIARY PORT VALVE (APV) MOTOR INSPECTION [13B-MSP].)
3 Intake manifold	(See INTAKE MANIFOLD REMOVAL/INSTALLATION [13B-MSP].) (See INTAKE MANIFOLD DISASSEMBLY/ASSEMBLY [13B-MSP].)
4 SSV actuator	(See SECONDARY SHUTTER VALVE (SSV) REMOVAL/INSTALLATION [13B-MSP].) (See SECONDARY SHUTTER VALVE (SSV) ACTUATOR INSPECTION [13B-MSP].)
5 VDI actuator (Vehicles with VDI)	(See VARIABLE DYNAMIC EFFECT INTAKE-AIR (VDI) VALVE REMOVAL/INSTALLATION [13B-MSP].) (See VARIABLE DYNAMIC EFFECT INTAKE-AIR (VDI) ACTUATOR INSPECTION [13B-MSP].)
6 SSV solenoid valve	(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].) (See SECONDARY SHUTTER VALVE (SSV) SOLENOID VALVE INSPECTION [13B-MSP].)
7 VDI solenoid valve (Vehicles with VDI)	(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].) (See VARIABLE DYNAMIC EFFECT INTAKE-AIR (VDI) SOLENOID VALVE INSPECTION [13B-MSP].)
8 Check valve (one-way)	(See CHECK VALVE (ONE-WAY) INSPECTION [13B-MSP].)
9 Accelerator pedal	(See ACCELERATOR PEDAL REMOVAL/INSTALLATION [13B-MSP].)
10 Throttle body	(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].) (See THROTTLE BODY INSPECTION [13B-MSP].)
11 Air cleaner	(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].) (See AIR CLEANER ELEMENT INSPECTION [13B-MSP].)
12 VFAD actuator (Vehicles with VFAD)	(See VARIABLE FRESH AIR DUCT (VFAD) ACTUATOR INSPECTION [13B-MSP].)
13 Vacuum chamber	(See VACUUM CHAMBER INSPECTION [13B-MSP].)

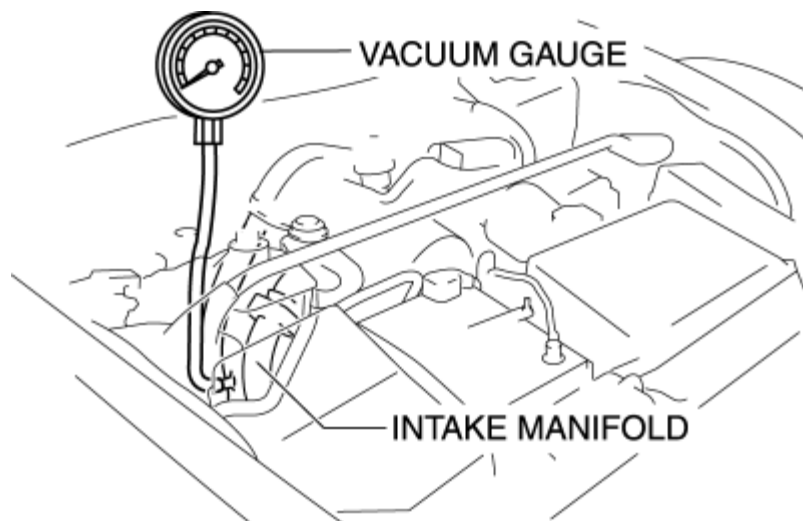
2011 - RX-8 - Engine

INTAKE MANIFOLD VACUUM INSPECTION [13B-MSP]

1. Verify that the intake-air system related parts and hoses are securely installed.
2. Disconnect the vacuum hose shown in the figure.



3. Install the vacuum gauge.



4. Warm up the engine.
5. Measure intake manifold vacuum while no load and Idling.
 - If not within the specification, perform the following inspection:
 - Compression pressure (See [COMPRESSION INSPECTION \[13B-](#)

[MSP1.](#))

■ Air intake

- Each hose installation part
- Throttle body installation part
- Fuel injector installation parts
- Extension manifold (upper, lower) installation part
- Purge solenoid valve installation part
- Intake manifold installation part

Intake manifold vacuum

- MT: -66.7—-56.0 kPa {-500—-421 mmHg, -19.6—-16.6 inHg}
- AT: -66.9—-53.1 kPa {-501—-399 mmHg, -19.7—-15.7 inHg}

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP]

WARNING:

- A hot engine and intake-air system can cause severe burns. Turn off the engine and wait until they are cool before removing the intake-air system.
 - Fuel line spills and leakage from the pressurized fuel system are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure", while referring to the "BEFORE SERVICE PRECAUTION".
1. Complete the "BEFORE SERVICE PRECAUTION". (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).)
 2. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 3. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 4. Remove in the order indicated in the table.
 5. Install in the reverse order of removal.
 6. Add the engine coolant to the cooling system filler neck and the coolant reserve tank to replace that during servicing.
 7. Inspect the engine coolant level. (See [ENGINE COOLANT LEVEL INSPECTION \[13B-MSP\]](#).)
 8. Inspect for engine coolant leakage. (See [ENGINE COOLANT LEAKAGE INSPECTION \[13B-MSP\]](#).)
 9. Complete the "AFTER SERVICE PRECAUTION". (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)

3	Vacuum chamber
4	Air cleaner element
5	Air cleaner case
6	Air hose (See Air Hose Installation Note.)
7	Throttle body (See Throttle Body Removal Note.) (See Throttle Body Installation Note.)
8	Extension manifold (upper) (See Extension Manifold (Upper) Removal Note.)
9	Extension manifold (lower)
10	Oil filler pipe
11	SSV solenoid valve
12	VDI solenoid valve (Vehicles with VDI)
13	Air cleaner insulator (See Air Cleaner Insulator Installation Note.)
14	Fresh-air duct (See Fresh-air Duct Removal Note.) (See Fresh-air Duct Installation Note.)

Throttle Body Removal Note

WARNING:

- Turn off the engine and wait until it is cool. Even then, be very careful when removing the cap. Wrap a thick cloth around it and slowly turn it counterclockwise to the first stop. Step back while the pressure escapes.
- When you are sure all the pressure is gone, press down on the cap using the cloth, turn it, and remove it.

CAUTION:

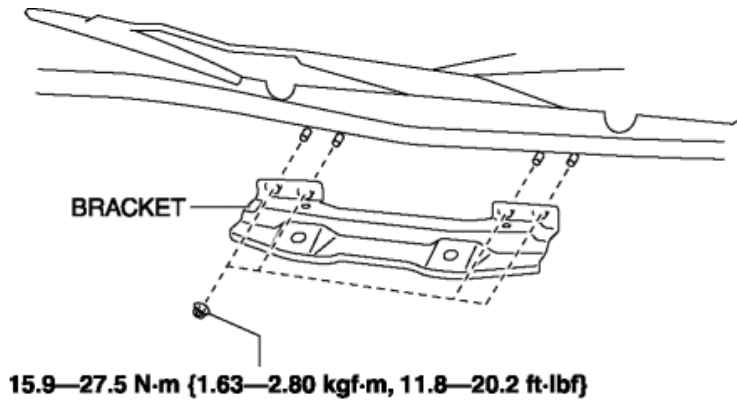
- Do not plug the water hose with a sharp-edged object. Otherwise, the hose could be damaged.

1. Wrap a clean cloth around the cooling system cap and release the pressure by loosening the cap slowly.

2. Remove the water hose from the throttle body and plug the water hose quickly.

Extension Manifold (Upper) Removal Note

1. Remove the front suspension tower bar. (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[MT\].](#))
2. Remove the bracket as shown in the figure.



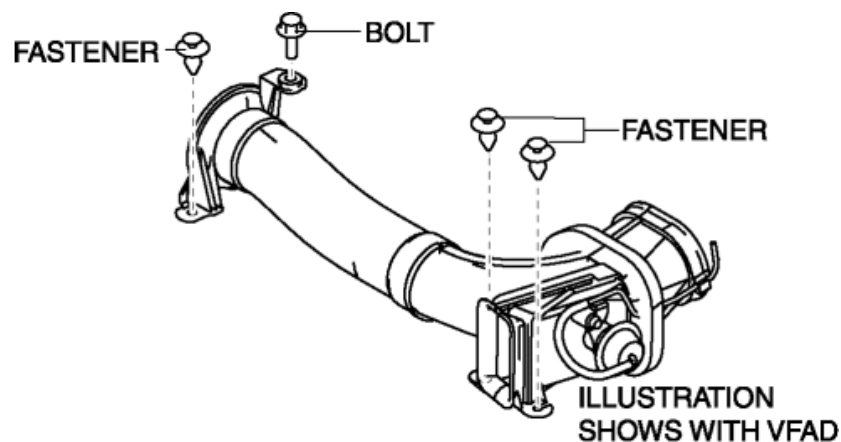
3. Remove the extension manifold (upper).

Fresh-air Duct Removal Note

1. Remove the front bumper. (See [FRONT BUMPER REMOVAL/INSTALLATION.](#))
2. Remove the fresh-air duct.

Fresh-air Duct Installation Note

1. Install the fasteners.
2. Tighten the bolt to the specified torque.

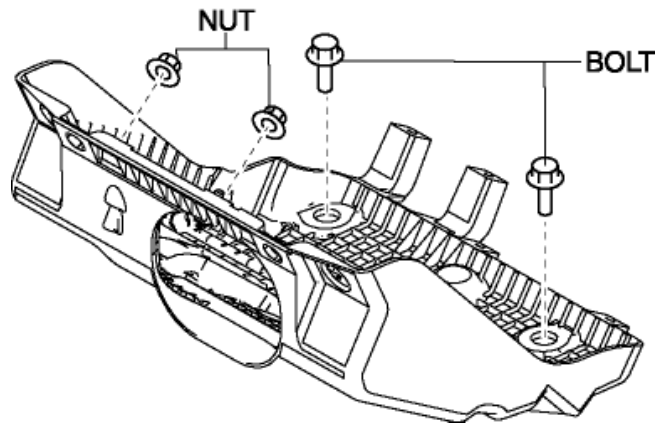


Tightening torque

- 7.8—10.8 N·m {80—110 kgf·cm, 70—95 in·lbf}

Air Cleaner Insulator Installation Note

1. Temporarily tighten nuts.
2. Temporarily tighten bolts.
3. Tighten the nuts to the specified torque.
4. Tighten the bolts to the specified torque.



Tightening torque

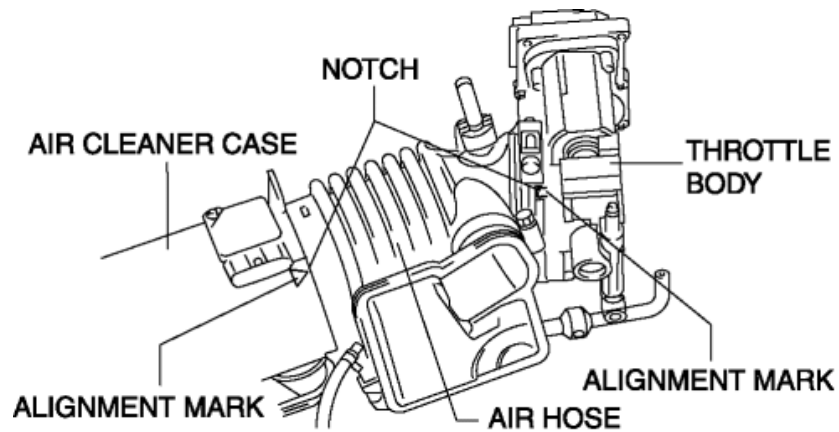
- 7.8—10.8 N·m {80—110 kgf·cm, 70—95 in·lbf}

Throttle Body Installation Note

1. Temporarily tighten the throttle body to the intake manifold.
2. Remove the plug from the engine coolant hose and install the water hose to the throttle body quickly.

Air Hose Installation Note

1. Align the alignment marks with the air hose notches.



2011 - RX-8 - Engine

INTAKE MANIFOLD REMOVAL/INSTALLATION [13B-MSP]

WARNING:

- Fuel vapor is hazardous. It can very easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage from the pressurized fuel system are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure" while referring to the "BEFORE SERVICE PRECAUTION".
- Remove the engine, transmission and crossmember carefully, holding it steady. If the transmission falls it could be damaged or cause injury.
- After disconnecting the steering shaft joint, always set the EPS system to the neutral position to prevent system malfunction. (See [EPS SYSTEM NEUTRAL POSITION SETTING](#).)

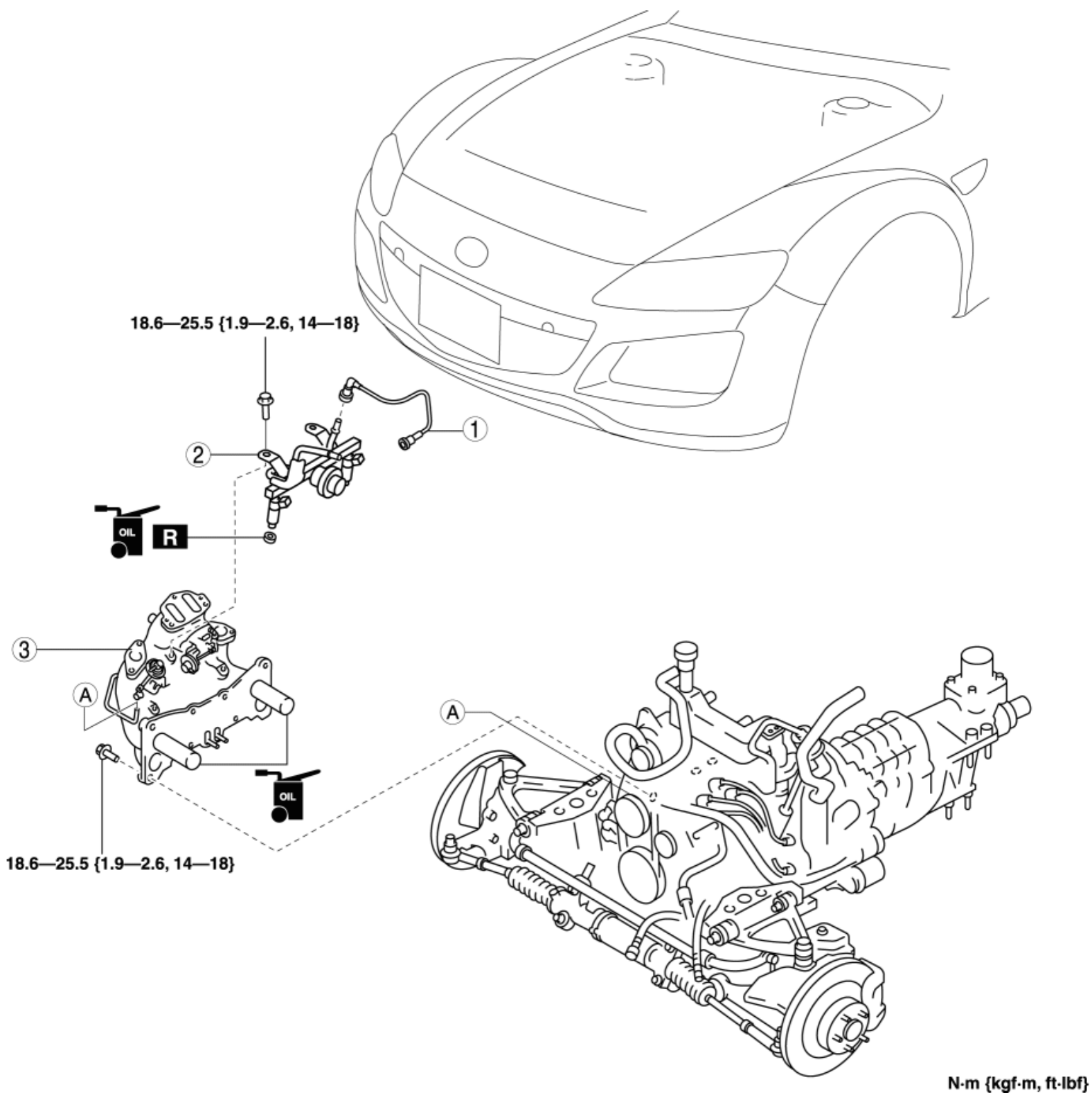
CAUTION:

- Do not bend the jet air fuel mixing nozzle. Otherwise malfunction of the engine may occur. Exercise extreme caution when handling the intake manifold.

NOTE:

- The engine must be removed to remove the intake manifold.
 - Remove the engine, transmission, and crossmember component as a single unit downward of the vehicle.
1. Complete the "BEFORE SERVICE PRECAUTION". (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).)
 2. Remove the following parts:
 - a. Front wheel and tires (See [GENERAL PROCEDURES \(SUSPENSION\)](#).)
 - b. Engine cover (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 - c. Front suspension tower bar (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[MT\]](#).)
 - d. Battery cover, battery, battery box and battery tray (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 - e. Air cleaner, intake-air duct and air cleaner insulator (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 - f. PCM (See [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 - g. AIR pump (See [SECONDARY AIR INJECTION \(AIR\) PUMP REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 3. Drain the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\]](#).)
 4. Disconnect the brake vacuum hose.
 5. Disconnect the quick release connector going to the charcoal canister from the engine room side. (See [QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 6. Disconnect the fuel hose from the fuel distributor (housing side). (See [FUEL INJECTOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 7. Remove the ignition coil. (See [IGNITION COIL REMOVAL/INSTALLATION \[13B-MSP\]](#).)

8. Remove the A/C belt. (See [DRIVE BELT REPLACEMENT \[13B-MSP\].](#))
9. Remove the A/C compressor with the pipes connected and secure the A/C compressor using wire or rope so that it is out of the way.
10. Disconnect the engine wiring harness from the main fuse block side.
11. Remove the aerodynamic under cover. (See [AERODYNAMIC UNDER COVER REMOVAL/INSTALLATION.](#))
12. Remove the under cover. (See [ENGINE OIL REPLACEMENT \[13B-MSP\].](#))
13. Disconnect front ABS wheel speed sensor connector. (See [FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.](#))
14. Disconnect the radiator hose, the heater hose and coolant reserve tank hose.
15. Disconnect the selector link. (AT) (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\].](#))
16. Remove the clutch release cylinder with the pipes connected and secure the clutch release cylinder using wire or rope so that it is out of the way. (MT) (See [CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION.](#))
17. Remove the shift lever component. (MT) (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\].](#))
18. Remove the engine, transmission, and crossmember component. (See [ENGINE REMOVAL/INSTALLATION \[13B-MSP\].](#))
19. Remove the extension manifold (upper and lower). (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))
20. Remove the AIR control valve. (See [SECONDARY AIR INJECTION \(AIR\) CONTROL VALVE REMOVAL/INSTALLATION \[13B-MSP\].](#))
21. Remove in the order indicated in the table.
22. Install in the reverse order of removal.



1 Fuel hose

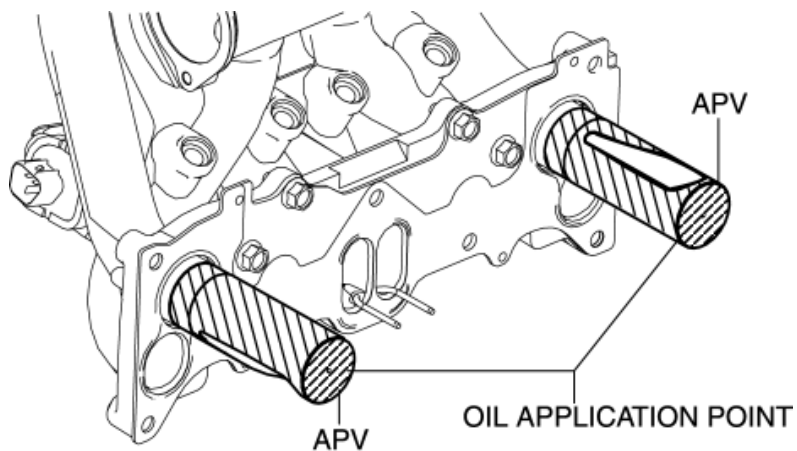
(See [QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION \[13B-MSP\].](#))

2 Fuel distributor (intake manifold side)

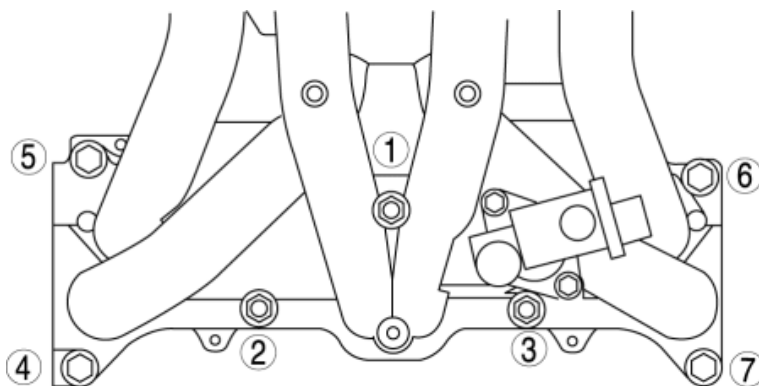
(See [FUEL INJECTOR REMOVAL/INSTALLATION \[13B-MSP\].](#))

Intake Manifold Installation Note

1. Apply oil thoroughly to the APV as shown in the figure.



2. Tighten the bolts in the order shown in the figure



3. Retighten the No.1 bolt after tighten the all bolts.

Tightening torque

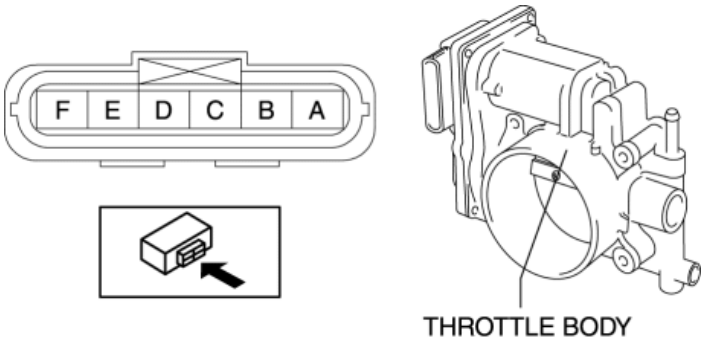
- 18.6—25.5 N·m {1.9—2.6 kgf·m, 14—18 ft·lbf}

2011 - RX-8 - Engine

THROTTLE BODY INSPECTION [13B-MSP]

Resistance Inspection

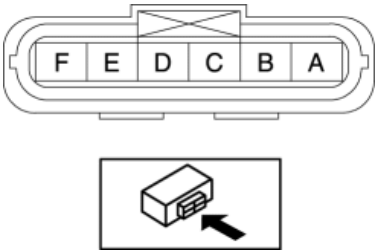
1. Remove the throttle body. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Verify that there is no continuity between the throttle body and throttle body each terminal.
 - If not as specified, replace the throttle body. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)



3. Measure the resistance between the throttle actuator terminals.
 - If not as specified, replace the throttle body. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 - If as specified, carry out the "Circuit Open/Short Inspection".

Throttle valve actuator resistance

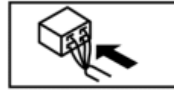
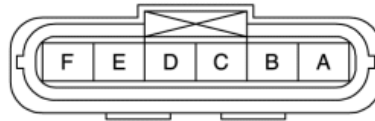
Ambient temperature (°C {°F})	Resistance (ohm)
Approx. 20 {68}	0.3—100



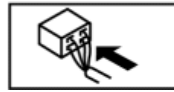
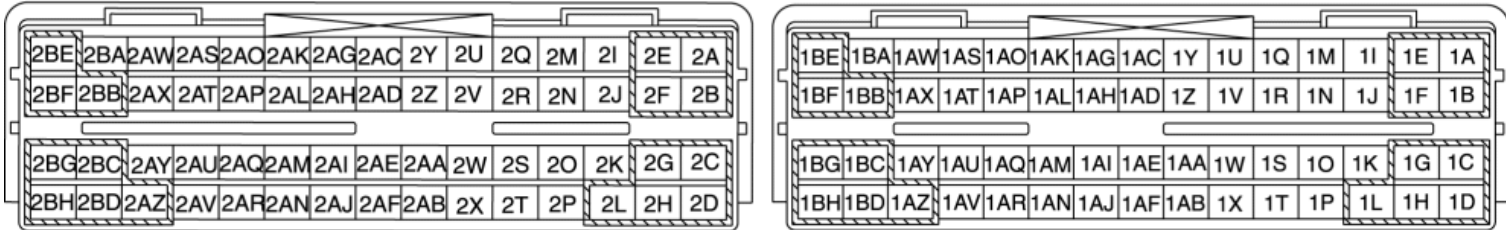
Circuit Open/Short Inspection

1. Disconnect the PCM connector. (See [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Inspect the following wiring harnesses for open or short (continuity check).

THROTTLE BODY WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



Open circuit

- If there is no continuity, the circuit is open. Repair or replace the wiring harness.
 - Throttle body terminal A and PCM terminal 2A
 - Throttle body terminal B and PCM terminal 2B

Short circuit

- If there is no continuity, the circuit is shorted. Repair or replace the wiring harness.
 - Throttle body terminal A and power supply
 - Throttle body terminal A and body GND
 - Throttle body terminal B and power supply
 - Throttle body terminal B and body GND

Throttle Valve Inspection

1. Remove the throttle body. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))
2. Open the throttle valve from the closed position to open the fully open position by hand.
3. Verify that the throttle valve moves smoothly.
 - If cannot be verified, replace the throttle body. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))
4. Release hand from the throttle valve when at the fully open position.
5. Verify that the throttle valve returns to the closed position smoothly by spring force.
 - If cannot be verified, replace the throttle body. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))
6. Press the throttle valve from the closed position to the fully closed position by hand.
7. Verify that the throttle valve move approx. 5°.

- If cannot be verified, replace the throttle body. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

INTAKE-AIR SYSTEM INSPECTION [13B-MSP]

1. Perform the following intake-air system part inspections.

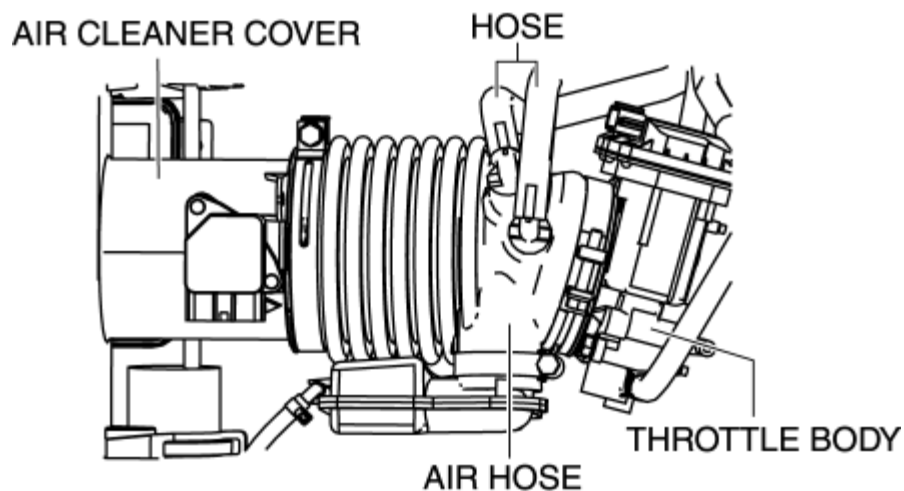
NOTE:

- If there is improper installation or a malfunction of an intake-air system part, it could cause poor emission, low engine output, or rough idling.

Air Hose Inspection

1. Visually inspect the following items:

- If there is any abnormality, reinstall or replace the air hose.
 - Is there any looseness or disconnection of air hose and air cleaner cover connecting parts?
 - Is there any looseness or disconnection of air hose and throttle body connecting parts?
 - Is the hose correctly installed?
 - Are there any cracks or splits in the air hose?



Hose Inspection

1. Refer to the intake-air system hose routing diagram and verify that the hoses are installed in the correct positions. (See [INTAKE-AIR SYSTEM VACUUM HOSE ROUTING DIAGRAM \[13B-MSP\].](#))

- If there is any abnormality, install in the correct position.

2. Verify that there is no crushing, cracks, or splits on the hose.

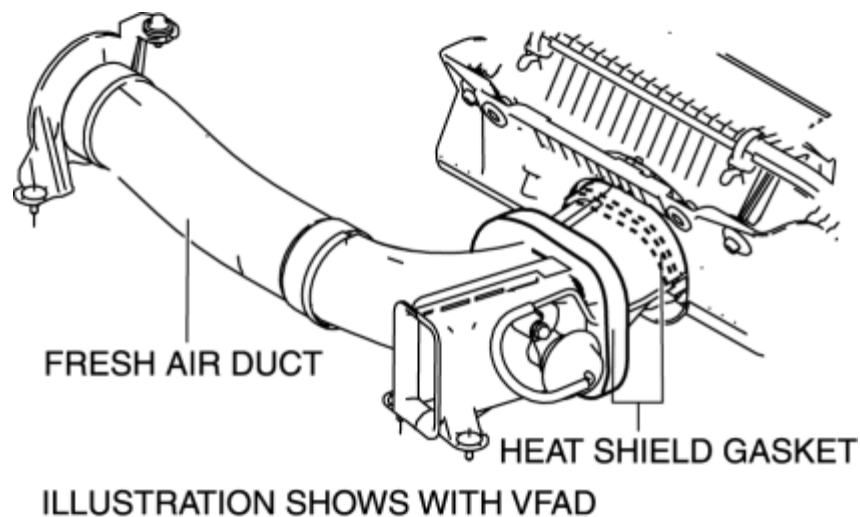
- If there is any abnormality, repair or replace the hose.

Fresh-air Duct Inspection

1. Remove the fresh air duct. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))

2. Verify that there is no damage or peeling on the heat shield gasket for the fresh air duct.

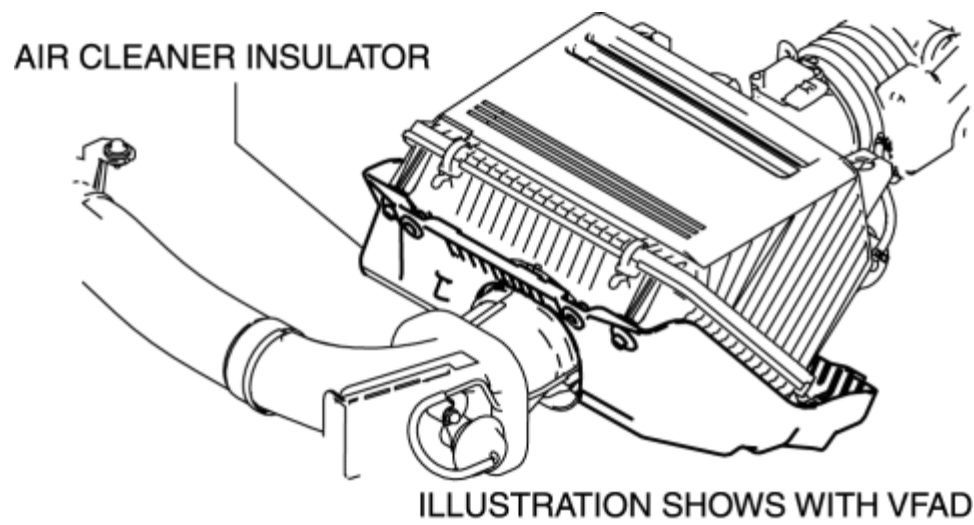
- If there is any abnormality, repair or replace the fresh air duct. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))



Air Cleaner Insulator Inspection

1. Verify that the air cleaner insulator has been installed.

- If it has not been installed, install an air cleaner insulator.



[< Previous](#) [Next >](#)

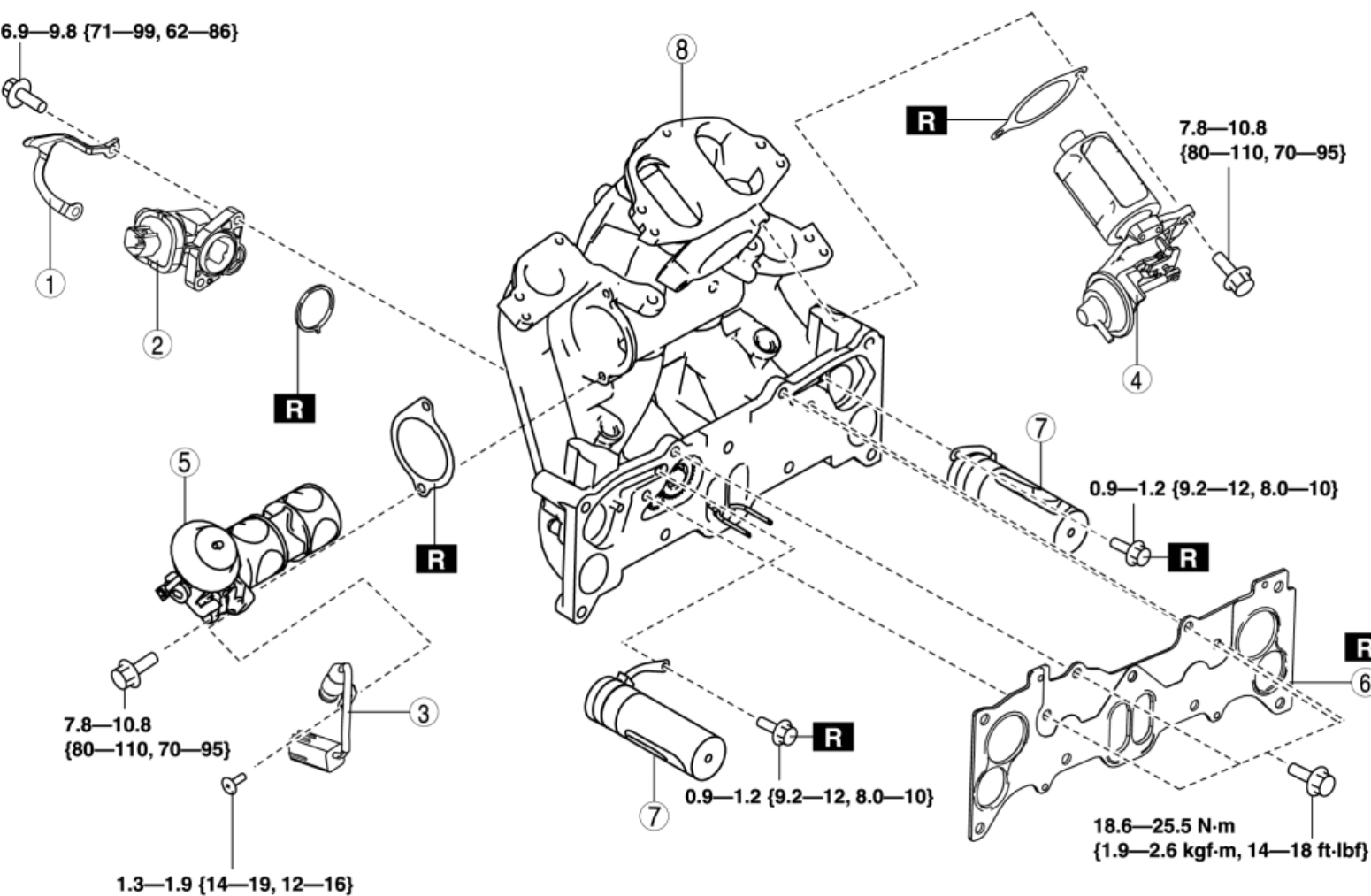
[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

INTAKE MANIFOLD DISASSEMBLY/ASSEMBLY [13B-MSP]

1. Remove the intake manifold. (See [INTAKE MANIFOLD REMOVAL/INSTALLATION \[13B-MSP\].](#))
2. Remove the APV position sensor No.1. (See [AUXILIARY PORT VALVE \(APV\) POSITION SENSOR REMOVAL/INSTALLATION \[13B-MSP\].](#))
3. Remove the APV position sensor No.2. (See [AUXILIARY PORT VALVE \(APV\) POSITION SENSOR REMOVAL/INSTALLATION \[13B-MSP\].](#))
4. Remove in the order indicated in the table.
5. Install in the reverse order of removal.



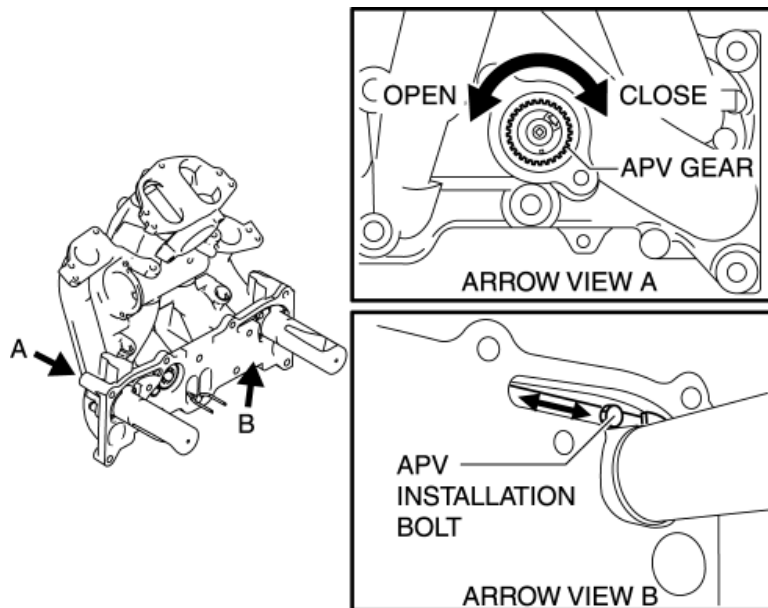
N·m {kgf·cm, in·lbf}

1	Bracket
2	APV motor

(See APV Removal Note.)
3SSV switch
4VDI valve (Vehicles with VDI)
5SSV
6Gasket
7APV (See APV Removal Note.) (See APV Installation Note.)
8Intake manifold

APV Removal Note

1. Rotate the APV gear by hand to a position which allows removal of the APV installation bolt.



2. Remove the APV installation bolt and the APV.

APV Installation Note

CAUTION:

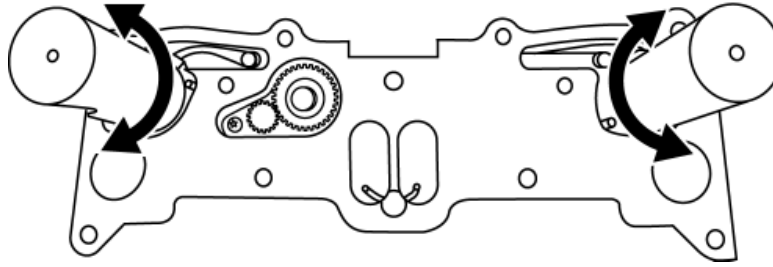
- To prevent damage to the APV installation bolt, be careful not to perform the following:
 - Do not tighten the APV installation bolt to a torque which exceeds the specification.
 - Do not apply part cleaner to the threads of the APV installation bolt.

1. Install the APV using a new APV installation bolt.

Tightening torque

- 0.9—1.2 N·m {9.2—12 kgf·cm, 8.0—10 in·lbf}

2. Rotate the APV gear manually with the APV pointed perpendicular to the ground and verify that the APV can be rotated smoothly.



APV Motor Installation Note

1. Install the intake manifold. (See [INTAKE MANIFOLD REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Rotate the APV gear manually and verify that it can be rotated smoothly (approx. three-quarter rotation).
 - If the gear cannot be rotated smoothly, clean the internal ports of the housing and the areas around the APV.
3. Install a new gasket, APV motor and bracket.

Tightening torque

- 6.9—9.8 N·m {71—99 kgf·cm, 62—86 in·lbf}

[< Previous](#) [Next >](#)

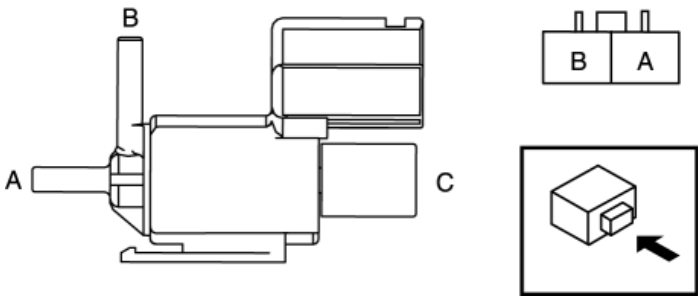
[Back to Top](#)

2011 - RX-8 - Engine

SECONDARY SHUTTER VALVE (SSV) SOLENOID VALVE INSPECTION [13B-MSP]

Airflow Inspection

1. Disconnect the negative battery cable.
2. Remove the SSV solenoid valve. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
3. Inspect for airflow using the steps in the table below.



○ — ○ : Continuity

○ = ○ : Airflow

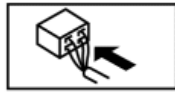
Step	Terminal		Port		
	A	B	A	B	C
1	○ — ○			○ = ○	
2	B+	GND	○ = ○		

- If there is any malfunction, replace the SSV solenoid valve. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- If as specified, carry out the “Circuit Open/Short Inspection”.

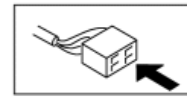
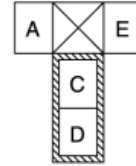
Circuit Open/Short Inspection

1. Disconnect the PCM connector. (See [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Inspect the following wiring harnesses for open or short (continuity check).

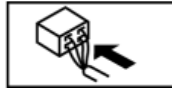
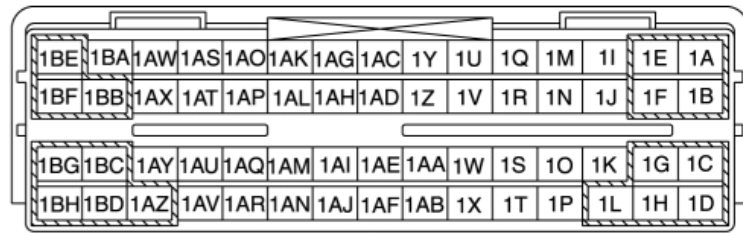
SSV SOLENOID VALVE WIRING HARNESS-SIDE CONNECTOR



MAIN RELAY



PCM WIRING HARNESS-SIDE CONNECTOR



Open circuit

- If there is no continuity, the circuit is open. Repair or replace the wiring harness.
 - SSV solenoid valve terminal B and PCM terminal 2I
 - SSV solenoid valve terminal A and main relay terminal C

Short circuit

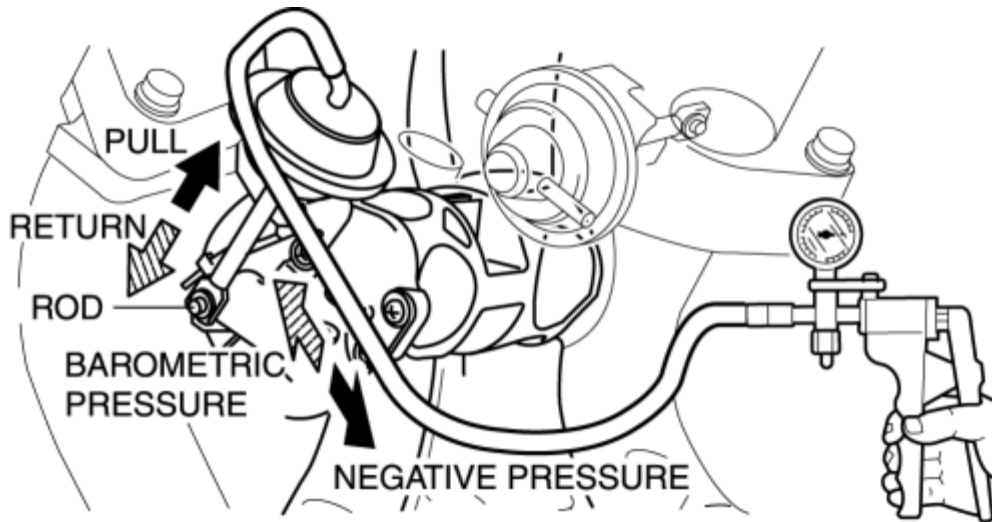
- If there is no continuity, the circuit is shorted. Repair or replace the wiring harness.
 - SSV solenoid valve terminal B and body GND
 - SSV solenoid valve terminal A and power supply

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

SECONDARY SHUTTER VALVE (SSV) ACTUATOR INSPECTION [13B-MSP]

1. Disconnect the vacuum hose of the SSV actuator.
2. Install the vacuum pump to the SSV actuator.



3. Verify that the rod moves as indicated in the table below when gradually applying a vacuum to the SSV actuator. **Rod movement**

Vacuum (kPa {mmHg, inHg})	Rod movement
-4.0 {-30, -1.2}	Starts to move
-25.3 {-190, -7.47}	Fully pulled
-1.3 {-9.8, -0.38}	Fully returned

- If there is any malfunction, replace the SSV. (See [INTAKE MANIFOLD DISASSEMBLY/ASSEMBLY \[13B-MSP\]](#).)

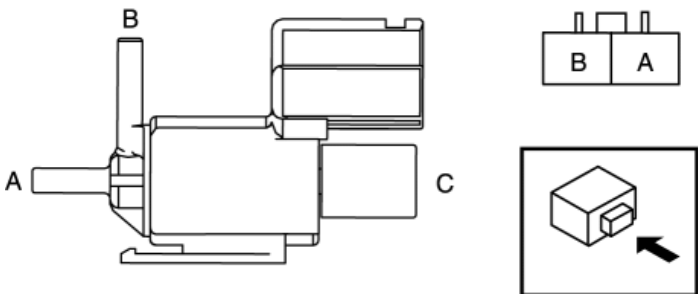
2011 - RX-8 - Engine

VARIABLE DYNAMIC EFFECT INTAKE-AIR (VDI) SOLENOID VALVE INSPECTION [13B-MSP]

Vehicles With VDI

Airflow inspection

- 1. Disconnect the negative battery cable.
- 2. Remove the VDI solenoid valve. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- 3. Inspect for airflow with the steps in the table below.



○ — ○ : Continuity

○ = ○ : Airflow

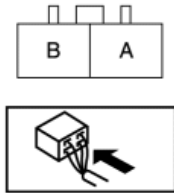
Step	Terminal		Port		
	A	B	A	B	C
1	○ — ○			○ = ○	
2	B+	GND	○ = ○		

- If there is any malfunction, replace the VDI solenoid valve. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- If as specified, carry out the “Circuit Open/Short Inspection”.

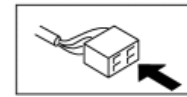
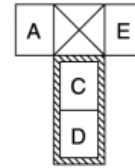
Circuit open/short inspection

- 1. Disconnect the PCM connector. (See [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- 2. Inspect the following wiring harnesses for open or short (continuity check).

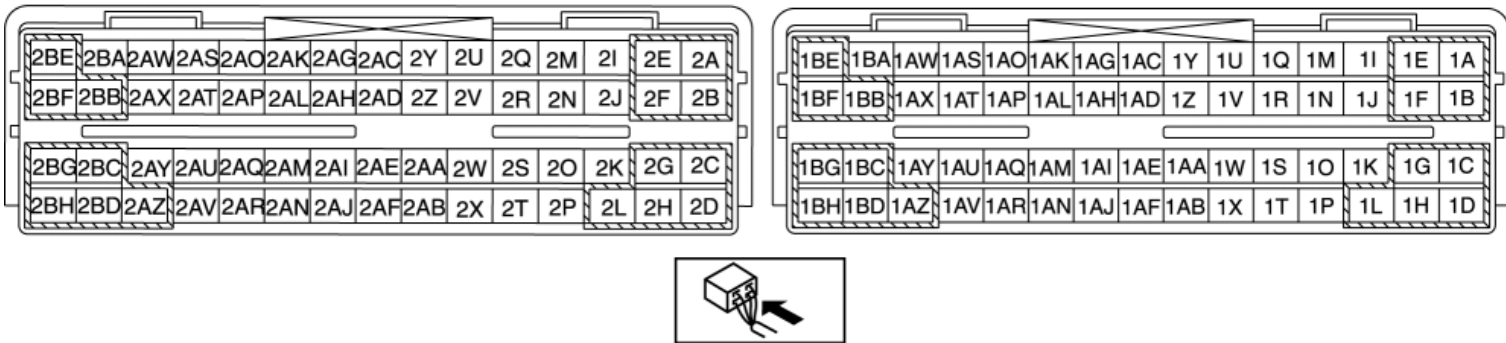
**VDI SOLENOID VALVE
WIRING HARNESS-SIDE CONNECTOR**



MAIN RELAY



**PCM
WIRING HARNESS-SIDE CONNECTOR**



Open circuit

- If there is no continuity, the circuit is open. Repair or replace the wiring harness.
 - VDI solenoid valve terminal B and PCM terminal 2L
 - VDI solenoid valve terminal A and main relay terminal C

Short circuit

- If there is no continuity, the circuit is shorted. Repair or replace the wiring harness.
 - VDI solenoid valve terminal B and body GND
 - VDI solenoid valve terminal A and power supply

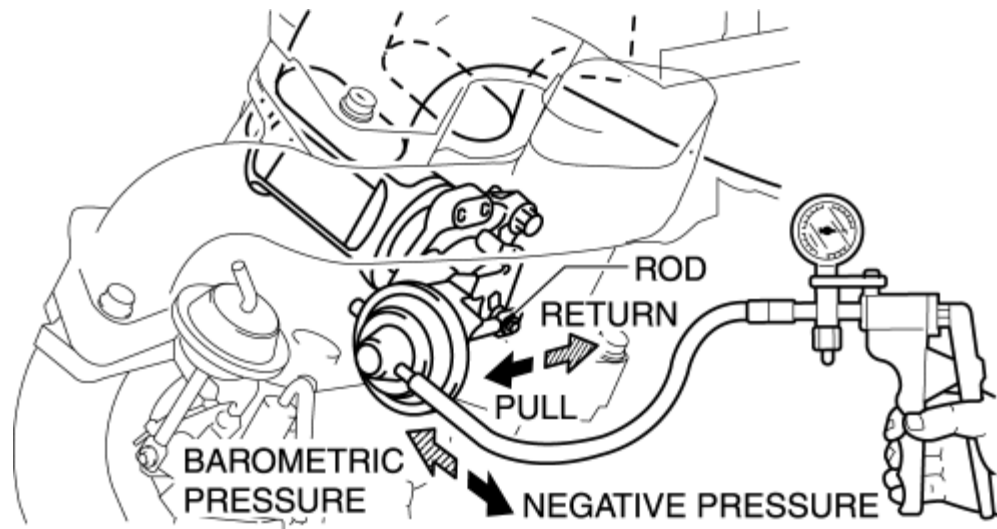
[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

VARIABLE DYNAMIC EFFECT INTAKE-AIR (VDI) ACTUATOR INSPECTION [13B-MSP]

Vehicles With VDI

- 1. Disconnect the VDI actuator vacuum hose.
- 2. Install the vacuum pump to the VDI actuator.



- 3. Verify that the rod moves as indicated in the table below when gradually applying a vacuum to the VDI actuator. **Rod movement**

Vacuum (kPa {mmHg, inHg})	Rod movement
-4.0 {-30, -1.2}	Starts to move
-25.3 {-190, -7.47}	Fully pulled
-1.3 {-9.8, -0.38}	Fully returned

If it fails, replace the VDI valve. (See [INTAKE MANIFOLD DISASSEMBLY/ASSEMBLY \[13B-MSP\].](#))

[< Previous](#) [Next >](#)

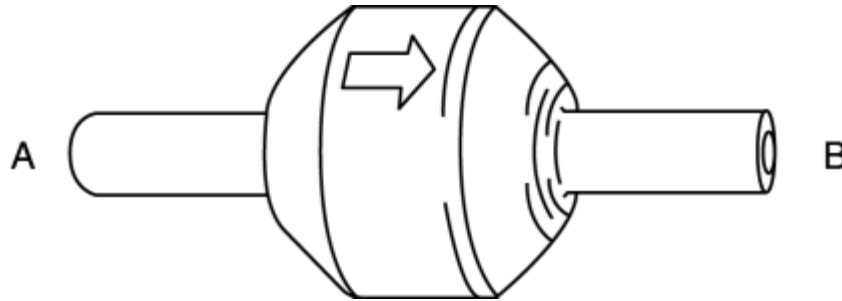
[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

CHECK VALVE (ONE-WAY) INSPECTION [13B-MSP]

1. Remove the check valve.
2. Verify that there is airflow at port B when blowing air by mouth from port A.



3. Verify that there is no airflow at port A when blowing air by mouth from port B.
 - If it cannot be verified, replace the check valve.

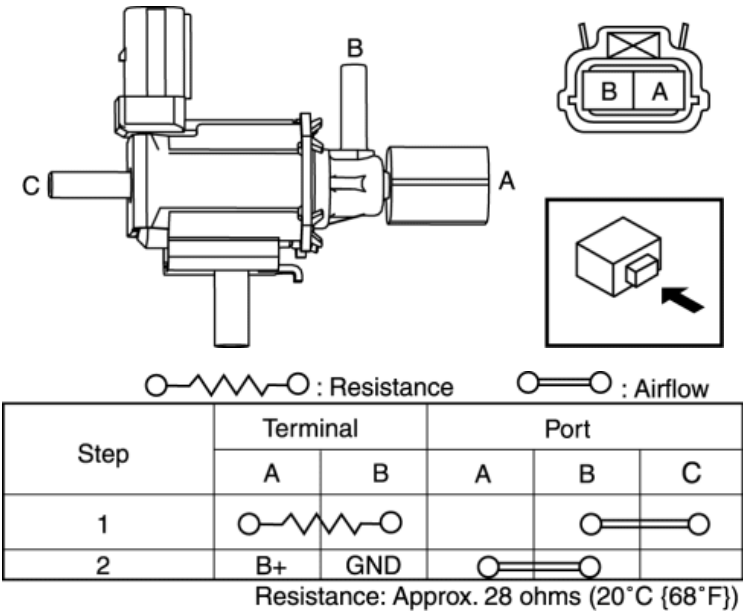
2011 - RX-8 - Engine

VARIABLE FRESH AIR DUCT (VFAD) SOLENOID VALVE INSPECTION [13B-MSP]

Vehicles With VFAD

Airflow insoection

- 1. Disconnect the negative battery cable.
- 2. Remove the VFAD solenoid valve. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))
- 3. Inspect for airflow with the steps in the table below.

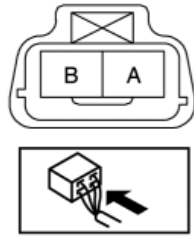


- If there is any malfunction, replace the VFAD solenoid valve. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))
- If as specified, carry out the “Circuit Open/Short Inspection”.

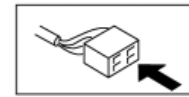
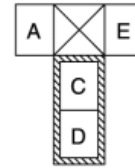
Circuit open/short inspection

- 1. Disconnect the PCM connector. (See [PCM REMOVAL/INSTALLATION \[13B-MSP\].](#))
- 2. Inspect the following wiring harnesses for open or short (continuity check).

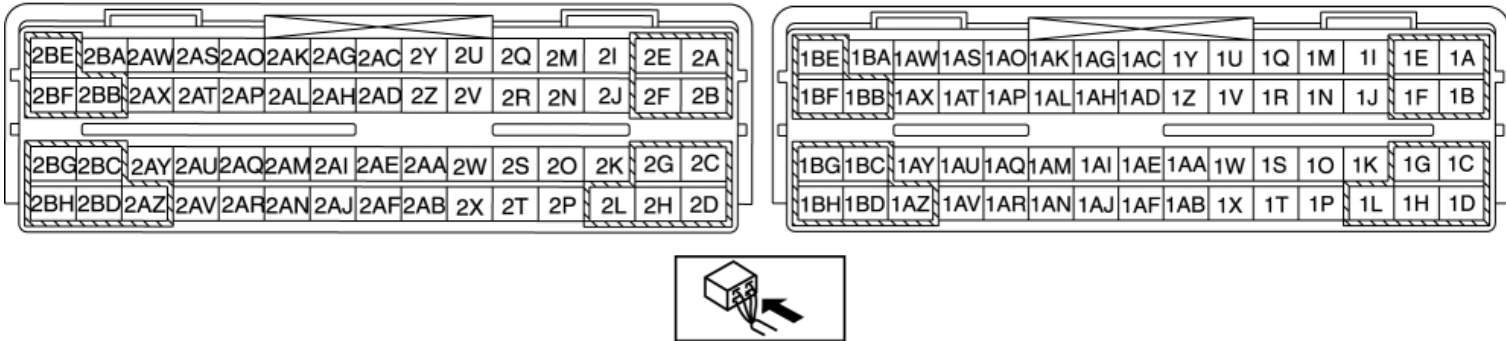
**VFAD SOLENOID VALVE
WIRING HARNESS-SIDE CONNECTOR**



MAIN RELAY



**PCM
WIRING HARNESS-SIDE CONNECTOR**



Open circuit

- If there is no continuity, the circuit is open. Repair or replace the wiring harness.
 - VFAD solenoid valve terminal B and PCM terminal 1AE
 - VFAD solenoid valve terminal A and main relay terminal C

Short circuit

- If there is no continuity, the circuit is shorted. Repair or replace the wiring harness.
 - VFAD solenoid valve terminal B and body GND
 - VFAD solenoid valve terminal A and power supply

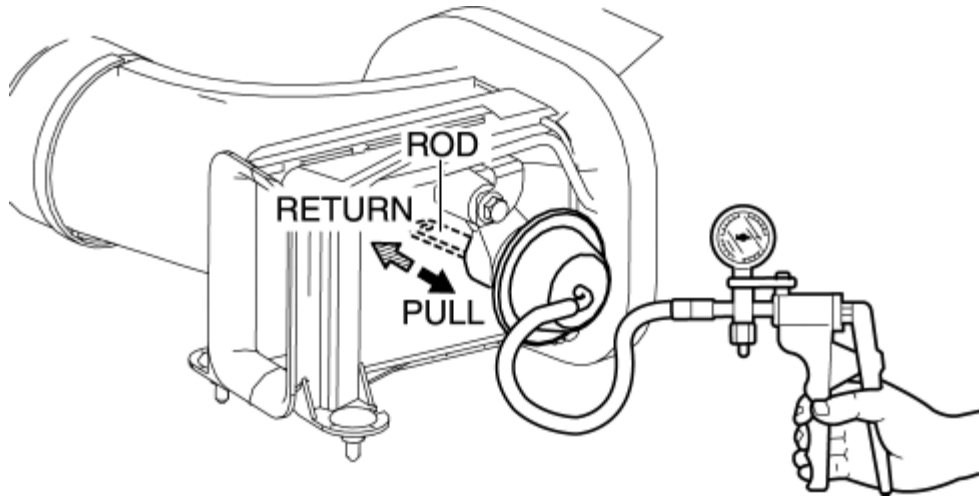
[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

VARIABLE FRESH AIR DUCT (VFAD) ACTUATOR INSPECTION [13B-MSP]

Vehicles With VFAD

1. Remove the front bumper. (See [FRONT BUMPER REMOVAL/INSTALLATION](#).)
2. Disconnect the vacuum hose of the VFAD actuator.
3. Install the vacuum pump to the VFAD actuator.



4. Verify that the rod moves as indicated in the table below when gradually applying a vacuum to the VFAD actuator.

Rod movement

Vacuum (kPa {mmHg, inHg})	Rod movement
-13 {-97.5, -3.8} or more	Starts to move
-40 {-300.0, -11.8} or less	Fully pulled
-8.7 {-65.3, -2.6} or more	Fully returned

- If it cannot be verified, replace the fresh-air duct. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

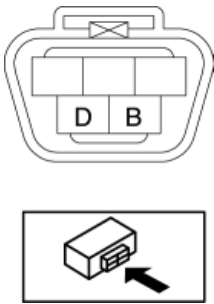
© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

AUXILIARY PORT VALVE (APV) MOTOR INSPECTION [13B-MSP]

Resistance Inspection

1. Remove the APV motor. (See [INTAKE MANIFOLD DISASSEMBLY/ASSEMBLY \[13B-MSP\]](#).)
2. Measure the resistance between the APV motor terminals.

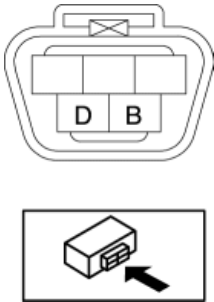


- APV motor resistance
8—50 ohms [20 °C {68 °F}]
- If not as specified, replace the APV motor. (See [INTAKE MANIFOLD DISASSEMBLY/ASSEMBLY \[13B-MSP\]](#).)

Operation Inspection

CAUTION:

- Applying voltage to the APV motor terminals for more than 3 s may damage the APV motor.
1. Disconnect the negative battery cable.
 2. Remove the APV motor. (See [INTAKE MANIFOLD DISASSEMBLY/ASSEMBLY \[13B-MSP\]](#).)
 3. Apply **12 V** with a current of **0.9—1.9 A** to terminal B or D and verify that the gear moves.



Terminal		Gear rotation direction
B	D	
B+	GND	Clockwise

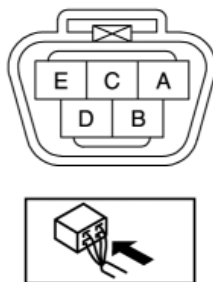
GND	B+	Counterclockwise
-----	----	------------------

- If there is any malfunction, replace the APV motor. (See [INTAKE MANIFOLD DISASSEMBLY/ASSEMBLY \[13B-MSP\]](#).)
- If as specified, carry out the "Circuit Open/Short Inspection".

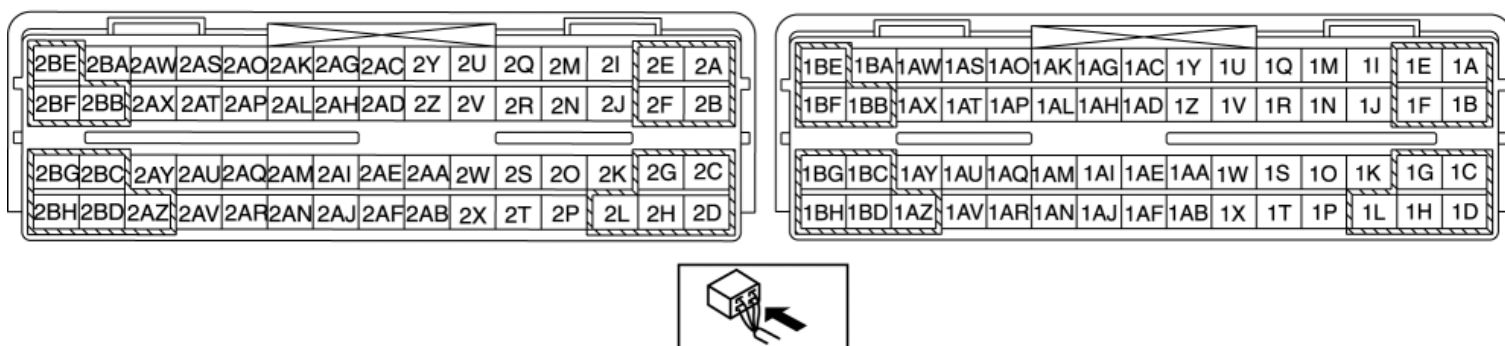
Circuit Open/Short Inspection

1. Disconnect the PCM connector. (See [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Inspect the following wiring harnesses for open or short (continuity check).

APV MOTOR
WIRING HARNESS-SIDE CONNECTOR



PCM
WIRING HARNESS-SIDE CONNECTOR



Open circuit

- If there is no continuity, the circuit is open. Repair or replace the wiring harness.
 - APV motor terminal B and PCM terminal 2F
 - APV motor terminal D and PCM terminal 2D

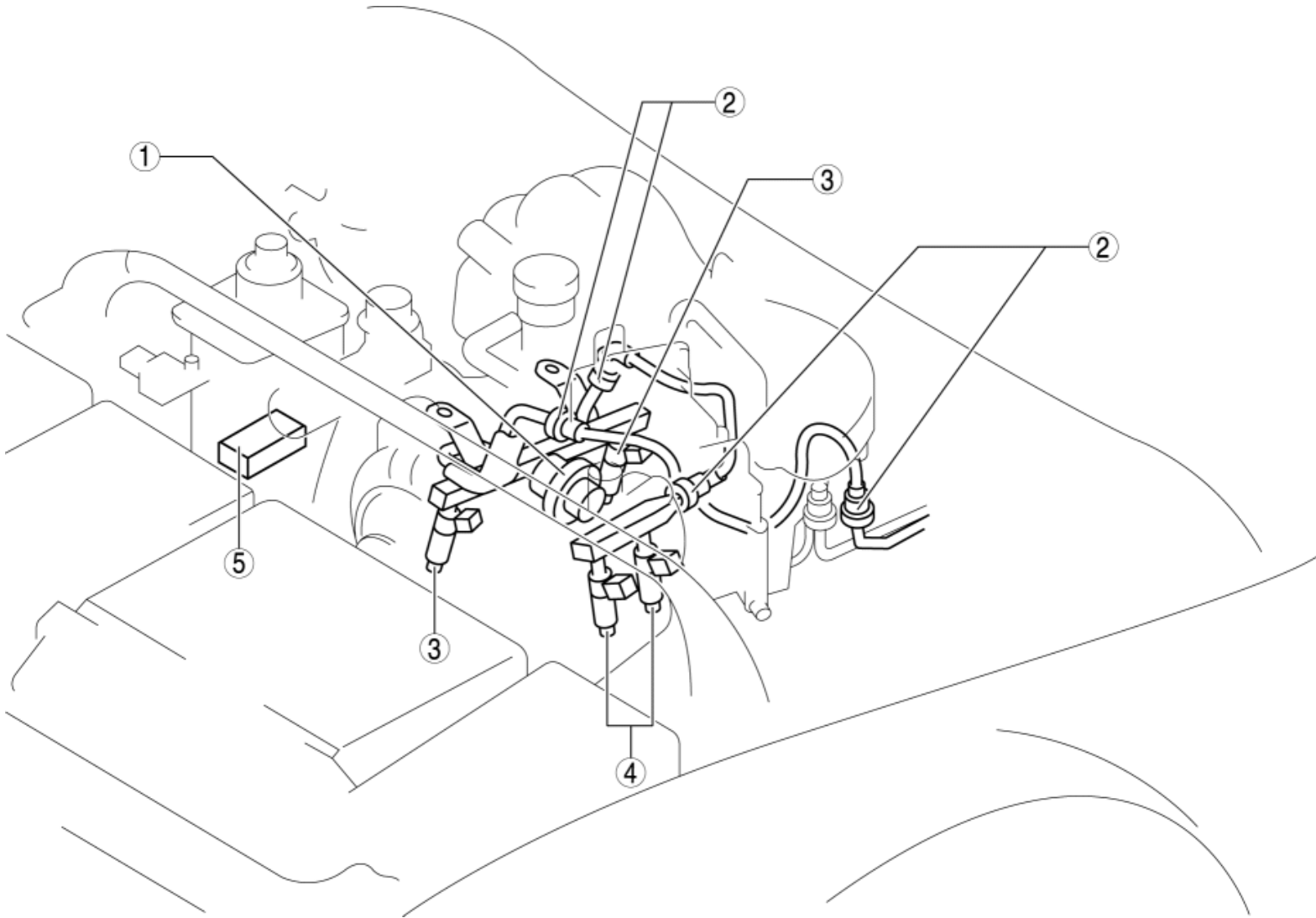
Short circuit

- If there is no continuity, the circuit is shorted. Repair or replace the wiring harness.
 - APV motor terminal B and power supply
 - APV motor terminal B and body GND
 - APV motor terminal D and power supply
 - APV motor terminal D and body GND

2011 - RX-8 - Engine

FUEL SYSTEM LOCATION INDEX [13B-MSP]

Engine Compartment Side



1 Pulsation damper

(See [PULSATION DAMPER REMOVAL/INSTALLATION \[13B-MSP\]](#).)

(See [PULSATION DAMPER INSPECTION \[13B-MSP\]](#).)

2 Quick release connector

(See [QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)

3Fuel injector (FS, RS)

(See [FUEL INJECTOR REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [FUEL INJECTOR INSPECTION \[13B-MSP\].](#))

4Fuel injector (FP, RP)

(See [FUEL INJECTOR REMOVAL/INSTALLATION \[13B-MSP\].](#))

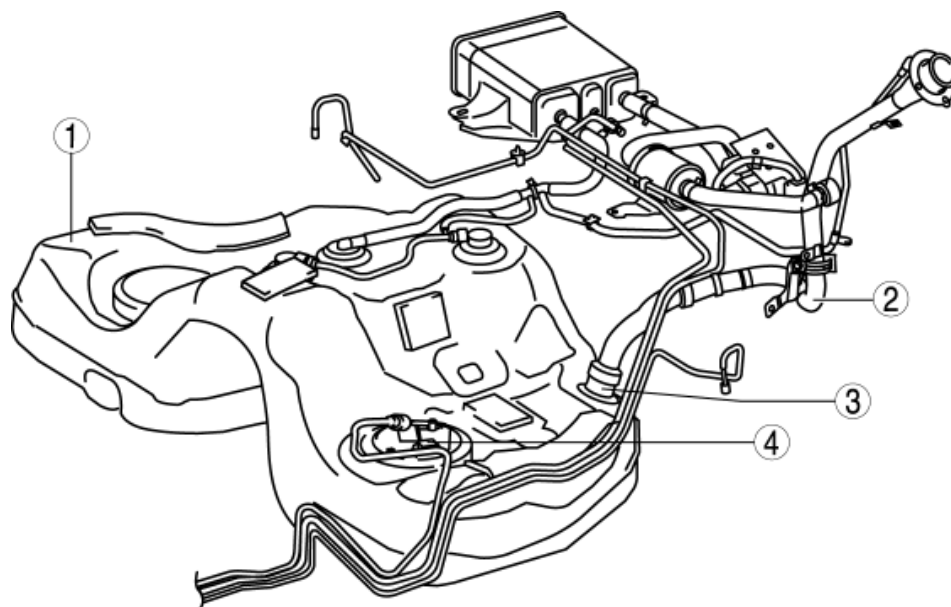
(See [FUEL INJECTOR INSPECTION \[13B-MSP\].](#))

5Fuel pump resistor

(See [FUEL PUMP RESISTOR REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [FUEL PUMP RESISTOR INSPECTION \[13B-MSP\].](#))

Fuel Tank Side



1Fuel tank

(See [FUEL TANK REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [FUEL TANK INSPECTION \[13B-MSP\].](#))

2Fuel-filler pipe

(See [FUEL TANK REMOVAL/INSTALLATION \[13B-MSP\].](#))

3Nonreturn valve

(See [NONRETURN VALVE INSPECTION \[13B-MSP\].](#))

4 Fuel pump unit

(See [FUEL PUMP UNIT REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [FUEL PUMP UNIT DISASSEMBLY/ASSEMBLY \[13B-MSP\].](#))

(See [FUEL PUMP UNIT INSPECTION \[13B-MSP\].](#))

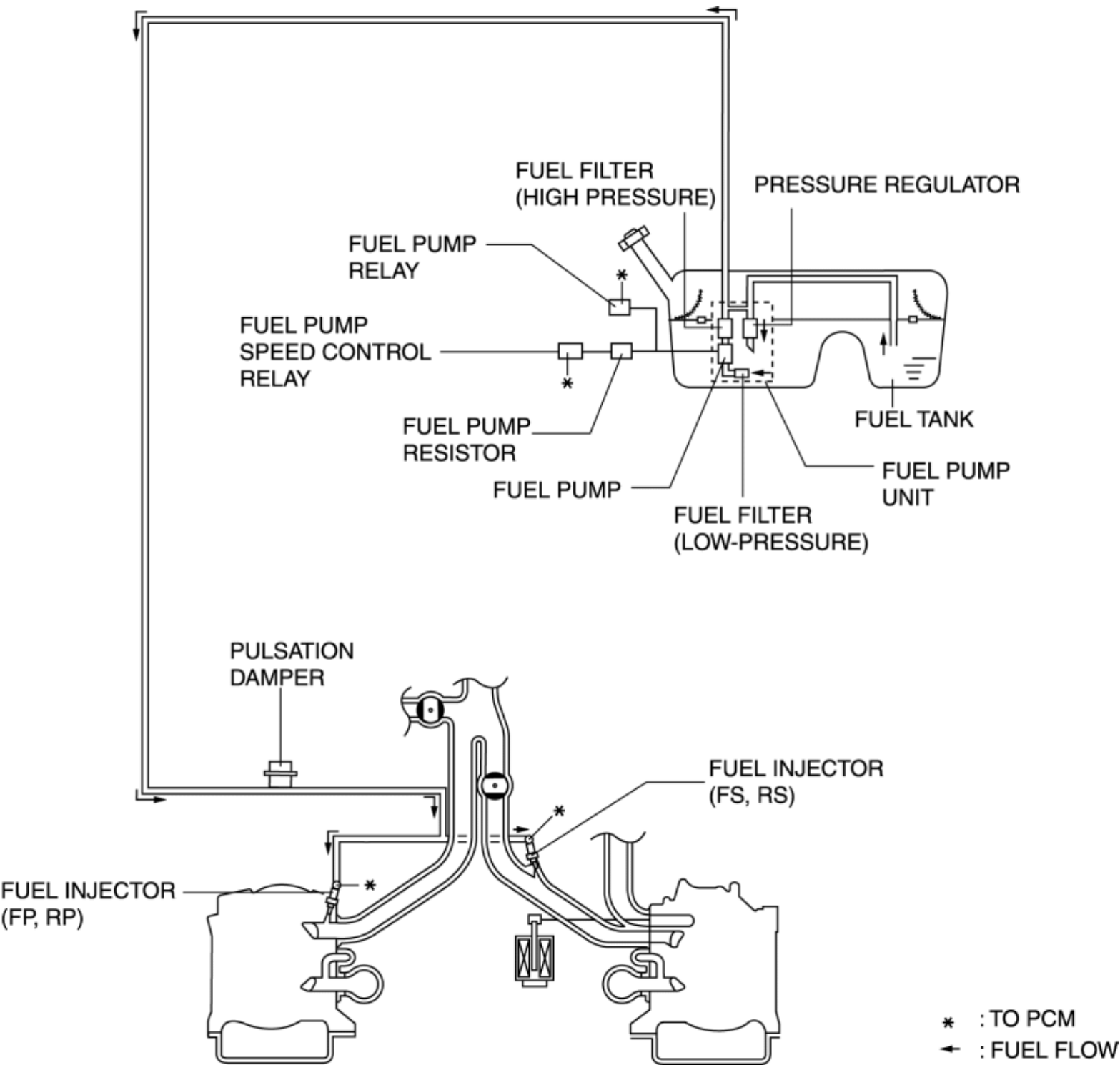
[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

FUEL SYSTEM DIAGRAM [13B-MSP]



2011 - RX-8 - Engine

BEFORE SERVICE PRECAUTION [13B-MSP]

WARNING:

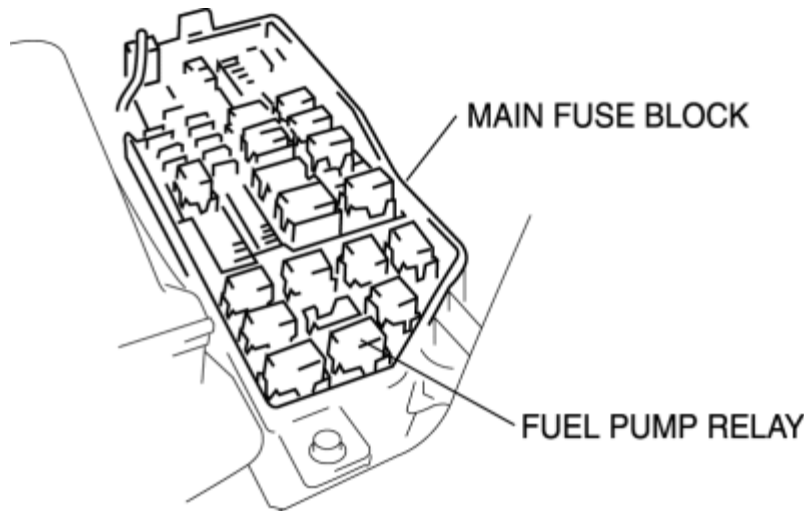
- Fuel is extremely flammable. Always keep sparks and flame away from fuel. Ignition may cause death or serious injury, or damage to equipment.
- Fuel line spills and leakage from the pressurized fuel system are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure".

CAUTION:

- If there is foreign material on the connecting area of the quick release connector, it might damage the connector or fuel pipe. To prevent this, when the quick release connector has been disconnected, clean the connecting area before reconnecting it.

Fuel Line Safety Procedure

1. Remove the fuel-filler cap to release the pressure inside the fuel tank.
2. Remove the fuel pump relay.



3. Start the engine.
4. After the engine stalls, crank the engine **several times**.
5. Turn the ignition switch to the LOCK position.

6. Install the fuel pump relay.

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

AFTER SERVICE PRECAUTION [13B-MSP]

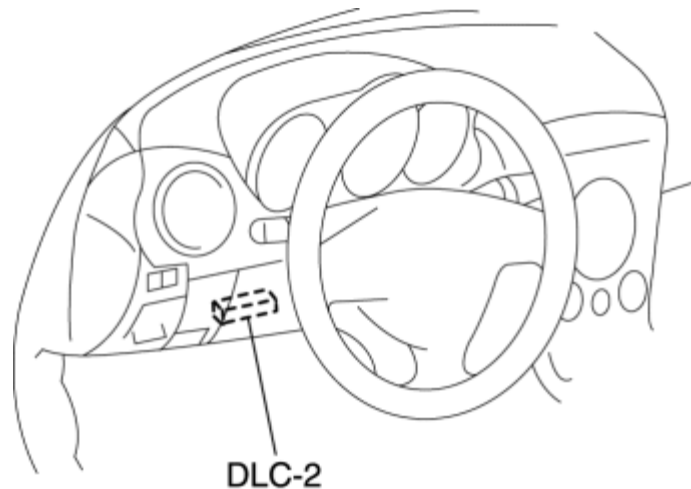
Fuel Leakage Inspection

WARNING:

- Fuel vapor is hazardous. It can very easily ignite, causing serious injury and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Inspection".

Using M-MDS

1. Connect the M-MDS to the DLC-2



2. Using the simulation function "FP", start the fuel pump. (See [ON-BOARD DIAGNOSTIC TEST \[13B-MSP\]](#).)
3. Verify that there is no fuel leakage from the pressurized parts.
 - If there is leakage, replace the fuel hoses.
 - If there is damage to the seal on the fuel pipe side, replace the fuel pipe.

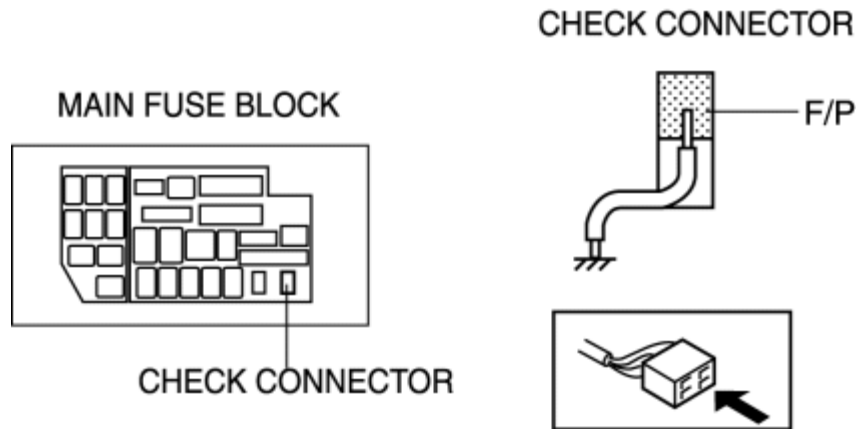
Fuel Leakage

- There shall be no leakage after 5 min.
4. After reinstallation, repeat Step 1—3 of the fuel leakage inspection.

Without using M-MDS

CAUTION:

- Shorting the wrong terminal of the check connector may cause malfunctions. Make sure to short only the specified terminal.
1. Ground the check connector terminal F/P to the body using a jumper wire.



2. Turn the ignition switch to the ON position and operate the fuel pump.
3. Verify that there is no fuel leakage from the pressurized parts.
 - If there is leakage, replace the fuel hoses.
 - If there is damage to the seal on the fuel pipe side, replace the fuel pipe.

Fuel Leakage

- There shall be no leakage after 5 min.
4. After reinstallation, repeat Step 1—3 of the fuel leakage inspection.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

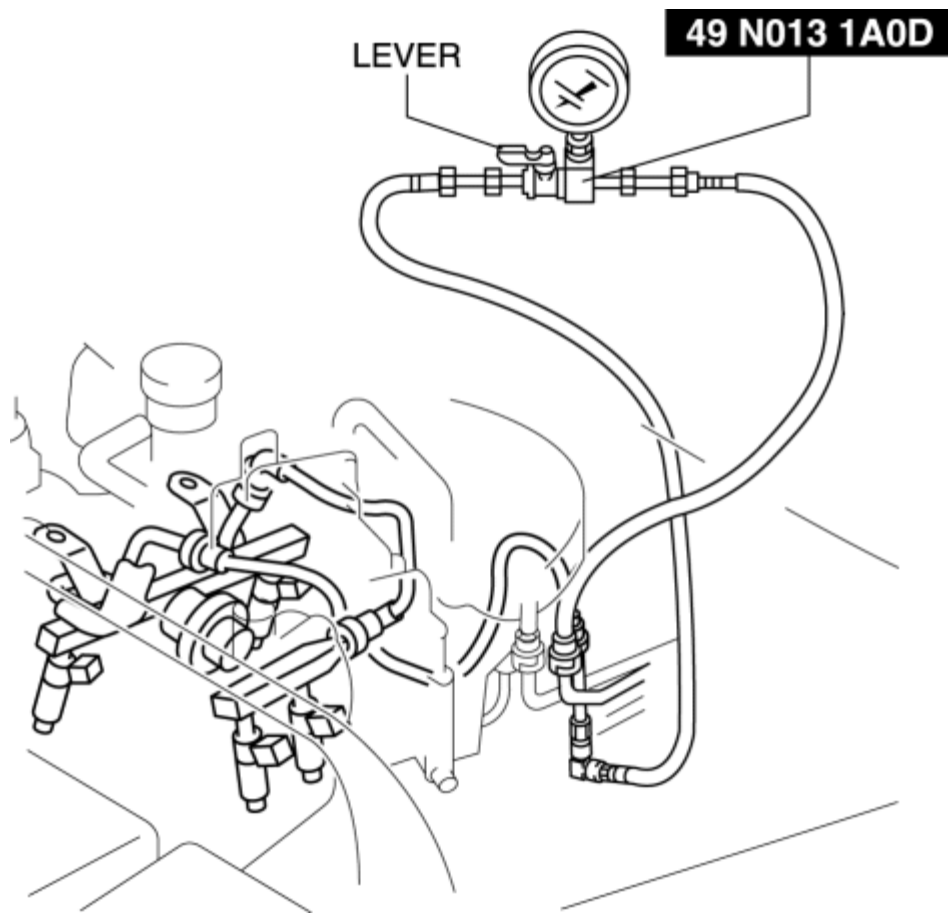
FUEL LINE PRESSURE INSPECTION [13B-MSP]

WARNING:

- Fuel line spills and leakage from the pressurized fuel system are dangerous. Fuel can ignite and cause serious injury or death and damage. To prevent this, complete the following inspection with the engine stopped.
- Complete the "BEFORE SERVICE PRECAUTION". (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).)
 - Disconnect the negative battery cable.
 - Disconnect the engine compartment side quick release connector. (See [QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)



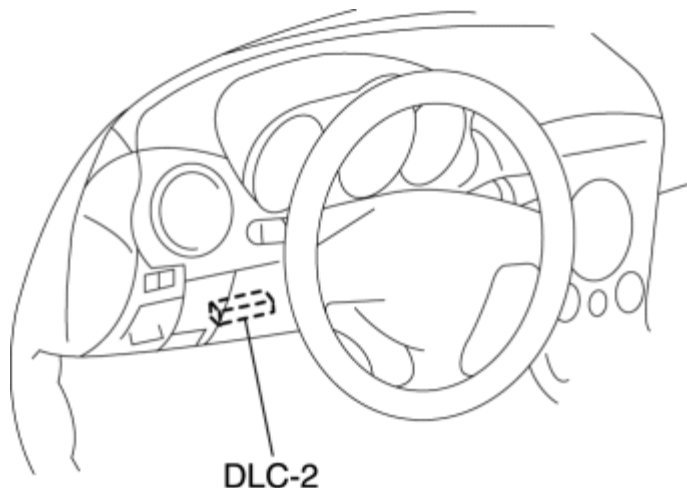
- Turn the lever of the **SST** parallel to the hose as shown in the figure.



5. Insert the **SST** quick release connector into the fuel pipe until a click heard.
6. Verify that the quick release connector is firmly connected by pulling it by hand.
7. Start the fuel pump using the following procedure.

Using M-MDS

- Connect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- Connect the M-MDS to the DLC-2.



- Using the simulation function "FP", start the fuel pump. (See [ON-BOARD](#)

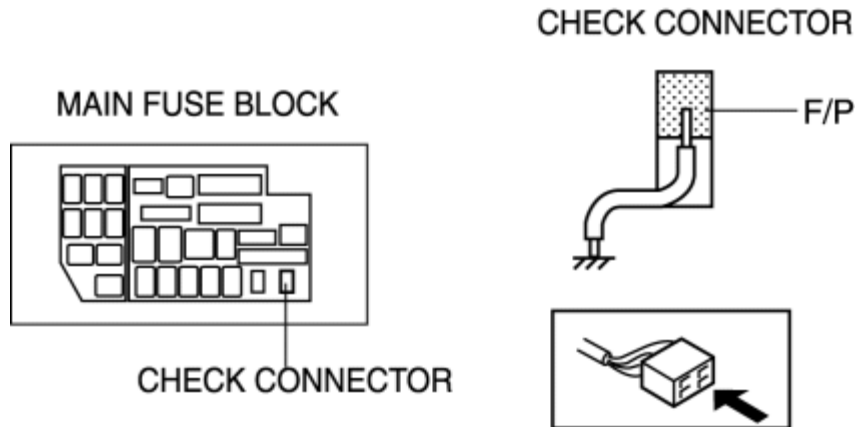
[DIAGNOSTIC TEST \[13B-MSP\].\)](#)

Without using M-MDS

- Connect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].\)](#)

CAUTION:

- Shorting the wrong terminal of the check connector may cause malfunctions. Make sure to short only the specified terminal.
- Ground the check connector terminal F/P using the jumper wire.



- Turn the ignition switch to the ON position and operate the fuel pump.

8. Measure the fuel line pressure.

- If not within the specification, inspect or replace the following parts:

If it is less than the specification

- Fuel pump unit
- Fuel line leakage

If it is more than the specification

- Fuel pump unit
- Fuel line clogging

Fuel line pressure

- 375—450 kPa {3.83—4.58 kgf/cm², 54.4—65.2 psi}

9. Stop the fuel pump using the following procedure.

Using M-MDS

- Using the simulation function "FP", stop the fuel pump. (See [ON-BOARD DIAGNOSTIC TEST \[13B-MSP\].\)](#)

Without using M-MDS

- Disconnect the jumper wire and stop the fuel pump.

10. Wait **5 min** and measure the fuel hold pressure.

- If it is within the specification, inspect the following.
 - Fuel line for clogging or leakage

Fuel hold pressure

- 200 kPa {2.0 kgf/cm², 29 psi}

11. Complete the "BEFORE SERVICE PRECAUTION". (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).)

12. Disconnect the **SST**.

13. Connect the quick release connector. (See [QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)

14. Complete the "AFTER SERVICE PRECAUTION". (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

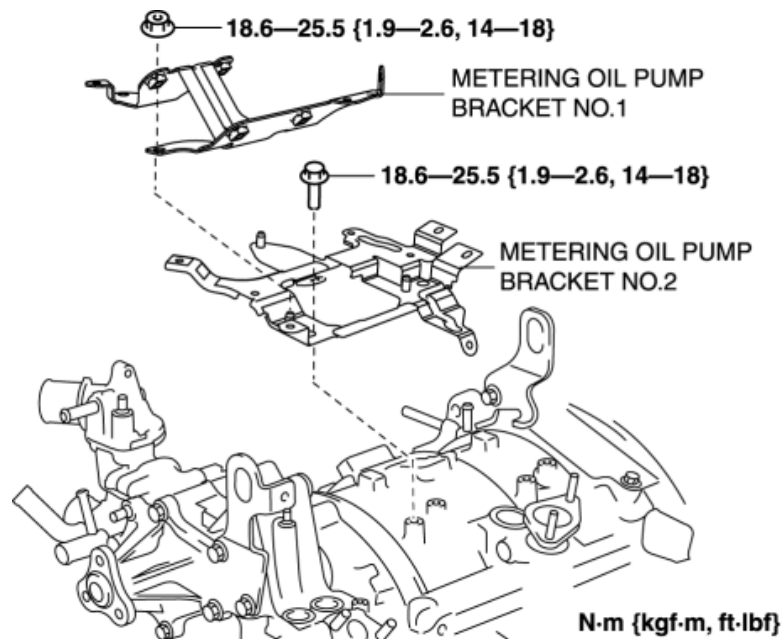
[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

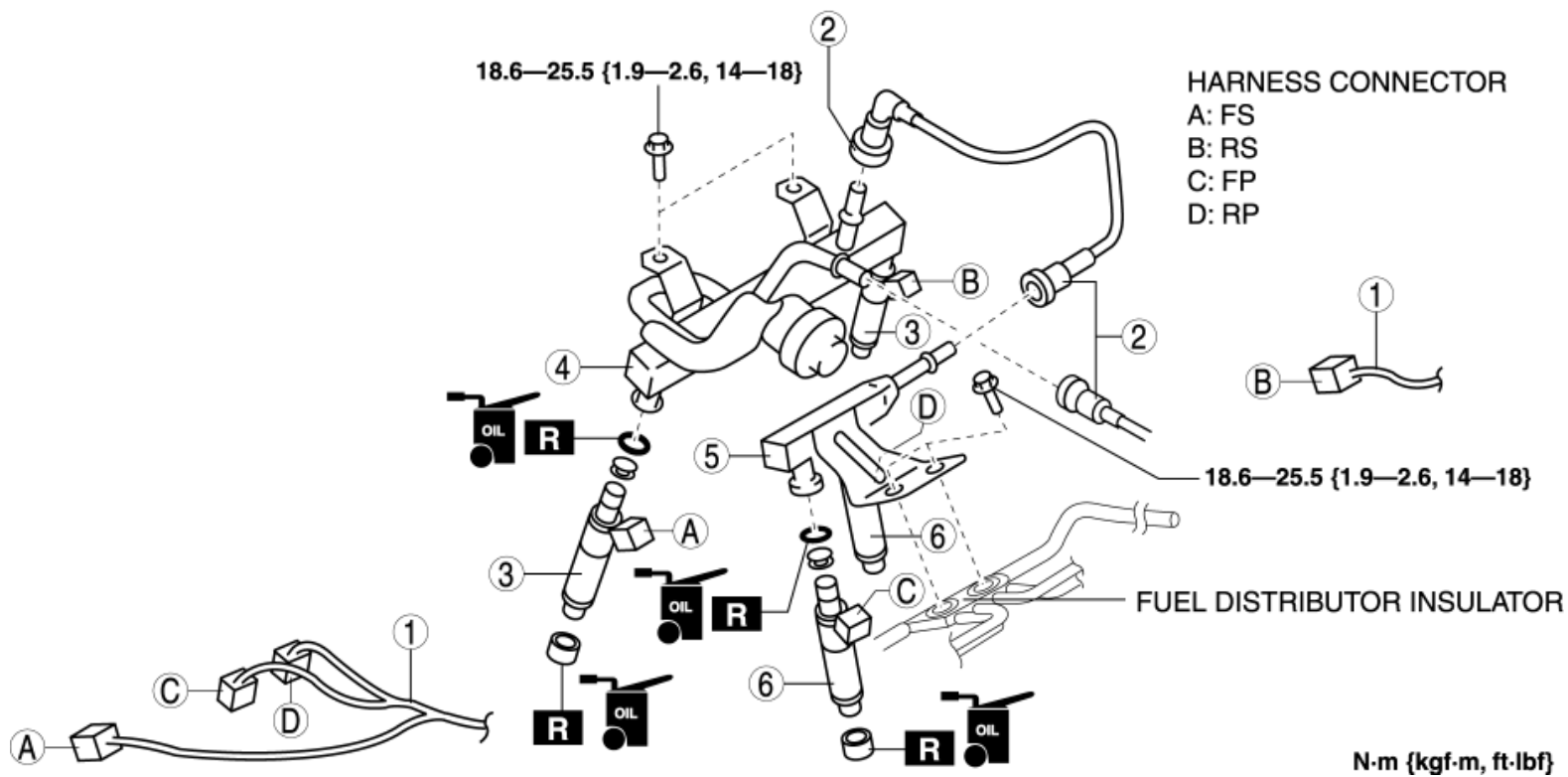
2011 - RX-8 - Engine

FUEL INJECTOR REMOVAL/INSTALLATION [13B-MSP]

1. Complete the "BEFORE SERVICE PRECAUTION". (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).)
2. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
3. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
4. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
5. Remove the extension manifold (upper and lower). (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
6. Remove the oil filler pipe. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
7. Remove the metering oil pump (No.1, No.2). (See [METERING OIL PUMP REMOVAL/INSTALLATION \[13B-MSP\]](#).)
8. Remove the metering oil pump bracket (No.1, No.2). (See [Metering Oil Pump Bracket Installation Note](#).)



9. Remove in the order indicated in the table.
10. Install in the reverse order of removal.
11. Perform the VDI operation inspection. (13B-MSP (high power)) (See [VARIABLE DYNAMIC EFFECT INTAKE-AIR \(VDI\) SOLENOID VALVE INSPECTION \[13B-MSP\]](#).)
12. Complete the "AFTER SERVICE PRECAUTION". (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)



1	Harness connector (See Harness Connector Installation Note.)
2	Fuel hose (See QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [13B-MSP].) (See Fuel Hose Installation Note.)
3	Fuel injector (FS, RS) (See Fuel Injector (FS, RS) Removal Note.)
4	Fuel distributor (intake manifold side)
5	Fuel distributor (housing side) (See Fuel Distributor (Housing Side) Installation Note.)
6	Fuel injector (FP, RP)

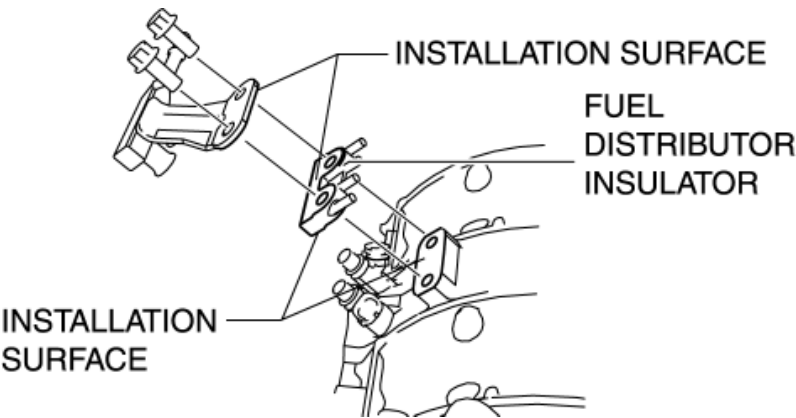
Fuel Injector (FS, RS) Removal Note

1. Lift up the fuel distributor (intake manifold side) slightly and remove the fuel injector (intake manifold side).

Fuel Distributor (Housing Side) Installation Note

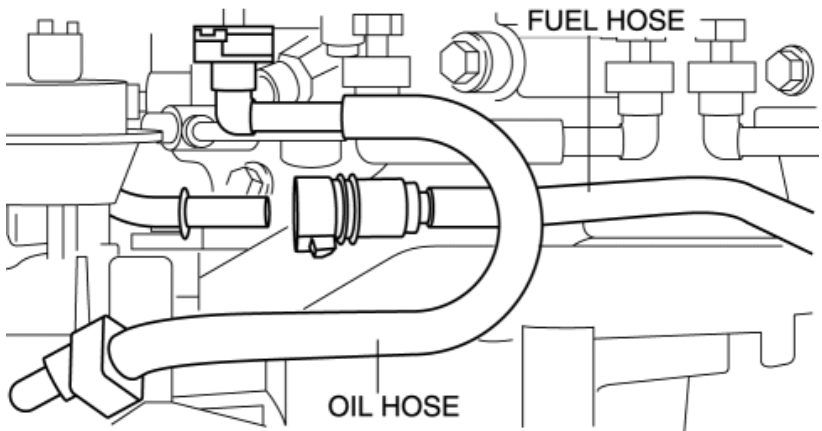
CAUTION:

- If the fuel distributor and fuel distributor insulator are installed with foreign material adhering to the installation surfaces, cracking or splitting could occur, causing a malfunction such as whistling noise or abnormal acceleration. Always verify that there is no foreign material adhering to the installation surfaces and clean these areas if necessary before installing the fuel distributor and fuel distributor insulator.



Fuel Hose Installation Note

1. Pass the fuel hose under the oil hose and install it as shown in the figure.



Harness Connector Installation Note

CAUTION:

- Improper connection of the wiring harness connectors for primary injectors may occur because the connectors on the front and rear rotor sides have the same shape. When connecting the wiring harnesses and injectors, verify the colored identification tape affixed on the wiring harness side and the injector positions, and then connect the wiring harness connectors to the proper injectors. If the colored tape has peeled off or was never affixed, verify injector connection according to the colors of the wires.

1. Verify the colors of the identification tape on the wiring harness connectors and the injector connections according to the following table.
 - If there is no colored tape, identify injector connection according to the colors of the wires and connect the wiring harness connectors.

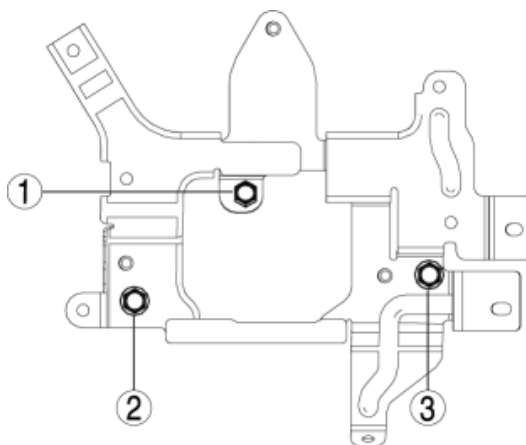
Identification tape color–: Not applicable

Harness Connector	Identification tape color
-------------------	---------------------------

FP	White
RP	Green
FS	—
RS	—

Metering Oil Pump Bracket Installation Note

1. Tighten the metering oil pump bracket No.2 installation bolts in the order shown.



Tightening torque

- 18.6—25.5 N·m {1.9—2.6 kgf·m, 14—18 ft·lbf}

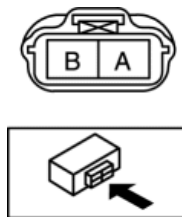
[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

FUEL INJECTOR INSPECTION [13B-MSP]

Resistance Inspection

1. Disconnect the negative battery cable.
2. Remove the extension manifold. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
3. Disconnect the fuel injector connector.
4. Measure the resistance between terminals A and B of the fuel injector.



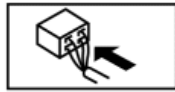
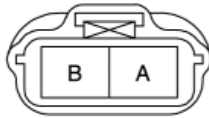
Fuel injector resistance

- Approx. 13.8 ohms [20 °C {68 °F}]
- If not within the specification, replace the fuel injector. (See [FUEL INJECTOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- If as specified, carry out the "Circuit Open/Short Inspection".

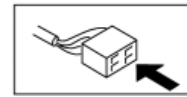
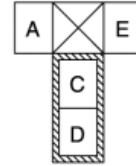
Circuit Open/Short Inspection

1. Disconnect the PCM connector. (See [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Inspect the following wiring harnesses for open or short (continuity check).

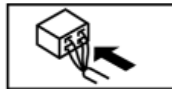
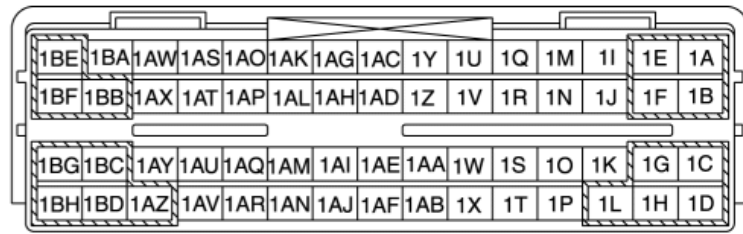
FUEL INJECTOR WIRING HARNESS-SIDE CONNECTOR



MAIN RELAY



PCM WIRING HARNESS-SIDE CONNECTOR



Open circuit

- If there is no continuity, the circuit is open. Repair or replace the wiring harness.
 - Fuel injector (FP) terminal B and PCM terminal 2BB
 - Fuel injector (RP) terminal B and PCM terminal 2BD
 - Fuel injector (FS) terminal B and PCM terminal 2BC
 - Fuel injector (RS) terminal B and PCM terminal 2AZ
 - Fuel injector (FP) terminal A and main relay terminal C
 - Fuel injector (RP) terminal A and main relay terminal C
 - Fuel injector (FS) terminal A and main relay terminal C
 - Fuel injector (RS) terminal A and main relay terminal C

Short circuit

- If there is no continuity, the circuit is shorted. Repair or replace the wiring harness.
 - Fuel injector (FP) terminal B and body GND
 - Fuel injector (RP) terminal B and body GND
 - Fuel injector (FS) terminal B and body GND
 - Fuel injector (RS) terminal B and body GND

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

FUEL PUMP UNIT REMOVAL/INSTALLATION [13B-MSP]

WARNING:

- Fuel is extremely flammable. Always keep sparks and flame away from fuel. Ignition may cause death or serious injury, or damage to equipment.
- Fuel line spills and leakage from the pressurized fuel system are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure".
- A person charged with static electricity could cause a fire or explosion, resulting in death or serious injury. Before draining fuel, make sure to discharge static electricity by touching a vehicle.

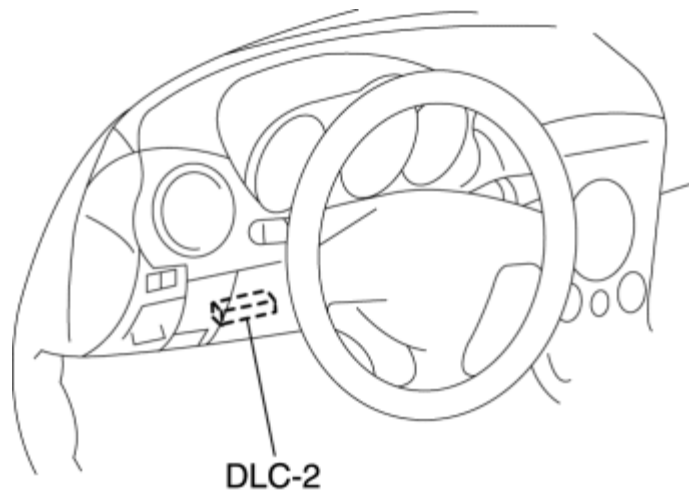
CAUTION:

- When the fuel gauge indicates 3/4 or more, the fuel level is higher than the installation surface of the fuel pump and the fuel suction pipe bracket. Due to this condition, fuel may spill or leak out when performing this procedure. Before performing this procedure, always drain out fuel so that the fuel tank is half full or less (according to the fuel gauge needle).

1. Complete the "BEFORE SERVICE PRECAUTION". (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).)
2. Disconnect the negative battery cable.
3. Remove the rear seat. (See [REAR SEAT REMOVAL/INSTALLATION](#).)
4. Remove the service hole cover.
5. Disconnect the quick release connector from the fuel pump unit. (See [QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
6. Connect the hose to the fuel pump unit and drain the fuel into a container used for collecting gasoline.
7. Drain fuel from the fuel tank using the following procedure.

Using M-MDS

- Connect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- Connect the M-MDS to the DLC-2.



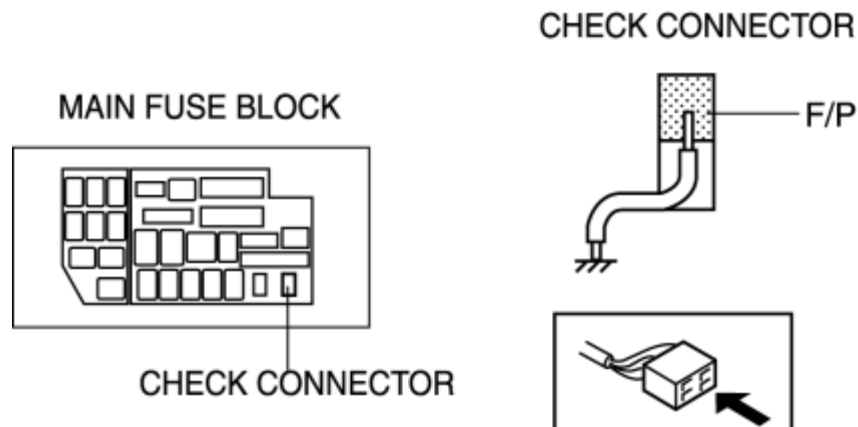
- Using the simulation function “FP”, start the fuel pump. (See [ON-BOARD DIAGNOSTIC TEST \[13B-MSP\]](#).)

Without using M-MDS

- Connect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)

CAUTION:

- Shorting the wrong terminal of the check connector may cause malfunctions. Make sure to short only the specified terminal.
- Ground check connector terminal F/P to the body using a jumper wire.



CAUTION:

- The fuel pump may malfunction if it is operated without any fuel in the fuel tank (fuel pump idling). Constantly monitor the amount of fuel being discharged and immediately stop operation of the pump when essentially no fuel is being discharged.
- Turn the ignition switch to the ON position and operate the fuel pump.

NOTE:

- When operating the fuel pump with a full fuel tank, fuel

discharge will become erratic after **approx. 10 min** but will continue for **approx. 10 min** more and then essentially no fuel will be discharged. At this time the fuel gauge needle will be at the halfway position.

8. Stop the fuel pump using the following procedure.

Using M-MDS

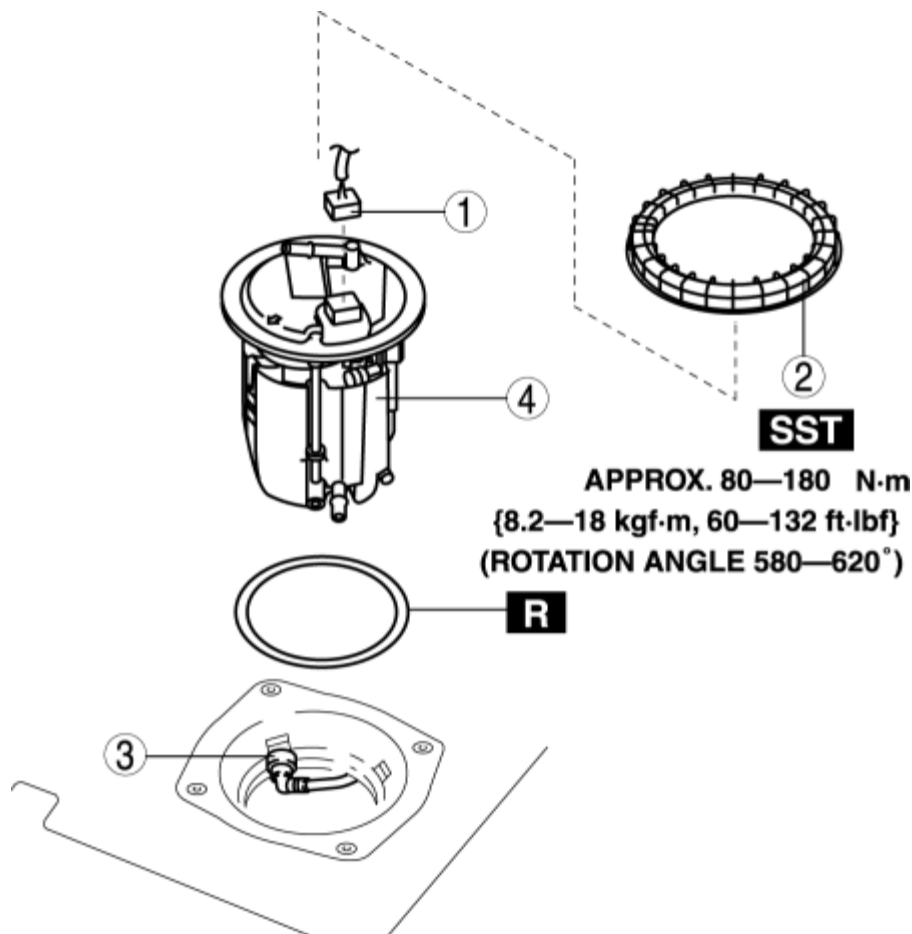
- Using the simulation function "FP", stop the fuel pump. (See [ON-BOARD DIAGNOSTIC TEST \[13B-MSP\]](#).)

Without using M-MDS

- Turn the ignition switch to the LOCK position and stop the fuel pump.
- Disconnect the jumper wire.

9. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)

10. Remove in the order indicated in the table.



1	Connector
2	Fuel pump cap

(See [Fuel Pump Cap Removal Note.](#))

(See [Fuel Pump Cap Installation Note.](#))

3 Fuel suction pipe

(See [QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION \[13B-MSP\].](#))

4 Fuel pump unit

(See [Fuel Pump Unit Removal Note.](#))

11. Install in the reverse order of removal.

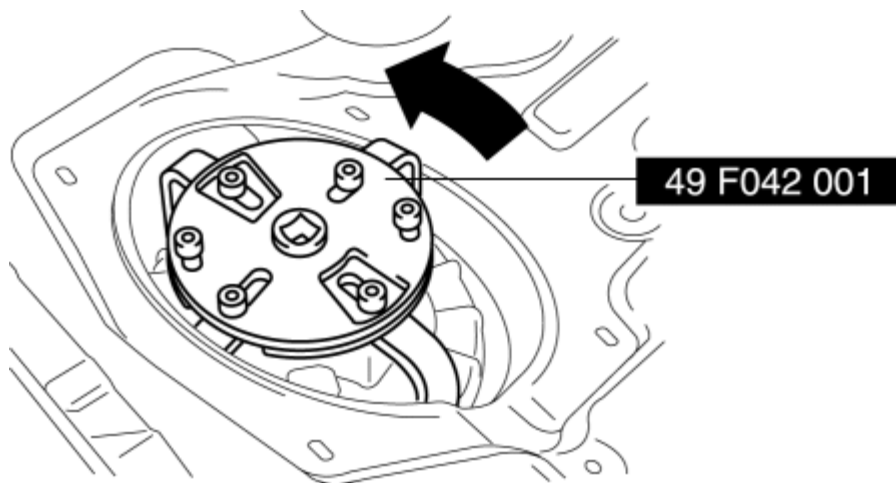
12. Complete the "AFTER SERVICE PRECAUTION". (See [AFTER SERVICE PRECAUTION \[13B-MSP\].](#))

Fuel Pump Cap Removal Note

CAUTION:

- The cap could be damaged if the SST is used with any play between the cap and the SST. Securely attach the SST so that there is no gap between the SST tabs and the side of the cap.

1. Remove the fuel pump cap using the **SST**.



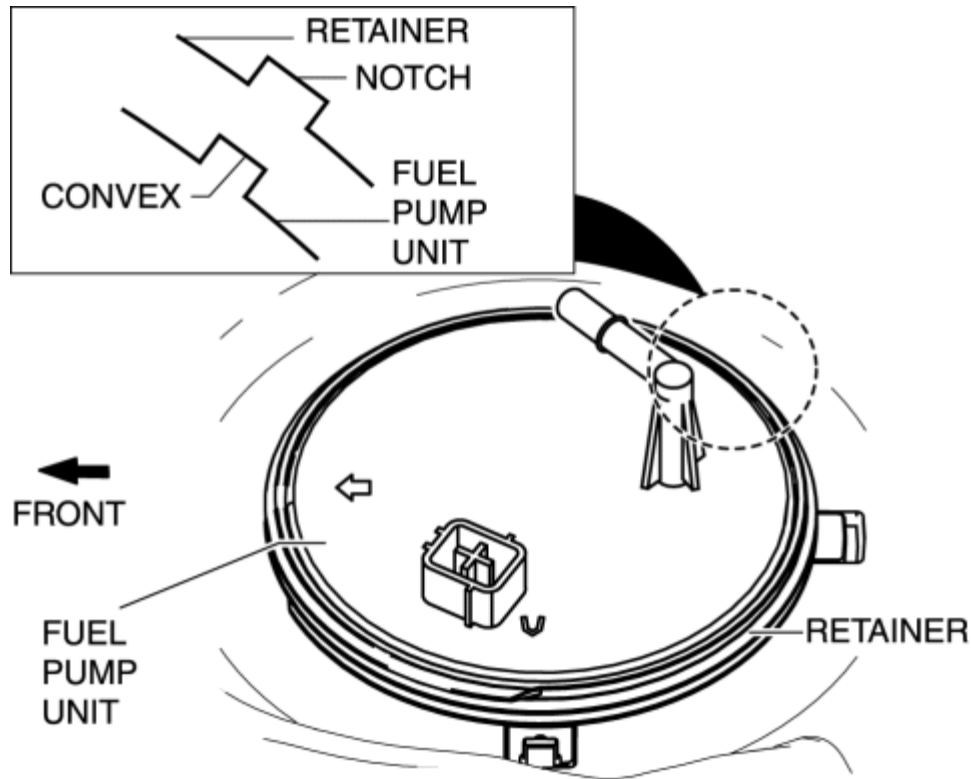
Fuel Pump Unit Removal Note

CAUTION:

- The fuel suction pipe might be damaged, if the fuel pump unit is lifted too much. Make sure to lift the pump only a small amount.

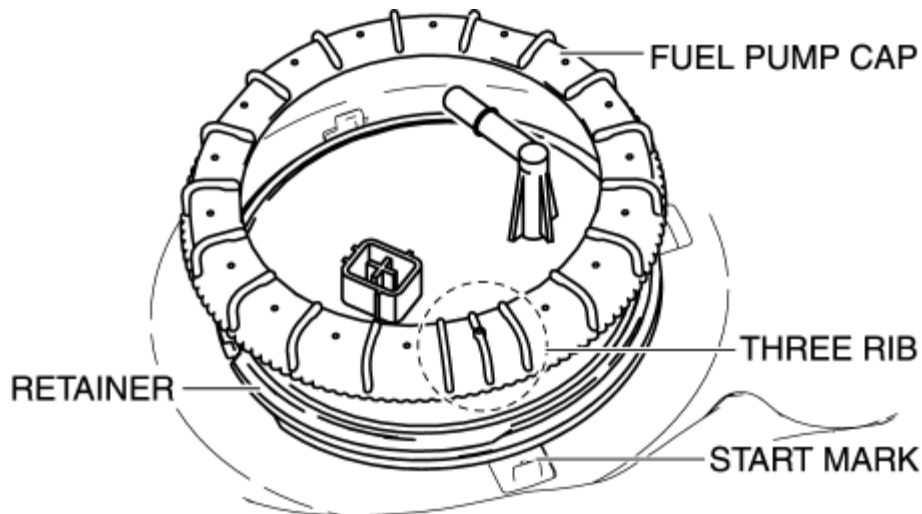
Fuel Pump Cap Installation Note

1. Align the convex of the fuel pump unit with the notch of the retainer as shown in the figure.



NOTE:

- Remove the residue of gasoline on gasket or cap completely. Any residue of gasoline can make the fuel pump unit turn round and prevent it from fixing.
2. Adjust the start mark of the fuel tank with the center one out of three rib lines of the cap, then turn it around **360°** degrees by hand as shown in the figure.



- If the retainer and cap cannot be tightened by hand, remove the cap, verify that there is no damage or misalignment on the retainer and cap, and then tighten again.

CAUTION:

- The cap could be damaged if the SST is used with any play between the cap and the SST. Securely attach the SST so that there is no gap between the SST tabs and the side of the cap.

3. While keeping the alignment mark and the retainer notch aligned, tighten the cap to the rotation angle and specified torque using the **SST**.

- If the specified torque cannot be obtained even when the cap is rotated to the specified rotation angle, replace with a new cap and retainer and repeat Step 3.

Rotation angle (Total angle for Step 2 and Step 3)

- 580—620°

Cap tightening torque (approx.)

- 80—180 N·m {8.2—18 kgf·m, 60—132 ft·lbf}

[< Previous](#) [Next >](#)

[Back to Top](#)

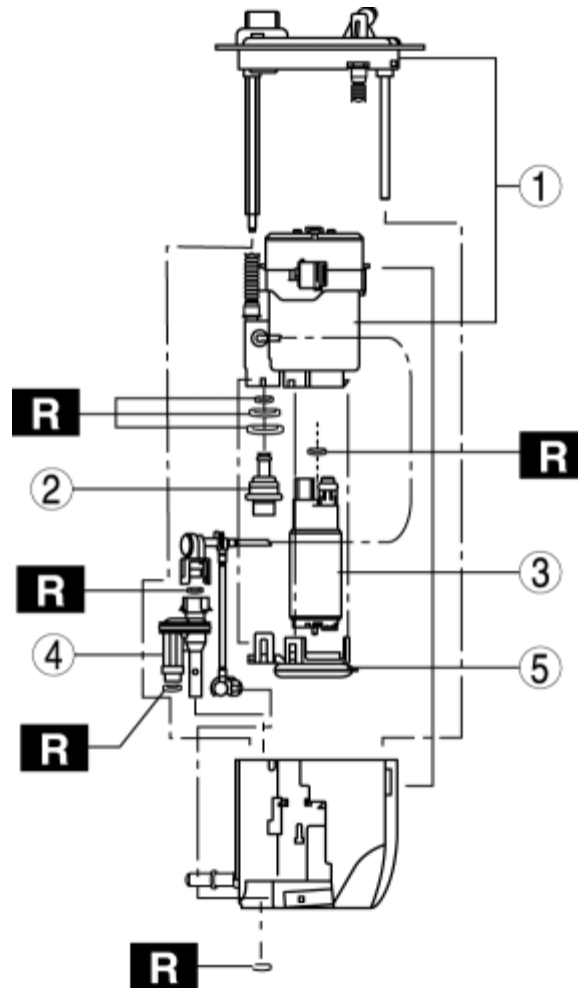
© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

FUEL PUMP UNIT DISASSEMBLY/ASSEMBLY [13B-MSP]

WARNING:

- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, do not damage the sealing surface of the fuel pump unit when removing or installing.
- Disassemble in the order indicated in the table.
 - Assemble in the reverse order of disassembly.



1	Fuel filter body
---	------------------

2	Pressure regulator
3	Fuel pump
4	Transfer
5	Fuel filter (low-pressure side)

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

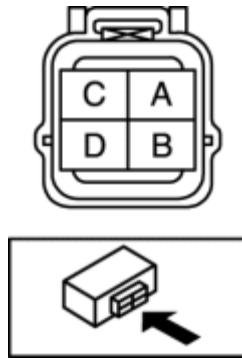
[Back to Top](#)

2011 - RX-8 - Engine

FUEL PUMP UNIT INSPECTION [13B-MSP]

Continuity Inspection

1. Disconnect the negative battery cable.
2. Disconnect the fuel pump unit connector.
3. Inspect for continuity between fuel pump unit connector terminals B and D.

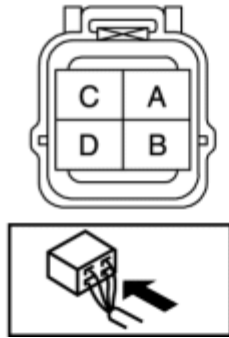


- If there is no continuity, replace the fuel pump unit. (See [FUEL PUMP UNIT REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- If as specified, carry out the "Circuit Open/Short Inspection".

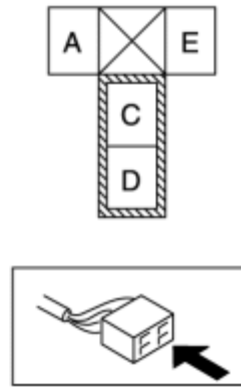
Circuit Open/Short Inspection

1. Inspect the following wiring harnesses for open or short (continuity check).

FUEL PUMP UNIT WIRING HARNESS-SIDE CONNECTOR



MAIN RELAY



Open circuit

- If there is no continuity, the circuit is open. Repair or replace the wiring harness.
 - Fuel pump unit terminal D and body GND
 - Fuel pump unit terminal B and main relay terminal C

Short circuit

- If there is no continuity, the circuit is shorted. Repair or replace the wiring harness.
 - Fuel pump unit terminal D and power supply
 - Fuel pump unit terminal B and body GND

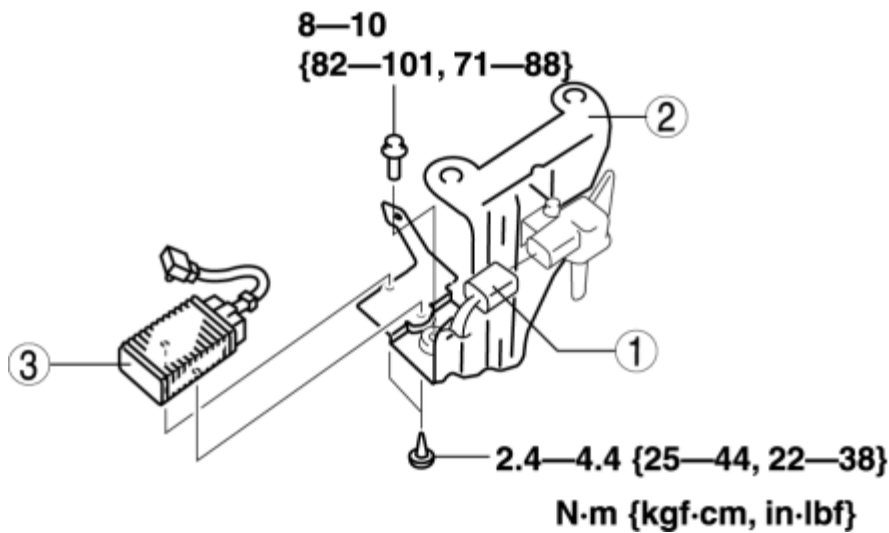
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

FUEL PUMP RESISTOR REMOVAL/INSTALLATION [13B-MSP]

- 1. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- 2. Remove the secondary air injection (AIR) pump. (See [SECONDARY AIR INJECTION \(AIR\) PUMP REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- 3. Remove in the order indicated in the table.
- 4. Install in the reverse order of removal.



1	Connector
2	Bracket
3	Fuel pump resistor

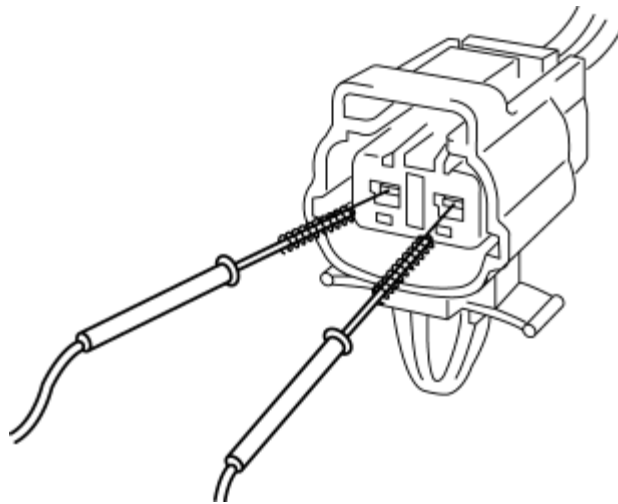
2011 - RX-8 - Engine

FUEL PUMP RESISTOR INSPECTION [13B-MSP]

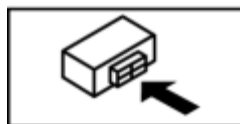
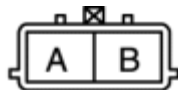
Resistance Inspection

CAUTION:

- If a tester lead is inserted forcefully into a terminal during resistance measurement, the terminal may deform and cause a decrease in the contact pressure between terminals while the connector is connected. When measuring resistance, attach a tapered lead or wire to the tester lead and lightly touch the terminal with the tip.



1. Disconnect the negative battery cable.
2. Remove the fuel pump resistor. (See [FUEL PUMP RESISTOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
3. Verify that the continuity between the fuel pump resistor terminal A and B is within the specification.



Fuel pump resistor continuity

- 0.304—0.336 ohms [20 °C {68 °F}]
- If not within the specification, replace the fuel pump resistor. (See [FUEL PUMP RESISTOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

FUEL TANK REMOVAL/INSTALLATION [13B-MSP]

WARNING:

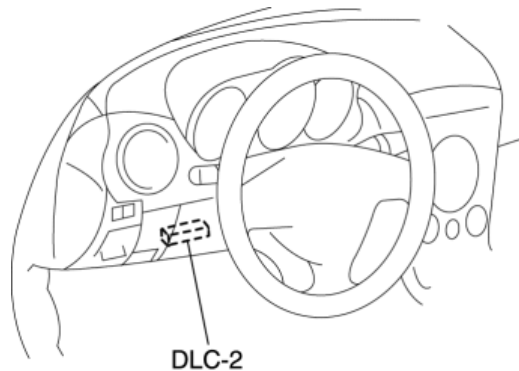
- A person charged with static electricity could cause a fire or explosion, resulting in death or serious injury. Before draining fuel, make sure to discharge static electricity by touching a vehicle.
- Fuel line spills and leakage from the pressurized fuel system are dangerous. Fuel can ignite and cause serious injury or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure".

CAUTION:

- When the fuel gauge indicates 3/4 or more, the fuel level is higher than the installation surface of the fuel pump and the fuel suction pipe bracket. Due to this condition, fuel may spill or leak out when performing this procedure. Before performing this procedure, always drain out fuel so that the fuel tank is half full or less (according to the fuel gauge needle).
1. Park the vehicle on a level surface.
 2. Complete the "BEFORE SERVICE PRECAUTION". (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).)
 3. Remove the rear seat. (See [REAR SEAT REMOVAL/INSTALLATION](#).)
 4. Disconnect the quick release connector from the fuel pump unit. (See [QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 5. Connect the hose to the fuel pump unit and drain the fuel into a container used for collecting gasoline.
 6. Drain the fuel from the fuel tank using the following procedure.

Using M-MDS

- Connect the M-MDS to the DLC-2



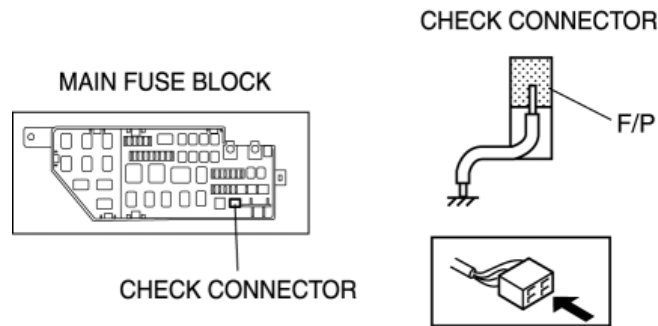
- Using the simulation function "FP", start the fuel pump. (See [ON-BOARD DIAGNOSTIC TEST \[13B-MSP\]](#).)

CAUTION:

- Shorting the wrong terminal of the check connector may cause malfunctions. Make sure to short only the specified terminal.

Without using M-MDS

- Ground check connector terminal F/P to the body using a jumper wire.



CAUTION:

- The fuel pump may malfunction if it is operated without any fuel in the fuel tank (fuel pump idling). Constantly monitor the amount of fuel being discharged and immediately stop operation of the pump when essentially no fuel is being discharged.
- Turn the ignition switch to the ON position and operate the fuel pump.

NOTE:

- When operating the fuel pump with a full fuel tank, fuel discharge will become erratic after **approx. 10 min** but will continue for **approx. 10 min** more and then essentially no fuel will be discharged. At this time the fuel gauge needle will be at the halfway position.

7. Stop the fuel pump using the following procedure.

Using M-MDS

- Using the simulation function "FP", stop the fuel pump. (See [ON-BOARD DIAGNOSTIC TEST \[13B-MSP\].](#))

Without using M-MDS

- Turn the ignition switch to the LOCK position and stop the fuel pump.
- Disconnect the jumper wire.

8. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))

9. Remove the following parts:

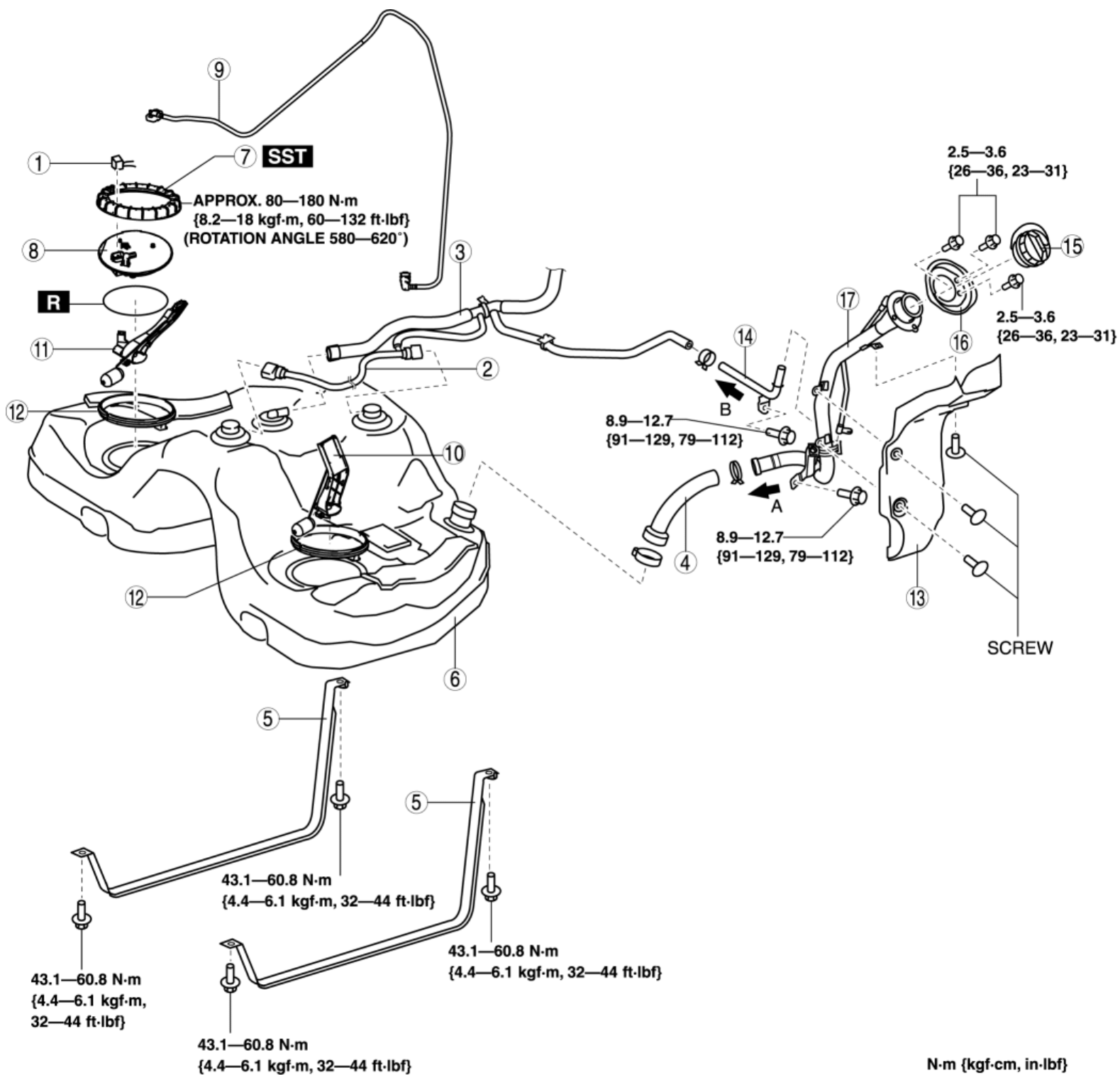
- Fuel pump unit. (See [FUEL PUMP UNIT REMOVAL/INSTALLATION \[13B-MSP\].](#))
- Main silencer and middle pipe. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))
- Power plant frame. (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\].](#)) (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\].](#))
- Propeller shaft. (See [PROPELLER SHAFT REMOVAL/INSTALLATION.](#))

10. Position the parking brake cable out of the way. (See [PARKING BRAKE LEVER REMOVAL/INSTALLATION.](#))

11. Remove in the order indicated in the table.

12. Install in the reverse order of removal.

13. Complete the "AFTER SERVICE PRECAUTION". (See [AFTER SERVICE PRECAUTION \[13B-MSP\].](#))



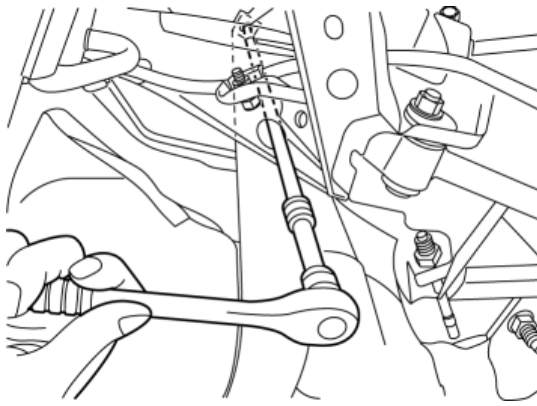
1	Connector
2	Evaporative hose (See QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [13B-MSP].)
3	Breather hose (See Breather Hose Installation Note.)

4	Joint hose (See Joint Hose Installation Note.)
5	Fuel tank strap (See Fuel Tank Strap Removal Note.)
6	Fuel tank
7	Cap (See Cap Removal Note.) (See Cap Installation Note.)
8	Fuel suction pipe bracket
9	Fuel suction pipe
10	Fuel gauge sender unit (main) (See FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION.)
11	Fuel gauge sender unit (sub) (See FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION.)
12	Retainer
13	Protector
14	Joint pipe
15	Fuel-filler cap
16	Dust cover
17	Fuel-filler pipe (See Fuel-Filler Pipe Removal Note.)

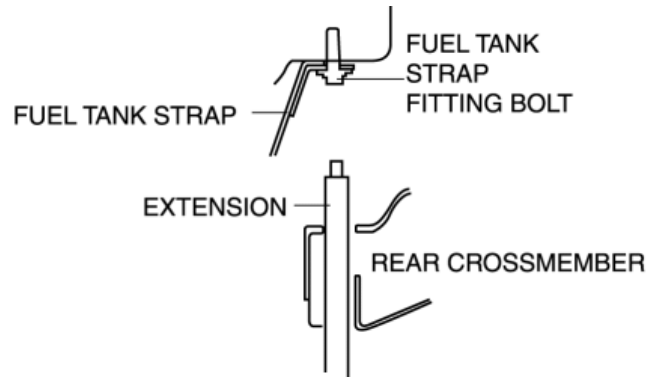
Fuel Tank Strap Removal Note

NOTE:

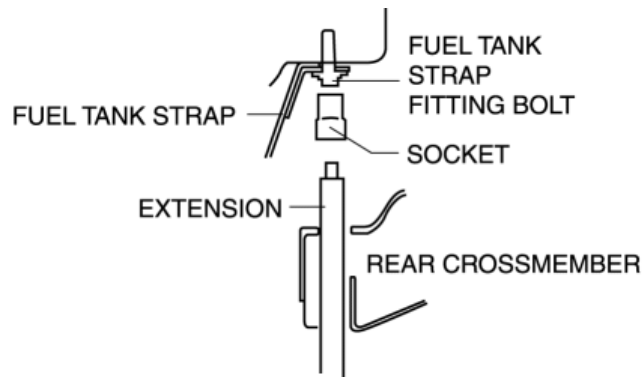
- The tool cannot reach the fitting bolt (rear) of the fuel tank strap in ways other than shown in the figure. Remove the fuel tank strap according to the following procedure.



1. Insert the extension into the service hole on the rear crossmember.



2. Attach the socket to the extension in the service hole.



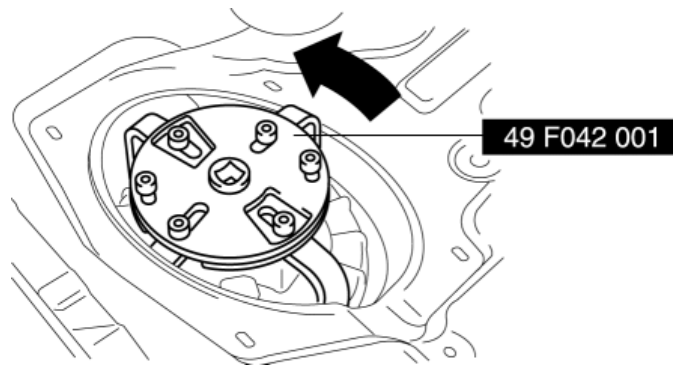
3. Remove the fuel tank strap.

Cap Removal Note

CAUTION:

- The cap could be damaged if the SST is used with any play between the cap and the SST. Securely attach the SST so that there is no gap between the SST tabs and the side of the cap.

1. Remove the cap using the **SST**.

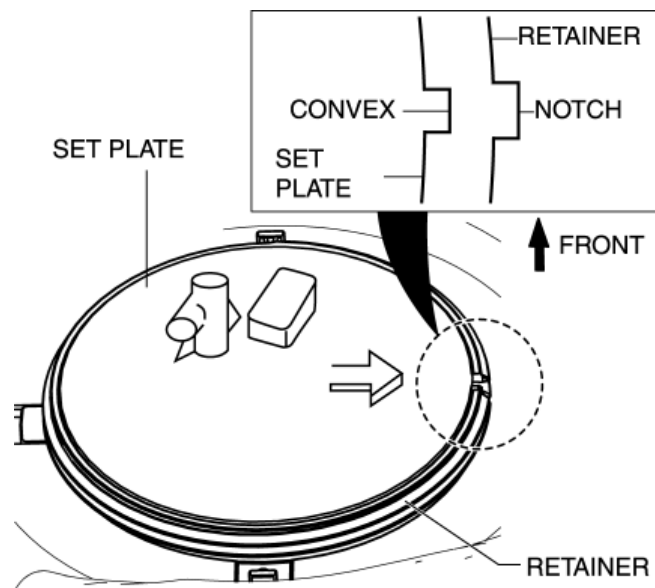


Fuel-Filler Pipe Removal Note

1. Remove the rear ABS wheel-speed sensor. (See [REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.](#))
2. Remove the rear shock absorber lower bolt. (See [REAR SHOCK ABSORBER AND COIL SPRING REMOVAL/INSTALLATION.](#))
3. Loosen the rear crossmember installation nut (6 locations), and lower the rear crossmember. (See [REAR CROSSMEMBER REMOVAL/INSTALLATION.](#))
4. Remove the fuel-filler pipe.

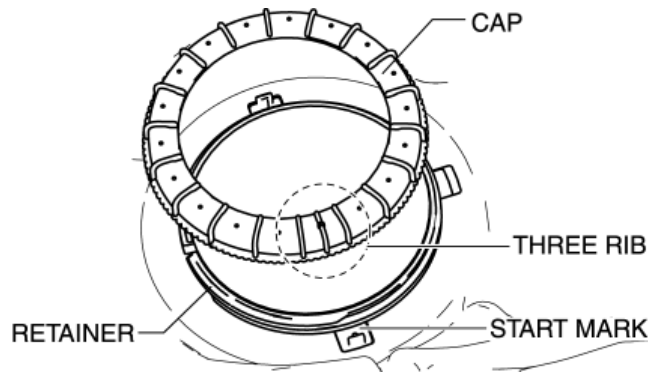
Cap Installation Note

1. Align the convex of the set plate with the notch of the retainer as shown in the figure.



NOTE:

- Remove the residue of gasoline on gasket or cap completely. Any residue of gasoline can make the set plate turn round and prevent it from fixing.
2. Adjust the start mark of the fuel tank with the center one out of three rib lines of the cap, then turn it around **360°** degrees by hand as shown in the figure.



- If the retainer and cap cannot be tighten by hand, remove the cap, verify that there is no damage or misalignment on the retainer and cap, and then tighten again.

CAUTION:

- The cap could be damaged if the SST is used with any play between the cap and the SST. Securely attach the SST so that there is no gap between the SST tabs and the side of the cap.

3. While keeping the alignment mark and the retainer notch aligned, tighten the cap to the rotation angle and specified torque using the **SST**.

- If the specified torque cannot be obtained even when the cap is rotated to the specified rotation angle, replace with a new cap and retainer and repeat Step 3.

Rotation angle (Total angle for Step 2 and Step 3)

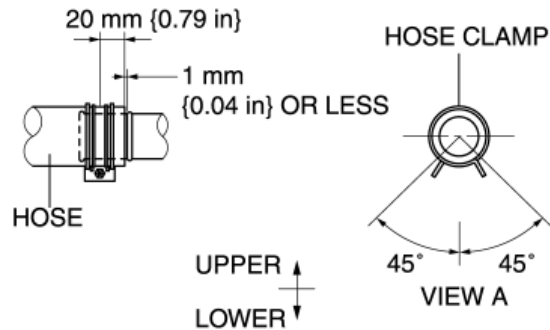
- 580—620°

Cap tightening torque (approx.)

- 80—180 N·m {8.2—18 kgf·m, 60—132 ft·lbf}

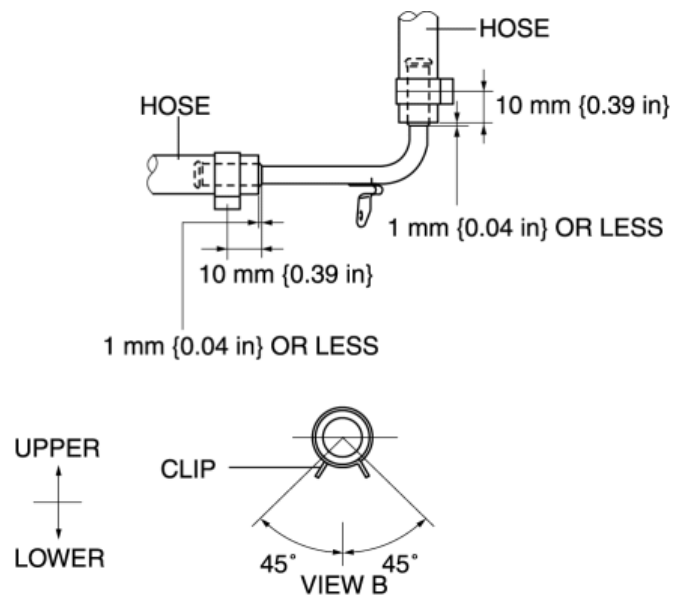
Joint Hose Installation Note

1. Install the joint hose and clamps as shown in the figure.



Breather Hose Installation Note

1. Install the breather hose and clamps as shown in the figure.



[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION [13B-MSP]

WARNING:

- Fuel is very flammable liquid. If fuel spills or leaks from the pressurized fuel system, it will cause serious injury or death and facility breakage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure", while referring to the "BEFORE SERVICE PRECAUTION".

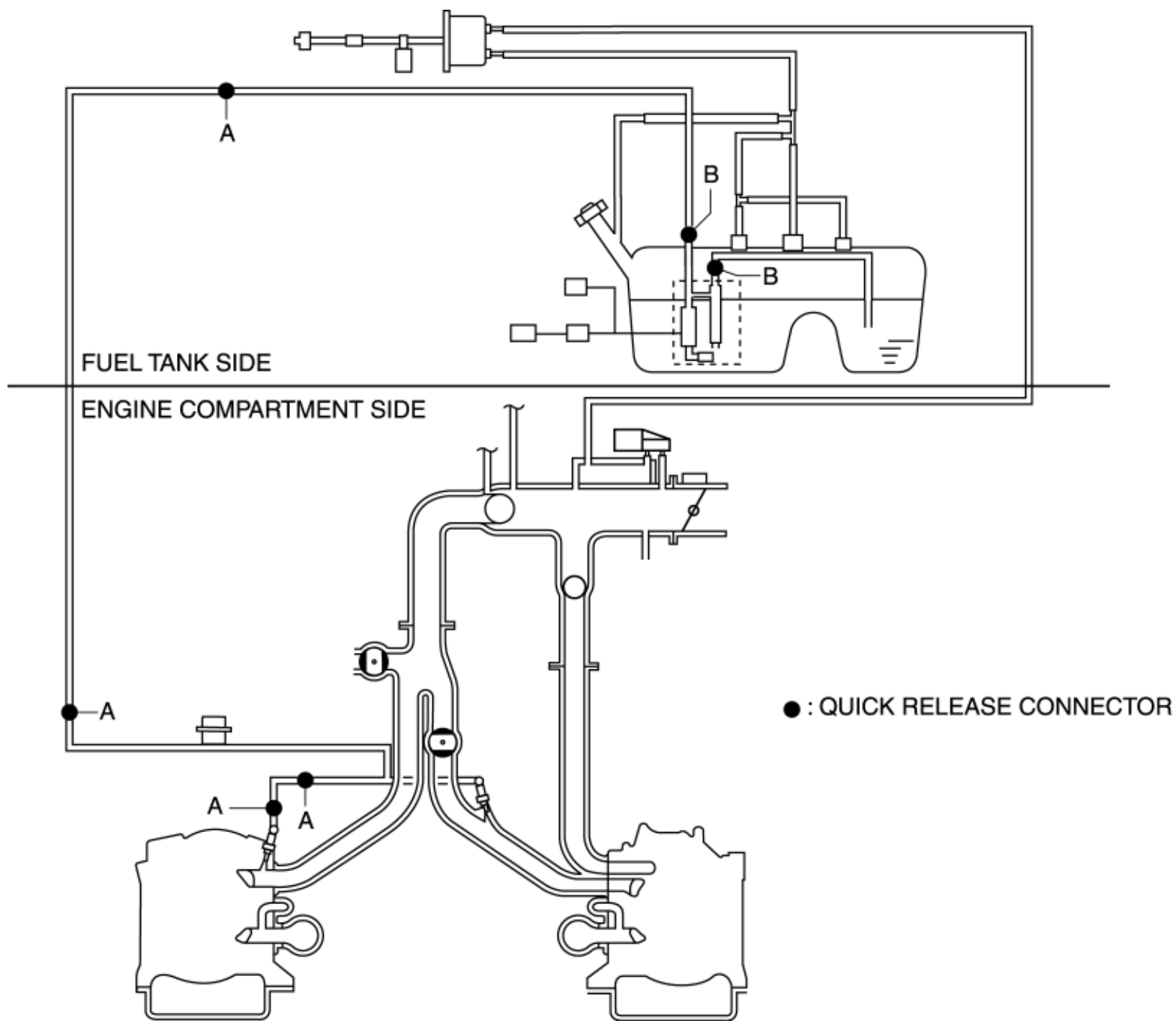
CAUTION:

- Disconnecting/connecting the quick release connector without cleaning it may cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting using a cloth or soft brush, and make sure that it is free of foreign material.

Quick Release Connector Type

CAUTION:

- There are two types of quick release connectors. Verify the type and location, and install/remove properly.



Type A Removal

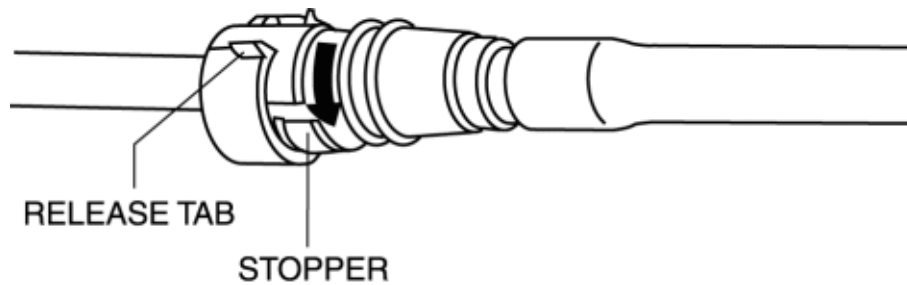
1. Complete the "BEFORE SERVICE PRECAUTION". (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).)

CAUTION:

- The quick release connector may be damaged if the release tab is bent excessively. Do not expand the release tab over the stopper.

NOTE:

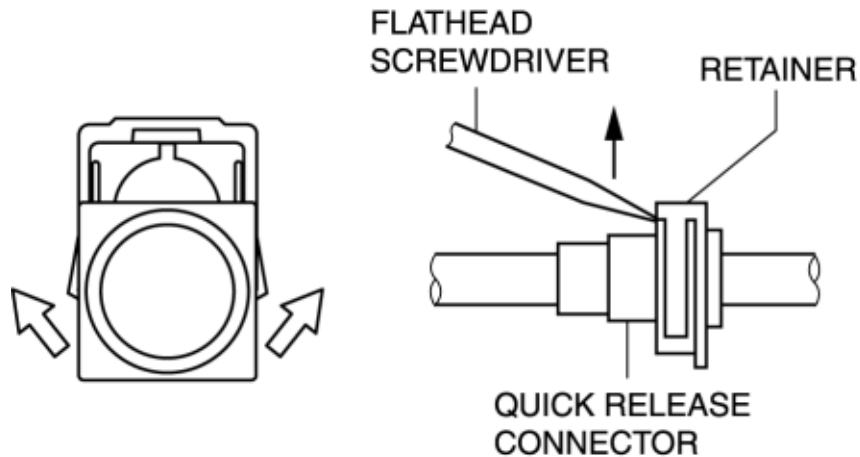
- The fuel hose can be removed by pushing it to the fuel pipe side to release the lock.
2. Rotate the release tab on the quick release connector to the stopper position.



3. Pull out the quick release connector straight from the fuel pipe and disconnect it.
4. Cover the disconnected quick release connector and fuel pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.

Type B Removal

1. Complete the "BEFORE SERVICE PRECAUTION". (See [BEFORE SERVICE PRECAUTION \[13B-MSP\].](#))
2. Move the retainer upward using a small flathead screwdriver or a similar tool.

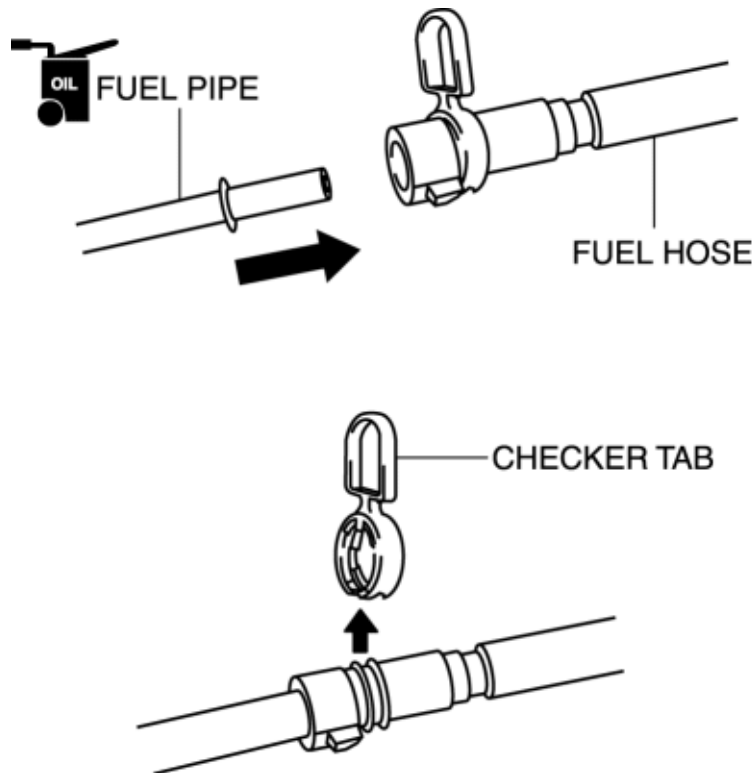


3. Pull out the fuel hose straight from the fuel pipe and disconnect it.
4. Cover the disconnected quick release connector and fuel pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.

Type A Installation

NOTE:

- If the quick release connector O-ring is damaged or has slipped, replace the quick release connector.
- A checker tab is integrated with the quick release connector for new fuel hoses. Remove the checker tab from the quick release connector after the connector is completely engaged with the fuel pipe.



1. Inspect the fuel hose and fuel pipe sealing surface for damage and deformation.

- If there is any malfunction, replace it with a new one.

2. Apply a small amount of clean engine oil to the sealing surface of the fuel pipe.

3. Reconnect the fuel hose straight to the fuel pipe until a click is heard.

NOTE:

- If the quick release connector does not move at all, disconnect it, verify that the O-ring is not damaged or has not slipped, and then reconnect the quick release connector.

4. Lightly pull and push the quick release connector a few times by hand, and then verify that it can move 2.0—3.0 mm {0.08—0.12 in} and is connected securely.

5. Complete the "AFTER SERVICE PRECAUTION". (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)

Type B Installation

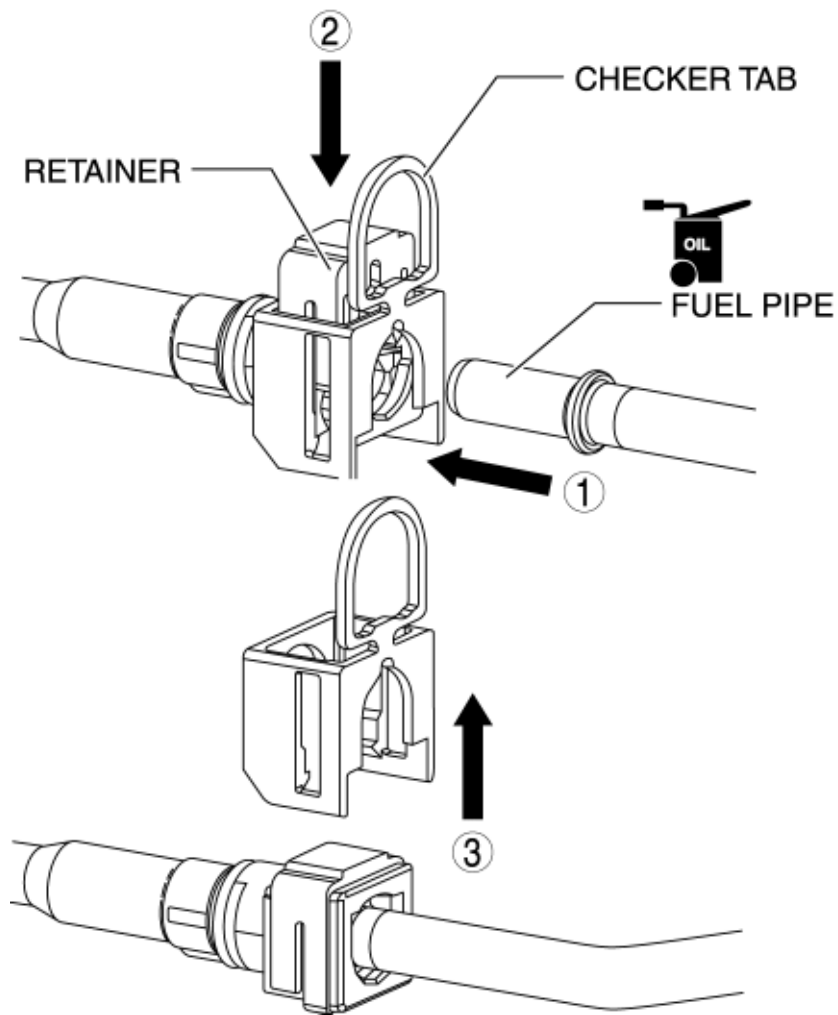
NOTE:

- If the quick release connector O-ring is damaged or has slipped, replace the fuel hose.

1. Inspect the fuel hose and fuel pipe sealing surface for damage and deformation.

- If there is any malfunction, replace it with a new one.

2. Install the quick release connector.



- Insert the fuel pipe straight to the end of the quick release connector.
- Push down the retainer using a finger.
 - If the retainer cannot be pushed down, push the fuel pipe further to the quick release connector.

3. Lightly pull and push the quick release connector a few times by hand, and then verify that it is connected securely.

4. Complete the "AFTER SERVICE PRECAUTION". (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

PULSATION DAMPER INSPECTION [13B-MSP]

1. Remove the pulsation damper. (See [PULSATION DAMPER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Visually inspect the pulsation damper for damage, cracking, or excess deterioration that would cause fuel leakage.
 - If there is any malfunction, replace the pulsation damper. (See [PULSATION DAMPER REMOVAL/INSTALLATION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

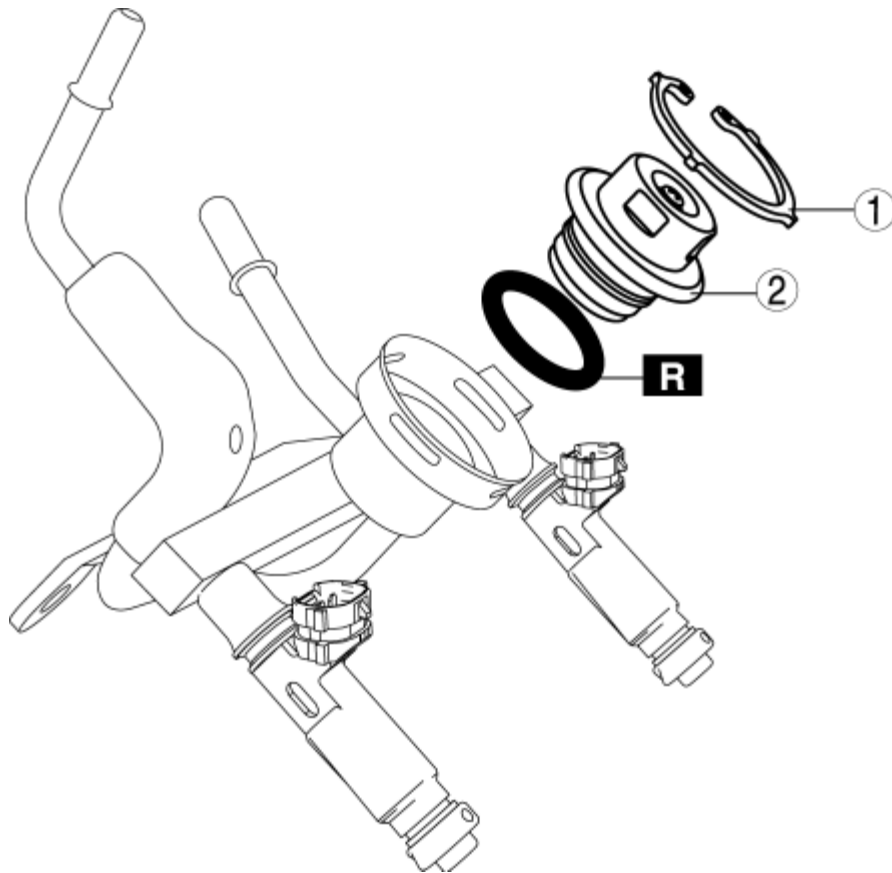
[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

PULSATION DAMPER REMOVAL/INSTALLATION [13B-MSP]

1. Complete the "BEFORE SERVICE PRECAUTION". (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).)
2. Remove the fuel distributor (intake manifold side). (See [FUEL INJECTOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
3. Remove in the order indicated in the table.



1	Clip
2	Pulsation damper

4. Install in the reverse order of removal.

5. Complete the "AFTER SERVICE PRECAUTION". (See [AFTER SERVICE PRECAUTION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

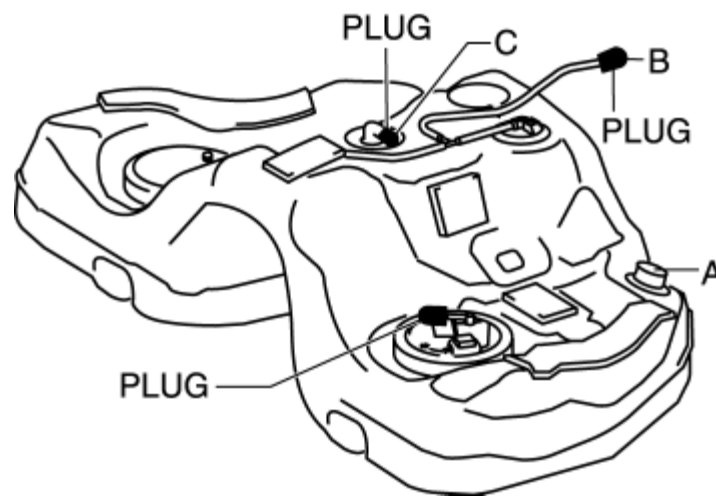
[Back to Top](#)

2011 - RX-8 - Engine

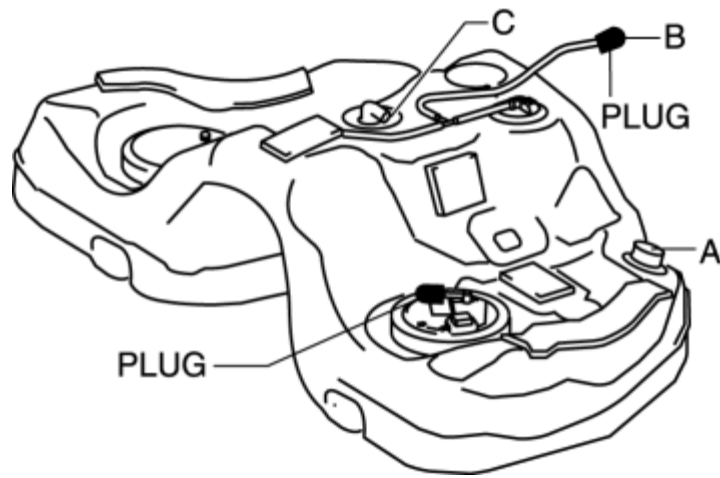
FUEL TANK INSPECTION [13B-MSP]

NOTE:

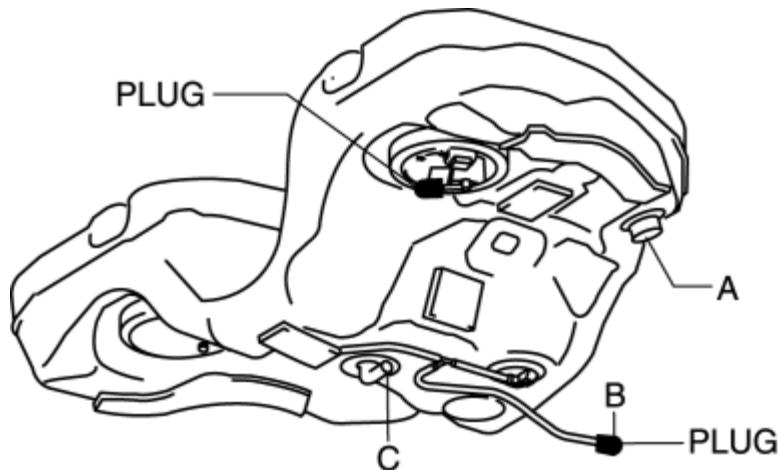
- This inspection is for two rollover valves and fuel shut-off valve integrated in the fuel tank.
1. Remove the connector and the fuel hose from the fuel pump unit. (See [QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Remove the fuel tank with the fuel pump unit and fuel suction pipe bracket still installed. (See [FUEL TANK REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 3. Perform the following procedure to verify the fuel tank airtightness.
 - a. Plug the fuel pump unit pipe, ports B and C.



- b. Apply a pressure to port A and wait for a while.
 - c. Verify that there is no air flow leakage from the fuel tank.
 - If there is air flow, replace the fuel tank. (See [FUEL TANK REMOVAL/INSTALLATION \[13B-MSP\]](#).)
4. Plug the fuel pump unit pipe and port B.



5. Level the fuel tank.
6. Apply a pressure to port A and wait for a while.
7. With the pressure still applied, verify that there is air flow port C and the pressure.
 - If there is no air flow, replace the fuel tank. (See [FUEL TANK REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 - If there is air flow, place the fuel tank upside down.
8. Apply a pressure to port A and wait for a while.



9. With the pressure still applied, verify that there is no air flow from port C.
 - If there is air flow, replace the fuel tank. (See [FUEL TANK REMOVAL/INSTALLATION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

NONRETURN VALVE INSPECTION [13B-MSP]

1. Remove the fuel pump. (See [FUEL PUMP UNIT REMOVAL/INSTALLATION \[13B-MSP\]](#).)

NOTE:

- The nonreturn valve cannot be removed as it is built into the fuel tank.
 - The nonreturn valve is normally closed due to spring force.
2. Verify that the nonreturn valve opens/closes through the fuel pump installation hole.
 - If it does not open/close or return to the normal position, replace the fuel tank. (See [FUEL TANK REMOVAL/INSTALLATION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

EXHAUST SYSTEM INSPECTION [13B-MSP]

1. Start the engine and inspect each exhaust system component for exhaust gas leakage.
 - If there is leakage, repair or replace the appropriate component.

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

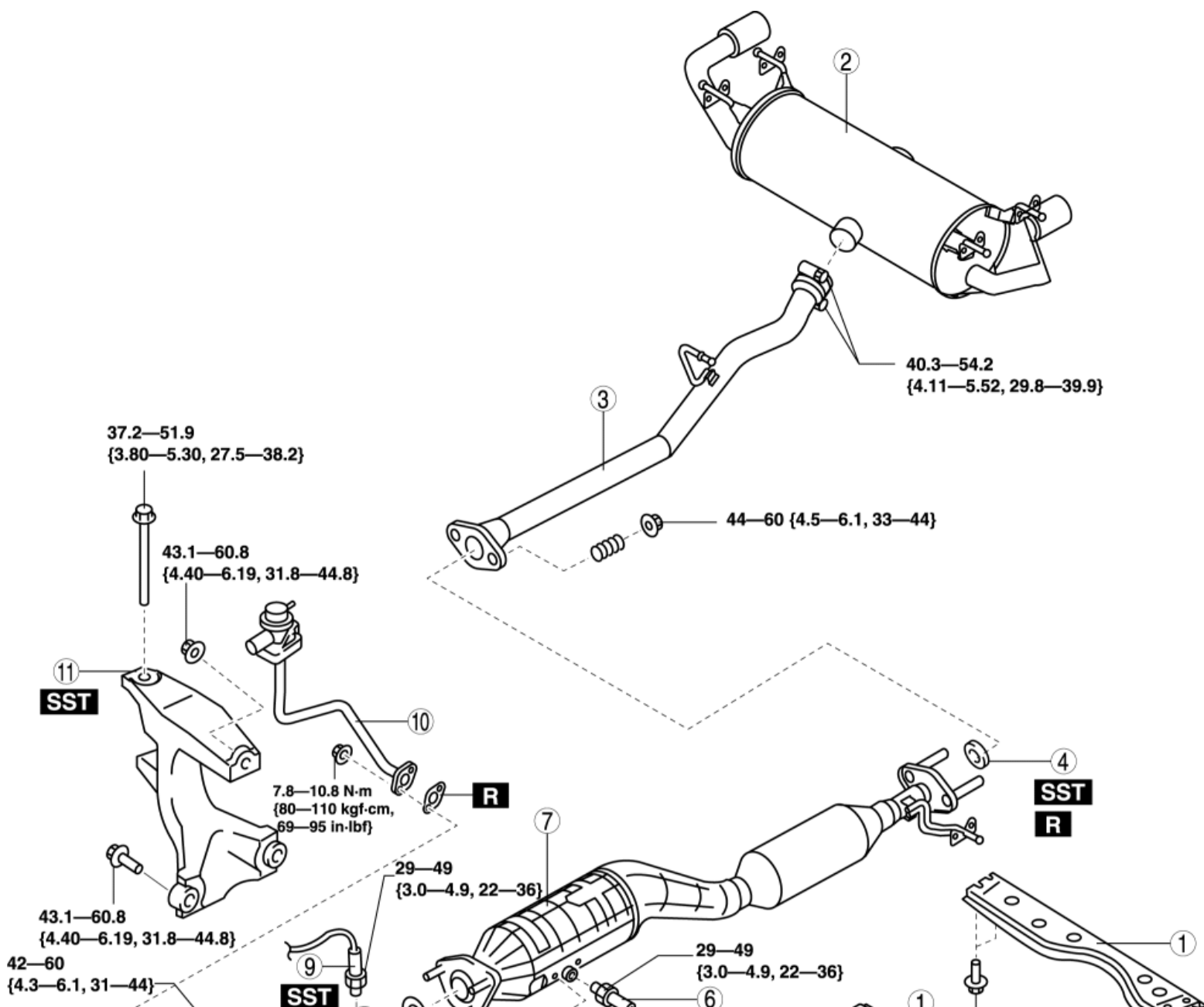
2011 - RX-8 - Engine

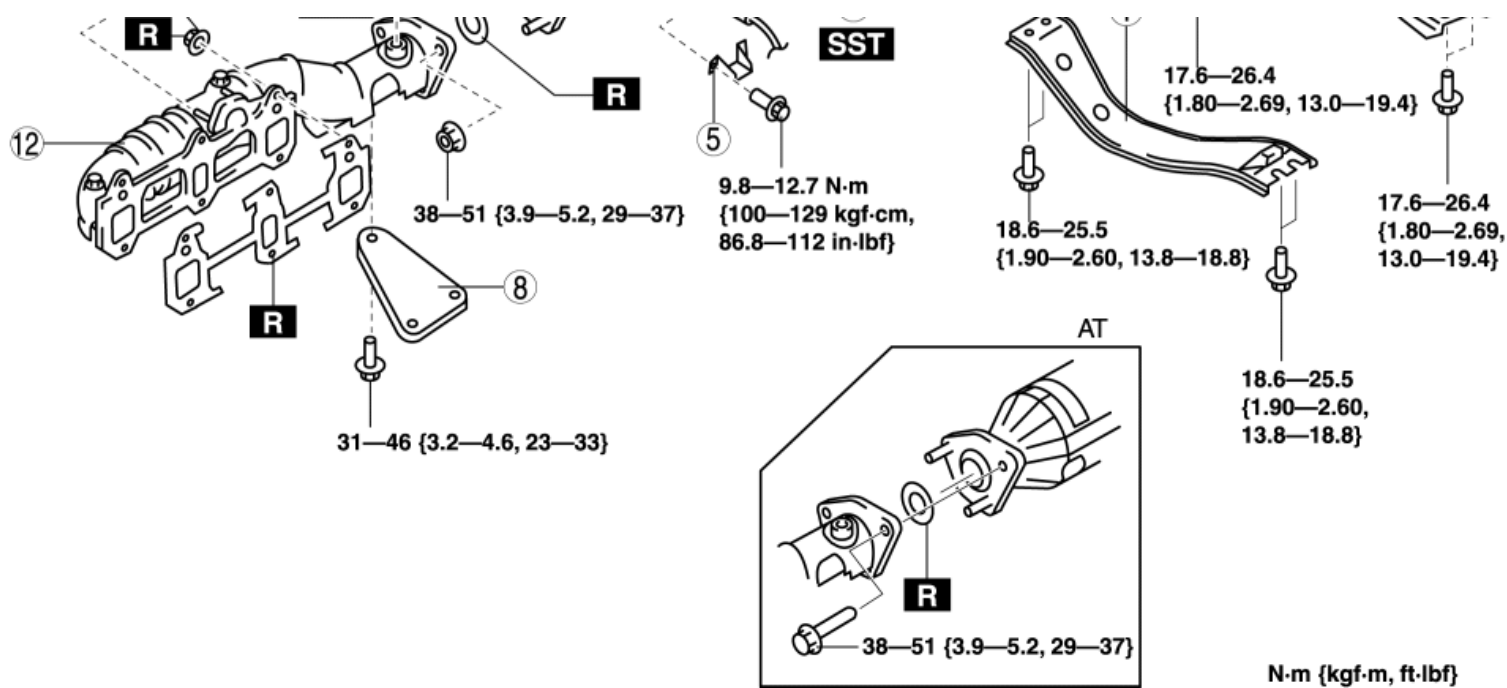
EXHAUST SYSTEM REMOVAL/INSTALLATION [13B-MSP]

WARNING:

- A hot engine and exhaust system can cause severe burns. Turn off the engine and wait until they are cool before servicing the exhaust system.

1. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Remove in the order indicated in the table.
3. Remove the exhaust system insulator. (See [Exhaust System Insulator Removal/Installation Note](#).)
4. Install in the reverse order of removal.



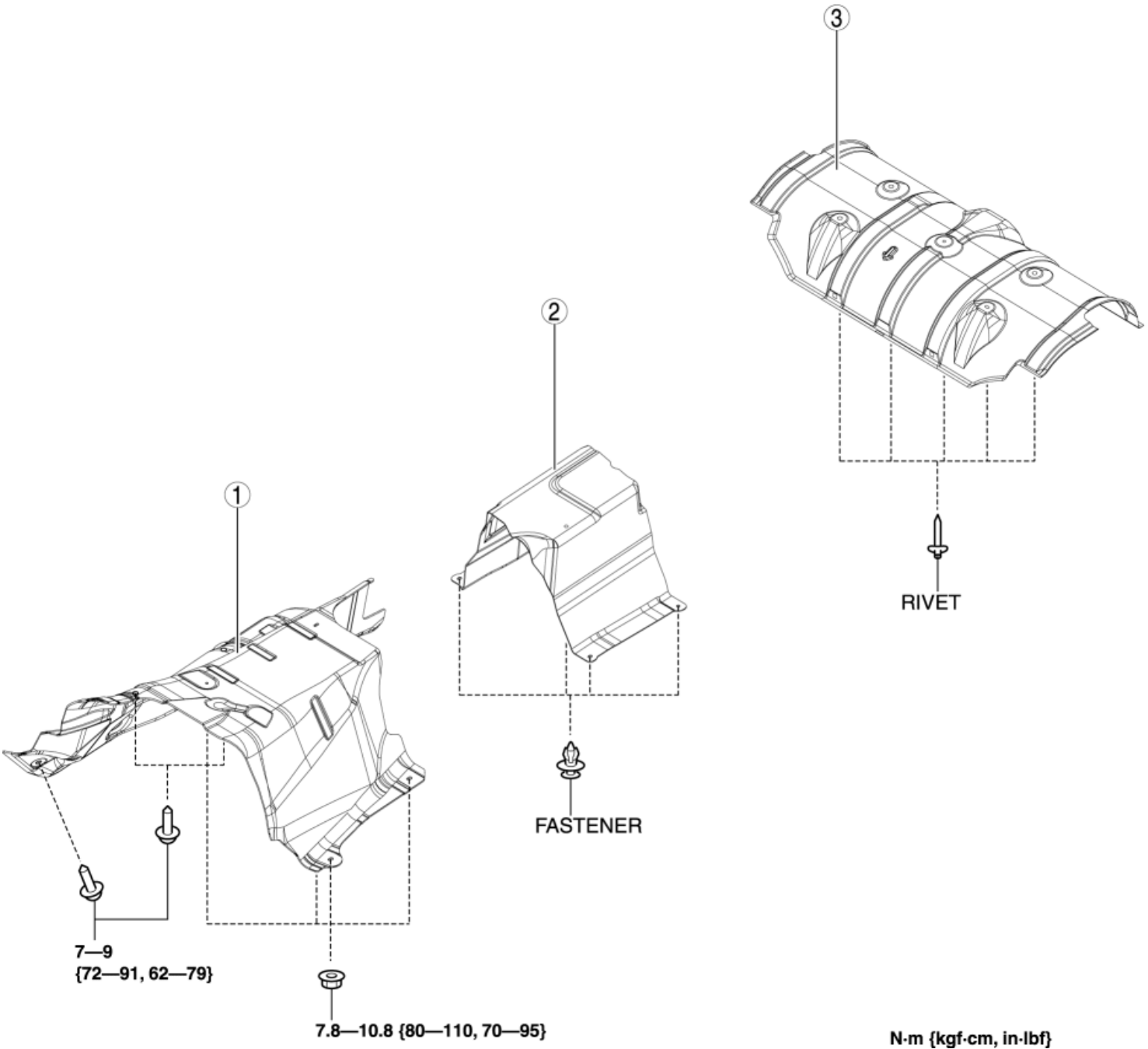


1	Tunnel member
2	Main silencer (See Main Silencer Installation Note.)
3	Middle pipe (See Middle Pipe, Three Way Catalytic Converter (TWC) Installation Note.)
4	Seal ring (See Seal Ring Removal Note.) (See Seal Ring Installation Note.)
5	Protector
6	HO2S (See HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [13B-MSP].)
7	TWC (See Middle Pipe, Three Way Catalytic Converter (TWC) Installation Note.)
8	Bracket
9	A/F sensor (See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP].)
10	AIR pipe

11	Engine mount bracket (RH) (See Engine Mount Bracket (RH) Removal Note.)
12	Exhaust manifold (See Exhaust Manifold Removal Note.) (See Exhaust Manifold Installation Note.)

Exhaust System Insulator Removal/Installation Note

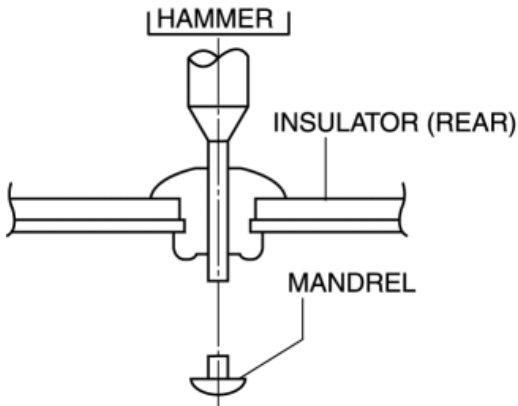
1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.



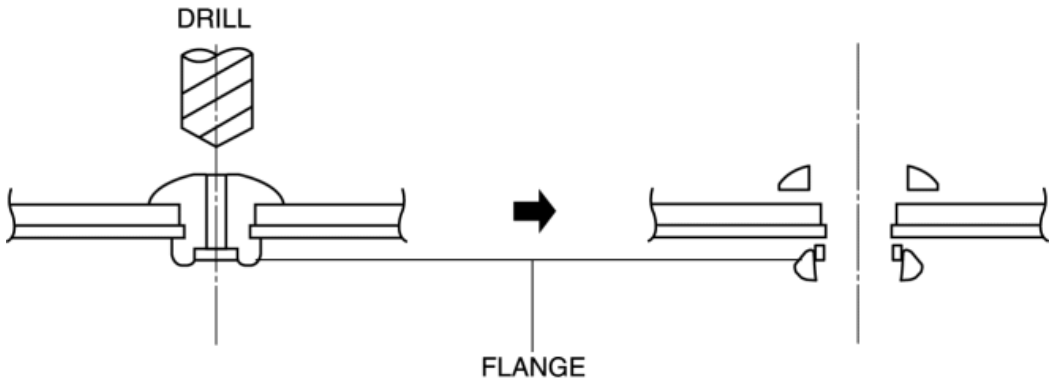
1	Insulator (front)
2	Insulator (middle)
3	Insulator (rear) (See Insulator (rear) removal note.)

Insulator (rear) removal note

1. Push out the mandrel using a hammer and punch (2—2.8 mm {0.08—0.11 in} diameter).

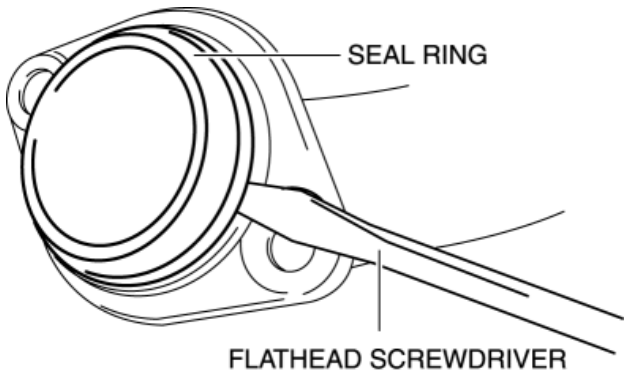


2. Remove the flange using a drill (5 mm {0.20 in} drill bit).



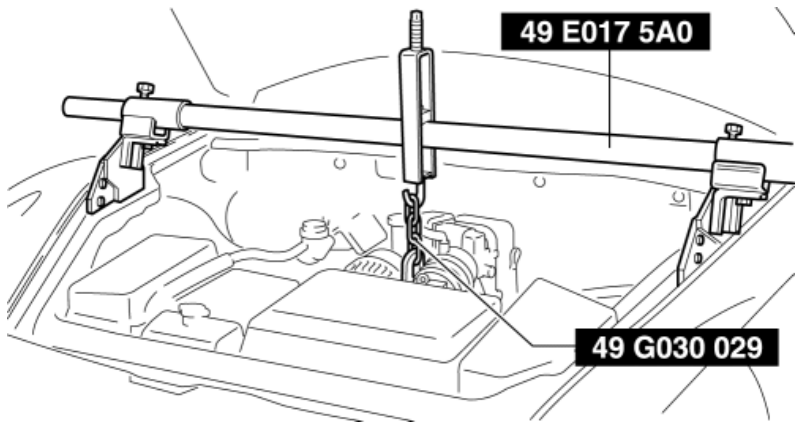
Seal Ring Removal Note

1. Remove the seal ring using a flathead screwdriver being careful not to damage the pipe.

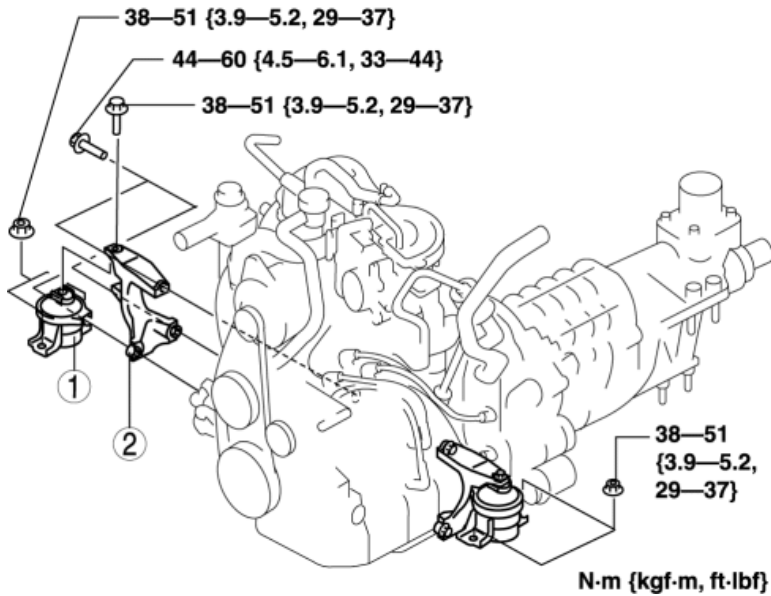


Engine Mount Bracket (RH) Removal Note

- 1. Attach the SST and support the engine.



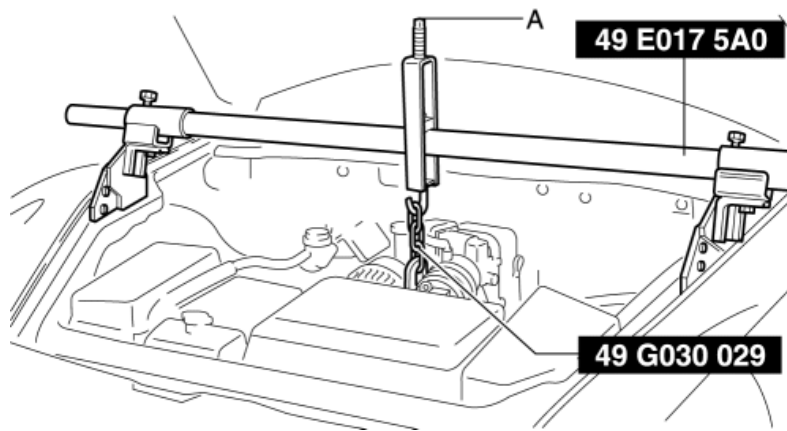
- 2. Remove the engine mount rubber (LH) installation nut.
- 3. Remove in the order indicated in the table.



1	Engine mount rubber (RH) (See Engine mount rubber (RH) removal note.)
2	Engine mount bracket (RH)

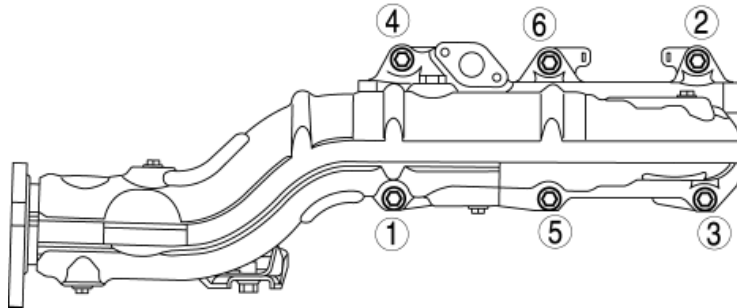
Engine mount rubber (RH) removal note

- 1. Tighten the A part indicated in the figure, and then pull up the engine to remove the engine mount rubber (RH).

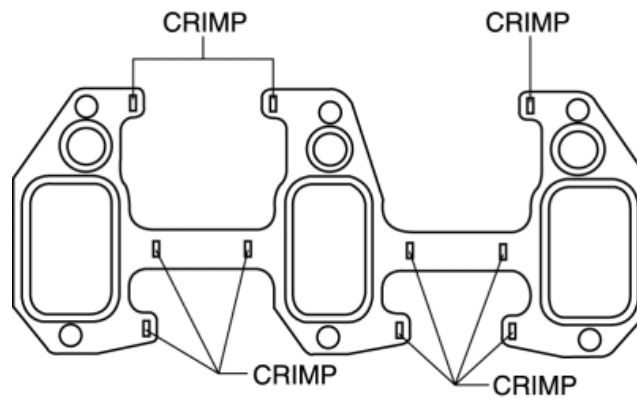


Exhaust Manifold Removal Note

1. Remove the under cover.
2. Loosen the bolts in the order shown in the figure.



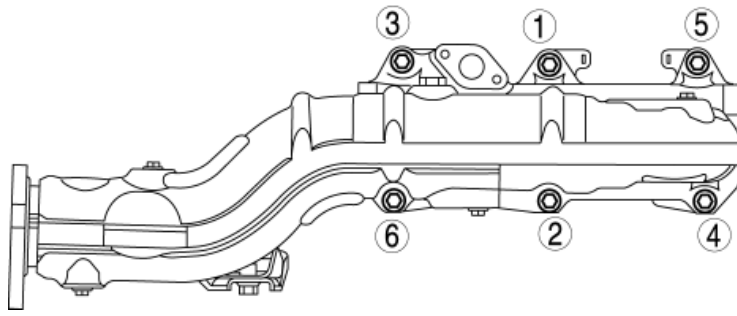
Exhaust Manifold Installation Note



CAUTION:

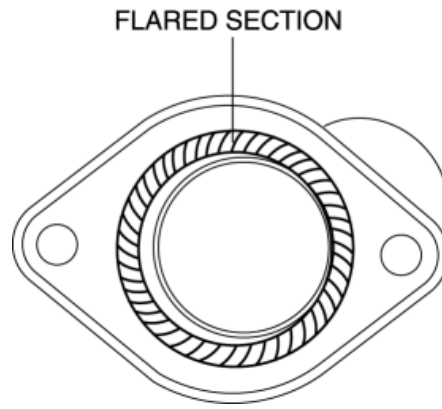
- Do not reuse the gasket and self-lock nuts on the joint area between the engine and exhaust manifold.
- If a gasket with detached crimps is used on the joint area between the engine and exhaust manifold, exhaust gas will leak. Be careful not to allow the crimps to detach from the gasket. Do not use a gasket if any crimps are detached.

1. Tighten the bolts in the order shown in the figure.



Middle Pipe, Three Way Catalytic Converter (TWC) Installation Note

1. Spray carbon remover (TB6601 or equivalent) on the flared section of the exhaust pipe.
2. Remove the carbon adhering to the flared section shown in the figure using a nylon brush or sandpaper (No.400 or equivalent).

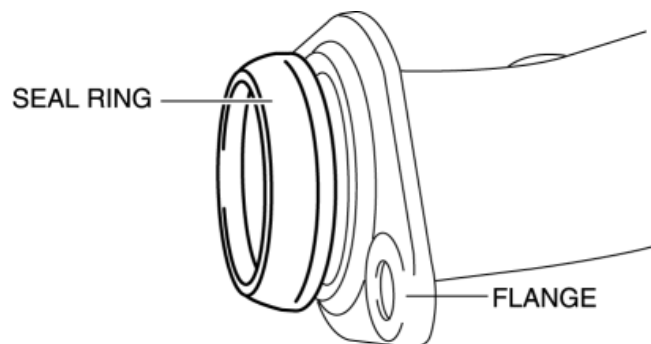


Seal Ring Installation Note

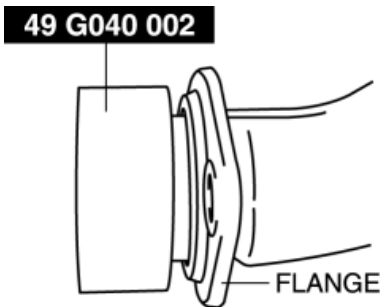
CAUTION:

- If installation is performed without using the SST, the seal ring will be damaged and deformed, resulting in an incorrect installation. Always use the SST to install the seal ring.

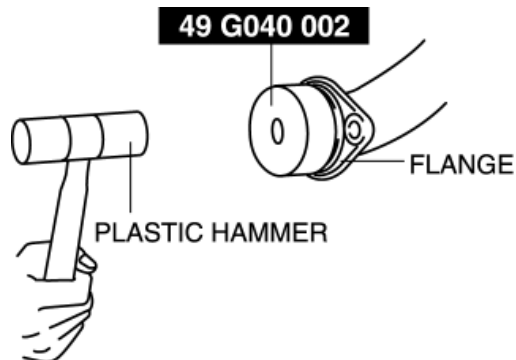
1. Temporarily install the seal ring to the pipe so that the seal ring is even with the flange.



2. Install the SST to the seal ring so that the SST is even with the flange.



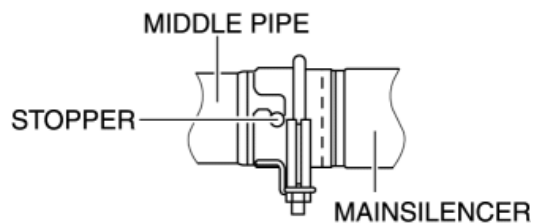
3. Press in the seal ring by tapping the SST using a plastic hammer until the seal ring contacts the flange.



Main Silencer Installation Note

CAUTION:

- If the main silencer and middle pipe are reused after being separated once, exhaust gas leakage will occur. When replacing the main silencer or middle pipe, always replace the main silencer and middle pipe at the same time.
1. Install the main silencer so that the stopper is at the position shown in the figure.



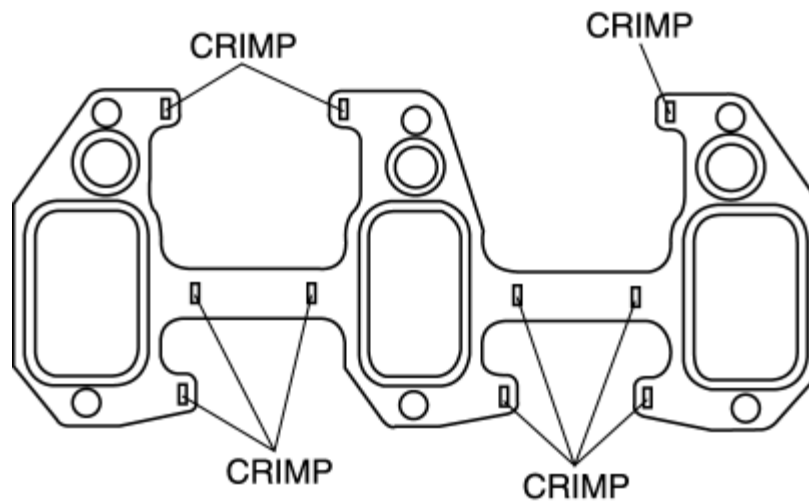
[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

EXHAUST MANIFOLD INSPECTION [13B-MSP]

CAUTION:

- Do not reuse the gasket and self-lock nuts on the joint area between the engine and exhaust manifold.
- If a gasket with detached crimps is used on the joint area between the engine and exhaust manifold, exhaust gas will leak. Be careful not to allow the crimps to detach from the gasket. Do not use a gasket if any crimps are detached.

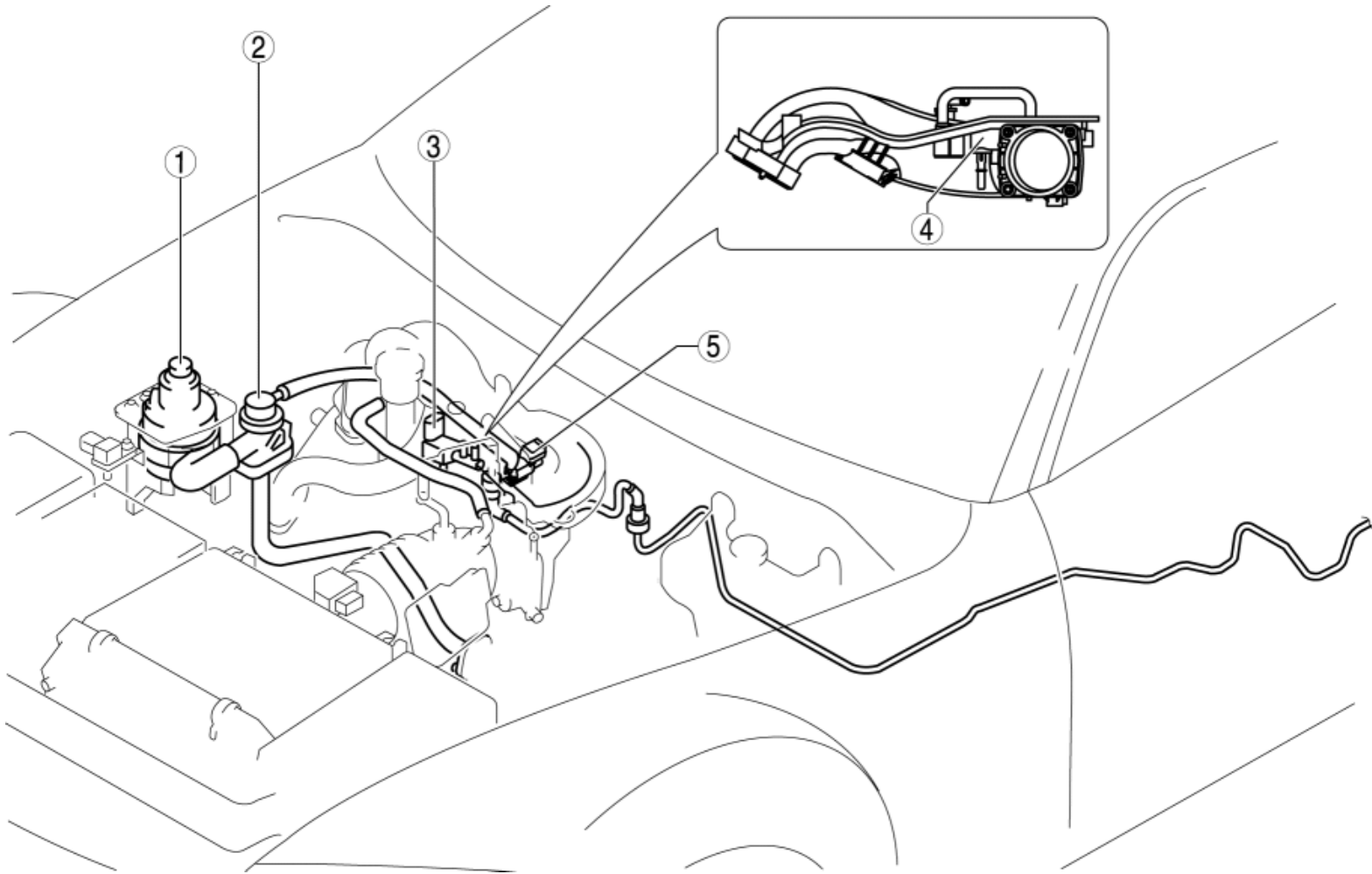


1. Remove the exhaust manifold. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Verify that there is no deformation, damage, cracks, or breakage.
 - If there is any malfunction, replace the exhaust manifold. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)

2011 - RX-8 - Engine

EMISSION SYSTEM LOCATION INDEX [13B-MSP]

Engine Compartment Side



1AIR pump

(See [SECONDARY AIR INJECTION \(AIR\) PUMP REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [SECONDARY AIR INJECTION \(AIR\) PUMP INSPECTION \[13B-MSP\].](#))

2AIR control valve

(See [SECONDARY AIR INJECTION \(AIR\) CONTROL VALVE REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [SECONDARY AIR INJECTION \(AIR\) CONTROL VALVE INSPECTION \[13B-MSP\].](#))

3 Purge solenoid valve

(See [PURGE SOLENOID VALVE INSPECTION \[13B-MSP\].](#))

4 Catch tank

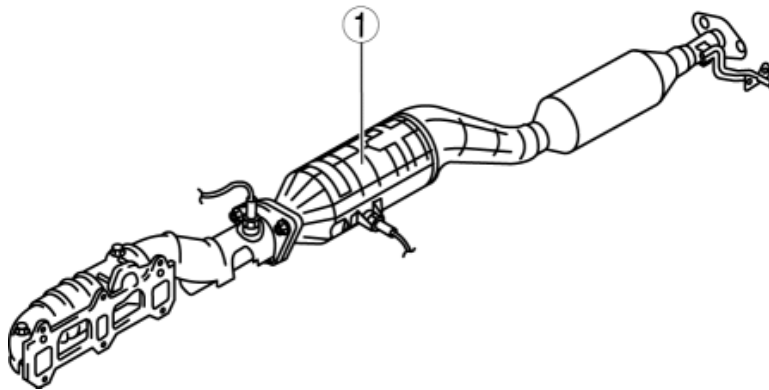
(See [CATCH TANK INSPECTION \[13B-MSP\].](#))

5 AIR solenoid valve

(See [SECONDARY AIR INJECTION \(AIR\) SOLENOID VALVE REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [SECONDARY AIR INJECTION \(AIR\) SOLENOID VALVE INSPECTION \[13B-MSP\].](#))

Exhaust System

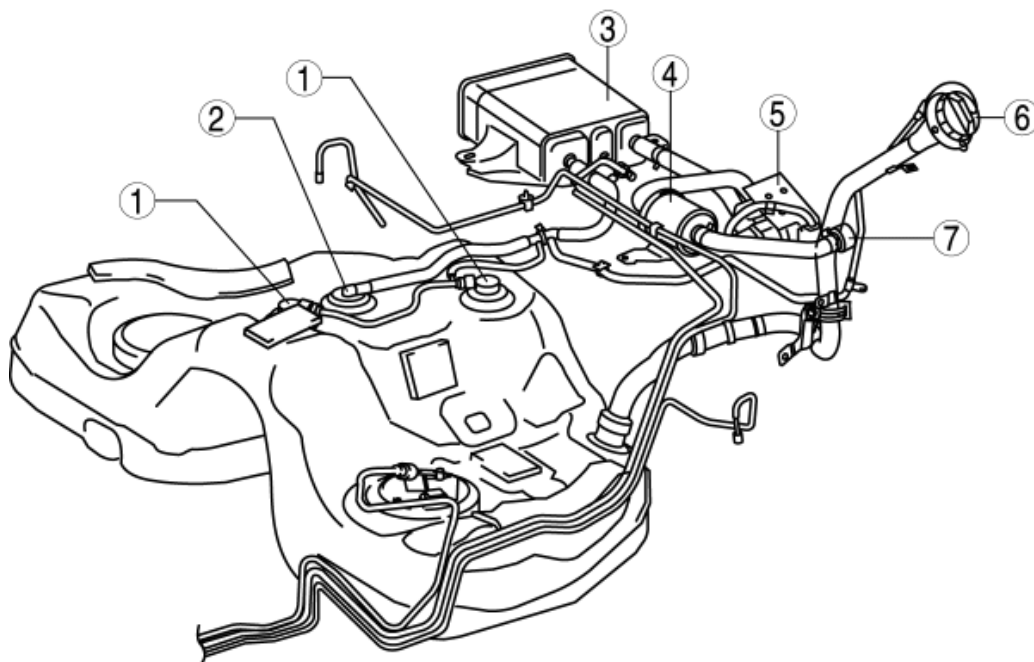


1 Catalytic converter

(See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [THREE-WAY CATALYTIC CONVERTER \(TWC\) INSPECTION \[13B-MSP\].](#))

Fuel Tank Side



1 Rollover valve

(See [FUEL SHUT-OFF/ROLLOVER VALVE INSPECTION \[13B-MSP\].](#))

2 Fuel shut-off valve

(See [FUEL SHUT-OFF/ROLLOVER VALVE INSPECTION \[13B-MSP\].](#))

3 Charcoal canister

(See [EVAPORATIVE EMISSION \(EVAP\) CONTROL SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [CHARCOAL CANISTER INSPECTION \[13B-MSP\].](#))

4 Air filter

(See [EVAPORATIVE EMISSION \(EVAP\) CONTROL SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [AIR FILTER INSPECTION \[13B-MSP\].](#))

5 Evaporative emission (EVAP) system leak detection pump

(See [EVAPORATIVE EMISSION \(EVAP\) CONTROL SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [EVAPORATIVE EMISSION \(EVAP\) SYSTEM LEAK DETECTION PUMP INSPECTION \[13B-MSP\].](#))

6 Fuel-filler cap

(See [FUEL-FILLER CAP INSPECTION \[13B-MSP\].](#))

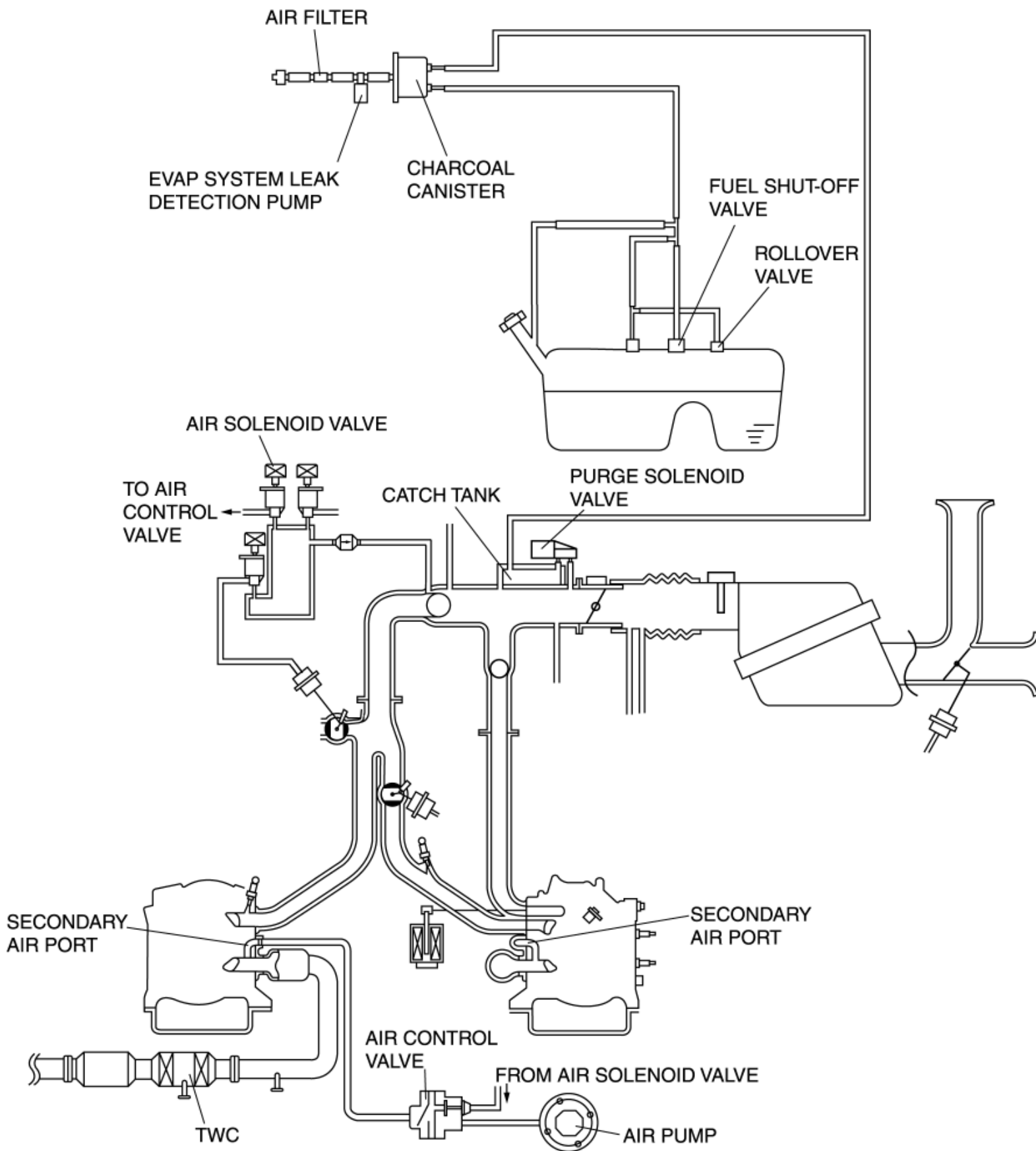
7 Evaporative chamber

(See [EVAPORATIVE CHAMBER INSPECTION \[13B-MSP\].](#))

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

EMISSION SYSTEM DIAGRAM [13B-MSP]



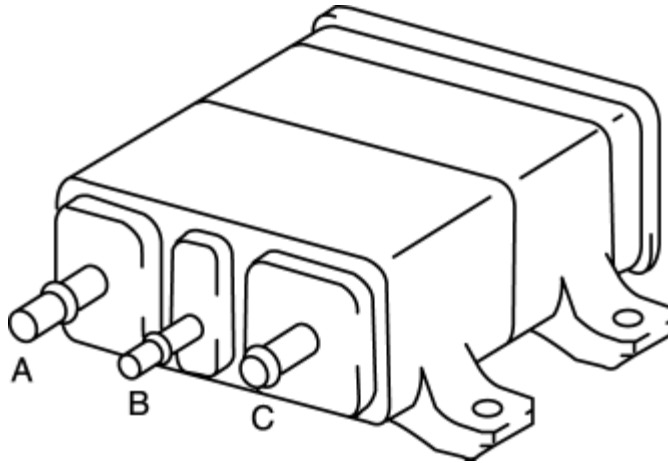
2011 - RX-8 - Engine

CHARCOAL CANISTER INSPECTION [13B-MSP]

1. Remove the charcoal canister. (See [EVAPORATIVE EMISSION \(EVAP\) CONTROL SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Plug ports A and C, then blow air into port B.

CAUTION:

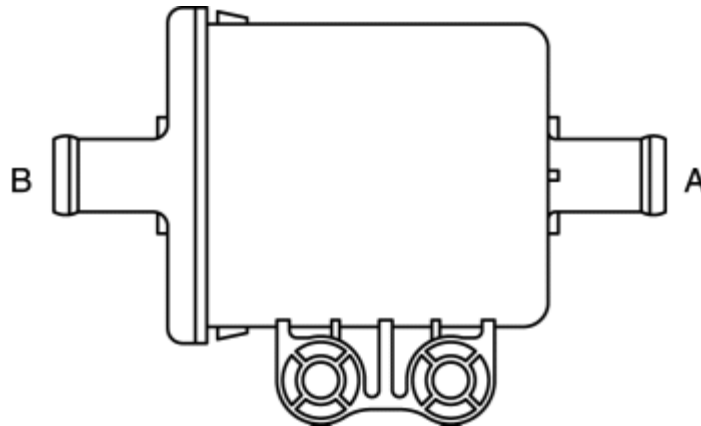
- Do not apply the pressure more than 20 kPa {0.2 kgf/cm², 2.8 psi} to the charcoal canister. Doing so will damage the charcoal canister.
3. Verify that there is no air leakage from the case.
 - If not as specified, replace the charcoal canister. (See [EVAPORATIVE EMISSION \(EVAP\) CONTROL SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)



2011 - RX-8 - Engine

AIR FILTER INSPECTION [13B-MSP]

1. Remove the air filter. (See [EVAPORATIVE EMISSION \(EVAP\) CONTROL SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Blow from port A and verify that there is airflow from port B.



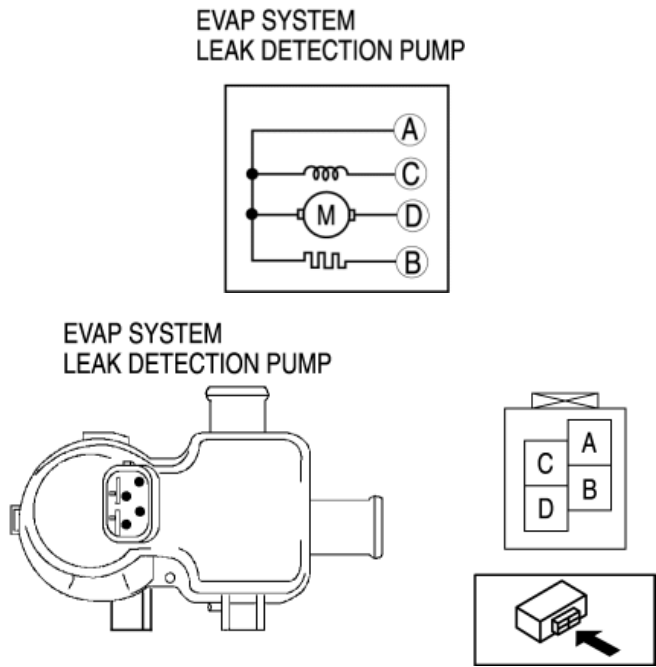
- If not as specified, replace the air filter. (See [EVAPORATIVE EMISSION \(EVAP\) CONTROL SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
3. Blow from port B and verify that there is airflow from port A.
- If not as specified, replace the air filter. (See [EVAPORATIVE EMISSION \(EVAP\) CONTROL SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)

2011 - RX-8 - Engine

EVAPORATIVE EMISSION (EVAP) SYSTEM LEAK DETECTION PUMP INSPECTION [13B-MSP]

Resistance Inspection

1. Disconnect the negative battery cable.
2. Inspect resistance of the EVAP system leak detection pump.



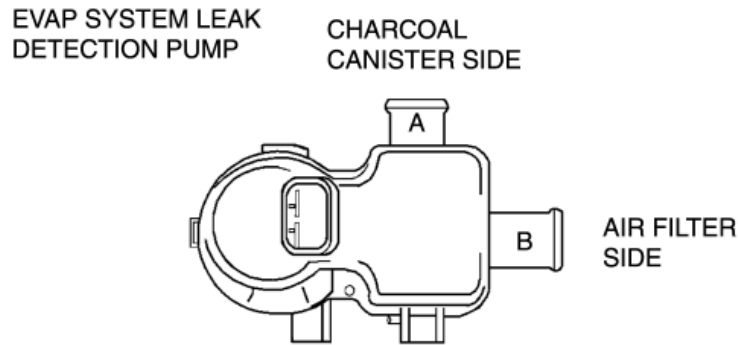
Terminals	Resistance (ohm)
A—B	20—50
A—C	26.6—32.4
A—D	118 or less

- If not as specified, replace the EVAP system leak detection pump. (See [EVAPORATIVE EMISSION \(EVAP\) CONTROL SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)

Airflow Inspection

1. Disconnect the negative battery cable.
2. Remove the EVAP system leak detection pump. (See [EVAPORATIVE EMISSION \(EVAP\) CONTROL SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)

3. Blow air into port A and verify that there is airflow from port B.



- If not as specified, replace the EVAP system leak detection pump. (See [EVAPORATIVE EMISSION \(EVAP\) CONTROL SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)

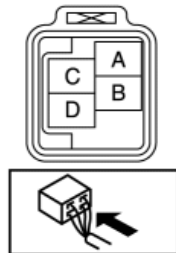
4. Blow air into port B and verify that there is airflow from port A.

- If not as specified, replace the EVAP system leak detection pump. (See [EVAPORATIVE EMISSION \(EVAP\) CONTROL SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- If as specified, carry out the "Circuit Open/Short Inspection".

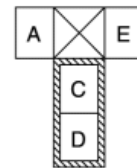
Circuit Open/Short Inspection

1. Disconnect the PCM connector. (See [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Inspect the following wiring harnesses for open or short (continuity check).

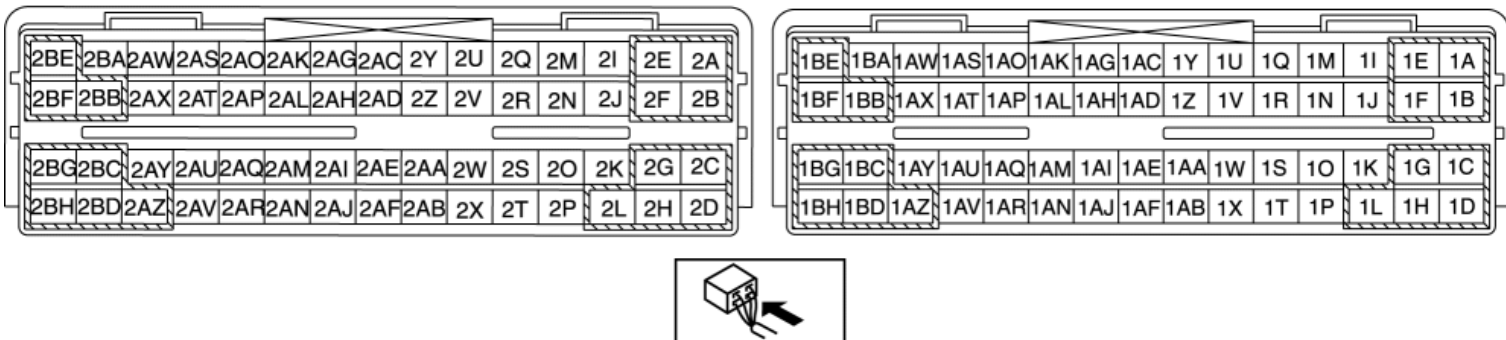
EVAP SYSTEM LEAK DETECTION PUMP
WIRING HARNESS-SIDE CONNECTOR



MAIN RELAY



PCM
WIRING HARNESS-SIDE CONNECTOR



Open circuit

- If there is no continuity, the circuit is open. Repair or replace the wiring harness.
 - EVAP system leak detection pump terminal C and PCM terminal 1V

EVAP system leak detection pump terminal D and PCM terminal 1U

- EVAP system leak detection pump terminal A and main relay terminal C
- EVAP system leak detection pump terminal B and the body GND

Short circuit

- If there is no continuity, the circuit is shorted. Repair or replace the wiring harness.
 - EVAP system leak detection pump terminal C and power supply
 - EVAP system leak detection pump terminal D and power supply
 - EVAP system leak detection pump terminal A and the body GND
 - EVAP system leak detection pump terminal B and power supply

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

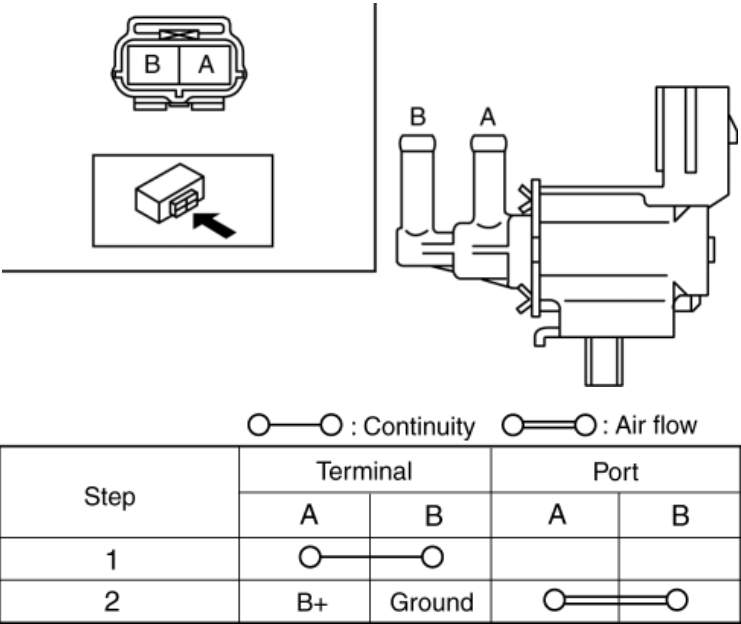
[Back to Top](#)

2011 - RX-8 - Engine

PURGE SOLENOID VALVE INSPECTION [13B-MSP]

Air flow Inspection

- 1. Disconnect the negative battery cable.
- 2. Remove the purge solenoid valve.
- 3. Inspect air flow between the ports under the following conditions:

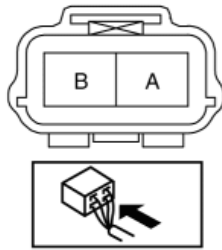


- If as specified, carry out the "Circuit Open/Short Inspection".
- If there is no air flow, replace the purge solenoid valve.

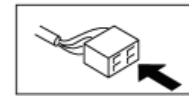
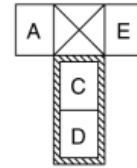
Circuit Open/Short Inspection

- 1. Disconnect the PCM connector. (See [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- 2. Inspect the following wiring harnesses for open or short (continuity check).

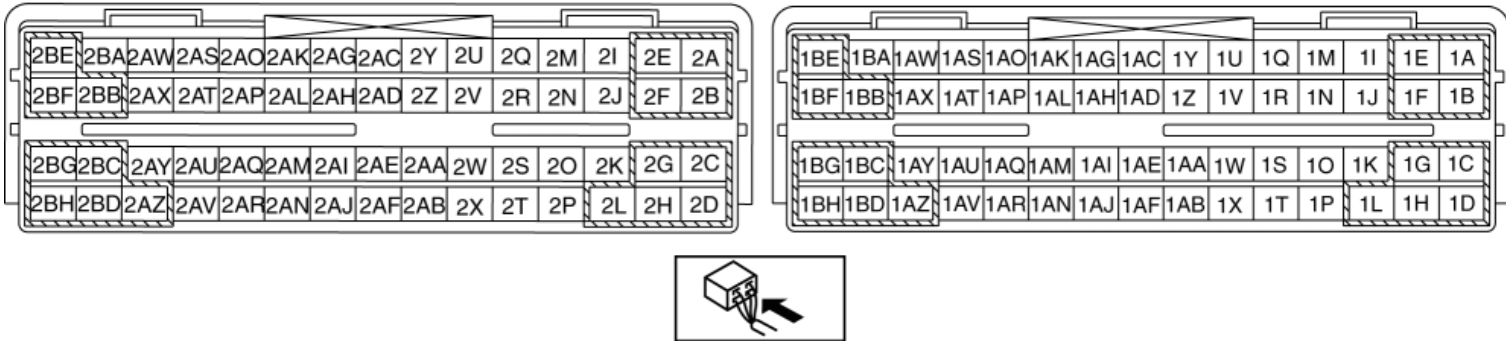
**PURGE SOLENOID VALVE
WIRING HARNESS-SIDE CONNECTOR**



MAIN RELAY



**PCM
WIRING HARNESS-SIDE CONNECTOR**



Open circuit

- If there is no continuity, the circuit is open. Repair or replace the wiring harness.
 - Purge solenoid valve terminal B and PCM terminal 2C
 - Purge solenoid valve terminal A and main relay terminal C

Short circuit

- If there is no continuity, the circuit is shorted. Repair or replace the wiring harness.
 - Throttle body terminal A and body GND
 - Throttle body terminal B and power supply
 - Throttle body terminal B and body GND

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

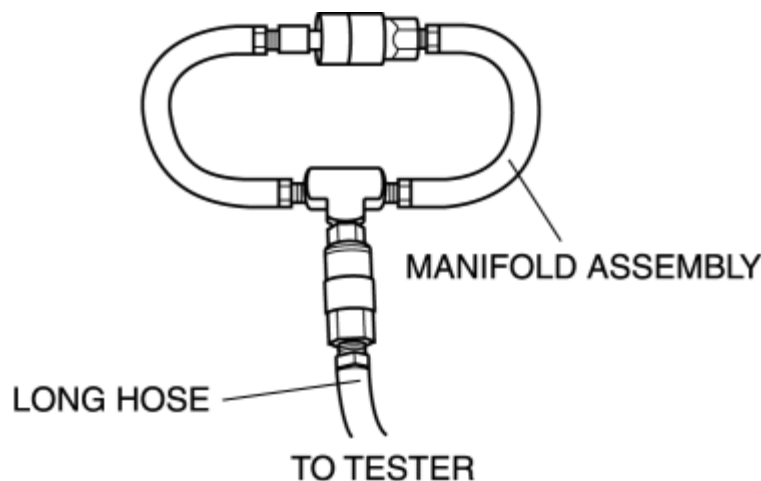
FUEL-FILLER CAP INSPECTION [13B-MSP]

Leakage Inspection

1. Perform the following **SST** (Evaporative Emission System Tester 134-01049A) self-test:

NOTE:

- If the tester does not work correctly during self-test, refer to the tester operators manual for more detailed procedures.
- a. Verify that the gas cylinder valve is closed and the control valve located on the tester is in the TEST position. All tester displays should be off at this time.
 - b. Connect the long hose (part of **SST**) to the tester.



- c. Connect the manifold assembly (part of **SST**) to the long hose as shown.
- d. Open the gas cylinder valve and verify the gas cylinder regulator left gauge reads **69—82 kPa {0.71—0.83 kgf/cm², 10—12 psi}** (preset at factory).
 - If not, refer to the tester operators manual to contact tester manufacturer.
- e. Press the ON/OFF switch to turn on the **SST** and make sure the left display reads **0.0**.
- f. Turn the control valve on the tester to the FILL position.
- g. Verify the left display reading is **within 13.9 to 14.0** in of water.

- If not, adjust the pressure using the regulator knob located on the right side of the tester.

h. Turn the control valve to TEST position and press the START switch.

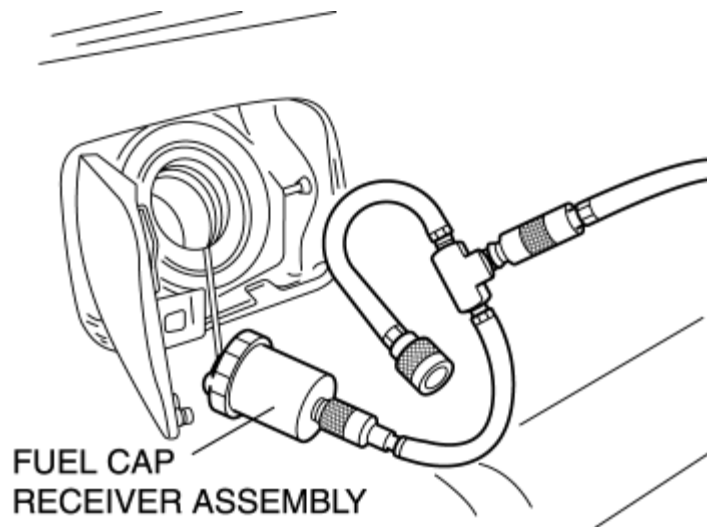
i. After the **2-min** countdown (left display) is completed, the right display shows the total pressure loss for that period. A **0.5** in of water loss is acceptable on the self-test.

- If the loss is **more than 0.5** in of water, do one or more self-test. If the failed test repeats, check for leak using the ultrasonic leak detector (part of **SST**).

2. Press the RESET switch to set the left display reading to **0.0**.

3. Connect the fuel cap receiver assembly (part of **SST**) to the manifold assembly and fuel-filler cap from the vehicle.

- If the fuel-filler cap is not a genuine part, replace it.



4. Turn the control valve to the FILL position.

5. Wait (**maximum 20 s**) until the left display reads **13.9** to **14.0** in of water.

- If the reading is slightly below the specification, adjust it using the regulator knob.
- If the reading is far below, the fuel-filler cap has leak. Replace it.

6. Turn the control valve to the TEST position and press the START switch.

7. After the **2-min** countdown (left display) is completed, check the test result (the failed/passed light on the tester).

- If the green light turns on, the fuel-filler cap is normal.
- If the red light turns on, the fuel-filler cap has leakage. Replace it.

8. Close the gas cylinder valve.

9. Turn the control valve to the FILL position.

10. Press the ON/OFF switch to turn off the tester.

[< Previous](#) [Next >](#)

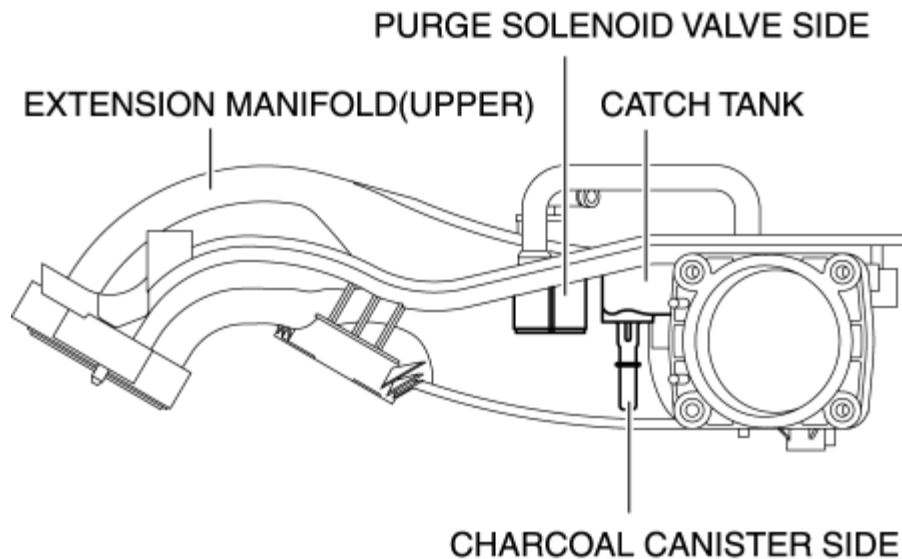
© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

CATCH TANK INSPECTION [13B-MSP]

1. Remove the extension manifold (upper). (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Seal the catch tank on the purge solenoid valve side.

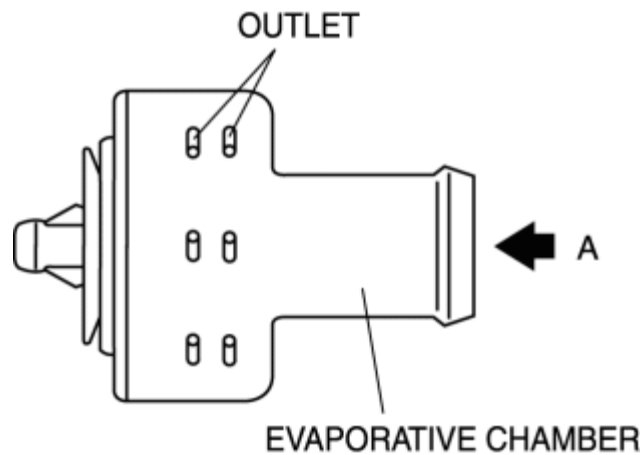


3. Inspect for air leakage when blowing air from the charcoal canister side.
 - If air leaks, replace the extension manifold (upper). (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)

2011 - RX-8 - Engine

EVAPORATIVE CHAMBER INSPECTION [13B-MSP]

1. Remove the rear differential. (See [REAR DIFFERENTIAL REMOVAL/INSTALLATION](#).)
2. Remove the evaporative chamber installed on outside air side of the charcoal canister hose.
3. Blow air from port A and verify that there is air flow.



- If there is no air flow, replace the evaporative chamber.
4. Verify that there is no deformation or cracking of the evaporative chamber.
 - If the exterior is not normal, replace the evaporative chamber.

2011 - RX-8 - Engine

QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [13B-MSP]

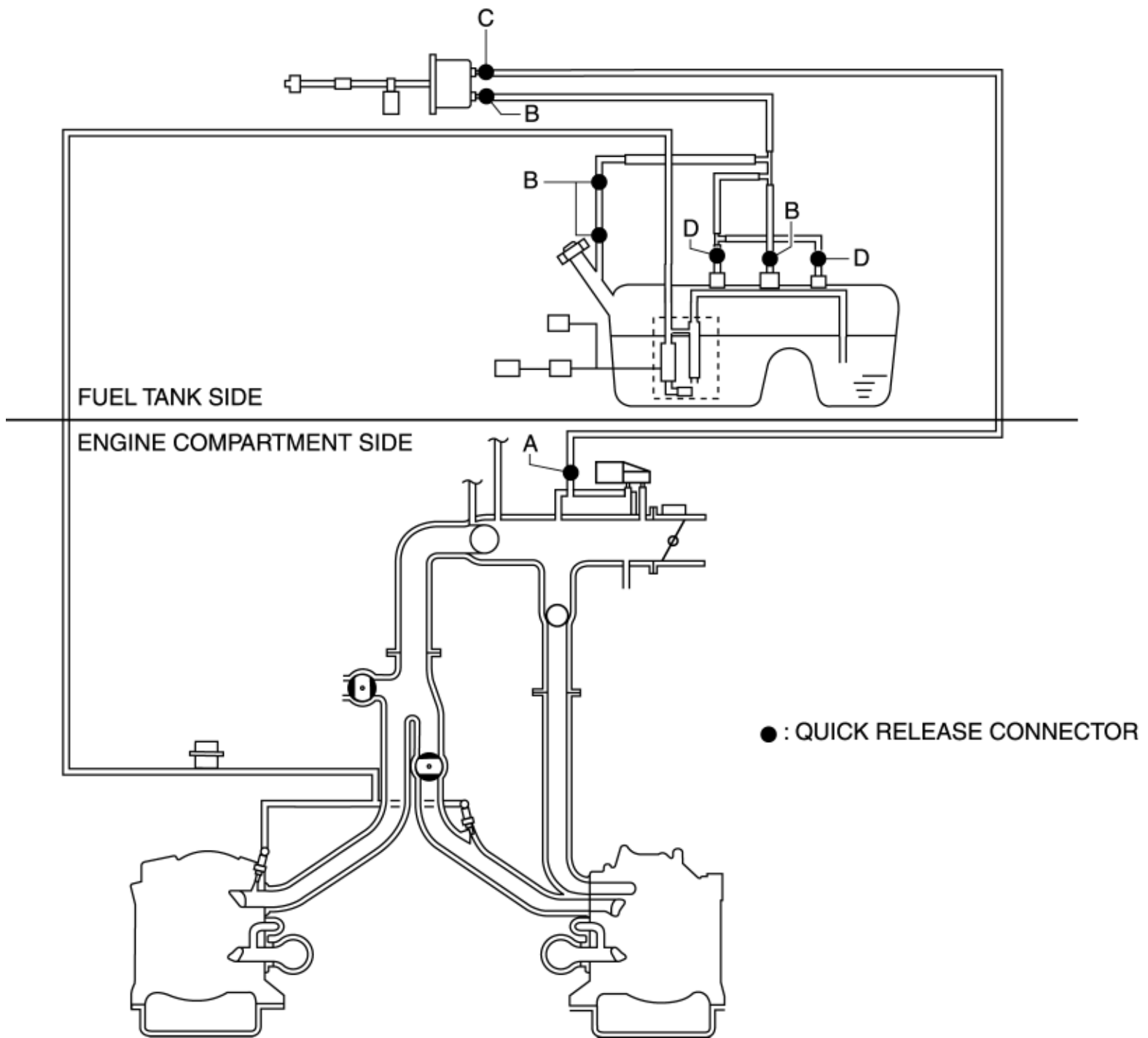
CAUTION:

- Disconnecting/connecting the quick release connector without cleaning it may cause damage to the fuel pipe and quick release connector. Always clean the quick release connector joint area before disconnecting/connecting using a cloth or soft brush, and make sure that it is free of foreign material.

Quick Release Connector Type

CAUTION:

- There are four types of quick release connectors. Verify the type and location, and install/remove properly.



Type A Removal

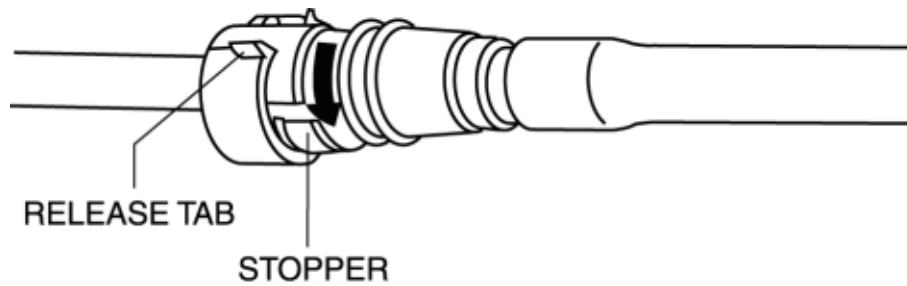
CAUTION:

- The quick release connector may be damaged if the release tab is bent excessively. Do not expand the release tab over the stopper.

NOTE:

- The evaporative hose can be removed by pushing it to the evaporative pipe side to release the lock.

1. Rotate the release tab on the quick release connector to the stopper position.



2. Pull out the quick release connector straight from the evaporative pipe and disconnect it.
3. Cover the disconnected quick release connector and evaporative pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.

Type B Removal

CAUTION:

- Be careful not to damage the evaporative pipe when unlocking the retainer.

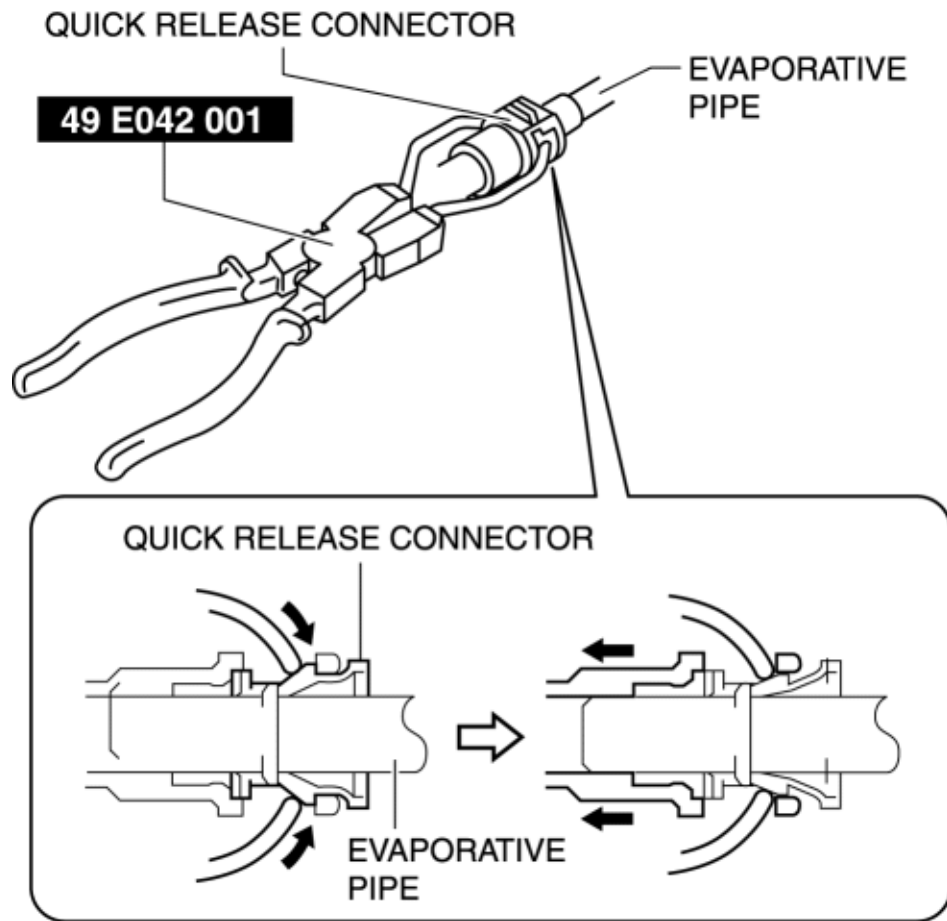
NOTE:

- When removing the quick release connector, either SST 49 E042 001 or 49 N013 103A (Part of 49 N013 1A0D) can be used.

When using SST 49 E042 001

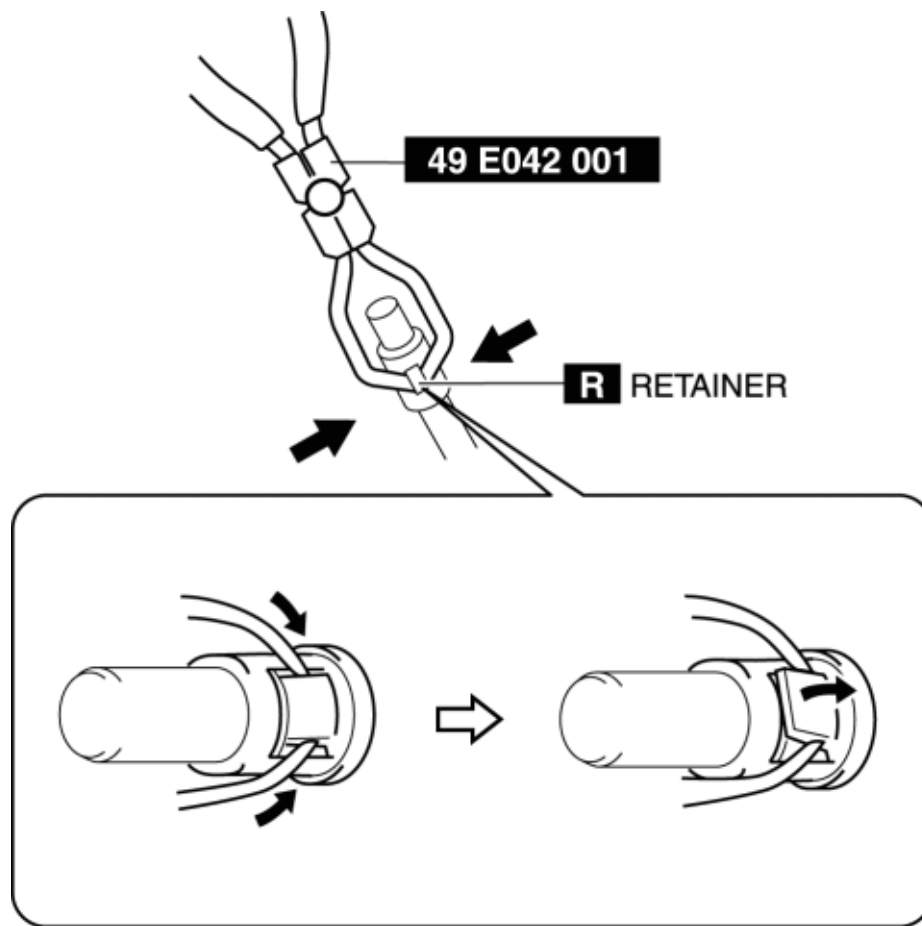
NOTE:

- If the quick release connector is removed, replace the retainer with a new one.
1. Set the **SST** parallel to the quick release connector.



NOTE:

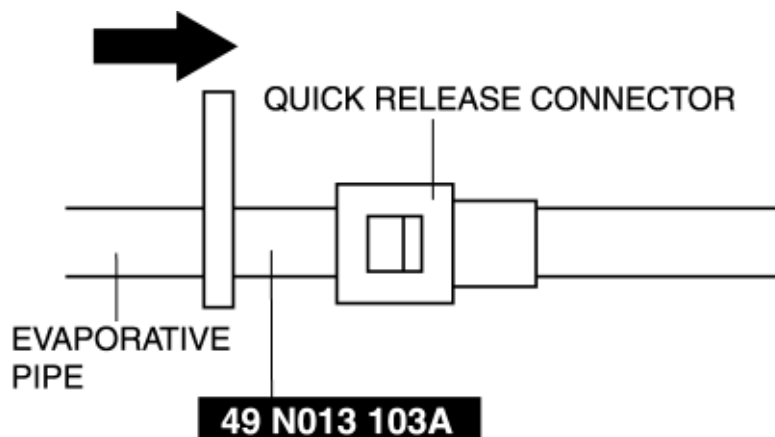
- The quick release connector can be removed by pushing the center of the retainer tabs.
 - The retainer is attached to the evaporative pipe even after the connector is disconnected.
2. Hold the center of the retainer tabs with the **SST** ends and press the retainer.
 3. Pull the connector side and disconnect the quick release connector.
 4. Raise a retainer tab using the **SST** and remove the retainer.



5. Cover the disconnected quick release connector and evaporative pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.

When using SST 49 N013 103A (Part of 49 N013 1A0D)

1. Insert the **SST** into the quick release connector.

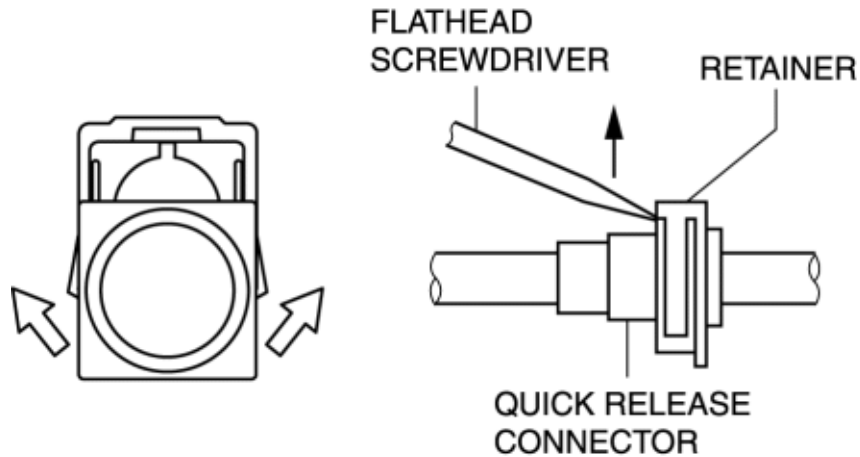


2. Pull out the evaporative hose straight from the evaporative pipe and disconnect it.

3. Cover the disconnected quick release connector and pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.

Type C Removal

1. Move the retainer upward using a small flathead screwdriver or a similar tool.



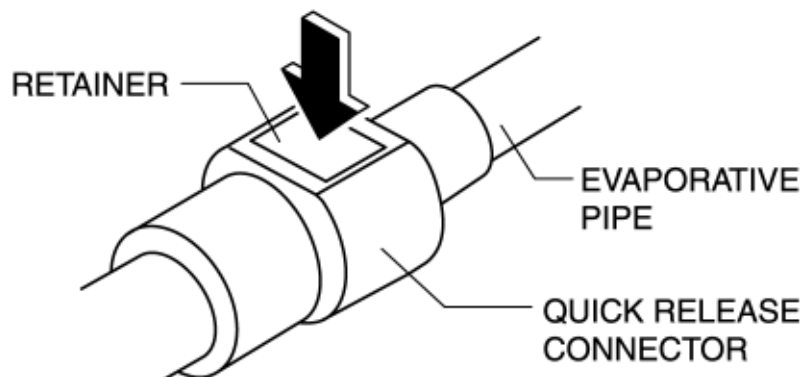
2. Pull out the evaporative hose straight from the evaporative pipe and disconnect it.
3. Cover the disconnected quick release connector and evaporative pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.

Type D Removal

NOTE:

- If the quick release connector is removed, replace the retainer with a new one.

1. Push the retainer.



NOTE:

- The quick release connector can be removed by pushing the center of the retainer tabs.
- The retainer is attached to the evaporative pipe even after the connector is disconnected.

2. Pull the connector side and disconnect the quick release connector.
3. Cover the disconnected quick release connector and evaporative pipe with vinyl sheeting or a similar material to prevent it from scratches or dirt.

Type A Installation

NOTE:

- If the quick release connector O-ring is damaged or has slipped, replace the quick release connector.
 - A checker tab is integrated with the quick release connector for new evaporative hoses. Remove the checker tab from the quick release connector after the connector is completely engaged with the evaporative pipe.
1. Inspect the evaporative hose and evaporative pipe sealing surface for damage and deformation.
 - If there is any malfunction, replace it with a new one.
 2. Apply a small amount of clean engine oil to the sealing surface of the evaporative pipe.
 3. Reconnect the evaporative hose straight to the evaporative pipe until a click is heard.

NOTE:

- If the quick release connector does not move at all, disconnect it, verify that the O-ring is not damaged or has not slipped, and then reconnect the quick release connector.
4. Lightly pull and push the quick release connector a few times by hand, and then verify that it can move 2.0—3.0 mm {0.08—0.12 in} and is connected securely.

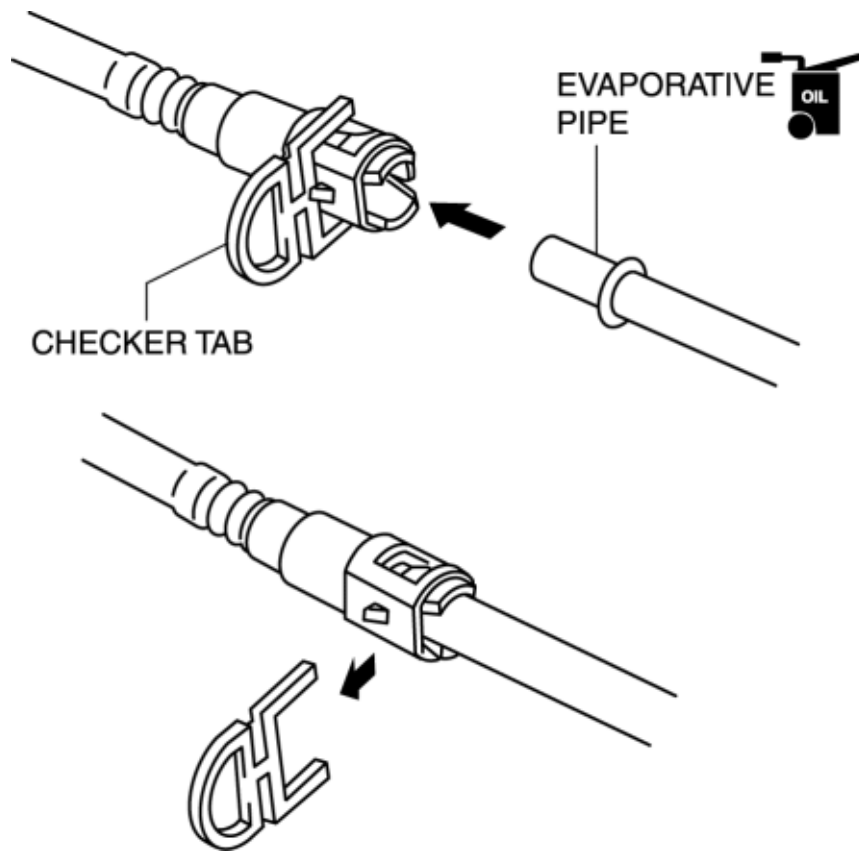
Type B Installation

CAUTION:

- Always replace the retainer with a new one when using SST 49 E042 001, otherwise, evaporative leakage could result.

NOTE:

- If the quick release connector O-ring is damaged or has slipped, replace the piping component.
- A checker tab is integrated with the quick release connector for new evaporative hoses. Remove the checker tab from the quick release connector after the connector is completely engaged with the pipe.

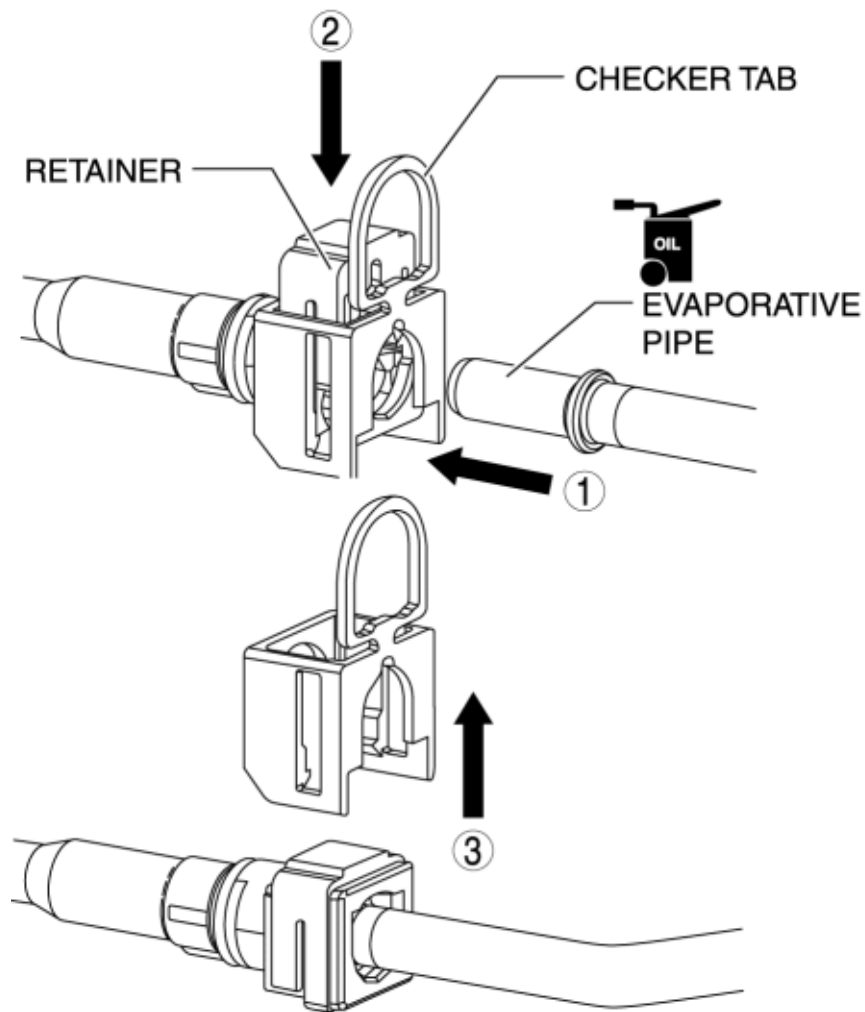


1. Inspect the evaporative hose and evaporative pipe sealing surface for damage and deformation.
 - If there is any malfunction, replace it with a new one.
2. Apply a small amount of clean engine oil to the sealing surface of the evaporative pipe.
3. Install a new retainer to the quick release connector.
4. Reconnect the evaporative hose straight to the pipe until a click is heard.
5. Lightly pull and push the quick release connector a few times by hand, and then verify that it is connected securely.

Type C Installation

NOTE:

- If the quick release connector O-ring is damaged or has slipped, replace the evaporative hose.
1. Inspect the evaporative hose and evaporative pipe sealing surface for damage and deformation.
 - If there is any malfunction, replace it with a new one.
 2. Apply a small amount of clean engine oil to the sealing surface of the evaporative pipe.
 3. Install the quick release connector.

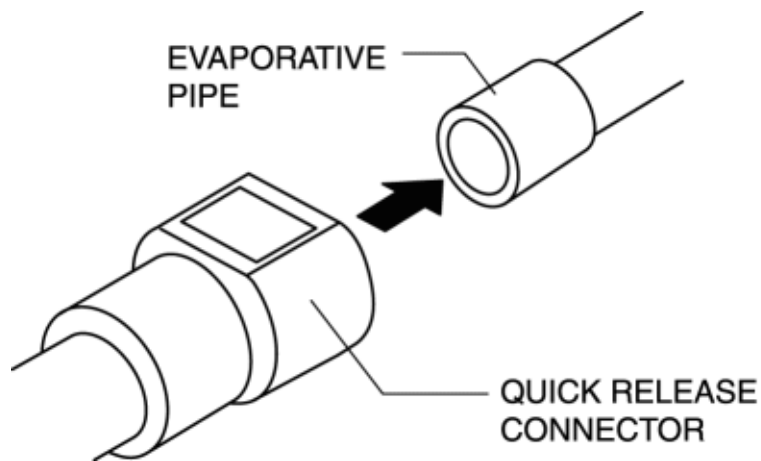


- Insert the evaporative pipe straight to the end of the quick release connector.
- Push down the retainer using a finger.
 - If the retainer cannot be pushed down, push the fuel pipe further to the quick release connector.

4. Lightly pull and push the quick release connector a few times by hand, and then verify that it is connected securely.

Type D Installation

1. Inspect the evaporative hose and evaporative pipe sealing surface for damage and deformation.
 - If there is any malfunction, replace it with a new one.
2. Install the quick release connector.



- Insert the evaporative pipe straight to the end of the quick release connector.
- Push down the retainer using a finger.
 - If the retainer cannot be pushed down, push the evaporative pipe further to the quick release connector.

3. Lightly pull and push the quick release connector a few times by hand, and then verify that it is connected securely.

[< Previous](#) [Next >](#)

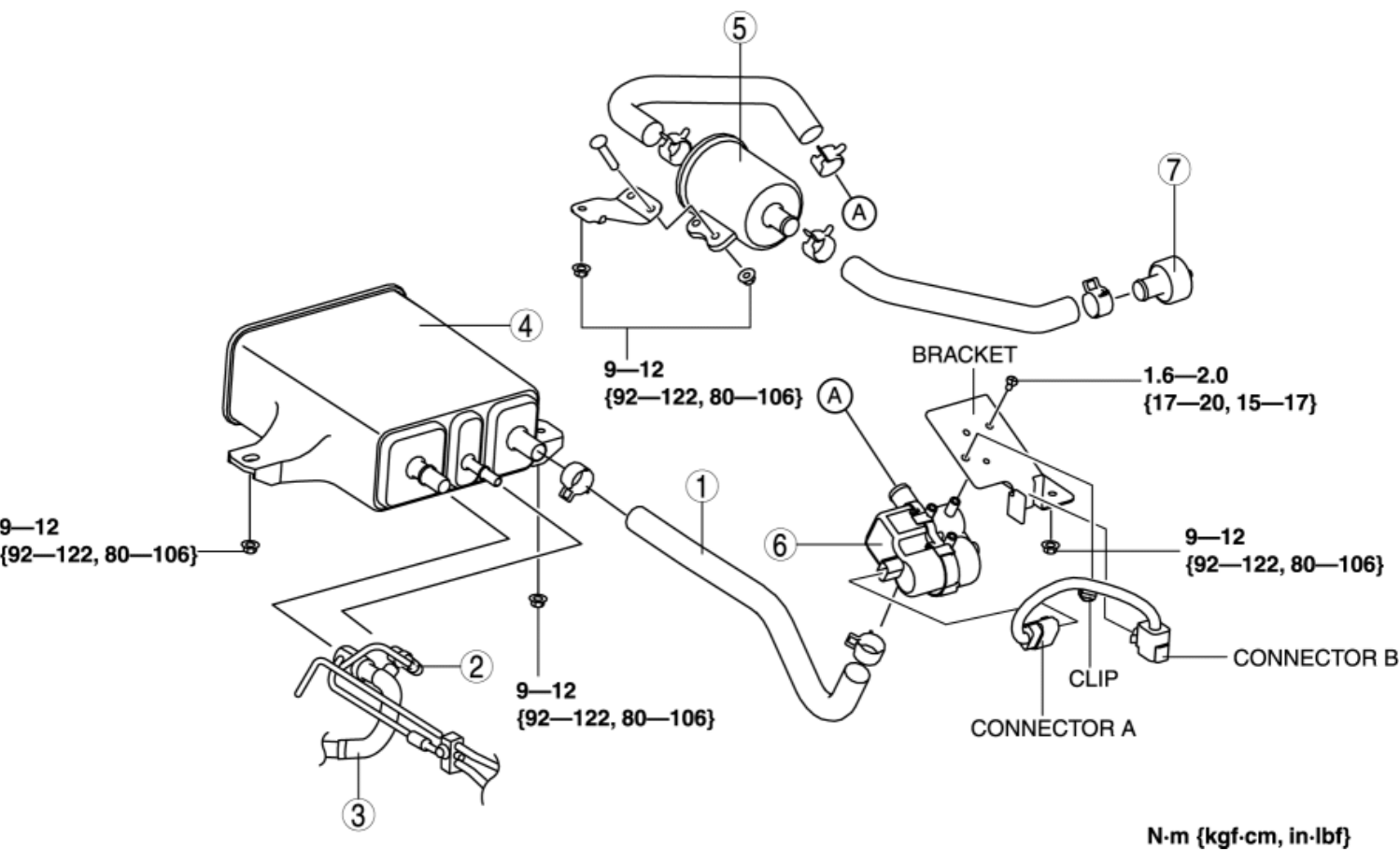
© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM REMOVAL/INSTALLATION [13B-MSP]

- 1. Remove the rear differential. (See [REAR DIFFERENTIAL REMOVAL/INSTALLATION](#).)
- 2. Remove in the order indicated in the table.
- 3. Install in the reverse order of removal.



1	Evaporative hose (to EVAP system leak detection pump)
2	Evaporative hose (to purge solenoid valve) (See QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [13B-MSP] .)
3	Evaporative hose (to fuel shut-off/rollover valve) (See QUICK RELEASE CONNECTOR (EMISSION SYSTEM) REMOVAL/INSTALLATION [13B-MSP] .)
4	Charcoal canister

5	Air filter
6	EVAP system leak detection pump (See EVAP System Leak Detection Pump Installation Note.)
7	Evaporative chamber (See Evaporative Chamber Installation Note.)

Evaporative Chamber Installation Note

1. Install the evaporative chamber to the hose.
2. Insert the evaporative chamber into crossmember No.5.

EVAP System Leak Detection Pump Installation Note

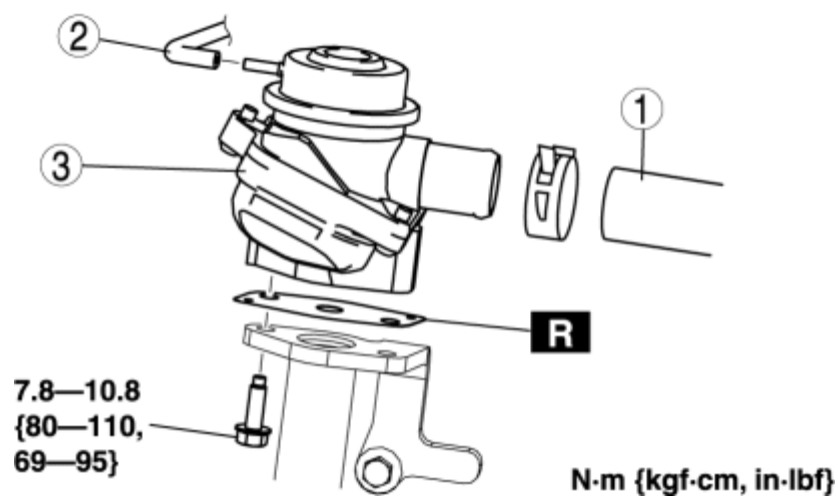
1. Install the bracket on the EVAP system leak detection pump.
2. Install the connector A.
3. Install the connector B.
4. Install the clip.

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

SECONDARY AIR INJECTION (AIR) CONTROL VALVE REMOVAL/INSTALLATION [13B-MSP]

1. Remove in the order indicated in the table.



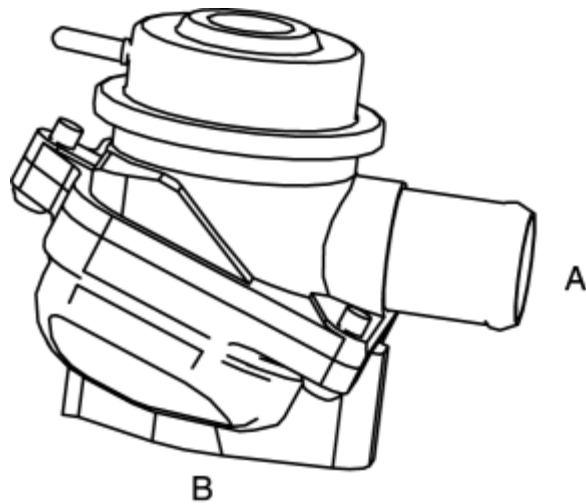
1	Air hose
2	Vacuum hose
3	AIR control valve

2. Install in the reverse order of removal.

2011 - RX-8 - Engine

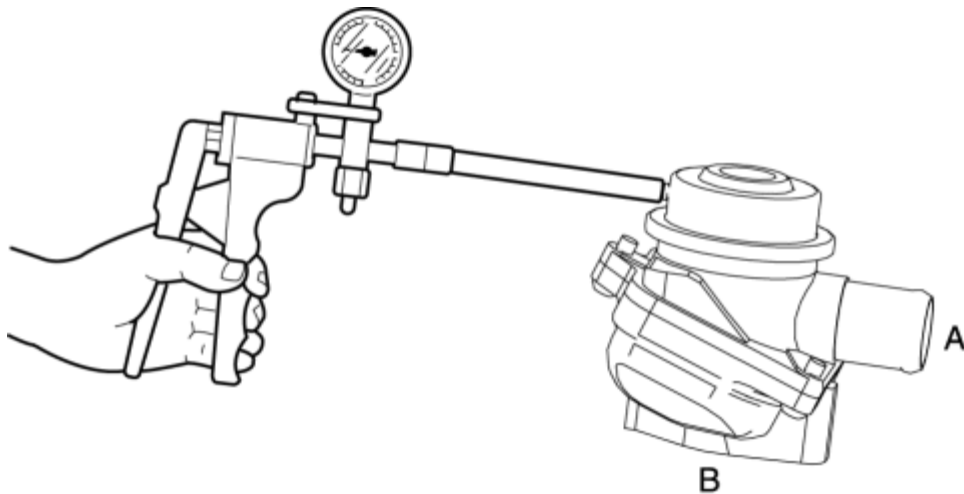
SECONDARY AIR INJECTION (AIR) CONTROL VALVE INSPECTION [13B-MSP]

1. Remove the secondary air injection control valve. (See [SECONDARY AIR INJECTION \(AIR\) CONTROL VALVE REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Verify that there is no air flow between A and B of the AIR control valve port.



- If there is air flow, replace the AIR control valve. (See [SECONDARY AIR INJECTION \(AIR\) CONTROL VALVE REMOVAL/INSTALLATION \[13B-MSP\]](#).)

3. Install the vacuum pump to the AIR control valve.



4. Pressurize the actuator valve of the AIR control with a negative pressure of **approx. 60 kPa {450 mmHg, 18 inHg}**.

CAUTION:

- Since the valve actuator of the AIR control could be damaged, do not pressurize positive pressure or negative pressure more than 100 kPa {1.02 kgf/cm², 14.5 psi}.

5. Blow air through port A, then verify that there is air flow.

- If there is no air flow, replace the AIR control valve.

6. Blow air from through port B, then verify that there is no air flow.

- If there is air flow, replace the AIR control valve. (See [SECONDARY AIR INJECTION \(AIR\) CONTROL VALVE REMOVAL/INSTALLATION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

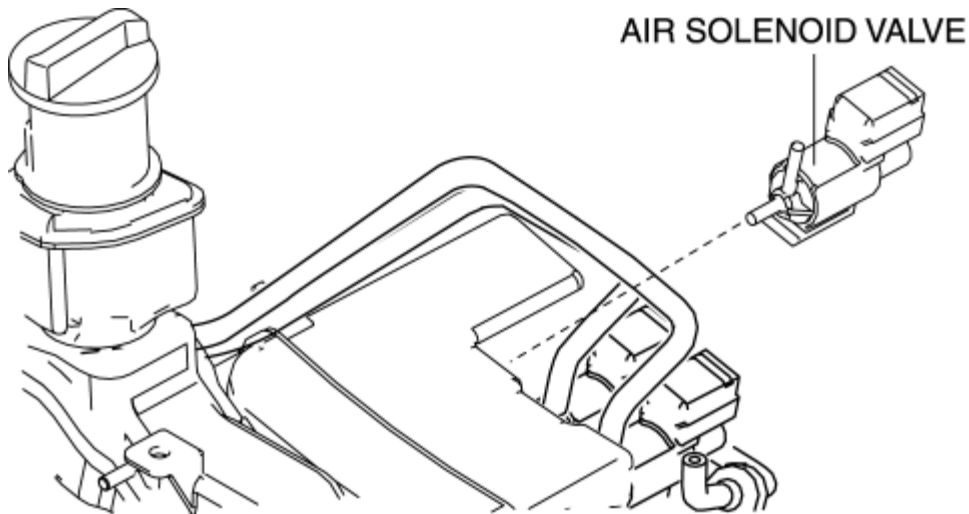
[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

SECONDARY AIR INJECTION (AIR) SOLENOID VALVE REMOVAL/INSTALLATION [13B-MSP]

1. Remove the extension manifold (upper). (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Disconnect the air solenoid valve connector.
3. Disconnect the vacuum hose from the air solenoid valve.
4. Remove the air solenoid valve.

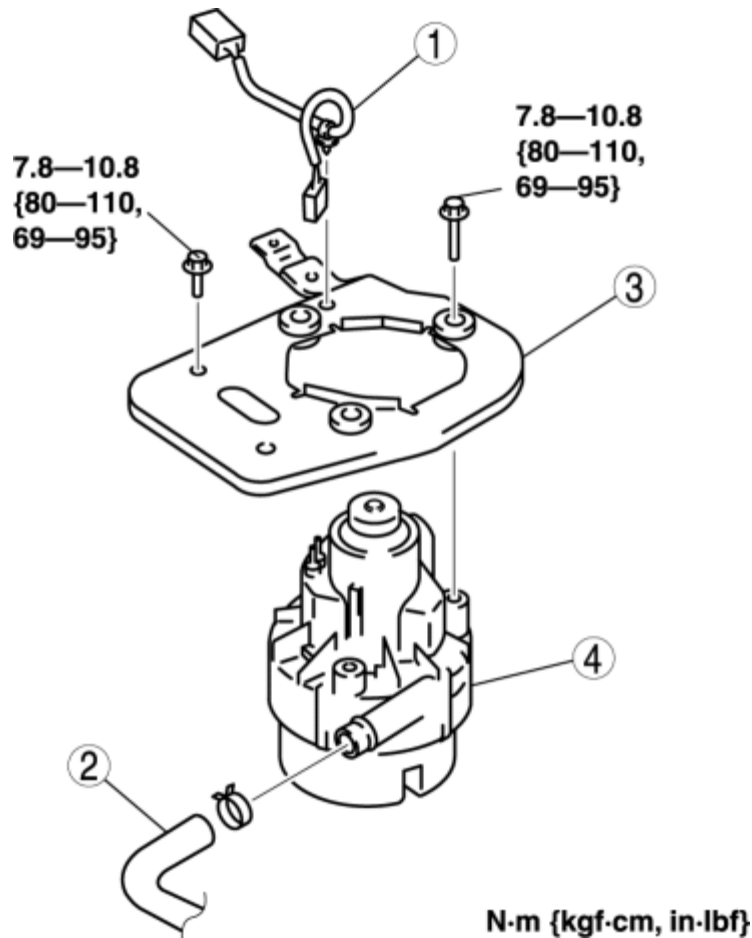


5. Install in the reverse order of removal.

2011 - RX-8 - Engine

SECONDARY AIR INJECTION (AIR) PUMP REMOVAL/INSTALLATION [13B-MSP]

1. Remove in the order indicated in the table.



1	Connector
2	Air hose
3	AIR pump bracket
4	AIR pump

2. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

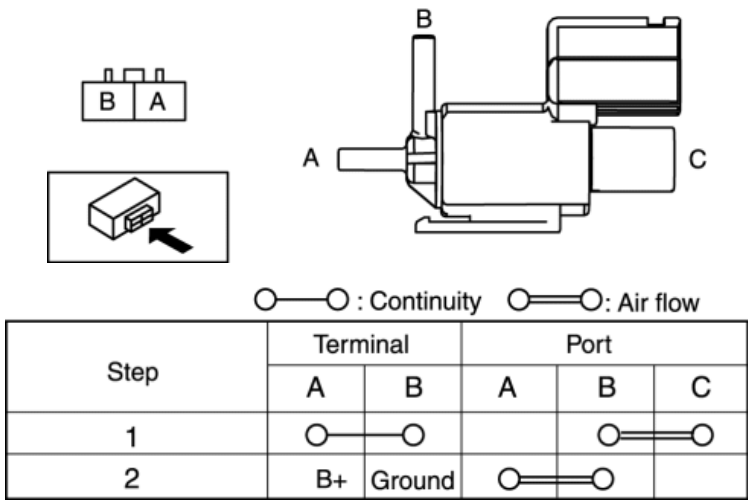
[Back to Top](#)

2011 - RX-8 - Engine

SECONDARY AIR INJECTION (AIR) SOLENOID VALVE INSPECTION [13B-MSP]

Air flow Inspection

1. Disconnect the negative battery cable.
2. Remove the AIR solenoid valve. (See [SECONDARY AIR INJECTION \(AIR\) SOLENOID VALVE REMOVAL/INSTALLATION \[13B-MSP\]](#).)
3. Inspect air flow between the ports under the following conditions:

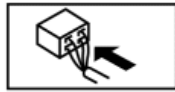


- If there is any malfunction, replace the AIR solenoid valve. (See [SECONDARY AIR INJECTION \(AIR\) SOLENOID VALVE REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- If as specified, carry out the “Circuit Open/Short Inspection”.

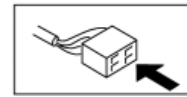
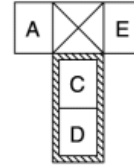
Circuit Open/Short Inspection

1. Disconnect the PCM connector. (See [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Inspect the following wiring harnesses for open or short (continuity check).

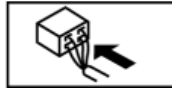
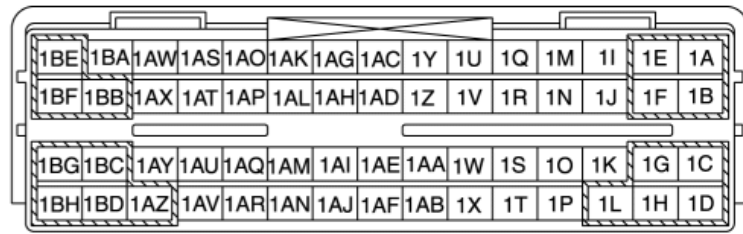
AIR SOLENOID VALVE WIRING HARNESS-SIDE CONNECTOR



MAIN RELAY



PCM WIRING HARNESS-SIDE CONNECTOR



Open circuit

- If there is no continuity, the circuit is open. Repair or replace the wiring harness.
 - AIR solenoid valve terminal B and PCM terminal 2G
 - AIR solenoid valve terminal A and main relay terminal C

Short circuit

- If there is no continuity, the circuit is shorted. Repair or replace the wiring harness.
 - AIR solenoid valve terminal B and body GND
 - AIR solenoid valve terminal B and power supply

[< Previous](#) [Next >](#)

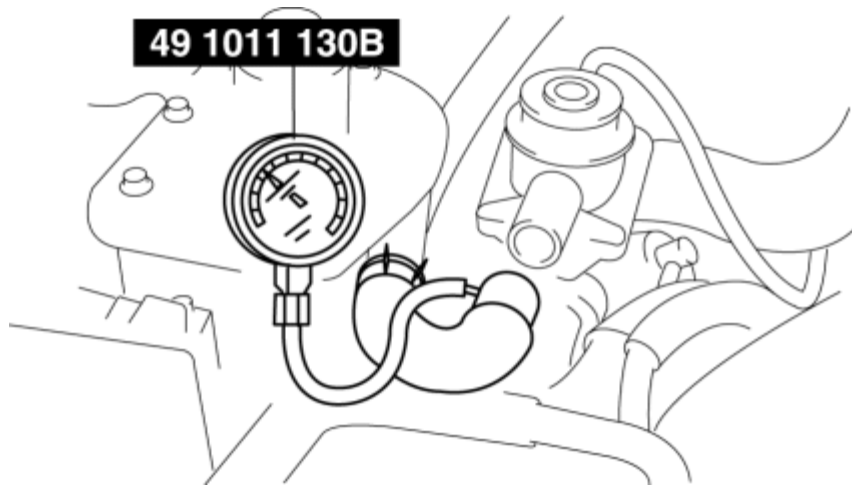
2011 - RX-8 - Engine

SECONDARY AIR INJECTION (AIR) PUMP INSPECTION [13B-MSP]

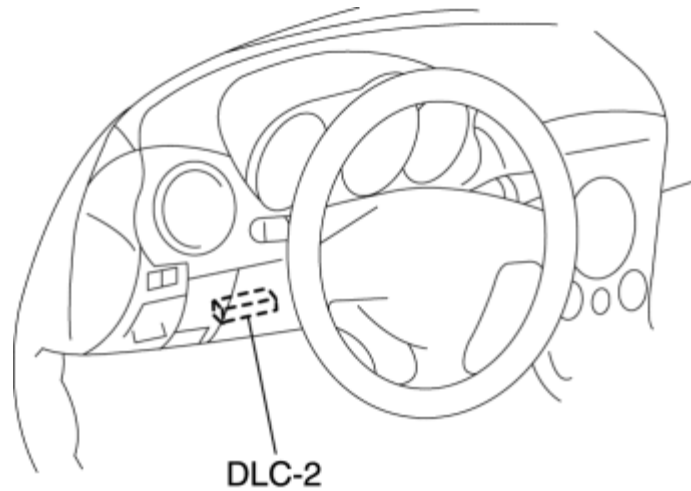
Discharging Pressure Inspection

Using M-MDS

1. Remove the air hose between the AIR pump and AIR control valve at the AIR control valve side.
2. Install the **SST** on the AIR control side using tape to prevent air leakage.



3. Start the engine, turn all electrical loads off, and idle the engine after completely warming it up.
4. Connect the M-MDS to the DLC-2.



5. Turn the PID "AIP RLY" from off to on position using the simulation function. (See [ON-BOARD DIAGNOSTIC TEST \[13B-MSP\]](#).)

CAUTION:

- When connecting the secondary air injection pump relay to the body ground, short the specified terminal, because shorting the wrong terminal may cause malfunctions.
- Do not operate the secondary air injection pump for more than 1 min. to avoid damaging the pump.
- Stop the engine and wait for 1 h or more after energization of the secondary air injection pump to allow it to cool down before operating it again.

6. Verify that the discharging pressure of the AIR pump is within the specification.

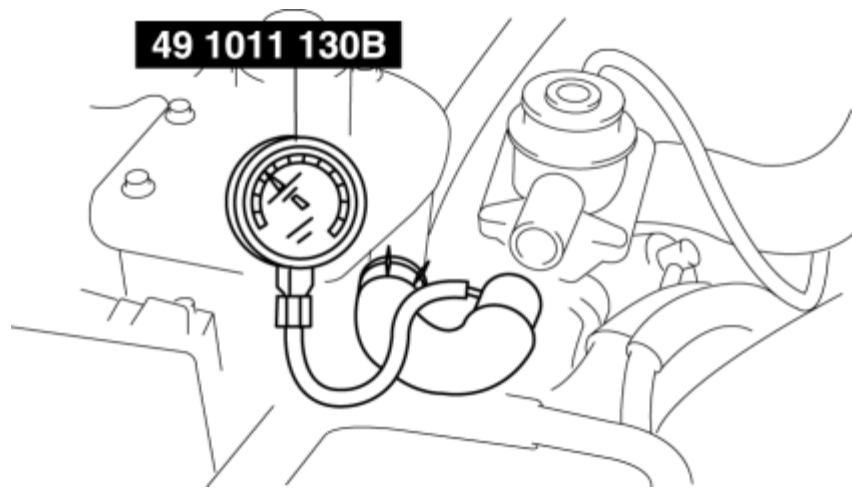
- If not within the specification, inspect the following:
 - PCM terminal 1G and AIR pump relay terminal A
 - AIR pump relay
 - If it is within the specification, inspect the continuity for the AIR pump.

Discharging pressure

- 6—12 kPa {0.07—0.12 kgf/cm², 0.9—1.7 psi} [15—35 °C {59—95 °F}]

Without using M-MDS

1. Remove the air hose between the AIR pump and AIR control valve at the AIR control valve side.
2. Install the **SST** on the AIR control side using tape to prevent air leakage.



3. Position the PCM out of the way with the connects still connected. (See [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#).)

4. Start the engine, turn all electrical loads off, and idle the engine after completely warming it up.

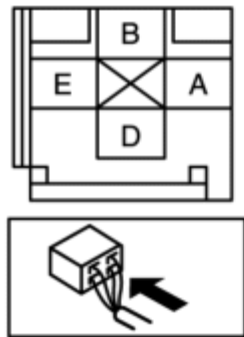
5. Connect the AIR pump relay terminal A to the ground, and operate the AIR pump.

CAUTION:

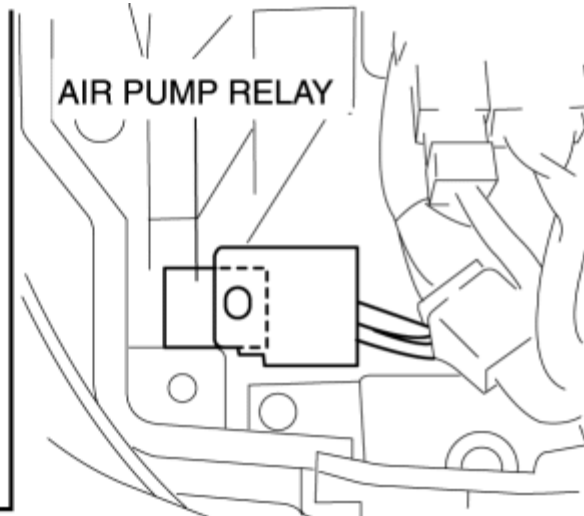
- When connecting the secondary air injection pump relay to the body ground, short the specified terminal, because shorting the wrong terminal may cause malfunctions.
- Do not operate the secondary air injection pump for more than 1 min. to avoid damaging the pump.
- Stop the engine and wait for 1 h or more after energization of the secondary air injection pump to allow it to cool down before operating it again.

6. Verify that the discharging pressure of the AIR pump is within the specification.

**AIR PUMP RELAY
WIRING HARNESS-
SIDE CONNECTOR**



AIR PUMP RELAY



- If not within the specification, inspect the following:
 - AIR pump relay

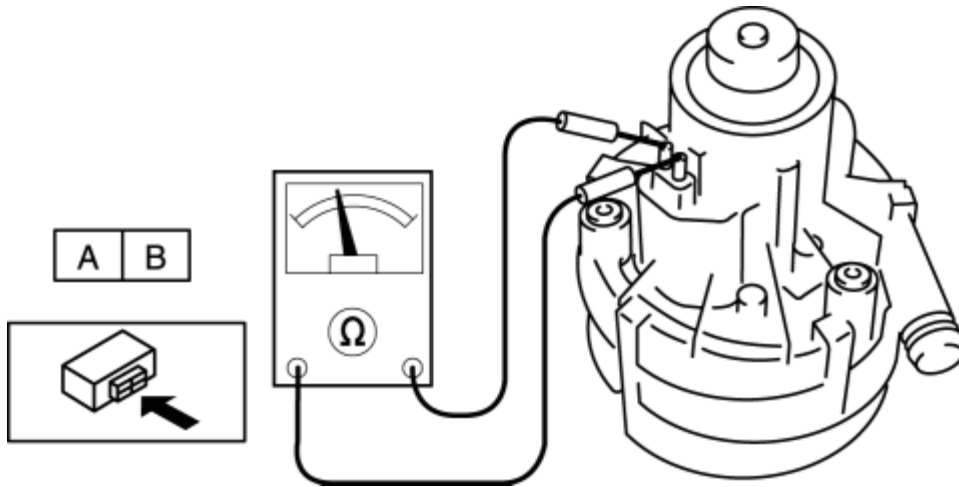
- If it is within the specification, inspect the continuity for the AIR pump.

Discharging pressure

- 6—12 kPa {0.07—0.12 kgf/cm², 0.9—1.7 psi} [15—35 °C {59—95 °F}]

Continuity Inspection

1. Disconnect the negative battery cable.
2. Disconnect the AIR pump connector.
3. Inspect for continuity between the AIR pump terminals A and B.



- If there is no continuity, replace the AIR pump. (See [SECONDARY AIR INJECTION \(AIR\) PUMP REMOVAL/INSTALLATION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

FUEL SHUT-OFF/ROLLOVER VALVE INSPECTION [13B-MSP]

NOTE:

- The fuel shut-off valve and rollover valve cannot be disassembled and inspected because it is built into the fuel tank.
1. Perform the fuel tank inspection. (See [FUEL TANK INSPECTION \[13B-MSP\]](#).)
 - If malfunction, replace the fuel tank. (See [FUEL TANK REMOVAL/INSTALLATION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

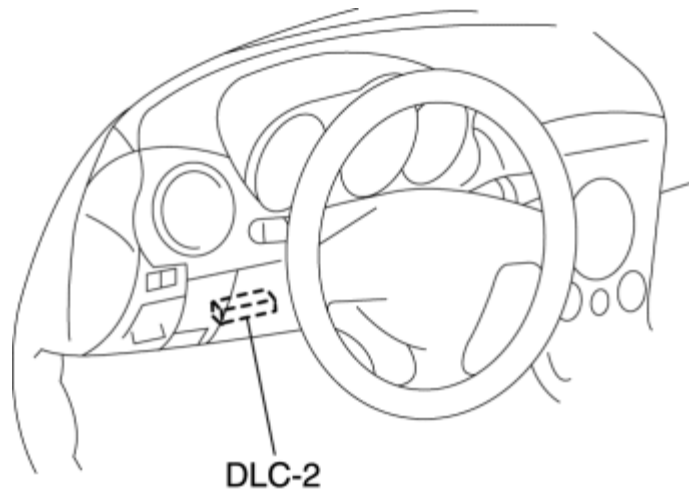
THREE-WAY CATALYTIC CONVERTER (TWC) INSPECTION [13B-MSP]

CAUTION:

- Perform the following procedures if only DTC P0420 is detected.

NOTE:

- Make sure that no HO2S DTCs have been detected. If detected, this inspection is not applicable for TWC inspection.



1. Connect the M-MDS to the DLC-2.
2. Verify that the HO2S DTCs are not detected using the M-MDS.
 - If an HO2S DTC is detected, perform the appropriate DTC inspection procedure. (See [DTC TABLE \[13B-MSP\]](#).)
3. Clear the DTC from the PCM memory using the M-MDS.
4. Start the engine and warm it up to normal operating temperature.
5. Verify that the engine compression is within the specification. (See [COMPRESSION INSPECTION \[13B-MSP\]](#).)
 - If the compression pressure is not within the specification, repair or replace any malfunctioning part.
6. Drive the vehicle at Drive Mode 3. (See [OBD-II DRIVE MODE \[13B-MSP\]](#).)
7. Access Test ID 10:21:80 using the "Diagnostic Monitoring Test Result" function.
8. Verify that the test result is within the specification as indicated on the M-MDS.

- If not as specified, replace the TWC. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)

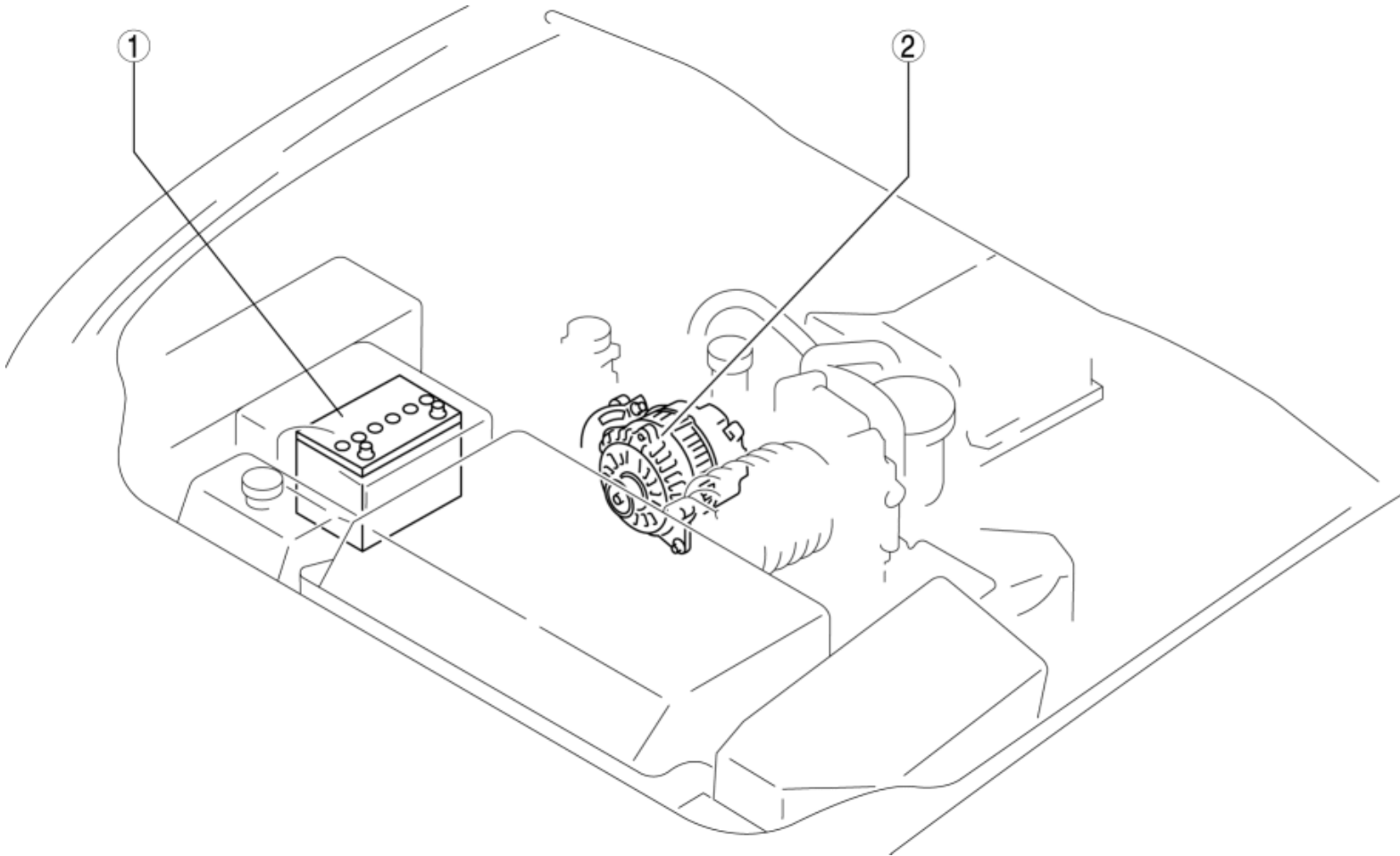
[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

CHARGING SYSTEM LOCATION INDEX [13B-MSP]



1 Battery

(See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [BATTERY INSPECTION \[13B-MSP\].](#))

(See [BATTERY RECHARGING \[13B-MSP\].](#))

2 Generator

(See [GENERATOR REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [GENERATOR INSPECTION \[13B-MSP\].](#))

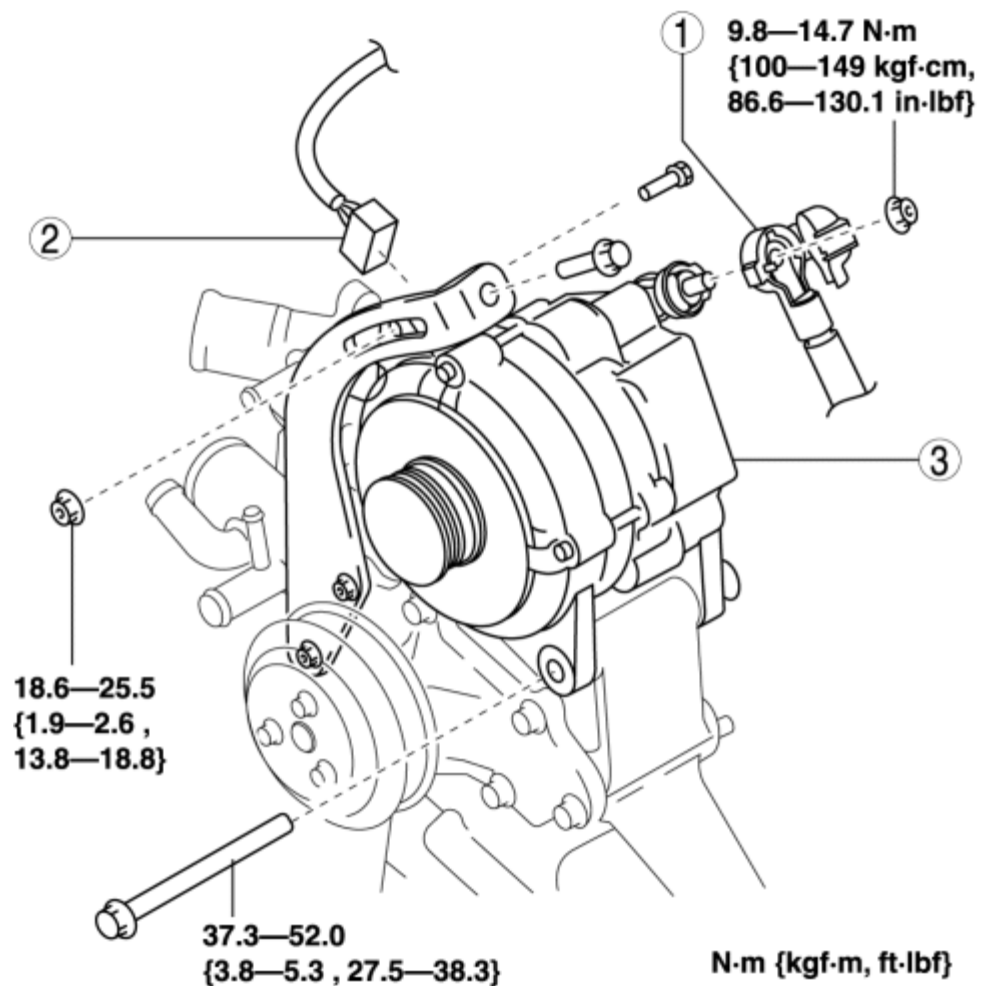
(See [GENERATOR DISASSEMBLY/ASSEMBLY \[13B-MSP\].](#))

2011 - RX-8 - Engine

GENERATOR REMOVAL/INSTALLATION [13B-MSP]

WARNING:

- Remove and install all parts when the engine is cold, otherwise they can cause severe burns or serious injury.
 - When the battery cables are connected, touching the vehicle body with generator terminal B will generate sparks. This can cause personal injury, fire, and damage to the electrical components. Always disconnect the negative battery cable before performing the following operation.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
 2. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 3. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 4. Remove the front suspension tower bar. (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[MT\].](#)) (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[AT\].](#))
 5. Remove the air hose (air cleaner to throttle body). (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))
 6. Position the drive belt out of the way. (See [DRIVE BELT REPLACEMENT \[13B-MSP\].](#))
 7. Remove in the order indicated in the table.
 8. Install in the reverse order of removal.



1 Terminal B cable

2 Generator connector

3 Generator

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

GENERATOR INSPECTION [13B-MSP]

CAUTION:

1. Do not apply direct battery positive voltage to the generator terminal D, otherwise it could cause damage to the internal parts (power transistor) of the generator.

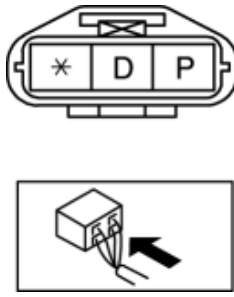
Generator Warning Light

1. Verify that the battery is fully charged.
2. Verify that the drive belt deflection/tension is within the specification. (See [DRIVE BELT DEFLECTION/TENSION INSPECTION \[13B-MSP\]](#).)
3. With the ignition switch turn to the ON position, verify that the generator warning light illuminates.
 - If it does not illuminate, inspect the generator warning light and the wiring harness.
 1. If the generator warning light and the wiring harness are normal, inspect the PCM.
4. Verify that the generator warning light goes out after the engine is started.
 - If the generator warning light does not go out, perform the DTC inspection, then perform troubleshooting according to the corresponding diagnostic procedure. (See [ON-BOARD DIAGNOSTIC TEST \[13B-MSP\]](#).) (See [DTC TABLE \[13B-MSP\]](#).)

Generator

Voltage

1. Verify that the battery is fully charged.
2. Verify that the drive belt deflection/tension is within the specification. (See [DRIVE BELT DEFLECTION/TENSION INSPECTION \[13B-MSP\]](#).)
3. Turn off all electrical loads.
4. Start the engine.
5. Verify that the generator rotates smoothly without any noise while the engine is running.
 - If there is any noise, find the cause and repair or replace the generator.
6. Measure the voltage at each terminal using a tester.



- If it is not as specified, find the cause and repair or replace the applicable part.

Generator standard voltage [IG-ON]

- Terminal B: B+
- Terminal P: Approx. 1 V or less
- Terminal D: Approx. 0 V

Generator standard voltage [Idle, 20 °C {68 °F}]

- Terminal B: 13—15 V
- Terminal P: Approx. 3—8 V
- Terminal D: Turn the electrical loads (headlights, blower motor, rear window defroster, brake lights, etc.) on and verify that the voltage reading increases.

Current

NOTE:

1. Since the charging current decreases rapidly after starting the engine, carry out the following procedure quickly, and read the maximum current value.
1. Verify that the battery is fully charged.
2. Verify that the drive belt deflection/tension is within the specification. (See [DRIVE BELT DEFLECTION/TENSION INSPECTION \[13B-MSP\]](#).)
3. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
4. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
5. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
6. Connect a tester, which can read **120 A or more**, between generator terminal B and the wiring harness.
7. Connect the negative battery cable.
8. Turn off all electrical loads.
9. Start the engine.

NOTE:

1. When the electrical load on the vehicle is low, the specified current cannot be verified although the generator is normal. In this case, increase the electrical load (Leave the headlights turned on for a while, then discharge the battery, or use a similar method.) and recheck.

2. When the generator itself or the ambient temperature are too high, the specified current also cannot be verified. In this case, cool down the generator and recheck.

10. Turn the electrical loads (headlights, blower motor, rear window defroster, brake lights, etc.) on and verify that the current reading increases more than the minimum value indicated below.

1. If it is not as specified, go to the PCM and generator shearing inspection. (See [PCM and generator shearing inspection](#).)

NOTE:

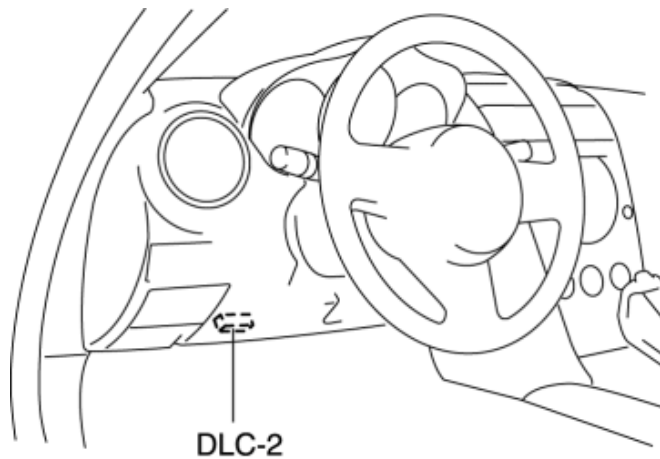
- Current required for generating power varies with the electrical loads applied.

Generator generated current (reference value) [Conditions] Ambient temperature: 20 °C {68 °F}, Voltage: 13—15 V, Engine hot

Engine speed (rpm)	Terminal B current (Lower limit of current must be more than 0 A.)
1,000	0—80 A
2,000	0—112 A

PCM and generator shearing inspection



1. Connect the M-MDS to the DLC-2.



2. Inspect as follows:

Step	Inspection	Action
1	Measure the generator terminal B voltage when the electrical loads ^{*1} are on and off.	15 V or more Go to Step 2.
		13—15 V Normal ^{*2}

		13 V or less	Go to Step 3.
2	<p>Monitor the ALTT V PID using the M-MDS, (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) or measure the PCM 2AJ terminal waveform using an oscilloscope. (See PCM INSPECTION [13B-MSP].)</p> <p>Is the value normal?</p>	<p>Yes</p> <p>Go to Step 4.</p>	<p>No</p> <p>Inspect followings, then repair or replace as necessary.</p> <ul style="list-style-type: none"> • If there is no malfunction, replace the PCM. <ol style="list-style-type: none"> 1. Wiring harness between PCM terminal 2AJ-generator terminal P. 2. Wiring harness between PCM terminal 2AI-generator terminal D. 3. Generator inner parts.
3	<p>Monitor the ALTT V PID using the M-MDS, (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) or measure the PCM 2AJ terminal waveform using an oscilloscope. (See PCM INSPECTION [13B-MSP].)</p> <p>Is the value normal?</p>	<p>Yes</p> <p>Go to Step 5.</p>	<p>No</p> <p>Inspect followings, then repair or replace as necessary.</p> <ul style="list-style-type: none"> • If there is no malfunction, replace the PCM. <ol style="list-style-type: none"> 1. Wiring harness between PCM terminal 2AJ-generator terminal P. 2. Wiring

				harness between PCM terminal 2AI-generator terminal D.
			3. Generator inner parts.	
4	Monitor the ALTF PID using the M-MDS, or calculate the duty value of the PCM terminal 2AI using an oscilloscope. Is the duty value 100%?	 <p>$\frac{A}{B} \times 100 (\%) = \text{DUTY} (\%)$</p>	Yes	Replace PCM.
			No	Inspect followings, then repair or replace as necessary. <ul style="list-style-type: none">• If there is no malfunction, replace the PCM. <ol style="list-style-type: none">1. Wiring harness between PCM terminal 2AI-generator terminal D.2. Generator inner parts.
5	Monitor the ALTF PID using the M-MDS, or calculate the duty value of the PCM terminal 2AI using an oscilloscope. Is the duty value 0%?	 <p>$\frac{A}{B} \times 100 (\%) = \text{DUTY} (\%)$</p>	Yes	Replace PCM.
			No	Inspect followings, then repair or replace as necessary. <ul style="list-style-type: none">• If there is no malfunction, replace the PCM. <ol style="list-style-type: none">1. Wiring harness between PCM terminal 2AI-generator terminal D.2. Generator inner parts.

*1

Headlights, blower motor, rear window defroster, brake lights, etc.

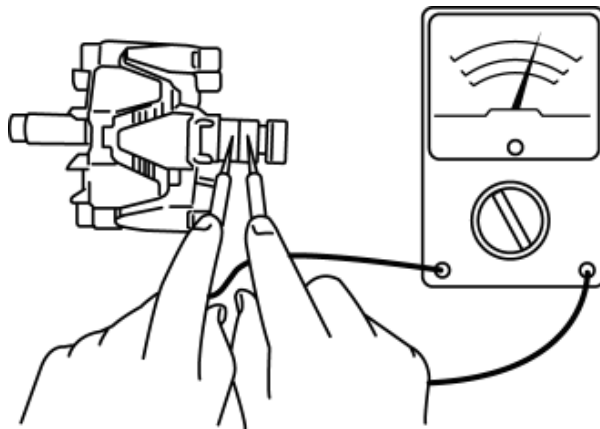
*2

If the generator field coil duty value does not change when electrical loads (such as headlights, blower motor, rear window defroster, brake lights) are on or off, inspection with discharged battery is needed.

Generator Inner Parts

Rotor

1. Measure the resistance between the slip rings using a tester.

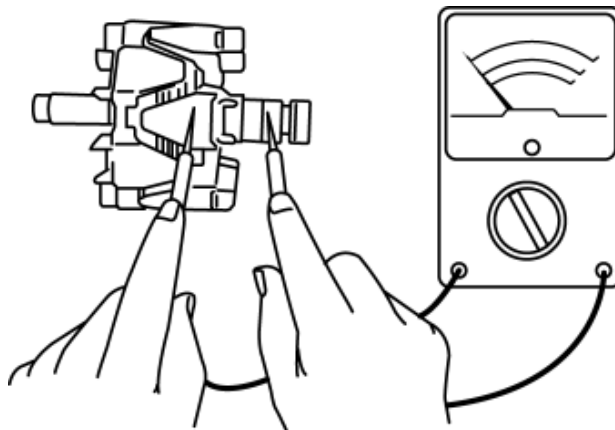


- If not within the specification, replace the rotor.

Generator rotor resistance (between slip rings) [20 °C {68 °F}]

- 1.7—2.0 ohms

2. Verify that there is no continuity between the slip ring and core using a tester.



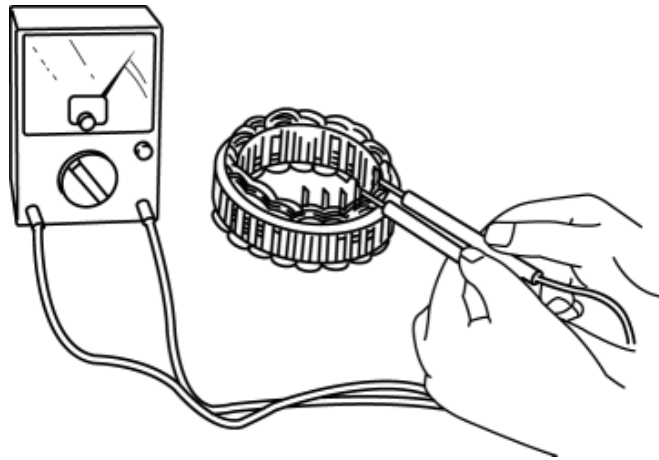
- If there is continuity, replace the rotor.

3. Inspect the slip ring surface condition.

- If the slip ring surface is rough, use a lathe or fine sandpaper to smooth it.

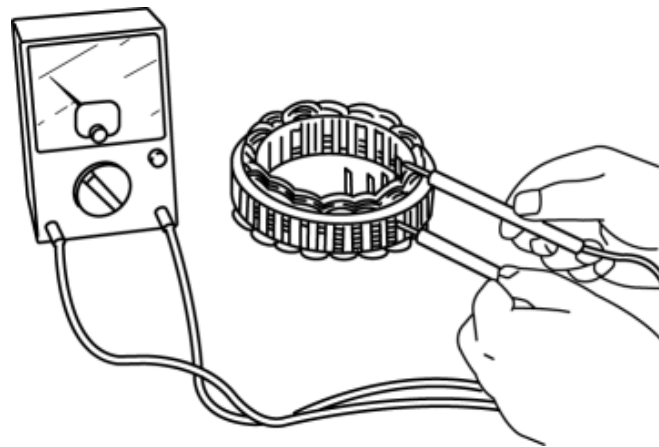
Stator coil

1. Inspect for continuity between the stator coil leads using a tester.



- If there is no continuity, replace the stator coil.

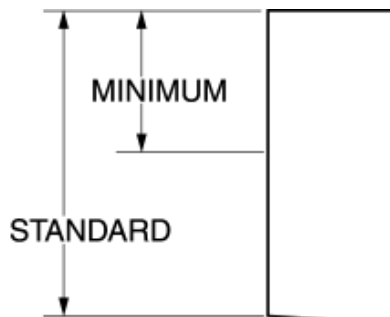
2. Verify that there is no continuity between the stator coil leads and the core using a tester.



- If there is continuity, replace the stator coil.

Brush

1. Inspect brushes for wear.



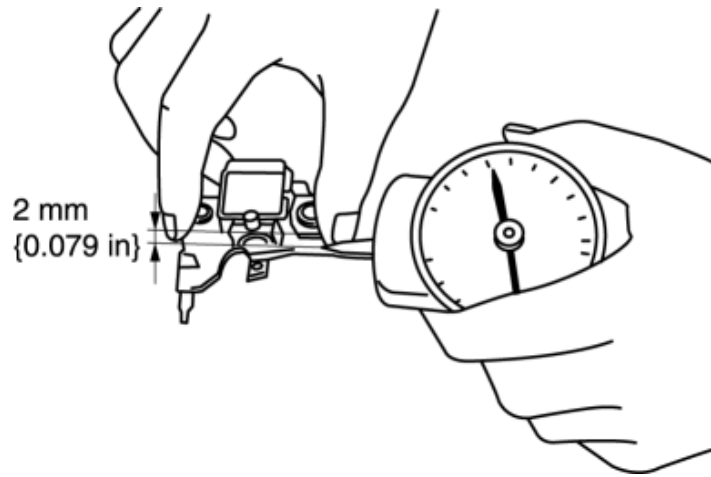
- If any brush is worn almost to or beyond the limit, replace all of the brushes.

Generator brush length

- Standard: 18.5 mm {0.73 in}
- Minimum: 5.0 mm {0.2 in}

Brush spring

1. Measure the force of the brush spring using a spring pressure gauge.
2. Read the spring pressure gauge at the brush tip projection of **2 mm {0.079 in}**.



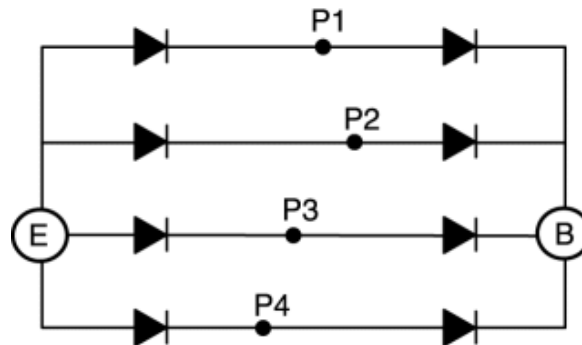
- Replace the brush spring if necessary.

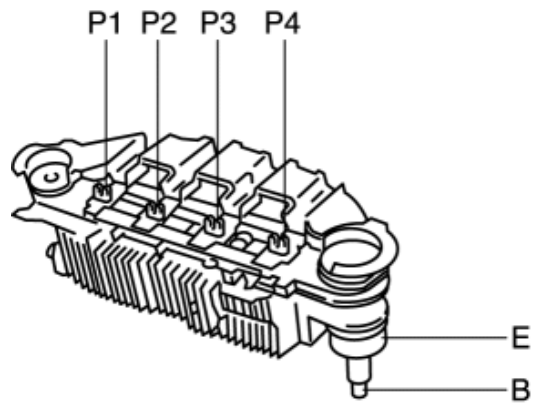
Generator brush spring force

- Standard: 4.8—6.0 N {0.49—0.61 kgf, 1.08—1.34 lbf}
- Minimum: 2.16 N {0.22 kgf, 0.49 lbf}

Rectifier

1. Inspect for continuity of the diodes using a tester.





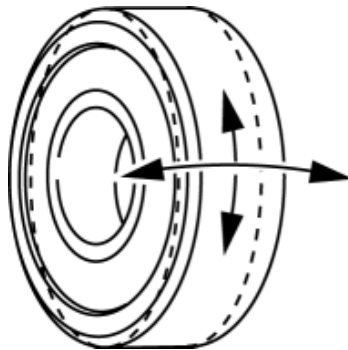
- If not as specified, replace the rectifier.

Specification

Tester		Continuity
Negative	Positive	
E	P1, P2, P3, P4	Yes
B		No
P1, P2, P3, P4	E	No
	B	Yes

Bearing

1. Inspect for abnormal noise, looseness, and sticking.



- Replace the bearing if necessary.

2011 - RX-8 - Engine

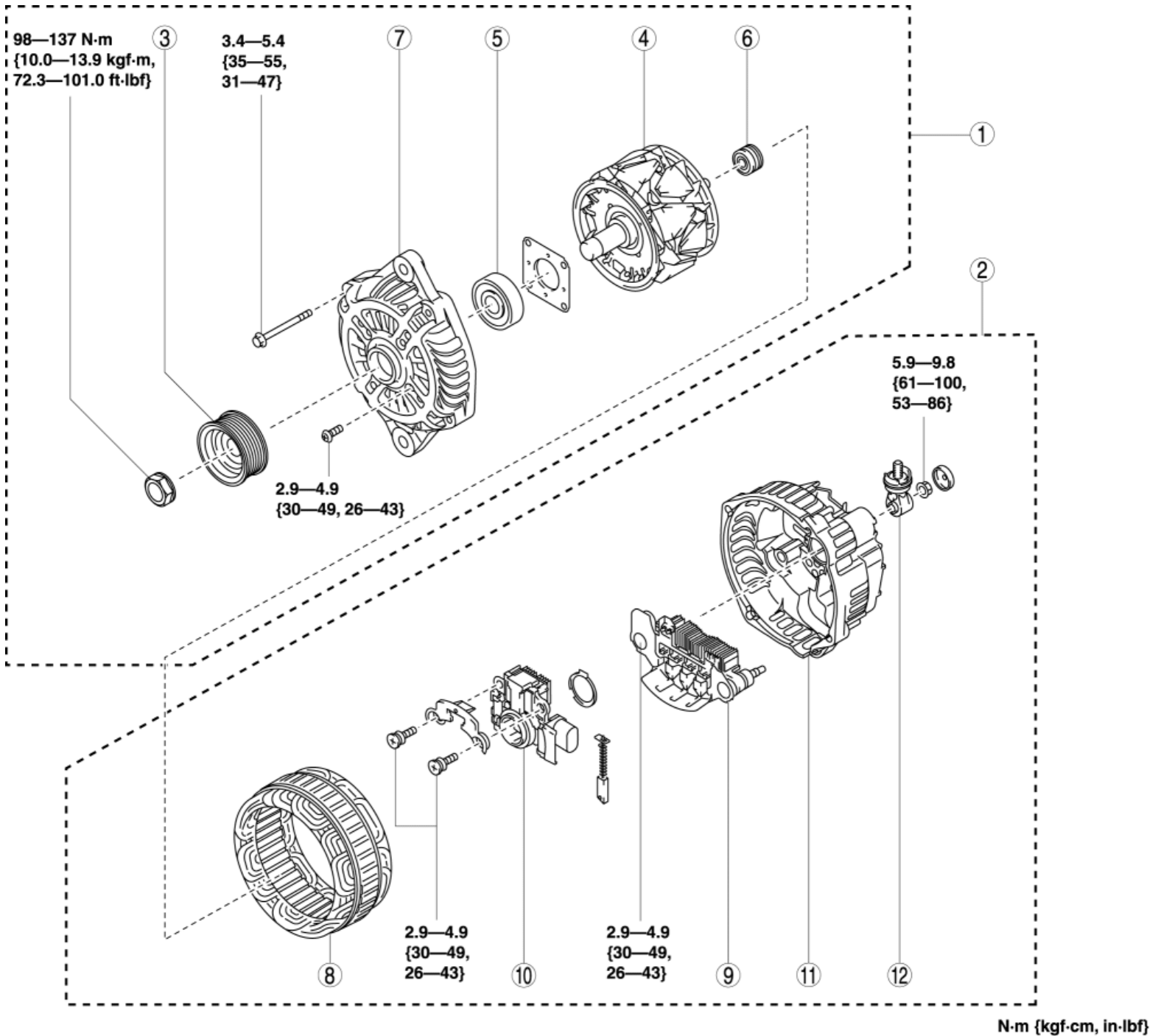
GENERATOR DISASSEMBLY/ASSEMBLY [13B-MSP]

CAUTION:

- Melt the solder quickly, otherwise the diodes (rectifier) and regulator will be damaged by excessive heat.

1. Disassemble in the order indicated in the table.

2. Assemble in the reverse order of disassembly.



1	Rotor component
2	Stator coil component
3	Pulley
4	Rotor
5	Front bearing
6	Rear bearing
7	Front cover
8	Stator coil
9	Rectifier
10	Regulator component
11	Rear cover
12	Terminal B component

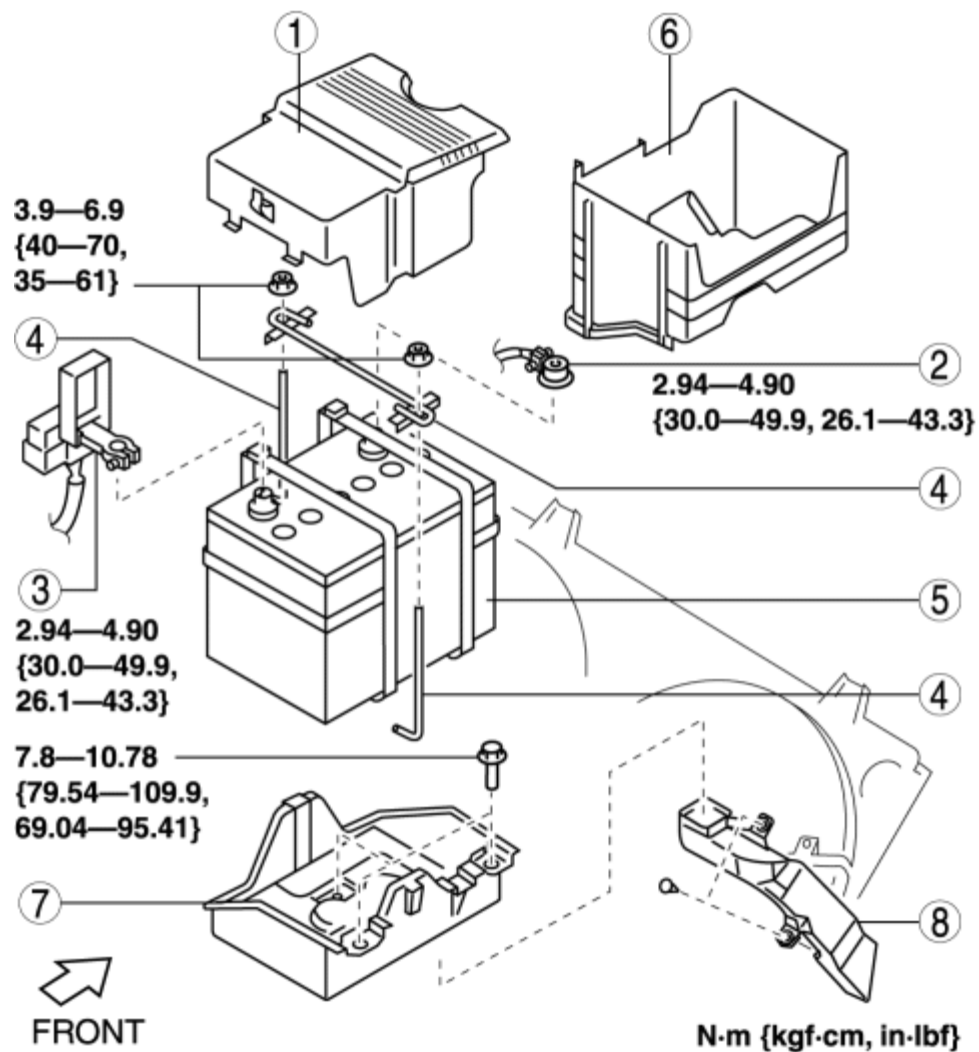
[< Previous](#) [Next >](#)

2011 - RX-8 - Engine

BATTERY REMOVAL/INSTALLATION [13B-MSP]

WARNING:

1. For vehicles with DSC, if the negative battery cable is disconnected, the stored initial position of the steering angle sensor will be cleared and the DSC will not operate properly, making the vehicle unsafe to drive. Perform the steering angle sensor initialization procedure after connecting the negative battery cable.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.
4. Perform the steering angle sensor initialization procedure. (See [EPS SYSTEM NEUTRAL POSITION SETTING](#).)



1 Battery cover

(See [Battery Cover Removal Note.](#))

2 Negative battery cable

(See [Negative Battery Cable Installation Note.](#))

3 Positive battery cable

4 Battery clamp

5 Battery

6 Battery box

(See [Battery Box Removal Note.](#))

7	Battery tray
8	Battery duct (See Battery Duct Removal Note .)

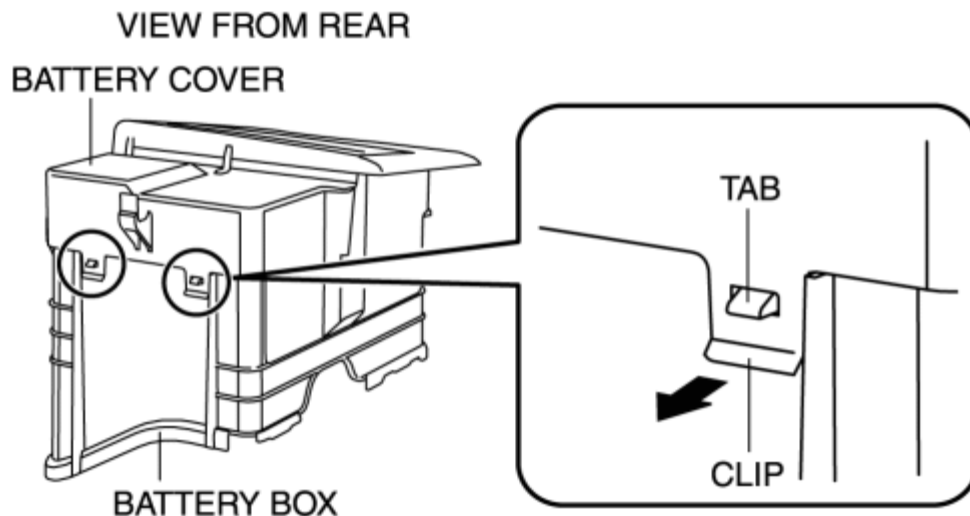
Battery Cover Removal Note

CAUTION:

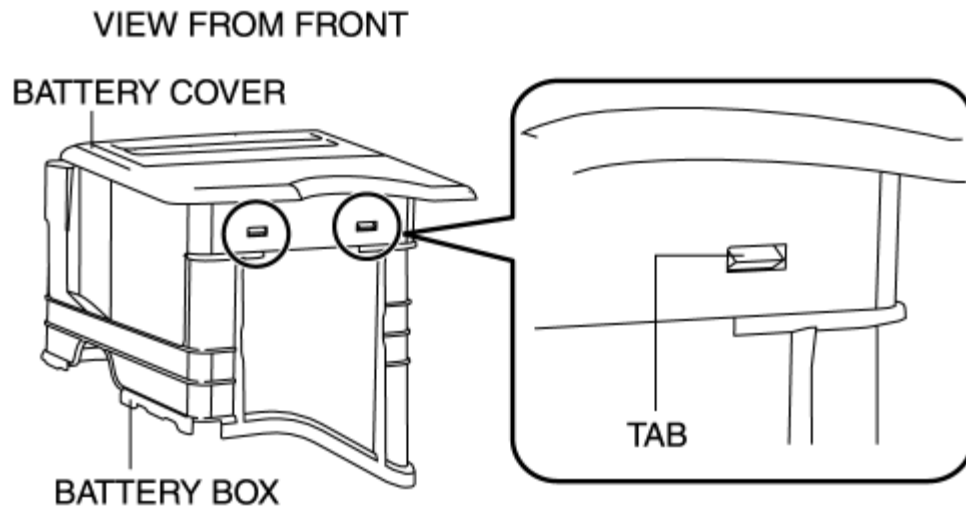
- When pulling the clips on the rear, do not apply excessive force to a clip using the screwdriver or pair of pliers.
- If excessive force is applied to the clips on the rear, they could be damaged. When removing the battery cover, use the following procedure to prevent damaging the clips.

1. Remove the battery cover using the following procedure.

a. Pull up the clips on the rear and disengage the battery box tabs.



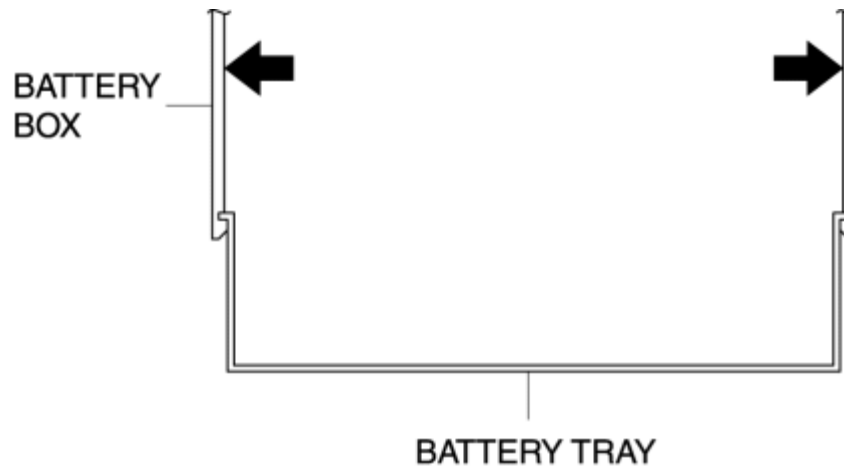
b. Slightly move the battery cover to the vehicle front side and disengage the battery box tabs on the front.



c. Remove the battery cover.

Battery Box Removal Note

1. Lightly press the battery box from inside to outside to detach it from the battery tray tabs.



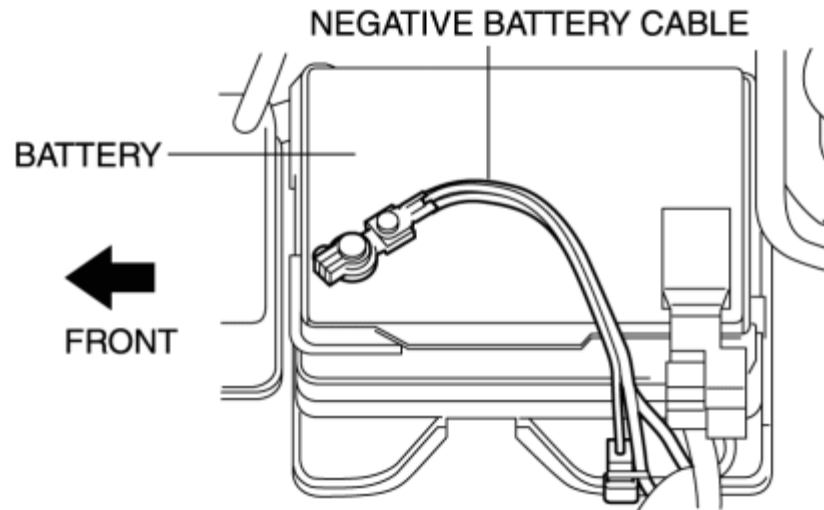
2. Remove the battery box.

Battery Duct Removal Note

1. Remove the aerodynamic under cover (See [AERODYNAMIC UNDER COVER REMOVAL/INSTALLATION](#).)
2. Remove the two clips which secure the battery duct to the radiator cowl.
3. Remove the battery duct.

Negative Battery Cable Installation Note

1. When connecting the negative battery cable to the battery, connect the negative battery cable as shown in the figure.



[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

BATTERY INSPECTION [13B-MSP]

WARNING:

- 1. Since battery acid is toxic, be careful when handling the battery.
- 2. Since battery acid is highly corrosive, be careful not to allow it to contact clothing or the vehicle.
- 3. In case battery acid contacts skin, eyes, or clothing, flush it immediately with running water. If the acid gets in the eyes, flush with water for more than 15 min and get prompt medical attention.

Using GR8-1291:

[GR8-1291 INSTANT TRAINING MODULE \(VIDEO\)](#)

- 1. Remove the battery filler caps and check the water level. If necessary, add water to the appropriate level. Reinstall the caps.
- 2. Attach the small red clamp to the positive battery terminal and the small black clamp to the negative terminal.
- 3. Select the Battery Test icon in the Main Menu, then press the NEXT key.
- 4. Test the battery by following the on-screen instructions to enter the appropriate information. Refer to the Mazda GR8-1291 Instruction Manual for more information.
- 5. After the test, the Control Module displays a battery decision with an analysis in a series of screens. The analysis includes the battery state of health (SOH) and state of charge (SOC). Before the Battery Test results are displayed, use the keypad on the Control Module to enter the last 5 digits of the vehicle's VIN and press NEXT to continue.
- 6. The Mazda GR8-1291 will print out the test results and display one of the eight possible results listed below. Review the results and follow the Action Step for the displayed result.

Battery Tester Display	Action Step
GOOD BATTERY	Return the battery to service.

GOOD - RECHARGE	Fully charge the battery and return it to service.
CHARGE & RETEST	Fully charge the battery and retest. Failure to fully charge the battery before retesting may cause false readings. If CHARGE & RETEST appears again after you fully charge the battery, replace the battery.
REPLACE BATTERY	A REPLACE BATTERY result may also mean a poor connection between the battery and the vehicle. If you tested the battery using the System test, disconnect the battery cables and retest using the Battery Test before replacing it.
BAD CELL - REPLACE	Replace the battery. WARNING: Do not charge the battery. Charging a battery with one or more bad cells could cause an explosion and serious harm to the user.
SIDE POST TEST	Test data was inconclusive using the side post. Retest using side post adapters.
JUMP START POST	Data was inconclusive using the jump start post. Retest at the battery terminals.
24 VOLT BATTERY	24-volt battery detected. You are attempting to test in-vehicle both batteries in a 24-volt system. Disconnect the batteries and test them individually.

Using Electrolyte Specific Gravity

1. Measure the electrolyte specific gravity using a hydrometer.
 - If it is less than the specification, recharge the battery. (See [BATTERY RECHARGING \[13B-MSP\]](#).)

Battery electrolyte specific gravity [20 °C {68 °F}]

- 1.22—1.29

Using Battery Voltage

1. Inspect the battery as follows:

Step	Inspection	Action

1	Measure the battery positive voltage.	12.4 V or more	Go to Step 3.
		Less than 12.4 V	Go to the next step.
2	Quick charge for 30 min and recheck voltage.	12.4 V or more	Go to the next step.
		Less than 12.4 V	Replace the battery.
3	Using the battery load tester, apply load current (see battery load test current) and record battery voltage after 15 s . Is voltage more than the specification?	Yes	Normal
		No	Replace the battery.

Battery load test current

- 80D26L (55): 195 A

Standard specification

Battery temp. (°C {°F})	Minimum voltage (V)
4 {39}	9.3
10 {50}	9.4
16 {61}	9.5
21 {70}	9.6

PARASITIC DRAW INSPECTION

Using GR8-1291:

GR8-1291 PARASITIC DRAW TESTING INSTANT TRAINING (VIDEO)

1. Verify that the ignition is off (key has been removed) and that all doors, the hood and the trunk are closed.
2. Remove the battery cover.
3. Select the DMM icon from the main menu.
4. Then select DC Ammeter.
5. Since you are measuring milliamps, select the 70 AMP MAX range.
6. Connect the amp clamp to the negative battery cable.
7. Monitor the current draw.

NOTE:

- If the battery is not left undisturbed for **10 min or more, but less than 2.5 hours**, the tester will indicate a high value (**approx. 200 mA**).
 - If the ignition or any electrical accessory is operated after the tester is connected, the battery must be left undisturbed for **10 min or more, but less than 2.5 hours** from that point.
 - For vehicles with the immobilizer system, the system periodically shifts synchronization of the security light flashing. Therefore, **65 mA (0.1 s)** current draw is supplied when the security light is illuminated, and **40 mA (2 s)** current draw is supplied when the security light is not illuminated. In addition, the measuring instrument, which shows the average value, indicates around **55 mA**.
8. Leave the vehicle electrical system undisturbed for **10 min or more, but less than 2.5 hours**, and then measure the parasitic draw.
 - If not within specification, measure the parasitic draw while removing the fuses one by one from the inside of the main fuse block and the inside of the fuse block.
 - Inspect and repair wiring harnesses and connectors of the fuse where the current draw has decreased.

Parasitic draw (When the ignition is off (key is removed) and all doors, hood and trunk are closed.)

- 40-65 mA

NOTE:

- If the battery is left for **2.5 hours or more**, a battery parasitic draw value of **25-45 mA** is indicated.

Without Using GR8-1291:

1. Verify that the ignition is off (key has been removed) and that all doors are closed.
2. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
3. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
4. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))

CAUTION:

- Operating electrical loads while the parasitic draw is being measured can damage the tester.

NOTE:

- If the battery is not left undisturbed for **30 min**, the tester will indicate a high value (**approx. 300 mA**).
- If the key or any electrical accessory is operated within **approx. 30 min** after the tester is connected, the battery must be left undisturbed for **approx. 30 min** from that point.
- For vehicles with the immobilizer system, the system periodically shifts synchronization of the security light flashing. Therefore, **45 mA (0.1 s)** current is supplied when the security light is illuminated, and **25 mA (2 s)** current is supplied when the security light is not illuminated. In addition, the measuring instrument, which shows the average value, indicates around **30 mA**.

5. Connect the tester between the negative battery terminal and negative battery cable, leave the battery undisturbed for **30 min**, and then measure the parasitic draw.

- If not within the specification, measure the parasitic draw while removing the fuses one by one from the inside of the main fuse block and the inside of the fuse block.
- Inspect and repair wiring harnesses and connectors of the fuse where the current has decreased.

Battery parasitic draw (When the ignition is off (key is removed), all doors and the hood are closed.)

- 25—45 mA

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

BATTERY RECHARGING [13B-MSP]

Using GR8-1291:

WARNING:

- Keep all flames away from the battery, otherwise evaporated gas from the battery fluid may catch fire, and cause serious injury.

[GR8-1291 INSTANT TRAINING MODULE \(VIDEO\)](#)

1. Remove the battery filler caps and check the water level. If necessary, add water to the appropriate level. Reinstall the caps.
2. Attach the large red clamp to the positive battery terminal and the large black clamp to the negative terminal.
3. Select the Diagnostic icon in the Main Menu, then press the NEXT key.
4. Follow the on-screen instructions to enter the appropriate information. Refer to the Mazda GR8-1291 Instruction Manual for more information.
5. The GR8-1291 will test and charge the battery. Before the Diagnostic Charging results are displayed, use the keypad on the Control Module to enter the last 5 digits of the vehicle's VIN and press NEXT to continue.
6. After the charge session is complete, the Mazda GR8-1291 will print out the Diagnostic Charging results and display one of the following results listed below. Review the results and follow the Action Step for the displayed result.

Battery Tester Display	Action Step
GOOD BATTERY	Return the battery to service.
REPLACE BATTERY	Replace the battery.
BAD CELL - REPLACE	Replace the battery. WARNING: Do not charge the battery. Charging a battery with one or more bad

	cells could cause an explosion and serious harm to the user.
SIDE POST TEST	Test data was inconclusive using the side post. Retest using side post adapters.
JUMP START POST	Data was inconclusive using the jump start post. Retest at the battery terminals.

Without Using GR8-1291:

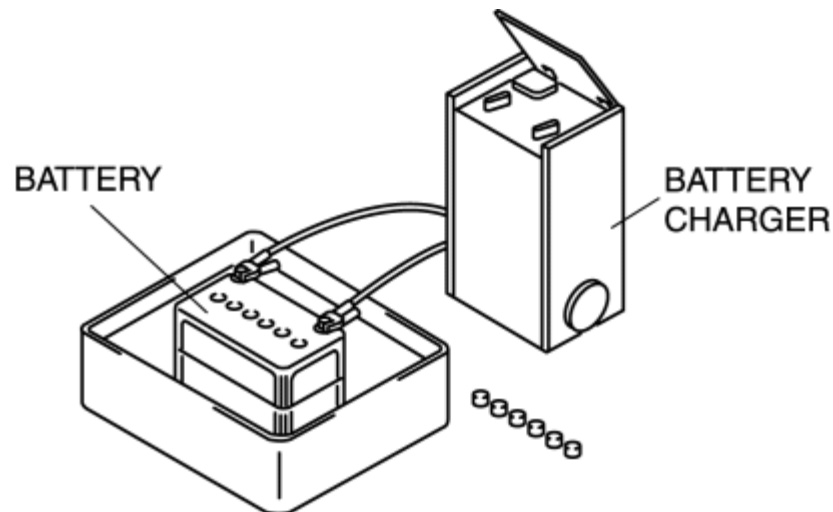
WARNING:

- Keep all flames away from the battery, otherwise evaporated gas from the battery fluid may catch fire, and cause serious injury.
- Remove the battery filler caps when recharging to prevent battery deformation or damage.

CAUTION:

- Do not quick charge for more than 30 min. It will damage the battery.

1. Remove the battery and then place it in a pan of water. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)



2. Remove the battery filler caps.
3. Connect a battery charger to the battery and adjust the charging current as follows.

Battery slow charge current

- 80D26L (55): 5.5—6.5 A

Battery quick charge current [30 min]

- 80D26L (55): 35 A

4. After the battery is recharged, verify that the voltage is within the specification and remains at the same value for **1 h or more** after the recharging has been completed.

- If not within the specification, replace the battery.

Standard voltage

- 12.4 V or more

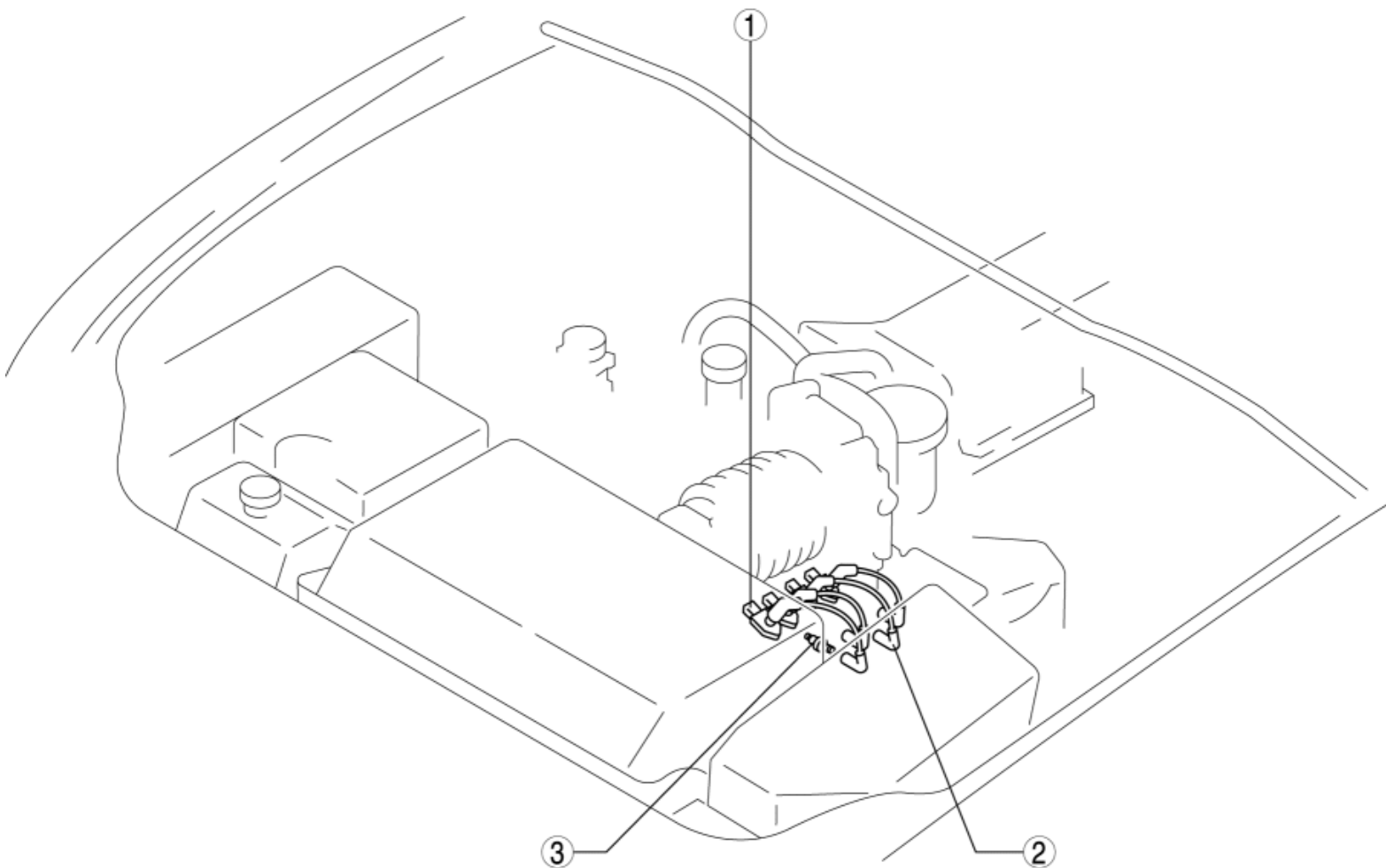
[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

IGNITION SYSTEM LOCATION INDEX [13B-MSP]



1 Ignition coil

(See [IGNITION COIL REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [IGNITION COIL INSPECTION \[13B-MSP\].](#))

2 High-tension lead

(See [HIGH-TENSION LEAD REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [HIGH-TENSION LEAD INSPECTION \[13B-MSP\].](#))

3 Spark plug

(See [SPARK PLUG REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [SPARK PLUG INSPECTION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

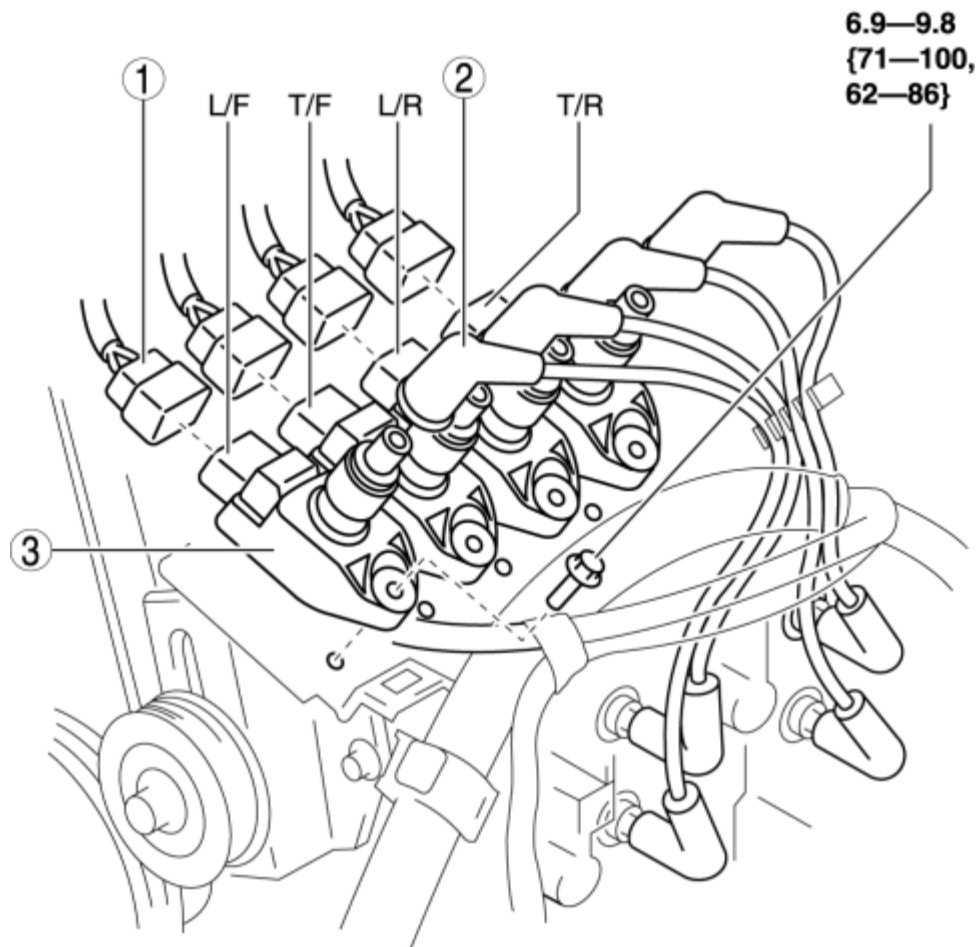
© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

IGNITION COIL REMOVAL/INSTALLATION [13B-MSP]

1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
2. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
3. Remove the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
4. Remove the air hose (air cleaner to throttle body). (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))
5. Remove in the order indicated in the table.
6. Install in the reverse order of removal.



N·m {kgf·cm, in·lbf}

1	Connector
2	High-tension lead (See HIGH-TENSION LEAD REMOVAL/INSTALLATION [13B-MSP].)
3	Ignition coil

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

IGNITION COIL INSPECTION [13B-MSP]

Ignition Coil Inspection (Spark Test)

1. Perform the spark test and identify the malfunctioning cylinder. (See [ENGINE CONTROL SYSTEM OPERATION INSPECTION \[13B-MSP\]](#).)
2. Replace the ignition coil of the malfunctioning cylinder with that of a normal cylinder, and reperform the spark test. (See [ENGINE CONTROL SYSTEM OPERATION INSPECTION \[13B-MSP\]](#).)
 - If the spark is not normal due to a malfunctioning ignition coil, replace that ignition coil.
 - It is unlikely that all four ignition coils fail to operate properly. To prevent replacing a normal component, perform the above procedure, identify the malfunctioning ignition coil, and replace it.

Ignition Coil Inspection

1. Warm up the engine.
2. Connect the timing light to the high-tension lead.
3. Verify that the timing light flashes at a certain interval on all high-tension leads while idling and racing the engine.
 - If the timing light does not flash at a certain interval, inspect the following:
 - a. Replace the high-tension lead and spark plug for which the timing light flashes at a certain interval.
 - b. Verify that the timing light flashes at a certain interval while idling and racing the engine.
 - If the timing light does not flash at a certain interval even if the high-tension lead and spark plug are replaced, replace the ignition coil. (See [IGNITION COIL REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 - If the high-tension lead and spark plug are replaced and the timing light flashes at a certain interval, a high-tension lead or spark plug malfunction can be considered possible causes. (See [HIGH-TENSION LEAD INSPECTION \[13B-MSP\]](#).) (See [SPARK PLUG INSPECTION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

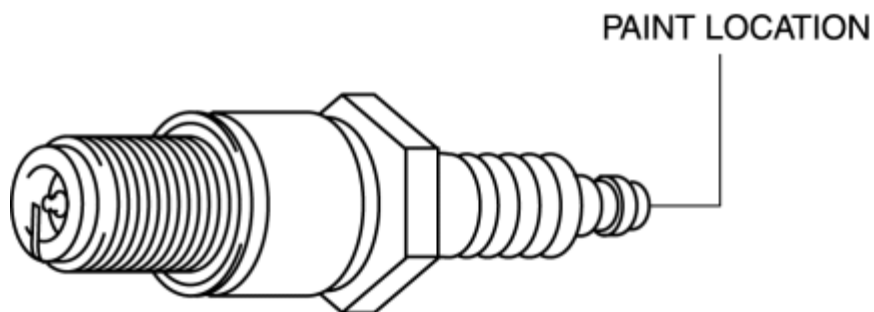
SPARK PLUG REMOVAL/INSTALLATION [13B-MSP]

CAUTION:

- If a spark plug that is not as specified is installed, engine performance will be deteriorated. Install only the specified spark plug when replacing.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
 2. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 3. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 4. Disconnect the high-tension leads from the spark plugs. (See [HIGH-TENSION LEAD REMOVAL/INSTALLATION \[13B-MSP\].](#))
 5. Remove the spark plugs using a plug-wrench.

CAUTION:

1. Install spark plugs marked with white (standard type plug) or orange (hot type plug) paint on the leading side and spark plugs with blue paint on the trailing side.



NOTE:

1. It is easier to remove some spark plugs from beneath the vehicle.
6. Install in the reverse order of removal.

Tightening torque

- 12.8—17.7 N·m {131—180 kgf·cm, 114—156 in·lbf}

2011 - RX-8 - Engine

SPARK PLUG INSPECTION [13B-MSP]

Specification

Spark plug type

- Leading side: N3H5 18 110A (RE7C-L) ^{*1}, N3Y8 18 110A (RE7C-L) ^{*1}, N3Y9 18 110A (RE6C-L) ^{*2}
- Trailing side: N3H1 18 110D (RE9B-T) ^{*1}, N3Y1 18 110A (RE9B-T) ^{*1}

*1

Standard equipment

*2

Hot type plug: Available only for customers who often drive their car at very low speed which causes the plugs to foul easily.

Plug Gap Inspection

CAUTION:

1. To avoid possible damage to the tip, do not adjust the plug gap.
1. To prevent damaging the tip, use a wire type plug gap gauge when inspecting the plug gap.
1. Measure the spark plug gap using a wire type plug gap gauge.
 1. If it is more than the maximum specification, replace the spark plug.

Standard spark plug gap

- 1.15—1.25 mm {0.046—0.049 in}

Maximum spark plug gap

- Leading side: 1.5 mm {0.059 in}
- Trailing side: 1.4 mm {0.055 in}

Cleaning

CAUTION:

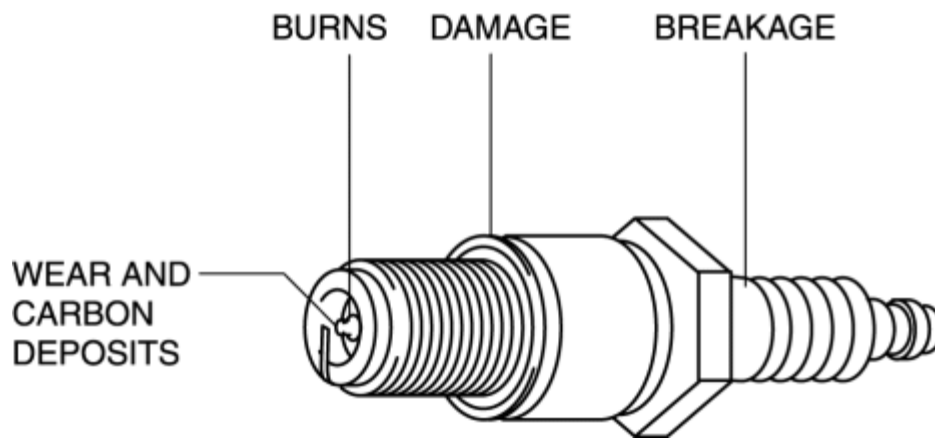
1. To avoid possible damage to the spark plug tip, do not use a wire brush for cleaning.

NOTE:

1. To avoid possible damage to the tip, use gasoline to clean the spark plugs after removing dirt.

Visual Inspection

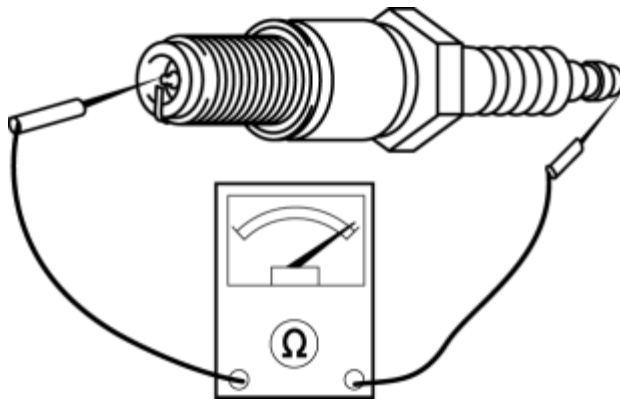
1. Inspect the following items:



- If any of the following malfunctions are indicated, replace the spark plug.
 - Insulator breakage
 - Worn electrode
 - Damaged gasket
 - Badly burned insulator (sparking side)

Resistance Inspection

1. Measure the resistance of the spark plug using a tester as shown in the figure.



- If not within the specification, replace the spark plug.

Spark plug resistance [25°C {77 °F}]

- 3.0—7.5 kilohms

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

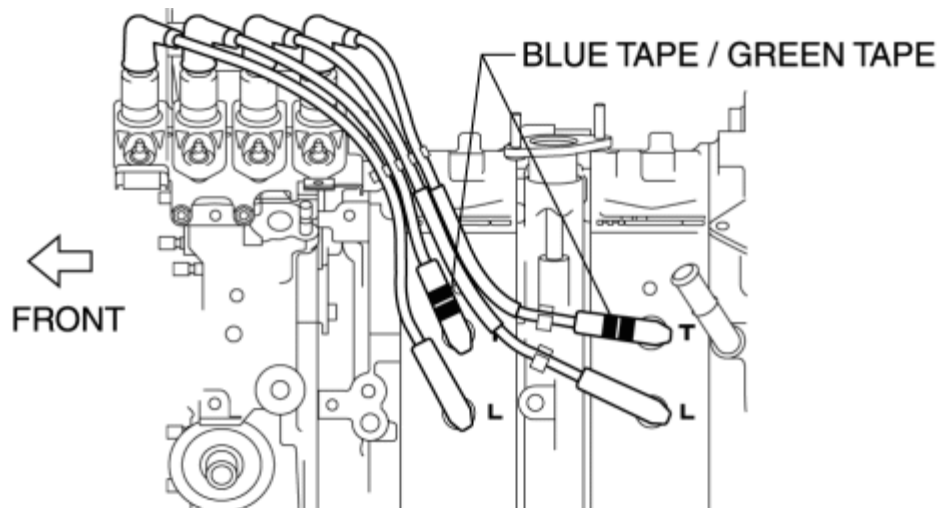
HIGH-TENSION LEAD REMOVAL/INSTALLATION [13B-MSP]

CAUTION:

- Improper installation of the high-tension lead could result in a harmful electrical influence of other electrical parts, or in a ground fault due to damage to the lead. Be sure to install the lead in the same position and routing as when it is removed.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 3. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 4. Remove the air hose (air cleaner to throttle body). (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 5. Remove the high-tension lead from the ignition coil and the spark plug.

CAUTION:

1. Install the high-tension lead with blue and green tape on the trailing side.



6. Install in the reverse order of removal.

2011 - RX-8 - Engine

HIGH-TENSION LEAD INSPECTION [13B-MSP]

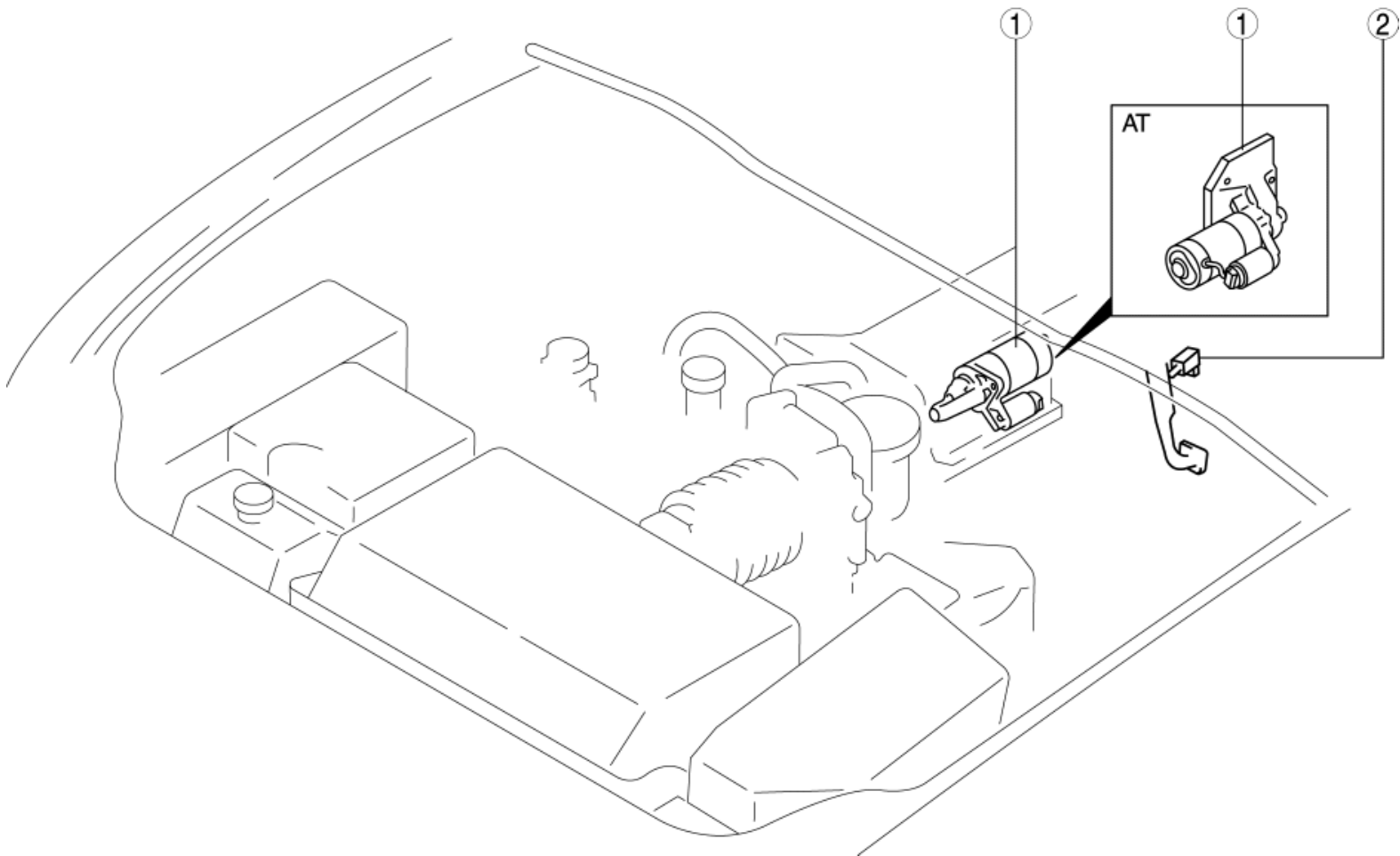
1. Remove the high-tension lead. (See [HIGH-TENSION LEAD REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Measure the resistance using a tester.
 1. If not within the specification, replace the high-tension lead.

High-tension lead resistance [20 °C {68 °F}]

- 1.0—4.0 kilohms

2011 - RX-8 - Engine

STARTING SYSTEM LOCATION INDEX [13B-MSP]



1 Starter

(See [STARTER REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [STARTER INSPECTION \[13B-MSP\].](#))

(See [STARTER DISASSEMBLY/ASSEMBLY \[13B-MSP\].](#))

2 Starter interlock switch (MT)

(See [STARTER INTERLOCK SWITCH INSPECTION \[13B-MSP\].](#))

2011 - RX-8 - Engine

STARTER REMOVAL/INSTALLATION [13B-MSP]

WARNING:

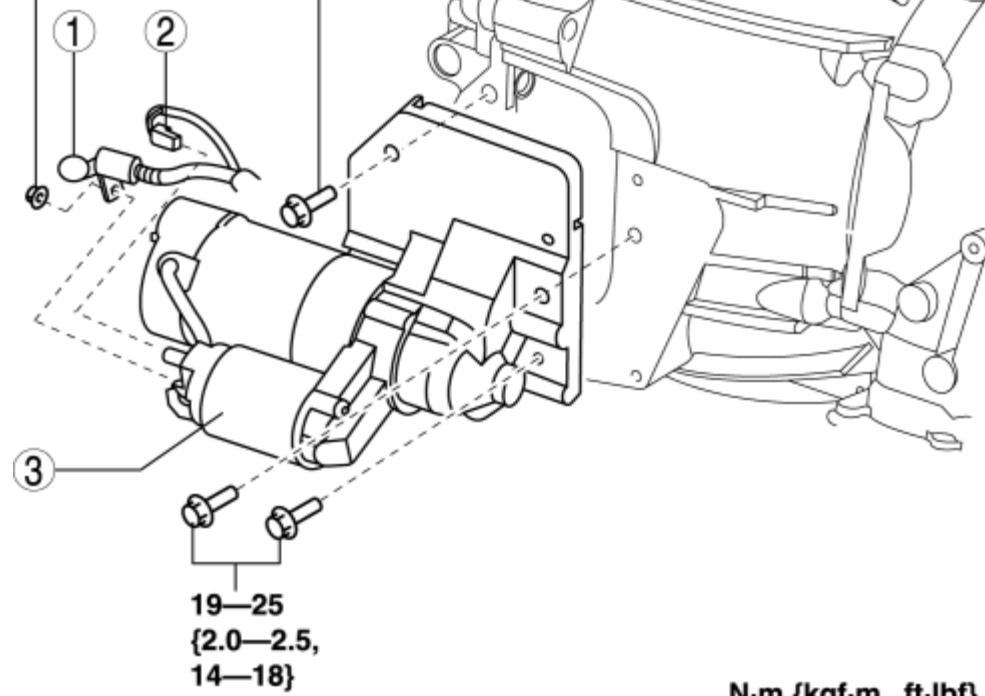
- Remove and install all parts when the engine is cold, otherwise they can cause severe burns or serious injury.
 - When the battery cables are connected, touching the vehicle body with starter terminal B will generate sparks. This can cause personal injury, fire, and damage to the electrical components. Always disconnect the negative battery cable before performing the following operation.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
 2. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 3. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 4. Remove in the order indicated in the table.
 5. Install in the reverse order of removal.

AT

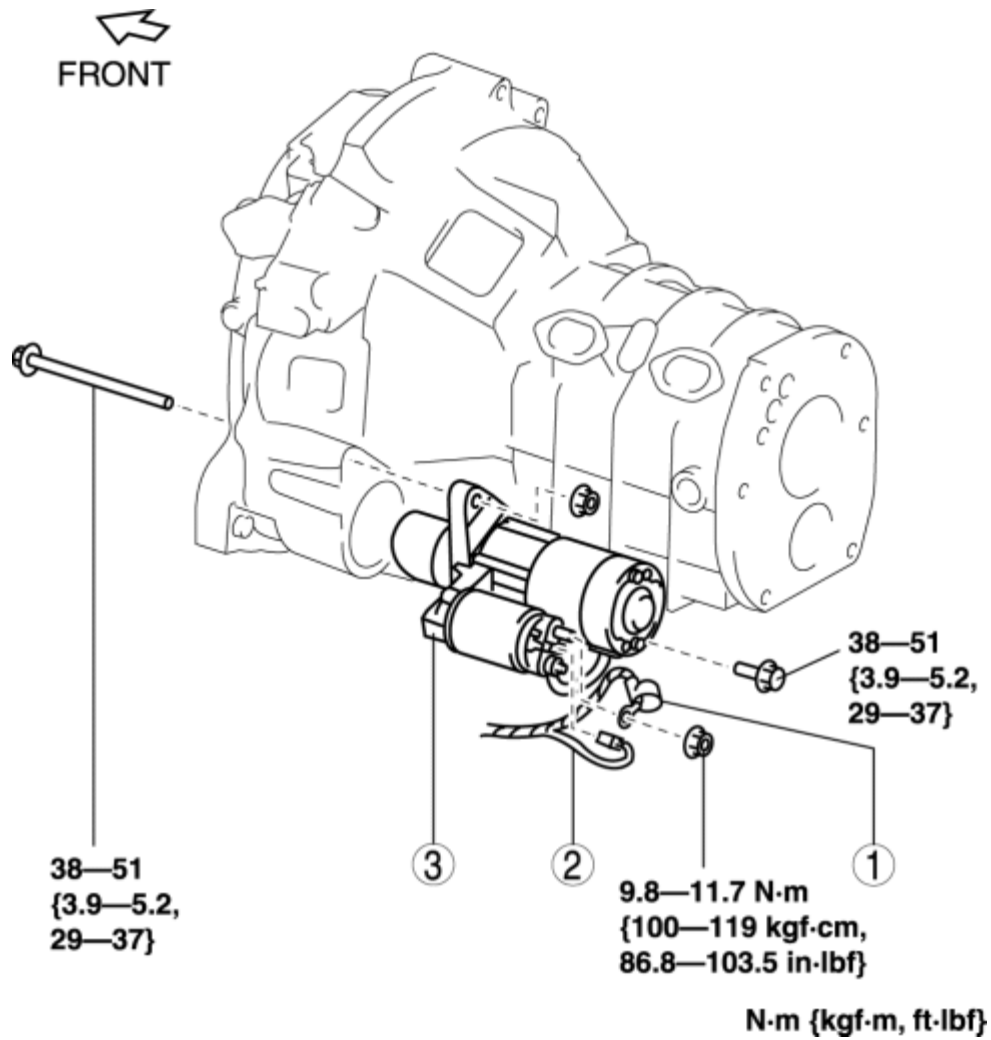
↖
FRONT

9.8—11.7 N·m
{100—119 kgf·cm,
86.8—103.5 in·lbf}

19—25
{2.0—2.5,
14—18}



MT

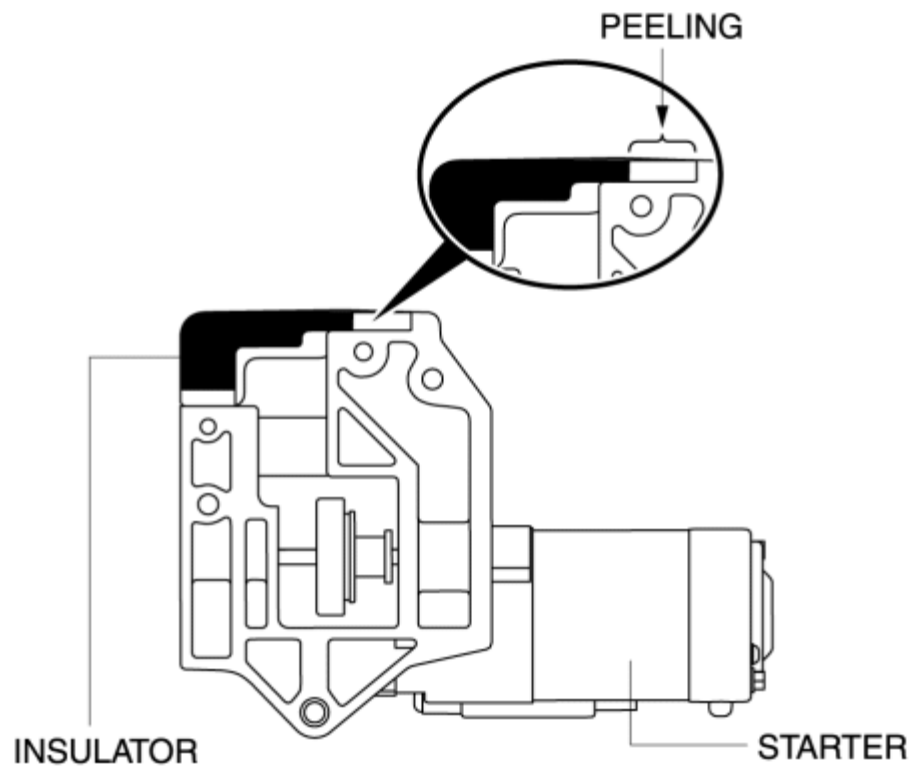


1	Terminal B cable
2	Terminal S connector
3	Starter
	(See Starter Installation Note (AT) .)

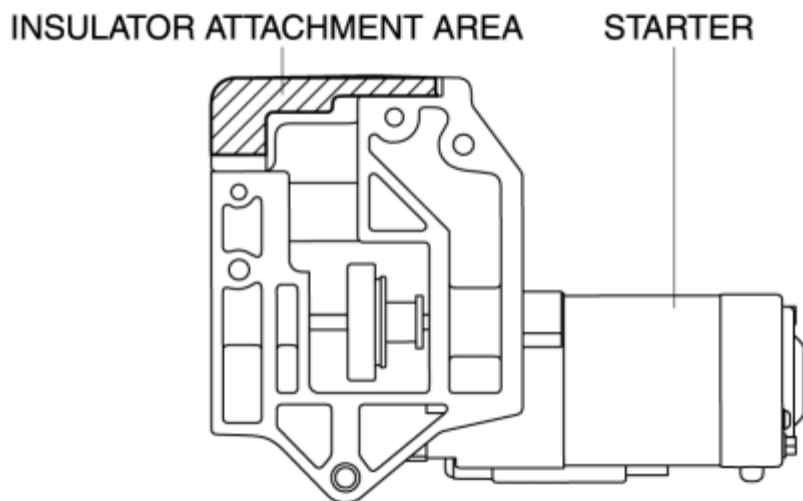
Starter Installation Note (AT)

NOTE:

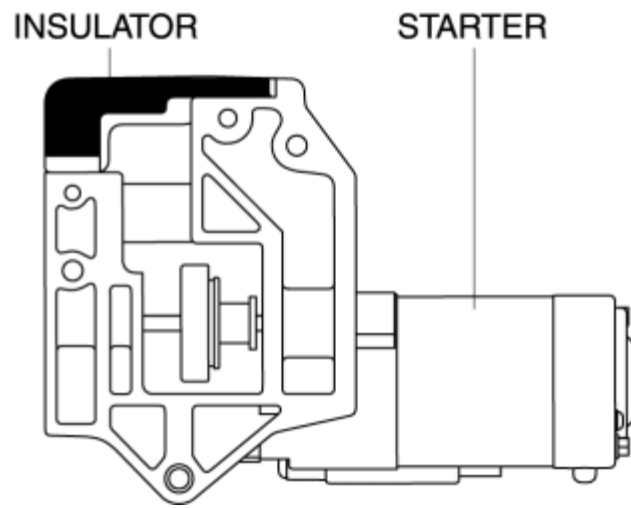
- If the insulator is peeling or damaged, attach a new insulator using the following procedure:



1. Peel off the insulator from the starter completely using a scraper.
2. Degrease the insulator attachment area.



3. Attach a new insulator to the starter.



[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

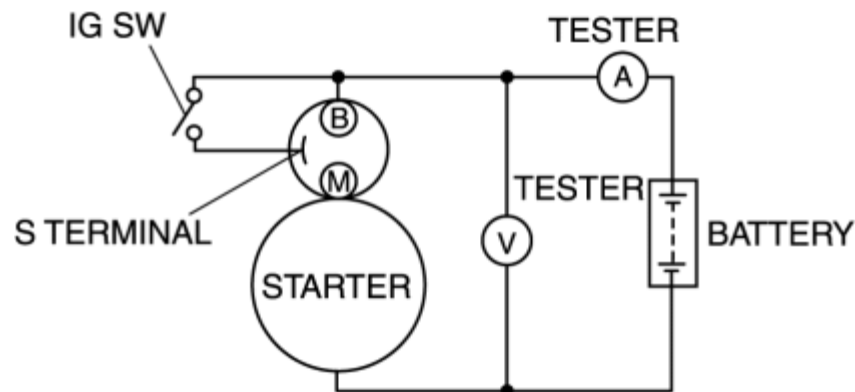
STARTER INSPECTION [13B-MSP]

On-vehicle Inspection

1. Verify that the battery is fully charged.
2. The starter is normal if it rotates smoothly and without any noise when the engine is cranked.
 - If the starter does not operate, inspect the following:
 - Remove the starter, and inspect the starter unit.
 - Inspect the related wiring harnesses, the ignition switch, and the transmission range switch (AT).

No-load Test

1. Verify that the battery is fully charged.
2. Connect the starter, battery, and a tester as shown in the figure.



3. Operate the starter and verify that it rotates smoothly.
 - If the starter does not rotate smoothly, inspect the starter unit.
4. Measure the voltage and current while the starter is operating.
 - If not within the specification, replace the starter.

Starter no-load test voltage

- 11 V

Starter no-load test current

- 120 A or less

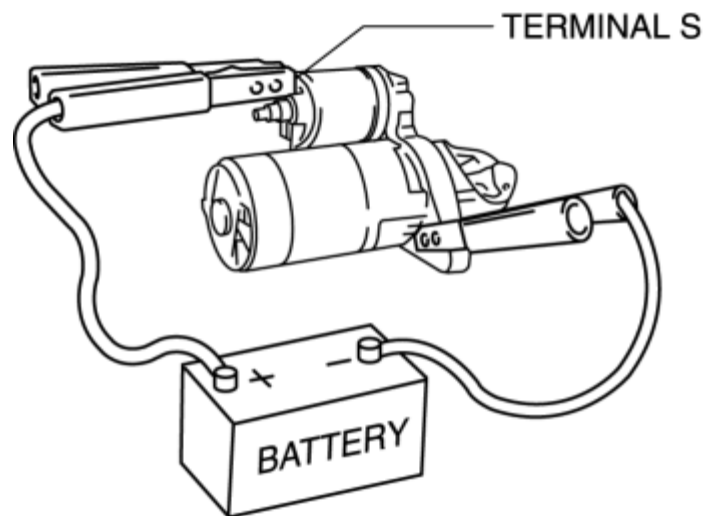
Magnetic Switch Operation Inspection

Pull-out test

NOTE:

- Depending on the battery charge condition, the starter motor pinion may rotate while in an extended state. This is due to current flowing to the starter motor through the pull-in coil to turn the starter motor, and does not indicate an abnormality.

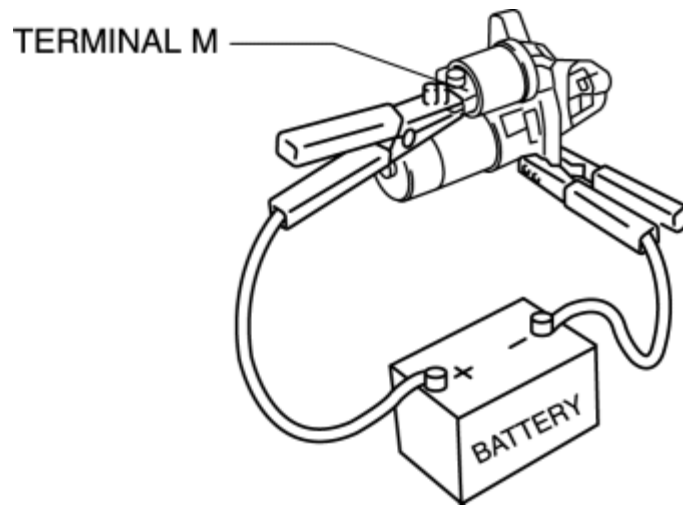
1. Verify that the starter motor pinion is extended while battery positive voltage is connected to terminal S and the starter body is grounded.



- If the starter motor pinion is not extended, repair or replace the starter.

Return test

1. Disconnect the motor wire from terminal M.
2. Connect battery positive voltage to terminal M and ground the starter body.

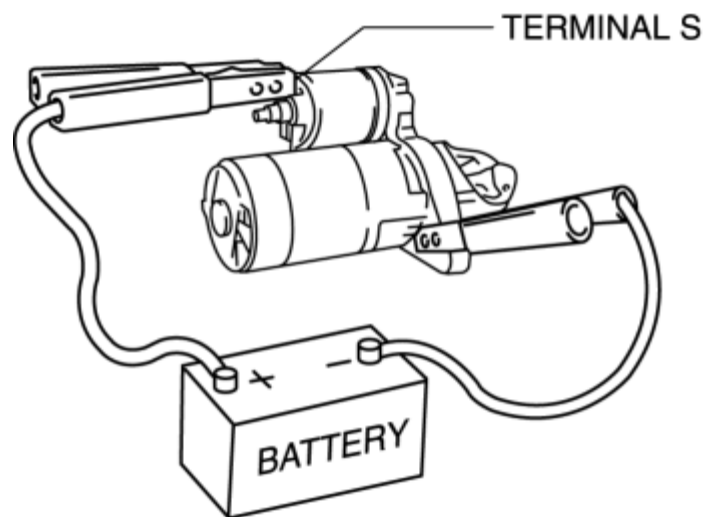


3. Pull out the drive pinion with a screwdriver. Verify that it returns to its original position when released.

- If it does not return, repair or replace the starter.

Pinion Gap Inspection

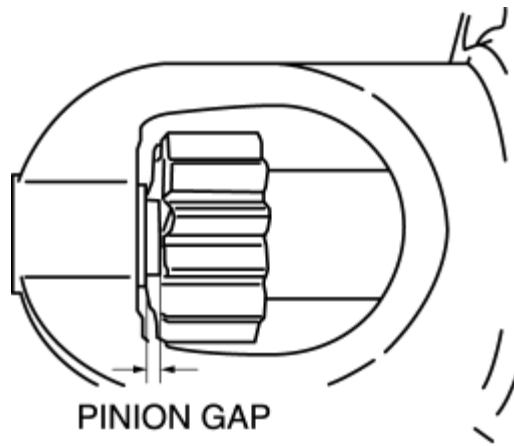
1. Pull out the drive pinion with the battery positive voltage connected to terminal S and the starter body grounded.



CAUTION:

- Applying power for more than 10 s can damage the starter. Do not apply power for more than 10 s.

2. Measure the pinion gap while the drive pinion is extended.



- If not as specified, adjust with an adjustment washer (between drive housing front cover and magnetic switch).

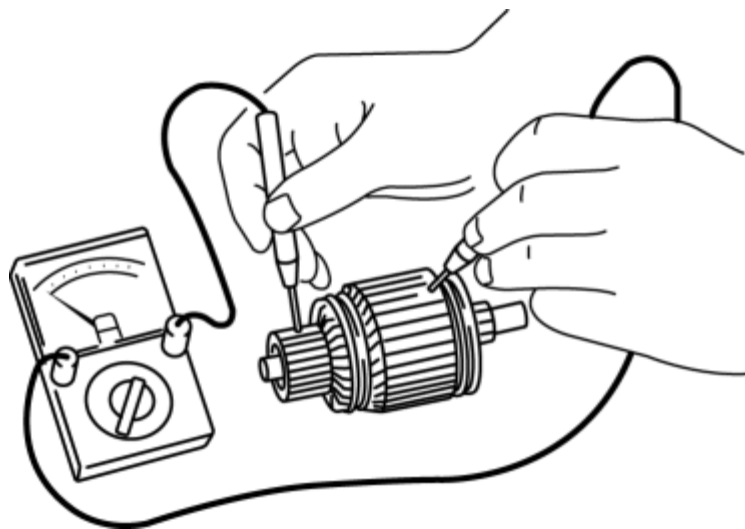
Starter pinion gap

- AT: 0 mm {0 in}
- MT: 0.5—2.0 mm {0.02—0.07 in}

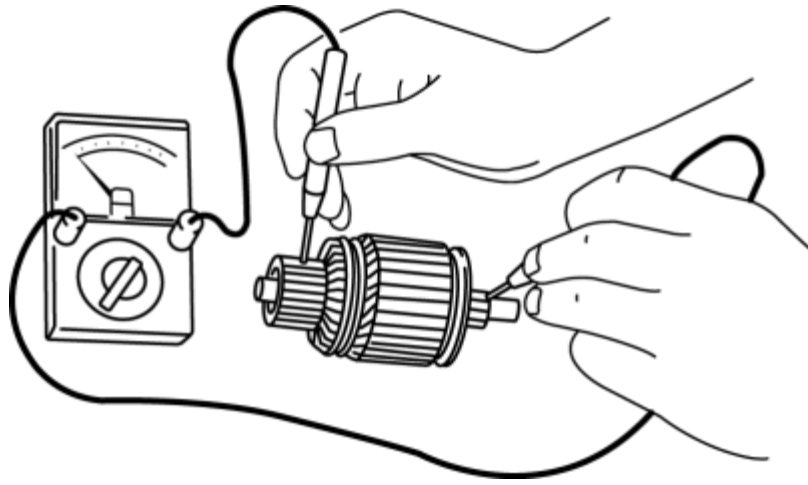
Starter Inner Parts Inspection

Armature

1. Verify that there is no continuity between the commutator and the core at each segment using a tester.

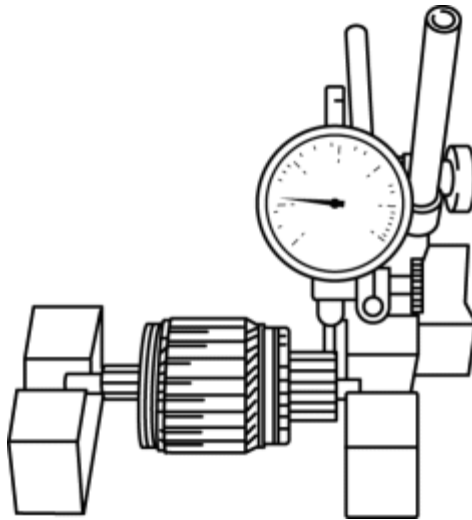


- If there is continuity, replace the armature.
2. Verify that there is no continuity between the commutator and the shaft using a tester.



- If there is continuity, replace the armature.

3. Place the armature on V-blocks, and measure the runout using a dial indicator.

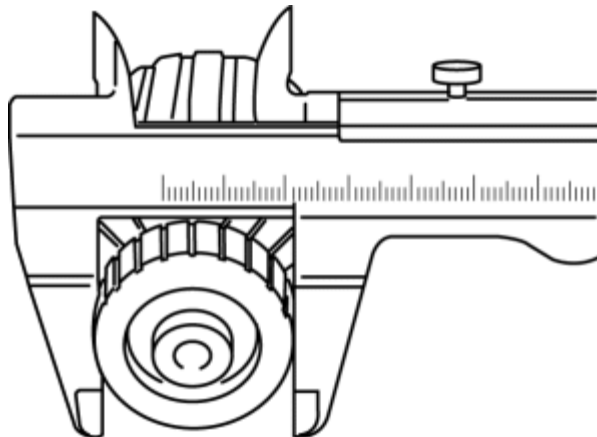


- If not within the specification, replace the armature.

Starter armature runout

- 0.1 mm {0.004 in} max.

4. Measure the commutator diameter.

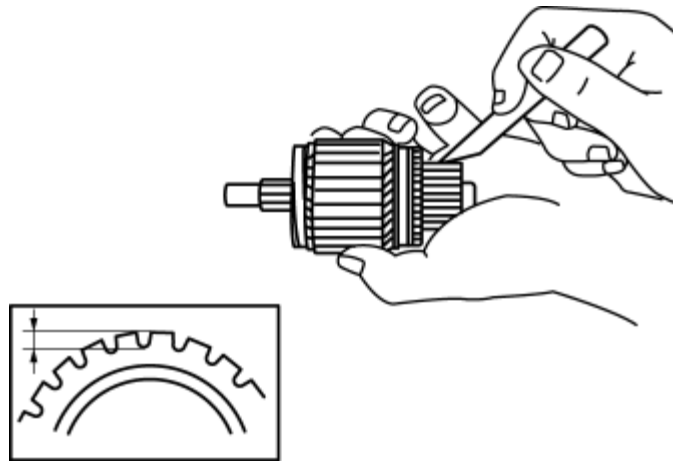


If not within the minimum specification, replace the armature.

Starter commutator diameter

- Standard: 29.4 mm {1.16 in}
- Minimum: 28.8 mm {1.13 in}

5. Measure the segment groove depth of the commutator.



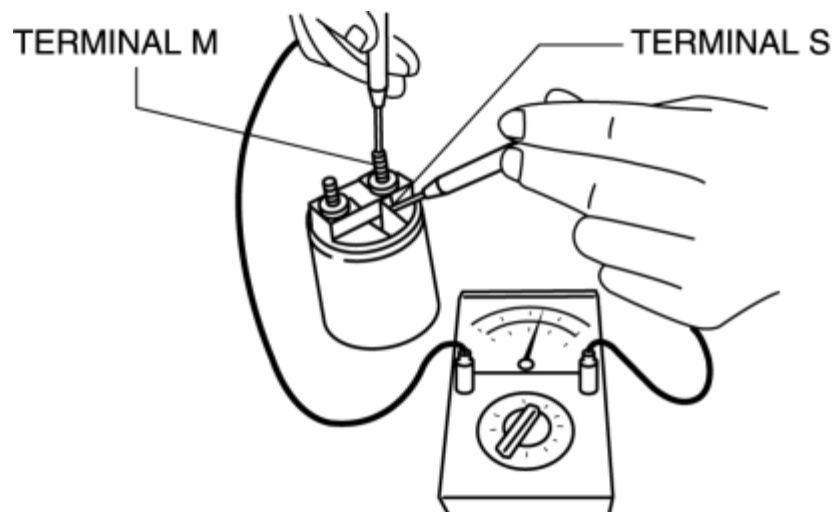
- If not within the minimum specification, undercut the grooves to the standard depth.

Segment groove depth of starter commutator

- Standard: 0.5 mm {0.020 in}
- Minimum: 0.2 mm {0.008 in}

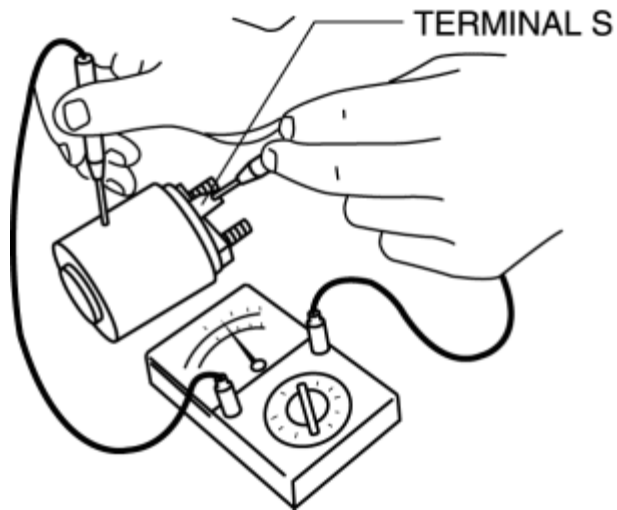
Magnetic switch

1. Inspect for continuity between terminals S and M using a tester.



- If there is no continuity, replace the magnetic switch.

2. Inspect for continuity between terminal S and the body using a tester.



- If there is no continuity, replace the magnetic switch.

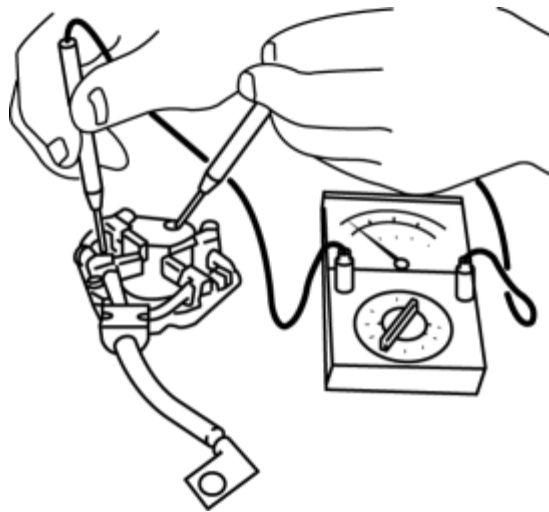
3. Verify that there is no continuity between terminals M and B using a tester.



- If there is continuity, replace the magnetic switch.

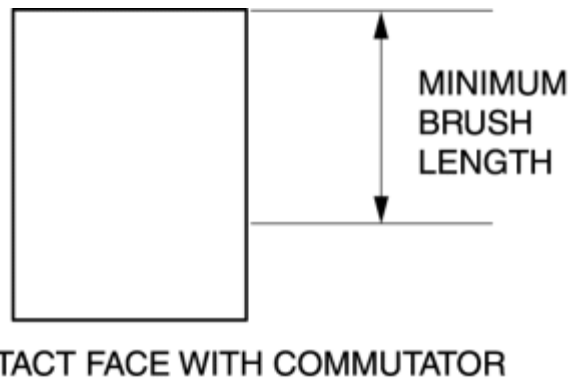
Brush and brush holder

1. Verify that there is no continuity between each insulated brush and plate using a tester.



- If there is continuity, replace the brush holder.

2. Measure the brush length.

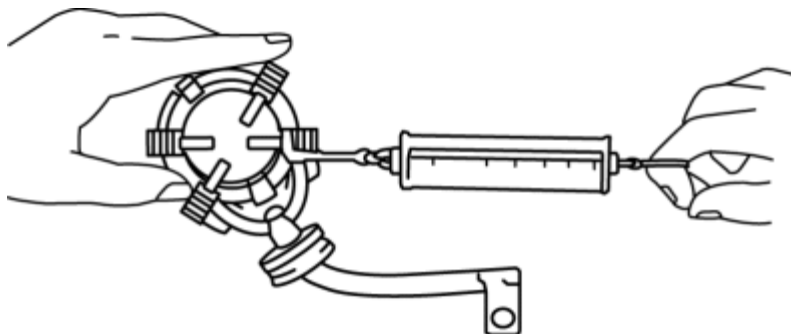


- If any brush is worn almost to or beyond the minimum specification, replace all of the brushes.

Starter brush length

- Standard: 17.6 mm {0.69 in}
- Minimum: 10.0 mm {0.39 in}

3. Measure the brush spring force using a spring balance.



- If not within the minimum specification, replace the brush and brush holder component.

Starter brush spring force

- Standard: 23.4—31.6 N {2.39— 3.22 kgf, 5.26—7.10 lbf}
- Minimum: 10.0 N {1.02 kgf, 2.25 lbf}

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

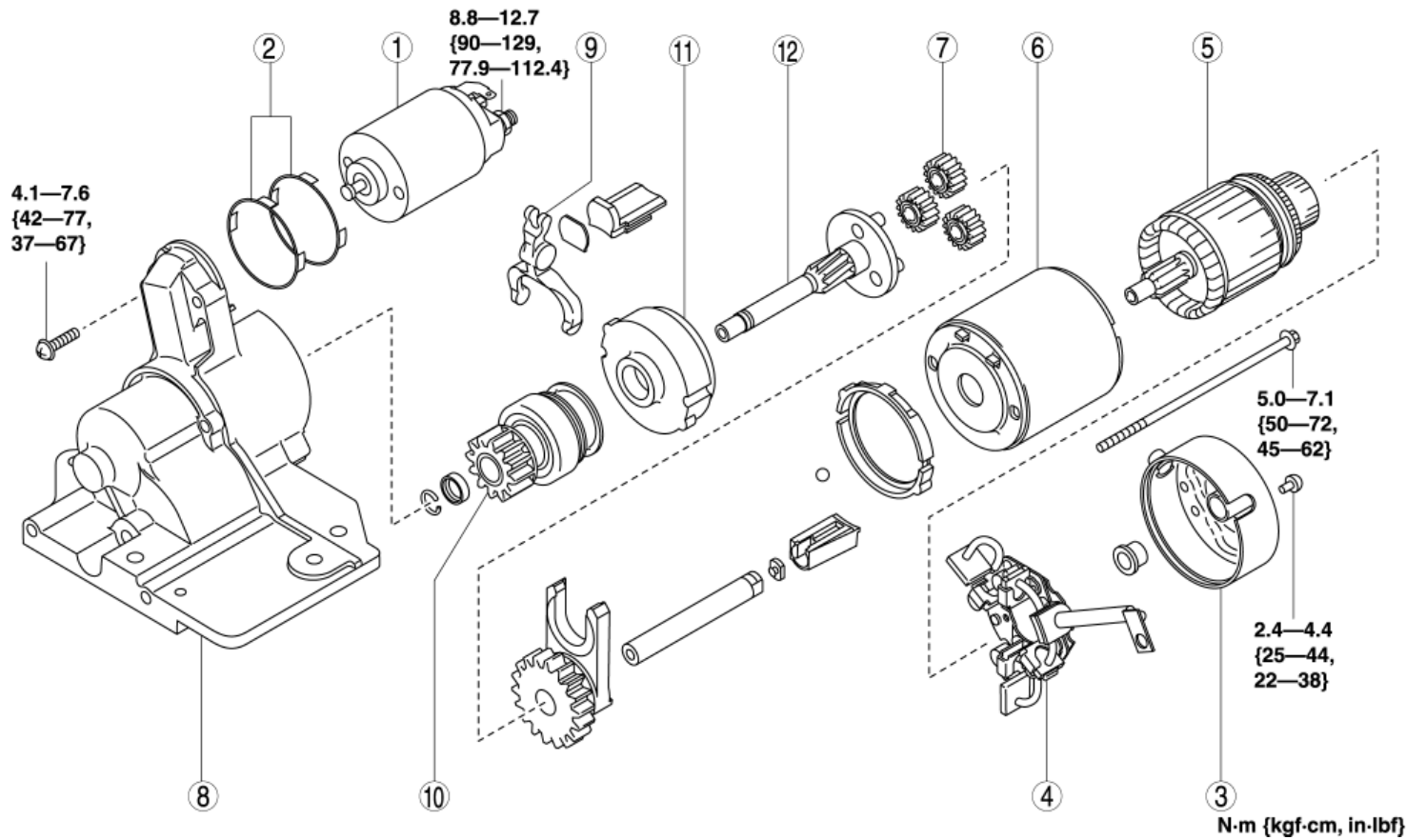
[Back to Top](#)

2011 - RX-8 - Engine

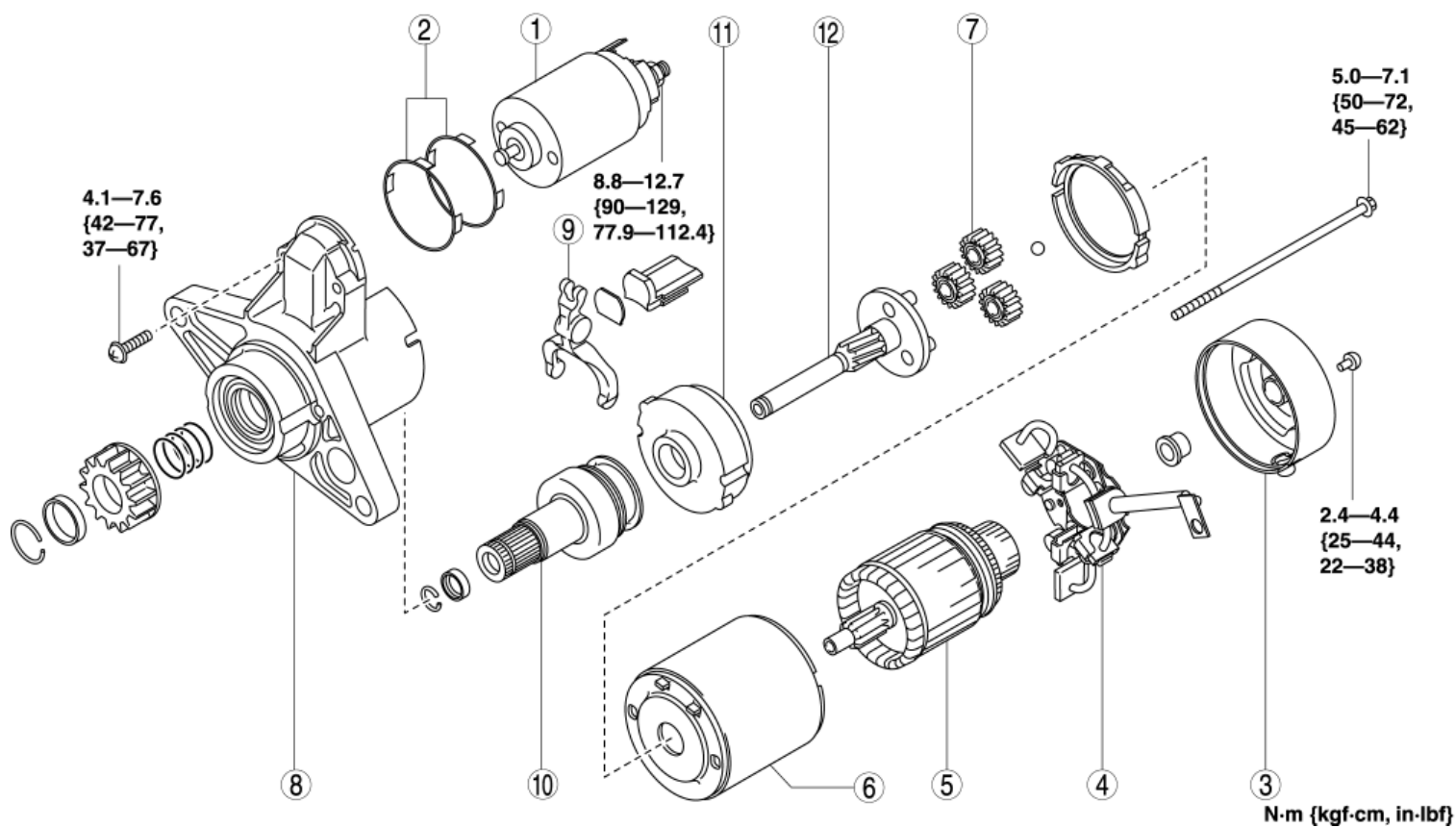
STARTER DISASSEMBLY/ASSEMBLY [13B-MSP]

- 1. Disassemble in the order indicated in the table.
- 2. Assemble in the reverse order of disassembly.

AT



MT



1	Magnetic switch
2	Adjustment washer
3	Rear housing
4	Brush and brush holder
5	Armature
6	Yoke
7	Planetary gear
8	Front cover
9	Lever
10	Drive pinion
11	Internal gear
12	Gear shaft

2011 - RX-8 - Engine

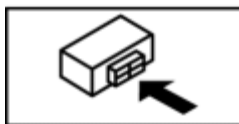
STARTER INTERLOCK SWITCH INSPECTION [13B-MSP]

CAUTION:

1. Do not reuse the starter interlock switch if it is removed from the vehicle even once.
Replace with a new starter interlock switch when installing.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
3. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
4. Disconnect the starter interlock switch connector.
5. Verify that the continuity is as indicated in the table using a tester.

○—○ : Continuity

Condition	Terminal	
	A	B
Clutch pedal is depressed	○—○	○—○
Clutch pedal is not depressed		

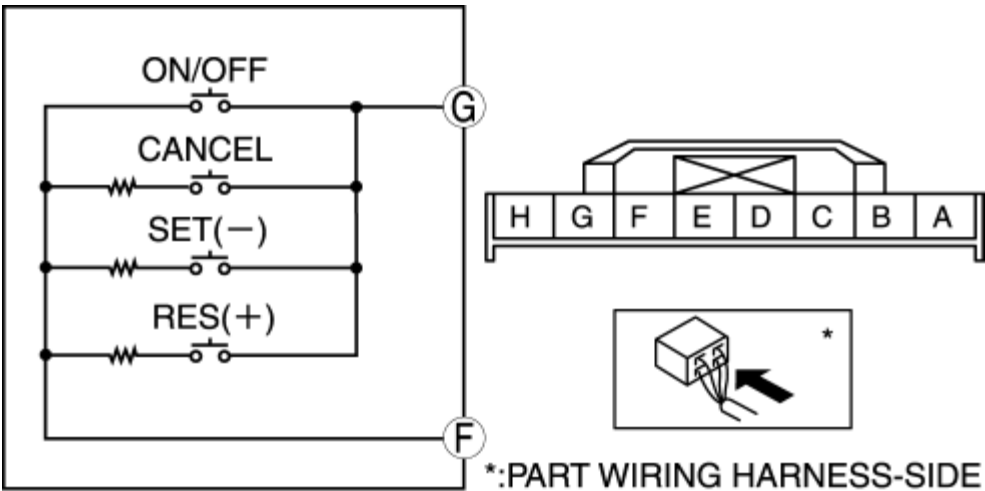


- If the continuity is not as indicated in the table, replace the starter interlock switch. (See [CLUTCH PEDAL REMOVAL/INSTALLATION](#).)

2011 - RX-8 - Engine

CRUISE CONTROL SWITCH INSPECTION [13B-MSP]

1. Disconnect the negative battery cable and wait for **1 min or more**.
2. Remove the driver-side air bag module. (See [DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION](#).)
3. Disconnect the cruise control switch connector. (See [AUDIO CONTROL SWITCH REMOVAL/INSTALLATION](#).)
4. Inspect for resistance and continuity between cruise control switch terminals G—F using a tester.

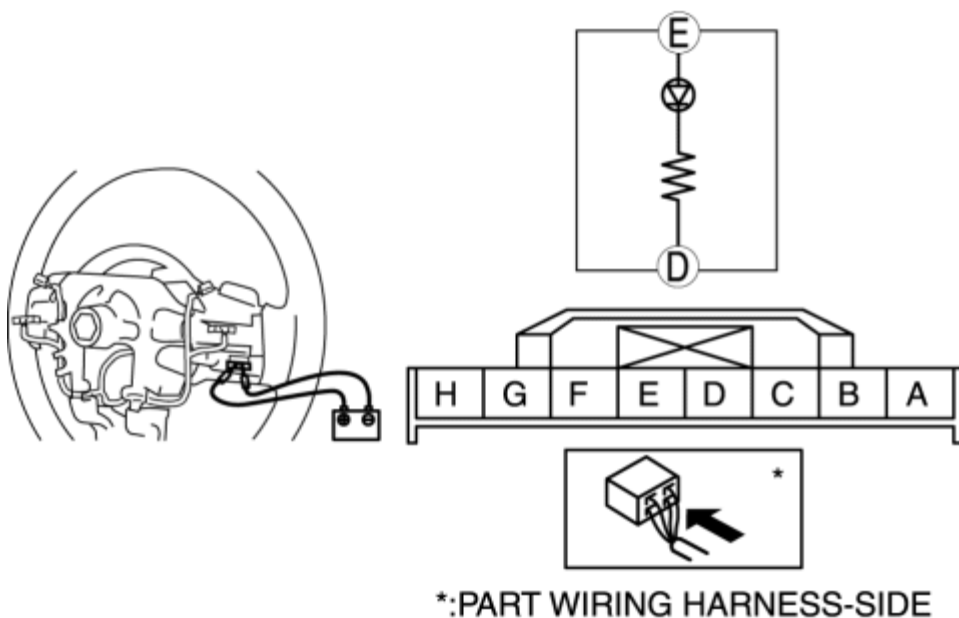


- If not as specified, replace the audio control switch. (See [AUDIO CONTROL SWITCH REMOVAL/INSTALLATION](#).)

Switch condition	Resistance (ohm)
ON/OFF button pressed	Continuity
CANCEL button pressed	117—123
SET/COAST button pressed	666—694
RES/ACCEL button pressed	2,156—2,244

No button pressed	No continuity
-------------------	---------------

5. Apply battery positive voltage to cruise control switch terminal E, and connect terminal D to ground.



6. Verify that the LED illuminates.

- If the LED does not illuminate, replace the audio control switch. (See [AUDIO CONTROL SWITCH REMOVAL/INSTALLATION](#).)

[< Previous](#) [Next >](#)

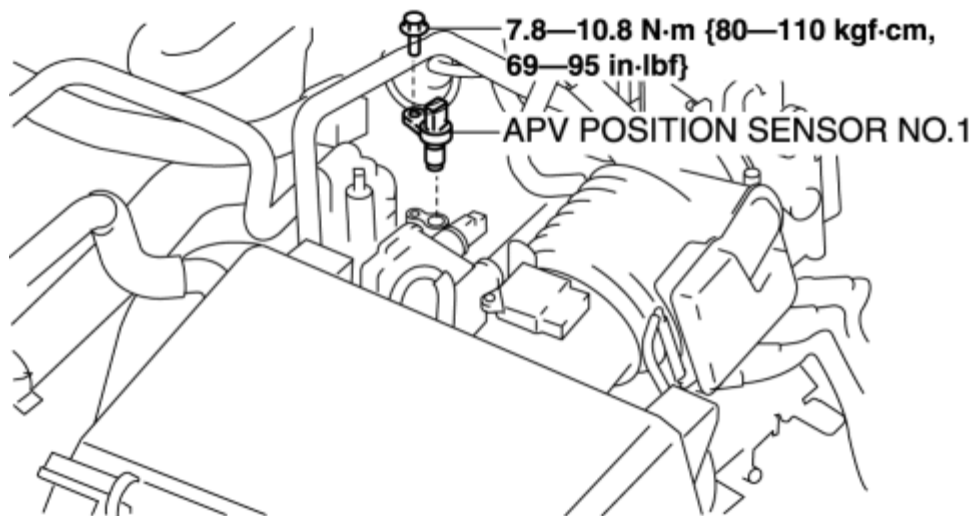
[Back to Top](#)

2011 - RX-8 - Engine

AUXILIARY PORT VALVE (APV) POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP]

APV Position Sensor No.1

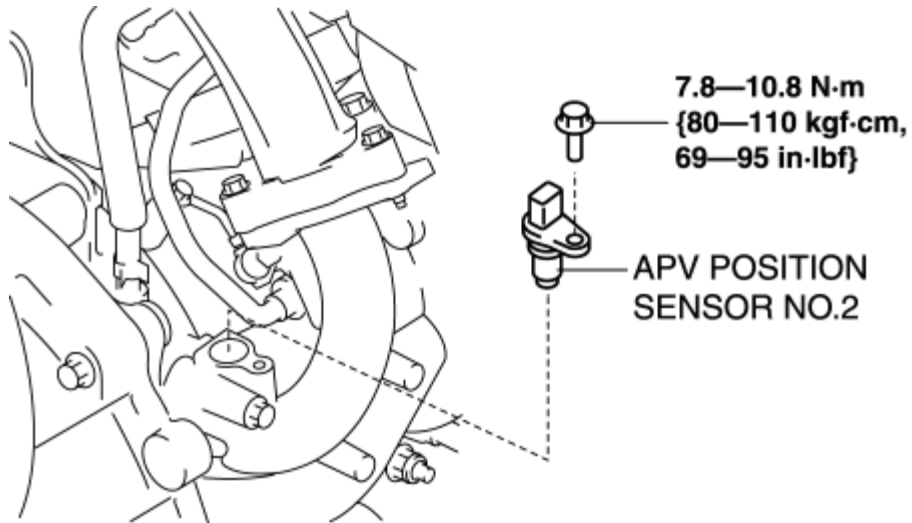
1. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#))
2. Disconnect the negative battery cable.
3. Remove the battery. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#))
4. Remove the battery tray. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#))
5. Remove the air control valve. (See [SECONDARY AIR INJECTION \(AIR\) CONTROL VALVE REMOVAL/INSTALLATION \[13B-MSP\]](#))
6. Remove the generator. (See [GENERATOR REMOVAL/INSTALLATION \[13B-MSP\]](#))
7. Disconnect the SSV switch connector.
8. Disconnect the APV position sensor No.1 connector.
9. Remove the APV position sensor No.1.



10. Install in the reverse order of removal.

APV Position Sensor No.2

1. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#))
2. Disconnect the negative battery cable.
3. Remove the exhaust manifold. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#))
4. Disconnect the APV position sensor No.2 connector.
5. Remove the APV position sensor No.2.



6. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

[Back to Top](#)

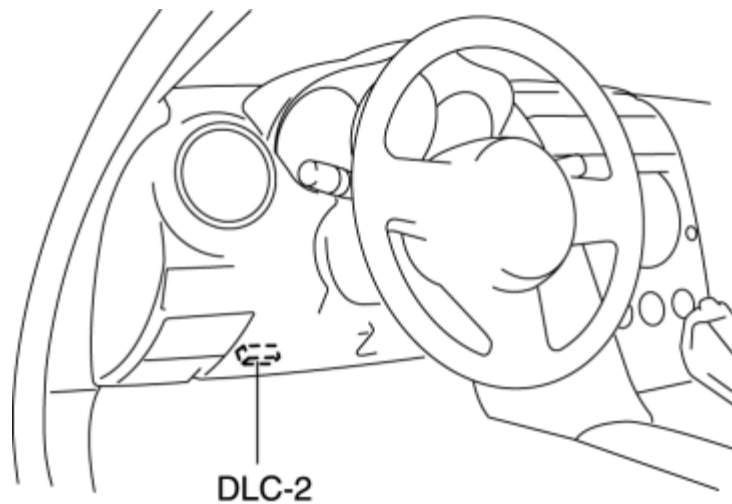
© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

PCM TEMPERATURE SENSOR INSPECTION [13B-MSP]

NOTE:

- Before performing the following inspection, make sure to follow the troubleshooting flowchart. (See [FOREWORD \[13B-MSP\]](#).)
1. Connect the M-MDS to the DLC-2.



2. Turn the ignition switch to the ON position.
3. Select PCM_T on the M-MDS.
4. Verify that the PCM_T PID voltage is within the specification.
 - If not as verified, replace the PCM. (See [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#).)

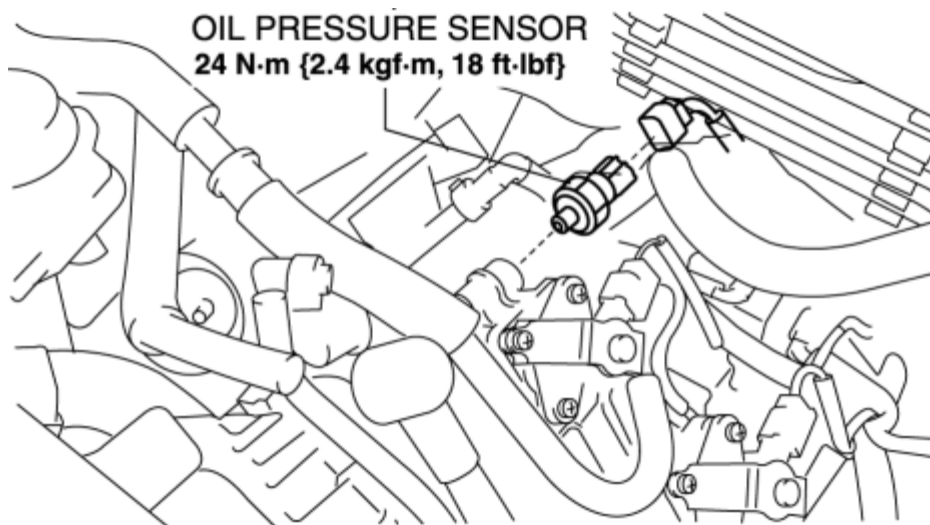
PCM Temperature Sensor Output Voltage

- 1.2—2.6 V

2011 - RX-8 - Engine

OIL PRESSURE SENSOR REMOVAL/INSTALLATION [13B-MSP]

1. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Disconnect the negative battery cable.
3. Remove the extension manifold (upper). (See [INTAKE MANIFOLD REMOVAL/INSTALLATION \[13B-MSP\]](#).)
4. Remove the extension manifold (lower). (See [INTAKE MANIFOLD REMOVAL/INSTALLATION \[13B-MSP\]](#).)
5. Disconnect the oil pressure sensor connector.
6. Remove the oil pressure sensor.

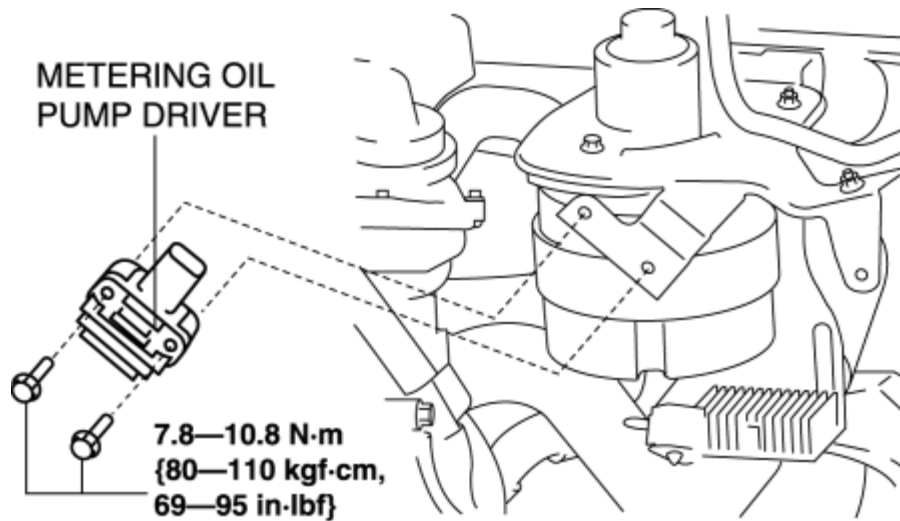


7. Install in the reverse order of removal.

2011 - RX-8 - Engine

METERING OIL PUMP DRIVER REMOVAL/INSTALLATION [13B-MSP]

1. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Disconnect the negative battery cable.
3. Disconnect the metering oil pump driver connector.
4. Remove the metering oil pump driver.



5. Install in the reverse order of removal.

2011 - RX-8 - Engine

OIL PRESSURE SENSOR INSPECTION [13B-MSP]

NOTE:

- Before performing the following inspection, make sure to follow the troubleshooting flowchart. (See [FOREWORD \[13B-MSP\]](#).)
1. Turn the ignition switch to ON position.
 2. Verify that the voltage at PCM terminals 2R is within the specification.
 - If not as verified, replace the oil pressure sensor. (See [OIL PRESSURE SENSOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)

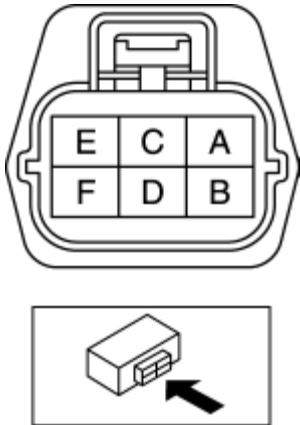
Oil Pressure Sensor Output Voltage

- **0.55—1.03 V [Oil Pressure: 50—150 kPa {0.51—1.52 kgf/cm², 7.3—21.7 psi}]**

2011 - RX-8 - Engine

METERING OIL PUMP DRIVER INSPECTION [13B-MSP]

- 1. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- 2. Disconnect the negative battery cable.
- 3. Disconnect the metering oil pump driver connector.
- 4. Verify that the resistance is as indicated in the table .



- If not within the specification, replace the metering oil pump driver. (See [METERING OIL PUMP DRIVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)

Metering Oil Pump Driver Resistance

Terminal	Resistance
B—D	50—100 kilohm
C—B	
C—F	
D—F	
D—A	1 Megohm
D—E	

[< Previous](#) [Next >](#)

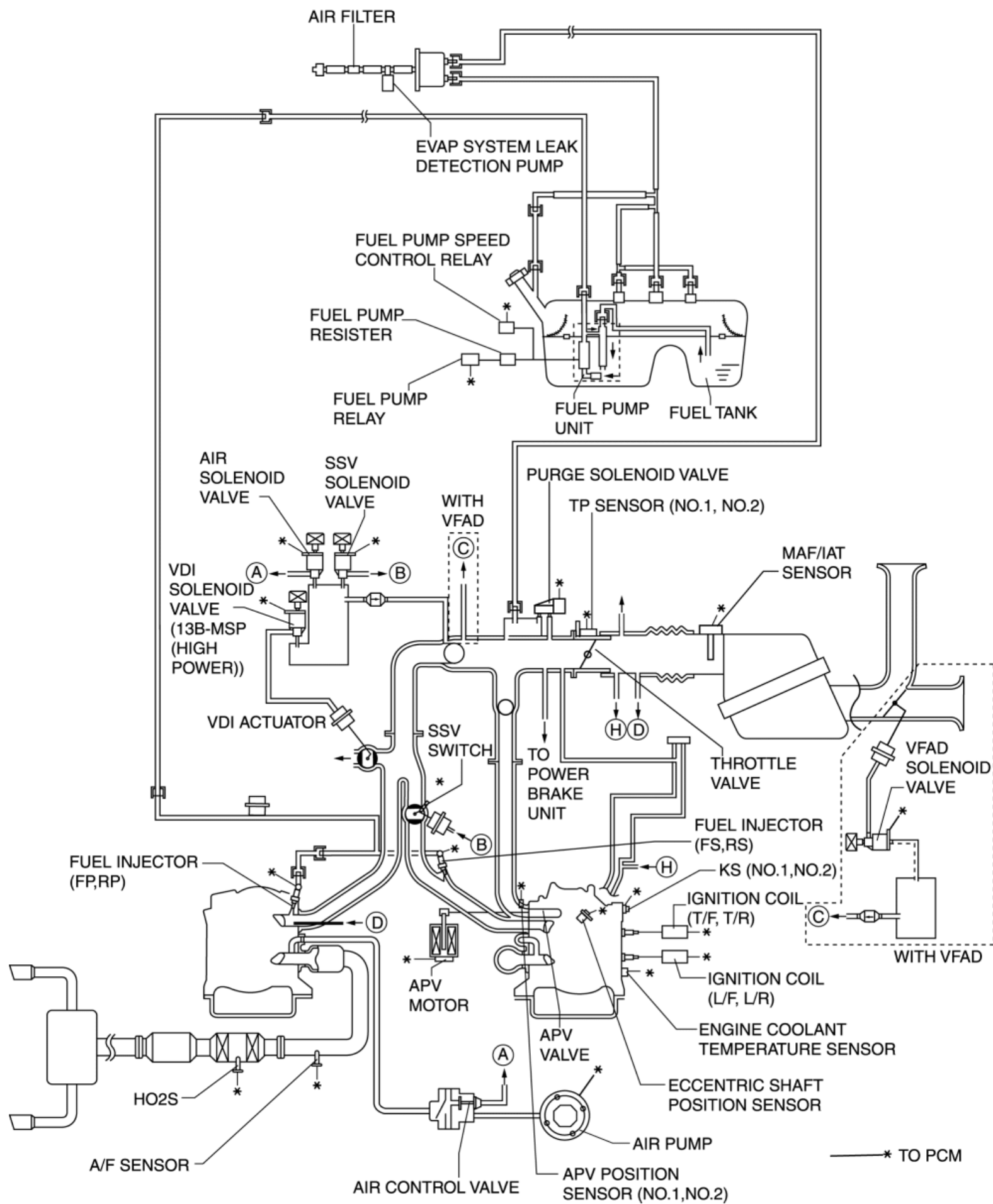
[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

[< Previous](#) [Next >](#)

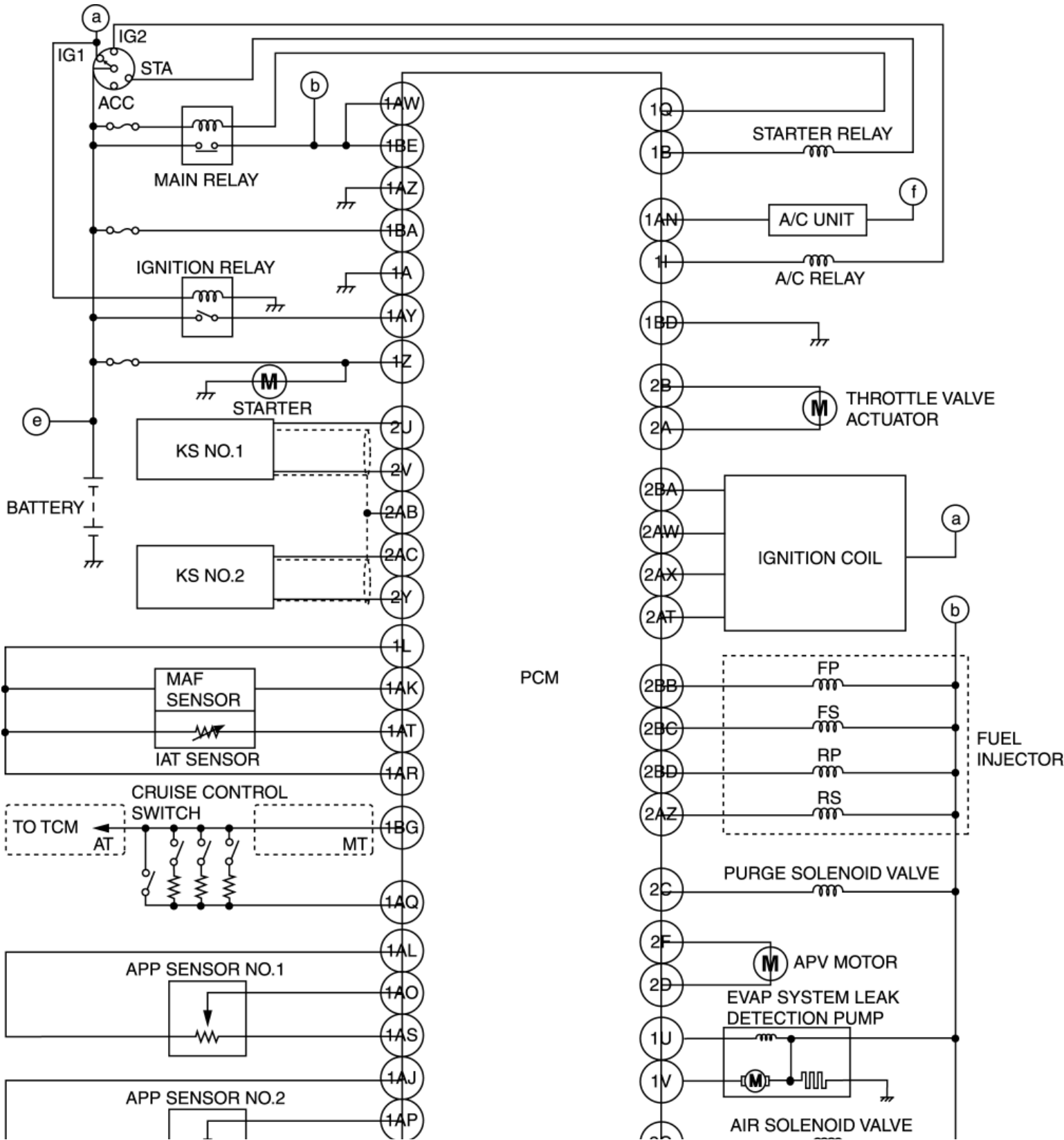
2011 - RX-8 - Engine

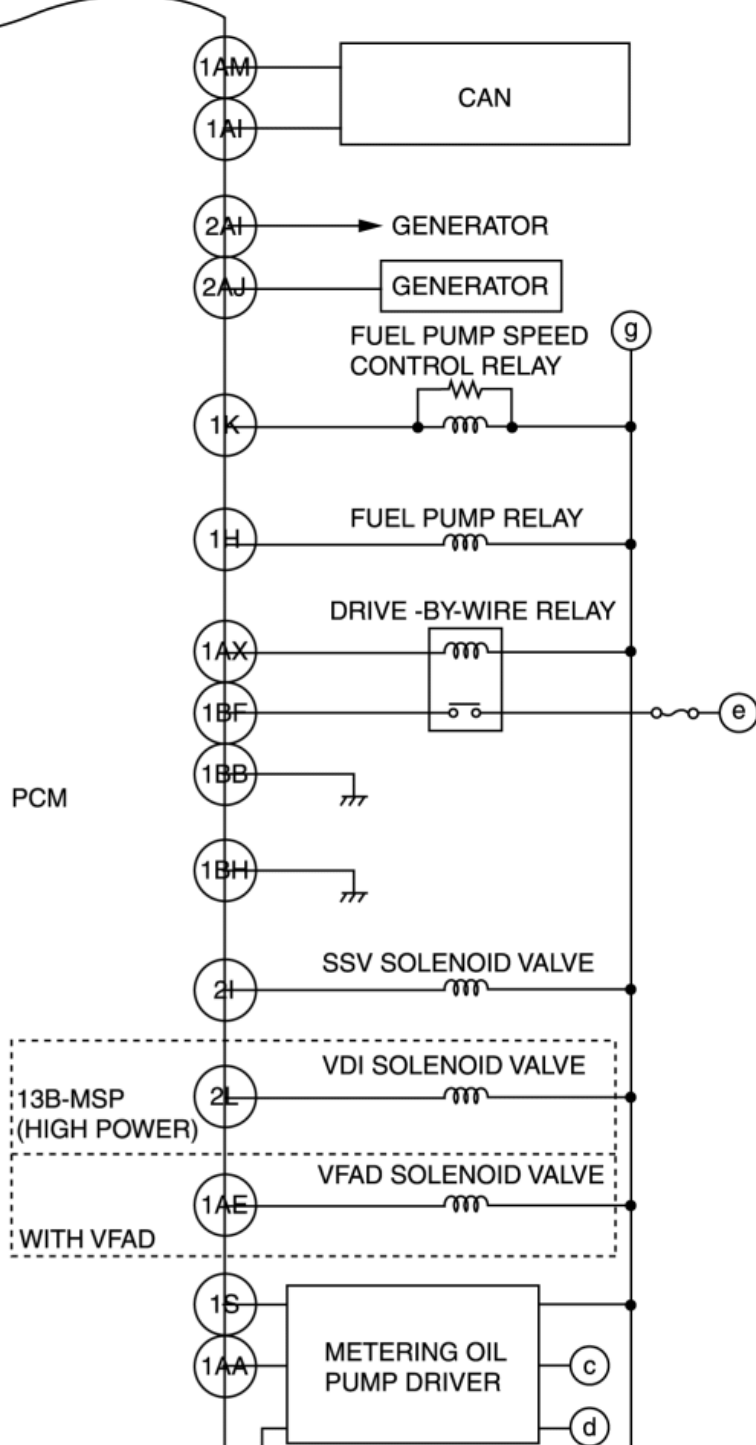
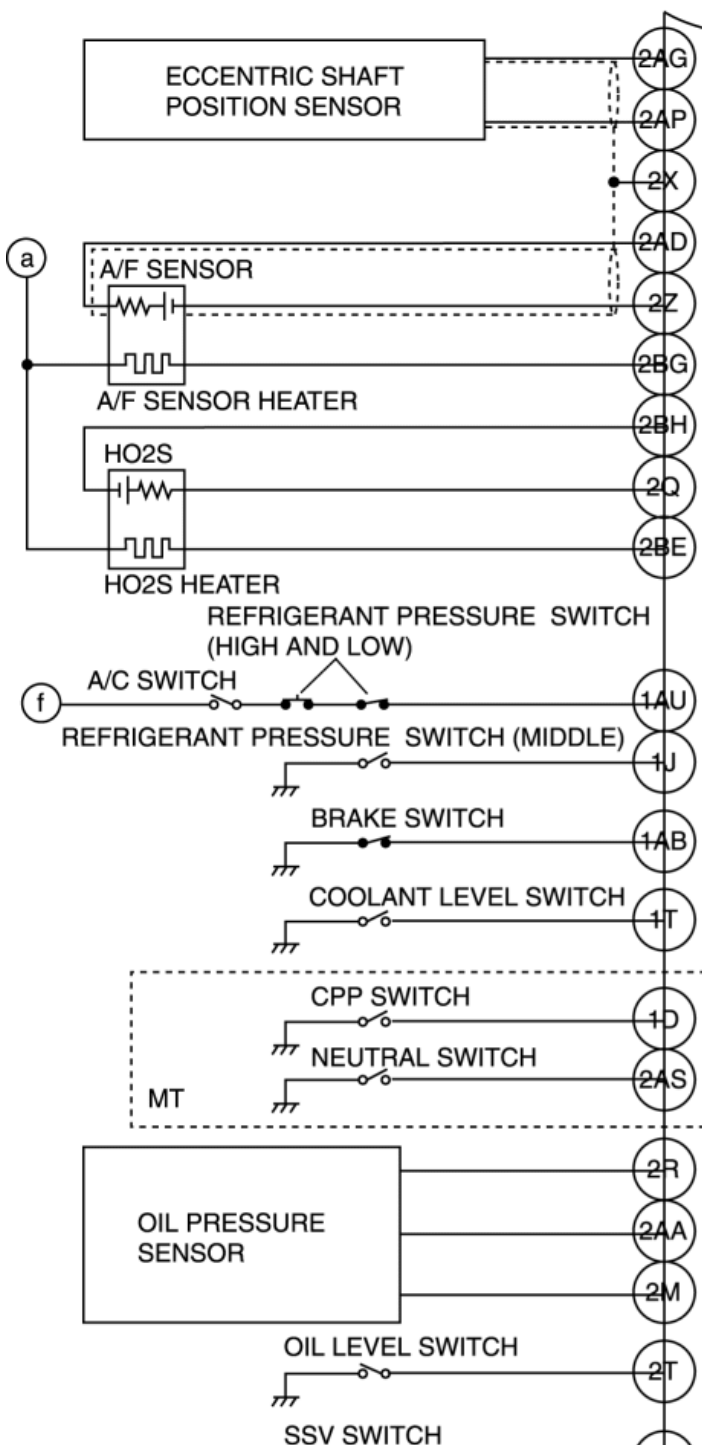
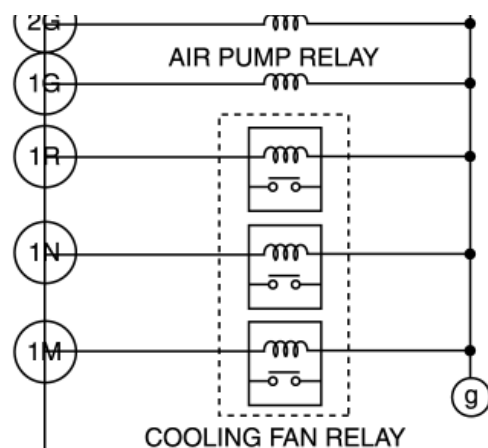
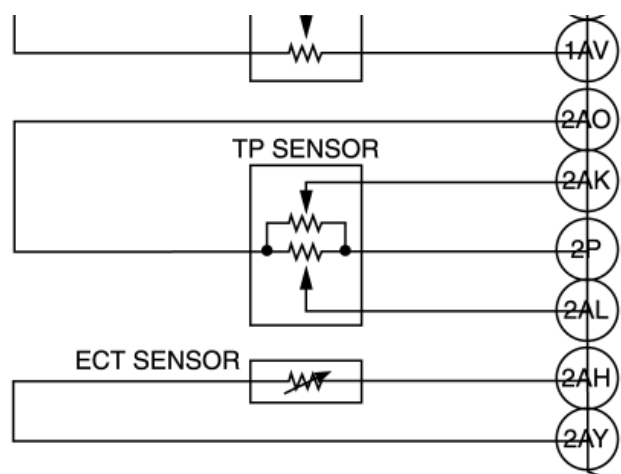
CONTROL SYSTEM DIAGRAM [13B-MSP]

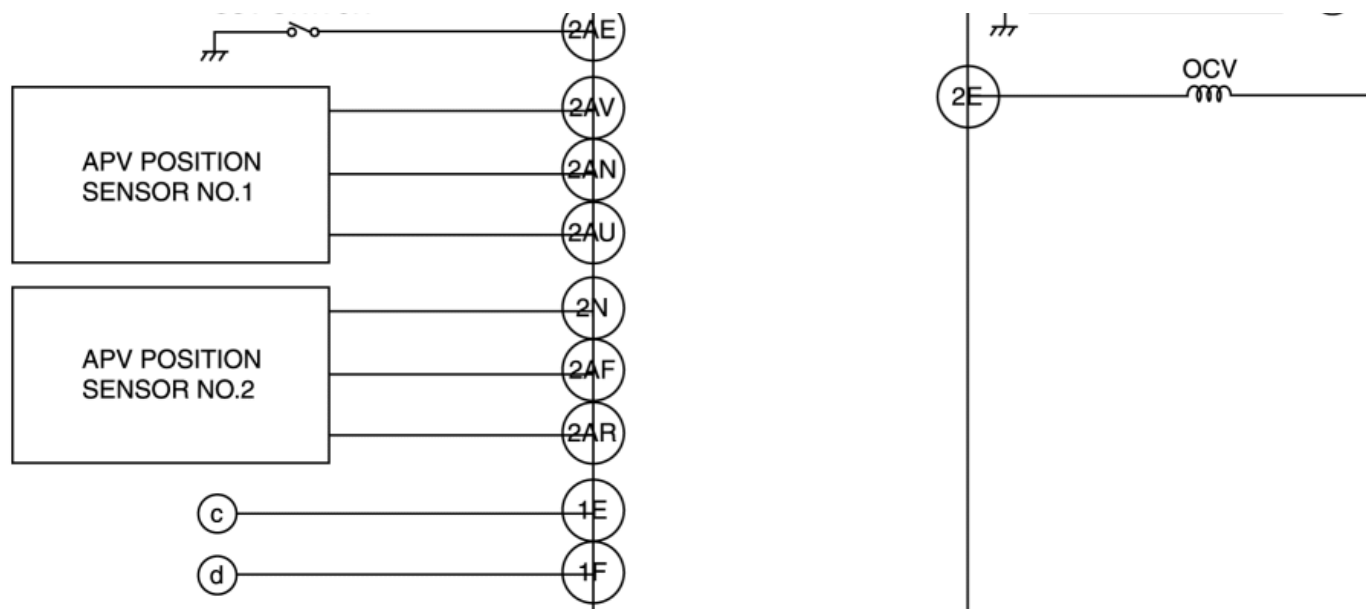


2011 - RX-8 - Engine

CONTROL SYSTEM WIRING DIAGRAM [13B-MSP]







[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

MASS AIR FLOW (MAF) SENSOR INSPECTION [13B-MSP]

NOTE:

- Before performing the following inspection, make sure to follow the troubleshooting flowchart. (See [FOREWORD \[13B-MSP\]](#).)

Visual Inspection

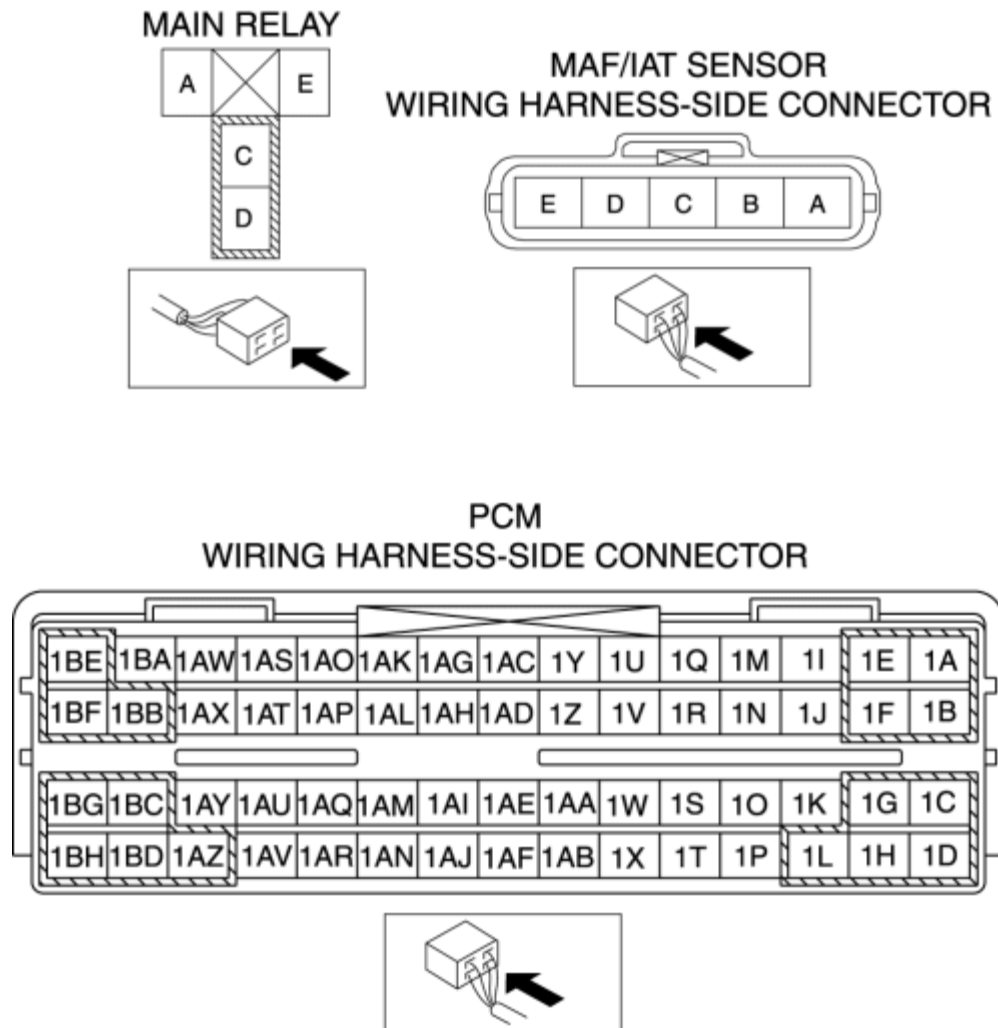
1. Visually inspect the MAF/IAT sensor for the following:
 - Damage, cracks
 - Rusted sensor terminal
 - Bent sensor terminal
 - If there is any malfunction, replace the MAF/IAT sensor. (See [MASS AIR FLOW \(MAF\)/INTAKE AIR TEMPERATURE \(IAT\) SENSOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 - If the monitor item condition (reference) is not within the specification even though there is no malfunction, perform the "Circuit Open/Short Inspection". (See [Circuit Open/Short Inspection](#).)

Voltage Inspection

1. Remove the MAF/IAT sensor without disconnect the MAF/IAT sensor connector.
2. Turn the ignition switch to ON position.
3. As the air gradually approaches the MAF detection part of the MAF/IAT sensor, verify that the voltage at PCM terminal 1AK (M-MDS PID: MAF) varies.
 - If it cannot be verified even though the related harnesses have no malfunction, replace the MAF/IAT sensor. (See [MASS AIR FLOW \(MAF\)/INTAKE AIR TEMPERATURE \(IAT\) SENSOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)

Circuit Open/Short Inspection

1. Disconnect the PCM connector.
2. Disconnect the MAF/IAT sensor connector.
3. Inspect the following wiring harnesses for open or short circuit. (Continuity inspection)



Open circuit

- If there is no continuity in the following wiring harnesses, there is an open circuit. Repair or replace the wiring harness.
 - MAF/IAT sensor terminal A and main relay terminal C
 - MAF/IAT sensor terminal B and PCM terminal 1L
 - MAF/IAT sensor terminal C and PCM terminal 1AK

Short circuit

- If there is continuity in the following wiring harnesses, there is a short circuit. Repair or replace the wiring harness.

- MAF/IAT sensor terminal A and body ground
- MAF/IAT sensor terminal C and power supply
- MAF/IAT sensor terminal C and body ground

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

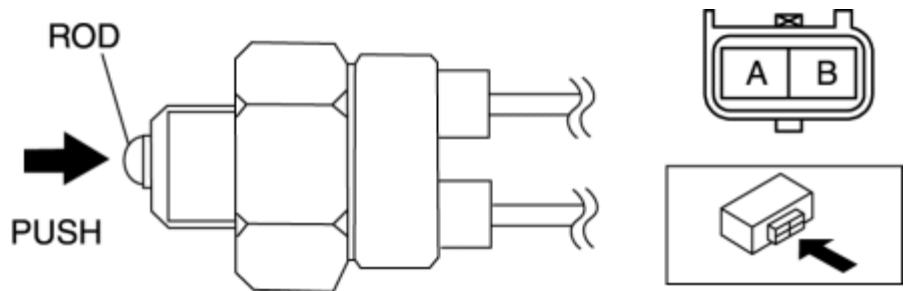
NEUTRAL SWITCH INSPECTION [13B-MSP]

NOTE:

- Before performing the following inspection, make sure to follow the troubleshooting flowchart. (See [FOREWORD \[13B-MSP\]](#).)

Continuity Inspection

1. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Disconnect the negative battery cable.
3. Remove the neutral switch. (See [NEUTRAL SWITCH REMOVAL/INSTALLATION \[P66M-D\]](#).)
4. Verify that the continuity between neutral switch terminals A and B is as indicated in the table.



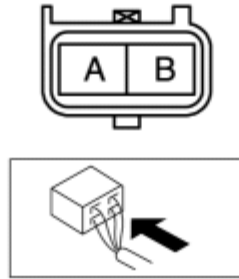
- If there is no malfunction, perform the "Circuit Open/Short Inspection". (See [Circuit Open/Short Inspection](#).)
- If there is any malfunction, replace the neutral switch. (See [NEUTRAL SWITCH REMOVAL/INSTALLATION \[P66M-D\]](#).)

Measurement condition	Continuity
Push the rod	No continuity
Except above	Continuity detected

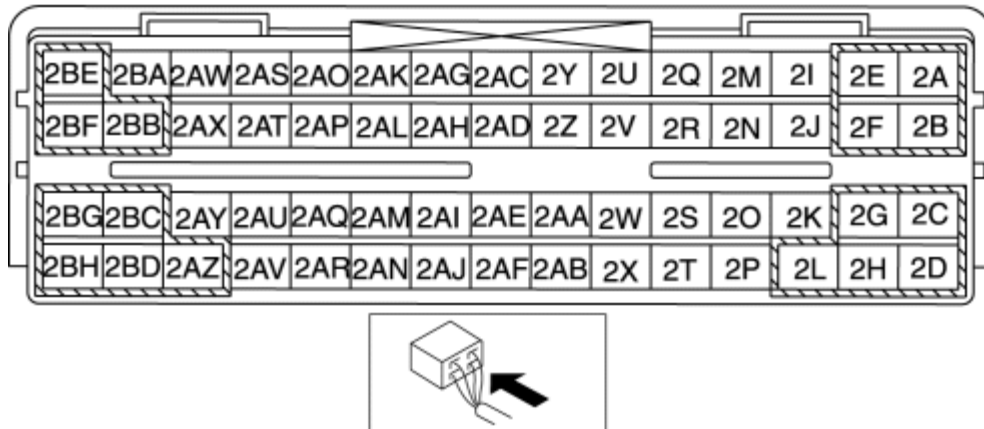
Circuit Open/Short Inspection

1. Disconnect the PCM connector.
2. Disconnect the neutral switch connector.
3. Inspect the following wiring harnesses for open or short circuit. (Continuity inspection)

NEUTRAL SWITCH WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



Open circuit

- If there is no continuity in the following wiring harnesses, there is an open circuit. Repair or replace the wiring harness.
 - Neutral switch terminal A and PCM terminal 2AS
 - Neutral switch terminal B and body ground

Short circuit

- If there is continuity in the following wiring harnesses, there is a short circuit. Repair or

replace the wiring harness.

- Neutral switch terminal A and body ground
- Neutral switch terminal A and power supply

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

BAROMETRIC PRESSURE (BARO) SENSOR INSPECTION [13B-MSP]

NOTE:

- Before performing the following inspection, make sure to follow the troubleshooting flowchart. (See [FOREWORD \[13B-MSP\]](#).)
1. Connect the M-MDS to the DLC-2.
 2. Turn the ignition switch to the ON position.
 3. Select BARO on the M-MDS.
 4. Verify that the BARO PID voltage is within the specification.
 - If not as verified, replace the PCM. (See [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#).)

BARO Sensor Output Voltage

- **2.44—3.80 V**

2011 - RX-8 - Engine

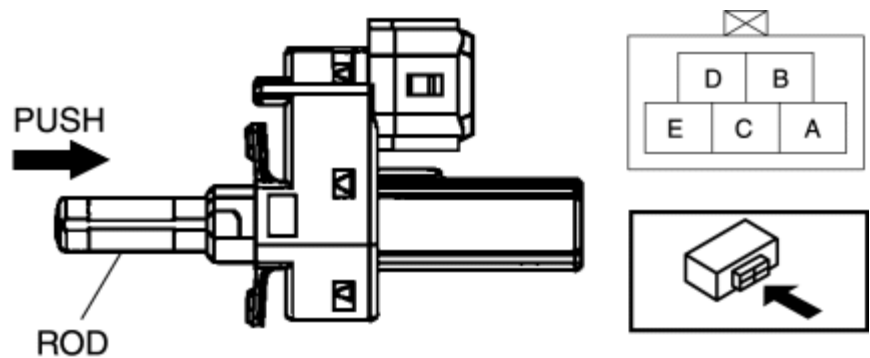
CLUTCH PEDAL POSITION (CPP) SWITCH INSPECTION [13B-MSP]

NOTE:

- Before performing the following inspection, make sure to follow the troubleshooting flowchart. (See [FOREWORD \[13B-MSP\]](#).)

Continuity Inspection

1. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Disconnect the negative battery cable.
3. Disconnect the CPP switch connector.
4. Verify that the continuity between CPP switch terminals B and D is as indicated in the table.



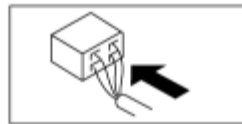
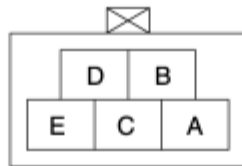
- If there is no malfunction, perform the "Circuit Open/Short Inspection". (See [Circuit Open/Short Inspection](#).)
- If there is any malfunction, replace the CPP switch. (See [CLUTCH PEDAL REMOVAL/INSTALLATION](#).)

Measurement condition	Clutch pedal position	Continuity
Push the rod	Clutch pedal released	No continuity
Except above	Clutch pedal depressed	Continuity detected

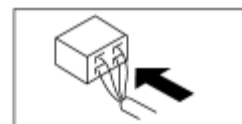
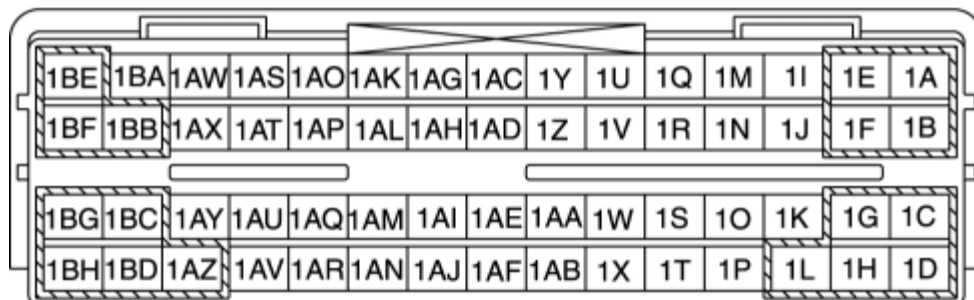
Circuit Open/Short Inspection

1. Disconnect the PCM connector.
2. Disconnect the CPP switch connector.
3. Inspect the following wiring harnesses for open or short circuit. (Continuity inspection)

CPP SWITCH WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



Open circuit

- If there is no continuity in the following wiring harnesses, there is an open circuit. Repair or replace the wiring harness.
 - CPP switch terminal B and PCM terminal 1D
 - CPP switch terminal D and body ground

Short circuit

- If there is continuity in the following wiring harnesses, there is a short circuit. Repair or replace the wiring harness.
 - CPP switch terminal B and body ground
 - CPP switch terminal B and power supply

[< Previous](#) [Next >](#)

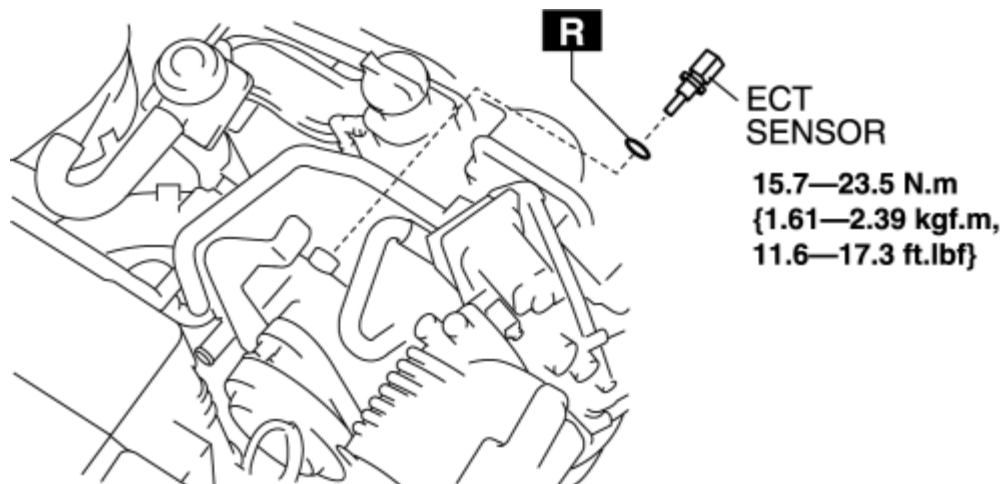
[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [13B-MSP]

1. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Disconnect the negative battery cable.
3. Remove the generator. (See [GENERATOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
4. Drain the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\]](#).)
5. Disconnect the ECT sensor connector.
6. Remove the ECT sensor.



7. Install in the reverse order of removal.

2011 - RX-8 - Engine

ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [13B-MSP]

NOTE:

- Before performing the following inspection, make sure to follow the troubleshooting flowchart. (See [FOREWORD \[13B-MSP\]](#).)

Resistance Inspection

1. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Disconnect the negative battery cable.
3. Remove the generator. (See [GENERATOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
4. Drain the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\]](#).)
5. Disconnect the ECT sensor connector.
6. Remove the ECT sensor. (See [ENGINE COOLANT TEMPERATURE \(ECT\) SENSOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
7. Place the detection part of the ECT sensor in water and verify that the resistance between ECT sensor terminals A and B is as indicated in the table while gradually increasing water temperature.
 - If the monitor item condition/specification (reference) is not within the specification, even though the resistance is within the specification, perform the "Circuit Open/Short Inspection". (See [Circuit Open/Short Inspection](#).)
 - If not within the specification, replace the ECT sensor. (See [ENGINE COOLANT TEMPERATURE \(ECT\) SENSOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)

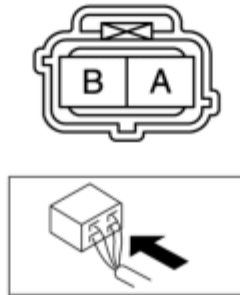
ECT sensor resistance

Water temperature (°C {°F})	Resistance (ohm)
20 {68}	2,205—2,695
80 {176}	287—349

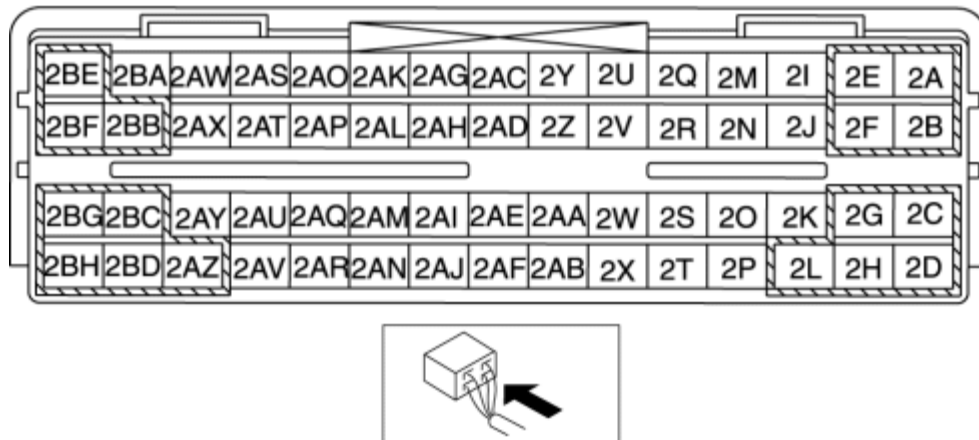
Circuit Open/Short Inspection

1. Disconnect the PCM connector.
2. Disconnect the ECT sensor connector.
3. Inspect the following wiring harnesses for open or short circuit. (Continuity inspection)

ECT SENSOR WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



Open circuit

- If there is no continuity in the following wiring harnesses, there is an open circuit. Repair or replace the wiring harness.
 - ECT sensor terminal A and PCM terminal 2AH
 - ECT sensor terminal B and PCM terminal 2AY

Short circuit

- If there is continuity at the following wiring harnesses, there is a short circuit. Repair or replace the wiring harness.
 - ECT sensor terminal A and body ground
 - ECT sensor terminal A and power supply

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

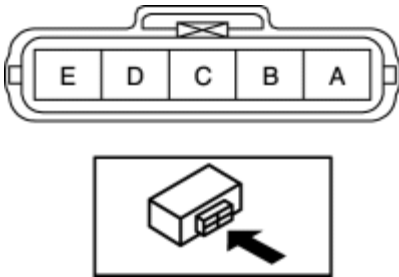
INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [13B-MSP]

NOTE:

- Before performing the following inspection, make sure to follow the troubleshooting flowchart. (See [FOREWORD \[13B-MSP\]](#).)

Resistance Inspection

1. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Disconnect the negative battery cable.
3. Disconnect the MAF/IAT sensor connector.
4. Verify that the resistance between MAF sensor terminals D and E is as indicated in the table while blowing hot air gradually into the IAT sensor part built into the MAF sensor.



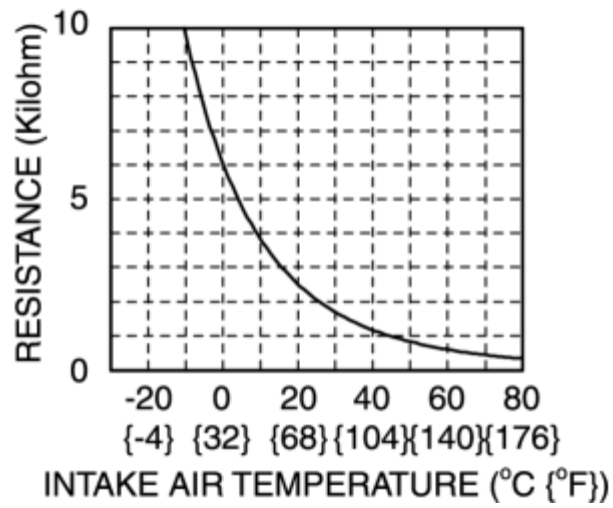
- If the monitor item condition/specification (reference) is not within the specification, even though the resistance is within the specification, perform the "Circuit Open/Short Inspection". (See [Circuit Open/Short Inspection](#).)
- If not within the specification, replace the MAF/IAT sensor. (See [MASS AIR FLOW \(MAF\)/INTAKE AIR TEMPERATURE \(IAT\) SENSOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)

IAT sensor resistance

Air temperature (°C {°F})	Resistance (kilohm)
-20 {-4}	13.6—18.4
20 {68}	2.21—2.69

60 {140}	0.493—0.667
----------	-------------

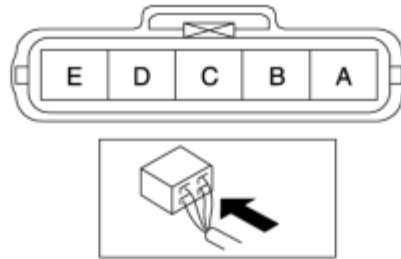
IAT sensor characteristics graph (reference)



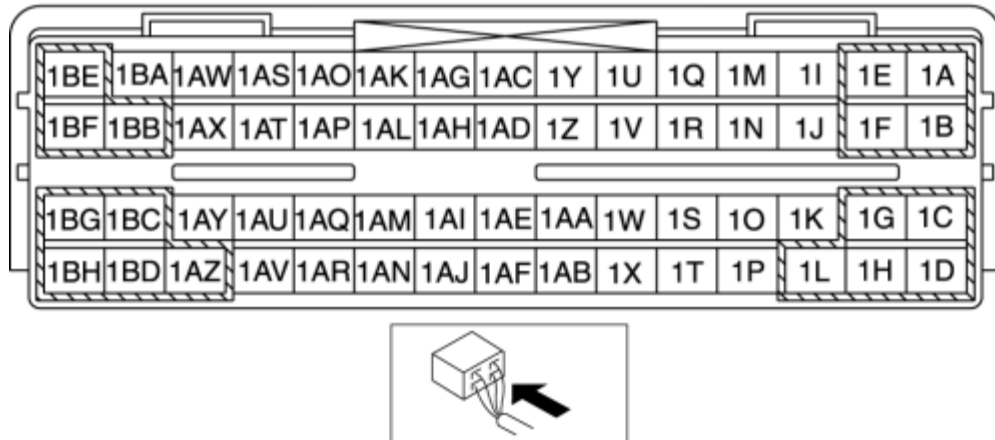
Circuit Open/Short Inspection

1. Disconnect the PCM connectors.
2. Disconnect the MAF/IAT sensor connector.
3. Inspect the following wiring harnesses for open or short circuit. (Continuity inspection)

MAF/IAT SENSOR WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



Open circuit

- If there is no continuity in the following wiring harnesses, there is an open circuit. Repair or replace the wiring harness.
 - MAF/IAT sensor terminal D and PCM terminal 1AT
 - MAF/IAT sensor terminal E and PCM terminal 1AR

Short circuit

- If there is continuity in the following wiring harnesses, there is a short circuit. Repair or replace the wiring harness.
 - MAF/IAT sensor terminal D and body ground
 - MAF/IAT sensor terminal D and power supply

[< Previous](#) [Next >](#)

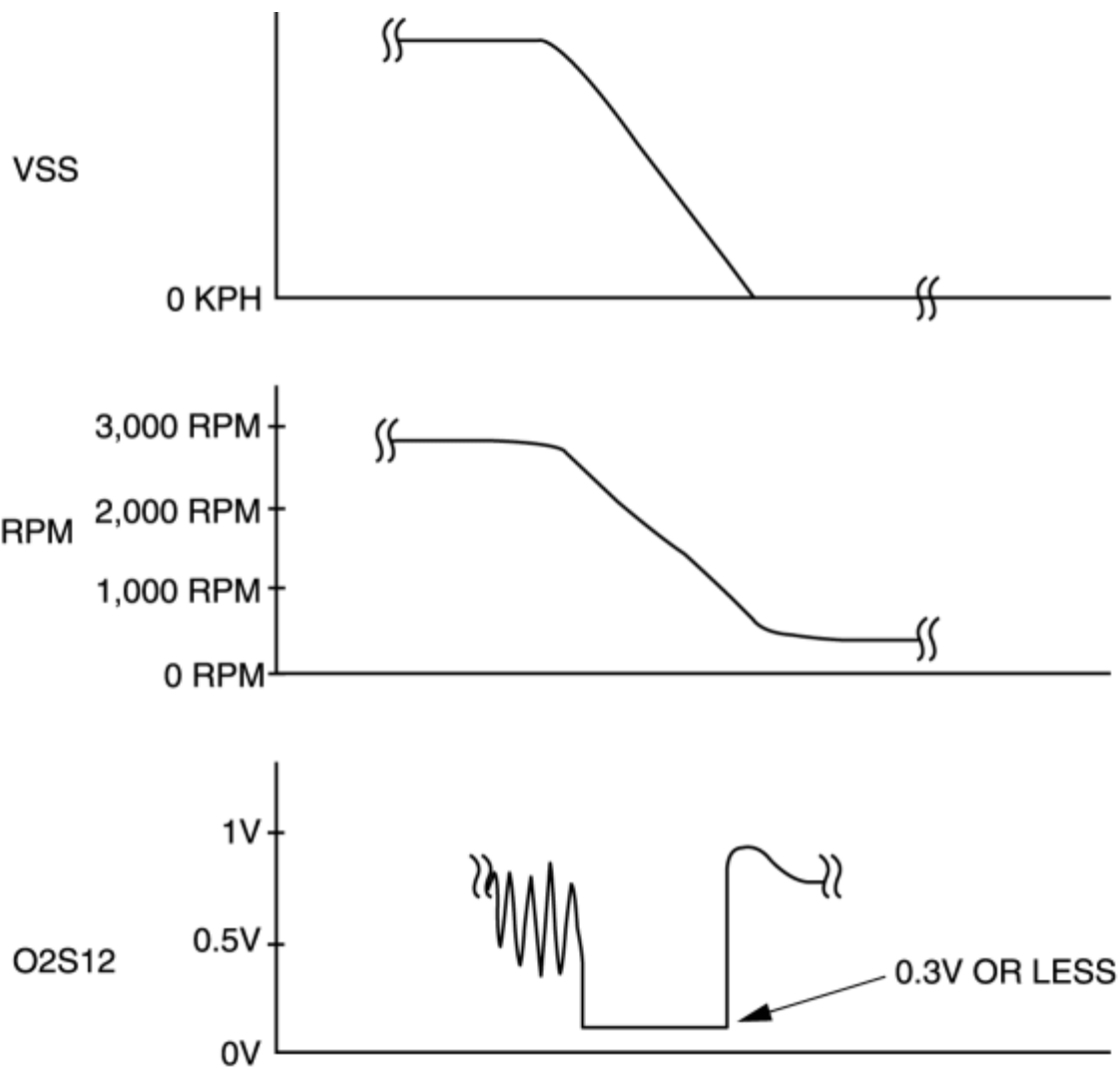
[Back to Top](#)

2011 - RX-8 - Engine

HEATED OXYGEN SENSOR (HO2S) INSPECTION [13B-MSP]

HO2S voltage inspection

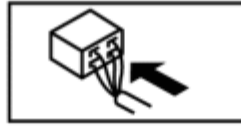
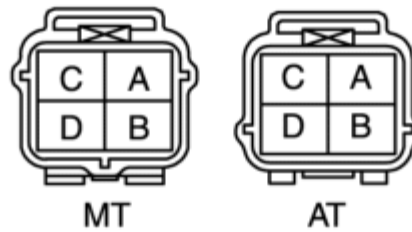
1. Warm up the engine to normal operating temperature.
2. Using the M-MDS, monitor the following:
 - Vehicle speed (PID: VSS)
 - Engine speed (PID: RPM)
 - HO2S voltage (PID: O2S12)
3. Drive the vehicle and decelerate the engine speed by releasing the accelerator pedal fully when the engine speed is 3,000 rpm or more.
4. Verify that the HO2S outputs a voltage of **0.6 V or more**, one time or more, then verify that the HO2S voltage (PID: O2S12) is **0.3 V or less** while decelerating as shown in the figure.



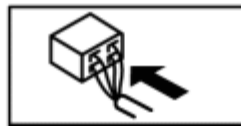
- If not within the specification, inspect the HO2S for an open or short circuit. (See [HO2S circuit open/short inspection](#).) Then if there is no malfunction in the wiring harness, replace the HO2S. (See [HEATED OXYGEN SENSOR \(HO2S\) REMOVAL/INSTALLATION \[13B-MSP\]](#).)

HO2S circuit open/short inspection

HO2S WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



1. Disconnect the PCM connector.
2. Disconnect the HO2S connector.
3. Inspect the following wiring harnesses for an open or short circuit. (Continuity inspection)

Open circuit

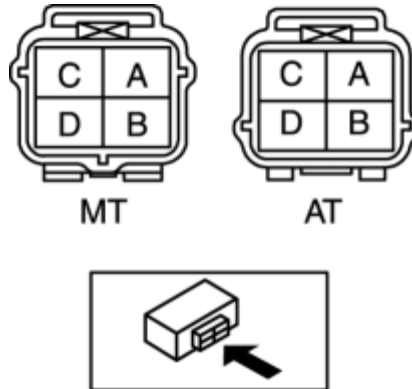
- If there is no continuity, there is an open circuit. Repair or replace the wiring harness.
 - HO2S terminal A and PCM terminal 2Q
 - HO2S terminal B and PCM terminal 2BH

Short circuit

- If there is continuity, there is a short circuit. Repair or replace the wiring harness.
 - HO2S terminal A and body ground
 - HO2S terminal A and power supply
 - HO2S terminal B and power supply

HO2S heater resistance inspection

1. Disconnect the HO2S connector.
2. Measure the HO2S resistance between terminals C and D.



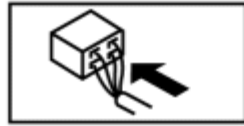
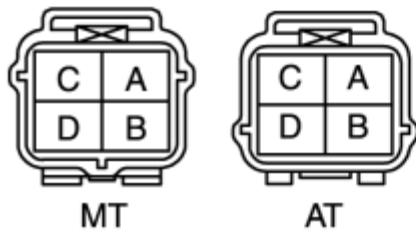
- If not within the specification, replace the HO2S. (See [HEATED OXYGEN SENSOR \(HO2S\) REMOVAL/INSTALLATION \[13B-MSP\].](#))

HO2S heater resistance

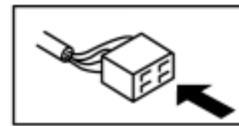
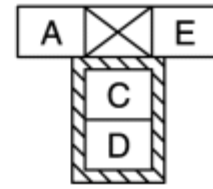
- 2—50 ohms

HO2S circuit open/short inspection (heater)

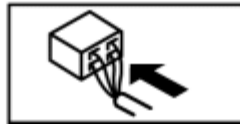
HO2S WIRING HARNESS-SIDE CONNECTOR



MAIN RELAY CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



1. Disconnect the PCM connector.
2. Disconnect the HO2S connector.
3. Inspect the following wiring harnesses for an open or short circuit. (Continuity inspection)

Open circuit

- If there is no continuity, there is an open circuit. Repair or replace the wiring harness.
 - HO2S terminal C and main relay terminal C
 - HO2S terminal D and PCM terminal 2BE

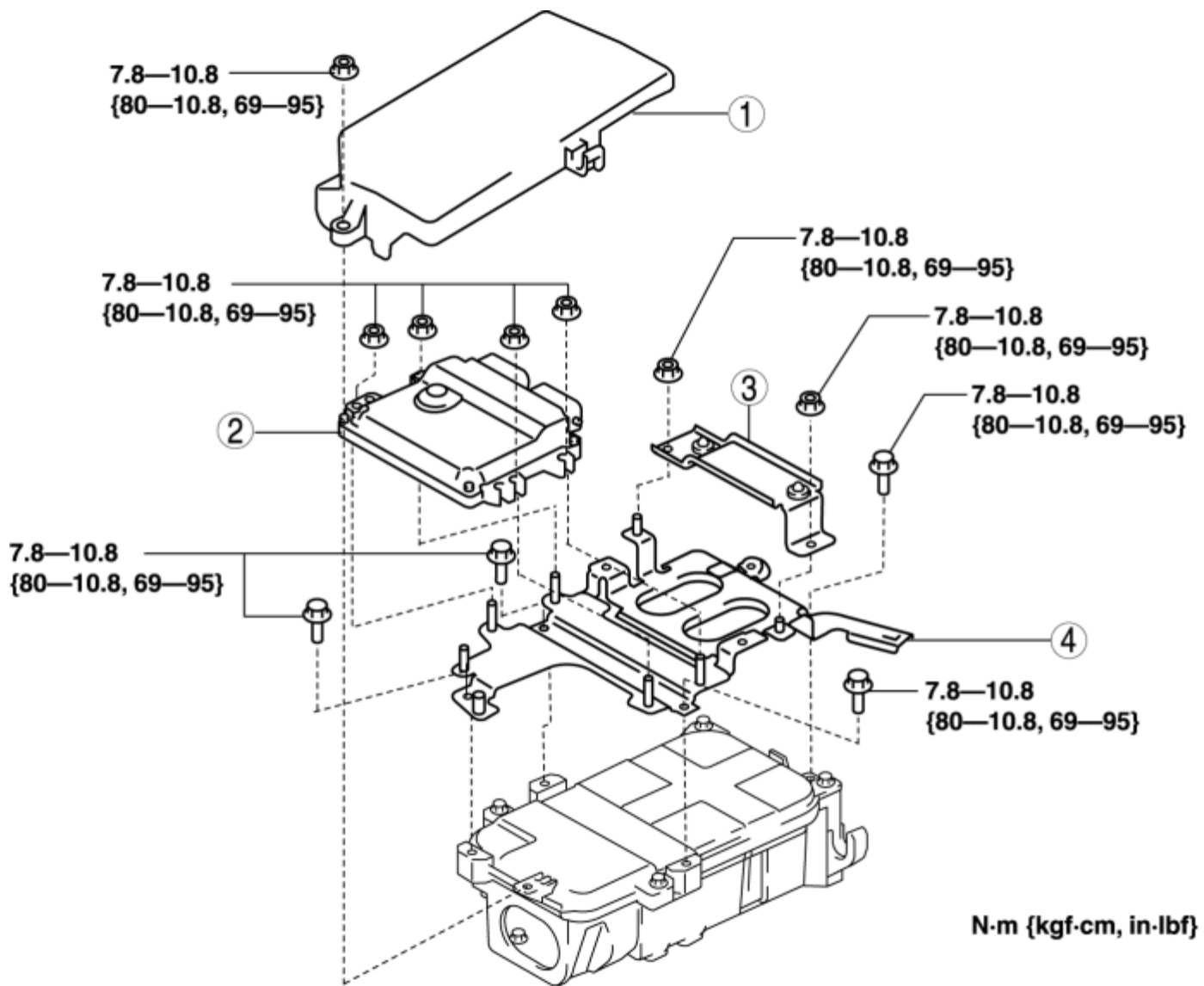
Short circuit

- If there is no continuity, there is a short circuit. Repair or replace the wiring harness.
 - HO2S terminal C and body ground
 - HO2S terminal D and power supply
 - HO2S terminal D and body ground

2011 - RX-8 - Engine

PCM REMOVAL/INSTALLATION [13B-MSP]

1. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Disconnect the negative battery cable.
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.
5. When replacing the PCM on the vehicles, perform the following:
 - PCM configuration (See [PCM CONFIGURATION \[13B-MSP\]](#).)
 - Immobilizer system component replacement/key addition and clearing (See [IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#).) (See [IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING \[WITH KEYLESS ENTRY SYSTEM\]](#).)



1 PCM cover

2 PCM

3 PCM bracket No.1

4 PCM bracket No.2

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

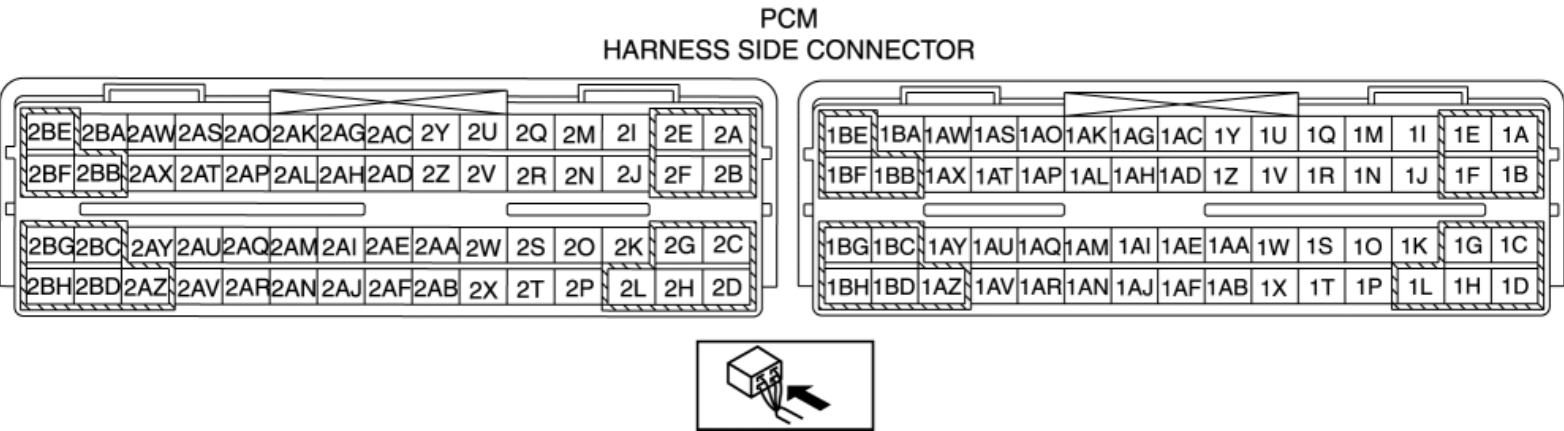
PCM INSPECTION [13B-MSP]

Without Using the SST

CAUTION:

- The PCM terminal voltages vary with change in measuring conditions and vehicle conditions. Always carry out a total inspection of the input systems, output systems, and PCM to determine the cause of trouble. Otherwise, a wrong diagnosis will be made.
1. Measure the voltage at each terminal.
- If any incorrect voltage is detected, inspect the related system(s), wiring harnesses and connector(s) referring to the Action column in the terminal voltage table.

Terminal voltage table (Reference)



Terminal	Signal	Connected to	Test condition	Voltage (V)	inspection item
1A	GND	GND	Under any condition	Below 1.0	<ul style="list-style-type: none">• Related wiring harness
1B	Starter cut-off control	Starter relay	Ignition switch is turned to START using key registered in immobilizer system	Below 1.0	<ul style="list-style-type: none">• Starter relay• Related wiring harnesses
			Ignition switch is turned to START using key not registered in immobilizer system	B+	
1C	—	—	—	—	—
				Below	<ul style="list-style-type: none">• CPP switch

1D*1	Clutch operation	CPP switch	Clutch pedal depressed		1.0	<ul style="list-style-type: none"> Related wiring harness
			Clutch pedal released		B+	
1E	Metering oil pump No.1 monitor	Metering oil pump No.1, Metering oil pump driver	IG SW ON		B+	<ul style="list-style-type: none"> Metering oil pump No.1 Related wiring harness
			Cranking		Below 1.0	
1F	Metering oil pump No.2 monitor	Metering oil pump No.2, Metering oil pump driver	IG SW ON		B+	<ul style="list-style-type: none"> Metering oil pump No.2 Related wiring harness
			Cranking		Below 1.0	
1G	AIR pump control	AIR pump relay	During the specified period after cold start		Below 1.0	<ul style="list-style-type: none"> AIR pump relay Related wiring harnesses
			Idling after warm-up		B+	
1H	Fuel pump control	Fuel pump relay	Engine runs.		Below 1.0	<ul style="list-style-type: none"> Fuel pump relay Related wiring harnesses
			Approx. 1 s after engine stop, or thereafter		B+	
1I	A/C cut-off control	A/C relay	A/C switch on and fan switch at 1st or higher		Below 1.0	<ul style="list-style-type: none"> A/C relay Related wiring harnesses
			Except above		B+	
1J	A/C load	Refrigerant pressure switch (middle)	Idling	Refrigerant pressure is 1.11 MPa {11.3 kgf/cm ² , 161 psi} or less.	B+	<ul style="list-style-type: none"> Refrigerant pressure switch (middle) Related wiring harnesses
				Refrigerant pressure is 1.60 MPa {16.3 kgf/cm ² , 232 psi} or more.	Below 1.0	
1K	Fuel pump speed control	Fuel pump speed control relay	High engine speed and high load		Below 1.0	<ul style="list-style-type: none"> Fuel pump speed control relay Related wiring harnesses
			Idling		B+	
1L	Sensor GND	MAF sensor	Under any condition		Below 1.0	<ul style="list-style-type: none"> Related wiring harness

1M	Electrical fan control	Cooling fan relay No.1	The cooling fan is operating		Below 1.0	Cooling fan relay No.1
			Except above		B+	
1N	Electrical fan control	Cooling fan relay No.2, No.3	The cooling fan is operating at middle speed or high speed		Below 1.0	<ul style="list-style-type: none"> Cooling fan relay No.2, No.3 Related wiring harnesses
			Except above		B+	
1O	—	—	—		—	—
1P	—	—	—		—	—
1Q	Main relay control	Main relay	IG SW ON	No malfunction	Below 1.0	<ul style="list-style-type: none"> Main relay Related wiring harnesses
				Malfunctioning	B+	
1R	Electrical fan control	Cooling fan relay No.4, No.5	The cooling fan is operating at high speed		Below 1.0	<ul style="list-style-type: none"> Cooling fan relay No.4, No.5 Related wiring harnesses
			Except above		B+	
1S	Metering oil pump No.1 control	Metering oil pump driver	IG SW ON		Below 1.0	<ul style="list-style-type: none"> Metering oil pump driver Related wiring harness
			Cranking		B+	
1T	Coolant level switch	Coolant level switch	IG SW ON	Engine coolant level in the coolant reserve tank is more than the L mark.	B+	<ul style="list-style-type: none"> Coolant level switch Related wiring harnesses
				Engine coolant level in the coolant reserve tank is at the L mark or less.	Below 1.0	
1U	EVAP leak detection pump (pump)	EVAP leak detection pump	IG SW ON		B+	<ul style="list-style-type: none"> EVAP leak detection pump Related wiring harnesses
			Idling		B+	
1V	EVAP leak detection pump (solenoid)	EVAP leak detection pump	IG SW ON		B+	<ul style="list-style-type: none"> EVAP leak detection pump Related wiring
			Idling		B+	

					harnesses
1W	—	—	—	—	—
1X	—	—	—	—	—
1Y	—	—	—	—	—
1Z	Starter signal	Starter	IG SW ON	Below 1.0	<ul style="list-style-type: none"> • Starter • Related wiring harnesses
			Cranking	B+	
			Idling	Below 1.0	
1AA	Metering oil pump No.2 control	Metering oil pump driver	IG SW ON	Below 1.0	<ul style="list-style-type: none"> • Metering oil pump driver • Related wiring harness
			Cranking	B+	
1AB	Brake switch	Brake switch	When the brake pedal is depressed.	B+	<ul style="list-style-type: none"> • Brake switch • Related wiring harnesses
			Except above	Below 1.0	
1AC	—	—	—	—	—
1AD	—	—	—	—	—
1AE	VFAD control (with VFAD)	VFAD solenoid valve	High engine speed	Below 1.0	<ul style="list-style-type: none"> • VFAD solenoid valve • Related wiring harnesses
			Idling	B+	
1AF	—	—	—	—	—
1AG	—	—	—	—	—
1AH	—	—	—	—	—
1AI	CAN_L	—	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.	—	<ul style="list-style-type: none"> • Related wiring harnesses
1AJ	Constant voltage (Vref)	APP sensor	Under any condition	Approx. 5.0	<ul style="list-style-type: none"> • Related wiring harness

1AK	MAF sensor	MAF sensor	Idling after warm-up		Approx. 1.2	<ul style="list-style-type: none"> MAF sensor Related wiring harnesses
			Engine speed 2,500 rpm		Approx. 1.5	
1AL	Constant voltage (Vref)	APP sensor	Under any condition		Approx. 5.0	<ul style="list-style-type: none"> Related wiring harness
1AM	CAN_H	—	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.		—	<ul style="list-style-type: none"> Related wiring harnesses
1AN	ECT (A/C unit)	A/C unit	IG SW ON	ECT 0 °C {32 °F}	Approx. 4.0	<ul style="list-style-type: none"> A/C unit Related wiring harnesses
				ECT 20 °C {68 °F}	Approx. 3.1	
				ECT 40 °C {104 °F}	Approx. 2.1	
				ECT 60 °C {140 °F}	Approx. 1.4	
				ECT 80 °C {176 °F}	Approx. 0.9	
				ECT 100 °C {212 °F}	Approx. 0.5	
1AO	APP sensor 1	APP sensor No.1	IG SW ON	When the accelerator pedal is depressed.	3.78— 3.93	<ul style="list-style-type: none"> APP sensor No.1 Related wiring harnesses
				When the accelerator pedal is released.	1.555— 1.655	
1AP	APP sensor 2	APP sensor No.2	IG SW ON	When the accelerator pedal is depressed.	3.23— 3.38	<ul style="list-style-type: none"> APP sensor No.2 Related wiring harnesses
				When the accelerator pedal is released.	1.005— 1.105	
1AQ	Cruise control switch	Cruise control switch	IG SW ON	ON/OFF switch pressed in	Approx. 0	<ul style="list-style-type: none"> Cruise control switch Related wiring harnesses
				CANCEL switch pressed in	Approx. 1.1	
				SET(-) switch pressed in	Approx. 3.1	

				RES(+) switch pressed in	Approx. 4.2	
				Except above	Approx. 5.0	
1AR	Sensor GND	IAT sensor	Under any condition		Below 1.0	<ul style="list-style-type: none"> Related wiring harness
1AS	Sensor GND	APP sensor	Under any condition		Below 1.0	<ul style="list-style-type: none"> Related wiring harness
1AT	IAT sensor	IAT sensor	IG SW ON	IAT 0 °C {32 °F}	Approx. 3.4	<ul style="list-style-type: none"> IAT sensor Related wiring harnesses
				IAT 20 °C {68 °F}	Approx. 2.4	
				IAT 40 °C {104 °F}	Approx. 1.5	
				IAT 60 °C {140 °F}	Approx. 0.9	
				IAT 80 °C {176 °F}	Approx. 0.5	
				IAT 100 °C {212 °F}	Approx. 0.3	
1AU	A/C control	Refrigerant pressure switch (high, low), A/C switch	Idling	A/C switch off	B+	<ul style="list-style-type: none"> Refrigerant pressure switch (high, low) A/C switch Related wiring harnesses
				A/C switch and fan switch on	Below 1.0	
1AV	Sensor GND	APP sensor	Under any condition		Below 1.0	<ul style="list-style-type: none"> Related wiring harness
1AW	Power supply	Main relay	Under any condition		B+	<ul style="list-style-type: none"> Main relay Related wiring harnesses
1AX	Drive-by-wire relay control	Drive-by-wire relay	IG SW ON	No malfunction	Below 1.0	<ul style="list-style-type: none"> Drive-by-wire relay Related wiring harnesses
				Malfunctioning	B+	

1AY	IG1	Ignition relay	IG SW ON		B+	<ul style="list-style-type: none"> Ignition relay Related wiring harnesses
			Except above		Below 1.0	
1AZ	GND	GND	Under any condition		Below 1.0	<ul style="list-style-type: none"> Related wiring harness
1BA	Backup power supply	Battery	Under any condition		B+	<ul style="list-style-type: none"> Battery Related wiring harnesses
1BB	GND	GND	Under any condition		Below 1.0	<ul style="list-style-type: none"> Related wiring harness
1BC	—	—	—		—	—
1BD	GND	GND	Under any condition		Below 1.0	<ul style="list-style-type: none"> Related wiring harness
1BE	Power supply	Main relay	Under any condition		B+	<ul style="list-style-type: none"> Main relay Related wiring harnesses
1BF	Drive-by-wire relay control	Drive-by-wire relay	IG SW ON	Malfunction	B+	<ul style="list-style-type: none"> Drive-by-wire relay Related wiring harnesses
				No malfunction	Below 1.0	
1BG*1	GND	Cruise control switch	Under any condition		Below 1.0	<ul style="list-style-type: none"> Related wiring harness
1BH	GND	GND	Under any condition		Below 1.0	<ul style="list-style-type: none"> Related wiring harness
2A	Throttle control (+)	Throttle body (Throttle valve actuator)	(See Inspection Using An Oscilloscope (Reference) .)			<ul style="list-style-type: none"> Throttle valve actuator Related wiring harnesses
2B	Throttle control (–)	Throttle body (Throttle valve actuator)	(See Inspection Using An Oscilloscope (Reference) .)			<ul style="list-style-type: none"> Throttle valve actuator Related

					wiring harnesses
2C	Purge solenoid valve control	Purge solenoid valve	(See Inspection Using An Oscilloscope (Reference) .)		<ul style="list-style-type: none"> Purge solenoid valve Related wiring harnesses
2D	APV motor control (+)	APV motor	(See Inspection Using An Oscilloscope (Reference) .)		<ul style="list-style-type: none"> APV motor Related wiring harnesses
2E	OCV control	OCV	(See Inspection Using An Oscilloscope (Reference) .)		<ul style="list-style-type: none"> OCV Related wiring harnesses
2F	APV motor control (-)	APV motor	(See Inspection Using An Oscilloscope (Reference) .)		<ul style="list-style-type: none"> APV motor Related wiring harnesses
2G	AIR control	AIR solenoid valve	During the specified period after cold start	Below 1.0	<ul style="list-style-type: none"> AIR solenoid valve Related wiring harnesses
			Idling after warm-up	B+	
2H	—	—	—	—	—
2I	SSV control	SSV solenoid valve	High engine speed after warm-up	B+	<ul style="list-style-type: none"> SSV solenoid valve Related wiring harnesses
			Except above	Below 1.0	
2J	—	—	—	—	—
2K	—	—	—	—	—
2L *2	VDI control	VDI solenoid valve	High engine speed after warm-up	B+	<ul style="list-style-type: none"> VDI solenoid valve Related wiring harnesses
			Except above	Below 1.0	
2M	Sensor GND	Oil pressure sensor	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness

2N	Sensor GND	APV position sensor No.2	Under any condition		Below 1.0	<ul style="list-style-type: none"> Related wiring harness
2O	—	—	—		—	—
2P	Sensor GND	TP sensor	Under any condition		Below 1.0	<ul style="list-style-type: none"> Related wiring harness
2Q	HO2S	HO2S	Idling after warm-up		0—1.0	<ul style="list-style-type: none"> HO2S Related wiring harnesses
2R	Oil pressure sensor	Oil pressure sensor	IG SW ON (Oil pressure: -0.05—0.75 MPa {-0.5—7.6 kgf/cm ² , -7—108 psi})		0.228—4.998	<ul style="list-style-type: none"> Oil pressure sensor Related wiring harness
2S	—	—	—		—	—
2T	Oil-level switch	Oil-level switch	IG SW ON	The engine oil amount is more than the L mark on the dipstick.	Below 1.0	<ul style="list-style-type: none"> Oil-level switch Related wiring harnesses
				The engine oil amount is low.	B+	
2U	KS No.1 (+)	KS No.1	Idling after warm-up		Approx. 2.5	<ul style="list-style-type: none"> KS No.1 Related wiring harnesses
2V	KS No.1 (-)	KS No.1	Under any condition		Below 1.0	<ul style="list-style-type: none"> KS No.1 Related wiring harnesses
2W	—	—	—		—	—
2X	Shield	A/F sensor, eccentric shaft position sensor	Under any condition		Below 1.0	<ul style="list-style-type: none"> Related wiring harness
2Y	KS No.2 (-)	KS No.2	Under any condition		Below 1.0	<ul style="list-style-type: none"> KS No.2 Related wiring harnesses
2Z	A/F sensor	A/F sensor	Idling after warm-up		Approx.	<ul style="list-style-type: none"> A/F sensor Related

					2.4	wiring harnesses
2AA	Constant voltage (Vref)	Oil pressure sensor	Under any condition		Approx. 5.0	<ul style="list-style-type: none">Related wiring harness
2AB	Shield	KS No.1, KS No.2	Under any condition		Below 1.0	<ul style="list-style-type: none">Related wiring harness
2AC	KS No.2 (+)	KS No.2	Idling after warm-up		Approx. 2.5	<ul style="list-style-type: none">KS No.2Related wiring harnesses
2AD	A/F sensor	A/F sensor	Idling after warm-up		Approx. 2.2	<ul style="list-style-type: none">A/F sensorRelated wiring harnesses
2AE	SSV switch	SSV switch	Idling after warm-up	The SSV actuator rod is completely pulled out.	Below 1.0	<ul style="list-style-type: none">SSV switchRelated wiring harnesses
				The SSV actuator rod is pulled in.	B+	
2AF	APV opening angle No.2	APV position sensor No.2	High engine speed after warm-up		Approx. 5.0	<ul style="list-style-type: none">APV position sensor No.2Related wiring harnesses
			Except above		Approx. 0.35	
2AG	Eccentric shaft position sensor (+)	Eccentric shaft position sensor	(See Inspection Using An Oscilloscope (Reference).)			<ul style="list-style-type: none">Eccentric shaft position sensorRelated wiring harnesses
2AH	ECT sensor	ECT sensor	IG SW ON	ECT 0 °C {32 °F}	Approx. 4.0	<ul style="list-style-type: none">ECT sensorRelated wiring harnesses
				ECT 20 °C {68 °F}	Approx. 3.1	
				ECT 40 °C {104 °F}	Approx. 2.1	
				ECT 60 °C {140 °F}	Approx. 1.4	
				ECT 80 °C {176 °F}	Approx.	

					0.9		
				ECT 100 °C {212 °F}	Approx. 0.5		
2AI	Field coil control	Generator (D terminal)	(See Inspection Using An Oscilloscope (Reference) .)			<ul style="list-style-type: none">• Generator• Related wiring harnesses	
2AJ	Generator output voltage	Generator (Terminal P)	(See Inspection Using An Oscilloscope (Reference) .)			<ul style="list-style-type: none">• Generator• Related wiring harnesses	
2AK	Throttle valve opening angle No. 1	TP sensor No.1	IG SW ON	WOT	3.825— 4.095	<ul style="list-style-type: none">• TP sensor No.1• Related wiring harnesses	
				CTP	0.4— 0.8		
2AL	Throttle valve opening angle No. 2	TP sensor No.2	IG SW ON	WOT	4.033— 4.303	<ul style="list-style-type: none">• TP sensor No.2• Related wiring harnesses	
				CTP	1.18— 1.78		
2AM	—	—	—			—	
2AN	APV opening angle No.1	APV position sensor No.1	High engine speed after warm-up			Approx. 5.0	<ul style="list-style-type: none">• APV position sensor No.1• Related wiring harnesses
			Except above			Approx. 0.35	
2AO	Constant voltage (Vref)	TP sensor	Under any condition			Approx. 5.0	<ul style="list-style-type: none">• Related wiring harness
2AP	Eccentric shaft position sensor (-)	Eccentric shaft position sensor	Under any condition			Below 1.0	<ul style="list-style-type: none">• Eccentric shaft position sensor• Related wiring harnesses
2AQ	—	—	—			—	—
2AR	Constant voltage (Vref)	APV position sensor No.2	Under any condition			Approx. 5.0	<ul style="list-style-type: none">• Related wiring harness

2AS*1	Neutral switch	Neutral switch	Idling	Neutral	Below 1.0	<ul style="list-style-type: none">• Neutral switch• Related wiring harnesses
				Except above	B+	
2AT	Ignition coil (L/R) control	Ignition coil (L/R)	(See Inspection Using An Oscilloscope (Reference).)			<ul style="list-style-type: none">• Ignition coil (L/R)• Related wiring harnesses
2AU	Constant voltage (Vref)	APV position sensor No.1	Under any condition		Approx. 5.0	<ul style="list-style-type: none">• Related wiring harness
2AV	Sensor GND	APV position sensor No.1	Under any condition		Below 1.0	<ul style="list-style-type: none">• Related wiring harness
2AW	Ignition coil (T/R) control	Ignition coil (T/R)	(See Inspection Using An Oscilloscope (Reference).)			<ul style="list-style-type: none">• Ignition coil (T/R)• Related wiring harnesses
2AX	Ignition coil (L/F) control	Ignition coil (L/F)	(See Inspection Using An Oscilloscope (Reference).)			<ul style="list-style-type: none">• Ignition coil (L/F)• Related wiring harnesses
2AY	Sensor GND	ECT sensor	Under any condition		Below 1.0	<ul style="list-style-type: none">• Related wiring harness
2AZ	Fuel injector (RS) control	Fuel injector (RS)	(See Inspection Using An Oscilloscope (Reference).)			<ul style="list-style-type: none">• Fuel injector (RS)• Related wiring harnesses
2BA	Ignition coil (T/F) control	Ignition coil (T/F))	(See Inspection Using An Oscilloscope (Reference).)			<ul style="list-style-type: none">• Ignition coil (T/F)• Related wiring harnesses
2BB	Fuel injector (FP) control	Fuel injector (FP)	(See Inspection Using An Oscilloscope (Reference).)			<ul style="list-style-type: none">• Fuel injector (FP)• Related wiring harnesses

2BC	Fuel injector (FS) control	Fuel injector (FS)	(See Inspection Using An Oscilloscope (Reference) .)		<ul style="list-style-type: none"> Fuel injector (FS) Related wiring harnesses
2BD	Fuel injector (RP) control	Fuel injector (RP)	(See Inspection Using An Oscilloscope (Reference) .)		<ul style="list-style-type: none"> Fuel injector (RP) Related wiring harnesses
2BE	HO2S heater control	HO2S heater	(See Inspection Using An Oscilloscope (Reference) .)		<ul style="list-style-type: none"> HO2S heater Related wiring harnesses
2BF	—	—	—	—	—
2BG	A/F sensor heater control	A/F sensor heater	(See Inspection Using An Oscilloscope (Reference) .)		<ul style="list-style-type: none"> A/F sensor heater Related wiring harnesses
2BH	Sensor GND	HO2S	Under any condition	Below 1.0	<ul style="list-style-type: none"> Related wiring harness

*1

MT

*2

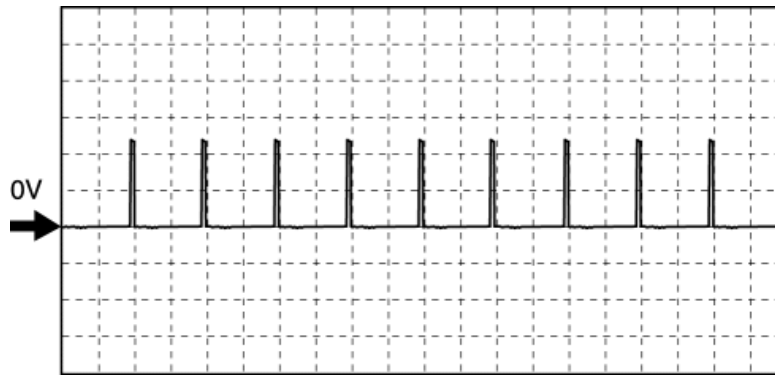
13B-MSP(high power)

Inspection Using An Oscilloscope (Reference)

NOTE:

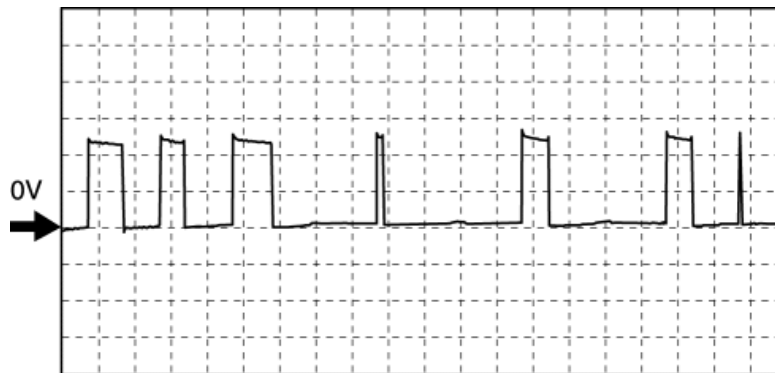
- The duty ratio for the wave pattern can vary with the control conditions. Therefore determine comprehensively where the malfunction occurs among the input systems, output systems, and the PCM.

Throttle control (+)



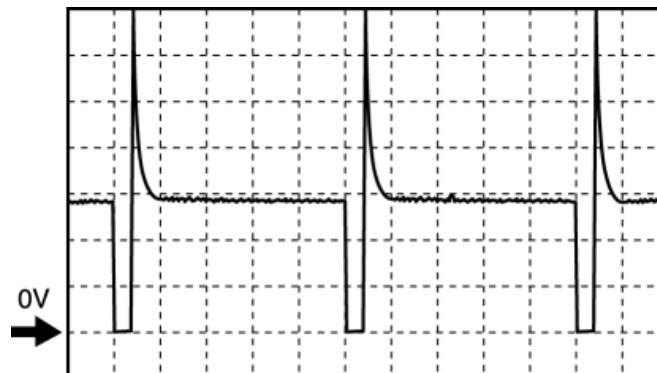
- Terminal connected: 2A (+)—Negative battery terminal
- Oscilloscope setting: 5 V/DIV (Y): 0.4 ms/DIV (X), DC range
- Measurement condition: IG SW ON

Throttle control (–)



- Terminal connected: 2B (+)—Negative battery terminal
- Oscilloscope setting: 5 V/DIV (Y): 1 ms/DIV (X), DC range
- Measurement condition: As soon as the accelerator pedal is fully released from the fully depressed position while the ignition switch is at ON (engine off).

Purge control

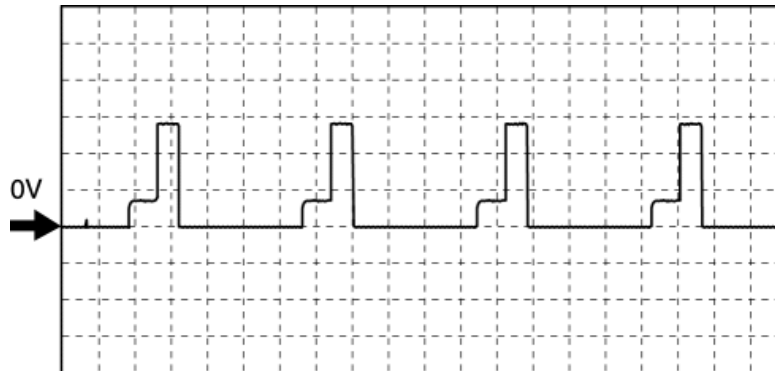


- Terminal connected: 2C (+)—Negative battery terminal
- Oscilloscope setting: 5 V/DIV (Y): 20 ms/DIV (X), DC range
- Measurement condition: Idling after warm-up (no load)

NOTE:

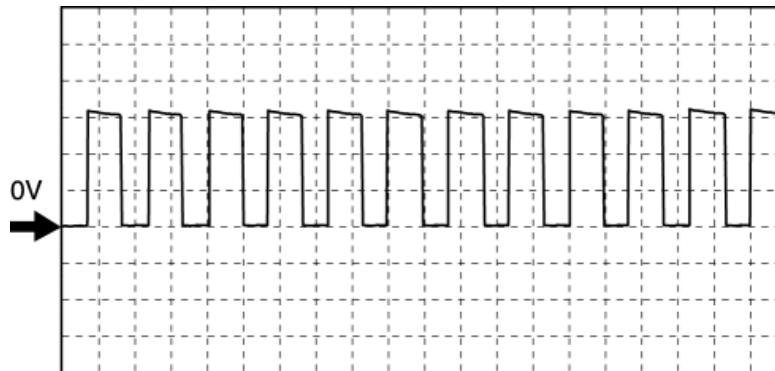
- Purge control might not be activated depending on the engine conditions.

APV motor control (+)



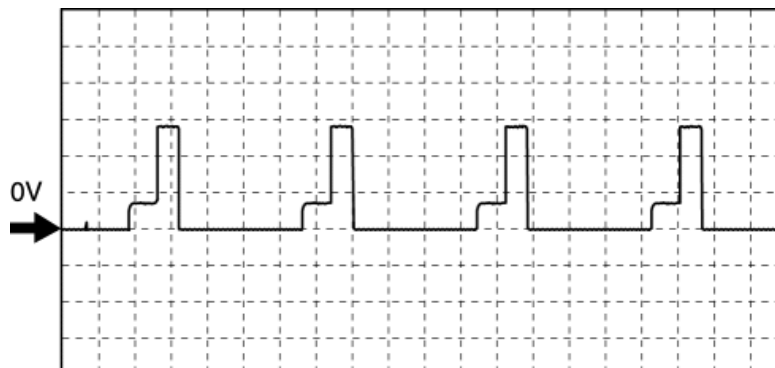
- Terminal connected: 2D (+)—Negative battery terminal
- Oscilloscope setting: 5 V/DIV (Y): 20 ms/DIV (X), DC range
- Measurement condition: High engine speed after warm-up

OCV control



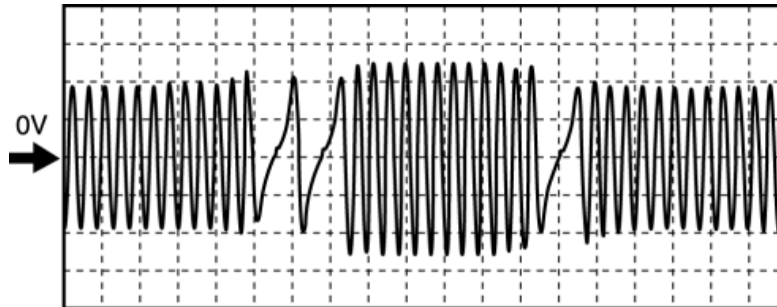
- Terminal connected: 2E (+)—Negative battery terminal
- Oscilloscope setting: 5 V/DIV (Y): 2 ms/DIV (X), DC range
- Measurement condition: Idling after warm-up (no load)

APV motor control (–)



- Terminal connected: 2F (+)—Negative battery terminal
- Oscilloscope setting: 5 V/DIV (Y): 20 ms/DIV (X), DC range
- Measurement condition: High engine speed after warm-up

Eccentric shaft position sensor



- Terminal connected: 2AG (+)—Negative battery terminal
- Oscilloscope setting: 2 V/DIV (Y): 5 ms/DIV (X), DC range
- Measurement condition: Idling after warm-up (no load)

Field coil control (Generator)



- Terminal connected: 2AI (+)—Negative battery terminal
- Oscilloscope setting: 0.5 V/DIV (Y): 1 ms/DIV (X), DC range
- Measurement condition: Idling after warm-up (no load)

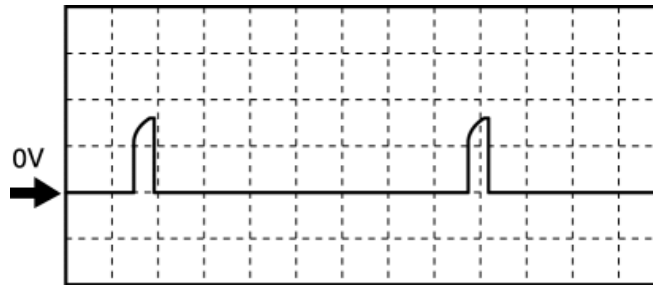
Generator output voltage



- Terminal connected: 2AJ (+)—Negative battery terminal

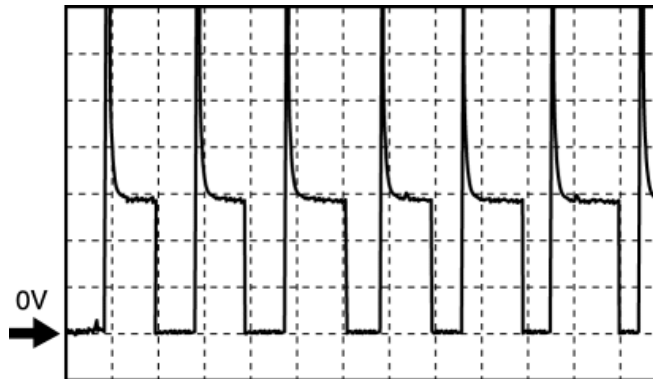
- Oscilloscope setting: 2 V/DIV (Y): 2 ms/DIV (X), DC range
- Measurement condition: Idling after warm-up (no load)

Ignition coil (L/F, L/R, T/F, T/R)



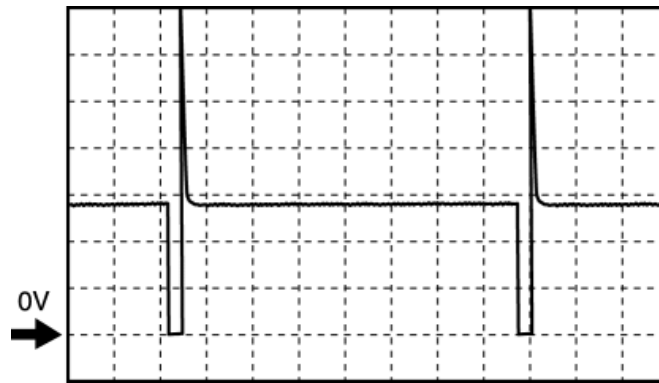
- Terminal connected:
 - L/F: 2AX (+)—Negative battery terminal
 - L/R: 2AT (+)—Negative battery terminal
 - T/F: 2BA (+)—Negative battery terminal
 - T/R: 2AW (+)—Negative battery terminal
- Oscilloscope setting: 2 V/DIV (Y): 10 ms/DIV (X), DC range
- Measurement condition: Idling after warm-up (no load)

Fuel injector (FS, RS) control

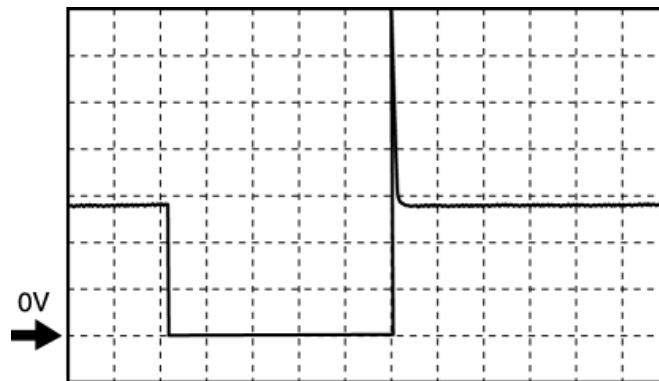


- Terminal connected:
 - FS: 2BC (+)—Negative battery terminal
 - RS: 2AZ (+)—Negative battery terminal
- Oscilloscope setting: 5 V/DIV (Y): 5 ms/DIV (X), DC range
- Measurement condition: Racing after warm-up (no load)

Fuel injector (FP, RP) control

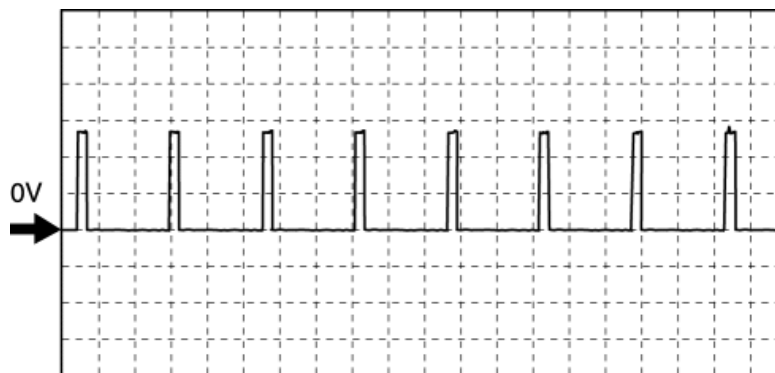


- Terminal connected:
FP: 2BB (+)—Negative battery terminal
RP: 2BD (+)—Negative battery terminal
- Oscilloscope setting: 5 V/DIV (Y): 10 ms/DIV (X), DC range
- Measurement condition: Idling after warm-up (no load)



- Terminal connected:
FP: 2BB (+)—Negative battery terminal
RP: 2BD (+)—Negative battery terminal
- Oscilloscope setting: 5 V/DIV (Y): 10 ms/DIV (X), DC range
- Measurement condition: Cranking while the engine is cold. (ECT: Approx. 20 °C {68 °F})

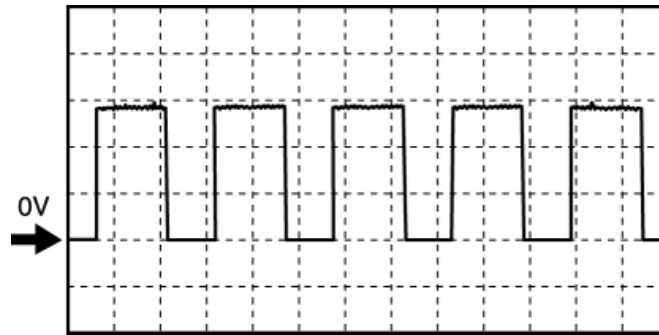
HO2S heater control



- Terminal connected: 2BE (+)—Negative battery terminal
- Oscilloscope setting: 5 V/DIV (Y): 100 ms/DIV (X), DC range

- Measurement condition: Idling after warm-up (no load)

A/F sensor heater control



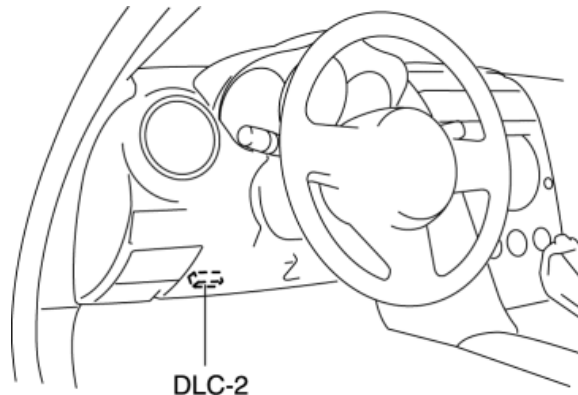
- Terminal connected: 2BG (+)—Negative battery terminal
- Oscilloscope setting: 5 V/DIV (Y): 50 ms/DIV (X), DC range
- Measurement condition: Idling after warm-up (no load)

Using the M-MDS

NOTE:

- PIDs for the following parts are not available on this model. Go to the appropriate part inspection page.
 - Main relay (See [RELAY INSPECTION](#).)

1. Connect the M-MDS to the DLC-2.



2. Turn the ignition switch to ON position.
3. Measure the PID value.

- If PID value is not within the specification, follow the instructions in Action column.

NOTE:

- The PID/DATA MONITOR function monitors the calculated value of the input/output signals in the PCM. Therefore, an output device malfunction is not directly indicated as a malfunction of the monitored value for the output device. If a monitored value of an output device is out of specification, inspect the monitored value of the input device related to the output control.
- For input/output signals except those of the monitoring items, use a voltmeter to measure the PCM terminal voltage.
- The simulation items that are used in the ENGINE CONTROL SYSTEM OPERATION INSPECTION are as follows.

CAUTION:

- To prevent engine damage, use MOP_FL_C and MOP_FL_S only during idling (after engine warm-up) up to 30 s.
- ACCS, AIP RLY, ALTF, APV, ARPMDES, DEI, ETC_DSD, EVAPCP, FAN1, FAN2, FAN3, FP, FPRR, FUEL PW1, GENVDSD, HTR12, IASV, MOP_FL_C, MOP_FL_S, OCV_CLOSE, PACNTV, SSV, test

PID/DATA monitor table (reference)

Monitor item (Definition)	Unit/Condition	Condition/Specification (Reference)	Inspection item(s)	PCM terminal
ACCS (A/C relay)	Off/On	Idling <ul style="list-style-type: none"> • A/C operating: On • A/C not operating: Off 	<ul style="list-style-type: none"> • The following PIDs <ul style="list-style-type: none"> ▪ AC_REQ, ECT, IVS, PCM_T, RPM, TP, VSS • A/C relay 	1I
AC_REQ (A/C switch)	Off/On	<ul style="list-style-type: none"> • A/C switch OFF: Off • A/C switch ON: On 	<ul style="list-style-type: none"> • Refrigerant pressure switch (high, low) • A/C switch 	1AU
AIP RLY (AIR pump relay)	Off/On	<ul style="list-style-type: none"> • During the specified period after cold: On • Idling after warm-up: Off 	<ul style="list-style-type: none"> • The following PIDs <ul style="list-style-type: none"> ▪ CATT11_DSD, ECT, IAT • AIR pump relay 	1G
ALTF (Generator field coil control duty value)	%	<ul style="list-style-type: none"> • IG SW ON: 0% • Just after A/C switch ON and fan switch ON at idling: Duty value rises 	<ul style="list-style-type: none"> • The following PIDs <ul style="list-style-type: none"> ▪ ALTT V, ECT, IAT, IVS, PCM_T, RPM, VPWR, VSS • Generator 	2AI
ALTT V (Generator output voltage)	V	<ul style="list-style-type: none"> • IG SW ON: 0 V • Idling: Approx. 14.9 V*1 (E/L not operating) 	Generator	2AJ
APP (APP)	%	<ul style="list-style-type: none"> • Accelerator pedal released: 0% • Accelerator pedal depressed: 100% 	<ul style="list-style-type: none"> • The following PIDs <ul style="list-style-type: none"> ▪ APP1, APP2 • APP sensor No.1, No.2 	1AO 1AP
APP1 (APP 1)	%	<ul style="list-style-type: none"> • Accelerator pedal released: 31.1—33.1% • Accelerator pedal depressed: 75.6—78.6% 	APP sensor No.1	1AO
	V	<ul style="list-style-type: none"> • Accelerator pedal released: 1.555—1.655 V 		

		<ul style="list-style-type: none"> Accelerator pedal depressed: 3.78—3.93 V 		
APP2 (APP 2)	%	<ul style="list-style-type: none"> Accelerator pedal released: 20.1—22.1% Accelerator pedal depressed: 64.6—67.6% 	APP sensor No.2	1AP
	V	<ul style="list-style-type: none"> Accelerator pedal released: 1.005—1.105 V Accelerator pedal depressed: 3.23—3.38 V 		
APV (APV motor)	Open/Closed	<ul style="list-style-type: none"> High engine speed after warm-up: Open Except above: Closed 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> APV_POS, BARO, ECT, IAT, MAF, RPM, TP APV motor 	2D 2F
APV_2 (APV motor)	Open/Closed	<ul style="list-style-type: none"> High engine speed after warm-up: Open Except above: Closed 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> APV_POS, BARO, ECT, IAT, MAF, RPM, TP APV motor 	2D 2F
APV_POS (APV position sensor)	V	<ul style="list-style-type: none"> High engine speed after warm-up: Approx. 5.0 V Except above: Approx. 0.35 V 	<ul style="list-style-type: none"> APV position sensor No.1 	2AN
APV_POS_2 (APV position sensor)	V	<ul style="list-style-type: none"> High engine speed after warm-up: Approx. 5.0 V Except above: Approx. 0.35 V 	<ul style="list-style-type: none"> APV position sensor No.2 	2AF
ARPMDES (Target engine speed)	RPM	<ul style="list-style-type: none"> Indicate the target engine speed 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> ACCS, ALTT V, COLP, ECT, IAT, MAF, RPM, TP, VPWR 	—
BARO (Barometric pressure)	kPa, Bar, psi	<ul style="list-style-type: none"> IG SW ON: Indicate the atmospheric pressure 	<ul style="list-style-type: none"> BARO sensor 	—
	V	<ul style="list-style-type: none"> IG SW ON: 2.44—3.80 V 		
BOO (Brake switch)	Off/On	<ul style="list-style-type: none"> Brake pedal depressed: On Brake pedal released: Off 	<ul style="list-style-type: none"> Brake switch 	—

CATT11_DSD (Estimated catalytic converter temperature)	°C	°F	<ul style="list-style-type: none"> Indicate the estimated catalytic converter temperature 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> ECT, IAT, LOAD, RPM 	—
CHRG LP (Generator warning light)	Off/On		<ul style="list-style-type: none"> Generator warning light illuminate: On Generator warning light not illuminate: Off 	<ul style="list-style-type: none"> Generator warning light 	—
COLP (Refrigerant pressure switch (middle))	OFF/ON		<ul style="list-style-type: none"> Refrigerant pressure switch (middle) ON ^{*2}: ON Refrigerant pressure switch (middle) OFF ^{*3}: OFF 	<ul style="list-style-type: none"> Refrigerant pressure switch (middle) 	1J
CPP ^{*4} (Clutch pedal position)	Off/On		<ul style="list-style-type: none"> Clutch pedal depressed: On Clutch pedal released: Off 	<ul style="list-style-type: none"> CPP switch 	1D
CPP/PNP ^{*4} (Shift lever position)	Drive/Neutral		<ul style="list-style-type: none"> Neutral position: Neutral Except above: Drive 	<ul style="list-style-type: none"> Neutral switch 	2AS
DEI ^{*6} (VDI solenoid valve)	Off/On		<ul style="list-style-type: none"> Idling: Off High engine speed after warm-up: On 	<ul style="list-style-type: none"> The following PID <ul style="list-style-type: none"> RPM VDI solenoid valve 	2L
DTCCNT (Number of DTC detected)	—		—	—	—
ECT (Engine coolant temperature)	°C	°F	<ul style="list-style-type: none"> IG SW ON: Indicate the ECT 	<ul style="list-style-type: none"> ECT sensor 	2AH
	V		<ul style="list-style-type: none"> ECT 20 °C {68 °F}: approx. 3.1 V ECT 80 °C {176 °F}: approx. 0.9 V 		
EQ_RAT11 (A/F sensor)	—		<ul style="list-style-type: none"> Idling after warm-up: Approx. 1 	<ul style="list-style-type: none"> A/F sensor 	—
EQ_RAT11_DSD (Target lambda)	—		<ul style="list-style-type: none"> Indicate the target lambda 	<ul style="list-style-type: none"> A/F sensor 	—
ETC_ACT (Electronic throttle control actual)	°		<ul style="list-style-type: none"> CTP: 6.3° or less WOT: Approx. 83° 	<ul style="list-style-type: none"> Throttle valve actuator 	2A 2B

ETC_DSD (Electronic throttle control desired)	°	<ul style="list-style-type: none"> CTP: 6.3° or less WOT: Approx. 83° 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> APP, TP1, TP2 	—
	%	<ul style="list-style-type: none"> CTP: 7% or less WOT: Approx. 100% 		
EVAPCP (Purge solenoid valve duty value)	%	<ul style="list-style-type: none"> IG SW ON: 0% Increase the engine speed: Duty value rises 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> BARO, ECT, FUELSYS, IAT, LOAD, MAF, RPM Purge solenoid valve 	2C
FAN1 (Cooling fan control)	Off/On	<ul style="list-style-type: none"> The cooling fan is operating at low speed: On Except above: Off 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> AC_REQ, COLP, ECT, IAT, PCM_T Cooling fan relay No.1 	1M
FAN2 (Cooling fan control)	Off/On	<ul style="list-style-type: none"> The cooling fan is operating at middle speed: On Except above: Off 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> AC_REQ, COLP, ECT, IAT, PCM_T Cooling fan relay No.2, No.3 	1N
FAN3 (Cooling fan control)	Off/On	<ul style="list-style-type: none"> The cooling fan is operating at high speed: On Except above: Off 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> AC_REQ, COLP, ECT, IAT, PCM_T Cooling fan relay No.4, No.5 	1R
FLI (Fuel level)	%	<ul style="list-style-type: none"> Fuel gauge level F: Approx. 100% Fuel gauge level E: Approx. 0% 	<ul style="list-style-type: none"> Fuel tank gauge unit 	—
FP (Fuel pump relay)	Off/On	<ul style="list-style-type: none"> IG SW ON: Off Cranking: On Idling: On 	<ul style="list-style-type: none"> The following PID <ul style="list-style-type: none"> RPM Fuel pump relay 	1H
FPRR (Fuel pump speed control relay)	Off/On	<ul style="list-style-type: none"> IG SW ON: Off Cranking: On Idling: Off 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> BARO, ECT, IAT, MAF, O2S11, O2S12, RPM, TP, VPWR Fuel pump speed control relay 	1K
			<ul style="list-style-type: none"> The following PIDs 	

FUELPW (Fuel injector duration)	sec		<ul style="list-style-type: none"> Idling after warm-up: Approx. 2.7 ms 	<ul style="list-style-type: none"> AC_REQ, APP, BARO, ECT, IAT, KNOCKR, MAF, O2S11, O2S12, RPM, TP, VPWR, VSS Fuel injector (FP, RP, FS, RS) 	2AZ 2BB 2BC 2BD
FUELSYS (Fuel system status)	OL/CL/ OL-Drive/ OL-Fault/ CL-Fault		<ul style="list-style-type: none"> Idling after warm-up: CL 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> AC_REQ, APP, BARO, ECT, IAT, KNOCKR, MAF, O2S11, O2S12, RPM, TP, VPWR, VSS 	—
GENVDSD (Generator voltage desired)	V		<ul style="list-style-type: none"> Idling: Approx. 14.9 V^{*1} (E/L not operating) 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> AC_REQ, ALTT V, BOO, ECT, IAT, PCM_T, RPM, VPWR, VSS 	—
HTR11 (A/F sensor heater)	Off/On		<ul style="list-style-type: none"> IG SW ON: Off Idling after warm-up: On 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> ECT, IAT, LOAD, MAF, VPWR A/F sensor heater 	2BG
HTR12 (HO2S heater)	Off/On		<ul style="list-style-type: none"> IG SW ON: Off Idling after warm-up: On 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> ECT, IAT, LOAD, MAF, VPWR HO2S heater 	2BE
IAC (Idle air control)	%		<ul style="list-style-type: none"> IG SW ON: Approx. 26% Idling after warm-up: Approx. 21% 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> AC_REQ, ALTT V, APP, ARPMDES, COLP, ECT, EVAPCP, RPM, VSS Throttle valve actuator 	2A 2B
IASV ^{*7} (VFAD solenoid valve)	Off/On		<ul style="list-style-type: none"> Idling: Off High engine speed: On 	<ul style="list-style-type: none"> The following PID <ul style="list-style-type: none"> RPM VFAD solenoid valve 	1AE
	°C	°F	<ul style="list-style-type: none"> IG SW ON: Indicate the IAT 		

IAT (Intake air temperature)	V	<ul style="list-style-type: none"> IAT 20 °C {68 °F}: Approx. 2.4 V IAT 40 °C {104 °F}: Approx. 1.5 V 	<ul style="list-style-type: none"> IAT sensor 	1AT
INGEAR (In gear)	Off/On	<p>MT</p> <ul style="list-style-type: none"> When the following conditions are satisfied: On <ul style="list-style-type: none"> IG SW ON Not neutral Clutch pedal released Except above: Off <p>AT</p> <ul style="list-style-type: none"> When the following conditions are satisfied: On <ul style="list-style-type: none"> Engine runs Driving range Except above: Off 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> CPP, CPP/PNP, RPM 	—
IVS (CTP condition)	Idle/ Off Idle	<ul style="list-style-type: none"> Idling: Idle Except above: Off idle 	<ul style="list-style-type: none"> The following PID <ul style="list-style-type: none"> APP 	—
KNOCKR (Knocking retard)	°	<ul style="list-style-type: none"> IG SW ON: 0 ° Idling: 0 ° 	<ul style="list-style-type: none"> KS No.1, No.2 	2U 2V 2Y 2AC
LDP_EVAPCP (EVAP Control system incorrect purge flow detection value)	A	<ul style="list-style-type: none"> Indicates EVAP Control system incorrect purge flow detection value 	<ul style="list-style-type: none"> EVAP leak detection pump 	1U 1V
LDF_IDL (EVAP System leak detection pump idle current)	A	<ul style="list-style-type: none"> Indicates EVAP System leak detection pump idle current 	<ul style="list-style-type: none"> EVAP leak detection pump 	1U 1V
LDP_MON (EVAP System leak detection pump monitoring current)	A	<ul style="list-style-type: none"> Indicates EVAP System leak detection pump monitoring current 	<ul style="list-style-type: none"> EVAP leak detection pump 	1U 1V
LDP_REF (EVAP System leak detection pump)	A	<ul style="list-style-type: none"> Indicates EVAP System leak detection pump 	<ul style="list-style-type: none"> EVAP leak detection pump 	1U

reference current)		reference current		1V
LDP_SLDV (EVAP Control system small leak detection value)	A	<ul style="list-style-type: none"> Indicates EVAP Control system small leak detection value 	<ul style="list-style-type: none"> EVAP leak detection pump 	1U 1V
LDP_VSLDV* ⁵ (EVAP Control system very small leak detection value)	mA/sec	<ul style="list-style-type: none"> Indicates EVAP Control system very small leak detection value 	<ul style="list-style-type: none"> EVAP leak detection pump 	1U 1V
LOAD (Engine load)	%	MT <ul style="list-style-type: none"> Idling: 28.2—39.2% Engine speed 2,500 rpm (no load): 16.2—23.4% AT <ul style="list-style-type: none"> Idling: 26.6—39.2% Engine speed 2,500 rpm (no load): 17.1—24.3% 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> BARO, IAT, MAF, RPM 	—
LONGFT1 (long term fuel trim)	%	<ul style="list-style-type: none"> Idling after warm-up: approx. –12.5—12.5% 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> ECT, LOAD, MAF, RPM, SHRTFT1 	—
MAF (Mass airflow)	g/sec	<ul style="list-style-type: none"> Indicate the MAF 	<ul style="list-style-type: none"> MAF sensor 	1AK
	V	<ul style="list-style-type: none"> Idling after warm-up: Approx. 1.2 V Engine speed 2,500 rpm (no load): Approx. 1.5 V 		
MIL (Malfunction indicator lamp)	Off/On	<ul style="list-style-type: none"> Malfunction indicator lamp illuminate : On Malfunction indicator lamp not illuminate: Off 	<ul style="list-style-type: none"> Instrument cluster 	—
MIL_DIS (Travelled distance since the MIL illuminated)	Km	<ul style="list-style-type: none"> Indicates travelled distance since the MIL illuminated 	—	—
MOP_DRV_C (Electromagnetic metering oil pump center driving signal)	Off/On	<ul style="list-style-type: none"> IG SW ON: Off Cranking: On Idling: Off 	<ul style="list-style-type: none"> Metering oil pump No.1 	1E
MOP_DRV_S (Electromagnetic metering oil pump side driving signal)	Off/On	<ul style="list-style-type: none"> IG SW ON: Off Cranking: On Idling: Off 	<ul style="list-style-type: none"> Metering oil pump No.2 	1F
MOP_FL_C		<ul style="list-style-type: none"> IG SW ON: 0 cc/h 		

(Electromagnetic metering oil pump center request flow volume)	cc/h	<ul style="list-style-type: none"> • Cranking: Approx. 5 cc/h • Idling: Approx. 1 cc/h 	<ul style="list-style-type: none"> • Metering oil pump driver 	1S
MOP_FL_S (Electromagnetic metering oil pump side request flow volume)	cc/h	<ul style="list-style-type: none"> • IG SW ON: 0 cc/h • Cranking: Approx. 3 cc/h • Idling: Approx. 0 cc/h 	<ul style="list-style-type: none"> • Metering oil pump driver 	1AA
MOP_P_ACT (Electromagnetic metering oil pump system pressure actual)	Pa	<ul style="list-style-type: none"> • Idling: 70 KPa 	<ul style="list-style-type: none"> • Oil pressure sensor 	2R
MOP_P_DSD (Electromagnetic metering oil pump system pressure desired)	Pa	<ul style="list-style-type: none"> • Indicate the target oil pressure 	<ul style="list-style-type: none"> • Oil pressure sensor 	—
NUM_OCV(Number of OCV open)	—	<ul style="list-style-type: none"> • Indicate the number of OCV open 	<ul style="list-style-type: none"> • OCV • PCM 	2E
NUM_SD(Number of short drive)	—	<ul style="list-style-type: none"> • Indicate the number of short drive 	<ul style="list-style-type: none"> • PCM 	—
NUM_ST(Number of engine start)	—	<ul style="list-style-type: none"> • Indicate the number of engine start 	<ul style="list-style-type: none"> • PCM 	—
O2S11 (A/F sensor)	A	<ul style="list-style-type: none"> • Idling after warm-up: Approx. 0 mA 	<ul style="list-style-type: none"> • A/F sensor 	2AD
O2S12 (HO2S)	V	<ul style="list-style-type: none"> • Idling after warm-up: 0 —1.0 V 	<ul style="list-style-type: none"> • HO2S 	2Q
OCV_ACT (OCV current actual)	A	<ul style="list-style-type: none"> • IG SW ON: Approx. 300 mA • Idling: Approx. 450 mA 	<ul style="list-style-type: none"> • OCV 	2E
OCV_CLEAN (OCV cleaning mode)	Off/On	<ul style="list-style-type: none"> • OCV cleaning mode operating: On • Except above: Off 	<ul style="list-style-type: none"> • OCV 	2E
OCV_DSD (OCV current desired)	A	<ul style="list-style-type: none"> • Indicate the target OCV current 	<ul style="list-style-type: none"> • The following PID <ul style="list-style-type: none"> ▪ MOP_P_DSD 	—
PACNTV (AIR solenoid valve control)	Off/On	<ul style="list-style-type: none"> • AIR pump operating: On • AIR pump not operating: Off 	<ul style="list-style-type: none"> • The following PIDs <ul style="list-style-type: none"> ▪ CATT11_DSD, ECT, IAT • AIR solenoid valve 	2G

PCM_T (PCM temperature sensor)	V	<ul style="list-style-type: none"> IG SW ON: 1.2—2.6 V 	<ul style="list-style-type: none"> PCM temperature sensor 	—
RO2FT1 (HO2S fuel trim)	—	<ul style="list-style-type: none"> Idling after warm-up: approx. 0 	<ul style="list-style-type: none"> The following PID <ul style="list-style-type: none"> O2S12 	—
RPM (Engine speed)	RPM	<ul style="list-style-type: none"> Engine runs: Indicate the engine speed 	<ul style="list-style-type: none"> Eccentric shaft position sensor 	2AG
SC_SET (Cruise main indicator light/ cruise set indicator light)	Off/On	<ul style="list-style-type: none"> Cruise main indicator light/ cruise set indicator light illuminate: On Cruise main indicator light/ cruise set indicator light not illuminate: Off 	<ul style="list-style-type: none"> Instrument cluster 	—
SCCS (Cruise control switch)	V	<ul style="list-style-type: none"> ON/OFF switch pressed in: approx. 0 V CANCEL switch pressed in: approx. 1.1 V SET(-) switch pressed in: approx. 3.1 V RES(+) switch pressed in: approx. 4.2 V Except above: approx. 5.0 V 	<ul style="list-style-type: none"> Cruise control switch 	1AQ
SHRTFT1 (Short term fuel trim (front))	%	<ul style="list-style-type: none"> Idling after warm-up: approx. -4—4% 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> AC_REQ, APP, BARO, ECT, IAT, KNOCKR, LOAD, MAF, O2S11, O2S12, RPM, TP, VPWR, VSS 	—
SHRTFT12 (Short term fuel trim (rear))	%	<ul style="list-style-type: none"> Idling after warm-up: approx. 0% 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> AC_REQ, APP, BARO, ECT, IAT, KNOCKR, LOAD, MAF, O2S11, O2S12, RPM, TP, VPWR, VSS 	—
SPARK-L (Ignition timing)	°(BTDC)	<ul style="list-style-type: none"> Idling after warm-up: BTDC approx. -5° 	<ul style="list-style-type: none"> The following PIDs <ul style="list-style-type: none"> AC_REQ, APP, ECT, IAT, IVS, KNOCKR, LOAD, MAF, RPM, TP, VSS 	2AT 2AX

					<ul style="list-style-type: none">Ignition coil (L/F, L/R)	
SPARK-T (Ignition timing)	°(BTDC)		<ul style="list-style-type: none">Idling after warm-up: BTDC approx. 10°		<ul style="list-style-type: none">The following PIDs<ul style="list-style-type: none">AC_REQ, APP, ECT, IAT, IVS, KNOCKR, LOAD, MAF, RPM, TP, VSSIgnition coil (T/F, T/R)	2AW 2BA
SSV (SSV solenoid valve)	Off/On		<ul style="list-style-type: none">High engine speed after warm-up: OnIdling: Off		<ul style="list-style-type: none">The following PIDs<ul style="list-style-type: none">BARO, ECT, IAT, MAF, RPM, TPSSV solenoid valve	2I
test	Off/On		<ul style="list-style-type: none">Test mode: OnExcept above: Off		—	—
TH_M (Thermostat monitor engine coolant temperature)	°C	°F	<ul style="list-style-type: none">Indicates engine coolant temperature when thermostat monitoring is finished		<ul style="list-style-type: none">Thermostat	—
TH_M_MAX (Thermostat monitor engine coolant temperature max limit)	°C	°F	<ul style="list-style-type: none">Indicates upper limit of engine coolant temperature for thermostat monitoring execution		<ul style="list-style-type: none">Thermostat	—
TH_M_MIN (Thermostat monitor engine coolant temperature min limit)	°C	°F	<ul style="list-style-type: none">Indicates lower limit of engine coolant temperature for thermostat monitoring execution		<ul style="list-style-type: none">Thermostat	—
TIRESIZE (Tire revolution per mile)	rev/mile		<ul style="list-style-type: none">Indicates tire revolution per a mile			
TP (TP)	V		<ul style="list-style-type: none">CTP: Approx. 0.8 VWOT: Approx. 3.92 V	<ul style="list-style-type: none">The following PIDs<ul style="list-style-type: none">TP1, TP2		—
TP_REL (Relative TP)	%		<ul style="list-style-type: none">CTP: Approx. 7%WOT: Approx. 100%	<ul style="list-style-type: none">The following PIDs<ul style="list-style-type: none">TP, TP1, TP2		2AK 2AL
TP1 (TP 1)	%		<ul style="list-style-type: none">CTP: 8.0—16.0%WOT: 76.5—81.9%	<ul style="list-style-type: none">TP sensor No.1		2AK
	V		<ul style="list-style-type: none">CTP: 0.4—0.8 VWOT: 3.825—4.095 V			

TP2 (TP 2)	%		<ul style="list-style-type: none"> • CTP: 23.6—35.6% • WOT: 80.66—86.06% 	<ul style="list-style-type: none"> • TP sensor No.2 	2AL
	V		<ul style="list-style-type: none"> • CTP: 1.18—1.78 V • WOT: 4.033—4.303 V 		
TPCT (TP sensor voltage at CTP)	V		<ul style="list-style-type: none"> • IG SW ON (CTP): Approx. 0.6 V 	<ul style="list-style-type: none"> • TP sensor 	—
VPWR (Battery voltage)	V		<ul style="list-style-type: none"> • Indicate the battery voltage 	<ul style="list-style-type: none"> • Battery 	1BA
VSS (Vehicle speed)	KPH	MPH	<ul style="list-style-type: none"> • Vehicle running: Indicate the vehicle speed 	<ul style="list-style-type: none"> • ABS HU/CM • DSC HU/CM 	—

*1
Calculated value; differs from terminal voltage

*2
Refrigerant pressure switch (middle) turns off when the refrigerant pressure is 1.11 MPa {11.3 kgf/cm², 161 psi} or less

*3
Refrigerant pressure switch (middle) turns on when the refrigerant pressure is 1.60 MPa {16.3 kgf/cm², 232 psi} or more

*4
MT

*5
California emission regulation applicable model

*6
13B-MSP(high power)

*7
With VFAD

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Engine

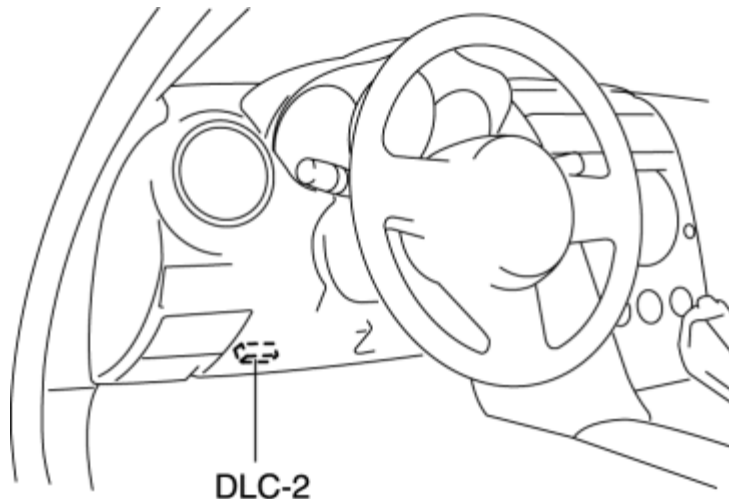
PCM CONFIGURATION [13B-MSP]

CAUTION:

- If the wheel and tire sizes are changed, the set value for the tire rotation diameter will be different, causing a discrepancy whereby the speedometer needle exceeds the allowable range. If the wheel and tire sizes are changed, perform a PCM configuration to change the tire size setting.

Newly Replacing PCM

- Connect the M-MDS to the DLC-2.

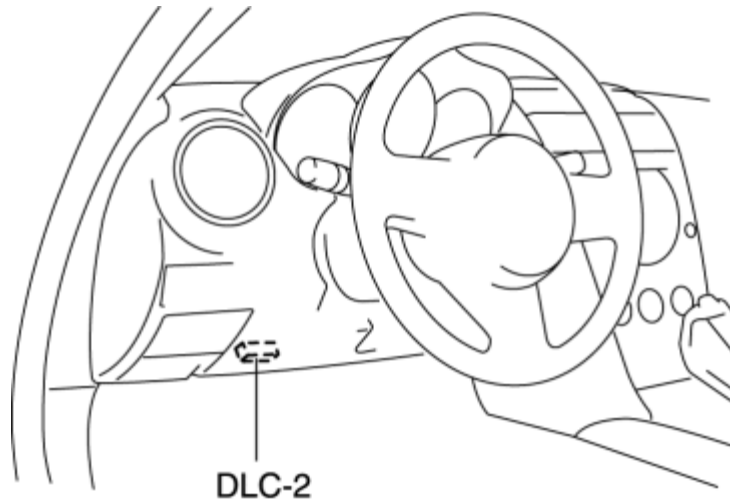


- After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 - When using the IDS (laptop PC)
 1. Select the "Module Programming".
 - When using the PDS (Pocket PC)
 1. Select the "Programming".
 2. Select the "Module Programming".
- Then, select items from the screen menu in the following order.
 - Select "Programmable Module installation".
 - Select "PCM".

- Perform the configuration according to the directions on the screen.
- Retrieve DTCs by the M-MDS, then verify that there is no DTC present.
 - If a DTC(s) is detected, perform the applicable DTC inspection. (See [DTC TABLE \[13B-MSP\]](#).)

Wheel And Tire Size Change

- Connect the M-MDS to the DLC-2.



- After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 - When using the IDS (laptop PC)
 - Select the "Module Programming".
 - When using the PDS (Pocket PC)
 - Select the "Programming".
 - Select the "Module Programming".
- Then, select items from the screen menu in the following order.
 - Select "Programmable Parameters".
 - Select "Tire Size / Axle Ratio".
- Select an item name, and then select option.

Items

- Tire Size ("225/40R19"/"225/45R18"/"225/50R17")

2011 - RX-8 - Engine

THROTTLE POSITION (TP) SENSOR INSPECTION [13B-MSP]

CAUTION:

- This inspection procedure cannot be completed correctly if the accelerator pedal position sensor has a malfunction. Before performing this procedure, verify that any one of the DTC related to the accelerator pedal position sensor is not detected.

NOTE:

- Before performing the following inspection, make sure to follow the troubleshooting flowchart. (See [FOREWORD \[13B-MSP\]](#).)

Voltage Inspection

1. Turn the ignition switch to the ON position.
2. Verify that the voltage at PCM terminals 2AK (M-MDS PID: TP1) and 2AL (M-MDS PID: TP2) increases while gradually increasing the accelerator pedal opening angle according to the accelerator pedal opening angle.
 - If it can be verified, go to the next step.
 - If it cannot be verified even though the related wiring harnesses have no malfunction, replace the throttle body. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
3. Verify that the voltage at PCM terminals 2AK (M-MDS PID: TP1) and 2AL (M-MDS PID: TP2) is as indicated in the table.
 - If it cannot be verified, replace the throttle body. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)

TP sensor output voltage

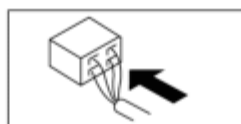
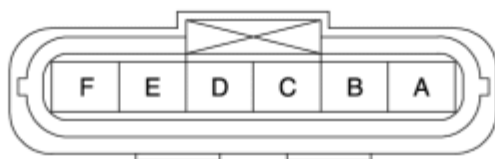
Measurement condition	PCM terminal (M-MDS PID)	
	2AK (TP1)	2AL (TP2)
When the accelerator pedal is depressed.	3.825—4.095 V	4.033—4.303 V

When the accelerator pedal is released.	0.4—0.8 V	1.18—1.78 V
---	-----------	-------------

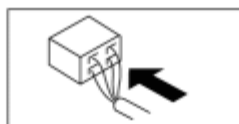
Circuit Open/Short Inspection

1. Disconnect the PCM connector.
2. Disconnect the throttle body connector.
3. Inspect the following wiring harnesses for open or short circuit. (Continuity inspection)

THROTTLE BODY WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



Open circuit

- If there is no continuity in the following wiring harnesses, there is an open circuit. Repair or replace the wiring harness.
 - Throttle body terminal C and PCM terminal 2P
 - Throttle body terminal D and PCM terminal 2AL

- Throttle body terminal E and PCM terminal 2AO
- Throttle body terminal F and PCM terminal 2AK

Short circuit

- If there is continuity in the following wiring harnesses, there is a short circuit. Repair or replace the wiring harness.
 - Throttle body terminal E and body ground
 - Throttle body terminal E and power supply
 - Throttle body terminal F and body ground
 - Throttle body terminal F and power supply
 - Throttle body terminal D and body ground
 - Throttle body terminal D and power supply

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

KNOCK SENSOR (KS) INSPECTION [13B-MSP]

Resistance Inspection

NOTE:

- Before performing the following inspection, make sure to follow the troubleshooting flowchart. (See [FOREWORD \[13B-MSP\]](#).)
1. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Disconnect the negative battery cable.
 3. Disconnect the KS connector.
 4. Measure the resistance between KS terminals A and B.
 - If not within the specification, replace the KS. (See [KNOCK SENSOR \(KS\) REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 - If the monitor item condition/specification (reference) is not within the specification, even though the KS resistance is within the specification, perform the "Circuit Open/Short Inspection". (See [Circuit Open/Short Inspection](#).)

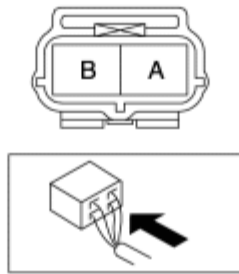
KS No.1, No.2 resistance

- 120—280 kilohms

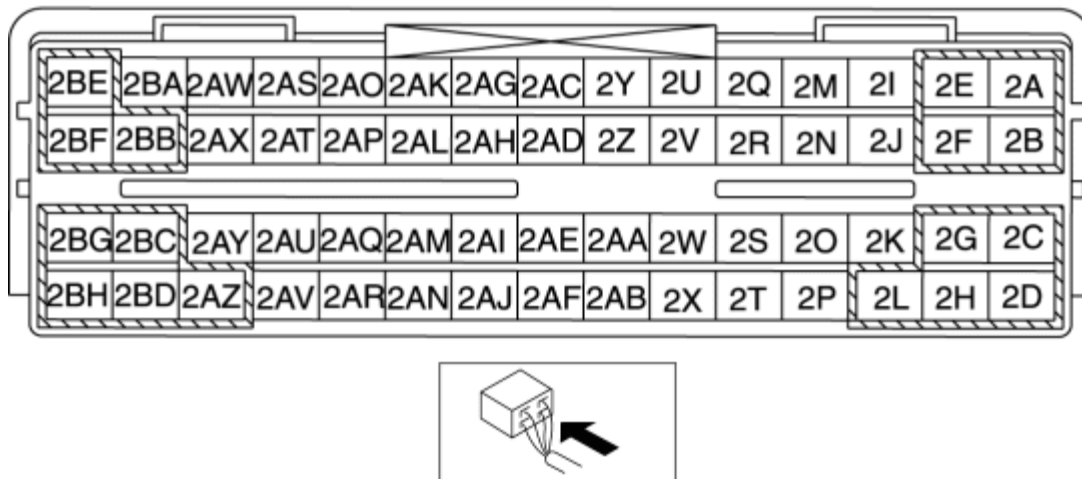
Circuit Open/Short Inspection

1. Disconnect the PCM connector.
2. Disconnect the KS connector.
3. Inspect the following wiring harnesses for open or short. (Continuity inspection)

**KS NO.1, NO.2
WIRING HARNESS-SIDE CONNECTOR**



**PCM
WIRING HARNESS-SIDE CONNECTOR**



Open circuit

- If there is no continuity in the following wiring harnesses, there is an open circuit. Repair or replace the wiring harness.
 - KS No.1 terminal A and PCM terminal 2U
 - KS No.1 terminal B and PCM terminal 2V
 - KS No.2 terminal A and PCM terminal 2AC
 - KS No.2 terminal B and PCM terminal 2Y

Short circuit

- If there is continuity in the following wiring harnesses, there is a short circuit. Repair or replace the wiring harness.
 - KS No.1 terminal A and body ground
 - KS No.1 terminal A and power supply

- KS No.1 terminal B and body ground
- KS No.1 terminal B and power supply
- KS No.2 terminal A and body ground
- KS No.2 terminal A and power supply
- KS No.2 terminal B and body ground
- KS No.2 terminal B and power supply

[< Previous](#) [Next >](#)

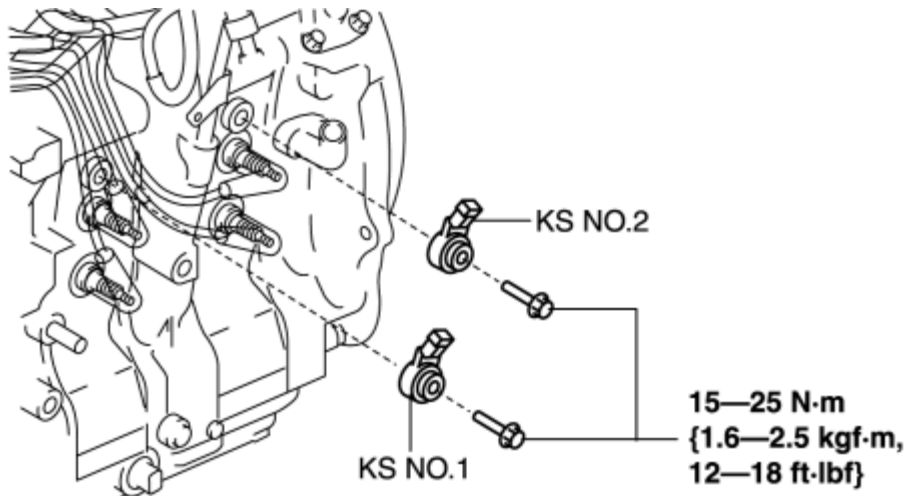
[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

KNOCK SENSOR (KS) REMOVAL/INSTALLATION [13B-MSP]

1. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Disconnect the negative battery cable.
3. Disconnect the KS connector.
4. Remove the KS.



5. Install in the reverse order of removal.

2011 - RX-8 - Engine

ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [13B-MSP]

NOTE:

- Before performing the following inspection, make sure to follow the troubleshooting flowchart. (See [FOREWORD \[13B-MSP\]](#).)

Voltage Inspection

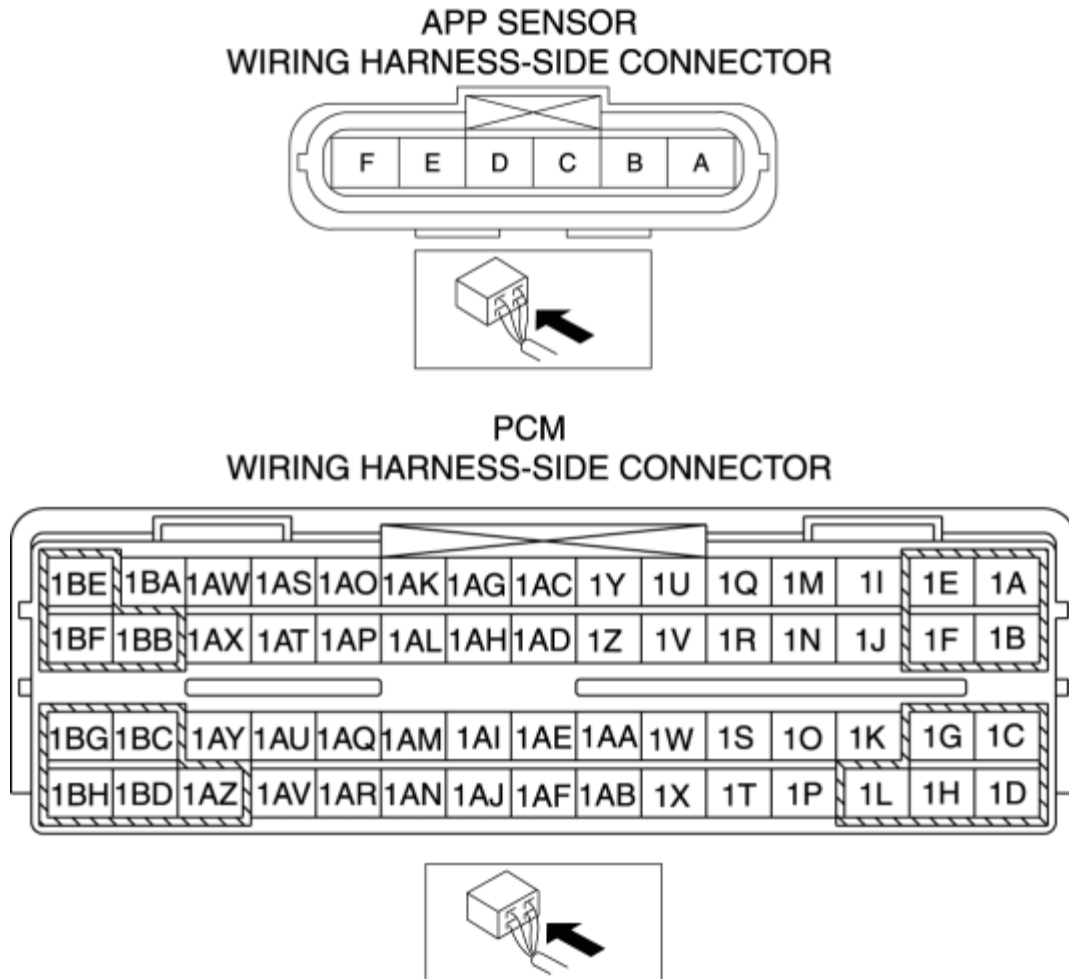
1. Turn the ignition switch to the ON position.
2. Verify that the voltage at PCM terminals 1AO (M-MDS PID: APP1) and 1AP (M-MDS PID: APP2) increases while gradually increasing the accelerator pedal opening angle according to the accelerator pedal opening angle.
 - If it can be verified, go to the next step.
 - If it cannot be verified even though the related wiring harnesses have no malfunction, replace the accelerator pedal. (See [ACCELERATOR PEDAL REMOVAL/INSTALLATION \[13B-MSP\]](#).)
3. Verify that the voltage at PCM terminals 1AO (M-MDS PID: APP1) and 1AP (M-MDS PID: APP2) is as indicated in the table.
 - If it cannot be verified, replace the accelerator pedal. (See [ACCELERATOR PEDAL REMOVAL/INSTALLATION \[13B-MSP\]](#).)

APP sensor output voltage

Measurement condition	PCM terminal (M-MDS PID)	
	1AO (APP1)	1AP (APP2)
When the accelerator pedal is depressed.	3.78—3.93 V	3.23—3.38 V
When the accelerator pedal is released.	1.555—1.655 V	1.005—1.105 V

Circuit Open/Short Inspection

1. Disconnect the PCM connectors.
2. Disconnect the APP sensor connector.
3. Inspect the following wiring harnesses for open or short circuit. (Continuity inspection)



Open circuit

- If there is no continuity in the following wiring harnesses, there is an open circuit. Repair or replace the wiring harness.
 - APP sensor terminal A and PCM terminal 1AJ
 - APP sensor terminal B and PCM terminal 1AV
 - APP sensor terminal C and PCM terminal 1AP
 - APP sensor terminal D and PCM terminal 1AL
 - APP sensor terminal E and PCM terminal 1AS
 - APP sensor terminal F and PCM terminal 1AO

Short circuit

- If there is continuity in the following wiring harnesses, there is a short circuit. Repair or replace the wiring harness.
 - APP sensor terminal D and body ground
 - APP sensor terminal D and power supply
 - APP sensor terminal A and body ground
 - APP sensor terminal A and power supply
 - APP sensor terminal F and body ground
 - APP sensor terminal F and power supply
 - APP sensor terminal C and body ground
 - APP sensor terminal C and power supply

[< Previous](#) [Next >](#)

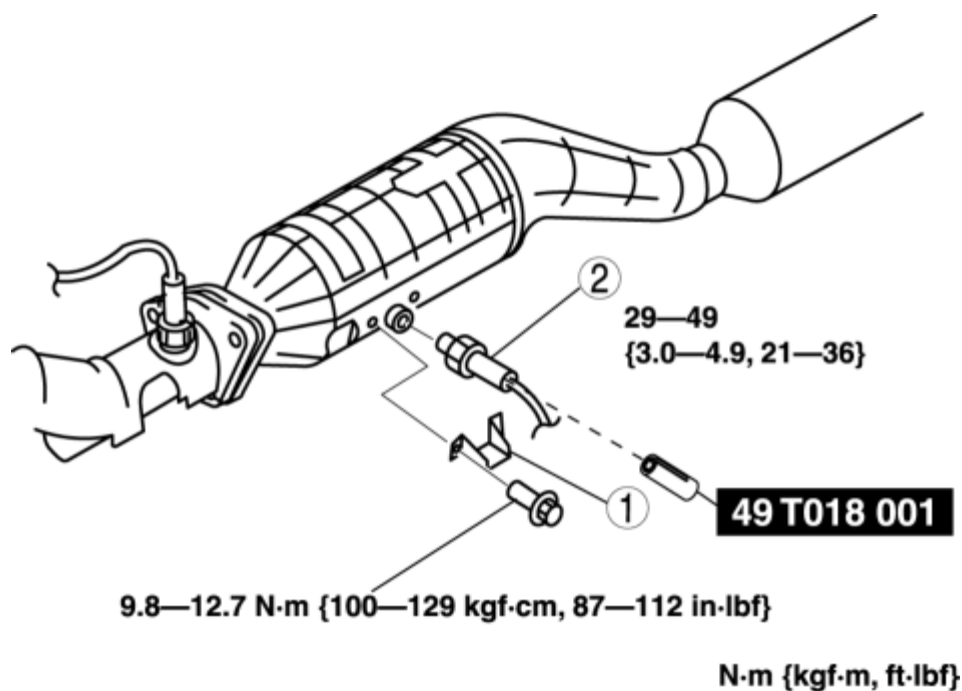
[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [13B-MSP]

1. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Disconnect the negative battery cable.
3. Remove the HO2S connector.
4. Remove in the order indicated in the table.

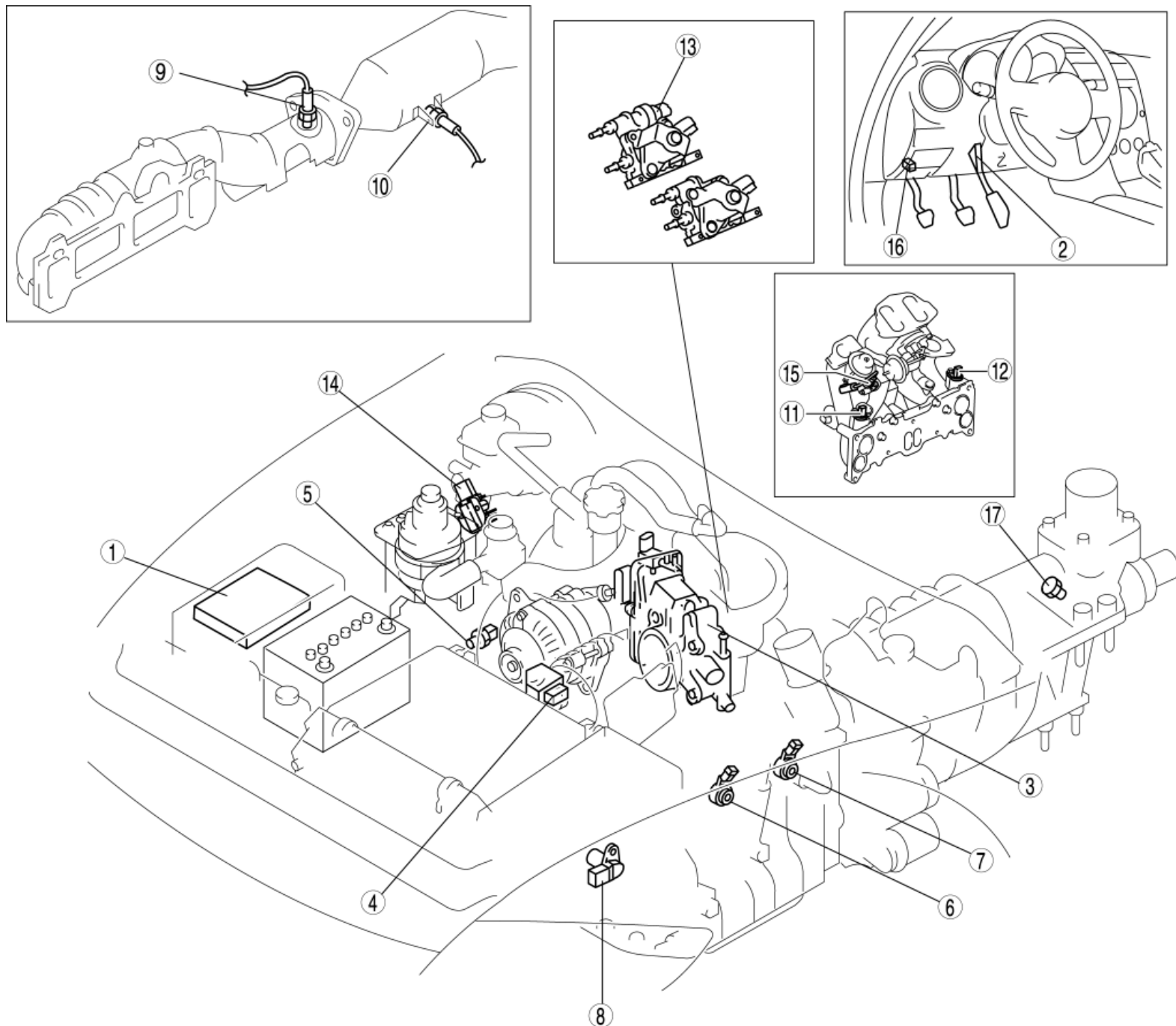


1	Protector
2	HO2S

5. Install in the reverse order of removal.

2011 - RX-8 - Engine

CONTROL SYSTEM LOCATION INDEX [13B-MSP]



1 PCM

(See [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#).)

(See [PCM INSPECTION \[13B-MSP\]](#).)

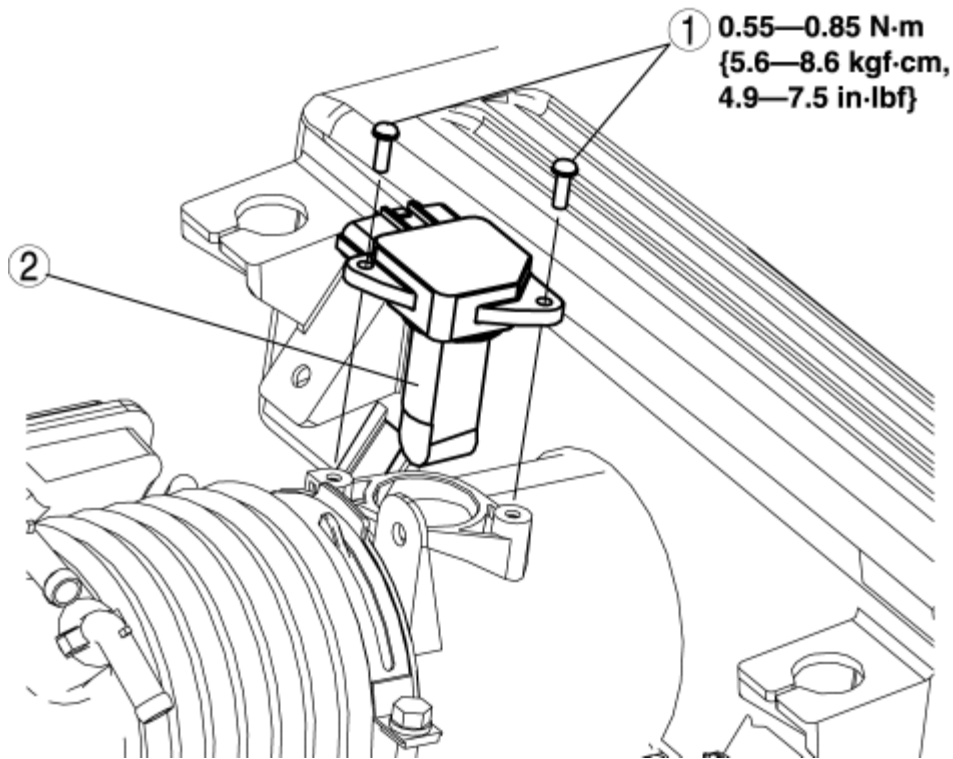
	(See PCM CONFIGURATION [13B-MSP].)
2 APP sensor	<p>(See ACCELERATOR PEDAL REMOVAL/INSTALLATION [13B-MSP].)</p> <p>(See ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [13B-MSP].)</p>
3 TP sensor	<p>(See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>(See THROTTLE POSITION (TP) SENSOR INSPECTION [13B-MSP].)</p>
4 MAF/ IAT sensor	<p>(See MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p> <p>(See MASS AIR FLOW (MAF) SENSOR INSPECTION [13B-MSP].)</p> <p>(See INTAKE AIR TEMPERATURE (IAT) SENSOR INSPECTION [13B-MSP].)</p>
5 ECT sensor	<p>(See ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p> <p>(See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [13B-MSP].)</p>
6 KS No.1	<p>(See KNOCK SENSOR (KS) REMOVAL/INSTALLATION [13B-MSP].)</p> <p>(See KNOCK SENSOR (KS) INSPECTION [13B-MSP].)</p>
7 KS No.2	<p>(See KNOCK SENSOR (KS) REMOVAL/INSTALLATION [13B-MSP].)</p> <p>(See KNOCK SENSOR (KS) INSPECTION [13B-MSP].)</p>
8 Eccentric shaft position sensor	<p>(See ECCENTRIC SHAFT POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p> <p>(See ECCENTRIC SHAFT POSITION SENSOR INSPECTION [13B-MSP].)</p>
9 A/F sensor	<p>(See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p> <p>(See AIR FUEL RATIO (A/F) SENSOR INSPECTION [13B-MSP].)</p>
10HO2S	<p>(See HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [13B-MSP].)</p> <p>(See HEATED OXYGEN SENSOR (HO2S) INSPECTION [13B-MSP].)</p>
11APV position sensor No.1	<p>(See AUXILIARY PORT VALVE (APV) POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p> <p>(See AUXILIARY PORT VALVE (APV) POSITION SENSOR INSPECTION [13B-MSP].)</p>
12APV position sensor No.2	

	<p>(See AUXILIARY PORT VALVE (APV) POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p> <p>(See AUXILIARY PORT VALVE (APV) POSITION SENSOR INSPECTION [13B-MSP].)</p>
13	<p>Oil pressure sensor</p> <p>(See OIL PRESSURE SENSOR REMOVAL/INSTALLATION [13B-MSP].)</p> <p>(See OIL PRESSURE SENSOR INSPECTION [13B-MSP].)</p>
14	<p>Metering oil pump driver</p> <p>(See METERING OIL PUMP DRIVER REMOVAL/INSTALLATION [13B-MSP].)</p> <p>(See METERING OIL PUMP DRIVER INSPECTION [13B-MSP].)</p>
15	<p>SSV switch</p> <p>(See SECONDARY SHUTTER VALVE (SSV) SWITCH REMOVAL/INSTALLATION [13B-MSP].)</p> <p>(See SECONDARY SHUTTER VALVE (SSV) SWITCH INSPECTION [13B-MSP].)</p>
16	<p>CPP switch (MT)</p> <p>(See CLUTCH PEDAL POSITION (CPP) SWITCH INSPECTION [13B-MSP].)</p>
17	<p>Neutral switch (MT)</p> <p>(See NEUTRAL SWITCH INSPECTION [13B-MSP].)</p>

2011 - RX-8 - Engine

MASS AIR FLOW (MAF)/INTAKE AIR TEMPERATURE (IAT) SENSOR REMOVAL/INSTALLATION [13B-MSP]

1. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#))
2. Disconnect the negative battery cable.
3. Remove the MAF/IAT sensor connector.
4. Remove in the order indicated in the table.

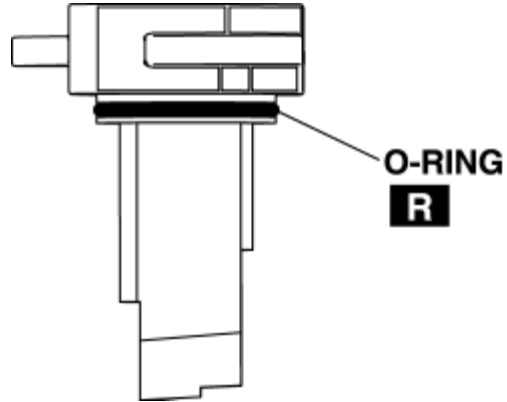


1	Screw (See Screw Installation Note.)
2	MAF/IAT sensor (See MAF/IAT Sensor Installation Note.)

5. Install in the reverse order of removal.

MAF/IAT Sensor Installation Note

1. Before installation of the MAF/IAT sensor, replace the O-ring.



Screw Installation Note

1. After installation of the screws, verify that the MAF/IAT sensor is installed securely.

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

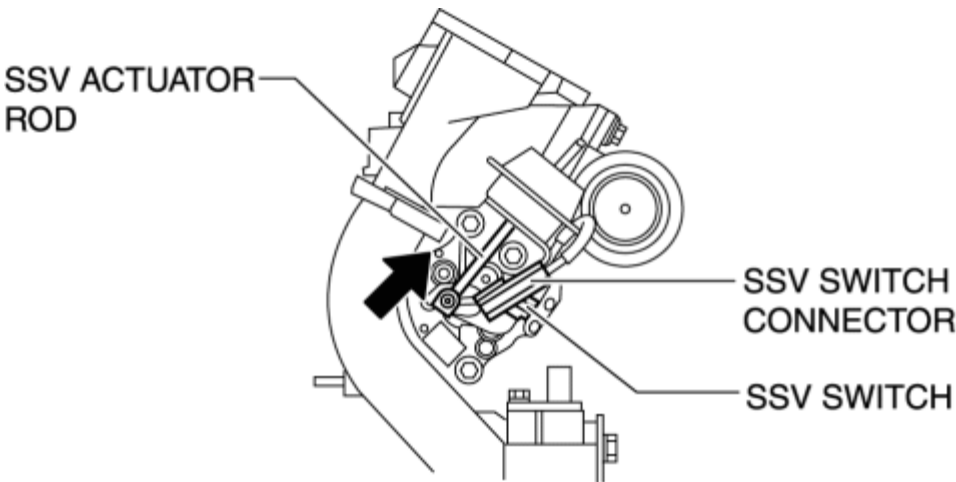
SECONDARY SHUTTER VALVE (SSV) SWITCH INSPECTION [13B-MSP]

NOTE:

- Before performing the following inspection, make sure to follow the troubleshooting flowchart. (See [FOREWORD \[13B-MSP\]](#).)

Continuity Inspection

1. Verify that the continuity between SSV switch terminals A and B is as indicated in the table.



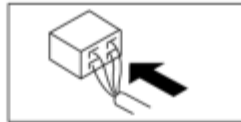
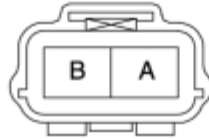
- If there is no malfunction, perform the "Circuit Open/Short Inspection".
- If there is any malfunction, replace the SSV switch. (See [SECONDARY SHUTTER VALVE \(SSV\) SWITCH REMOVAL/INSTALLATION \[13B-MSP\]](#).)

Measurement condition	Continuity
Push the rod	No continuity
Except above	Continuity detected

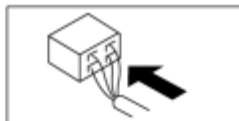
Circuit Open/Short Inspection

1. Disconnect the PCM connector.
2. Disconnect the SSV switch connector.
3. Inspect the following wiring harnesses for open or short circuit. (Continuity inspection)

SSV SWITCH WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



Open circuit

- If there is no continuity in the following wiring harnesses, there is an open circuit. Repair or replace the wiring harness.
 - SSV switch terminal A and PCM terminal 2AE
 - SSV switch terminal B and body ground

Short circuit

- If there is continuity in the following wiring harnesses, there is a short circuit. Repair or

replace the wiring harness.

- SSV switch terminal A and body ground
- SSV switch terminal A and power supply

[< Previous](#) [Next >](#)

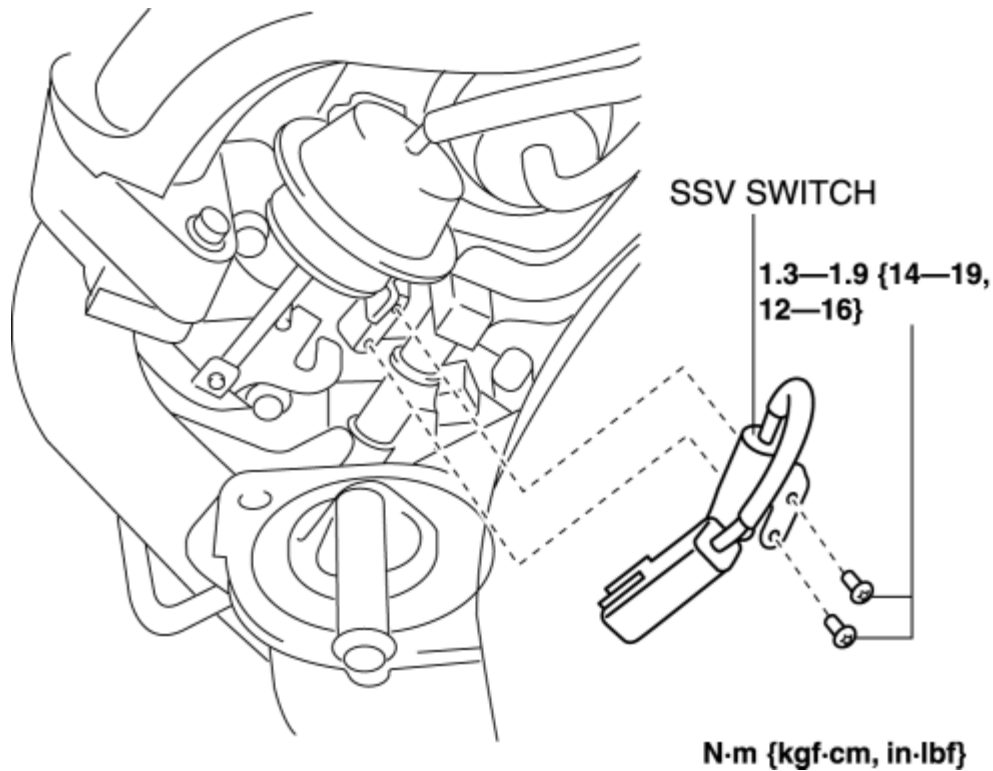
© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Engine

SECONDARY SHUTTER VALVE (SSV) SWITCH REMOVAL/INSTALLATION [13B-MSP]

1. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Disconnect the negative battery cable.
3. Remove the battery. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
4. Remove the air control valve. (See [SECONDARY AIR INJECTION \(AIR\) CONTROL VALVE REMOVAL/INSTALLATION \[13B-MSP\]](#).)
5. Remove the generator. (See [GENERATOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
6. Disconnect the SSV switch connector.
7. Remove the SSV installation screws and remove the SSV switch.



8. Install in the reverse order of removal.

2011 - RX-8 - Engine

AUXILIARY PORT VALVE (APV) POSITION SENSOR INSPECTION [13B-MSP]

NOTE:

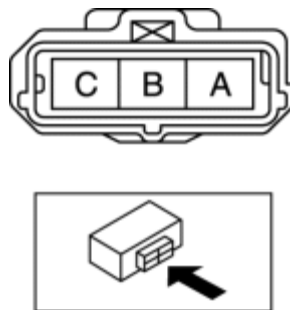
- Before performing the following inspection, make sure to follow the troubleshooting flowchart. (See [FOREWORD \[13B-MSP\]](#).)

Visual Inspection

1. Remove the APV position sensor. (See [AUXILIARY PORT VALVE \(APV\) POSITION SENSOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Verify that there are no metal shavings on the sensor.
3. Repair or replace the malfunctioning part according to the inspection results.

Resistance Inspection

1. Disconnect the APV position sensor connector.
2. Measure the coil resistance between APV position sensor terminals A and B or B and C.



- If not within the specification, replace the APV position sensor. (See [AUXILIARY PORT VALVE \(APV\) POSITION SENSOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)

APV position sensor No.1, No.2 resistance

- **Except for ∞ or 0 ohms** [at room temperature]

2011 - RX-8 - Engine

ECCENTRIC SHAFT POSITION SENSOR INSPECTION [13B-MSP]

NOTE:

- Before performing the following inspection, make sure to follow the troubleshooting flowchart. (See [FOREWORD \[13B-MSP\]](#).)

Visual Inspection

1. Remove the eccentric shaft position sensor.
2. Verify that there are no metal shavings on the sensor.
 - If the monitor item condition (reference) is not within the specification even though there is no malfunction, perform the "Circuit Open/Short Inspection". (See [Circuit Open/Short Inspection](#).)

Resistance Inspection

1. Disconnect the eccentric shaft position sensor connector.
2. Measure the coil resistance between eccentric shaft position sensor terminals A and B.
 - If not within the specification, replace the eccentric shaft position sensor. (See [ECCENTRIC SHAFT POSITION SENSOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 - If the monitor item condition/specification (reference) is not within the specification, even though the eccentric shaft position sensor resistance is within the specification, perform the "Circuit Open/Short Inspection" and repair or replace the malfunctioning part. (See [Circuit Open/Short Inspection](#).)

Eccentric shaft position sensor resistance

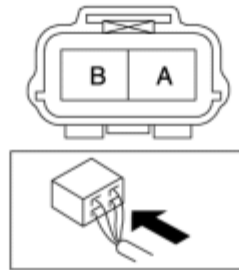
- 950—1,250 ohms [at room temperature]

Circuit Open/Short Inspection

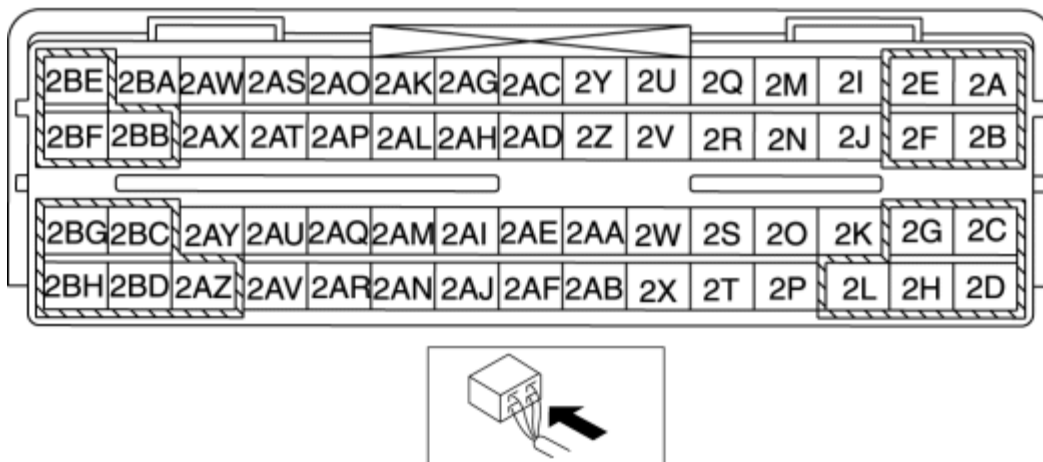
1. Disconnect the PCM connector.
2. Disconnect the eccentric shaft position sensor connector.

3. Inspect the following wiring harnesses for open or short circuit. (Continuity inspection)

ECCENTRIC SHAFT POSITION SENSOR WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



Open circuit

- If there is no continuity in the following wiring harnesses, there is an open circuit. Repair or replace the wiring harness.
 - Eccentric shaft position sensor terminal A and PCM terminal 2AG
 - Eccentric shaft position sensor terminal B and PCM terminal 2AP

Short circuit

- If there is continuity in the following wiring harnesses, there is a short circuit. Repair or replace the wiring harness.
 - Eccentric shaft position sensor terminal A and body ground
 - Eccentric shaft position sensor terminal A and power supply
 - Eccentric shaft position sensor terminal B and body ground

- Eccentric shaft position sensor terminal B and power supply

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

ECCENTRIC SHAFT POSITION SENSOR REMOVAL/INSTALLATION [13B-MSP]

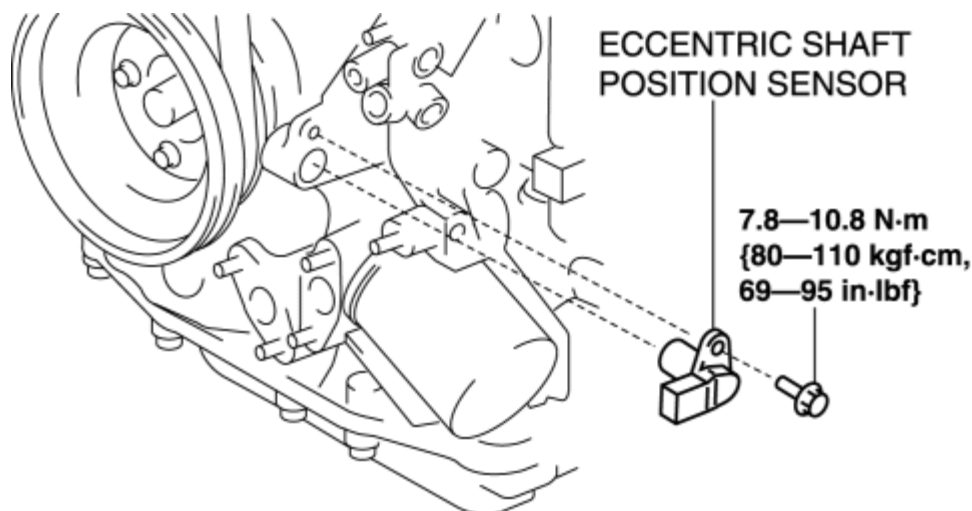
CAUTION:

- When replacing the eccentric shaft position sensor, make sure there is no foreign material on it such as metal shavings. If it is installed with foreign material, the sensor output signal will malfunction resulting from fluctuation in magnetic flux and cause a deterioration in engine control.

NOTE:

- Remove/install the eccentric shaft position sensor from above the vehicle.

1. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Disconnect the negative battery cable.
3. Remove the air cleaner component and air cleaner insulator. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
4. Disconnect the eccentric shaft position sensor connector.
5. Remove the eccentric shaft position sensor installation bolt and remove the eccentric shaft position sensor.

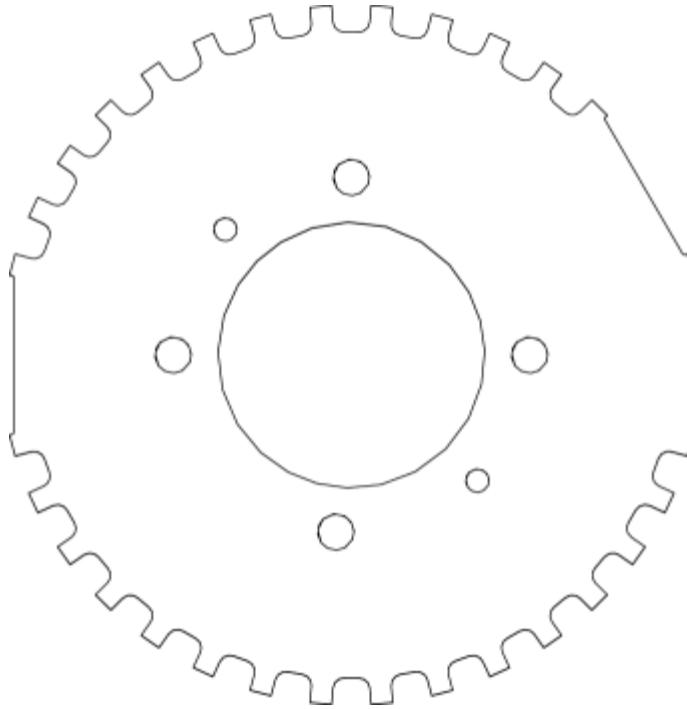


6. Install in the reverse order of removal.

2011 - RX-8 - Engine

ECCENTRIC SHAFT POSITION PLATE INSPECTION [13B-MSP]

1. Verify that there are no cracks, damage, or corrosion on the projecting parts of the eccentric shaft position plate.

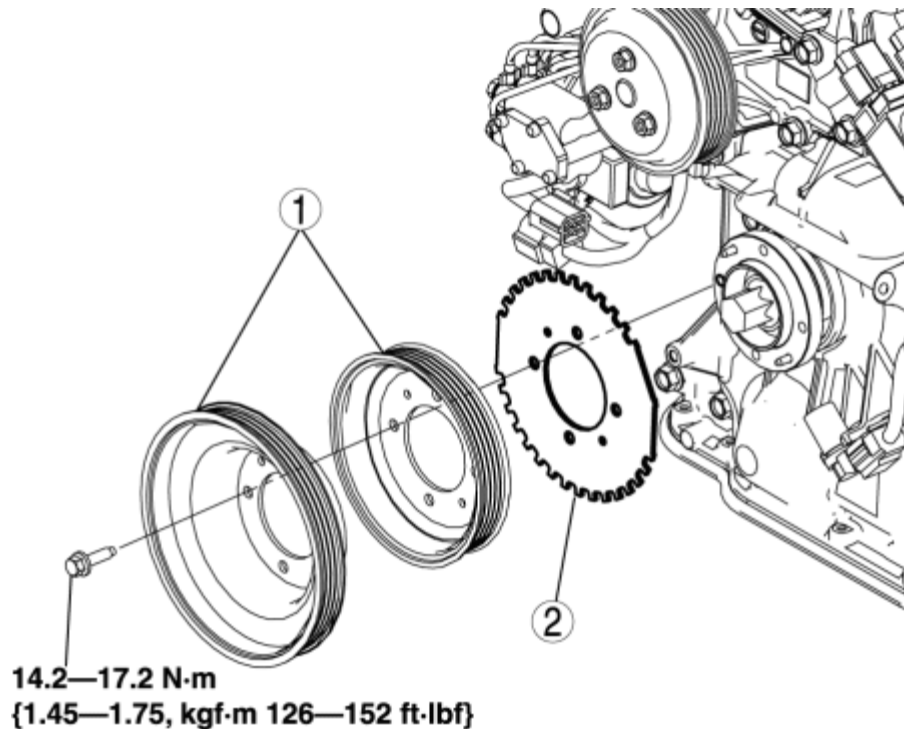


- If there are cracks, damage, or corrosion on the projecting parts, replace the eccentric shaft position plate. (See [ECCENTRIC SHAFT POSITION PLATE REMOVAL/INSTALLATION \[13B-MSP\]](#).)

2011 - RX-8 - Engine

ECCENTRIC SHAFT POSITION PLATE REMOVAL/INSTALLATION [13B-MSP]

1. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#))
2. Disconnect the negative battery cable.
3. Remove the drive belt referring to the drive belt replacement. (See [DRIVE BELT REPLACEMENT \[13B-MSP\]](#).)
4. Remove in the order indicated in the table.



1	Drive belt pulley
2	Eccentric shaft position plate

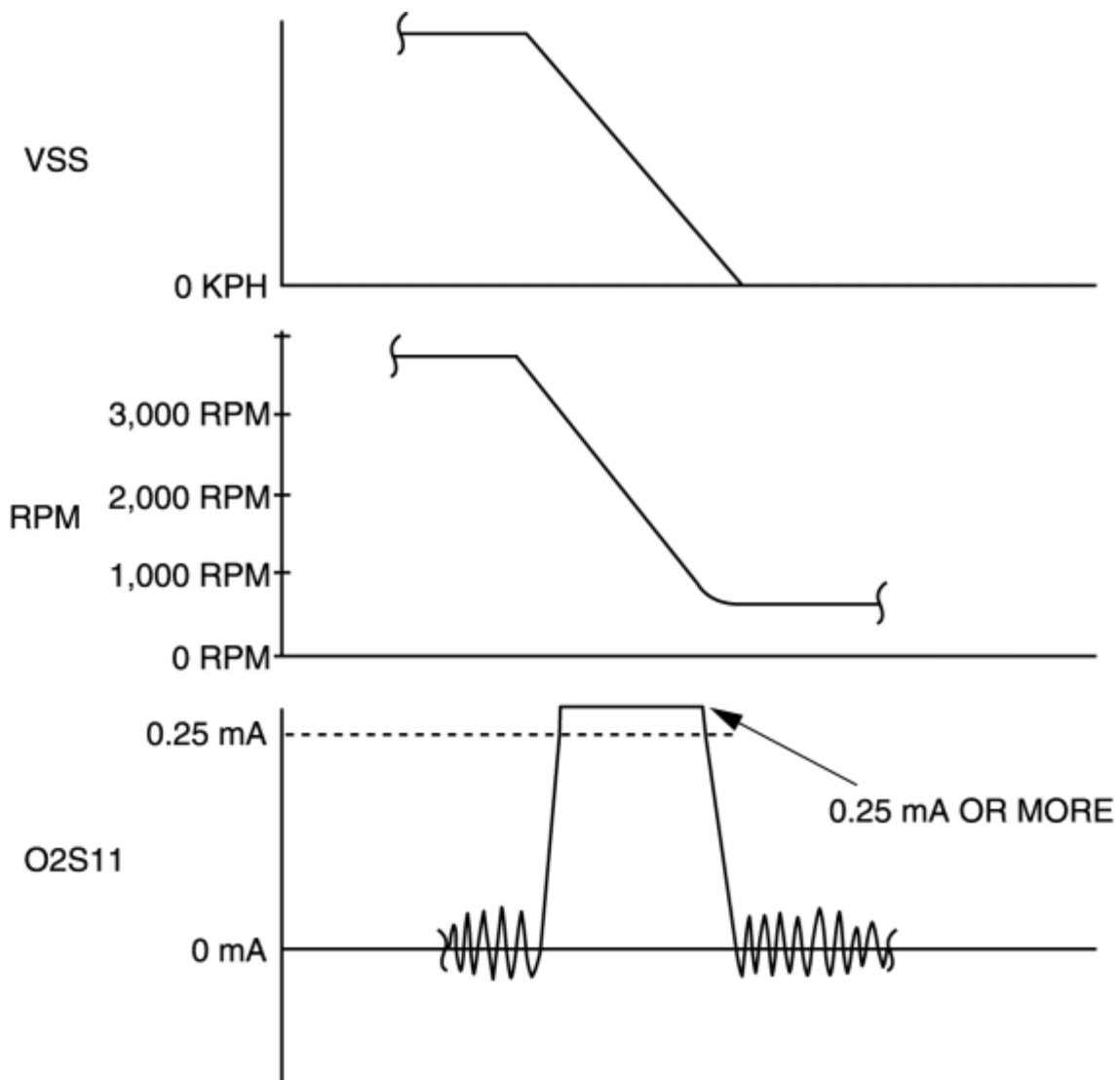
5. Install in the reverse order of removal.

2011 - RX-8 - Engine

AIR FUEL RATIO (A/F) SENSOR INSPECTION [13B-MSP]

A/F Sensor Current Inspection

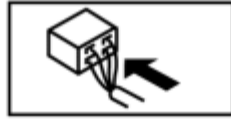
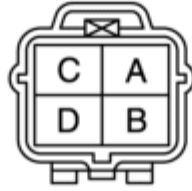
1. Warm up the engine to normal operating temperature.
2. Using the M-MDS, monitor the following:
 - Vehicle speed (PID: VSS)
 - Engine speed (PID: RPM)
 - A/F sensor current (PID: O2S11)
3. Drive the vehicle and decelerate the engine speed by releasing the accelerator pedal fully when the engine speed is 3,000 rpm or more.
4. Verify that the A/F sensor current (PID: O2S11) is 0.25 mA or more while decelerating as shown in the figure.



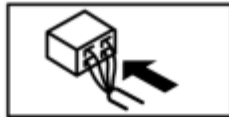
- If not within the specification, inspect the A/F sensor for an open or short circuit. (See [A/F Sensor Circuit Open/short Inspection](#).) Then if there is no malfunction in the wiring harness, replace the A/F sensor. (See [AIR FUEL RATIO \(A/F\) SENSOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)

A/F Sensor Circuit Open/short Inspection

**A/F SENSOR
WIRING HARNESS-SIDE CONNECTOR**



**PCM
WIRING HARNESS-SIDE CONNECTOR**



1. Disconnect the PCM connector.
2. Disconnect the A/F sensor connector.
3. Inspect the following wiring harnesses for an open or short circuit. (Continuity inspection)

Open circuit

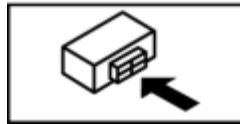
- If there is no continuity, there is an open circuit. Repair or replace the wiring harness.
 - A/F sensor terminal A and PCM terminal 2AD
 - A/F sensor terminal B and PCM terminal 2Z

Short circuit

- If there is continuity, there is a short circuit. Repair or replace the wiring harness.
 - A/F sensor terminal A and body ground
 - A/F sensor terminal A and power supply
 - A/F sensor terminal B and body ground
 - A/F sensor terminal B and power supply

A/F Sensor Heater Resistance Inspection

1. Disconnect the A/F sensor connector.
2. Measure the resistance between A/F sensor terminals C and D.



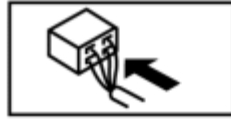
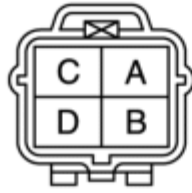
- If not within the specification, replace the A/F sensor. (See [AIR FUEL RATIO \(A/F\) SENSOR REMOVAL/INSTALLATION \[13B-MSP\].](#))

A/F sensor heater resistance

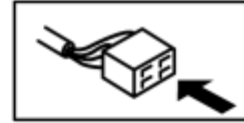
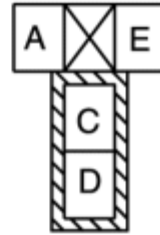
- 1—10 ohms

A/F Sensor Heater Circuit Open/short Inspection

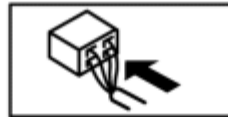
**A/F SENSOR
WIRING HARNESS-SIDE CONNECTOR**



**MAIN FUSE BLOCK
(MAIN RELAY)**



**PCM
WIRING HARNESS-SIDE CONNECTOR**



1. Disconnect the PCM connector.
2. Disconnect the A/F sensor connector.
3. Inspect the following wiring harnesses for an open or short circuit. (Continuity inspection)

Open circuit

- If there is no continuity, there is an open circuit. Repair or replace the wiring harness.
 - A/F sensor terminal C and main relay terminal C
 - A/F sensor terminal D and PCM terminal 2BG

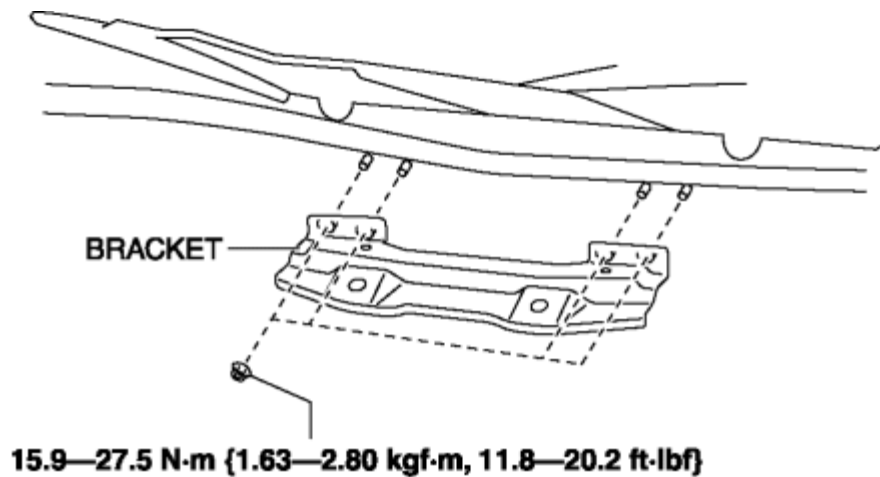
Short circuit

- If there is no continuity, there is a short circuit. Repair or replace the wiring harness.
 - A/F sensor terminal C and body ground
 - A/F sensor terminal D and power supply
 - A/F sensor terminal D and body ground

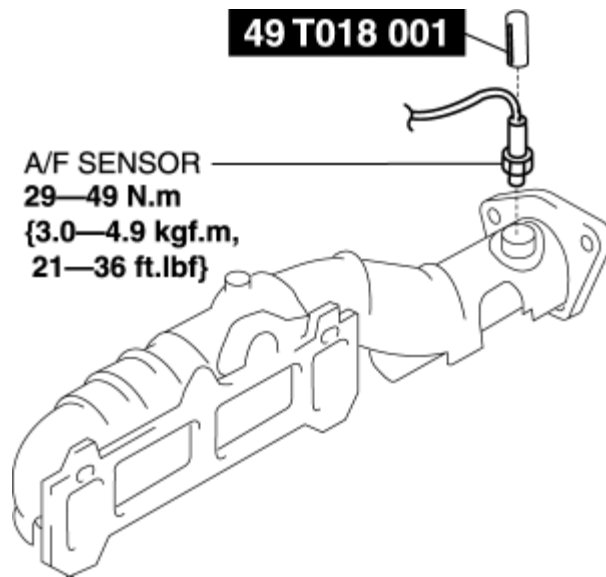
2011 - RX-8 - Engine

AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [13B-MSP]

1. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Disconnect the negative battery cable.
3. Remove the front suspension tower bar. (MT) (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[MT\]](#).)
4. Remove the bracket as shown in the figure.



5. Remove the extension manifold (upper). (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
6. Disconnect the A/F sensor connector.
7. Remove the catalytic converter installation nuts, then move the catalytic converter out of the way. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
8. Remove the A/F sensor using the SST.



9. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

2011 - RX-8 - Engine

ENGINE TECHNICAL DATA [13B-MSP]

Item	Specification
Ignition timing	Trailing side: BTDC 10° Leading side: BTDC -5°
Compression pressure	Standard: 830 kPa {8.5 kgf.cm ² , 120 psi} [250 rpm] Minimum: 680 kPa {6.9 kgf.cm ² , 98.6 psi} [250 rpm] Standard difference in chambers: Within 150 kPa {1.5 kgf.cm ² , 21.8psi} Standard difference in rotors: Within 100 kPa {1.0 kgf.cm ² , 14.5 psi}
Pressing distance for the front oil seal (from edge of front cover)	1.5—2.5 mm {0.06—0.09 in}
Engine oil capacity (approx. quantity)	Oil replacement: 4.2 L {4.4 US qt, 3.7 Imp qt} Oil and oil filter replacement: 4.4 L {4.6 US qt, 3.9 Imp qt} Engine overhaul: 5.6 L {5.9 US qt, 4.9 Imp qt} Total (dry engine): 7.1 L {7.5 US qt, 6.2 Imp qt} (MT), 6.4 L {6.8 US qt, 5.6 Imp qt} (AT)
Oil pressure (reference value) [oil temperature: 100 °C {212 °F}]	500 kPa {5.10 kgf/cm ² , 72.5 psi}[3,000 rpm]
Metering oil pump No.1, No.2 standard voltage	B+ [IG-ON, 20°C {68 °F}]
Metering oil pump No.1, No.2 standard resistance	3.6—4.1 ohms [20°C {68 °F}]

OCV standard resistance	6.9—7.9 ohms [20°C {68°F}]
Engine coolant capacity (approx. quantity)	MT: 10.0 L {10.6 US qt, 8.80 Imp qt} AT: 9.8 L {10 US qt, 8.6 Imp qt}
Cooling system cap valve opening pressure	73.6—103 kPa {0.75—1.05 kgf/cm ² , 10.7—14.9 psi}
Thermostat initial-opening temperature	80—84 °C {176—183 °F}
Thermostat full-open temperature	95 °C {203 °F}
Thermostat full-open lift	More than 8.5 mm {0.33 in}
Cooling fan motor No.1, No.2 standard current	7.7—10.7 A [12V]
Fuel Leakage	There shall be no leakage after 5 min.
Fuel Leakage	There shall be no leakage after 5 min.
Fuel line pressure	375—450 kPa {3.83—4.58 kgf/cm ² , 54.4—65.2 psi}
Fuel injector resistance	Approx. 13.8 ohms [20 °C {68 °F}]
Battery electrolyte specific gravity [20 °C {68 °F}]	1.22—1.29
Battery load test current	80D26L (55): 195 A
Battery parasitic draw (When the ignition is off (key is removed), all doors and the hood are closed.)	25—45 mA
Battery slow charge current	80D26L (55): 5.5—6.5 A
Battery quick charge current [30 min]	80D26L (55): 35 A
	Terminal B: B+

Generator standard voltage [IG-ON]	Terminal P: Approx. 1 V or less Terminal D: Approx. 0 V
Generator standard voltage [Idle, 20 °C {68 °F}]	Terminal B: 13—15 V Terminal P: Approx. 3—8 V Terminal D: Turn the electrical loads (headlights, blower motor, rear window defroster, brake lights, etc.) on and verify that the voltage reading increases.
Generator rotor resistance (between slip rings) [20 °C {68 °F}]	1.7—2.0 ohms
Generator brush length	Standard: 18.5 mm {0.73 in} Minimum: 5.0 mm {0.2 in}
Generator brush spring force	Standard: 4.8—6.0 N {0.49—0.61 kgf, 1.08—1.34 lbf} Minimum: 2.16 N {0.22 kgf, 0.49 lbf}
Spark plug type	Leading side: N3H5 18 110A (RE7C-L) ^{*1} , N3Y8 18 110A (RE7C-L) ^{*1} , N3Y9 18 110A (RE6C-L) ^{*2} Trailing side: N3H1 18 110D (RE9B-T) ^{*1} , N3Y1 18 110A (RE9B-T) ^{*1}
Standard spark plug gap	1.15—1.25 mm {0.046—0.049 in}
Maximum spark plug gap	Leading side: 1.5 mm {0.059 in} Trailing side: 1.4 mm {0.055 in}
Spark plug resistance [25°C {77 °F}]	3.0—7.5 kilohms
High-tension lead resistance [20 °C {68 °F}]	1.0—4.0 kilohms
Starter no-load test voltage	11 V
Starter no-load test current	120 A or less

Starter pinion gap	AT: 0 mm {0 in} MT: 0.5—2.0 mm {0.02—0.07 in}
Starter armature runout	0.1 mm {0.004 in} max.
Starter commutator diameter	Standard: 29.4 mm {1.16 in} Minimum: 28.8 mm {1.13 in}
Segment groove depth of starter commutator	Standard: 0.5 mm {0.020 in} Minimum: 0.2 mm {0.008 in}
Starter brush length	Standard: 17.6 mm {0.69 in} Minimum: 10.0 mm {0.39 in}
Starter brush spring force	Standard: 23.4—31.6 N {2.39— 3.22 kgf, 5.26—7.10 lbf} Minimum: 10.0 N {1.02 kgf, 2.25 lbf}

*1

Standard equipment

*2

Hot type plug: Available only for customers who often drive their car at very low speed which causes the plugs to foul easily.

Idle speed

Load status	Idling speed (rpm)			
	N, D, R position (AT), Neutral position (MT)			
	AT			MT
	N position	D position	R position	
No load	760—860	760—860	760—860	770—870
Electrical loads on ^{*3}	780—880	760—860	740—840	760—860
A/C on	780—880	760—860	750—850	760—860

(standard)				
A/C on (standard)+ electrical loads on ^{*3}	780—880	760—860	750—850	790—890
A/C on (heavy load)	800—900	780—880	780—880	790—890




^{*3}

The headlight, rear window defroster, blower fan (2-step or more) are on.

Generator generated current (reference value) [Conditions] Ambient temperature: 20 °C {68 °F}, Voltage: 13—15 V, Engine hot

Engine speed (rpm)	Terminal B current (Lower limit of current must be more than 0 A.)
1,000	0—80 A
2,000	0—112 A

Engine oil specification

Item	U.S.A. and CANADA	Except U.S.A. and CANADA
Engine oil grade	 (ILSAC)	  (ILSAC)
		API SL, SM or ILSAC

Engine oil viscosity	5W-20
-------------------------	-------

[< Previous](#) [Next >](#)


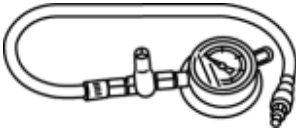


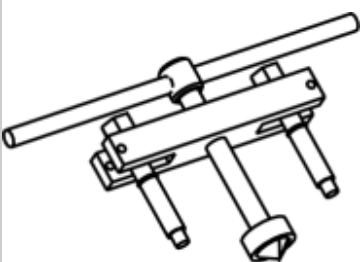

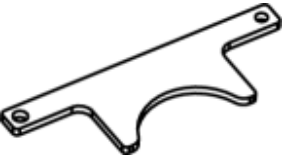
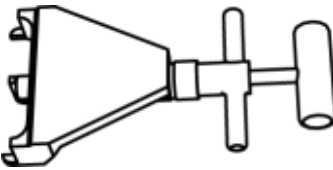
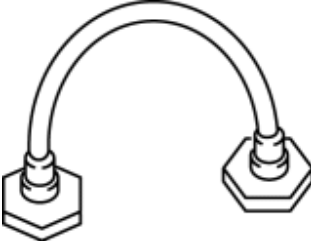



[Back to Top](#)

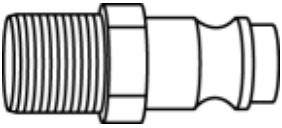

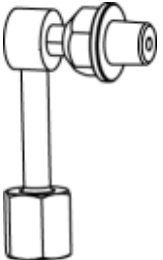
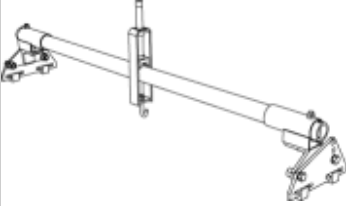



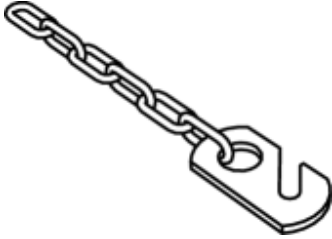


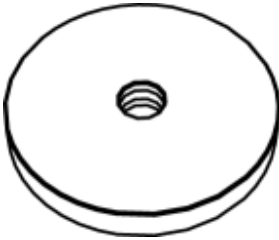
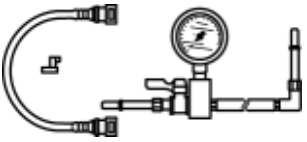
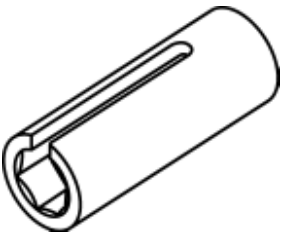
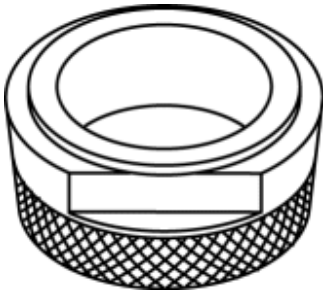
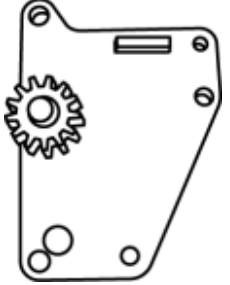
© 2011 Mazda North American Operations, U.S.A.

[< Previous](#)

2011 - RX-8 - Engine

ENGINE SST [13B-MSP]

134-01049A Evaporative emission system tester		49 0187 280A Oil pressure gauge		49 0813 225A Oil seal remover	
49 0820 035 Flywheel box wrench		49 0839 305A Counterweight puller		49 1011 130B Air pump gauge set	
49 1881 055A Stopper counterweight		49 9200 020A Belt tension gauge		49 9200 146 Adapter hose (Part of 49 9200 145)	
49 9200 147 Adapter (Part of 49 9200 145)		49 D019 908 Gauge (Part of 49 D019 9A2)		49 D019 909 Hose (Part of 49 D019 9A2)	

49 D019 910 Adapter (Part of 49 D019 9A2)		49 D019 911 Adapter (Part of 49 D019 9A2)		49 D019 913 Adapter (Part of 49 D019 9A2)	
49 E017 5A0 Engine support set		49 F018 9A0C Compression tester		49 F042 001 Wrench	
49 G014 001 Oil filter wrench		49 G030 029 Chain		49 G040 002 Installer	
49 H019 002 Adapter		49 J027 001 Bearing installer		49 N013 1A0D Fuel pressure gauge set	
49 T018 001 O2 sensor wrench		49 F010 401A Installer		49 F011 106 Holder	

[< Previous](#)

[Back to Top](#)

Workshop Manual - Suspension

2011 - RX-8

On-Board Diagnostics

- [TIRE PRESSURE MONITORING SYSTEM \(TPMS\) WIRING DIAGRAM](#)
- [TIRE PRESSURE MONITORING SYSTEM \(TPMS\) ON-BOARD DIAGNOSIS](#)
- [MALFUNCTIONING WHEEL UNIT IDENTIFICATION](#)
- [DTC B2143](#)
- [DTC B2868, B2869, B2870, B2871](#)
- [DTC U0127](#)
- [DTC U2616, U2617, U2618, U2619](#)

Symptom Troubleshooting

- [TIRE PRESSURE MONITORING SYSTEM \(TPMS\) WIRING DIAGRAM](#)
- [FOREWORD](#)
- [PRECAUTION](#)
- [SYMPTOM TROUBLESHOOTING](#)
- [NO.1 TPMS WARNING LIGHT ILLUMINATES CONTINUOUSLY](#)
- [NO.2 TPMS WARNING LIGHT \(LOW PRESSURE WARNING\) ILLUMINATES AFTER ENGINE START AND TURNS OFF AFTER DRIVING FOR PERIOD OF TIME](#)
- [NO.3 WHEEL UNIT ID REGISTRATION CANNOT BE PERFORMED \(TPMS WARNING LIGHT FLASHES\)](#)

General Procedures

- [GENERAL PROCEDURES \(SUSPENSION\)](#)

Wheel Alignment

- [WHEEL ALIGNMENT PRE-INSPECTION](#)
- [FRONT WHEEL ALIGNMENT](#)
- [REAR WHEEL ALIGNMENT](#)

Wheels and Tires

- [WHEEL AND TIRE SPECIFICATION](#)
- [WHEEL BALANCE ADJUSTMENT](#)
- [TIRE PRESSURE ADJUSTMENT \(WITH TPMS\)](#)
- [REPAIR AGENT REMOVAL](#)
- [WHEEL UNIT ID REGISTRATION](#)

- [WHEEL UNIT REMOVAL/INSTALLATION](#)

Front Suspension

- [FRONT SUSPENSION LOCATION INDEX](#)
- [FRONT SHOCK ABSORBER AND COIL SPRING REMOVAL/INSTALLATION](#)
- [FRONT SHOCK ABSORBER AND COIL SPRING DISASSEMBLY/ASSEMBLY](#)
- [FRONT SHOCK ABSORBER INSPECTION](#)
- [FRONT SHOCK ABSORBER DISPOSAL](#)
- [FRONT UPPER ARM REMOVAL/INSTALLATION](#)
- [FRONT UPPER ARM INSPECTION](#)
- [FRONT LOWER ARM REMOVAL/INSTALLATION](#)
- [FRONT LOWER ARM INSPECTION](#)
- [FRONT STABILIZER REMOVAL/INSTALLATION](#)
- [FRONT STABILIZER CONTROL LINK INSPECTION](#)
- [FRONT CROSSMEMBER REMOVAL/INSTALLATION](#)
- [TRANSVERSE MEMBER REMOVAL/INSTALLATION](#)
- [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[MT\]](#)
- [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[AT\]](#)

Rear Suspension

- [REAR SUSPENSION LOCATION INDEX](#)
- [REAR SHOCK ABSORBER AND COIL SPRING REMOVAL/INSTALLATION](#)
- [REAR SHOCK ABSORBER AND COIL SPRING DISASSEMBLY/ASSEMBLY](#)
- [REAR SHOCK ABSORBER INSPECTION](#)
- [REAR SHOCK ABSORBER DISPOSAL](#)
- [REAR TRAILING LINK \(UPPER\) INSPECTION](#)
- [REAR TRAILING LINK \(UPPER\) REMOVAL/INSTALLATION](#)
- [REAR TRAILING LINK \(LOWER\) REMOVAL/INSTALLATION](#)
- [REAR LATERAL LINK \(UPPER\) REMOVAL/INSTALLATION](#)
- [REAR LATERAL LINK \(UPPER\) INSPECTION](#)
- [REAR LATERAL LINK \(LOWER\) REMOVAL/INSTALLATION](#)
- [REAR LATERAL LINK \(LOWER\) INSPECTION](#)
- [TOE CONTROL LINK REMOVAL/INSTALLATION](#)
- [TOE CONTROL LINK INSPECTION](#)
- [REAR STABILIZER REMOVAL/INSTALLATION](#)
- [REAR STABILIZER CONTROL LINK INSPECTION](#)
- [REAR CROSSMEMBER REMOVAL/INSTALLATION](#)

Technical Data

- [SUSPENSION TECHNICAL DATA](#)

Maintenance/Service Tools

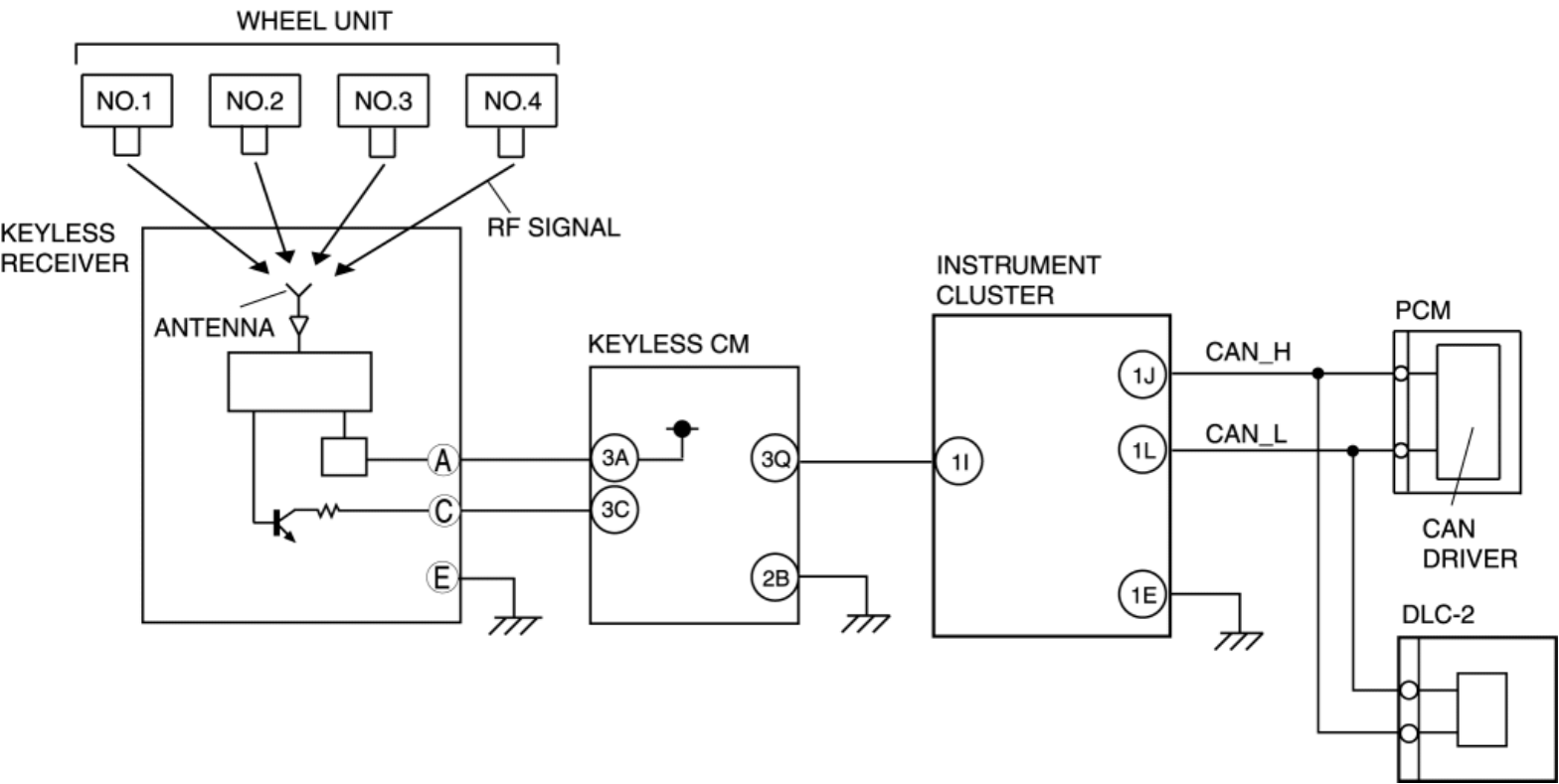
- [SUSPENSION](#)

[Next >](#)

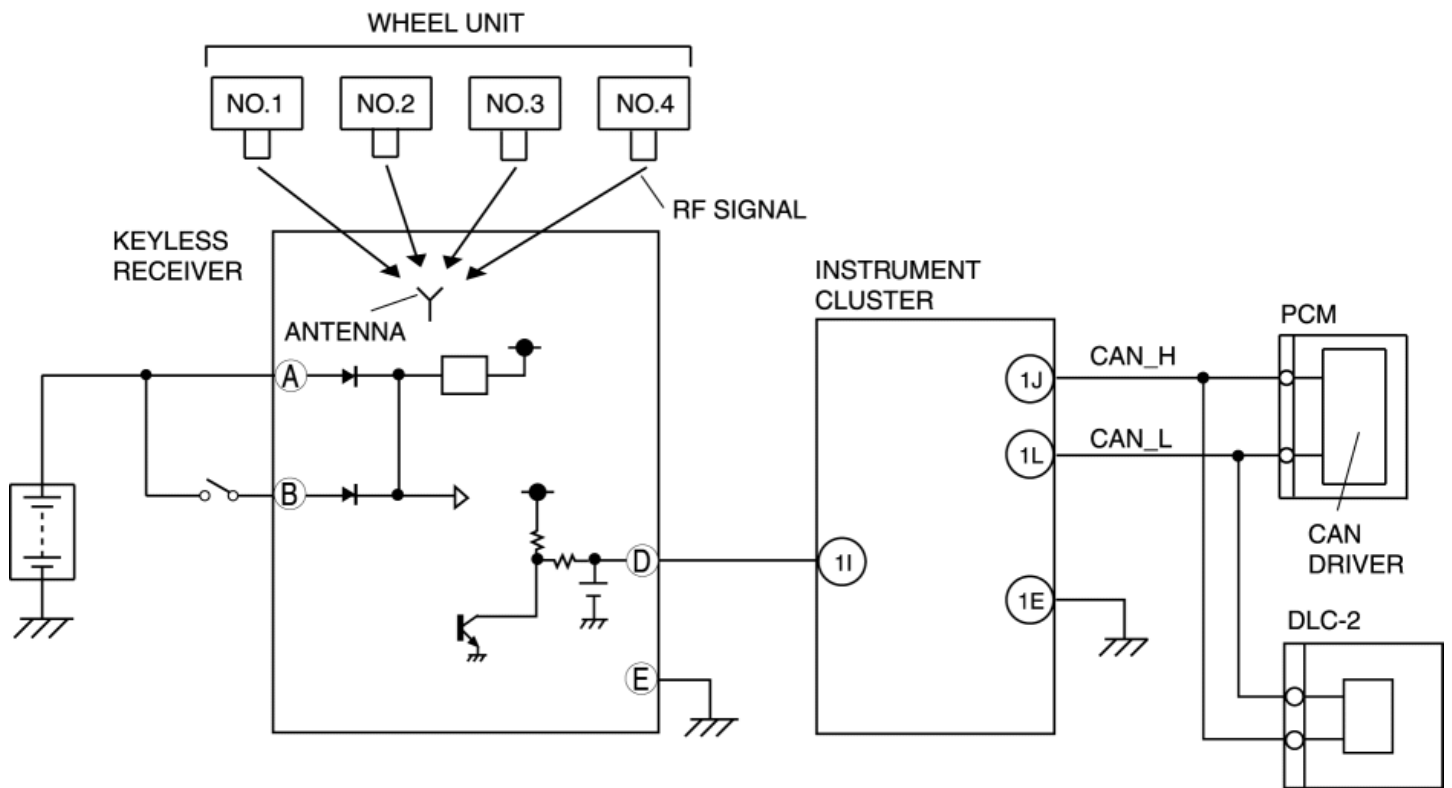
2011 - RX-8 - Suspension

TIRE PRESSURE MONITORING SYSTEM (TPMS) WIRING DIAGRAM

With Advanced Keyless System



With Keyless Entry System



[Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Suspension

TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS

On-Board Diagnostic (OBD) Test Description

- The OBD test inspects the integrity and function of the TPMS and outputs the results when requested by the specific tests.
- On-board diagnostic test also:
 - Provides a quick inspection of the TPMS usually performed at the start of each diagnostic procedure.
 - Provides verification after repairs to ensure that no other faults occurred during service.
- The OBD test is divided into 3 tests:
 - Read/clear diagnostic results, PID monitor and active command mode.

Read/clear diagnostic results

- This function allows you to read or clear DTCs in the instrument cluster memory.

PID/Data monitor and record

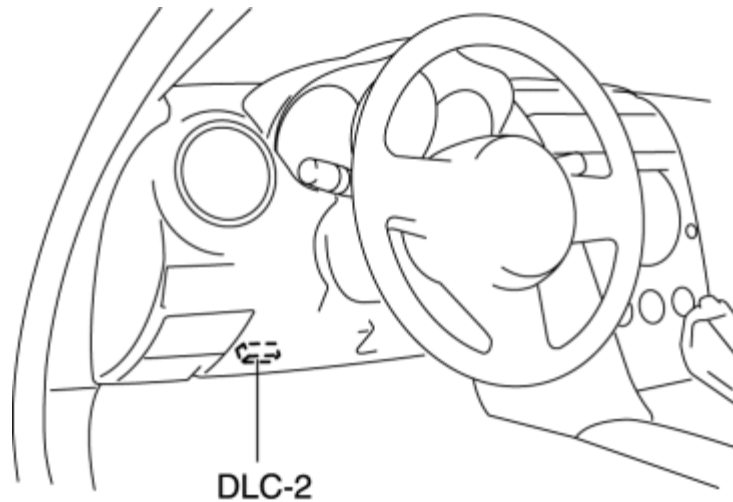
- This function allows you to access certain data values, input signals, calculated values, and system status information.

Active command modes

- This function allows you to control devices through the M-MDS.

Reading DTCs Procedure

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "TPM".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "TPM".
 3. Select "Self Test".

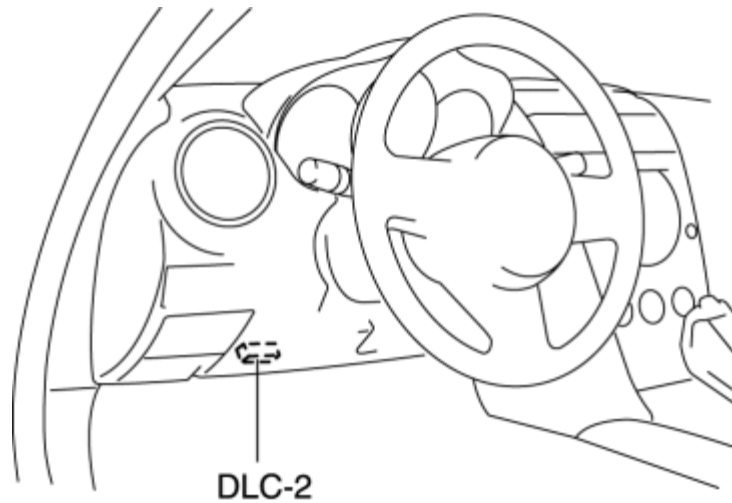
3. Verify the DTC according to the directions on the screen.

- If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.

4. After completion of repairs, clear all DTCs stored in the TPMS. (See [Clearing DTCs Procedure](#).)

Clearing DTCs Procedure

1. Connect the M-MDS to the DLC-2.



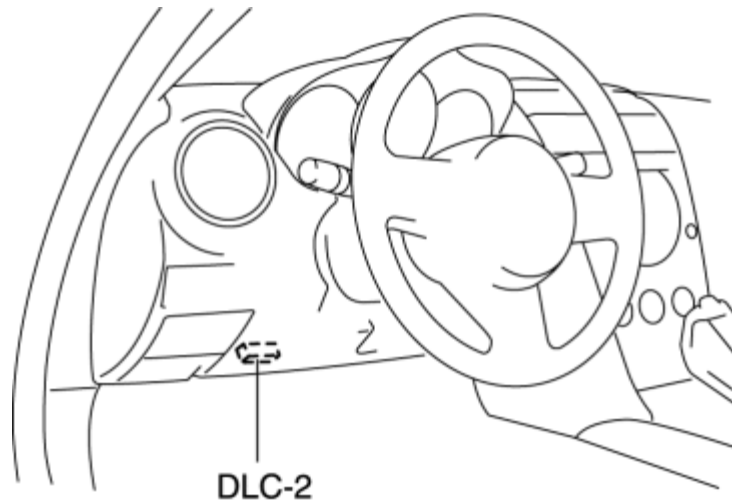
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "TPM".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "TPM".
 3. Select "Self Test".

3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Turn the ignition switch to the LOCK position.
6. Turn the ignition switch to the ON position and wait for **5 s or more**.
7. Perform DTC inspection (See [Reading DTCs Procedure](#).)
8. Verify that no DTCs are displayed.

PID/Data Monitor and Record Procedure

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "TPM".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "TPM".
 3. Select "DataLogger".

3. Select the applicable PID from the PID table.

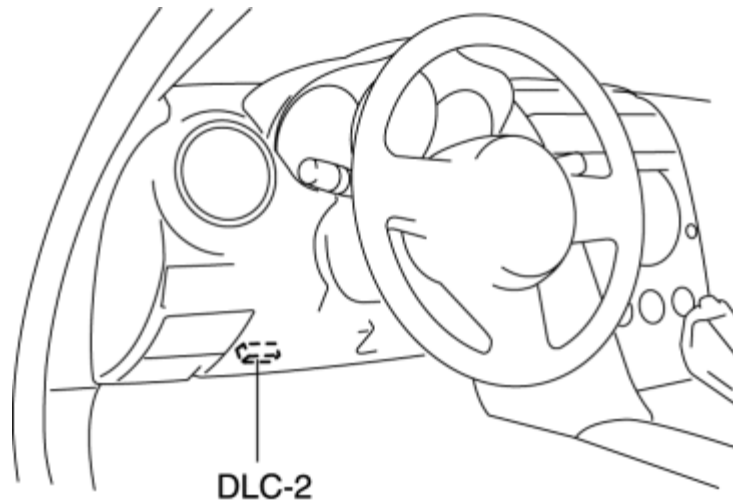
4. Verify the PID data according to the directions on the screen.

NOTE:

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

Active Command Modes Procedure

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "TPM".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "TPM".
 3. Select "DataLogger".

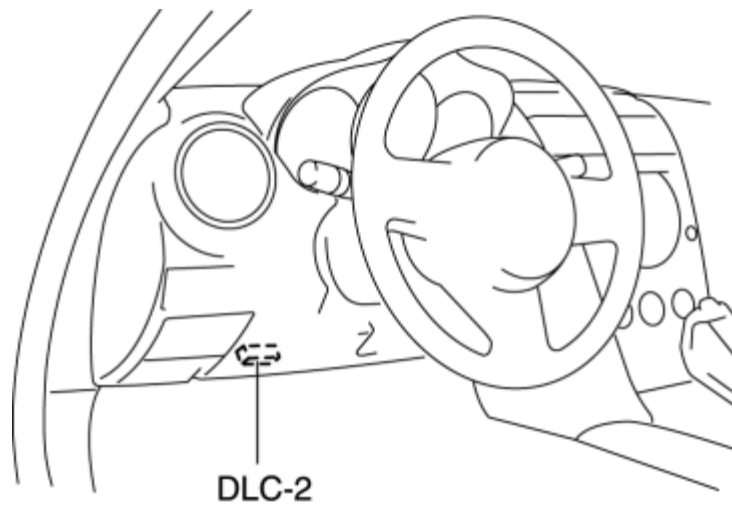
3. Select the active command modes from the PID table.

4. Perform the active command modes, inspect the operations for each parts.

- If the operation of output parts cannot be verified after the active command mode inspection is performed, this could indicate the possibility of an open or short circuit, sticking, or operation malfunction in the output parts.

Freeze Frame PID Data Access Procedure

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initial screen of the M-MDS.

- This function is available for only the IDS (laptop PC)

1. Select the "Body".
2. Select the "TPMS Functions".

3. Select the following item from the screen menu.

- Freeze Frame Data

DTC Table

DTC	Description	Page
B1342	Instrument cluster internal malfunction	(See DTC B1342 [INSTRUMENT CLUSTER].)
B2143	ID registration failure	(See DTC B2143.)
B2477	Instrument cluster configuration not performed	(See DTC B2477 [INSTRUMENT CLUSTER].)
B2868	Wheel unit No.1 internal malfunction	(See DTC B2868, B2869, B2870, B2871.)
B2869	Wheel unit No.2 internal malfunction	(See DTC B2868, B2869, B2870, B2871.)

B2870	Wheel unit No.3 internal malfunction	(See DTC B2868, B2869, B2870, B2871.)
B2871	Wheel unit No.4 internal malfunction	(See DTC B2868, B2869, B2870, B2871.)
U0073	CAN system communication error (HS-CAN)	(See FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U0100	Communication error to PCM	
U0127	Communication failure between instrument cluster and keyless receiver	(See DTC U0127.)
U2023	Abnormal message from PCM	(See FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U2616	Wheel unit No.1 (No response)	(See DTC U2616, U2617, U2618, U2619.)
U2617	Wheel unit No.2 (No response)	(See DTC U2616, U2617, U2618, U2619.)
U2618	Wheel unit No.3 (No response)	(See DTC U2616, U2617, U2618, U2619.)
U2619	Wheel unit No.4 (No response)	(See DTC U2616, U2617, U2618, U2619.)

PID/DATA Monitor Table

PID Name (Definition)	Unit/ Condition	Condition/Specification	Action
AI_WU1_ID AI_WU2_ID AI_WU3_ID AI_WU4_ID (Wheel unit ID code (during ID registration))	–	Indicates the wheel unit ID code. (During wheel unit ID registration.)	<ul style="list-style-type: none"> • Replace the wheel unit. • Perform the wheel unit ID registration.
AI_WU1_P			<ul style="list-style-type: none"> • Adjust tire

AI_WU2_P AI_WU3_P AI_WU4_P (Tire pressure value (during ID registration))	Pa, psi	Indicates the tire pressure. (During ID registration.)	pressure. • Replace the wheel unit. • Perform the wheel unit ID registration.
FFD1_WU1_P FFD1_WU2_P FFD1_WU3_P FFD1_WU4_P (Tire pressure value (freeze frame PID data 1))	Pa, psi	Indicates the tire pressure. (Freeze frame PID data 1)	Adjust tire pressure.
FFD2_WU1_P FFD2_WU2_P FFD2_WU3_P FFD2_WU4_P (Tire pressure value (freeze frame PID data 2))	Pa, psi	Indicates the tire pressure. (Freeze frame PID data 2)	Adjust tire pressure.
FFD1_WU1_T FFD1_WU2_T FFD1_WU3_T FFD1_WU4_T (Internal tire air temperature value (freeze frame PID data 1))	°C, °F	Indicates the internal tire air temperature. (Freeze frame PID data 1)	Adjust tire pressure.
FFD2_WU1_T FFD2_WU2_T FFD2_WU3_T FFD2_WU4_T (Internal tire air temperature value (freeze frame PID data 2))	°C, °F	Indicates the internal tire air temperature. (Freeze frame PID data 2)	Adjust tire pressure.

FFD1_MLG (Wheel unit mileage value (freeze frame PID data 1))	m, mi (ft)	Indicates the mileage. (Freeze frame PID data 1)	Adjust tire pressure.
FFD2_MLG (Wheel unit mileage value (freeze frame PID data 2))	m, mi (ft)	Indicates the mileage. (Freeze frame PID data 2)	Adjust tire pressure.
FFD1_SPD (Wheel unit speed value (freeze frame PID data 1))	KPH, MPH	Indicates the speed. (Freeze frame PID data 1)	Adjust tire pressure.
FFD2_SPD (Wheel unit speed value (freeze frame PID data 2))	KPH, MPH	Indicates the speed. (Freeze frame PID data 2)	Adjust tire pressure.
CCNT_TPMS (Number of continuous DTCs)	–	Indicates number of DTC	Perform the DTC inspection.
ID_LAST* (Last received tire transmitter ID code value)	–	Indicates the last ID that is transmitted from the wheel unit.	<ul style="list-style-type: none"> • Replace the wheel unit. • Perform the configuration.
ID_WU1* ID_WU2* ID_WU3* ID_WU4* (Registered wheel unit ID code)	–	Indicates the registered ID that is transmitted from the wheel unit.	<ul style="list-style-type: none"> • Replace the wheel unit. • Perform the wheel unit ID registration.
SPDOMETER (Vehicle speed)	KPH, MPH	<ul style="list-style-type: none"> • Vehicle is stopped: 0 KPH {0 MPH} • Vehicle is running: Indicates vehicle speed 	Inspect the PCM.
		<ul style="list-style-type: none"> • Ignition switch 	<ul style="list-style-type: none"> • Inspect the battery.

VBATT (Battery positive voltage)	V	ON: B+ • Ignition switch OFF: 0 V	<ul style="list-style-type: none"> Inspect the related wiring harness.
WU1_P* WU2_P* WU3_P* WU4_P* (Tire pressure value)	Pa, psi	Indicates the tire pressure. (See SUSPENSION TECHNICAL DATA.)	<ul style="list-style-type: none"> Adjust tire pressure. Replace the wheel unit.
WU1_T* WU2_T* WU3_T* WU4_T* (Internal tire air temperature value)	°C, °F	Indicates the internal tire air temperature.	Replace the wheel unit.

*

Data transmission from the wheel unit occurs when the vehicle speed is 25 km/h {15.5 mph} or more. Due to this, the current air pressure and temperature data can only be displayed after the vehicle is driven at 25 km/h {15.5 mph} or more. Also, the ID_LAST, and tire pressure and internal tire air temperature data are erased when the instrument cluster connector and the battery terminal are disconnected. If the instrument cluster is replaced or the battery terminals are disconnected, drive the vehicle at 25 km/h {15.5 mph} or more and display the tire pressure PID after the data transmission.

Active Command Modes Table

Command Name	Definition	Operation	Note
IDR_MODE	Wheel unit ID registration mode	On/Off	Ignition switch at ON

2011 - RX-8 - Suspension

MALFUNCTIONING WHEEL UNIT IDENTIFICATION

NOTE:

- The tire pressure monitoring system (TPMS) does not identify the location of the malfunctioning wheel unit on the vehicle (RF, LF, LR, RR). The TPMS identifies each wheel unit as No.1, No.2, No.3 and No.4. In order to identify the location of the wheel unit, perform the following procedure.
1. Adjust the air pressure as follows:
 - RF: 220 kPa {2.2 kgf/cm², 32 psi}
 - LF: 240 kPa {2.4 kgf/cm², 35 psi}
 - LR: 260 kPa {2.6 kgf/cm², 38 psi}
 - RR: 280 kPa {2.8 kgf/cm², 40 psi}
 2. Turn the ignition switch off.
 3. Connect the M-MDS to the DLC-2.
 4. Turn the ignition switch to the ON position.
 5. Drive the vehicle at a speed of **25 km/h {15.5 mph} or more** for **2 min or more**.
 6. Select the following PIDs using the M-MDS, and monitor them.
 - WU1_P
 - WU2_P
 - WU3_P
 - WU4_P
 7. Determine which wheel unit identification code matches which wheel and tire by comparing the PID monitor values with the air pressure values set in Step 1.

AIR PRESSURE
VALUE SET IN STEP.1

PID MONITOR VALUE

RF 220 KPA

LF 240 KPA

LR 260 KPA

RR 280 KPA

WU1_P 240 KPA

WU2_P 220 KPA

WU3_P 280 KPA

WU4_P 260 KPA



FR: WU2_P

FL: WU1_P

RL: WU4_P

RR: WU3_P

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Suspension

DTC B2143

DTC B2143	<ul style="list-style-type: none"> ID registration failure
DETECTION CONDITION	<ul style="list-style-type: none"> Two or more codes are overlapping.
POSSIBLE CAUSE	<ul style="list-style-type: none"> ID registration procedure has not been performed properly.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY THE PROGRAMMED ID <ul style="list-style-type: none"> Turn the ignition switch off. Connect the M-MDS to the DLC-2. Select the following PIDs using the M-MDS: <ul style="list-style-type: none"> ID_WU1 ID_WU2 ID_WU3 ID_WU4 Turn the ignition switch to the ON position. Is the same code in the output ID? 	Yes Configure the instrument cluster, then go to the next step. (See INSTRUMENT CLUSTER CONFIGURATION .)
		No Go to the next step.
2	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the memory. (See TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS .)	Yes Repeat the inspection from Step 1. If the malfunction recurs, replace the instrument cluster and/or wheel unit. (See INSTRUMENT CLUSTER)

	<ul style="list-style-type: none"> • Drive the vehicle at a speed of 25 km/h {15.5 mph} or more for 10 min or more. • Is the same DTC present? 	REMOVAL/INSTALLATION.) (See WHEEL UNIT REMOVAL/INSTALLATION.)
		No Go to the next step.
3	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Are there any other DTCs present? 	Yes Go to the applicable DTC inspection. (See TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.)
		No DTC troubleshooting completed.

2011 - RX-8 - Suspension

DTC B2868, B2869, B2870, B2871

DTC	B2868	Wheel unit No.1 (internal malfunction)
	B2869	Wheel unit No.2 (internal malfunction)
	B2870	Wheel unit No.3 (internal malfunction)
	B2871	Wheel unit No.4 (internal malfunction)
DETECTION CONDITION		<ul style="list-style-type: none"> The instrument cluster receives error signals from the wheel unit.
POSSIBLE CAUSE		<ul style="list-style-type: none"> Internal malfunction of wheel unit

Diagnostic procedure

STEP	INSPECTION	ACTION				
1	IDENTIFY MALFUNCTIONING WHEEL UNIT <ul style="list-style-type: none">(See MALFUNCTIONING WHEEL UNIT IDENTIFICATION.)	<ul style="list-style-type: none">Identify the malfunctioning wheel unit.Replace and register the wheel unit. (See WHEEL UNIT ID REGISTRATION.)Go to the next step.				
2	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none">Clear the DTC from the memory. (See TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.)Drive the vehicle at a speed of 25	<table><tr><td>Yes</td><td>Go to Step 1.</td></tr><tr><td>No</td><td>Go to the next step.</td></tr></table>	Yes	Go to Step 1.	No	Go to the next step.
Yes	Go to Step 1.					
No	Go to the next step.					

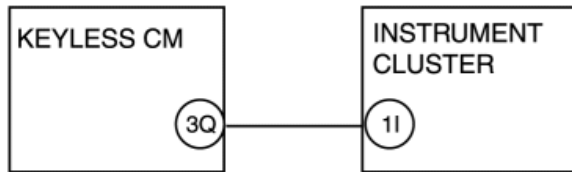
	<p>km/h {15.5 mph} or more for 10 min or more.</p> <ul style="list-style-type: none">• Is the same DTC present?		
3	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none">• Are there any other DTCs present?	Yes	Go to the applicable DTC inspection. (See TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.)
		No	DTC troubleshooting completed.

2011 - RX-8 - Suspension

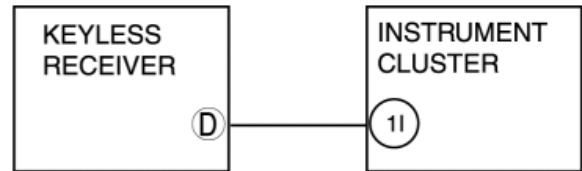
DTC U0127

DTC U0127	<ul style="list-style-type: none">• Communication failure between instrument cluster and keyless receiver
DETECTION CONDITION	<ul style="list-style-type: none">• The instrument cluster cannot receive signal from the keyless CM or keyless receiver.
POSSIBLE CAUSE	<div>With advanced keyless system<ul style="list-style-type: none">• Open or short circuit in the wiring harness between the keyless CM terminal 3Q and the instrument cluster terminal 11.• Keyless control module malfunction.• Instrument cluster malfunction.• Poor connection at connectors (female terminal)</div> <div>With keyless entry system<ul style="list-style-type: none">• Open or short circuit in the wiring harness between the keyless receiver terminal D and the instrument cluster terminal 11.• Keyless receiver malfunction.• Instrument cluster malfunction.• Poor connection at connectors (female terminal)</div>

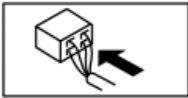
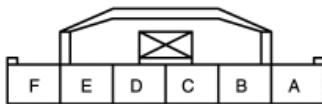
WITH ADVANCE KEYLESS SYSTEM



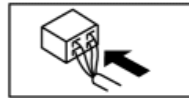
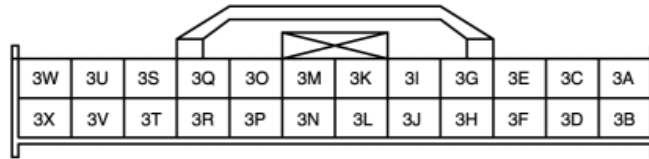
WITH KEYLESS ENTRY SYSTEM



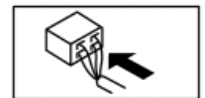
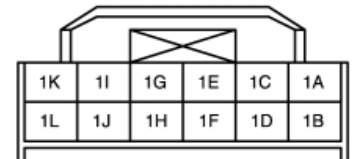
KEYLESS RECEIVER WIRING HARNESS SIDE CONNECTOR



KEYLESS CM WIRING HARNESS SIDE CONNECTOR



INSTRUMENT CLUSTER WIRING HARNESS SIDE CONNECTOR



With Advanced Keyless System

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT WHEEL UNIT SIGNAL FOR OPEN CIRCUIT <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect keyless CM and instrument cluster connectors. Inspect for continuity between keyless CM terminal 3Q (harness-side) and instrument cluster terminal 1I (harness-side). Is there continuity? 	<p>Yes Go to the next step.</p> <p>No Repair or replace the wiring harness for an open circuit between keyless CM terminal 3Q and instrument cluster terminal 1I, then go to Step 5.</p>
2	INSPECT WHEEL UNIT SIGNAL FOR SHORT TO POWER <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect keyless CM and instrument cluster connectors. Measure the voltage between keyless CM terminal 3Q (harness-side) and ground. Is there B+? 	<p>Yes Repair or replace the wiring harness for a short to power between keyless CM terminal 3Q and instrument cluster terminal 1I, then go to Step 5.</p> <p>No Go to the next step.</p>
3	INSPECT WHEEL UNIT SIGNAL FOR SHORT TO GROUND <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect keyless CM and instrument 	<p>Yes Repair or replace the wiring harness for a short to ground between keyless CM terminal 3Q and instrument cluster terminal 1I, then go to the next step.</p>

	cluster connectors. <ul style="list-style-type: none"> Inspect for continuity between keyless CM terminal 3Q (harness-side) and ground. Is there continuity? 	No	Go to the next step.
4	INSPECT FOR KEYLESS CM MALFUNCTION <ul style="list-style-type: none"> Turn the ignition switch off. Using the M-MDS, perform the DTC inspection for the keyless CM. Is any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [ADVANCED KEYLESS ENTRY AND START SYSTEM] .)
		No	Go to the next step.
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Turn the ignition switch to the ON position and drive the vehicle at a speed of 25 km/h {15.5 mph} or more. Clear the DTC from the memory. (See TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS .) <ul style="list-style-type: none"> Is the same DTC present? 	Yes	<ul style="list-style-type: none"> If the malfunction recurs, replace the instrument cluster. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION .) <ul style="list-style-type: none"> Configure the instrument cluster. (See INSTRUMENT CLUSTER CONFIGURATION .) <ul style="list-style-type: none"> Register the wheel unit ID. (See WHEEL UNIT ID REGISTRATION .) <ul style="list-style-type: none"> Go to the next step.
		No	Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Drive the vehicle at a speed of 25 km/h {15.5 mph} or more for 10 min or more. Are there any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS .)
		No	DTC troubleshooting completed.

With Keyless Entry System

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT WHEEL UNIT SIGNAL FOR OPEN CIRCUIT <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect keyless receiver and instrument cluster connectors. Inspect for continuity between keyless receiver terminal D (harness-side) and instrument cluster terminal 1I (harness-side). Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for an open circuit between keyless receiver terminal D and instrument cluster terminal 1I, then go to Step 4.
2	INSPECT WHEEL UNIT SIGNAL FOR SHORT TO POWER <ul style="list-style-type: none"> Turn the ignition switch off. 	Yes	Repair or replace the wiring harness for a short to power between keyless receiver terminal D and instrument cluster terminal 1I, then go to Step 4.

	<p>Disconnect keyless receiver and instrument cluster connectors.</p> <ul style="list-style-type: none"> • Measure the voltage between keyless receiver terminal D (harness-side) and ground. • Is there B+? 	No	Go to the next step.
3	<p>INSPECT WHEEL UNIT SIGNAL FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect keyless receiver and instrument cluster connectors. • Inspect for continuity between keyless receiver terminal D (harness-side) and ground. • Is there continuity? 	Yes	Repair or replace the wiring harness for a short to ground between keyless receiver terminal D and instrument cluster terminal 11, then go to the next step.
		No	<p>Replace keyless receiver, then go to the next step.</p> <p>(See KEYLESS RECEIVER REMOVAL/INSTALLATION [WITH KEYLESS ENTRY SYSTEM].)</p>
4	<p>VERIFY TROUBLESHOOTING COMPLETED</p> <ul style="list-style-type: none"> • Clear the DTC from the memory. <p>(See TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.)</p> <ul style="list-style-type: none"> • Turn the ignition switch to the ON position and wait for 30 s. • Is the same DTC present? 	Yes	<ul style="list-style-type: none"> • If the malfunction recurs, replace the instrument cluster. <p>(See INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)</p> <ul style="list-style-type: none"> • Configure the instrument cluster. <p>(See INSTRUMENT CLUSTER CONFIGURATION.)</p> <ul style="list-style-type: none"> • Register the wheel unit ID. <p>(See WHEEL UNIT ID REGISTRATION.)</p> <ul style="list-style-type: none"> • Go to the next step.
		No	Go to the next step.
5	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Drive the vehicle at a speed of 25 km/h {15.5 mph} or more for 10 min or more. • Are there any other DTCs present? 	Yes	<p>Go to the applicable DTC inspection.</p> <p>(See TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.)</p>
		No	DTC troubleshooting completed.

[< Previous](#) [Next >](#)

2011 - RX-8 - Suspension

DTC U2616, U2617, U2618, U2619

DTC	U2616	Wheel unit No.1 (No response)
	U2617	Wheel unit No.2 (No response)
	U2618	Wheel unit No.3 (No response)
	U2619	Wheel unit No.4 (No response)
DETECTION CONDITION		<ul style="list-style-type: none"> The keyless receiver or keyless CM has continuously not received a signal from the wheel unit for a certain period.
POSSIBLE CAUSE		<ul style="list-style-type: none"> Wheel unit is not installed. Wheel unit identification code is not registered in the instrument cluster. No signal is received from the wheel unit. Keyless receiver or keyless CM malfunction Poor connection at connectors (female terminal).

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY WHEEL UNIT IS INSTALLED TO EACH WHEEL <ul style="list-style-type: none"> Are all four wheels equipped with a wheel unit? 	Yes	Go to the Step 3.
		No	<ul style="list-style-type: none"> Install the wheel unit. (See WHEEL UNIT REMOVAL/INSTALLATION.) Register the wheel unit ID. (See WHEEL UNIT ID REGISTRATION.)

			<ul style="list-style-type: none"> Go to the next step.
2	INSPECT FOR DTCs <ul style="list-style-type: none"> Drive the vehicle at a speed of 25 km/h {15.5 mph} or more for 10 min or more. Is the same DTC present? 	Yes Go to the next step. No Go to the Step 5.	
3	IDENTIFY MALFUNCTIONING WHEEL UNIT <ul style="list-style-type: none"> (See MALFUNCTIONING WHEEL UNIT IDENTIFICATION.) 		<ul style="list-style-type: none"> Identify the malfunctioning wheel unit. Replace the wheel unit. (See WHEEL UNIT REMOVAL/INSTALLATION.) Register the wheel unit ID. (See WHEEL UNIT ID REGISTRATION.) Go to the Step 5.
4	INSPECT FOR KEYLESS RECEIVER OR KEYLESS CM MALFUNCTION <ul style="list-style-type: none"> Inspect the keyless receiver or keyless CM. Is there any malfunction? 	Yes Replace the malfunctioning part. No Go to the next step.	
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the memory. (See TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.) Drive the vehicle at a speed of 25 km/h {15.5 mph} or more for 10 min or more. Is the same DTC present? 	Yes	<ul style="list-style-type: none"> If the malfunction recurs, replace the instrument cluster. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION.) Configure the instrument cluster. (See INSTRUMENT CLUSTER CONFIGURATION.) Register the wheel unit ID. (See WHEEL UNIT ID REGISTRATION.) Go to the next step.

		No	Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Are there any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See TIRE PRESSURE MONITORING SYSTEM (TPMS) ON-BOARD DIAGNOSIS.)
		No	DTC troubleshooting completed.

NOTE:

- If the installed wheel unit ID number is known, verification of whether the instrument cluster is receiving data from the wheel unit can be easily confirmed using the following procedure:
 - Drive the vehicle at **25 km/h {15.5 mph} or more**, and send data from the wheel unit.
 - Select [ID_LAST] from the PID items, and monitor the data.
 - Verification that the instrument cluster is receiving data is possible if the monitored ID number matches the installed wheel unit ID number.
- If the wheel unit has been newly replaced, the TPMS warning light may flashes before the ID registration is complete, and DTC U2616, U2617, U2618 and U2619 may be stored in the memory. In this case, re-implement the wheel unit ID registration, and after confirming that the TPMS warning light is no longer flashing, erase the DTC. If the TPMS warning light does not go out, a malfunction on any one of the wheel units may have occurred and the ID registration will not have been correctly performed. Repeat the diagnostic procedure from Step 1 and perform and inspection.

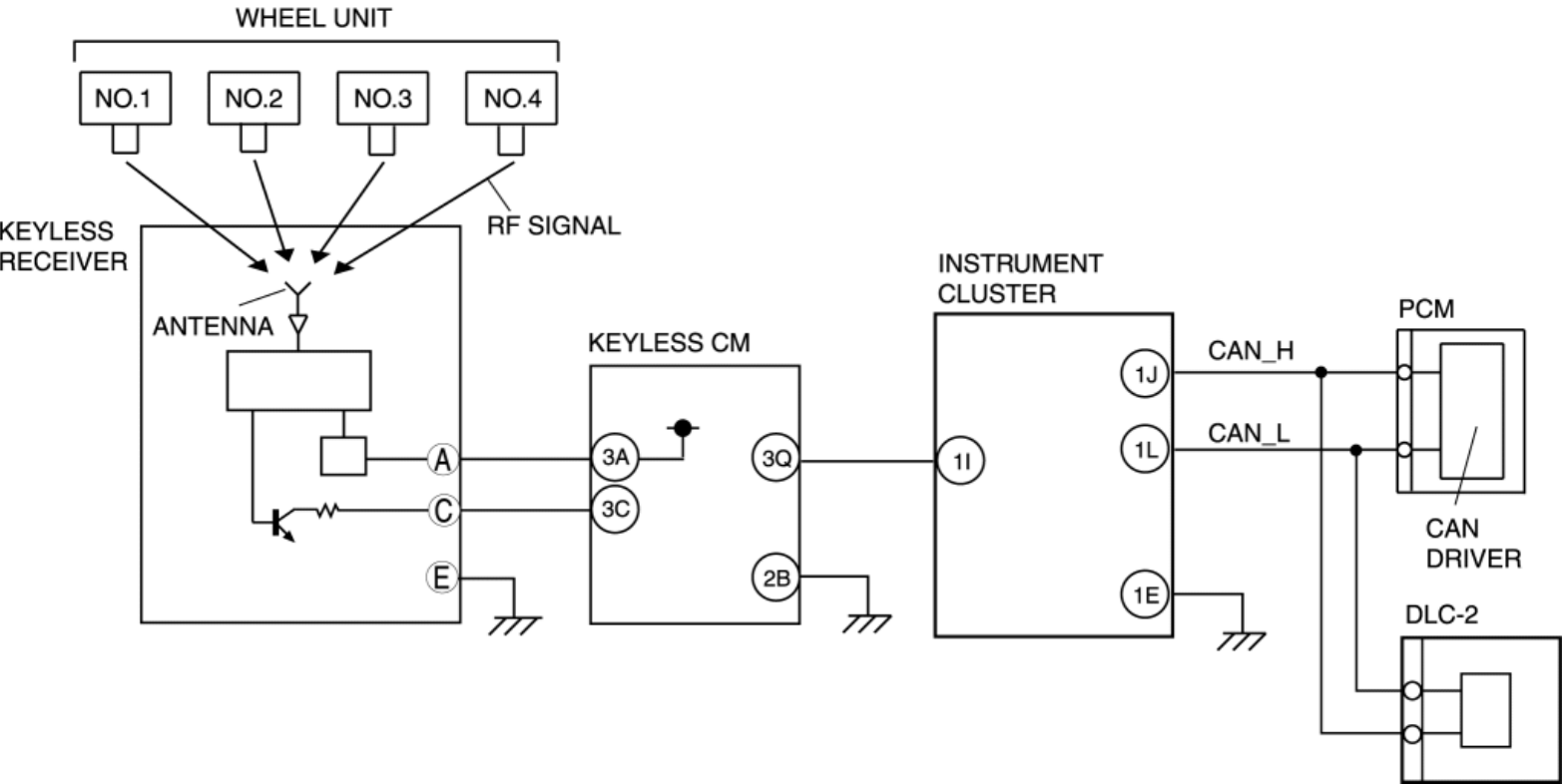
[< Previous](#) [Next >](#)

[Back to Top](#)

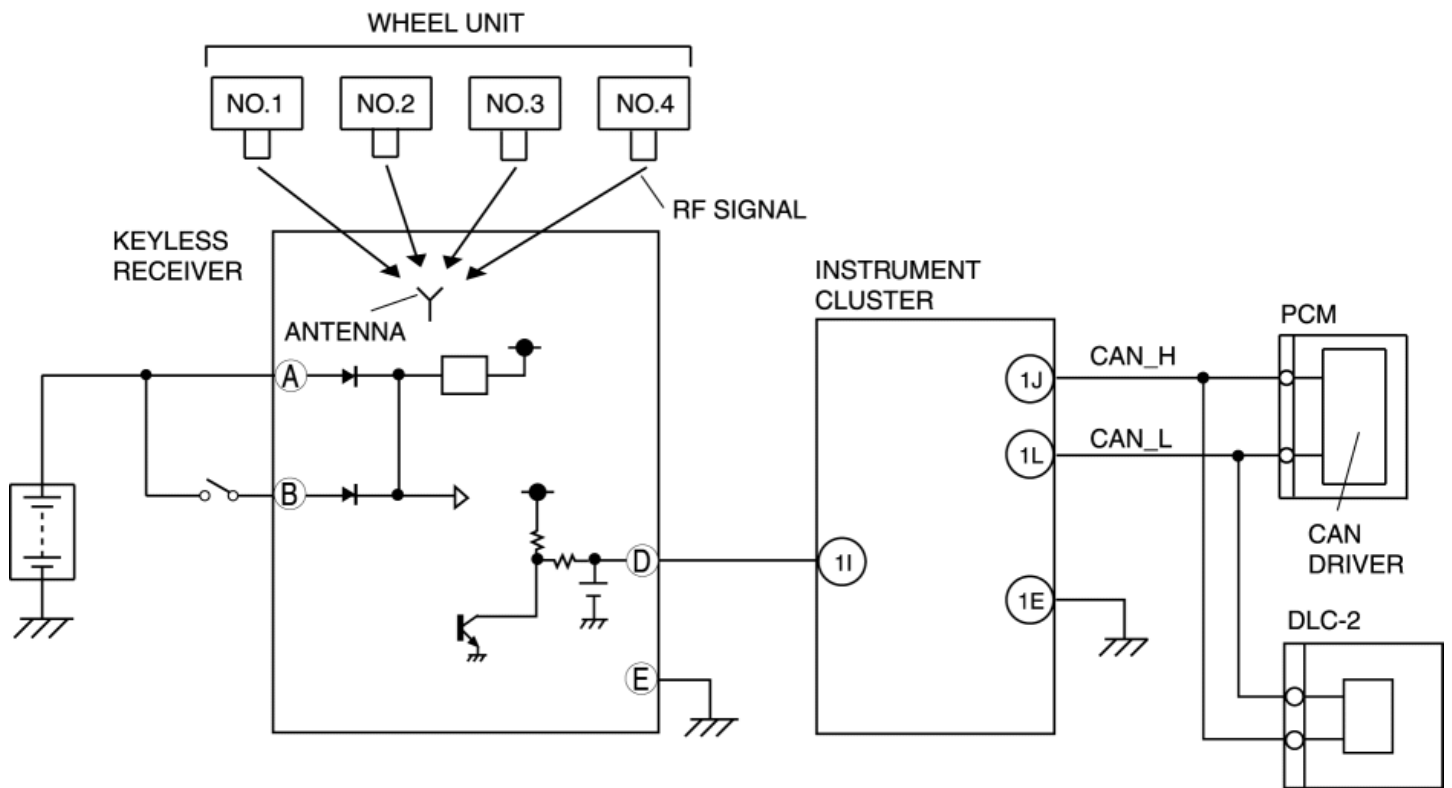
2011 - RX-8 - Suspension

TIRE PRESSURE MONITORING SYSTEM (TPMS) WIRING DIAGRAM

With advanced keyless system



With keyless entry system



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Suspension

FOREWORD

- Before performing the steps in Symptom Troubleshooting, perform the On-board Diagnostic Inspection. To check the DTC, follow the DTC Inspection steps. (See [TIRE PRESSURE MONITORING SYSTEM \(TPMS\) ON-BOARD DIAGNOSIS](#).)

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Suspension

PRECAUTION

Intermittent Concern Troubleshooting

Vibration method

- If a malfunction occurs or becomes worse while driving on a rough road or when the engine is vibrating, perform the following steps.

NOTE:

- There are several reasons why vehicle or engine vibration could cause an electrical malfunction. Inspect the following:
 - Connectors not fully seated.
 - Wiring harnesses not having full play.
 - Wiring harnesses laying across brackets or moving parts.
 - Wiring harnesses routed too close to hot parts.
- An improperly routed, improperly clamped, or loose wiring harness can cause wiring to become pinched between parts.
- The connector joints, points of vibration, and places where wiring harnesses pass through the firewall, body panels and other panels are the major areas to be inspected.

Inspection method for switch and/or sensor connectors or wiring harnesses

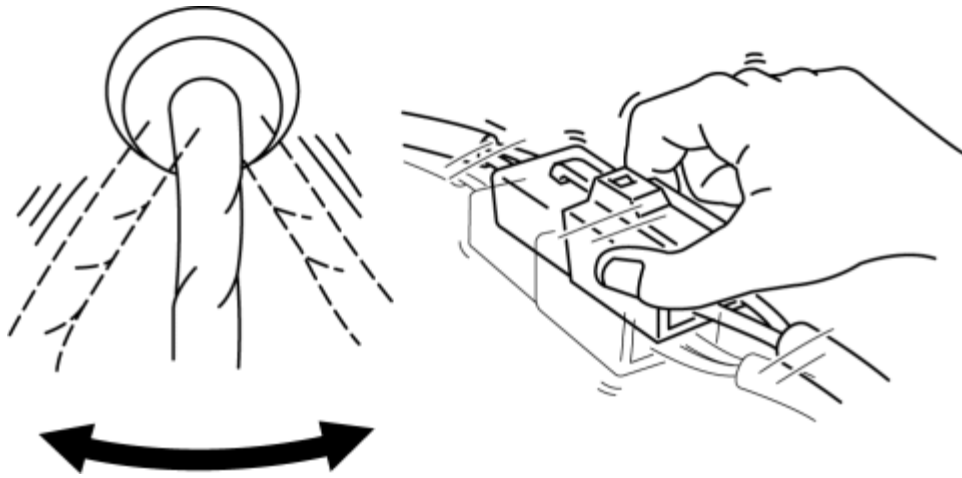
1. Connect the M-MDS to the DLC-2.
2. Turn the ignition switch to the ON position (engine off).

NOTE:

- If the engine starts and runs, perform the following steps at idle.
3. Access PIDs for the switch you are inspecting.

4. Turn the switch on manually.

5. Slightly shake each connector or wiring harness vertically and horizontally while monitoring the PID.



- If the PID value is unstable, inspect for poor connection.

Inspection method for sensors

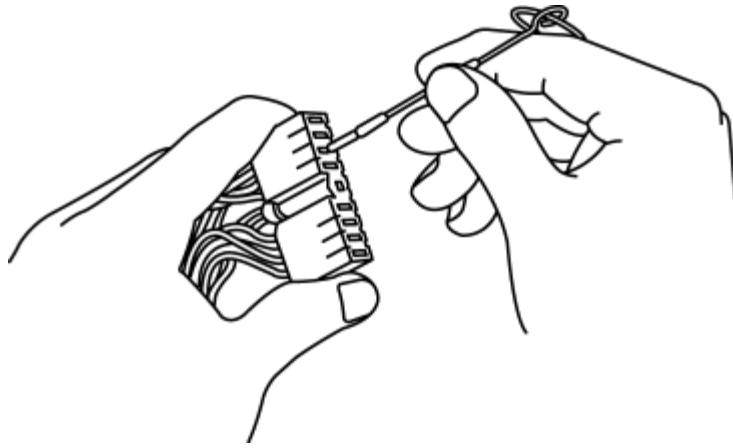
1. Connect the M-MDS to the DLC-2.
2. Turn the ignition switch to the ON position (engine off).

NOTE:

- If the engine starts and runs, perform the following steps at idle.
3. Access PIDs for the switch you are inspecting.
 4. Vibrate the sensor slightly with your finger.
- If the PID value is unstable or a malfunction occurs, inspect for poor connection and/or poorly mounted sensor.

Connector terminal inspection method

1. Inspect the connection of each female terminal.
2. Insert the male terminal to the female terminal and inspect the female terminal for looseness.



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Suspension

SYMPTOM TROUBLESHOOTING

No.	Symptom
1	TPMS warning light illuminates continuously.
2	TPMS warning light (low pressure warning) illuminates after engine start and turns off after driving for a period of time.
3	Wheel unit ID registration cannot be performed (TPMS warning light flashes).

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Suspension

NO.1 TPMS WARNING LIGHT ILLUMINATES CONTINUOUSLY

CAUTION:

- The tire pressure cannot be measured accurately after driving for a long period due to the internal temperature and pressure. Stop the vehicle for approx. 1 hour and then perform the tire pressure measurement and adjustment.
- Use a high accuracy digital gauge for measurement of the tire pressure.

NOTE:

- If the DTC clearing procedure is implemented, the TPMS warning light turns off.

1	TPMS warning light illuminates continuously
POSSIBLE CAUSE	<ul style="list-style-type: none">• Tire pressure is lower than the specification. (Such as loss of air pressure due to puncture.)• TPMS warning light circuit malfunction in the instrument cluster.

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	INSPECT TIRE <ul style="list-style-type: none">• Inspect the tires.• Is there any foreign object adhering to the tire?	Yes Remove the any foreign object. Replace the tire if necessary, then go to the next step.
		No Go to the next step.
2	MEASURE TIRE PRESSURE <ul style="list-style-type: none">• Measure the tire pressure when the tires are cold.• Is the tire pressure lower than the specification?	Yes Adjust the tire pressure to the specification when the tires are cold, then go to the next step. (See TIRE PRESSURE ADJUSTMENT (WITH TPMS) .)

		No	Go to the next step.
3	VERIFY TPMS WARNING LIGHT <ul style="list-style-type: none"> • Verify the TPMS warning light. • Does the TPMS warning light turn off? 	Yes	Symptom troubleshooting completed. Explain to the customer what has been repaired.
		No	Go to the next step.
4	VERIFY TPMS WARNING LIGHT AFTER DRIVING THE VEHICLE <ul style="list-style-type: none"> • Drive the vehicle at speed of 25 km/h {16 mph} or more for 10 min or more. • Verify the TPMS warning light. • Does the TPMS warning light turn off? 	Yes	Symptom troubleshooting completed. Explain to the customer what has been repaired.
		No	Go to the next step.
5	INSPECT FOR DTCS IN INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Connect the M-MDS to DLC-2. • Retrieve the instrument cluster DTC. • Is the DTC displayed? 	Yes	Go to applicable DTC troubleshooting procedure. (See DTC TABLE [INSTRUMENT CLUSTER].)
		No	Malfunction is in the TPMS warning light illumination control circuit in the instrument cluster. Replace the instrument cluster. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)

2011 - RX-8 - Suspension

NO.2 TPMS WARNING LIGHT (LOW PRESSURE WARNING) ILLUMINATES AFTER ENGINE START AND TURNS OFF AFTER DRIVING FOR PERIOD OF TIME

CAUTION:

- The tire pressure cannot be measured accurately after driving for a long period due to increased internal temperature and pressure. Stop the vehicle for approx. 1 hour and then perform the tire pressure measurement and adjustment.
- Use a high accuracy digital gauge for measurement of the tire pressure.

NOTE:

- The tire pressure normally decreases by **approx. 7 kPa {0.07 kgf/cm², 1.02 psi}** per month even if the tire is normal.
- The FFD (temperature and pressure) stored when the TPMS warning light is turned on or off can be verified by operating the M-MDS.

2	TPMS warning light (low pressure warning) illuminates after engine start and turns off after driving for a period of time.
[TROUBLESHOOTING HINTS] <ul style="list-style-type: none"> • The tire pressure decreases (approaches value to illuminate TPMS warning light) when the internal temperature of the tire is low. 	

STEP	INSPECTION	ACTION	
1	INSPECT THE TIRE <ul style="list-style-type: none"> • Is there any foreign object adhering to the tire? 	Yes	Remove any foreign object. Replace the tire if necessary, and then go to the next step.
		No	Go to the next step.
2	MEASURE THE TIRE PRESSURE WHEN THE TIRES ARE COLD	Yes	Adjust the tire pressure to the specification, and then go to the

	<ul style="list-style-type: none"> Has the tire pressure decreased (approaches value to illuminate TPMS warning light)? 		next step.
		No	Go to the next step.
3	IS THE MALFUNCTION CORRECTED?	Yes	Troubleshooting completed.
		No	Verify troubleshooting again and return to Step 1 if the malfunction recurs.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Suspension

NO.3 WHEEL UNIT ID REGISTRATION CANNOT BE PERFORMED (TPMS WARNING LIGHT FLASHES)

CAUTION:

- Activate the wheel unit ID registration mode using the M-MDS, and perform the following steps if the TPMS warning light does not turn off after driving at 25 km/h {15.5 mph} or more for 10 min or more.

3	Wheel unit ID registration cannot be performed (TPMS warning light flashes).
---	---

[TROUBLESHOOTING HINTS]

- New wheel unit malfunction (caused when installing to wheel)
- Any malfunction on an old wheel unit which has not been replaced.

STEP	INSPECTION	ACTION
1	CAN THE WHEEL UNIT ID BE REGISTERED? <ul style="list-style-type: none">• Connect the M-MDS.• Display the wheel unit ID registration condition (ID and tire pressure table) using the M-MDS.• Temporarily remove the battery and reinstall it immediately. NOTE: <ul style="list-style-type: none">• If the battery is removed, the tire pressure data for WU_1 to WU_4 stored in the instrument cluster is reset.	Yes Trouble shooting completed. (Adjust the tire pressure on four wheels, and then return the vehicle to the customer.)
		No Go to the next step.

	<p>Pressure is 0 kPa {0 kgf/cm², 0 psi} when it is displayed again using the M-MDS.</p> <ul style="list-style-type: none"> Set tire pressure for the four wheels separately. Perform the wheel unit ID registration again. Can the ID be registered? 		
2	<p>VERIFY THE WHEEL UNIT ID REGISTRATION CONDITIONS (ID AND TIRE PRESSURE TABLE) USING THE M-MDS</p> <ul style="list-style-type: none"> Refer to [Display Of M-MDS (Example)] to specify wheel unit for which the ID could not be registered. (See Display Of M-MDS (Example).) Is the wheel unit for which the ID could not be registered a new wheel unit? <p>CAUTION:</p> <ul style="list-style-type: none"> ID numbers of WU_1 to WU_4 are updated when wheel on all of four wheels are registered. 	<p>Yes Replace with a new wheel unit, and then go to Step 4.</p> <p>No Go to the next step.</p>	
3	<p>Replace the old wheel unit, and then go tot the next step (any malfunction on an old wheel unit which has not been replaced).</p>		
4	<p>CAN THE WHEEL UNIT ID BE REGISTERED?</p> <ul style="list-style-type: none"> Perform the wheel unit ID registration using the M-MDS. 	<p>Yes Troubleshooting completed.</p> <p>No Verify troubleshooting again and return to Step 1 if the malfunction recurs.</p>	

Display Of M-MDS (Example)

- Registered ID: 0xAAAAAAAA, 0BBBBBBBB, 0CCCCCCCC, and 0DDDDDDDD (AAAAAAAA, BBBBBBBB, CCCCCCCC, and DDDDDDDD mean arbitrary numbers.)
- Unregistered ID: 0x00000000
- Tire pressure: aaa kPa, bbb kPa, ccc kPa, ddd kPa (aaa, bbb, ccc, and ddd mean measurement value.)

- * The battery is removed, the stored tire pressure is reset to 0 kPa.

Three registered wheel units and a replaced wheel unit

When a replaced wheel unit malfunctions

	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCccccccc	0xDDDDDDDD
ID Number (Candidate)	0x00000000	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	bbb kPa	ccc kPa	0 kPa
Tire Pressure (Candidate)	0 kPa	0 kPa	0 kPa	0 kPa

When a registered wheel unit malfunctions

	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCccccccc	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	bbb kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	0 kPa	0 kPa	0 kPa

When two registered wheel unit malfunction

	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCccccccc	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	0 kPa	0 kPa	0 kPa

Tire Pressure (Candidate)	eee kPa	0 kPa	0 kPa	0 kPa
---------------------------	---------	-------	-------	-------

When a replaced wheel unit and a registered wheel unit malfunction

	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0x00000000	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	bbb kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	0 kPa	0 kPa	0 kPa	0 kPa

When a replaced wheel unit and two registered wheel units malfunctions

	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0x00000000	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	0 kPa	0 kPa	0 kPa	0 kPa

When three registered wheel units malfunction

	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	0 kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	0 kPa	0 kPa	0 kPa

Two registered wheel units and two replaced wheel units

When a replaced wheel unit malfunctions

	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	bbb kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	0 kPa	0 kPa	0 kPa

When a registered wheel unit malfunctions

	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0xFFFFFFFF	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	fff kPa	0 kPa	0 kPa

When two replaced wheel units malfunction

	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0x00000000	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	bbb kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	0 kPa	0 kPa	0 kPa	0 kPa

When two registered wheel units malfunction

	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0xFFFFFFFF	0x00000000	0x00000000
Tire Pressure (Stored)	0 kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	fff kPa	0 kPa	0 kPa

When a replaced wheel unit and a registered wheel unit malfunction

	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	0 kPa	0 kPa	0 kPa

When two replaced wheel units and a registered wheel unit malfunction

	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0x00000000	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	0 kPa	0 kPa	0 kPa	0 kPa

When a replaced wheel unit and two registered wheel units malfunction

--	--	--	--	--

	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	0 kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	0 kPa	0 kPa	0 kPa

A registered wheel unit and three replaced wheel units

When a registered wheel unit malfunctions

	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0xFFFFFFFF	0xGGGGGGGG	0x00000000
Tire Pressure (Stored)	0 kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	fff kPa	ggg kPa	0 kPa

When a replaced wheel unit malfunctions

	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0xFFFFFFFF	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	fff kPa	0 kPa	0 kPa

When a replaced wheel unit and a registered wheel unit malfunction

--	--	--	--	--

	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0xFFFFFFFF	0x00000000	0x00000000
Tire Pressure (Stored)	0 kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	fff kPa	0 kPa	0 kPa

When two replaced wheel units malfunction

	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	0 kPa	0 kPa	0 kPa

When two replaced wheel units and a registered wheel unit malfunction

	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	0 kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	0 kPa	0 kPa	0 kPa

When three replaced wheel units malfunction

	WU_1	WU_2	WU_3	WU_4

ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBBB	0xCcccccccc	0xDDDDDDDD
ID Number (Candidate)	0x00000000	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	0 kPa	0 kPa	0 kPa	0 kPa

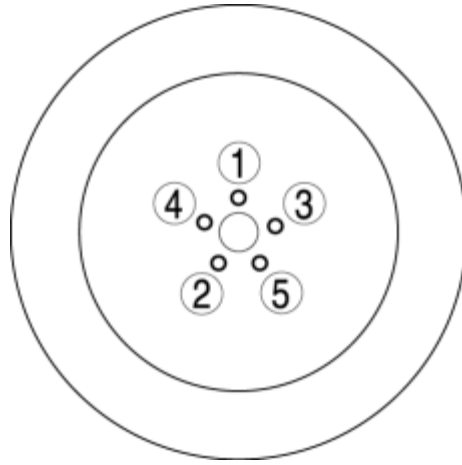
[< Previous](#) [Next >](#)

2011 - RX-8 - Suspension

GENERAL PROCEDURES (SUSPENSION)

Wheel And Tire Installation

1. When installing the wheels and tires, tighten the wheel nuts in a criss-cross pattern to the following tightening torque.



Tightening torque

- 88—118 N·m {9.0—12.0 kgf·m, 65.0—87.0 ft·lbf}

Suspension Links Removal/Installation

1. For the joint sections with rubber bushings, raise the vehicle using a lift, and then temporarily tighten the installation bolts and nuts. Lower the vehicle to the ground and tighten them completely with the specified torque.

Connector Disconnection

1. Perform the following works, before the connectors are disconnected.
 - a. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 - b. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)

c. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Suspension

WHEEL ALIGNMENT PRE-INSPECTION

1. Park the vehicle on a level ground, in an unloaded condition*, and with the wheels straight forward.

Unloaded vehicle.....Fuel tank is full. Engine coolant and engine oil are at specified level. Jack and tools are in designated position.

2. Inspect the tire pressure.

- Adjust to the recommended pressure if necessary. (See [SUSPENSION TECHNICAL DATA](#).)

3. Inspect the wheel bearing play.

- Correct if necessary. (See [WHEEL HUB, STEERING KNUCKLE INSPECTION](#).)
(See [WHEEL HUB, REAR KNUCKLE INSPECTION](#).)

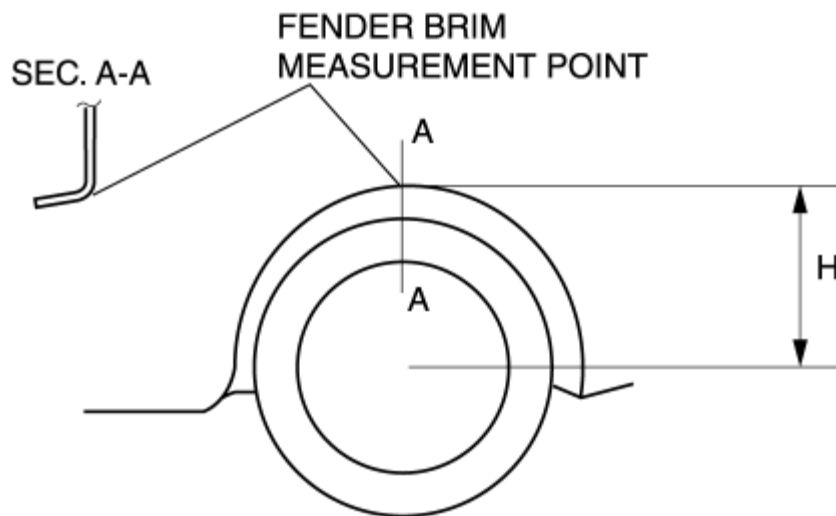
4. Inspect the wheel runout.

- Correct if necessary. (See [SUSPENSION TECHNICAL DATA](#).)

5. Rock the vehicle, and verify that there is no looseness in the steering wheel joint and suspension ball joint.

6. Rock the vehicle, and verify that the shock absorber operates properly.

7. Measure height H from the center of the wheel to the fender brim.



8. Verify that the difference between the left and right dimension H is within the specification.

- If it exceeds the specification, repeat the Step 2—7.

- Standard

10 mm {0.39 in} or less

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Suspension

FRONT WHEEL ALIGNMENT

Specification (Unloaded Condition)

Front wheel alignment [Standard suspension]

Item			Specification
Total toe-in	Tire [Tolerance ± 4 {0.15 }]	(mm {in})	2 {0.08}
	Rim inner [Tolerance ± 3 {0.12}]		1 {0.04}
		degree	0°11'±21'
Steering angle [Tolerance $\pm 3^\circ$]		Inner	38°36'
		Outer	33°18'
Steering axis inclination (Reference value)			10°59'
Camber [Tolerance $\pm 1^\circ$]	Vehicle height: From the end of the front fender to the center of the wheel (mm {in})	363—372 {14.3—14.6}	-0°41'
		373—382 {14.7—15.0}	-0°21'
		383—392 {15.1—15.4}	-0°03'
		393—402 {15.5—15.8}	0°14'
		403—412 {15.9	0°28'

		—16.2}	
Caster [Tolerance ±1°]	Vehicle height: From the end of the rear fender to the center of the wheel (mm {in})	366—375 {14.5 —14.7}	6°45′
		376—385 {14.9 —15.1}	6°33′
		386—395 {15.2 —15.5}	6°20′
		396—405 {15.6 —15.9}	6°07′
		406—415 {16.0 —16.3}	5°55′

Front wheel alignment [Sport suspension]

Item			Specification
Total toe-in	Tire [Tolerance ±4 {0.15}]	(mm {in})	2 {0.08}
	Rim inner [Tolerance ±3 {0.12}]		1 {0.04}
		degree	0°11′±21′
Steering angle [Tolerance ±3°]		Inner	38°36′
		Outer	33°18′
Steering axis inclination (Reference value)			11°12′
Camber [Tolerance ±1°]	Vehicle height: From the end of the front fender to the center of the wheel (mm {in})	356—365 {14.1 —14.3}	-0°57′
		366—375 {14.5 —14.7}	-0°35′
		376—385 {14.9 —15.1}	-0°15′

Caster [Tolerance $\pm 1^\circ$]	Vehicle height: From the end of the rear fender to the center of the wheel (mm {in})	386—395 {15.2—15.5}	0°02'
		396—405 {15.6—15.9}	0°18'
		364—373 {14.4—14.6}	6°47'
		374—383 {14.8—15.0}	6°35'
		384—393 {15.2—15.4}	6°22'
		394—403 {15.6—15.8}	6°09'
		404—413 {16.0—16.2}	5°57'

NOTE:

- Unloaded vehicle: Fuel tank is full. Engine coolant and engine oil are at specified level. Jack and tools are in designated position.
- Difference between the left and right dimension for camber and caster is within **1°**.

Steering Angle Adjustment

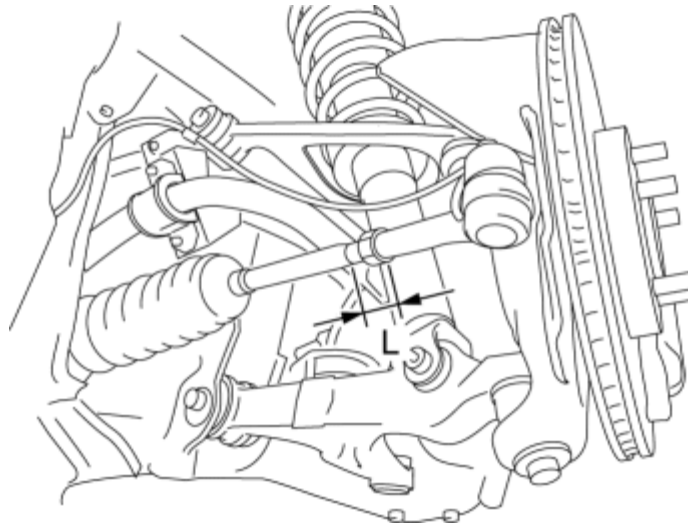
1. Loosen the locknut of the tie-rod end.
2. Remove the rack boot clamp.
3. Rotate the tie rod and adjust the steering angle.

Standard steering angle

- Inner: $38^\circ 36' \pm 3^\circ$
- Outer: $33^\circ 18' \pm 3^\circ$

NOTE:

- Rotate and adjust the tie rod. The difference between right and left dimension L shown in the figure should be within the specification.



- Standard

3 mm {0.12 in} or less

4. Tighten the locknut of the tie-rod end.

Tightening torque

- **68.6—98.0 N·m {7.00—9.99 kgf·m, 50.6—72.2 ft·lbf}**

5. Correct the rack boot deformation.

6. Install and fix the rack boot clamp.

7. After adjusting the steering angle, always inspect and adjust the toe angle. (See [Total Toe-in Adjustment](#).)

Camber Adjustment

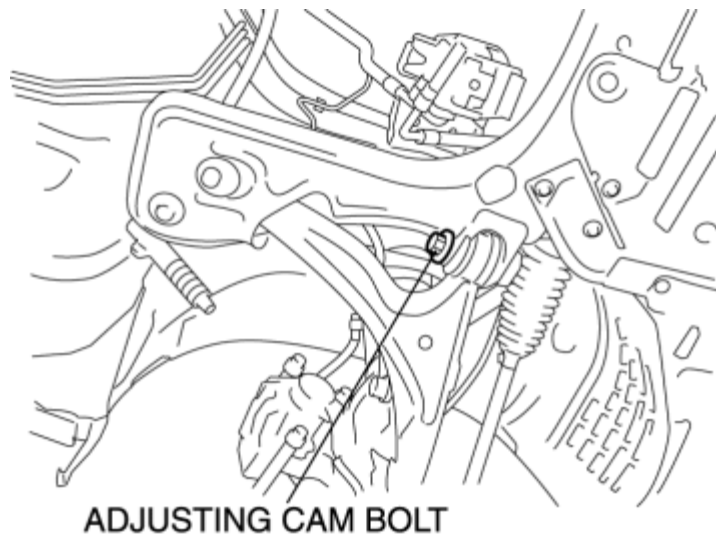
CAUTION:

- Adjust the camber before adjusting the caster.

NOTE:

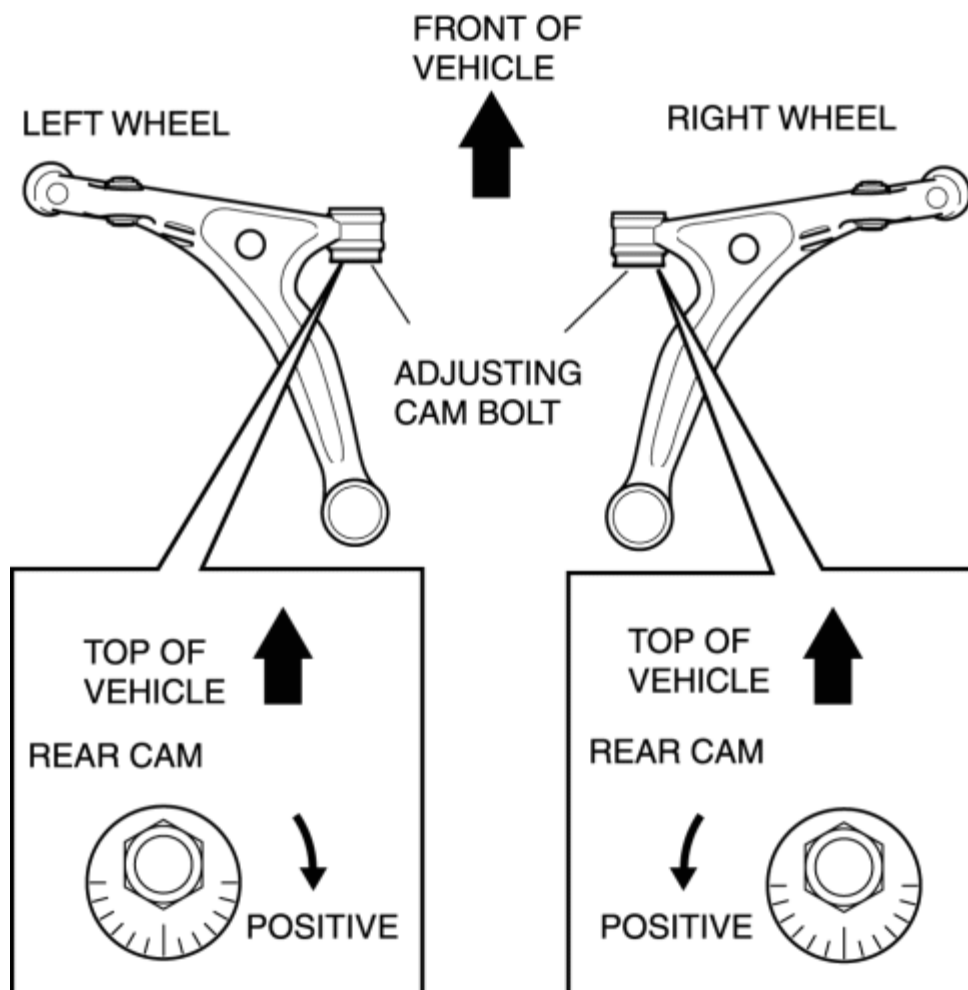
- The camber and caster change largely if the front cam is adjusted due to the suspension construction. If the rear cam is adjusted, the caster largely, however, the camber barely changes. Therefore, adjust the camber (front cam) and then the caster (rear cam) to adjust the alignment efficiently.

1. Loosen the fixing nut of the adjusting cam bolt (front lower arm front side).



ADJUSTING CAM BOLT

2. Rotate the adjusting cam bolt in either direction to adjust the camber.



Standard suspension

Vehicle height *	Camber
363—372 {14.3—14.6}	-0°41'

373—382 {14.7—15.0}	-0°21′
383—392 {15.1—15.4}	-0°03′
393—402 {15.5—15.8}	0°14′
403—412 {15.9—16.2}	0°28′

Sport suspension

Vehicle height *	Camber
356—365 {14.1—14.3}	-0°57′
366—375 {14.5—14.7}	-0°35′
376—385 {14.9—15.1}	-0°15′
386—395 {15.2—15.5}	0°02′
396—405 {15.6—15.9}	0°18′

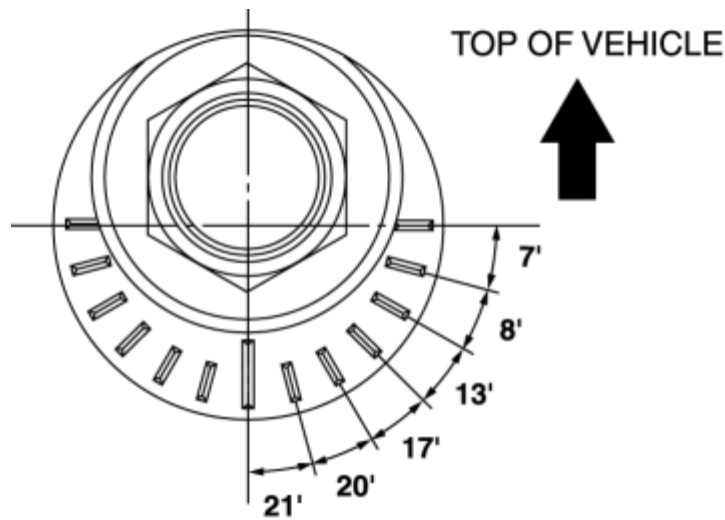
*

From the end of the front fender to the center of the wheel (mm {in})

	Left wheel	Right wheel
Positive direction	Clockwise	Counterclockwise
Negative direction	Counterclockwise	Clockwise

NOTE:

- Refer to the figure for the adjusting angle per one graduation.



3. Tighten the nut.

Tightening torque

- 117.7—137.3 N·m {12.1—14.0 kgf·m, 86.9—101.2 ft·lbf}

4. Adjust the toe-in.

Caster Adjustment

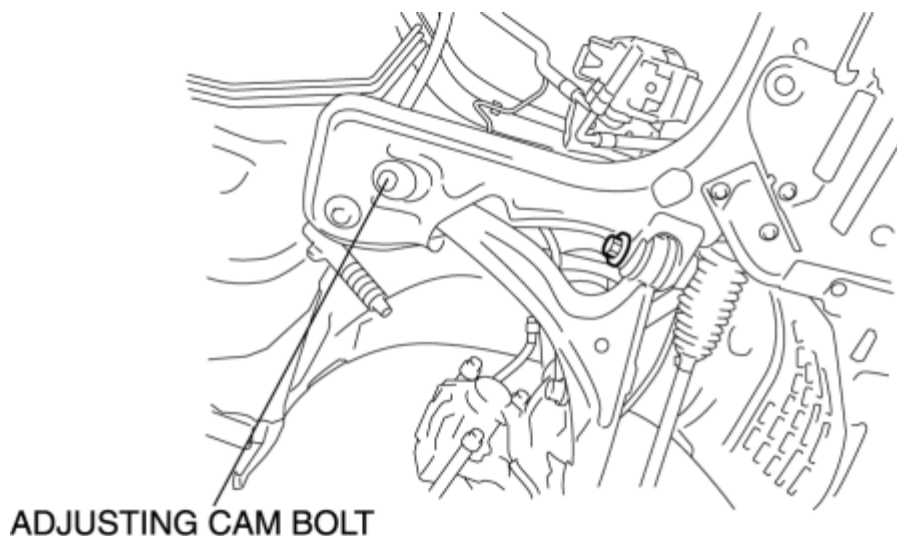
CAUTION:

- Adjust the caster after adjusting the camber.

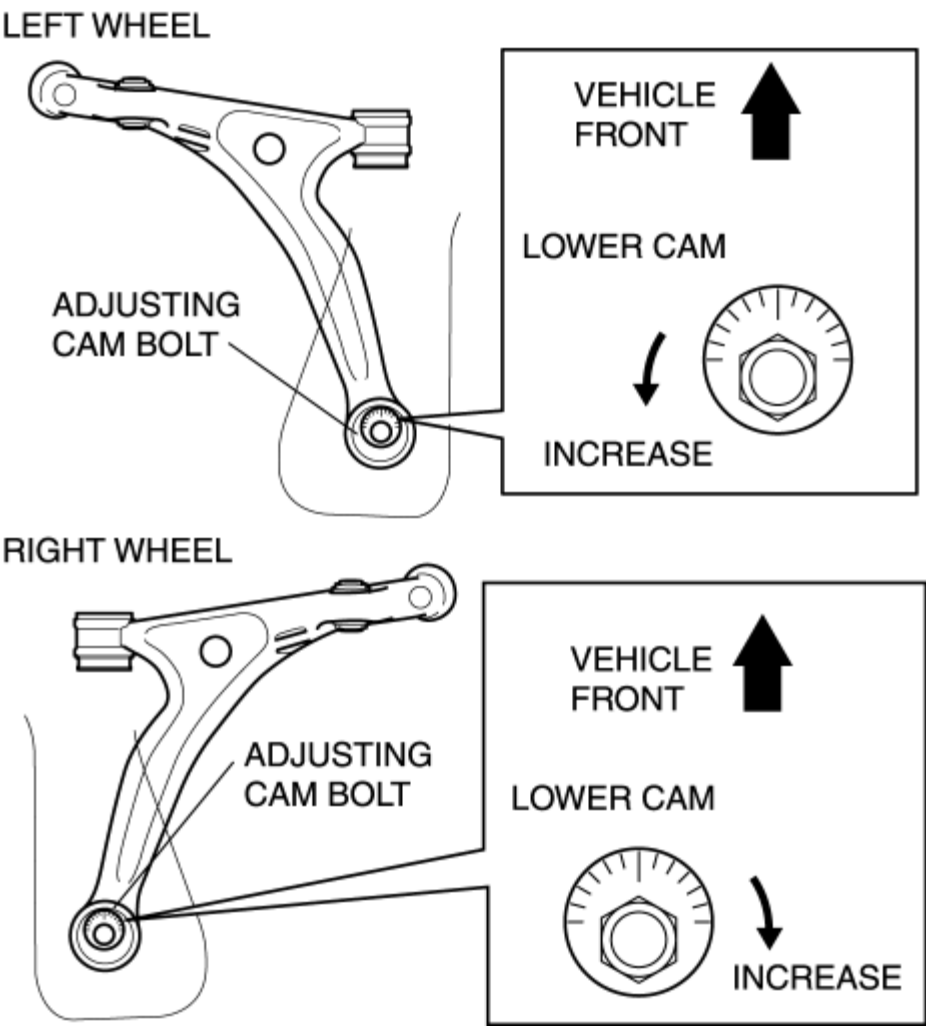
NOTE:

- The camber and caster change largely if the front cam is adjusted due to the suspension construction. If the rear cam is adjusted, the caster largely, however, the camber barely changes. Therefore, adjust the camber (front cam) and then the caster (rear cam) to adjust the alignment efficiently.

1. Loosen the installation nut of the adjusting cam bolt (front lower arm rear side).



2. Rotate the adjusting cam bolt in either direction to adjust the caster.



Standard suspension

Vehicle height*	Caster
366—375 {14.5—14.7}	6°45'
376—385 {14.9—15.1}	6°33'
386—395 {15.2—15.5}	6°20'
396—405 {15.6—15.9}	6°07'
406—415 {16.0—16.3}	5°55'

Sport suspension

--	--

Vehicle height*	Caster
364—373 {14.4—14.6}	6°47'
374—383 {14.8—15.0}	6°35'
384—393 {15.2—15.4}	6°22'
394—403 {15.6—15.8}	6°09'
404—413 {16.0—16.2}	5°57'

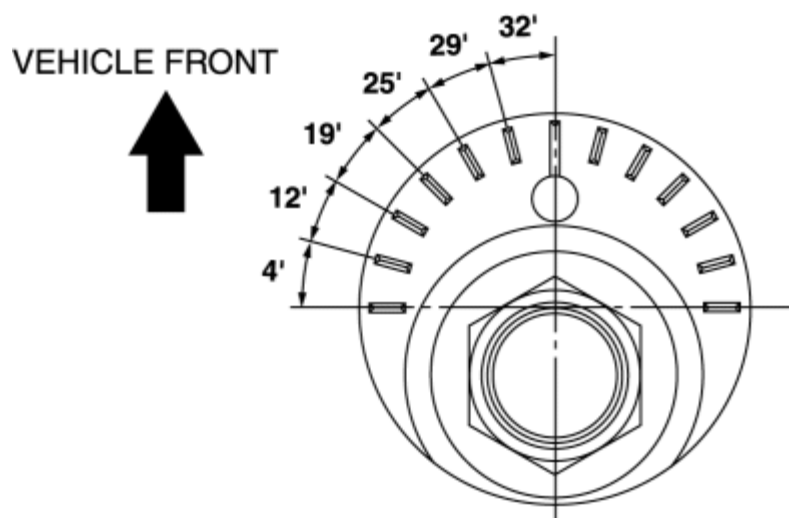
*

From the end of the rear fender to the center of the wheel (mm {in})

	Left wheel	Right wheel
Increase	Counterclockwise	Clockwise
Decrease	Clockwise	Counterclockwise

NOTE:

- Refer to the following figure for the adjusting amount per one graduation.



3. Tighten the nut.

Tightening torque

- **117.7—137.3 N·m {12.1—14.0 kgf·m, 86.9—101.2 ft·lbf}**

4. Adjust the camber and total toe-in.

Total Toe-in Adjustment

1. Loosen the locknut of the tie-rod end.
2. Remove the rack boot clamp.
3. Adjust the total toe-in by rotating each tie rod (left and right) in the opposite directions by the same amount respectively.

Total Toe-in Standard

- **2±4 mm {0.08±0.15 in} (0°11'±21')**

NOTE:

- Toe angle changes by **approx. 5 mm {0.2 in}** per one rotation of the tie rod for one wheel.
 - Each tie rod has a left-hand thread. When increasing the toe-in angle, rotate the right tie rod toward the rear of the vehicle, and rotate the left tie rod toward the front of the vehicle by the same amount.
4. Tighten the locknut of the tie-rod end.

Tightening torque

- **68.6—98.0 N·m {7.00—9.99 kgf·m, 50.6—72.2 ft·lbf}**

5. Verify that the rack boot does not have any twisting, and install the rack boot clamp.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Suspension

REAR WHEEL ALIGNMENT

Specification (Unloaded Condition)

Rear wheel alignment [Standard suspension]

Item			Specification
Total toe-in	Tire [Tolerance ± 4 {0.15 }]	(mm {in})	3.6 {0.14}
	Rim inner [Tolerance ± 3 {0.12}]		2 {0.08}
		degree	0°19'±20'
Camber [Tolerance $\pm 1^\circ$]	Vehicle height: From the end of the rear fender to the center of the wheel (mm {in})	366—375 {14.5—14.7}	-1°22'
		376—385 {14.9—15.1}	-1°02'
		386—395 {15.2—15.5}	-0°45'
		396—405 {15.6—15.9}	-0°31'
		406—415 {16.0—16.3}	-0°18'

Rear wheel alignment [Sport suspension]

Item			Specification

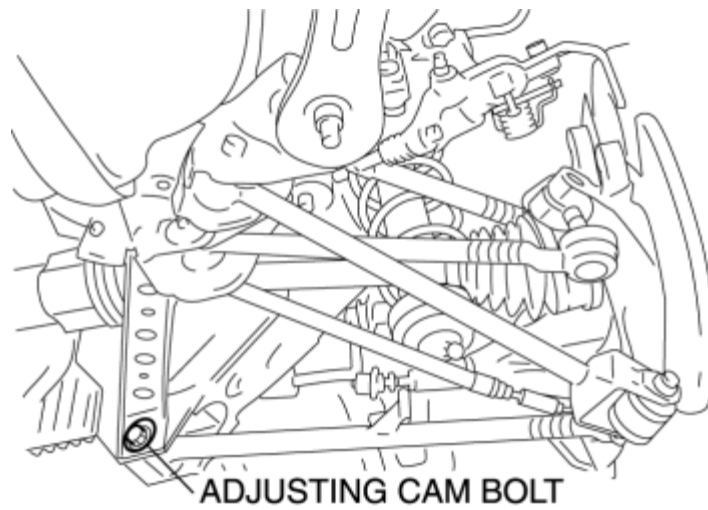
Total toe-in	Tire [Tolerance ± 4 {0.15}]	(mm {in})	3.6 {0.14}
	Rim inner [Tolerance ± 3 {0.12}]		2 {0.08}
		degree	0°19'±20'
Camber [Tolerance $\pm 1^\circ$]	Vehicle height: From the end of the rear fender to the center of the wheel (mm {in})	364—373 {14.4—14.6}	-1°26'
		374—383 {14.8—15.0}	-1°06'
		384—393 {15.2—15.4}	-0°48'
		394—403 {15.6—15.8}	-0°33'
		404—413 {16.0—16.2}	-0°21'

NOTE:

- Unloaded vehicle: Fuel tank is full. Engine coolant and engine oil are at specified level. Jack and tools are in designated position.
- Difference between the left and right camber angle is within **1°**.

Camber Adjustment

1. Loosen the fixing nut of the adjusting cam bolt (rear lateral link (lower)).



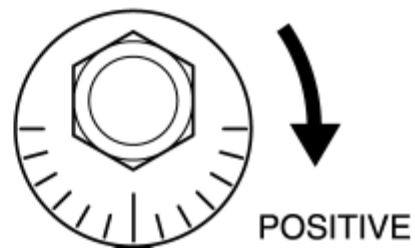
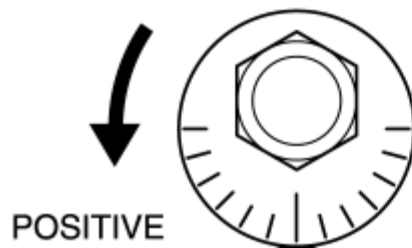
2. Rotate the adjusting cam bolt in either direction to adjust the camber.

LEFT WHEEL

RIGHT WHEEL

FRONT CAM

FRONT CAM



Standard suspension

Vehicle height*	Camber
366—375 {14.5—14.7}	-1°22'
376—385 {14.9—15.1}	-1°02'
386—395 {15.2—15.5}	-0°45'
396—405 {15.6—15.9}	-0°31'
406—415 {16.0—16.3}	-0°18'

Sport suspension

*	Camber
---	--------

Vehicle height	
364—373 {14.4—14.6}	-1°26'
374—383 {14.8—15.0}	-1°06'
384—393 {15.2—15.4}	-0°48'
394—403 {15.6—15.8}	-0°33'
404—413 {16.0—16.2}	-0°21'

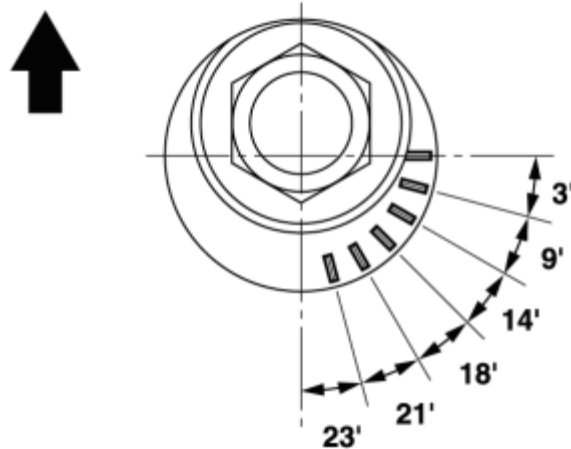
*: From the end of the rear fender to the center of the wheel (mm {in})

	Left wheel	Right wheel
Positive direction	Counterclockwise	Clockwise
Negative direction	Clockwise	Counterclockwise

NOTE:

- Refer to the figure for the adjusting angle per one graduation.

TOP OF VEHICLE



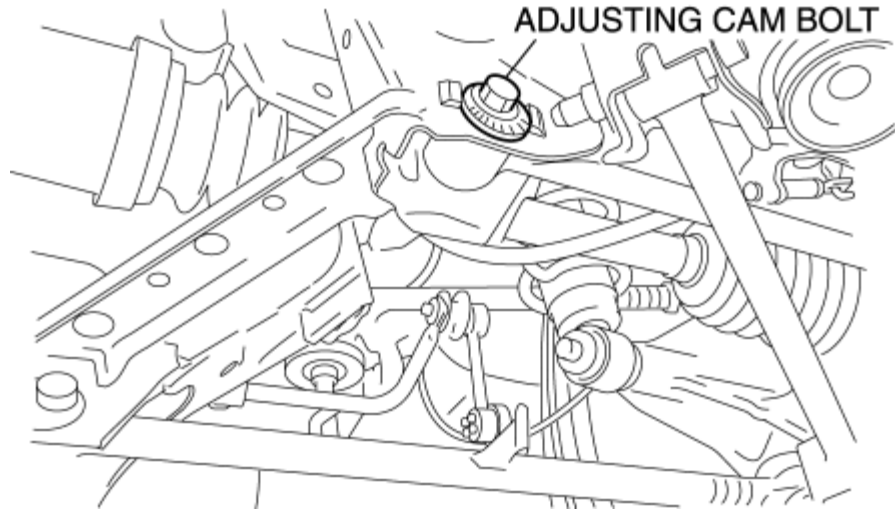
3. Tighten the nut.

Tightening torque

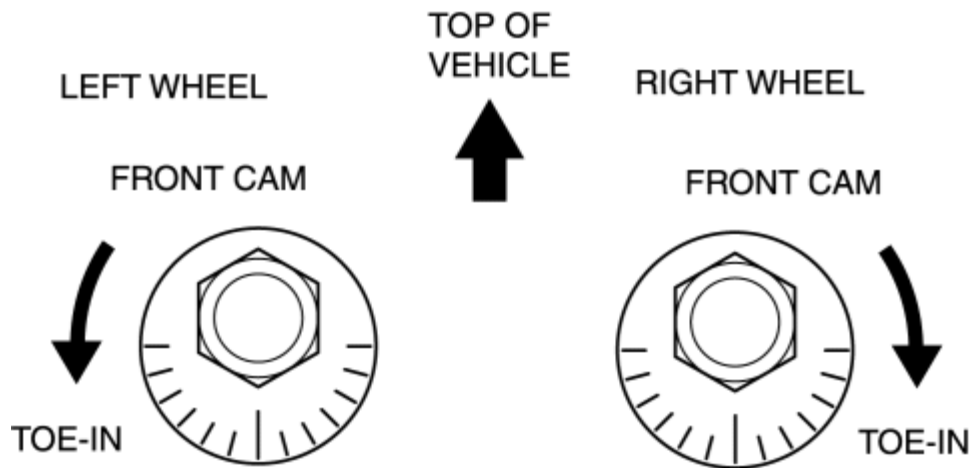
- 117.7—137.3 N·m {12.1—14.0 kgf·m, 86.9—101.2 ft·lbf}

Total Toe-in Adjustment

1. Loosen the installation nut of the adjusting cam bolt.



2. Rotate the adjusting cam bolt in either direction to adjust the toe-in.



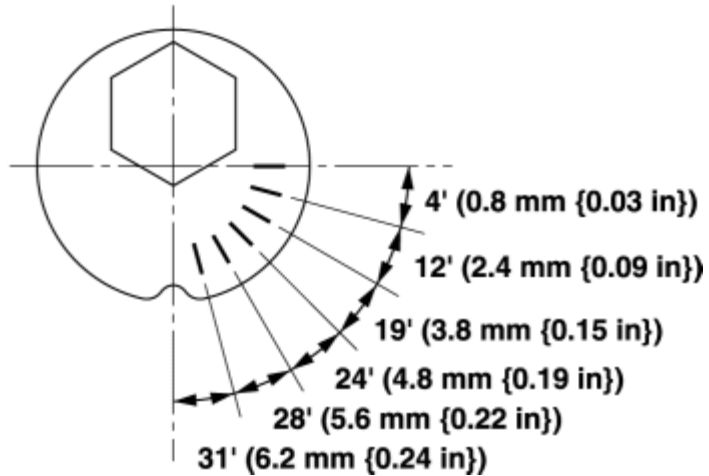
Standard

- 3.6 ± 4 mm { 0.14 ± 0.15 in} ($0^\circ 19' \pm 20'$)

NOTE:

- Refer to the following figure for the adjusting angle per one graduation of the toe-in gauge.

TOP OF VEHICLE



3. Tighten the nut.

Tightening torque

- 70—95 N·m {7.2—9.6 kgf·m, 52—70 ft·lbf}

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Suspension

WHEEL AND TIRE SPECIFICATION

Wheel and tires

Item			Specification	
Wheel	Size		18 x 8J	19 x 8J
	Offset	(mm {in})	50 {2.0}	47 {1.9}
	Pitch circle diameter	(mm {in})	114.3 {4.50}	
	Material		Aluminum alloy	
Tire	Size		225/45R18 91W	225/40R19 89W
	Air pressure	(kPa {psi})	220 {32}	
	Remaining tread	(mm {in})	1.6 {0.063} min.	
Wheel and tire	Lug nut tightening torque	(N·m {kgf·m, ft·lbf})	88—118 {9.0—12.0, 65.0—87.0}	
	Wheel and tire runout	Radial direction	1.5 {0.059} max.	
	(mm {in})	Lateral direction	2.0 {0.078} max.	
	Wheel imbalance	(g {oz})	Adhesive-type ^{*1} : 12 {0.42} max. Knock-type ^{*2} : 8 {0.28} max.	Adhesive-type ^{*1} : 12 {0.42} max. Knock-type ^{*2} : 7 {0.2} max.

*1

Total weight 160 g {5.64 oz} max.

*2

One balance weight: 60 g {2.1 oz} max. If the total weight exceeds 100 g {3.53 oz} on one side, rebalance after moving the tire around on the rim. Do not use three or more balance weights on one side.

CAUTION:

- If the wheel and tire sizes are changed, the set value for the tire rotation diameter will be different, causing a discrepancy whereby the speedometer needle exceeds the allowable range. If the wheel and tire sizes are changed, perform a PCM configuration to change the tire size setting. (See [PCM CONFIGURATION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Suspension

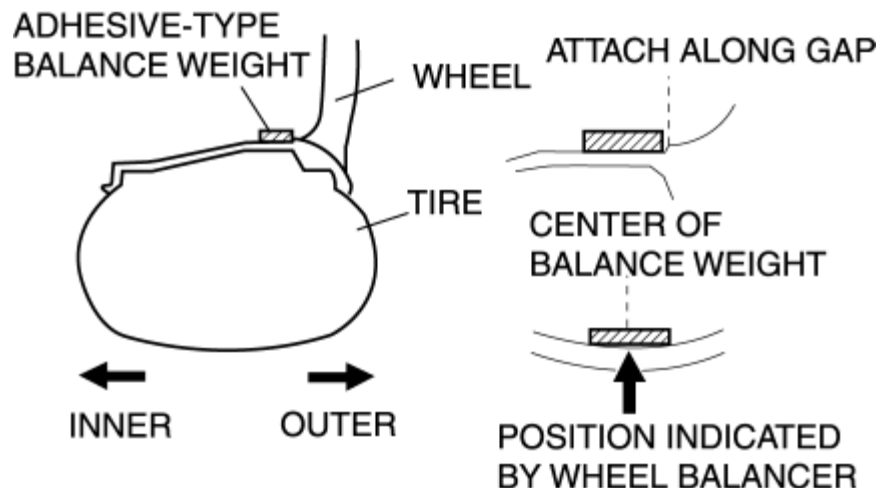
WHEEL BALANCE ADJUSTMENT

CAUTION:

- Adjust the outer wheel balance first, then the inner wheel balance.
- Be careful not to scratch the wheels.

Adhesive-type Balance Weight (Outer)

1. Remove the old balance weight from the wheel.
2. Remove the double-sided adhesive tape remaining on the wheel, then clean and degrease the bonding area.
3. Set the wheel on a wheel balancer, measure the amount of unbalance and the position with the mode set for knock-type balance weight.
4. Multiply the amount of unbalance by **1.6** to obtain the balance weight value.
5. Select a balance weight closest to the weight value and attach the balance weight on the position (outer) indicated by the wheel balancer.



Example calculation of balance weight value

- Indicated amount of unbalance: 23 g {0.81 oz}
 $23 \text{ g } \{0.81 \text{ oz}\} \times 1.6 = 36.8 \text{ g } \{1.30 \text{ oz}\}$
- Selected balance weight value: 35 g {1.2 oz}

NOTE:

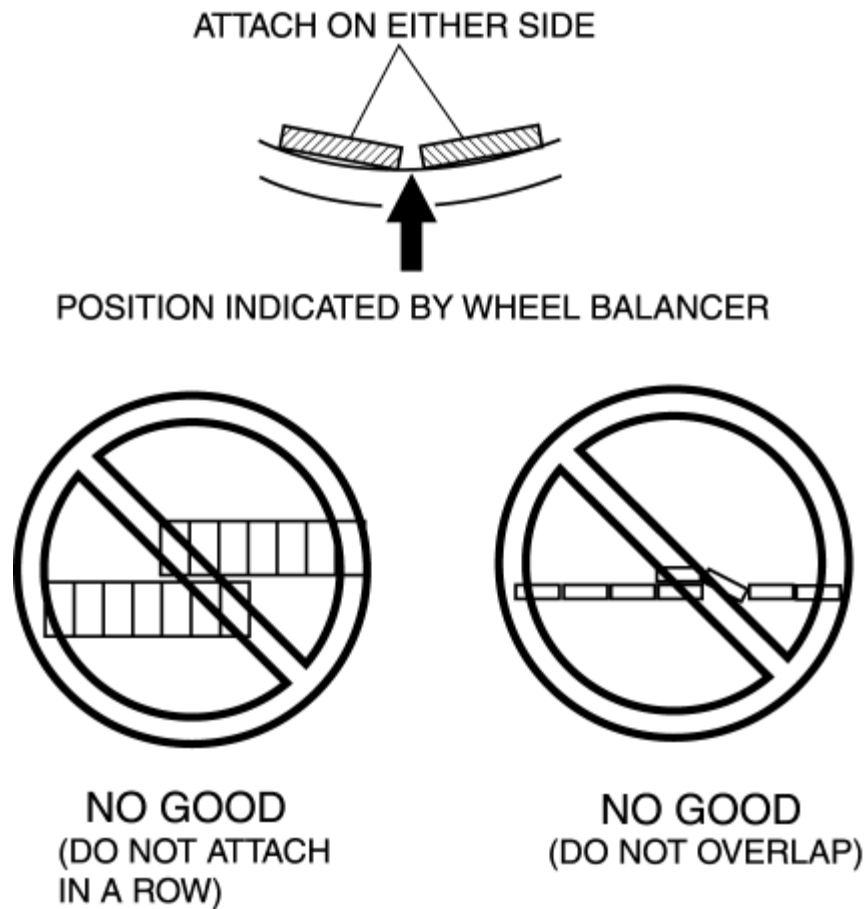
- When selecting a balance weight, select one closest to the calculated value.

Example: **32.4 g {1.14 oz} = 30 g {1.1 oz}**

CAUTION:

- Use a genuine balance weight or equivalent (steel).
- When attaching the weight, press the weight with a force of 25 N {2.5 kgf, 5.5 lbf} per 5 g for 2 s or more.

6. If attaching two balance weights, position them so that each is on either side of the position indicated by the wheel balancer.



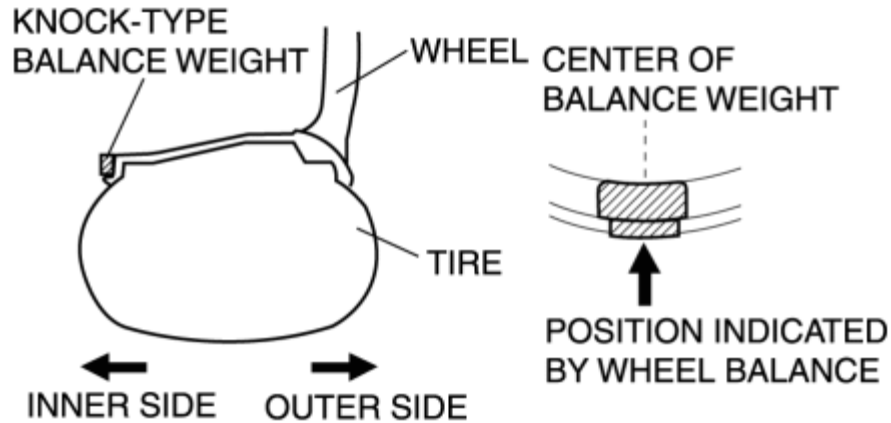
CAUTION:

- Do not attach weight balances in a row.
- Do not overlap the balance weights.
- Total weight must not exceed 160g {5.64 oz}.

Knock-type Balance Weight (Inner)

1. Measure the amount of unbalance with a wheel balancer.

2. Attach a weight corresponding to the measured weight value on the position (inner) indicated by the wheel balancer.



CAUTION:

- Do not attach three or more balance weights.
- One balance weight must not exceed 60g {2.12 oz}, and a total of tow balance weights must not exceed 100g {3.53 oz}.

Remaining Amount of Unbalance Confirmation

1. After installing the outer and inner balance weights, operate the wheel balancer again.
2. Confirm that the remaining unbalance does not exceed the following on either side.
 - If the remaining unbalance exceeds the specifications, adjust the wheel balance again.

Specifications

	Outer (Adhesive-type)	Inner (Knock-type)
18 inch wheel	12 g {0.42 oz}	8 g {0.28 oz}
19 inch wheel		7 g {0.2 oz}

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Suspension

TIRE PRESSURE ADJUSTMENT (WITH TPMS)

1. Use of a digital gauge is recommended for accurate measurement of the air pressure.
2. Tire pressure lowers gradually as time passes. Due to this, monthly air pressure inspection is recommended.
3. Perform tire pressure adjustment before driving. (When tires are cold.)
 - Tire pressure will increase after driving because the internal temperature of the tire is high. If tire pressure is adjusted to specifications when the internal temperature of the tire is high, tire pressure will decrease when the internal temperature of the tire decreases to the same level as ambient temperature. If the tire pressure is lower than the lower-limit pressure, the TPMS warning light may illuminate.
 - Even though the air pressure is adjusted to specifications, the indicated air pressure may be higher than the specified value when the internal temperature of the tire is higher than ambient temperature. (Example: Air pressure changes approx. **10 kPa {0.1 kgf/cm², 1.5 psi}** when the temperature changes 10 degrees)

CAUTION:

- In an area or a season with varying temperatures, tire pressure will change due to ambient temperature change. If the tire pressure is lower than the lower-limit pressure due to low ambient temperature, the TPMS warning light may illuminate. Adjust the pressure when the TPMS warning light illuminates.
- The wheel unit air pressure stem is made from aluminum and can be damaged. Do not tilt or use excessive side force when checking air pressure or filling tire with air. Some tire pressure gauges and air filling nozzles have extended tips, which can provide enough leverage to easily bend or break the wheel unit.

2011 - RX-8 - Suspension

WHEEL UNIT ID REGISTRATION

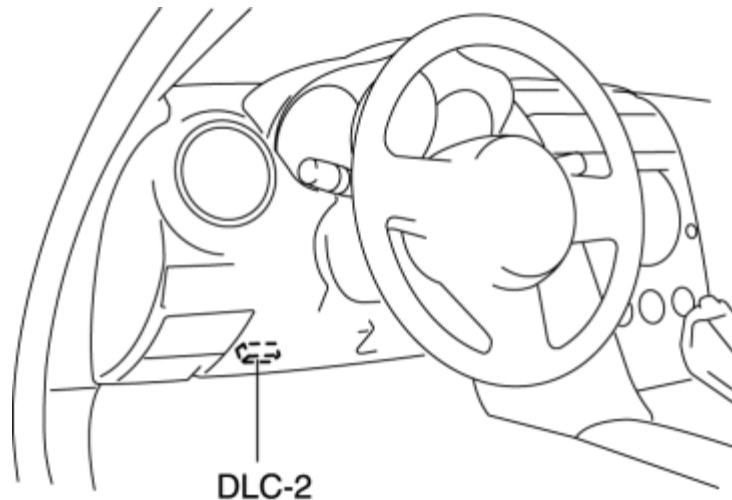
NOTE:

- After the wheel unit replacement, registration of the wheel unit identification codes must be performed.
- ID registration can be done using the M-MDS, or not using the M-MDS.

Using M-MDS

NOTE:

- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support the wheel unit ID registration.
1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (notebook PC).
 - Select the "Body".
 - Select the "TPMS Functions".
3. Then, select the "Wheel Unit ID Registration".

4. Perform the procedure according to the directions on the screen.
5. Leave the vehicle with the engine off for **15 min or more**.
6. Verify that the TPMS warning light turns on and off in **0.5 s** cycles repeatedly.
7. Drive the vehicle at a speed of **25 km/h {15.5 mph} or more** for **10 min** to implement the wheel unit ID registration.

NOTE:

- If the ID registration is not completed even after driving the vehicle for **10 min** or more at a speed of **25 km/h {15.5 mph} or more**, the TPMS warning light flashes.

8. Verify that the TPMS warning light turns off.

NOTE:

- If the wheel unit ID registration cannot be performed after driving **10 min** or more, refer to the symptom troubleshooting procedure.

Without Using M-MDS

1. Turn the ignition switch to the ON position, then turn it off.
2. Leave the vehicle with the engine off for **15 min or more**.
3. Drive the vehicle at a speed of **25 km/h {15.5 mph} or more** for **10 min or more**.
4. After driving for **10 min**, verify that the TPMS warning light does not flash and is not illuminated.

[< Previous](#) [Next >](#)

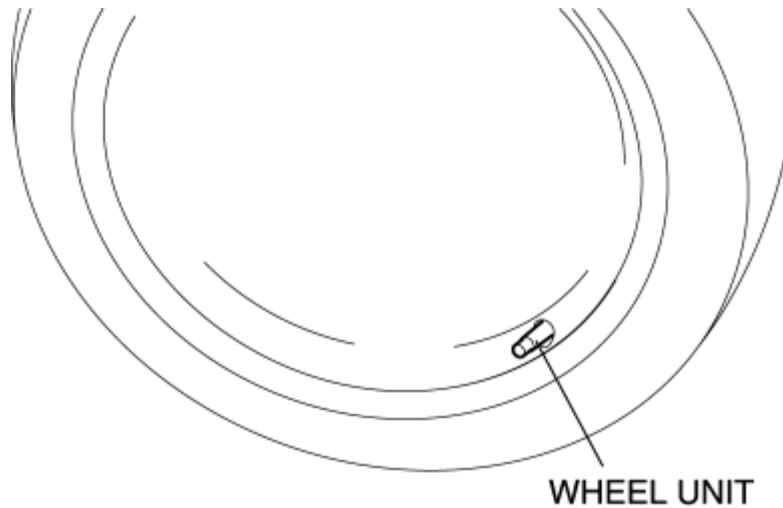
[Back to Top](#)

2011 - RX-8 - Suspension

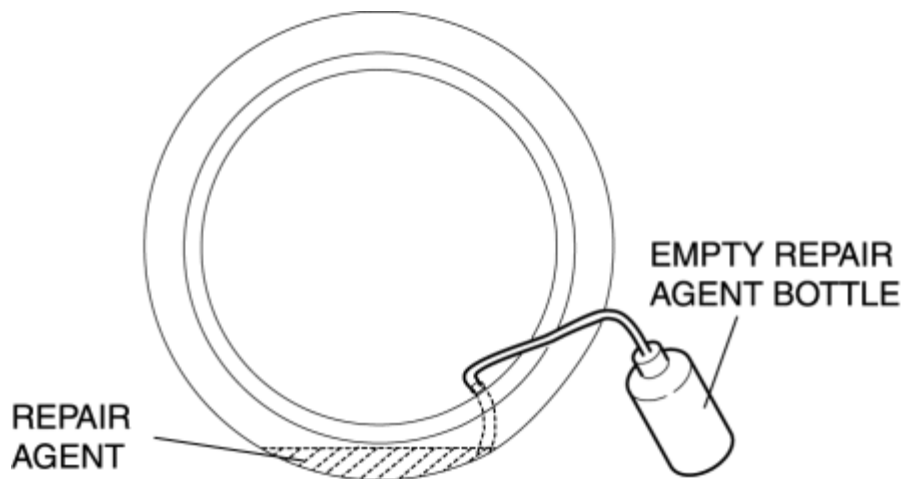
REPAIR AGENT REMOVAL

CAUTION:

- Be careful not to spill the repair agent from inside of the tire.
1. Remove the flat tire from the vehicle, and let the air out of the tire.
 2. Remove the wheel unit nut and push the remaining part of the wheel valve into the tire.



3. Insert the hose through the valve and into the tire. Stand the tire up so that the hose end sinks into the repair agent.



4. Pump out the repair agent.

NOTE:

- Place the tire on a higher stand than the pumping bottle. This will make the operation easier.

5. Repeat the pumping procedure, changing the position of the hose end, until there is no repair agent left in the tire.

6. Remove the tire from the wheel and pick the wheel unit pushed in at Step 2 out.

7. Wipe off the repair agent remaining on the wheel, wheel unit and tire.

NOTE:

- Dispose of waste repair agent according to local disposal law.
- The repair agent is composed of the following:
 - Deproteinized natural rubber latex
 - Emulsified adhesive resin
 - Propylene glycol
- The tire must be replaced with a new one and clean all tire repair agent off to the wheel.
- Use compressed air to clean out TPMS style valve.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Suspension

WHEEL UNIT REMOVAL/INSTALLATION

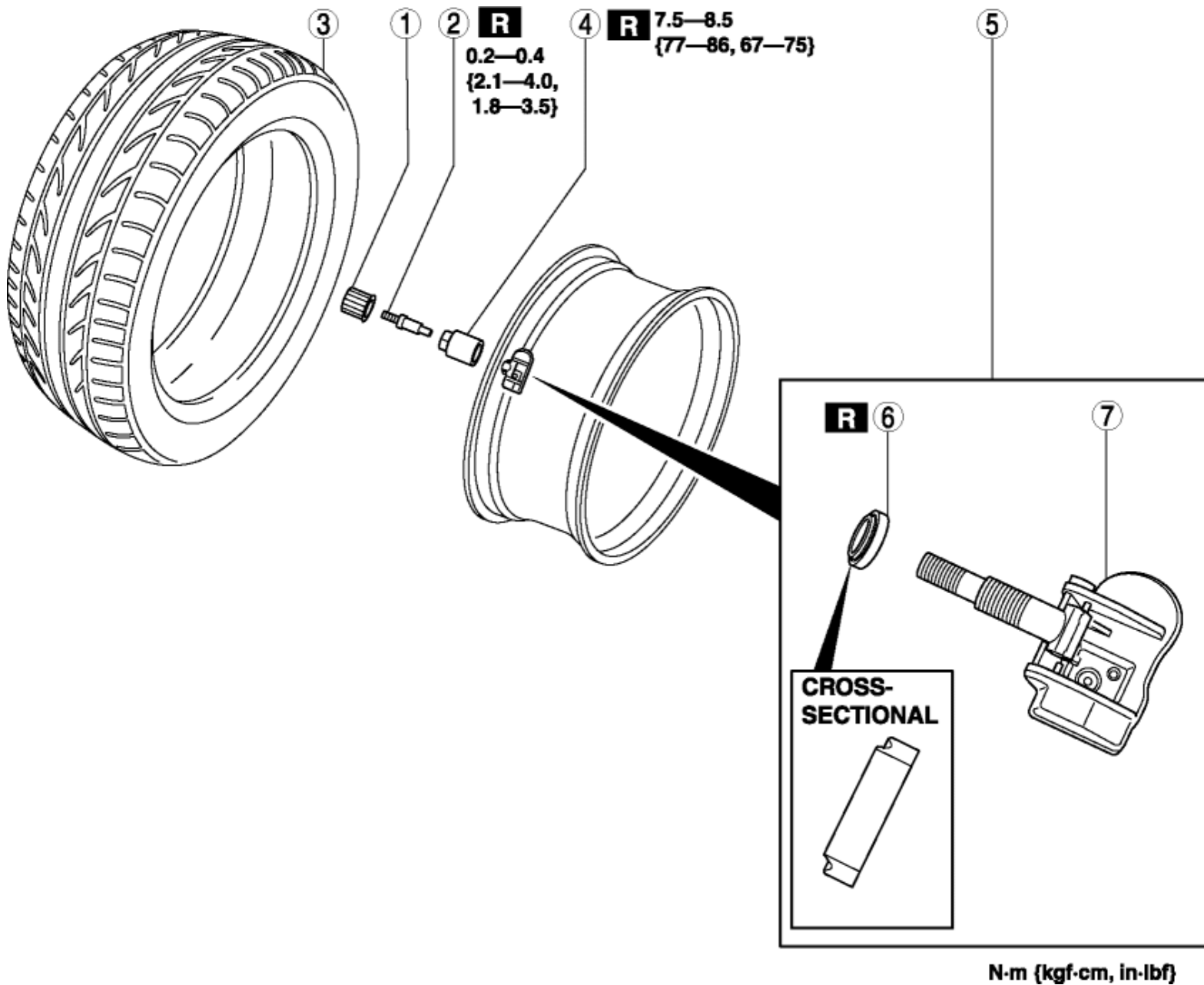
1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. Install the valve core and valve cap, put air into the tire.

CAUTION:

- A TPMS wheel unit has an exclusive valve cap and valve core. If a valve core other than the exclusive one is installed, the wheel unit could be damaged due to the generation of rust. Always install the exclusive valve cap and valve core for TPMS.
 - The wheel unit air pressure stem is made from aluminum and can be damaged. Do not tilt or use excessive side force when checking air pressure or filling tire with air. Some tire pressure gauges and air filling nozzles have extended tips, which can provide enough leverage to easily bend or break the wheel unit.
4. When replacing wheel unit (s), register the new wheel unit ID (s). (See [WHEEL UNIT ID REGISTRATION](#).)

NOTE:

- If the wheel unit is replaced with a new one, the ID registration must be performed. When the ID registration is finished, the data for the new wheel unit is displayed on the M-MDS.



1 Valve cap

2 Valve core

(See [Valve Core Removal Note.](#))

3 Tire

(See [Tire Removal Note.](#))

(See [Tire Installation Note.](#))

4 Valve nut

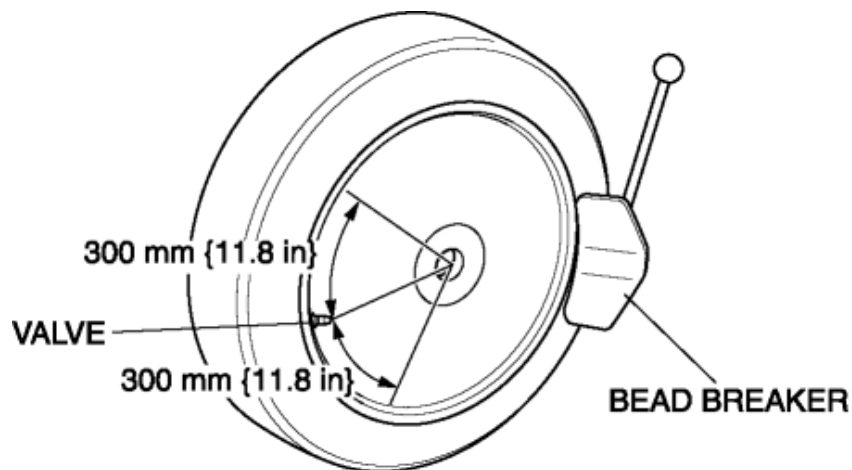
5	Wheel unit component
	(See Wheel Unit Component Installation Note.)
6	Seal
7	Wheel unit

Valve Core Removal Note

1. Remove the valve core of the wheel unit, and bleed the air from the tire.

Tire Removal Note

1. Set the bead breaker at the position laterally opposed to the valve.

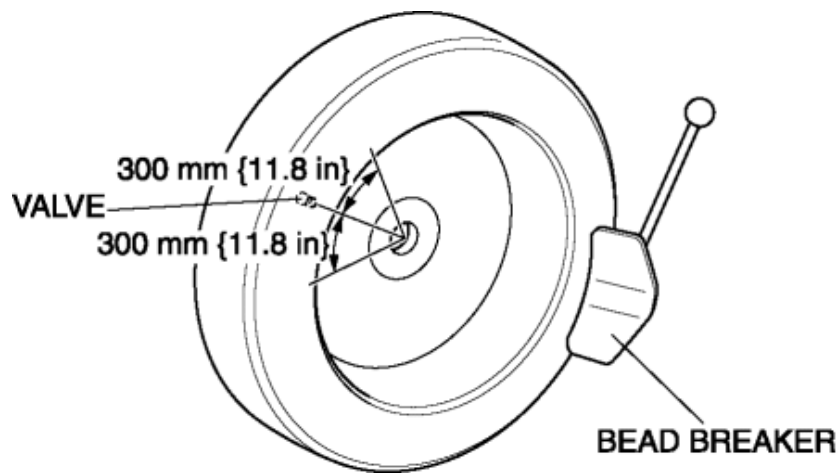


2. Break the bead loose.

CAUTION:

- Do not break the bead loose within the range of 300 mm {11.8 in} on each side of the valve. Otherwise, the wheel unit could be damaged.

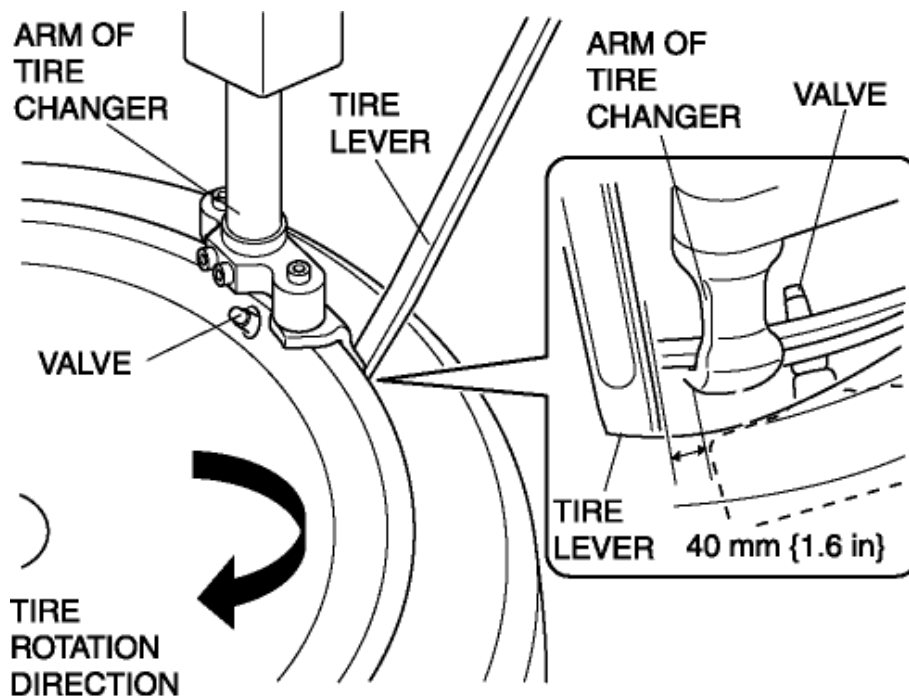
3. Break the bead loose on the other side of the wheel.



CAUTION:

- Set the bead breaker at the position laterally opposed to the valve.
- Do not break the bead loose within the range of 300 mm {11.8 in} on each side of the valve. Otherwise, the wheel unit could be damaged.

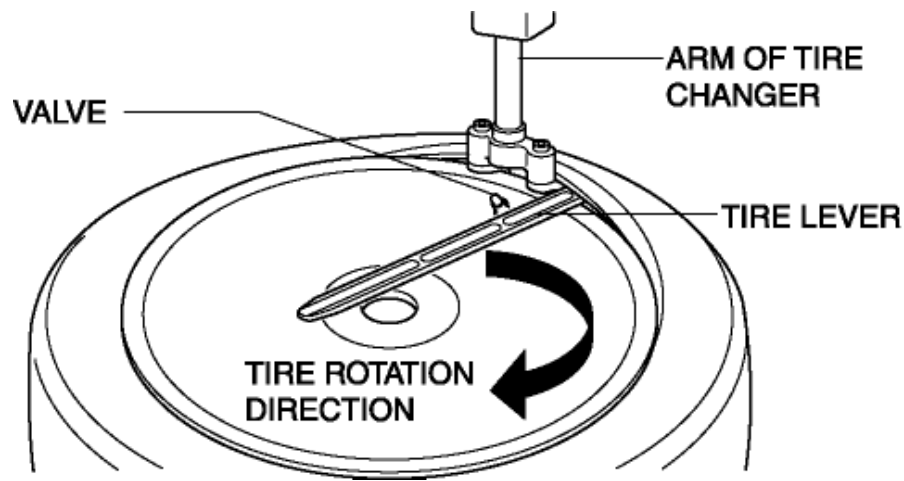
4. Insert the tire lever at the point **40 mm {1.6 in}** from the wheel unit in the direction that the tire changer turntable rotates.



5. Remove the bead from the wheel.

NOTE:

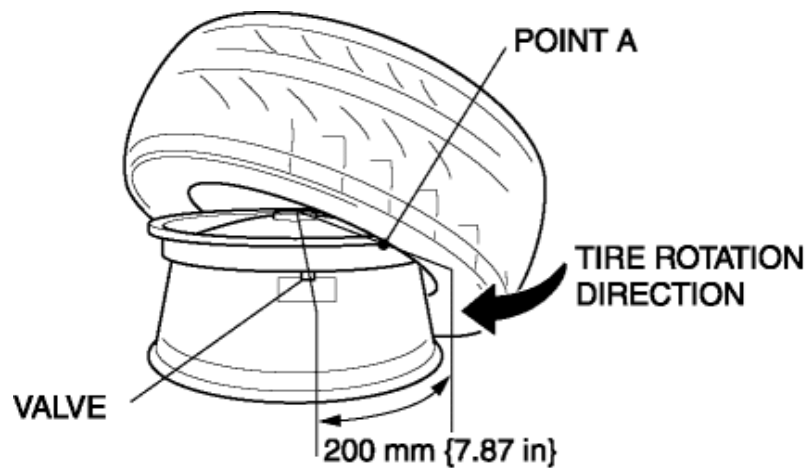
- Using the tire lever as a support will aid in preventing the tire changer arm from deviating from the point at which the bead is first broken.



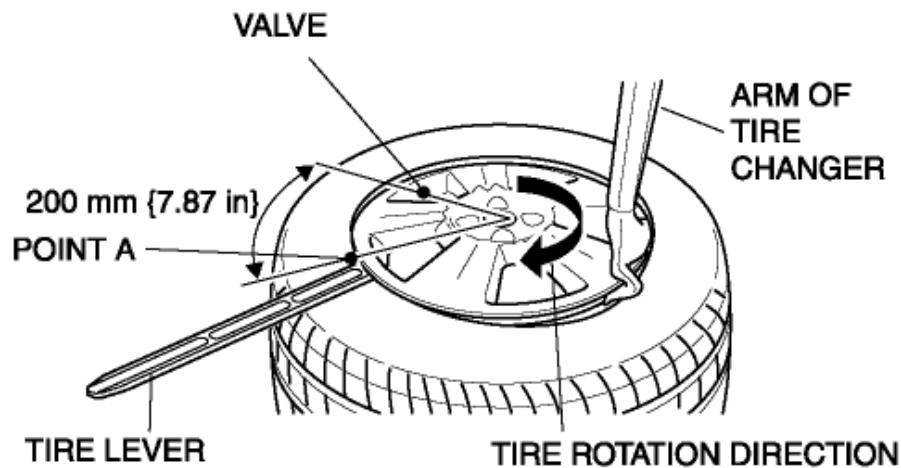
6. For the other side, insert the tire lever at the point of **40 mm {1.6 in}** from the wheel unit in the direction that the tire changer turntable rotates, and remove the bead from the wheel.

Tire Installation Note

1. Set the tire at the point A (**200 mm {7.87 in}** away from the valve hole), and install the tire.



2. Set the tire at the point A (**200 mm {7.87 in}** away from the valve hole).



NOTE:

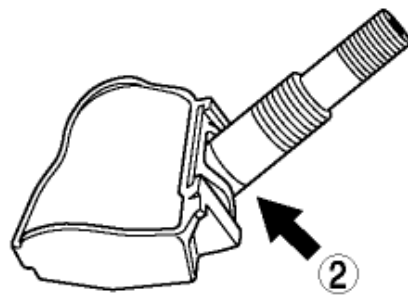
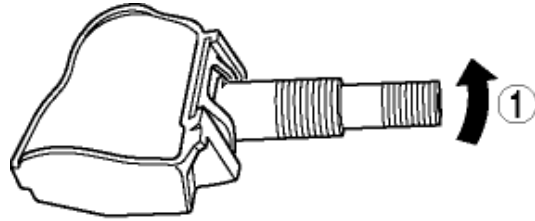
- Using the tire lever as a support will aid in preventing the tire from deviating from the

point A.

3. Install the tire.

Wheel Unit Component Installation Note

1. Insert the valve into the wheel unit in the order shown in the figure.



2. Verify that the valve is installed into the wheel unit completely as shown in the figure.



3. Insert the wheel unit valve into the valve hole so that the polyurethane foam side faces the wheel.
4. Temporarily tighten the valve nut by hand.
5. Completely tighten the valve nut using a torque wrench.

Tightening torque

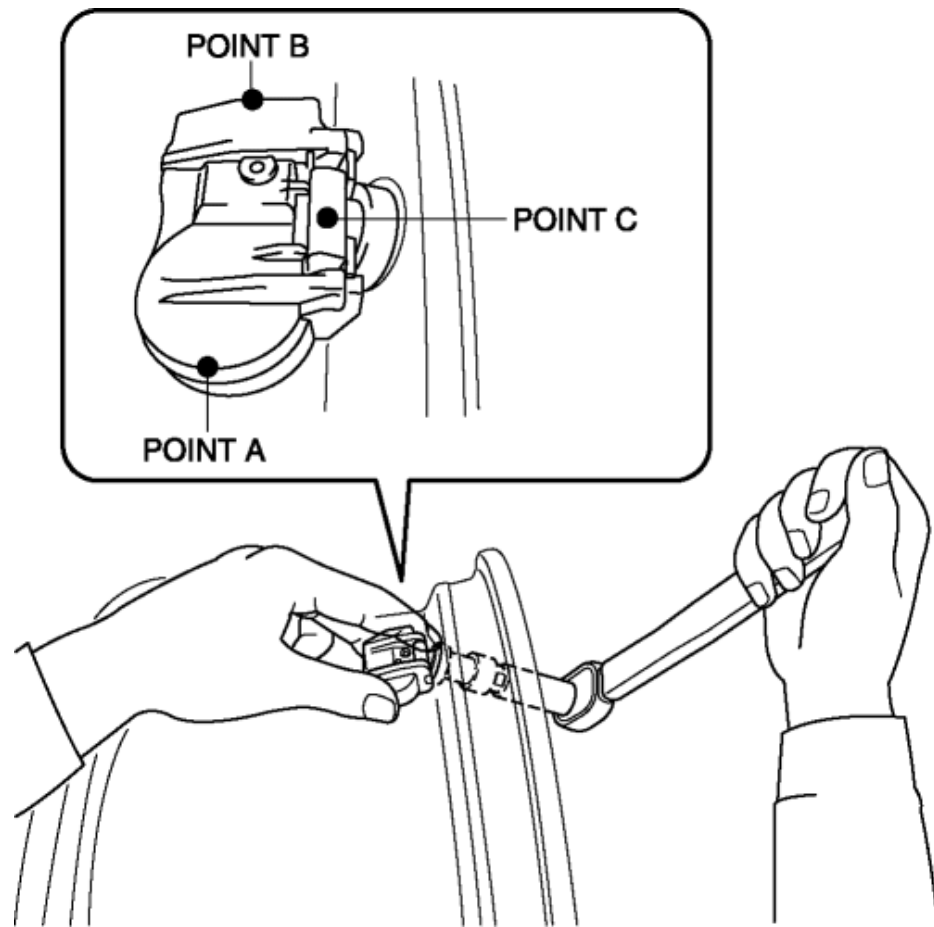
- 7.5—8.5 N·m {77—86 kgf·cm, 67—75 in·lbf}

CAUTION:

- Do not retighten the valve nut after the initial operation.

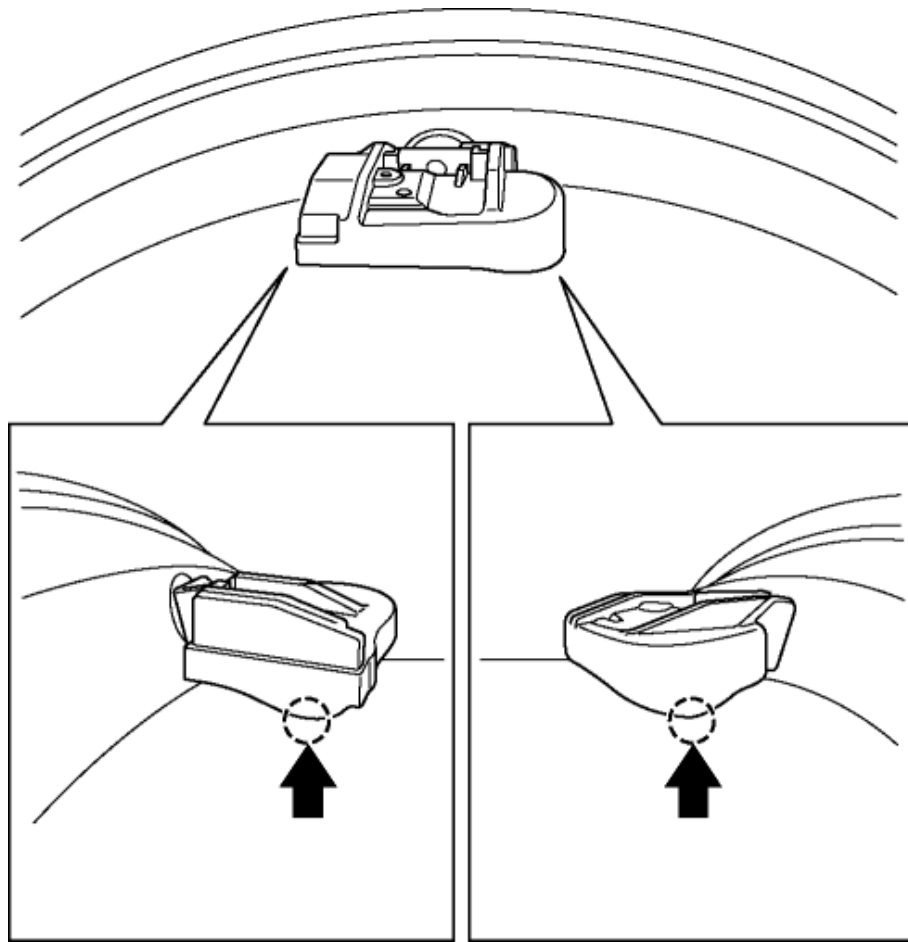
NOTE:

- Hold the end of the wheel unit (POINTS A and B) with your thumb and middle fingers so that the wheel unit does not rotate, and then hold the valve (POINT C) with your index finger so that the valve does not detach from the wheel unit.

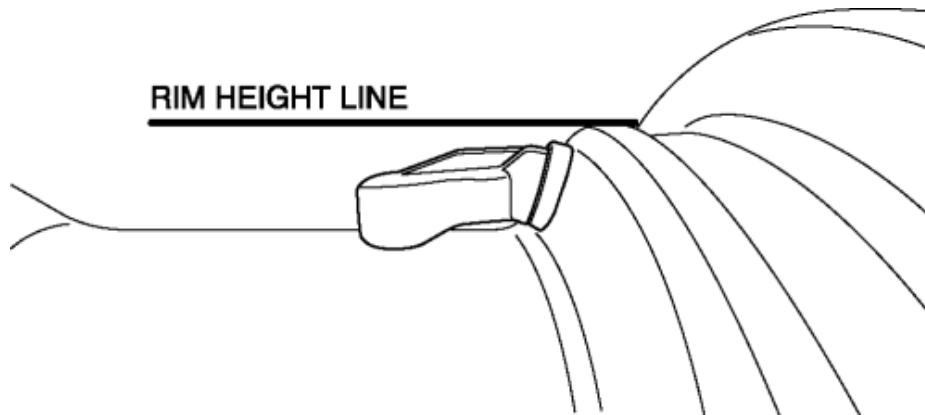


6. Verify that the wheel unit component is correctly installed.

- Both ends or one end of the wheel unit contacts the wheel as shown in the figure.

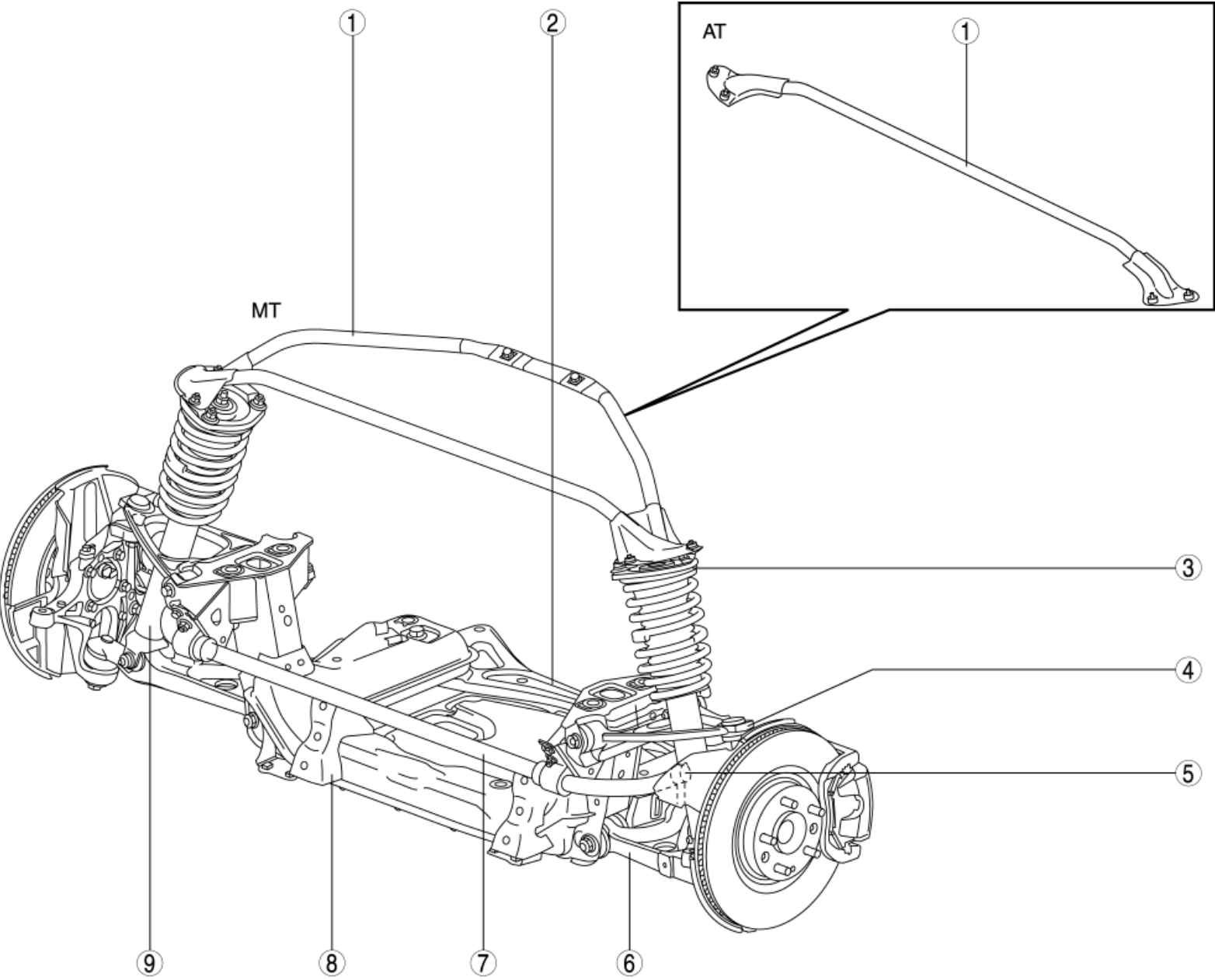


- The wheel unit does not exceed the rim height as shown in the figure.



2011 - RX-8 - Suspension

FRONT SUSPENSION LOCATION INDEX



1	Front suspension tower bar (See FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION [MT].) (See FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION [AT].)
2	Transverse member (See TRANSVERSE MEMBER REMOVAL/INSTALLATION.)

3	Front shock absorber and coil spring (See FRONT SHOCK ABSORBER AND COIL SPRING REMOVAL/INSTALLATION.) (See FRONT SHOCK ABSORBER AND COIL SPRING DISASSEMBLY/ASSEMBLY.)
4	Front upper arm (See FRONT UPPER ARM REMOVAL/INSTALLATION.) (See FRONT UPPER ARM INSPECTION.)
5	Stabilizer control link (See FRONT STABILIZER CONTROL LINK INSPECTION.)
6	Front lower arm (See FRONT LOWER ARM REMOVAL/INSTALLATION.) (See FRONT LOWER ARM INSPECTION.)
7	Front stabilizer (See FRONT STABILIZER REMOVAL/INSTALLATION.)
8	Front crossmember (See FRONT CROSSMEMBER REMOVAL/INSTALLATION.)
9	Front shock absorber (See FRONT SHOCK ABSORBER INSPECTION.) (See FRONT SHOCK ABSORBER DISPOSAL.)

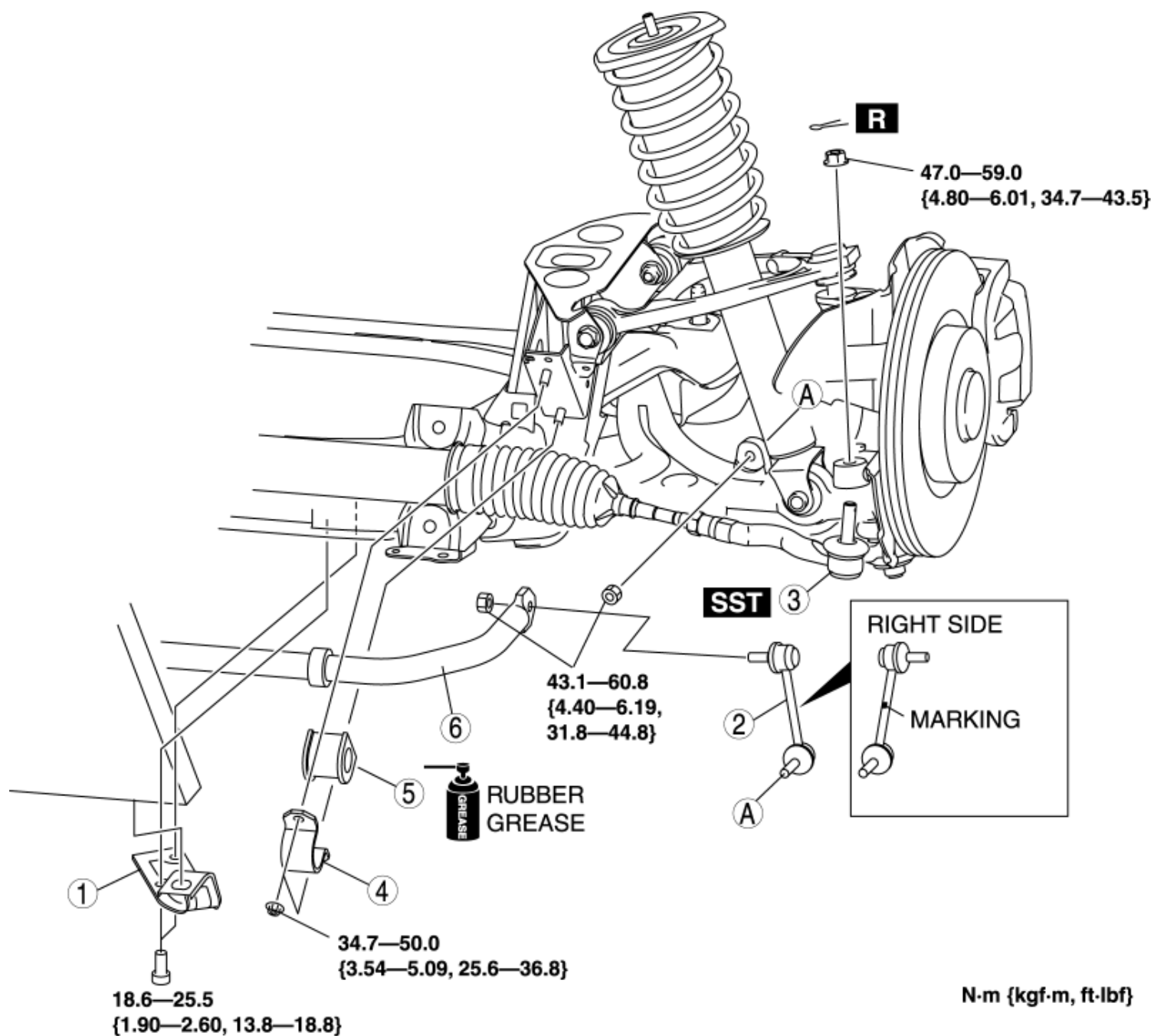
[< Previous](#) [Next >](#)

2011 - RX-8 - Suspension

FRONT STABILIZER REMOVAL/INSTALLATION

CAUTION:

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, remove the ABS wheel-speed sensor (axle side) and fix it to an appropriate place where the sensor will not be pulled while servicing the vehicle.
1. Remove the splash shield. (See [SPLASH SHIELD REMOVAL/INSTALLATION](#).)
 2. Slightly bend back the front mudguard, and remove the aerodynamic under cover. (See [AERODYNAMIC UNDER COVER REMOVAL/INSTALLATION](#).)
 3. Remove in the order indicated in the table.
 4. Install in the reverse order of removal.



1 Radiator mount bracket

2 Stabilizer control link

3 Tie-rod end

(See [STEERING GEAR AND LINKAGE REMOVAL/INSTALLATION.](#))

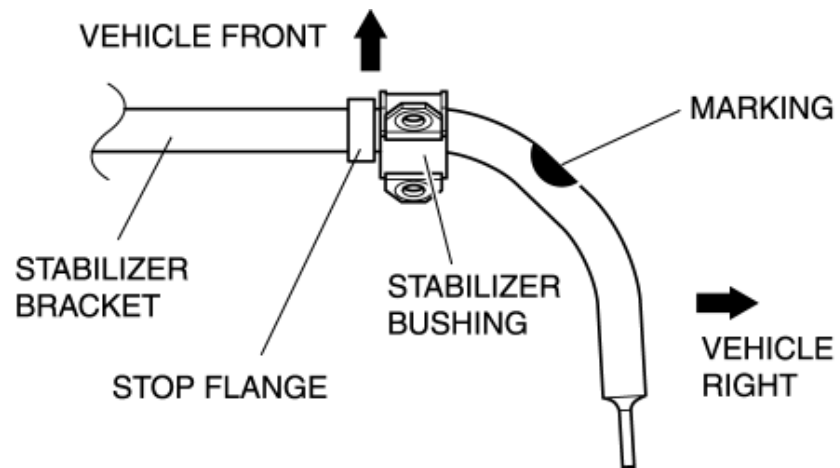
4 Stabilizer bracket

(See [Stabilizer Bracket Installation Note.](#))

5	Stabilizer bushing
6	Front stabilizer

Stabilizer Bracket Installation Note

1. Apply rubber grease to the inner side of the stabilizer bushing.
2. Align the outer side of the stabilizer slide stopper with the stabilizer bushing.
3. Install the stabilizer bracket.



[< Previous](#) [Next >](#)

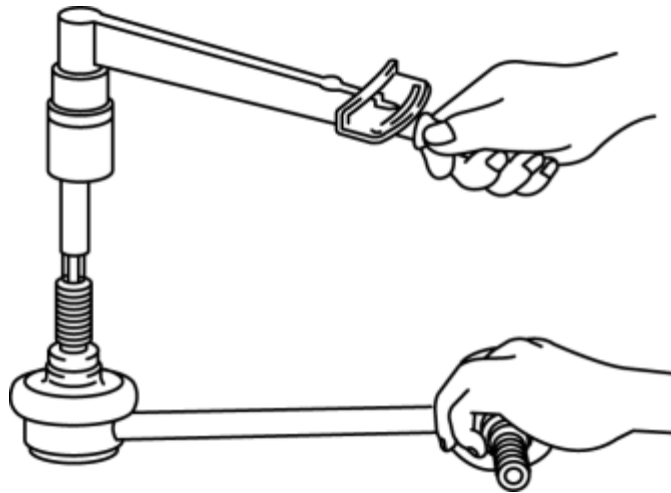
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Suspension

FRONT STABILIZER CONTROL LINK INSPECTION

1. Remove the stabilizer control link from the vehicle.
2. Inspect the stabilizer control link for bending or damage. If there is any malfunction, replace it.
3. Rotate the ball joint stud **10 times**, and then rock it side to side **10 times**.
4. Measure the ball-joint rotational torque using an Allen wrench and a torque wrench.



Front stabilizer control link ball joint rotational torque

- 0.2—0.8 N·m {2.0—8.1 kgf·cm, 1.8—7.1 in·lbf}
- If not within the specification, replace the stabilizer control link.
- Even when within the specification, if there is excessive play in the ball joint, replace the stabilizer control link.

2011 - RX-8 - Suspension

FRONT LOWER ARM REMOVAL/INSTALLATION

CAUTION:

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, remove the ABS wheel-speed sensor (axle side) and fix it to an appropriate place where the sensor will not be pulled while servicing the vehicle.
1. Remove the front auto leveling sensor. (See [FRONT AUTO LEVELING SENSOR REMOVAL/INSTALLATION](#).)
 2. Remove in the order indicated in the table.
 3. Install in the reverse order of removal.

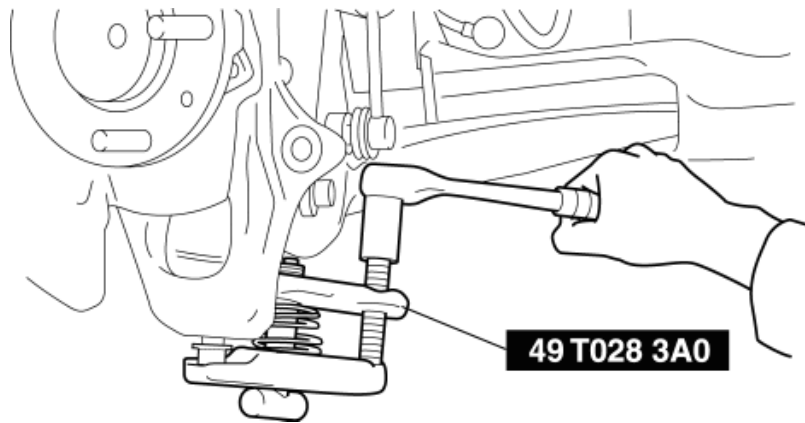
4	Front upper arm ball joint (See Upper Arm Ball Joint Removal Note.)
5	Front hub and steering knuckle component
6	Stabilizer control link nut (front lower arm side)
7	Front lower arm (See Front Lower Arm Installation Note.)
8	Clip (See Clip Installation Note.)
9	Dust boot
10	Bushing (rear side) (See Bushing (Rear Side) Removal Note.) (See Bushing (Rear Side) Installation Note.)
11	Bushing (front side) (See Bushing (Front Side) Removal Note.) (See Bushing (Front Side) Installation Note.)
12	Bushing (shock absorber lower side connecting part) (See Bushing (Shock Absorber Lower Side Connecting Part) Removal Note.) (See Bushing (Shock Absorber Lower Side Connecting Part) Installation Note.)

Caliper and Mounting Support Removal Note

1. Remove the caliper and mounting support from the steering knuckle and suspend it with a cable in a location out of the way.

Front Lower Arm Ball Joint Removal Note

1. Disconnect the front lower arm ball joint from the steering knuckle using the **SST**.

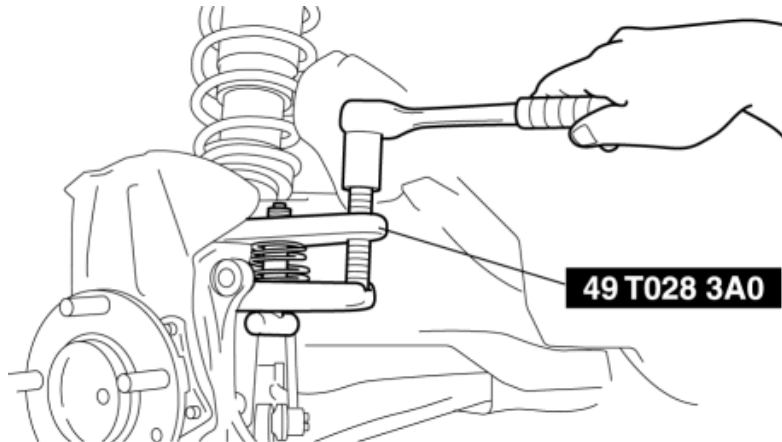


NOTE:

- When removing the front lower arm ball joint, the steering knuckle bushing may also come off. If it comes off, replace the steering knuckle.

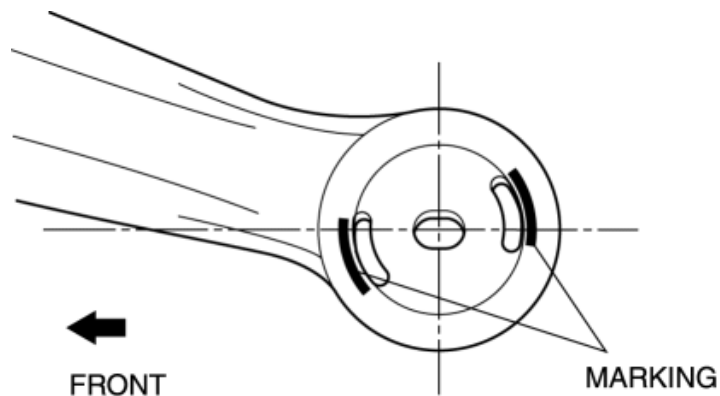
Upper Arm Ball Joint Removal Note

1. Loosen the bolts on the vehicle side.
2. Disconnect the upper arm ball joint using the **SST**.

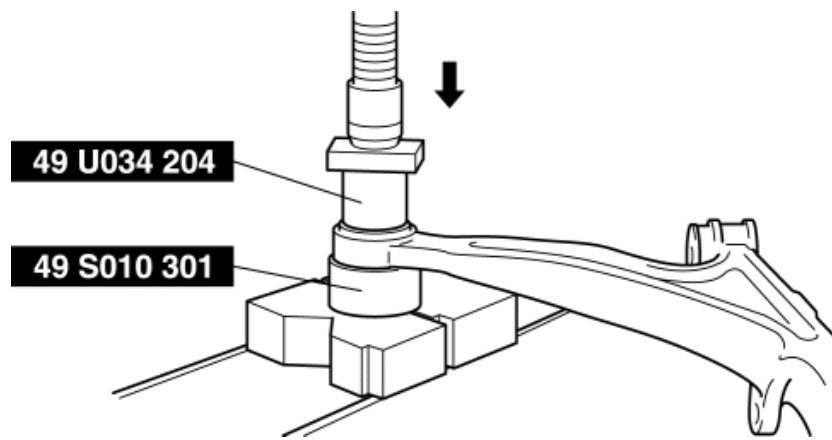


Bushing (Rear Side) Removal Note

1. Mark the front upper arm as shown in the figure.



2. Remove the bushing using the **SSTs**.

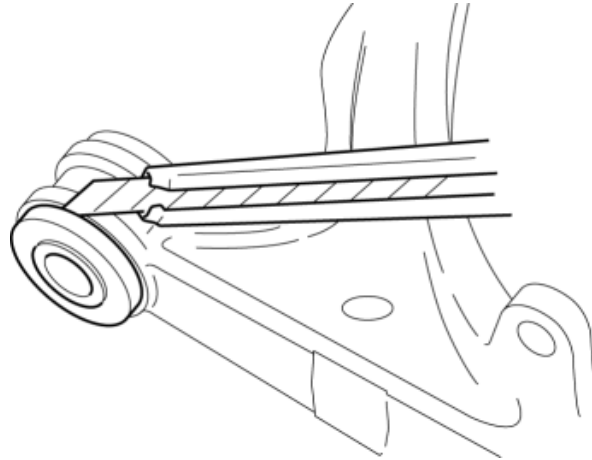


Bushing (Front Side) Removal Note

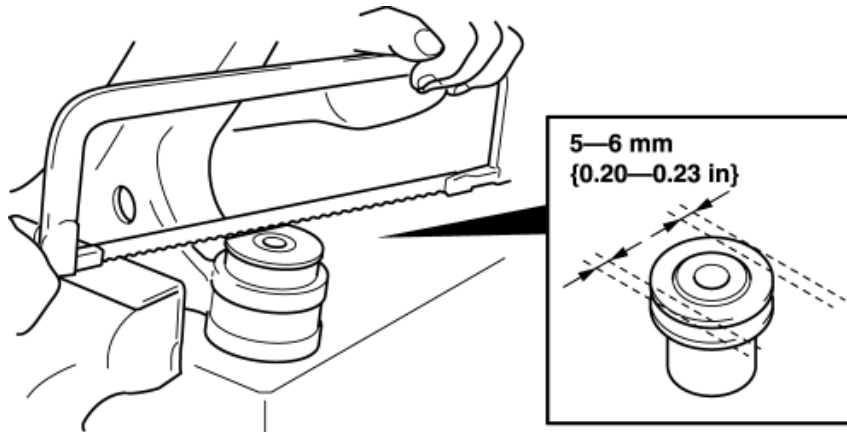
CAUTION:

- Be careful not to damage the front lower arm. If it is damaged, replace it.

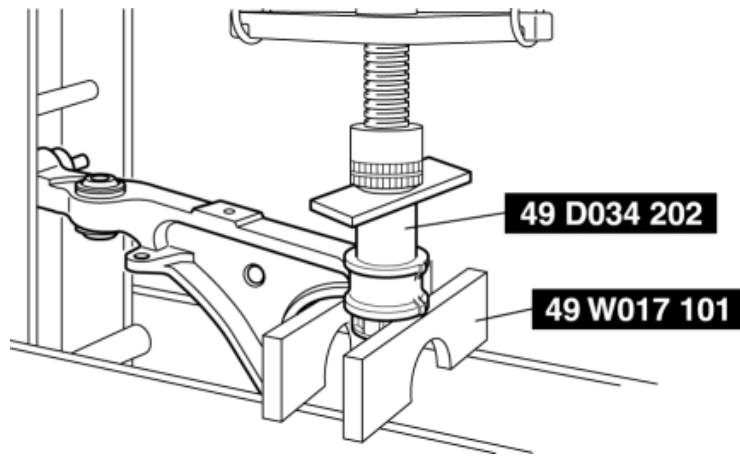
1. Cut off the stopper plate rubber using a razor.



2. Cut off **5—6 mm {0.20—0.23 in}** from each side of the knob end of the bushing using a hacksaw.

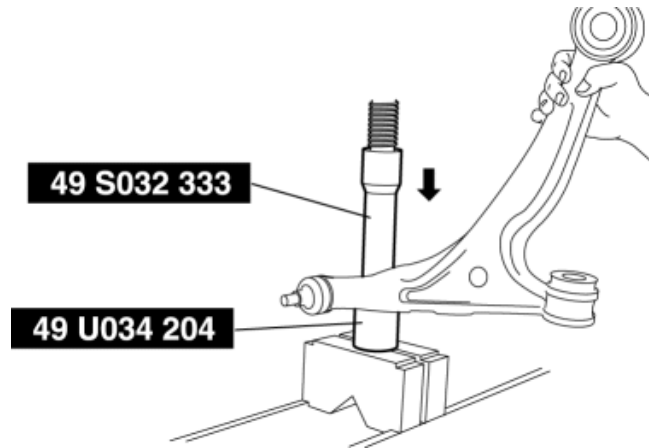


3. Remove the bushing using the **SSTs**.



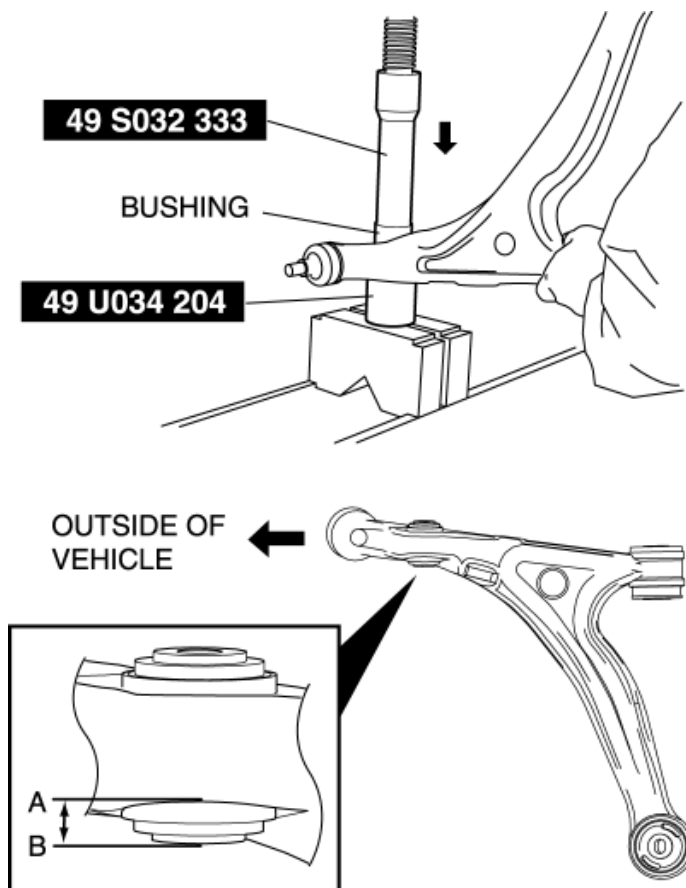
Bushing (Shock Absorber Lower Side Connecting Part) Removal Note

1. Remove the bushing using the **SSTs**.



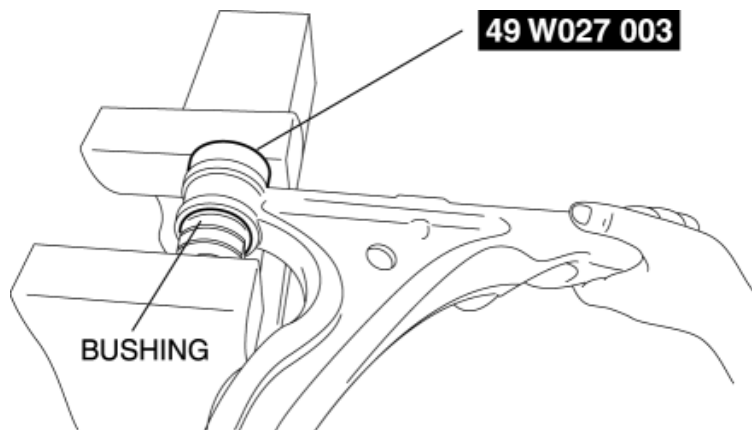
Bushing (Shock Absorber Lower Side Connecting Part) Installation Note

1. Compress the bushing using the **SSTs** so that the clearance distance A-B is **11.2—12.8 mm {0.441—0.503 in}**.

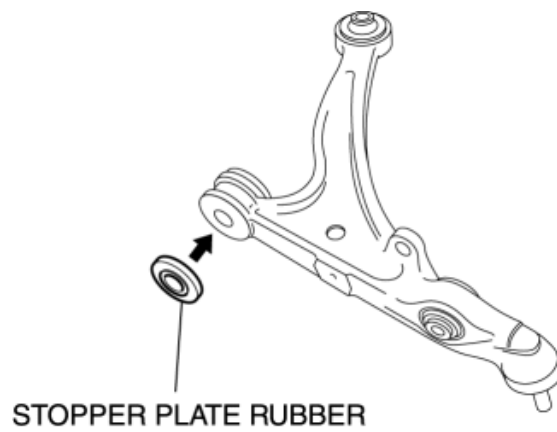


Bushing (Front Side) Installation Note

1. Press the bushing in using the **SSTs**.

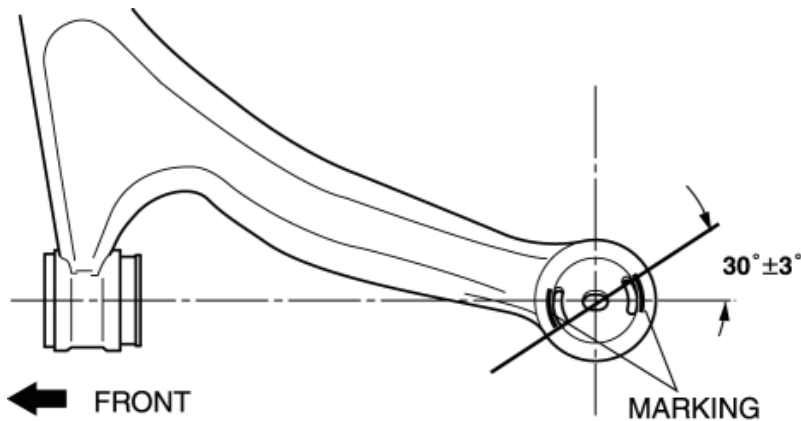


2. Verify that there is no clearance between the bushing and the front lower arm.
3. Insert the stopper plate rubber into the inner pipe of the bushing (front side).

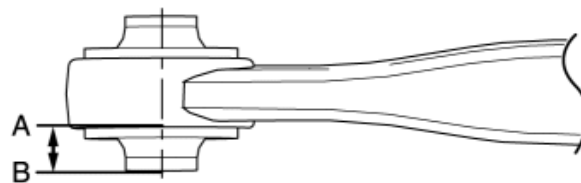
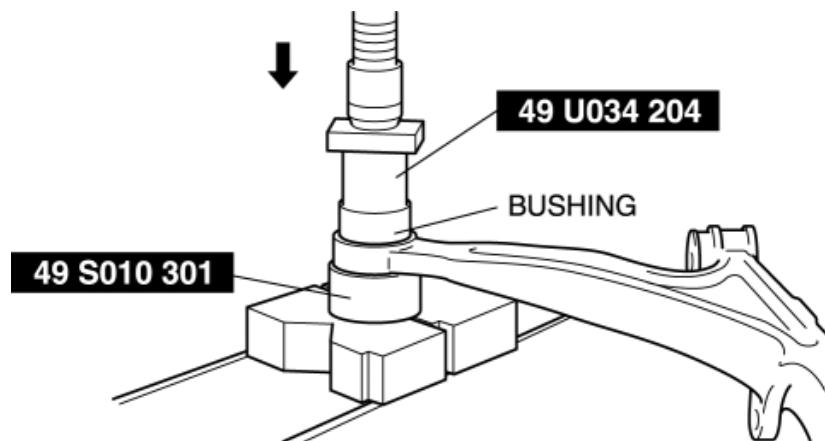


Bushing (Rear Side) Installation Note

1. Align the marks placed during removal and install the bushing.

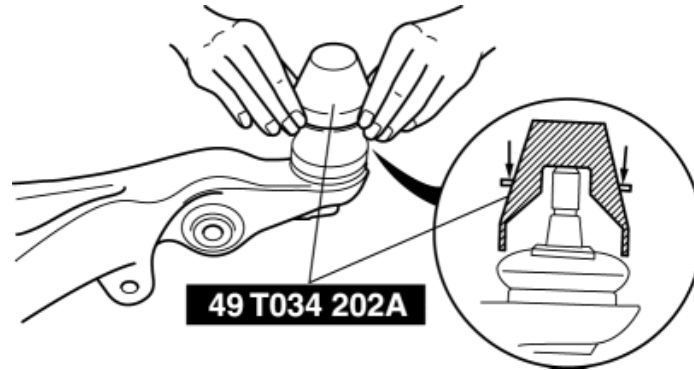


2. Press the bushing in using the **SSTs** so that the clearance distance A-B is 15.5—17.5 mm{0.611—0.688 in}.



Clip Installation Note

1. Wipe the grease off the ball joint stud.
2. Fill the inside of the new dust boot with grease.
3. Install the dust boot to the ball joint.
4. Install the clip using the **SST**.



5. Verify that the clip is installed securely to the groove.
6. Wipe off any excess grease.

Front Lower Arm Installation Note

1. Install the front lower arm rear side bushing part horizontally.
2. Install the front lower arm front side bushing part.

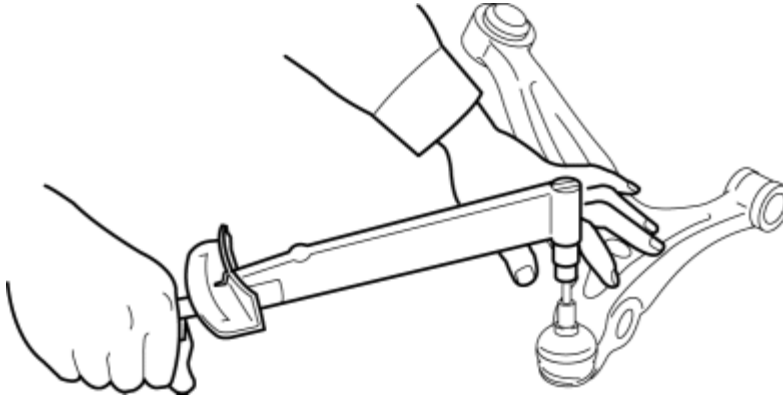
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Suspension

FRONT LOWER ARM INSPECTION

1. Remove the front lower arm from the vehicle.
2. Inspect the front lower arm for bending or damage. If there is any malfunction, replace it.
3. Inspect the ball joint for excessive play. If there is any malfunction, replace the front lower arm.
4. Rotate the ball joint **5 times**.
5. Measure the ball-joint rotational torque using an Allen wrench and a torque wrench.



Front lower arm ball joint rotational torque

- 2.3 N·m {23 kgf·cm, 20 in·lbf} max.
- If not within the specification, replace the front lower arm.

[< Previous](#) [Next >](#)

2011 - RX-8 - Suspension

FRONT SHOCK ABSORBER INSPECTION

1. Remove the front shock absorber.
2. Inspect for damage and oil leakage.
3. Compress and extend the shock absorber piston rod at least three times at a steady speed. From the fourth compression stroke, verify that the operational force does not change and that there is no unusual noise.
 - If there is any malfunction, replace the shock absorber.

[< Previous](#) [Next >](#)

[Back to Top](#)

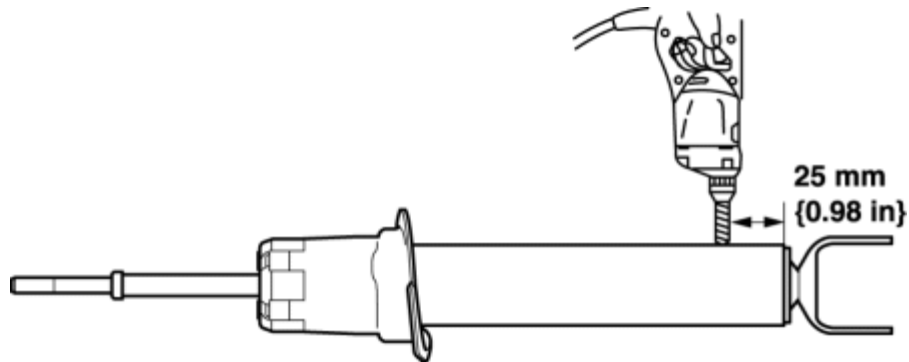
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Suspension

FRONT SHOCK ABSORBER DISPOSAL

WARNING:

- Whenever drilling into a shock absorber, wear protective eye wear. The gas in the shock absorber is pressurized, and could spray metal chips into the eyes and face when drilling.
1. Clamp the shock absorber on a flat surface.
 2. Drill a **2—3 mm {0.08—0.12 in}** hole at a point **25 mm {0.98 in}** from the bottom of the tube, so that the gas can escape.



3. Turn the hole downwards.
4. The oil can be collected by moving the piston rod several times up and down and cutting the tube at the end.
5. Dispose of waste oil according to local waste disposal law.

NOTE:

- Shock absorber gas contains nitrogen gas.
- Shock absorber oil contains mineral oil.

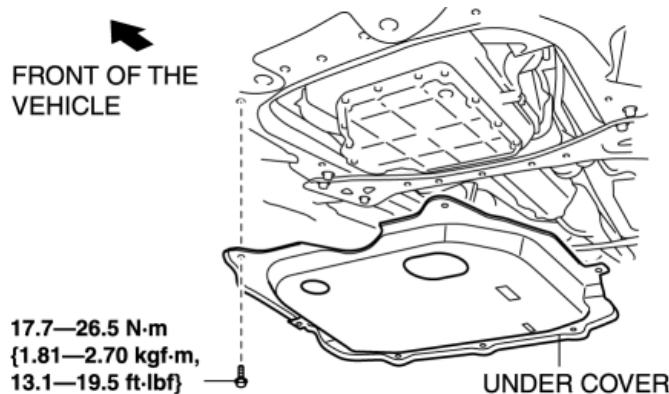
2011 - RX-8 - Suspension

FRONT CROSSMEMBER REMOVAL/INSTALLATION

CAUTION:

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, remove the ABS wheel-speed sensor (axle side) and fix it to an appropriate place where the sensor will not be pulled while servicing the vehicle.
- Secure the steering wheel using tape or a cable to prevent the steering shaft from rotating after disconnecting the steering shaft. If the steering wheel rotates after the steering shaft and the steering gear and linkage are disconnected, the internal parts of the clock spring could be damaged.

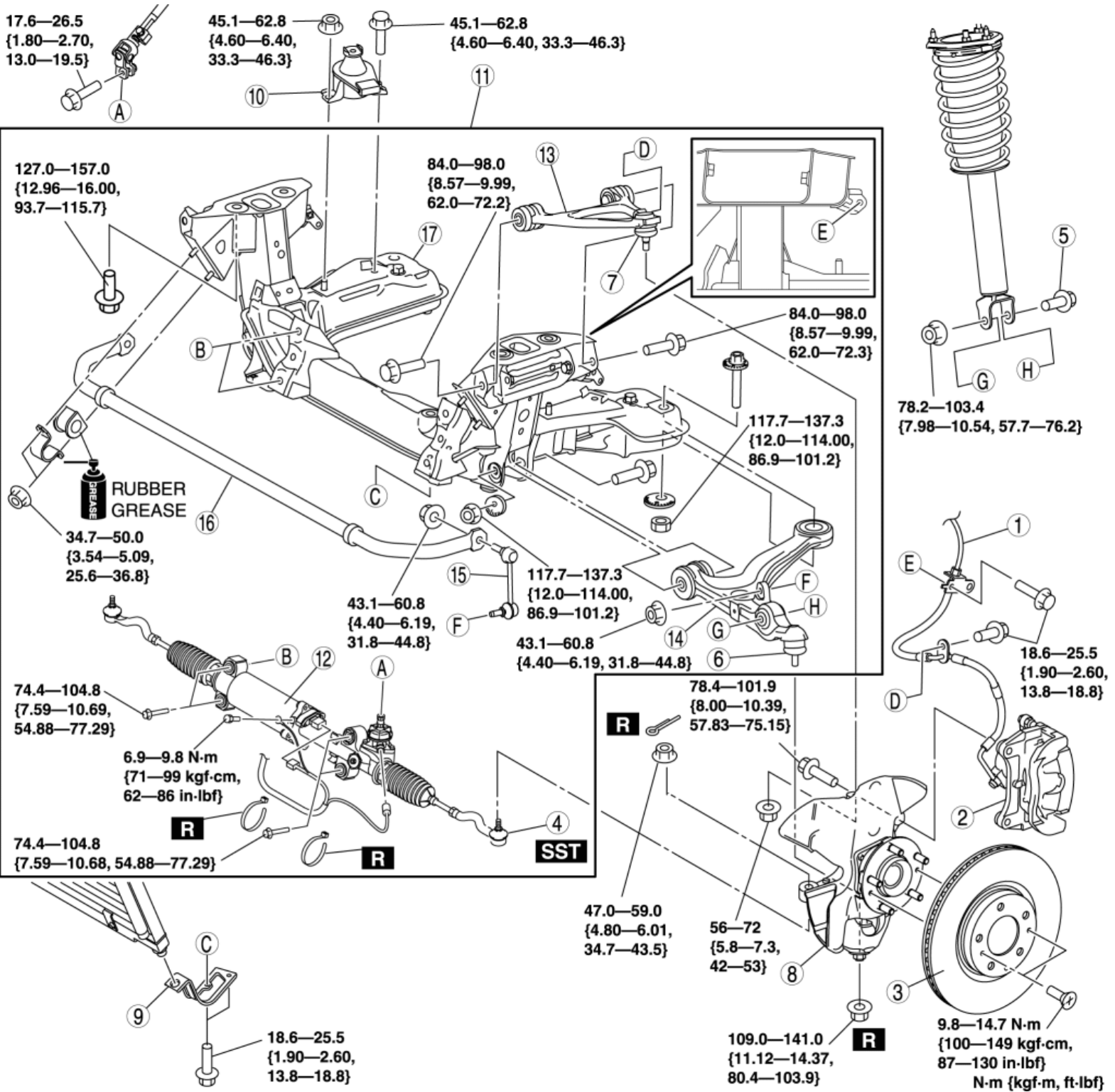
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Remove the front suspension tower bar. (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[MT\]](#).) (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[AT\]](#).)
3. Remove the splash shield. (See [SPLASH SHIELD REMOVAL/INSTALLATION](#).)
4. Slightly bend back the front mudguard, and remove the aerodynamic under cover. (See [AERODYNAMIC UNDER COVER REMOVAL/INSTALLATION](#).)
5. Remove the front auto leveling sensor. (See [FRONT AUTO LEVELING SENSOR REMOVAL/INSTALLATION](#).)
6. Remove the under cover.



7. Remove the transverse member. (See [TRANSVERSE MEMBER REMOVAL/INSTALLATION](#).)
8. Remove in the order indicated in the table.
9. Install in the reverse order of removal.
10. Inspect the front wheel alignment. (See [FRONT WHEEL ALIGNMENT](#).)
11. Set the EPS system to the neutral position. (See [EPS SYSTEM NEUTRAL POSITION SETTING](#).)

CAUTION:

- After disconnecting the steering shaft joint, always set the EPS system to the neutral position to prevent system malfunction.



1 Brake hose

2 Caliper and mounting support

3 Disc plate

4 Tie-rod end

(See [STEERING GEAR AND LINKAGE REMOVAL/INSTALLATION.](#))

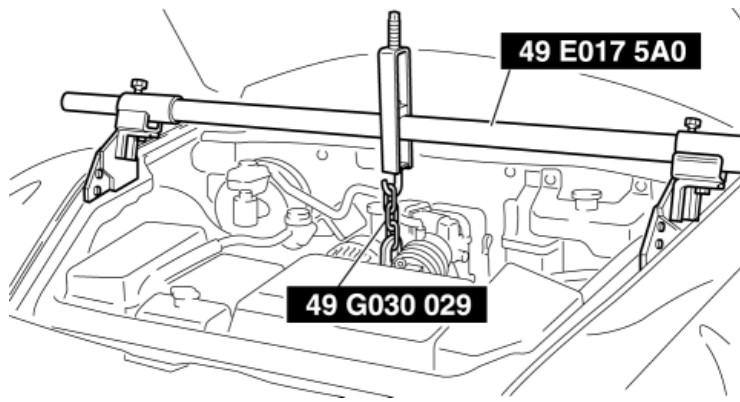
5	Shock absorber bolt (lower)
6	Front lower arm bolt joint (See FRONT LOWER ARM REMOVAL/INSTALLATION.)
7	Front upper arm ball joint (See FRONT UPPER ARM REMOVAL/INSTALLATION.)
8	Axle and hub component (See Axle and Hub Component Removal Note.)
9	Radiator mounting bracket
10	Mounting rubber (See Mounting Rubber Removal Note.)
11	Front crossmember component
12	Steering gear and linkage
13	Front upper arm
14	Front lower arm
15	Stabilizer control link
16	Front stabilizer
17	Front crossmember

Axle and Hub Component Removal Note

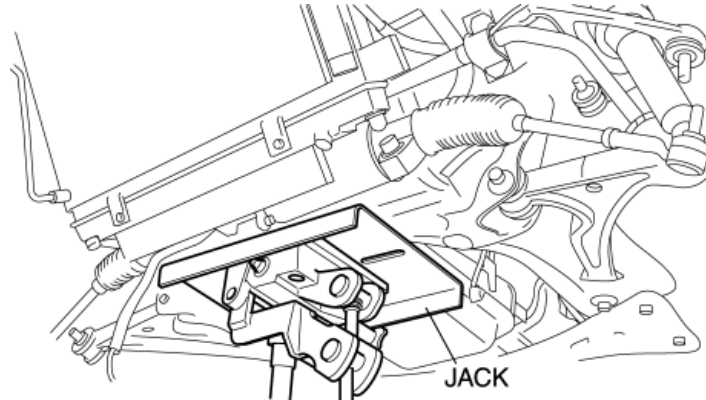
1. Loosen the front upper arm inner bolts.
2. Remove the axle and hub component.

Mounting Rubber Removal Note

1. Suspend the engine using the **SSTs**.



2. Support the front crossmember using a jack.



WARNING:

- Verify that the crossmember component is securely supported by a jack. If the crossmember component falls, it could cause serious injury or death, or damage to the vehicle.

3. Remove the transverse member.

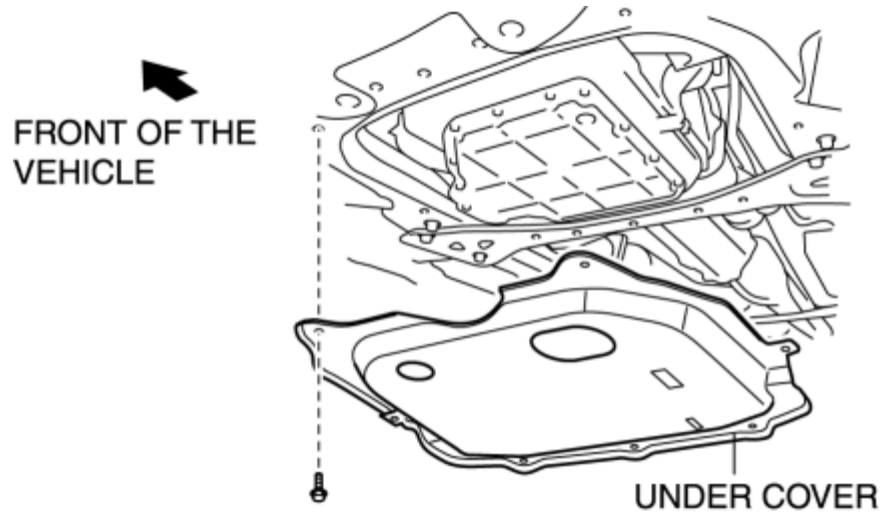
4. Remove the mounting rubber while gradually lowering the front crossmember.

[< Previous](#) [Next >](#)

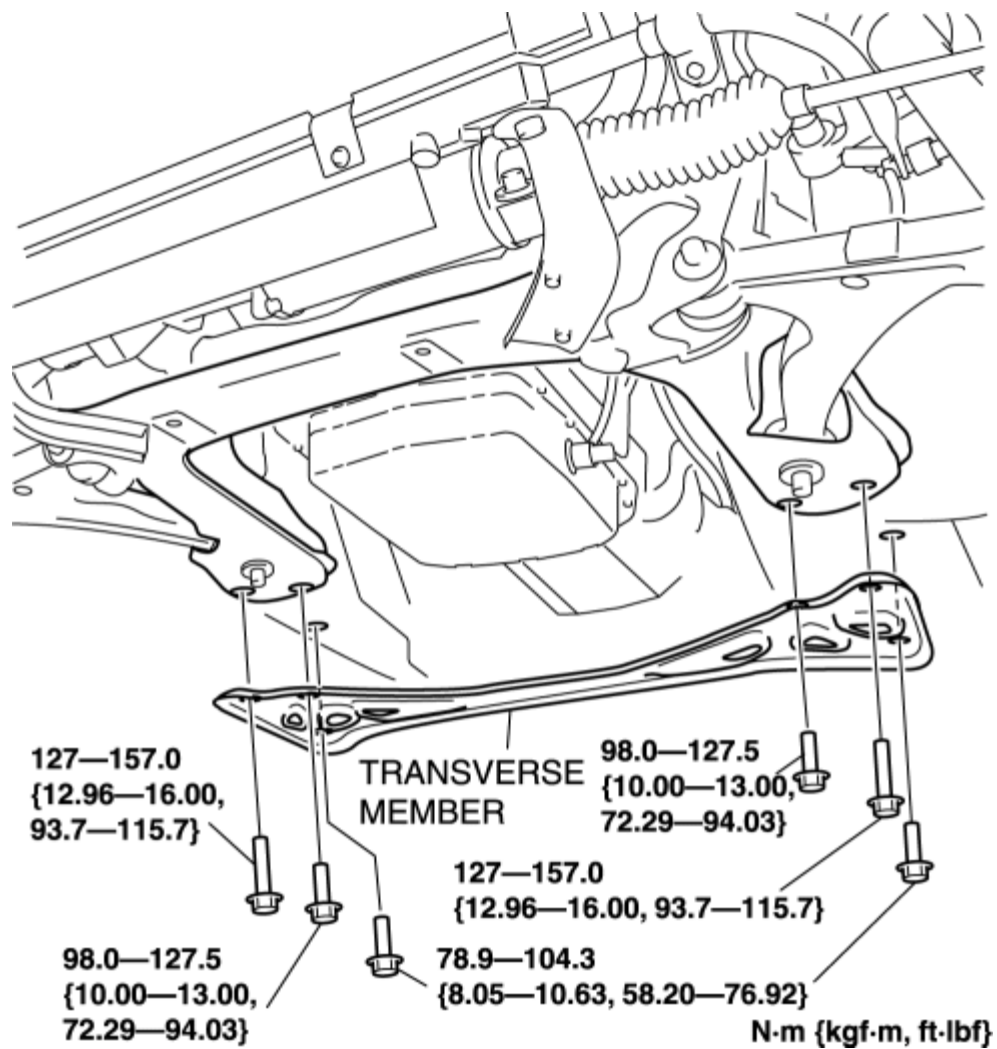
2011 - RX-8 - Suspension

TRANSVERSE MEMBER REMOVAL/INSTALLATION

1. Remove the under cover.

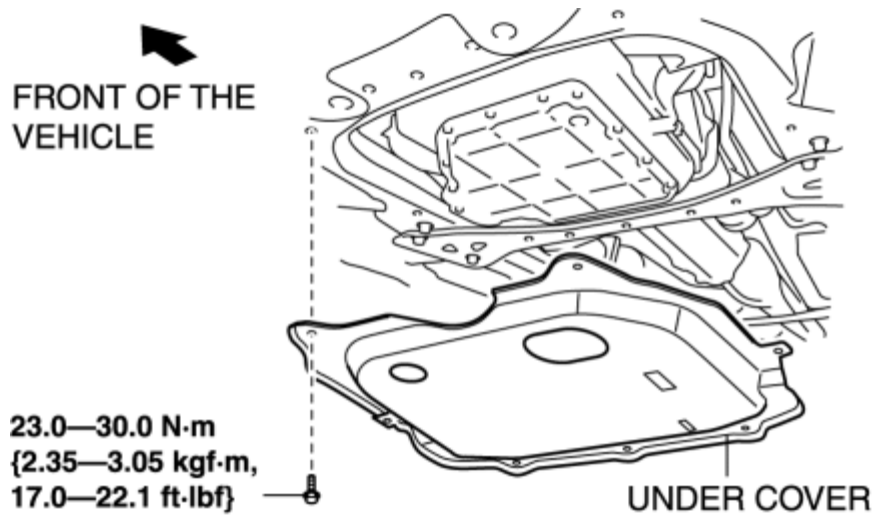


2. Remove the transverse member.



3. Install the transverse member.

4. Install the under cover.

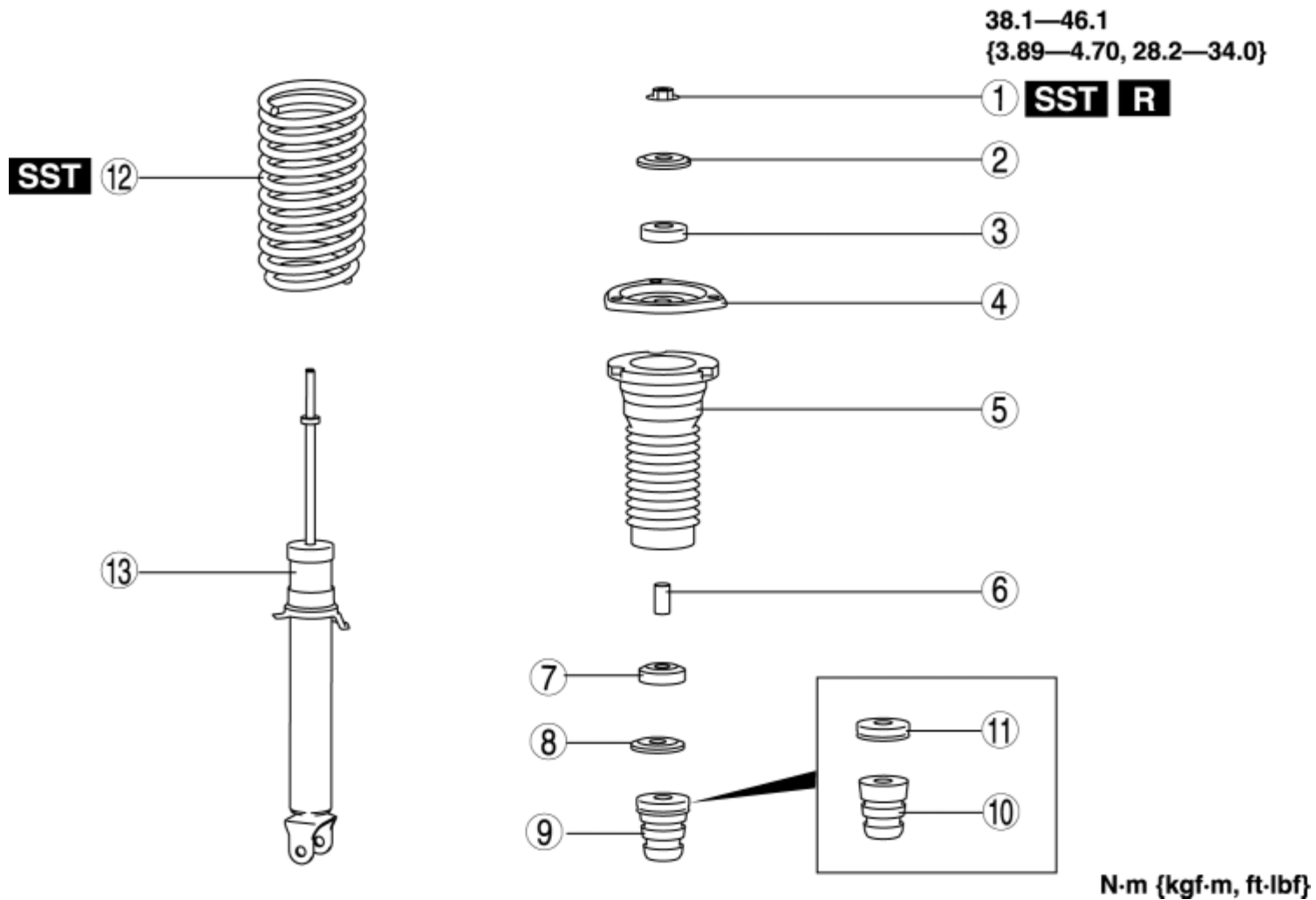


2011 - RX-8 - Suspension

FRONT SHOCK ABSORBER AND COIL SPRING DISASSEMBLY/ASSEMBLY

CAUTION:

- Removing/installing the shock absorber and coil spring is dangerous. The shock absorber and coil spring could fly off under tremendous pressure and cause serious injury or death, and damage the vehicle.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Remove the front suspension tower bar. (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[MT\]](#).) (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[AT\]](#).)
 3. Remove the front shock absorber and coil spring. (See [FRONT SHOCK ABSORBER AND COIL SPRING REMOVAL/INSTALLATION](#).)
 4. Disassemble in the order indicated in the table.
 5. Assemble in the reverse order of removal.



1	Piston rod nut (See Piston Rod Nut Removal Note.)
2	Retainer
3	Bushing
4	Upper spring seat (See Upper Spring Seat Installation Note.)
5	Dust boot
6	Spacer
7	Bushing

8	Retainer
9	Stopper casing and bound stopper
10	Bound stopper
11	Stopper casing
12	Coil spring (See Coil Spring Installation Note.)
13	Front shock absorber

Piston Rod Nut Removal Note

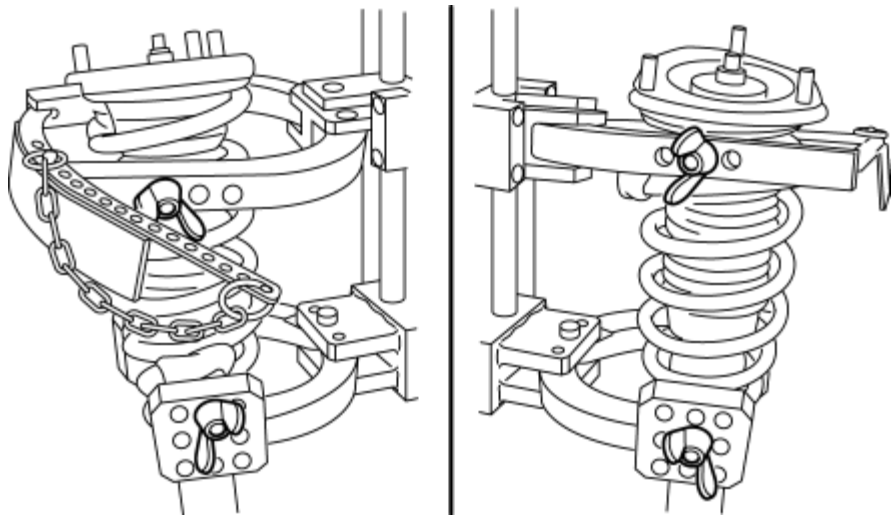
WARNING:

- Before removing the piston rod nut, secure the shock absorber and spring in the SSTs. Otherwise, the shock absorber and spring could fly off under tremendous pressure and cause serious injury or death, or damage to vehicle parts.

1. Install the coil spring to the **SST** using the following procedure.

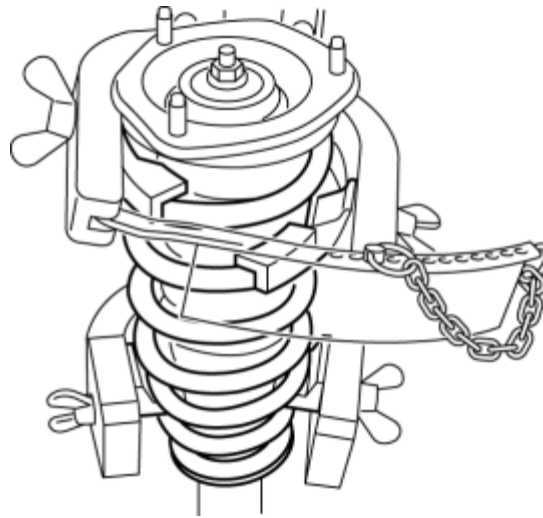
NOTE:

- Install the **SST** using a piece of clean rag to prevent the coil spring from being scratched.
- a. Set the **SST** attachments (tabs) to the positions shown in the figure.



b. Install the front shock absorber and coil spring to the **SST** so that the coil spring

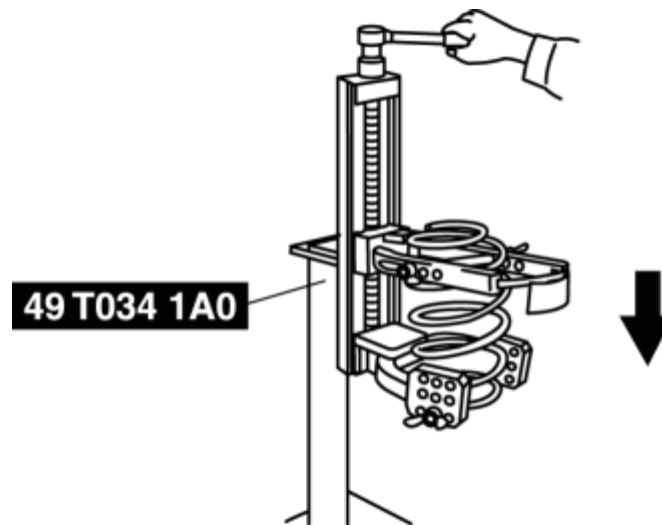
is set to the position shown in the figure.



2. Compress the coil spring using the **SST**.
3. Remove the piston rod nut.

Coil Spring Installation Note

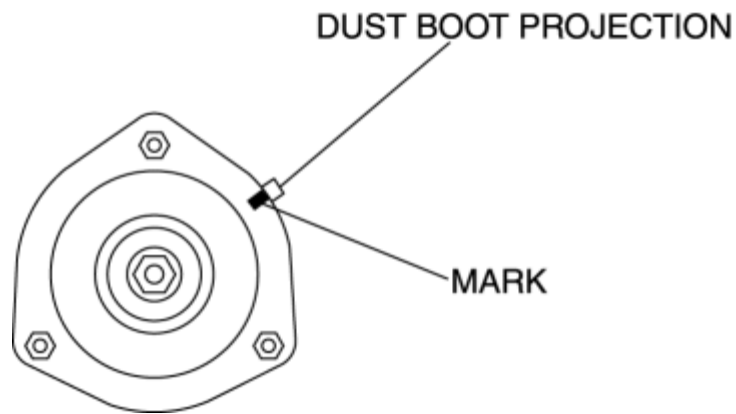
1. Protect the coil spring from scratches using a piece of cloth and install the **SSTs**.
2. Compress the coil spring using the **SSTs**.



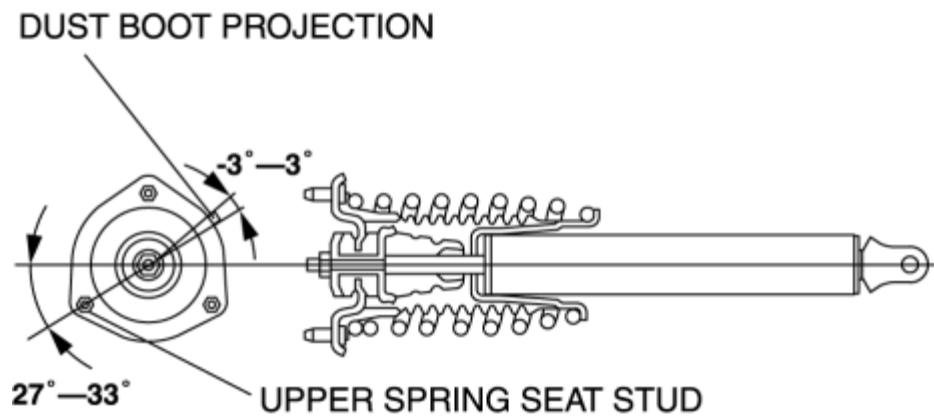
3. Install the shock absorber so that the lower end of the coil spring is seated on the step of the lower spring seat.

Upper Spring Seat Installation Note

1. Align the mark on the upper spring seat with the dust boot projection.



2. Install the upper spring seat so that the upper spring seat stud is at a **27°—33°** angle to the shock absorber installation shaft (lower side).



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

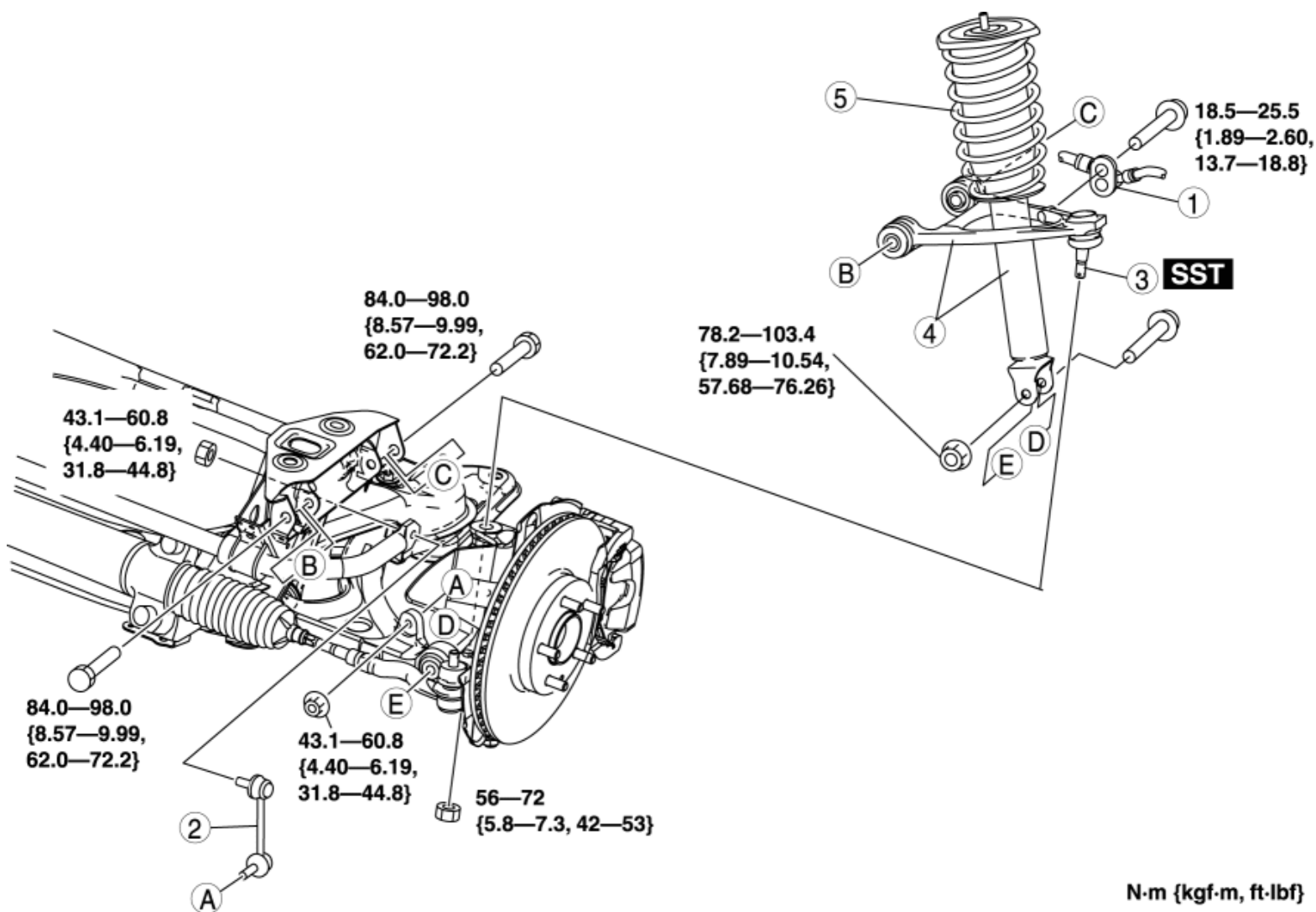
[Back to Top](#)

2011 - RX-8 - Suspension

FRONT SHOCK ABSORBER AND COIL SPRING REMOVAL/INSTALLATION

CAUTION:

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, remove the ABS wheel-speed sensor (axle side) and fix it to an appropriate place where the sensor will not be pulled while servicing the vehicle.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Remove the front suspension tower bar. (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[MT\]](#).) (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[AT\]](#).)
 3. Remove in the order indicated in the table.
 4. Install in the reverse order of removal.
 5. Inspect the front wheel alignment. (See [FRONT WHEEL ALIGNMENT](#).)



1 Brake hose bracket

2 Front stabilizer control link

3 Front upper arm ball joint

(See [FRONT UPPER ARM REMOVAL/INSTALLATION.](#))

4 Front shock absorber and coil spring, front upper arm

5 Front shock absorber and coil spring

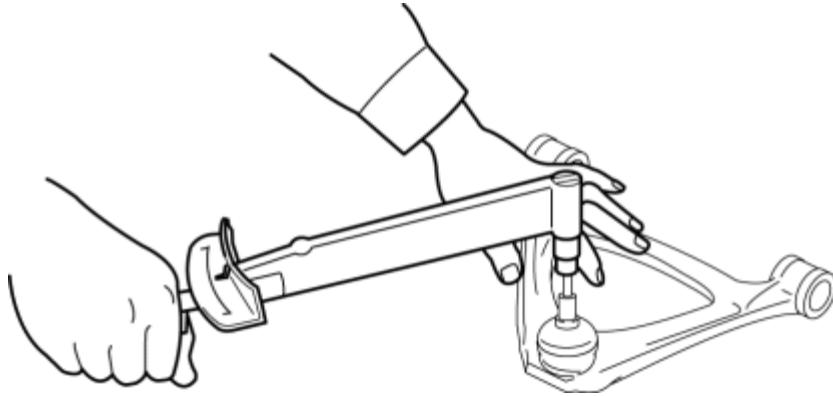
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Suspension

FRONT UPPER ARM INSPECTION

1. Remove the front upper arm from the vehicle.
2. Inspect the front upper arm for bending or damage. If there is any malfunction, replace it.
3. Inspect the ball joint for excessive play, and if there is any malfunction, replace the front upper arm.
4. Rotate the ball joint **5 times**.
5. Measure the ball-joint rotational torque using an Allen wrench and a torque wrench.



Front upper arm ball joint rotational torque

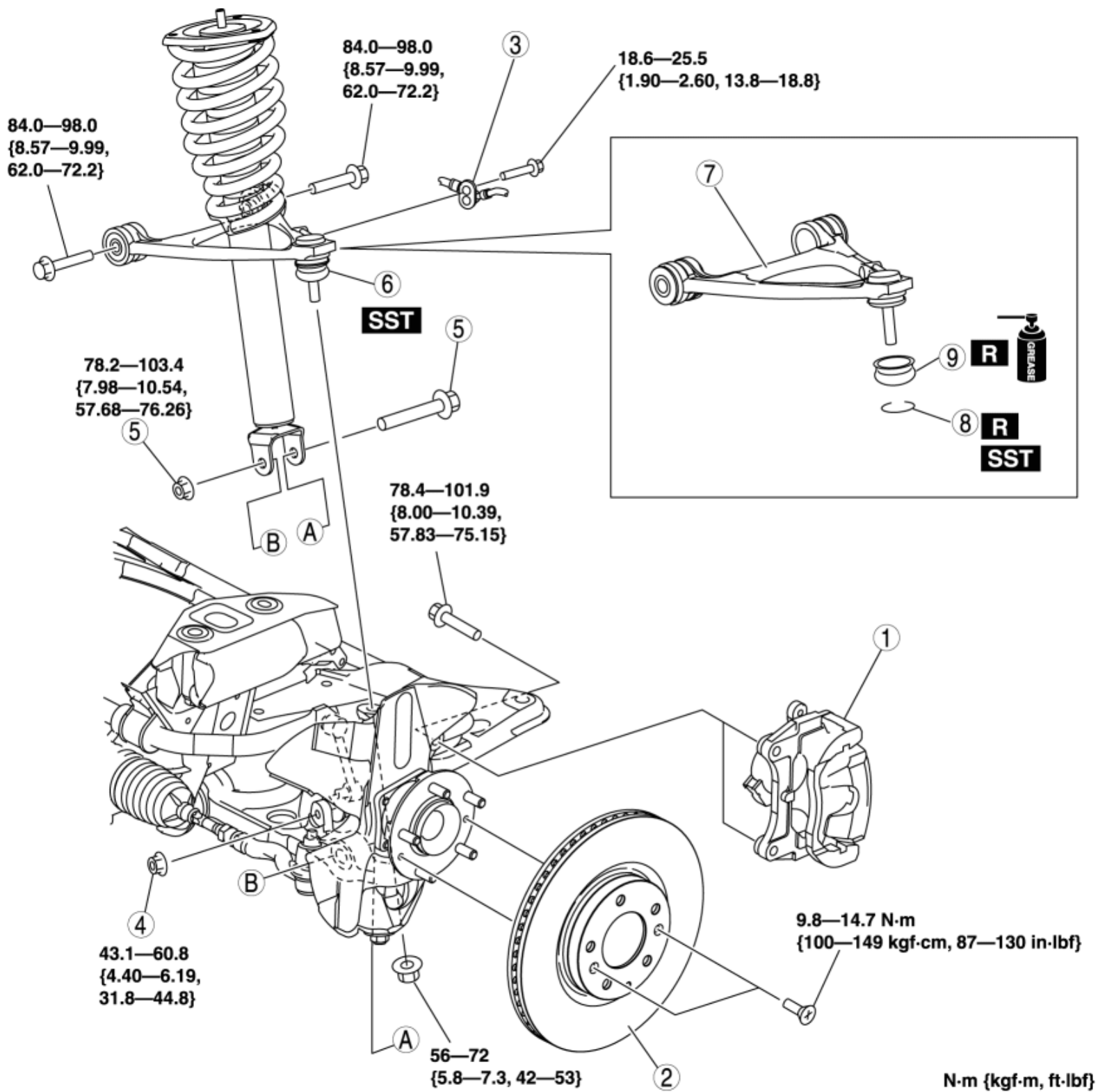
- 1.76 N·m {17.6 kgf·cm, 15.6 in·lbf} max.
- If not within the specification, replace the front upper arm.

2011 - RX-8 - Suspension

FRONT UPPER ARM REMOVAL/INSTALLATION

CAUTION:

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, remove the ABS wheel-speed sensor (axle side) and fix it to an appropriate place where the sensor will not be pulled while servicing the vehicle.
1. Remove in the order indicated in the table.
 2. Install in the reverse order of removal.
 3. Inspect the front wheel alignment. (See [FRONT WHEEL ALIGNMENT](#).)



1 Caliper and mounting support

(See [Caliper and Mounting Support Removal Note.](#))

2 Disc plate

3	Brake hose bracket
4	Stabilizer control link nut
5	Shock absorber lower bolt and nut (See Shock Absorber Lower Bolt and Nut Removal Note.)
6	Front upper arm ball joint (See Front Upper Arm Ball Joint Removal Note.)
7	Front upper arm (See Front Upper Arm Removal Note.)
8	Clip (See Clip Installation Note.)
9	Dust boot

Caliper and Mounting Support Removal Note

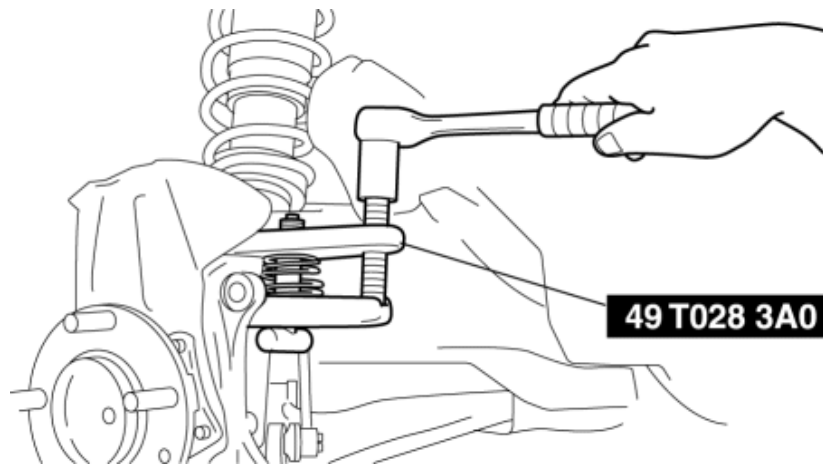
1. Remove the caliper and mounting support from the steering knuckle and suspend it with a cable in a location out of the way.

Shock Absorber Lower Bolt and Nut Removal Note

1. Loosen the shock absorber upper nuts.
2. Remove the front shock absorber lower bolt and nut.

Front Upper Arm Ball Joint Removal Note

1. Remove the front upper arm ball joint from the steering knuckle using the **SST**.

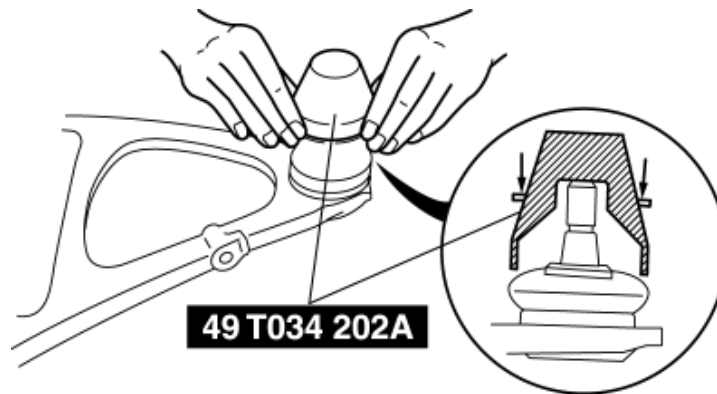


Front Upper Arm Removal Note

1. Remove the front upper arm bolts.
2. Push down the front lower arm, and then remove the front upper arm from the gap between the shock absorber lower end and the front lower arm.

Clip Installation Note

1. Wipe the grease off the ball joint stud.
2. Fill the inside of the new dust boot with grease.
3. Install the dust boot on the ball joint.
4. Install the clip using the **SST**.

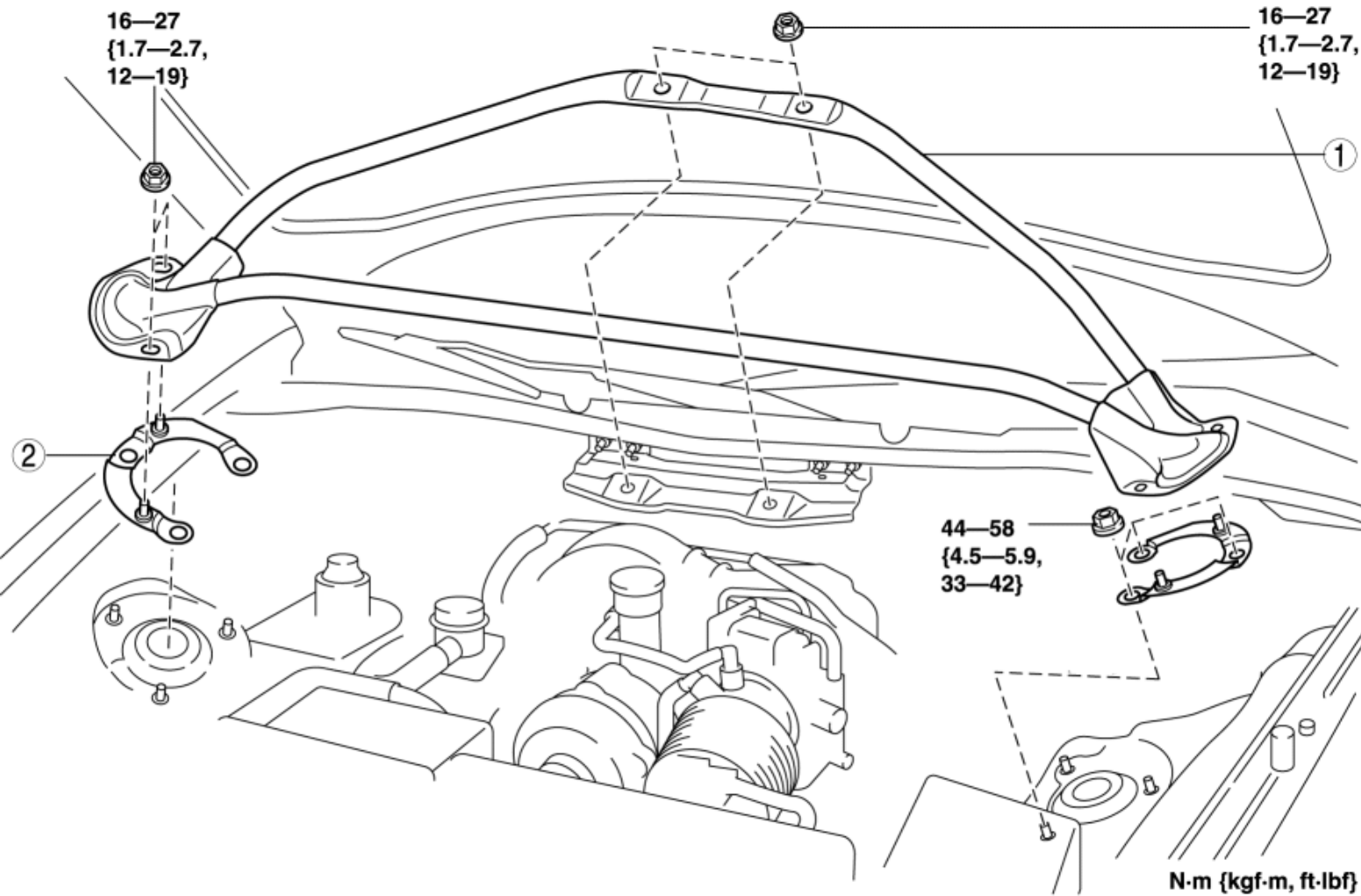


5. Verify that the clip is installed securely to the groove.
6. Wipe off any excess grease.

2011 - RX-8 - Suspension

FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION [MT]

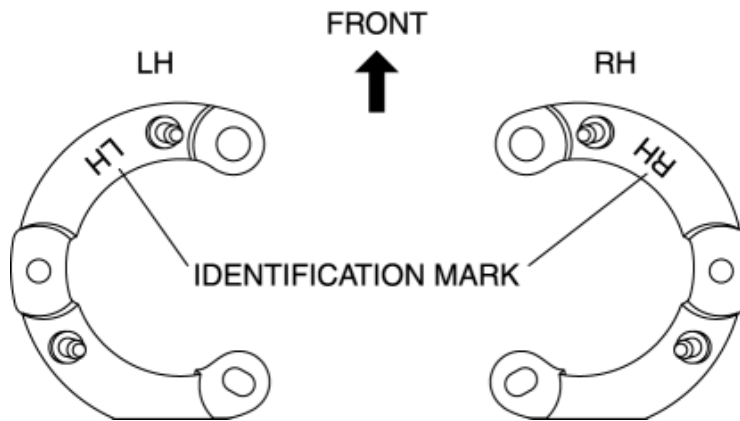
- 1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- 2. Remove in the order indicated in the table.
- 3. Install in the reverse order of removal.



1	Front suspension tower bar
2	Plate
	(See Plate Installation Note .)

Plate Installation Note

1. Install the plates with the identification marks facing upward.



[< Previous](#) [Next >](#)

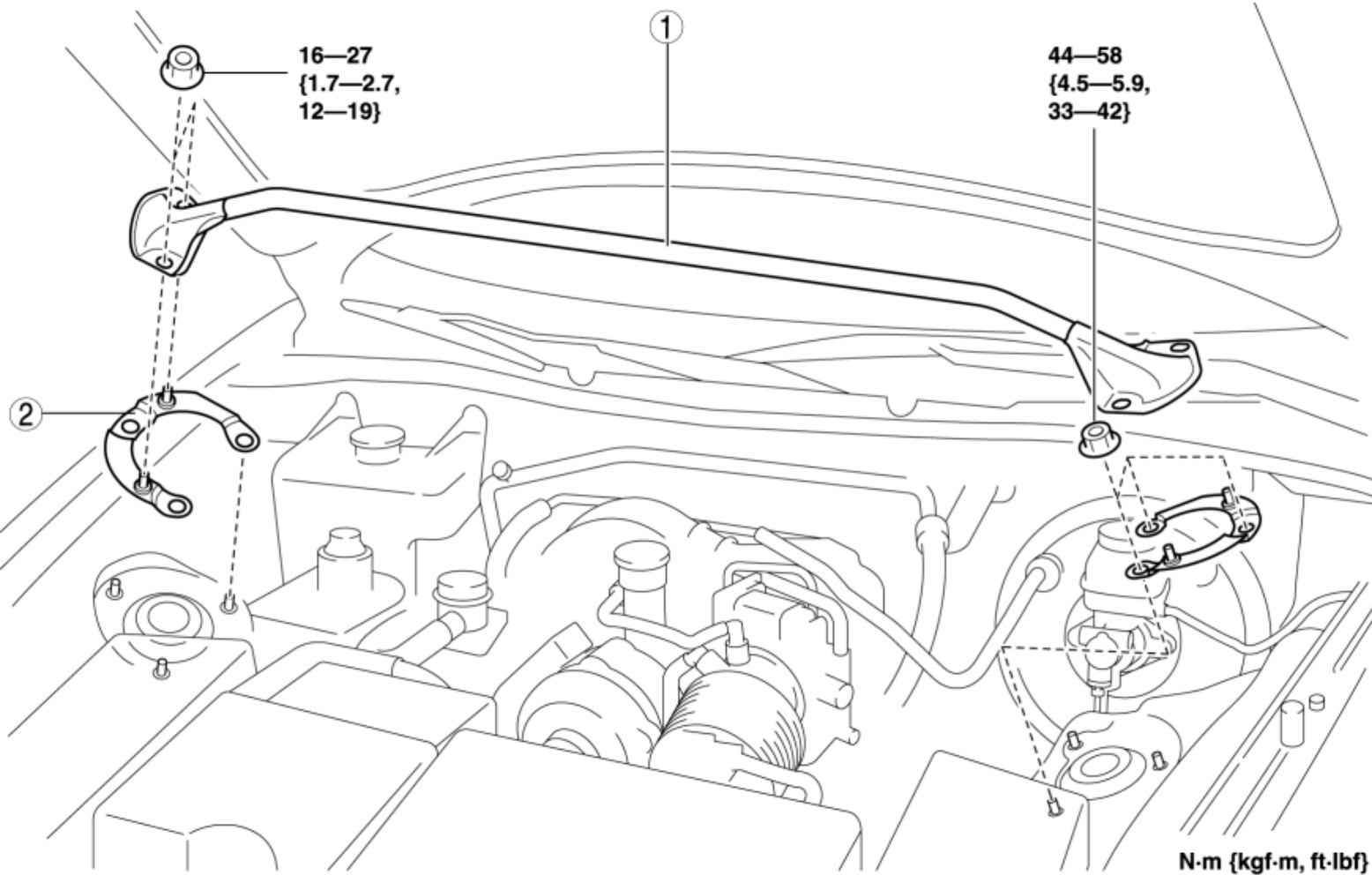
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Suspension

FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION [AT]

- 1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
- 2. Remove in the order indicated in the table.
- 3. Install in the reverse order of removal.

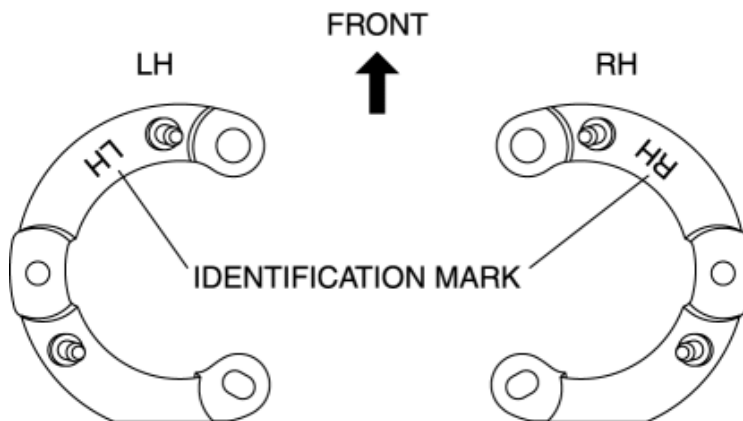


N·m {kgf·m, ft·lbf}

1	Front suspension tower bar
2	Plate
	(See Plate Installation Note.)

Plate Installation Note

1. Install the plates with the identification marks facing upward.



[< Previous](#) [Next >](#)

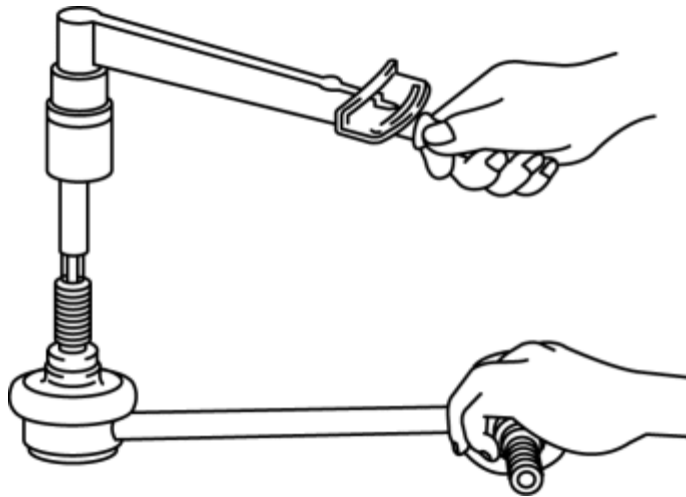
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Suspension

REAR STABILIZER CONTROL LINK INSPECTION

1. Remove the stabilizer control link from the vehicle.
2. Inspect the link for bending or damage. If there is any malfunction, replace the link.
3. Rotate the ball joint **10 times**, and rock the ball joint **10 times**.
4. Measure the ball-joint rotational torque using an Allen wrench and a torque wrench.

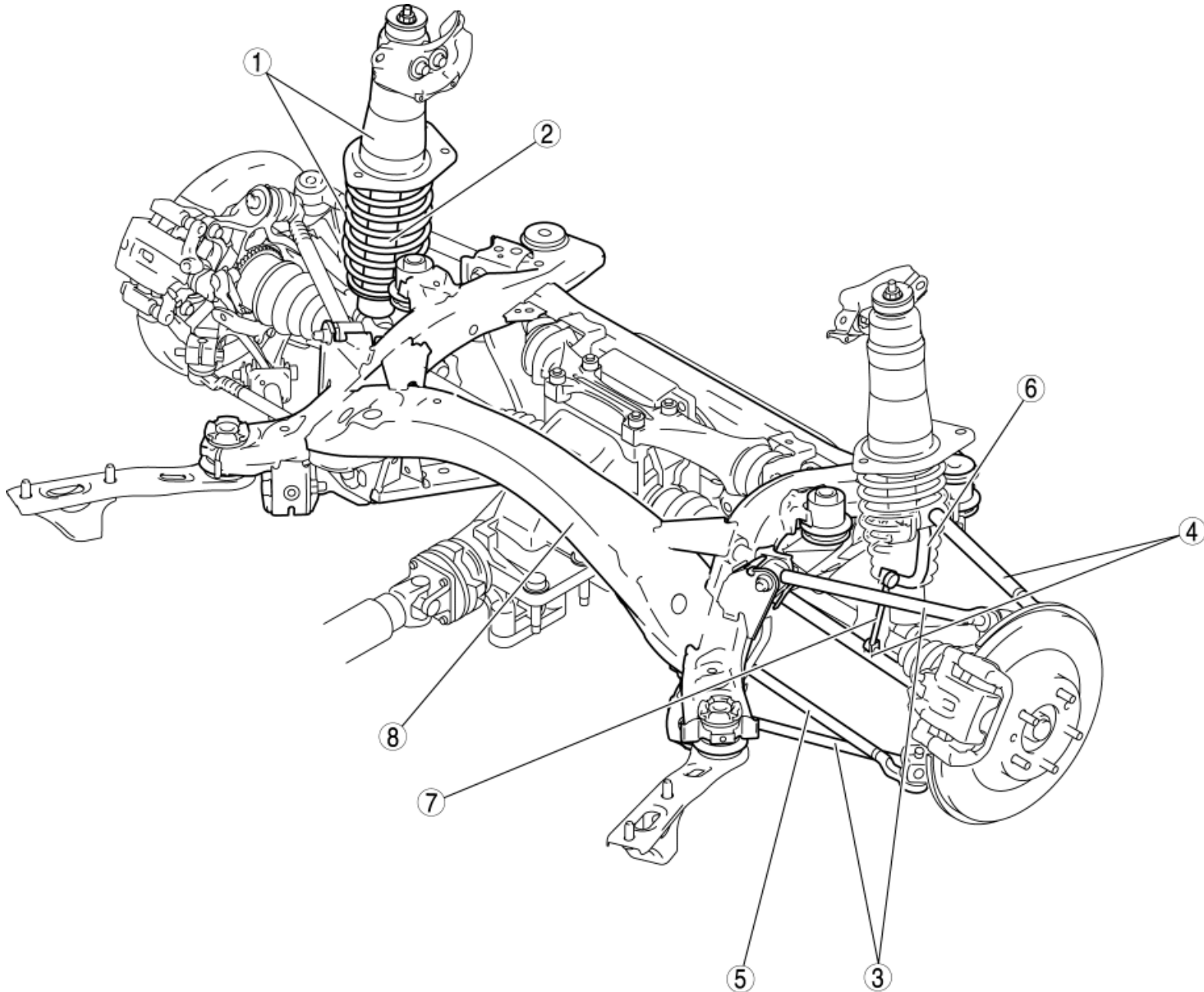


Rear stabilizer control link ball joint rotational torque

- 0.2—2.0 N·m {3—20 kgf·cm, 2—17 in·lbf}
- If not within the specification, replace the stabilizer control link ball joint.
- Even when within the specification, if there is excessive play in the ball joint, replace the stabilizer control link.

2011 - RX-8 - Suspension

REAR SUSPENSION LOCATION INDEX



1 Rear shock absorber and coil spring

(See [REAR SHOCK ABSORBER AND COIL SPRING REMOVAL/INSTALLATION.](#))

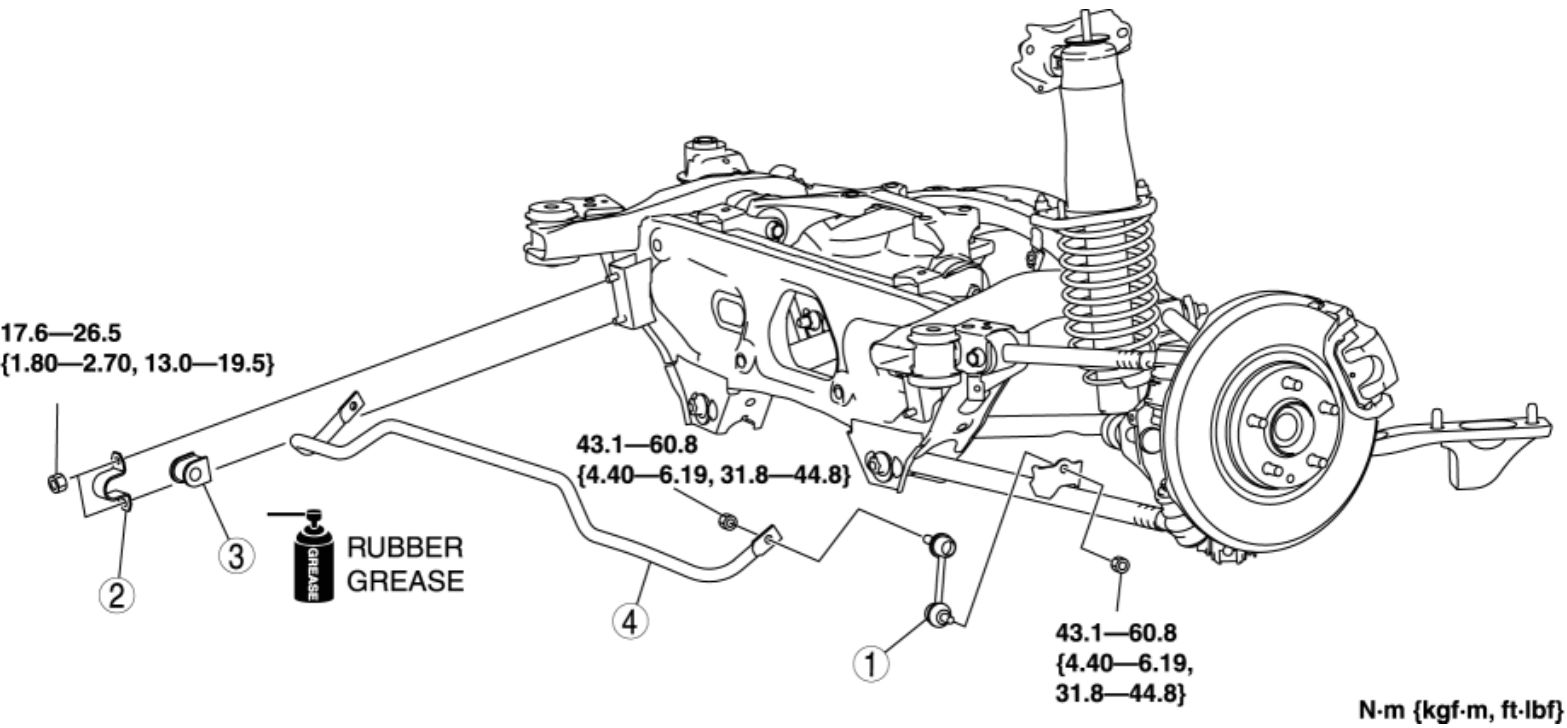
(See [REAR SHOCK ABSORBER AND COIL SPRING DISASSEMBLY/ASSEMBLY](#))

2	Rear shock absorber (See REAR SHOCK ABSORBER INSPECTION.) (See REAR SHOCK ABSORBER DISPOSAL.)
3	Rear trailing link (See REAR TRAILING LINK (UPPER) REMOVAL/INSTALLATION.) (See REAR TRAILING LINK (UPPER) INSPECTION.) (See REAR TRAILING LINK (LOWER) REMOVAL/INSTALLATION.)
4	Rear lateral link (See REAR LATERAL LINK (UPPER) REMOVAL/INSTALLATION.) (See REAR LATERAL LINK (UPPER) INSPECTION.) (See REAR LATERAL LINK (LOWER) REMOVAL/INSTALLATION.) (See REAR LATERAL LINK (LOWER) INSPECTION.)
5	Toe control link (See TOE CONTROL LINK REMOVAL/INSTALLATION.) (See TOE CONTROL LINK INSPECTION.)
6	Rear stabilizer (See REAR STABILIZER REMOVAL/INSTALLATION.)
7	Stabilizer control link (See REAR STABILIZER CONTROL LINK INSPECTION.)
8	Rear crossmember (See REAR CROSSMEMBER REMOVAL/INSTALLATION.)

2011 - RX-8 - Suspension

REAR STABILIZER REMOVAL/INSTALLATION

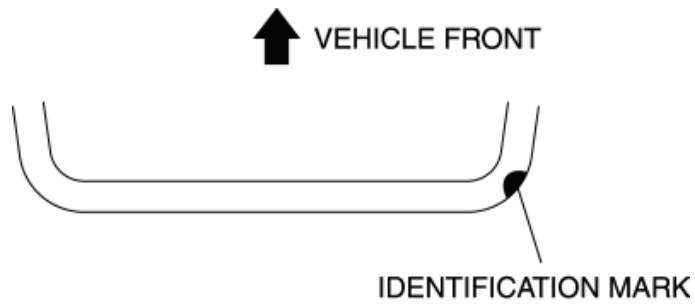
- 1. Remove in the order indicated in the table.
- 2. Install in the reverse order of removal.



1	Stabilizer control link (See Stabilizer Control Link Installation Note.)
2	Stabilizer bracket
3	Bushing
4	Rear stabilizer (See Rear Stabilizer Installation Note.)

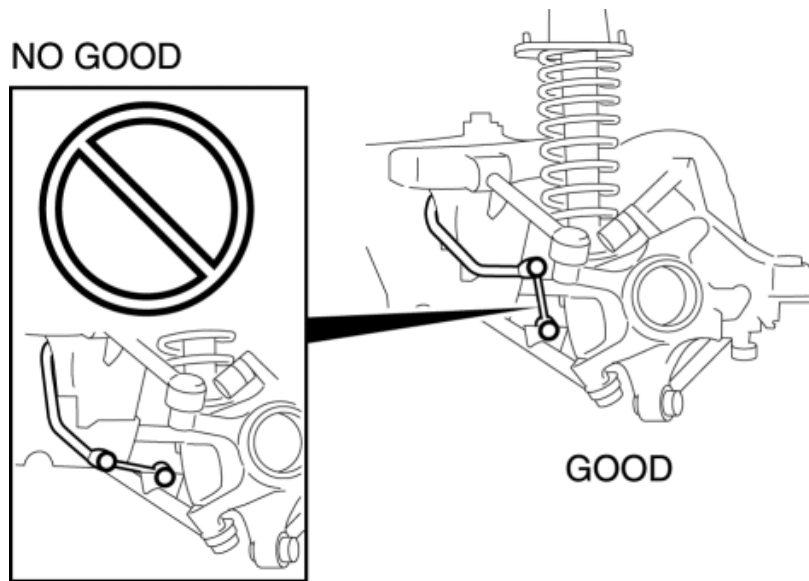
Rear Stabilizer Installation Note

- 1. Install the rear stabilizer so that the identification mark is on the right side of the vehicle.



Stabilizer Control Link Installation Note

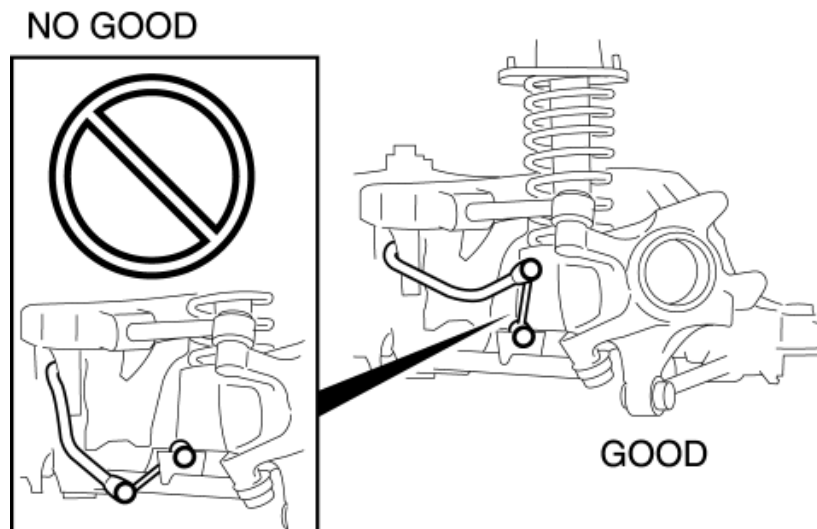
1. Install the stabilizer control link in the proper angle as shown in the figure.



CAUTION:

- Be sure to install the stabilizer control link in the proper position. If it is not installed properly, the stabilizer control link may interfere with peripheral components when driving, causing damage to each other.

2. Place the vehicle on the ground and verify that the stabilizer control link is installed in the angle shown in the figure.



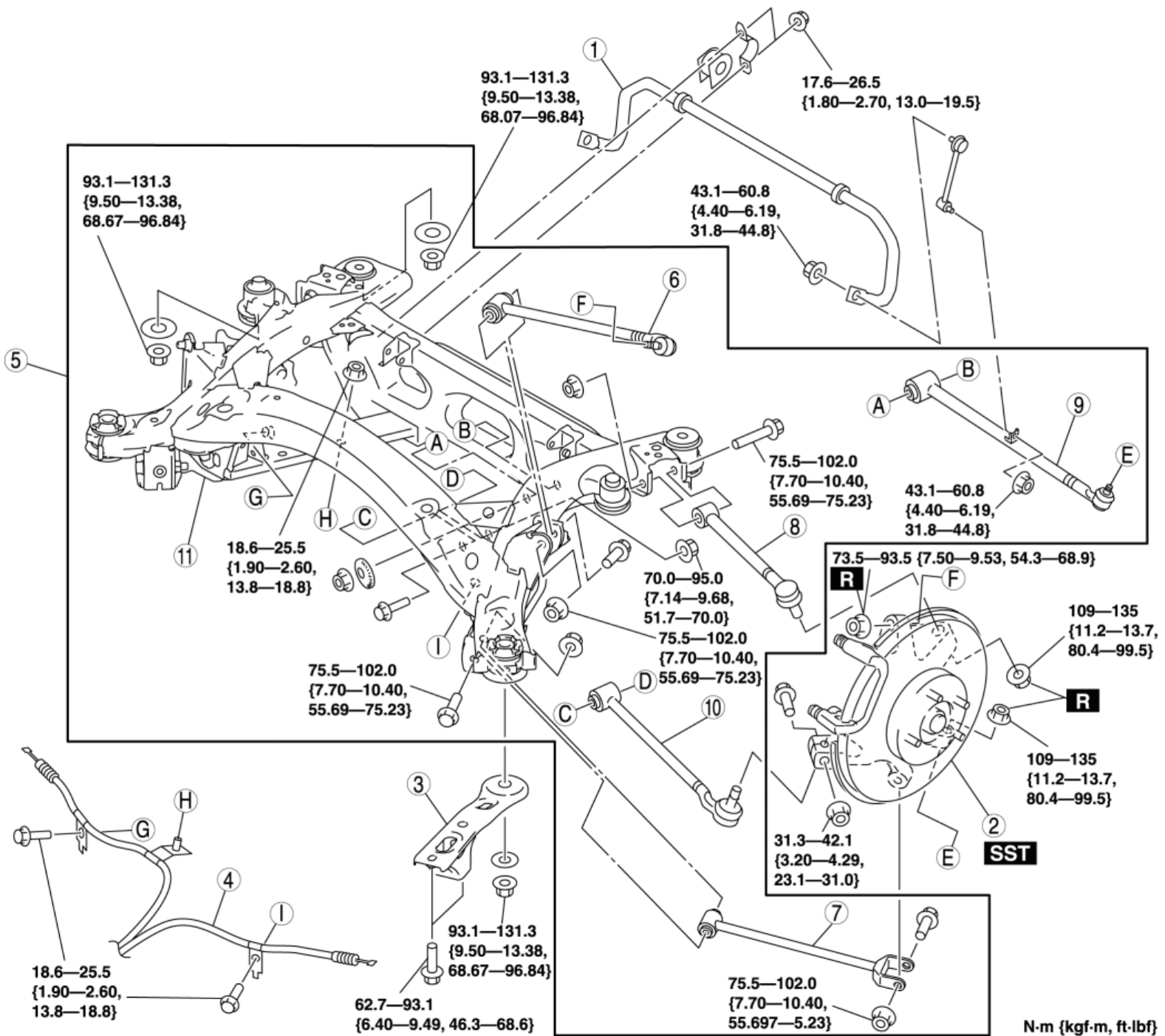
2011 - RX-8 - Suspension

REAR CROSSMEMBER REMOVAL/INSTALLATION

CAUTION:

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before operations, remove the ABS wheel-speed sensor (axle side) and move the sensor away from the harnesses.

1. Remove the rear auto leveling sensor. (See [REAR AUTO LEVELING SENSOR REMOVAL/INSTALLATION](#).)
2. Remove the exhaust pipe. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
3. Remove the propeller shaft. (See [PROPELLER SHAFT REMOVAL/INSTALLATION](#).)
4. Remove the power plant frame. (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#).) (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)
5. Remove the rear drive shaft. (See [REAR DRIVE SHAFT REMOVAL/INSTALLATION](#).)
6. Remove the rear differential. (See [REAR DIFFERENTIAL REMOVAL/INSTALLATION](#).)
7. Remove in the order indicated in the table.
8. Install in the reverse order of removal.
9. Inspect the rear wheel alignment. (See [REAR WHEEL ALIGNMENT](#).)



1 Rear stabilizer

(See [REAR STABILIZER REMOVAL/INSTALLATION.](#))

2 Rear axle component

(See [Rear Axle Component Removal Note.](#))

3 Stopper plate

4 Parking brake cable

5 Rear crossmember component

(See [Rear Crossmember Component Removal Note.](#))

6 Rear trailing link (upper)

7 Rear trailing link (lower)

8 Rear lateral link (upper)

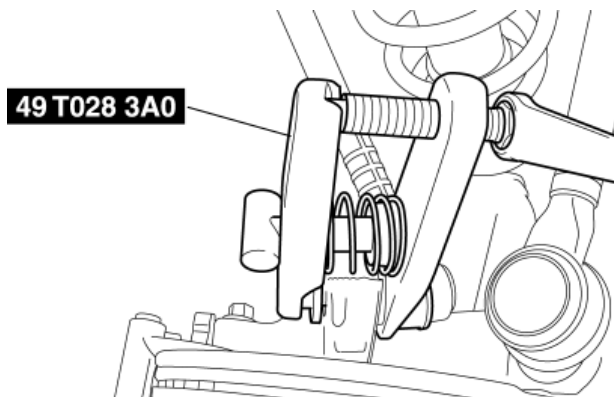
9 Rear lateral link (lower)

10 Toe control link

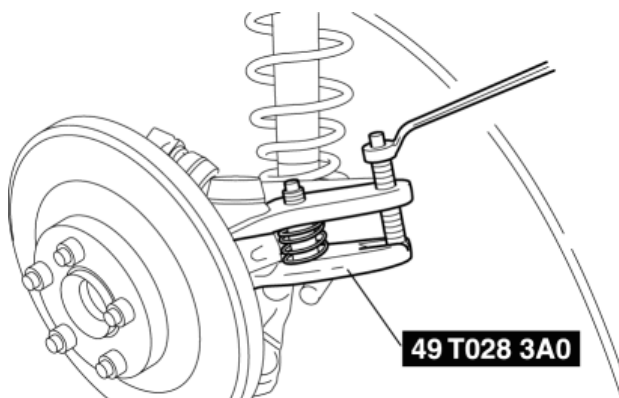
11 Rear crossmember

Rear Axle Component Removal Note

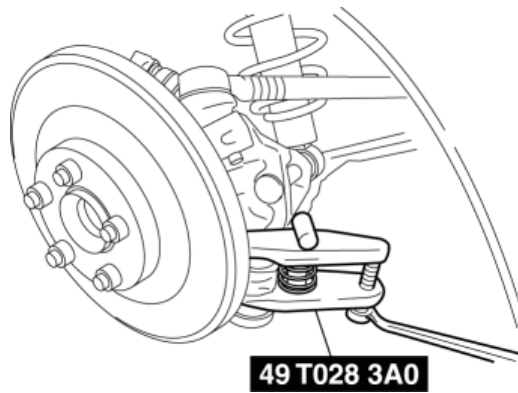
1. Support the knuckle using a jack.
2. Using the **SST**, disconnect the rear trailing link (upper) ball joint.



3. Remove the rear trailing link (lower) outer bolt.
4. Using the **SST**, disconnect the rear lateral link (upper) ball joint.



5. Using the **SST**, disconnect the rear lateral link (lower) ball joint.

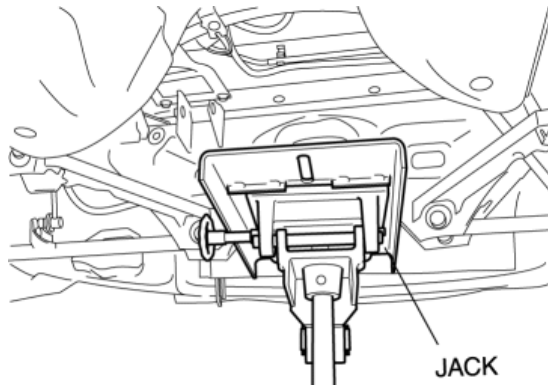


6. Remove the toe control link outer bolt.
7. Remove the shock absorber lower bolt.
8. Remove the rear axle component.

Rear Crossmember Component Removal Note

WARNING:

1. Be sure that the crossmember component is securely supported by the jack. If not securely supported, the crossmember component could fall, resulting in serious injury or death, and damage to the vehicle.
1. Support the rear crossmember with the jack, and remove the bolt.



2. Remove the rear crossmember component.

[< Previous](#) [Next >](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Suspension

REAR SHOCK ABSORBER INSPECTION

1. Inspect the rear shock absorber in the same way as the front shock absorber.

(See [FRONT SHOCK ABSORBER INSPECTION](#).)

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Suspension

REAR SHOCK ABSORBER DISPOSAL

1. Dispose of the rear shock absorber in the same way as the front shock absorber.

(See [FRONT SHOCK ABSORBER DISPOSAL](#).)

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

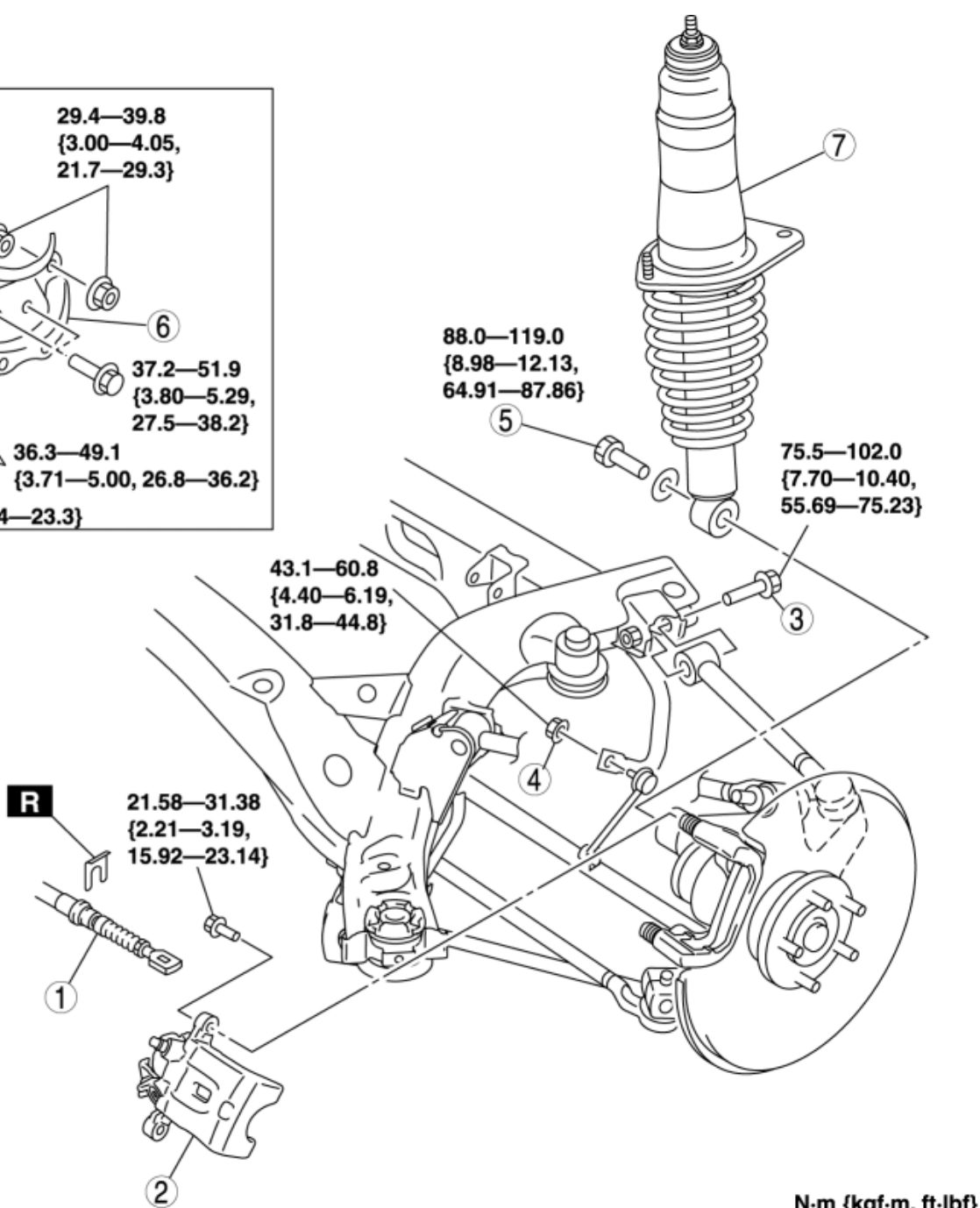
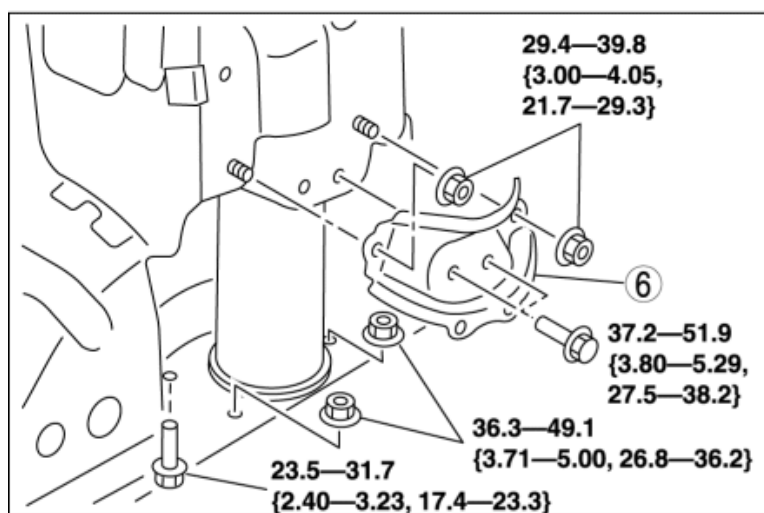
[Back to Top](#)

2011 - RX-8 - Suspension

REAR SHOCK ABSORBER AND COIL SPRING REMOVAL/INSTALLATION

CAUTION:

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before operations, remove the ABS wheel-speed sensor (axle side), and move the sensor away from the harnesses.
1. Remove in the order indicated in the table.
 2. Install in the reverse order of removal.



1 Parking brake cable

2 Caliper

(See [Caliper Removal Note.](#))

3 Rear lateral link (upper) inner bolt

4 Stabilizer control link upper nut

5 Rear shock absorber lower bolt

6	Rear shock absorber bracket (See Rear Shock Absorber Bracket Removal Note.)
7	Rear shock absorber and coil spring

Caliper Removal Note

1. Remove the caliper, and hang the cable out of the way.

Rear Shock Absorber Bracket Removal Note

1. Remove the trunk end trim. (See [TRUNK END TRIM REMOVAL/INSTALLATION.](#))
2. Remove the trunk side trim. (See [TRUNK SIDE TRIM REMOVAL/INSTALLATION.](#))
3. Remove the rear shock absorber bracket.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

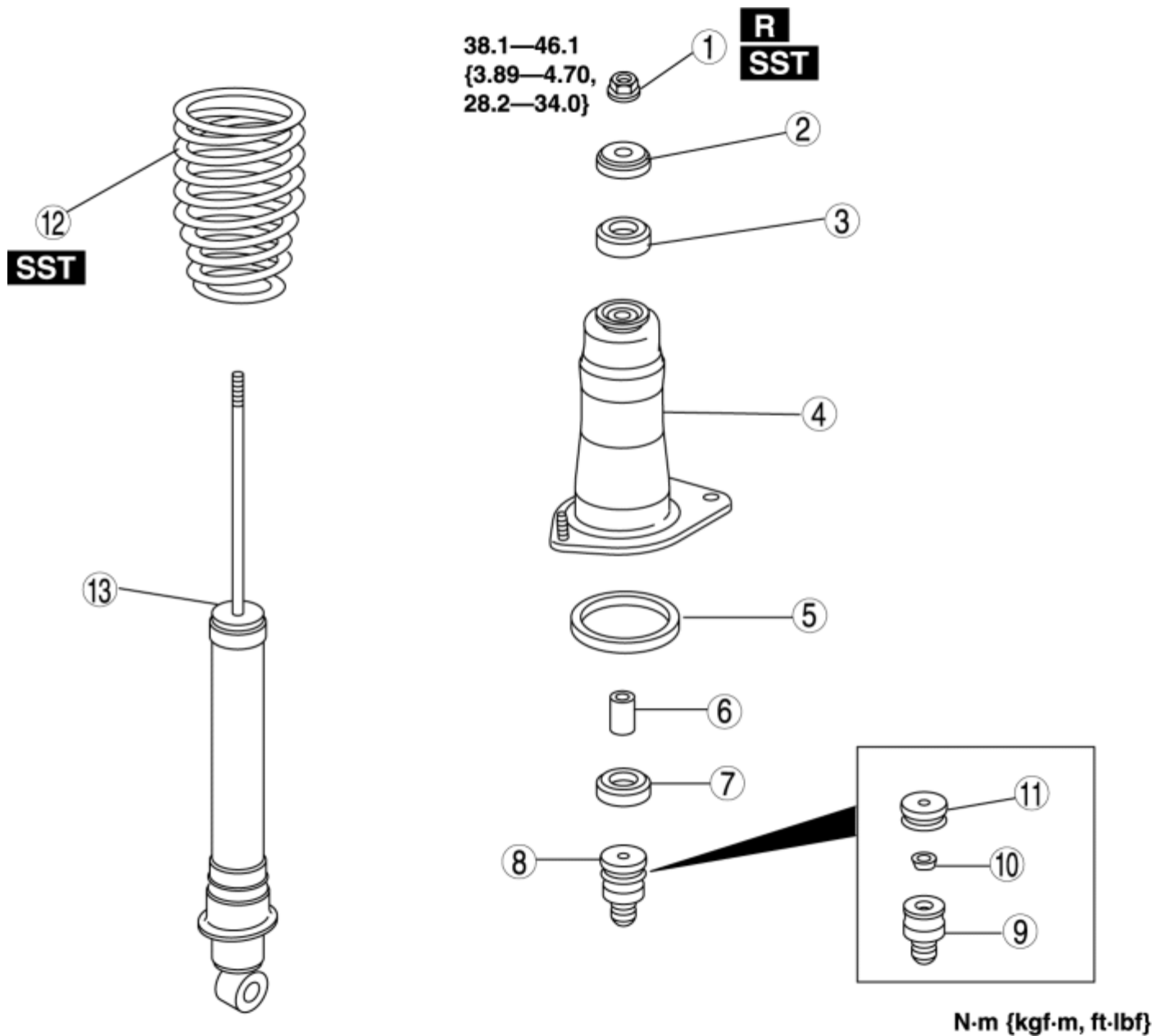
[< Previous](#) [Next >](#)

2011 - RX-8 - Suspension

REAR SHOCK ABSORBER AND COIL SPRING DISASSEMBLY/ASSEMBLY

CAUTION:

- Removing /installing the shock absorber and coil spring is dangerous. The shock absorber and coil spring could fly off under tremendous pressure and cause serious injury or death, and damage the vehicle.
1. Disassemble in the order indicated in the table.
 2. Assemble in the reverse order of removal.



1 Piston rod nut

(See [REAR SHOCK ABSORBER AND COIL SPRING REMOVAL/INSTALLATION.](#))

2 Retainer

3 Bushing

4 Upper spring seat

5 Spring seat rubber

	(See REAR SHOCK ABSORBER AND COIL SPRING REMOVAL/INSTALLATION.)
6	Bushing
7	Spacer
8	Bound stopper and stopper casing
9	Bound stopper
10	Collar (See REAR SHOCK ABSORBER AND COIL SPRING REMOVAL/INSTALLATION.)
11	Stopper casing
12	Coil spring (See REAR SHOCK ABSORBER AND COIL SPRING REMOVAL/INSTALLATION.)
13	Rear shock absorber

Piston Rod Nut Removal Note

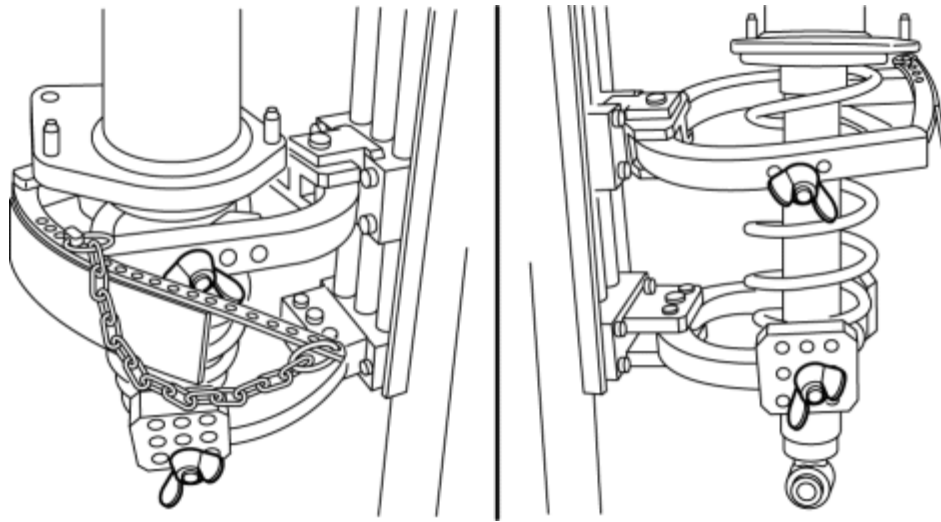
WARNING:

- Before removing the piston rod nut, secure the shock absorber and spring in the SSTs. Otherwise, the shock absorber and spring could fly off under tremendous pressure and cause serious injury or death, or damage to the vehicle.

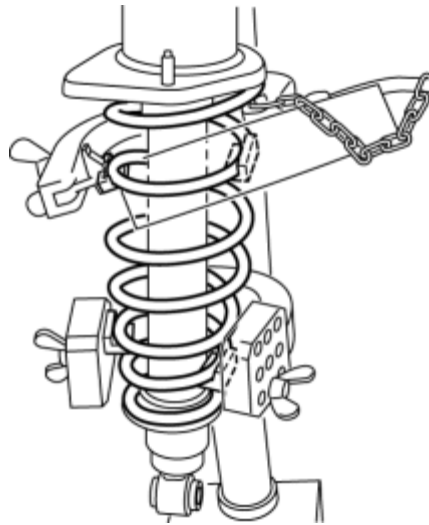
1. Install the coil spring to the **SST** using the following procedure.

NOTE:

- Install the **SST** using a piece of clean rag to prevent the coil spring from being scratched.
- a. Set the **SST** attachments (tabs) to the positions shown in the figure.



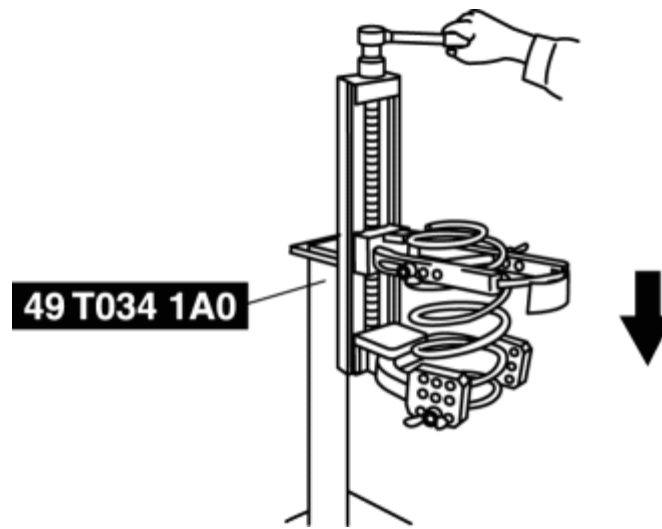
b. Install the front shock absorber and coil spring to the **SST** so that the coil spring is set to the position shown in the figure.



2. Compress the coil spring using the SST.
3. Remove the piston rod nut.

Coil Spring Installation Note

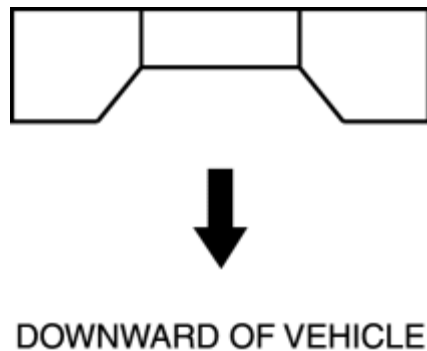
1. Set the coil spring to the **SSTs** using cloth.
2. Using the **SSTs**, compress the coil spring.



3. Install the shock absorber so that the lower end of the coil spring is seated on the step of the lower spring seat.

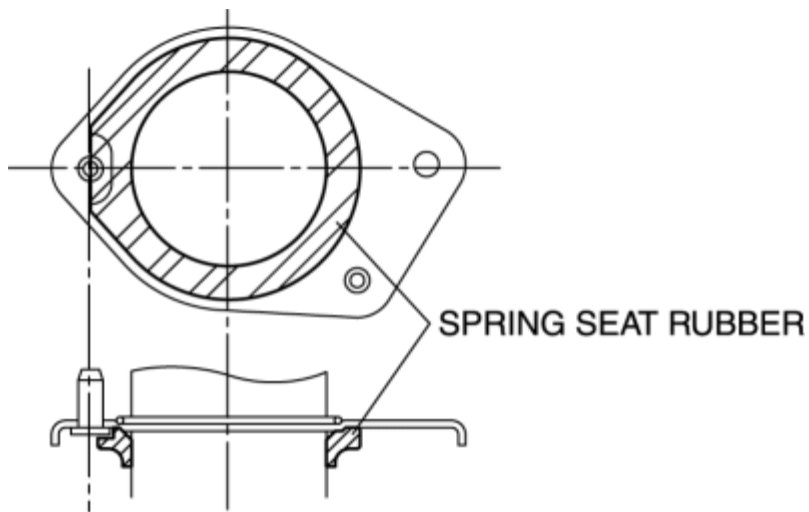
Collar Installation Note

1. Install the collar so that the tapered side is facing downward as shown in the figure.



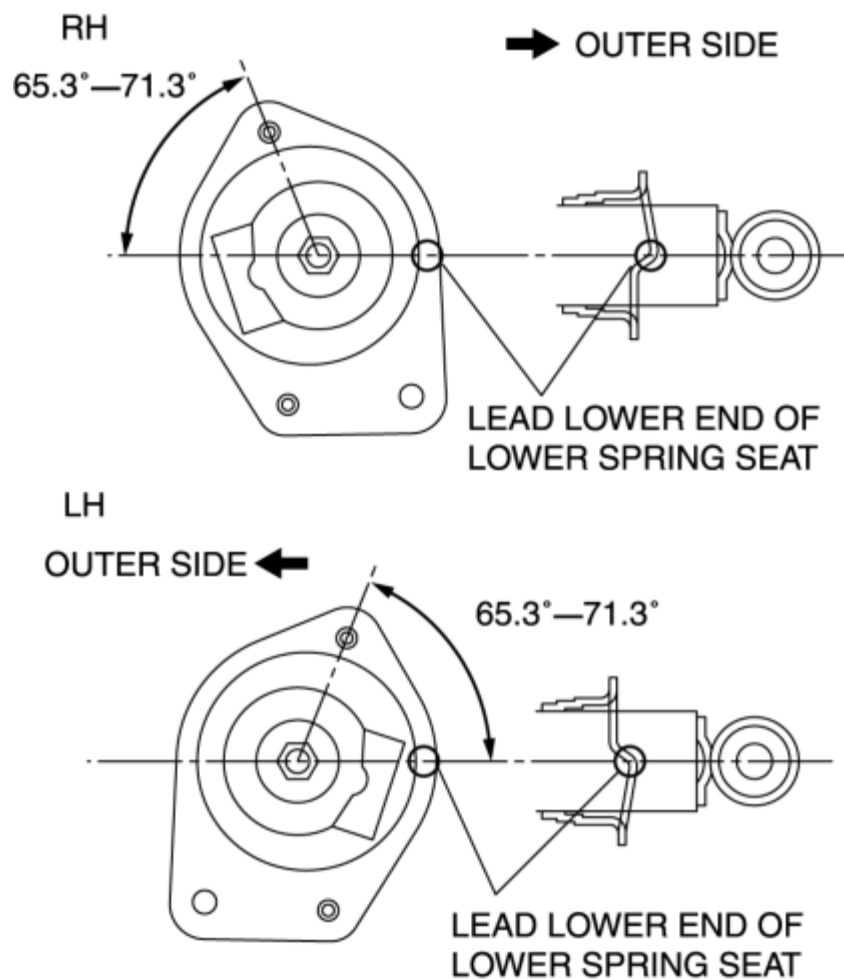
Spring Seat Rubber Installation Note

1. Install the spring seat rubber to the upper spring seat as shown in the figure.



Rear Shock Absorber and Coil Spring Installation Note

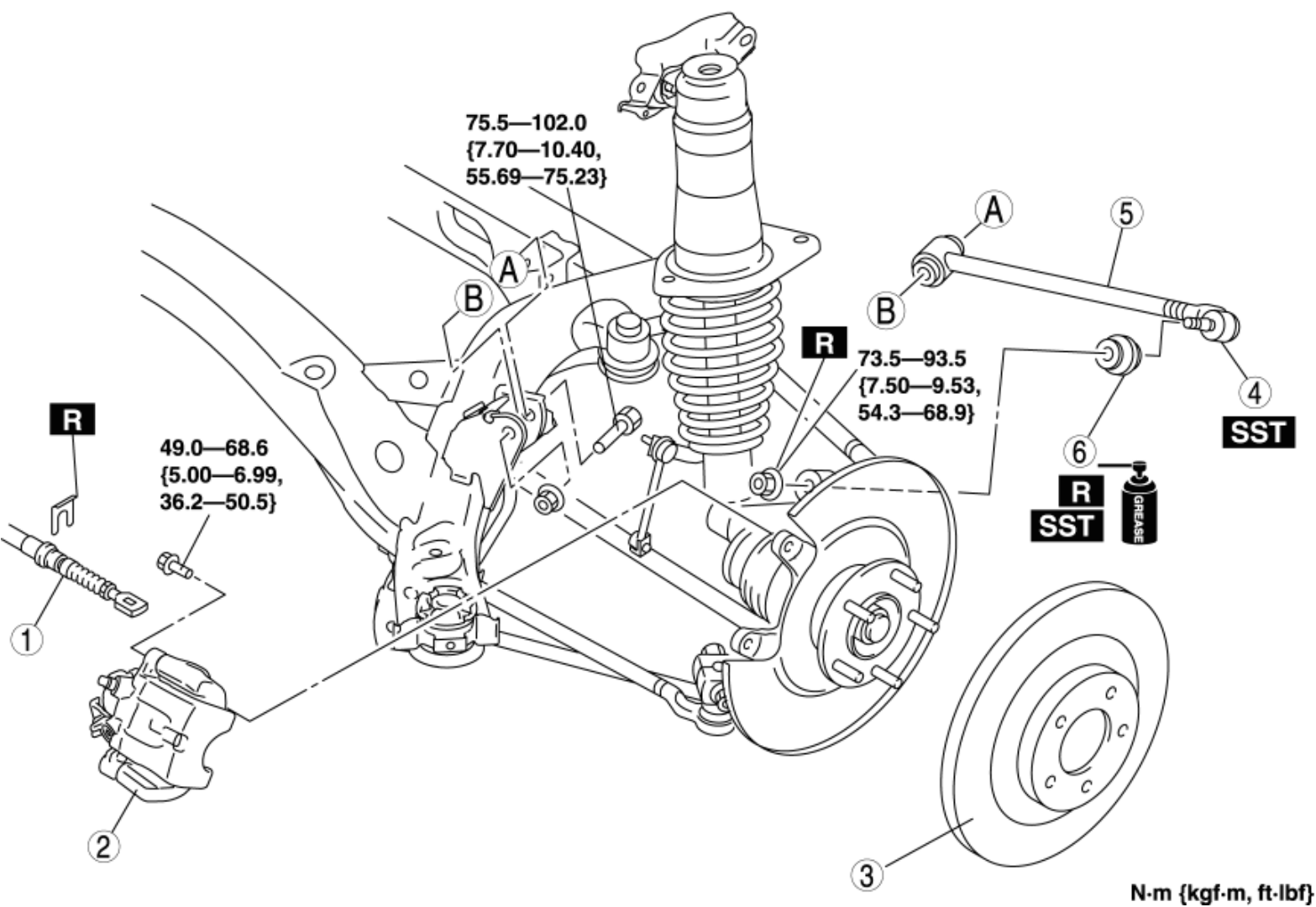
1. Install the coil spring with the lead lower end of the lower spring seat facing the direction shown in the figure.



2011 - RX-8 - Suspension

REAR TRAILING LINK (UPPER) REMOVAL/INSTALLATION

- 1. Remove in the order indicated in the table.
- 2. Install in the reverse order of removal.
- 3. Inspect the rear wheel alignment.(See [REAR WHEEL ALIGNMENT.](#))



1	Parking brake cable
2	Caliper component

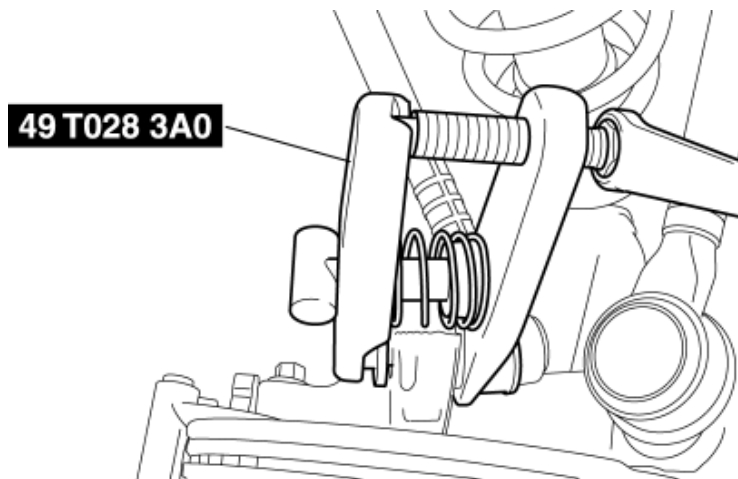
	(See Caliper Component Removal Note.)
3	Disc plate
4	Rear trailing link (upper) ball joint (See Rear Trailing Link (Upper) Ball Joint Removal Note.)
5	Rear trailing link (upper)
6	Dust boot (See Dust Boot Installation Note.)

Caliper Component Removal Note

1. Hang the caliper component by the cable and move aside.

Rear Trailing Link (Upper) Ball Joint Removal Note

1. Using the **SST**, disconnect the ball joint.

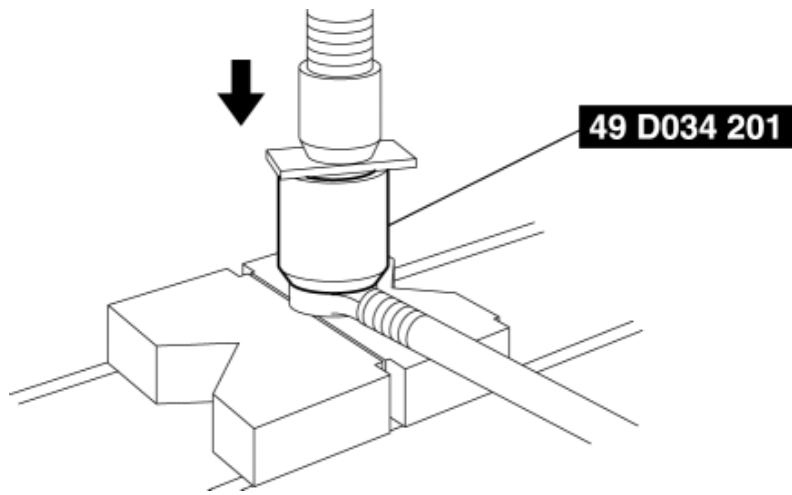


NOTE:

- When removing the rear trailing link (upper) ball joint, the rear knuckle bushing may also come off. If it comes off, replace the rear knuckle.

Dust Boot Installation Note

1. Wipe the grease off the ball joint stud.
2. Fill the inside of the new dust boot with grease.
3. Using the **SST**, install the dust boot to the ball joint.



4. Wipe off the excess grease.

[< Previous](#) [Next >](#)

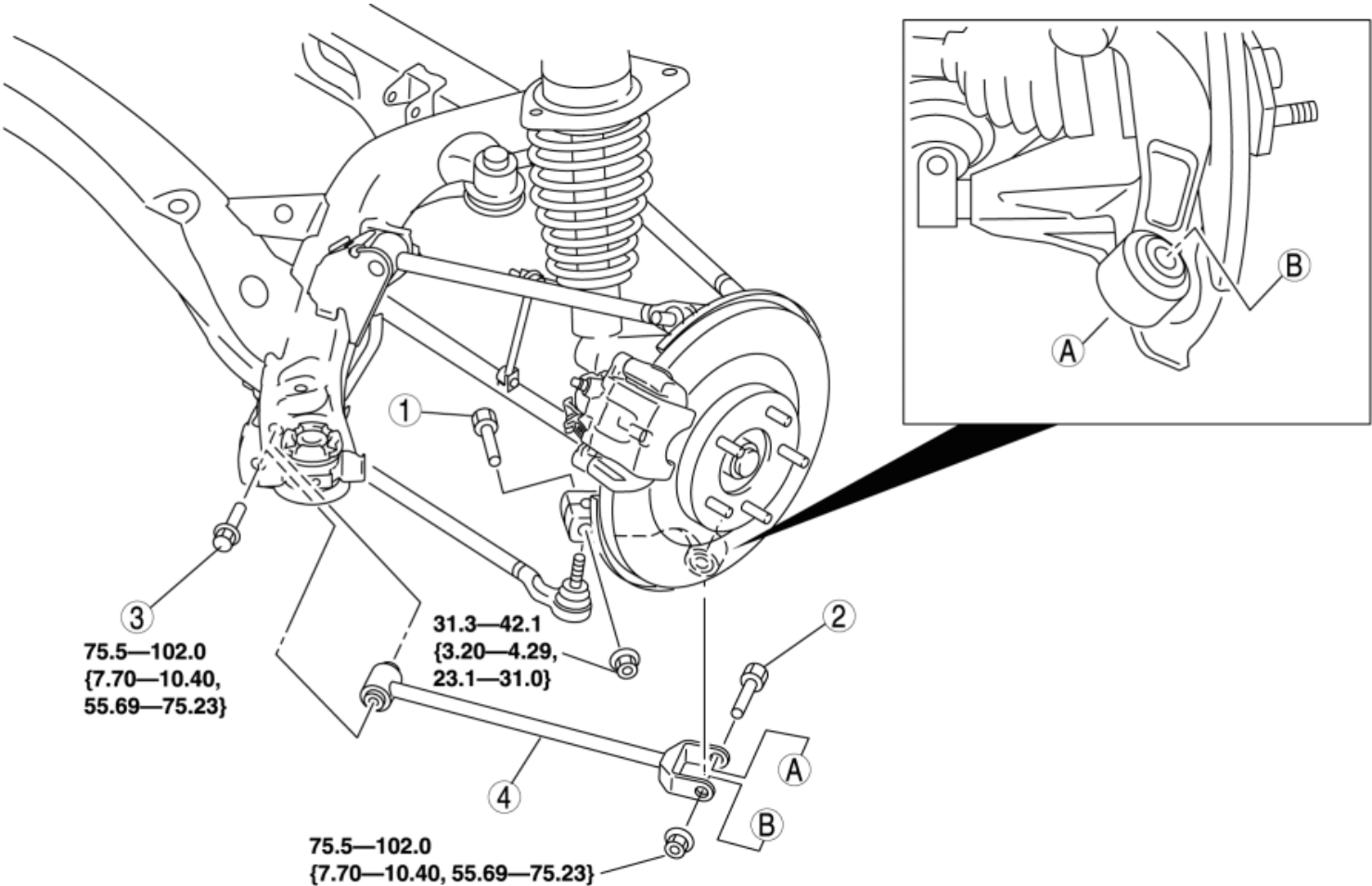
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Suspension

REAR TRAILING LINK (LOWER) REMOVAL/INSTALLATION

- 1. Remove in the order indicated in the table.
- 2. Install in the reverse order of removal.
- 3. Inspect the rear wheel alignment.(See [REAR WHEEL ALIGNMENT](#).)



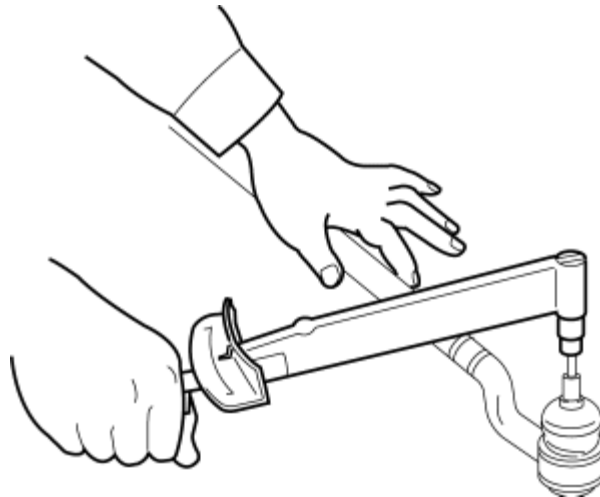
N·m {kgf·m, ft·lbf}

1	Toe control link outer bolt
2	Rear trailing link (lower) outer bolt
3	Rear trailing link (lower) inner bolt
4	Rear trailing link (lower)

2011 - RX-8 - Suspension

REAR TRAILING LINK (UPPER) INSPECTION

1. Remove the rear trailing link (upper) from the vehicle.
2. Inspect the link for bending or damage. If there is any malfunction, replace the rear trailing link (upper).
3. Inspect the ball joint for looseness. If there is any malfunction, replace the ball joint.
4. Rotate the ball joint **5 times**.
5. Measure the ball-joint rotational torque using an Allen wrench and a torque wrench.



Rear trailing link (upper) ball joint rotational torque

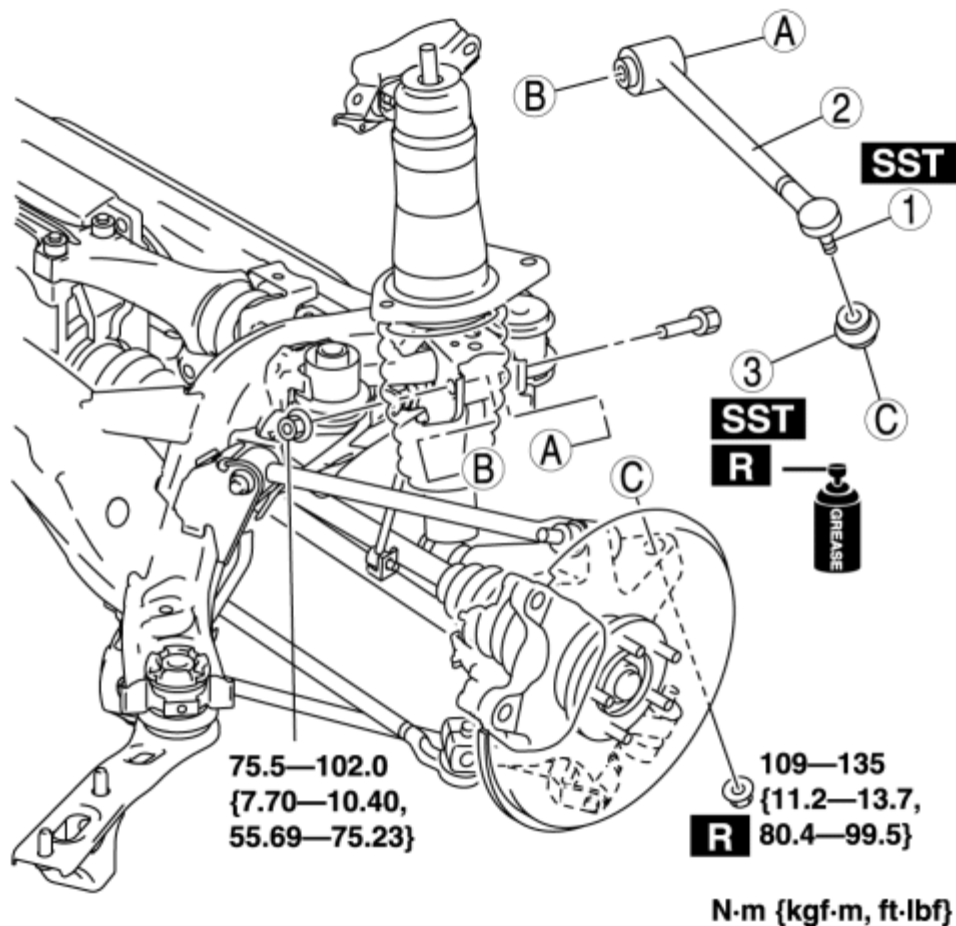
- 2.55 N·m {26.0 kgf·cm, 22.6 in·lbf}
- If not within the specification, replace the rear trailing link (upper).

2011 - RX-8 - Suspension

REAR LATERAL LINK (UPPER) REMOVAL/INSTALLATION

CAUTION:

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before operations, remove the ABS wheel-speed sensor (axle side) and move the sensor away from the harnesses.
1. Remove in the order indicated in the table.
 2. Install in the reverse order of removal.
 3. Inspect the rear wheel alignment. (See [REAR WHEEL ALIGNMENT](#).)



(See [Rear Lateral Link \(Upper\) Ball Joint Removal Note.](#))

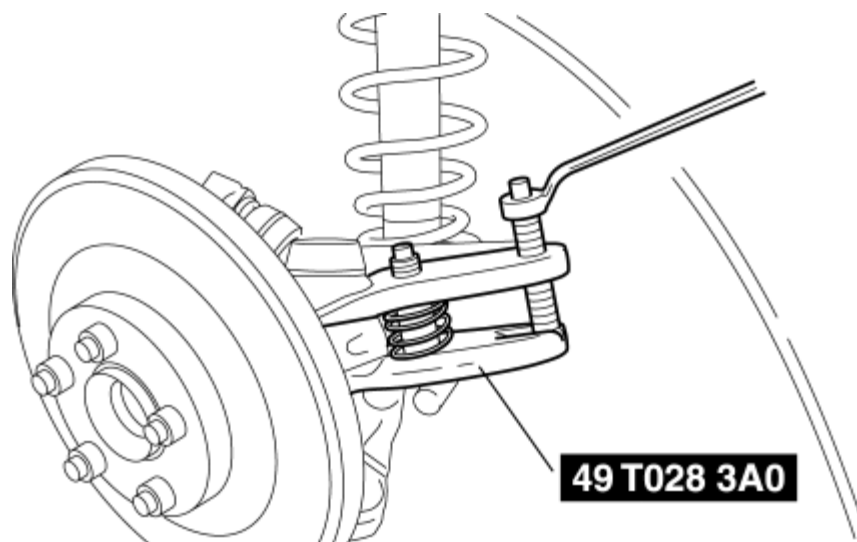
2Rear lateral link (upper)

3Dust boot

(See [Dust Boot Installation Note.](#))

Rear Lateral Link (Upper) Ball Joint Removal Note

1. Using the **SST**, disconnect the rear lateral link (upper) ball joint.

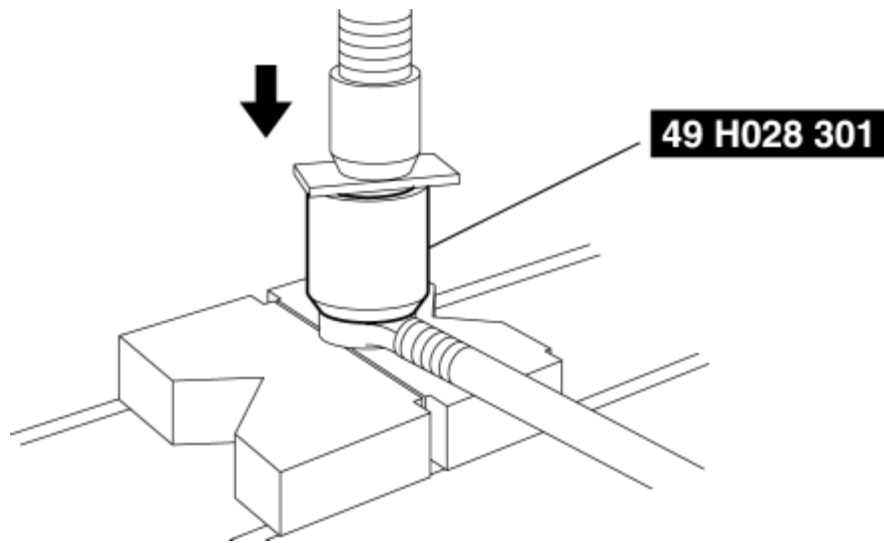


NOTE:

- When removing the rear lateral link (upper) ball joint, the rear knuckle bushing may also come off. If it comes off, replace the rear knuckle.

Dust Boot Installation Note

1. Wipe the grease off the ball joint stud.
2. Fill the inside of the new dust boot with grease.
3. Using the **SST**, install the dust boot to the ball joint.



4. Wipe off the excess grease.

[< Previous](#) [Next >](#)

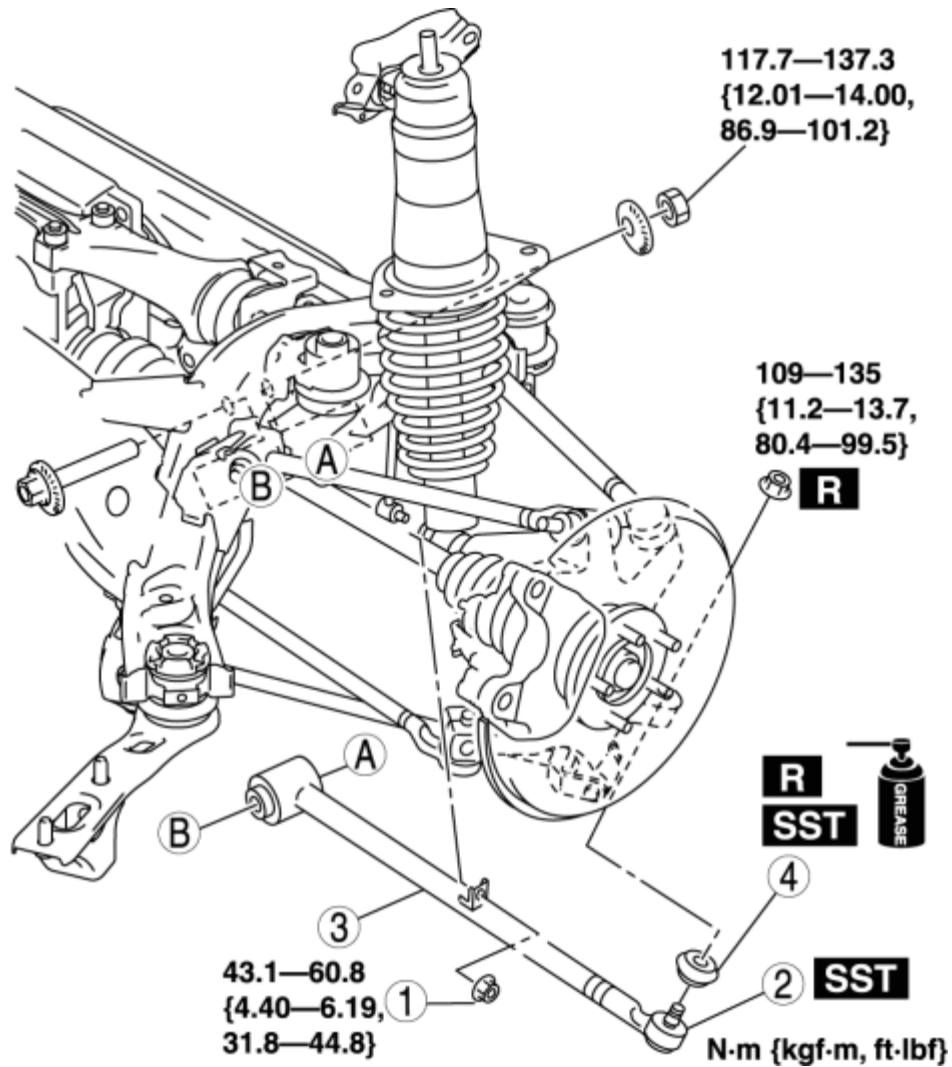
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Suspension

REAR LATERAL LINK (LOWER) REMOVAL/INSTALLATION

1. Remove the rear auto leveling sensor. (See [REAR AUTO LEVELING SENSOR REMOVAL/INSTALLATION](#).)
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.
4. Inspect the rear wheel alignment. (See [REAR WHEEL ALIGNMENT](#).)



2 Rear lateral link (lower) ball joint

(See [Rear Lateral Link \(Lower\) Ball Joint Removal Note](#).)

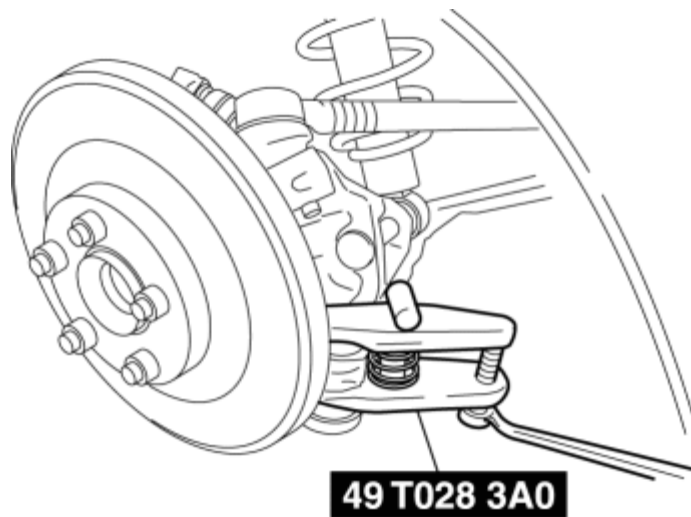
3 Rear lateral link (lower)

4 Dust boot

(See [Dust Boot Installation Note](#).)

Rear Lateral Link (Lower) Ball Joint Removal Note

1. Using the **SST**, disconnect the ball joint.

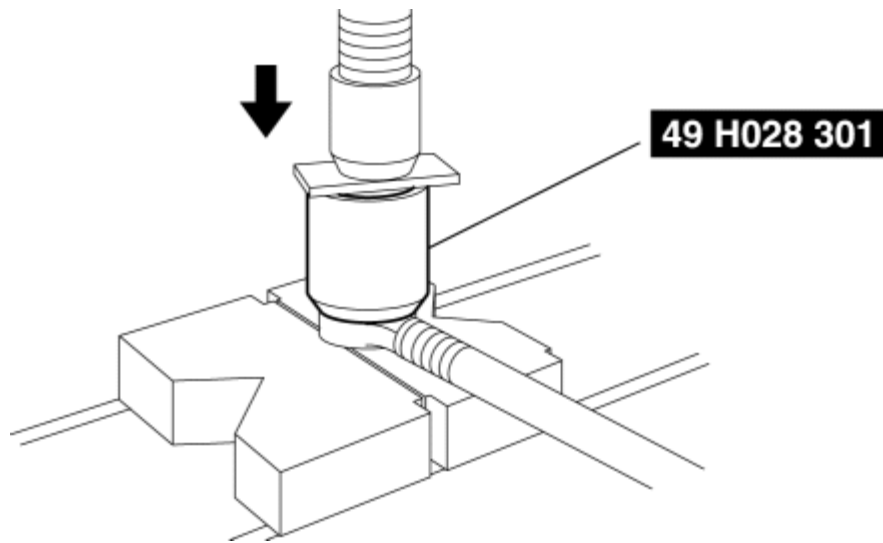


NOTE:

- When removing the rear lateral link (lower) ball joint, the rear knuckle bushing may also come off. If it comes off, replace the rear knuckle.

Dust Boot Installation Note

1. Wipe the grease off the ball joint stud.
2. Fill the inside of the new dust boot with grease.
3. Using the **SST**, install the dust boot to the ball joint.



4. Wipe off the excess grease.

[< Previous](#) [Next >](#)

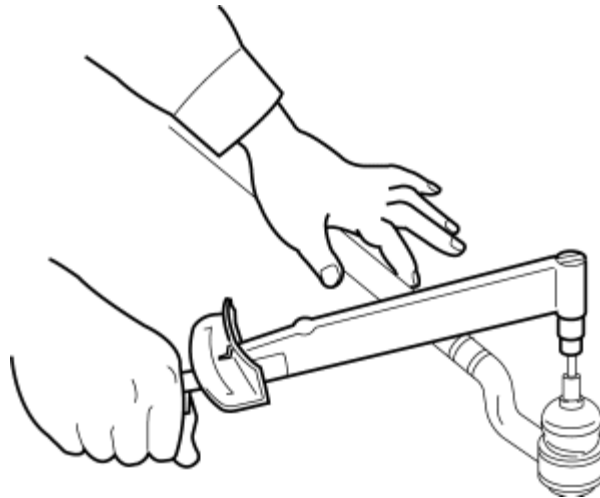
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Suspension

REAR LATERAL LINK (UPPER) INSPECTION

1. Remove the rear lateral link (upper) from the vehicle.
2. Inspect the link for bending or damage. If there is any malfunction, replace the link.
3. Inspect the ball joint for looseness. If there is any malfunction, replace the ball joint.
4. Rotate the ball joint **5 times**.
5. Measure the ball-joint rotational torque using an Allen wrench and a torque wrench.



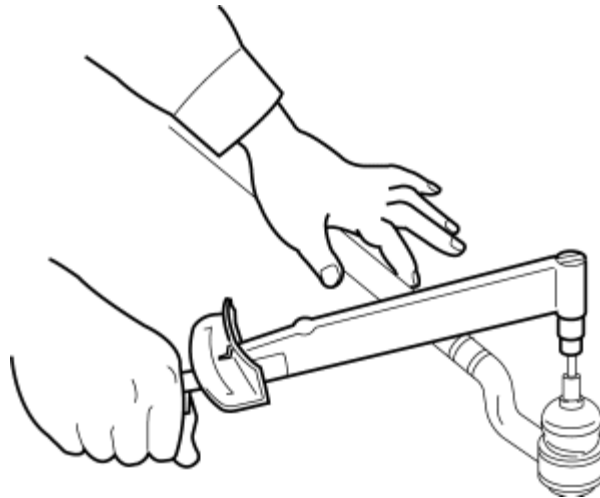
Rear lateral link (upper) ball joint rotational torque

- 2.16 N·m {22.0 kgf·cm, 19.1 in·lbf} max.
- If not within the specification, replace the rear lateral link (upper).

2011 - RX-8 - Suspension

REAR LATERAL LINK (LOWER) INSPECTION

1. Remove the rear lateral link (lower) from the vehicle.
2. Inspect the link for bending or damage. If there is any malfunction, replace the link.
3. Inspect the ball joint for looseness. If there is any malfunction, replace the ball joint.
4. Rotate the ball joint **5 times**.
5. Measure the ball-joint rotational torque using an Allen wrench and a torque wrench.



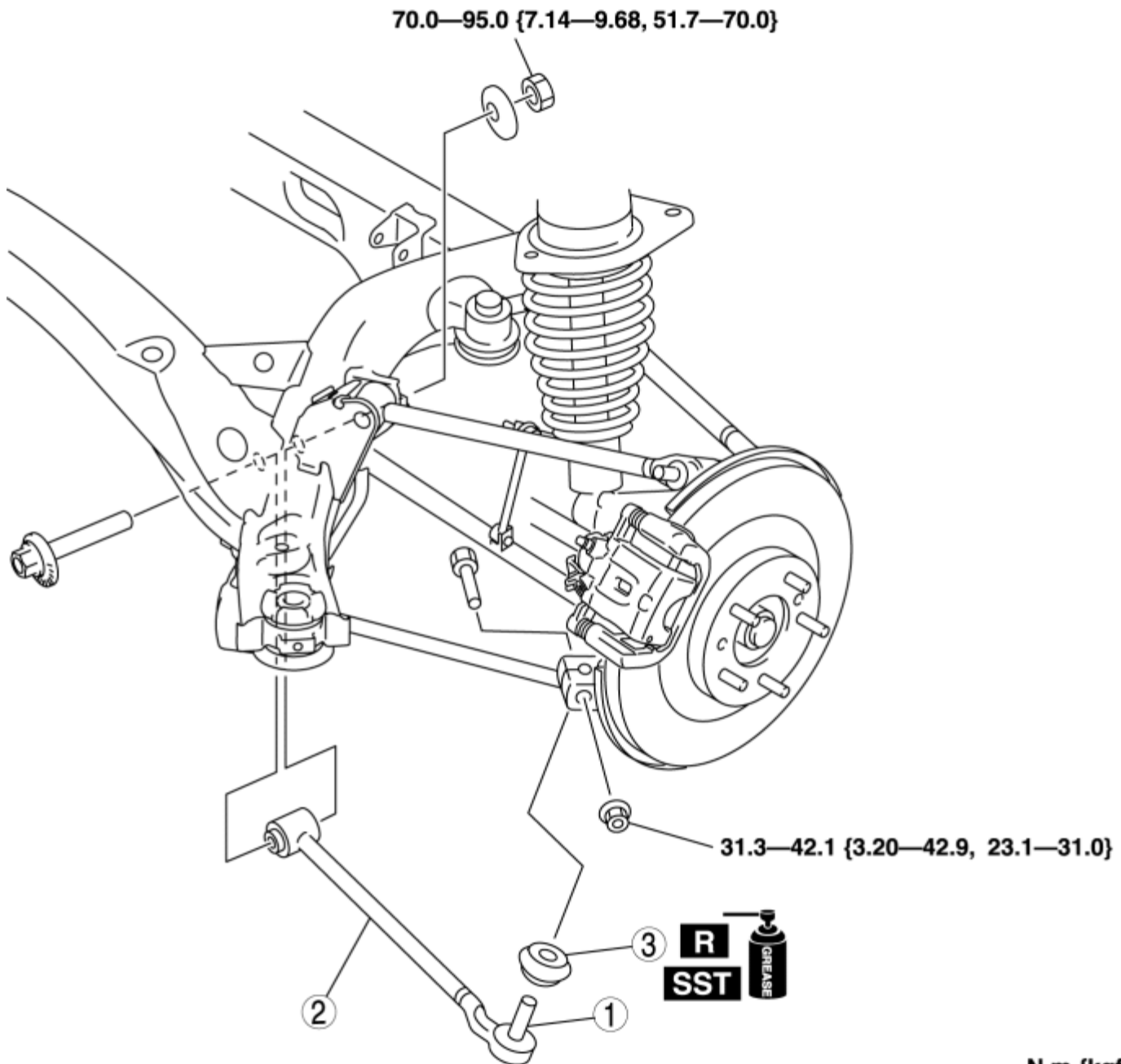
Rear lateral link (lower) ball joint rotational torque

- 2.16 N·m {22.0 kgf·cm, 19.1 in·lbf} max.
- If not within the specification, replace the rear lateral link (lower).

2011 - RX-8 - Suspension

TOE CONTROL LINK REMOVAL/INSTALLATION

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. Inspect the rear wheel alignment. (See [REAR WHEEL ALIGNMENT](#).)

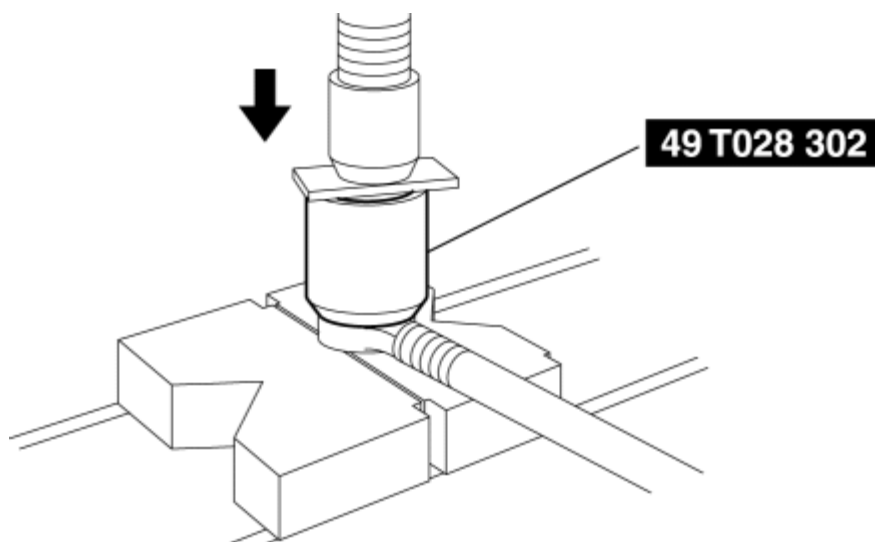


N·m {kgf·m, ft·lbf}

1	Toe control link ball joint (See Toe Control Link Ball Joint Installation Note.)
2	Toe control link
3	Dust boot (See Dust Boot Installation Note.)

Dust Boot Installation Note

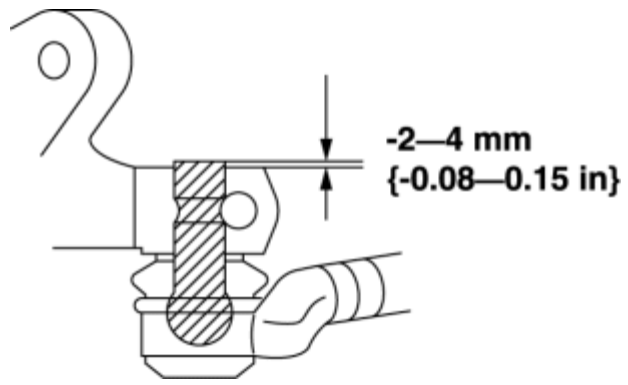
1. Wipe the grease off the ball joint stud.
2. Fill the inside of the new dust boot with grease.
3. Using the **SST**, install the dust boot to the ball joint.



4. Wipe off the excess grease.

Toe Control Link Ball Joint Installation Note

1. Install the toe control link ball joint so that the ball joint stud projection is within **-2—4 mm** **{-0.08—0.15 in}**.



[< Previous](#) [Next >](#)

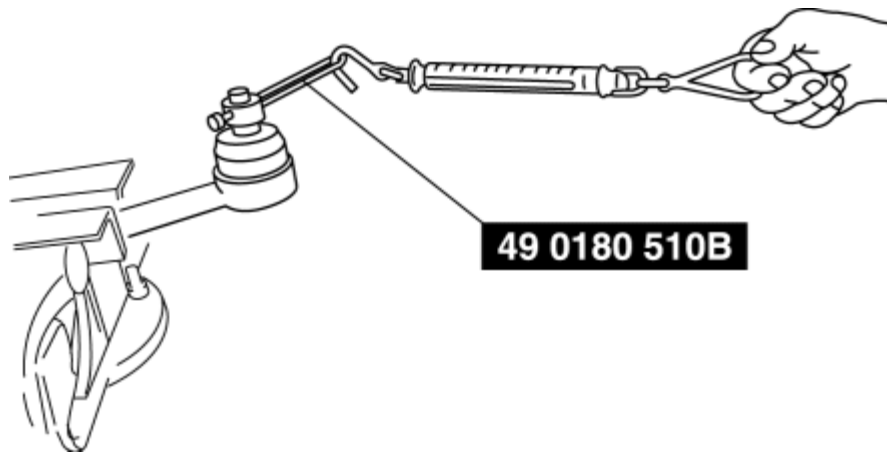
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Suspension

TOE CONTROL LINK INSPECTION

1. Remove the toe control link from the vehicle.
2. Inspect the lateral link for bending or damage. If there is any malfunction, replace the lateral link.
3. Inspect the ball joint for looseness. If there is any malfunction, replace the ball joint.
4. Rotate the ball joint **5 times**.
5. Install the **SST** to the ball stud, and measure the ball joint rotational torque using a pull scale.



Toe control link ball joint rotational torque

- 1.76 N·m {17.9 kgf·cm, 15.6 in·lbf}
- Pull scale reading: 17.6 N {1.76 kgf, 3.96 lbf}
- If not within the specification, replace the toe control link.

2011 - RX-8 - Suspension

SUSPENSION TECHNICAL DATA

Front Wheel Alignment

Standard suspension

Item			Specification
Total toe-in	Tire [Tolerance ± 4 {0.15 }]	(mm {in})	2 {0.08}
	Rim inner [Tolerance ± 3 {0.12}]		1 {0.04}
		degree	0°11'±21'
Steering angle [Tolerance $\pm 3^\circ$]		Inner	38°36'
		Outer	33°18'
Steering axis inclination (Reference value)			10°59'
Camber [Tolerance $\pm 1^\circ$]	Vehicle height: From the end of the front fender to the center of the wheel (mm {in})	363—372 {14.3 —14.6}	-0°41'
		373—382 {14.7 —15.0}	-0°21'
		383—392 {15.1 —15.4}	-0°03'
		393—402 {15.5 —15.8}	0°14'
		403—412 {15.9	0°28'

		—16.2}	
Caster [Tolerance ±1°]	Vehicle height: From the end of the rear fender to the center of the wheel (mm {in})	366—375 {14.5 —14.7}	6°45′
		376—385 {14.9 —15.1}	6°33′
		386—395 {15.2 —15.5}	6°20′
		396—405 {15.6 —15.9}	6°07′
		406—415 {16.0 —16.3}	5°55′

Sport suspension

Item			Specification
Total toe-in	Tire [Tolerance ±4 {0.15}]	(mm {in})	2 {0.08}
	Rim inner [Tolerance ±3 {0.12}]		1 {0.04}
		degree	0°11′±21′
Steering angle [Tolerance ±3°]		Inner	38°36′
		Outer	33°18′
Steering axis inclination (Reference value)			11°12′
Camber [Tolerance ±1°]	Vehicle height: From the end of the front fender to the center of the wheel (mm {in})	356—365 {14.1 —14.3}	-0°57′
		366—375 {14.5 —14.7}	-0°35′
		376—385 {14.9 —15.1}	-0°15′

		386—395 {15.2—15.5}	0°02′
		396—405 {15.6—15.9}	0°18′
Caster [Tolerance ±1°]	Vehicle height: From the end of the rear fender to the center of the wheel (mm {in})	364—373 {14.4—14.6}	6°47′
		374—383 {14.8—15.0}	6°35′
		384—393 {15.2—15.4}	6°22′
		394—403 {15.6—15.8}	6°09′
		404—413 {16.0—16.2}	5°57′

NOTE:

- Unloaded vehicle: Fuel tank is full. Engine coolant and engine oil are at specified level. Jack and tools are in designated position.
- Difference between the left and right dimension for camber and caster is within 1°.

Rear Wheel Alignment

Standard suspension

Item			Specification
Total toe-in	Tire [Tolerance ±4 {0.15 }]	(mm {in})	3.6 {0.14}
	Rim inner [Tolerance ±3 {0.12}]		2 {0.08}
		degree	0°19′±20′
		366—375 {14.5—	-1°22′

Camber [Tolerance ±1°]	Vehicle height: From the end of the rear fender to the center of the wheel (mm {in})	14.7}	
		376—385 {14.9—15.1}	-1°02′
		386—395 {15.2—15.5}	-0°45′
		396—405 {15.6—15.9}	-0°31′
		406—415 {16.0—16.3}	-0°18′

Sport suspension

Item			Specification
Total toe-in	Tire [Tolerance ±4 {0.15}]	(mm {in})	3.6 {0.14}
	Rim inner [Tolerance ±3 {0.12}]		2 {0.08}
		degree	0°19'±20′
Camber [Tolerance ±1°]	Vehicle height: From the end of the rear fender to the center of the wheel (mm {in})	364—373 {14.4—14.6}	-1°26′
		374—383 {14.8—15.0}	-1°06′
		384—393 {15.2—15.4}	-0°48′
		394—403 {15.6—15.8}	-0°33′
		404—413 {16.0—16.2}	-0°21′

NOTE:

Unloaded vehicle: Fuel tank is full. Engine coolant and engine oil are at specified level.
Jack and tools are in designated position.

- Difference between the left and right camber angle is within **1°**.

Suspension

Item		Specification	
Front upper arm ball joint rotational torque		1.76 N·m {17.6 kgf·cm, 15.6 in·lbf} max.	
Front lower arm ball joint rotational torque		2.3 N·m {23 kgf·cm, 20 in·lbf} max.	
Front stabilizer control link ball joint rotational torque		0.2—0.8 N·m {2.0—8.1 kgf·cm, 1.8—7.1 in·lbf}	
Rear lateral link (upper) ball joint rotational torque		2.16 N·m {22.0 kgf·cm, 19.1 in·lbf} max.	
Rear lateral link (lower) ball joint rotational torque		2.16 N·m {22.0 kgf·cm, 19.1 in·lbf} max.	
Toe control link ball joint rotational torque		1.76 N·m {17.9 kgf·cm, 15.6 in·lbf} Pull scale reading: 17.6 N {1.76 kgf, 3.96 lbf}	
Rear stabilizer control link ball joint rotational torque		0.2—2.0 N·m {3—20 kgf·cm, 2—17 in·lbf}	
Rear trailing link (upper) ball joint rotational torque		2.55 N·m {26.0 kgf·cm, 22.6 in·lbf}	

Wheel and Tire

Item			Specification	
Wheel	Size		18 x 8J	19 x 8J
	Offset	(mm {in})	50 {2.0}	47 {1.9}

	Pitch circle diameter	(mm {in})	114.3 {4.50}	
	Material		Aluminum alloy	
Tire	Size		225/45R18 91W	225/40R19 89W
	Air pressure	(kPa {psi})	220 {32}	
	Remaining tread	(mm {in})	1.6 {0.063} min.	
Wheel and tire	Lug nut tightening torque	(N·m {kgf·m, ft·lbf})	88—118 {9.0—12.0, 65.0—87.0}	
	Wheel and tire runout	Radial direction	1.5 {0.059} max.	
	(mm {in})	Lateral direction	2.0 {0.078} max.	
	Wheel imbalance	(g {oz})	Adhesive-type ^{*1} : 13 {0.46} max. Knock-type ^{*2} : 8 {0.28} max.	

*1
Total weight exceeds 160 g {5.65 oz}.

*2
One balance weight: 60 g {2.12 oz} max. If the total weight exceeds 100 g {3.53 oz} on one side, rebalance after moving the tire around on the rim. Do not use three or more balance weights.

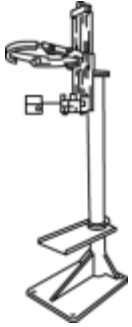
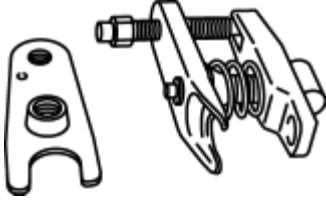

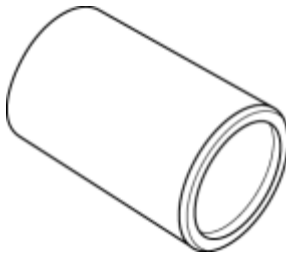
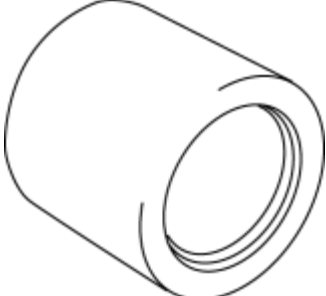
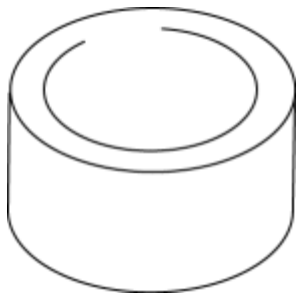
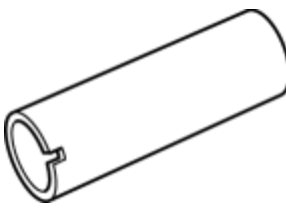

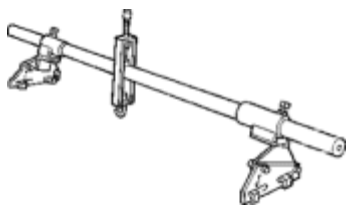
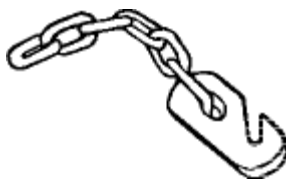
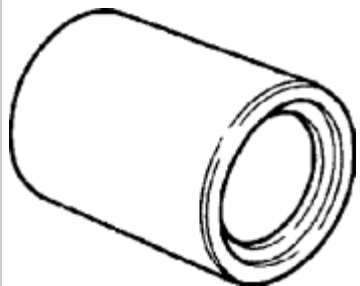
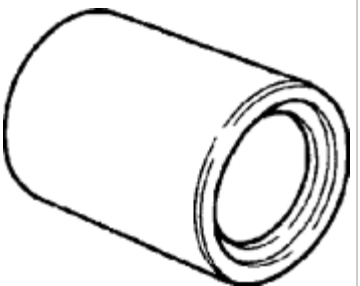
[< Previous](#) [Next >](#)

[Back to Top](#)

[< Previous](#)

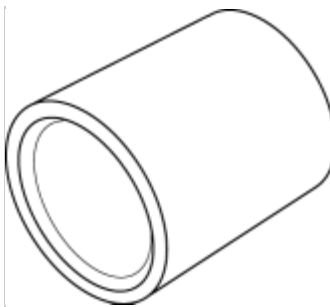
2011 - RX-8 - Suspension

SUSPENSION

49 T034 1A0 Coil spring compressor set		49 T028 3A0 Ball joint puller set		49 T034 202A Clip guide	
49 D034 202 Support block		49 U034 204 Dust boot installer		49 S010 301 Oil seal installer	
49 S032 333 Bearing installer		49 W027 003 Bearing installer		49 E017 5A0 Engine support set	
49 G030 029 Chain		49 D034 201 Dust boot installer		49 H028 301 Dust boot installer	
49 T028		49 0180		49	

302

Dust boot
installer



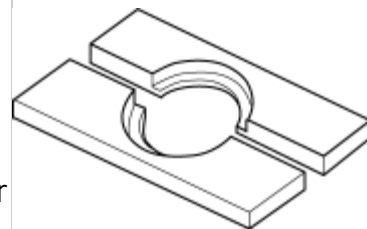
510B

Preload
measuring
attachment



W017
101

Clutch
hub
remover



[< Previous](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

Workshop Manual - DriveLine/Axle

2011 - RX-8

General Procedures

- [GENERAL PROCEDURES \(FRONT AND REAR AXLES\)](#)

Front Axle

- [FRONT AXLE LOCATION INDEX](#)
- [WHEEL HUB, STEERING KNUCKLE INSPECTION](#)
- [WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION](#)
- [FRONT WHEEL HUB BOLT REPLACEMENT](#)

Rear Axle

- [REAR AXLE LOCATION INDEX](#)
- [WHEEL HUB, REAR KNUCKLE INSPECTION](#)
- [WHEEL HUB, REAR KNUCKLE REMOVAL/INSTALLATION](#)

Drive Shaft

- [REAR DRIVE SHAFT LOCATION INDEX](#)
- [REAR DRIVE SHAFT INSPECTION](#)
- [REAR DRIVE SHAFT REMOVAL/INSTALLATION](#)
- [REAR DRIVE SHAFT DISASSEMBLY/ASSEMBLY](#)

Differential

- [REAR DIFFERENTIAL LOCATION INDEX](#)
- [DIFFERENTIAL OIL INSPECTION](#)
- [DIFFERENTIAL OIL REPLACEMENT](#)
- [OIL SEAL \(SIDE GEAR\) REPLACEMENT](#)
- [OIL SEAL \(COMPANION FLANGE\) REPLACEMENT](#)
- [REAR DIFFERENTIAL REMOVAL/INSTALLATION](#)
- [REAR DIFFERENTIAL DISASSEMBLY](#)
- [REAR DIFFERENTIAL ASSEMBLY](#)

Propeller Shaft

- [PROPELLER SHAFT LOCATION INDEX](#)
- [PROPELLER SHAFT REMOVAL/INSTALLATION](#)
- [PROPELLER SHAFT INSPECTION](#)

Technical Data

- [DRIVELINE/AXLE TECHNICAL DATA](#)

Maintenance/Service Tools

- [DRIVELINE/AXLE SST](#)

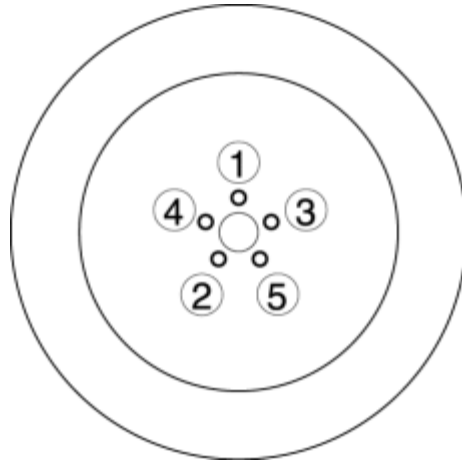
[Next >](#)

2011 - RX-8 - DriveLine/Axle

GENERAL PROCEDURES (FRONT AND REAR AXLES)

Wheel And Tire Installation

1. When installing the wheels and tires, tighten the wheel nuts in a criss-cross pattern to the following tightening torque.



Tightening torque

- 88—118 N·m {9.0—12.0 kgf·m, 65.0—87.0 ft·lbf}

Connector Disconnection

1. Perform the following works, before the connectors are disconnected.
 - a. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
 - b. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 - c. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))

Suspension Links Removal/Installation

1. For the joint sections with rubber bushings, raise the vehicle using a lift, and then temporarily

tighten the installation bolts and nuts. Lower the vehicle to the ground and tighten them completely with the specified torque.

[Next >](#)

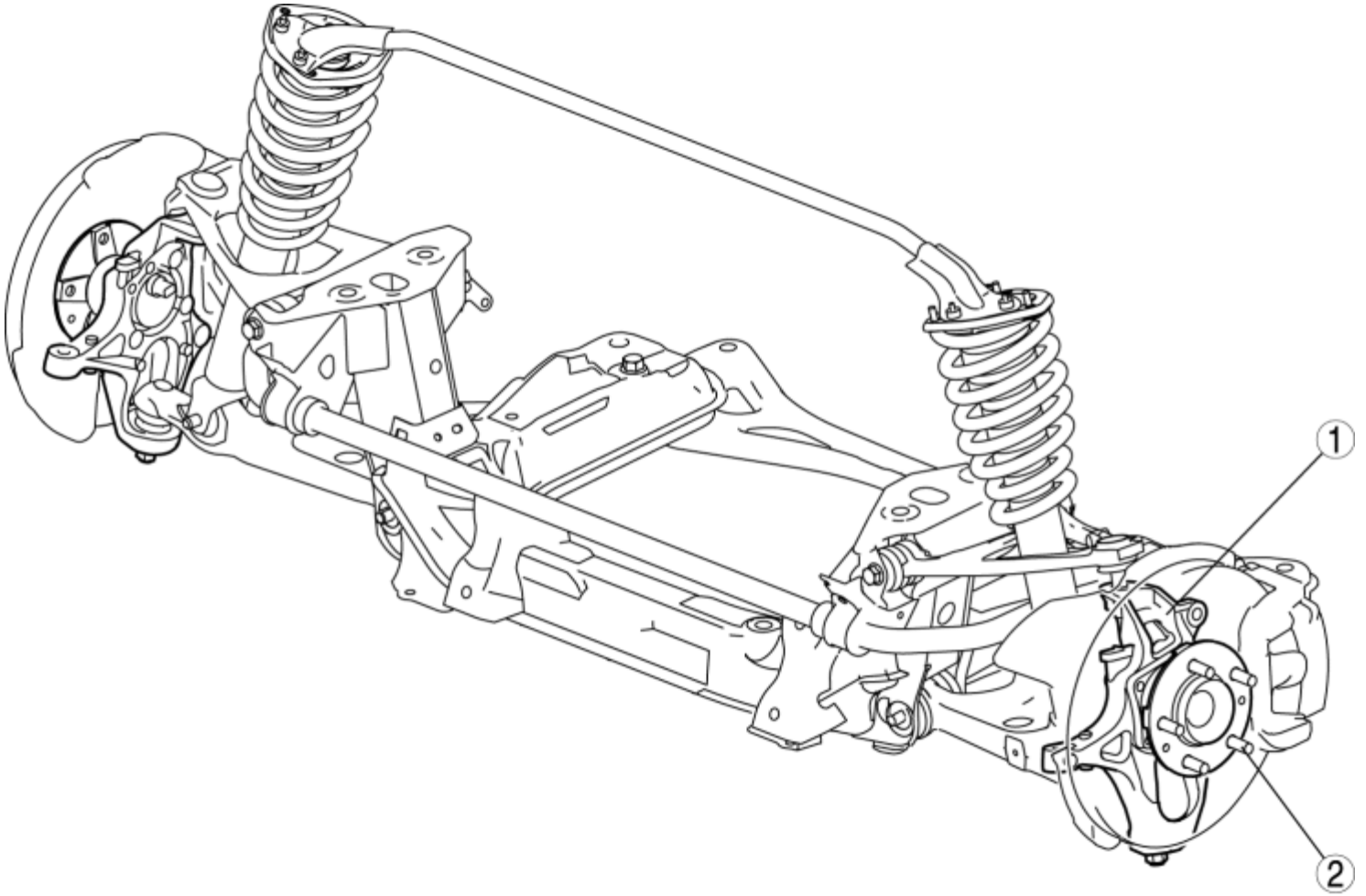
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - DriveLine/Axle

FRONT AXLE LOCATION INDEX



1 Wheel hub, steering knuckle

(See [WHEEL HUB, STEERING KNUCKLE INSPECTION.](#))

(See [WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION.](#))

2 Front wheel hub bolt

(See [FRONT WHEEL HUB BOLT REPLACEMENT.](#))

[< Previous](#) [Next >](#)

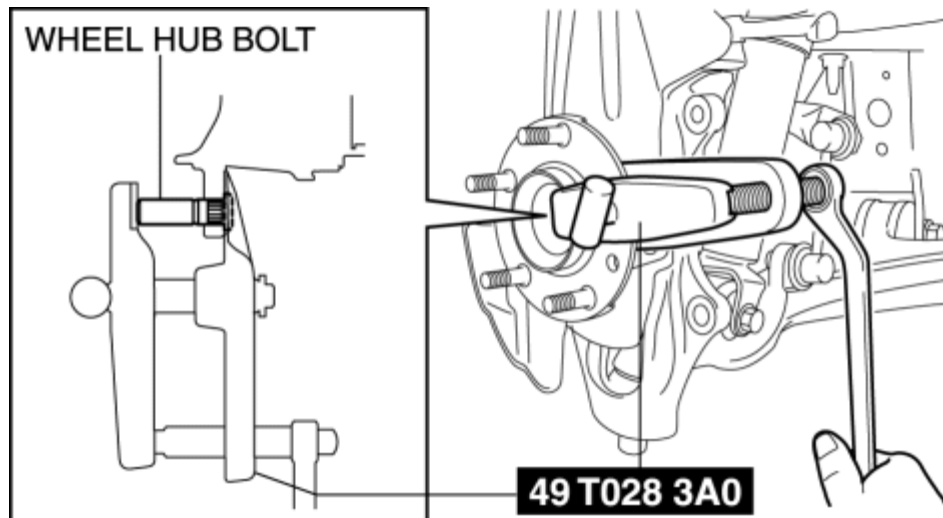
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

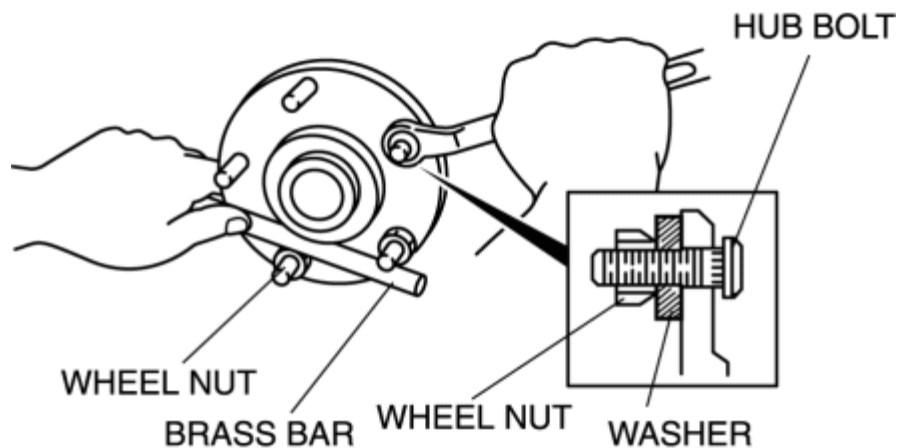
2011 - RX-8 - DriveLine/Axle

FRONT WHEEL HUB BOLT REPLACEMENT

1. Remove the brake caliper component and disc plate.
2. Remove the wheel hub bolt using the **SST** as shown in the figure.



3. Place a new wheel hub bolt in the wheel hub.
4. Install the wheel hub bolt by placing a proper sized washer on the hub, and tightening the nut as shown in the figure.

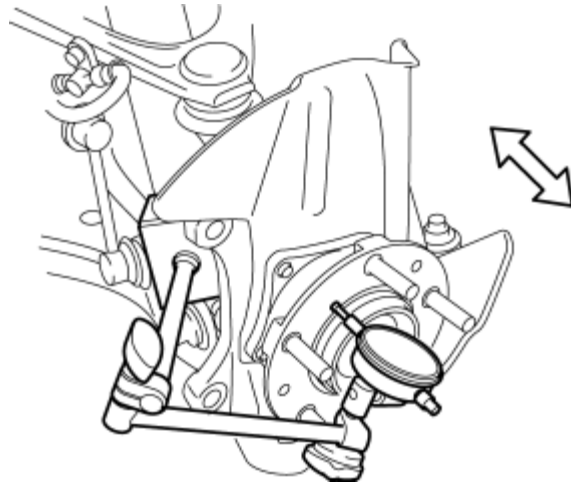


2011 - RX-8 - DriveLine/Axle

WHEEL HUB, STEERING KNUCKLE INSPECTION

Wheel Bearing Looseness Inspection

1. Install the magnetic vane and dial gauge as shown in the figure, and inspect the wheel bearing for axial looseness.



- If it exceeds the maximum specification, replace the wheel hub component.

Maximum front wheel bearing play

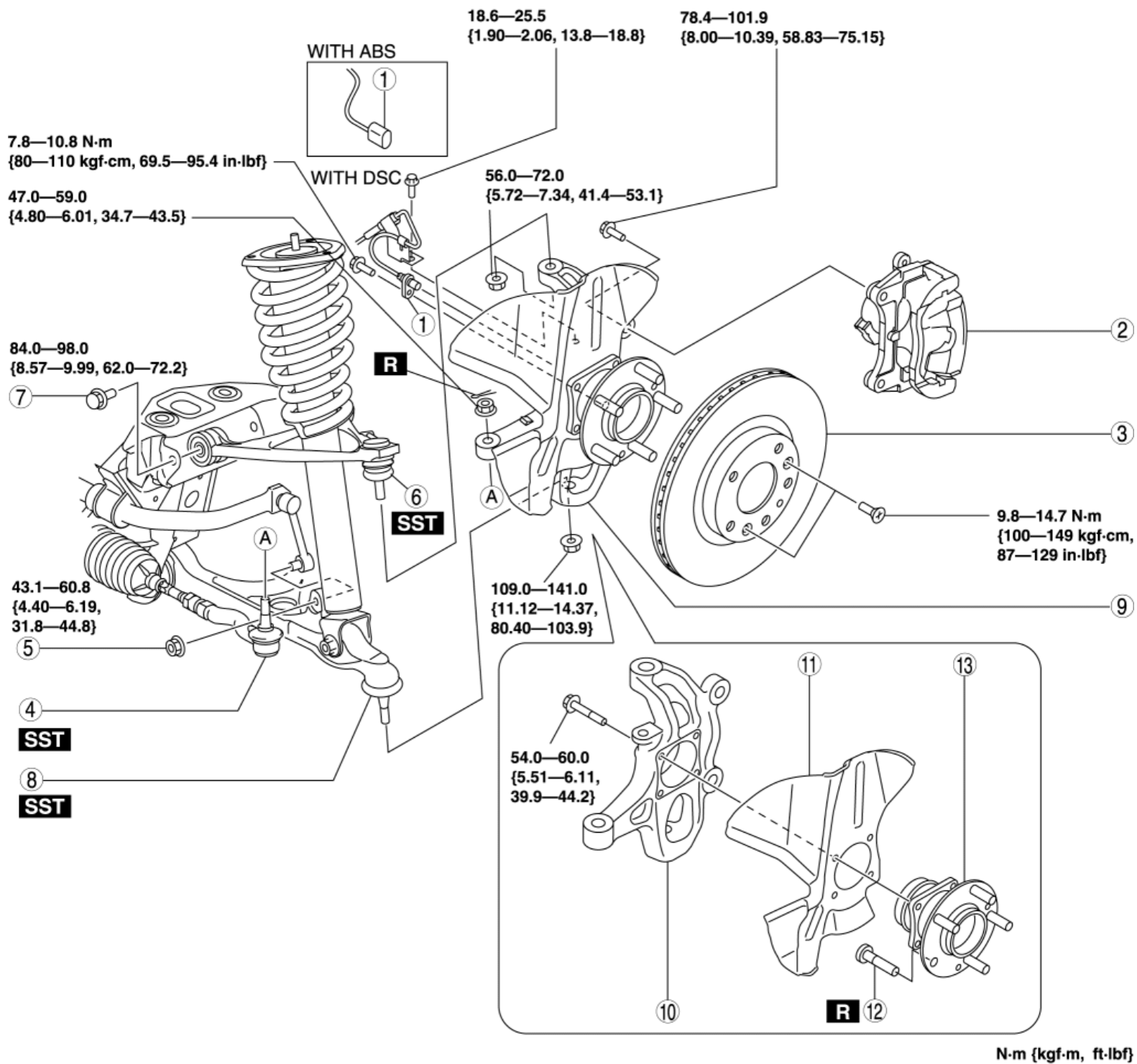
- 0.05 mm {0.002 in}

2011 - RX-8 - DriveLine/Axle

WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION

CAUTION:

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, disconnect the ABS wheel-speed sensor or ABS wheel-speed sensor harness connector (axle side) and fix it to an appropriate place where the sensor will not be pulled by mistake while servicing the vehicle.
1. Remove in the order indicated in the table.
 2. Install in the reverse order of removal.
 3. After installation, inspect the front wheel alignment. (See [FRONT WHEEL ALIGNMENT](#).)



1 ABS wheel-speed sensor harness connector (With ABS)
ABS wheel-speed sensor (With DSC)

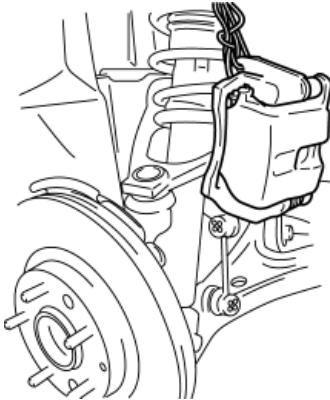
2 Brake caliper component
(See [Brake Caliper Component Removal Note.](#))

3 Disc plate

4	Tie-rod end (See STEERING GEAR AND LINKAGE REMOVAL/INSTALLATION.)
5	Stabilizer control link nut (lower)
6	Front upper arm ball joint (See FRONT UPPER ARM REMOVAL/INSTALLATION.)
7	Front upper arm bolt
8	Front lower arm ball joint (See FRONT LOWER ARM REMOVAL/INSTALLATION.)
9	Wheel hub, steering knuckle component
10	Steering knuckle
11	Dust cover
12	Wheel hub bolt
13	Wheel hub component

Brake Caliper Component Removal Note

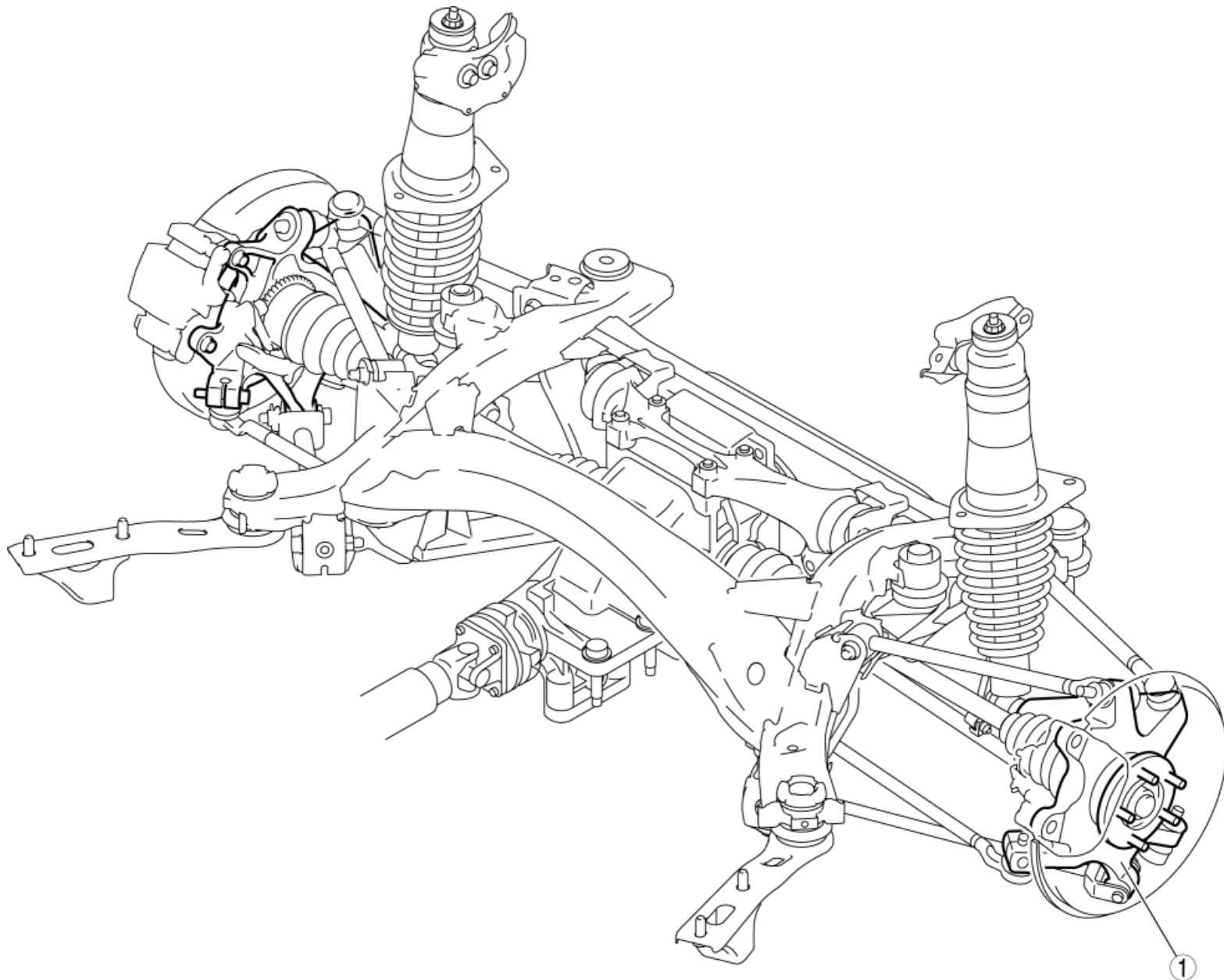
1. Suspend the brake calliper component using a cable or equivalent.



[< Previous](#) [Next >](#)

2011 - RX-8 - DriveLine/Axle

REAR AXLE LOCATION INDEX



1 Wheel hub, rear knuckle

(See [WHEEL HUB, REAR KNUCKLE INSPECTION.](#))

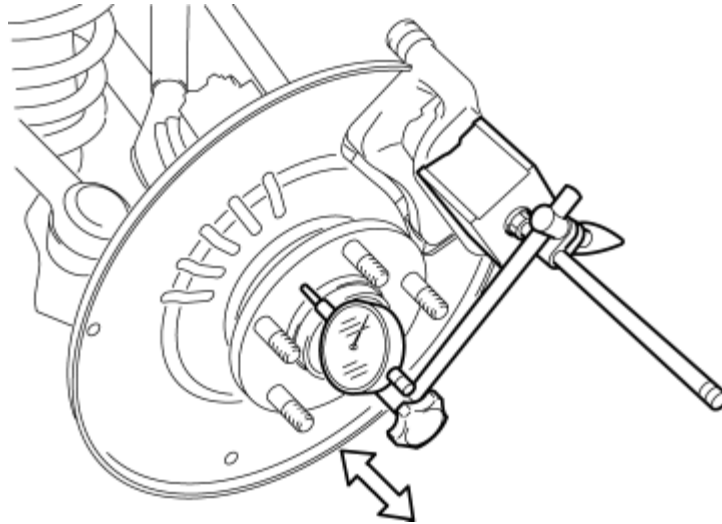
(See [WHEEL HUB, REAR KNUCKLE REMOVAL/INSTALLATION.](#))

2011 - RX-8 - DriveLine/Axle

WHEEL HUB, REAR KNUCKLE INSPECTION

Wheel Bearing Looseness Inspection

1. Install the magnetic base and dial gauge as shown in the figure, and inspect the wheel bearing for axial looseness.



- If it exceeds the maximum specification, replace the wheel hub component.

Maximum rear wheel bearing play

- 0.05 mm {0.002 in}

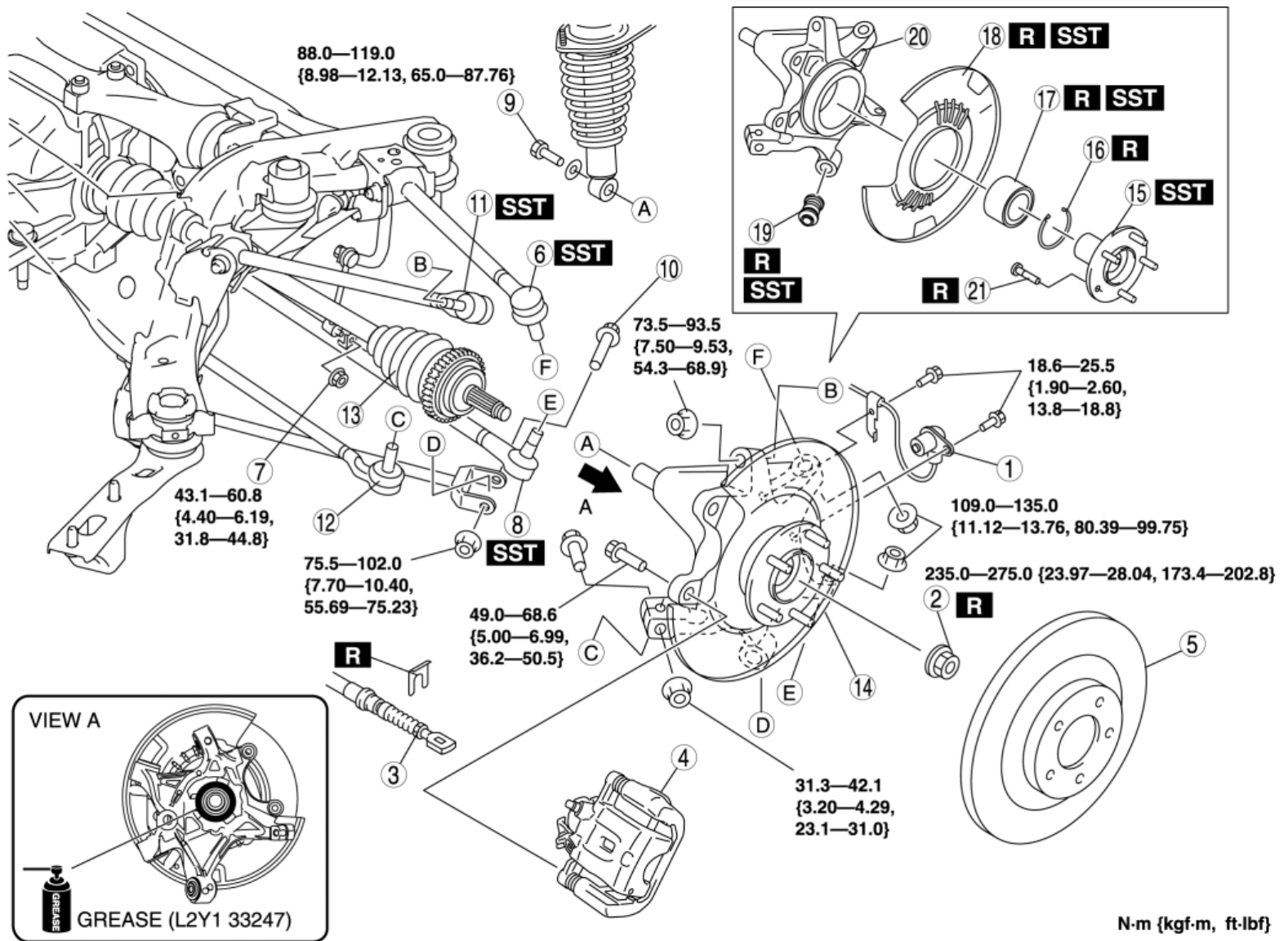
2011 - RX-8 - DriveLine/Axle

WHEEL HUB, REAR KNUCKLE REMOVAL/INSTALLATION

CAUTION:

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, remove the ABS wheel-speed sensor (axle side) and fix it to an appropriate place where the sensor will not be pulled by mistake while servicing the vehicle.

- Remove the rear auto leveling sensor. (See [REAR AUTO LEVELING SENSOR REMOVAL/INSTALLATION](#).)
- Remove in the order indicated in the table.
- Install in the reverse order of removal.
- After installation, inspect the rear wheel alignment. (See [REAR WHEEL ALIGNMENT](#).)

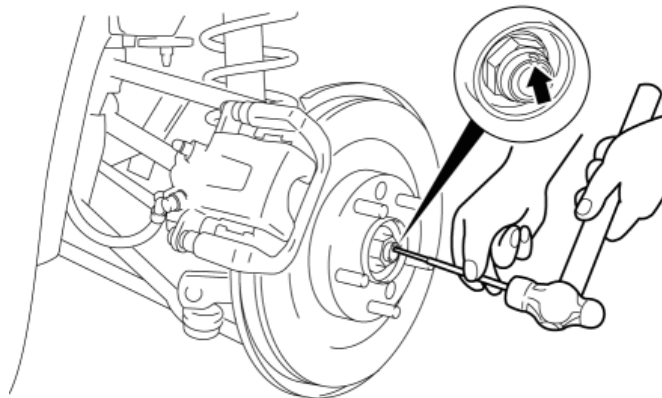


2	Locknut (See Locknut Removal Note.) (See Locknut Installation Note.)
3	Parking brake cable
4	Brake caliper component (See Brake Caliper Component Removal Note.)
5	Disc plate (See REAR BRAKE (DISC) REMOVAL/INSTALLATION.)
6	Rear lateral link (upper) ball joint (See REAR LATERAL LINK (UPPER) REMOVAL/INSTALLATION.)
7	Stabilizer control link nut (lower) (See REAR STABILIZER REMOVAL/INSTALLATION.)
8	Rear lateral link (lower) ball joint (See REAR LATERAL LINK (LOWER) REMOVAL/INSTALLATION.)
9	Shock absorber bolt (lower)
10	Rear trailing link (lower) outside bolt
11	Rear trailing link (upper) ball joint (See REAR TRAILING LINK (UPPER) REMOVAL/INSTALLATION.)
12	Toe control link ball joint
13	Rear drive shaft (See Rear Drive shaft Removal Note.)
14	Rear knuckle component (See Rear Knuckle Component Installation Note.)
15	Wheel hub component (See Wheel Hub Component Removal Note.) (See Wheel Hub Component Installation Note.)
16	Retaining ring
17	Wheel bearing (See Wheel Bearing Removal Note.) (See Wheel Bearing Installation Note.)

18	Dust cover (See Dust Cover Removal Note.) (See Dust Cover Installation Note.)
19	Bushing (See Bushing Removal Note.) (See Bushing Installation Note.)
20	Rear knuckle
21	Wheel hub bolt (See Wheel Hub Bolt Removal Note.) (See Wheel Hub Bolt Installation Note.)

Locknut Removal Note

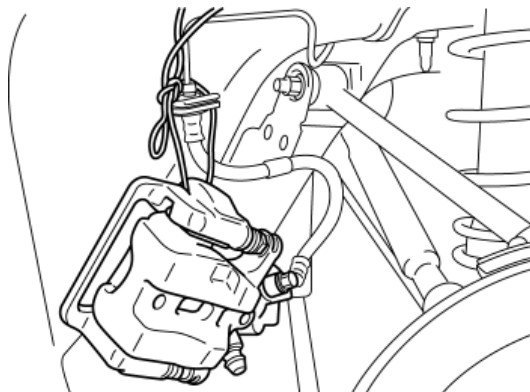
1. Lock the disc plate by applying the brakes.
2. Knock the crimped portion of the locknut outward using a chisel and a hammer.



3. Remove the locknut.

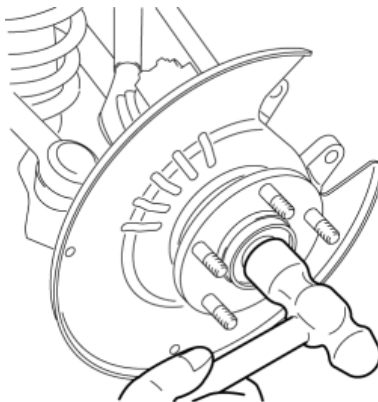
Brake Caliper Component Removal Note

1. Suspend the brake calliper component using a cable or equivalent.



Rear Drive shaft Removal Note

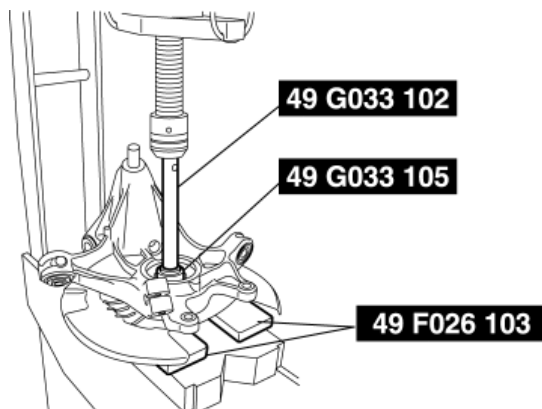
1. Temporarily install a spare nut onto the end of the rear drive shaft.
2. Tap the nut with a copper hammer to loosen the drive shaft from the wheel hub.



3. Separate the rear drive shaft from the wheel hub.

Wheel Hub Component Removal Note

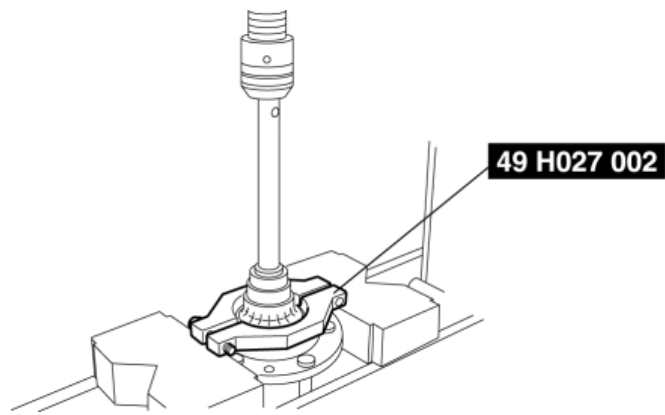
1. Remove the wheel hub component using the **SSTs**.



2. If the bearing inner race remains on the wheel hub component, use a chisel to secure a sufficient space for installing the **SST** between wheel hub component and bearing inner race.

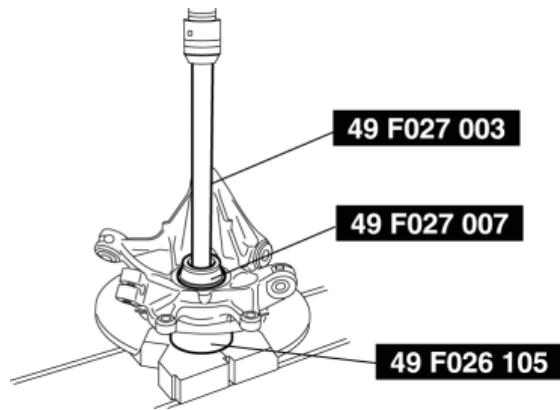


3. Remove the bearing inner race using the **SST**.



Wheel Bearing Removal Note

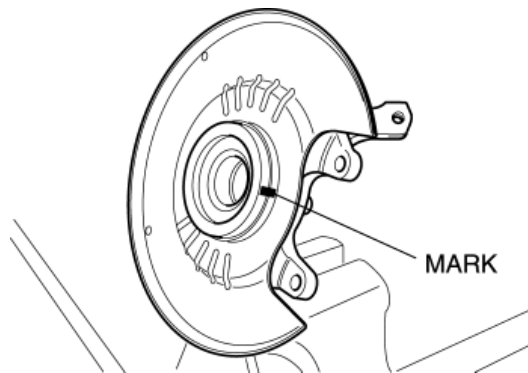
1. Remove the wheel bearing from the rear knuckle using the **SSTs**.



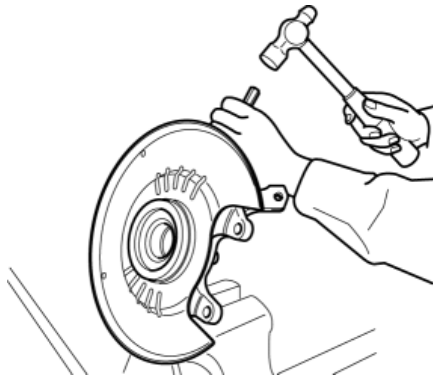
Dust Cover Removal Note

NOTE:

- Remove the dust cover only if there is an abnormality.
1. Place an alignment mark on the dust cover and rear knuckle for proper installation.

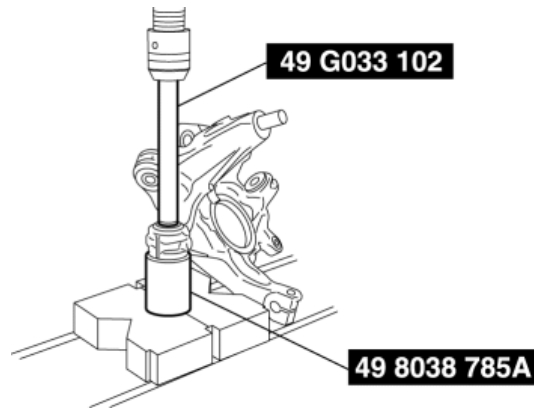


2. Remove the dust cover using a chisel.



Bushing Removal Note

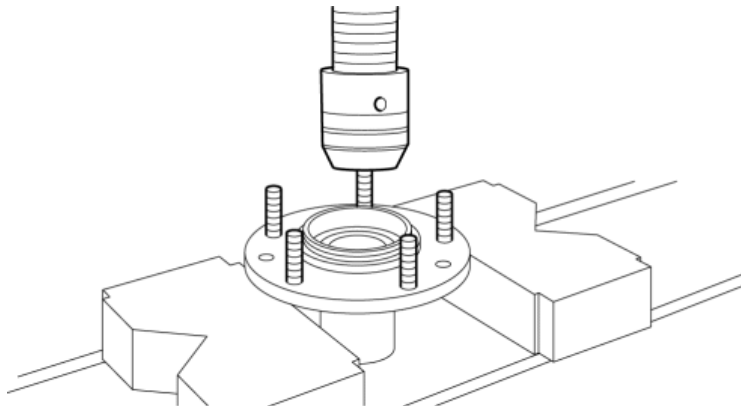
1. Remove the bushing from the rear knuckle using the **SSTs**.



Wheel Hub Bolt Removal Note

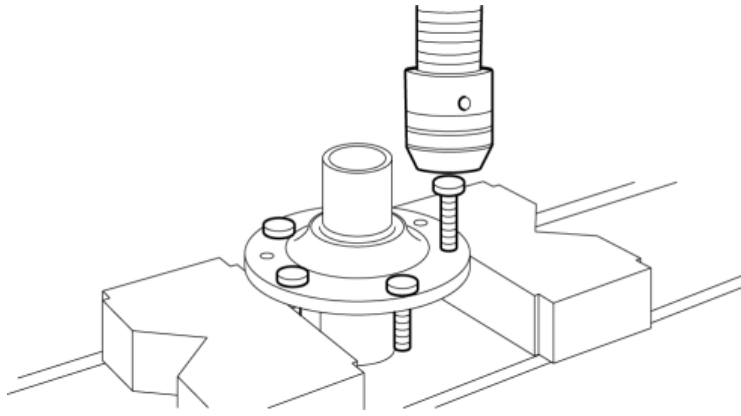
NOTE:

- Remove the dust cover only if there is an abnormality.
1. Remove the wheel hub bolts from the wheel hub using a press.



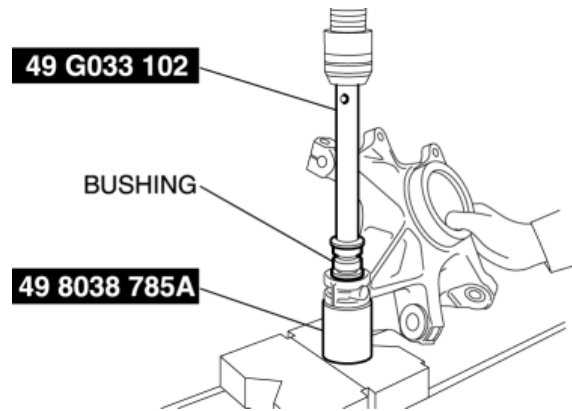
Wheel Hub Bolt Installation Note

1. Press in new wheel hub bolts into the wheel hub using a press.



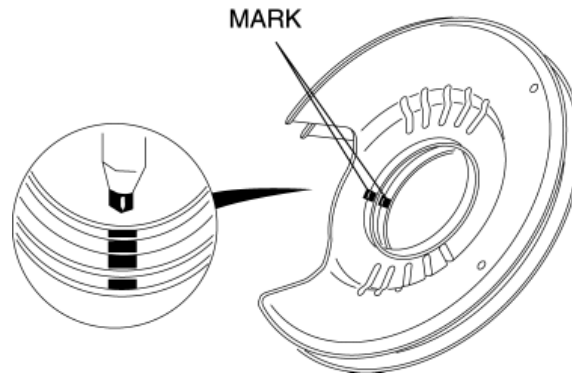
Bushing Installation Note

1. Press the new bushing into the rear knuckle using the **SSTs**.

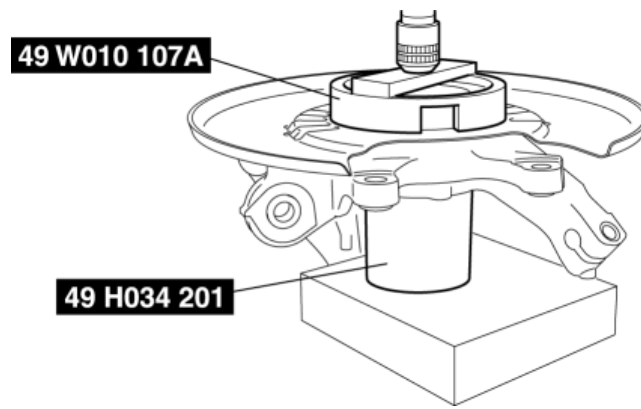


Dust Cover Installation Note

1. Align the new and old dust covers and place alignment marks on the new dust cover.

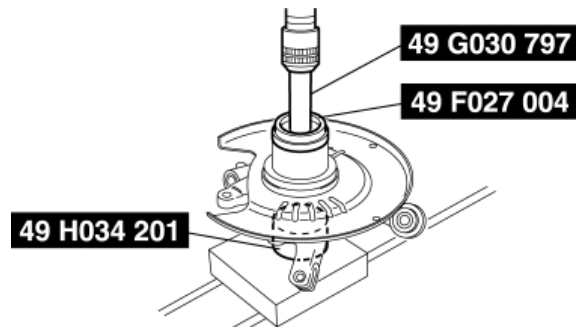


2. Align the marks on the new dust cover and rear knuckle.
3. Press the new dust cover onto the rear knuckle using the **SSTs**.



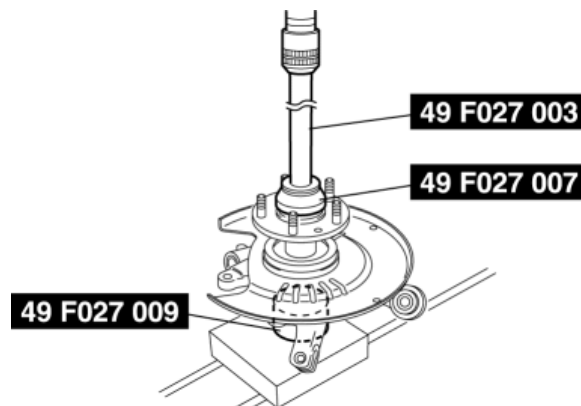
Wheel Bearing Installation Note

1. Install a new wheel bearing using the **SSTs**.



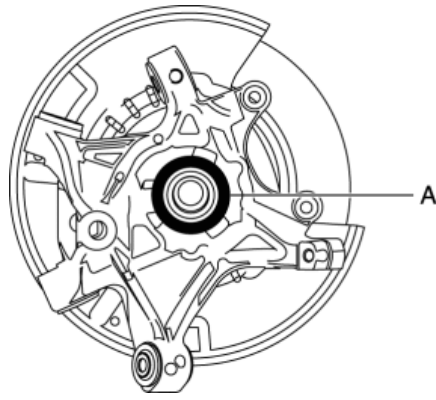
Wheel Hub Component Installation Note

1. Install the wheel hub component using the **SSTs**.



Rear Knuckle Component Installation Note

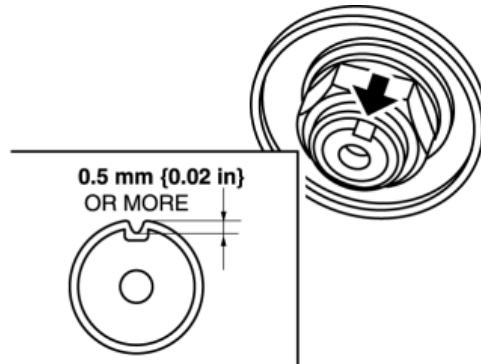
1. Apply grease (L2Y1 33247) to the wheel bearing inner race and drive shaft contact surface (Area A in figure).



2. Install the rear knuckle component.

Locknut Installation Note

1. Tighten a new locknut.
2. Install a new locknut and indent as shown to crimp the locknut, using a chisel and hammer.



[< Previous](#) [Next >](#)

2011 - RX-8 - DriveLine/Axle

REAR DRIVE SHAFT REMOVAL/INSTALLATION

CAUTION:

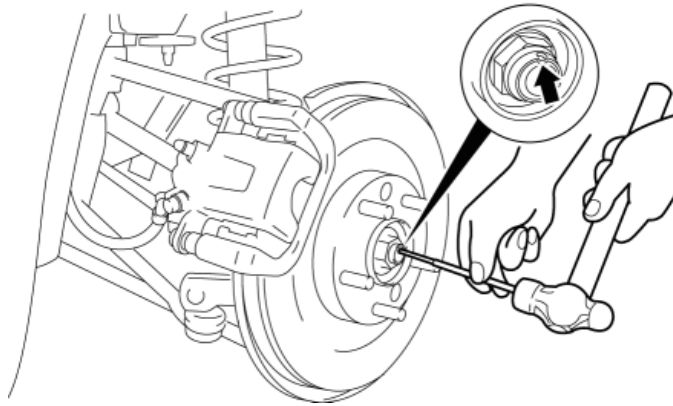
- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, remove the ABS wheel-speed sensor (axle side) and fix it to an appropriate place where the sensor will not be pulled by mistake while servicing the vehicle.

1. Drain the rear differential oil. (See [DIFFERENTIAL OIL REPLACEMENT](#).)
2. Remove the rear auto leveling sensor. (See [REAR AUTO LEVELING SENSOR REMOVAL/INSTALLATION](#).)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.
5. Add rear differential oil. (See [DIFFERENTIAL OIL REPLACEMENT](#).)
6. After installation, inspect the rear wheel alignment. (See [REAR WHEEL ALIGNMENT](#).)

	(See REAR STABILIZER REMOVAL/INSTALLATION.)
7	Rear lateral link (lower) ball joint (See REAR LATERAL LINK (LOWER) REMOVAL/INSTALLATION.)
8	Shock absorber bolt (lower)
9	Rear trailing link (upper) ball joint (See REAR TRAILING LINK (UPPER) REMOVAL/INSTALLATION.)
10	Toe control link (outer)
11	Rear drive shaft (See Rear Drive Shaft Removal Note.) (See Rear Drive Shaft Installation Note.)
12	Rear drive shaft clip (See Rear Drive Shaft Clip Installation Note.)

Locknut Removal Note

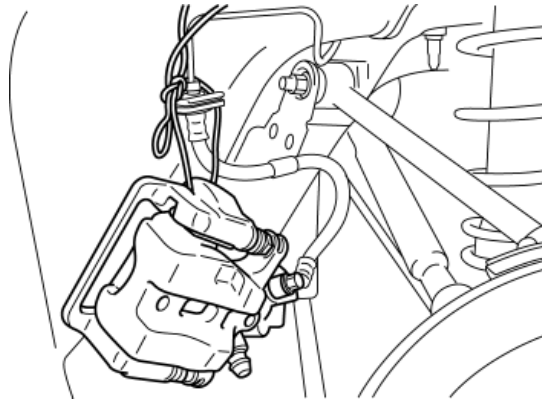
1. Lock the disc plate by applying the brakes.
2. Knock the crimped portion of the locknut outward using a chisel and a hammer.



3. Remove the locknut.

Brake Caliper Component Removal Note

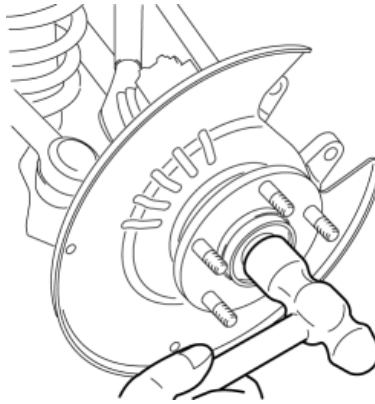
1. Suspend the brake calliper component using a cable or equivalent.



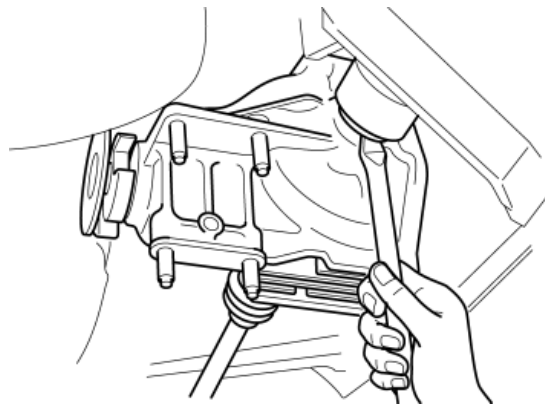
2. Temporarily tighten the wheel nut to prevent the disc plate from falling off.

Rear Drive Shaft Removal Note

1. Temporarily install a spare nut to the end of the rear drive shaft.
2. Knock the nut with copper hammer lightly and remove the rear drive shaft from the wheel hub.



3. Separate the rear drive shaft from the wheel hub.
4. Insert a tire lever or equivalent between the rear differential and differential side outer ring, and then remove the rear drive shaft.



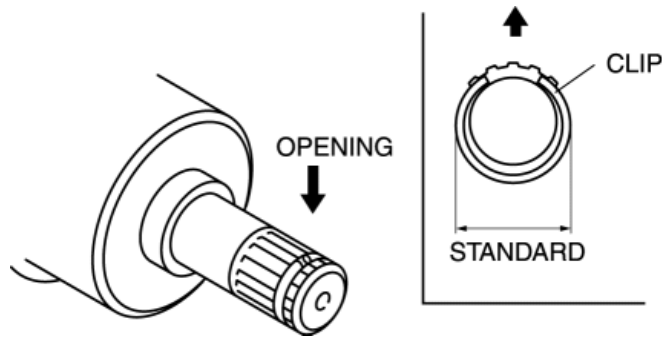
CAUTION:

- The sharp edges of the drive shaft can slice or puncture the oil seal. Be careful not to damage the oil seal when removing the drive shaft from the differential.

5. Pull the rear drive shaft to the outer side of the vehicle and disconnect it from the rear differential.
6. To hold the rear knuckle component, install the rear lateral link (upper) to the rear knuckle temporarily after disconnecting the rear drive shaft.

Rear Drive Shaft Clip Installation Note

1. Point the opening of the new drive shaft clip upward, install it to the clip groove at the end of the rear drive shaft with the installation width within the specification.



Standard

- 32 mm {1.3 in}

2. After installing the clip, measure the outer diameter. If it exceeds the specification, reinstall the new clip.

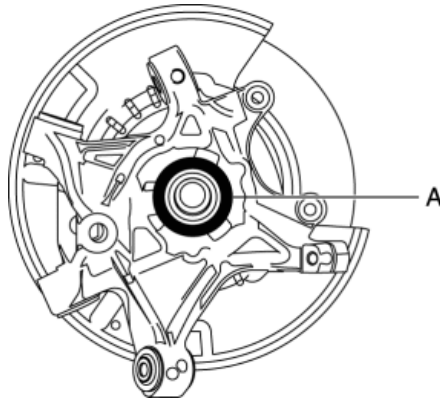
Rear Drive Shaft Installation Note

1. Apply differential oil to the differential oil seal lip.

CAUTION:

- The sharp edges of the rear drive shaft can slice or puncture the oil seal. Be careful not to damage the oil seal when installing the rear drive shaft from the rear differential.

2. Apply grease (L2Y1 33247) to the wheel bearing inner race and rear drive shaft contact surface (Area A in figure).



3. Insert the rear drive shaft into the rear differential with the clip opening facing upward.

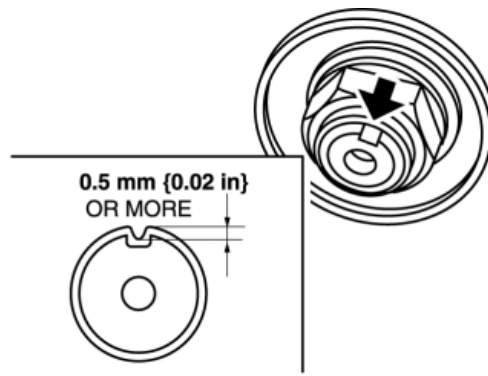
4. Insert the rear drive shaft to the wheel hub.

5. After installation, verify that the rear drive shaft is securely held by the clip by pulling the outer ring on the differential side towards the axle.

Locknut Installation Note

1. Tighten a new locknut.

2. Crimp the locknut, using a chisel and hammer.



[< Previous](#) [Next >](#)

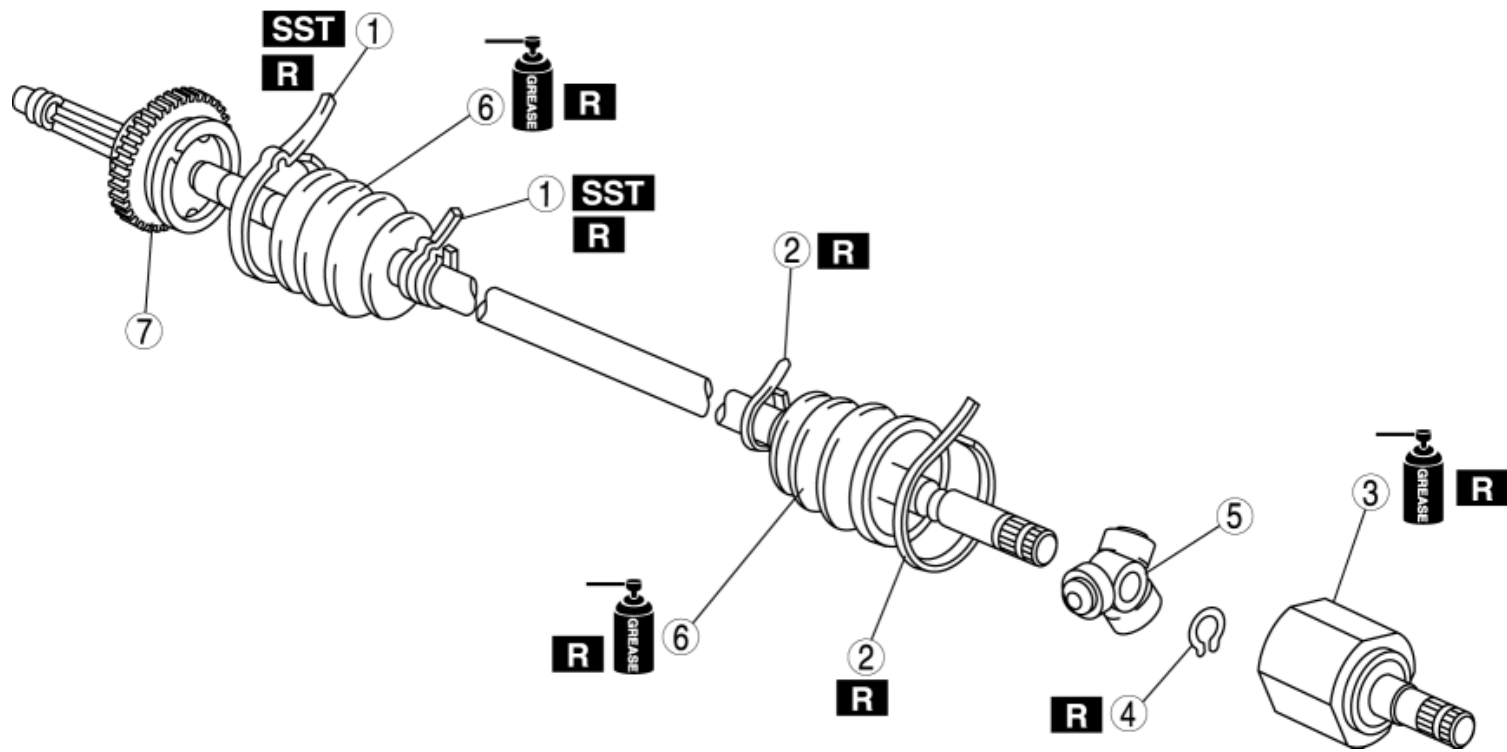
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - DriveLine/Axle

REAR DRIVE SHAFT DISASSEMBLY/ASSEMBLY

- 1. Disassemble in the order indicated in the table.
- 2. Assemble in the reverse order of disassembly.



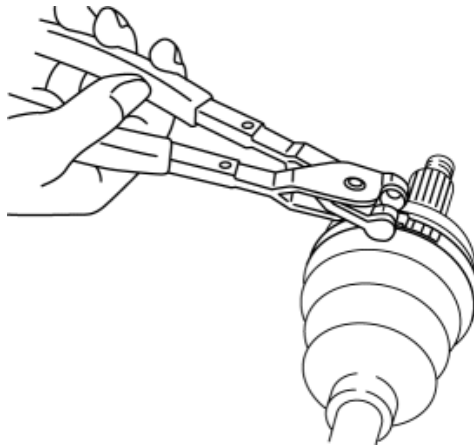
1	Boot band (axle side) (See Boot Band (Axle Side) Disassembly Note.) (See Boot Band (Axle Side) Assembly Note.)
2	Boot band (differential side) (See Boot Band (Differential Side) Disassembly Note.) (See Boot Band (Differential Side) Assembly Note.)
3	Outer ring (See Outer Ring Disassembly Note.) (See Outer Ring Assembly Note.)

4	Snap ring (See Snap Ring, Tripod Joint Disassembly Note.) (See Tripod Joint, Snap Ring Assembly Note.)
5	Tripod joint (See Snap Ring, Tripod Joint Disassembly Note.) (See Tripod Joint, Snap Ring Assembly Note.)
6	Boot (See Boot Disassembly Note.) (See Boot Assembly Note.)
7	Shaft and ball joint component

Boot Band (Axle Side) Disassembly Note

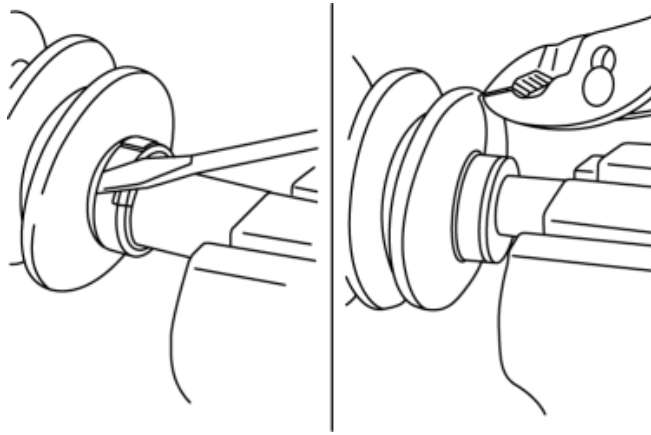
NOTE:

- Remove the boot band only if there is an abnormality.
1. Remove the boot band using end clamp pliers.



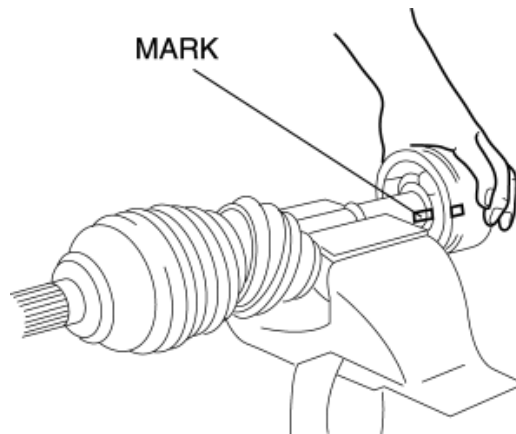
Boot Band (Differential Side) Disassembly Note

1. Remove the crimp of the clip using a flathead screwdriver.



Outer Ring Disassembly Note

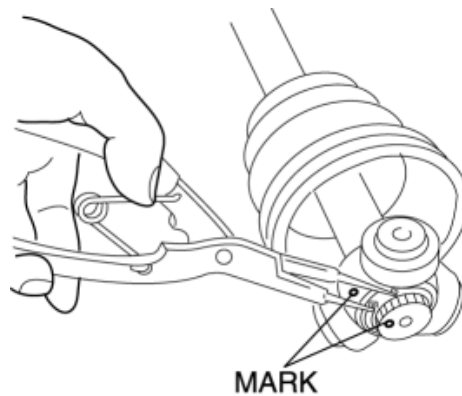
1. Place an alignment mark on the drive shaft and the outer ring.



2. Remove the outer ring.

Snap Ring, Tripod Joint Disassembly Note

1. Place an alignment mark on the shaft and tripod joint.
2. Remove the snap ring using a snap ring plier.



3. Remove the tripod joint from the shaft.

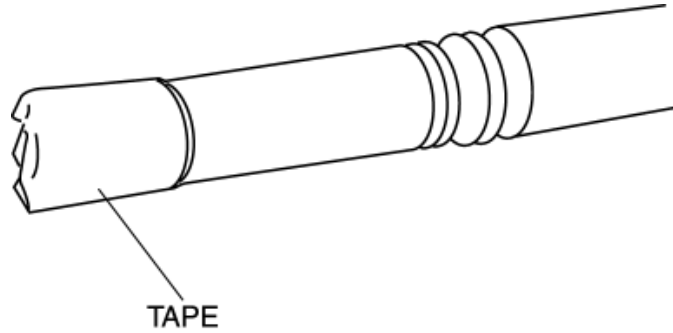
CAUTION:

- To prevent damage to the component, do not use a hammer when removing it.

Boot Disassembly Note

NOTE:

- Remove the axle side boot only if there is an abnormality.
1. Wrap the shaft spline with vinyl tape.



2. Remove the boot.

Boot Assembly Note

NOTE:

- The boot shapes on the axle side and the differential side are different so do not misinstall them.
1. Fill the inside of the new dust boot (wheel side) with grease.

NOTE:

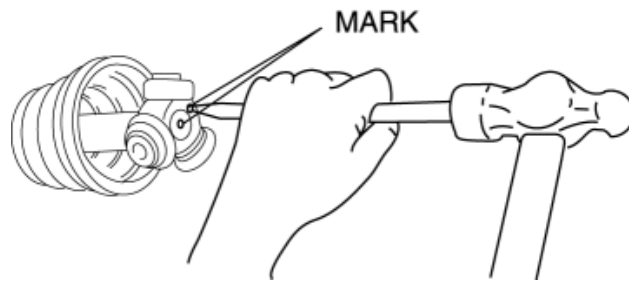
- Do not touch the grease with your hand. Apply it from the tube to prevent foreign matter from entering the boot.

Grease amount

- MT: 110—130 g {3.89—4.59 oz}
 - AT: 85—105 g {3.00—3.70 oz}
2. Install the boot with the drive shaft spline still wrapped with vinyl tape.
 3. Remove the vinyl tape.

Tripod Joint, Snap Ring Assembly Note

1. Align the tripod joint with the shaft mark and insert it using a brass bar.



CAUTION:

- To prevent damage to the component, do not tap the roller part when installing.
2. Install the new snap ring to the shaft installation slot securely using a snap ring pliers.

Outer Ring Assembly Note

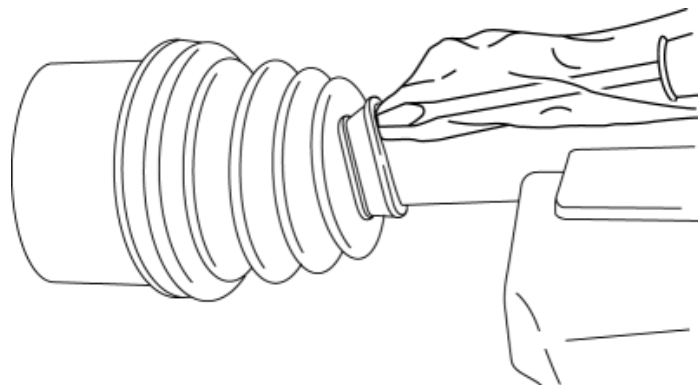
1. Fill the outer ring and boot (differential side) with the repair kit grease.

NOTE:

- Do not touch the grease with your hand. Apply it from the tube to prevent foreign matter from entering the boot.

Grease amount

- MT: 170—190 g {6.00—6.70 oz}
 - AT: 135—155 g {4.77—5.46 oz}
2. Assemble the outer ring.
 3. Release any trapped air from the boots by carefully lifting up the small end of each boot with a cloth wrapped screwdriver.



CAUTION:

- Do not let the grease leak.
 - Do not damage the boot.
4. Set the drive shaft length to the specification when the inside of the boots is at ambient pressure. **Rear drive shaft standard length**

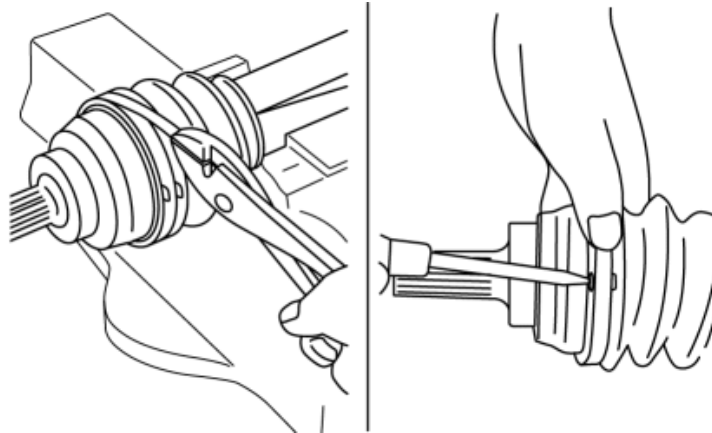
MT	Left side	792.6—802.6 mm {31.21—31.59 in}
	Right side	832.6—842.6 mm {32.78—33.17 in}

AT	Left side	791.1—801.1 mm {31.15—31.53 in}
	Right side	831.1—841.1 mm {32.71—33.11 in}

5. After installation, verify that there is no boot damage or grease leakage.

Boot Band (Differential Side) Assembly Note

1. Using pliers, pull the boot band around the boot slot in opposite direction of drive shaft forward rotation direction and tighten.



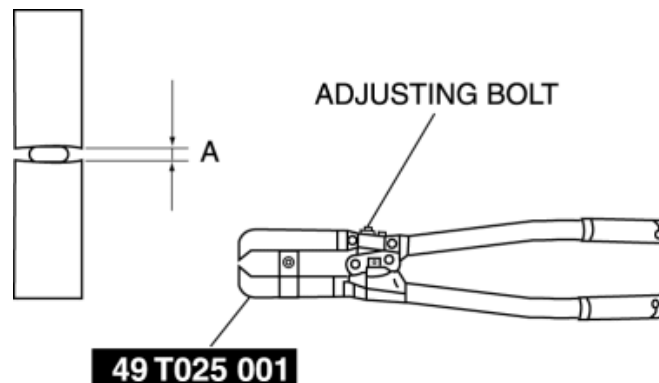
2. Insert the end of the boot band between the boot band clip and fold back the clip tabs using a flathead screwdriver to secure the boot band.

3. Verify that the boot band is installed to the boot slot securely.

Boot Band (Axle Side) Assembly Note

Boot band (small diameter side)

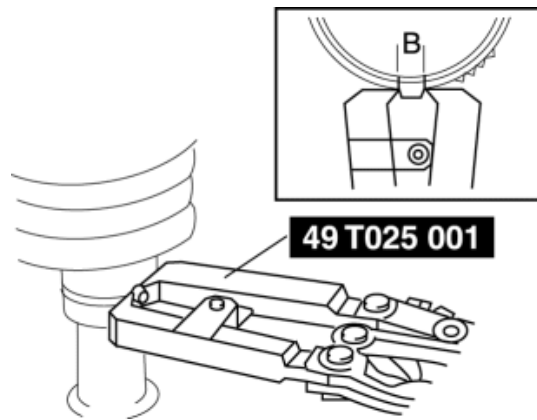
1. Adjust clearance A by turning the adjusting bolt of the **SST**.



Clearance A

- 2.9 mm {0.11 in}

2. Crimp the wheel side small boot band using the **SST**. Verify that clearance B is within the specification.



- If clearance B is more than the specification, reduce clearance A of the SST and crimp the boot again.
- If clearance B is less than the specification, replace the boot band, increase clearance A of the SST, and crimp the new boot.

Clearance B

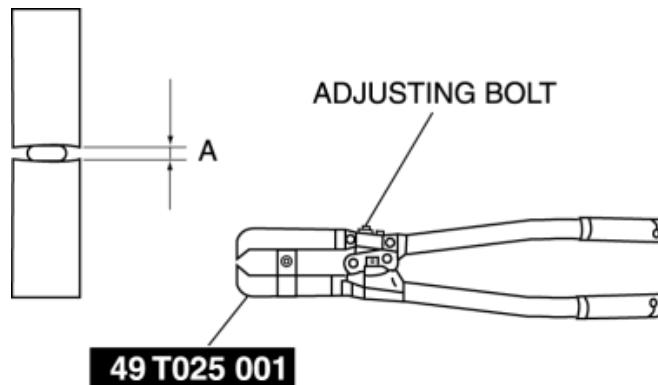
- 2.4—2.8 mm {0.095—0.110 in}

3. Verify that the boot band does not protrude from the boot band installation area.

- If it does, replace the boot band and repeat Steps 2 and 3.

Boot band (Large diameter side)

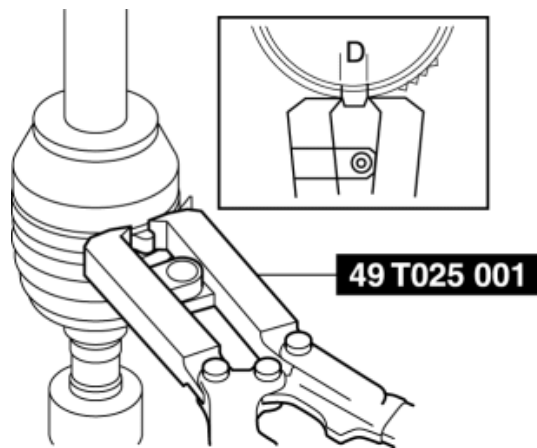
1. Adjust clearance C by turning the adjusting bolt of the **SST**.



Clearance C

- 3.2 mm {0.13 in}

2. Crimp the wheel side large boot band using the **SST**. Verify that clearance D is within the specification.



- If clearance D is more than the specification, reduce clearance C of the SST and crimp the boot again.
- If clearance D is less than the specification, replace the boot band, increase clearance C of the SST, and crimp the new boot.

Clearance D

- 2.4—2.8 mm {0.095—0.110 in}

3. Verify that the boot band does not protrude from the boot band installation area.

- If it does, replace the boot band and repeat Steps 2 and 3.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

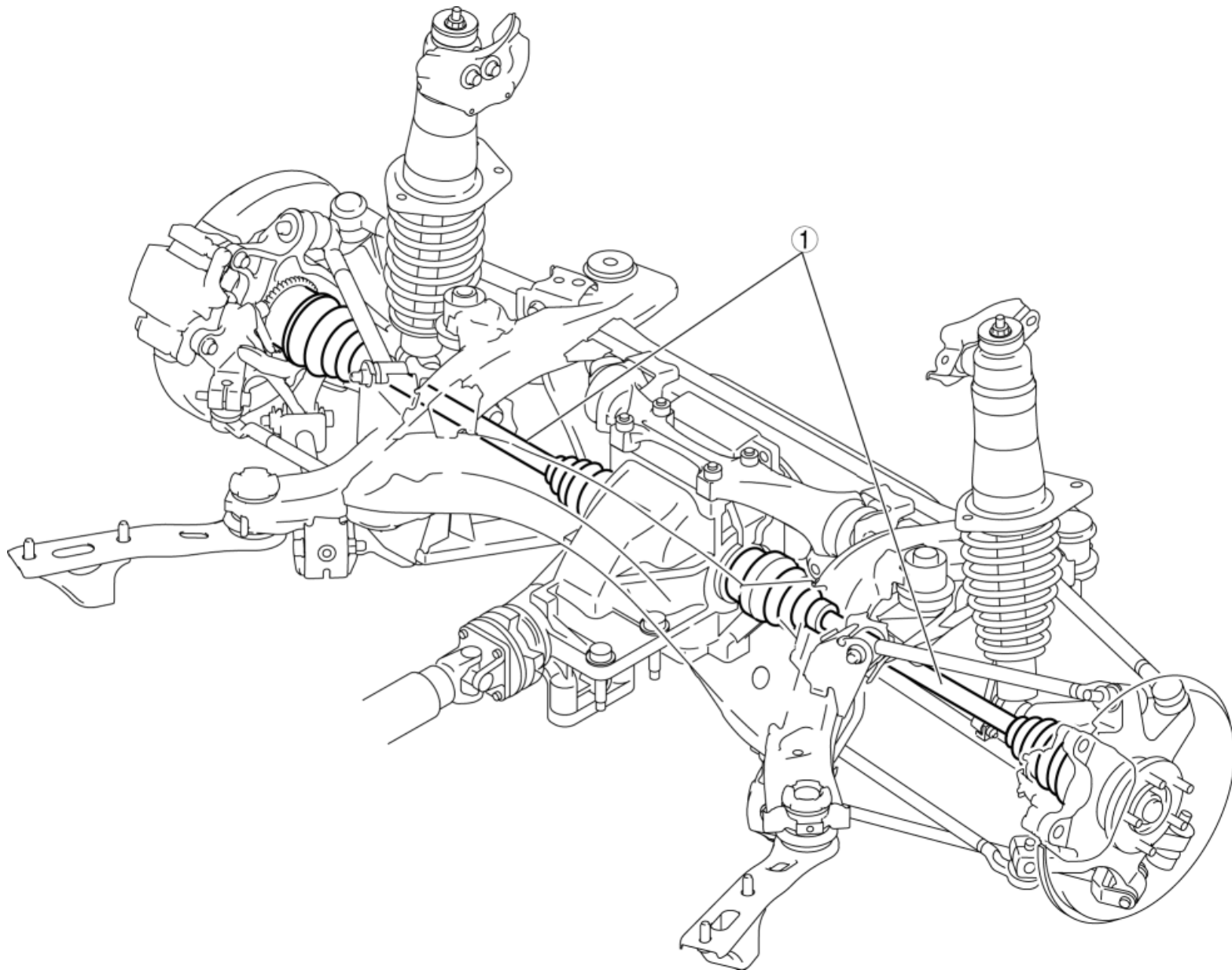
2011 - RX-8 - DriveLine/Axle

REAR DRIVE SHAFT INSPECTION

1. Verify that the drive shaft is not twisted or damaged.
 - If there is any malfunction, replace the applicable part.
2. Inspect the dust boot for damage and cracks.
 - If there is any malfunction, replace the applicable part.
3. Move the spline and joint up and down, left and right by hand and verify that there is no roughness.
 - If there is any malfunction, replace the applicable part.

2011 - RX-8 - DriveLine/Axle

REAR DRIVE SHAFT LOCATION INDEX



1 Rear drive shaft

(See [REAR DRIVE SHAFT INSPECTION.](#))

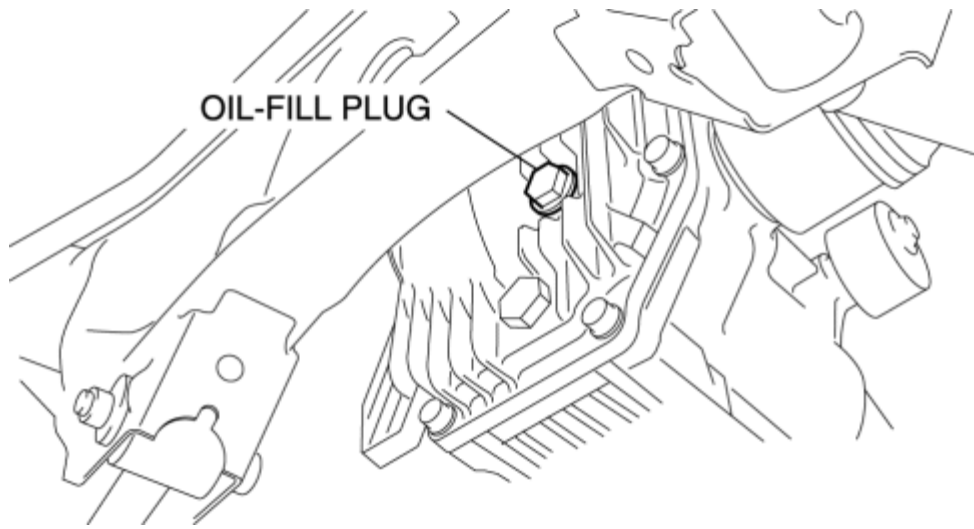
(See [REAR DRIVE SHAFT REMOVAL/INSTALLATION.](#))

(See [REAR DRIVE SHAFT DISASSEMBLY/ASSEMBLY.](#))

2011 - RX-8 - DriveLine/Axle

DIFFERENTIAL OIL INSPECTION

1. Position the vehicle on level ground.
2. Remove the oil-fill plug and the washer.
3. Inspect if the oil level is close to the rim of the oil-fill plug hole.
4. If the oil is not close to the rim of the oil-fill plug hole, add oil.
5. Install the oil-fill plug with a new washer and tighten.



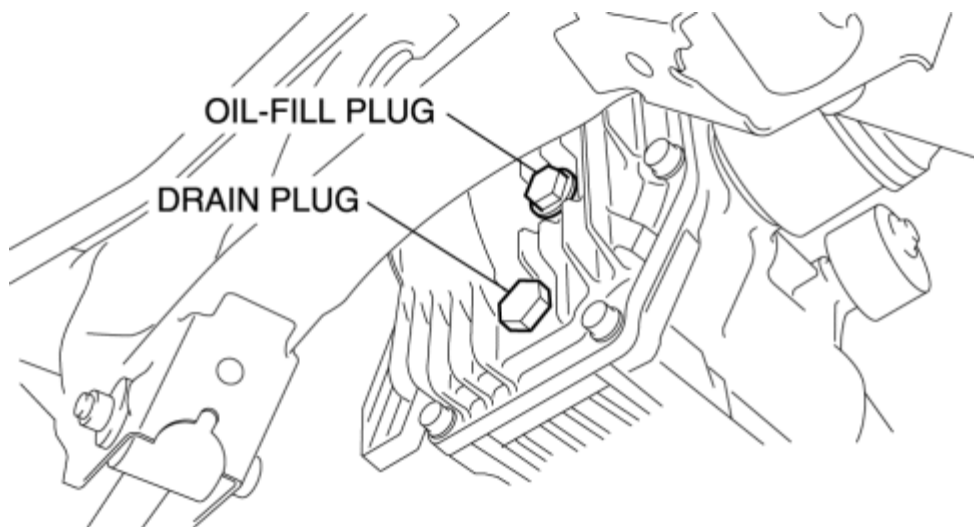
Tightening torque

- 39.2—53.9 N·m {4.00—5.49 kgf·m, 29.0—39.7 ft·lbf}

2011 - RX-8 - DriveLine/Axle

DIFFERENTIAL OIL REPLACEMENT

1. Position the vehicle on level ground.
2. Remove the oil-fill plug.
3. Remove the drain plug and drain the oil.



4. Install the drain plug with a new washer and tighten.

Tightening torque

- 39.2—53.9 N·m {4.00—5.49 kgf·m, 29.0—39.7 ft·lbf}

5. Add the specified oil through the oil-fill plug hole.

Differential oil grade/viscosity:

- API service GL-5 (SAE 90)
- API service GL-5 (SAE 80W-90)
- API service GL-5 (SAE 75W-90) (Not available from Mazda)

Differential oil capacity (approx. quantity):

- 1.2—1.4 L {1.3— 1.4 US qt, 1.1—1.2 Imp qt}

6. After adding the oil, perform the oil level inspection.
7. Install the oil-fill plug with a new washer and tighten.

Tightening torque

- 39.2—53.9 N·m {4.00—5.49 kgf·m, 29.0—39.7 ft·lbf}

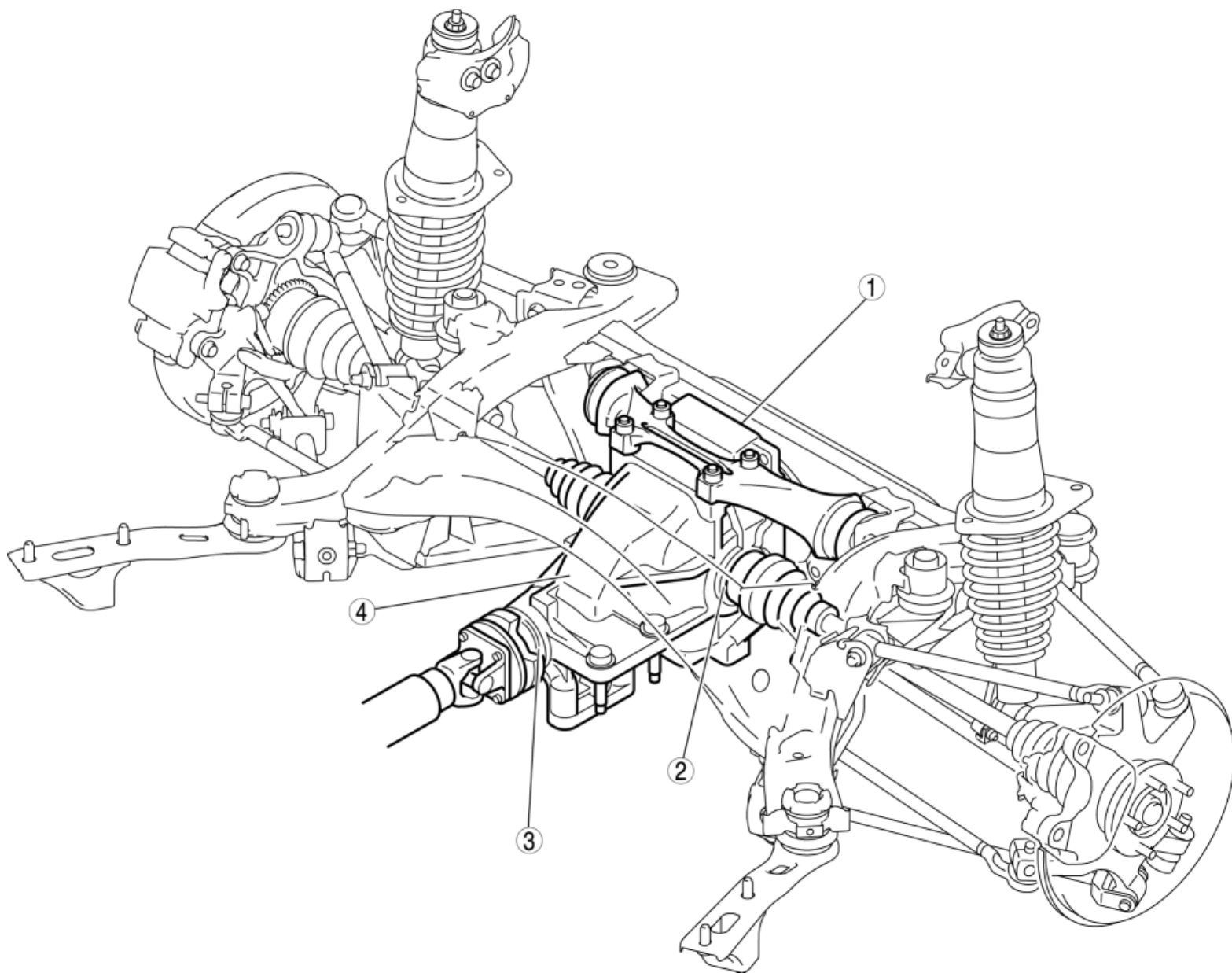
[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - DriveLine/Axle

REAR DIFFERENTIAL LOCATION INDEX



1 Differential oil

(See [DIFFERENTIAL OIL INSPECTION.](#))

(See [DIFFERENTIAL OIL REPLACEMENT.](#))

2 Oil seal (side gear)

(See [OIL SEAL \(SIDE GEAR\) REPLACEMENT.](#))

3 Oil seal (companion flange)
(See [OIL SEAL \(COMPANION FLANGE\) REPLACEMENT.](#))

4 Rear differential
(See [REAR DIFFERENTIAL REMOVAL/INSTALLATION.](#))
(See [REAR DIFFERENTIAL DISASSEMBLY.](#))
(See [REAR DIFFERENTIAL ASSEMBLY.](#))

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

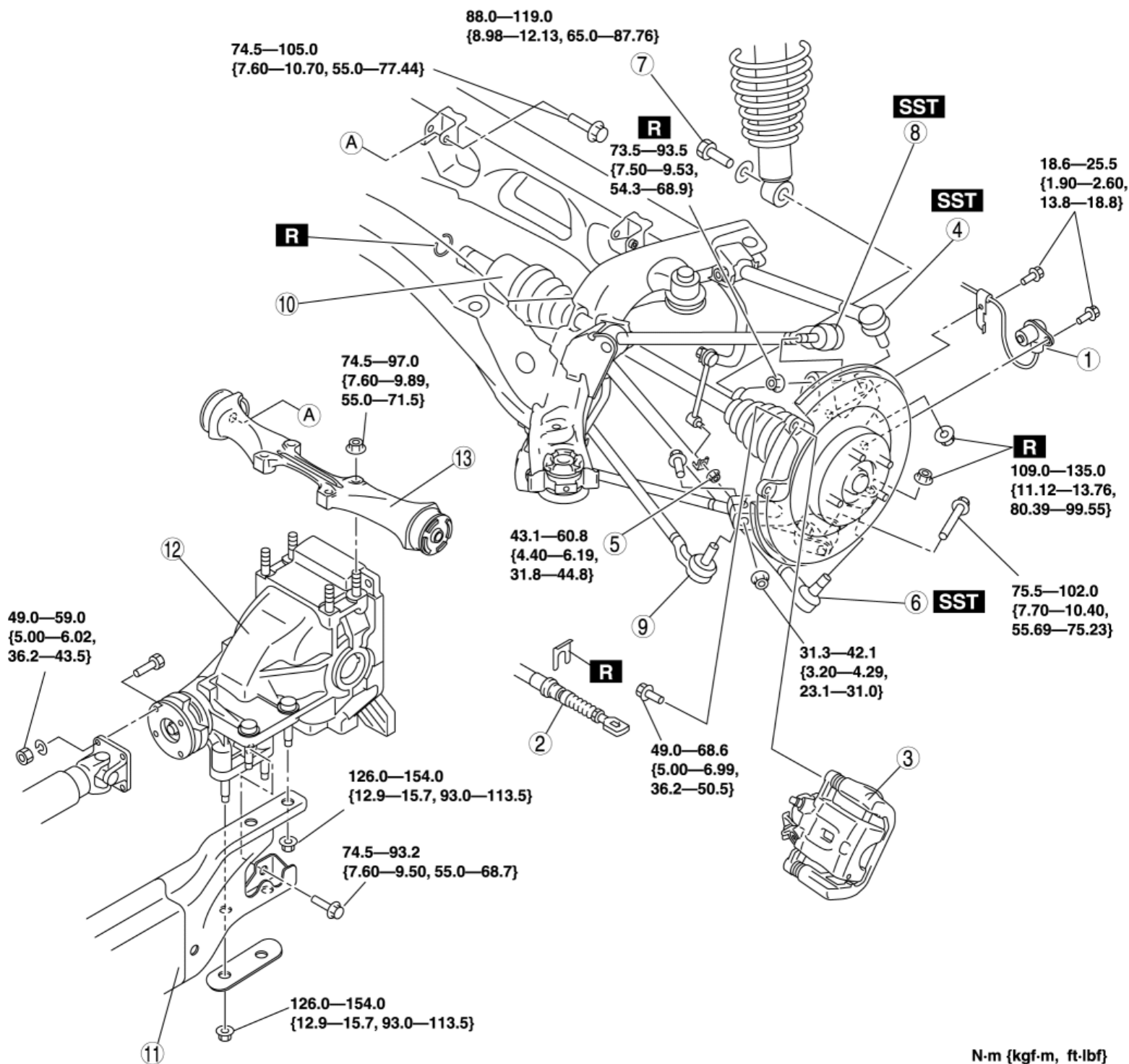
2011 - RX-8 - DriveLine/Axle

REAR DIFFERENTIAL REMOVAL/INSTALLATION

CAUTION:

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, remove the ABS wheel-speed sensor (axle side) and fix it to an appropriate place where the sensor will not be pulled by mistake while servicing the vehicle.

1. Drain the rear differential oil. (See [DIFFERENTIAL OIL REPLACEMENT](#).)
2. Remove the rear auto leveling sensor. (See [REAR AUTO LEVELING SENSOR REMOVAL/INSTALLATION](#).)
3. Remove the tunnel member. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
4. Remove the middle pipe and main silencer. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
5. Remove the TWC. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
6. Remove the heat insulator. (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#).) (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)
7. Remove the propeller shaft. (See [PROPELLER SHAFT REMOVAL/INSTALLATION](#).)
8. Remove in the order indicated in the table.
9. Install in the reverse order of removal.
10. Add rear differential oil. (See [DIFFERENTIAL OIL REPLACEMENT](#).)
11. Inspect the rear wheel alignment. (See [REAR WHEEL ALIGNMENT](#).)



1 ABS wheel-speed sensor

2 Parking brake cable

3 Brake caliper component

(See [Brake Caliper Component Removal Note.](#))

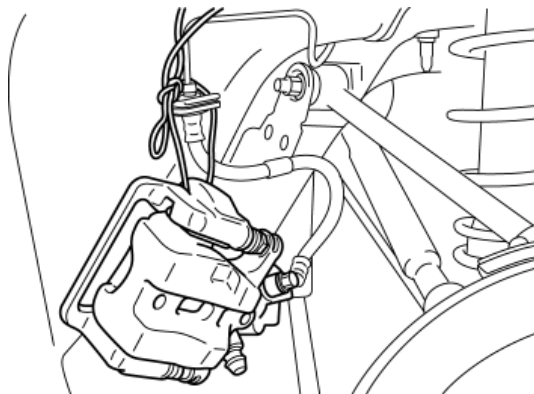
4 Rear lateral link (upper) ball joint

(See [REAR LATERAL LINK \(UPPER\) REMOVAL/INSTALLATION.](#))

5	Stabilizer control link nut (lower) (See REAR STABILIZER REMOVAL/INSTALLATION.)
6	Rear lateral link (lower) ball joint (See REAR LATERAL LINK (LOWER) REMOVAL/INSTALLATION.)
7	Shock absorber bolt (lower)
8	Rear trailing link (upper) ball joint (See REAR TRAILING LINK (UPPER) REMOVAL/INSTALLATION.)
9	Toe control link ball joint
10	Rear drive shaft, rear knuckle component (See Rear Drive Shaft, Rear Knuckle Component Removal Note.) (See Rear Drive Shaft, Rear Knuckle Component Installation Note.)
11	Power plant frame (See Power Plant Frame Removal Note.) (See Rear Differential, Power Plant Frame Installation Note.)
12	Rear differential (See Rear Differential Removal Note.) (See Rear Differential, Power Plant Frame Installation Note.)
13	Differential mount

Brake Caliper Component Removal Note

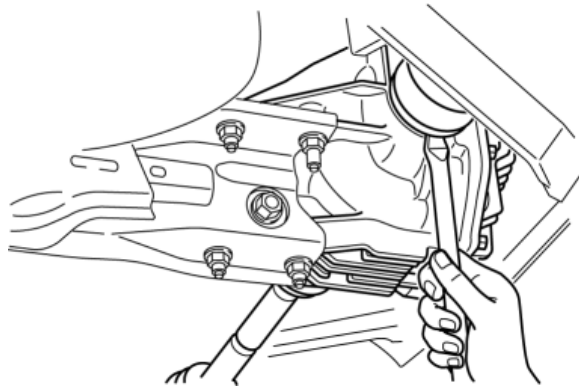
1. Suspend the brake calliper component using a cable or equivalent.



2. Temporarily tighten the wheel nut to prevent the disc plate from falling off.

Rear Drive Shaft, Rear Knuckle Component Removal Note

1. Insert a tire lever or equivalent between the rear differential and differential side outer ring, and remove the rear drive shaft.



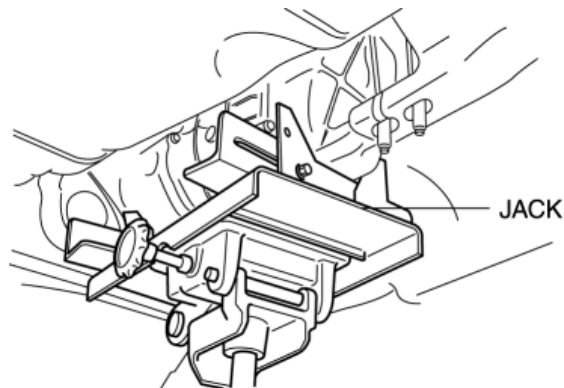
CAUTION:

- The sharp edges of the drive shaft can slice or puncture the oil seal. Be careful not to damage the oil seal when removing the drive shaft from the differential.

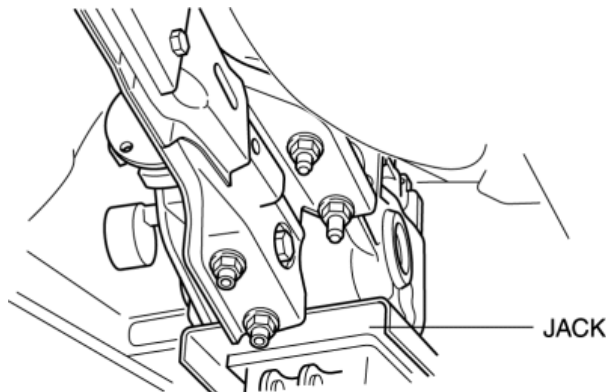
2. Pull the rear drive shaft and rear knuckle component to the outer side, and detach the rear drive shaft from the rear differential.
3. To hold the rear drive shaft and rear knuckle component, install the rear lateral link (upper) to the rear knuckle temporarily after disconnecting the rear drive shaft.

Power Plant Frame Removal Note

1. Support the transmission using a jack.



2. Support the rear differential using a jack.



3. Remove the power plant frame.

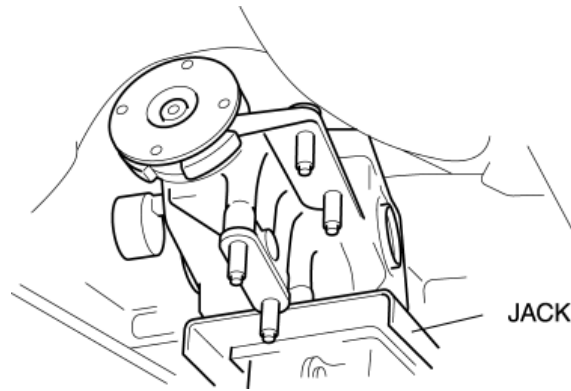
Rear Differential Removal Note

WARNING:

- If the rear differential falls off, it can cause serious injuries or death, and damage to the vehicle. When removing the rear

differential, verify that it is supported securely with a jack.

1. Support the rear differential using a jack.



2. Remove the differential mounting installation bolts.
3. Lower the jack slowly and remove the rear differential.

Rear Differential, Power Plant Frame Installation Note

WARNING:

- If the rear differential falls off, it can cause serious injuries or death, and damage to the vehicle. When installing the rear differential, verify that it is supported securely with a jack.

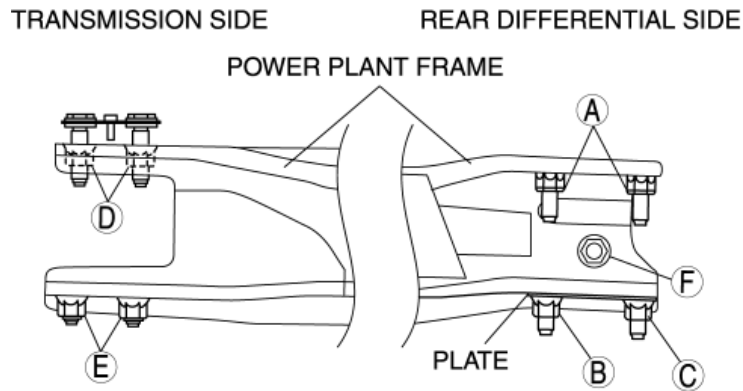
CAUTION:

- Tighten the differential mounting installation bolts completely only after performing the power plant frame installation and adjustment. If the differential mounting bracket is installed at an incorrect angle, the differential mounting bracket bushings will twist and cause an abnormal noise while the vehicle is moving.

1. Support the rear differential using a jack.



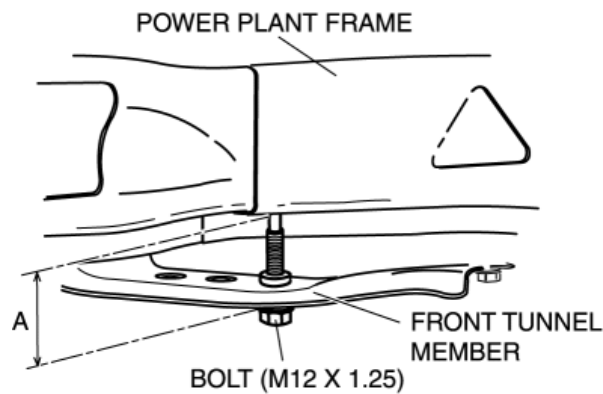
2. Temporarily tighten the differential mounting installation bolts.
3. Install the power plant frame.
4. Install the plate.
5. Temporarily tighten the bolts and nuts as shown in the figure.



6. Tighten the nut B until the power plant frame is seated in the rear differential.

7. Install the heat insulator, TWC, middle pipe, main silencer and front tunnel member. (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#).) (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\]](#).) (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)

8. Raise the power plant frame front end (transmission side) or transmission using a jack so that dimension A (between power plant frame lower surface and front tunnel member lower surface) shown in the figure is within the adjustment value.



Adjustment dimension A

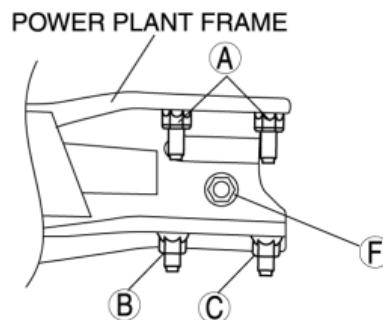
- 55—57 mm {2.17—2.24 in}

NOTE:

- When raising the power plant frame without a transmission jack, use bolts (M12x1.25) with a thread length of **55 mm {2.17 in}** or more. Tighten the bolts from the underside of the front tunnel member as shown in the figure and raise the power plant frame.
- When using bolts, the underside of the power plant frame could be damaged. Affix tape to the underside of the frame to prevent damage.
- If there is the possibility of age-related bending/deterioration of the mount, adjust dimension A to **approx. 15 mm {0.59 in}** higher than the adjustment value to facilitate obtaining the specification.

9. Tighten the bolts and nuts on the rear differential side in the order shown in the figure.

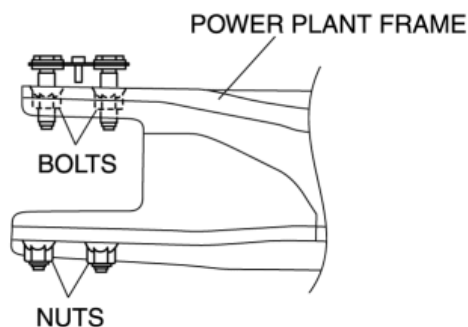
REAR DIFFERENTIAL SIDE



Step	Bolt, nut	Tightening torque (N·m {kgf·m, ft·lbf})
1	A	126.0—154.0 {12.9—15.7, 93.0—113.5}
2	B	126.0—154.0 {12.9—15.7, 93.0—113.5}
3	C	126.0—154.0 {12.9—15.7, 93.0—113.5}
4	F	74.5—93.2 {7.60—9.50, 55.0—68.7}

10. Tighten the bolts and nuts on the transmission side as shown in the figure.

TRANSMISSION SIDE



Tightening torque

- 126.0—154.0 N·m {12.9—15.7 kgf·m, 93.0—113.5 ft·lbf}

11. Verify that dimension A is within the specification with the transmission jack and the adjustment bolt removed.

- If not within the specification, adjust dimension A again.

Standard dimension A

- 48.4—56.4 mm {1.91—2.22 in}

12. Temporarily loosen the differential mount installation bolts, straighten the differential mounting bracket bushings, and then tighten the differential mounting installation bolts again to the specified torque.

CAUTION:

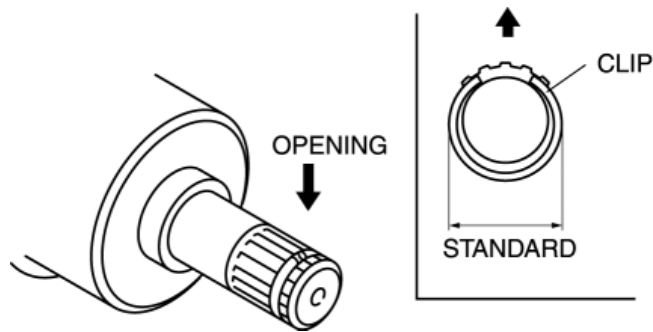
- Never support the rear differential using a jack when tightening the differential mounting installation bolts. Otherwise, the differential mounting bracket bushings will twist and cause an abnormal noise while the vehicle is moving.

Tightening torque

- 74.5—105.0 N·m {7.60—10.70 kgf·m, 55.0—77.44 ft·lbf}

Rear Drive Shaft, Rear Knuckle Component Installation Note

1. Install a new drive shaft clip to the clip groove at the top of the rear drive shaft with the clip opening facing upward and the clip width within the specification.



Standard

- 32 mm {1.3 in}

2. After installing the clip, measure the outer diameter; if it exceeds the specification, reinstall a new clip.
3. Apply differential oil to the differential oil seal lip.

CAUTION:

- The sharp edges of the rear drive shaft can slice or puncture the oil seal. Be careful not to damage the oil seal when installing the rear drive shaft from the rear differential.
4. Insert the rear drive shaft into the rear differential with the clip opening facing upward.
 5. After installation, verify that the rear drive shaft is securely held by the clip by pulling the outer ring on the differential side towards the axle.

[< Previous](#) [Next >](#)

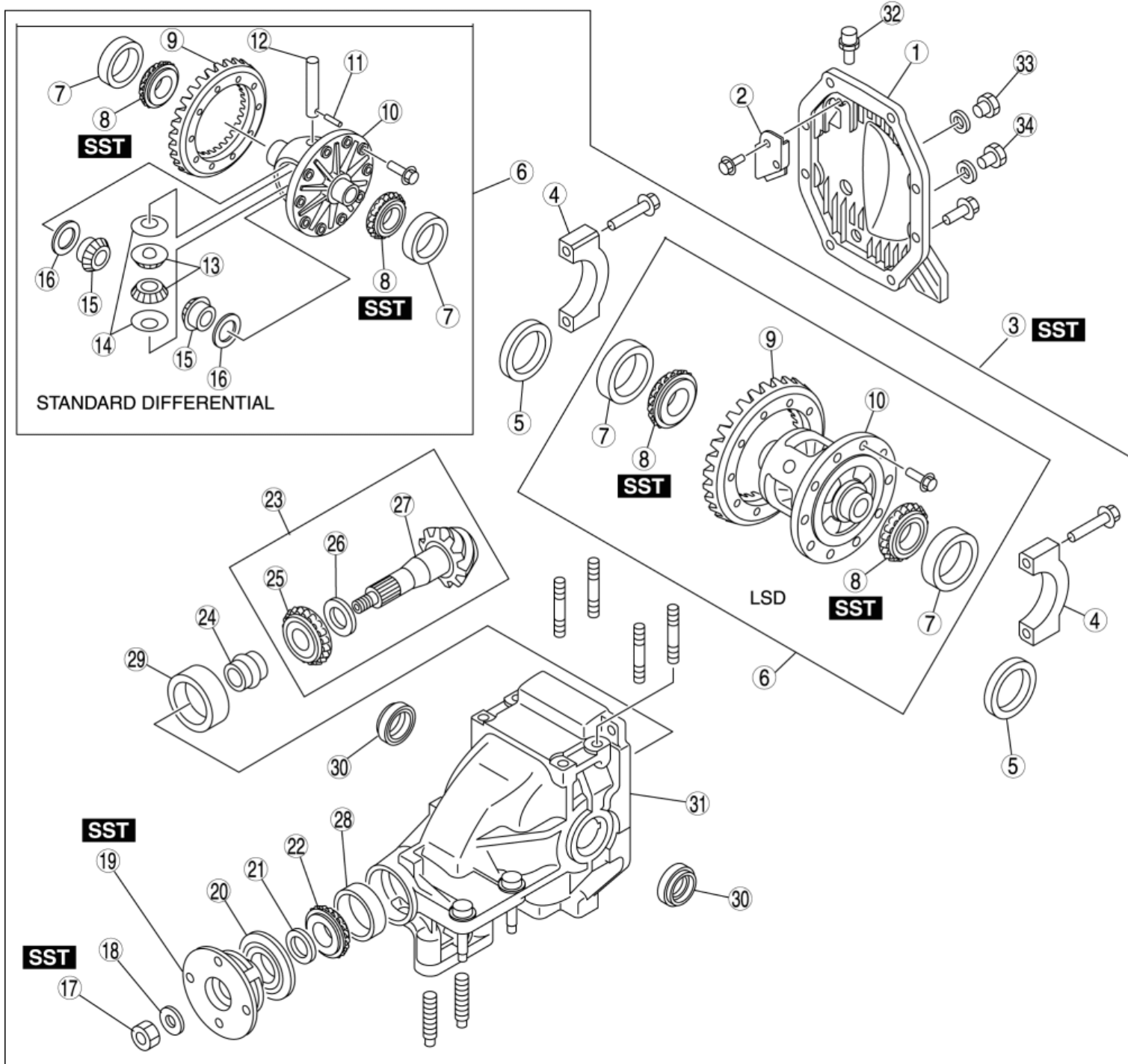
2011 - RX-8 - DriveLine/Axle

REAR DIFFERENTIAL DISASSEMBLY

WARNING:

- The engine stand is equipped with a self-lock mechanism, however, if the rear differential is tilted, the self-lock mechanism could become inoperative. If the rear differential unexpectedly rotates, it could cause injury, therefore do not maintain the rear differential tilted. When turning the rear differential, grasp the rotation handle firmly.

1. Disassemble in the order indicated in the table.

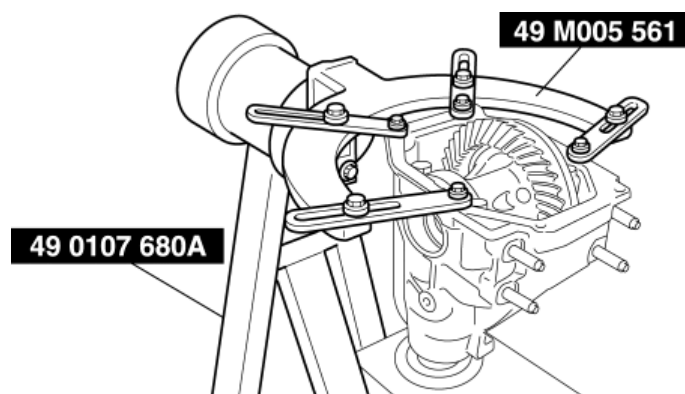


1	Rear cover
2	Baffle plate
3	Differential component (See Differential Component Disassembly Note.)
4	Bearing cap (See Bearing Cap Disassembly Note.)
5	Adjustment shim (See Adjustment Shim, Side Bearing Outer Race Disassembly Note.)
6	Differential gear case component
7	Side bearing outer race (See Adjustment Shim, Side Bearing Outer Race Disassembly Note.)
8	Side bearing (See Side Bearing Disassembly Note.)
9	Ring gear
10	Gear case
11	Roll pin (See Roll Pin Disassembly Note.)
12	Pinion shaft
13	Pinion gear
14	Thrust washer
15	Side gear
16	Washer
17	Locknut (See Locknut Disassembly Note.)
18	Washer
19	Companion flange (See Companion Flange Disassembly Note.)
20	Oil seal (companion flange)

21	Spacer
22	Front bearing
23	Drive pinion component (See Drive Pinion Component Disassembly Note.)
24	Collapsible spacer
25	Rear bearing (See Rear Bearing Disassembly Note.)
26	Spacer
27	Drive pinion
28	Front bearing outer race (See Front Bearing Outer Race, Rear Bearing Outer Race Disassembly Note.)
29	Rear bearing outer race (See Front Bearing Outer Race, Rear Bearing Outer Race Disassembly Note.)
30	Oil seal (side gear)
31	Differential carrier
32	Breather plug
33	Oil-fill plug
34	Drain plug

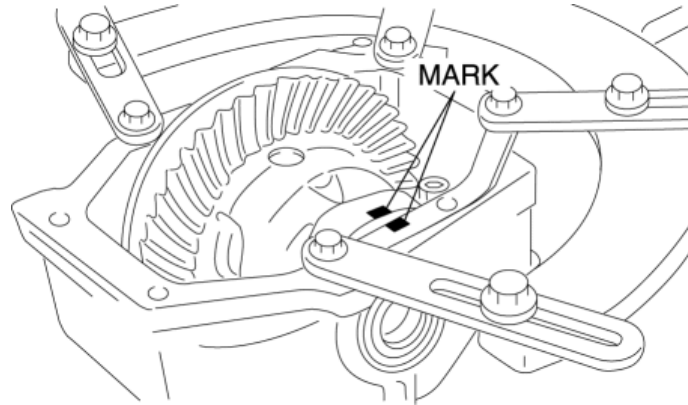
Differential Component Disassembly Note

1. Install the differential component to the **SSTs**.



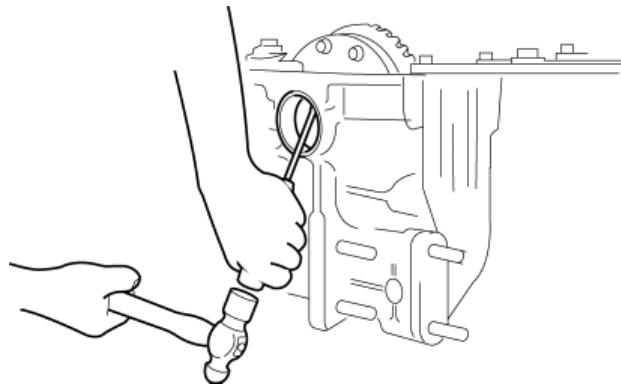
Bearing Cap Disassembly Note

1. Mark the bearing cap and differential carrier for proper installation.

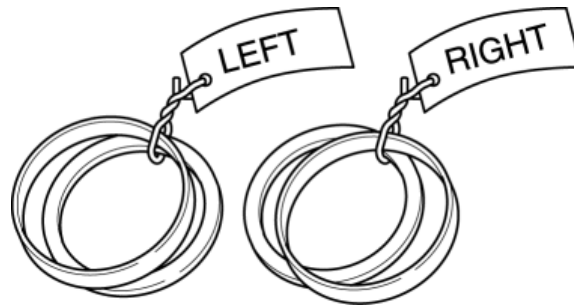


Adjustment Shim, Side Bearing Outer Race Disassembly Note

1. Remove the adjustment shim using a flathead screwdriver.

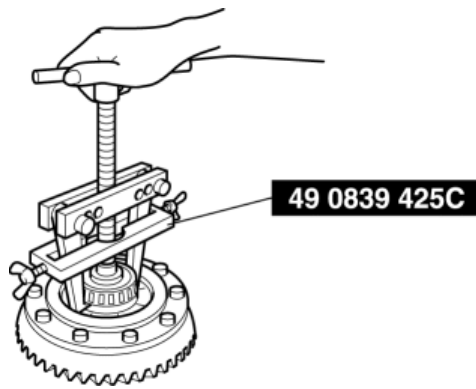


2. Put left and right identification marks on the removed adjustment shims and side bearing outer races.



Side Bearing Disassembly Note

1. Remove the side bearing using the **SST**.



2. Put left and right identification marks on the removed side bearings.

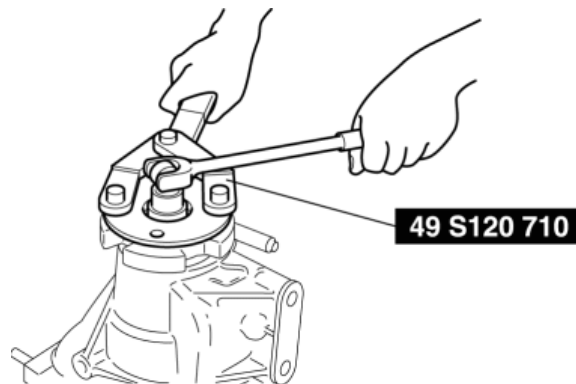
Roll Pin Disassembly Note

1. Tap the roll pin out from the direction shown in the figure using a pin punch.



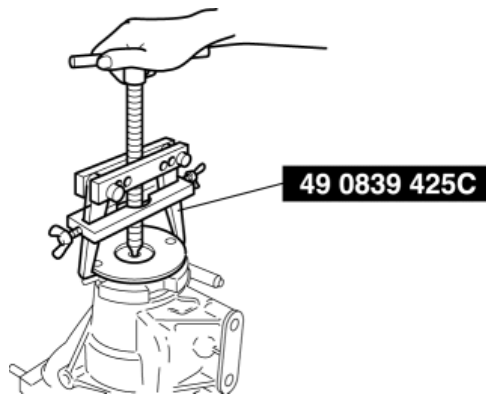
Locknut Disassembly Note

1. Remove the locknut while fixing the companion flange using the SST.



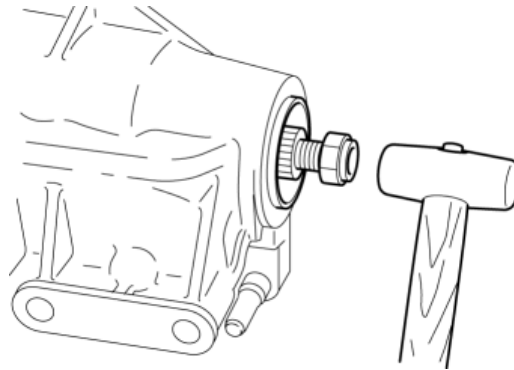
Companion Flange Disassembly Note

1. Remove the companion flange using the SST.



Drive Pinion Component Disassembly Note

1. Install the removed locknut to the drive pinion top to prevent damage to the thread.



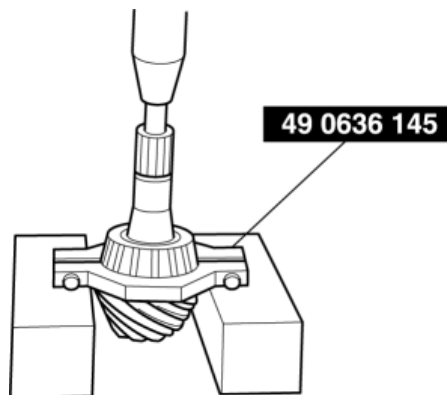
2. Remove the drive pinion component by tapping the locknut lightly using a plastic hammer.
3. Remove the locknut installed in Step 1.

Rear Bearing Disassembly Note

CAUTION:

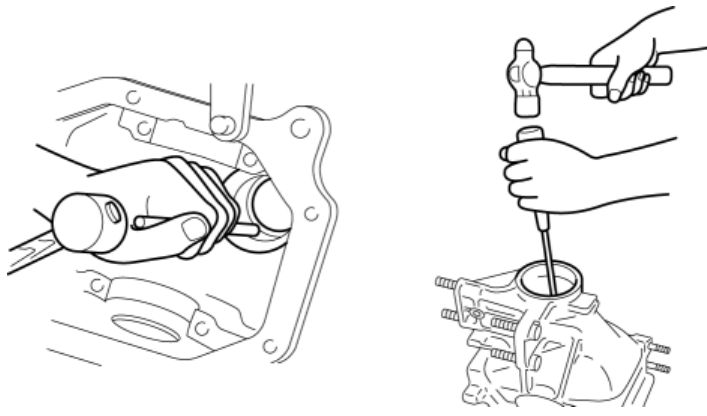
- The drive pinion could be damaged if it falls off. Support the drive pinion with your hand when removing the rear bearing.

1. Remove the rear bearing using the **SST** and a press.



Front Bearing Outer Race, Rear Bearing Outer Race Disassembly Note

1. Remove the bearing outer race by lightly tapping the edge of the bearing outer race using a flathead screwdriver.



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - DriveLine/Axle

REAR DIFFERENTIAL ASSEMBLY

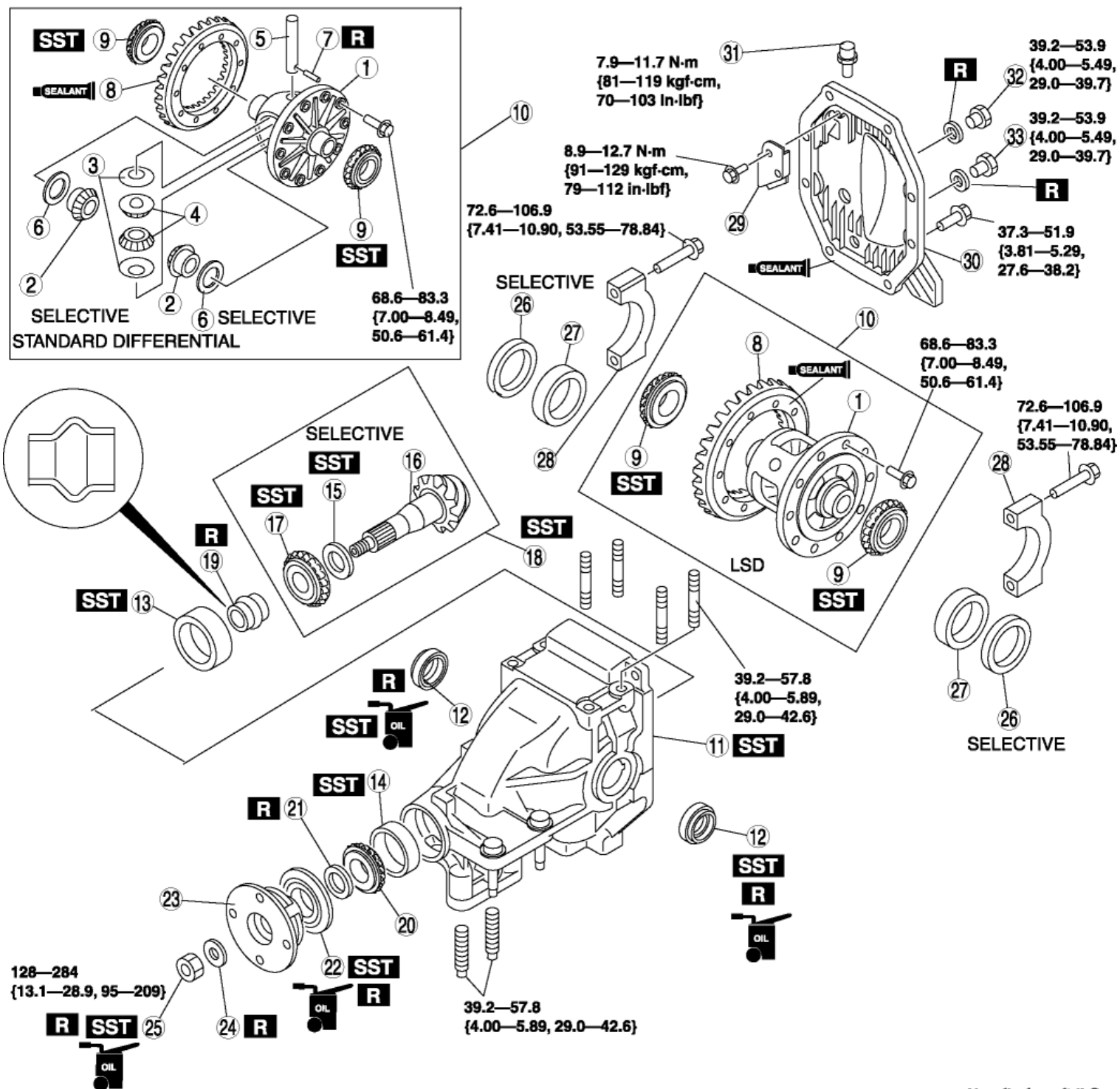
WARNING:

- The engine stand is equipped with a self-lock mechanism, however, if the rear differential is tilted, the self-lock mechanism could become inoperative. If the rear differential unexpectedly rotates, it could cause injury, therefore do not maintain the rear differential tilted. When turning the rear differential, grasp the rotation handle firmly.

NOTE:

- Clean away the old silicone sealant before applying the new silicone sealant.
- Install the rear cover before the applied sealant starts to harden.
- Allow the sealant to set **at least 30 min or more** after installation before filling the differential with differential oil.

1. Assemble in the order indicated in the table.



N·m {kgf·m, ft·lbf}

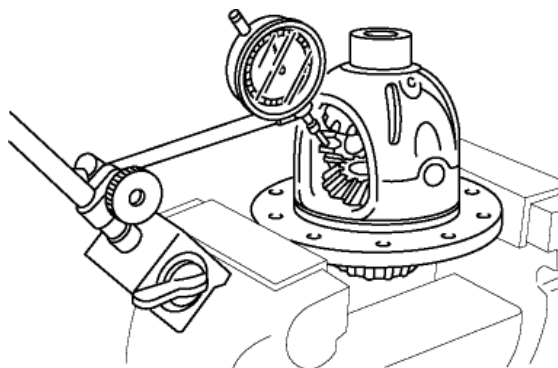
1	Gear case
2	Side gear
3	Thrust washer
4	Pinion gear
5	Pinion shaft

6	Washer (See Washer Assembly Note.)
7	Roll pin (See Roll Pin Assembly Note.)
8	Ring gear (See Ring Gear Assembly Note.)
9	Side bearing (See Side Bearing Assembly Note.)
10	Differential gear case component
11	Differential carrier
12	Oil seal (side gear) (See Oil Seal (Side Gear) Assembly Note.)
13	Rear bearing outer race (See Rear Bearing Outer Race Assembly Note.)
14	Front bearing outer race (See Front Bearing Outer Race Assembly Note.)
15	Spacer (See Spacer Assembly Note.)
16	Drive pinion
17	Rear bearing (See Rear Bearing Assembly Note.)
18	Drive pinion component (See Drive Pinion Component Assembly Note.)
19	Collapsible spacer
20	Front bearing
21	Spacer
22	Oil seal (companion flange) (See Oil Seal (Companion Flange) Assembly Note.)
23	Companion flange
24	Washer
25	Locknut

	(See Locknut Assembly Note.)
26	Adjustment shim (See Adjustment Shim Assembly Note.)
27	Side bearing race
28	Bearing cap (See Bearing Cap Assembly Note.)
29	Baffle plate
30	Rear cover
31	Breather plug
32	Oil-fill plug
33	Drain plug

Washer Assembly Note

1. Assemble the side gear, thrust washer, pinion gear, and the pinion shaft to the gear case.
2. Install the dial gauge with the measuring probe of the dial gauge attached perpendicularly to the end of one of the pinion gear teeth.



3. Fix either one of the side gears.
4. Move the pinion gear and measure the backlash at the pinion gear top.
 - If it is not within the specification, adjust by choosing the proper washer.

Backlash of pinion gear and side gear

- 0.1 mm {0.004 in} or less

Washer table

Identification mark	Part name	Thickness (mm {in})
0	0578 27 252	2.00 {0.0787}
05	P016 27 252	2.05 {0.0807}
1	0578 27 253	2.10 {0.0827}

15	P016 27 253	2.15 {0.0846}
2	0578 27 254	2.20 {0.0866}

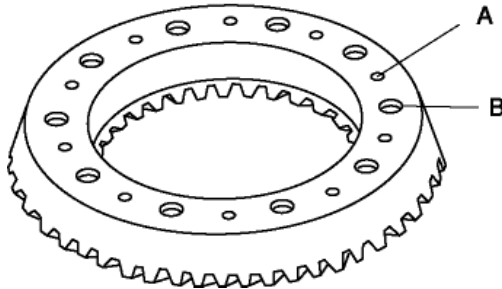
Roll Pin Assembly Note

1. Align the differential gear case and pinion shaft pin holes.
2. Tap the roll pin in using a pin punch.

Ring Gear Assembly Note

CAUTION:

- The gear case and ring gear could be damaged if the ring gear is installed with old thread-locking compound remaining on the bolt threads. Before installing the ring gear, completely remove the old thread-locking compound from the bolt threads.
1. Apply a small amount of thread-locking compound to each of points A on the back of the ring gear, and bolt thread areas B (around the entire ring).



Application thickness

- Back of ring gear points A:
Approx. 0.4 cm³ {0.4 cc, 0.024 cu in}
(1 location approx. 0.04 cm³
{0.04 cc, 0.0024 cu in})
- Ring gear bolt thread points B:
Approx. 0.4 cm³ {0.4 cc, 0.024 cu in}
(1 location approx. 0.04 cm³
{0.04 cc, 0.0024 cu in})

2. Install the ring gear to the differential gear case and tighten the bolts in a criss-cross pattern.

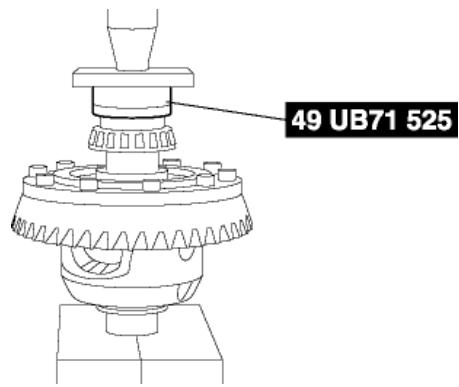
Tightening torque

- 68.6—83.3 N·m {7.00—8.49 kgf·m, 50.6—61.4 ft·lbf}

Side Bearing Assembly Note

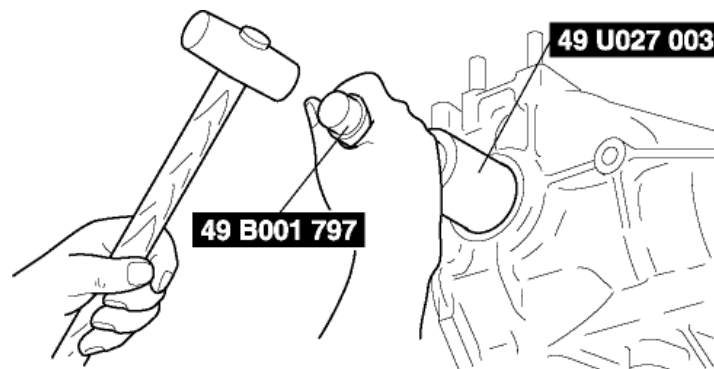
NOTE:

- When assembling the side bearings, do not mix the left and right side bearings that were identified during disassembly.
1. Press the side bearing in using the **SST** and a press.



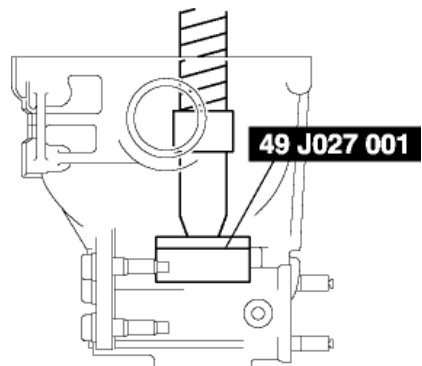
Oil Seal (Side Gear) Assembly Note

1. Apply differential oil to the lip of a new oil seal.
2. Assemble the oil seal using the **SSTs**.



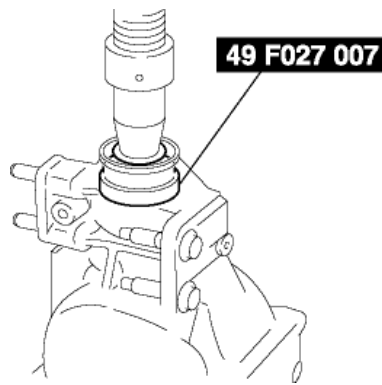
Rear Bearing Outer Race Assembly Note

1. Press the rear bearing outer race into the differential carrier using the **SST** and a press.



Front Bearing Outer Race Assembly Note

1. Press the front bearing outer race into the differential carrier using the **SST** and a press.

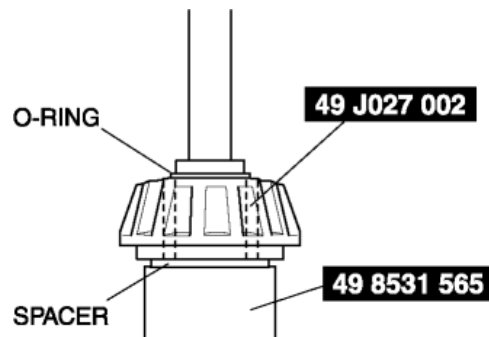


Spacer Assembly Note

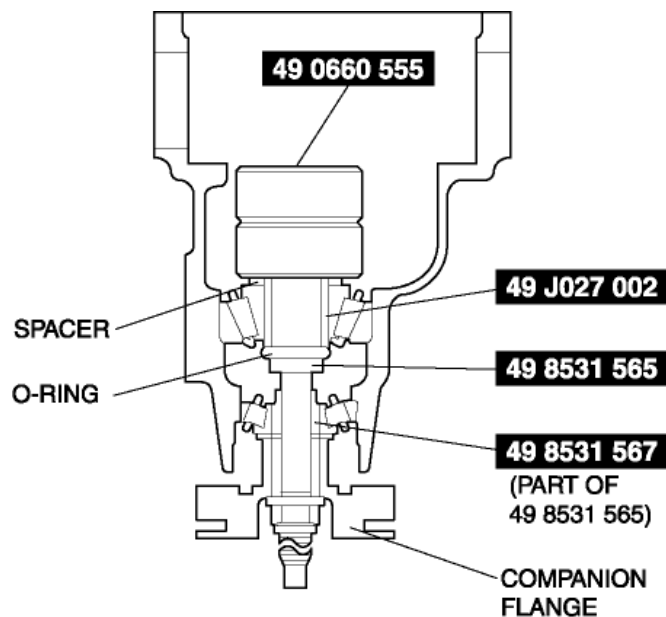
Pinion height adjustment

NOTE:

- Use the installed spacer when adjusting.
 - Install the spacer with the chamfer on the **SST** side.
1. Assemble the spacer, bearing inner race (rear side), and the **SST** (O-ring) to the **SST** (49 8531 565) as shown in the figure.

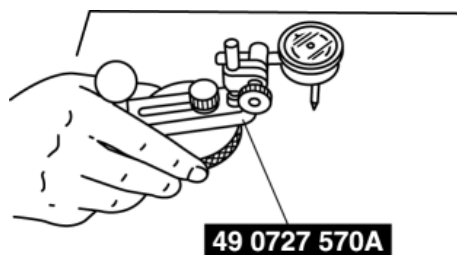


2. Insert the set assembled in Step 1 from the rear side of the differential carrier.

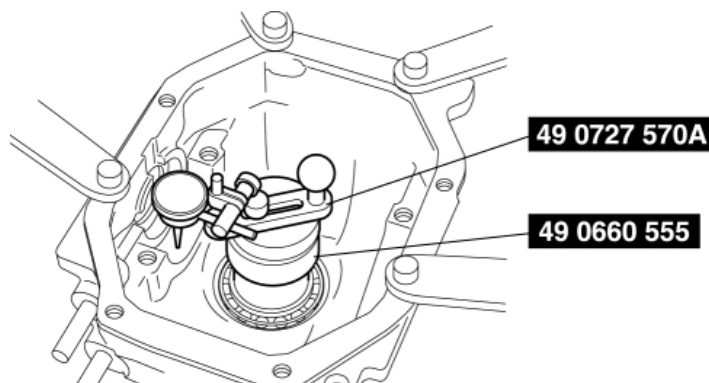


3. Assemble the **SST** (49 8531 567), front bearing, companion flange, and a washer from the front side of the differential carrier.
4. Tighten the locknut to the extent that the **SST** (49 8531 565) can be turned by hand.

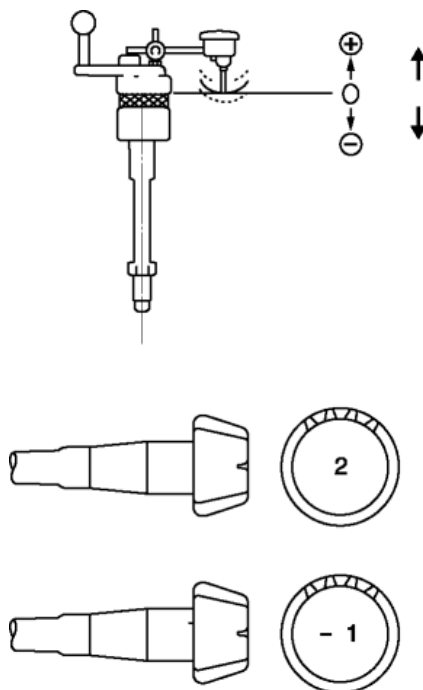
5. Place the **SST** (49 8531 565) on top of the **SST** (49 0660 555).
6. Place the **SST** on the surface plate and set the dial gauge to zero.



7. Set the **SSTs** as shown in the figure.



8. Place the measuring probe of the dial gauge at the point where the side bearing is installed in the differential carrier and measure at the lowest position. Measure the left and right sides.
9. Add the two (left and right) values obtained by the measurements taken in Step 8 and then divide the total by **2**. From this sum, subtract the sum of the number inscribed on the end of the drive pinion divided by **100**. (If there is no figure inscribed, use 0.) This is the pinion height adjustment value.



Differential pinion height

- 0.038 mm {0.0015 in} or less

NOTE:

- When the values obtained by the measurements taken in Step 8, 9 are 0.06 mm {0.0024 in}, 0.04 mm {0.0016 in} and the tip surface of the drive pinion value is 2, the formula is $((0.06+0.04)/2)-(2/100)=0.03$. Therefore, assemble a spacer 0.03 mm {0.0012} thicker than the currently assembled one. The thickness settings are in increments of 0.015 mm {0.0006}, so choose one closest in thickness and install.

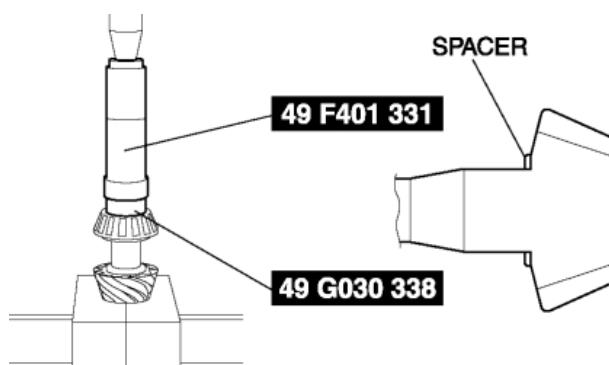
Spacer table

Identification mark	Thickness (mm {in})	Identification mark	Thickness (mm {in})
08	3.080 {0.1213}	29	3.290 {0.1295}
09	3.095 {0.1219}	30	3.305 {0.1301}
11	3.110 {0.1224}	32	3.320 {0.1307}
12	3.125 {0.1230}	33	3.335 {0.1313}
14	3.140 {0.1236}	35	3.350 {0.1319}
15	3.155 {0.1242}	36	3.365 {0.1325}
17	3.170 {0.1248}	38	3.380 {0.1331}
18	3.185 {0.1254}	39	3.395 {0.1337}
20	3.200 {0.1260}	41	3.410 {0.1343}
21	3.215 {0.1266}	42	3.425 {0.1348}
23	3.230 {0.1272}	44	3.440 {0.1354}
24	3.245 {0.1278}	45	3.455 {0.1360}
26	3.260 {0.1283}	47	3.470 {0.1366}
27	3.275 {0.1289}	—	—

Rear Bearing Assembly Note

NOTE:

- Install the spacer with the chamfer on the gear side.
1. Assemble the spacer selected in the pinion height adjustment to the drive pinion.
 2. Press the drive pinion into the rear bearing using the **SSTs** and a press.



Drive Pinion Component Assembly Note

Drive pinion preload adjustment

NOTE:

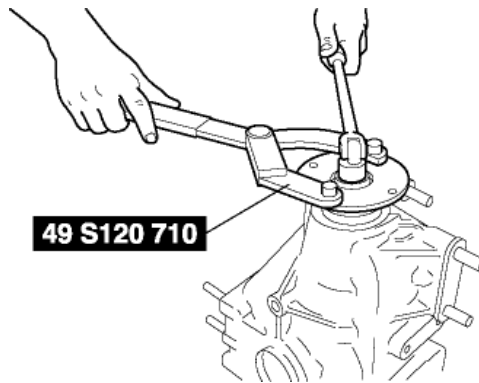
- Perform preload adjustment with the oil seal uninstalled.

1. Assemble the following parts to the drive pinion.

- New collapsible spacer
- Front bearing
- New spacer
- Companion flange
- New washer
- New locknut

2. Turn the serrated part of the drive pinion by hand to seat the bearing.

3. Tighten the locknut temporarily tightened in Step 1 from the lower limit of the specified tightening torque using the **SST**, and obtain the specified preload. Record the tightening torque at this time.



Tightening torque

- 128—284 N·m {13—29 kgf·m, 95—209 ft·lbf}

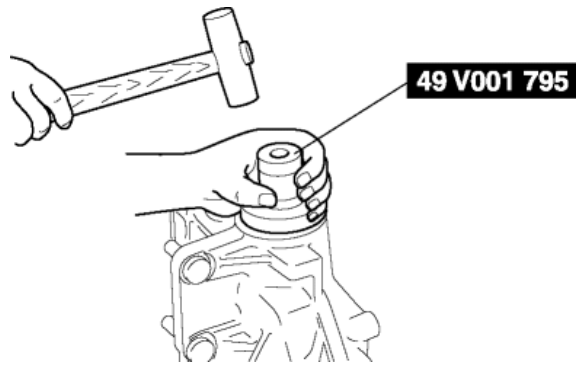
Differential drive pinion preload

- 1.3—1.7 N·m {14—17 kgf·cm, 12—15 in·lbf}
- If the specified preload cannot be obtained within the specified tightening torque, replace with a new collapsible spacer and adjust again.

4. Remove the locknut, washer, and companion flange.

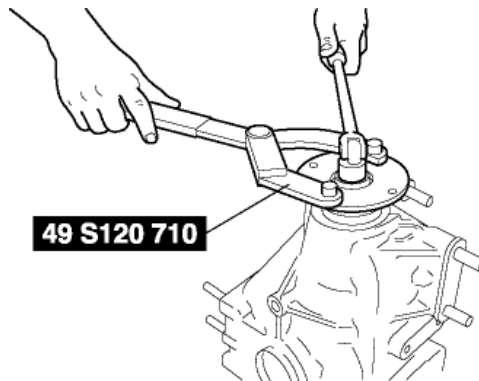
Oil Seal (Companion Flange) Assembly Note

1. Apply differential oil to the lip of a new oil seal.
2. Assemble the oil seal using the **SST**.

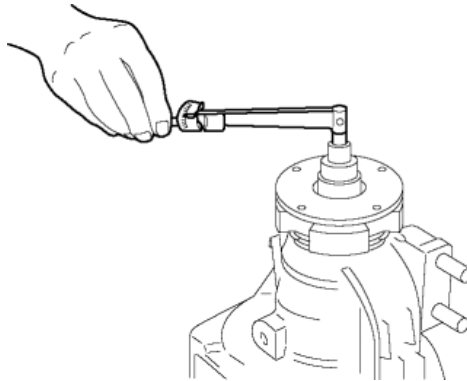


Locknut Assembly Note

1. Apply differential oil to the thread of a new locknut.
2. Tighten a new locknut with the torque recorded at the drive pinion preload adjustment using the **SST**.



3. Verify that the drive pinion preload is within the specification.



- If not within the specification, perform the preload adjustment again.

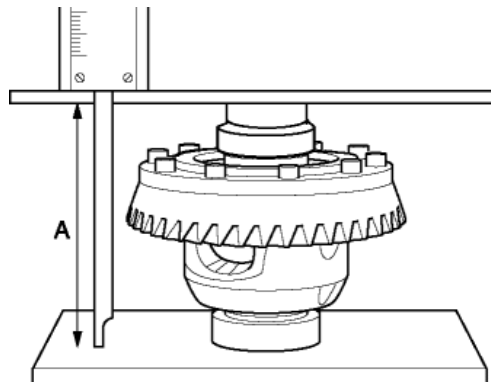
Differential drive pinion preload

- 1.3—1.7 N·m {14—17 kgf·cm, 12—15 in·lbf}

Adjustment Shim Assembly Note

Ring gear backlash adjustment

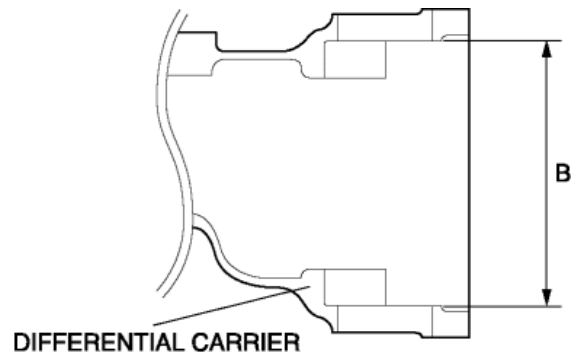
1. Stack the side bearing race and differential gear case component on the surface plate as shown in the figure, and measure the height using a caliper and a ruler. This is value A.



Standard Height A

- 158.1—159.5 mm {6.224—6.280 in}

2. Measure the width of the section of the differential gear case component installed in the differential carrier. This is value B.



Standard width B

- 170.9—171.1 mm {6.729—6.736 in}

3. The combined thickness of the left and right adjustment shims is obtained by the following formula.

Shim thickness (mm {in}) = B-A+ (0.01—0.03 {0.0004—0.0118 in})

4. If the combined thickness of the previously assembled adjustment shims is equal to the calculated thickness, use the shims as they are.

5. If the combined thickness of the previously assembled adjustment shims is not equal to the calculated thickness, or if the adjustment shims have to be replaced, select two appropriate adjustment shims from the table below. **Adjustment shim table**

Identification mark	Thickness (mm {in})	Identification mark	Thickness (mm {in})
550	5.50 {0.217}	605	6.05 {0.238}
560	5.60 {0.220}	610	6.10 {0.240}
565	5.65 {0.222}	615	6.15 {0.242}
570	5.70 {0.224}	620	6.20 {0.244}
575	5.75 {0.226}	625	6.25 {0.246}
580	5.80 {0.228}	630	6.30 {0.248}
585	5.85 {0.230}	635	6.35 {0.250}
590	5.90 {0.232}	640	6.40 {0.252}
595	5.95 {0.234}	650	6.50 {0.256}

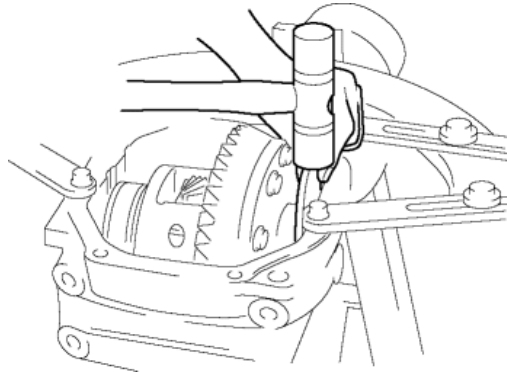
600	6.00 {0.236}	—	—
-----	--------------	---	---

NOTE:

- If the adjustment shims are to be reused, assemble the left and right shims that were identified during disassembly.
- When assembling the side bearing races, do not mix the left and right side bearings that were identified during disassembly.

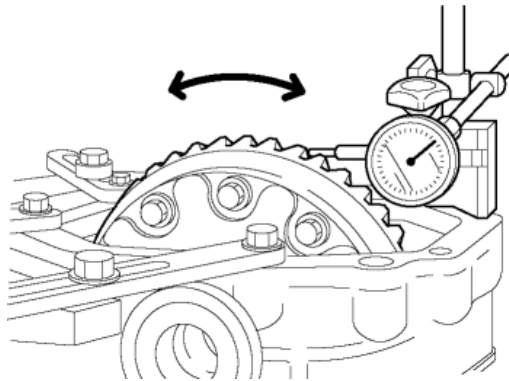
6. Assemble the differential gear case component and the side bearing race to the differential carrier.

7. Tap the selected adjustment shim between the differential carrier and the side bearing race with a plastic hammer as shown in the figure.



8. Align the bearing cap alignment marks, assemble the bearing cap, and then temporarily tighten the bolts.

9. Install the dial gauge with the measuring probe of the dial gauge attached perpendicularly to the end of one of the ring gear teeth.



10. Secure the drive pinion and measure the backlash of the ring gear.

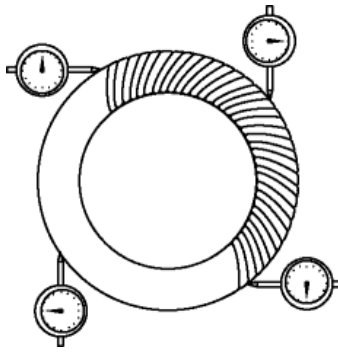
Backlash of drive gear and ring gear

- Standard: 0.09—0.11 mm {0.0035—0.0043 in}
- Minimum value: 0.05 mm {0.0020 in} or more
- Variance: 0.07 mm {0.0028 in} or less

NOTE:

- Measure the backlash at 4 locations around the ring gear. Make sure all of the 4 locations are within specification, and the minimum value for the 4 locations is **0.05 mm {0.0020in} or more** and the variance is **0.07 mm {0.0028 in} or less**

11. If the backlash is not within the specification, adjust the gear case component by moving it in the axial direction.



12. Measure the ring gear preload between the backlash.

Ring gear preload

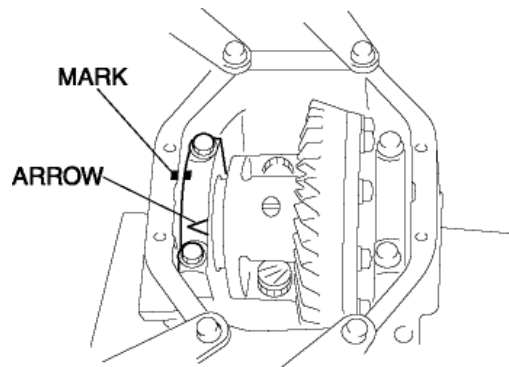
- 0.49—2.45 N·m {5.0—24.9 kgf·cm, 4.4—21.6 in·lbf}

NOTE:

- When moving the gear case component in the axial direction, replace the adjustment shims. If the adjustment shim on the right side is replaced with one that is **0.05 mm {0.0020 in}** thicker, replace the one on the left with one that is **0.05 mm {0.0020 in}** thinner.

Bearing Cap Assembly Note

1. Align the bearing cap alignment marks and assemble the bearing cap with the arrow facing outward.



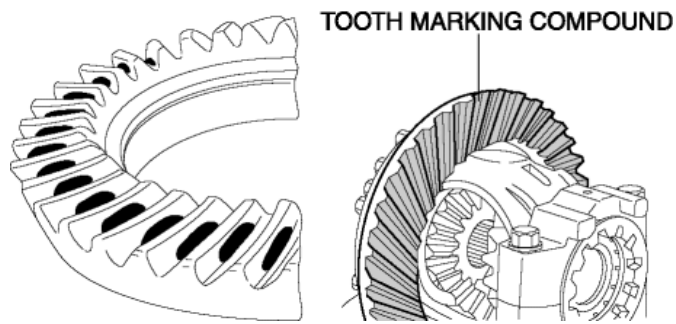
Tightening torque

- 72.6—106.9 N·m {7.41—10.91 kgf·m, 53.5—78.84 ft·lbf}

2. Perform the drive pinion and ring gear tooth contact inspection.

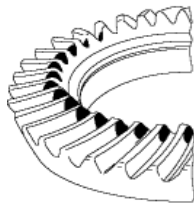
Drive Pinion, Ring Gear Tooth Contact Inspection

1. Apply tooth marking compound evenly to both surfaces of the ring gear.
2. Rotate the ring gear back and forth for several times.
3. Inspect the tooth contact pattern in 4 locations around the ring gear, and verify that the tooth contact points exhibit the pattern shown in the figure.
 - If the tooth contact points are normal, wipe off the marking compound.
 - If the tooth contact points are not normal, adjust the pinion height, then adjust the backlash.

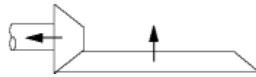
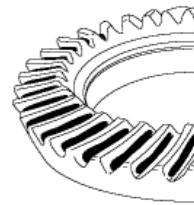


4. If the toe and flank contact points appear as shown in the figure after the drive pinion and ring gear teeth contact inspection, replace the spacer with a thinner one, and move the drive pinion outward.

TOE CONTACT

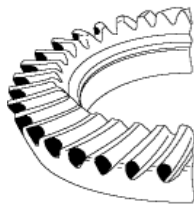


FLANK CONTACT

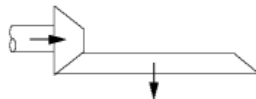
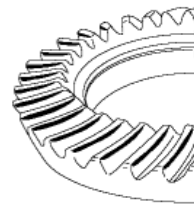


5. If the heel and face contact points appear as shown in the figure after the drive pinion and ring gear teeth contact inspection, replace the spacer with a thicker one, and move the drive pinion inward.

HEEL CONTACT



FACE CONTACT



2011 - RX-8 - DriveLine/Axle

OIL SEAL (SIDE GEAR) REPLACEMENT

1. Remove the drain plug and drain the oil.
2. Install the drain plug with a new washer and tighten.

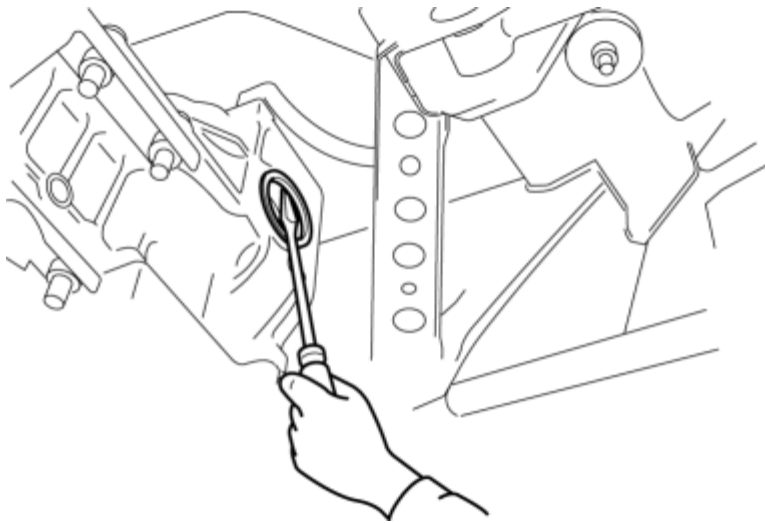
Tightening torque

- 39.2—53.9 N·m {4.00—5.49 kgf·m, 29.0—39.7 ft·lbf}

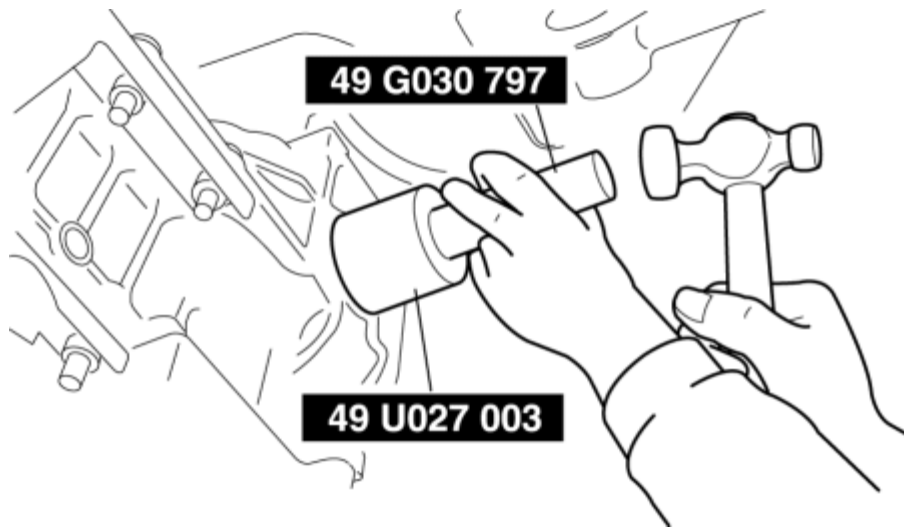
3. Disconnect the rear drive shaft on the differential side. (See [REAR DIFFERENTIAL REMOVAL/INSTALLATION](#).)
4. Remove the clip from the rear drive shaft.

CAUTION:

- To prevent damaging the inside of the differential casing, wrap cloth on the end of the flathead screwdriver.
5. Remove the oil seal from the differential carrier using a flathead screwdriver.



6. Apply differential oil to the lip of a new oil seal.
7. Tap in the new oil seal until it reaches the differential carrier using the **SSTs**.



NOTE:

- Install the oil seal at a straight angle.

8. After installing a new clip to the rear drive shaft, insert it into the rear differential. (See [REAR DIFFERENTIAL REMOVAL/INSTALLATION](#).)

9. Verify that the rear drive shaft is held securely by the clip by pulling the outer ring on the differential side towards the axle.

10. Add differential oil.

11. After adding the oil, perform the oil level inspection. (See [DIFFERENTIAL OIL INSPECTION](#).)

12. Install the oil-fill plug with a new washer and tighten.

Tightening torque

- 39.2—53.9 N·m {4.00—5.49 kgf·m, 29.0—39.7 ft·lbf}

[< Previous](#) [Next >](#)

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - DriveLine/Axle

OIL SEAL (COMPANION FLANGE) REPLACEMENT

1. Remove the rear differential. (See [REAR DIFFERENTIAL REMOVAL/INSTALLATION](#).)
2. Replace the oil seal (companion flange) referring to the rear differential disassembly/assembly procedure. (See [REAR DIFFERENTIAL DISASSEMBLY](#).) (See [REAR DIFFERENTIAL ASSEMBLY](#).)
3. Install the rear differential. (See [REAR DIFFERENTIAL REMOVAL/INSTALLATION](#).)

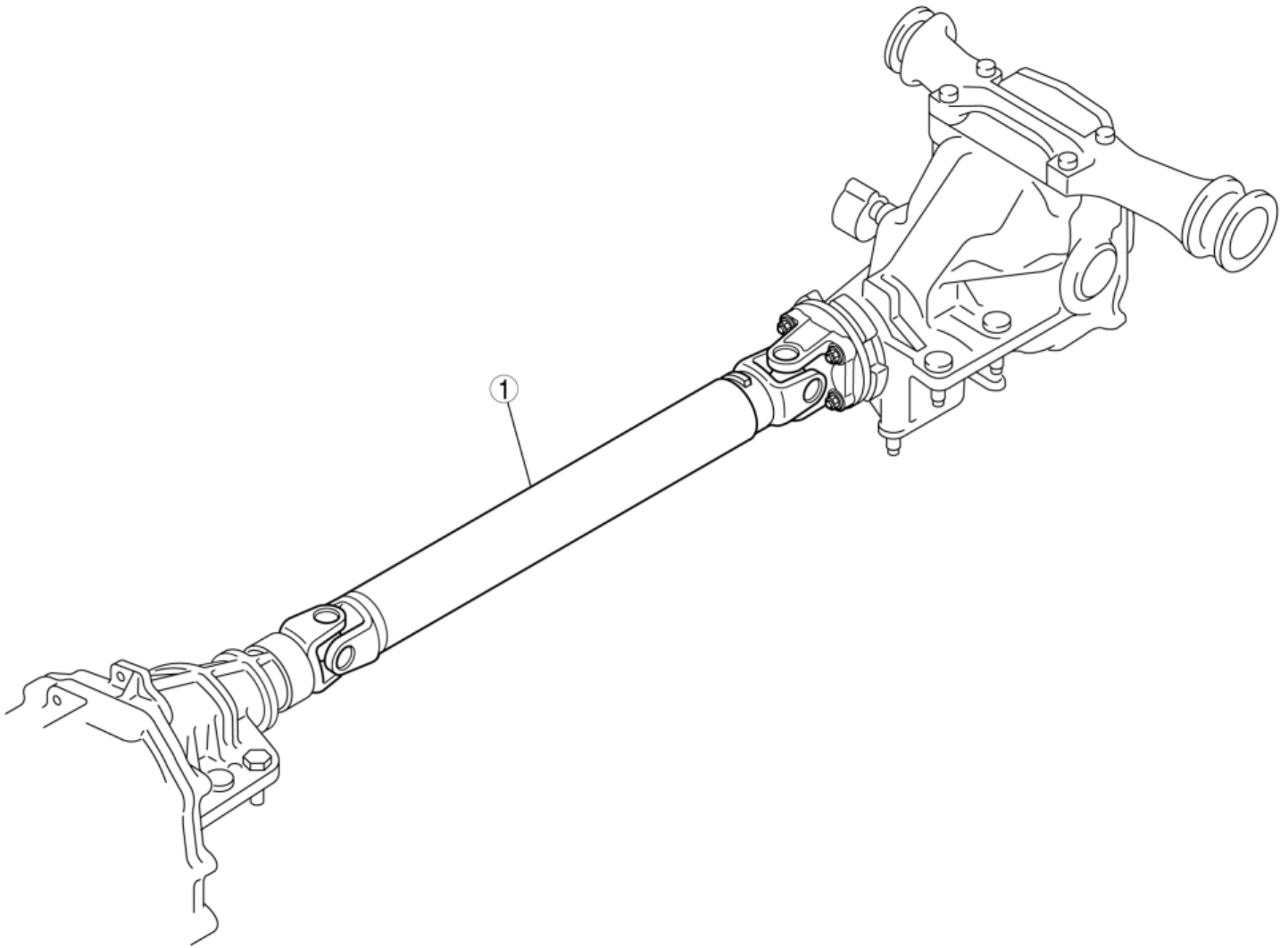
[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - DriveLine/Axle

PROPELLER SHAFT LOCATION INDEX



1 Propeller shaft

(See [PROPELLER SHAFT REMOVAL/INSTALLATION.](#))

(See [PROPELLER SHAFT INSPECTION.](#))

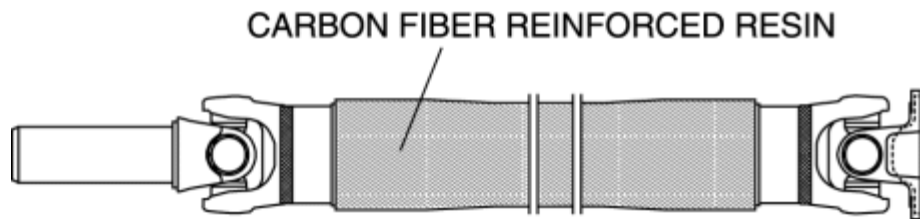
2011 - RX-8 - DriveLine/Axle

PROPELLER SHAFT REMOVAL/INSTALLATION

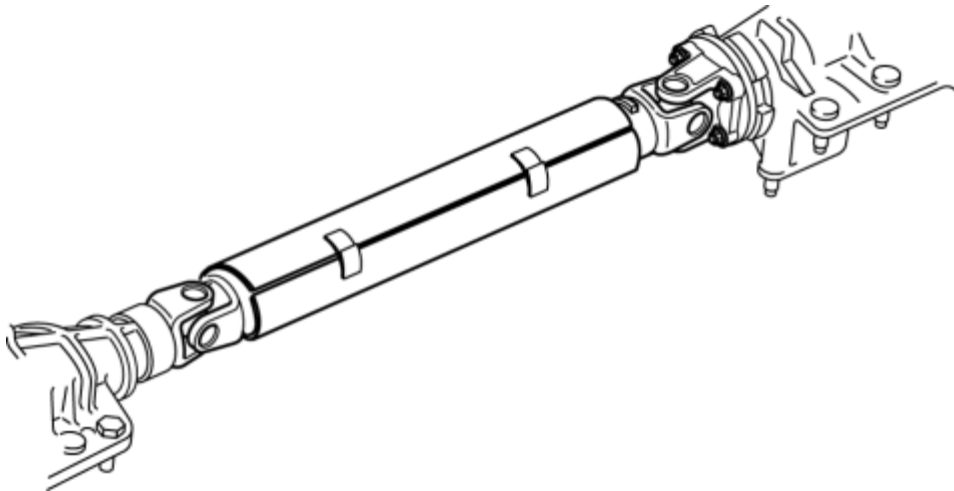
For Carbon-Fiber Propeller Shaft

CAUTION:

- The carbon-fiber-reinforced propeller shaft could be chipped or cracked if dropped. To prevent any damage, handle the shaft with careful attention when removing/installing.
- Replace the propeller shaft if it is dropped.



1. Remove the TWC. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))
2. Remove the insulator (front). (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))
3. Remove the insulator (middle). (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))
4. Protect the propeller shaft with rubber padding or similar protective cover to prevent damage.



CAUTION:

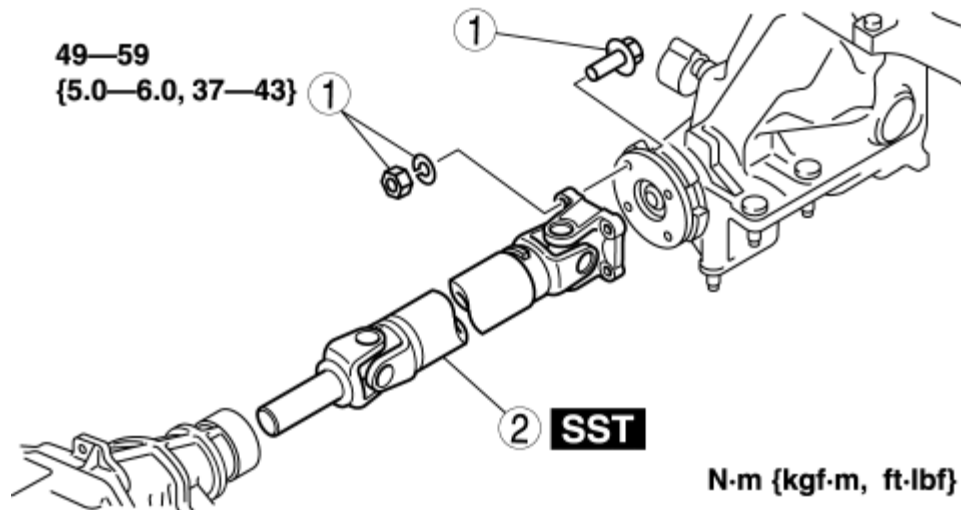
- Remove the rubber padding or similar protective cover after propeller shaft

installation is complete.

5. Remove in the order indicated in the table.

6. Install in the reverse order of removal.

7. Remove the rubber padding or similar protective cover from the propeller shaft.



1 Bolt, nut
2 Propeller shaft (See Propeller Shaft Removal Note.) (See Propeller Shaft Installation Note.)

For Steel Propeller Shaft

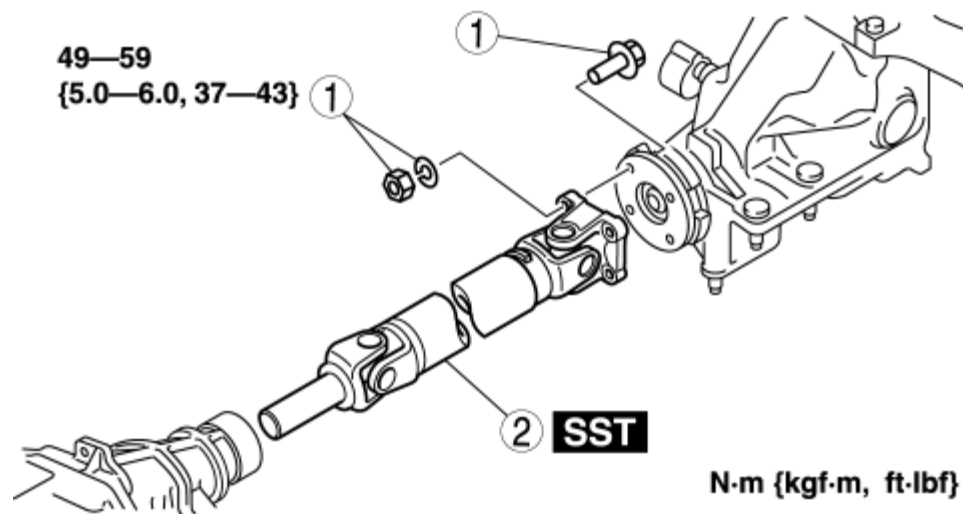
1. Remove the TWC. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))

2. Remove the insulator (front). (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))

3. Remove the insulator (middle). (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))

4. Remove in the order indicated in the table.

5. Install in the reverse order of removal.



1 Bolt, nut

2 Propeller shaft

(See [Propeller Shaft Removal Note](#).)

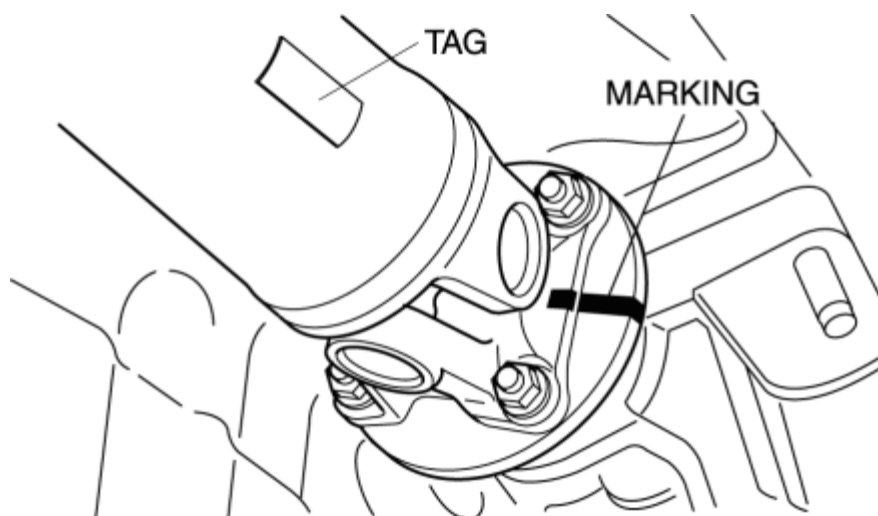
(See [Propeller Shaft Installation Note](#).)

Propeller Shaft Removal Note

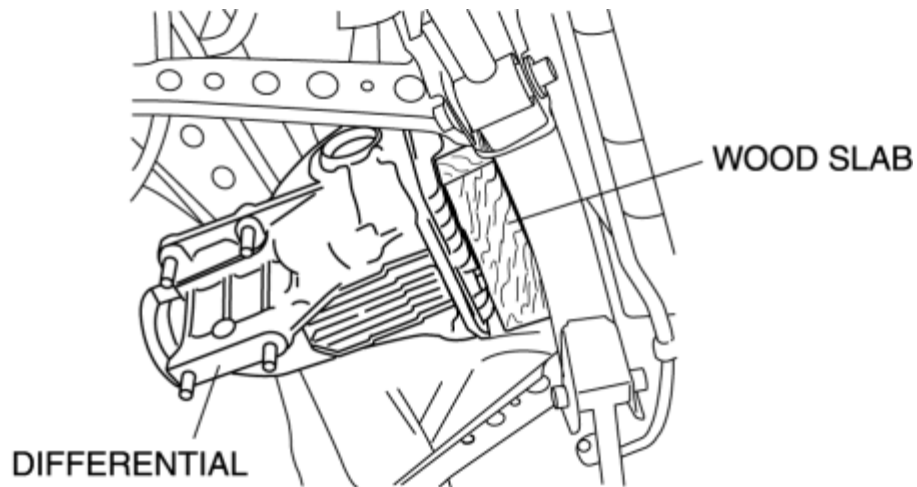
CAUTION:

- When replacing with a new propeller shaft, mark the companion flange to match the position of the tag on the propeller shaft.

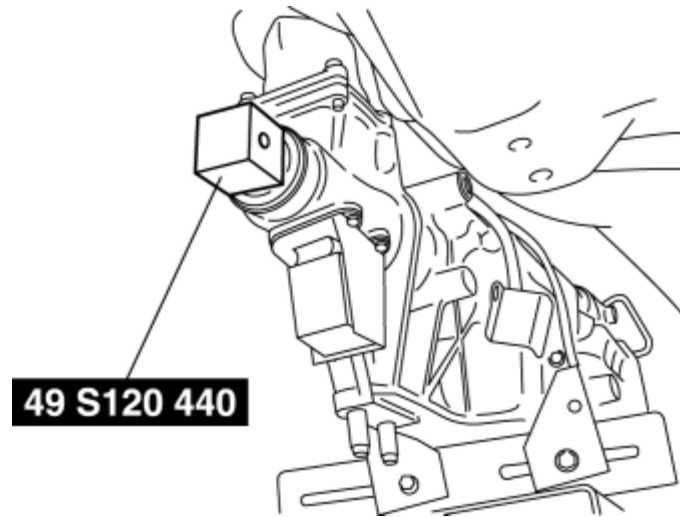
1. Before removing the propeller shaft, make alignment marks on the yoke and differential companion flange.



2. Insert a slab of wood behind the rear differential, and remove the propeller shaft.



3. Install the **SST** to the extension housing.



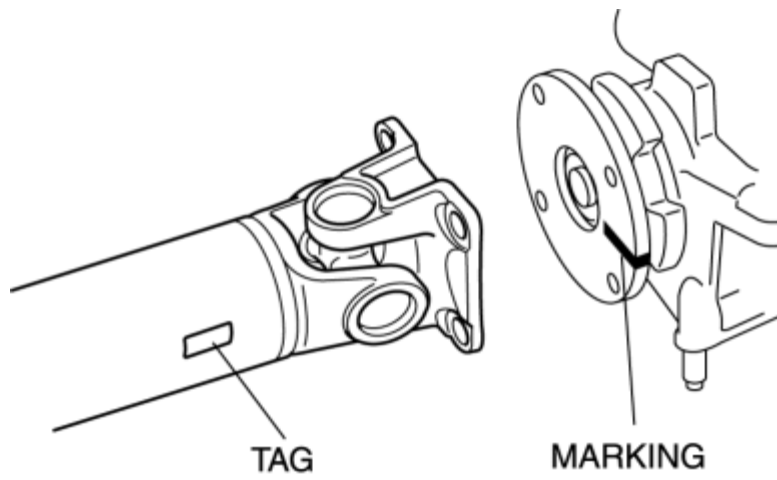
Propeller Shaft Installation Note

1. Align the marks and install the propeller shaft.

CAUTION:

- When installing a new carbon-fiber propeller shaft, install the shaft with the protective cover still on and then remove after completion.
- Handle the propeller shaft with careful attention.

2. When installing a new propeller shaft, align the differential companion flange mark with the tag on the propeller shaft and assemble.



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

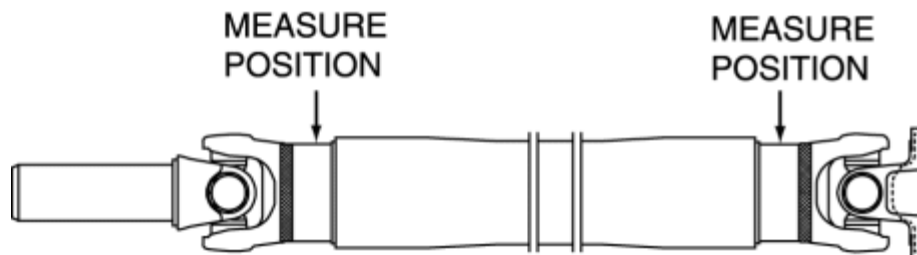
2011 - RX-8 - DriveLine/Axle

PROPELLER SHAFT INSPECTION

For Carbon-Fiber Propeller Shaft

CAUTION:

- Replace the propeller shaft if it is dropped.
 - Handle the propeller shaft with care so that the pipe is not damaged from striking surrounding objects or other impacts.
 - Replace the propeller shaft if there is any chipping or warping of the pipe.
 - Protect the propeller shaft from damage and handle with careful attention when working.
1. Use a dial gauge to measure the runout of the propeller shaft at each position.

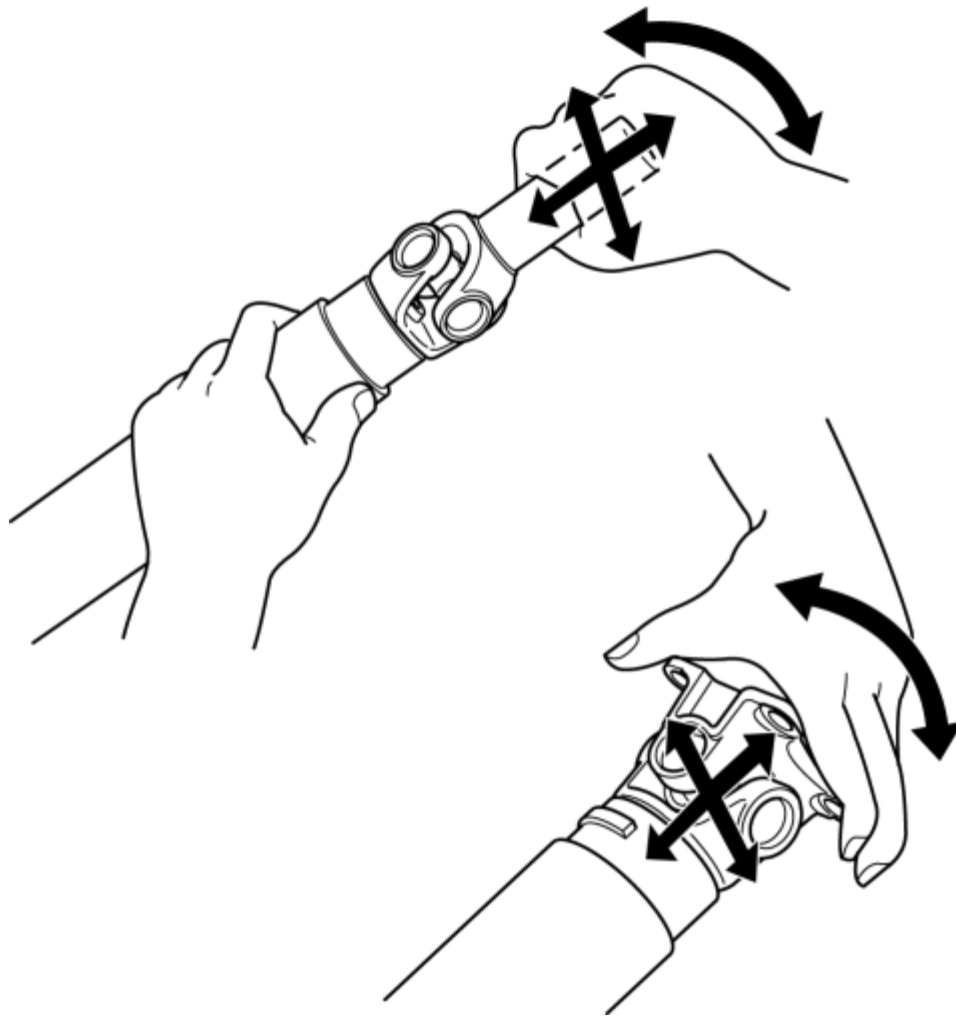


- If it exceeds the maximum specification, replace the propeller shaft.

Propeller shaft maximum runout

- 0.6 mm {0.024 in}

2. Inspect the play and rotation of the joint by turning the universal joint in the directions shown by the arrows.



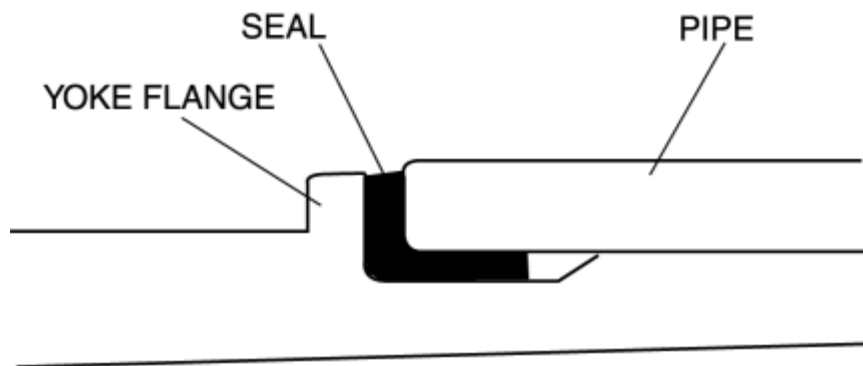
Propeller shaft initial torque (Reference value)

- 0.29—0.98 N·m {3.0—10 kgf·cm, 2.7—8.6 in·lbf}
- If there is any play or excessive initial torque, replace the propeller shaft.

3. Verify that the propeller shaft has no bends or damage.

- If there is any malfunction, replace the propeller shaft.

4. Verify that there is a gap between the pipe and yoke flange.



- If there is any malfunction, replace the propeller shaft.

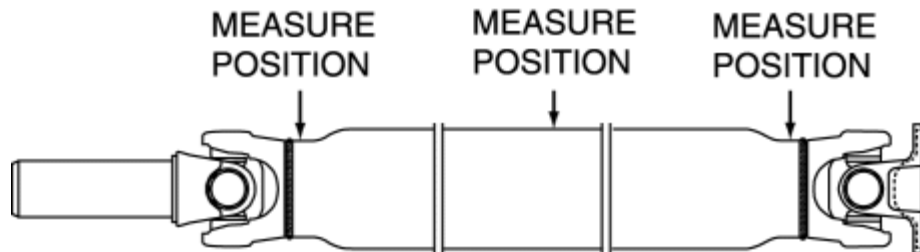
5. Verify that there is no cracking, peeling or similar damage to the seal (where the pipe and

yoke connect).

- If there is any malfunction, replace the propeller shaft.

For Steel Propeller Shaft

1. Use a dial gauge to measure the runout of the propeller shaft at each position.

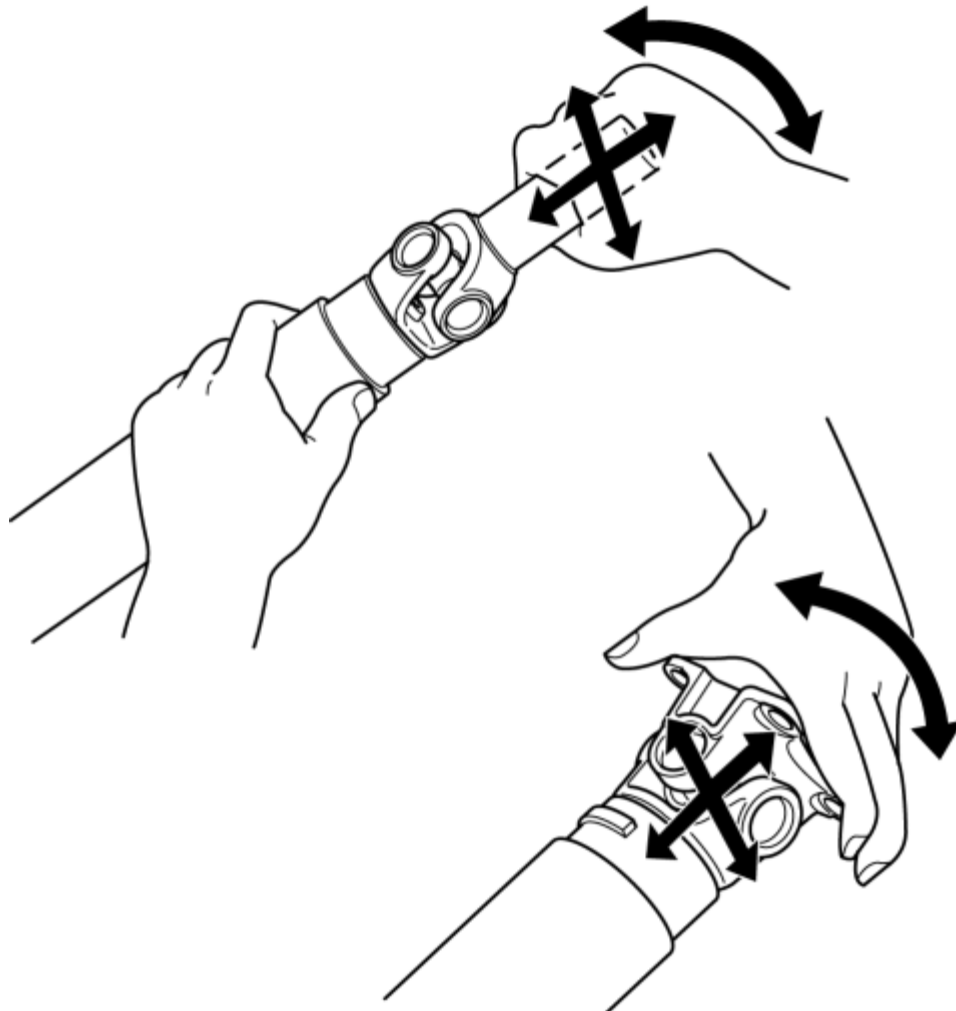


- If it exceeds the maximum specification, replace the propeller shaft.

Propeller shaft maximum runout

- 0.6 mm {0.024 in}

2. Inspect the play and rotation of the joint by turning the universal joint in the direction shown by the arrow.



Propeller shaft initial torque (Reference value)

- 0.29—0.98 N·m {3.0—10 kgf·cm, 2.7—8.6 in·lbf}
- If there is excessive play or initial torque, replace the propeller shaft.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - DriveLine/Axle

DRIVELINE/AXLE TECHNICAL DATA

Item	Specification
Maximum front wheel bearing play	0.05 mm {0.002 in}
Maximum rear wheel bearing play	0.05 mm {0.002 in}
Differential oil grade/viscosity	API service GL-5 (SAE 90) API service GL-5 (SAE 80W-90) API service GL-5 (SAE 75W-90) (Not available from Mazda)
Differential oil capacity (approx. quantity)	1.2—1.4 L {1.3— 1.4 US qt, 1.1—1.2 Imp qt}
Differential pinion height	0.038 mm {0.0015 in} or less
Differential drive pinion preload	1.3—1.7 N·m {14—17 kgf·cm, 12—15 in·lbf}
Backlash of drive gear and ring gear	Standard: 0.09—0.11 mm {0.0035—0.0043 in} Minimum value: 0.05 mm {0.0020 in} or more Variance: 0.07 mm {0.0028 in} or less
Propeller shaft maximum runout	0.6 mm {0.024 in}
Propeller shaft initial torque (Reference value)	0.29—0.98 N·m {3.0—10 kgf·cm, 2.7—8.6 in·lbf}

Rear drive shaft standard length

Left side	792.6—802.6 mm {31.21—31.59 in}
-----------	---------------------------------

MT	Right side	832.6—842.6 mm {32.78—33.17 in}
	Left side	791.1—801.1 mm {31.15—31.53 in}
AT	Right side	831.1—841.1 mm {32.71—33.11 in}

[< Previous](#) [Next >](#)

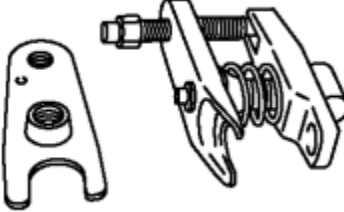

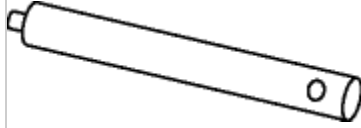

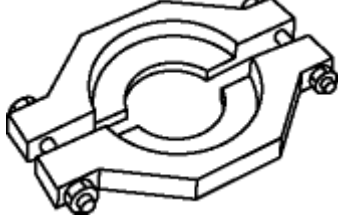
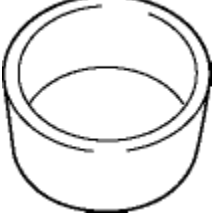
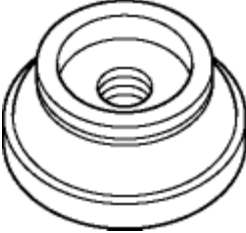
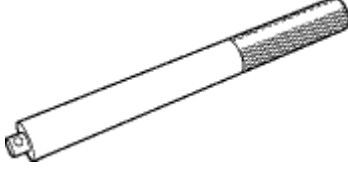
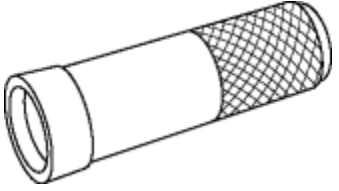
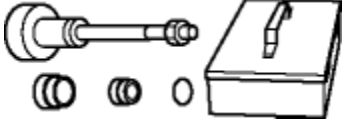
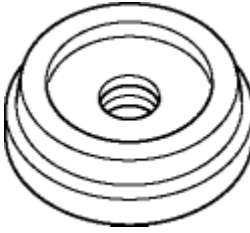

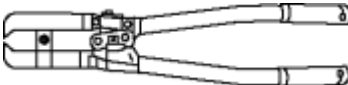
[Back to Top](#)

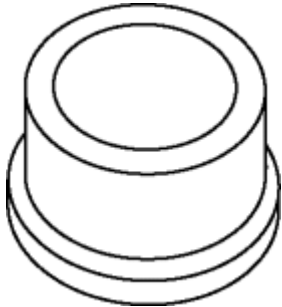
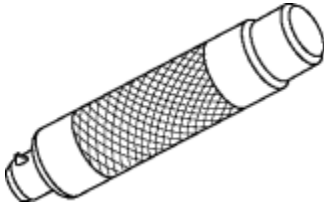
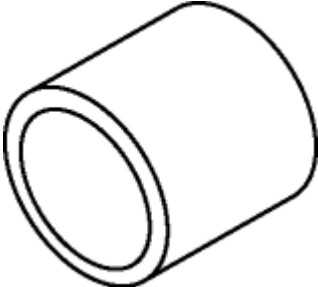

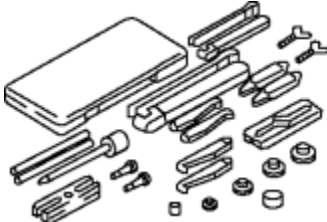
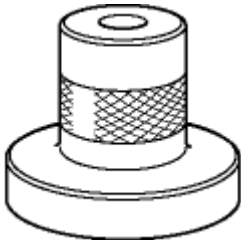
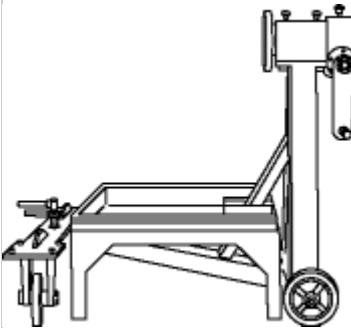
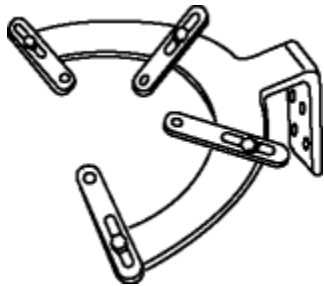
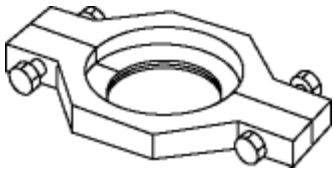
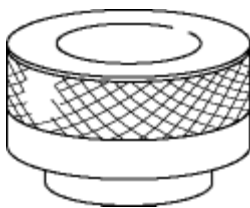
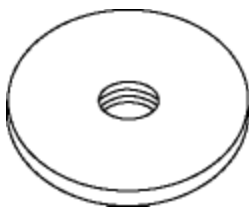

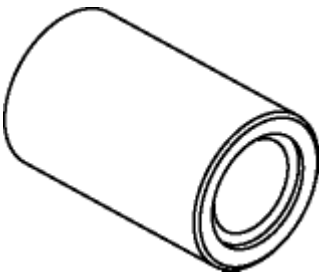
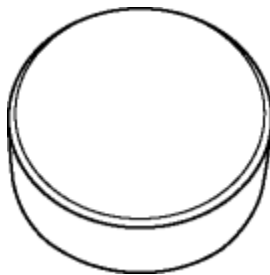

© 2010 Mazda North American Operations, U.S.A.

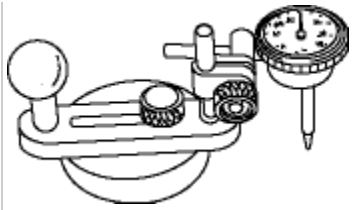
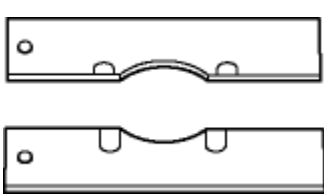

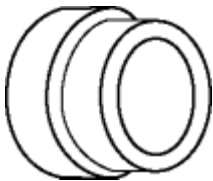
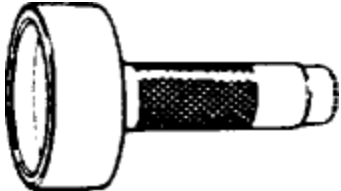
[< Previous](#)

2011 - RX-8 - DriveLine/Axle

DRIVELINE/AXLE SST

49 T028 3A0 Ball joint puller set		49 G030 338 Attachment E		49 G033 102 Handle	
49 G033 105 Attachment		49 H027 002 Bearing remover		49 F026 105 Support block	
49 F027 007 Attachment for ø72 bearing		49 F027 003 Handle		49 F401 331 Body	
49 8531 565 Drive pinion model		49 F027 004 Attachment for ø80 bearing		49 H034 201 Support block	
49 F027 009 Attachment for ø68&ø77		49 T025 001 Boot clamp crimper		49 G030 797 Handle	

bearing					
49 U027 003 Oil seal installer		49 S120 710 Coupling flange holder		49 0839 425C Bearing puller set	
49 V001 795 Oil seal installer		49 0107 680A Engine stand		49 M005 561 Differential carrier hanger	
49 0636 145 Water pump pulley boss puller		49 UB71 525 Bearing installer		49 J027 001 Bearing installer	
49 J027 002 Collar		49 8038 785A Dust boot installer		49 0660 555 Gauge block	
49 0727 570A Pinion height gauge		49 S120 440 Mainshaft holder		49 F026 103 Wheel hub puller	

body					
49 W010 107A Oil seal installer		49 8531 567 Collar A (Part of 49 8531 565)		49 B001 795 Oil seal installer	

[< Previous](#)

[Back to Top](#)

Workshop Manual - Brakes

2011 - RX-8

On-Board Diagnostics

- [ABS SYSTEM WIRING DIAGRAM \[ABS\]](#)
- [ON-BOARD DIAGNOSIS \[ABS\]](#)
- [DTC B1318 \[ABS\]](#)
- [DTC B1342 \[ABS\]](#)
- [DTC C1095, C1096 \[ABS\]](#)
- [DTC C1140 \[ABS\]](#)
- [DTC C1145, C1155, C1165, C1175 \[ABS\]](#)
- [DTC C1148, C1158, C1168, C1178, C1234, C1233, C1235, C1236 \[ABS\]](#)
- [DTC C1186, C1266 \[ABS\]](#)
- [DTC C1210, C1214, C1194, C1198, C1246, C1254, C1242, C1250 \[ABS\]](#)
- [DTC C1510, C1511, C1512, C1513 \[ABS\]](#)

On-Board Diagnostics

- [DYNAMIC STABILITY CONTROL SYSTEM WIRING DIAGRAM \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [ON-BOARD DIAGNOSIS \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC B1317, B1318 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC B1342 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC B1484, C1954 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC B2477 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC B2741, C2768, U2516 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC C1093 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC C1095, C1096 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC C1141, C1142, C1143, C1144 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC C1145, C1155, C1165, C1175 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC C1148, C1158, C1168, C1178 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC C1186, C1266 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC C1194, C1198, C1210, C1214, C1242, C1246, C1250, C1254, C1400, C1410, C1957, C1958 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC C1222 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC C1233, C1234, C1235, C1236 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC C1279, C1280, C1281, C1952, C1959 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC C1290, C1953 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC C1295, C1307, C1937, C1938, C1956 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC C1306 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC C1994 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [DTC U0073, U0100, U0101, U0155, U1900, U2023 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)

- [DTC U0074, U0123, U1901 \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)

Symptom Troubleshooting

- [SYSTEM WIRING DIAGRAM \[ABS\]](#)
- [FOREWORD \[ABS\]](#)
- [PRECAUTION \[ABS\]](#)
- [SYMPTOM TROUBLESHOOTING \[ABS\]](#)
- [NO.1 NEITHER ABS WARNING LIGHT NOR BRAKE SYSTEM WARNING LIGHT ILLUMINATE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION \[ABS\]](#)
- [NO.2 ABS WARNING LIGHT DOES NOT ILLUMINATE WHEN IGNITION SWITCH TURNED TO ON POSITION \[ABS\]](#)
- [NO.3 BRAKE SYSTEM WARNING LIGHT DOES NOT ILLUMINATE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION \[ABS\]](#)
- [NO.4 BOTH ABS WARNING LIGHT AND BRAKE SYSTEM WARNING LIGHT STAY ON 4 S OR MORE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION \[ABS\]](#)
- [NO.5 ABS WARNING LIGHT STAYS ON 4 S OR MORE WHEN IGNITION SWITCH TURNED TO ON POSITION \[ABS\]](#)
- [NO.6 BRAKE SYSTEM WARNING LIGHT STAYS ON 4 S OR MORE WHEN IGNITION SWITCH TURNED TO ON POSITION \[ABS\]](#)

Symptom Troubleshooting

- [SYSTEM WIRING DIAGRAM \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [FOREWORD \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [PRECAUTION \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [SYMPTOM TROUBLESHOOTING \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [NO.1 ANY OF THE FOLLOWING LIGHTS DO NOT ILLUMINATE WHEN IGNITION SWITCH TURNED TO ON POSITION: \(ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DSC INDICATOR LIGHT AND/OR DSC OFF LIGHT\) \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [NO.2 ANY OF THE FOLLOWING LIGHTS REMAIN ON: \(ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DSC INDICATOR LIGHT AND/OR DSC OFF LIGHT\) \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [NO.3 THERE IS A MALFUNCTION IN THE SYSTEM EVEN THOUGH ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DSC INDICATOR LIGHT AND DSC OFF LIGHT DO NOT ILLUMINATE \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [NO.4 ABS OR TCS*1 OPERATES FREQUENTLY/TCS DOES NOT WORK CORRECTLY *1: DSC SYSTEM FUNCTION CONTAINS TRACTION CONTROL FUNCTION, DSC INDICATOR LIGHT GOES ON AND OFF WHILE DSC IS OPERATING \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)
- [NO.5 DSC*2 OPERATES FREQUENTLY/DSC DOES NOT WORK CORRECTLY *2: DSC INDICATOR LIGHT GOES ON AND OFF WHILE DSC IS OPERATING \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#)

General Procedures

- [GENERAL PROCEDURES \(BRAKE\)](#)

Conventional Brake System

- [CONVENTIONAL BRAKE SYSTEM LOCATION INDEX](#)
- [AIR BLEEDING](#)
- [VACUUM LINE INSPECTION](#)
- [BRAKE PEDAL INSPECTION](#)
- [BRAKE PEDAL REMOVAL/INSTALLATION](#)
- [BRAKE SWITCH INSPECTION](#)
- [MASTER CYLINDER REMOVAL/INSTALLATION](#)
- [BRAKE FLUID LEVEL SENSOR INSPECTION](#)

- [POWER BRAKE UNIT INSPECTION](#)
- [POWER BRAKE UNIT REMOVAL/INSTALLATION](#)
- [FRONT BRAKE \(DISC\) INSPECTION](#)
- [FRONT BRAKE \(DISC\) REMOVAL/INSTALLATION](#)
- [DISC PAD \(FRONT\) REPLACEMENT](#)
- [CALIPER \(FRONT\) DISASSEMBLY/ASSEMBLY](#)
- [BRAKE HOSE \(FRONT\) REMOVAL/INSTALLATION](#)
- [REAR BRAKE \(DISC\) INSPECTION](#)
- [REAR BRAKE \(DISC\) REMOVAL/INSTALLATION](#)
- [DISC PAD \(REAR\) REPLACEMENT](#)
- [CALIPER \(REAR\) DISASSEMBLY/ASSEMBLY](#)
- [BRAKE HOSE \(REAR\) REMOVAL/INSTALLATION](#)

Parking Brake System

- [PARKING BRAKE SYSTEM LOCATION INDEX](#)
- [PARKING BRAKE LEVER INSPECTION](#)
- [PARKING BRAKE LEVER ADJUSTMENT](#)
- [PARKING BRAKE LEVER REMOVAL/INSTALLATION](#)
- [PARKING BRAKE SWITCH INSPECTION](#)

Antilock Brake System (ABS)

- [ABS SYSTEM WIRING DIAGRAM](#)
- [ABS LOCATION INDEX](#)
- [ABS SYSTEM INSPECTION](#)
- [ABS HU/CM REMOVAL/INSTALLATION](#)
- [ABS HU/CM INSPECTION](#)
- [FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION](#)
- [FRONT ABS WHEEL-SPEED SENSOR INSPECTION](#)
- [REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION](#)
- [REAR ABS WHEEL-SPEED SENSOR INSPECTION](#)

Dynamic Stability Control

- [DYNAMIC STABILITY CONTROL LOCATION INDEX](#)
- [DSC SYSTEM WIRING DIAGRAM](#)
- [DSC SYSTEM INSPECTION](#)
- [DSC HU/CM REMOVAL/INSTALLATION](#)
- [DSC CONFIGURATION](#)
- [DSC HU/CM INSPECTION](#)
- [FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION](#)
- [FRONT ABS WHEEL-SPEED SENSOR INSPECTION](#)
- [REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION](#)
- [REAR ABS WHEEL-SPEED SENSOR INSPECTION](#)
- [COMBINED SENSOR REMOVAL/INSTALLATION](#)
- [COMBINED SENSOR INSPECTION](#)
- [COMBINED SENSOR INITIALIZATION PROCEDURE](#)
- [BRAKE FLUID PRESSURE SENSOR INSPECTION](#)
- [STEERING ANGLE SENSOR REMOVAL/INSTALLATION](#)
- [STEERING ANGLE SENSOR INSPECTION](#)
- [STEERING ANGLE SENSOR INITIALIZATION PROCEDURE](#)
- [DSC OFF SWITCH REMOVAL/INSTALLATION](#)
- [DSC OFF SWITCH INSPECTION](#)

Technical Data

- [BRAKES TECHNICAL DATA](#)

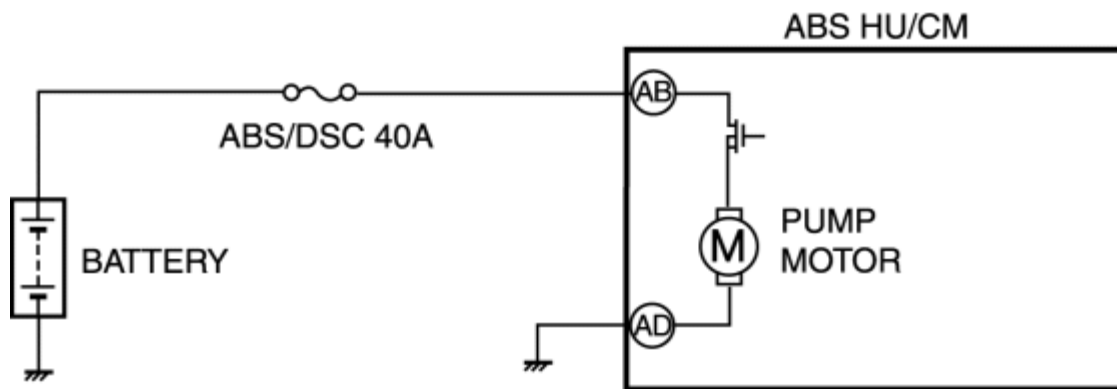
Maintenance/Service Tools

- [BRAKES SST](#)

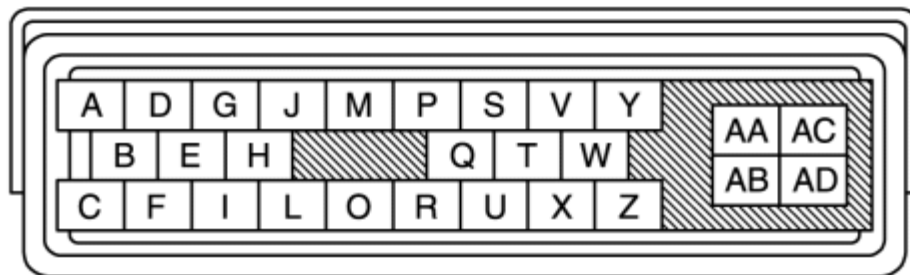
2011 - RX-8 - Brakes

DTC C1095, C1096 [ABS]

DTC	C1095, C1096	Pump motor, motor relay
DETECTION CONDITION	<ul style="list-style-type: none">• C1095<ul style="list-style-type: none">▪ ABS motor monitor signal does not correspond to ABS HU/CM OFF signal.• C1096<ul style="list-style-type: none">▪ ABS motor monitor signal does not correspond to ABS HU/CM ON signal.▪ ABS motor monitor OFF signal is input within specified time limit when the motor signal is switched from ON to OFF by ABS HU/CM.	
POSSIBLE CAUSE	<ul style="list-style-type: none">• ABS/DSC 40 A fuse malfunction• Open or short to ground circuit in the wiring harness between the battery and the ABS HU/CM terminal AB• Open circuit in the wiring harness between the ABS HU/CM terminal AD and the body ground• Motor relay malfunction• Open or short circuit in the ABS HU/CM internal motor relay, or stuck motor relay• Open or short circuit in the ABS HU/CM internal motor, or frozen motor• Poor connection at connectors (female terminal)• ABS HU/CM malfunction	



ABS HU/CM WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY OTHER DTC HAS BEEN RECORDED <ul style="list-style-type: none"> Have DTC C1186 and/or C1266 also been stored? 	Yes Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [ABS].)
		No Go to the next step.
2	INSPECT ABS FUSE CONDITION <ul style="list-style-type: none"> Is the ABS/DSC 40A fuse normal? 	Yes Go to the next step.
		No Replace the fuse, then go to Step 6.
3	INSPECT MOTOR RELAY POWER SUPPLY FOR OPEN CIRCUIT <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the ABS 	Yes Go to the next step.
		No Repair or replace the wiring harness for open circuit between battery positive terminal and ABS HU/CM terminal AB, then go to Step 6.

	<p>HU/CM connector.</p> <ul style="list-style-type: none">• Turn the ignition switch to the ON position (engine off).• Measure the voltage between ABS HU/CM terminal AB (harness-side) and ground.• Is the voltage B+?		
4	INSPECT PUMP MOTOR GROUND FOR OPEN CIRCUIT <ul style="list-style-type: none">• Turn the ignition switch off.• Inspect for continuity between ABS HU/CM terminal AD (harness-side) and ground.• Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for open circuit between ABS HU/CM terminal AD and ground, then go to Step 6.
5	VERIFY PUMP MOTOR OPERATION <ul style="list-style-type: none">• Turn the ignition switch off.• Connect the M-MDS to the DLC-2.• Turn the ignition switch to the ON position (engine off).• Access ABS_POWER and PMP_MOTOR active command modes using the M-MDS.• Does the pump motor operate?	Yes	Go to the next step.
		No	Replace the ABS HU/CM, then go to the next step. (See ABS HU/CM REMOVAL/INSTALLATION.)
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none">• Make sure to reconnect all disconnected connectors.• Clear the DTC from the memory. <p>(See ON-BOARD DIAGNOSIS [ABS].)</p>	Yes	Replace the ABS HU/CM, then go to the next step. (See ABS HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.

	<ul style="list-style-type: none">• Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more.• Gradually slow down and stop the vehicle.• Is the same DTC present? <p>(See ON-BOARD DIAGNOSIS [ABS].)</p>		
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Are any other DTCs present? <p>(See ON-BOARD DIAGNOSIS [ABS].)</p>	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [ABS] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Brakes

DTC C1145, C1155, C1165, C1175 [ABS]

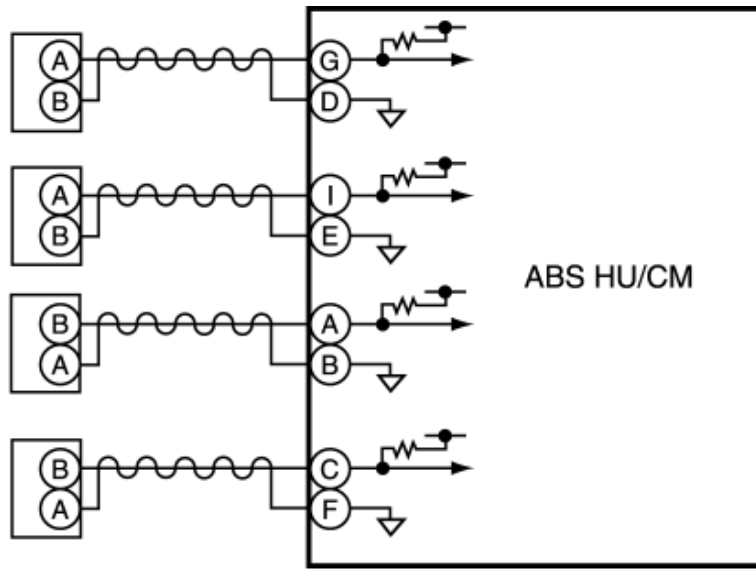
DTC	C1145	RF ABS wheel-speed sensor
	C1155	LF ABS wheel-speed sensor
	C1165	RR ABS wheel-speed sensor
	C1175	LR ABS wheel-speed sensor
DETECTION CONDITION		<ul style="list-style-type: none">Open circuit or short to ground has been detected in the ABS wheel-speed sensor wiring harness on any of the four vehicle wheels.
POSSIBLE CAUSE		<ul style="list-style-type: none">Open circuit or short to ground in the wiring harness between the following ABS HU/CM terminal and the ABS wheel-speed sensor terminal:<ul style="list-style-type: none">ABS HU/CM terminal G—RF ABS wheel-speed sensor terminal AABS HU/CM terminal D—RF ABS wheel-speed sensor terminal BABS HU/CM terminal I—LF ABS wheel-speed sensor terminal AABS HU/CM terminal E—LF ABS wheel-speed sensor terminal BABS HU/CM terminal A—RR ABS wheel-speed sensor terminal BABS HU/CM terminal B—RR ABS wheel-speed sensor terminal AABS HU/CM terminal C—LR ABS wheel-speed sensor terminal BABS HU/CM terminal F—LR ABS wheel-speed sensor terminal AABS wheel-speed sensor malfunctionPoor connection at connectors (female terminal)ABS HU/CM malfunction

RF
ABS WHEEL-
SPEED SENSOR

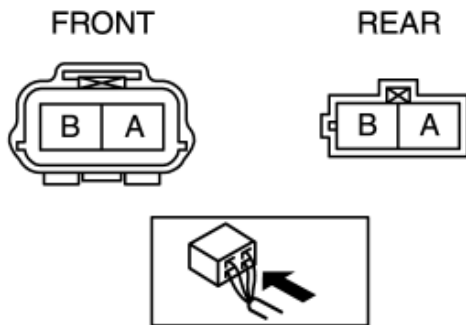
LF
ABS WHEEL-
SPEED SENSOR

RR
ABS WHEEL-
SPEED SENSOR

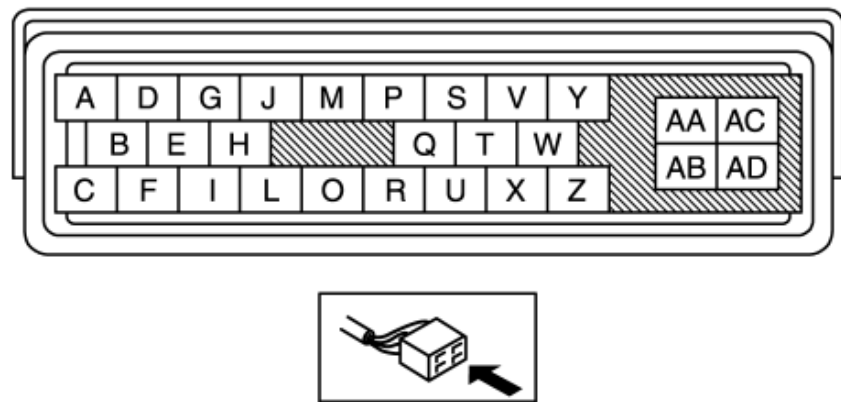
LR
ABS WHEEL-
SPEED SENSOR



ABS WHEEL-SPEED SENSOR
WIRING HARNESS-SIDE CONNECTOR



ABS HU/CM WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT PID FOR ABNORMAL OUTPUT FROM ABS WHEEL-SPEED SENSOR USING M-MDS <ul style="list-style-type: none"> Turn the ignition switch off. Connect the M-MDS to the DLC-2. Select the following PIDs using the M-MDS: <ul style="list-style-type: none"> LF_WSPD LR_WSPD RF_WSPD RR_WSPD Start the engine and drive the vehicle. Verify that the PIDs of the four ABS wheel-speed sensors 	<p>Yes Go to Step 4.</p> <p>No If there is a difference in speeds of the four wheels, go to the next step.</p>

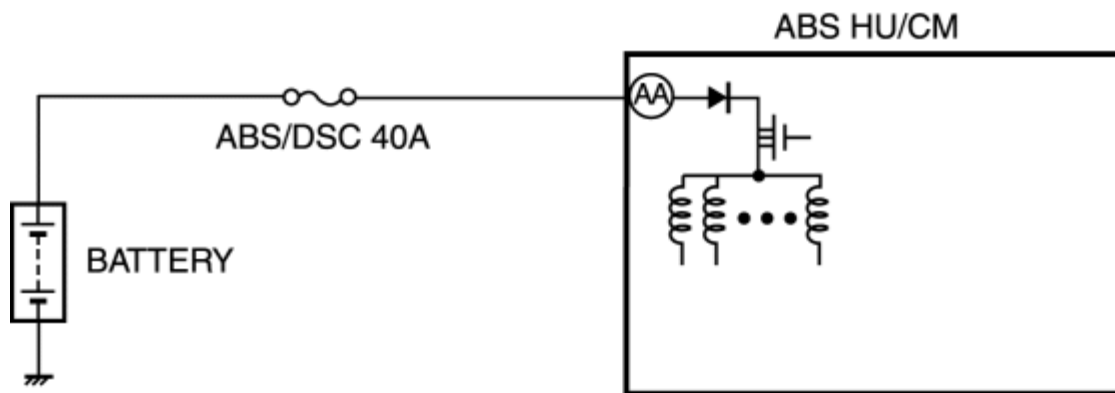
	<p>correspond approximately.</p> <ul style="list-style-type: none"> Do the vehicle speeds correspond? 		
2	<p>INSPECT ABS WHEEL-SPEED SENSOR WIRING HARNESS FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> Disconnect the ABS HU/CM connector and ABS wheel-speed sensor connectors. Inspect for continuity between the following ABS HU/CM connector terminals (vehicle harness-side) and body ground: <ul style="list-style-type: none"> RF ABS wheel-speed sensor(+): G RF ABS wheel-speed sensor(-): D LF ABS wheel-speed sensor(+): I LF ABS wheel-speed sensor(-): E RR ABS wheel-speed sensor(+): A RR ABS wheel-speed sensor(-): B LR ABS wheel-speed sensor(+): C LR ABS wheel-speed sensor(-): F Is there continuity? 	<p>Yes</p> <p>Repair or replace the wiring harness, then go to Step 4.</p>	
		<p>No</p> <p>Go to the next step.</p>	
3	<p>INSPECT FOR OPEN CIRCUIT IN ABS WHEEL-SPEED SENSOR WIRING HARNESS</p> <ul style="list-style-type: none"> Inspect for continuity between the ABS HU/CM connectors (vehicle harness-side) and the following vehicle harness-side connector terminals of the ABS wheel-speed sensors: <ul style="list-style-type: none"> RF ABS wheel-speed sensor(+): G—A RF ABS wheel-speed sensor(-): D—B LF ABS wheel-speed sensor(+): I—A LF ABS wheel-speed sensor(-): E—B RR ABS wheel-speed sensor(+): A—B RR ABS wheel-speed sensor(-): B—A LR ABS wheel-speed sensor(+): C—B LR ABS wheel-speed sensor(-): F—A Is there continuity? 	<p>Yes</p> <p>Replace the ABS wheel-speed sensor, then go to the next step.</p> <p>(See FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)</p> <p>(See REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)</p>	
		<p>No</p> <p>Repair or replace the wiring harness, then go to the next step.</p>	
4	<p>VERIFY TROUBLESHOOTING COMPLETED</p> <ul style="list-style-type: none"> Reconnect all disconnected connectors. Clear the DTC from the memory. <p>(See ON-BOARD DIAGNOSIS [ABS].)</p>	<p>Yes</p> <p>Repeat the inspection from Step 1.</p> <p>If the malfunction recurs, replace the ABS HU/CM, then go to the next step.</p>	

	<ul style="list-style-type: none">Is the same DTC present? <p>(See ON-BOARD DIAGNOSIS [ABS].)</p>		(See ABS HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">Are any other DTCs present? <p>(See ON-BOARD DIAGNOSIS [ABS].)</p>	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [ABS].)
		No	DTC troubleshooting completed.

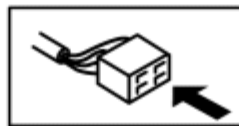
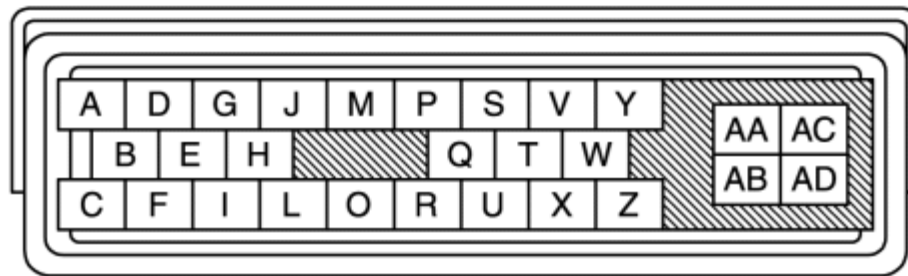
2011 - RX-8 - Brakes

DTC C1186, C1266 [ABS]

DTC	C1186, C1266	Valve relay
DETECTION CONDITION		<ul style="list-style-type: none">• C1186<ul style="list-style-type: none">▪ ABS HU/CM internal fail-safe relay remains OFF (stuck) when valve relay ON is commanded.• C1266<ul style="list-style-type: none">▪ ABS HU/CM internal fail-safe relay remains ON (stuck) when valve relay OFF is commanded.
POSSIBLE CAUSE		<ul style="list-style-type: none">• ABS/DSC 40 A fuse malfunction• Open circuit or short to ground in the wiring harness between the battery and the ABS HU/CM terminal AA• Open or short circuit in the ABS HU/CM internal valve relay, or stuck valve relay• Poor connection at connectors (female terminal)• ABS HU/CM malfunction



ABS HU/CM WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

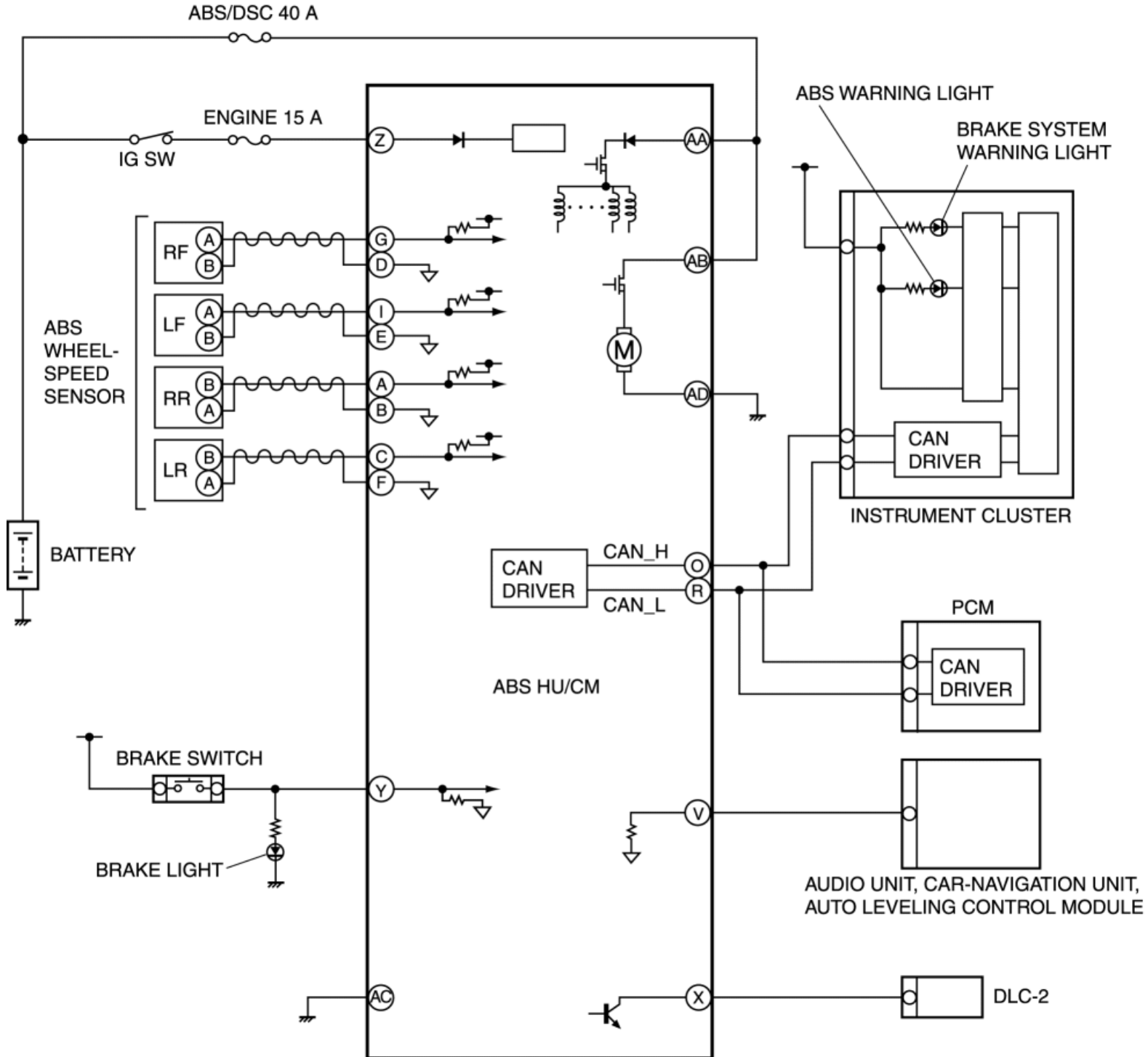
STEP	INSPECTION	ACTION
1	INSPECT ABS FUSE CONDITION <ul style="list-style-type: none"> Is ABS/DSC 40A fuse normal? 	Yes Go to the next step.
		No Replace fuse, then go to Step 4.
2	INSPECT VALVE RELAY POWER SUPPLY FOR OPEN CIRCUIT <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect ABS HU/CM connector. Turn the ignition switch to the ON position (engine off). Measure the voltage between ABS HU/CM 	Yes Go to the next step.
		No Repair or replace the wiring harness for open circuit between battery positive terminal and ABS HU/CM terminal AA, then go to Step 4.

	<p>terminal AA (harness side) and ground.</p> <ul style="list-style-type: none"> Is the voltage B+? 		
3	<p>VERIFY VALVE RELAY OPERATION</p> <ul style="list-style-type: none"> Turn the ignition switch off. Connect all disconnected connectors. Connect the M-MDS to the DLC-2. Turn the ignition switch to the ON position (engine off). Access ABS_POWER active command modes using M-MDS. Does the valve relay operate? 	<p>Yes Go to the next step.</p> <p>No Replace the ABS HU/CM, then go to next step. (See ABS HU/CM REMOVAL/INSTALLATION.)</p>	
4	<p>VERIFY TROUBLESHOOTING COMPLETED</p> <ul style="list-style-type: none"> Clear the DTC from the memory. (See ON-BOARD DIAGNOSIS [ABS].) Is the same DTC present? (See ON-BOARD DIAGNOSIS [ABS].) 	<p>Yes Replace the ABS HU/CM, then go to next step. (See ABS HU/CM REMOVAL/INSTALLATION.)</p> <p>No Go to the next step.</p>	
5	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> Are any other DTCs present? (See ON-BOARD DIAGNOSIS [ABS].) 	<p>Yes Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [ABS].)</p> <p>No DTC troubleshooting completed.</p>	

[Next >](#)

2011 - RX-8 - Brakes

ABS SYSTEM WIRING DIAGRAM [ABS]



[Next >](#)

2011 - RX-8 - Brakes

DTC B1342 [ABS]

DTC	B1342	ABS HU/CM
DETECTION CONDITION	<ul style="list-style-type: none">The ABS HU/CM on-board diagnostic function detects control module malfunction.	
POSSIBLE CAUSE	<ul style="list-style-type: none">ABS HU/CM internal malfunction	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY CURRENT STATUS OF MALFUNCTION <ul style="list-style-type: none">Clear the DTC from the memory. (See ON-BOARD DIAGNOSIS [ABS].)Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more.Is same DTC present? (See ON-BOARD DIAGNOSIS [ABS].)	Yes Replace the ABS HU/CM, then go to the next step. (See ABS HU/CM REMOVAL/INSTALLATION .)
		No Go to the next step.
2	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">Are any other DTCs present? (See ON-BOARD DIAGNOSIS [ABS].)	Yes Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [ABS] .)
		No DTC troubleshooting completed.

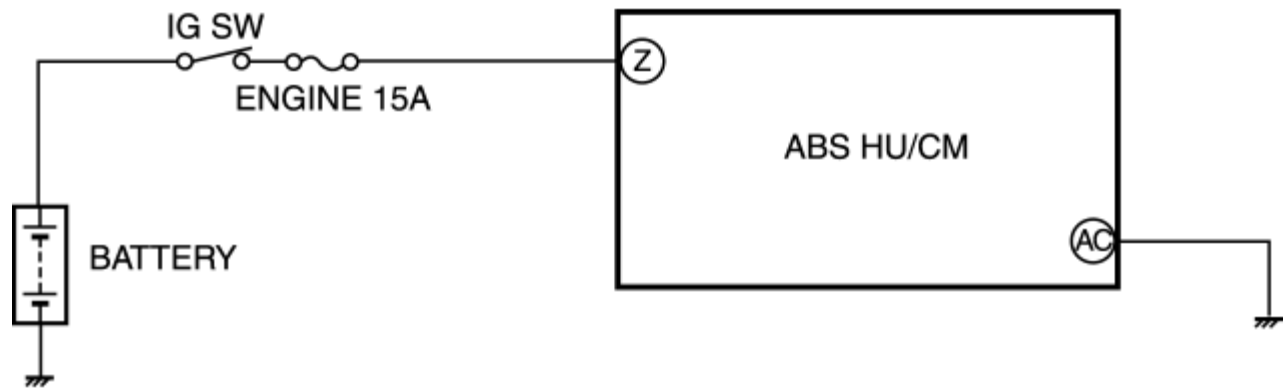
2011 - RX-8 - Brakes

DTC B1318 [ABS]

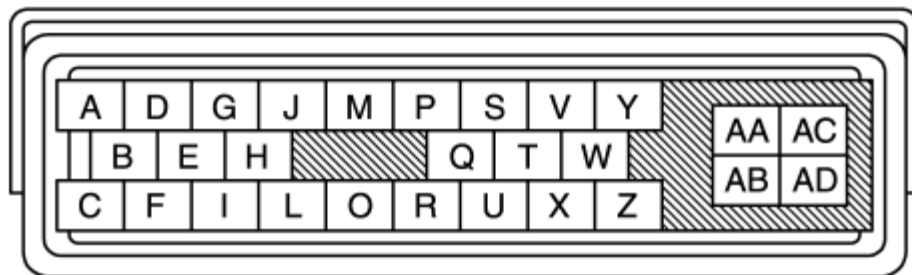
CAUTION:

- If the battery voltage drops during the inspection, B1318 will be output as a current malfunction and the proper diagnosis cannot be made. Be careful not to let the battery voltage drop.

DTC	B1318	Power supply
DETECTION CONDITION	<ul style="list-style-type: none">• The voltage at ABS HU/CM terminal Z is approx. 10 V or less.	
POSSIBLE CAUSE	<ul style="list-style-type: none">• Battery deterioration• Generator malfunction• ENGINE 15 A fuse malfunction• Open circuit or short to ground in the wiring harness between the ABS HU/CM terminal Z and the battery• Open circuit or faulty ground in the wiring harness between the ABS HU/CM terminal AC and the body ground• Poor connection at connectors (female terminal)• ABS HU/CM malfunction	



ABS HU/CM WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT BATTERY VOLTAGE <ul style="list-style-type: none"> Is the battery terminal voltage normal? 	Yes Make sure that battery terminal connection is normal. Go to the next step.
		No Charge or replace the battery, then go to Step 6. (See BATTERY RECHARGING [13B-MSP].) (See BATTERY REMOVAL/INSTALLATION [13B-MSP].)
2	INSPECT BATTERY GRAVITY <ul style="list-style-type: none"> Is battery specific gravity as specified? 	Yes Go to the next step.
		No Replace the battery, then go to Step 6. (See BATTERY REMOVAL/INSTALLATION [13B-MSP].)
	INSPECT CHARGING SYSTEM	

3	<ul style="list-style-type: none"> Are the generator and drive belt tensions normal? 	<p>Yes Go to the next step.</p> <p>No Adjust drive belt tension if necessary.</p> <p>(See DRIVE BELT DEFLECTION/TENSION INSPECTION [13B-MSP].)</p> <p>Replace generator and/or drive belt as necessary.</p> <p>(See DRIVE BELT REPLACEMENT [13B-MSP].)</p> <p>(See GENERATOR REMOVAL/INSTALLATION [13B-MSP].)</p>
4	<p>INSPECT ABS HU/CM POWER SUPPLY FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> Start the engine. Measure the voltage between ABS HU/CM terminal Z and ground. Is the voltage above 10 V? 	<p>Yes Go to the next step.</p> <p>No Repair or replace the wiring harness for open circuit between the ABS HU/CM and ground, then go to Step 6.</p>
5	<p>INSPECT ABS HU/CM GROUND FOR POOR GROUND OR OPEN CIRCUIT</p> <ul style="list-style-type: none"> Turn the ignition switch off. Measure the resistance between ground and ABS HU/CM terminal AC. Is the resistance within 0—1 ohm? 	<p>Yes Go to the next step.</p> <p>No If there is no continuity:</p> <ul style="list-style-type: none"> Repair or replace the wiring harness for open circuit between the ABS HU/CM and ground, then go to the next step. <p>If the resistance is not within 0—1 ohm:</p> <ul style="list-style-type: none"> Repair or replace harness for poor ground, then go to the next step.
6	<p>VERIFY TROUBLESHOOTING COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the memory. <p>(See ON-BOARD DIAGNOSIS [ABS].)</p> <ul style="list-style-type: none"> Is the same DTC present? 	<p>Yes Replace the ABS HU/CM, then go to the next step.</p> <p>(See ABS HU/CM REMOVAL/INSTALLATION.)</p> <p>No Go to the next step.</p>

	(See ON-BOARD DIAGNOSIS [ABS] .)		
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Are any other DTCs present? (See ON-BOARD DIAGNOSIS [ABS] .)	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [ABS] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Brakes

ON-BOARD DIAGNOSIS [ABS]

On-Board Diagnostic (OBD) Test Description

- The OBD test inspects the integrity and function of the ABS and outputs the results when requested by the specific tests.
- On-board diagnostic test also:
 - Provides a quick inspection of the ABS usually performed at the start of each diagnostic procedure.
 - Provides verification after repairs to ensure that no other faults occurred during service.
- The OBD test is divided into 3 tests:
 - Read/clear diagnostic results, PID monitor and record and active command modes.

Read/clear diagnostic results

- This function allows you to read or clear DTCs in the ABS HU/CM memory.

PID/Data monitor and record

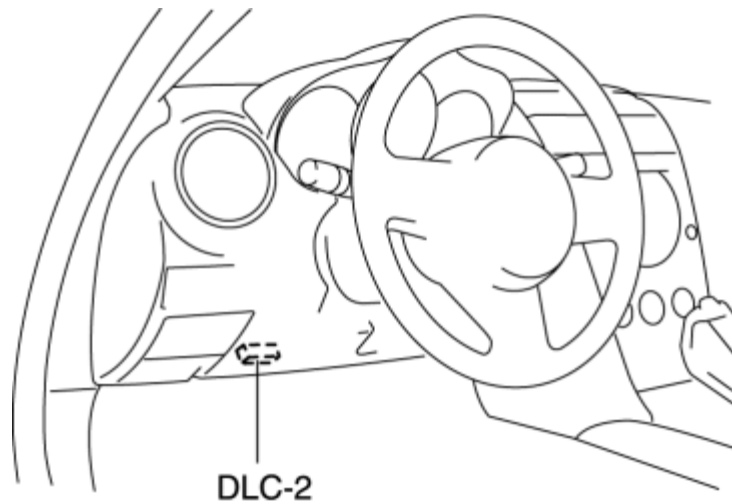
- This function allows you to access certain data values, input signals, calculated values, and system status information.

Active command modes

- This function allows you to control devices through the M-MDS.

Reading DTCs Procedure

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "ABS".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "ABS".
 3. Select "Self Test".

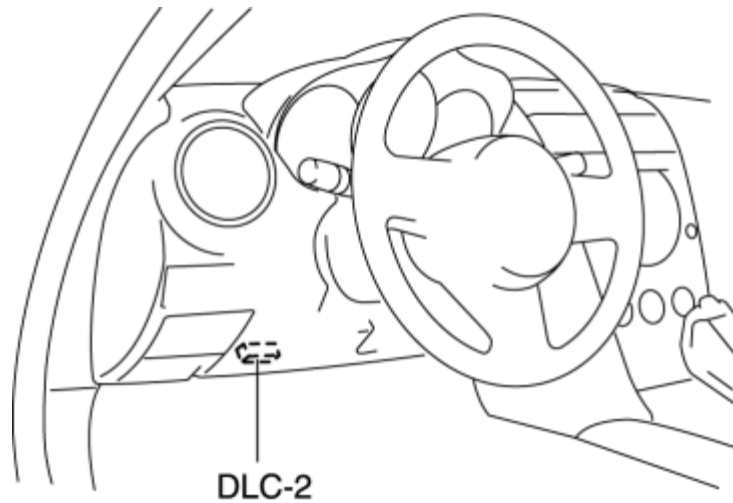
3. Verify the DTC according to the directions on the screen.

- If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.

4. After completion of repairs, clear all DTCs stored in the DSC. (See [Clearing DTCs Procedures.](#))

Clearing DTCs Procedures

1. Connect the M-MDS to the DLC-2.



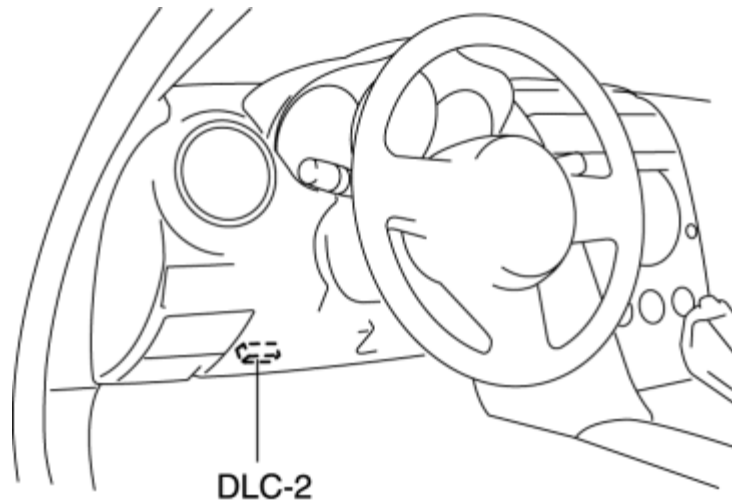
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "ABS".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "ABS".
 3. Select "Self Test".

3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Turn the ignition switch to the LOCK position.
6. Turn the ignition switch to the ON position and wait for **5 s or more**.
7. Perform DTC inspection. (See [Reading DTCs Procedure](#).)
8. Verify that no DTCs are displayed.

PID/Data Monitor and Record Procedure

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "ABS".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "ABS".
 3. Select "DataLogger".

3. Select the applicable PID from the PID table.

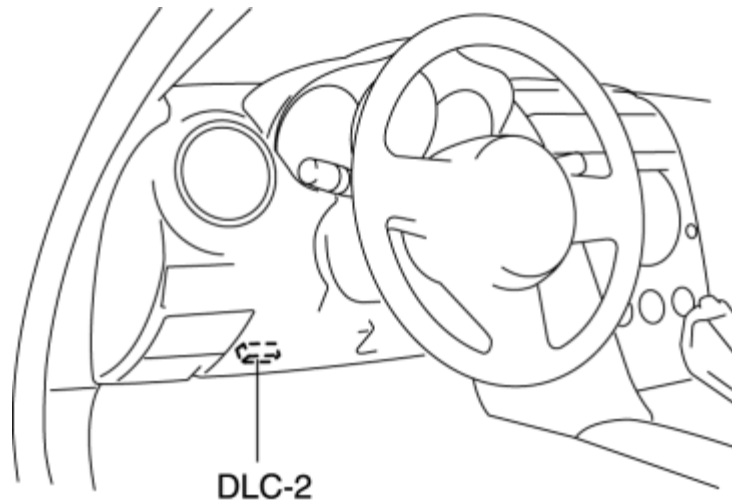
4. Verify the PID data according to the directions on the screen.

NOTE:

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

Active Command Modes Procedure

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "ABS".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "ABS".
 3. Select "DataLogger".

3. Select the active command modes from the PID table.

4. Perform the active command modes, inspect the operations for each parts.

- If the operation of output parts cannot be verified after the active command mode inspection is performed, this could indicate the possibility of an open or short circuit, sticking, or operation malfunction in the output parts.

DTC Table

DTC		
M-MDS	System malfunction location	Page

B1318	Power supply system	(See DTC B1318 [ABS].)
B1342	ABS HU/CM system	(See DTC B1342 [ABS].)
C1095	Pump motor, motor relay system	(See DTC C1095, C1096 [ABS].)
C1096	Pump motor, motor relay system	(See DTC C1095, C1096 [ABS].)
C1140	ABS HU/CM (pump) system	(See DTC C1140 [ABS].)
C1145	RF ABS wheel-speed sensor system	(See DTC C1145, C1155, C1165, C1175 [ABS].)
C1148	RF ABS wheel-speed sensor system	(See DTC C1148, C1158, C1168, C1178, C1234, C1233, C1235, C1236 [ABS].)
C1155	LF ABS wheel-speed sensor system	(See DTC C1145, C1155, C1165, C1175 [ABS].)
C1158	LF ABS wheel-speed sensor system	(See DTC C1148, C1158, C1168, C1178, C1234, C1233, C1235, C1236 [ABS].)
C1165	RR ABS wheel-speed sensor system	(See DTC C1145, C1155, C1165, C1175 [ABS].)
C1168	RR ABS wheel-speed sensor system	(See DTC C1148, C1158, C1168, C1178, C1234, C1233, C1235, C1236 [ABS].)
C1175	LR ABS wheel-speed sensor system	(See DTC C1145, C1155, C1165, C1175 [ABS].)
C1178	LR ABS wheel-speed sensor system	(See DTC C1148, C1158, C1168, C1178, C1234, C1233, C1235, C1236 [ABS].)
C1186	Valve relay system	(See DTC C1186, C1266 [ABS].)
C1194	LF outlet solenoid valve system	(See DTC C1210, C1214, C1194, C1198, C1246, C1254, C1242, C1250 [ABS].)
C1198	LF inlet solenoid valve system	(See DTC C1210, C1214, C1194, C1198, C1246, C1254, C1242, C1250 [ABS].)
C1210	RF outlet solenoid valve system	(See DTC C1210, C1214, C1194, C1198, C1246, C1254, C1242, C1250 [ABS].)

C1214	RF inlet solenoid valve system	(See DTC C1210, C1214, C1194, C1198, C1246, C1254, C1242, C1250 [ABS].)
C1233	LF ABS wheel-speed sensor/ABS sensor rotor system	(See DTC C1148, C1158, C1168, C1178, C1234, C1233, C1235, C1236 [ABS].)
C1234	RF ABS wheel-speed sensor/ABS sensor rotor system	(See DTC C1148, C1158, C1168, C1178, C1234, C1233, C1235, C1236 [ABS].)
C1235	RR ABS wheel-speed sensor/ABS sensor rotor system	(See DTC C1148, C1158, C1168, C1178, C1234, C1233, C1235, C1236 [ABS].)
C1236	LR ABS wheel-speed sensor/ABS sensor rotor system	(See DTC C1148, C1158, C1168, C1178, C1234, C1233, C1235, C1236 [ABS].)
C1242	LR outlet solenoid valve system	(See DTC C1210, C1214, C1194, C1198, C1246, C1254, C1242, C1250 [ABS].)
C1246	RR outlet solenoid valve system	(See DTC C1210, C1214, C1194, C1198, C1246, C1254, C1242, C1250 [ABS].)
C1250	LR inlet solenoid valve system	(See DTC C1210, C1214, C1194, C1198, C1246, C1254, C1242, C1250 [ABS].)
C1254	RR inlet solenoid valve system	(See DTC C1210, C1214, C1194, C1198, C1246, C1254, C1242, C1250 [ABS].)
C1266	Valve relay system	(See DTC C1186, C1266 [ABS].)
C1510	RF solenoid valve, pump motor, or RF ABS wheel-speed sensor	(See DTC C1510, C1511, C1512, C1513 [ABS].)
C1511	LF solenoid valve, pump motor, or LF ABS wheel-speed sensor	(See DTC C1510, C1511, C1512, C1513 [ABS].)
C1512	RR solenoid valve, pump motor, or RR ABS wheel-speed sensor	(See DTC C1510, C1511, C1512, C1513 [ABS].)
C1513	LR solenoid valve, pump motor, or LR ABS wheel-speed sensor	(See DTC C1510, C1511, C1512, C1513 [ABS].)
U1900	CAN communication system	(See FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)

U2516	CAN communication system	
-------	--------------------------	--

PID/DATA Monitor Table

PID name (definition)	Unit/Condition	Operation condition (reference)	Action	ABS HU/CM terminal
ABS_LAMP (ABS warning light driver output state)	Off/On	<ul style="list-style-type: none"> ABS warning light illuminated: On ABS warning light not illuminated: Off 	Inspect the ABS warning light.	—
ABS_VOLT (System battery voltage value)	V	<ul style="list-style-type: none"> Ignition switch at ON: Approx. 12 V Idling: Approx. 14 V 	Inspect the power supply circuit. (See ABS HU/CM INSPECTION.)	Z
ABSLF_I (Left front inlet solenoid valve output state)	Off/On	<ul style="list-style-type: none"> Solenoid valve activated: On Solenoid valve not activated: Off 	Inspect the ABS HU/CM. (See ABS SYSTEM INSPECTION.)	—
ABSLF_O (Left front outlet solenoid valve output state)	Off/On	<ul style="list-style-type: none"> Solenoid valve activated: On Solenoid valve not activated: Off 	Inspect the ABS HU/CM. (See ABS SYSTEM INSPECTION.)	—
ABSLR_I (Left rear inlet solenoid valve output state)	Off/On	<ul style="list-style-type: none"> Solenoid valve activated: On Solenoid valve not activated: Off 	Inspect the ABS HU/CM. (See ABS SYSTEM INSPECTION.)	—
		<ul style="list-style-type: none"> Solenoid valve 		

ABSLR_O (Left rear outlet solenoid valve output state)	Off/On	<ul style="list-style-type: none"> activated: On Solenoid valve not activated: Off 	Inspect the ABS HU/CM. (See ABS SYSTEM INSPECTION.)	—
ABSPMPRLY (Motor relay output state)	Off/On	<ul style="list-style-type: none"> Relay activated: On Relay not activated: Off 	Inspect the ABS HU/CM. (See ABS SYSTEM INSPECTION.)	—
ABSRF_I (Right front inlet solenoid valve output state)	Off/On	<ul style="list-style-type: none"> Solenoid valve activated: On Solenoid valve not activated: Off 	Inspect the ABS HU/CM. (See ABS SYSTEM INSPECTION.)	—
ABSRF_O (Right front outlet solenoid valve output state)	Off/On	<ul style="list-style-type: none"> Solenoid valve activated: On Solenoid valve not activated: Off 	Inspect the ABS HU/CM. (See ABS SYSTEM INSPECTION.)	—
ABSRR_I (Right rear inlet solenoid valve output state)	Off/On	<ul style="list-style-type: none"> Solenoid valve activated: On Solenoid valve not activated: Off 	Inspect the ABS HU/CM. (See ABS SYSTEM INSPECTION.)	—
ABSRR_O (Right rear outlet solenoid valve output state)	Off/On	<ul style="list-style-type: none"> Solenoid valve activated: On Solenoid valve not activated: Off 	Inspect the ABS HU/CM. (See ABS SYSTEM INSPECTION.)	—
ABSVLVRLY (Valve relay output state)	Off/On	<ul style="list-style-type: none"> Solenoid valve activated: On Valve relay not activated: Off 	Inspect the ABS HU/CM. (See ABS SYSTEM INSPECTION.)	—
BOO_ABS (Brake pedal switch input)	Off/On	<ul style="list-style-type: none"> Brake pedal depressed: On Brake pedal 	Inspect the brake switch.	Y

		released: Off		
BRAKE_LMP (BRAKE system warning light output state)	Off/On	<ul style="list-style-type: none"> Brake system warning light illuminated: On Brake system warning light not illuminated: Off 	Inspect the brake system warning light.	—
CCNTABS (Number of continuous codes)	—	<ul style="list-style-type: none"> DTCs detected: 1—255 No DTCs detected: 0 	Perform the DTC inspection.	—
LF_WSPD (Left front ABS wheel-speed sensor input)	KPH, MPH	<ul style="list-style-type: none"> Vehicle stopped: 0 KPH, 0 MPH Vehicle running: Vehicle speed 	Inspect the ABS wheel-speed sensor.	E, I
LR_WSPD (Left rear ABS wheel-speed sensor input)	KPH, MPH	<ul style="list-style-type: none"> Vehicle stopped: 0 KPH, 0 MPH Vehicle running: Vehicle speed 	Inspect the ABS wheel-speed sensor.	C, F
PMPSTAT (Pump motor output state)	Off/On	<ul style="list-style-type: none"> Pump motor activated: On Pump motor not activated: Off 	Inspect the ABS HU/CM. (See ABS SYSTEM INSPECTION.)	—
RF_WSPD (Right front ABS wheel-speed sensor input)	KPH, MPH	<ul style="list-style-type: none"> Vehicle stopped: 0 KPH, 0 MPH Vehicle running: Vehicle speed 	Inspect the ABS wheel-speed sensor.	D, G
RR_WSPD (Right rear ABS wheel-speed sensor input)	KPH, MPH	<ul style="list-style-type: none"> Vehicle stopped: 0 KPH, 0 MPH Vehicle running: Vehicle speed 	Inspect the ABS wheel-speed sensor.	A, B

Active Command Modes Table

Command name	Output part	Operation	Operating condition
ABS_POWER	Valve relay	Off/On	Ignition switch at ON
LF_INLET	LF inlet solenoid valve		
LF_OUTLET	LF outlet solenoid valve		
LR_INLET	LR inlet solenoid valve		
LR_OUTLET	LR outlet solenoid valve		
PMP_MOTOR	Pump motor		
RF_INLET	RF inlet solenoid valve		
RF_OUTLET	RF outlet solenoid valve		
RR_INLET	RR inlet solenoid valve		
RR_OUTLET	RR outlet solenoid valve		

2011 - RX-8 - Brakes

DTC C1140 [ABS]

DTC	C1140	ABS HU/CM (pump)
DETECTION CONDITION		<ul style="list-style-type: none"> Lock-up of right front and left rear wheels, or left front and right rear wheel is detected during ABS operation.
POSSIBLE CAUSE		<ul style="list-style-type: none"> ABS HU/CM internal pump motor frozen ABS HU/CM malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT IF MALFUNCTION OCCURRED DUE TO ABS HU/CM INTERNAL MALFUNCTION (PIPE CLOGGING) <ul style="list-style-type: none"> Perform the ABS system inspection. (See ABS SYSTEM INSPECTION.) Is the system normal? 	Yes	Go to the next step.
		No	Replace the ABS HU/CM, then go to Step 4. (See ABS HU/CM REMOVAL/INSTALLATION .)
2	INSPECT IF MALFUNCTION OCCURRED IN CONVENTIONAL BRAKE SYSTEM <ul style="list-style-type: none"> Inspect the brake fluid level. Start the engine. Drive the vehicle and inspect the brake operation. Is the result normal? 	Yes	Go to the next step.
		No	Inspect the conventional brake lines. Repair the malfunctioning part, then go to Step 4.
3	INSPECT IF MALFUNCTION IS DUE TO PARKING BRAKE DRAGGING <ul style="list-style-type: none"> Turn the ignition switch off. 	Yes	Go to the next step.
		No	Repair the parking brake,

	<ul style="list-style-type: none"> • Jack up the vehicle and support it with safety stand. • Release the parking brake. • Does the rear wheel drag when turned by hand? 		then go to the next step.
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the memory. (See ON-BOARD DIAGNOSIS [ABS].) • Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. • Is the same DTC present? (See ON-BOARD DIAGNOSIS [ABS].) 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the ABS HU/CM. (See ABS HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Are any other DTCs present? (See ON-BOARD DIAGNOSIS [ABS].) 	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [ABS].)
		No	DTC troubleshooting completed.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Brakes

DTC C1510, C1511, C1512, C1513 [ABS]

DTC	C1510	RF solenoid valve, pump motor or RF ABS wheel-speed sensor/ABS sensor rotor.
	C1511	LF solenoid valve, pump motor or LF ABS wheel-speed sensor/ABS sensor rotor.
	C1512	RR solenoid valve, pump motor or RR ABS wheel-speed sensor/ABS sensor rotor.
	C1513	LR solenoid valve, pump motor or LR ABS wheel-speed sensor/ABS sensor rotor.
DETECTION CONDITION		<ul style="list-style-type: none"> Wheel lock-up continues during ABS operation (pressure reduction inoperative) for 4 s or more. Pressure reduction on a single wheel continues for 20 s or more.
POSSIBLE CAUSE		<ul style="list-style-type: none"> Malfunction of ABS wheel-speed sensor and/or sensor rotor (abnormal output of vehicle wheel speed signal) Malfunction of ABS HU/CM internal solenoid valves Malfunction of ABS HU/CM internal pump motor ABS HU/CM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT ABS WHEEL-SPEED SENSOR FOR MALFUNCTION	
	<ul style="list-style-type: none"> Turn the ignition switch off. Connect the M-MDS to the DLC-2. Perform the DTC inspection. Are any of the ABS wheel-speed sensor related DTCs 	<div>Yes</div> Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [ABS] .) <div>No</div> Go to the next step.

	output at the same time?		
2	INSPECT FOR SOLENOID VALVE MALFUNCTION <ul style="list-style-type: none"> Perform the DTC inspection. Are any of the solenoid valve related DTCs output at the same time? 	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [ABS].)
		No	Go to the next step.
3	INSPECT PUMP MOTOR AND MOTOR RELAY FOR MALFUNCTION <ul style="list-style-type: none"> Perform the DTC inspection. Is either the pump motor or motor relay related DTC output at the same time? 	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [ABS].)
		No	Go to the next step.
4	INSPECT IF MALFUNCTION OCCURRED DUE TO ABS HU/CM INTERNAL MALFUNCTION (PIPE CLOGGING) <ul style="list-style-type: none"> Perform the ABS system inspection. (See ABS SYSTEM INSPECTION.) Is the system normal? 	Yes	Go to the next step.
		No	Replace the ABS HU/CM, then go to the next step. (See ABS HU/CM REMOVAL/INSTALLATION.)
5	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTCs from the memory. (See ON-BOARD DIAGNOSIS [ABS].) Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. Gradually slow down and stop vehicle. Are the same DTCs present? (See ON-BOARD DIAGNOSIS [ABS].) 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the ABS HU/CM. (See ABS HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Are any other DTCs present? (See ON-BOARD DIAGNOSIS [ABS].) 	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [ABS].)
		No	DTC troubleshooting completed.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

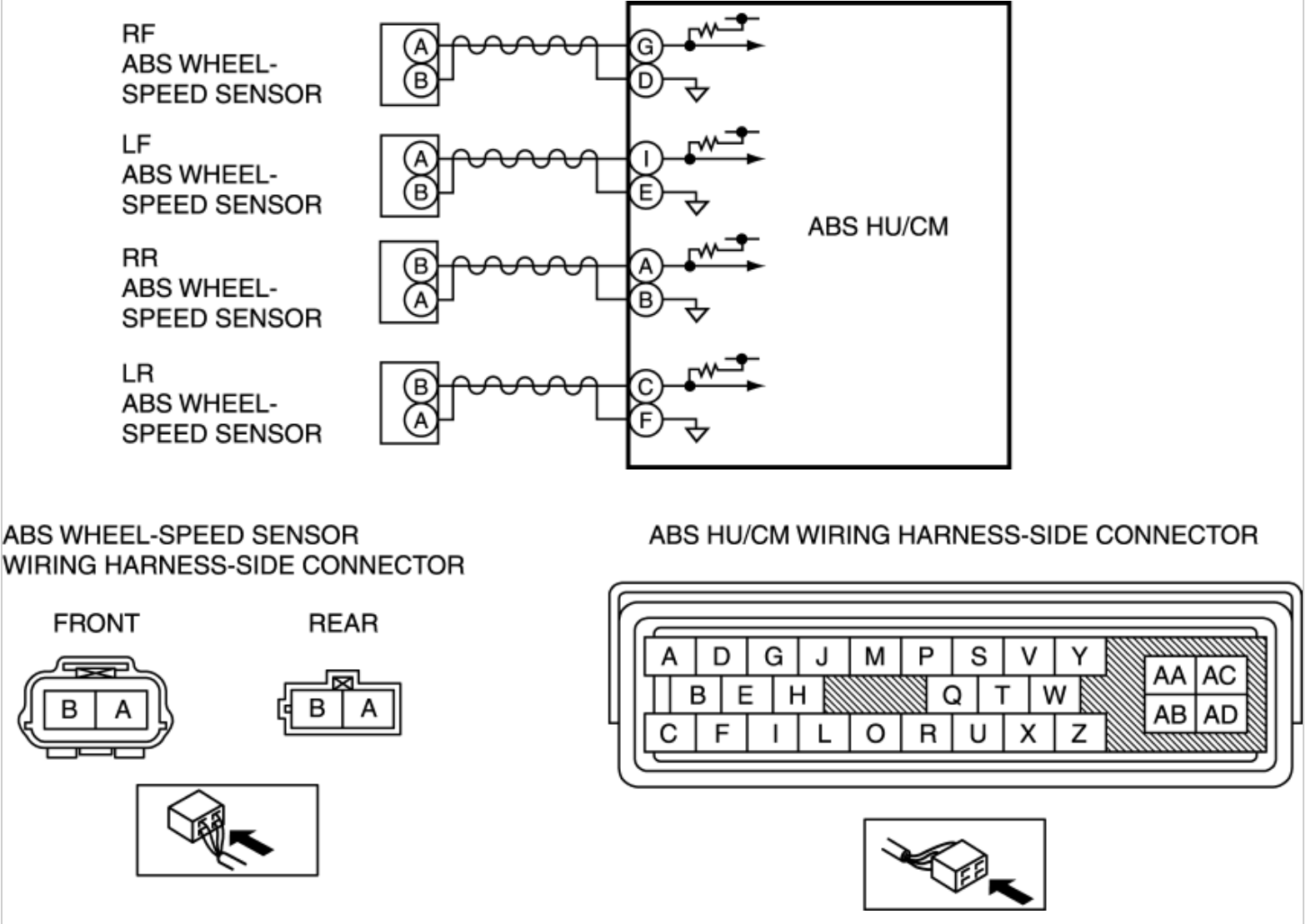
[Back to Top](#)

2011 - RX-8 - Brakes

DTC C1148, C1158, C1168, C1178, C1234, C1233, C1235, C1236 [ABS]

DTC	<p>C1148, C1234</p> <p>C1158, C1233</p> <p>C1168, C1235</p> <p>C1178, C1236</p>	<p>RF ABS wheel-speed sensor/ABS sensor rotor</p> <p>LF ABS wheel-speed sensor/ABS sensor rotor</p> <p>RR ABS wheel-speed sensor/ABS sensor rotor</p> <p>LR ABS wheel-speed sensor/ABS sensor rotor</p>
DETECTION CONDITION	<ul style="list-style-type: none"> • C1148, C1158, C1168, C1178 <ul style="list-style-type: none"> ▪ Sudden change in vehicle wheel speed signal or no signal for a certain period from any of the four vehicle wheels when driving at the specified vehicle speed or more ▪ Abnormal output is detected from any of the four vehicle wheel speed sensors when the vehicle goes from standstill to a speed of 10 km/h {6.2 mph}. ▪ More than the specified number of ABS control commands from the front wheel sensors when the vehicle starts from a standstill. • C1234, C1233, C1235, C1236 <ul style="list-style-type: none"> ▪ Abnormal sensor output due to chipping of the sensor rotor teeth or similar malfunction is detected. ▪ ABS control operates for 36 s or more. 	
POSSIBLE	<ul style="list-style-type: none"> • ABS wheel-speed sensor malfunction (low output, metal shavings on sensor) • Short to ground in wiring harness between the following ABS HU/CM terminals and ABS wheel-speed sensor terminals: <ul style="list-style-type: none"> ▪ ABS HU/CM terminal G—RF ABS wheel-speed sensor terminal A ▪ ABS HU/CM terminal D—RF ABS wheel-speed sensor terminal B ▪ ABS HU/CM terminal I—LF ABS wheel-speed sensor terminal A ▪ ABS HU/CM terminal E—LF ABS wheel-speed sensor terminal B ▪ ABS HU/CM terminal A—RR ABS wheel-speed sensor terminal B 	

CAUSE	<ul style="list-style-type: none"> ■ ABS HU/CM terminal B—RR ABS wheel-speed sensor terminal A ■ ABS HU/CM terminal C—LR ABS wheel-speed sensor terminal B ■ ABS HU/CM terminal F—LR ABS wheel-speed sensor terminal A <ul style="list-style-type: none"> • Excessive clearance between the ABS wheel-speed sensor and sensor rotor • ABS sensor rotor malfunction (chipping of sensor rotor teeth) • Poor installation of ABS wheel speed sensor and/or sensor rotor (If the sensor rotor is installed at an angle, it may cause output of abnormal wave pattern at high speeds.) • ABS HU/CM malfunction
-------	---



	<ul style="list-style-type: none">• Connect the M-MDS to the DLC-2.• Select the following PIDs using the M-MDS: LF_WSPD LR_WSPD RF_WSPD RR_WSPD• Start the engine and drive the vehicle.• Verify that the PIDs of the four ABS wheel speed sensors correspond approximately.• Do the vehicle speeds correspond?	No	<ul style="list-style-type: none">• If the vehicle speed is 0 km/h, go to the next step.• If there is any malfunction in the front ABS wheel-speed sensor, replace the front ABS wheel-speed sensor, then go to Step 5.• If there is any malfunction in the rear ABS wheel-speed sensor, go to Step 3.
2	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND ABS WHEEL-SPEED SENSOR FOR SHORT TO GROUND <ul style="list-style-type: none">• Turn the ignition switch off.• Disconnect the ABS HU/CM and ABS wheel-speed sensor connectors.• Inspect for continuity between the following ABS HU/CM connector and body ground.<ul style="list-style-type: none">▪ ABS HU/CM (RF ABS wheel-speed sensor): G— Body ground▪ ABS HU/CM (RF ABS wheel-speed sensor): D— Body ground▪ ABS HU/CM (LF ABS wheel-speed sensor): I— Body ground▪ ABS HU/CM (LF ABS wheel-speed sensor): E— Body ground▪ ABS HU/CM (RR ABS wheel-speed sensor): A— Body ground▪ ABS HU/CM (RR ABS wheel-speed sensor): B— Body ground▪ ABS HU/CM (LR ABS wheel-speed sensor): C— Body ground▪ ABS HU/CM (LR ABS	Yes	Repair or replace the wiring harness, then go to Step 5.
		No	<ul style="list-style-type: none">• If there is any malfunction in the front ABS wheel-speed sensor, replace the front ABS wheel-speed sensor, then go to Step 5.• If there is any malfunction in the rear ABS wheel-speed sensor, go to the next step.

	<p>wheel-speed sensor): F— Body ground</p> <ul style="list-style-type: none"> Is there continuity? 		
3	<p>INSPECT IF MALFUNCTION OCCURRED DUE TO IMPROPER SENSOR CLEARANCE</p> <ul style="list-style-type: none"> Inspect the clearance between the rear ABS wheel-speed sensor and the rear ABS sensor rotor. Is the clearance normal? <ul style="list-style-type: none"> Clearance 0.3—1.1 mm {0.012—0.043 in} 	<p>Yes Go to the next step.</p> <p>No Replace the rear ABS wheel-speed sensor, then go to Step 5.</p> <p>(See REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)</p>	
4	<p>VISUALLY INSPECT REAR ABS SENSOR ROTOR FOR ABNORMAL OR MISSING TEETH, DEFORMATION, OBSTRUCTION, AND ANGLED INSTALLATION</p> <ul style="list-style-type: none"> Is the result normal? 	<p>Yes Go to the next step.</p> <p>No Replace the rear drive shaft, then go to the next step.</p> <p>(See REAR DRIVE SHAFT REMOVAL/INSTALLATION.)</p>	
5	<p>VERIFY DTC TROUBLESHOOTING COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the memory. <p>(See ON-BOARD DIAGNOSIS [ABS].)</p> <ul style="list-style-type: none"> Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. Gradually slow down and stop the vehicle. Are the same DTCs present? 	<p>Yes Repeat the inspection from Step 1.</p> <p>If the malfunction recurs, replace the ABS HU/CM.</p> <p>(See ABS HU/CM REMOVAL/INSTALLATION.)</p> <p>No Go to the next step.</p>	
6	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> Are any other DTCs present? 	<p>Yes Go to the applicable DTC inspection.</p> <p>(See ON-BOARD DIAGNOSIS [ABS].)</p> <p>No DTC troubleshooting completed.</p>	

2011 - RX-8 - Brakes

DTC C1210, C1214, C1194, C1198, C1246, C1254, C1242, C1250 [ABS]

DTC	C 1210	RF outlet solenoid valve
	C 1214	RF inlet solenoid valve
	C 1194	LF outlet solenoid valve
	C 1198	LF inlet solenoid valve
	C 1246	RR outlet solenoid valve
	C 1254	RR inlet solenoid valve
	C 1242	LR outlet solenoid valve
	C 1250	LR inlet solenoid valve
DETECTION CONDITION		<ul style="list-style-type: none"> Solenoid valve operation does not correspond to solenoid ON/OFF commands from the ABS HU/CM.
POSSIBLE CAUSE		<ul style="list-style-type: none"> Open or short circuit in the ABS HU/CM internal solenoid valves Solenoid valve malfunction Poor connection at connectors (female terminal) ABS HU/CM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY SOLENOID VALVE OPERATION <ul style="list-style-type: none"> Turn the ignition switch off. Connect the M-MDS to the DLC-2. Turn the ignition switch to the ON position (engine off). 	Yes Go to the next step.
		No Replace the ABS HU/CM, then go to the next step. (See ABS HU/CM

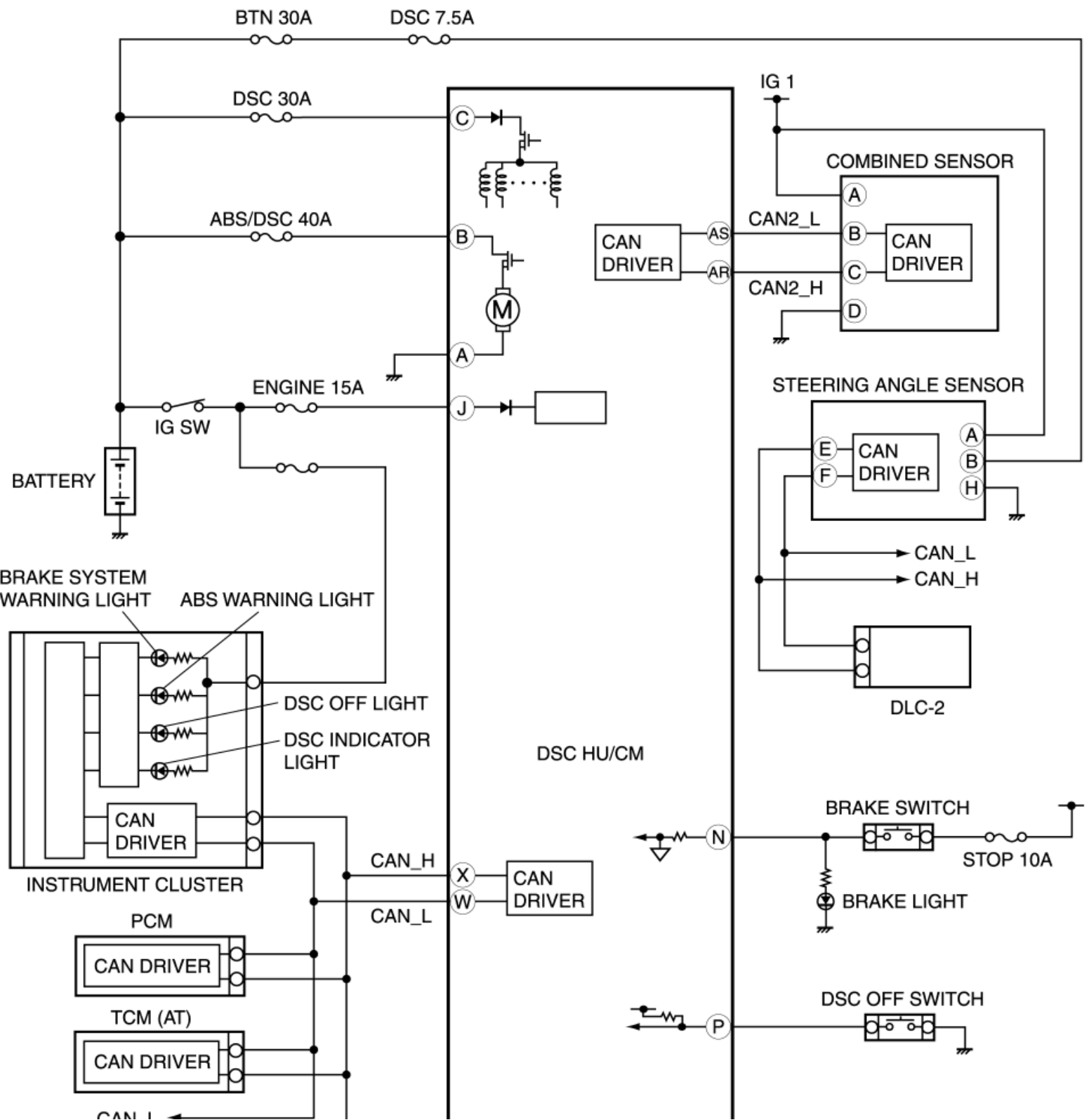
	<ul style="list-style-type: none"> • Access the active command mode for the solenoid valve using the M-MDS. • Does the solenoid valve operate? 		REMOVAL/INSTALLATION.)
2	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the memory. (See ON-BOARD DIAGNOSIS [ABS].) • Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. • (See ON-BOARD DIAGNOSIS [ABS].) 	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the ABS HU/CM. (See ABS HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Are any other DTCs present? (See ON-BOARD DIAGNOSIS [ABS].) 	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [ABS].)
		No	DTC troubleshooting completed.

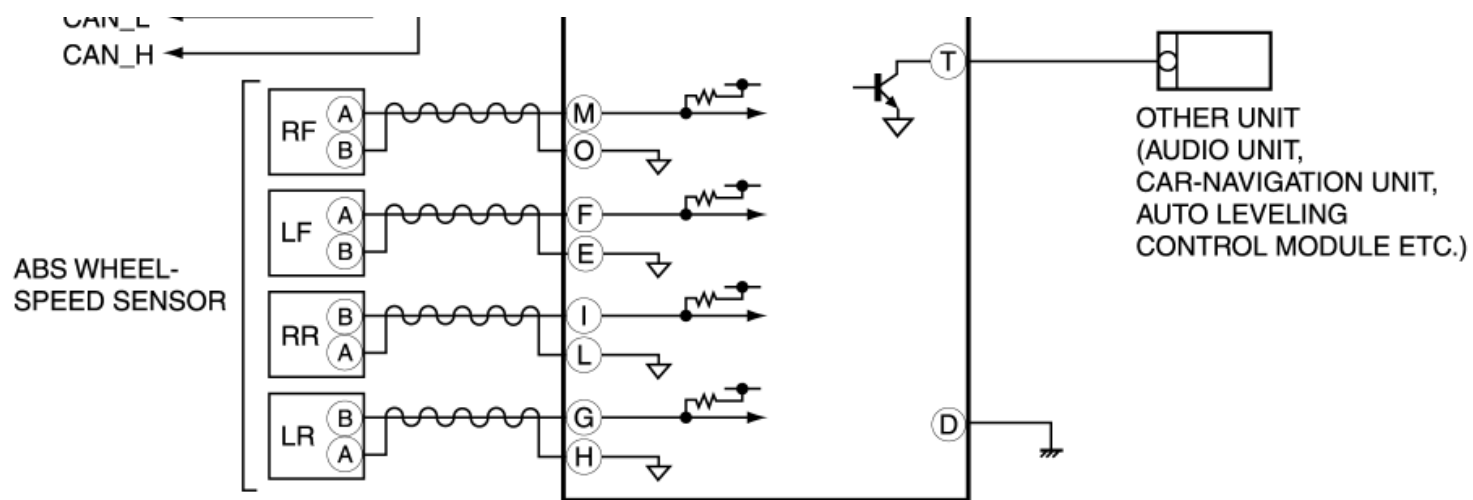
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Brakes

DYNAMIC STABILITY CONTROL SYSTEM WIRING DIAGRAM [DYNAMIC STABILITY CONTROL (DSC)]





[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Brakes

ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)]

On-Board Diagnostic (OBD) Test Description

- The OBD test inspects the integrity and function of the DSC and outputs the results when requested by the specific tests.
- On-board diagnostic test also:
 - Provides a quick inspection of the DSC usually performed at the start of each diagnostic procedure.
 - Provides verification after repairs to ensure that no other faults occurred during service.
- The OBD test is divided into 3 tests:
 - Read/clear diagnostic results, PID monitor and record and active command modes.

Read/clear diagnostic results

- This function allows you to read or clear DTCs in the DSC HU/CM memory.

PID/Data monitor and record

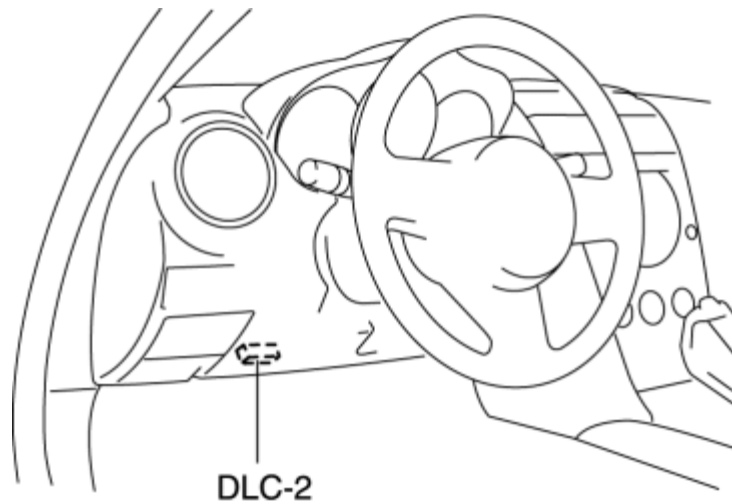
- This function allows you to access certain data values, input signals, calculated values, and system status information.

Active command modes

- This function allows you to control devices through the M-MDS.

Reading DTCs Procedure

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "ABS".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "ABS".
 3. Select "Self Test".

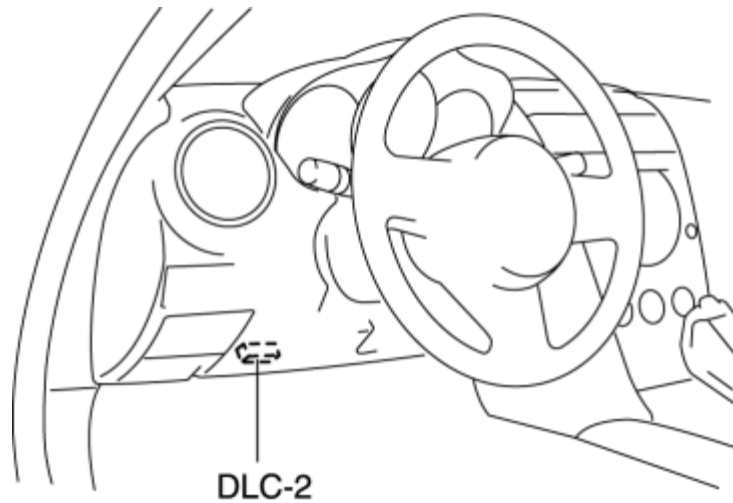
3. Verify the DTC according to the directions on the screen.

- If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.

4. After completion of repairs, clear all DTCs stored in the DSC. (See [Clearing DTCs Procedures.](#))

Clearing DTCs Procedures

1. Connect the M-MDS to the DLC-2.



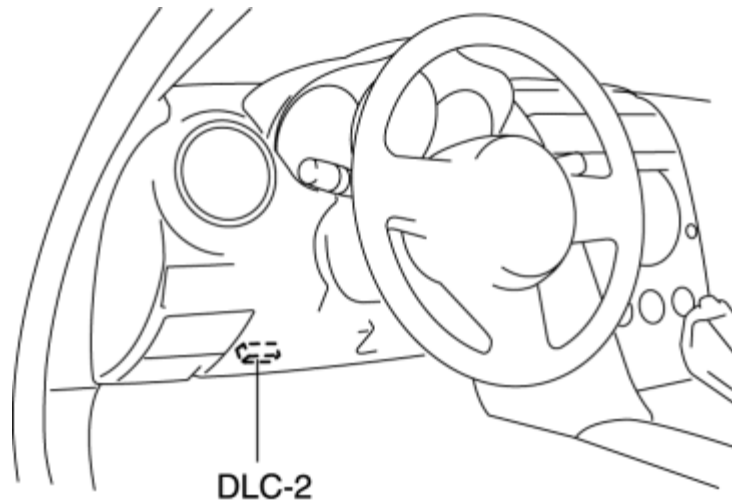
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "ABS".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "ABS".
 3. Select "Self Test".

3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Turn the ignition switch to the LOCK position.
6. Turn the ignition switch to the ON position and wait for **5 s or more**.
7. Perform DTC inspection. (See [Reading DTCs Procedure](#).)
8. Verify that no DTCs are displayed.

PID/Data Monitor and Record Procedure

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "ABS".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "ABS".
 3. Select "DataLogger".

3. Select the applicable PID from the PID table.

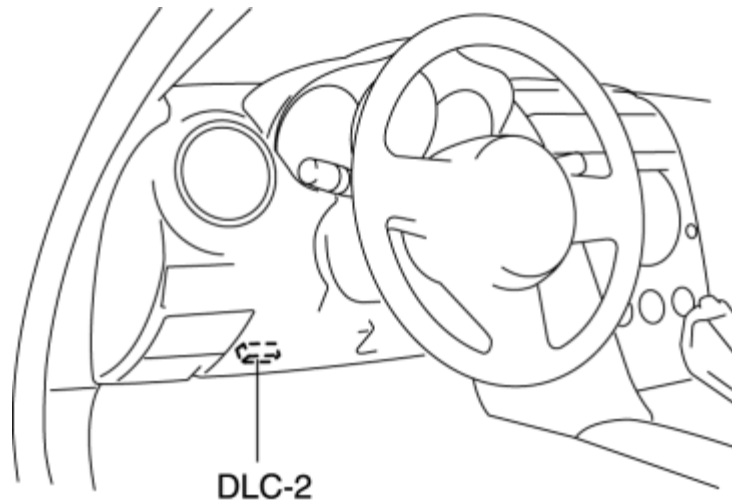
4. Verify the PID data according to the directions on the screen.

NOTE:

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

Active Command Modes Procedure

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "ABS".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "ABS".
 3. Select "DataLogger".

3. Select the active command modes from the PID table.

4. Perform the active command modes, inspect the operations for each parts.

- If the operation of output parts cannot be verified after the active command mode inspection is performed, this could indicate the possibility of an open or short circuit, sticking, or operation malfunction in the output parts.

DTC Table

DTC	System malfunction location	Page
M-MDS		

B1317	Power supply system	(See DTC B1317, B1318 [DYNAMIC STABILITY CONTROL (DSC)].)
B1318	Power supply system	(See DTC B1317, B1318 [DYNAMIC STABILITY CONTROL (DSC)].)
B1342	DSC HU/CM system	(See DTC B1342 [DYNAMIC STABILITY CONTROL (DSC)].)
B1484	Brake switch system	(See DTC B1484, C1954 [DYNAMIC STABILITY CONTROL (DSC)].)
B2477	DSC HU/CM configuration	(See DTC B2477 [DYNAMIC STABILITY CONTROL (DSC)].)
B2741	Combined sensor system	(See DTC B2741, C2768, U2516 [DYNAMIC STABILITY CONTROL (DSC)].)
C1093	DSC OFF switch system	(See DTC C1093 [DYNAMIC STABILITY CONTROL (DSC)].)
C1095	Pump motor, motor relay system	(See DTC C1095, C1096 [DYNAMIC STABILITY CONTROL (DSC)].)
C1096	Pump motor, motor relay system	(See DTC C1095, C1096 [DYNAMIC STABILITY CONTROL (DSC)].)
C1141	LF ABS sensor rotor system	(See DTC C1141, C1142, C1143, C1144 [DYNAMIC STABILITY CONTROL (DSC)].)
C1142	RF ABS sensor rotor system	(See DTC C1141, C1142, C1143, C1144 [DYNAMIC STABILITY CONTROL (DSC)].)
C1143	LR ABS sensor rotor system	(See DTC C1141, C1142, C1143, C1144 [DYNAMIC STABILITY CONTROL (DSC)].)
C1144	RR ABS sensor rotor system	(See DTC C1141, C1142, C1143, C1144 [DYNAMIC STABILITY CONTROL (DSC)].)
C1145	RF ABS wheel-speed sensor system	(See DTC C1145, C1155, C1165, C1175 [DYNAMIC STABILITY CONTROL (DSC)].)
C1148	RF ABS wheel-speed sensor/ABS sensor rotor system	(See DTC C1148, C1158, C1168, C1178 [DYNAMIC STABILITY CONTROL (DSC)].)
C1155	LF ABS wheel-speed sensor system	(See DTC C1145, C1155, C1165, C1175 [DYNAMIC STABILITY CONTROL (DSC)].)

C1158	LF ABS wheel-speed sensor/ABS sensor rotor system	(See DTC C1148, C1158, C1168, C1178 [DYNAMIC STABILITY CONTROL (DSC)].)
C1165	RR ABS wheel-speed sensor system	(See DTC C1145, C1155, C1165, C1175 [DYNAMIC STABILITY CONTROL (DSC)].)
C1168	RR ABS wheel-speed sensor/ABS sensor rotor system	(See DTC C1148, C1158, C1168, C1178 [DYNAMIC STABILITY CONTROL (DSC)].)
C1175	LR ABS wheel-speed sensor system	(See DTC C1145, C1155, C1165, C1175 [DYNAMIC STABILITY CONTROL (DSC)].)
C1178	LR ABS wheel-speed sensor/ABS sensor rotor system	(See DTC C1148, C1158, C1168, C1178 [DYNAMIC STABILITY CONTROL (DSC)].)
C1186	Valve relay system	(See DTC C1186, C1266 [DYNAMIC STABILITY CONTROL (DSC)].)
C1194	LF outlet solenoid valve system	(See DTC C1194, C1198, C1210, C1214, C1242, C1246, C1250, C1254, C1400, C1410, C1957, C1958 [DYNAMIC STABILITY CONTROL (DSC)].)
C1198	LF inlet solenoid valve system	(See DTC C1194, C1198, C1210, C1214, C1242, C1246, C1250, C1254, C1400, C1410, C1957, C1958 [DYNAMIC STABILITY CONTROL (DSC)].)
C1210	RF outlet solenoid valve system	(See DTC C1194, C1198, C1210, C1214, C1242, C1246, C1250, C1254, C1400, C1410, C1957, C1958 [DYNAMIC STABILITY CONTROL (DSC)].)
C1214	RF inlet solenoid valve system	(See DTC C1194, C1198, C1210, C1214, C1242, C1246, C1250, C1254, C1400, C1410, C1957, C1958 [DYNAMIC STABILITY CONTROL (DSC)].)
C1222	ABS wheel-speed sensor (slip monitor) system	(See DTC C1222 [DYNAMIC STABILITY CONTROL (DSC)].)
C1233	LF ABS wheel-speed sensor system	(See DTC C1233, C1234, C1235, C1236 [DYNAMIC STABILITY CONTROL (DSC)].)
C1234	RF ABS wheel-speed sensor system	(See DTC C1233, C1234, C1235, C1236 [DYNAMIC STABILITY CONTROL (DSC)].)
C1235	RR ABS wheel-speed sensor system	(See DTC C1233, C1234, C1235, C1236 [DYNAMIC STABILITY CONTROL (DSC)].)

C1236	LR ABS wheel-speed sensor system	(See DTC C1233, C1234, C1235, C1236 [DYNAMIC STABILITY CONTROL (DSC)].)
C1242	LR outlet solenoid valve system	(See DTC C1194, C1198, C1210, C1214, C1242, C1246, C1250, C1254, C1400, C1410, C1957, C1958 [DYNAMIC STABILITY CONTROL (DSC)].)
C1246	RR outlet solenoid valve system	(See DTC C1194, C1198, C1210, C1214, C1242, C1246, C1250, C1254, C1400, C1410, C1957, C1958 [DYNAMIC STABILITY CONTROL (DSC)].)
C1250	LR inlet solenoid valve system	(See DTC C1194, C1198, C1210, C1214, C1242, C1246, C1250, C1254, C1400, C1410, C1957, C1958 [DYNAMIC STABILITY CONTROL (DSC)].)
C1254	RR inlet solenoid valve system	(See DTC C1194, C1198, C1210, C1214, C1242, C1246, C1250, C1254, C1400, C1410, C1957, C1958 [DYNAMIC STABILITY CONTROL (DSC)].)
C1266	Valve relay system	(See DTC C1186, C1266 [DYNAMIC STABILITY CONTROL (DSC)].)
C1279	Combined sensor system	(See DTC C1279, C1280, C1281, C1952, C1959 [DYNAMIC STABILITY CONTROL (DSC)].)
C1280	Combined sensor system	(See DTC C1279, C1280, C1281, C1952, C1959 [DYNAMIC STABILITY CONTROL (DSC)].)
C1281	Combined sensor system	(See DTC C1279, C1280, C1281, C1952, C1959 [DYNAMIC STABILITY CONTROL (DSC)].)
C1290	Brake fluid pressure sensor system	(See DTC C1290, C1953 [DYNAMIC STABILITY CONTROL (DSC)].)
C1295	Steering angle sensor system	(See DTC C1295, C1307, C1937, C1938, C1956 [DYNAMIC STABILITY CONTROL (DSC)].)
C1306	Steering angle sensor (abnormal initialization) system	(See DTC C1306 [DYNAMIC STABILITY CONTROL (DSC)].)
C1307	Steering angle sensor system	(See DTC C1295, C1307, C1937, C1938, C1956 [DYNAMIC STABILITY CONTROL (DSC)].)
C1400	RH traction control solenoid valve system	(See DTC C1194, C1198, C1210, C1214, C1242, C1246, C1250, C1254, C1400, C1410, C1957, C1958 [DYNAMIC STABILITY CONTROL (DSC)].)
	LH traction control solenoid	(See DTC C1194, C1198, C1210, C1214, C1242, C1246, C1250, C1254,

C1410	valve system	C1400, C1410, C1957, C1958 [DYNAMIC STABILITY CONTROL (DSC)].)
C1937	Steering angle sensor system	(See DTC C1295, C1307, C1937, C1938, C1956 [DYNAMIC STABILITY CONTROL (DSC)].)
C1938	Steering angle sensor system	(See DTC C1295, C1307, C1937, C1938, C1956 [DYNAMIC STABILITY CONTROL (DSC)].)
C1952	Combined sensor system	(See DTC C1279, C1280, C1281, C1952, C1959 [DYNAMIC STABILITY CONTROL (DSC)].)
C1953	Brake fluid pressure sensor system	(See DTC C1290, C1953 [DYNAMIC STABILITY CONTROL (DSC)].)
C1954	Brake switch system	(See DTC B1484, C1954 [DYNAMIC STABILITY CONTROL (DSC)].)
C1956	Steering angle sensor system	(See DTC C1295, C1307, C1937, C1938, C1956 [DYNAMIC STABILITY CONTROL (DSC)].)
C1957	RH stability control solenoid valve system	(See DTC C1194, C1198, C1210, C1214, C1242, C1246, C1250, C1254, C1400, C1410, C1957, C1958 [DYNAMIC STABILITY CONTROL (DSC)].)
C1958	LH stability control solenoid valve system	(See DTC C1194, C1198, C1210, C1214, C1242, C1246, C1250, C1254, C1400, C1410, C1957, C1958 [DYNAMIC STABILITY CONTROL (DSC)].)
C1959	Combined sensor system	(See DTC C1279, C1280, C1281, C1952, C1959 [DYNAMIC STABILITY CONTROL (DSC)].)
C1994	DSC control system	(See DTC C1994 [DYNAMIC STABILITY CONTROL (DSC)].)
C2768	Combined sensor system	(See DTC B2741, C2768, U2516 [DYNAMIC STABILITY CONTROL (DSC)].)
U0073	CAN system communication error	(See DTC U0073, U0100, U0101, U0155, U1900, U2023 [DYNAMIC STABILITY CONTROL (DSC)].)
U0074	Combined sensor system (CAN2 line malfunction)	(See DTC U0074, U0123, U1901 [DYNAMIC STABILITY CONTROL (DSC)].)
U0100	Communication error to PCM	(See DTC U0073, U0100, U0101, U0155, U1900, U2023 [DYNAMIC STABILITY CONTROL (DSC)].)

U0101	Communication error to TCM	(See DTC U0073, U0100, U0101, U0155, U1900, U2023 [DYNAMIC STABILITY CONTROL (DSC)] .)
U0123	Combined sensor system (CAN2 line malfunction)	(See DTC U0074, U0123, U1901 [DYNAMIC STABILITY CONTROL (DSC)] .)
U0155	Communication error to instrument cluster	(See DTC U0073, U0100, U0101, U0155, U1900, U2023 [DYNAMIC STABILITY CONTROL (DSC)] .)
U1900	Communication error to other module	(See DTC U0073, U0100, U0101, U0155, U1900, U2023 [DYNAMIC STABILITY CONTROL (DSC)] .)
U1901	Combined sensor system (CAN2 line malfunction)	(See DTC U0074, U0123, U1901 [DYNAMIC STABILITY CONTROL (DSC)] .)
U2023	Abnormal message from PCM	(See DTC U0073, U0100, U0101, U0155, U1900, U2023 [DYNAMIC STABILITY CONTROL (DSC)] .)
U2516	Combined sensor system	(See DTC B2741, C2768, U2516 [DYNAMIC STABILITY CONTROL (DSC)] .)

PID/DATA Monitor Table

PID name (definition)	Unit/Condition	Operation condition (reference)	Action	DSC HU/CM terminal
ABS_VOLT (System battery voltage value)	V	<ul style="list-style-type: none"> Ignition switch at ON: Approx. 12 V Idling: Approx. 14 V 	Inspect power supply circuit. (See DSC HU/CM INSPECTION .)	J
ABSLF_I (Left front inlet solenoid valve output state)	Off/On	<ul style="list-style-type: none"> Solenoid valve activated: On Solenoid valve not activated: Off 	Inspect the DSC HU/CM. (See DSC SYSTEM INSPECTION .)	—
ABSLF_O (Left front outlet	Off/On	<ul style="list-style-type: none"> Solenoid valve activated: On 	Inspect the DSC HU/CM.	—

solenoid valve output state)		<ul style="list-style-type: none"> • Solenoid valve not activated: Off 	(See DSC SYSTEM INSPECTION.)	
ABSLR_I (Left rear inlet solenoid valve output state)	Off/On	<ul style="list-style-type: none"> • Solenoid valve activated: On • Solenoid valve not activated: Off 	Inspect the DSC HU/CM. (See DSC SYSTEM INSPECTION.)	—
ABSLR_O (Left rear outlet solenoid valve output state)	Off/On	<ul style="list-style-type: none"> • Solenoid valve activated: On • Solenoid valve not activated: Off 	Inspect the DSC HU/CM. (See DSC SYSTEM INSPECTION.)	—
ABSPMPRLY (Motor relay output state)	Off/On	<ul style="list-style-type: none"> • Relay activated: On • Relay not activated: Off 	Inspect the DSC HU/CM. (See DSC SYSTEM INSPECTION.)	—
ABSRF_I (Right front inlet solenoid valve output state)	Off/On	<ul style="list-style-type: none"> • Solenoid valve activated: On • Solenoid valve not activated: Off 	Inspect the DSC HU/CM. (See DSC SYSTEM INSPECTION.)	—
ABSRF_O (Right front outlet solenoid valve output state)	Off/On	<ul style="list-style-type: none"> • Solenoid valve activated: On • Solenoid valve not activated: Off 	Inspect the DSC HU/CM. (See DSC SYSTEM INSPECTION.)	—
ABSRR_I (Right rear inlet solenoid valve output state)	Off/On	<ul style="list-style-type: none"> • Solenoid valve activated: On • Solenoid valve not activated: Off 	Inspect the DSC HU/CM. (See DSC SYSTEM INSPECTION.)	—
ABSRR_O (Right rear outlet solenoid valve output state)	Off/On	<ul style="list-style-type: none"> • Solenoid valve activated: On • Solenoid valve not activated: Off 	Inspect the DSC HU/CM. (See DSC SYSTEM INSPECTION.)	—
ABSVLVRLY (Fail-safe relay output state)	Off/On	<ul style="list-style-type: none"> • Fail-safe relay is activated: On • Fail-safe relay is 	Inspect the DSC HU/CM. (See DSC SYSTEM 	—

		deactivated: Off	INSPECTION.)	
BOO_ABS (Brake pedal switch input)	Off/On	<ul style="list-style-type: none"> Brake pedal depressed: On Brake pedal released: Off 	Inspect the brake switch.	N
CCNTABS (Number of continuous codes)	—	<ul style="list-style-type: none"> DTCs detected: 1—255 No DTCs detected: 0 	Perform the DTC inspection.	—
LAT_ACCL	G	<ul style="list-style-type: none"> Vehicle stopped or driving at constant speed: 0 G Cornering to right: Changes 0 G—positive Cornering to left: Changes 0 G—negative 	Inspect the combined sensor.	—
LF_WSPD (Left front ABS wheel-speed sensor input)	KPH, MPH	<ul style="list-style-type: none"> Vehicle stopped: 0 KPH, 0 MPH Vehicle running: vehicle speed 	Inspect the ABS wheel-speed sensor.	F, E
LR_WSPD (Left rear ABS wheel-speed sensor input)	KPH, MPH	<ul style="list-style-type: none"> Vehicle stopped: 0 KPH, 0 MPH Vehicle running: Vehicle speed 	Inspect the ABS wheel-speed sensor.	G, H
MCYLI P	Pa, psi	<ul style="list-style-type: none"> Brake pedal depressed: Changes according to the brake fluid pressure 	Inspect the brake fluid pressure sensor.	—
PMP_MOTOR (Pump motor output state)	Off/On	<ul style="list-style-type: none"> Pump motor activated: On Pump motor not activated: Off 	Inspect the DSC HU/CM. (See DSC HU/CM INSPECTION.)	—
RF_WSPD		<ul style="list-style-type: none"> Vehicle stopped: 0 		

(Right front ABS wheel-speed sensor input)	KPH, MPH	KPH, 0 MPH <ul style="list-style-type: none"> Vehicle running: vehicle speed 	Inspect the ABS wheel-speed sensor.	M, O
RPM (Engine speed signal input)	RPM	<ul style="list-style-type: none"> Engine stopped: 0 RPM Engine speed at 3,000 rpm: 3,000 RPM 	Inspect the PCM. Inspect the instrument cluster.	—
RR_WSPD (Right rear ABS wheel-speed sensor input)	KPH, MPH	<ul style="list-style-type: none"> Vehicle stopped: 0 KPH, 0 MPH Vehicle running: Vehicle speed 	Inspect the ABS wheel-speed sensor.	I, L
SWA_POS	°	<ul style="list-style-type: none"> Steering wheel in neutral position (not turned): 0° Steering wheel turned to left: Changes 0°—negative Steering wheel turned to right: Changes 0°—positive 	Inspect the steering angle sensor.	—
TPI	%	<ul style="list-style-type: none"> Closed throttle position: 0% Wide open throttle: Changes according to throttle valve opening angle 	Inspect the throttle position sensor.	—
V_STB_L (LH stability control solenoid valve output state)	Off/On	<ul style="list-style-type: none"> Solenoid valve activated: On Solenoid valve not activated: Off 	Inspect the DSC HU/CM. (See DSC SYSTEM INSPECTION.)	—
V_STB_R (RH stability control solenoid valve output state)	Off/On	<ul style="list-style-type: none"> Solenoid valve activated: On Solenoid valve not activated: Off 	Inspect the DSC HU/CM. (See DSC SYSTEM INSPECTION.)	—
V_TRC_L		<ul style="list-style-type: none"> Solenoid valve activated: On 	Inspect the DSC HU/CM.	

(LH traction control solenoid valve output state)	Off/On	<ul style="list-style-type: none"> Solenoid valve not activated: Off 	(See DSC SYSTEM INSPECTION.)	—
V_TRC_R (RH traction control solenoid valve output state)	Off/On	<ul style="list-style-type: none"> Solenoid valve activated: On Solenoid valve not activated: Off 	Inspect the DSC HU/CM. (See DSC SYSTEM INSPECTION.)	—
YAW_RATE	°/s	<ul style="list-style-type: none"> Vehicle stopped or driving straight: 0 °/s Cornering to left: Changes 0 °/s—negative Cornering to right: Changes 0 °/s—positive 	Inspect the combined sensor.	—

Active Command Modes Table

Command name	Output part	Operation	Operating condition
LATACCEL	Combined sensor (lateral acceleration) initialization	FALSE/TRUE	
LF_INLET	LF inlet solenoid valve	Off/On	
LF_OUTLET	LF outlet solenoid valve		
LR_INLET	LR inlet solenoid valve		
LR_OUTLET	LR outlet solenoid valve		
PMP_MOTOR	Pump motor		
RF_INLET	RF inlet solenoid valve		
RF_OUTLET	RF outlet solenoid valve		

RR_INLET	RR inlet solenoid valve		Ignition switch at ON
RR_OUTLET	RR outlet solenoid valve		
SAS_CAL	Steering angle sensor initialization	FALSE/TRUE	
STAB_IND	DSC indicator light	Off/On	
TRAC OFF	DSC OFF light		
V_STB_L	LH stability control solenoid valve		
V_STB_R	RH stability control solenoid valve		
V_TRC_L	LH traction control solenoid valve		
V_TRC_R	RH traction control solenoid valve		
YAWRATE	Combined sensor (yaw rate) initialization		

[< Previous](#) [Next >](#)

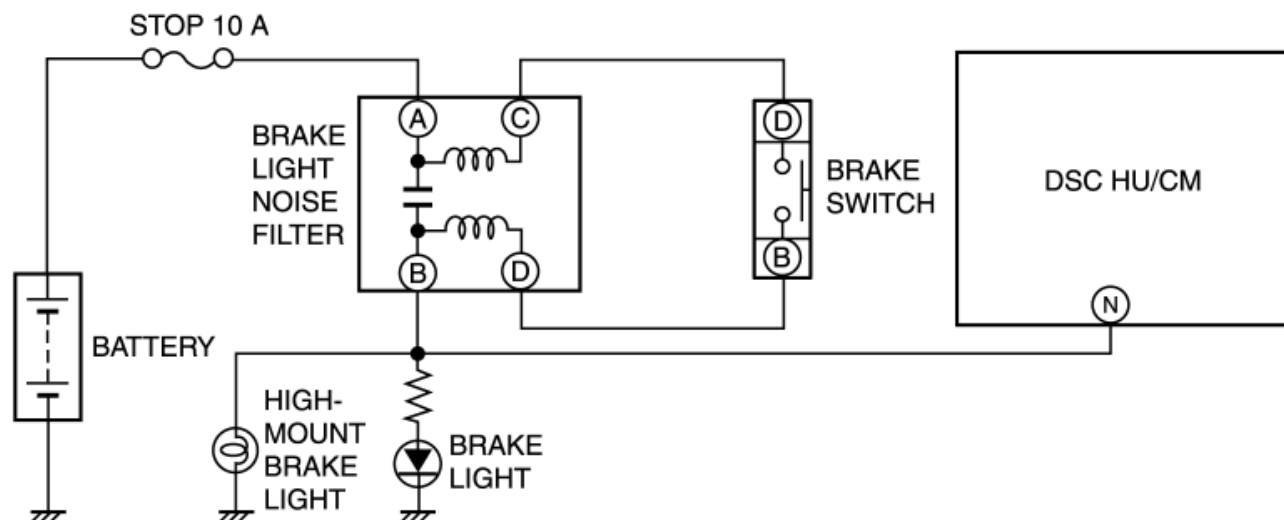
[Back to Top](#)

© 2011 Mazda North American Operations, U.S.A.

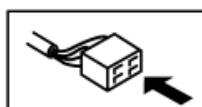
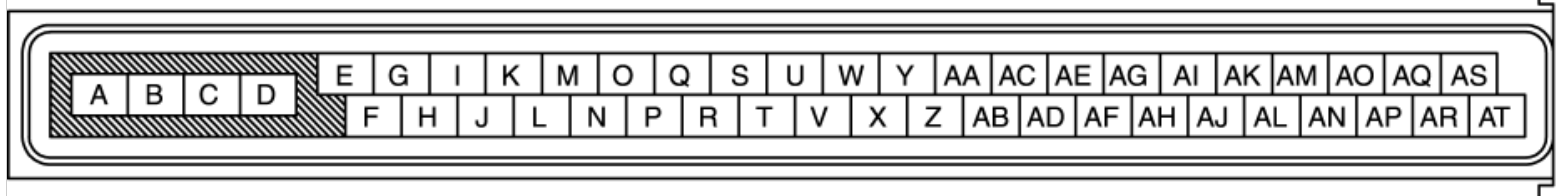
2011 - RX-8 - Brakes

DTC B1484, C1954 [DYNAMIC STABILITY CONTROL (DSC)]

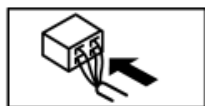
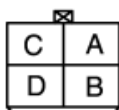
DTC	B1484, C1954	Brake switch system
DETECTION CONDITION	<ul style="list-style-type: none"> • B1484 <ul style="list-style-type: none"> ▪ Open circuit is detected in wiring harness between DSC HU/CM—brake switch (Voltage at the DSC HU/CM terminal N is more than 40% and less than 67% of the voltage at the DSC HU/CM terminal J for 0.5 s continuously.). • C1954 <ul style="list-style-type: none"> ▪ Brake switch ON signal is input even though signal from brake fluid pressure sensor is lower than specified value (While vehicle is driven at a speed of 10.8 km/h or more, brake switch is continuously ON for 60 s with accelerator pedal ON and brake fluid pressure 500 kPa or lower, not operated). ▪ Brake fluid pressure sensor signal value is continuously more than 1,000 kPa for 1 s with brake switch signal OFF. 	
FAIL-SAFE	<ul style="list-style-type: none"> • Inhibits ABS, TCS, and DSC controls, and illuminates ABS warning light and DSC indicator light. <p>(If error is detected during ABS/TCS control, inhibits ABS/TCS control after finishing the control and illuminates ABS warning light.)</p>	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • STOP 10 A fuse malfunction • Brake switch malfunction • Brake light noise filter malfunction • Open circuit or short to ground in the wiring harness between the DSC HU/CM terminal N and the brake switch terminal D • Brake light malfunction • High-mount brake light malfunction • Brake fluid pressure sensor malfunction in DSC HU/CM • DSC HU/CM malfunction 	



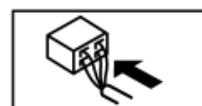
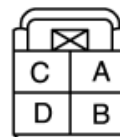
DSC HU/CM WIRING HARNESS-SIDE CONNECTOR



BRAKE LIGHT NOISE FILTER WIRING HARNESS-SIDE CONNECTOR



BRAKE SWITCH WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT BRAKE PEDAL POSITION SIGNAL INPUT TO DSC HU/CM USING M-MDS <ul style="list-style-type: none"> Connect the M-MDS to the DLC-2. Select the "BOO_ABS" PID and verify that the display is switched as follows according to the brake pedal condition: <ul style="list-style-type: none"> Brake pedal depressed: On 	<p>Yes Go to Step 6.</p> <p>No Go to the next step.</p>

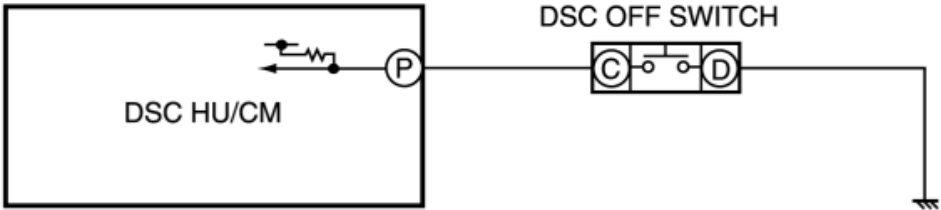
	<ul style="list-style-type: none"> ▪ Brake pedal released: Off <ul style="list-style-type: none"> • Does the “BOO_ABS” PID change normally? 		
2	INSPECT STOP LIGHT FUSE CONDITION <ul style="list-style-type: none"> • Turn the ignition switch off. • Inspect the STOP 10 A fuse. • Is the STOP 10 A fuse normal? 	Yes	Go to the next step.
		No	Replace the fuse, then go to Step 7.
3	INSPECT BRAKE SWITCH <ul style="list-style-type: none"> • Inspect the brake switch. <p>(See BRAKE SWITCH INSPECTION.)</p> <ul style="list-style-type: none"> • Is the brake switch normal? 	Yes	Go to the next step.
		No	Replace the brake switch, then go to Step 7. (See BRAKE PEDAL REMOVAL/INSTALLATION.)
4	INSPECT BRAKE LIGHT NOISE FILTER <ul style="list-style-type: none"> • Inspect the brake light noise filter. <p>(See NOISE FILTER INSPECTION.)</p> <ul style="list-style-type: none"> • Is the brake light noise filter normal? 	Yes	Go to the next step.
		No	Replace the wiring harness (including the brake light noise filter), then go to Step 7. NOTE: <ul style="list-style-type: none"> • The brake light noise filter is integrated with the wiring harness and cannot be replaced individually. Therefore, if there is a malfunction of the brake light noise filter, replace the wiring harness.
5	INSPECT FOR OPEN CIRCUIT IN WIRING HARNESS BETWEEN DSC HU/CM AND STOP LIGHT FUSE <ul style="list-style-type: none"> • Disconnect the DSC HU/CM, brake switch, and brake light noise filter connectors. • Inspect the vehicle wiring harness-side connectors for continuity between the following terminals: <ul style="list-style-type: none"> ▪ STOP 10 A fuse—brake light noise filter terminal A ▪ Brake light noise filter terminal C—brake switch terminal D ▪ Brake switch terminal D—brake light noise filter terminal B 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for open circuit between brake switch, brake light noise filter and DSC HU/CM, then go to Step 7.

	<ul style="list-style-type: none"> ▪ Brake light noise filter terminal B—DSC HU/CM terminal N <ul style="list-style-type: none"> • Is there continuity? 		
6	INSPECT BRAKE FLUID PRESSURE SENSOR <ul style="list-style-type: none"> • Inspect the brake fluid pressure sensor. (See BRAKE FLUID PRESSURE SENSOR INSPECTION.) • Is the brake fluid pressure sensor normal? 	Yes Go to the next step.	
		No Replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION .)	
7	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the memory. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Start the engine and drive the vehicle at 20 km/h {13 mph} or more for 60 s or more. • Are the same DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	Yes Repeat the inspection from Step 1. Replace the DSC HU/CM, then go to the next step. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION .)	
		No Go to the next step.	
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Are any other DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	Yes Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .)	
		No DTC troubleshooting completed.	

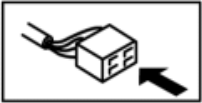
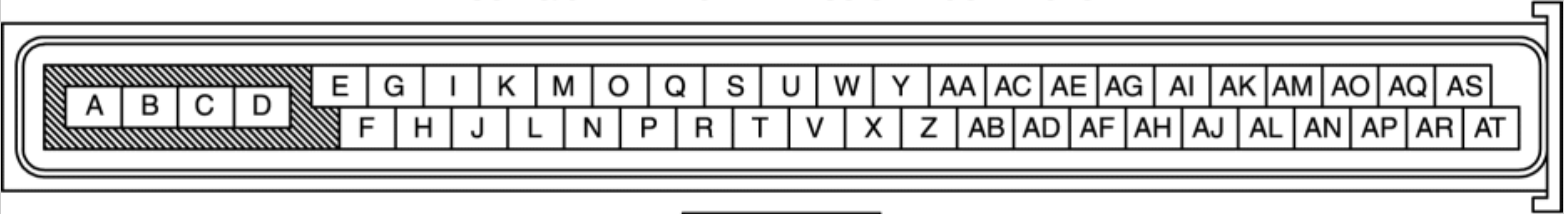
2011 - RX-8 - Brakes

DTC C1093 [DYNAMIC STABILITY CONTROL (DSC)]

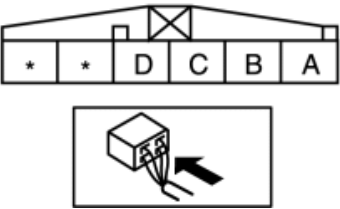
DTC	C1093	DSC OFF switch system
DETECTION CONDITION	<ul style="list-style-type: none">Continuous ON signal from the DSC OFF switch for 5 s or more is detected.	
FAIL-SAFE	<ul style="list-style-type: none">Inhibits TCS control and DSC control, and illuminates DSC indicator light and DSC OFF indicator light.	
POSSIBLE CAUSE	<ul style="list-style-type: none">Short to ground in the wiring harness between the DSC HU/CM terminal P and the DSC OFF switch terminal CDSC OFF switch malfunctionThe driver pressed and held the DSC OFF switch for 5 s or more.DSC HU/CM malfunction	



DSC HU/CM WIRING HARNESS-SIDE CONNECTOR



DSC OFF SWITCH WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT DSC HU/CM TO DSC OFF SWITCH FOR SHORT TO GROUND <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect DSC HU/CM and DSC OFF switch connector. Inspect for continuity between the DSC HU/CM terminal P and ground. Is there continuity? 	Yes Repair or replace the wiring harness for short to ground between DSC HU/CM terminal P and DSC OFF switch terminal A, then go to the next step.
		No Go to the next step.
2	INSPECT DSC OFF SWITCH <ul style="list-style-type: none"> Inspect the DSC OFF switch. <p>(See DSC OFF SWITCH INSPECTION.)</p> <ul style="list-style-type: none"> Is the DSC OFF switch normal? 	Yes Go to the next step.
		No Replace the DSC OFF switch, then go to the next step. (See DSC OFF SWITCH REMOVAL/INSTALLATION .)
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the memory. <p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p> <ul style="list-style-type: none"> Is the same DTC present? <p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p>	Yes Replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION .)
		No Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Are any other DTCs present? <p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p>	Yes Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .)
		No DTC troubleshooting completed.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Brakes

DTC C1141, C1142, C1143, C1144 [DYNAMIC STABILITY CONTROL (DSC)]

DTC	C1141	LF ABS sensor rotor system
	C1142	RF ABS sensor rotor system
	C1143	LR ABS sensor rotor system
	C1144	RR ABS sensor rotor system
DETECTION CONDITION		<ul style="list-style-type: none"> While the vehicle is driven at a speed of 10—60 km/h and the system is not operated, error is detected periodically in wheel speed signals from the ABS wheel-speed sensor.
FAIL-SAFE		<ul style="list-style-type: none"> Inhibits ABS, TCS, and DSC controls, and illuminates ABS warning light and DSC indicator light. <p>(If error is detected during ABS control, inhibits ABS control after finishing the control.)</p>
POSSIBLE CAUSE		<ul style="list-style-type: none"> ABS wheel-speed sensor malfunction ABS sensor rotor malfunction (foreign material adhering) Improper installation of ABS wheel-speed sensor and/or sensor rotor Excessive clearance between the ABS wheel-speed sensor and sensor rotor DSC HU/CM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT PID FOR ABS WHEEL-SPEED SENSOR OUTPUT ERROR USING M-MDS	Yes Go to Step 4.
	<ul style="list-style-type: none"> Turn the ignition switch off. Connect the M-MDS to the DLC-2. 	No Go to the next step.

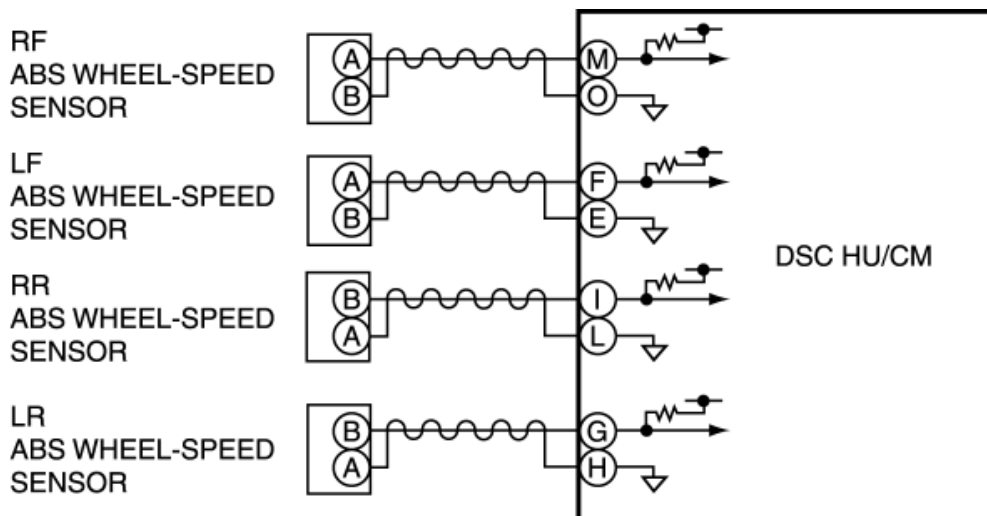
	<ul style="list-style-type: none">• Select the following PIDs using the M-MDS: LF_WSPD LR_WSPD RF_WSPD RR_WSPD• Drive the vehicle.• Verify that the vehicle speeds detected by the four ABS wheel-speed sensors are approximately the same.• Are the vehicle speeds approximately the same?		
2	INSPECT IF MALFUNCTION OCCURRED DUE TO IMPROPER SENSOR CLEARANCE. <ul style="list-style-type: none">• Inspect the clearance between the ABS wheel-speed sensor and the ABS sensor rotor. (See FRONT ABS WHEEL-SPEED SENSOR INSPECTION.) (See REAR ABS WHEEL-SPEED SENSOR INSPECTION.)• Is the clearance normal?<ul style="list-style-type: none">◦ Clearance Front: 0.3—1.0 mm {0.012—0.057 in} Rear: 0.8—1.6 mm {0.032—0.062 in}	YesGo to the next step.	No Replace the ABS wheel-speed sensor, then go to Step 4. (See FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION .) (See REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION .)
3	VISUALLY INSPECT ABS SENSOR ROTOR FOR FOREIGN MATERIAL ADHERING OR IMPROPER INSTALLATION <ul style="list-style-type: none">• Is the result normal?	YesGo to the next step.	No Replace the front wheel hub component or rear drive shaft, then go to the next step. (See WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION .) (See REAR DRIVE SHAFT REMOVAL/INSTALLATION .)

4	<p>VERIFY THAT THE SAME DTC IS NOT PRESENT</p> <ul style="list-style-type: none"> • Clear the DTC from the memory. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. • Are the same DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	<p>Yes Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION.)</p> <p>No Go to the next step.</p>
5	<p>VERIFY THAT NO OTHER DTCS ARE PRESENT</p> <ul style="list-style-type: none"> • Are any other DTCs output? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	<p>Yes Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p> <p>No DTC troubleshooting completed.</p>

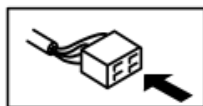
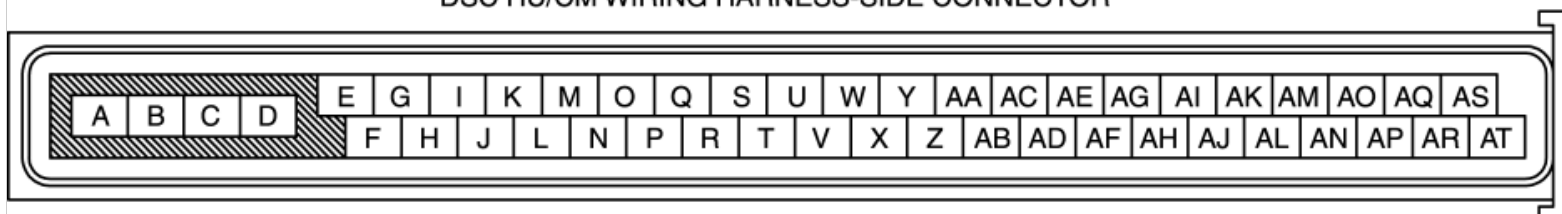
2011 - RX-8 - Brakes

DTC C1145, C1155, C1165, C1175 [DYNAMIC STABILITY CONTROL (DSC)]

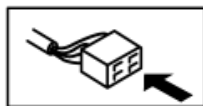
DTC	C1145	RF ABS wheel-speed sensor system
	C1155	LF ABS wheel-speed sensor system
	C1165	RR ABS wheel-speed sensor system
	C1175	LR ABS wheel-speed sensor system
DETECTION CONDITION		<ul style="list-style-type: none"> Open circuit, or short to ground or power supply has been detected in the ABS wheel-speed sensor or ABS wheel-speed sensor wiring harness on any of the four vehicle wheels.
FAIL-SAFE		<ul style="list-style-type: none"> Inhibits ABS, TCS, and DSC controls, and illuminates ABS warning light and DSC indicator light. (If error is detected during ABS control, inhibits ABS control after finishing the control.)
POSSIBLE CAUSE		<ul style="list-style-type: none"> Open circuit, or short to ground or power supply in the wiring harness between the following terminals of the DSC HU/CM and ABS wheel-speed sensor: <ul style="list-style-type: none"> DSC HU/CM terminal M—RF ABS wheel-speed sensor terminal A DSC HU/CM terminal O—RF ABS wheel-speed sensor terminal B DSC HU/CM terminal F—LF ABS wheel-speed sensor terminal A DSC HU/CM terminal E—LF ABS wheel-speed sensor terminal B DSC HU/CM terminal I—RR ABS wheel-speed sensor terminal B DSC HU/CM terminal L—RR ABS wheel-speed sensor terminal A DSC HU/CM terminal G—LR ABS wheel-speed sensor terminal B DSC HU/CM terminal H—LR ABS wheel-speed sensor terminal A ABS wheel-speed sensor malfunction Poor connection at connectors (female terminal) DSC HU/CM malfunction



DSC HU/CM WIRING HARNESS-SIDE CONNECTOR



ABS WHEEL-SPEED SENSOR WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT PID TO VERIFY THAT WHEEL SPEED-SIGNALS ARE TRANSMITTED FROM ABS WHEEL- SPEED SENSOR USING M-MDS <ul style="list-style-type: none"> Turn the ignition switch off. Connect the M-MDS to the DLC-2. Select the following PIDs using the M-MDS: <ul style="list-style-type: none"> LF_WSPD LR_WSPD RF_WSPD RR_WSPD 	<p>Yes Go to Step 5.</p> <p>No Go to the next step.</p>

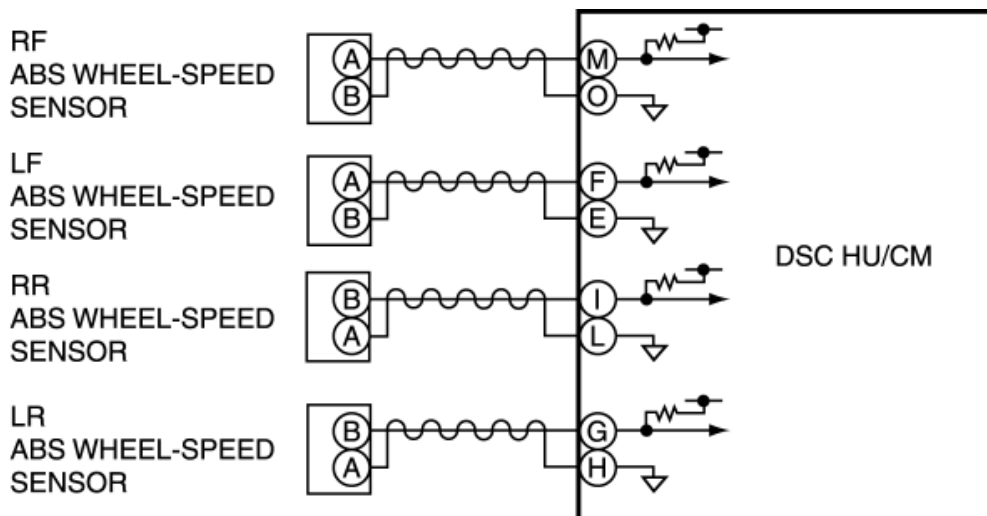
	<ul style="list-style-type: none"> • Drive the vehicle. • Verify that the wheel speed-signals are transmitted from each ABS wheel-speed sensor. • Are the wheel-speed signals transmitted? 		
2	INSPECT FOR OPEN CIRCUIT IN WIRING HARNESS BETWEEN DSC HU/CM AND ABS WHEEL-SPEED SENSOR <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the DSC HU/CM connector and ABS wheel-speed sensor. • Inspect for continuity in the wiring harness between the following ABS wheel-speed sensor connectors on the vehicle wiring harness-side and DSC HU/CM connectors. <ul style="list-style-type: none"> ▪ RF ABS wheel-speed sensor (+): M—A ▪ RF ABS wheel-speed sensor (-): O—B ▪ LF ABS wheel-speed sensor (+): F—A ▪ LF ABS wheel-speed sensor (-): E—B ▪ RR ABS wheel-speed sensor (+): I—A ▪ RR ABS wheel-speed sensor (-): L—B ▪ LR ABS wheel-speed sensor (+): G—A ▪ LR ABS wheel-speed sensor (-): H—B • Is there continuity? 	YesGo to the next step.	No Repair or replace the wiring harness, then go to Step 5.
3	INSPECT WIRING HARNESS BETWEEN DSC HU/CM AND ABS WHEEL-SPEED SENSOR FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Inspect the voltage between the following terminals of the DSC HU/CM connector and body ground: <ul style="list-style-type: none"> ▪ RF ABS wheel-speed sensor (+): M-body ground ▪ RF ABS wheel-speed sensor (-): O-body ground ▪ LF ABS wheel-speed sensor (+): F-body ground ▪ LF ABS wheel-speed sensor (-): E-body ground ▪ RR ABS wheel-speed sensor (+): I-body ground ▪ RR ABS wheel-speed sensor (-): L-body ground ▪ LR ABS wheel-speed sensor (+): G-body ground ▪ LR ABS wheel-speed sensor (-): H-body ground • Is the voltage approx. 0 V? 	YesGo to the next step.	No Repair or replace the wiring harness, then go to Step 5.
4	INSPECT FOR SHORT TO GROUND IN WIRING HARNESS BETWEEN DSC HU/CM AND ABS WHEEL-SPEED SENSOR <ul style="list-style-type: none"> • Inspect for continuity in the wiring harness between the following DSC HU/CM connector terminals on the vehicle wiring harness-side and body ground. <ul style="list-style-type: none"> ▪ RF ABS wheel-speed sensor (+): M 	YesRepair or replace the wiring harness, then go to the next step.	No Replace the ABS wheel-speed sensor, then go to the next step. (See FRONT ABS WHEEL-SPEED)

	<ul style="list-style-type: none"> ▪ RF ABS wheel-speed sensor (-): O ▪ LF ABS wheel-speed sensor (+): F ▪ LF ABS wheel-speed sensor (-): E ▪ RR ABS wheel-speed sensor (+): I ▪ RR ABS wheel-speed sensor (-): L ▪ LR ABS wheel-speed sensor (+): G ▪ LR ABS wheel-speed sensor (-): H <ul style="list-style-type: none"> • Is there continuity? 		SENSOR REMOVAL/INSTALLATION.) (See REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)
5	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTCs from the memory. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Start the engine and drive the vehicle at 45 km/h {28 mph} or more. • Are the same DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	Yes Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION.)	No Go to the next step.
6	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> • Are any other DTCs output? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	Yes Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .)	No DTC troubleshooting completed.

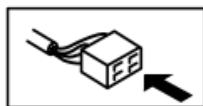
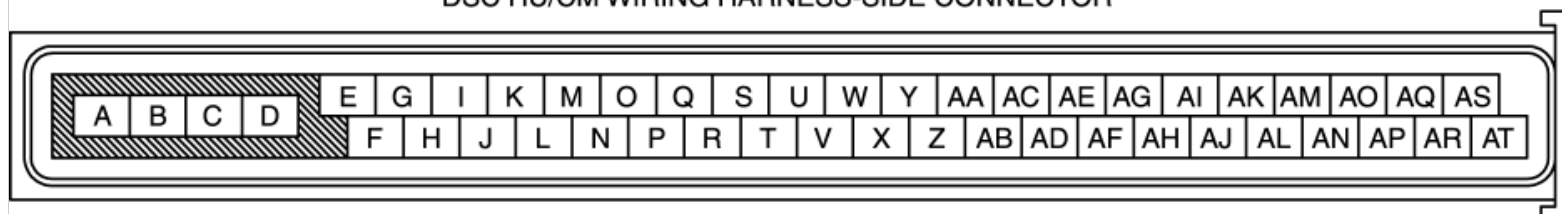
2011 - RX-8 - Brakes

DTC C1148, C1158, C1168, C1178 [DYNAMIC STABILITY CONTROL (DSC)]

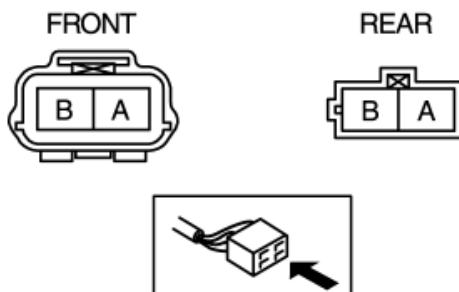
DTC	C1148	RF ABS wheel-speed sensor/ABS sensor rotor system
	C1158	LF ABS wheel-speed sensor/ABS sensor rotor system
	C1168	RR ABS wheel-speed sensor/ABS sensor rotor system
	C1178	LR ABS wheel-speed sensor/ABS sensor rotor system
DETECTION CONDITION		<ul style="list-style-type: none">Noise is continuously detected in wheel-speed signal for 10 s.
FAIL-SAFE		<ul style="list-style-type: none">Inhibits ABS, TCS, and DSC controls, and illuminates ABS warning light and DSC indicator light. <p>(If error is detected during a ABS control, inhibits ABS control after finishing the control.)</p>
POSSIBLE CAUSE		<ul style="list-style-type: none">ABS wheel-speed sensor malfunction (low output, metal shavings on sensor)ABS sensor rotor malfunction (chipping of sensor rotor teeth)Poor installation of ABS wheel-speed sensor and/or sensor rotorExcessive clearance between the ABS wheel-speed sensor and sensor rotorPoor connection at connectors (female terminal)DSC HU/CM malfunction



DSC HU/CM WIRING HARNESS-SIDE CONNECTOR



ABS WHEEL-SPEED SENSOR WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT PID FOR ABNORMAL OUTPUT FROM ABS WHEEL-SPEED SENSOR USING M-MDS <ul style="list-style-type: none"> Turn the ignition switch off. Connect the M-MDS to the DLC-2. Select the following PIDs using the M-MDS: <ul style="list-style-type: none"> LF_WSPD LR_WSPD RF_WSPD RR_WSPD 	<p>Yes Go to Step 4.</p> <p>No Go to the next step.</p>

	<ul style="list-style-type: none"> Start the engine and drive the vehicle. Verify that the PIDs of the four ABS wheel-speed sensors correspond approximately. Do the vehicle speeds correspond? 		
2	INSPECT IF MALFUNCTION OCCURRED DUE TO IMPROPER SENSOR CLEARANCE <ul style="list-style-type: none"> Inspect the clearance between the ABS wheel-speed sensor and the ABS sensor rotor. <ul style="list-style-type: none"> Clearance <p>Front: 0.3—1.0 mm {0.012—0.057 in}</p> <p>Rear: 0.8—1.6 mm {0.032—0.062 in}</p> 	YesGo to the next step.	No Replace the rear ABS wheel-speed sensor, then go to Step 4. (See FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)
3	VISUALLY INSPECT ABS SENSOR ROTOR FOR FOREIGN MATERIAL ADHERING OR IMPROPER INSTALLATION <ul style="list-style-type: none"> Is the result normal? 	YesGo to the next step.	No Replace the front wheel hub component or rear drive shaft, then go to the next step. (See WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION.) (See REAR DRIVE SHAFT REMOVAL/INSTALLATION.)
4	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the memory. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Start the engine and drive the vehicle. Are the same DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	YesRepeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION.)	No Go to the next step.
5	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Are any other DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	YesGo to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)	No DTC troubleshooting completed.

2011 - RX-8 - Brakes

DTC C1194, C1198, C1210, C1214, C1242, C1246, C1250, C1254, C1400, C1410, C1957, C1958 [DYNAMIC STABILITY CONTROL (DSC)]

DTC	C 1194	LF outlet solenoid valve system
	C 1198	LF inlet solenoid valve system
	C 1210	RF outlet solenoid valve system
	C 1214	RF inlet solenoid valve system
	C 1242	LR outlet solenoid valve system
	C 1246	RR outlet solenoid valve system
	C 1250	LR inlet solenoid valve system
	C 1254	RR inlet solenoid valve system
	C 1400	RH traction control solenoid valve system
	C 1410	LH traction control solenoid valve system
	C 1957	RH stability control solenoid valve system
	C 1958	LH stability control solenoid valve system
DETECTION CONDITION		<ul style="list-style-type: none"> Solenoid valve operation does not correspond to solenoid ON/OFF commands from the DSC HU/CM.
FAIL-SAFE		<ul style="list-style-type: none"> Inhibits EBD, ABS, TCS, and DSC controls, and illuminates brake system warning light, ABS warning light, and DSC indicator light.
POSSIBLE CAUSE		<ul style="list-style-type: none"> Solenoid valve malfunction Open or short circuit in the DSC HU/CM internal solenoid valves Poor connection at connectors (female terminal) DSC HU/CM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY SOLENOID VALVE OPERATION <ul style="list-style-type: none"> • Turn the ignition switch off. • Connect the M-MDS to the DLC-2. • Turn the ignition switch to the ON position (engine off). • Access the active command mode for the solenoid valve using the M-MDS. • Does the solenoid valve operate? 	Yes Go to the next step.
		No Replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION .)
2	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the memory. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. • Gradually slow down and stop vehicle. • Are the same DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	Yes Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION .)
		No Go to the next step.
3	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Are any other DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	Yes Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .)
		No DTC troubleshooting completed.

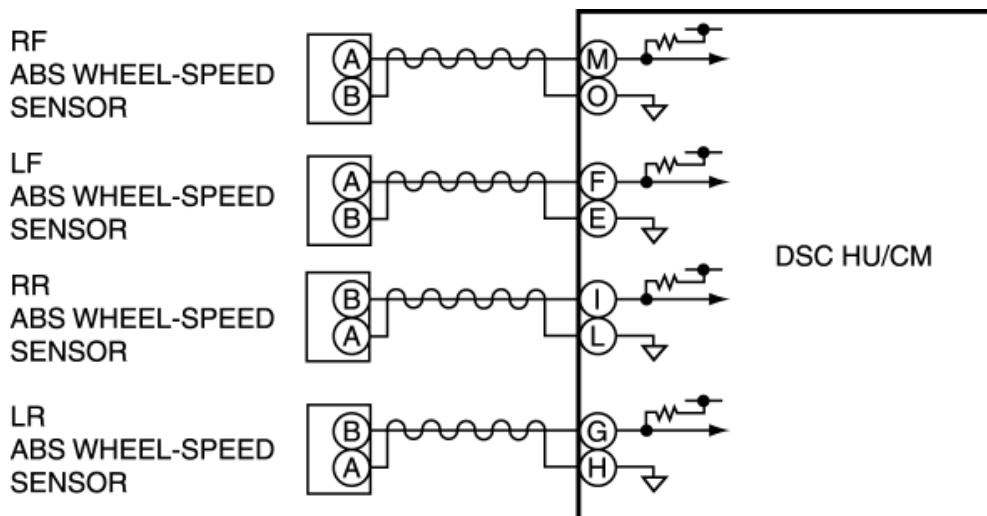
2011 - RX-8 - Brakes

DTC C1222 [DYNAMIC STABILITY CONTROL (DSC)]

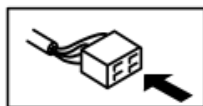
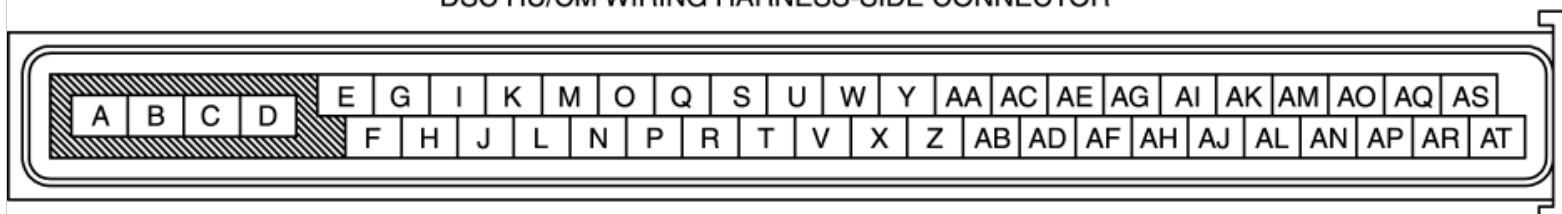
NOTE:

- DTC C1222 will be detected when a malfunctioning ABS wheel-speed sensor cannot be specified.

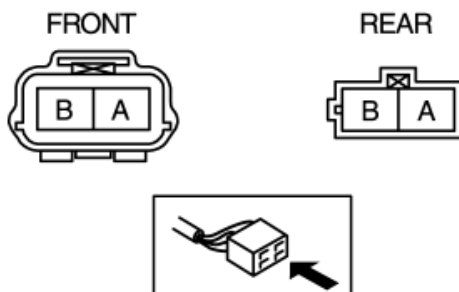
DTC	C1222	ABS wheel-speed sensor (slip monitor) system
DETECTION CONDITION		<ul style="list-style-type: none"> • Condition 1 <ul style="list-style-type: none"> ▪ ABS control for two wheels or more is continued for 60 s (If accelerator pedal is ON and brake switch is OFF and vehicle speed is more than 50 km/h, it is detected when 10 s has elapsed). • Condition 2 <ul style="list-style-type: none"> ▪ While the vehicle is driven at a speed of 20 km/h or more, difference in each wheel speed is continuously not within the specification. • Condition 3 <ul style="list-style-type: none"> ▪ There is difference between yaw rate value calculated based on the ABS wheel-speed sensor and yaw rate value calculated based on the steering angle sensor (abnormal cornering direction is detected).
FAIL-SAFE		<ul style="list-style-type: none"> • Conditions 1 and 2 <ul style="list-style-type: none"> ▪ Inhibits EBD, ABS, TCS, and DSC controls, and illuminates brake system warning light, ABS warning lights, and DSC indicator lights. • Condition 3 <ul style="list-style-type: none"> ▪ Inhibits ABS, TCS, and DSC controls, and illuminates ABS warning light and DSC indicator light. (If error is detected during an ABS control, inhibits ABS control after finishing the control.)
POSSIBLE CAUSE		<ul style="list-style-type: none"> • Tire type or size is different between the front and rear wheels. • ABS wheel-speed sensor malfunction (low output, metal shavings on sensor) • ABS sensor rotor malfunction (chipping of sensor rotor teeth) • Poor installation of ABS wheel-speed sensor and/or sensor rotor (If the sensor rotor is installed at an angle, it may cause output of abnormal wave pattern at high speeds.) • Excessive clearance between the ABS wheel-speed sensor and sensor rotor • DSC HU/CM malfunction



DSC HU/CM WIRING HARNESS-SIDE CONNECTOR



ABS WHEEL-SPEED SENSOR WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT PID FOR ABNORMAL OUTPUT FROM ABS WHEEL-SPEED SENSOR USING M-MDS <ul style="list-style-type: none"> Turn the ignition switch off. Connect the M-MDS to the DLC-2. Select the following PIDs using the M-MDS: <ul style="list-style-type: none"> LF_WSPD LR_WSPD RF_WSPD RR_WSPD 	<p>Yes Go to Step 5.</p> <p>No If there is a difference in speeds of the four wheels, go to the next step.</p>

	<ul style="list-style-type: none"> • Drive the vehicle. • Verify that the PIDs of the four ABS wheel-speed sensors correspond approximately. • Do the vehicle speeds correspond? 		
2	INSPECT TIRE SIZE AND PRESSURE <ul style="list-style-type: none"> • Inspect the tire size and tire pressure of each wheel. (See WHEEL AND TIRE SPECIFICATION.) • Is the tire size and tire pressure as specified? 	YesGo to the next step.	No Install the specified tire or adjust the tire pressure, then go to Step 5.
3	INSPECT IF MALFUNCTION OCCURRED DUE TO IMPROPER SENSOR CLEARANCE <ul style="list-style-type: none"> • Inspect the clearance between the ABS wheel-speed sensor and the ABS sensor rotor. <ul style="list-style-type: none"> ◦ Clearance Front: 0.3—1.0 mm {0.012—0.057 in} Rear: 0.8—1.6 mm {0.032—0.062 in} 	YesGo to the next step.	No Replace the rear ABS wheel-speed sensor, then go to Step 5. (See FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.)
4	VISUALLY INSPECT ABS SENSOR ROTOR FOR FOREIGN MATERIAL ADHERING OR IMPROPER INSTALLATION <ul style="list-style-type: none"> • Is the result normal? 	YesGo to the next step.	No Replace the front wheel hub component or rear drive shaft, then go to the next step. (See WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION.) (See REAR DRIVE SHAFT REMOVAL/INSTALLATION.)
5	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Clear the DTC from the memory. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Start the engine and drive the vehicle at 20 km/h {13 mph} or more. • Are the same DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	YesRepeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION.)	No Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Are any other DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	YesGo to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)	No DTC troubleshooting completed.

2011 - RX-8 - Brakes

DTC C1295, C1307, C1937, C1938, C1956 [DYNAMIC STABILITY CONTROL (DSC)]

DTC	C1295, C1307, C1937, C1938, C1956	Steering angle sensor system
DETECTION CONDITION	<ul style="list-style-type: none"> • C1295 <ul style="list-style-type: none"> ▪ Steering angle sensor malfunction is detected by CAN signal from the steering angle sensor. • C1307 <ul style="list-style-type: none"> ▪ Steering angle signal error from the steering angle sensor is continuously detected for 100 ms. • C1937 <ul style="list-style-type: none"> ▪ The difference between the steering angle calculated by each sensor and the steering angle from the steering angle sensor exceeds the specification. • C1938 <ul style="list-style-type: none"> ▪ Condition 1 <ul style="list-style-type: none"> • Variation of the steering angle sensor signal exceeds the specified value, or does not vary at all. ▪ Condition 2 <ul style="list-style-type: none"> • When comparing the yaw rate value calculated from the ABS wheel-speed sensor signal and steering angle sensor signal with the yaw rate sensor signal, one is + and the other is - while the vehicle is moving forward. • C1956 <ul style="list-style-type: none"> ▪ There is no signal received from the steering angle sensor. 	

FAIL-SAFE	<ul style="list-style-type: none"> • C1295, C1307, C1937, C1956 <ul style="list-style-type: none"> ▪ Inhibits TCS control and DSC control, and illuminates DSC indicator light. <p>(If error is detected during a TCS control, inhibits TCS control after finishing the control.)</p> • C1938 <ul style="list-style-type: none"> ▪ Condition 1 <ul style="list-style-type: none"> • Inhibits TCS control and DSC control, and illuminates DSC indicator light. <p>(If error is detected during a TCS control, inhibits TCS control after finishing the control.)</p> ▪ Condition 2 <ul style="list-style-type: none"> • Inhibits TCS control and DSC control, and illuminates DSC indicator light. <p>(If error is not detected when system is activated next time, enables (restores) each control and turns each light off.)</p>
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deviation of the steering wheel center position due to improper front wheel alignment • Improper installation or positioning of the steering angle sensor • Steering angle sensor malfunction • Poor connection at connectors (female terminal) • DSC HU/CM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT STEERING WHEEL FOR OFF-CENTER <ul style="list-style-type: none">• Drive the vehicle and inspect the steering wheel position while driving in a straight line.• Is the steering wheel off-center?	YesGo to the next step.
		NoInspect and adjust the front wheel alignment to correct the steering wheel alignment. (See FRONT WHEEL ALIGNMENT .) Go to Step 3.

2	INSPECT STEERING ANGLE SENSOR <ul style="list-style-type: none"> Inspect the steering angle sensor. (See STEERING ANGLE SENSOR INSPECTION.) Is the steering angle sensor normal? 		Yes Go to the next step. No Replace the steering angle sensor, then go to the next step. (See STEERING ANGLE SENSOR REMOVAL/INSTALLATION .)
3	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the memory. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Start the engine and drive the vehicle. Are the same DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 		Yes Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM. (See DSC HU/CM REMOVAL/INSTALLATION .) No Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Are any other DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 		Yes Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .) No DTC troubleshooting completed.

2011 - RX-8 - Brakes

DTC C1306 [DYNAMIC STABILITY CONTROL (DSC)]

NOTE:

- The initialization value of the steering angle sensor is stored using the battery power supply. Therefore, the battery power supply of the steering angle sensor is cut and the stored initialization value is cleared when any of the following items are performed. DTC C1306 is stored in the memory.
 - Negative battery cable disconnection
 - Steering angle sensor connector disconnection
 - Fuse (BTN 30A, DSC 7.5A) removal
 - Wiring harness disconnection between battery and steering angle sensor connector

DTC	C1306	Steering angle sensor (abnormal initialization) system
DETECTION CONDITION	<ul style="list-style-type: none">• Signal which indicates that the initialization has not been performed is continuously received from the steering angle sensor for 100 ms.	
FAIL-SAFE	<ul style="list-style-type: none">• Inhibits TCS and DSC controls, illuminates DSC indicator light, and flashes DSC OFF indicator light.	
POSSIBLE CAUSE	<ul style="list-style-type: none">• The initialization procedure for the steering angle sensor has not been performed.• The negative battery cable connector was disconnected previously.• The steering angle sensor connector was disconnected previously.• The fuse (BTN 30A, DSC 7.5A) was removed previously.• The wiring harness between battery—steering angle sensor connector is disconnected.• Steering angle sensor malfunction	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	VERIFY INITIALIZATION PROCEDURE. <ul style="list-style-type: none"> Has the steering angle sensor initialization procedure been performed? 	Yes	Go to the next step.
		No	Perform the steering angle sensor initialization procedure, then go to the next step. (See STEERING ANGLE SENSOR INITIALIZATION PROCEDURE .)
2	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the memory. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Is the same DTC present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	Yes	Repeat the inspection from Step 1. If the malfunction occurs again, replace the steering angle sensor, then go to the next step. (See STEERING ANGLE SENSOR REMOVAL/INSTALLATION .)
		No	Go to the next step.
3	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Are any other DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Brakes

DTC C1994 [DYNAMIC STABILITY CONTROL (DSC)]

DTC	C1994	DSC control system
DETECTION CONDITION		<ul style="list-style-type: none"> During ABS control, there are two or more wheels which the wheel speed is 10 km/h or less when pressure reduction or maintain is continuously requested for 0.3 s—3 s (depending on vehicle driving conditions). DSC control is performed continuously for 10 s (5 s if the vehicle speed is more than 100 km/h).
FAIL-SAFE		<ul style="list-style-type: none"> Inhibits ABS, TCS, and DSC controls, and illuminates ABS warning light and DSC indicator light.
POSSIBLE CAUSE		<ul style="list-style-type: none"> This does not indicate a malfunction since constant control over extended period of time is inhibited to protect the DSC solenoid valve inside the DSC HU. DSC HU/CM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the memory. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)]1.) Are the same DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)]1.) 	<div>Yes</div> Replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION.)
		<div>No</div> Go to the next step.
2	VERIFY AFTER REPAIR PROCEDURE	<div>Yes</div> Go to the applicable DTC inspection.

	<ul style="list-style-type: none">• Are any other DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)		(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .)
			No DTC troubleshooting completed.

2011 - RX-8 - Brakes

DTC B2477 [DYNAMIC STABILITY CONTROL (DSC)]

DTC	B2477	DSC HU/CM configuration
DETECTION CONDITION		<ul style="list-style-type: none"> Condition 1 <ul style="list-style-type: none"> Configuration data is not within the specification. Condition 2 <ul style="list-style-type: none"> Configuration data cannot be read. Condition 3 <ul style="list-style-type: none"> Configuration data is at an unused value.
FAIL-SAFE		<ul style="list-style-type: none"> Condition 1 <ul style="list-style-type: none"> Inhibits ABS, TCS, and DSC controls, and flashes ABS warning light and DSC indicator light. Conditions 2 and 3 <ul style="list-style-type: none"> Inhibits ABS, TCS, and DSC controls, and illuminates ABS warning light and DSC indicator light.
POSSIBLE CAUSE		<ul style="list-style-type: none"> Module configuration procedure was not completed properly. DSC HU/CM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY CONFIGURATION <ul style="list-style-type: none"> Has the DSC HU/CM configuration been performed? 	<div>Yes</div> Go to the next step. <div>No</div> Perform configuration using the M-MDS.

		(See DSC CONFIGURATION .)
2	VERIFY DTC TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Clear the DTC from the memory. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Is the same DTC present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	Yes Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION .)
		No Go to the next step.
3	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Are any other DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	Yes Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .)
		No DTC troubleshooting completed.

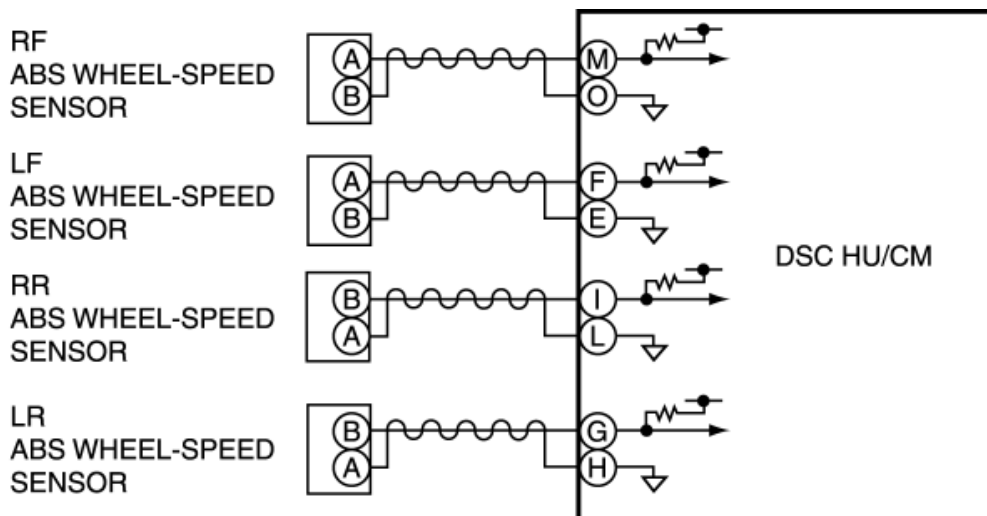
[< Previous](#) [Next >](#)

[Back to Top](#)

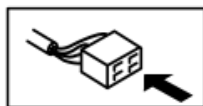
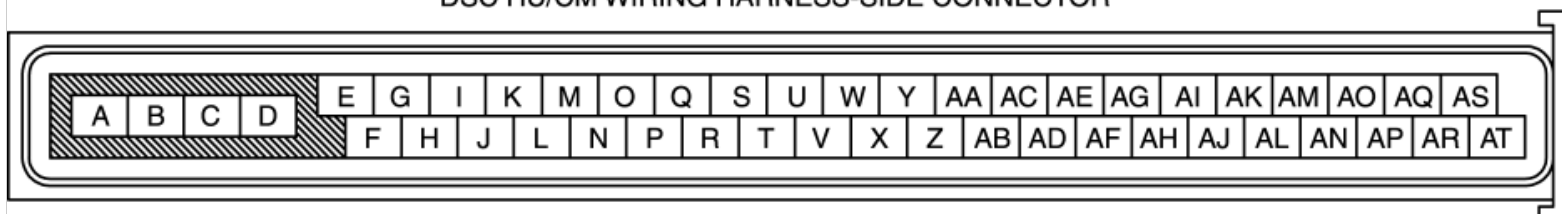
2011 - RX-8 - Brakes

DTC C1233, C1234, C1235, C1236 [DYNAMIC STABILITY CONTROL (DSC)]

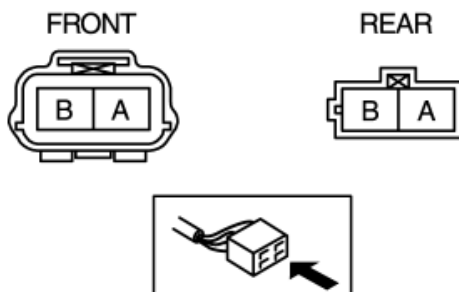
DTC	C1233	LF ABS wheel-speed sensor system
	C1234	RF ABS wheel-speed sensor system
	C1235	RR ABS wheel-speed sensor system
	C1236	LR ABS wheel-speed sensor system
DETECTION CONDITION		<ul style="list-style-type: none"> Excessively slow wheel speed is detected when the vehicle speed is 12 km/h or more first time after the system is activated or the vehicle is started. While the vehicle is driven at a speed of 20 km/h or more, difference in each wheel speed is continuously not within the specification.
FAIL-SAFE		<ul style="list-style-type: none"> Inhibits ABS, TCS, and DSC controls, and illuminates ABS warning light and DSC indicator light. (If error is detected during ABS control, inhibits ABS control after finishing the control.)
POSSIBLE CAUSE		<ul style="list-style-type: none"> Short to ground in the wiring harness between the following DSC HU/CM terminal and the ABS wheel-speed sensor terminal: <ul style="list-style-type: none"> DSC HU/CM terminal M—RF ABS wheel-speed sensor terminal A DSC HU/CM terminal O—RF ABS wheel-speed sensor terminal B DSC HU/CM terminal F—LF ABS wheel-speed sensor terminal A DSC HU/CM terminal E—LF ABS wheel-speed sensor terminal B DSC HU/CM terminal I—RR ABS wheel-speed sensor terminal B DSC HU/CM terminal L—RR ABS wheel-speed sensor terminal A DSC HU/CM terminal G—LR ABS wheel-speed sensor terminal B DSC HU/CM terminal H—LR ABS wheel-speed sensor terminal A ABS wheel-speed sensor malfunction Poor connection at connectors (female terminal) DSC HU/CM malfunction



DSC HU/CM WIRING HARNESS-SIDE CONNECTOR



ABS WHEEL-SPEED SENSOR WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

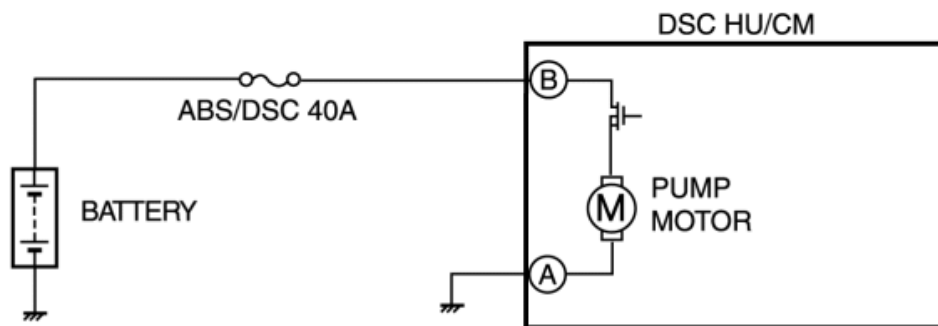
STEP	INSPECTION	ACTION
1	INSPECT PID TO VERIFY THAT WHEEL SPEED-SIGNALS ARE TRANSMITTED FROM ABS WHEEL- SPEED SENSOR USING M-MDS <ul style="list-style-type: none"> Turn the ignition switch off. Connect the M-MDS to the DLC-2. Select the following PIDs using the M-MDS: <ul style="list-style-type: none"> LF_WSPD LR_WSPD RF_WSPD RR_WSPD 	<p>Yes Go to Step 3.</p> <p>No Go to the next step.</p>

	<ul style="list-style-type: none"> • Drive the vehicle. • Verify that the wheel speed-signals are transmitted from each ABS wheel-speed sensor. • Are the wheel-speed signals transmitted? 		
2	INSPECT A SHORT TO GROUND IN THE WIRING HARNESS BETWEEN THE DSC HU/CM AND THE ABS WHEEL-SPEED SENSOR <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the DSC HU/CM connector and the ABS wheel-speed sensor connector. • Inspect for a short to ground in the wiring harness between the following ABS wheel-speed sensor connectors on the vehicle wiring harness-side and DSC HU/CM connectors. <ul style="list-style-type: none"> ▪ RF ABS wheel-speed sensor (+): M—A ▪ RF ABS wheel-speed sensor (-): O—B ▪ LF ABS wheel-speed sensor (+): F—A ▪ LF ABS wheel-speed sensor (-): E—B ▪ RR ABS wheel-speed sensor (+): I—B ▪ RR ABS wheel-speed sensor (-): L—A ▪ LR ABS wheel-speed sensor (+): G—B ▪ LR ABS wheel-speed sensor (-): H—A • Is there continuity? 	Yes Repair or replace the wiring harness, then go to the next step.	No Replace the ABS wheel-speed sensor, then go to the next step. (See FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION .) (See REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION .)
3	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> • Clear the DTCs from the memory. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. • Are the same DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	Yes Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION .)	No Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Are any other DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	Yes Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .)	No DTC troubleshooting completed.

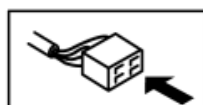
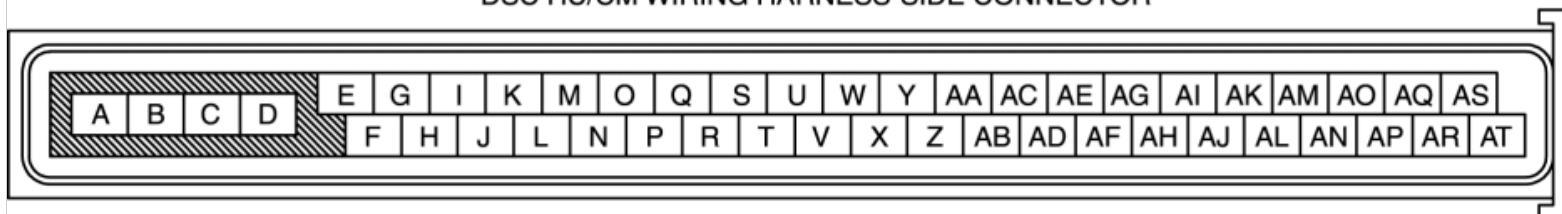
2011 - RX-8 - Brakes

DTC C1095, C1096 [DYNAMIC STABILITY CONTROL (DSC)]

DTC	C1095, C1096	Pump motor, motor relay system
DETECTION CONDITION	<ul style="list-style-type: none">• C1095<ul style="list-style-type: none">▪ When the motor relay is switched from ON to OFF, the pump motor voltage is turned off within the specified time (Pump motor rotation malfunction (sticking)).▪ Malfunction is detected in pump motor drive circuit during motor relay test.▪ Motor relay supply voltage is 40% of the ignition voltage or lower.▪ While the pump motor is stopped, pump motor monitor voltage is continuously 2 V or more for 1 s.• C1096<ul style="list-style-type: none">▪ While the pump motor is operated, difference in voltage between ignition and pump motor is continuously more than 4.0 V for 100 ms.	
FAIL-SAFE	<ul style="list-style-type: none">• Inhibits ABS, TCS, and DSC controls, and illuminates brake system warning light, ABS warning light and DSC indicator light.	
POSSIBLE CAUSE	<ul style="list-style-type: none">• ABS/DSC 40 A fuse malfunction• Open or short to ground circuit in the wiring harness between the battery and the DSC HU/CM terminal B• Open circuit in the wiring harness between the DSC HU/CM terminal A and the body ground• Open or short circuit in the DSC HU/CM internal motor relay, or stuck motor relay• Open or short circuit in the DSC HU/CM internal motor, or frozen motor• Poor connection at connectors (female terminal)• DSC HU/CM malfunction	



DSC HU/CM WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

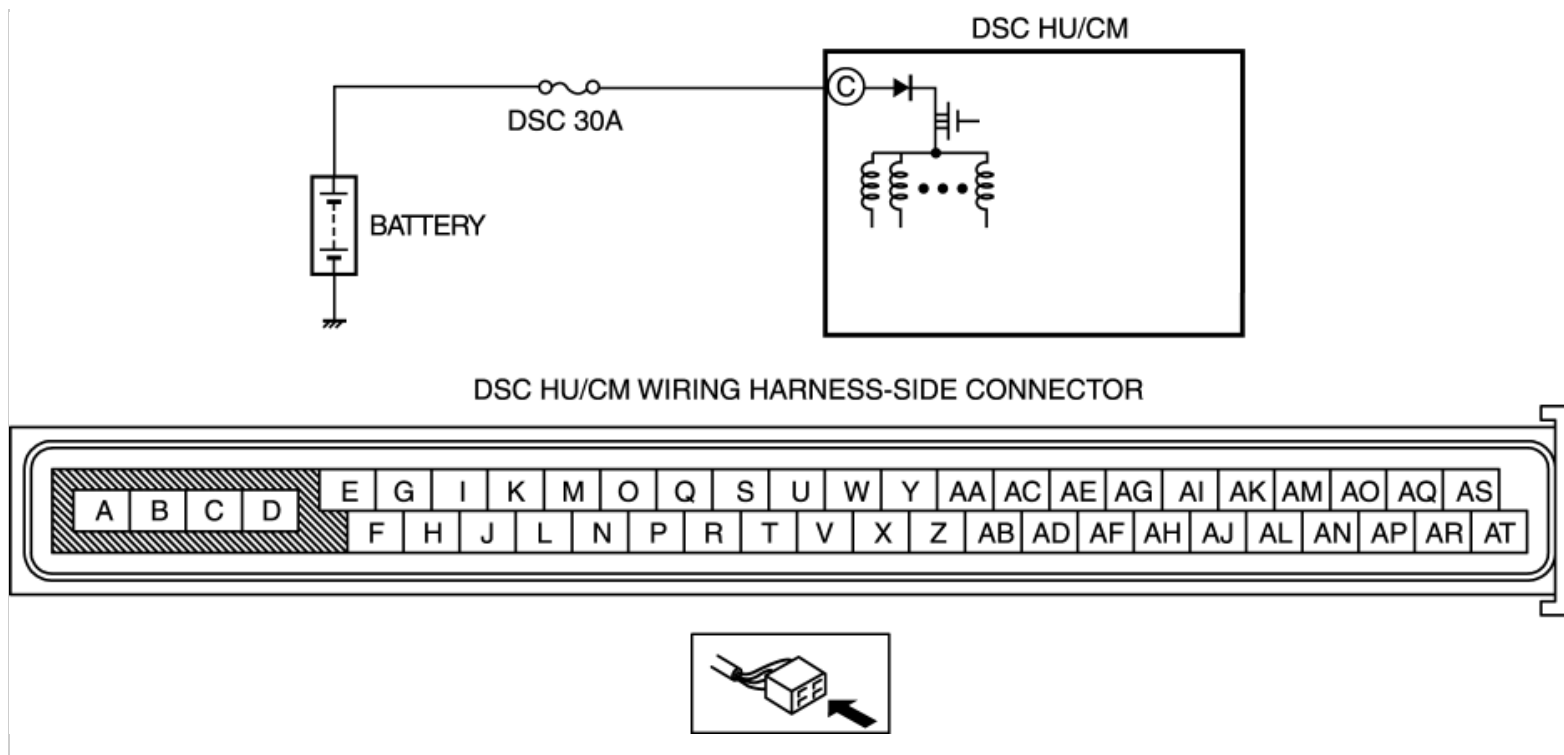
STEP	INSPECTION	ACTION
1	INSPECT ABS/DSC FUSE CONDITION <ul style="list-style-type: none"> Is the ABS/DSC 40A fuse normal? 	Yes Go to the next step.
		No Replace the fuse, then go to Step 5.
2	INSPECT MOTOR RELAY POWER SUPPLY FOR OPEN CIRCUIT <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect DSC HU/CM connector. Turn the ignition switch to the ON position (engine off). Measure voltage between DSC HU/CM terminal B (harness-side) and ground. Is the voltage B+? 	Yes Go to the next step.
		No Repair or replace the wiring harness for open circuit between battery positive terminal and DSC HU/CM terminal B, then go to Step 5.
3	INSPECT PUMP MOTOR GROUND FOR OPEN CIRCUIT <ul style="list-style-type: none"> Turn the ignition switch off. Inspect for continuity between DSC HU/CM terminal A (harness-side) and ground. Is there continuity? 	Yes Go to the next step.
		No Repair or replace the wiring harness for open circuit between DSC HU/CM terminal A and ground, then go to Step 5.
4	VERIFY PUMP MOTOR OPERATION <ul style="list-style-type: none"> Turn the ignition switch off. 	Yes Go to the next step.

	<ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. • Turn the ignition switch to the ON position (engine off). • Access PMP_MOTOR active command modes using M-MDS. • Does the pump motor operate? 	No	Replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION.)
5	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the memory. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. • Gradually slow down and stop the vehicle. • Is the same DTC present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	Yes	Replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Are any other DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Brakes

DTC C1186, C1266 [DYNAMIC STABILITY CONTROL (DSC)]

DTC	C1186, C1266	Valve relay system
DETECTION CONDITION		<ul style="list-style-type: none"> • C1186 <ul style="list-style-type: none"> ▪ Five or more solenoid valve malfunctions are detected (solenoid valve is determined when the solenoid valve operation does not correspond to the solenoid ON/OFF signals from the DSC HU/CM). ▪ Valve relay voltage is continuously less than 80% of the ignition voltage for 0.5 s. ▪ Short circuit to ground is detected in the valve relay power supply circuit and valve relay. ▪ Open circuit is detected in the valve relay power supply circuit, or open circuit or sticking (OFF side) is detected in the valve relay. • C1266 <ul style="list-style-type: none"> ▪ DSC HU internal valve relay remains ON (stuck) when valve relay OFF is commanded.
FAIL-SAFE		<ul style="list-style-type: none"> • C1186 <ul style="list-style-type: none"> ▪ Inhibits EBD, ABS, TCS, and DSC controls, and illuminates brake system warning light, ABS warning light, and DSC indicator light. • C1266 <ul style="list-style-type: none"> ▪ Inhibits ABS, TCS, and DSC controls, and illuminates ABS warning light and DSC indicator light.
POSSIBLE CAUSE		<ul style="list-style-type: none"> • DSC 30 A fuse malfunction • Open circuit or short to ground in the wiring harness between the battery and the DSC HU/CM terminal C • Open or short circuit in the DSC HU/CM internal valve relay, or stuck valve relay (DSC HU/CM malfunction) • Poor connection at connectors (female terminal) • DSC HU/CM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT DSC FUSE CONDITION <ul style="list-style-type: none"> Is the DSC 30 A fuse normal? 	Yes Go to the next step.
		No Replace the fuse, then go to Step 3.
2	INSPECT VALVE RELAY POWER SUPPLY FOR OPEN CIRCUIT <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect DSC HU/CM connector. Turn the ignition switch to the ON position (engine off). Measure voltage between DSC HU/CM terminal C (harness-side) and ground. Is voltage B+? 	Yes Go to the next step.
		No Repair or replace the wiring harness for open circuit between battery positive terminal and DSC HU/CM terminal C, then go to the next step.
3	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the memory. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Start the engine and drive the 	Yes Replace the DSC HU/CM, then go to next step. (See DSC HU/CM REMOVAL/INSTALLATION .)
		No Go to the next step.

	vehicle. <ul style="list-style-type: none">Is the same DTC present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)		
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">Are any other DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Brakes

DTC B1342 [DYNAMIC STABILITY CONTROL (DSC)]

DTC	B1342	DSC HU/CM system
DETECTION CONDITION		<ul style="list-style-type: none"> The DSC HU/CM on-board diagnostic function detects control module malfunction.
FAIL-SAFE		<ul style="list-style-type: none"> Inhibits EBD, ABS, TCS, and DSC controls, and illuminates brake system warning light, ABS warning light and DSC indicator light.
POSSIBLE CAUSE		<ul style="list-style-type: none"> DSC HU/CM internal malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY CURRENT STATUS OF MALFUNCTION <ul style="list-style-type: none"> Clear the DTC from the memory. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more. Is the same DTC present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	Yes Replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION .)
		No Go to the next step.
2	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Are any other DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) 	Yes Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .)

[\(DSC\)1.](#))

No DTC troubleshooting completed.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Brakes

DTC B2741, C2768, U2516 [DYNAMIC STABILITY CONTROL (DSC)]

DTC	B2741, C2768, U2516	Combined sensor system
DETECTION CONDITION	<ul style="list-style-type: none"> • B2741 <ul style="list-style-type: none"> ▪ Sensor malfunction signal from combined sensor is detected continuously for 100 ms. ▪ Type of combined sensor is different from specification, or not within set range. • C2768 <ul style="list-style-type: none"> ▪ Signal which indicates combined sensor is under initialization is transmitted from combined sensor. • U2516 <ul style="list-style-type: none"> ▪ Number of signal transmission from combined sensor is wrong. ▪ Check sum error is detected in CAN communication signal between combined sensor. 	
FAIL-SAFE	<ul style="list-style-type: none"> • Inhibits TCS control and DSC control, and illuminates DSC indicator light. (If error is detected during a TCS control, inhibits TCS control after finishing the control.) 	
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Combined sensor malfunction 	

Diagnostic procedure

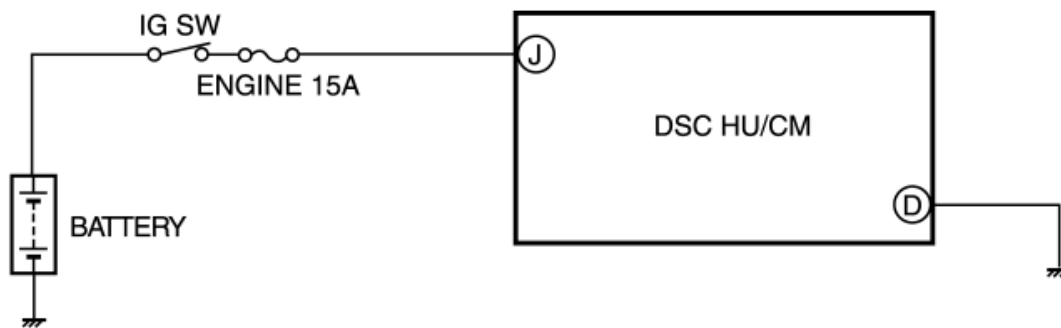
STEP	INSPECTION	ACTION
1	PERFORM COMBINED SENSOR INITIALIZATION	After the initialization procedure for the combined

	<ul style="list-style-type: none"> Perform the combined sensor initialization using the M-MDS. <p>(See COMBINED SENSOR INITIALIZATION PROCEDURE.)</p>	sensor has been completed, go to the next step.
2	VERIFY THAT SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Clear the DTCs from the memory. <p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p> <ul style="list-style-type: none"> Are the same DTCs present? <p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p>	<p>Yes Repeat the inspection from Step 1.</p> <p>If the malfunction recurs, replace the combined sensor.</p> <p>(See COMBINED SENSOR REMOVAL/INSTALLATION.)</p> <p>No Go to the next step.</p>
3	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? <p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p>	<p>Yes Go to the applicable DTC inspection.</p> <p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p> <p>No DTC troubleshooting completed.</p>

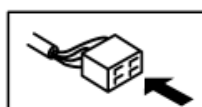
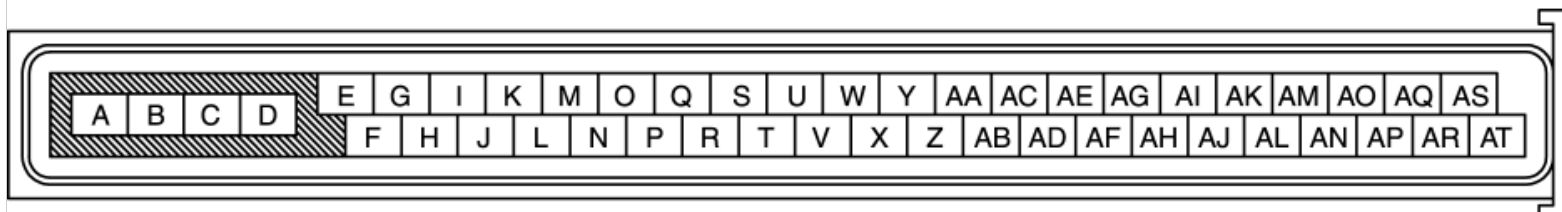
2011 - RX-8 - Brakes

DTC B1317, B1318 [DYNAMIC STABILITY CONTROL (DSC)]

DTC	B1317, B1318	Power supply system
DETECTION CONDITION		<ul style="list-style-type: none">• B1317<ul style="list-style-type: none">▪ Voltage at DSC HU/CM terminal J is more than 16.8 V.• B1318<ul style="list-style-type: none">▪ While the vehicle is driven at a speed of 15 km/h or higher, voltage at DSC HU/CM terminal J is less than 9.6 V (less than 9.3 V during control).
FAIL-SAFE		<ul style="list-style-type: none">• B1317<ul style="list-style-type: none">▪ Inhibits EBD, ABS, TCS, and DSC controls, and illuminates brake system warning light, ABS warning light and DSC indicator light. (If ignition voltage is continuously less than 16.6 V for 1 s, enables (restores) each control and turns each light off.)• B1318<ul style="list-style-type: none">▪ Inhibits ABS, TCS, and DSC controls, and illuminates ABS warning light and DSC indicator light. (If ignition voltage is more than 9.8 V, enables (restores) each control and turns each light off.)
POSSIBLE CAUSE		<ul style="list-style-type: none">• Battery deterioration• Generator malfunction• ENGINE 15 A fuse malfunction• Open circuit or short to ground in the wiring harness between the DSC HU/CM terminal J and the battery• Open circuit or faulty ground in the wiring harness between the DSC HU/CM terminal D and the body ground• Poor connection at connectors (female terminal)• DSC HU/CM malfunction



DSC HU/CM WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT BATTERY VOLTAGE <ul style="list-style-type: none"> Is the battery terminal voltage normal? 	Yes Make sure that battery terminal connection is normal. Go to the next step.
		No Charge or replace the battery, then go to Step 6. (See BATTERY RECHARGING [13B-MSP].) (See BATTERY REMOVAL/INSTALLATION [13B-MSP].)
2	INSPECT BATTERY GRAVITY <ul style="list-style-type: none"> Is battery specific gravity as specified? 	Yes Go to the next step.
		No Replace the battery, then go to Step 6. (See BATTERY REMOVAL/INSTALLATION [13B-MSP].)
3	INSPECT CHARGING SYSTEM <ul style="list-style-type: none"> Are the generator and drive belt tensions normal? 	Yes Go to the next step.
		No Replace generator and/or drive belt as necessary, then go to Step 6. (See GENERATOR REMOVAL/INSTALLATION [13B-MSP].) (See DRIVE BELT REPLACEMENT [13B-MSP].)
4	INSPECT ABS HU/CM POWER SUPPLY FOR OPEN CIRCUIT <ul style="list-style-type: none"> Start the engine. Measure the voltage between DSC HU/CM terminal J and 	Yes Go to the next step.
		No Repair or replace the wiring harness for open circuit between the DSC HU/CM and ground, then go to Step 6.

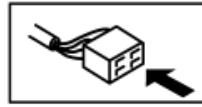
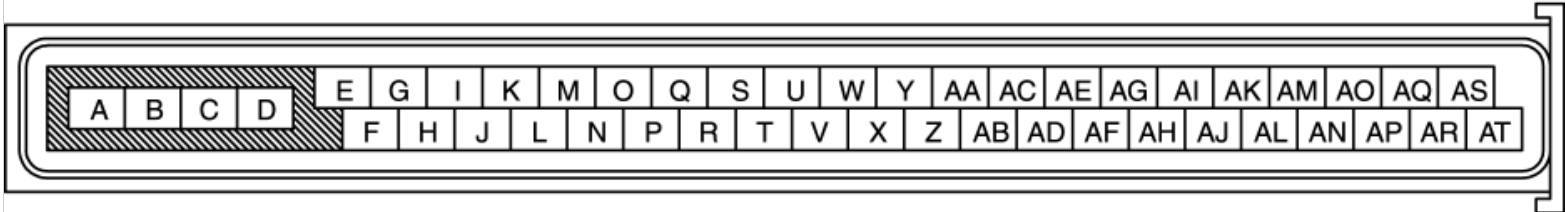
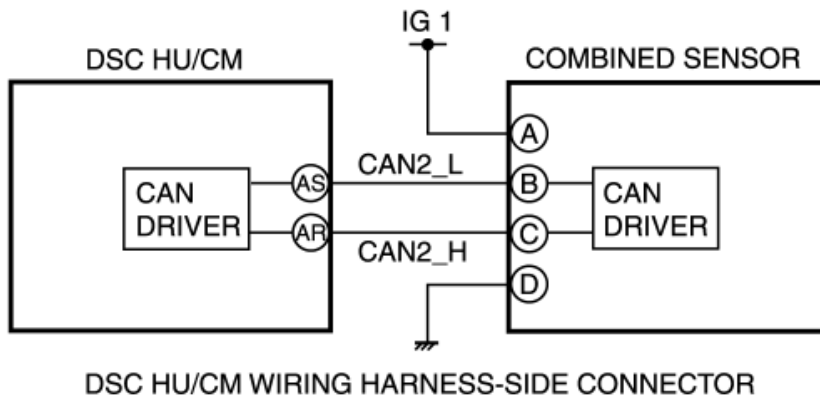
	ground.		
	<ul style="list-style-type: none"> Is the voltage approx. 10 V? 		
5	INSPECT DSC HU/CM GROUND FOR POOR GROUND OR OPEN CIRCUIT <ul style="list-style-type: none"> Turn the ignition switch off. Measure the resistance between ground and DSC HU/CM terminal D. Is the resistance within 0—1 ohm? 	YesGo to the next step.	
		No If there is no continuity: <ul style="list-style-type: none"> Repair or replace the wiring harness for open circuit between the DSC HU/CM and ground, then go to the next step. If the resistance is not within 0—1 ohm : <ul style="list-style-type: none"> Repair or replace the wiring harness for poor ground, then go to the next step. 	
6	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the memory. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .) <ul style="list-style-type: none"> Start the engine and drive the vehicle at 15 km/h {9.3 mph} or more. Is the same DTC present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .)	YesReplace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION .)	
		No Go to the next step.	
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Are any other DTCs present? (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .)	YesGo to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .)	
		No DTC troubleshooting completed.	

2011 - RX-8 - Brakes

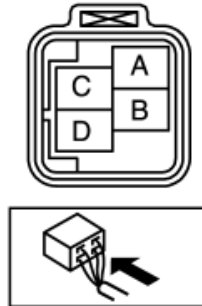
DTC C1279, C1280, C1281, C1952, C1959 [DYNAMIC STABILITY CONTROL (DSC)]

DTC	C1279, C1280, C1281, C1952, C1959	Combined sensor system
DETECTION CONDITION		<ul style="list-style-type: none">• C1279<ul style="list-style-type: none">■ Variation of the yaw rate value from the combined sensor while the vehicle is stopped or started is not within the specification.• C1280<ul style="list-style-type: none">■ Condition 1<ul style="list-style-type: none">• The difference between the yaw rate value calculated by each sensor and the yaw rate value from the combined sensor exceeds the specification.■ Condition 2<ul style="list-style-type: none">• While the vehicle is moving forward, one of the yaw rate values is + and the other is - (yaw rate value calculated from steering angle sensor signal and one from the combined sensor).• C1281<ul style="list-style-type: none">■ Difference between the two lateral-G values exceeds the specification (one from the combined sensor and one calculated from yaw rate signal from the combined sensor, steering angle sensor signal, and ABS wheel-speed sensor signal).• C1952<ul style="list-style-type: none">■ Signal, which indicates low voltage or over voltage, from the combined sensor is continued for 100 ms.• C1959<ul style="list-style-type: none">■ Variation of the lateral-G value from the combined sensor is not within the specification.
		<ul style="list-style-type: none">• C1279, C1281, C1959<ul style="list-style-type: none">■ Inhibits TCS control and DSC control, and illuminates DSC indicator light. (If error is detected during a TCS control, inhibits TCS control after finishing the control.)• C1280<ul style="list-style-type: none">■ Condition 1

<p>FAIL-SAFE</p>	<p>Inhibits TCS control and DSC control, and illuminates DSC indicator light.</p> <p>(If error is detected during a TCS control, inhibits TCS control after finishing the control.)</p> <ul style="list-style-type: none"> ▪ Condition 2 <ul style="list-style-type: none"> • Inhibits TCS control and DSC control, and illuminates DSC indicator light. <p>(If error is detected during a TCS control, inhibits TCS control after finishing the control. If the following conditions are all met at next system activation, enables (restores) each control and turns each light off.)</p> <ul style="list-style-type: none"> a. Yaw rate sensor signal exceeds 3 °/s b. Vehicle speed is 70.2 km/h or more c. Difference between yaw rate sensor signal and the yaw rate value calculated by each sensor is within acceptable range <ul style="list-style-type: none"> • C1952 <ul style="list-style-type: none"> ▪ Inhibits TCS control and DSC control, and illuminates DSC indicator light. <p>(If error is detected during a TCS control, inhibits TCS control after finishing the control. If the signal, which indicate low voltage or over voltage, is eliminated, enables (restores) each control and turns each light off. However, if error is detected again within 180 s after permission (restoring), inhibits each control and illuminates each light until ignition switch is turned off.)</p>
<p>POSSIBLE CAUSE</p>	<ul style="list-style-type: none"> • Poor installation of combined sensor • Open circuit or short to ground in wiring harness between ignition switch—combined sensor terminal A • Open circuit in wiring harness between combined sensor terminal D—ground • Combined sensor malfunction • Poor connection at connectors (female terminal) • DSC HU/CM malfunction



COMBINED SENSOR WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT COMBINED SENSOR INSTALLATION CONDITION <ul style="list-style-type: none"> Inspect the installation condition of the combined sensor. Is the combined sensor installed correctly? 	Yes Go to the next step.
		No Install the combined sensor correctly, then go to the next step.
2	INSPECT COMBINED SENSOR POWER SUPPLY FOR OPEN OR SHORT CIRCUIT <ul style="list-style-type: none"> Turn the ignition switch to the ON position. Measure the voltage between combined sensor terminal A and body ground. Is the voltage approx. 12 V? 	Yes Go to the next step.
		No Repair or replace the wiring harness, then go to Step 5.
3	INSPECT COMBINED SENSOR GROUND FOR OPEN CIRCUIT <ul style="list-style-type: none"> Turn the ignition switch off. Inspect for continuity between combined sensor 	Yes Go to the next step.
		No Repair or replace the wiring harness, then go to

	<p>terminal D and body ground.</p> <ul style="list-style-type: none"> Is there continuity? 	Step 5.
4	<p>INSPECT COMBINED SENSOR</p> <ul style="list-style-type: none"> Inspect the combined sensor. <p>(See COMBINED SENSOR INSPECTION.)</p> <ul style="list-style-type: none"> Is the combined sensor normal? 	<p>Yes Go to the next step.</p> <p>No Replace the combined sensor, then go to the next step.</p> <p>(See COMBINED SENSOR REMOVAL/INSTALLATION.)</p>
5	<p>VERIFY DTC TROUBLESHOOTING COMPLETED.</p> <ul style="list-style-type: none"> Clear the DTC from the memory. <p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p> <ul style="list-style-type: none"> Start the engine and drive the vehicle at 10 km/h {6.0 mph} or more. Are the same DTCs present? <p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p>	<p>Yes Replace the DSC HU/CM, then go to the next step.</p> <p>(See DSC HU/CM REMOVAL/INSTALLATION.)</p> <p>No Go to the next step.</p>
6	<p>VERIFY AFTER REPAIR PROCEDURE.</p> <ul style="list-style-type: none"> Are any other DTCs present? <p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p>	<p>Yes Go to the applicable DTC inspection.</p> <p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p> <p>No DTC troubleshooting completed.</p>

2011 - RX-8 - Brakes

DTC C1290, C1953 [DYNAMIC STABILITY CONTROL (DSC)]

DTC	C1290, C1953	Brake fluid pressure sensor system
DETECTION CONDITION	<ul style="list-style-type: none"> C1290 <ul style="list-style-type: none"> The basic brake fluid pressure value, which is calculated in the DSC HU/CM while the system is not operated and the brake is not applied, exceeds the specified value. C1953 <ul style="list-style-type: none"> The brake fluid pressure sensor signal is continuously more than 13.95 MPa or less than the specified value for 100 ms or more. 	
FAIL-SAFE	<ul style="list-style-type: none"> Inhibits ABS, TCS, and DSC controls, and illuminates ABS warning light and DSC indicator light. <p>(If error is detected during a ABS/TCS control, inhibits ABS/TCS control after finishing the control.)</p>	
POSSIBLE CAUSE	<ul style="list-style-type: none"> Brake fluid pressure sensor malfunction in DSC HU/CM Open or short circuit in the brake fluid pressure sensor circuit in DSC HU/CM 	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY NO ABNORMALITY ON BRAKE FLUID PRESSURE SENSOR <ul style="list-style-type: none"> Clear the DTCs from the memory. <p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p>	<p>Yes Replace the DSC HU/CM, then go to the next step.</p> <p>(See DSC HU/CM REMOVAL/INSTALLATION.)</p> <p>No Go to the next step.</p>

	<ul style="list-style-type: none">Start the engine and drive the vehicle at 10 km/h {6.2 mph} or more.Are the same DTCs present? <p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p>		
2	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none">Are any other DTCs output? <p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p>	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Brakes

DTC U0073, U0100, U0101, U0155, U1900, U2023 [DYNAMIC STABILITY CONTROL (DSC)]

DTC	U0073, U0100, U0101, U0155, U1900, U2023	CAN line system
DETECTION CONDITION	<ul style="list-style-type: none"> • U0073 <ul style="list-style-type: none"> ▪ Communication error with other modules is detected in CAN communication. • U0100 <ul style="list-style-type: none"> ▪ Error is detected in received data from PCM in CAN communication. • U0101 <ul style="list-style-type: none"> ▪ Error is detected in received data from TCM in CAN communication. • U0155 <ul style="list-style-type: none"> ▪ Error is detected in received data from instrument cluster in CAN communication. • U1900 <ul style="list-style-type: none"> ▪ Error is detected in transmitted data in CAN communication. ▪ CAN initialization is failure. ▪ Data written to CAN main memory and those read from are not consistent. • U2023 <ul style="list-style-type: none"> ▪ PCM malfunction data is continuously received for 0.5 s in CAN communication. ▪ Invalid accelerator opening angle signal is continuously received for 0.5 s in CAN communication. 	

	<ul style="list-style-type: none"> ▪ Invalid engine speed signal is continuously received for 0.5 s in CAN communication. ▪ Invalid reference engine torque signal is continuously received for 0.5 s in CAN communication. ▪ Invalid engine torque signal is continuously received for 0.5 s in CAN communication.
FAIL-SAFE	<ul style="list-style-type: none"> • Inhibits TCS control and DSC control, and illuminates DSC indicator light.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Malfunction in communication line between PCM, TCM, instrument cluster, and steering angle sensor • Malfunction in PCM, TCM, instrument cluster, or steering angle sensor • Poor connection at connectors (female terminal)

Diagnostic procedure

- Inspect according to diagnostic procedure in BODY & ACCESSORIES. (See [FOREWORD \[MULTIPLEX COMMUNICATION SYSTEM\]](#).)

[< Previous](#) [Next >](#)

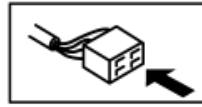
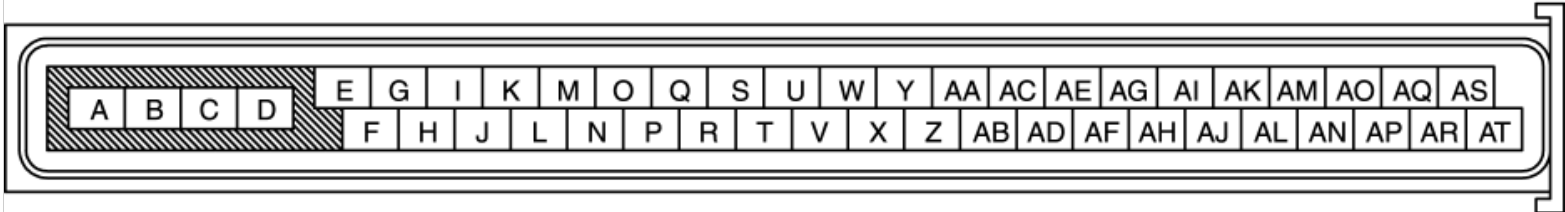
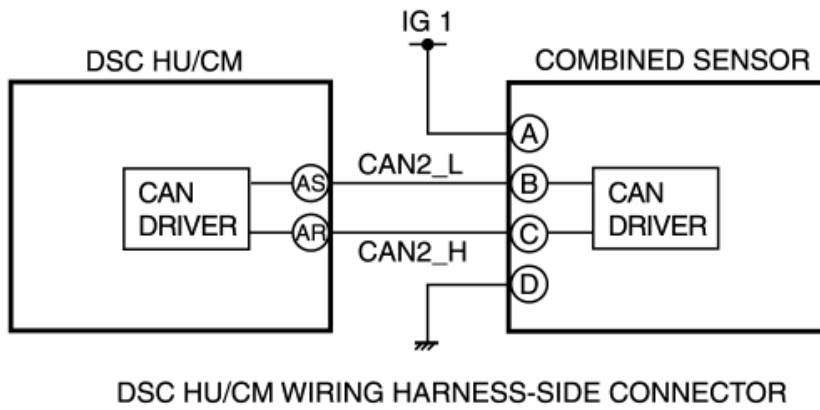
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

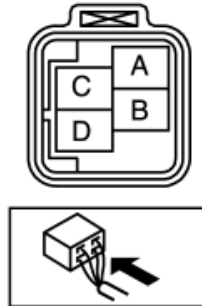
2011 - RX-8 - Brakes

DTC U0074, U0123, U1901 [DYNAMIC STABILITY CONTROL (DSC)]

DTC	U0074, U0123, U1901	Combined sensor system (CAN2 line malfunction)
DETECTION CONDITION		<ul style="list-style-type: none">• U0074<ul style="list-style-type: none">▪ Communication error with combined sensor is detected in CAN communication.• U0123<ul style="list-style-type: none">▪ Error is detected in received data from combined sensor in CAN communication.• U1901<ul style="list-style-type: none">▪ Error is detected in transmitted data to combined sensor in CAN communication.
FAIL-SAFE		<ul style="list-style-type: none">• U0074, U1901<ul style="list-style-type: none">▪ Inhibits TCS control and DSC control, and illuminates indicator light.• U0123<ul style="list-style-type: none">▪ Inhibits TCS control and DSC control, and illuminates indicator light. (If error is detected during a TCS control, inhibits TCS control after finishing the control.)
POSSIBLE CAUSE		<ul style="list-style-type: none">• Open or short circuit in the CAN2_L wiring harness between combined sensor terminal B and DSC HU/CM terminal AS• Open or short circuit in the CAN2_H wiring harness between combined sensor terminal C and DSC HU/CM terminal AR• Combined sensor malfunction• Poor connection at connectors (female terminal)• DSC HU/CM malfunction



COMBINED SENSOR WIRING HARNESS-SIDE CONNECTOR



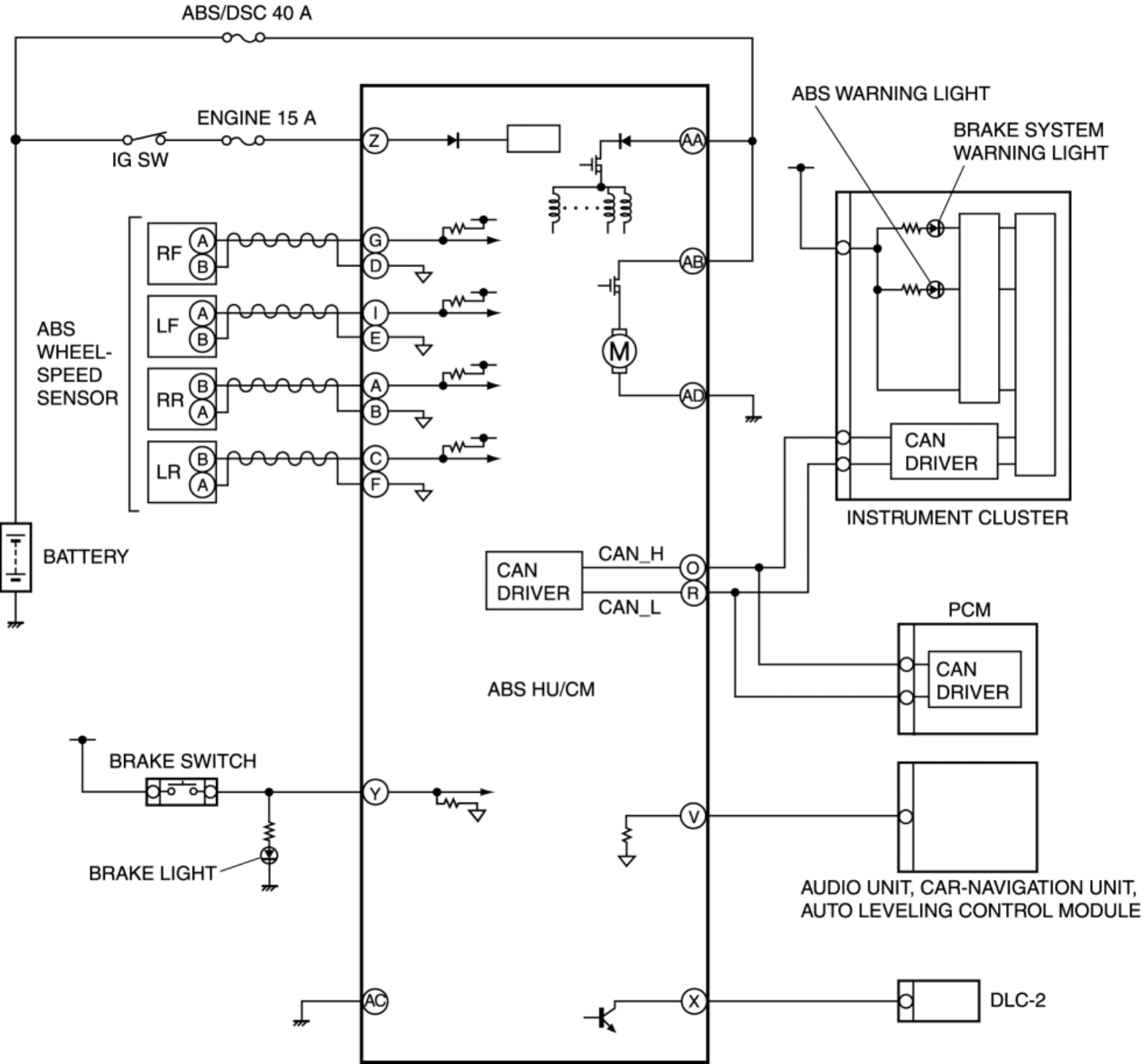
Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT COMBINED SENSOR SIGNAL (CAN2 LINE) FOR OPEN CIRCUIT <ul style="list-style-type: none"> Disconnect the DSC HU/CM connectors. Disconnect the combined sensor connectors. Inspect for continuity between the DSC HU/CM connectors (vehicle harness-side) and the following combined sensor connector terminals (vehicle harness-side): <ul style="list-style-type: none"> Combined sensor (CAN2_L): B—AS Combined sensor (CAN2_H): C—AR Is there continuity? 	<p>Yes Go to the next step.</p> <p>No Repair or replace the wiring harness, then go to Step 4.</p>
2	INSPECT COMBINED SENSOR SIGNAL (CAN2 LINE) FOR SHORT CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between the following DSC HU/CM connector terminals (vehicle harness-side) and body ground: <ul style="list-style-type: none"> Combined sensor (CAN2_L): B 	<p>Yes Repair or replace the wiring harness, then go to Step 4.</p> <p>No Go to the next step.</p>

	<ul style="list-style-type: none"> Combined sensor (CAN2_H): C 		
	<ul style="list-style-type: none"> Is there continuity? 		
3	INSPECT THE COMBINED SENSOR <ul style="list-style-type: none"> Reconnect all disconnected connectors. <p>Inspect the combined sensor.</p> <p>(See COMBINED SENSOR INSPECTION.)</p> <ul style="list-style-type: none"> Is the combined sensor normal? 	Yes	Go to the next step.
		No	Replace the combined sensor, then go to the next step. (See COMBINED SENSOR REMOVAL/INSTALLATION .)
4	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTCs from the memory. <p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p> <ul style="list-style-type: none"> Are the same DTCs present? <p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p>	Yes	Repeat the inspection from Step 1. If the malfunction recurs, replace the DSC CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION .)
		No	Go to the next step.
5	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? <p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p>	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Brakes

SYSTEM WIRING DIAGRAM [ABS]



[< Previous](#) [Next >](#)

2011 - RX-8 - Brakes

FOREWORD [ABS]

- Before performing the steps in Symptom Troubleshooting, perform the On-board Diagnostic Inspection. To check the DTC, follow the DTC Inspection steps. (See [ON-BOARD DIAGNOSIS \[ABS\]](#).)

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Brakes

PRECAUTION [ABS]

1. Any one or a combination of the ABS warning and BRAKE system warning lights illuminate even when the system is normal.

Warning lights that may illuminate and/or flash	Condition under which the light may illuminate	Conditions under which the light will go out	ABS, EBD control
<div>Any or all the following lights illuminate:</div> <div><ul style="list-style-type: none">• ABS warning light• BRAKE system warning light (*1)</div>	<div><ul style="list-style-type: none">• When the front wheels are jacked up, stuck, or placed on a chassis roller, and only the front wheel ABS wheel speed sensors are spun for 20 s or more.</div>	<div>After turning ignition switch off, vehicle is driven at speed greater than 10 km/h {6.2 mph} and normal operation is confirmed.</div>	<div><ul style="list-style-type: none">• ABS: Disables control.• EBD:<div><div>1. Disables control, in cases where the light may illuminate, only when ABS HU/CM detects that wheel speed sensors determine that two or more rear wheels are malfunctioning.</div><div>2. Enables control, if wheel speed sensors determine that three or more wheels are functioning correctly.</div></div></div>
	Parking brake is not fully released while driving.		
	Brake drag.		
	Sudden acceleration/deceleration.		

	Left/right or front/rear tires are different. (Size, radius, tire pressure, or wear is other than that listed on tire label.)		
All the following lights illuminate: <ul style="list-style-type: none"> • ABS warning light • BRAKE system warning light 	Battery voltage at ABS HU/CM ignition terminal Z drops below approx. 9 to 10 V. (* ²)	Battery voltage rises above approx. 10 V. (Only BRAKE system warning light goes out.)	ABS: Enables control. EBD: Enables control.

*¹ **The light will illuminate only when ABS HU/CM detects that a rear wheel–speed sensor is malfunctioning.**

*² **If battery voltage drops below 9 V while vehicle speed is greater than 6 km/h {3.7 mph}, the ABS HU/CM stores DTC B1318.**

2. Precautions during servicing of ABS

The ABS is composed of electrical and mechanical parts. It is necessary to categorize malfunctions as being either electrical or hydraulic when performing troubleshooting.

a. Malfunctions in electrical system

- The ABS HU/CM has an on-board diagnostic function. With this function, any one or a combination of the ABS warning light and BRAKE system warning light will illuminate when there is a problem in the electrical system. Also, past and present malfunctions are stored in the ABS HU/CM. This function can find malfunctions that do not occur during periodic inspections. Connect the M-MDS to the DLC–2. Stored malfunctions will be displayed in the order of occurrence. To find out the causes of ABS malfunctions, use these on-board diagnostic results.
- If a malfunction occurred in the past but is now normal, the cause is likely a temporary poor connection of the wiring harness. The ABS HU/CM usually operates normally. Be careful when searching for the cause of malfunction.
- After repair, it is necessary to clear the
DTC from the ABS HU/CM memory. Also, if the ABS related parts have been replaced, verify that no DTC is displayed after repairs.
- After repairing the ABS wheel-speed sensor or ABS sensor rotor, or after replacing the ABS HU/CM, the ABS warning light may not go out (*) even when the ignition switch is turned to the ON position. In this case, drive the vehicle at a speed of **10 km/h {6.2 mph} or more**, make sure that ABS warning light goes out, and then clear the DTC.

* The BRAKE system warning light also illuminates when there is any rear wheel deformation.

- When repairing, if the ABS related connectors are disconnected and the ignition switch is turned to the ON position, the ABS HU/CM will mistakenly detect a fault and record it as a malfunction.
- To protect the ABS HU/CM, make sure the ignition is off before connecting or disconnecting the ABS HU/CM connector.

b. Malfunctions in hydraulic system

- Symptoms in a hydraulic system malfunction are similar to those in a conventional brake malfunction. However, it is necessary to determine if the malfunction is in an ABS component or the conventional brake system.
- The ABS hydraulic unit contains delicate mechanical parts. If foreign material gets into the component, the ABS may fail to operate. Also, it will likely become extremely difficult to find the location of the malfunction in the event that the brakes operate but the ABS does not. Make sure foreign material does not enter when servicing the ABS (e.g. brake fluid replacement, pipe removal).

Intermittent Concern Troubleshooting

Vibration method

- If a malfunction occurs or becomes worse while driving on a rough road or when the engine is vibrating, perform the following steps.

NOTE:

- There are several reasons why vehicle or engine vibration could cause an electrical malfunction. Inspect the following:
 - Connectors not fully seated.
 - Wire harnesses not having full play.
 - Wires laying across brackets or moving parts.
 - Wires routed too close to hot parts.
- An improperly routed, improperly clamped, or loose harness can cause wiring to become pinched between parts.
- The connector joints, points of vibration, and places where wiring harnesses pass through the firewall, body and other panels are the major areas to be inspected.

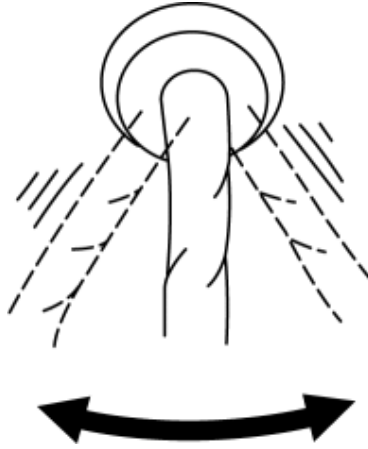
Inspection method for switch connectors or wires

1. Connect the M-MDS to the DLC-2.

2. Turn the ignition switch to the ON position (engine off).

NOTE:

- If the engine starts and runs, perform the following steps at idle.
3. Access PIDs for the switch you are inspecting.
 4. Turn the switch on manually.
 5. Slightly shake each connector or wiring harness vertically and horizontally while monitoring the PID.



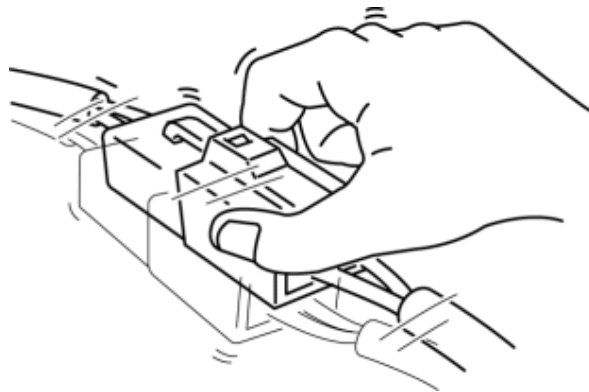
- If the PID value is unstable, inspect for poor connection.

Inspection method for sensor connectors or wires

1. Connect the M-MDS to the DLC-2.
2. Turn the ignition switch to the ON position (engine off).

NOTE:

- If the engine starts and runs, perform the following steps at idle.
3. Access PIDs for the switch you are inspecting.
 4. Slightly shake each connector or wiring harness vertically and horizontally while monitoring the PID.



- If the PID value is unstable, inspect for poor connection.

Inspection method for sensors

1. Connect the M-MDS to the DLC-2.
2. Turn the ignition switch to the ON position (engine off).

NOTE:

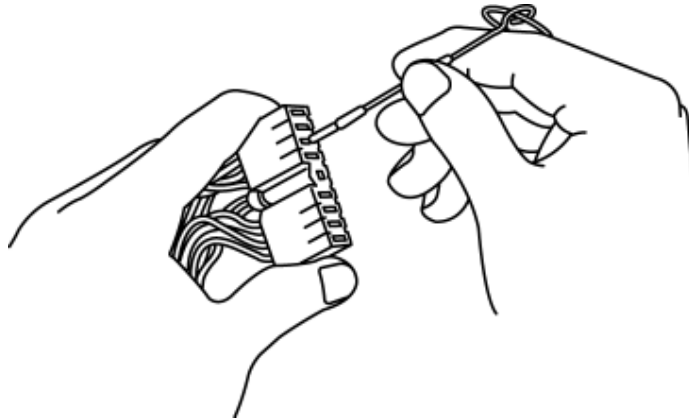
- If engine starts and runs, perform the following steps at idle.
3. Access PIDs for the switch you are inspecting.
 4. Vibrate the sensor slightly with your finger.
- If the PID value is unstable or a malfunction occurs, inspect for poor connection and/or poorly mounted sensor.

Malfunction data monitor method

1. Perform the malfunction reappearance test according to malfunction reappearance mode and malfunction data monitor. The malfunction cause is found in the malfunction data.

Inspection method for connector terminal

1. Inspect the connection condition of each female terminal.
2. Insert the male terminal, and fit the female terminal side to female terminal. Inspect if the malfunction is in the female terminal.



2011 - RX-8 - Brakes

SYMPTOM TROUBLESHOOTING [ABS]

- Verify the symptoms, and perform troubleshooting according to the appropriate number.

No.	Symptom
1	Neither ABS warning light nor BRAKE system warning light illuminate when the ignition switch is turned to the ON position.
2	ABS warning light does not illuminate when the ignition switch is turned to the ON position.
3	BRAKE system warning light does not illuminate when the ignition switch is turned to the ON position.
4	Both ABS warning light and BRAKE system warning light stay on 4 s or more when the ignition switch is turned to the ON position.
5	ABS warning light stays on 4 s or more when the ignition switch is turned to the ON position.
6	BRAKE system warning light stays on 4 s or more when the ignition switch is turned to the ON position. (Parking brake is released.)

Possible factor															
Troubleshooting item		ABS HU/CM	Instrument cluster	Battery	Brake fluid	Brake fluid level sensor	Parking brake switch	Charging system	ABS HU/CM power supply (terminal Z)	ABS HU/CM GND 1 (terminal AA)	Instrument cluster power supply (terminal 1G)	Instrument cluster GND (terminal 1E)	Tire size, tire air pressure	Conventional brakes	Brake pipe routing
1	Neither ABS warning light norBRAKE system warning light illuminates when the ignition switch is turned to the ON position.		X								X	X			
2	ABS warning light does not illuminate when the ignition switch is turned to the ON position.	X	X												
3	BRAKE system warning light does not illuminate when the ignition switch is turned to the ON position.	X	X												
4	Both ABS warning light and BRAKE system warning light stay on 4 s or more when the ignition switch is turned to the ON position.	X	X	X				X	X	X					
5	ABS warning light stays on 4 s or more when the ignition switch is turned to the ON position.	X	X												
6	BRAKE system warning light stays on 4 s or more when the ignition switch is turned to the ON position.	X	X		X	X	X								

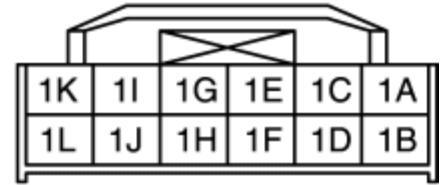
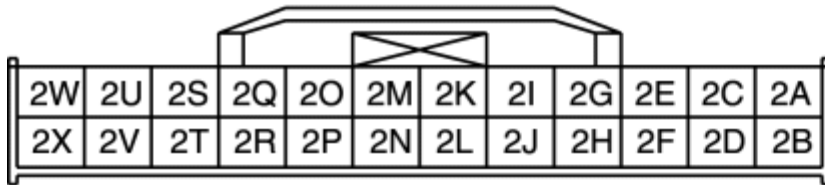
2011 - RX-8 - Brakes

NO.1 NEITHER ABS WARNING LIGHT NOR BRAKE SYSTEM WARNING LIGHT ILLUMINATE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION [ABS]

1	ABS warning light and BRAKE system warning light do not illuminate when the ignition switch is turned to ON position.	
[TROUBLESHOOTING HINTS] <ul style="list-style-type: none">• Malfunction of instrument cluster or ABS HU/CM• Improper configuration (instrument cluster)		
STEP	INSPECTION	ACTION
1	VERIFY WHETHER MALFUNCTION IS IN COMMON POWER SUPPLY OF WARNING LIGHTS AND INDICATOR LIGHTS, OR IN OTHER WARNING LIGHTS AND INDICATOR LIGHTS <ul style="list-style-type: none">• Do other warning and indicator lights illuminate when the ignition switch is turned to the ON position?	YesGo to step 4.
		NoGo to the next step.
2	INSPECT INSTRUMENT CLUSTER POWER SUPPLY FUSE <ul style="list-style-type: none">• Is the instrument cluster ignition power supply fuse normal?	YesGo to the next step.
		NoInspect for a short to ground on circuit of blown fuse. Repair or replace if necessary. Install appropriate amperage fuse.
*3	VERIFY WHETHER MALFUNCTION IS IN WIRING HARNESS (INSPECT FOR CONTINUITY BETWEEN INSTRUMENT CLUSTER POWER SUPPLY AND INSTRUMENT CLUSTER) OR INSTRUMENT CLUSTER <ul style="list-style-type: none">• Turn ignition switch to ON position.	YesReplace the instrument cluster (open circuit in instrument cluster). (See INSTRUMENT

	<ul style="list-style-type: none"> Measure voltage at instrument cluster connector (12-pin) terminal 1G. Is the voltage approx. 12 V? 		CLUSTER REMOVAL/INSTALLATION.)
		No	Inspect for open circuit between instrument cluster and ground. Repair or replace if necessary.
4	CONFIRM DTC U1900 USING M-MDS <ul style="list-style-type: none"> Retrieve DTCs from the PCM, ABS and instrument cluster. Is DTC U1900 retrieved? 	Yes	Go to the next step.
		No	Inspect the instrument cluster. If normal, go to Step 6.
5	CONFIRM THE FOLLOWING PIDs USING M-MDS: <ul style="list-style-type: none"> ABS_MSG PCM_MSG EPS_MSG TPM_MSG Is "not present" message displayed on M-MDS? 	Yes	Replace the instrument cluster (open circuit in instrument cluster). (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Inspect network communication for related system malfunction. Repair or replace if necessary.
6	CONFIRM DTC B2477 FOR INSTRUMENT CLUSTER USING M-MDS <ul style="list-style-type: none"> Is DTC B2477 retrieved? 	Yes	Perform instrument cluster configuration. (See INSTRUMENT CLUSTER CONFIGURATION.)
		No	Replace the ABS HU/CM. (See ABS HU/CM REMOVAL/INSTALLATION.)

INSTRUMENT CLUSTER WIRING HARNESS-SIDE CONNECTOR



- When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, Verify that the connectors, terminals and wiring harness are connected correctly and undamaged.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Brakes

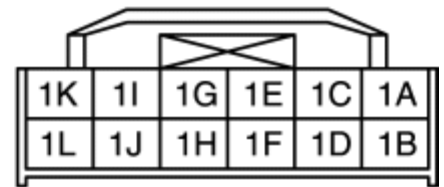
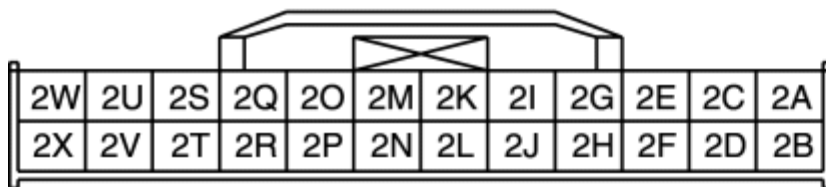
NO.3 BRAKE SYSTEM WARNING LIGHT DOES NOT ILLUMINATE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION [ABS]

3	BRAKE system warning light does not illuminate when the ignition switch is turned to the ON position.
<p>[TROUBLESHOOTING HINTS]</p> <ul style="list-style-type: none"> • Malfunction of instrument cluster or ABS HU/CM 	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	CONFIRM DTC U1900 USING M-MDS <ul style="list-style-type: none"> • Retrieve DTCs from the PCM, ABS and instrument cluster. • Is DTC U1900 retrieved? 	Yes Go to the next step.
		No Inspect the instrument cluster. If normal, go to the next step.
2	CONFIRM THE FOLLOWING PIDs USING M-MDS: <ul style="list-style-type: none"> • ABS_MSG • PCM_MSG • EPS_MSG • TPM_MSG • Is "not present" message displayed on M-MDS? 	Yes Replace the instrument cluster (open circuit in instrument cluster). (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION .)
		No Inspect network communication for related system malfunction. Repair or replace if necessary.

INSTRUMENT CLUSTER WIRING HARNESS-SIDE CONNECTOR



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Brakes

NO.4 BOTH ABS WARNING LIGHT AND BRAKE SYSTEM WARNING LIGHT STAY ON 4 S OR MORE WHEN THE IGNITION SWITCH IS TURNED TO THE ON POSITION [ABS]

4 Both ABS warning light and BRAKE system warning light stay on 4 s or more when the ignition switch is turned to the ON position.

[TROUBLESHOOTING HINTS]

- ABS HU/CM detects ABS proportioning system malfunction.
- ABS HU/CM detects low voltage in power supply (ABS CM ingestion terminal Z voltage is below about 9 to 10 V).
- ABS HU/CM does not operate.
- Malfunction of communication network.

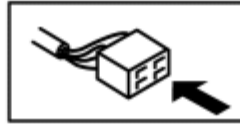
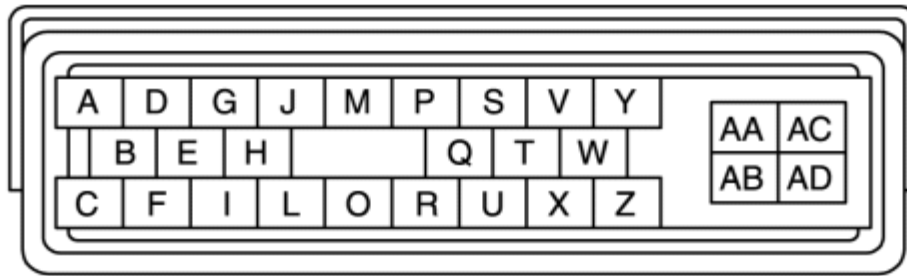
Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT ABS HU/CM POWER SUPPLY FUSE	Yes Go to the next step.
	<ul style="list-style-type: none"> • Is the ABS HU/CM ignition power supply fuse normal? 	No Inspect for a short to ground on circuit of blown fuse. Repair or replace if necessary. Install appropriate amperage fuse.
2	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR CONTINUITY AND SHORTS	Yes If a communication error message is displayed even after inspecting according to procedure displayed on M-MDS, go to step 10.
	<ul style="list-style-type: none"> • Perform DTC inspection. • Is error message displayed regarding communication 	No Go to the next step.

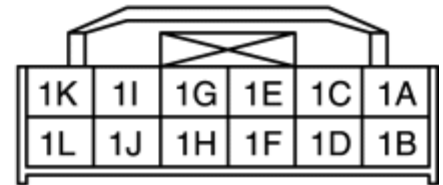
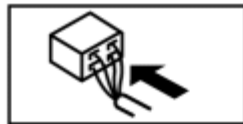
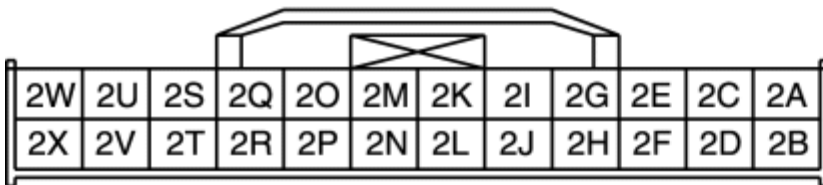
	between ABS HU/CM and M-MDS?		
3	INSPECT FOR DTCS IN ABS HU/CM <ul style="list-style-type: none"> Have DTCS been stored in memory? 	Yes	Perform the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [ABS].)
		No	Go to the next step.
4	INSPECT PID/DATA IN ABS HU/CM <ul style="list-style-type: none"> Inspect the following items using M-MDS datalogger function. <ul style="list-style-type: none"> ABS_LAMP (ABS warning light) BRAKE_LMP (BRAKE system warning light) ABS_VOLT (power supply voltage) Is ABS_LAMP and BRAKE_LMP ON 4 s or more after the ignition switch is turned to the ON position? 	Yes	Go to the next step.
		No	Inspect the instrument cluster.
5	INSPECT ABS HU/CM IGNITION POWER SUPPLY SYSTEM (TERMINAL Z) <ul style="list-style-type: none"> Inspect the voltage for datalogger ABS_VOLT item. Specification: approx. 10 V <ul style="list-style-type: none"> Is the voltage within specification? 	Yes	Replace the ABS HU/CM (open or short in ground circuit in ABS HU/CM). (See ABS HU/CM REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	INSPECT BATTERY <ul style="list-style-type: none"> Is the battery voltage normal? 	Yes	Go to the next step.
		No	Inspect the battery and charging system. (See BATTERY INSPECTION [13B-MSP].) (See GENERATOR INSPECTION [13B-MSP].)
7	INSPECT CHARGING SYSTEM	Yes	Go to the next step.

	<ul style="list-style-type: none"> Is the battery voltage normal with electrical load (A/C, headlight, etc.) on and engine idling? 	No	Inspect the charging system (drive belt tension, generator, etc.). (See GENERATOR INSPECTION [13B-MSP] .)
*8	INSPECT WIRING HARNESS BETWEEN ABS HU/CM POWER SUPPLY AND ABS HU/CM FOR CONTINUITY <ul style="list-style-type: none"> Disconnect the ABS HU/CM connector. Is the voltage approx. 12 V at connector terminal Z? 	Yes	Go to the next step.
		No	Inspect the ABS HU/CM connector for secure connection.
*9	INSPECT WIRING HARNESS BETWEEN ABS HU/CM GROUND FOR CONTINUITY <ul style="list-style-type: none"> Turn the ignition switch to LOCK position. Is there continuity between connector terminal AC and ground? 	Yes	If a malfunction error message is displayed on the M-MDS in Step 1 inspection, go to the next step. If a malfunction error message is not displayed on the M-MDS in Step 1 inspection, troubleshooting is completed.
		No	Repair the wiring harness between ABS HU/CM and ground.
*10	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR CONTINUITY <ul style="list-style-type: none"> Is there continuity between connector terminal X and DLC-2? 	Yes	Go to the next step.
		No	Repair the wiring harness between ABS HU/CM and DLC-2.
*11	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR SHORT TO BATTERY <ul style="list-style-type: none"> Is the voltage approx. 12 V at connector terminal X? 	Yes	Repair the wiring harness between ABS HU/CM and DLC-2.
		No	Go to the next step.
*12	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR SHORT TO GROUND <ul style="list-style-type: none"> Is there continuity between connector terminal X and DLC-2? 	Yes	Repair the wiring harness between ABS HU/CM and DLC-2.
		No	Replace the ABS HU/CM (communication circuit malfunction in ABS HU/CM). (See ABS HU/CM REMOVAL/INSTALLATION .)

ABS HU/CM WIRING HARNESS-SIDE CONNECTOR



INSTRUMENT CLUSTER WIRING HARNESS-SIDE CONNECTOR



- When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, verify that the connectors, terminals and wiring harness are connected correctly and undamaged.

2011 - RX-8 - Brakes

NO.2 ABS WARNING LIGHT DOES NOT ILLUMINATE WHEN IGNITION SWITCH TURNED TO ON POSITION [ABS]

2 ABS warning light does not illuminate when the ignition switch is turned to the ON position.

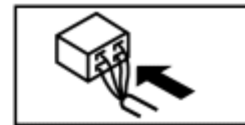
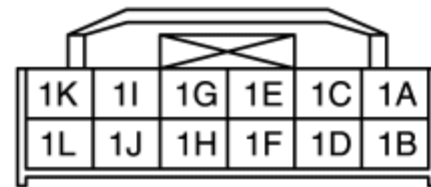
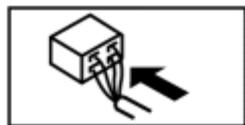
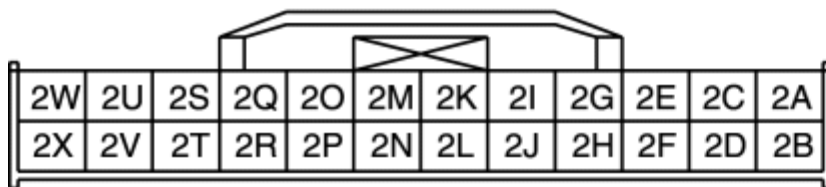
[TROUBLESHOOTING HINTS]

- Malfunction of instrument cluster or ABS HU/CM

Diagnostic procedure

STEP	INSPECTION	ACTION
1	CONFIRM DTC U1900 USING M-MDS <ul style="list-style-type: none"> • Retrieve DTCs from the PCM, ABS and instrument cluster. • Is DTC U1900 retrieved? 	Yes Go to the next step.
		No Inspect the instrument cluster. If normal, go to the next step.
2	CONFIRM THE FOLLOWING PIDs USING M-MDS: <ul style="list-style-type: none"> • ABS_MSG • PCM_MSG • EPS_MSG • TPM_MSG • Is "not present" message displayed on M-MDS? 	Yes Replace the instrument cluster (open circuit in instrument cluster). (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No Inspect network communication for related system malfunction. Repair or replace if necessary.

INSTRUMENT CLUSTER WIRING HARNESS-SIDE CONNECTOR



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Brakes

NO.5 ABS WARNING LIGHT STAYS ON 4 S OR MORE WHEN IGNITION SWITCH TURNED TO ON POSITION [ABS]

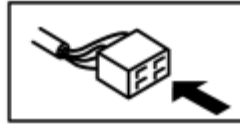
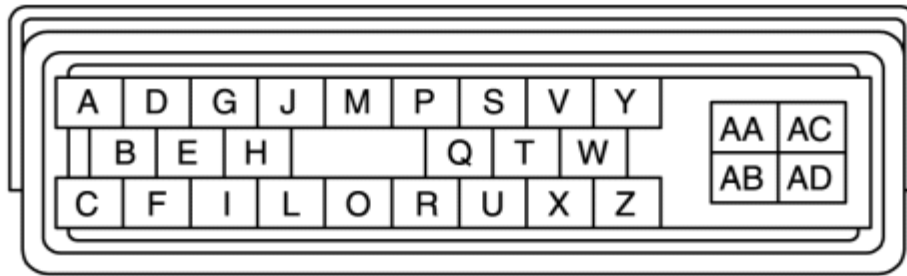
5	ABS warning light stays on 4 s or more when the ignition switch to the ON position.
[TROUBLESHOOTING HINTS] <ul style="list-style-type: none"> • ABS HU/CM detects ABS system malfunction. 	

Diagnostic procedure

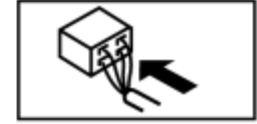
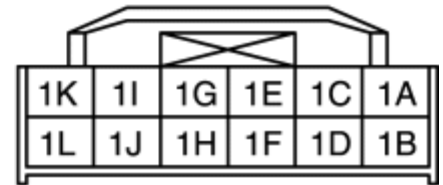
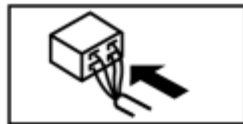
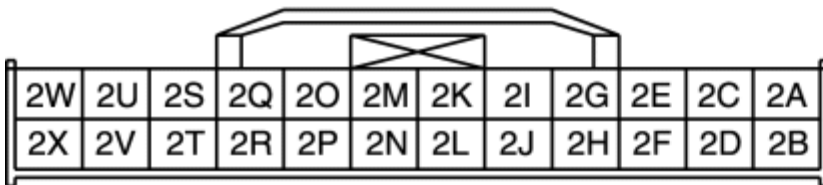
STEP	INSPECTION	ACTION	
1	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR CONTINUITY AND SHORTS <ul style="list-style-type: none"> • Perform DTC inspection. • Is error message displayed regarding communication between ABS HU/CM and M-MDS? 	Yes	If the communication error message is displayed even after inspecting according to procedures displayed in the M-MDS, go to Step 4.
		No	Go to the next step.
2	INSPECT FOR DTCs IN ABS HU/CM <ul style="list-style-type: none"> • Have DTCs been stored in memory? 	Yes	Perform the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [ABS] .)
		No	Go to the next step.
3	INSPECT PID/DATA IN ABS HU/CM <ul style="list-style-type: none"> • Inspect the following items using M-MDS datalogger function. <ul style="list-style-type: none"> ▪ ABS_LAMP (ABS warning 	Yes	Replace the ABS HU/CM (open circuit or short to ground in ABS HU/CM). (See ABS HU/CM REMOVAL/INSTALLATION .)
		No	Inspect the instrument cluster.

	light)		
	<ul style="list-style-type: none"> Is ABS_LAMP ON 4 s or more after turning the ignition switch to the ON position? 		
* 4	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR CONTINUITY Disconnect the ABS HU/CM connector. <ul style="list-style-type: none"> Is there continuity between connector terminal X and DLC-2? 	Yes	Go to the next step.
		No	Repair the wiring harness between the ABS HU/CM and DLC-2.
* 5	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR SHORT TO B+ <ul style="list-style-type: none"> Is the voltage approx. 12V at connector terminal X? 	Yes	Repair the wiring harness between the ABS HU/CM and DLC-2.
		No	Go to the next step.
* 6	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR SHORT TO GROUND <ul style="list-style-type: none"> Is there continuity between connector terminal X and ground? 	Yes	Repair the wiring harness between the ABS HU/CM and DLC-2.
		No	Replace the ABS HU/CM (communication circuit malfunction in ABS HU/CM). (See ABS HU/CM REMOVAL/INSTALLATION .)

ABS HU/CM WIRING HARNESS-SIDE CONNECTOR



INSTRUMENT CLUSTER WIRING HARNESS-SIDE CONNECTOR



- When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, verify that the connectors, terminals and wiring harness are connected correctly and undamaged.

2011 - RX-8 - Brakes

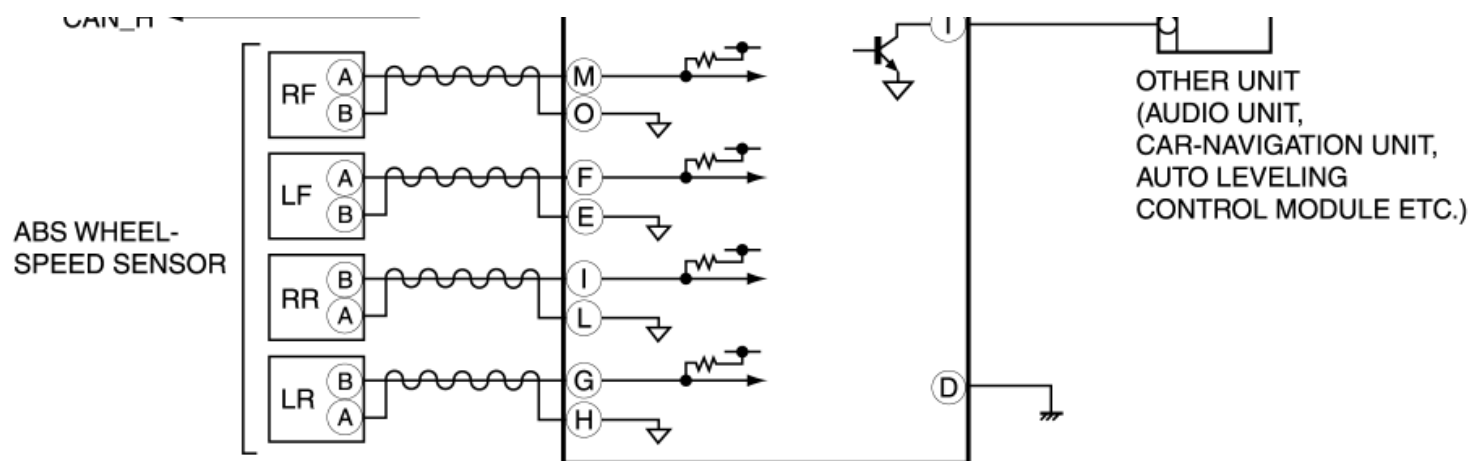
NO.6 BRAKE SYSTEM WARNING LIGHT STAYS ON 4 S OR MORE WHEN IGNITION SWITCH TURNED TO ON POSITION [ABS]

6	BRAKE system warning light stays on 4 s or more when the ignition switch is turned to the ON position. (Parking brake is released.)
<p>[TROUBLESHOOTING HINTS]</p> <ul style="list-style-type: none"> • Malfunction of instrument cluster or ABS HU/CM • Short to ground in circuit in parking brake switch and/or brake fluid level sensor 	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT BRAKE FLUID LEVEL <ul style="list-style-type: none"> • Is brake fluid level normal? 	<p>Yes Go to the next step.</p> <p>No Add brake fluid.</p>
*2	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR CONTINUITY AND SHORTS <ul style="list-style-type: none"> • Inspect the following items using the M-MDS datalogger function. <ul style="list-style-type: none"> ▪ BRAKE_LMP (BRAKE system warning light) • Is error message displayed regarding communication between ABS HU/CM and M-MDS? 	<p>Yes If a communication error message is displayed even after inspecting according to procedures displayed on M-MDS. Go to next Step 6.</p> <p>No Go to the next step.</p>
3	INSPECT FOR DTCs IN ABS HU/CM	<p>Yes Perform the applicable DTC inspection.</p>

	<ul style="list-style-type: none"> Have DTCs been stored in memory? 	<p>(See ON-BOARD DIAGNOSIS [ABS].)</p> <p>No Go to the next step.</p>
4	INSPECT PID/DATA IN ABS HU/CM <ul style="list-style-type: none"> Inspect (BRAKE system warning light) using the M-MDS datalogger function. Is BRAKE_LMP on 4 s or more after the ignition switch is turned to the ON position? 	<p>Yes Replace the ABS HU/CM.</p> <p>(See ABS HU/CM REMOVAL/INSTALLATION.)</p> <p>No Go to the next step.</p>
5	VERIFY WHETHER MALFUNCTION IS IN PARKING BRAKE SWITCH OR BRAKE FLUID LEVEL SENSOR, OR IN SOME OTHER PART <ul style="list-style-type: none"> Disconnect in the following order: <ol style="list-style-type: none"> Parking brake switch connector Brake fluid level sensor connector Does BRAKE system warning light go out with ignition switch to ON position? 	<p>Yes Replace the parking brake switch and/or brake fluid level sensor (Short with some internal part).</p> <p>(See MASTER CYLINDER REMOVAL/INSTALLATION.)</p> <p>(See PARKING BRAKE LEVER REMOVAL/INSTALLATION.)</p> <p>No Perform the following inspections. Repair if necessary.</p> <ul style="list-style-type: none"> Short to ground in the wiring harness between the instrument cluster (BRAKE system warning light) and parking brake switch. Short to ground in the wiring harness between the instrument cluster (BRAKE system warning light) and brake fluid level sensor. <p>Inspect the instrument cluster.</p>
*6	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR CONTINUITY <ul style="list-style-type: none"> Disconnect the ABS HU/CM connector. Is there continuity between connector terminal X and DLC-2? 	<p>Yes Go to the next step.</p> <p>No Repair the wiring harness between the ABS HU/CM and DLC-2.</p>
*7	INSPECT WIRING HARNESS BETWEEN ABS HU/CM AND DLC-2 FOR SHORT TO B+ <ul style="list-style-type: none"> Is the voltage approx. 12 V at 	<p>Yes Repair the wiring harness between the ABS HU/CM and DLC-2.</p>



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Brakes

FOREWORD [DYNAMIC STABILITY CONTROL (DSC)]

- Before performing the steps in Symptom Troubleshooting, perform the On-board Diagnostic Inspection. To check the DTC, follow the DTC Inspection steps. (See [ON-BOARD DIAGNOSIS \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Brakes

PRECAUTION [DYNAMIC STABILITY CONTROL (DSC)]

1. The ABS warning light and/or BRAKE system warning light and/or DSC indicator light and/or DSC OFF light illuminate even when the system is normal.

Warning lights that may illuminate and/or flash	Condition under which the light may illuminate	Conditions under which the light will go out	ABS, EBD, TCS and DSC control
<ul style="list-style-type: none">• ABS warning light• BRAKE system warning light• DSC indicator light	<p>Under any of the following conditions:</p> <ul style="list-style-type: none">• When the front wheels are jacked up, struck, or placed on a chassis roller, and only the front wheel ABS wheel speed sensors are spun for 20 s or more.	<p>After turning ignition switch off, vehicle is driven at speed greater than 10 km/h {6.2 mph} and normal operation is confirmed.</p>	<ul style="list-style-type: none">• ABS: Disables control.• EBD:<ol style="list-style-type: none">1. Disable control, in cases where the light may illuminate, only when DSC HU/CM detects that wheel speed sensors determine that two or more wheels are malfunctioning.2. Enables control, if wheel speed sensors determine three or more wheels are functioning correctly.• TCS: Disables control.• DSC: Disables control.
	Parking brake is not fully released while driving.		
	Brake drag.		
	Sudden acceleration/deceleration.		
	Left/right or front/rear		

	tires are different. (Size, radius, tire pressure, or wear is other than that listed on tire label.)		
	Battery voltage at DSC HU/CM ignition terminal drops below approx. 10 V.	Battery voltage rises above approx. 10 V.	ABS: Disables control. EBD: Enables control. TCS: Disables control. DSC: Disables control.
<ul style="list-style-type: none"> Brake system warning light 	Brake fluid amount is low.	Brake fluid level lower than recommended amount.	ABS: Enables control. EBD: Enables control. TCS: Enables control. DSC: Enables control.

2. Precautions during servicing of DSC

The DSC is composed of electrical and mechanical parts. It is necessary to categorize malfunctions as being either electrical or hydraulic when performing troubleshooting.

a. Malfunction in electrical system

- The control module has an on-board diagnostic function. With this function, the ABS warning light and/or BRAKE system warning light and/or DSC indicator light and/or DSC OFF light will illuminate when there is a problem in the electrical system.

Also, past and present malfunctions are in the control module. This function can find malfunctions that do not occur during periodic inspections. Connect the M-MDS to the DLC-2, the stored malfunctions will be displayed in the order of occurrence. To find out the causes of DSC malfunctions, use these on-board diagnostic results.

- If a malfunction occurred in the past but is now normal, the cause is likely a temporary poor connection of the wiring harness.

The control module usually operates normally. Be careful when searching for the cause of malfunction.

- After repair, it is necessary to clear the DTC from the control module memory.

Also, if the DSC related parts have been replaced, verify that no DTC is displayed after repairs.

- After repairing the ABS wheel-speed sensor or ABS sensor rotor, or after replacing the control module, the ABS warning light may not go out even when the ignition switch is turned to the ON position. In this case, drive the vehicle at a speed of **more than 10 km/h {6.2 mph}**, make sure the ABS warning light goes out, and then clear the DTC.
- When repairing, if the DSC related connectors are disconnected and the ignition switch is turned to the ON position, the control module will mistakenly detect a fault and record it as a malfunction.

CAUTION:

- In DSC vehicles, when the DSC HU/CM, steering angle sensor, or combined sensor is replaced, perform the initialization procedure for each sensor. (See [STEERING ANGLE SENSOR INITIALIZATION PROCEDURE](#).) (See [COMBINED SENSOR INITIALIZATION PROCEDURE](#).)
- To protect the control module, make sure the ignition is off before connecting or disconnecting the control module connector.

b. Malfunctions in hydraulic system

- Symptoms in a hydraulic system malfunction are similar to those in a conventional brake malfunction. However, it is necessary to determine if the malfunction is in a DSC component or the conventional brake system.
- The hydraulic unit contains delicate mechanical parts. If foreign material gets into the component, the DSC may fail to operate. Also, it will likely become extremely difficult to find the location of the malfunction in the event that the brakes operate but the DSC does not. Make sure foreign material does not enter when servicing the DSC (e.g.brake fluid replacement, pipe removal).

Intermittent Concern Troubleshooting

Vibration method

- If a malfunction occurs or becomes worse while driving on a rough road or when the engine is vibrating, perform the following steps.

NOTE:

- There are several reasons why vehicle or engine vibration could cause an electrical malfunction. Inspect the following:
 - Connectors not fully seated.
 - Wire harnesses not having full play.
 - Wires laying across brackets or moving parts.
 - Wires routed too close to hot parts.
- An improperly routed, improperly clamped, or loose harness can cause wiring to become pinched between parts.
- The connector joints, points of vibration, and places where wiring harnesses pass through the firewall, body and other panels are the major areas to be inspected.

Inspection method for switch connectors or wires

1. Connect the M-MDS to the DLC-2.
2. Turn the ignition switch to the ON position (engine off).

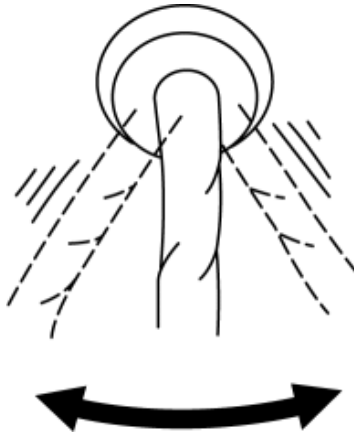
NOTE:

- If the engine starts and runs, perform the following steps at idle.

3. Access PIDs for the switch you are inspecting.

4. Turn the switch on manually.

5. Slightly shake each connector or wiring harness vertically and horizontally while monitoring the PID.



- If the PID value is unstable, inspect for poor connection.

Inspection method for sensor connectors or wires

1. Connect the M-MDS to the DLC-2.

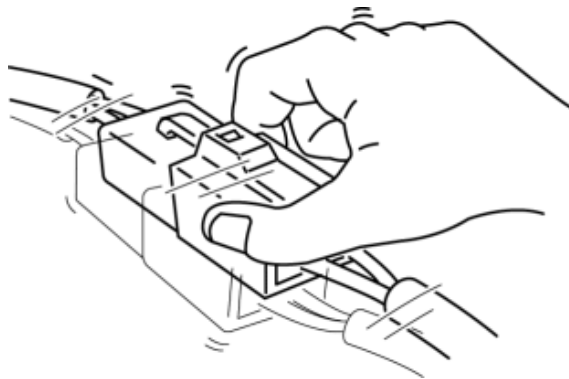
2. Turn the ignition switch to the ON position (engine off).

NOTE:

- If the engine starts and runs, perform the following steps at idle.

3. Access PIDs for the switch you are inspecting.

4. Slightly shake each connector or wiring harness vertically and horizontally while monitoring the PID.



- If the PID value is unstable, inspect for poor connection.

Inspection method for sensors

1. Connect the M-MDS to the DLC-2.

2. Turn the ignition switch to the ON position (engine off).

NOTE:

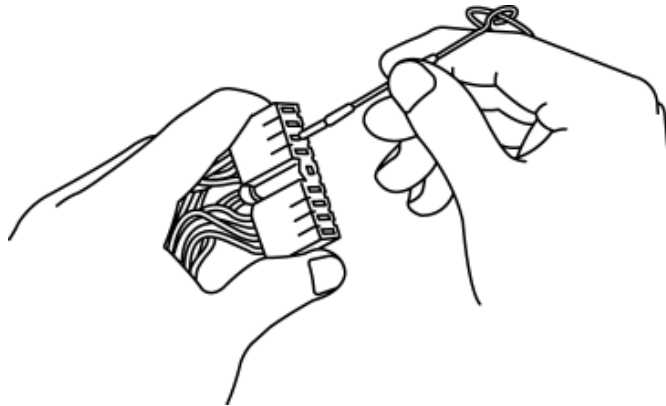
- If engine starts and runs, perform the following steps at idle.
3. Access PIDs for the switch you are inspecting.
4. Vibrate the sensor slightly with your finger.
- If the PID value is unstable or a malfunction occurs, inspect for poor connection and/or poorly mounted sensor.

Malfunction data monitor method

1. Perform the malfunction reappearance test according to malfunction reappearance mode and malfunction data monitor. The malfunction cause is found in the malfunction data.

Inspection method for connector terminal

1. Inspect the connection condition of each female terminal.
2. Insert the male terminal, and fit the female terminal side to female terminal. Inspect if the malfunction is in the female terminal.



[< Previous](#) [Next >](#)

2011 - RX-8 - Brakes

SYMPTOM TROUBLESHOOTING [DYNAMIC STABILITY CONTROL (DSC)]

- Verify the symptoms, and perform troubleshooting according to the appropriate number.

No.	Symptom
1	<p>Any of the following lights do not illuminate when the ignition switch is turned to the ON position.</p> <ul style="list-style-type: none"> • ABS warning light • BRAKE system warning light • DSC indicator light • DSC OFF light
2	<p>Any of the following lights remain on:</p> <ul style="list-style-type: none"> • ABS warning light. • BRAKE system warning light • DSC indicator light • DSC OFF light
3	<p>There is a malfunction in the system even though ABS warning light, BRAKE system warning light, DSC indicator light and DSC OFF light do not illuminate.</p>
4	<p>ABS or TCS^{*1} operates frequently.</p> <p>TCS does not work correctly.</p>
5	<p>DSC^{*2} operates frequently.</p> <p>DSC does not work correctly.</p>

*1

DSC system contains traction control function; DSC indicator light illuminates and goes out while DSC is operating.

*2

DSC indicator light illuminates and goes out while DSC is operating.

Possible factor														
Troubleshooting item		DSC HU/CM	Instrument cluster	Each sensor installation	Battery	Charging system	Brake fluid	Parking brake	Tire	Tire air pressure	Control module power supply system	Control module ground system	Instrument cluster power supply system	Instrument cluster ground system
1	Any of the following lights do not illuminate when the ignition switch is turned to the on position: (ABS warning light, BRAKE system warning light, DSC indicator light and/or DSC OFF light).	X	X										X	X
2	Any of the following lights remain on: (ABS warning light, BRAKE system warning light, DSC indicator light and/or DSC OFF light).		X		X	X	X	X			X	X		
3	There is a malfunction in the system even though ABS warning light, DSC indicator light, and DSC OFF light do not illuminate.													X
4	ABS or TCS (*1) operates frequently. /TCS does not work correctly. (*1): DSC system contains traction control function; DSC indicator light goes on and off while DSC is operating.			X					X	X				
5	DSC (*2) operates frequently. /DSC does not work correctly. (*2): DSC indicator light goes on and while DSC is operating.			X					X	X				

2011 - RX-8 - Brakes

NO.4 ABS OR TCS*1 OPERATES FREQUENTLY/TCS DOES NOT WORK CORRECTLY *1: DSC SYSTEM FUNCTION CONTAINS TRACTION CONTROL FUNCTION, DSC INDICATOR LIGHT GOES ON AND OFF WHILE DSC IS OPERATING [DYNAMIC STABILITY CONTROL (DSC)]

ABS or TCS (*1) operates frequently./TCS does not work correctly.

⁴ (*1): DSC system function contains traction control function; DSC indicator light goes on and off while DSC is operating.

[TROUBLESHOOTING HINTS]

- There is a difference in size or air pressure between the front and rear tires
- Incorrect ABS wheel-speed signal is input to DSC HU/CM
- There is a malfunction in the engine control system (TCS malfunction)

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT DTCS IN DSC HU/CM <ul style="list-style-type: none"> Inspect the DTC for the DSC ON-BOARD DIAGNOSTIC SYSTEM. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .)	Yes	Perform the applicable DTC inspection.
		No	Go to the next step.
2	INSPECT TIRE SIZE AND AIR PRESSURE <ul style="list-style-type: none"> Inspect the tire size and 	Yes	Go to the next step.

	<p>the air pressure.</p> <p>(See WHEEL AND TIRE SPECIFICATION.)</p> <ul style="list-style-type: none">• Are size and air pressure as specified?	No	Replace with specified tires and adjust tire air pressure.
3	<p>INSPECT PID FOR ABNORMAL OUTPUT FROM ABS WHEEL-SPEED SENSOR USING M-MDS</p> <ul style="list-style-type: none">• Turn the ignition switch off.• Connect the M-MDS to the DLC-2.• Select the following PIDs using the M-MDS:<ul style="list-style-type: none">▪ LF_WSPD (LF ABS wheel-speed sensor)▪ LR_WSPD (LR ABS wheel-speed sensor)▪ RF_WSPD (RF ABS wheel-speed sensor)▪ RR_WSPD (RR ABS wheel-speed sensor)• Start the engine and drive the vehicle.• Verify that the PIDs of the four ABS wheel-speed sensors correspond approximately.• Do the vehicle speeds correspond?	Yes	Find that malfunctioning part according to "INTERMITTENT CONCERN TROUBLESHOOTING".
		No	<ul style="list-style-type: none">• ABS wheel-speed sensor installation inspection: Inspect the sensor for looseness and verify that it is securely installed.• Sensor rotor installation inspection: Inspect the sensor rotor for poor installation and chipping of sensor rotor teeth. (If sensor rotor is installed poorly, it may cause output of abnormal wave form at high speed.)

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Brakes

NO.5 DSC*2 OPERATES FREQUENTLY/DSC DOES NOT WORK CORRECTLY *2: DSC INDICATOR LIGHT GOES ON AND OFF WHILE DSC IS OPERATING [DYNAMIC STABILITY CONTROL (DSC)]

5	<p>DSC (*2) operates frequently. /DSC does not work correctly.</p> <p>(*2): DSC indicator light goes on and off while DSC is operating.</p>
<p>[TROUBLESHOOTING HINTS]</p> <ul style="list-style-type: none"> • DSC HU/CM detected malfunction (input and output device malfunction) • Poor installation of yaw rate sensor, lateral-G sensor and/or steering angle sensor <p>(If any of the above sensors are poorly installed, DSC may operate intermittently)</p> <ul style="list-style-type: none"> • When replacing the DSC HU/CM, yaw rate sensor, lateral-G sensor or steering angle sensor, initialization is not performed. <p>(If initialization is not performed correctly, DSC may not work correctly)</p>	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<p>INSPECT DSC HU/CM FOR DTCs</p> <ul style="list-style-type: none"> • Inspect the DTC for the DSC ON-BOARD DIAGNOSTIC SYSTEM. <p>(See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)</p> <ul style="list-style-type: none"> • Have DTCs been recorded in memory? 	Yes Perform the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .)
		No Go to the next step.
2	<p>VERIFY THAT EACH SENSOR IS INSTALLED</p> <ul style="list-style-type: none"> • Are the combined sensor and steering angle sensor securely installed? 	Yes Go to the next step.

		No	Install sensor securely.
3	VERIFY THAT EACH SENSOR IS INITIALIZED <ul style="list-style-type: none"> Was initialization performed after replacement of DSC HU/CM, combined sensor or steering angle sensor? 	Yes	Find malfunctioning part according to "INTERMITTENT CONCERN TROUBLESHOOTING."
		No	Perform initialization procedure. (See COMBINED SENSOR INITIALIZATION PROCEDURE .) (See STEERING ANGLE SENSOR INITIALIZATION PROCEDURE .)

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Brakes

NO.2 ANY OF THE FOLLOWING LIGHTS REMAIN ON: (ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DSC INDICATOR LIGHT AND/OR DSC OFF LIGHT) [DYNAMIC STABILITY CONTROL (DSC)]

2 Any of the following lights remain on: (ABS warning light, BRAKE system warning light, DSC indicator light and/or DSC OFF light)

[TROUBLESHOOTING HINTS]

- Brake fluid amount is low
- Parking brake does not release
- No connection at DSC HU/CM connector
(When DSC HU/CM connector is disconnected, ABS warning light and BRAKE system warning light illuminate)
- DSC HU/CM detected malfunction (Input and output device malfunction)
- DSC HU/CM detects low voltage in power supply
- DSC HU/CM ground malfunction
(When DSC HU/CM ground is not securely connected, ABS warning light and BRAKE system warning light illuminate but diagnostic trouble code does not displayed)
- DSC HU/CM does not operate (DSC HU/CM malfunction)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT BRAKE FLUID AMOUNT AND VERIFY THAT PARKING BRAKE RELEASES <ul style="list-style-type: none">• Is the brake fluid amount normal?• Is the parking brake lever released?	YesGo to the next step.
		NoAdd brake fluid or release parking brake lever.

2	INSPECT DTCS IN DSC HU/CM <ul style="list-style-type: none"> Inspect the DTC for the DSC ON-BOARD DIAGNOSTIC SYSTEM. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) Have DTCs been stored in memory? 	Yes	Perform inspection using appropriate DTC.
		No	Go to the next step.
3	INSPECT WHETHER MALFUNCTION IS IN CONTROL MODULE CONNECTOR, TERMINAL OR OTHER <ul style="list-style-type: none"> Do ABS warning light and BRAKE system warning light go off after 4 s when the ignition switch is turned to the ON position? 	Yes	Temporary poor connection in control module connector. Inspect DSC HU/CM connector, then go to Step 6. Inspect DSC HU/CM connector terminal, then go to Step 7.
		No	Go to the next step.
4	INSPECT BATTERY <ul style="list-style-type: none"> Is the battery voltage normal? 	Yes	Go to the next step.
		No	Inspect the battery and charging system. (See BATTERY INSPECTION [13B-MSP] .) (See GENERATOR INSPECTION [13B-MSP] .)
5	INSPECT CHARGING SYSTEM <ul style="list-style-type: none"> Is the battery voltage normal with electrical load (A/C, headlight, etc.) on and engine idling? 	Yes	Go to the next step.
		No	Inspect the charging system (drive belt tension, generator, etc.). (See GENERATOR INSPECTION [13B-MSP] .)
6	VERIFY THAT DSC HU/CM CONNECTOR IS CONNECTED <ul style="list-style-type: none"> Is the DSC HU/CM securely connected? 	Yes	Go to the next step.
		No	Connect the DSC HU/CM connector securely, then go to the next step.
7	VERIFY THAT DSC HU/CM CONNECTOR TERMINAL OR RELATED CONNECTOR TERMINALS ARE CONNECTED <ul style="list-style-type: none"> Are DSC HU/CM connector terminal or 	Yes	Replace the DSC HU/CM. (See DSC HU/CM

	instrument cluster connector terminal etc. related connector terminals securely connected?		REMOVAL/INSTALLATION.)
		No	Securely connect the DSC HU/CM connector terminal and related connector terminals.

2011 - RX-8 - Brakes

NO.3 THERE IS A MALFUNCTION IN THE SYSTEM EVEN THOUGH ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DSC INDICATOR LIGHT AND DSC OFF LIGHT DO NOT ILLUMINATE [DYNAMIC STABILITY CONTROL (DSC)]

3	There is a malfunction in the system even though the ABS warning light, BRAKE system warning light, DSC indicator light and DSC OFF light do not illuminate.
<p>[TROUBLESHOOTING HINTS]</p> <ul style="list-style-type: none"> • There is a mechanical malfunction in system 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT DSC HU/CM FOR DTCs <ul style="list-style-type: none">Inspect the DTC for the DSC ON-BOARD DIAGNOSTIC SYSTEM. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)Have DTCs been stored in memory?	Yes	Perform the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .)
		No	Go to the next step.
2	INSPECT DSC SYSTEM <ul style="list-style-type: none">Perform DSC system inspection. (See DSC SYSTEM INSPECTION.)Is the system normal?	Yes	Inspect the conventional brake system.
		No	Repair or replace any malfunctioning part.

2011 - RX-8 - Brakes

NO.1 ANY OF THE FOLLOWING LIGHTS DO NOT ILLUMINATE WHEN IGNITION SWITCH TURNED TO ON POSITION: (ABS WARNING LIGHT, BRAKE SYSTEM WARNING LIGHT, DSC INDICATOR LIGHT AND/OR DSC OFF LIGHT) [DYNAMIC STABILITY CONTROL (DSC)]

Any of the following lights do not illuminate when the ignition switch is turned to the on position: (ABS warning light, BRAKE system warning light, DSC indicator light and/or DSC OFF light).
<p>[TROUBLESHOOTING HINTS]</p> <ul style="list-style-type: none"> • Inspect each light in the instrument cluster for malfunction • Poor connection at DSC HU/CM connector

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT FOR DTCS IN DSC HU/CM <ul style="list-style-type: none"> • Inspect the DTC for the DSC ON-BOARD DIAGNOSTIC SYSTEM. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].) • Have DTCs been stored in memory? 	Yes Perform the applicable DTC inspection. (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .)
		No Go to the next step.
2	INSPECT WHETHER MALFUNCTION IS IN INSTRUMENT CLUSTER SYSTEM OR OTHER SYSTEM <ul style="list-style-type: none"> • Do other warning and indicator lights illuminate when the ignition switch is turned to the ON position? 	Yes Go to the next step.
		No Inspect or repair the instrument cluster (power supply system, ground system).
3	VERIFY THAT DSC HU/CM CONNECTOR IS CONNECTED	Yes Go to the next step.

	Is the DSC HU/CM securely connected?		
		No	Connect the DSC HU/CM connector securely, then go to the next step.
4	VERIFY THAT DSC HU/CM CONNECTOR TERMINAL OR RELATED CONNECTOR TERMINALS ARE CONNECTED <ul style="list-style-type: none"> Are DSC HU/CM connector terminal, instrument cluster connector terminal, or related connector terminals securely connected? 	Yes	Replace the DSC HU/CM. (See DSC HU/CM REMOVAL/INSTALLATION .)
		No	Securely connect DSC HU/CM connector terminal and related connector terminals.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

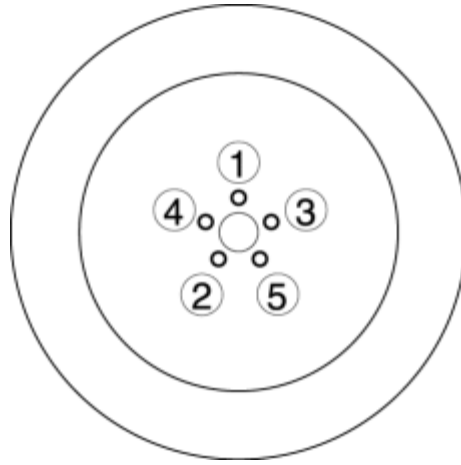
[Back to Top](#)

2011 - RX-8 - Brakes

GENERAL PROCEDURES (BRAKE)

Wheel and Tire Installation

1. When installing the wheels and tires, tighten the wheel nuts in a criss-cross pattern to the following tightening torque.



Tightening torque

- 88—118 N·m {9.0—12.0 Kgf·m, 65.0—87.0 ft·lbf}

Brake Lines Disconnection

1. If any brake line has been disconnected anytime during the procedures, add brake fluid, bleed the brakes, and inspect for leakage after the procedure has been completed.

CAUTION:

- Brake fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If it is spilled, wipe it off immediately.

Brake Pipe Flare Nut Tightening

1. Tighten the brake pipe flare nut using the commercially available flare nut wrench.

Connector Disconnection

1. Perform the following works, before the connectors are disconnected.
 - a. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 - b. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 - c. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)

ABS/DSC Related Parts

1. Make sure that there are no DTCs in the ABS/DSC memory after working on ABS/DSC related parts. If there are any codes in the memory, clear them.

DSC Related Part Sensor Initialization Procedure

WARNING:

- If the initialization procedure is not completed, the DSC will not operate properly and it might cause an unexpected accident. Therefore, when replacing or removing the following parts, make sure to perform the initialization procedure to insure proper DSC operation.
1. When replacing or removing the following parts, perform the initialization procedure. (See [COMBINED SENSOR INITIALIZATION PROCEDURE](#).) (See [STEERING ANGLE SENSOR INITIALIZATION PROCEDURE](#).)
 - DSC HU/CM
 - Combined sensor
 - Steering angle sensor

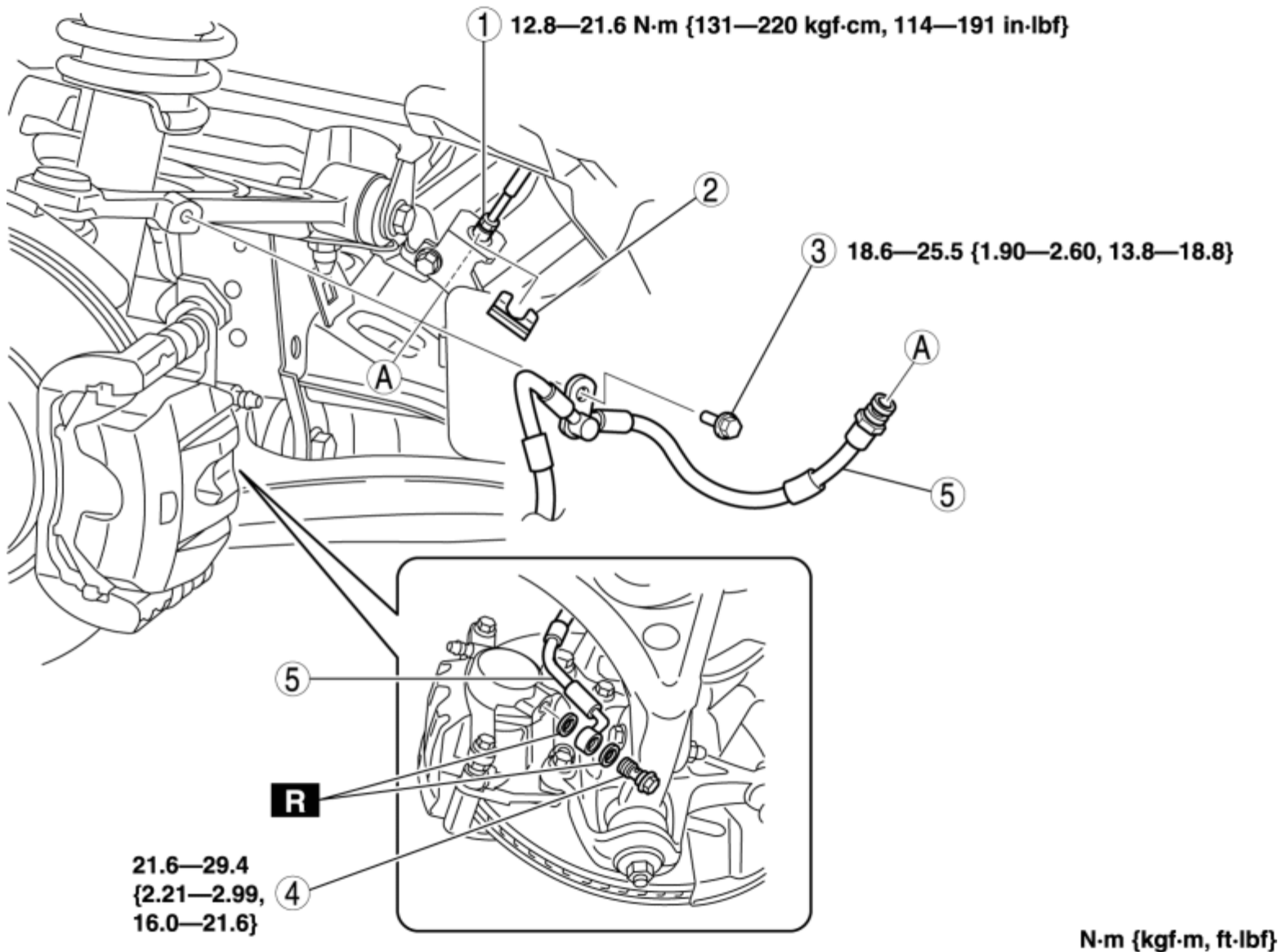
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Brakes

BRAKE HOSE (FRONT) REMOVAL/INSTALLATION

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. Add brake fluid, bleed the brakes, and inspect for leakage after the installation has been completed. (See [AIR BLEEDING](#).)



1	Brake pipe flare nut
2	Clamp
3	Bolt
4	Bolt
5	Brake hose

[< Previous](#) [Next >](#)

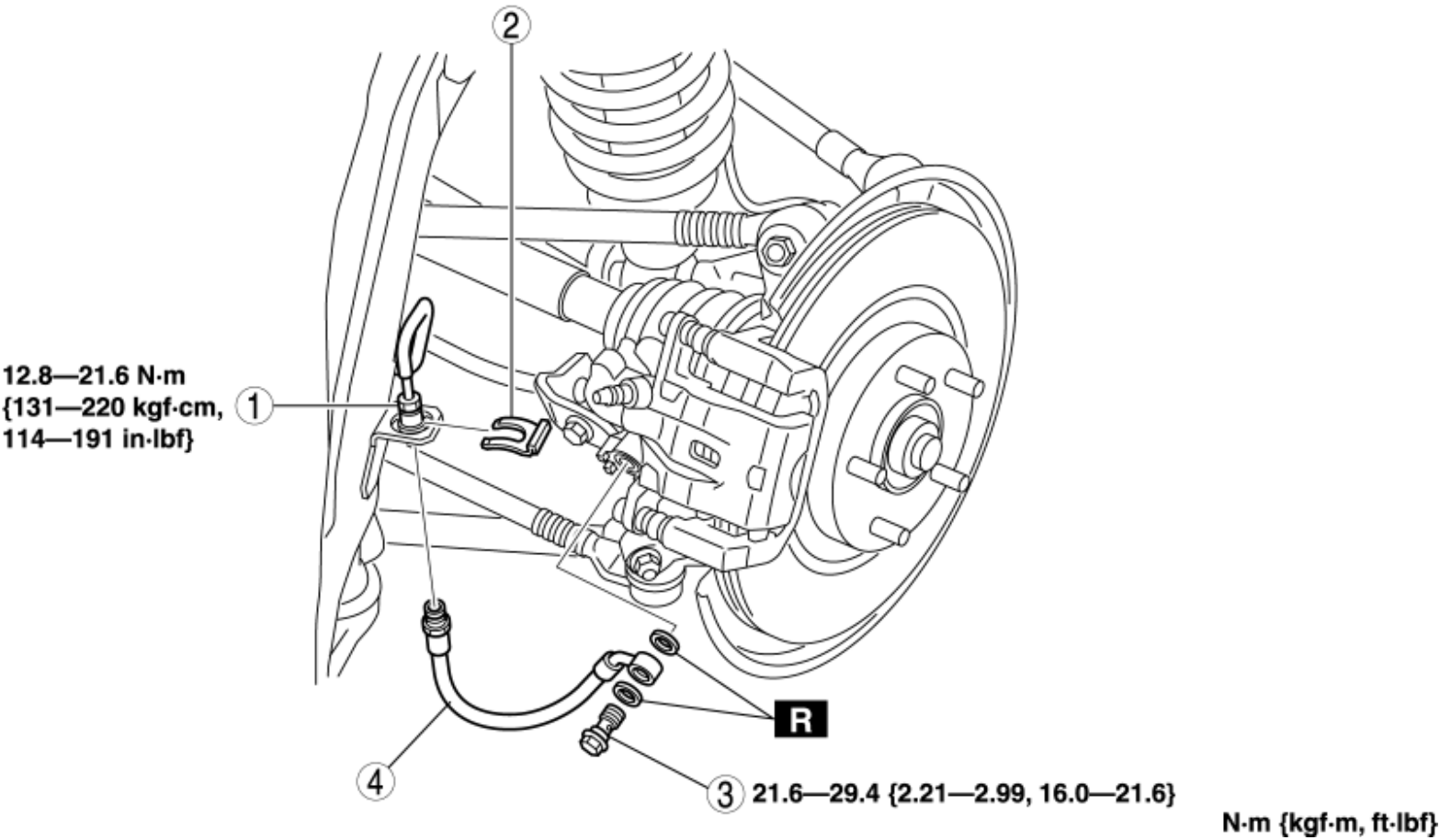
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Brakes

BRAKE HOSE (REAR) REMOVAL/INSTALLATION

- 1. Remove in the order indicated in the table.
- 2. Install in the reverse order of removal.
- 3. Add brake fluid, bleed the brakes, and inspect for leakage after the installation has been completed. (See [AIR BLEEDING](#).)



1	Brake pipe flare nut
2	Clamp
3	Bolt
4	

4 Brake hose

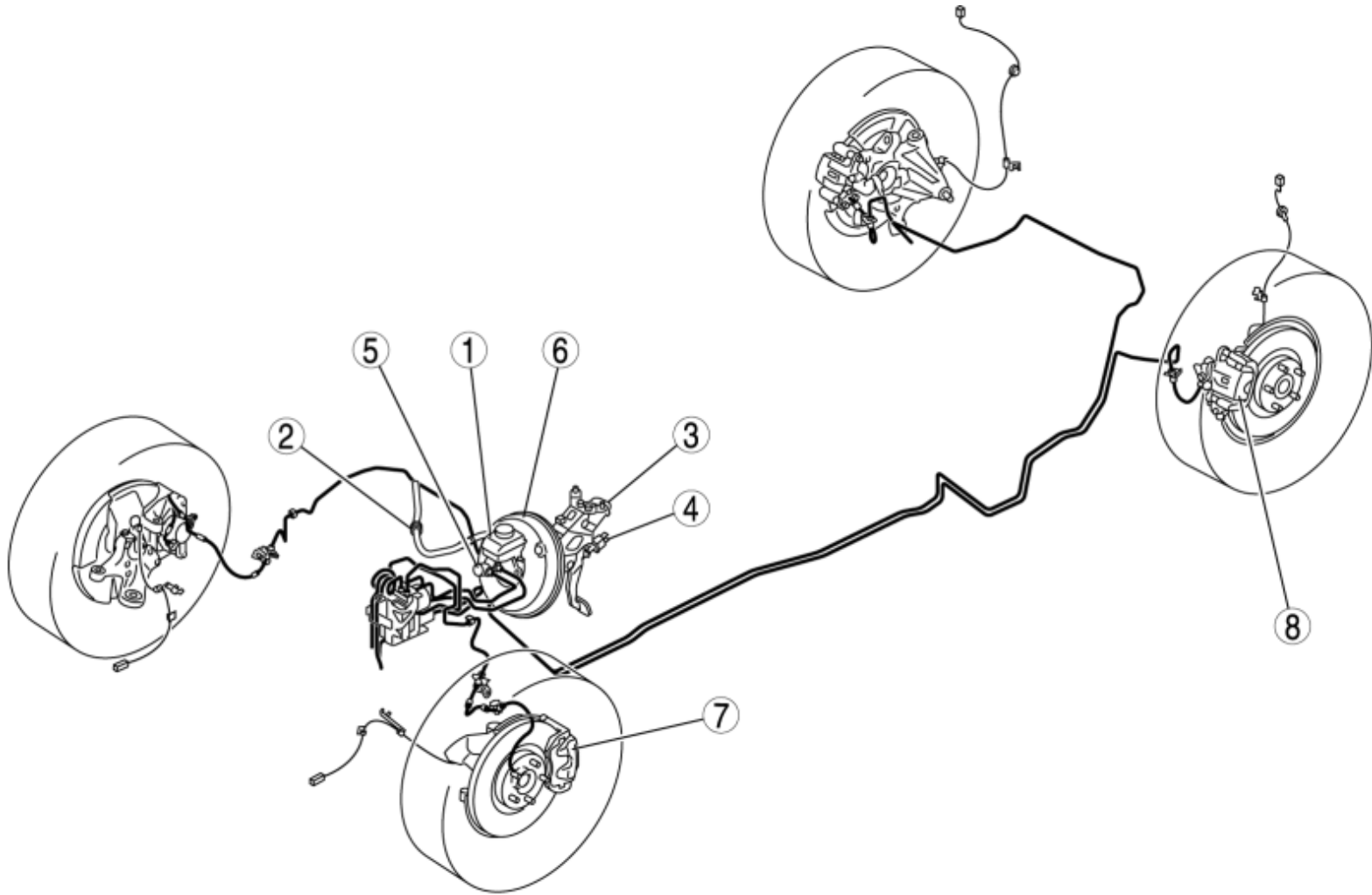
[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Brakes

CONVENTIONAL BRAKE SYSTEM LOCATION INDEX



1 Brake fluid

(See [AIR BLEEDING.](#))

2 Vacuum line

(See [VACUUM LINE INSPECTION.](#))

3 Brake pedal

	(See BRAKE PEDAL INSPECTION.)
	(See BRAKE PEDAL REMOVAL/INSTALLATION.)
4	Brake switch (See BRAKE SWITCH INSPECTION.)
5	Master cylinder (See MASTER CYLINDER REMOVAL/INSTALLATION.)
6	Power brake unit (See POWER BRAKE UNIT INSPECTION.) (See POWER BRAKE UNIT REMOVAL/INSTALLATION.)
7	Front brake (disc) (See FRONT BRAKE (DISC) INSPECTION.) (See FRONT BRAKE (DISC) REMOVAL/INSTALLATION.) (See DISC PAD (FRONT) REPLACEMENT.) (See CALIPER (FRONT) DISASSEMBLY/ASSEMBLY.) (See BRAKE HOSE (FRONT) REMOVAL/INSTALLATION.)
8	Rear brake (disc) (See REAR BRAKE (DISC) INSPECTION.) (See REAR BRAKE (DISC) REMOVAL/INSTALLATION.) (See DISC PAD (REAR) REPLACEMENT.) (See CALIPER (REAR) DISASSEMBLY/ASSEMBLY.) (See BRAKE HOSE (REAR) REMOVAL/INSTALLATION.)

[< Previous](#) [Next >](#)

2011 - RX-8 - Brakes

AIR BLEEDING

CAUTION:

- Brake fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If it is spilled, wipe it off immediately.

NOTE:

- Keep the fluid level in the reserve tank at 3/4 full or more during the air bleeding.
- Begin air bleeding with the brake caliper that is furthest from the master cylinder.

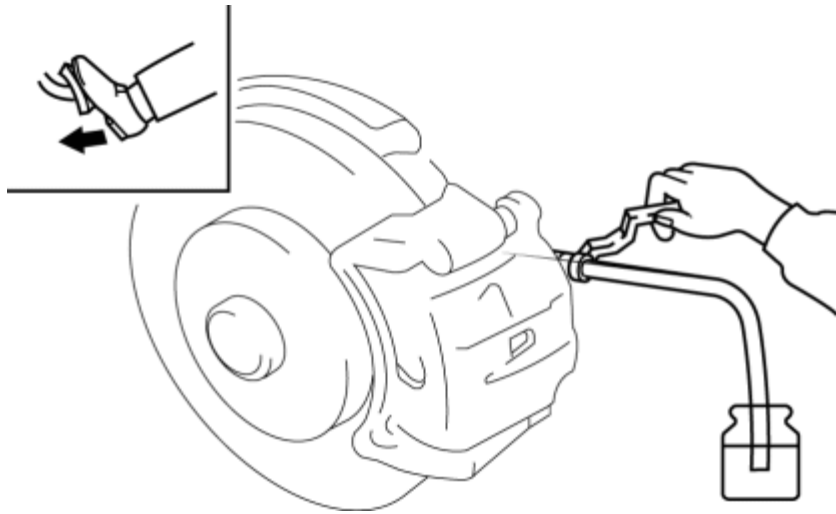
Brake fluid type

- SAE J1703, FMVSS 116 DOT-3

1. Remove the bleeder cap from the brake caliper, and connect a vinyl tube to the bleeder screw.
2. Place the other end of the vinyl tube in a clear container, and fill the container with fluid during air bleeding.
3. Working with two people, one should depress the brake pedal a few times and then depress and hold the pedal down.
4. While the brake pedal is being held down, the other person should loosen the bleeder screw using a commercially available flare nut wrench, and bleed any fluid containing air bubbles. Once completed, tighten the bleeder screw.

Tightening torque

- 6.9—9.8 N·m {71—99 Kgf·cm, 62—86 in·lbf}



5. Repeat Steps 3 and 4 until no air bubbles are seen.

6. Perform air bleeding as described in the above procedures for all brake calipers.

7. After air bleeding, inspect the following:

- Brake operation
- Fluid leakage
- Fluid level

[< Previous](#) [Next >](#)

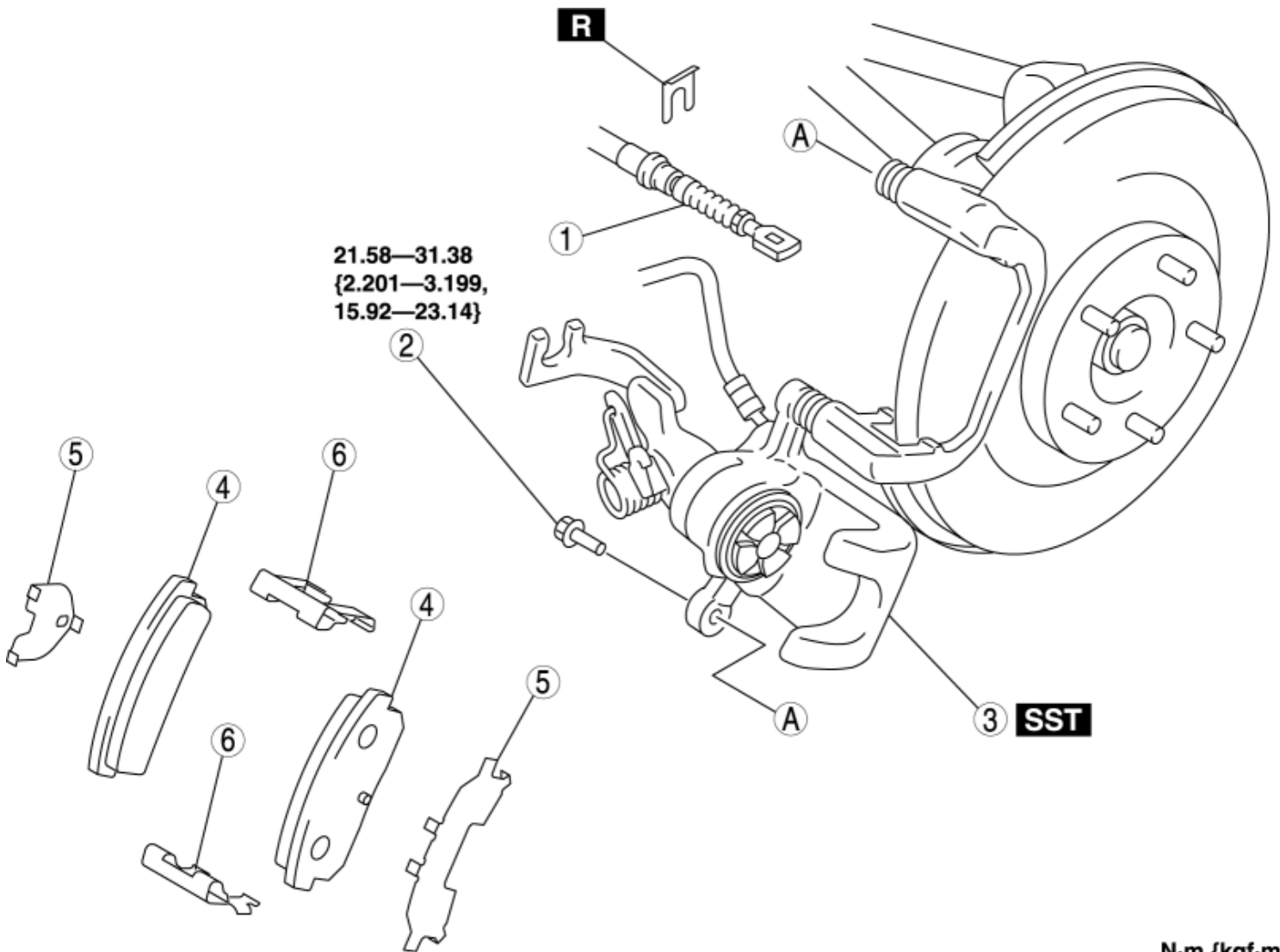
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Brakes

DISC PAD (REAR) REPLACEMENT

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. After installation, depress the brake pedal a few times, and inspect the following.
 - The disc pad projection is securely installed to the piston groove
 - Parking brake lever stroke
 - Brake drag

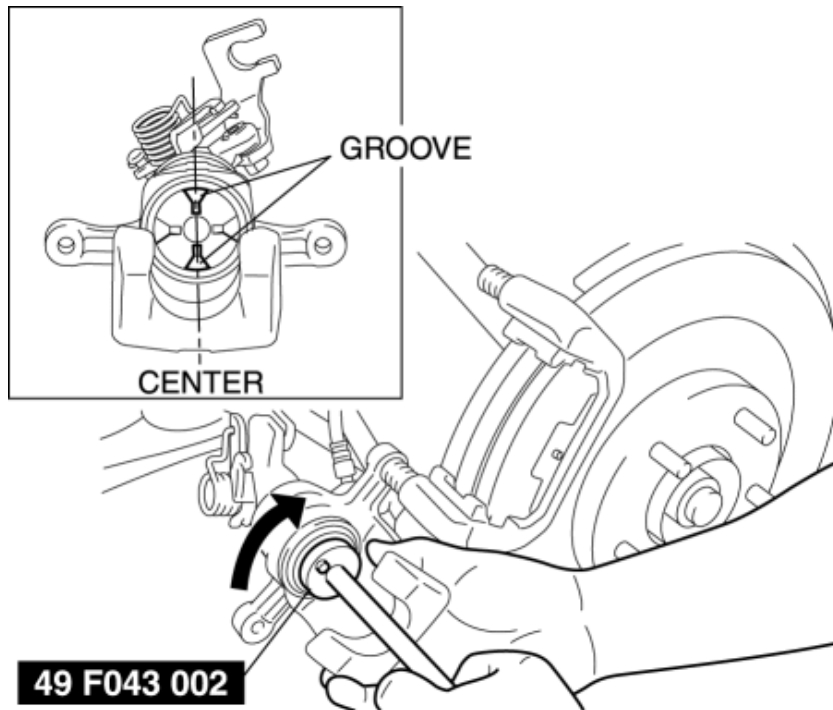


N·m {kgf·m, ft·lbf}

1	Parking brake cable (See REAR BRAKE (DISC) REMOVAL/INSTALLATION.)
2	Bolt
3	Caliper (See Caliper Installation Note.)
4	Disc pad
5	Shim
6	Guide plate

Caliper Installation Note

1. Clean the exposed area of the piston.
2. Rotate the piston clockwise slowly using the **SST** and push in the piston completely until the piston grooves are in the position shown in the figure.



3. Install the caliper.

2011 - RX-8 - Brakes

REAR BRAKE (DISC) INSPECTION

Description

- Steering wheel vibrates in the rotation direction. This characteristic is most noticeable when applying brakes at a vehicle speed of **100—140 km/h {62.2—86.9 mph}**.
- When applying the brakes, the vehicle body shakes back and forth. The seriousness of the shaking is not influenced by vehicle speed.
- When applying brakes, a pulsating force tries to push the brake pad back. The pulsation is transmitted to the brake pedal.

Brake Judder Repair Hints

Due to an excessive runout (side-to-side wobble) of the disc plate, the thickness of the disc plate is uneven.

- If the runout is **more than 0.05 mm {0.002 in}** at the position **10 mm {0.39 in}** from the disc plate edge, uneven wear occurs on the disc plate because the pad contacts the plate unevenly.
- If the runout is **less than 0.05 mm {0.002 in}**, uneven wear does not occur.

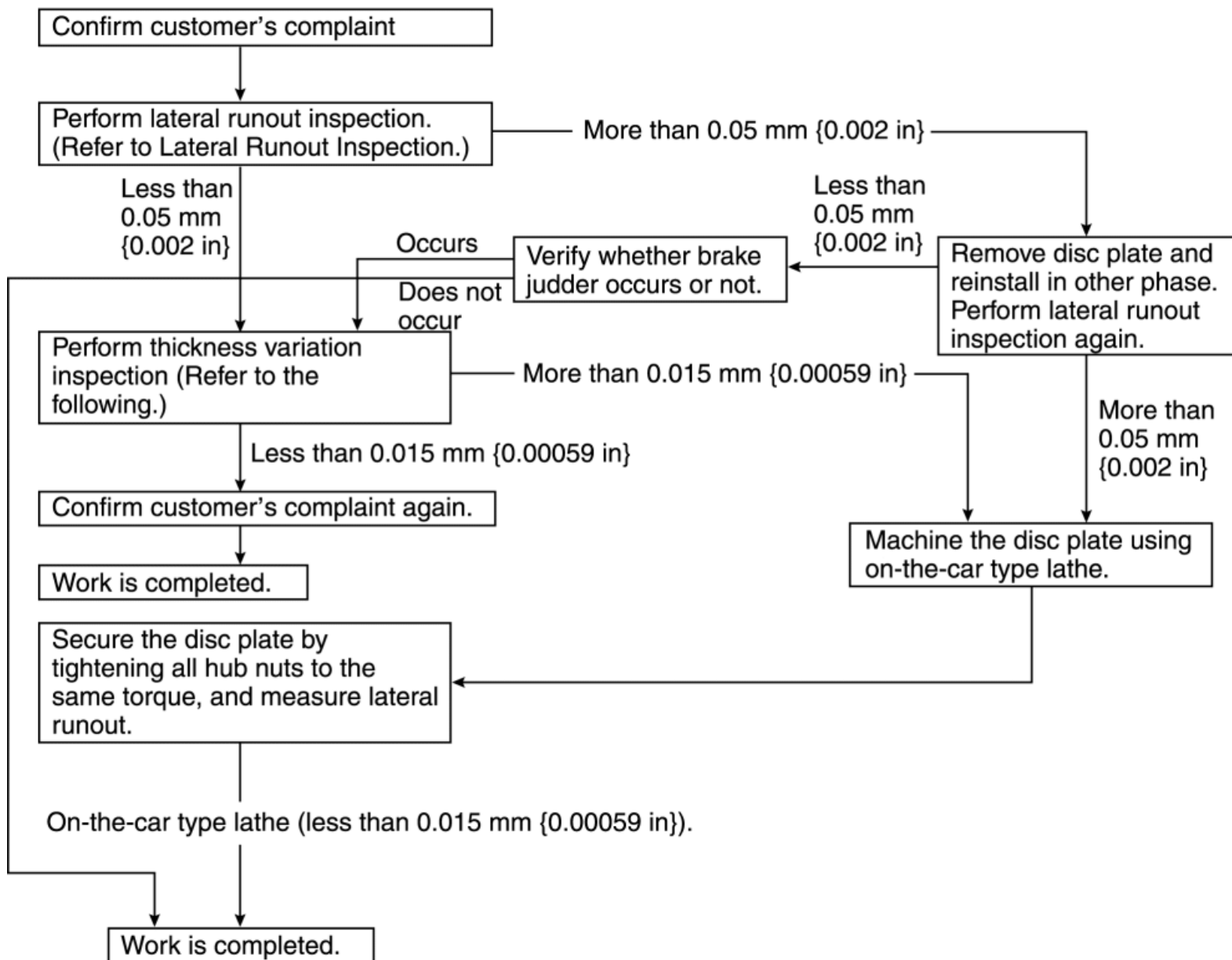
The disc plate is deformed by heat.

- Repeated panic braking may raise the temperature in some portions of disc plate by **approximately 1,000 °C {1,832 °F}**. This results in a deformed disc plate.

Due to corrosion, the thickness and friction coefficient of disc plate change.

- If a vehicle is parked in damp conditions for a long time, corrosion occurs on the friction surface of disc plate.
- The thickness of corrosion is uneven and sometimes appears like a wave pattern, which changes the friction coefficient and causes a reaction force.

Inspection and repair procedure



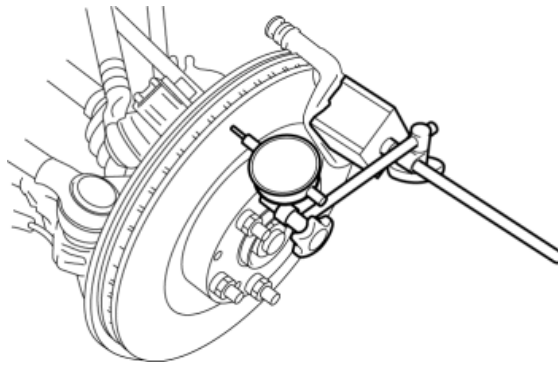
Lateral runout inspection

1. To secure the disc plate and the hub, insert the washer (thickness **10 mm {0.39 in}**, inner diameter **more than 12 mm {0.47 in}**) between each hub bolt and the hub nut, then tighten all the hub nuts.

NOTE:

- The component parts of the **SST** (49 B017 001 or 49 G019 003) can be used as a suitable washer.

2. After tightening all the hub nuts to the same torque, put the dial gauge on the friction surface of disc plate 10 mm {0.39 in} from the disc plate edge.



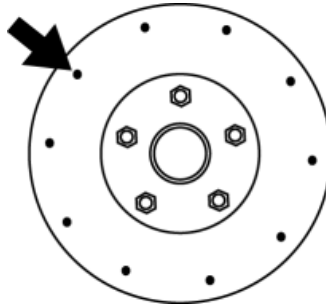
3. Rotate the disc plate one time and measure the runout.

Rear disc plate runout limit

- 0.05 mm {0.002 in}

Thickness variation inspection

1. Clean the disc plate-to-pad friction surface using a brake cleaner.
2. Measure the points indicated in the illustration using a caliper (micrometer).



3. Subtract the minimum value from the maximum, and if the result is not within specification, machine the disc plate using a lathe.

Thickness variation limit

- 0.015 mm {0.00059 in}

WARNING:

- Do not exceed minimum disc plate thickness.

Disc Plate Thickness Inspection

CAUTION:

- Excessive runout may result if the disc plate is removed from the vehicle then machined. Machine the disc plate while installed on the vehicle.
1. Measure the thickness of the disc plate.

- If the thickness is not within the specification, replace the disc plate.

Minimum rear disc plate thickness

- 16 mm {0.63 in}

Minimum rear disc plate thickness after machining using a brake lathe on-vehicle

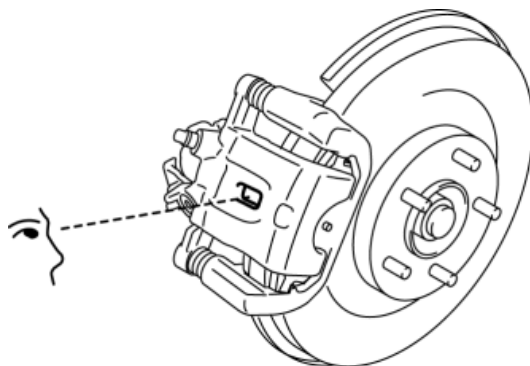
- 16.8 mm {0.66 in}

Disc Pad Thickness Inspection

1. Jack up the front of the vehicle and support it with safety stands.
2. Remove the wheel and tires.
3. Verify the remaining thickness of the pads.

Minimum rear disc pad thickness

- 2.0 mm {0.079 in} min.
4. Replace the pads as a set (right and left wheels) if either one is at or less than the minimum thickness.



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

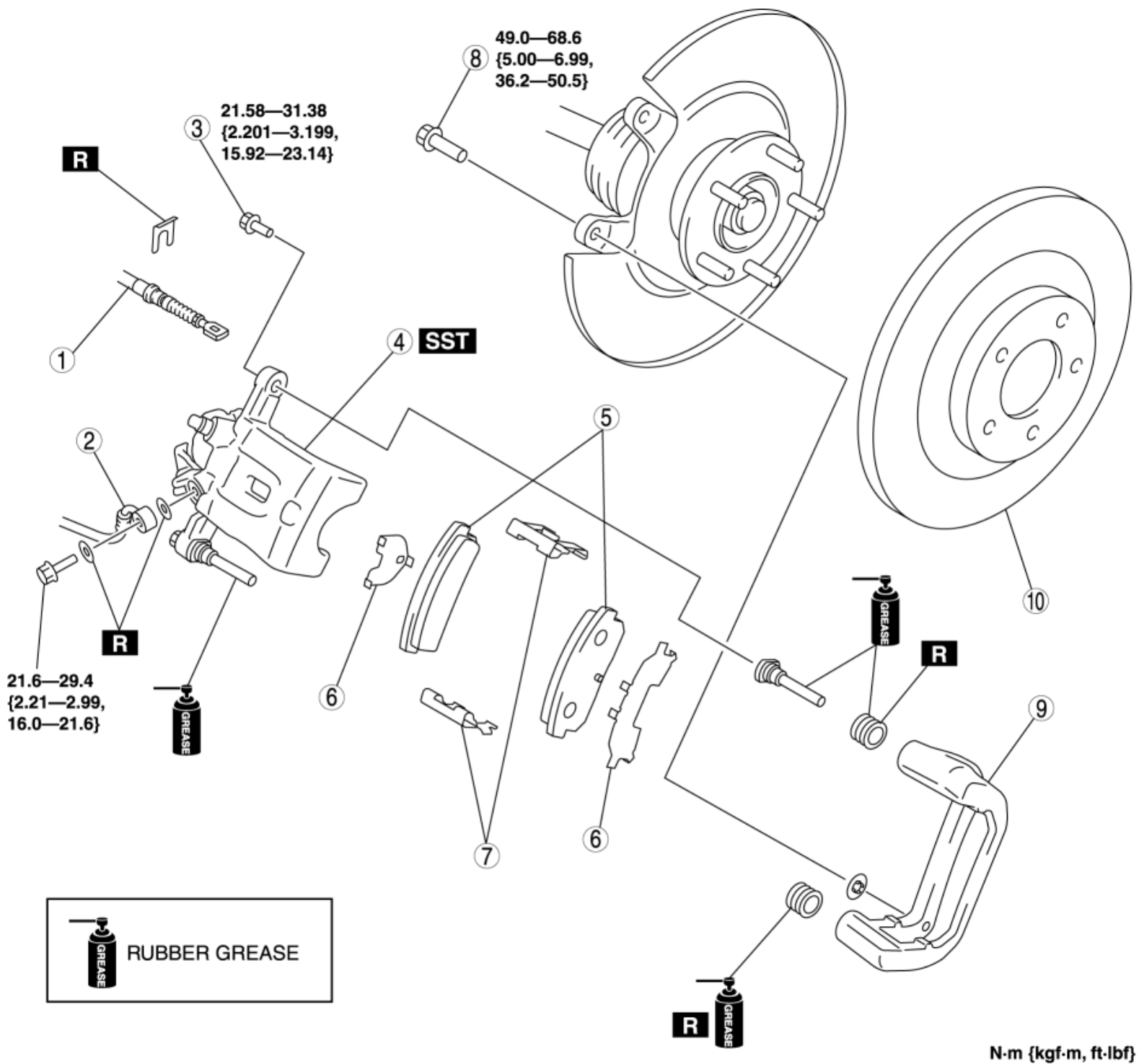
[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Brakes

REAR BRAKE (DISC) REMOVAL/INSTALLATION

1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. After installation, depress the brake pedal a few times, and inspect the following.
 - The disc pad projection is securely installed to the piston groove
 - Parking brake lever stroke
 - Brake drag

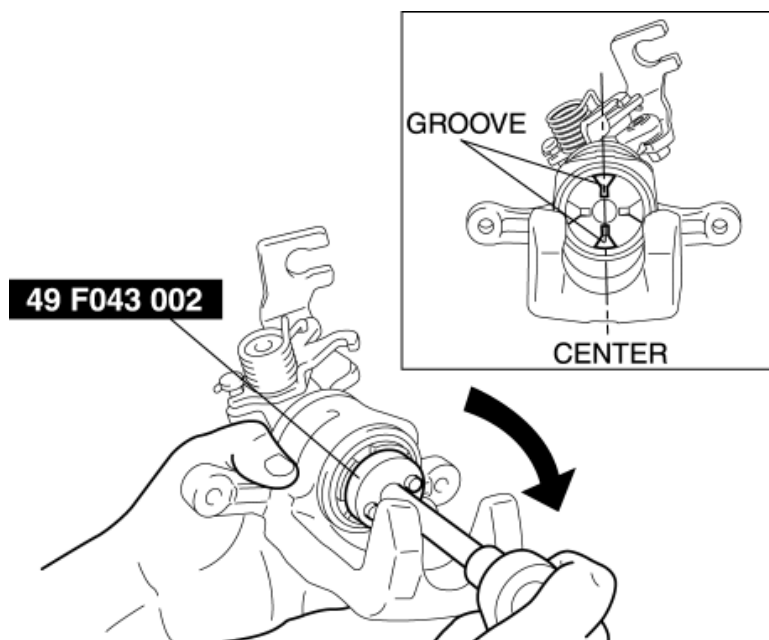


1	Parking brake cable
(See Parking Brake Cable Installation Note.)	
2	Brake hose
3	Bolt
4	Caliper

	(See Caliper Installation Note.)
5	Disc pad
6	Shim
7	Guide plate
8	Bolt
9	Mounting support
10	Disc plate

Caliper Installation Note

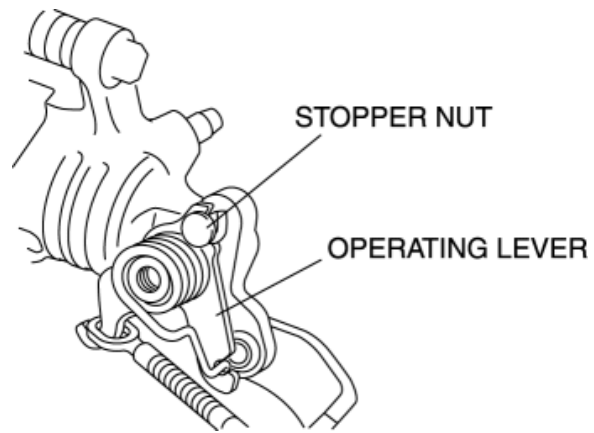
1. Clean the exposed area of the piston.
2. Rotate the piston clockwise slowly using the **SST** and push the piston completely until the piston grooves are in the position shown in the figure.



3. Install the caliper.

Parking Brake Cable Installation Note

1. After installing the parking brake cable, verify that the operating lever returns to the stopper nut with the parking brake lever released.



[< Previous](#) [Next >](#)

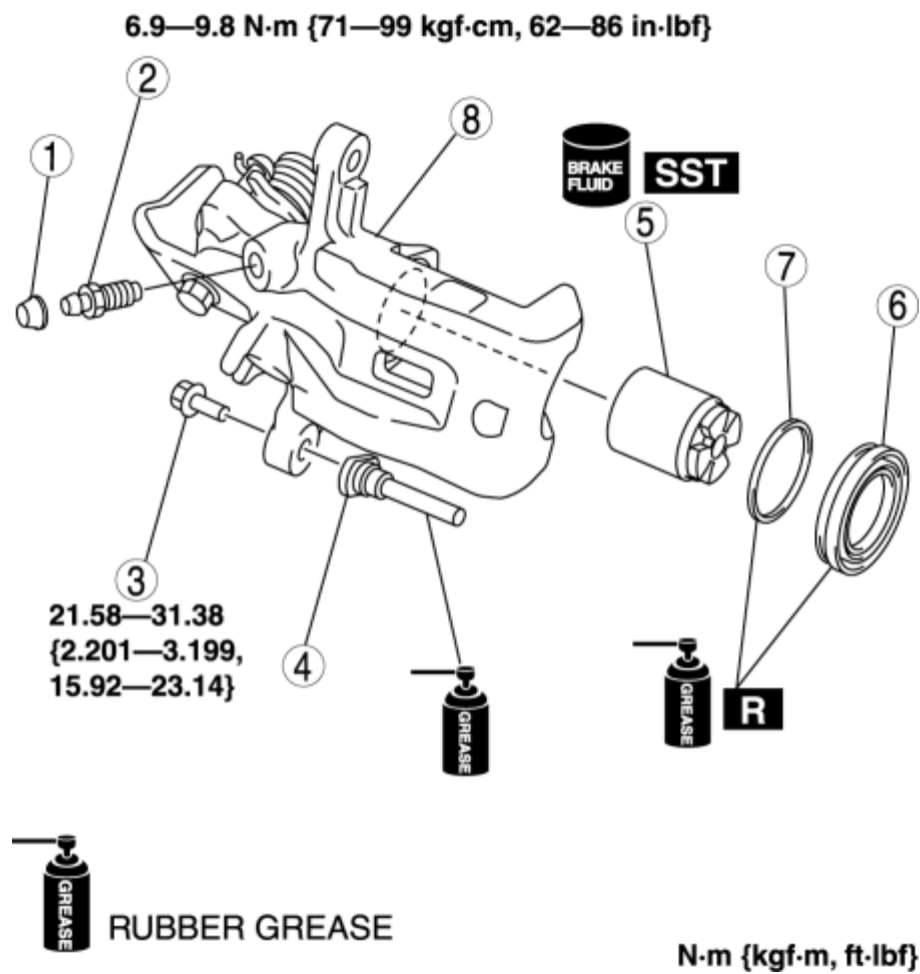
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Brakes

CALIPER (REAR) DISASSEMBLY/ASSEMBLY

1. Disassemble in the order indicated in the table.



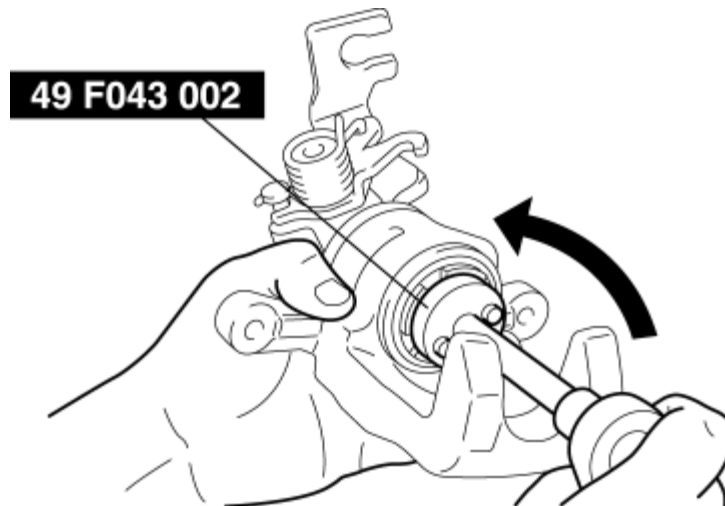
1	Bleeder cap
2	Bleeder screw
3	Bolt
4	Sleeve

5	Piston (See Piston Disassembly Note.) (See Dust Seal, Piston Assembly Note.)
6	Dust seal (See Dust Seal, Piston Assembly Note.)
7	Piston seal
8	Caliper body

2. Assemble in the reverse order of disassembly.

Piston Disassembly Note

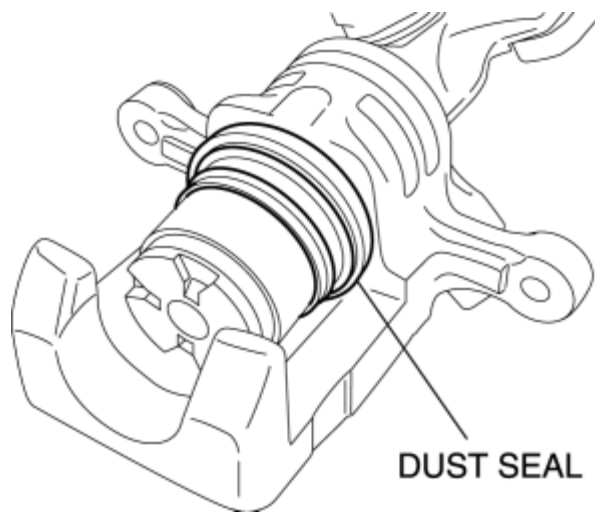
1. Rotate the piston counter-clockwise using the **SST**, remove the piston from the caliper body.



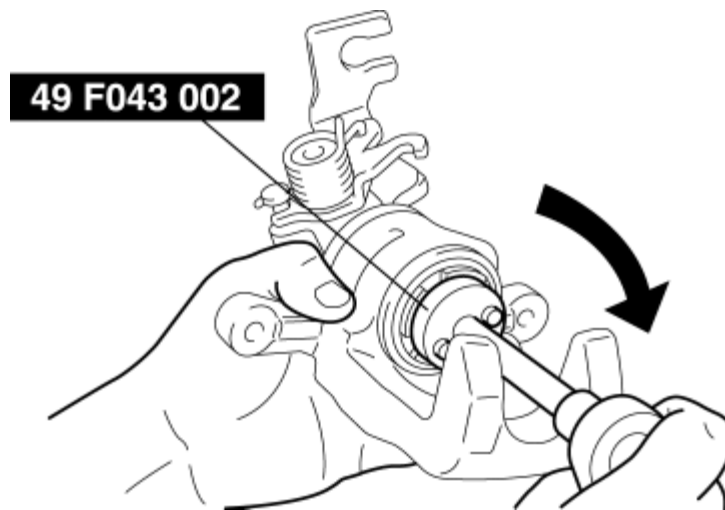
Dust Seal, Piston Assembly Note

1. Assemble the dust seal to the piston.

2. Assemble the lip of the dust seal to the groove of the caliper body with the dust seal is assembled to the piston as shown in the figure.



3. Rotate the piston clockwise using the **SST** slowly and push the piston inwards completely.



4. Verify that the dust seal is installed into the groove of the piston securely.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

1	Bolt
2	Caliper

	(See FRONT BRAKE (DISC) REMOVAL/INSTALLATION.)
3	Disc pad
4	Shim
5	Guide plate

[< Previous](#) [Next >](#)

2011 - RX-8 - Brakes

FRONT BRAKE (DISC) INSPECTION

Description

- Steering wheel vibrates in the rotation direction. This characteristic is most noticeable when applying brakes at a vehicle speed of **100—140 km/h {62.2—86.9 mph}**.
- When applying the brakes, the vehicle body shakes back and forth. The seriousness of the shaking is not influenced by vehicle speed.
- When applying brakes, a pulsating force tries to push the brake pad back. The pulsation is transmitted to the brake pedal.

Brake Judder Repair Hints

Due to an excessive runout (side-to-side wobble) of the disc plate, the thickness of the disc plate is uneven.

- If the runout is **more than 0.05 mm {0.002 in}** at the position **10 mm {0.39 in}** from the disc plate edge, uneven wear occurs on the disc plate because the pad contacts the plate unevenly.
- If the runout is **less than 0.05 mm {0.002 in}**, uneven wear does not occur.

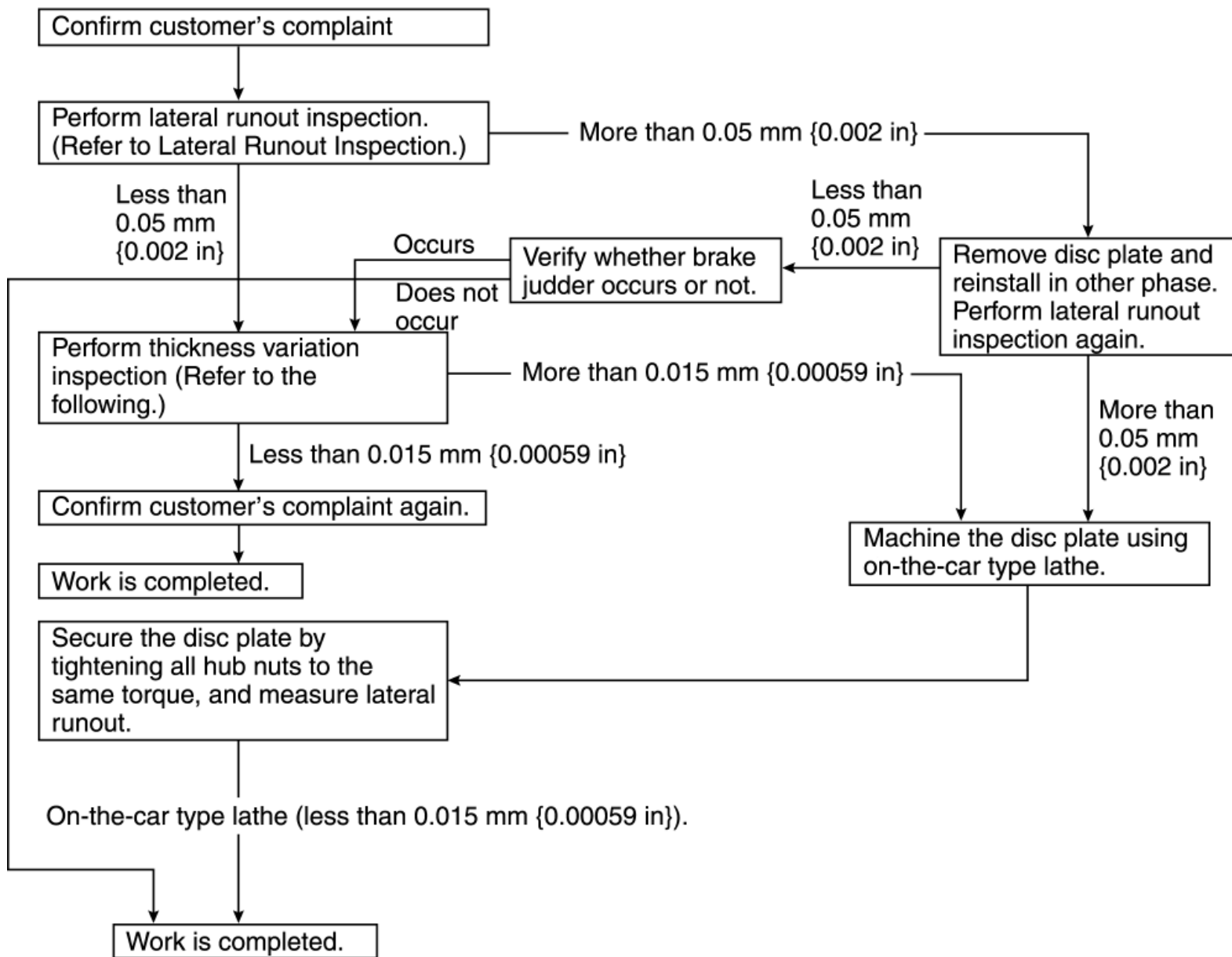
The disc plate is deformed by heat.

- Repeated panic braking may raise the temperature in some portions of disc plate by **approximately 1,000 °C {1,832 °F}**. This results in a deformed disc plate.

Due to corrosion, the thickness and friction coefficient of disc plate change.

- If a vehicle is parked in damp conditions for a long time, corrosion occurs on the friction surface of disc plate.
- The thickness of corrosion is uneven and sometimes appears like a wave pattern, which changes the friction coefficient and causes a reaction force.

Inspection and repair procedure



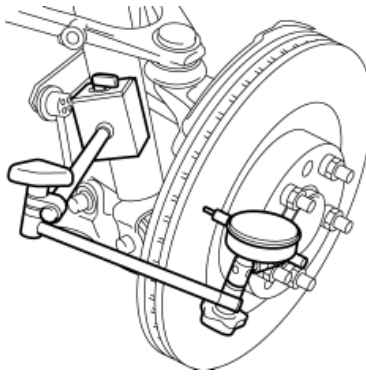
Lateral runout inspection

1. To secure the disc plate and the hub, insert the washer (thickness **10 mm {0.39 in}**, inner diameter **more than 12 mm {0.47 in}**) between each hub bolt and the hub nut, then tighten all the hub nuts.

NOTE:

- The component parts of the **SST** (49 B017 001 or 49 G019 003) can be used as a suitable washer.

2. After tightening all the hub nuts to the same torque, put the dial gauge on the friction surface of disc plate 10 mm {0.12—0.28 in} from the disc plate edge.



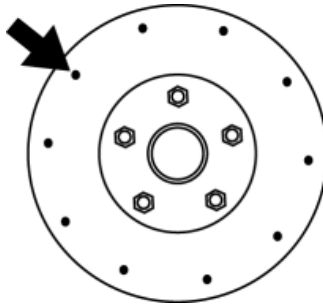
3. Rotate the disc plate one time and measure the runout.

Front disc plate runout limit

- 0.05 mm {0.002 in}

Thickness variation inspection

1. Clean the disc plate-to-pad friction surface using a brake cleaner.
2. Measure the points indicated in the illustration using a caliper (micrometer).



3. Subtract the minimum value from the maximum, and if the result is not within specification, machine the disc plate using a lathe.

Thickness variation limit

- 0.015 mm {0.00059 in}

WARNING:

- Do not exceed minimum disc plate thickness.

Disc Plate Thickness Inspection

CAUTION:

- Excessive runout may result if the disc plate is removed from the vehicle then machined. Machine the disc plate while installed on the vehicle.
1. Measure the thickness of the disc plate.
 - If the thickness is not within the specification, replace the disc plate.

Minimum front disc plate thickness

- 22 mm {0.87 in}

Minimum front disc plate thickness after machining using a brake lathe on-vehicle

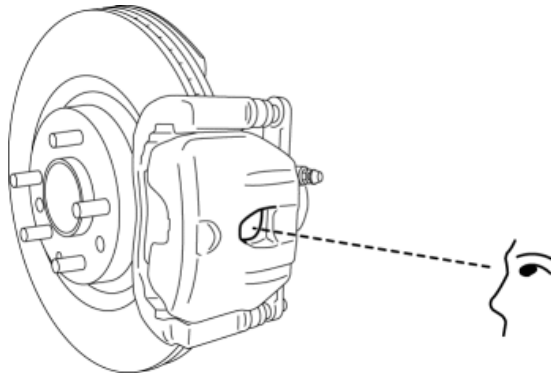
- 22.8 mm {0.90 in}

Disc Pad Thickness Inspection

1. Jack up the front of the vehicle and support it with safety stands.
2. Remove the wheel and tires.
3. Verify the remaining thickness of the pads.

Minimum front disc pad thickness

- 2.0 mm {0.079 in} min.
4. Replace the pads as a set (right and left wheels) if either one is at or less than the minimum thickness.



[< Previous](#) [Next >](#)

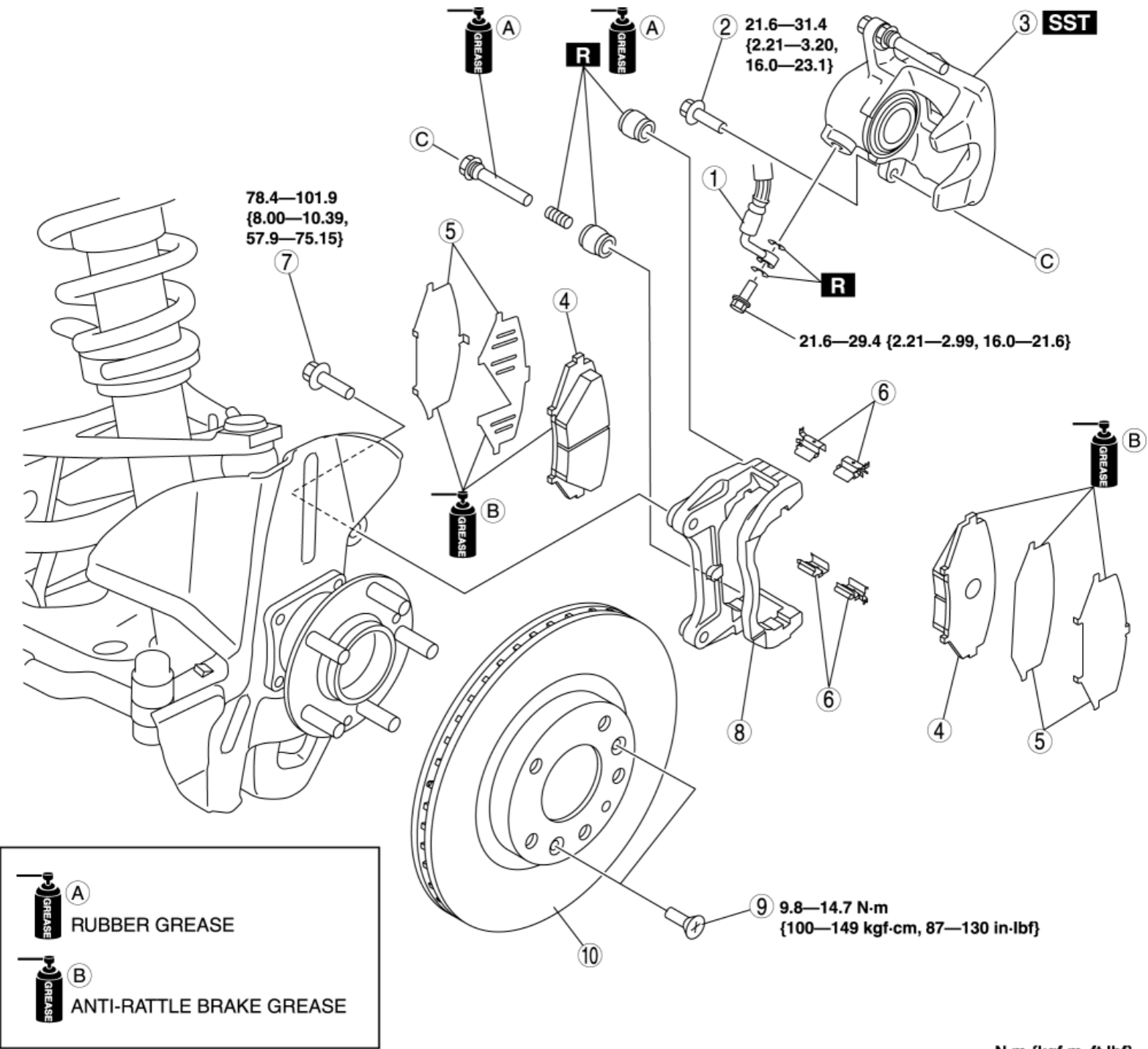
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Brakes

FRONT BRAKE (DISC) REMOVAL/INSTALLATION

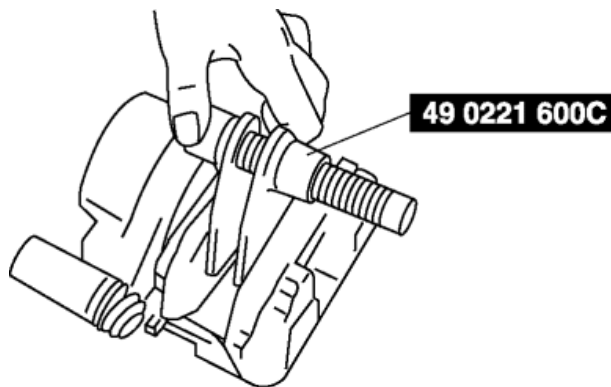
- 1. Remove in the order indicated in the table.
- 2. Install in the reverse order of removal.
- 3. After installation, depress the brake pedal a few times, then verify that the brakes do not drag.



1	Brake hose
2	Bolt
3	Caliper (See Caliper Installation Note.)
4	Disc pad
5	Shim
6	Guide plate
7	Bolt
8	Mounting support
9	Screw
10	Disc plate

Caliper Installation Note

1. Clean the exposed area of the piston.
2. Install the piston using the **SST**.



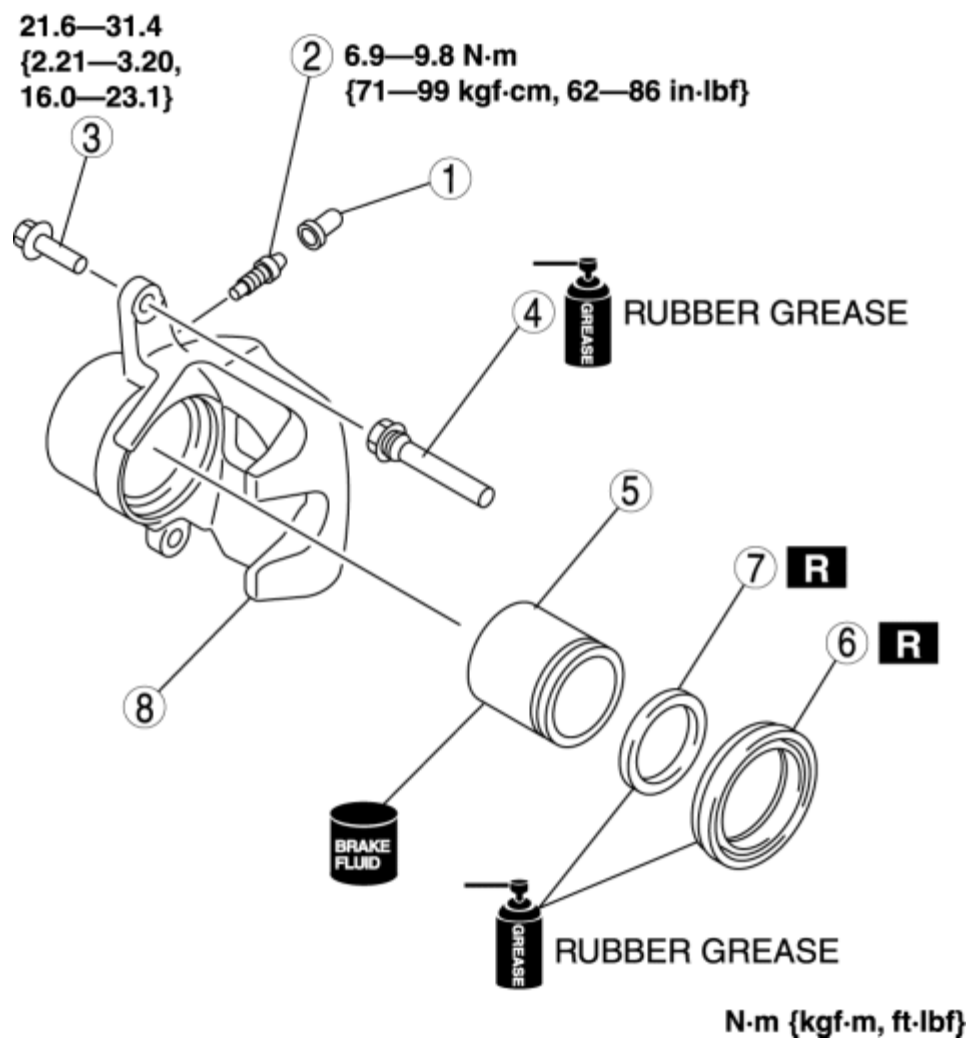
3. Install the caliper.

[< Previous](#) [Next >](#)

2011 - RX-8 - Brakes

CALIPER (FRONT) DISASSEMBLY/ASSEMBLY

1. Disassemble in the order indicated in the table.



1	Bleeder cap
2	Bleeder screw
3	Bolt

4	Sleeve
5	Piston (See Piston Disassembly Note.)
6	Dust seal
7	Piston seal
8	Caliper body

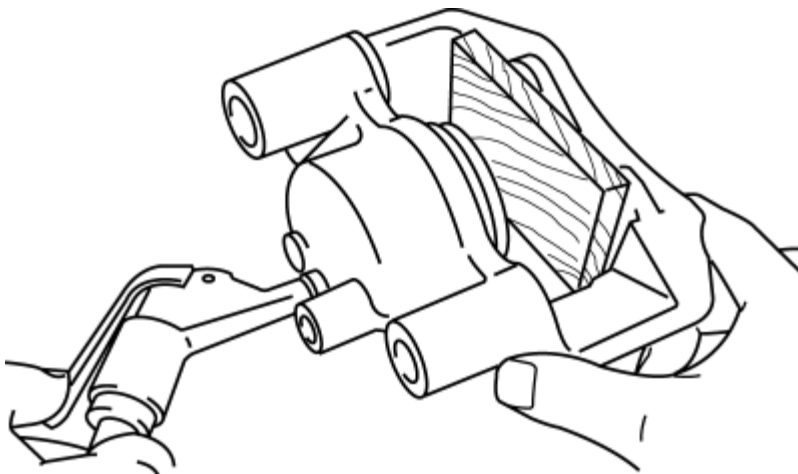
2. Assemble in the reverse order of disassembly.

Piston Disassembly Note

CAUTION:

- The piston could be damaged if blown out with great force. Blow the compressed air slowly to prevent the piston from suddenly popping out.

1. Insert a piece of wood in the caliper as shown in the figure, and then blow compressed air through the bleeder screw hole to remove the piston from the caliper body.



[< Previous](#) [Next >](#)

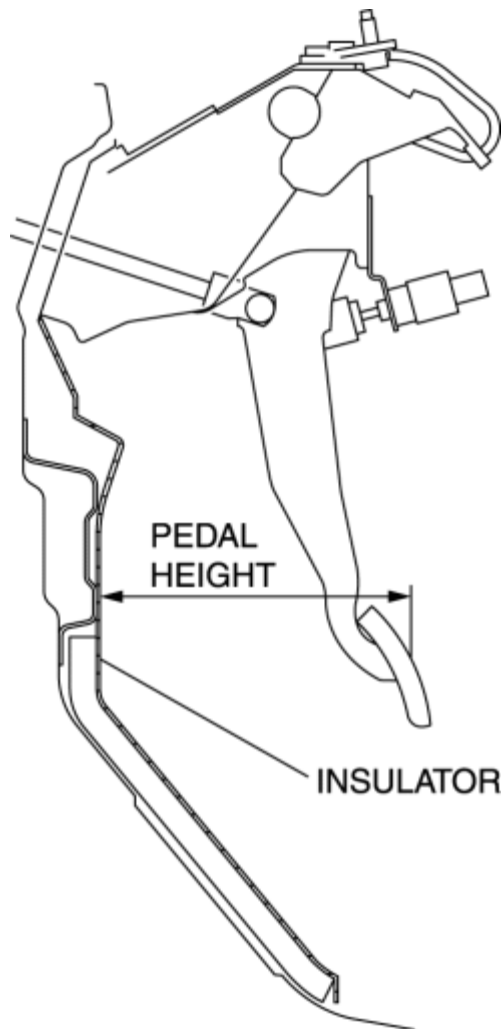
[Back to Top](#)

2011 - RX-8 - Brakes

BRAKE PEDAL INSPECTION

Brake Pedal Height Inspection

1. Measure the distance from the center of the upper surface of the pedal pad to the insulator and verify that it is as specified.



- If not within the specification, adjust the pedal height.

Brake pedal height (reference value)

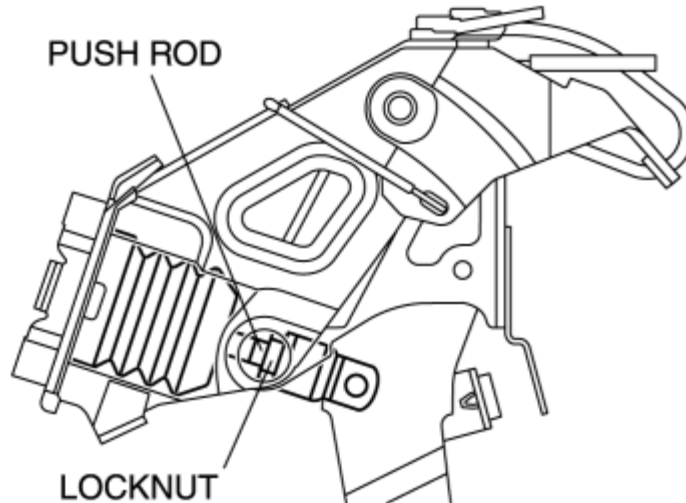
- 175 mm {6.89 in}

Brake Pedal Height Adjustment

CAUTION:

- The brake switch may not operate normally after adjusting the pedal height. Whenever adjusting the pedal height, replace the brake switch with a new one.
- The interlock cable may not operate normally after adjusting the pedal height. Whenever adjusting the pedal height, refer to the interlock cable installation note. (See [SELECTOR LEVER REMOVAL/INSTALLATION](#).)

1. Loosen the locknut and turn the push rod to adjust the pedal height.



2. Tighten the locknut.

Tightening torque

- 15.7—21.6 N·m {1.61—2.20 Kgf·m, 11.6—15.9 ft·lbf}

3. After adjustment, inspect the pedal play.

Brake Pedal Play Inspection

1. Depress the pedal several times to release the vacuum in the power brake unit.
2. Gently depress the pedal by hand, and measure the pedal play.
 - If not within the specification, inspect the wear of the clevis pin and replace it if there is any malfunction.

Brake pedal play

- 2—5 mm {0.08—0.19 in}

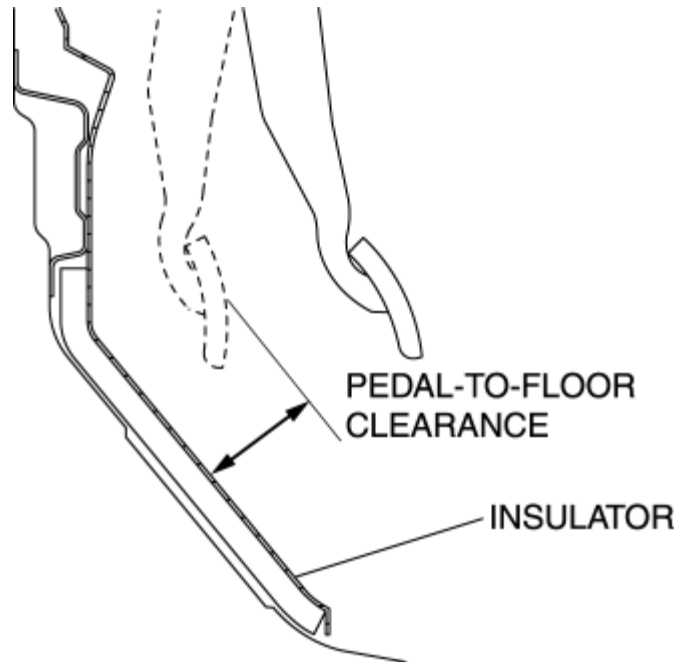
NOTE:

- If there is no malfunction in the clevis pin, there is a possibility that the power brake unit has some malfunction. Verify that there are no malfunctions, and

replace it if necessary.

Pedal-to-floor Clearance Inspection

1. Start the engine and depress the pedal with a pedal force of **147 N {15.0 Kgf, 33.0 lbf}**.
2. Measure the distance between the pedal pad center and the insulator, and verify that it is as specified.



- If the pedal-to-floor clearance is less than the specification, check for air in the brake system.

Brake pedal-to-floor clearance (Brake pedal when depressed at 147 N {15.0 Kgf, 33.0 lbf})

- 98.6 mm {3.88 in} or more

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Brakes

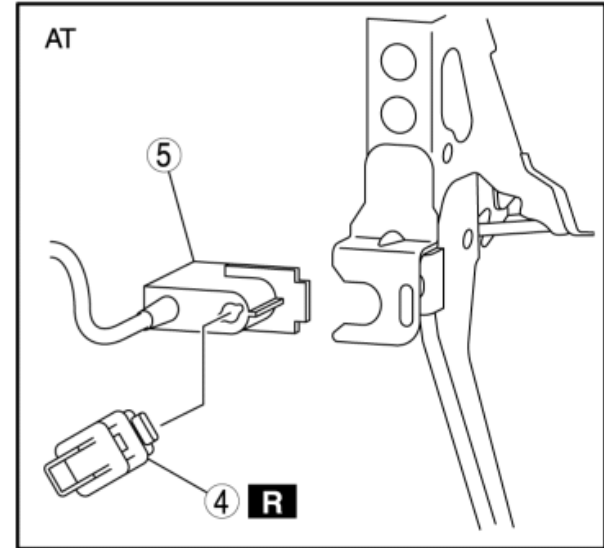
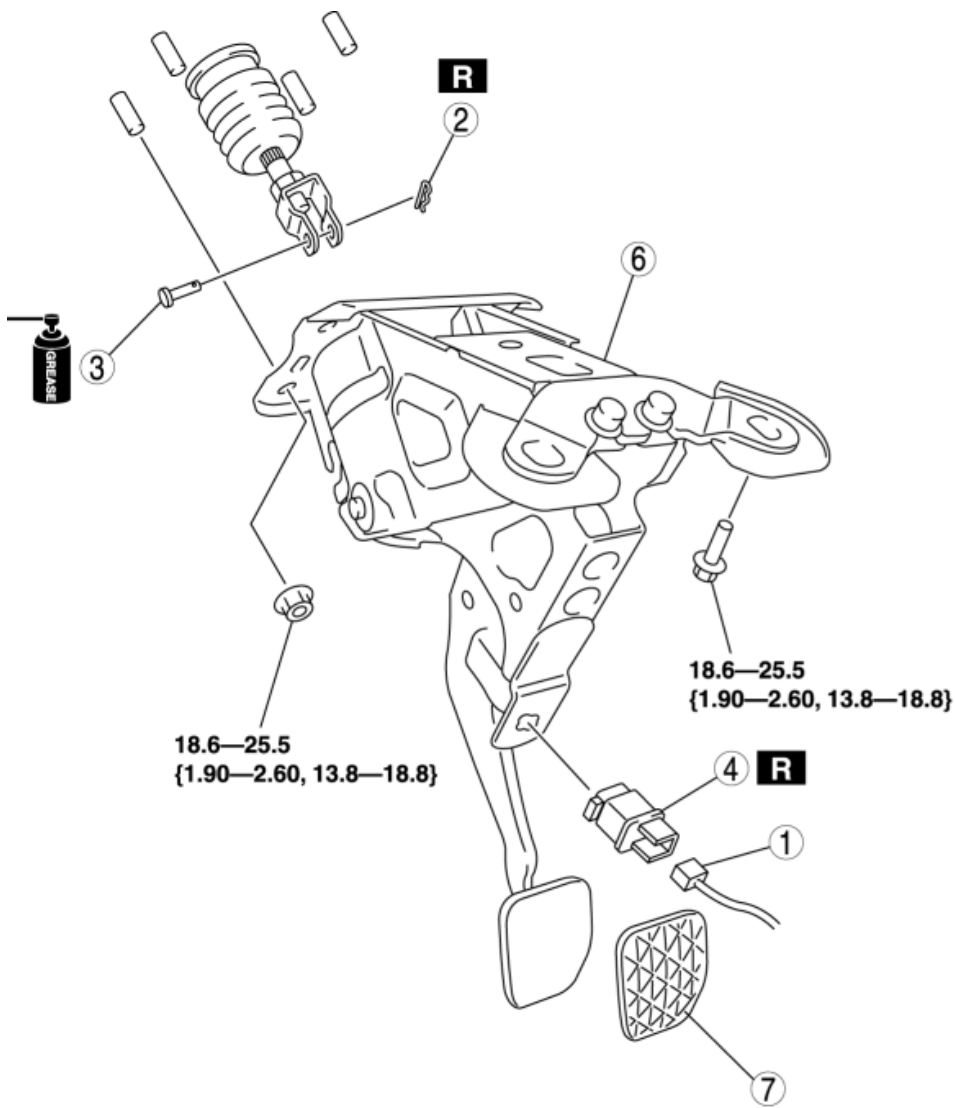
BRAKE PEDAL REMOVAL/INSTALLATION

CAUTION:

- The clearance between the brake switch and the brake pedal is automatically adjusted to the correct amount when the brake switch connector is connected after the brake switch has been properly installed. If the brake switch is not properly installed or the connector is connected before installation, the clearance may be incorrect, causing a brake light malfunction. Therefore, always verify that the brake switch is properly installed before connecting the connector.
- Once the brake switch clearance has automatically been adjusted, it cannot be adjusted again. Therefore, replace the switch with a new one when replacing the power brake unit or the pedal, or performing any procedure that changes the pedal stroke.
- When replacing the brake pedal (AT), it is possible that the installation of the interlock cable could become defective. Always refer to the interlock cable installation note when replacing the brake pedal. (See [SELECTOR LEVER REMOVAL/INSTALLATION](#).)

NOTE:

- When the brake switch connector is connected to the brake switch, the clearance between the pedal and the brake switch is adjusted automatically. However, this mechanism will only function one time.
1. Remove in the order indicated in the table.
 2. Install in the reverse order of removal.



N·m {kgf·m, ft·lbf}

1 Brake switch connector

(See [Brake Switch Connector Installation Note.](#))

2 Snap pin

3 Clevis pin

4 Brake switch

(See [Brake Switch Installation Note.](#))

5 Interlock cable (AT)

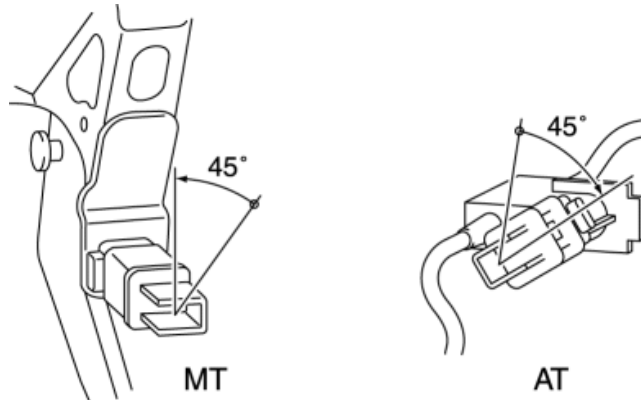
(See [SELECTOR LEVER REMOVAL/INSTALLATION.](#))

6 Brake pedal

7 Pedal pad

Brake Switch Installation Note

1. Install the new brake switch to the brake pedal (MT) or the interlock cable (AT), and secure it by turning it clockwise **45°** (AT) or counterclockwise **45°** (MT).



Brake Switch Connector Installation Note

1. Inspect the brake pedal. (See [BRAKE PEDAL INSPECTION](#).)
2. With the brake pedal in its original position, install the brake switch to the brake switch connector.

[< Previous](#) [Next >](#)

[Back to Top](#)

MASTER CYLINDER REMOVAL/INSTALLATION

-

1	Brake fluid level sensor connector
2	Hose (MT)
3	Brake pipe
4	Nut

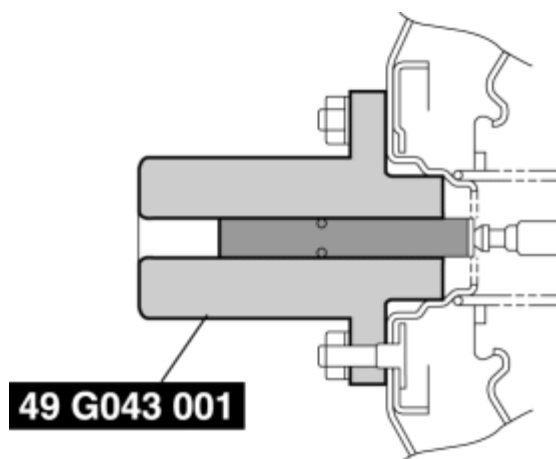
5	Master cylinder (See Master Cylinder Installation Note.)
6	Reserve tank
7	Front seal

Master Cylinder Installation Note

CAUTION:

- If the master cylinder is installed at an angle, the master cylinder piston may push against the push rod retainer of the power brake unit causing poor air bleeding, brake drag, or other malfunctions. Be sure to install the master cylinder at a perpendicular angle to the power brake unit.

1. Install the **SST** to the power brake unit and tighten to the specified torque.



Tightening torque

- 11.8—14.6 N·m {121—148 kgf·cm, 105—129 in·lbf}

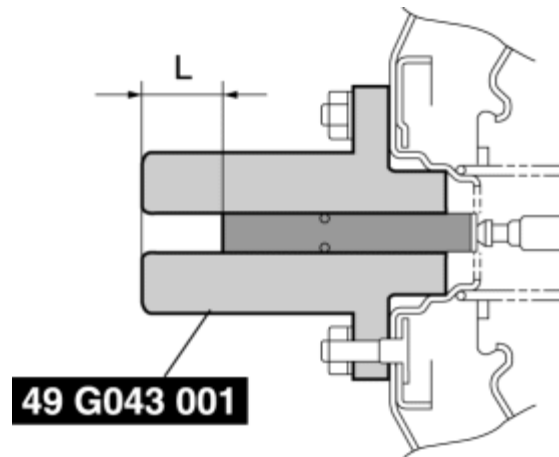
2. Apply a vacuum of **66.7 kPa {500 mmHg, 19.7 inHg}** to the power brake unit using a vacuum gauge.



NOTE:

- Use any commercially available vacuum gauge.

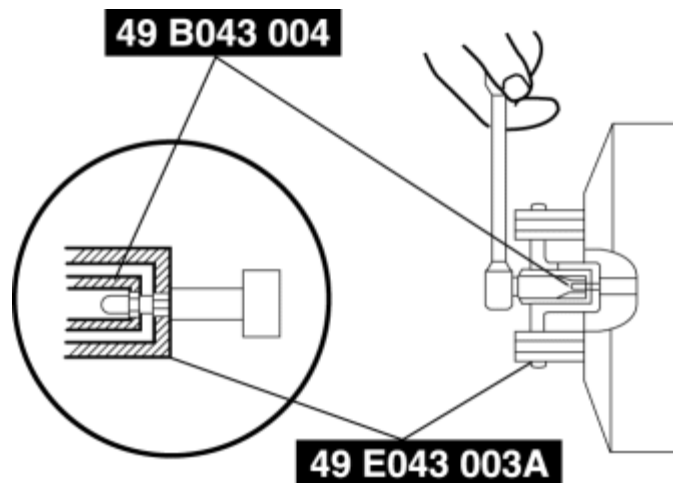
3. Using calipers, measure dimension L as shown in the figure.



Standard L dimension

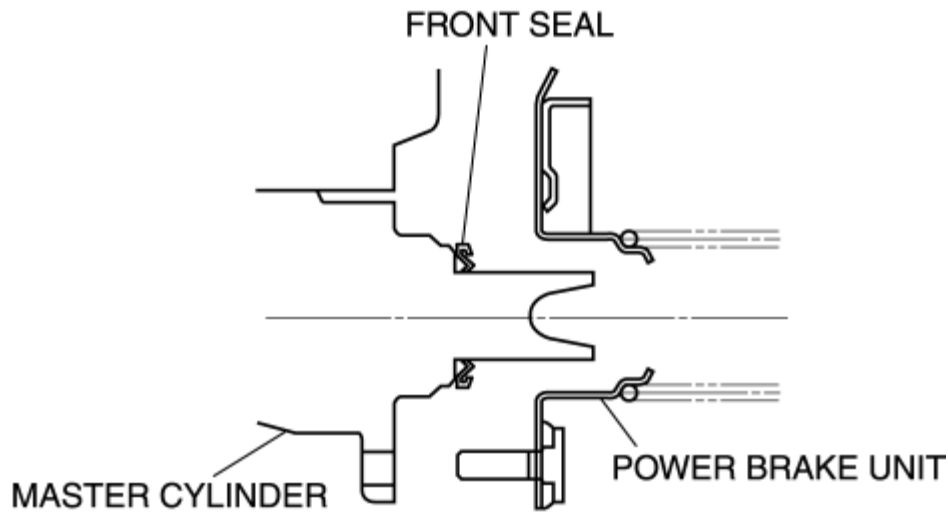
- 22.9—23.2 mm {0.902—0.913 in}

4. If dimension L is not within the standard, remove the **SST** (49 G043 001) and, while stopping the push rod rotation with the **SST** (49 E043 003A), adjust the push rod length with the **SST** (49 B043 004).



5. Switch the **SSTs** and remeasure dimension L.

6. Install the front seal to the power brake unit.
7. Install the master cylinder to the power brake unit.



CAUTION:

- After installing the master cylinder, if air still exists in the brake lines even after performing brake bleeding, brake drag occurs, or other malfunctions are present, it is possible that the master cylinder piston is jammed against the push rod retainer of the power brake unit. If air cannot be bled completely, brake drag exists, or other malfunctions occur, remove the master cylinder and reinstall it properly.
- Do not install the master cylinder with the front seal lip protruding. Doing so will create a vacuum leak and loss of braking force.

[< Previous](#) [Next >](#)

[Back to Top](#)

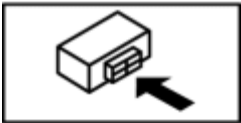
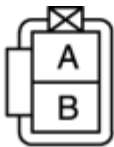
2011 - RX-8 - Brakes

BRAKE FLUID LEVEL SENSOR INSPECTION

- 1. Disconnect the brake fluid level sensor connector from the master cylinder.
- 2. Inspect for continuity according to fluid level between the brake fluid level sensor terminals.
 - If not as indicated in the table, replace the reserve tank.

○—○: Continuity

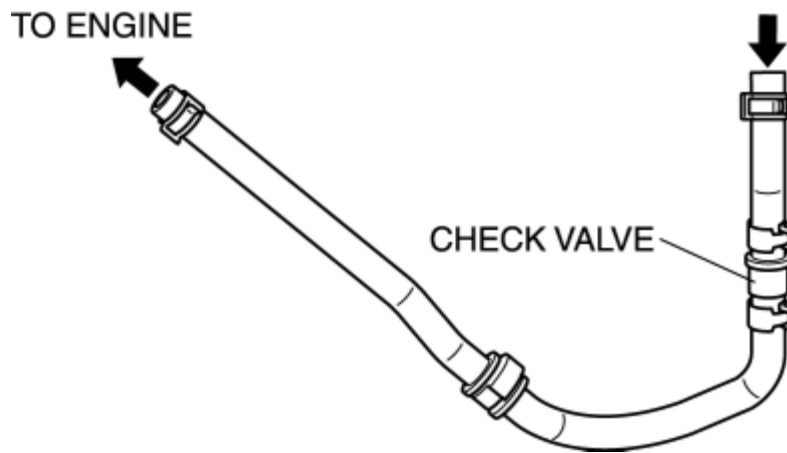
Condition	Terminal	
	A	B
Above MIN		
Below MIN	○—	—○



2011 - RX-8 - Brakes

VACUUM LINE INSPECTION

1. Remove the vacuum hose between the power brake unit and the intake manifold using pliers.
2. Verify that air can be blown from the power brake unit side of the vacuum hose towards the intake manifold side, and that air cannot be blown in the opposite direction.
 - If there is any malfunction of the inner check valve, replace it together with the vacuum hose as a single unit.



2011 - RX-8 - Brakes

POWER BRAKE UNIT INSPECTION

NOTE:

- The following inspection methods are simple inspection methods to judge the function of the power brake unit.
- If there is any malfunction in the power brake unit, replace the power brake unit as a single component.

Without Using SST

Operation inspection

1. Depress the pedal several times with the engine stopped.
2. With the pedal depressed, start the engine.
3. If the pedal moves down slightly immediately after engine start, the unit is normal.

Vacuum function inspection

1. Start the engine.
2. Stop the engine after driving the vehicle for **1—2 min**.
3. Depress the pedal with normal force.
4. If the first pedal stroke is long and becomes shorter with subsequent strokes, the unit is normal.
 - If a malfunction is found, inspect for damage to or improper installation of the check valve and vacuum hose. After repairing, inspect again.

Vacuum loss function inspection

1. Start the engine.

2. Depress the pedal with normal force.
3. Stop the engine under this condition.
4. Hold the pedal depressed for **approx. 30 s**.
5. If the pedal height does not change during this time, the unit is normal.

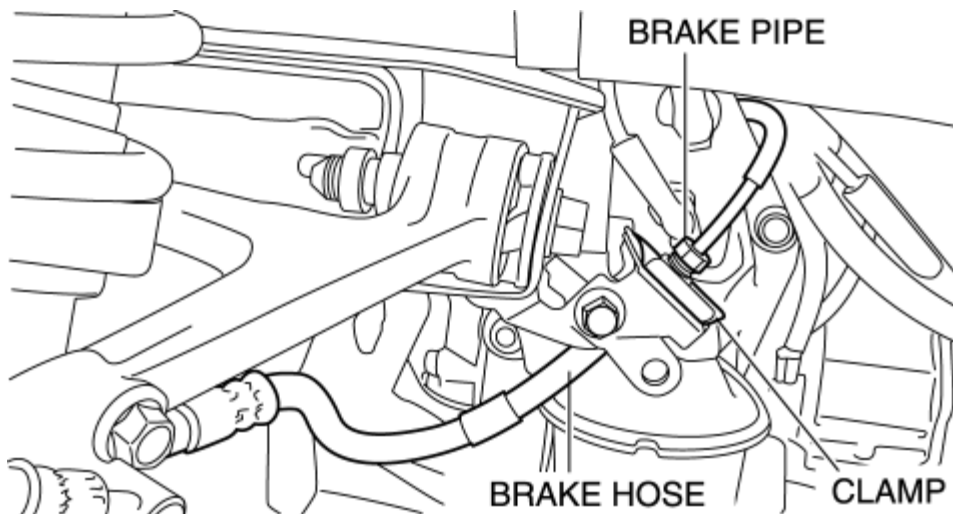
When using SST

NOTE:

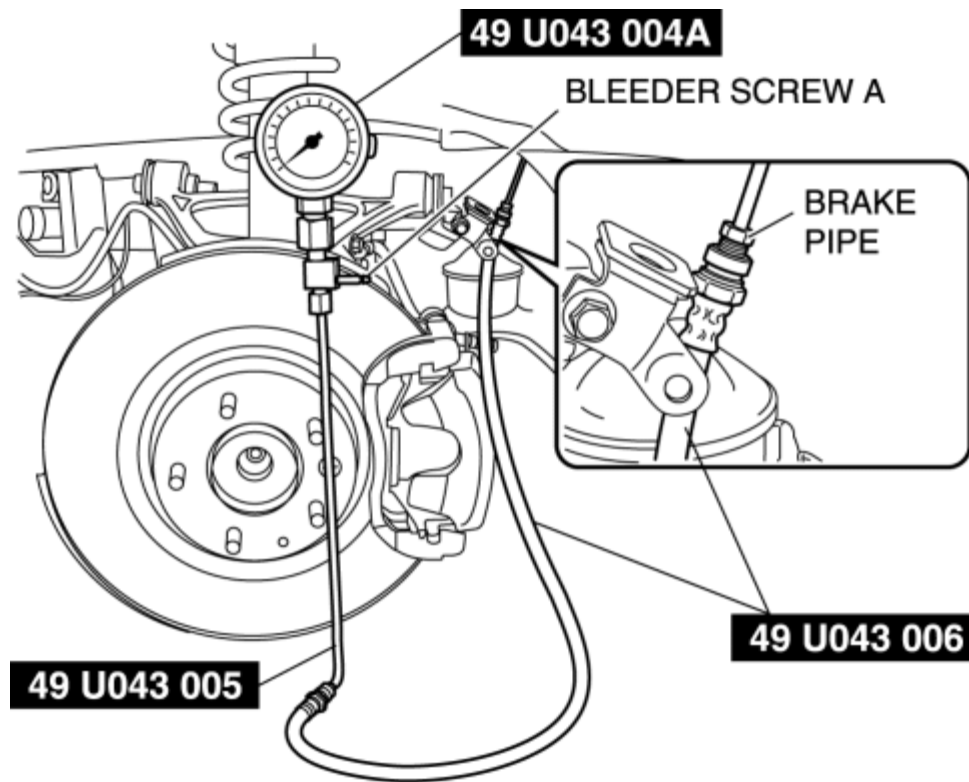
- When performing the inspection using the **SST**, inspect the brake pipe on the left or right front wheel.
- The following procedure and figures show the inspection for the brake pipe on the left front wheel.

Preparation before inspection

1. Loosen the brake pipe flare nut using the commercially available flare nut wrench.



2. Disconnect the brake pipe.
3. Remove the clamp and disconnect the brake hose.
4. Install the **SSTs** to the brake pipe as shown in the figure.



5. Perform air bleeding of the **SST** and brake line from bleeder screw A.
6. Install the pedal force gauge to the brake pedal.
7. Connect the vacuum piping to the vacuum gauge.

Checking for vacuum loss (loaded condition)

1. Start the engine.
2. Depress the brake pedal with a force of **200 N {20.4 kgf, 44.9 lbf}**.
3. With the brake pedal depressed, turn off the engine when the vacuum gauge reaches **68 kPa {510 mmHg, 20.1 inHg}**.
4. Within **15 s** right after stopping the engine, measure the lowest amount of vacuum.
5. If the lowest amount is **3.3 kPa {25 mmHg, 1.0 inHg}** or less, the system is normal.

Lack of hydraulic pressure inspection

1. With the engine stopped and the vacuum amount at **0 kPa {0 mmHg, 0 inHg}** if the pedal force and fluid pressure correlation is within the specification, the system is normal. **Master cylinder fluid pressure**

Vacuum amount at 0 kPa {0 mmHg, 0 inHg}

Pedal force (N {kgf, lbf})	Fluid pressure (kPa {kgf/cm ² , psi})
200 {20.4, 44.9}	606 {6.18, 87.9} or more

Hydraulic pressure inspection

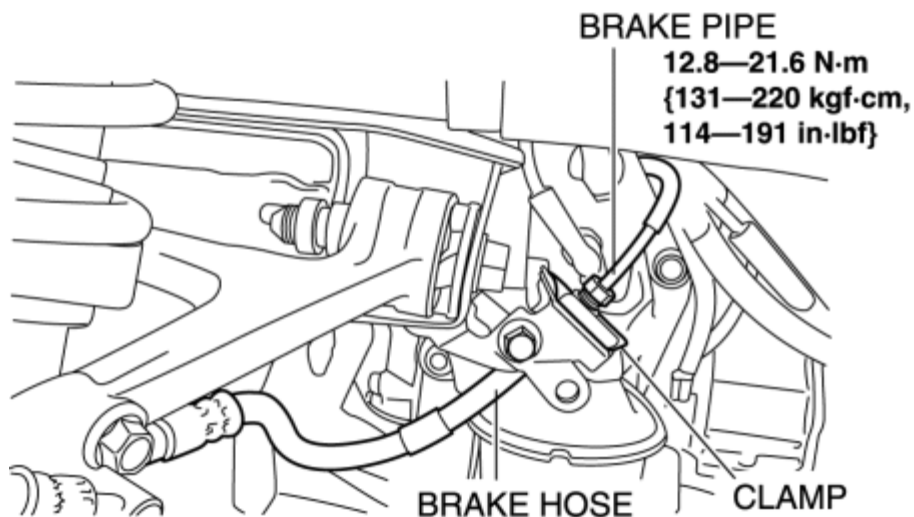
1. Start the engine and when the vacuum amount reaches **66.7 kPa {500 mmHg, 19.7 inHg}**, depress the brake pedal.
2. At this time, apply the indicated pedal force and if the fluid pressure is within the specification, the unit is normal.

Master cylinder fluid pressure

Vacuum amount at 66.7 kPa {500 mmHg, 19.7 inHg}	
Pedal force (N {kgf, lbf})	Fluid pressure (kPa {kgf/cm ² , psi})
200 {20.4, 44.9}	7,310 {74.54, 1,060} or more

Procedure after inspection

1. Remove the **SSTs** after the inspection and install the brake hose, clamp and brake pipe to their original positions.



2. Perform air bleeding of the brake line. (See [AIR BLEEDING](#).)

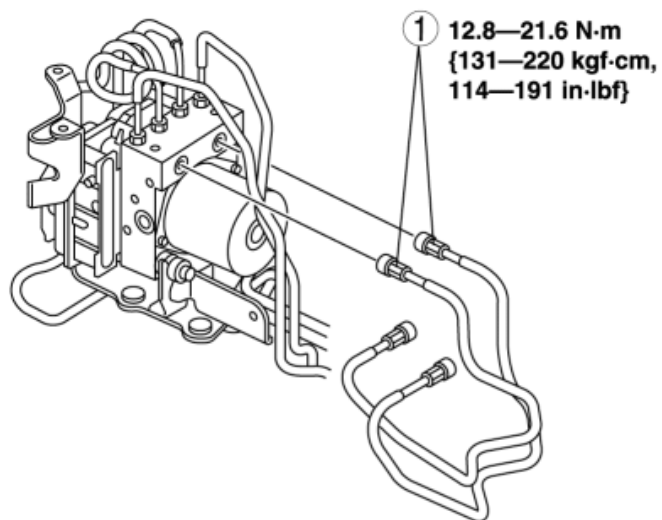
2011 - RX-8 - Brakes

POWER BRAKE UNIT REMOVAL/INSTALLATION

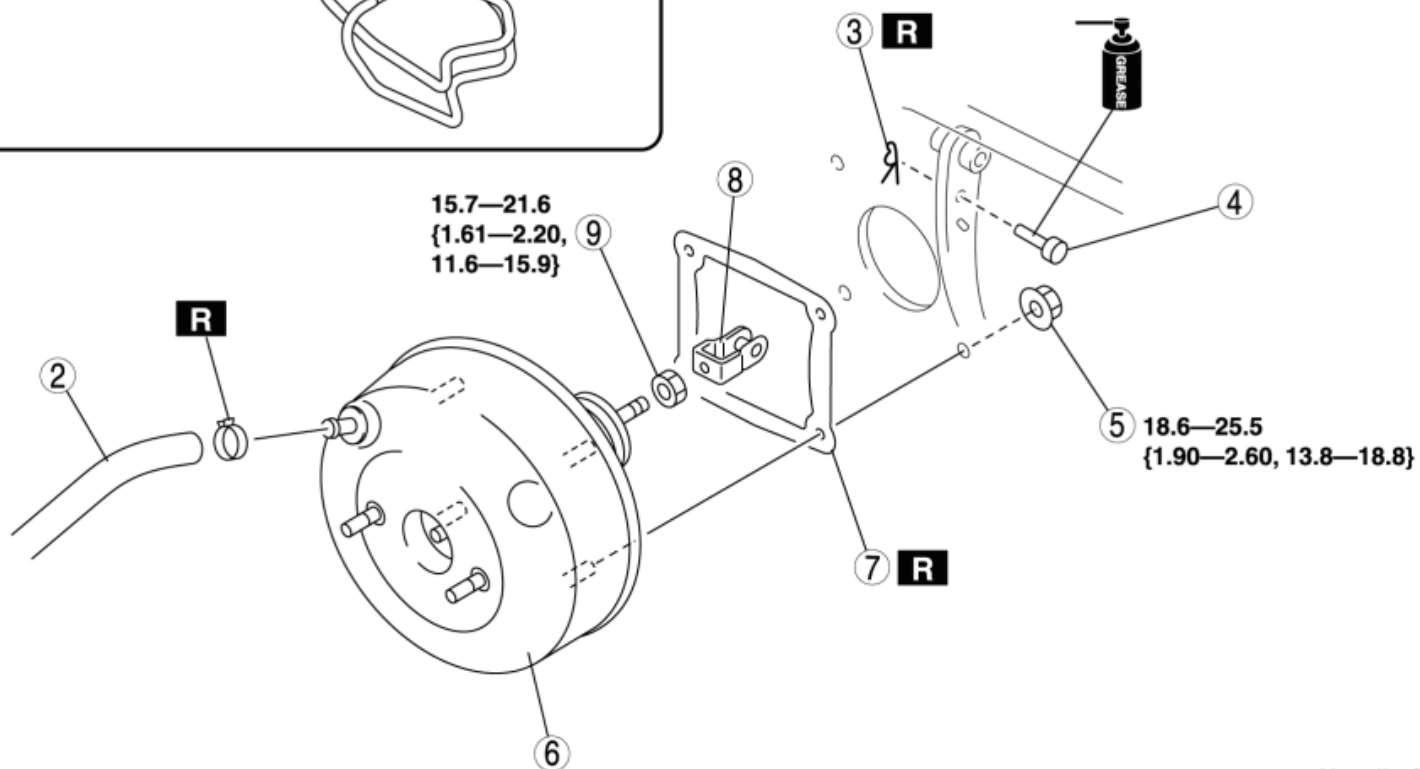
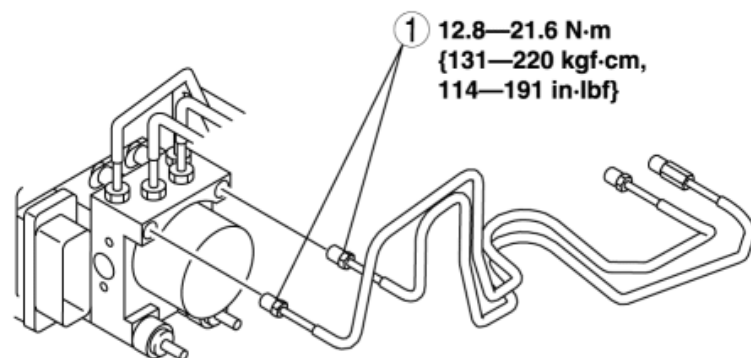
CAUTION:

- Once the brake switch clearance has automatically been adjusted, it cannot be adjusted again. Therefore, replace the switch with a new one when replacing the power brake unit or performing any procedure that changes the pedal stroke.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
 2. Remove the front suspension tower bar. (MT) (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[MT\].](#))
 3. Remove the master cylinder. (See [MASTER CYLINDER REMOVAL/INSTALLATION.](#))
 4. Remove in the order indicated in the table.
 5. Remove the brake switch. (See [BRAKE PEDAL REMOVAL/INSTALLATION.](#))
 6. Install in the reverse order of removal.
 7. After installation, perform brake pedal inspection. (See [BRAKE PEDAL INSPECTION.](#))

WITH DSC



WITH ABS



N·m {kgf·m, ft·lbf}

1 Brake pipe

2 Vacuum hose

3 Snap pin

4 Clevis pin

5 Nut

6 Power brake unit

7 Gasket

8	Fork
9	Locknut

[< Previous](#) [Next >](#)

© 2011 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Brakes

BRAKE SWITCH INSPECTION

CAUTION:

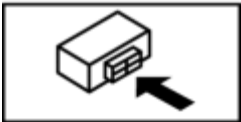
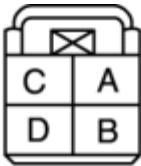
- If the brake switch is removed from the brake pedal or the interlock unit, its proper functioning cannot be guaranteed when reinstalled. Therefore, inspect the brake switch with it still installed, or replace the brake switch if it is removed.

1. Verify continuity as indicated in the table.

- If not as indicated in the table, replace the brake switch.

○—○ : Continuity

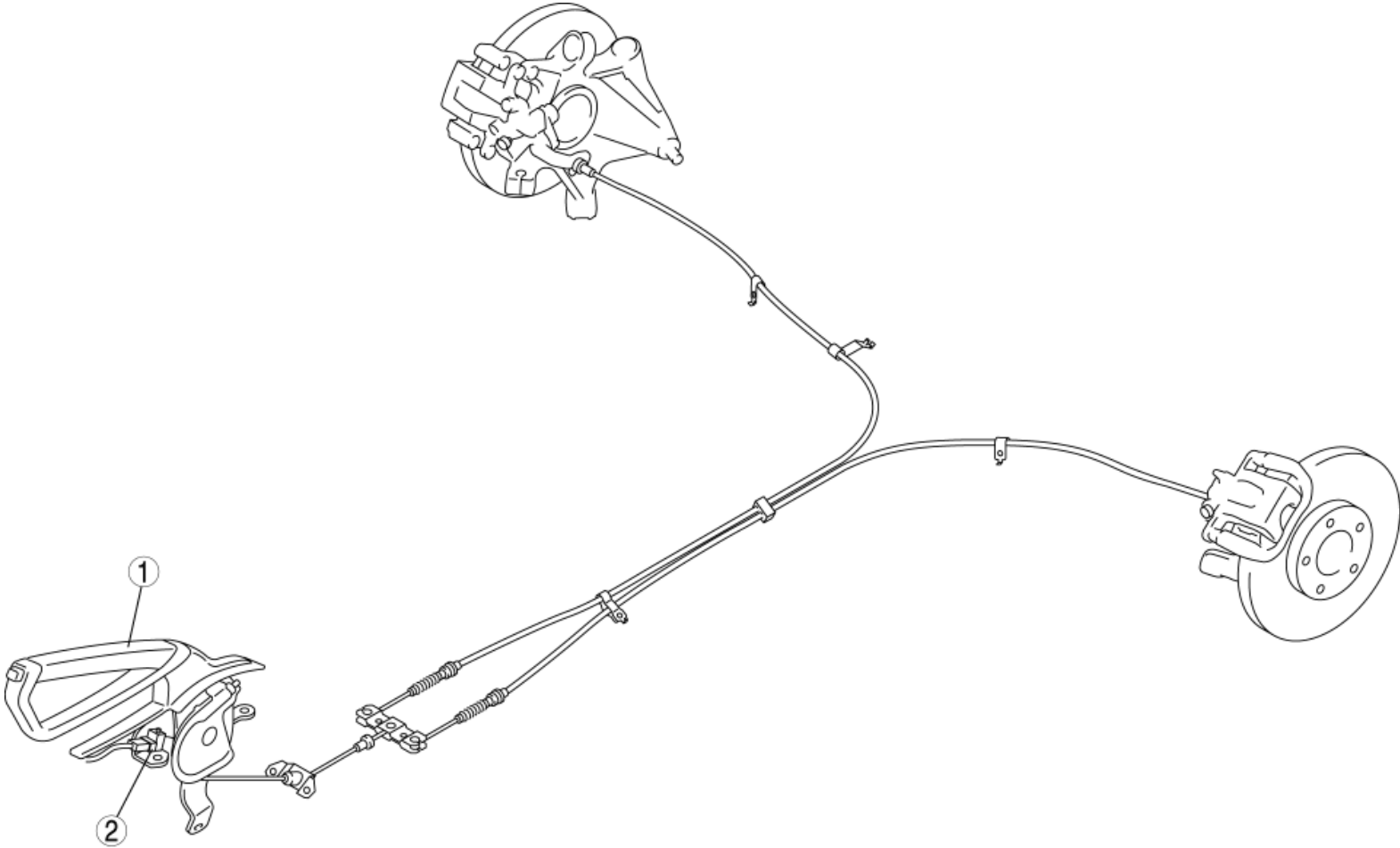
Condition	Terminal			
	A	B	C	D
When the brake pedal is depressed		○—○		○
When the brake pedal is not depressed	○		○	



[< Previous](#) [Next >](#)

2011 - RX-8 - Brakes

PARKING BRAKE SYSTEM LOCATION INDEX



1 Parking brake lever

(See [PARKING BRAKE LEVER INSPECTION.](#))

(See [PARKING BRAKE LEVER ADJUSTMENT.](#))

(See [PARKING BRAKE LEVER REMOVAL/INSTALLATION.](#))

2 Parking brake switch

(See [PARKING BRAKE SWITCH INSPECTION.](#))

[< Previous](#) [Next >](#)

[Back to Top](#)

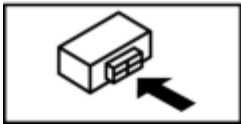
2011 - RX-8 - Brakes

PARKING BRAKE SWITCH INSPECTION

- 1. Disconnect the parking brake switch connector.
- 2. Verify that the continuity is as indicated in the table.
 - If not as indicated in the table, replace the parking brake switch.

○—○: Continuity

Condition	Terminal	
	A	Body ground
Parking brake lever pulled	○—○	○—○
Parking brake lever released		

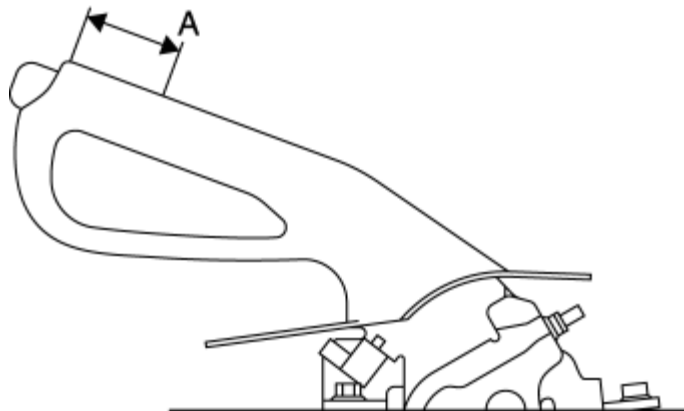


2011 - RX-8 - Brakes

PARKING BRAKE LEVER INSPECTION

Stroke Inspection

1. Depress the brake pedal several times.
2. Pull the parking brake lever **2—3 times**.
3. Inspect the parking brake stroke by slowly pulling at point A **50 mm {1.97 in}** from the end of the parking brake lever with a force of **98 N {10 kgf, 22 lbf}** and counting the number of notches (clicking sound).



- If not within the specification, adjust the parking brake lever.

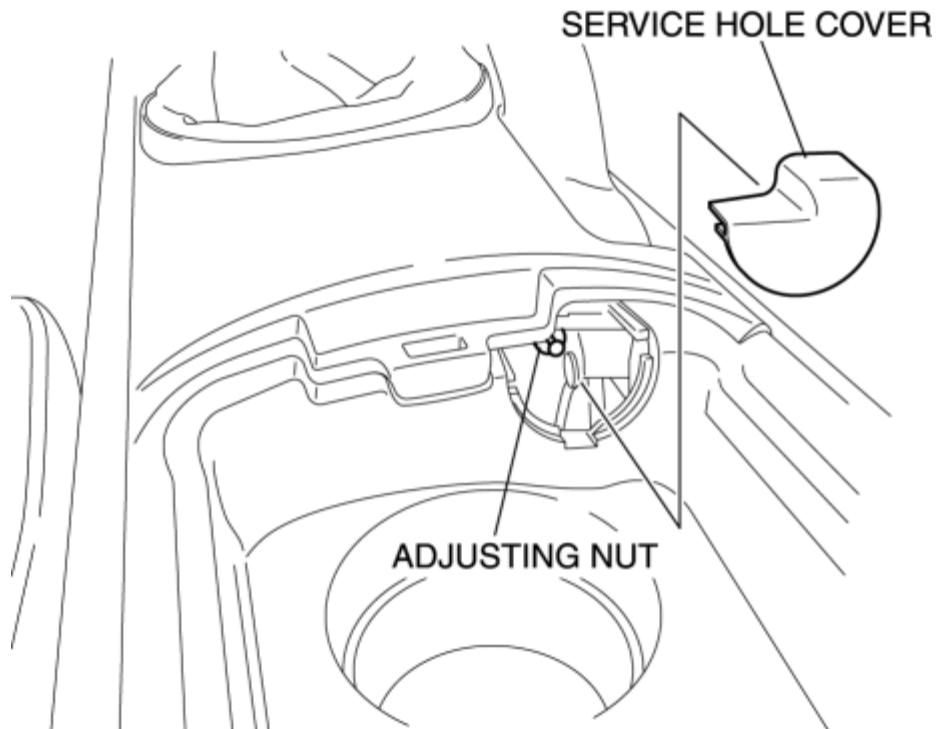
Parking brake lever stroke when pulled at 98 N {10 kgf, 22 lbf}

- 1—3 notches

2011 - RX-8 - Brakes

PARKING BRAKE LEVER ADJUSTMENT

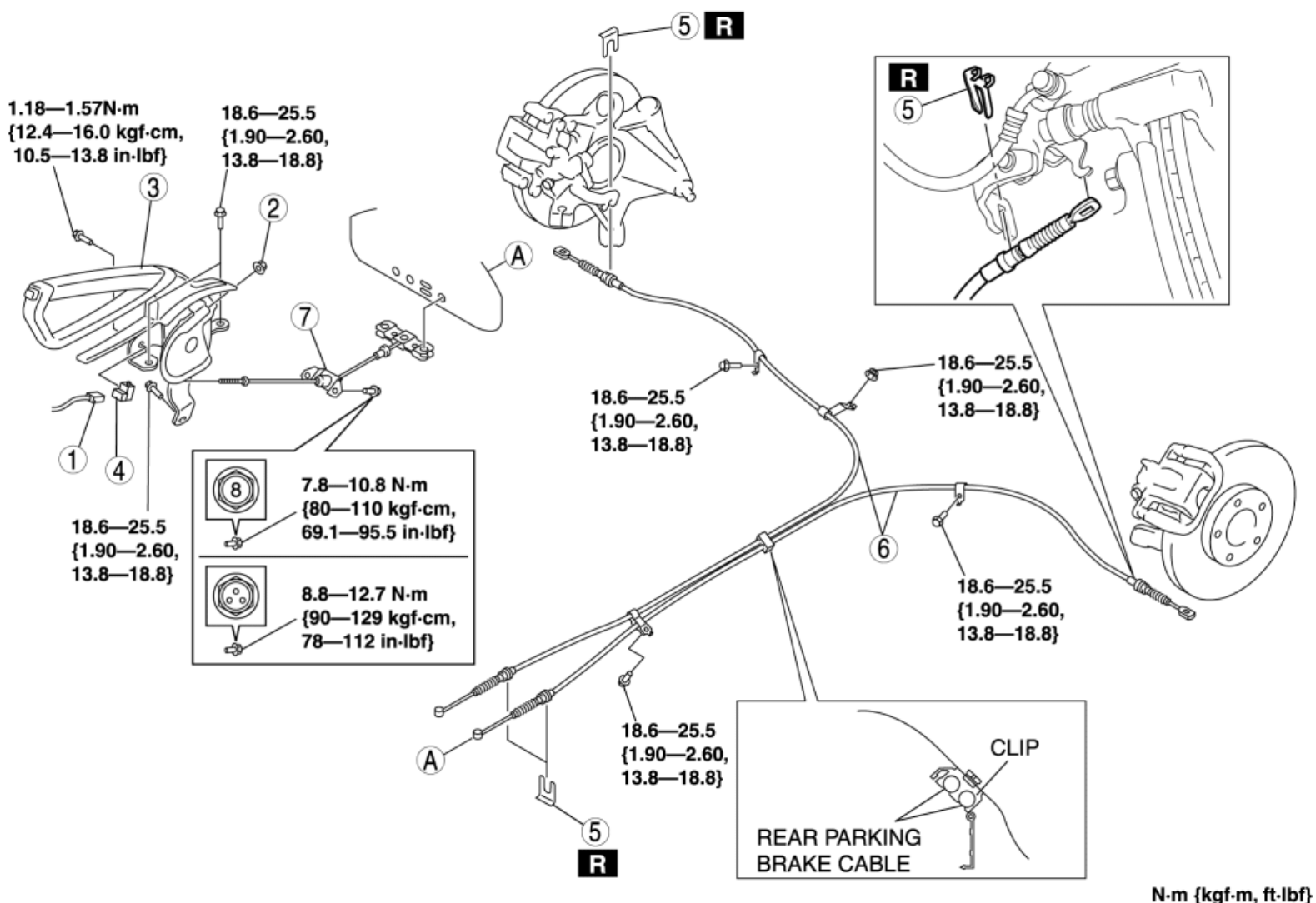
1. Depress the brake pedal several times.
2. Remove the service hole cover of the rear console.



3. Turn the adjusting nut and adjust the parking brake lever.
4. After adjustment, pull the parking brake lever one notch and verify that the parking brake warning light illuminates.
5. Verify that the rear brakes do not drag.

PARKING BRAKE LEVER REMOVAL/INSTALLATION

1. Remove the propeller shaft. (See [PROPELLER SHAFT REMOVAL/INSTALLATION](#).)
2. Remove the front console.
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.
5. After installation, inspect the parking brake stroke and adjust if necessary.



N·m {kgf·m, ft·lbf}

1	Parking brake switch connector
2	Adjusting nut

3	Parking brake lever
4	Parking brake switch
5	Clip
6	Rear parking brake cable
7	Front parking brake cable

2011 - RX-8 - Brakes

ABS SYSTEM INSPECTION

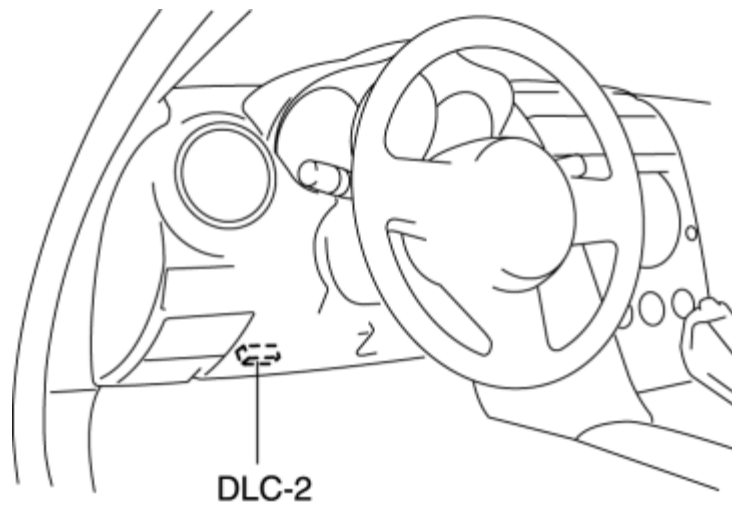
ABS HYDRAULIC UNIT ON-VEHICLE INSPECTION

Preparation

1. Verify that battery is fully charged.
2. Turn the ignition switch to the ON position and verify that the ABS warning light goes out after **approx. 3 s**.
3. Turn the ignition switch off.
4. Jack up the vehicle and support it evenly on safety stands.
5. Shift to neutral.
6. Release the parking brake.
7. Verify that all four wheels rotate.
8. Rotate the wheels by hand, and verify there is no brake drag.
 - If there is any brake drag, perform regular brake inspection.
 - If there is no brake drag, perform ABS HU/CM operation inspection.

Operation inspection

1. Perform "Preparation".
2. Connect the M-MDS to the DLC-2.



3. Set up an active command mode inspection according to the combination of commands below.

Operation condition	Command name				Command transmission type
	PMP_MOTOR	RF_OUTLET	RF_INLET	ABS_POWER	
Brake pressure retention	OFF	OFF	ON	ON	Manual
Brake pressure reduction	ON	ON	ON	ON	

The chart above shows an example of a right front wheel inspection.

CAUTION:

- To protect the ABS HU/CM, the solenoid valve and the pump motor used during active command mode stay on for only 10 s or less each time they are switched on.

NOTE:

- When working with two people, one should press on the brake pedal, and the other should attempt to rotate the wheel being inspected.

4. Send the command while depressing the brake pedal and attempting to rotate the wheel being inspected.

5. Performing the inspection above determines the following:

- The ABS HU/CM brake lines are normal.
- The ABS HU/CM hydraulic system is not significantly abnormal (including inside ABS HU/CM).

- The ABS HU/CM internal electrical parts (solenoid, motor and other parts) are normal.
- The ABS HU/CM output system wiring harnesses (solenoid valve, relay system) are normal.
 - However, the following items cannot be verified.
 - Malfunction of ABS HU/CM input system wiring harnesses and parts
 - Extremely small leaks in the ABS HU/CM internal hydraulic system
 - Malfunction with intermittent occurrence of the above items

[< Previous](#) [Next >](#)

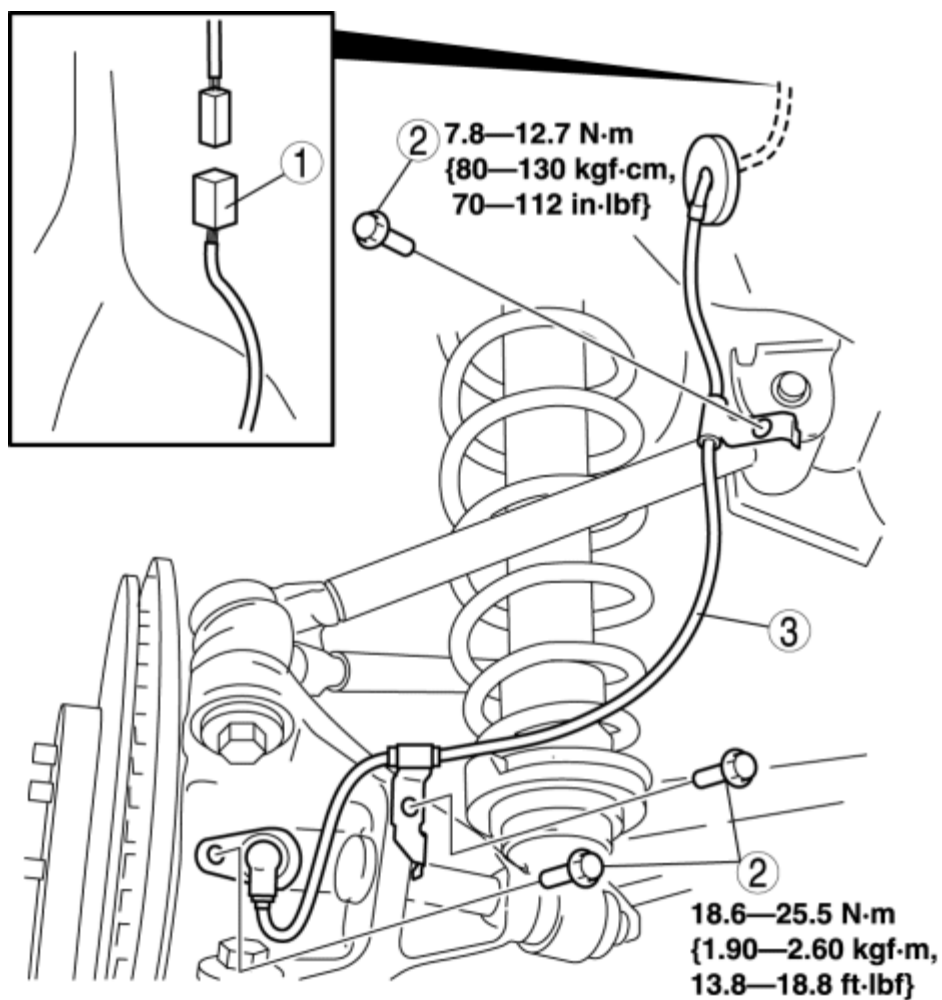
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Brakes

REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION

1. Remove the trunk side trim. (See [TRUNK SIDE TRIM REMOVAL/INSTALLATION](#).)
2. Remove in the order indicated in the table.



1	Connector
2	Bolt
3	Rear ABS wheel-speed sensor

3. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

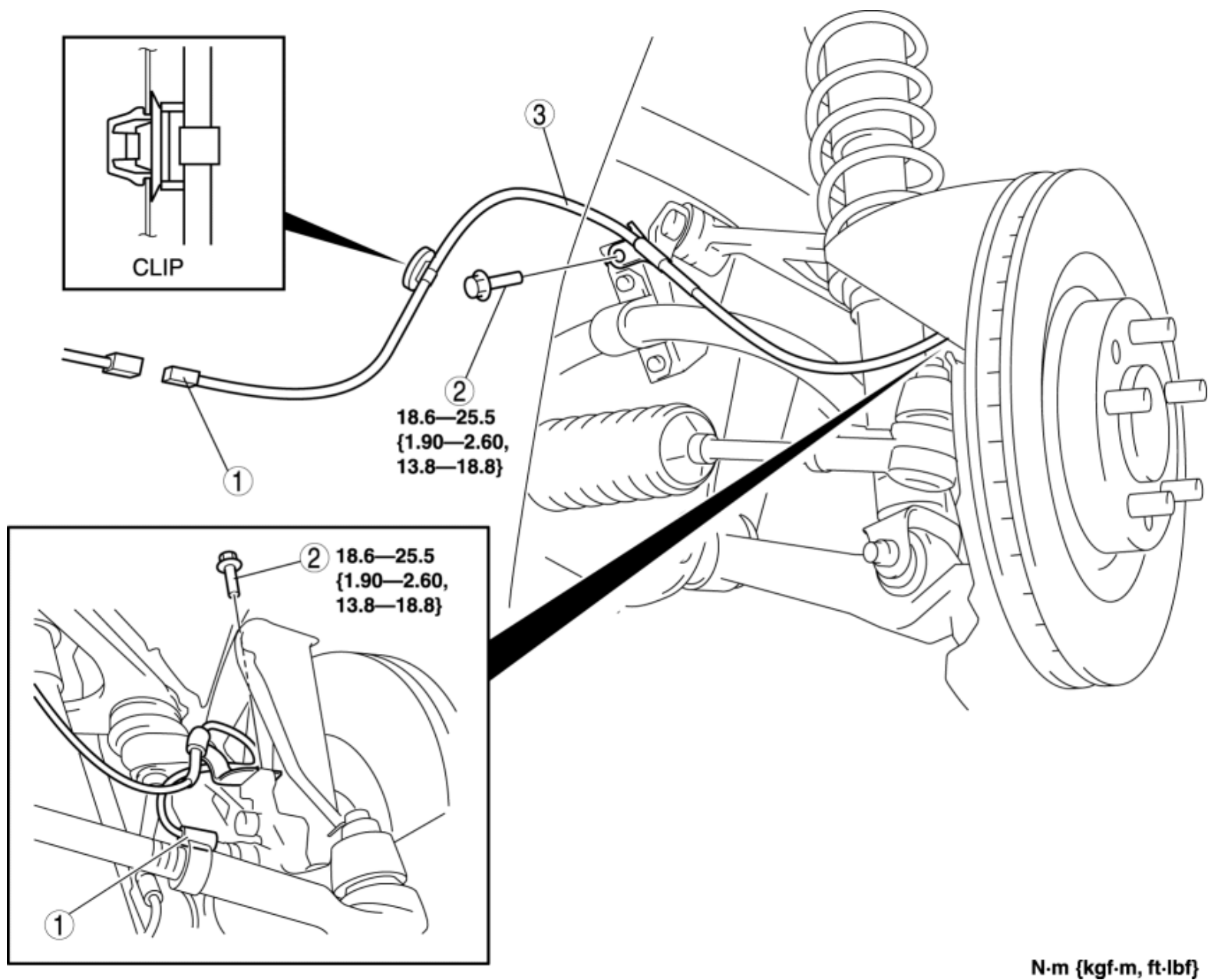
[Back to Top](#)

2011 - RX-8 - Brakes

FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION

NOTE:

- If there is any malfunction in the front ABS wheel-speed sensor unit, replace the wheel hub component. (See [WHEEL HUB, STEERING KNUCKLE REMOVAL/INSTALLATION](#).)
1. Slightly bend back the front mudguard. (See [FRONT MUDGUARD REMOVAL/INSTALLATION](#).)
 2. Remove in the order indicated in the table.
 3. Install in the reverse order of removal.



1	Connector
2	Bolt
3	Front ABS wheel-speed sensor wiring harness

[< Previous](#) [Next >](#)

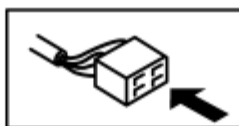
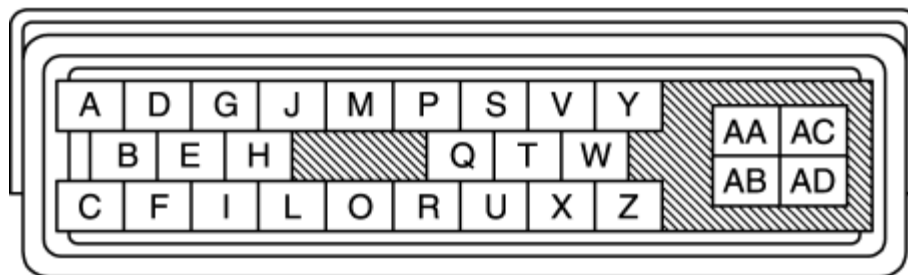
[Back to Top](#)

ABS HU/CM INSPECTION

1. Disconnect the ABS HU/CM connector. (See [ABS HU/CM REMOVAL/INSTALLATION](#).)
2. Connect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
3. Attach the tester lead to the ABS HU/CM harness side connector, then inspect voltage, continuity or resistance according to the standard (reference value) on the table.

Standard (Reference Value)

ABS HU/CM WIRING HARNESS-SIDE CONNECTOR



Terminal	Signal name	Connected to	Measured item	Measured terminal (measured condition)	Standard	Inspection item(s)
A	RR wheel-speed sensor (signal)	RR ABS wheel-speed sensor	Continuity	A—RR ABS wheel-speed sensor connector terminal B	Continuity detected	<ul style="list-style-type: none"> Wiring harness (A—RR ABS wheel-speed sensor connector terminal B)
						<ul style="list-style-type: none"> Wiring

B	RR wheel-speed sensor (ground)	RR ABS wheel-speed sensor		B—RR ABS wheel-speed sensor connector terminal A	Continuity detected	harness (B—RR ABS wheel-speed sensor connector terminal A)
C	LR wheel-speed sensor (signal)	LR ABS wheel-speed sensor		C—LR ABS wheel-speed sensor connector terminal B	Continuity detected	• Wiring harness (C—LR ABS wheel-speed sensor connector terminal B)
D	RF wheel-speed sensor (ground)	RF ABS wheel-speed sensor		D—RF ABS wheel-speed sensor connector terminal B	Continuity detected	• Wiring harness (D—RF ABS wheel-speed sensor connector terminal B)
E	LF wheel-speed sensor (ground)	LF ABS wheel-speed sensor		E—LF ABS wheel-speed sensor connector terminal B	Continuity detected	• Wiring harness (E—LF ABS wheel-speed sensor connector terminal B)
F	LR wheel-speed sensor (ground)	LR ABS wheel-speed sensor		F—LR ABS wheel-speed sensor connector terminal A	Continuity detected	• Wiring harness (F—LR ABS wheel-speed sensor connector terminal A)
G	RF wheel-speed sensor (signal)	RF ABS wheel-speed sensor		G—RF ABS wheel-speed sensor connector terminal A	Continuity detected	• Wiring harness (G—RF ABS wheel-speed sensor connector terminal A)
H	—	—	—	—	—	—
						• Wiring

I	LF wheel-speed sensor (single)	LF ABS wheel-speed sensor	Continuity	I—LF ABS wheel-speed sensor connector terminal A	Continuity detected	harness (I—LF ABS wheel-speed sensor connector terminal A)
J	—	—	—	—	—	—
K	—	—	—	—	—	—
L	—	—	—	—	—	—
M	—	—	—	—	—	—
N	—	—	—	—	—	—
O	CAN_H	DLC-2 (CAN_H)	Continuity	O—DLC-2 terminal CAN_H	Continuity detected	<ul style="list-style-type: none"> Wiring harness (O—DLC-2 terminal CAN_H)
P	—	—	—	—	—	—
Q	—	—	—	—	—	—
R	CAN_L	DLC-2 (CAN_L)	Continuity	R—DLC-2 terminal CAN_L	Continuity detected	<ul style="list-style-type: none"> Wiring harness (R—DLC-2 terminal CAN L)
S	—	—	—	—	—	—
T	—	—	—	—	—	—
U	—	—	—	—	—	—
		Audio unit		V—audio unit		<ul style="list-style-type: none"> Wiring harness (V—audio unit)
						<ul style="list-style-type: none"> Wiring

V	Vehicle speed output	Car-navigation unit	Continuity	V—car-navigation unit	Continuity detected	harness (V—car-navigation unit)
		Position memory control module		V—position memory control module		<ul style="list-style-type: none">Wiring harness (V—position memory control module)
		Auto light/wiper control module		V—auto light/wiper control module		<ul style="list-style-type: none">Wiring harness (V—auto light/wiper control module)
		Climate control unit		V—climate control unit		<ul style="list-style-type: none">Wiring harness (V—climate control unit)
		Auto leveling control module		V—auto leveling control module		<ul style="list-style-type: none">Wiring harness (V—auto leveling control module)
W	—	—	—	—	—	—
X	KLN	DLC-2 (KLN)	Continuity	X—DLC-2 terminal KLN	Continuity detected	<ul style="list-style-type: none">Wiring harness (X—DLC-2 terminal KLN)
Y	Brake switch	Brake switch	Voltage	Y—AC (Brake pedal depressed with ignition switch at ON)	B+	<ul style="list-style-type: none">Wiring harness (Y—brake switch)Brake switch
				Y—AC (Brake pedal not depressed with ignition switch at ON)	1 V or less	

Z	Power supply (system)	Ignition switch	Voltage	Ignition switch at ON	B+	<ul style="list-style-type: none"> Wiring harness (Z—ignition switch)
				Ignition switch is off.	1 V or less	—
AA	Power supply (solenoid)	Battery	Voltage	Under any condition	B+	<ul style="list-style-type: none"> Wiring harness (AA—battery)
AB	Power supply (ABS motor operation)	Battery	Voltage	Under any condition	B+	<ul style="list-style-type: none"> Wiring harness (AB—battery)
AC	Ground (ABS system)	Ground point	Continuity	AC—ground point	Continuity detected	<ul style="list-style-type: none"> Wiring harness (AC—ground point)
AD	Ground (ABS motor)	Ground point	Continuity	AD—ground point	Continuity detected	<ul style="list-style-type: none"> Wiring harness (AD—ground point)

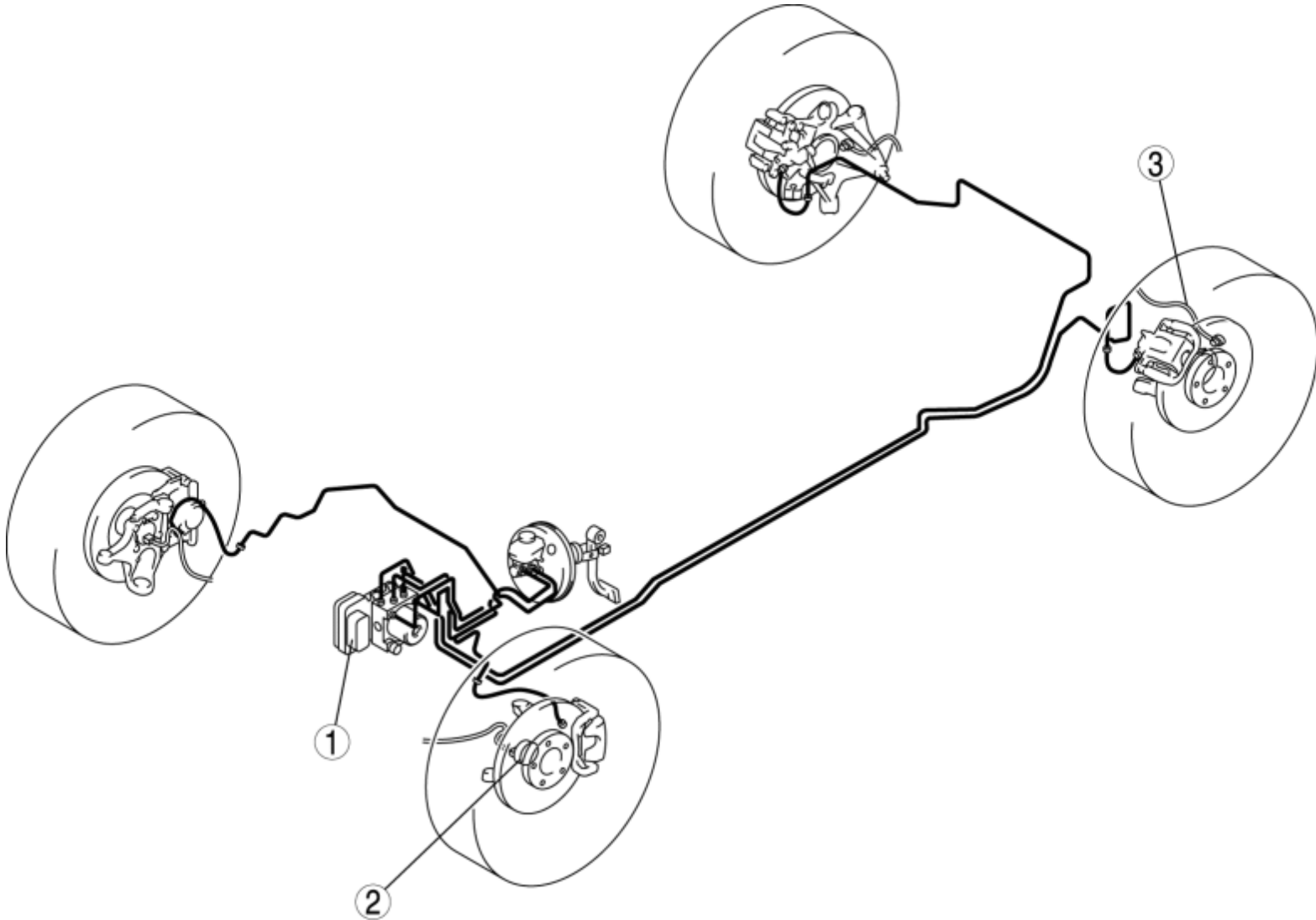
[< Previous](#) [Next >](#)

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Brakes

ABS LOCATION INDEX



1 ABS HU/CM

(See [ABS SYSTEM INSPECTION.](#))

(See [ABS HU/CM REMOVAL/INSTALLATION.](#))

(See [ABS HU/CM INSPECTION.](#))

2 Front ABS wheel-speed sensor

(See [FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.](#))

(See [FRONT ABS WHEEL-SPEED SENSOR INSPECTION.](#))

3 Rear ABS wheel-speed sensor

(See [REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.](#))

(See [REAR ABS WHEEL-SPEED SENSOR INSPECTION.](#))

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Brakes

REAR ABS WHEEL-SPEED SENSOR INSPECTION

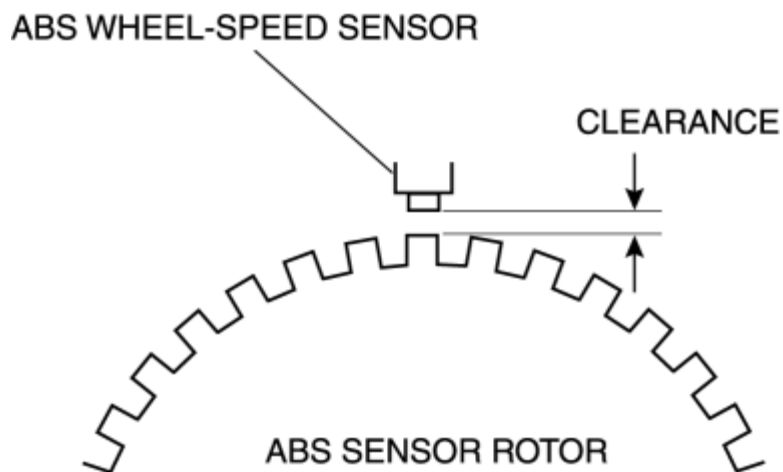
Installation Visual Inspection

1. Inspect the following items:

- If there is any malfunction, replace the applicable part.
 - a. Excessive looseness or play of the rear ABS wheel-speed sensor
 - b. Deformation of the rear ABS wheel-speed sensor
 - c. Deformation or damage of the rear ABS sensor rotor

Clearance Inspection

1. Verify the clearance between the rear ABS sensor rotor and the rear ABS wheel-speed sensor.
- If there is any malfunction, check for improper installation, and replace if necessary.



Clearance

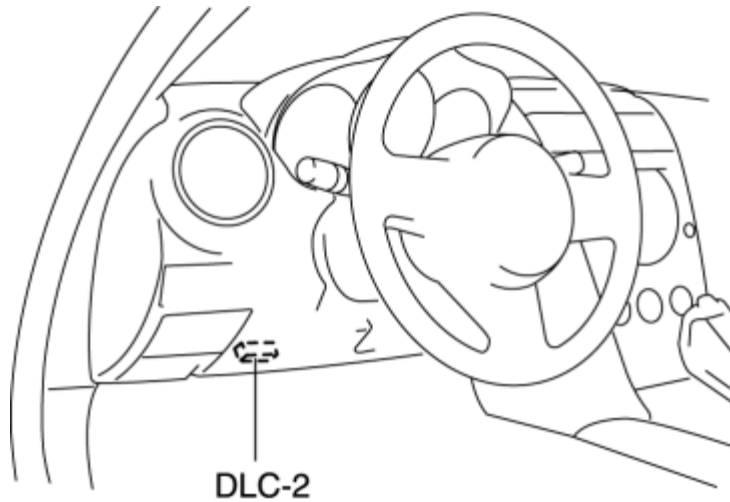
- 0.3—1.1 mm {0.012—0.043 in}

Sensor Output Value Inspection

CAUTION:

- Resistance inspection using other testers may cause damage to the ABS wheel-speed sensor internal circuit. Be sure to use the M-MDS to inspect the ABS wheel-speed sensor.

1. Turn the ignition switch off.
2. Connect the M-MDS to the DLC-2.



3. Select the following PIDs using the M-MDS:
 - LR_WSPD
(LR wheel-speed sensor)
 - RR_WSPD
(RR wheel-speed sensor)
4. Start the engine and drive the vehicle.
5. Verify that the display of the M-MDS shows the same value as the speedometer.
 - If there is any malfunction, replace the rear ABS wheel-speed sensor.

[< Previous](#) [Next >](#)

2011 - RX-8 - Brakes

FRONT ABS WHEEL-SPEED SENSOR INSPECTION

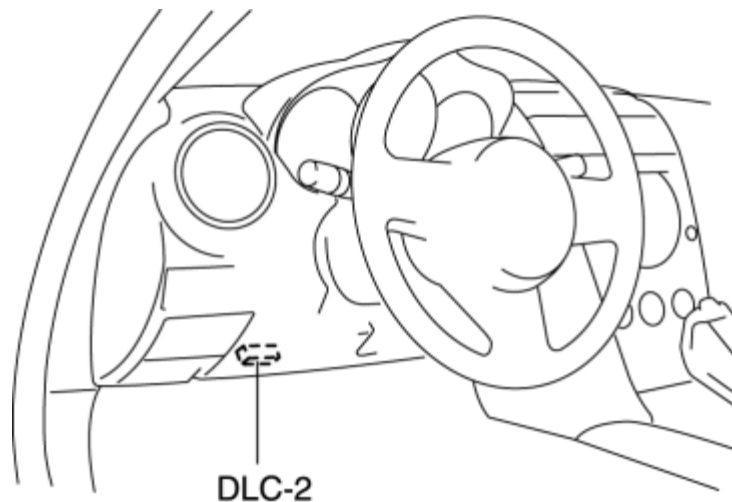
Installation Visual Inspection

1. Inspect the following items:
 - If there is any malfunction, replace the applicable part.
 - a. Excessive play of the front ABS wheel-speed sensor
 - b. Deformation of the front ABS wheel-speed sensor

Sensor Output Value Inspection

CAUTION:

- Resistance inspection using other testers may cause damage to the ABS wheel-speed sensor internal circuit. Be sure to use the M-MDS to inspect the ABS wheel-speed sensor.
1. Turn the ignition switch off.
 2. Connect the M-MDS to the DLC-2.



3. Select the following PIDs using the M-MDS:
 - LF_WSPD

(LF wheel-speed sensor)

- RF_WSPD

(RF wheel-speed sensor)

4. Start the engine and drive the vehicle.

5. Verify that the display of the M-MDS shows the same value as the speedometer.

- If there is any malfunction, replace the front ABS wheel-speed sensor.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

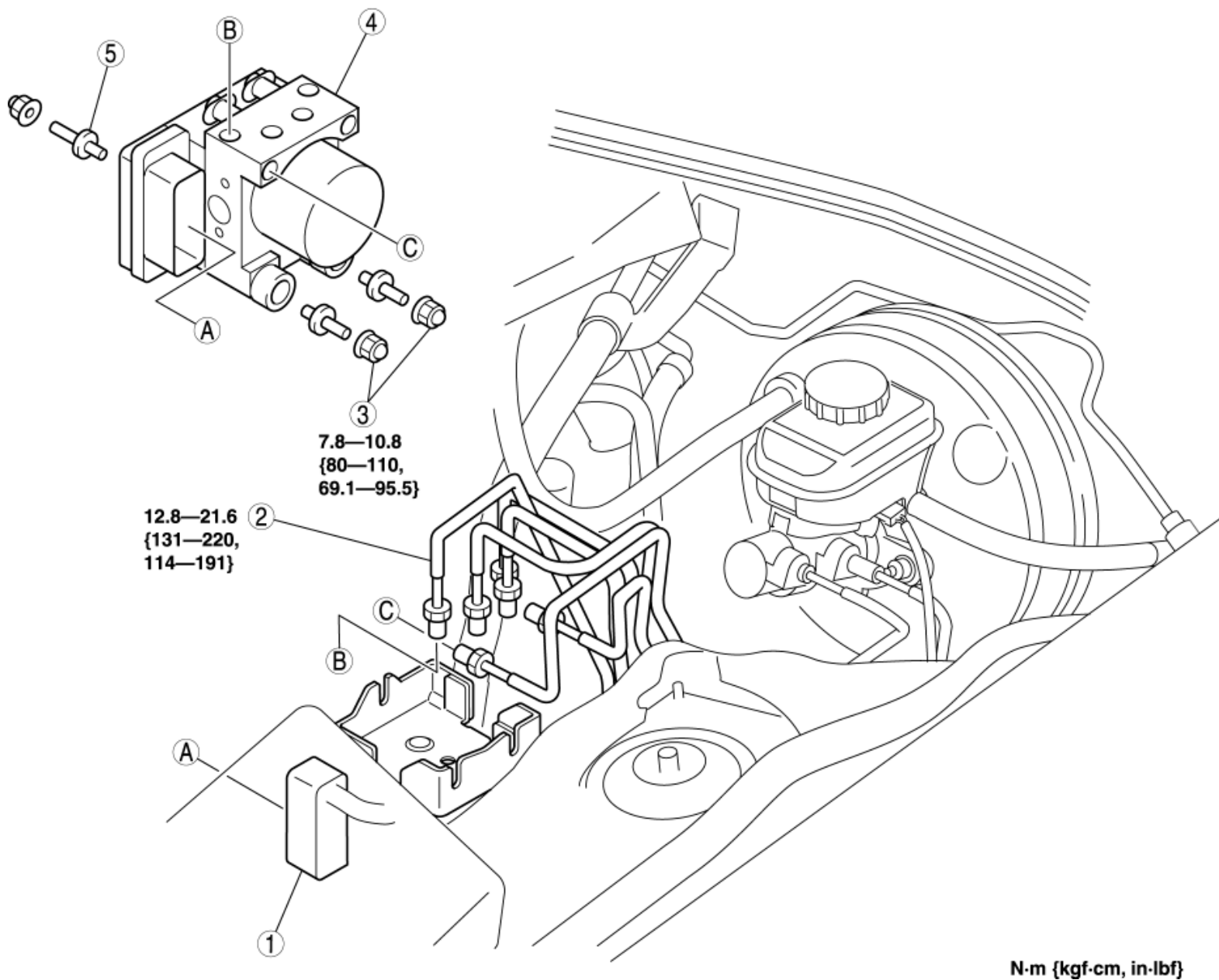
[< Previous](#) [Next >](#)

2011 - RX-8 - Brakes

ABS HU/CM REMOVAL/INSTALLATION

CAUTION:

- The internal parts of the ABS HU/CM could be damaged if dropped. Be careful not to drop the ABS HU/CM. Replace the ABS HU/CM if it is subjected to an impact.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Remove the front suspension tower bar. (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[MT\]](#).)
(See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[AT\]](#).)
 3. Remove in the order indicated in the table.
 4. Install in the reverse order of removal.



1 Connector

(See [Connector Removal Note.](#))

(See [Connector Installation Note.](#))

2 Brake pipe

3 Nut

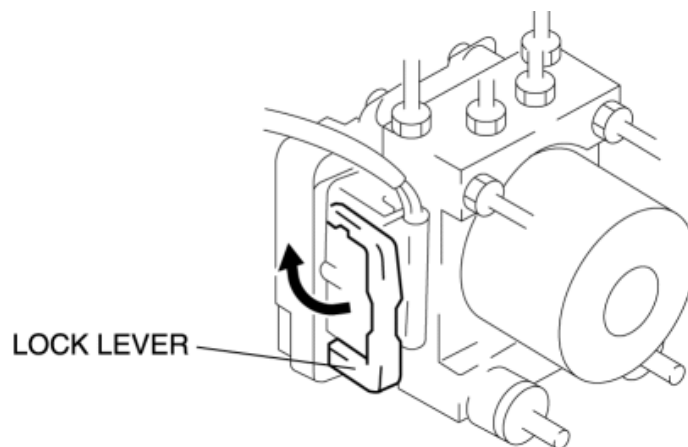
4 ABS HU/CM

(See [ABS HU/CM Removal/Installation Note.](#))

5 Stud

Connector Removal Note

1. Pull the lock lever up, and then remove the connector.

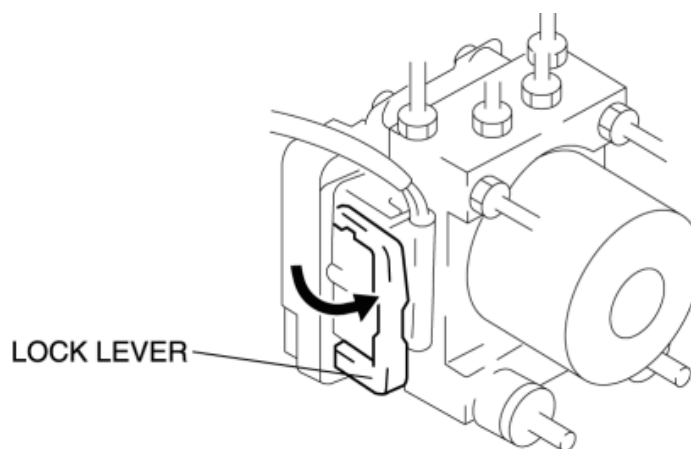


ABS HU/CM Removal/Installation Note

1. When removing/installing the ABS HU/CM from/to the vehicle, attach a strip of protective tape on the ABS HU/CM connector to prevent brake fluid from entering.

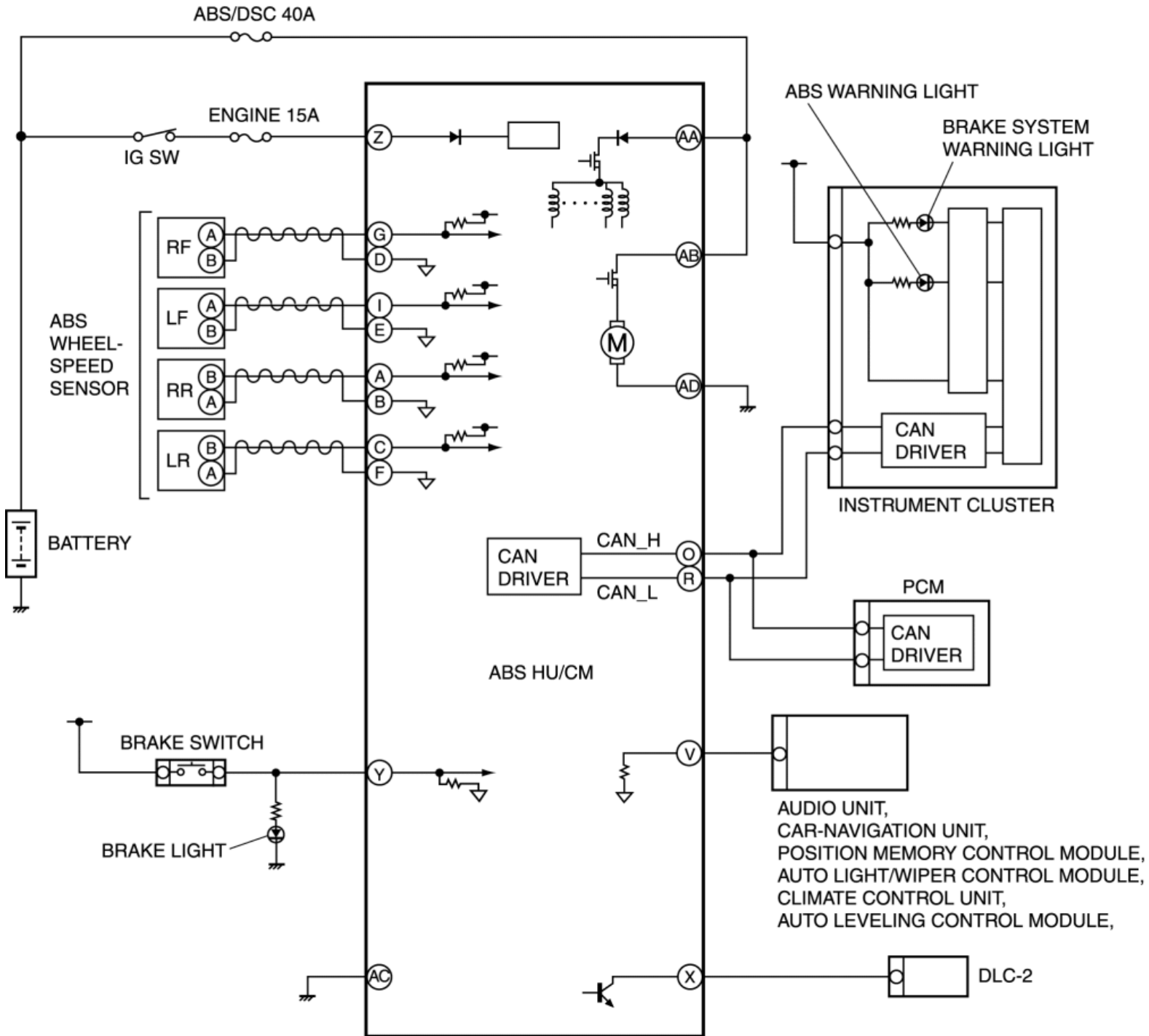
Connector Installation Note

1. After connecting the connector, verify that the lock lever is completely pushed in.



2011 - RX-8 - Brakes

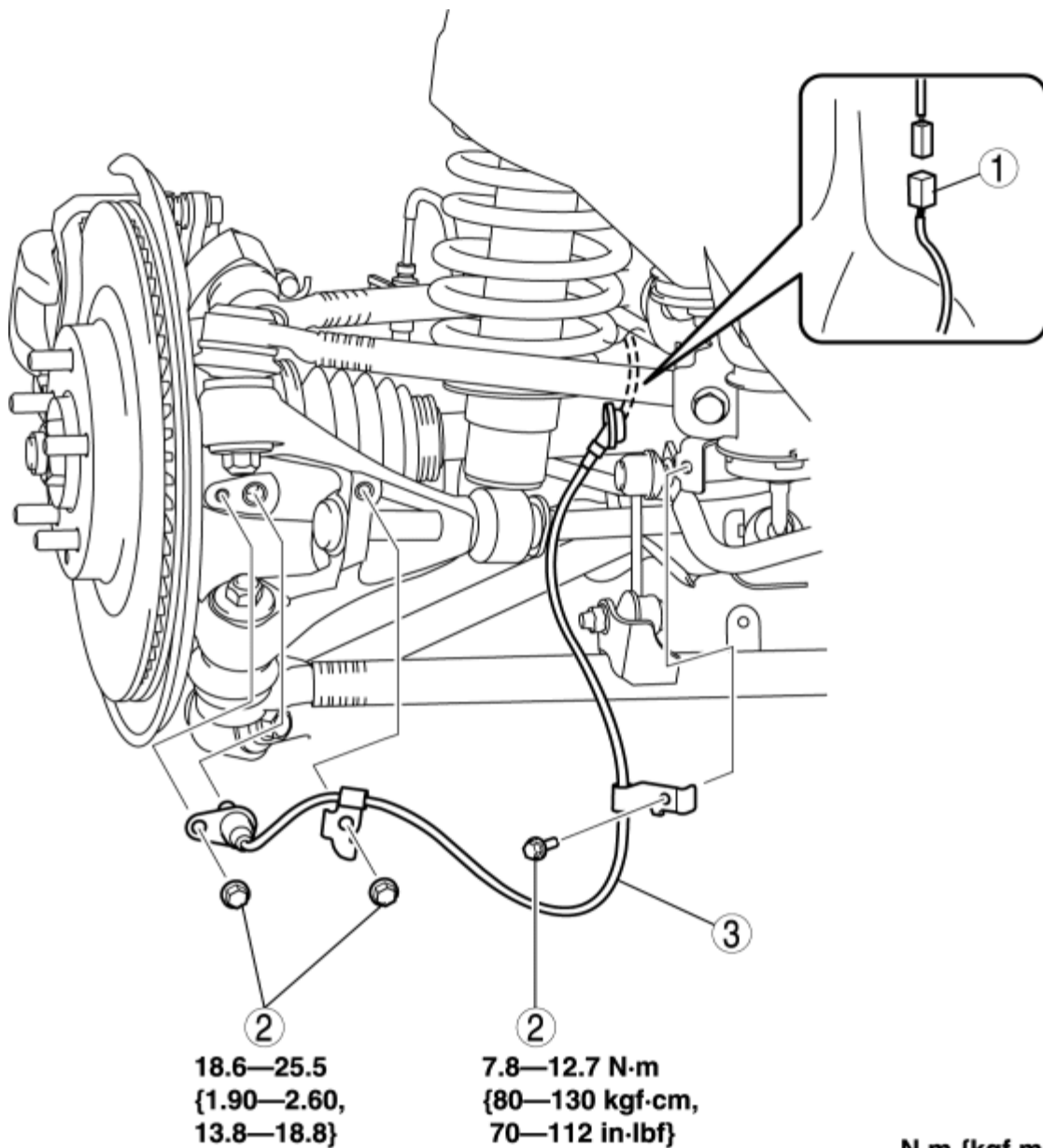
ABS SYSTEM WIRING DIAGRAM



2011 - RX-8 - Brakes

REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION

1. Remove the trunk side trim. (See [TRUNK SIDE TRIM REMOVAL/INSTALLATION](#).)
2. Remove in the order indicated in the table.
3. Install in the reverse order of removal.



1	Connector
2	Bolt
3	Rear ABS wheel-speed sensor

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Brakes

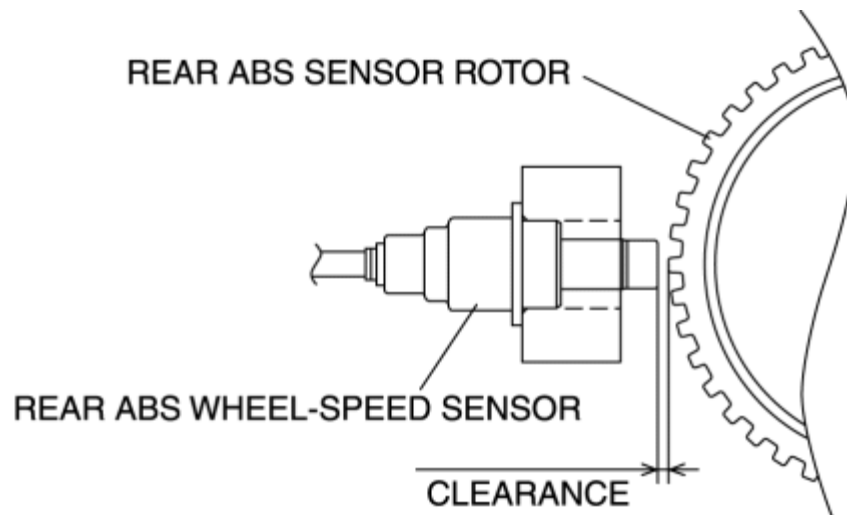
REAR ABS WHEEL-SPEED SENSOR INSPECTION

Installation Visual Inspection

1. Inspect the following items:
 - If there is any malfunction, replace the applicable part.
 - a. Excessive looseness or play of the rear ABS wheel-speed sensor
 - b. Deformation of the rear ABS wheel-speed sensor
 - c. Deformation or damage of the rear ABS sensor rotor

Clearance Inspection

1. Verify the clearance between the rear ABS sensor rotor and the rear ABS wheel-speed sensor.
 - If there is any malfunction, check for improper installation, and replace if necessary.



Clearance

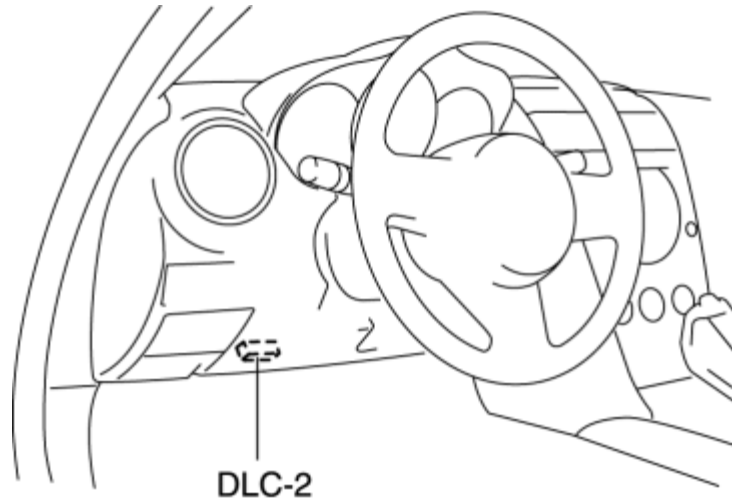
- 0.8—1.6 mm {0.04—0.06 in}

Sensor Output Value Inspection

CAUTION:

- Resistance inspection using other testers may cause damage to the ABS wheel-speed sensor internal circuit. Be sure to use the M-MDS to inspect the ABS wheel-speed sensor.

1. Turn the ignition switch off.
2. Connect the M-MDS to the DLC-2.



3. Select the following PIDs using the M-MDS:
 - LR_WSPD
(LR wheel-speed sensor)
 - RR_WSPD
(RR wheel-speed sensor)
4. Start the engine and drive the vehicle.
5. Verify that the display of the M-MDS shows the same value as the speedometer.
 - If there is any malfunction, replace the rear ABS wheel-speed sensor.

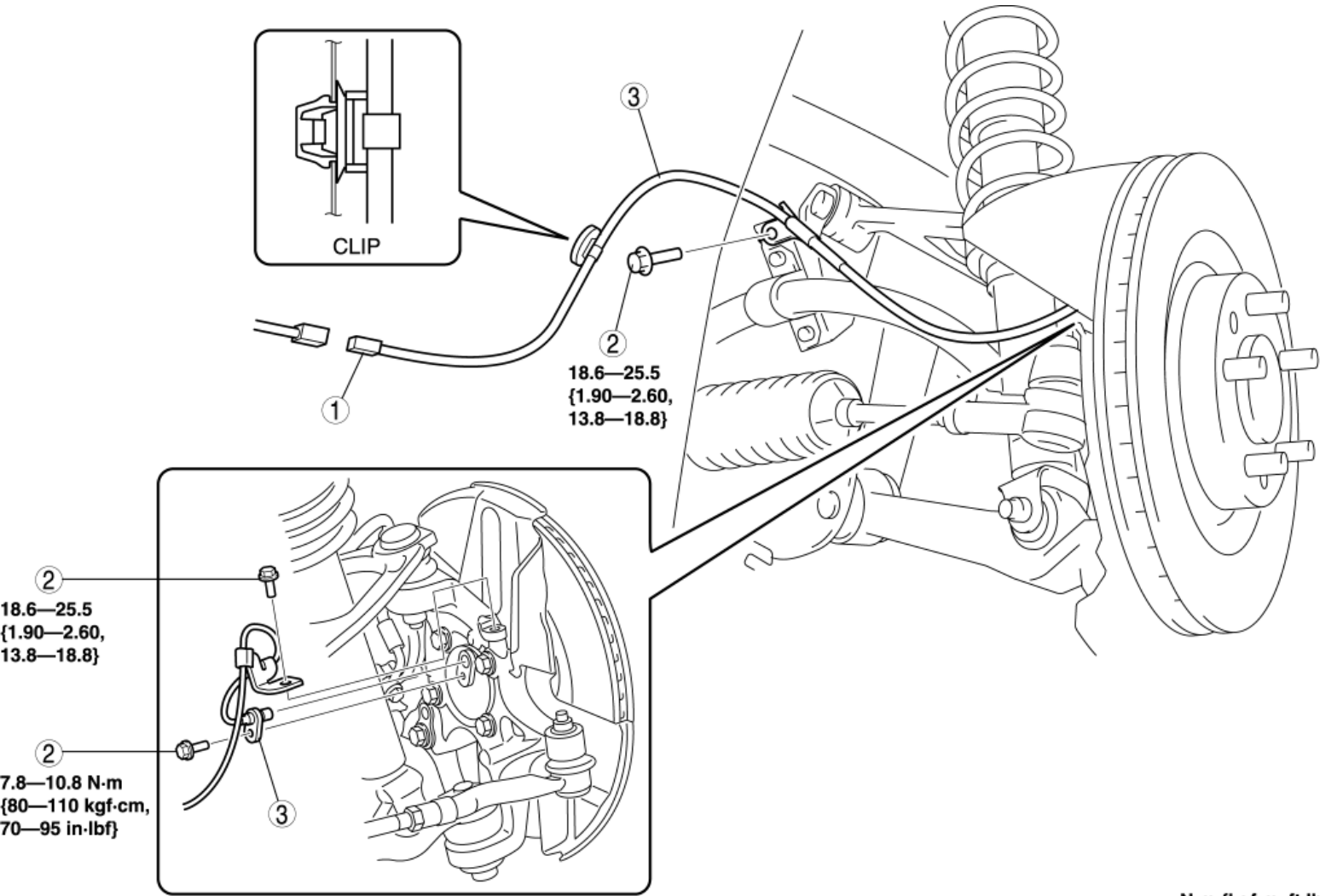
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Brakes

FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION

- 1. Slightly bend back the front mudguard. (See [FRONT MUDGUARD REMOVAL/INSTALLATION.](#))
- 2. Remove in the order indicated in the table.
- 3. Install in the reverse order of removal.



N·m {kgf·m, ft·lbf}

1	Connector
2	Bolt
3	Front ABS wheel-speed sensor

2011 - RX-8 - Brakes

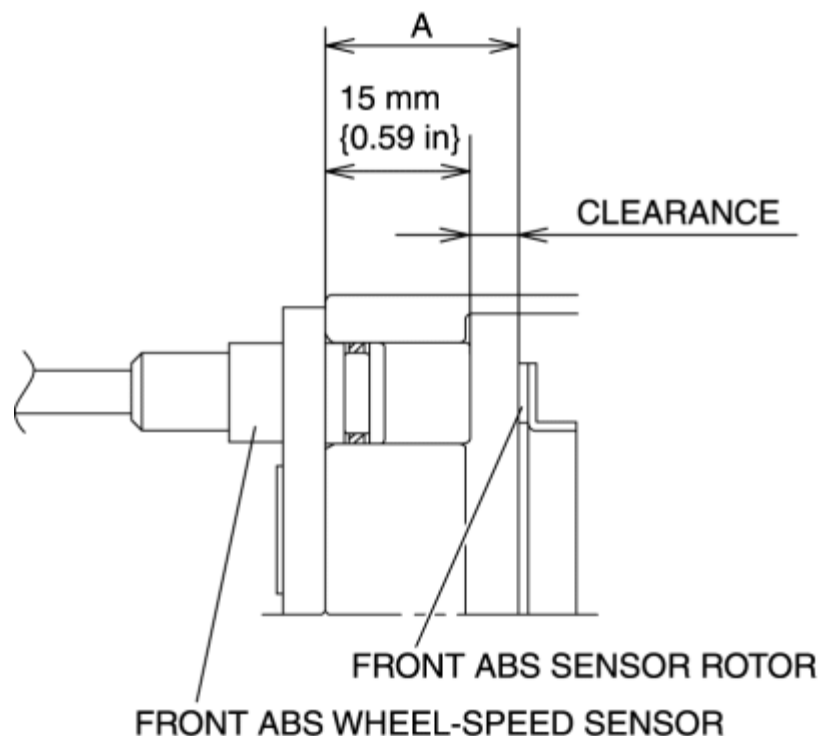
FRONT ABS WHEEL-SPEED SENSOR INSPECTION

Installation Visual Inspection

1. Inspect the following items:
 - If there is any malfunction, replace the applicable part.
 - a. Excessive play of the front ABS wheel-speed sensor
 - b. Deformation of the front ABS wheel-speed sensor

Clearance inspection

1. Remove the front ABS wheel-speed sensor.
2. Measure the distance between the front ABS wheel-speed sensor installation surface and the front ABS sensor rotor. This is dimension A.



3. Calculate the clearance between the front ABS wheel-speed sensor and the front ABS sensor

rotor using the following formula:

- Clearance (mm {in}) = A-15 mm {0.59 in}

4. Verify that the clearance between the front ABS sensor rotor and the front ABS wheel-speed sensor is as indicated below.

- If there is any malfunction, verify the installation condition and replace if necessary.

Clearance

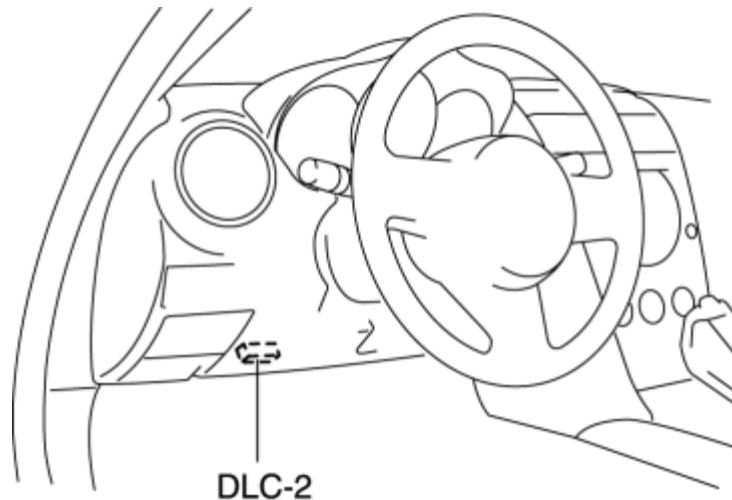
- 0.3—1.0 mm {0.02—0.03 in}

Sensor Output Value Inspection

CAUTION:

- Resistance inspection using other testers may cause damage to the ABS wheel-speed sensor internal circuit. Be sure to use the M-MDS to inspect the ABS wheel-speed sensor.

1. Turn the ignition switch off.
2. Connect the M-MDS to the DLC-2.



3. Select the following PIDs using the M-MDS:

- LF_WSPD
(LF wheel-speed sensor)
- RF_WSPD
(RF wheel-speed sensor)

4. Start the engine and drive the vehicle.

5. Verify that the display of the M-MDS shows the same value as the speedometer.

- If there is any malfunction, replace the front ABS wheel-speed sensor.

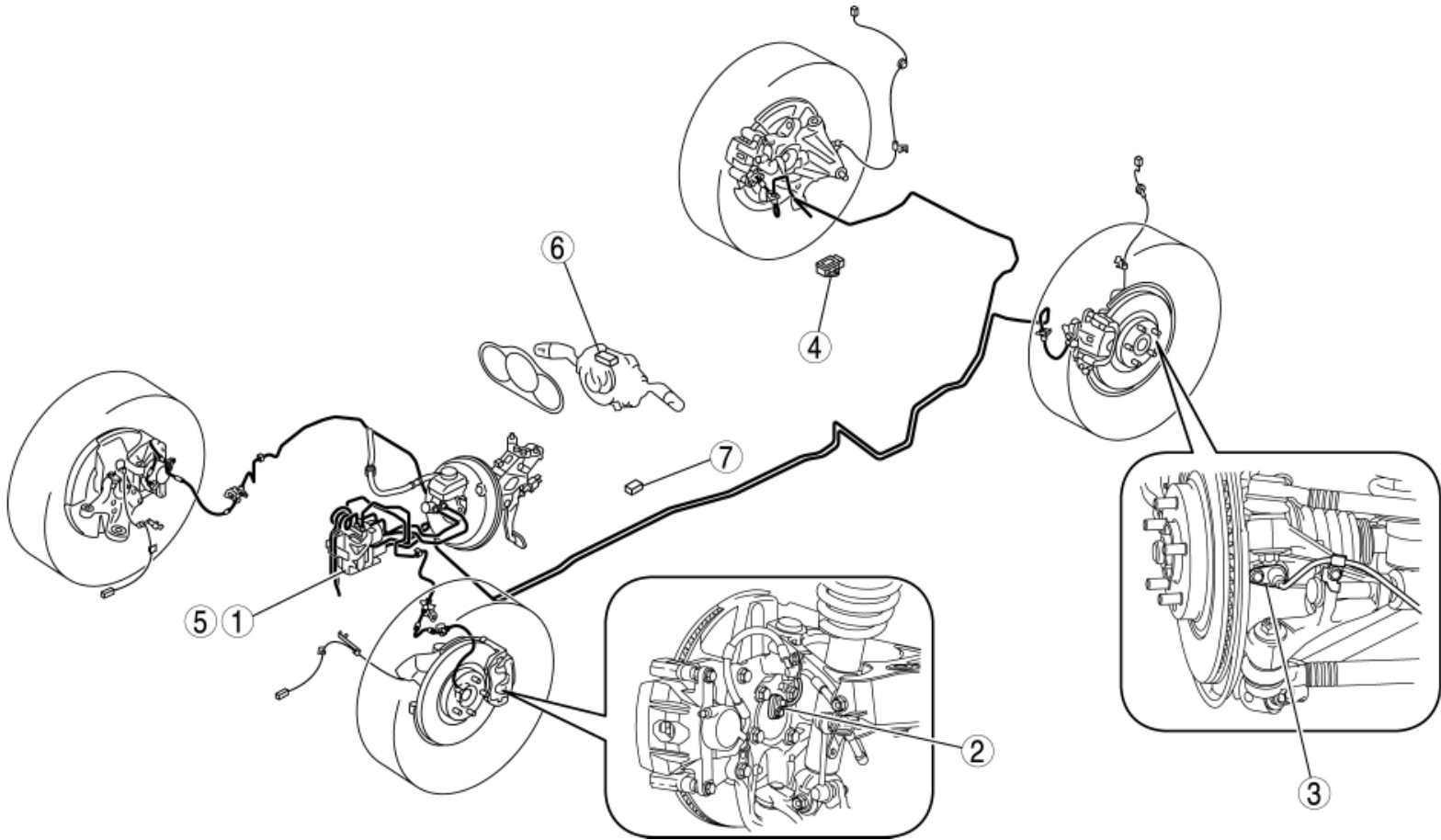
[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Brakes

DYNAMIC STABILITY CONTROL LOCATION INDEX



1 DSC HU/CM

(See [DSC SYSTEM INSPECTION.](#))

(See [DSC HU/CM REMOVAL/INSTALLATION.](#))

(See [DSC CONFIGURATION.](#))

(See [DSC HU/CM INSPECTION.](#))

2 Front ABS wheel-speed sensor

(See [FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.](#))

(See [FRONT ABS WHEEL-SPEED SENSOR INSPECTION.](#))

3 Rear ABS wheel-speed sensor

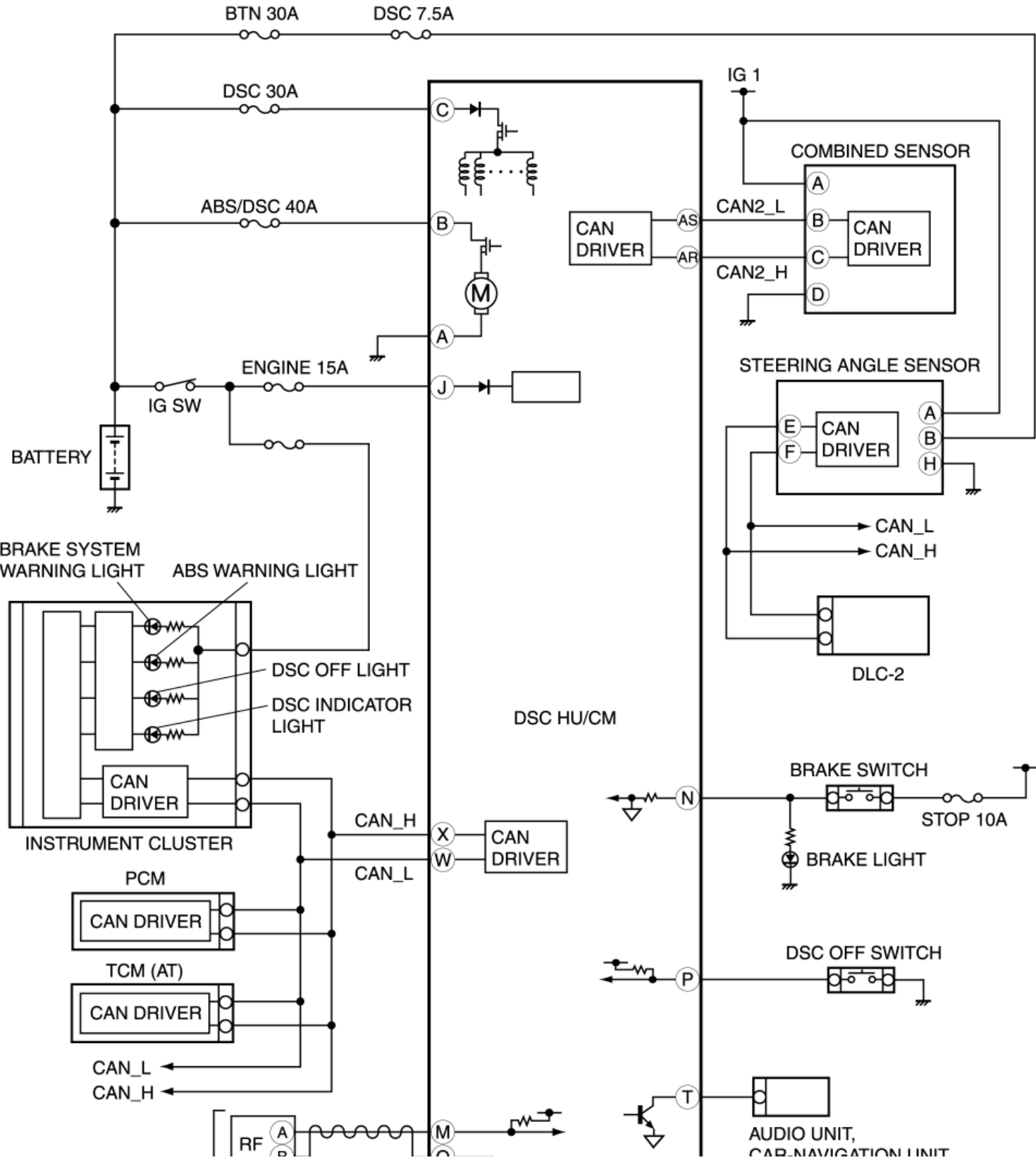
(See [REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.](#))

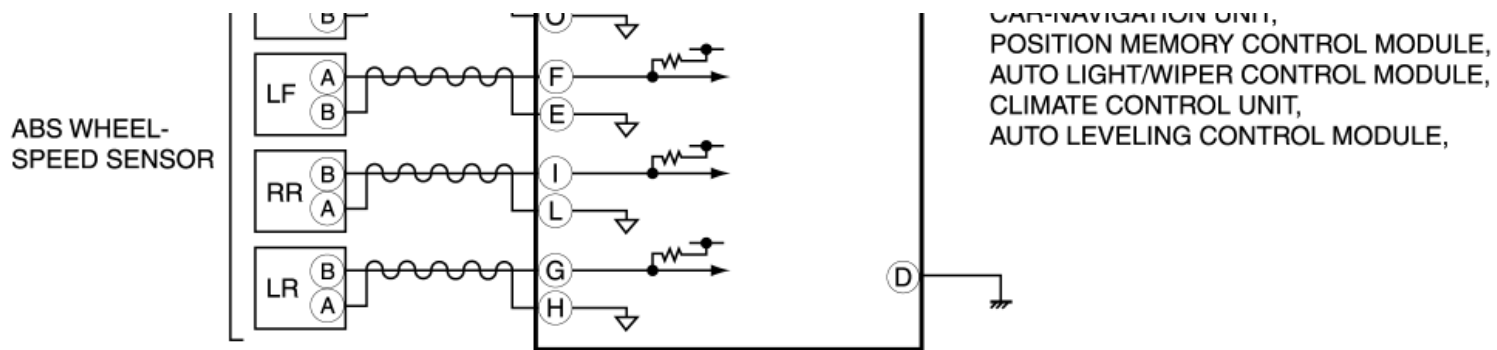
	(See REAR ABS WHEEL-SPEED SENSOR INSPECTION.)
4	Combined sensor (See COMBINED SENSOR REMOVAL/INSTALLATION.) (See COMBINED SENSOR INSPECTION.) (See COMBINED SENSOR INITIALIZATION PROCEDURE.)
5	Brake fluid pressure sensor (built-into DSC HU/CM) (See BRAKE FLUID PRESSURE SENSOR INSPECTION.)
6	Steering angle sensor (See STEERING ANGLE SENSOR REMOVAL/INSTALLATION.) (See STEERING ANGLE SENSOR INSPECTION.) (See STEERING ANGLE SENSOR INITIALIZATION PROCEDURE.)
7	DSC OFF switch (See DSC OFF SWITCH REMOVAL/INSTALLATION.) (See DSC OFF SWITCH INSPECTION.)

[< Previous](#) [Next >](#)

2011 - RX-8 - Brakes

DSC SYSTEM WIRING DIAGRAM





[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Brakes

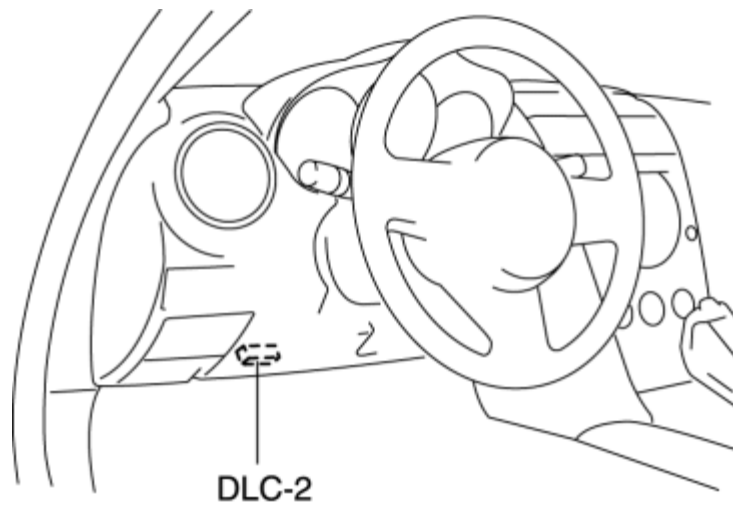
DSC SYSTEM INSPECTION

Preparation

1. Verify that battery is fully charged.
2. Turn the ignition switch to the ON position, and verify that the ABS warning light goes out after **approx. 3 s**.
3. Turn the ignition switch off.
4. Jack up the vehicle and support it evenly on safety stands.
5. Shift to the N position.
6. Verify that all four wheels rotate.
7. Rotate the inspected wheels by hand, and verify there is no brake drag.
 - If there is any brake drag, perform regular brake inspection.
 - If there is no brake drag, perform DSC HU/CM operation inspection.

ABS Control Inspection

1. Perform "Preparation".
2. Connect the M-MDS to the DLC-2.



3. Set up an active command mode inspection according to the combination of commands below. **Brake pressure retention**

Command name	Inspected wheels			
	LF	RF	LR	RR
V_TRC_L	OFF			
V_TRC_R				
V_STB_L				
V_STB_R				
LF_INLET	ON	OFF	OFF	OFF
LF_OUTLET	OFF			
LR_INLET			ON	
LR_OUTLET				
RF_INLET	OFF	ON	OFF	
RF_OUTLET				
RR_INLET		ON		

RR_OUTLET		OFF		
PMP_MOTOR				OFF

Brake pressure reduction

Command name	Inspected wheels			
	LF	RF	LR	RR
V_TRC_L	OFF			
V_TRC_R				
V_STB_L				
V_STB_R				
LF_INLET	ON		OFF	
LF_OUTLET				
LR_INLET	OFF			
LR_OUTLET			ON	
RF_INLET	OFF	ON		
RF_OUTLET				
RR_INLET	OFF		OFF	ON
RR_OUTLET				
PMP_MOTOR	ON			

CAUTION:

- To protect the DSC HU/CM, the solenoid valve and the pump motor used during active command mode stay on for only 10 s or less each time they are switched on.

NOTE:

- When working with two people, one should press on the brake pedal, and the other should attempt to rotate the wheel being inspected.

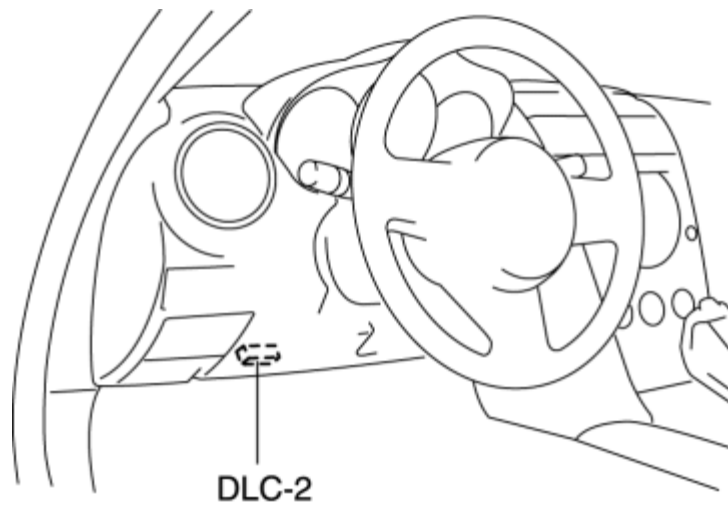
4. Send the command while depressing on the brake pedal and attempting to rotate the wheel being inspected.

5. While brake pressure is maintained and a DSC HU/CM operation click sound is heard, confirm that the wheel does not rotate. While brake pressure is being reduced and an DSC HU/CM operation click sound is heard, confirm that the wheel rotates.

- Performing the inspection above determines the following:
 - The DSC HU/CM brake lines are normal.
 - The DSC HU/CM hydraulic system is not significantly abnormal (including DSC HU/CM).
 - The DSC HU/CM internal electrical parts (solenoid, motor and other parts) are normal.
 - The DSC unit and DSC HU/CM output system wiring harnesses (solenoid valve, relay system) are normal.
- However, the following items cannot be verified.
 - Malfunction with intermittent occurrence of the above items
 - Malfunction of DSC HU/CM input system wiring harnesses and parts
 - Extremely small leaks in the DSC HU/CM internal hydraulic system

DSC Control Inspection

1. Perform "Preparation".
2. Connect the M-MDS to the DLC-2.



3. Set up an active command mode inspection according to the combination of commands below.

CAUTION:

- To protect the DSC HU/CM, the solenoid valve and the pump motor used during active command mode stay on for only 10 s or less each time they are switched on.

Command name	Inspected wheels			
	Understeer control inhibited		Oversteer control inhibited	
	LF	RF	LR	RR
V_TRC_L	ON	OFF		ON
V_TRC_R	OFF	ON		OFF
V_STB_L	OFF			
V_STB_R				
LF_INLET	OFF	OFF	OFF	ON
LF_OUTLET		ON		
LR_INLET				

LR_OUTLET				
RF_INLET			ON	OFF
RF_OUTLET		OFF		
RR_INLET	ON		OFF	
RR_OUTLET	OFF			
PMP_MOTOR	ON			

4. Send the command while rotating the wheel being inspected by hand in a forward direction.

5. Confirm that the wheel does not rotate easily while a DSC HU/CM operation click sound is heard.

- Performing the inspection above determines the following:
 - The DSC HU/CM brake lines are normal.
 - The DSC HU/CM hydraulic system is not significantly abnormal (including DSC HU/CM).
 - The DSC HU/CM internal electrical parts (solenoid, motor and other parts) are normal.
 - The DSC unit and DSC HU/CM output system wiring harnesses (solenoid valve, relay system) are normal.
- However, the following items cannot be verified.
 - Malfunction with intermittent occurrence of the above items
 - Malfunction of DSC HU/CM input system wiring harnesses and parts
 - Extremely small leaks in the DSC HU/CM internal hydraulic system

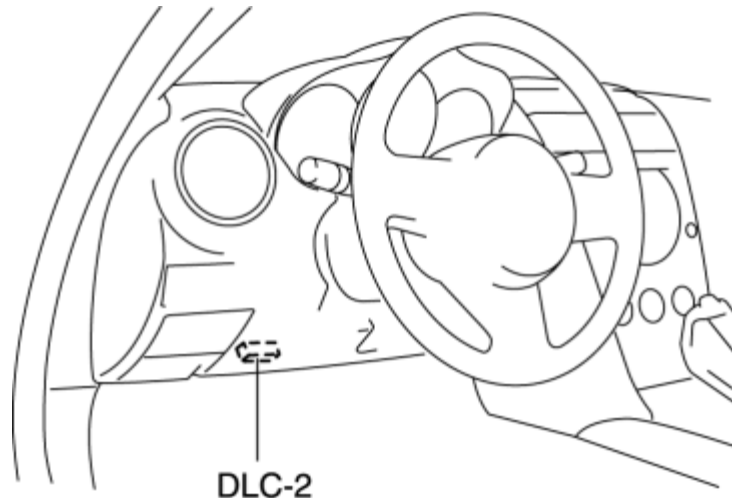
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Brakes

DSC CONFIGURATION

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "Module Programming".
- When using the PDS (Pocket PC)
 1. Select "Programming".
 2. Select "Module Programming".

3. Then, select items from the screen menu in the following order.

1. Select "Programmable Module Installation".
2. Select "ABS".

4. Perform the configuration according to the directions on the screen.

5. Retrieve DTCs by the M-MDS, then verify that there is no DTC present.

- If a DTC (s) is detected, perform the applicable DTC inspection. (See [ON-BOARD DIAGNOSIS \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#).)

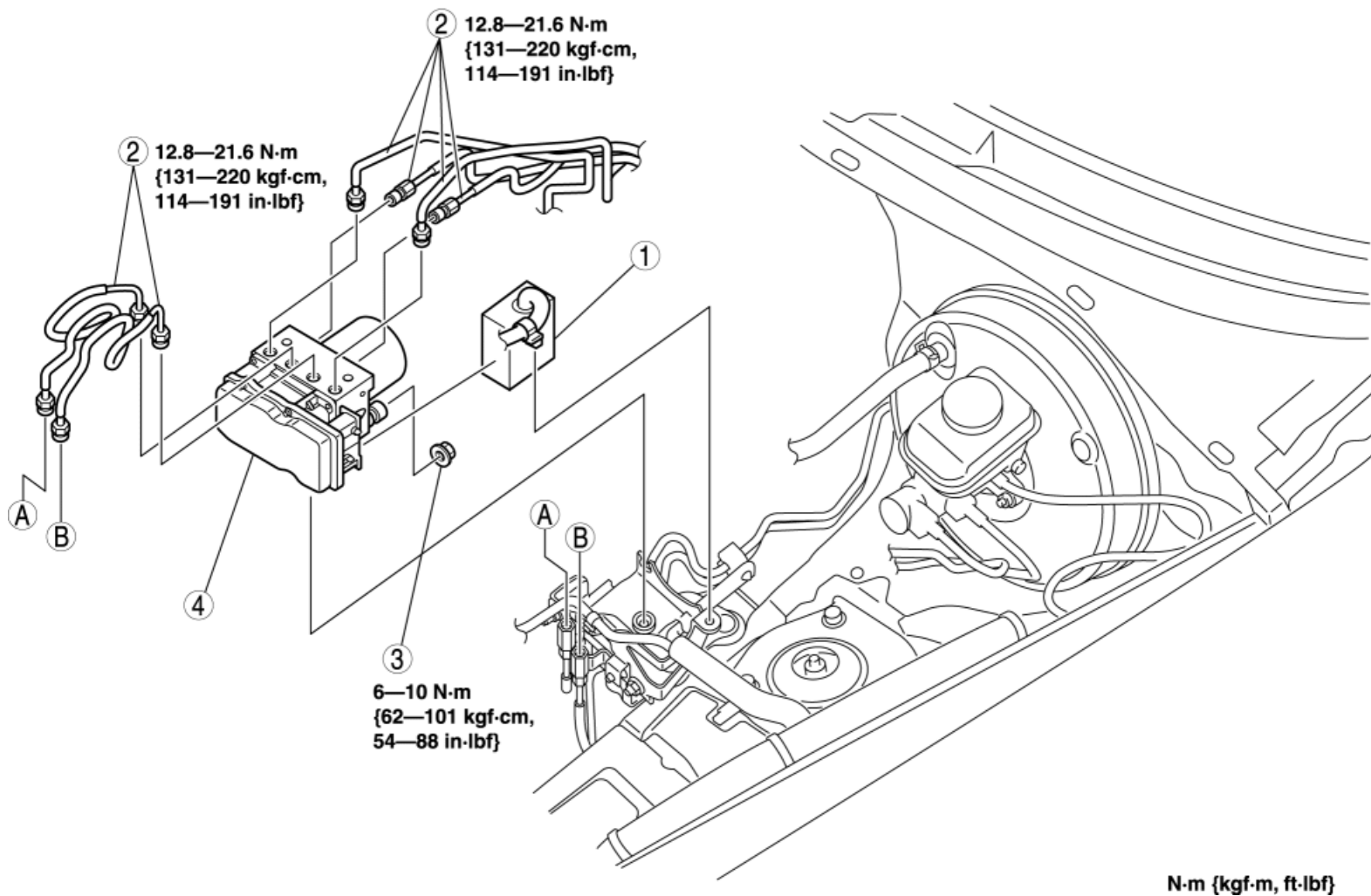
2011 - RX-8 - Brakes

DSC HU/CM REMOVAL/INSTALLATION

CAUTION:

- When replacing the DSC HU/CM, the configuration procedure must be done before removing the DSC HU/CM. If the configuration is not completed before removing the DSC HU/CM, DSC will not work properly after installation of the DSC HU/CM.
- The DSC may not function normally when the DSC HU/CM is replaced. After installation, always perform the initialization procedures for the combined sensor and the steering angle sensor.
- The internal parts of the DSC HU/CM could be damaged if dropped. Be careful not to drop the DSC HU/CM. Replace the DSC HU/CM if it is subjected to an impact.

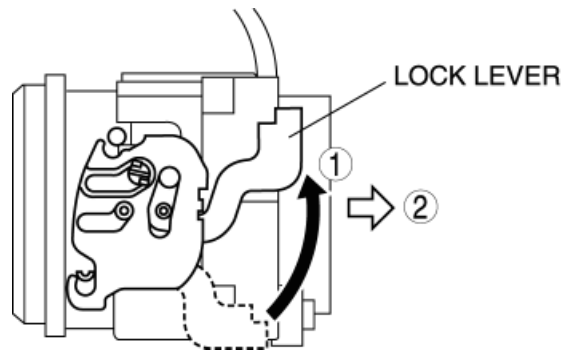
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Remove the front suspension tower bar. (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[MT\]](#).) (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[AT\]](#).)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.
5. Configure the DSC HU/CM. (See [DSC CONFIGURATION](#).)
6. After installation, perform the combined sensor initialization procedure. (See [COMBINED SENSOR INITIALIZATION PROCEDURE](#).)
7. After installation, perform the steering angle sensor initialization procedure. (See [STEERING ANGLE SENSOR INITIALIZATION PROCEDURE](#).)



1 DSC HU/CM connector (See DSC HU/CM Connector Removal Note.) (See DSC HU/CM Connector Installation Note.)
2 Brake pipe (See Brake Pipe Removal Note.) (See Brake Pipe Installation Note.)
3 Nut
4 DSC HU/CM

DSC HU/CM Connector Removal Note

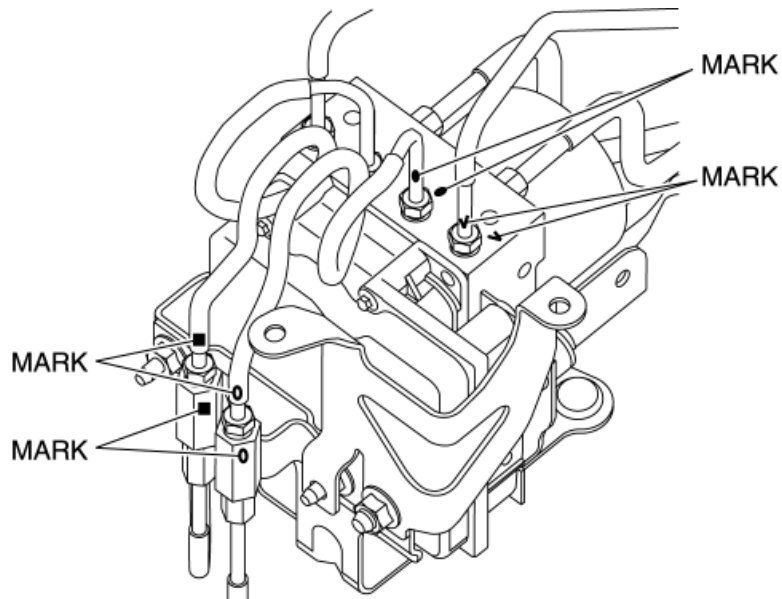
1. Pull the lock lever up in the direction of the arrow.



2. Pull the connector toward the vehicle rear and remove it.

Brake Pipe Removal Note

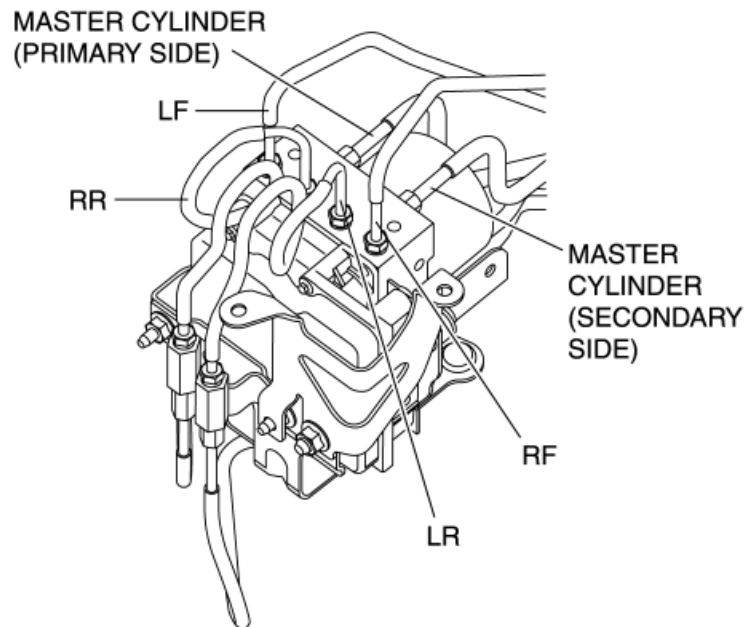
1. Place an alignment mark on the brake pipe and DSC HU/CM.



2. Apply protective tape to the connector to prevent brake fluid from entering.
3. Remove the brake pipe.

Brake Pipe Installation Note

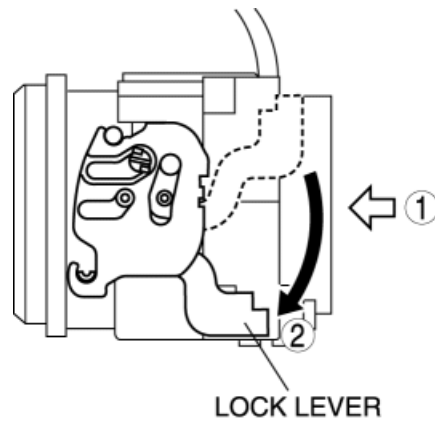
1. Align the marks made before removal and install the brake pipe to the DSC HU/CM and brake pipe joint referring to the figure.



2. Tighten the brake pipe to the specified torque using the commercially available flare nut wrench.

DSC HU/CM Connector Installation Note

1. After connecting the connector, verify that the lock lever is completely pushed in.



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

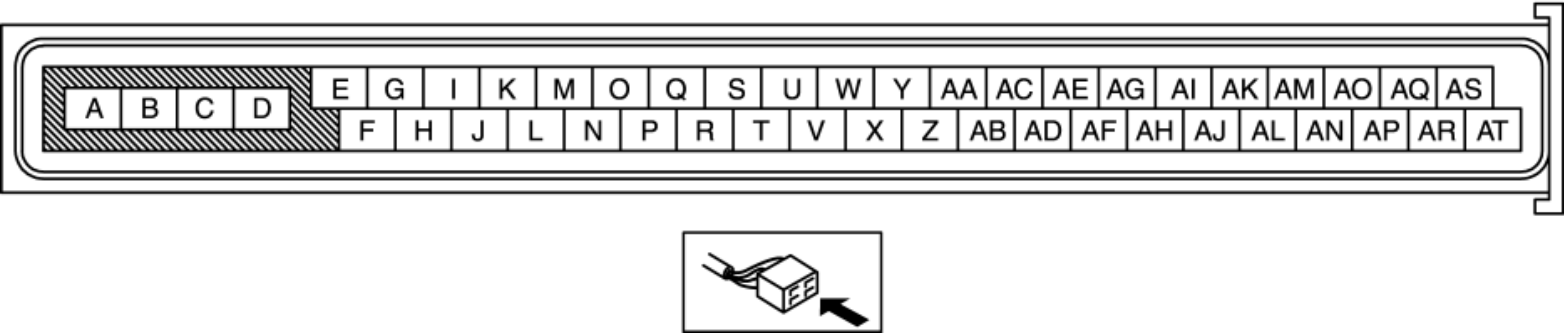
2011 - RX-8 - Brakes

DSC HU/CM INSPECTION

1. Disconnect the DSC HU/CM connector. (See [DSC HU/CM REMOVAL/INSTALLATION](#).)
2. Connect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
3. Attach the tester lead to the DSC HU/CM harness side connector, then inspect voltage, continuity or resistance according to the standard (reference value) on the table.

Standard (Reference Value)

DSC HU/CM WIRING HARNESS-SIDE CONNECTOR



Terminal	Signal name	Connected to	Measured item	Measured terminal (measured condition)	Standard	Inspection item(s)
A	Ground (ABS motor)	Ground point	Continuity	A—ground point	Continuity detected	<ul style="list-style-type: none">• Wiring harness (A—ground point)
B	Power supply (ABS motor operation)	Battery	Voltage	Under any condition	B+	<ul style="list-style-type: none">• Wiring harness (B—battery)
C	Power supply (solenoid operation)	Battery	Voltage	Under any condition	B+	<ul style="list-style-type: none">• Wiring harness (C—battery)
D	Ground (DSC system)	Ground point	Continuity	D—ground point	Continuity detected	<ul style="list-style-type: none">• Wiring harness (D—ground point)
E	LF wheel-speed sensor (ground)	LF ABS wheel-speed sensor	Continuity	E—LF ABS wheel-speed sensor connector	Continuity detected	<ul style="list-style-type: none">• Wiring harness (E—LF ABS wheel-speed sensor)

				terminal B		connector terminal B)
F	LF wheel-speed sensor (single)	LF ABS wheel-speed sensor	Continuity	F—LF ABS wheel-speed sensor connector terminal A	Continuity detected	<ul style="list-style-type: none"> Wiring harness (F—LF ABS wheel-speed sensor connector terminal A)
G	LR wheel-speed sensor (signal)	LR ABS wheel-speed sensor	Continuity	G—LR ABS wheel-speed sensor connector terminal B	Continuity detected	<ul style="list-style-type: none"> Wiring harness (G—LR ABS wheel-speed sensor connector terminal B)
H	LR wheel-speed sensor (ground)	LR ABS wheel-speed sensor	Continuity	H—LR ABS wheel-speed sensor connector terminal A	Continuity detected	<ul style="list-style-type: none"> Wiring harness (H—LR ABS wheel-speed sensor connector terminal A)
I	RR wheel-speed (signal)	RR ABS wheel-speed sensor	Continuity	I—RR ABS wheel-speed sensor connector terminal B	Continuity detected	<ul style="list-style-type: none"> Wiring harness (I—RR ABS wheel-speed sensor connector terminal B)
J	Power supply (system)	Ignition switch	Voltage	Ignition switch at ON	B+	<ul style="list-style-type: none"> Wiring harness (J—ignition switch)
				Ignition switch is off.	1 V or less	—
K	—	—	—	—	—	—
L	RR wheel-speed sensor (ground)	RR ABS wheel-speed sensor	Continuity	L—RR ABS wheel-speed sensor connector terminal A	Continuity detected	<ul style="list-style-type: none"> Wiring harness (L—RR ABS wheel-speed sensor connector terminal A)
M	RF wheel-speed sensor (signal)	RF ABS wheel-speed sensor	Continuity	M—RF ABS wheel-speed sensor connector terminal A	Continuity detected	<ul style="list-style-type: none"> Wiring harness (M—RF ABS wheel-speed sensor connector terminal A)
N	Brake switch	Brake switch	Voltage	N—ground point (Brake pedal depressed)	B+	<ul style="list-style-type: none"> Wiring harness (N—brake switch) Brake switch
				N—ground point (Brake pedal not depressed)	1 V or less	—
O	RF wheel-speed sensor (ground)	RF ABS wheel-speed sensor	Continuity	O—RF ABS wheel-speed sensor connector terminal B	Continuity detected	<ul style="list-style-type: none"> Wiring harness (O—RF ABS wheel-speed sensor connector terminal B)
P	DSC OFF switch	DSC OFF switch	Continuity	P—DSC OFF switch connector terminal C	Continuity detected	<ul style="list-style-type: none"> Wiring harness (P—DSC OFF switch connector terminal C)
Q	KLN	DLC-2 (KLN)	Continuity	Q—DLC-2 terminal KLN	Continuity detected	<ul style="list-style-type: none"> Wiring harness (Q—DLC-2 terminal KLN)

R	—	—	—	—	—	—
S	—	—	—	—	—	—
T	Vehicle speed output	Audio unit	Continuity	T—audio unit	Continuity detected	<ul style="list-style-type: none">• Wiring harness (T—audio unit)
		Car-navigation unit		T—car-navigation unit		<ul style="list-style-type: none">• Wiring harness (T—car-navigation unit)
		Position memory control module		T—position memory control module		<ul style="list-style-type: none">• Wiring harness (T—position memory control module)
		Auto light/wiper control module		T—auto light/wiper control module		<ul style="list-style-type: none">• Wiring harness (T—auto light/wiper control module)
		Climate control unit		T—climate control unit		<ul style="list-style-type: none">• Wiring harness (T—climate control unit)
		Auto leveling control module		T—auto leveling control module		<ul style="list-style-type: none">• Wiring harness (T—auto leveling control module)
U	—	—	—	—	—	—
V	—	—	—	—	—	—
W	CAN_L	DLC-2 (CAN_L)	Continuity	W—DLC-2 terminal CAN_L	Continuity detected	<ul style="list-style-type: none">• Wiring harness (W—DLC-2 terminal CAN_L)
X	CAN_H	DLC-2 (CAN_H)	Continuity	X—DLC-2 terminal CAN_H	Continuity detected	<ul style="list-style-type: none">• Wiring harness (X—DLC-2 terminal CAN_H)
Y	—	—	—	—	—	—
Z	—	—	—	—	—	—
AA	—	—	—	—	—	—
AB	—	—	—	—	—	—
AC	—	—	—	—	—	—
AD	—	—	—	—	—	—
AE	—	—	—	—	—	—

AF	—	—	—	—	—	—
AG	—	—	—	—	—	—
AH	—	—	—	—	—	—
AI	—	—	—	—	—	—
AJ	—	—	—	—	—	—
AK	—	—	—	—	—	—
AL	—	—	—	—	—	—
AM	—	—	—	—	—	—
AN	—	—	—	—	—	—
AO	—	—	—	—	—	—
AP	—	—	—	—	—	—
AQ	—	—	—	—	—	—
AR	CAN2_H	Combined sensor	Continuity	AR—combined sensor connector terminal C	Continuity detected	<ul style="list-style-type: none"> Wiring harness (AR—combined sensor connector terminal C)
AS	CAN2_L	Combined sensor	Continuity	AS—combined sensor connector terminal B	Continuity detected	<ul style="list-style-type: none"> Wiring harness (AS—combined sensor connector terminal B)
AT	—	—	—	—	—	—

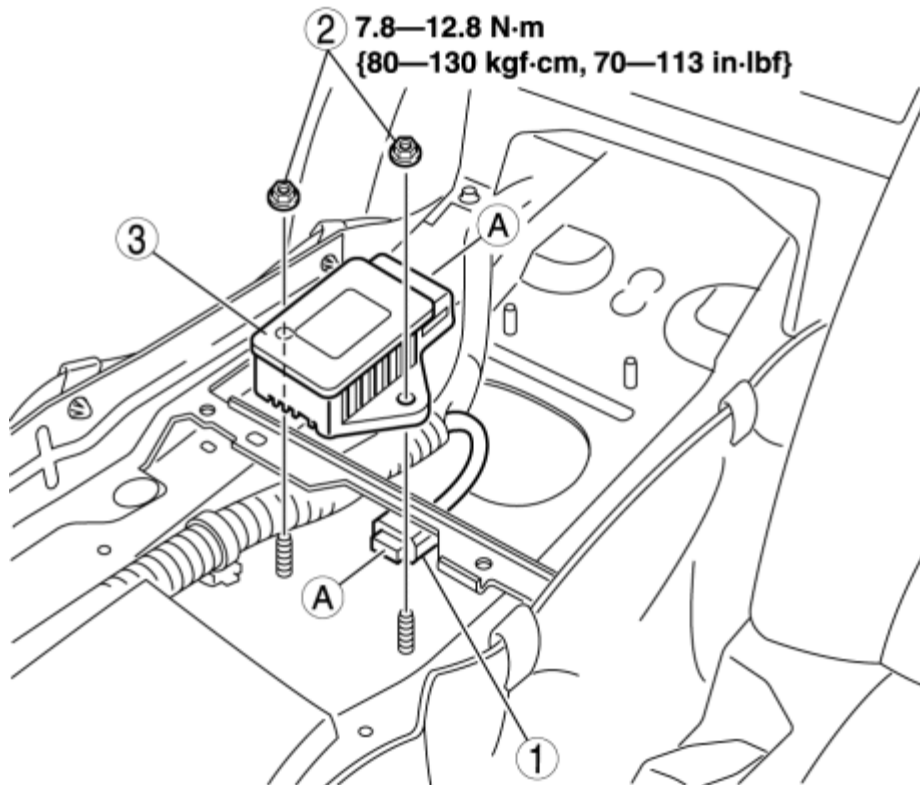
[< Previous](#) [Next >](#)

2011 - RX-8 - Brakes

COMBINED SENSOR REMOVAL/INSTALLATION

CAUTION:

- The internal parts of the combined sensor could be damaged if dropped. Be careful not to drop the combined sensor. Replace the combined sensor if it is subjected to an impact. Also, do not use an impact wrench or other similar air tools when removing/installing the sensor.
1. Remove the rear console. (See [CONSOLE REMOVAL/INSTALLATION](#).)
 2. Remove in the order indicated in the table.



1	Combined sensor connector
2	Nut
3	Combined sensor

3. Install in the reverse order of removal.

4. After installation, perform the combined sensor initialization procedure. (See [COMBINED SENSOR INITIALIZATION PROCEDURE](#).)

[< Previous](#) [Next >](#)

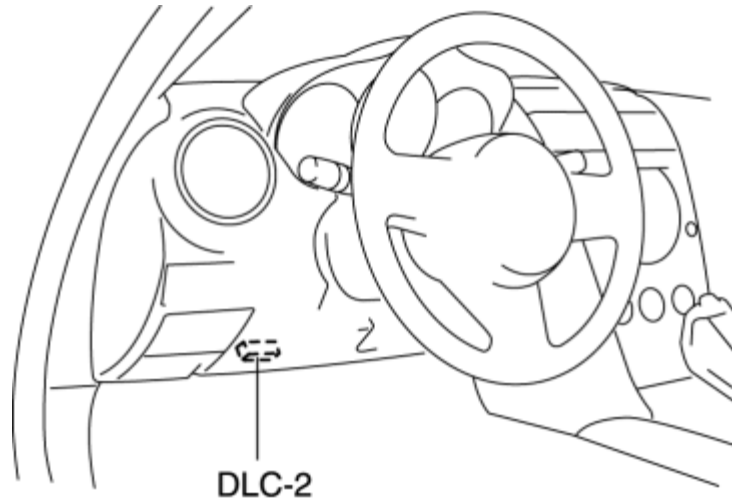
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

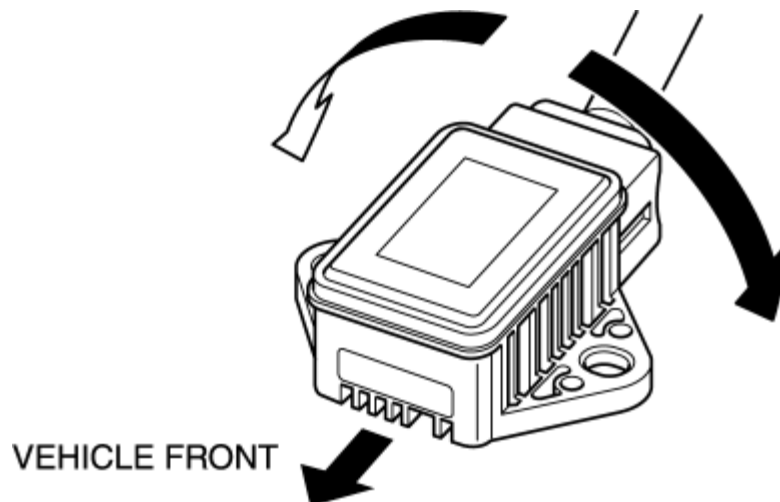
2011 - RX-8 - Brakes

COMBINED SENSOR INSPECTION

1. Turn the ignition switch off.
2. Connect the M-MDS to the DLC-2.



3. Select the following PIDs, then inspect the lateral acceleration speed and the yaw rate.
 - LAT_ACCL: (lateral acceleration speed)
 - YAW_RATE: (yaw rate)
- a. Lateral acceleration speed inspection
 - i. Verify the LAT_ACCL change when the combined sensor is tilted to the left and right.



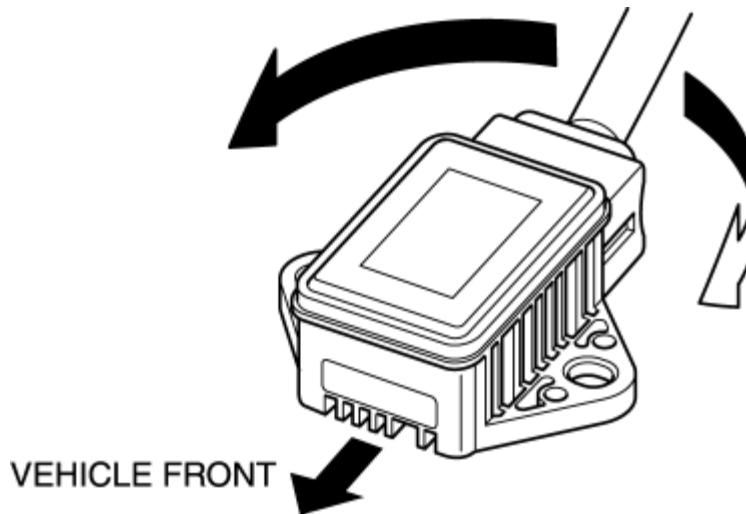
- If there is any malfunction, replace the combined sensor.

Standard

- When the sensor is tilted to the right:
LAT_ACCL changes negatively.
- When the sensor is tilted to the left:
LAT_ACCL changes positively.

b. Yaw rate inspection

- i. Verify the YAW_RATE change when the combined sensor is rotated to the left and right.



- If there is any malfunction, replace the combined sensor.

Standard

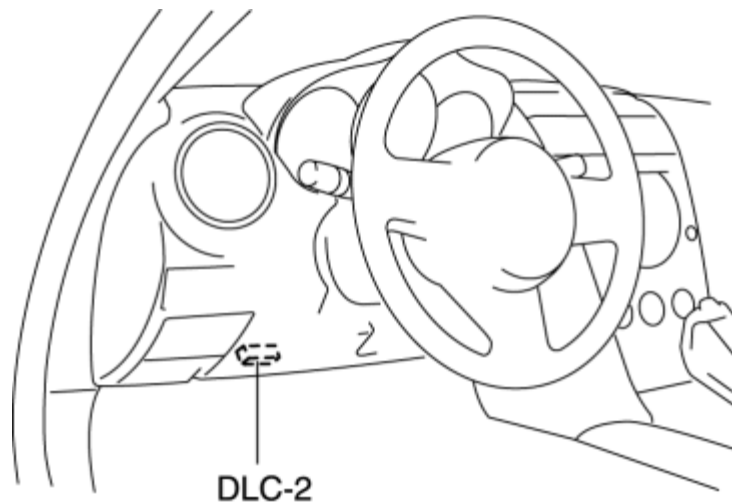
- When the sensor is rotated to the right:
YAW_RATE changes negatively.
- When the sensor is rotated to the left:
YAW_RATE changes positively.

2011 - RX-8 - Brakes

COMBINED SENSOR INITIALIZATION PROCEDURE

WARNING:

- Unless the initialization procedure of the combined sensor is completed, the DSC will not operate, causing an unexpected accident. Therefore, always perform the initialization procedure to ensure DSC operation if the combined sensor and DSC HU/CM have been removed or replaced.
1. Inspect the wheel alignment and inflation pressure.
 - If there is any malfunction, adjust the applicable part.
 2. Park the vehicle on level ground.
 3. Turn the ignition switch off.
 4. Connect the M-MDS to the DLC-2.



5. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)
 - Select "Chassis".
 - Select "ABS/DSC".
 - Select "Sensor Initialization"
 - When using the PDS (Pocket PC)

1. Select "All Tests and Calibrations".
2. Select "Sensor Initialization".
6. Perform the procedure according to the directions on the screen.
7. Drive the vehicle.
8. After **5 min or more** of driving, verify that the DSC system is normal.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

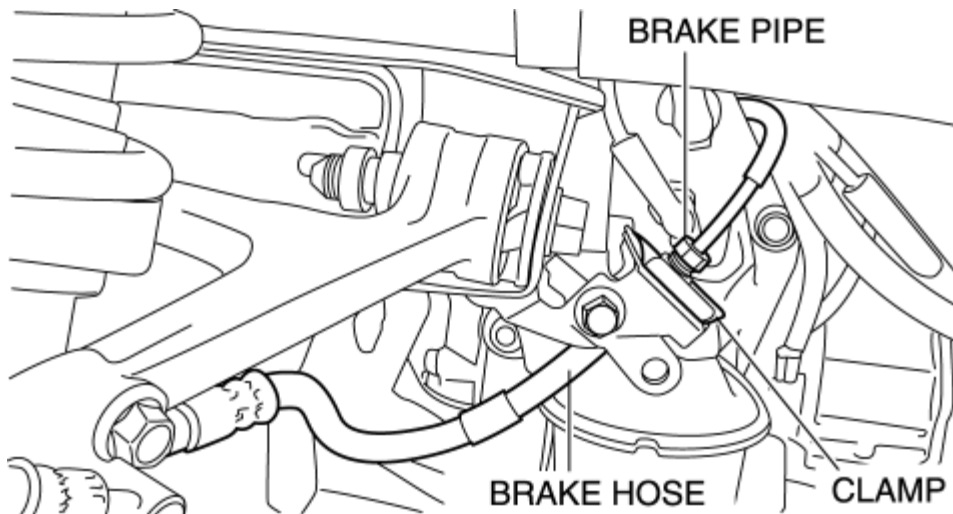
2011 - RX-8 - Brakes

BRAKE FLUID PRESSURE SENSOR INSPECTION

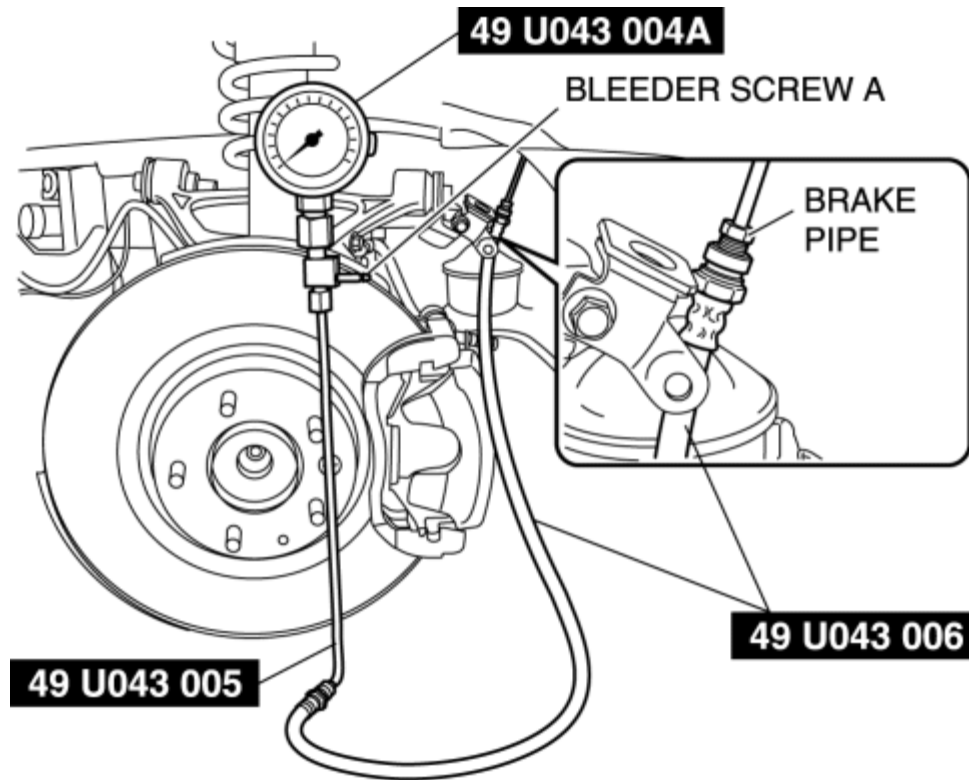
NOTE:

- The brake fluid pressure sensor is integrated into the DSC HU/CM and installed to the brake line of LF—RR brake system. Therefore, perform the brake fluid pressure sensor inspection with the SST installed to the brake pipe on the left front wheel.

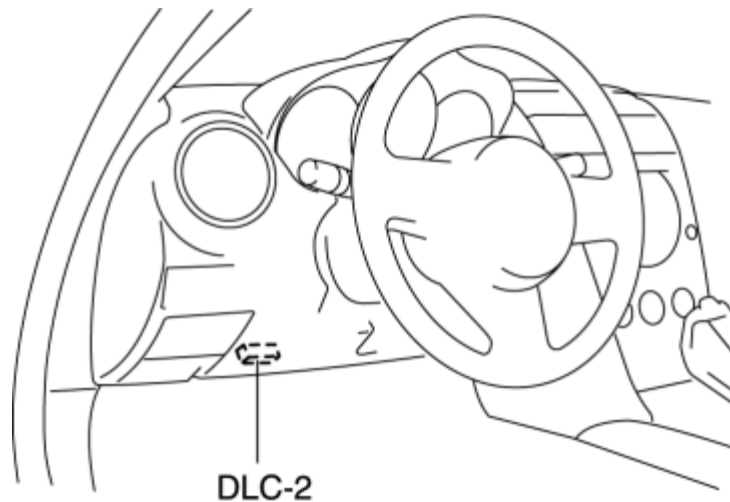
1. Turn the ignition switch off.
2. Loosen the brake pipe flare nut using the commercially available flare nut wrench.



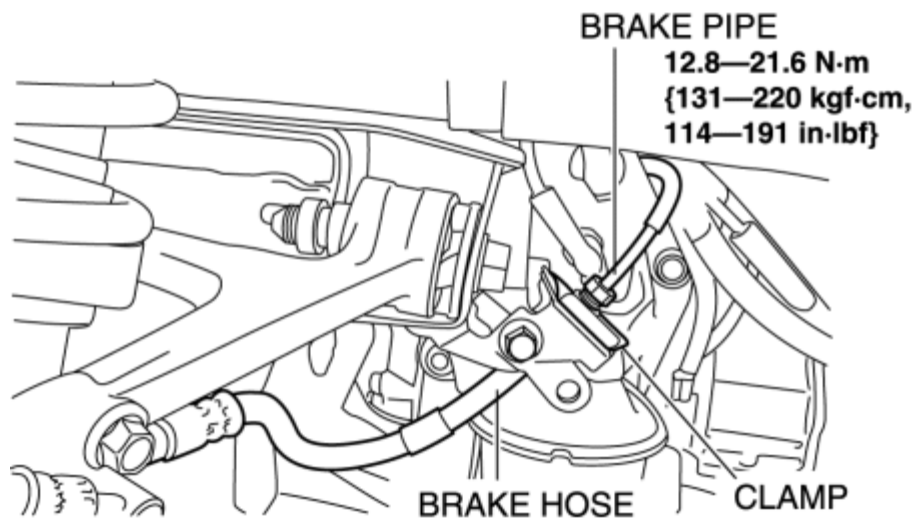
3. Disconnect the brake pipe.
4. Remove the clamp and disconnect the brake hose.
5. Install the **SSTs** to the brake pipe as shown in the figure.



6. Perform air bleeding of the **SST** and brake line from bleeder screw A.
7. Connect the M-MDS to the DLC-2.



8. Select the "MCYLI P" PID. (See [ON-BOARD DIAGNOSIS \[DYNAMIC STABILITY CONTROL \(DSC\)\]](#).)
9. Start the engine.
10. Depress the brake pedal, and verify that the fluid pressure value of the **SST** (gauge) and the value shown on the M-MDS are equal.
 - If the fluid pressure values are different, replace the DSC HU/CM. (See [DSC HU/CM REMOVAL/INSTALLATION](#).)
11. Remove the **SSTs** after the inspection and install the brake hose, clamp and brake pipe to their original positions.



12. Perform air bleeding of the brake line. (See [AIR BLEEDING](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

[< Previous](#) [Next >](#)

2011 - RX-8 - Brakes

STEERING ANGLE SENSOR REMOVAL/INSTALLATION

NOTE:

- The steering angle sensor is integrated into the combination switch to ensure sensor performance. Replace the steering angle sensor and combination switch as a single unit. (See [COMBINATION SWITCH REMOVAL/INSTALLATION](#).)

[< Previous](#) [Next >](#)

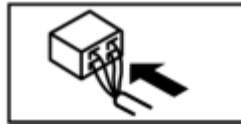
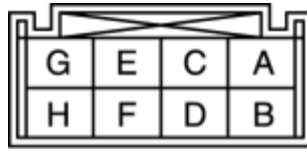
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Brakes

STEERING ANGLE SENSOR INSPECTION

1. Remove the column cover.
2. Measure the voltage between steering angle sensor terminal B and ground.



- If there is any malfunction, inspect the wiring harness between steering angle sensor terminal B and battery, then repair or replace if necessary.

Standard voltage

- B+

3. Turn the ignition switch to the ON position, then measure the voltage between steering angle sensor terminal A and ground.

- If there is any malfunction, inspect the wiring harness between steering angle sensor terminal A and ignition switch, then repair or replace if necessary.

Standard voltage

- B+

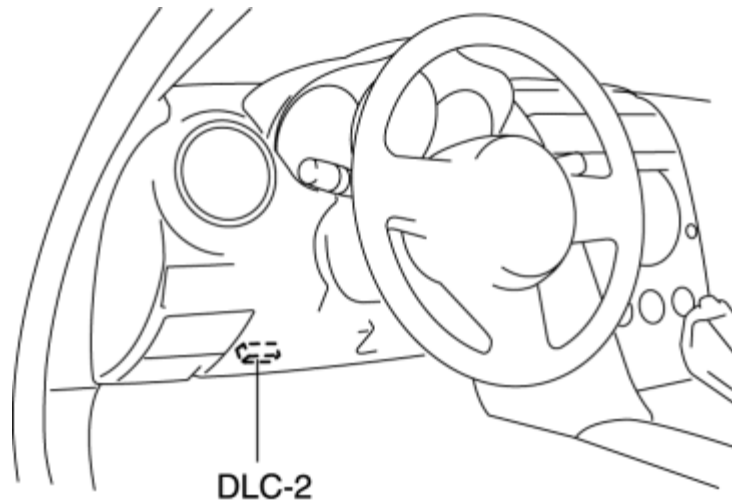
4. Measure the voltage between steering angle sensor terminal H and the ground.

- If there is any malfunction, inspect the wiring harness between steering angle sensor terminal H and ground point, then repair or replace if necessary.

Standard voltage

- 0 V

5. Turn the ignition switch off.
6. Connect the M-MDS to the DLC-2.



7. Select the "SWA_POS" PID.

8. Verify the SWA_POS changes when the steering wheel is turned to the left and right.

- If there is any malfunction, replace the steering angle sensor.

Standard

- When the steering wheel is turned to the right:
SWA_POS changes positively.
- When the steering wheel is turned to the left:
SWA_POS changes negatively.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Brakes

STEERING ANGLE SENSOR INITIALIZATION PROCEDURE

WARNING:

- Unless the initialization procedure of the steering angle sensor is completed, the DSC will not operate, causing an unexpected accident. Therefore, always perform the initialization procedure to ensure DSC operation if the power supply to the steering angle sensor has been cut off due to disconnection of the steering angle sensor connector or negative battery cable, or any other cause.

NOTE:

- The steering angle sensor requires battery power to store the steering angle initial position. Therefore when the battery power supply is cut off, a stored steering angle initial position is cleared.

1. Inspect the wheel alignment, inflation pressure, and the installation condition of the steering wheel.

- If there is any malfunction, adjust the applicable part.

2. Connect the negative battery cable.

3. Turn the ignition switch to the ON position.

4. Confirm that the DSC indicator light illuminates and that the DSC OFF light flashes.

5. Turn the steering wheel to full right lock, then turn it to full left lock.

6. Confirm that the DSC OFF light goes out.

7. Turn the ignition switch off.

8. Turn the ignition switch to the ON position again, and confirm that the DSC indicator light goes out.

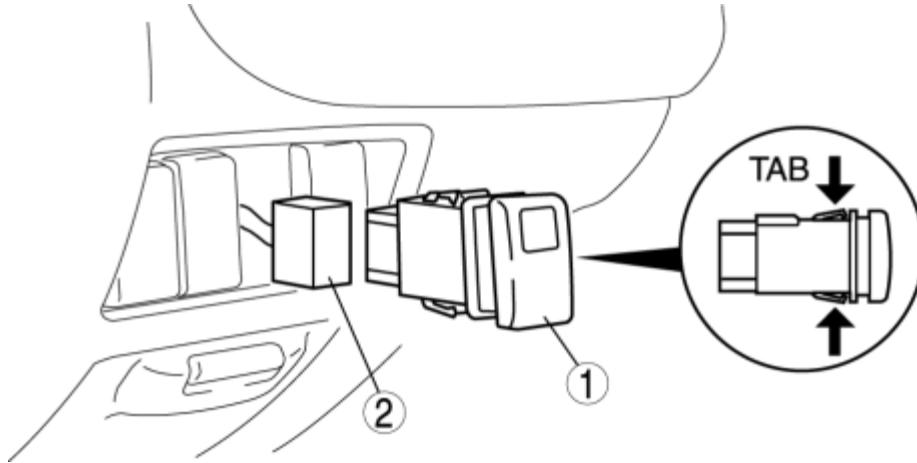
- If the DSC indicator light does not go out, disconnect the negative battery cable, and perform the procedure again starting from Step 2 shown above.

9. Drive the vehicle at a speed of **20 km/h {13 mph} or more** for **60 s or more**, then verify that the ABS warning light and DSC indicator light do not illuminate.

2011 - RX-8 - Brakes

DSC OFF SWITCH REMOVAL/INSTALLATION

1. Remove in the order indicated in the table.



1	DSC OFF switch (See DSC OFF Switch Removal Note.)
2	Connector

2. Install in the reverse order of removal.



DSC OFF Switch Removal Note




1. Access the DSC OFF switch from behind of the dashboard, and squeeze the tabs of the switch.
2. Pull the DSC OFF switch towards the driver"s side to remove it.

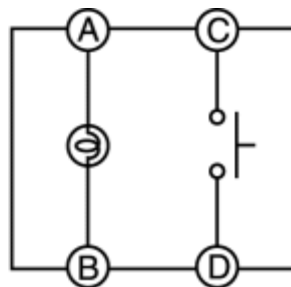
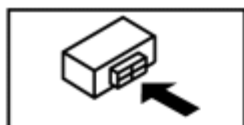
2011 - RX-8 - Brakes

DSC OFF SWITCH INSPECTION

1. Remove the DSC OFF switch.
2. Verify that the continuity is as indicated in the table.
 - If not as indicated in the table, replace the DSC OFF switch.

 : Bulb
  : Continuity

Condition	Terminal			
	A	B	C	D
Switch pressed				
Switch released				



2011 - RX-8 - Brakes

BRAKES TECHNICAL DATA

Item	Specification
Brake fluid type	SAE J1703, FMVSS 116 DOT-3
Brake pedal height (reference value)	175 mm {6.89 in}
Brake pedal play	2—5 mm {0.08—0.19 in}
Brake pedal-to-floor clearance (Brake pedal when depressed at 147 N {15.0 Kgf, 33.0 lbf})	98.6 mm {3.88 in} or more
Front disc plate runout limit	0.05 mm {0.002 in}
Minimum front disc plate thickness	22 mm {0.87 in}
Minimum front disc plate thickness after machining using a brake lathe on-vehicle	22.8 mm {0.90 in}
Minimum front disc pad thickness	2.0 mm {0.079 in} min.
Rear disc plate runout limit	0.05 mm {0.002 in}
Minimum rear disc plate thickness	16 mm {0.63 in}
Minimum rear disc plate thickness after machining using a brake lathe on-vehicle	16.8 mm {0.66 in}
Minimum rear disc pad thickness	2.0 mm {0.079 in} min.

Parking brake lever stroke when pulled at 98 N {10 kgf, 22 lbf}	1—3 notches
---	-------------

Master cylinder fluid pressure

Vacuum amount at 0 kPa {0 mmHg, 0 inHg}	
Pedal force (N {kgf, lbf})	Fluid pressure (kPa {kgf/cm ² , psi})
200 {20.4, 44.9}	606 {6.18, 87.9} or more

Master cylinder fluid pressure

Vacuum amount at 66.7 kPa {500 mmHg, 19.7 inHg}	
Pedal force (N {kgf, lbf})	Fluid pressure (kPa {kgf/cm ² , psi})
200 {20.4, 44.9}	7,310 {74.54, 1,060} or more

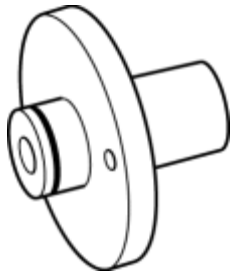
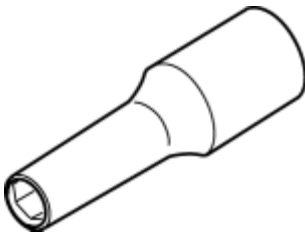
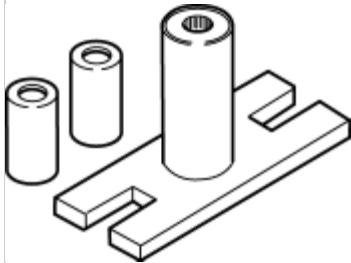
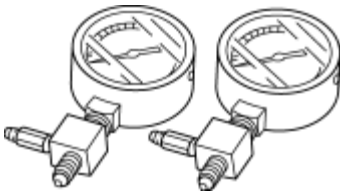
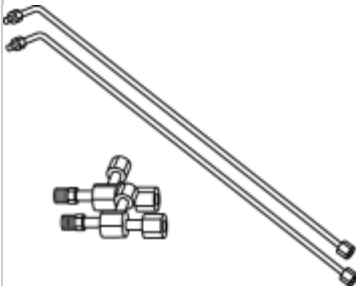
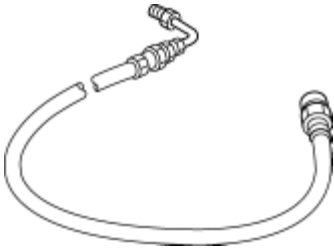
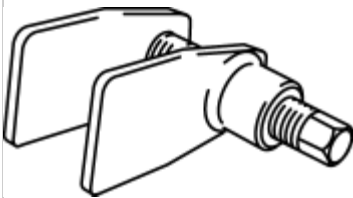

[< Previous](#) [Next >](#)

[Back to Top](#)

[< Previous](#)

2011 - RX-8 - Brakes

BRAKES SST

49 G043 001 Adjust gauge		49 B043 004 Socket wrench		49 E043 003A Turning lock tool	
49 U043 004A Oil pressure gauge		49 U043 005 Joint		49 U043 006 Hose	
49 0221 600C Disc brake expand tool		49 F043 002 Wrench		—	

[< Previous](#)

[Back to Top](#)

Workshop Manual - Transmission/Transaxle

2011 - RX-8

On-Board Diagnostics

- [AUTOMATIC TRANSMISSION CONTROL SYSTEM WIRING DIAGRAM \[SJ6A-EL\]](#)
 - [FOREWORD \[SJ6A-EL\]](#)
 - [AUTOMATIC TRANSMISSION ON-BOARD DIAGNOSTIC FUNCTION \[SJ6A-EL\]](#)
 - [AFTER REPAIR PROCEDURE \[SJ6A-EL\]](#)
 - [DTC TABLE \[SJ6A-EL\]](#)
 - [DTC P0601 \[SJ6A-EL\]](#)
 - [DTC P0603 \[SJ6A-EL\]](#)
 - [DTC P0604 \[SJ6A-EL\]](#)
 - [DTC P0707 \[SJ6A-EL\]](#)
 - [DTC P0708 \[SJ6A-EL\]](#)
 - [DTC P0711 \[SJ6A-EL\]](#)
 - [DTC P0712 \[SJ6A-EL\]](#)
 - [DTC P0713 \[SJ6A-EL\]](#)
 - [DTC P0717 \[SJ6A-EL\]](#)
 - [DTC P0722 \[SJ6A-EL\]](#)
 - [DTC P0751 \[SJ6A-EL\]](#)
 - [DTC P0752 \[SJ6A-EL\]](#)
 - [DTC P0756 \[SJ6A-EL\]](#)
 - [DTC P0757 \[SJ6A-EL\]](#)
 - [DTC P0761 \[SJ6A-EL\]](#)
 - [DTC P0762 \[SJ6A-EL\]](#)
 - [DTC P0766 \[SJ6A-EL\]](#)
 - [DTC P0781 \[SJ6A-EL\]](#)
 - [DTC P0813 \[SJ6A-EL\]](#)
 - [DTC P0819 \[SJ6A-EL\]](#)
 - [DTC P0826 \[SJ6A-EL\]](#)
 - [DTC P0882 \[SJ6A-EL\]](#)
 - [DTC P0961 \[SJ6A-EL\]](#)
 - [DTC P0962 \[SJ6A-EL\]](#)
 - [DTC P0963 \[SJ6A-EL\]](#)
 - [DTC P0969 \[SJ6A-EL\]](#)
 - [DTC P0970 \[SJ6A-EL\]](#)
 - [DTC P0971 \[SJ6A-EL\]](#)
 - [DTC P0973 \[SJ6A-EL\]](#)
 - [DTC P0974 \[SJ6A-EL\]](#)
 - [DTC P0976 \[SJ6A-EL\]](#)
 - [DTC P0977 \[SJ6A-EL\]](#)
-

- [DTC P0979 \[SJ6A-EL\]](#)
- [DTC P0980 \[SJ6A-EL\]](#)
- [DTC P0982 \[SJ6A-EL\]](#)
- [DTC P0983 \[SJ6A-EL\]](#)
- [DTC P0985 \[SJ6A-EL\]](#)
- [DTC P0986 \[SJ6A-EL\]](#)
- [DTC P2719 \[SJ6A-EL\]](#)
- [DTC P2720 \[SJ6A-EL\]](#)
- [DTC P2721 \[SJ6A-EL\]](#)
- [DTC P2757 \[SJ6A-EL\]](#)
- [DTC P2758 \[SJ6A-EL\]](#)
- [DTC P2762 \[SJ6A-EL\]](#)
- [DTC P2763 \[SJ6A-EL\]](#)
- [DTC P2764 \[SJ6A-EL\]](#)
- [PID/DATA MONITOR INSPECTION \[SJ6A-EL\]](#)

Symptom Troubleshooting

- [AUTOMATIC TRANSMISSION CONTROL SYSTEM WIRING DIAGRAM \[SJ6A-EL\]](#)
- [FOREWORD \[SJ6A-EL\]](#)
- [BASIC INSPECTION \[SJ6A-EL\]](#)
- [SYMPTOM TROUBLESHOOTING ITEM TABLE \[SJ6A-EL\]](#)
- [QUICK DIAGNOSIS CHART \[SJ6A-EL\]](#)
- [NO.1 VEHICLE DOES NOT MOVE IN D RANGE, OR IN R POSITION \[SJ6A-EL\]](#)
- [NO.2 VEHICLE MOVES IN N POSITION \[SJ6A-EL\]](#)
- [NO.3 VEHICLE MOVES IN P POSITION, OR PARKING GEAR DOES NOT DISENGAGE WHEN P IS DISENGAGED \[SJ6A-EL\]](#)
- [NO.4 EXCESSIVE CREEP \[SJ6A-EL\]](#)
- [NO.5 NO CREEP AT ALL \[SJ6A-EL\]](#)
- [NO.6 LOW MAXIMUM SPEED AND POOR ACCELERATION \[SJ6A-EL\]](#)
- [NO.7 NO SHIFTING \[SJ6A-EL\]](#)
- [NO.8 DOES NOT SHIFT TO 6GR \[SJ6A-EL\]](#)
- [NO.9 ABNORMAL SHIFTING \[SJ6A-EL\]](#)
- [NO.10 FREQUENT SHIFTING \[SJ6A-EL\]](#)
- [NO.11 SHIFT POINT IS HIGH OR LOW \[SJ6A-EL\]](#)
- [NO.12 TORQUE CONVERTER CLUTCH \(TCC\) NON-OPERATION \[SJ6A-EL\]](#)
- [NO.13 NO KICKDOWN \[SJ6A-EL\]](#)
- [NO.14 ENGINE FLARES UP OR SLIPS WHEN UPSHIFTING OR DOWNSHIFTING \[SJ6A-EL\]](#)
- [NO.15 ENGINE FLARES UP OR SLIPS WHEN ACCELERATING VEHICLE \[SJ6A-EL\]](#)
- [NO.16 JUDDER UPON TORQUE CONVERTER CLUTCH \(TCC\) OPERATION \[SJ6A-EL\]](#)
- [NO.17 EXCESSIVE SHIFT SHOCK FROM N TO D OR N TO R POSITION/RANGE \[SJ6A-EL\]](#)
- [NO.18 EXCESSIVE SHIFT SHOCK IS GIVEN WHEN UPSHIFTING AND DOWNSHIFTING \[SJ6A-EL\]](#)
- [NO.19 EXCESSIVE SHIFT SHOCK ON TORQUE CONVERTER CLUTCH \(TCC\) \[SJ6A-EL\]](#)
- [NO.20 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN ALL POSITIONS/RANGES \[SJ6A-EL\]](#)
- [NO.21 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN D RANGE, OR IN R POSITION \[SJ6A-EL\]](#)
- [NO.22 NO ENGINE BRAKING \[SJ6A-EL\]](#)
- [NO.23 TRANSMISSION OVERHEATS \[SJ6A-EL\]](#)
- [NO.24 ENGINE STALLS WHEN SHIFTED TO D RANGE, OR IN R POSITION \[SJ6A-EL\]](#)
- [NO.25 ENGINE STALLS WHEN DRIVING AT SLOW SPEED OR STOPPING \[SJ6A-EL\]](#)
- [NO.26 STARTER DOES NOT WORK \[SJ6A-EL\]](#)
- [NO.27 GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE \[SJ6A-EL\]](#)
- [NO.28 GEAR POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE OR P, N, R POSITIONS \[SJ6A-EL\]](#)
- [NO.29 DOES NOT UPSHIFT IN M RANGE \[SJ6A-EL\]](#)
- [NO.30 DOES NOT DOWNSHIFT IN M RANGE \[SJ6A-EL\]](#)
- [NO.31 M RANGE POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE AND/OR IN D RANGE WITH DIRECT MODE/M RANGE POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE WHILE](#)

[NOT IN DIRECT MODE \[SJ6A-EL\]](#)

Clutch

- [CLUTCH LOCATION INDEX](#)
- [GENERAL PROCEDURES \(CLUTCH\)](#)
- [CLUTCH FLUID INSPECTION](#)
- [CLUTCH FLUID REPLACEMENT](#)
- [CLUTCH PEDAL INSPECTION/ADJUSTMENT](#)
- [CLUTCH PEDAL REMOVAL/INSTALLATION](#)
- [CLUTCH MASTER CYLINDER REMOVAL/INSTALLATION](#)
- [CLUTCH MASTER CYLINDER DISASSEMBLY/ASSEMBLY](#)
- [CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION](#)
- [CLUTCH RELEASE CYLINDER DISASSEMBLY/ASSEMBLY](#)
- [CLUTCH UNIT REMOVAL/INSTALLATION](#)
- [CLUTCH COVER INSPECTION](#)
- [CLUTCH DISC INSPECTION](#)
- [CLUTCH RELEASE COLLAR INSPECTION](#)
- [PILOT BEARING INSPECTION](#)
- [FLYWHEEL INSPECTION](#)

Manual Transmission

- [MANUAL TRANSMISSION LOCATION INDEX \[P66M-D\]](#)
- [TRANSMISSION OIL INSPECTION \[P66M-D\]](#)
- [TRANSMISSION OIL REPLACEMENT \[P66M-D\]](#)
- [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#)
- [INSPECTION AFTER TRANSMISSION INSTALLATION \[P66M-D\]](#)
- [OIL SEAL \(EXTENSION HOUSING\) REPLACEMENT \[P66M-D\]](#)
- [NEUTRAL SWITCH REMOVAL/INSTALLATION \[P66M-D\]](#)

Automatic Transmission

- [AUTOMATIC TRANSMISSION LOCATION INDEX \[SJ6A-EL\]](#)
- [MECHANICAL SYSTEM TEST \[SJ6A-EL\]](#)
- [ROAD TEST \[SJ6A-EL\]](#)
- [AUTOMATIC TRANSMISSION FLUID \(ATF\) INSPECTION \[SJ6A-EL\]](#)
- [AUTOMATIC TRANSMISSION FLUID \(ATF\) REPLACEMENT \[SJ6A-EL\]](#)
- [AUTOMATIC TRANSMISSION FLUID \(ATF\) LEVEL ADJUSTMENT \[SJ6A-EL\]](#)
- [TRANSMISSION RANGE \(TR\) SWITCH INSPECTION \[SJ6A-EL\]](#)
- [TRANSMISSION RANGE \(TR\) SWITCH REMOVAL/INSTALLATION \[SJ6A-EL\]](#)
- [TRANSMISSION RANGE \(TR\) SWITCH ADJUSTMENT \[SJ6A-EL\]](#)
- [TRANSMISSION FLUID TEMPERATURE \(TFT\) SENSOR INSPECTION \[SJ6A-EL\]](#)
- [TRANSMISSION FLUID TEMPERATURE \(TFT\) SENSOR REMOVAL/INSTALLATION \[SJ6A-EL\]](#)
- [TURBINE SENSOR INSPECTION \[SJ6A-EL\]](#)
- [TURBINE SENSOR REMOVAL/INSTALLATION \[SJ6A-EL\]](#)
- [VEHICLE SPEED SENSOR \(VSS\) INSPECTION \[SJ6A-EL\]](#)
- [VEHICLE SPEED SENSOR \(VSS\) REMOVAL/INSTALLATION \[SJ6A-EL\]](#)
- [SOLENOID VALVE INSPECTION \[SJ6A-EL\]](#)
- [TCM INSPECTION \[SJ6A-EL\]](#)
- [TCM REMOVAL/INSTALLATION \[SJ6A-EL\]](#)
- [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\]](#)
- [TORQUE CONVERTER REMOVAL/INSTALLATION \[SJ6A-EL\]](#)
- [CONTROL VALVE BODY REMOVAL \[SJ6A-EL\]](#)
- [CONTROL VALVE BODY INSTALLATION \[SJ6A-EL\]](#)

- [OIL SEAL \(OIL PUMP\) REPLACEMENT \[SJ6A-EL\]](#)
- [OIL SEAL \(EXTENSION HOUSING\) REPLACEMENT \[SJ6A-EL\]](#)
- [OIL COOLER FLUSHING \[SJ6A-EL\]](#)
- [OIL COOLER REMOVAL/INSTALLATION \[SJ6A-EL\]](#)
- [OIL COOLER DISASSEMBLY/ASSEMBLY \[SJ6A-EL\]](#)
- [DRIVE PLATE REMOVAL/INSTALLATION \[SJ6A-EL\]](#)

Automatic Transmission Shift Mechanism

- [AUTOMATIC TRANSMISSION SHIFT MECHANISM LOCATION INDEX](#)
- [SHIFT LOCK INSPECTION](#)
- [KEY INTERLOCK INSPECTION](#)
- [INTERLOCK CABLE INSPECTION](#)
- [INTERLOCK CABLE ADJUSTMENT](#)
- [SELECTOR LEVER INSPECTION](#)
- [SELECTOR LEVER COMPONENT INSPECTION](#)
- [SELECTOR LEVER REMOVAL/INSTALLATION](#)
- [STEERING SHIFT SWITCH REMOVAL/INSTALLATION](#)
- [STEERING SHIFT SWITCH INSPECTION](#)

Technical Data

- [TRANSMISSION/TRANSAXLE TECHNICAL DATA](#)

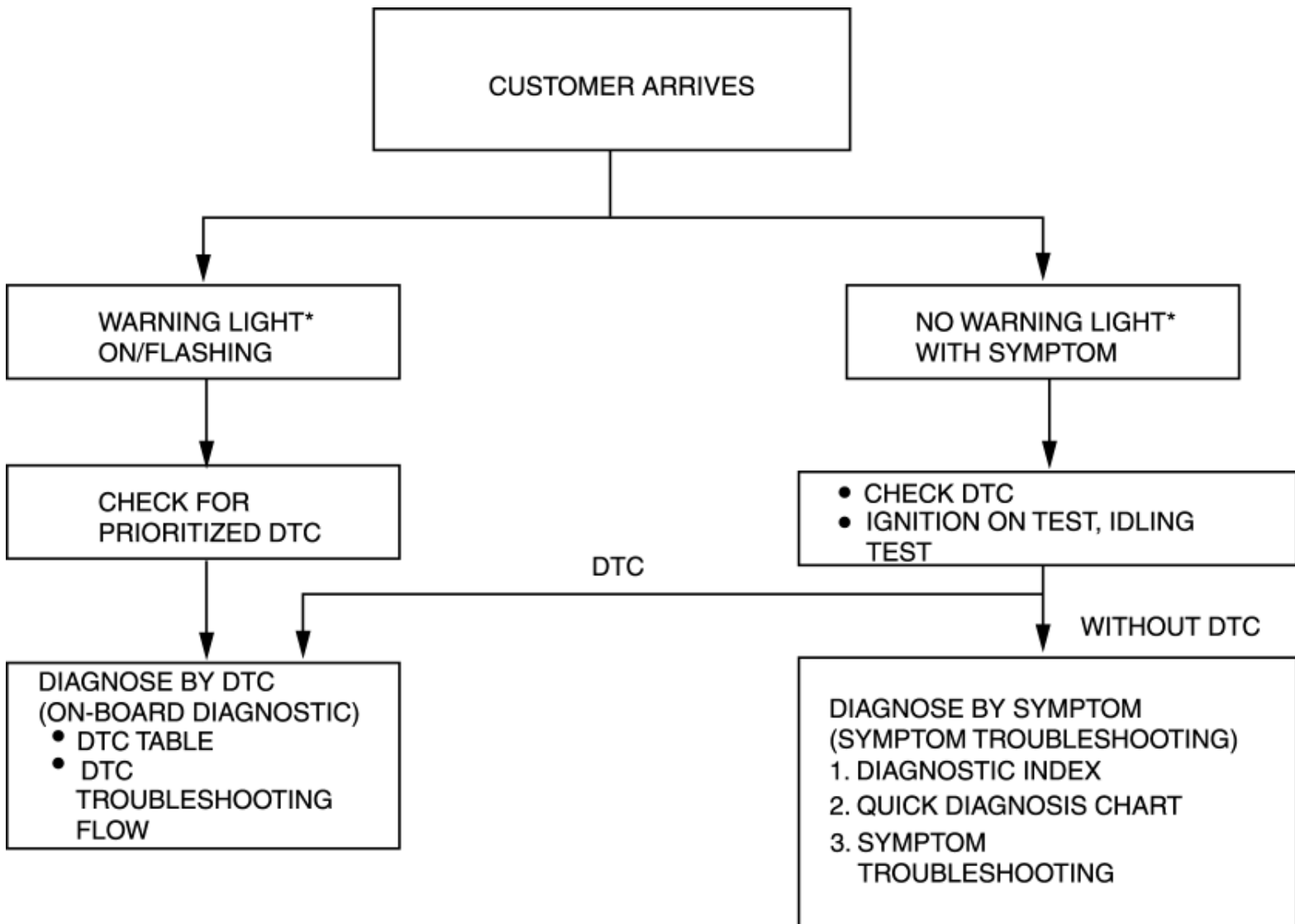
Maintenance/Service Tools

- [TRANSMISSION/TRANSAXLE SST](#)

2011 - RX-8 - Transmission/Transaxle

FOREWORD [SJ6A-EL]

- When the customer reports vehicle malfunction, check the malfunction indicator lamp (MIL) indication, AT warning indication, and diagnostic trouble code (DTC), then diagnose the malfunction according to following flowchart.
 - If a DTC exists, diagnose the applicable DTC inspection. (See [DTC TABLE \[SJ6A-EL\]](#).)
 - If a DTC does not exist and the MIL and AT warning lights do not illuminate, diagnose the applicable symptom troubleshooting. (See [SYMPTOM TROUBLESHOOTING ITEM TABLE \[SJ6A-EL\]](#).)



*: Malfunction Indicator Lamp (MIL), AT warning light

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

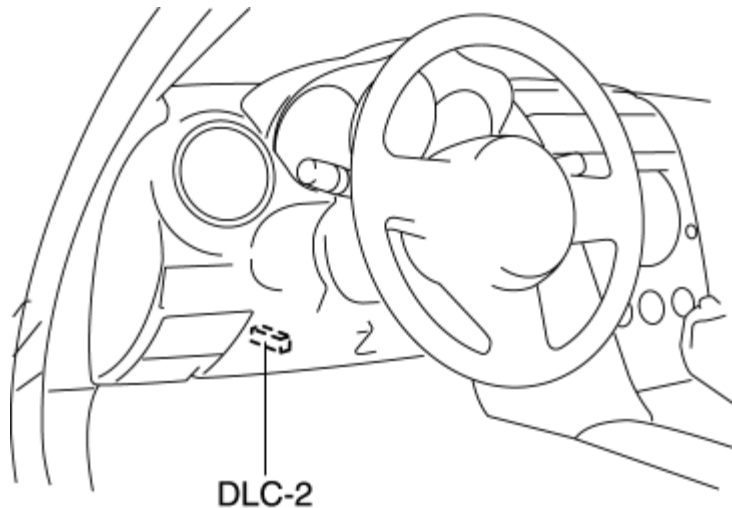
2011 - RX-8 - Transmission/Transaxle

AFTER REPAIR PROCEDURE [SJ6A-EL]

CAUTION:

- After repairing a malfunction, perform this procedure to verify that the malfunction has been corrected.
- When this procedure is carried out, be sure to drive the vehicle at lawful speed and pay attention to the other vehicles.

1. Connect the M-MDS to the vehicle DLC-2.



2. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 - When using the IDS (laptop PC)
 - Select "Self Test".
 - Select "Modules".
 - Select "TCM".
 - When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "TCM".
 - Select "Self Test".
3. Verify the DTC according to the directions on the screen.

4. Press the clear button on the DTC screen to clear the DTC.

5. Perform the following trouble code inspections to ensure that the DTC has been resolved:

DTC No.	inspection
P0601, P0603, P0604, P0712, P0713, P0717, P0722, P0882, P0961, P0962, P0963, P0969, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P0985, P0986, P2719, P2720, P2721, P2762, P2763, P2764	<ul style="list-style-type: none">• Start the engine.• Warm up the engine and AT.• Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 6GR.• Gradually slow down and stop the vehicle.• Turn the ignition switch to the LOCK position.• Go to Step 6.
P0707	<ul style="list-style-type: none">• Start the engine.• Warm up the engine to normal operating temperature.• Depress the brake pedal, and shift the selector lever from P to D for 2 s or more.• Gradually slow down and stop the vehicle.• Turn the ignition switch to the LOCK position.• Go to Step 6.
	<ul style="list-style-type: none">• Start the engine.• Warm up the engine to normal operating temperature.• Depress the brake pedal, and shift the

P0708	<p>selector lever from P to D for 2 s or more.</p> <ul style="list-style-type: none"> • Gradually slow down and stop the vehicle. • Turn the ignition switch to the LOCK position. • Start the engine. • Depress the brake pedal, and shift the selector lever from P to D for 2 s or more. • Gradually slow down and stop the vehicle. • Turn the ignition switch to the LOCK position. • Go to Step 6.
P0711	<ul style="list-style-type: none"> • Start the engine. • Warm up the engine to normal operating temperature. • Drive the vehicle in D range for 10 min or more. • Gradually slow down and stop the vehicle. • Turn the ignition switch to the LOCK position. • Go to Step 6.
	<ul style="list-style-type: none"> • Start the engine. • Warm up the engine and AT. • Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 6GR.

P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0781, P0813

- Gradually slow down and stop the vehicle.
- Turn the ignition switch to the LOCK position.
- Start the engine.
- Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 6GR.
- Gradually slow down and stop the vehicle.
- Turn the ignition switch to the LOCK position.
- Go to Step 6.

P0819

- Start the engine.
- Warm up the engine to normal operating temperature.
- Drive the vehicle in M range, and shift the selector lever (operate up and down switches) between 1GR to 6GR for **10 s or more**.
- Gradually slow down and stop the vehicle.
- Turn the ignition switch to the LOCK position.
- Go to Step 6.

- Start the engine.
- Warm up the engine to normal operating temperature.
- Drive the vehicle in M range, and shift the steering shift switch

P0826	<p>(operate up and down switches) between 1GR to 6GR for 10 s or more.</p> <ul style="list-style-type: none"> • Gradually slow down and stop the vehicle. • Turn the ignition switch to the LOCK position. • Go to Step 6.
P2757, P2758	<ul style="list-style-type: none"> • Start the engine. • Warm up the engine to normal operating temperature. • Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 6GR and TCC is operated. • Gradually slow down and stop the vehicle. • Turn the ignition switch to the LOCK position. • Go to Step 6.

6. Gradually slow down and stop the vehicle.

7. Make sure that no DTCs occur.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

DTC TABLE [SJ6A-EL]

X: Available—: N/A

DTC No.	Condition	MIL	AT warning light	DC	Memory function	Page
P0601	Flash ROM malfunction	X	X	1	X	(See DTC P0601 [SJ6A-EL])
P0603	EEPROM malfunction	X	X	1	X	(See DTC P0603 [SJ6A-EL])
P0604	RAM malfunction	X	X	1	X	(See DTC P0604 [SJ6A-EL])
P0707	Transmission range (TR) switch circuit low input (short to ground)	X	X	1	X	(See DTC P0707 [SJ6A-EL])
P0708	Transmission range (TR) switch circuit high input (open circuit)	X	X	2	X	(See DTC P0708 [SJ6A-EL])
P0711	Transmission fluid temperature (TFT) sensor malfunction (stuck)	X	X	2	X	(See DTC P0711 [SJ6A-EL])
P0712	Transmission fluid temperature (TFT) sensor circuit malfunction (short to ground)	X	X	1	X	(See DTC P0712 [SJ6A-EL])
P0713	Transmission fluid temperature (TFT) sensor circuit malfunction (short to power/open circuit)	X	X	1	X	(See DTC P0713 [SJ6A-EL])
P0717	Turbine sensor circuit malfunction (open circuit/short circuit)	X	X	1	X	(See DTC P0717 [SJ6A-EL])
P0722	Vehicle speed sensor (VSS) circuit malfunction (open circuit/short circuit)	X	X	1	X	(See DTC P0722 [SJ6A-EL])
P0751	Shift solenoid A malfunction (stuck off)	X	X	2	X	(See DTC P0751 [SJ6A-EL])

P0752	Shift solenoid A malfunction (stuck on)	X	X	2	X	(See DTC P0752 [SJ6A-EL])
P0756	Shift solenoid B malfunction (stuck off)	X	X	2	X	(See DTC P0756 [SJ6A-EL])
P0757	Shift solenoid B malfunction (stuck on)	X	X	2	X	(See DTC P0757 [SJ6A-EL])
P0761	Shift solenoid C malfunction (stuck off)	X	X	2	X	(See DTC P0761 [SJ6A-EL])
P0762	Shift solenoid C malfunction (stuck on)	X	X	2	X	(See DTC P0762 [SJ6A-EL])
P0766	Shift solenoid D malfunction (stuck off)	X	X	2	X	(See DTC P0766 [SJ6A-EL])
	Shift solenoid G malfunction (stuck on)	X	X	2	X	(See DTC P0766 [SJ6A-EL])
P0781	1-2 shift valve malfunction	X	X	2	X	(See DTC P0781 [SJ6A-EL])
P0813	Reverse sequence valve malfunction	X	X	2	X	(See DTC P0813 [SJ6A-EL])
P0819	Manual switch/up switch/down switch circuit malfunction (open circuit/short circuit)	–	X	1	X	(See DTC P0819 [SJ6A-EL])
P0826	Steering shift switch circuit malfunction (open circuit/short to ground)	X	X	1	X	(See DTC P0826 [SJ6A-EL])
P0882	TCM B+ low (less than 9 V)	X	X	1	X	(See DTC P0882 [SJ6A-EL])
P0961	Line pressure control solenoid range/performance (stuck)	X	X	1	X	(See DTC P0961 [SJ6A-EL])
P0962	Line pressure control solenoid circuit malfunction (short to ground/open circuit)	X	X	1	X	(See DTC P0962 [SJ6A-EL])
P0963	Line pressure control solenoid circuit malfunction (short to power)	X	X	1	X	(See DTC P0963 [SJ6A-EL])
P0969	Shift solenoid F range/performance (stuck)	X	X	1	X	(See DTC P0969 [SJ6A-EL])
P0970	Shift solenoid F circuit malfunction (short to ground/open circuit)	X	X	1	X	(See DTC P0970 [SJ6A-EL])

P0971	Shift solenoid F circuit malfunction (short to power)	X	X	1	X	(See DTC P0971 [SJ6A-EL])
P0973	Shift solenoid A circuit malfunction (short to ground)	X	X	1	X	(See DTC P0973 [SJ6A-EL])
P0974	Shift solenoid A circuit malfunction (short to power/open circuit)	X	X	1	X	(See DTC P0974 [SJ6A-EL])
P0976	Shift solenoid B circuit malfunction (short to ground)	X	X	1	X	(See DTC P0976 [SJ6A-EL])
P0977	Shift solenoid B circuit malfunction (short to power/open circuit)	X	X	1	X	(See DTC P0977 [SJ6A-EL])
P0979	Shift solenoid C circuit malfunction (short to ground)	X	X	1	X	(See DTC P0979 [SJ6A-EL])
P0980	Shift solenoid C circuit malfunction (short to power/open circuit)	X	X	1	X	(See DTC P0980 [SJ6A-EL])
P0982	Shift solenoid D circuit malfunction (short to ground)	X	X	1	X	(See DTC P0982 [SJ6A-EL])
P0983	Shift solenoid D circuit malfunction (short to power/open circuit)	X	X	1	X	(See DTC P0983 [SJ6A-EL])
P0985	Shift solenoid E circuit malfunction (short to ground)	X	X	1	X	(See DTC P0985 [SJ6A-EL])
P0986	Shift solenoid E circuit malfunction (short to power/open circuit)	X	X	1	X	(See DTC P0986 [SJ6A-EL])
P2719	Shift solenoid G range/performance (stuck)	X	X	1	X	(See DTC P2719 [SJ6A-EL])
P2720	Shift solenoid G circuit malfunction (short to ground/open circuit)	X	X	1	X	(See DTC P2720 [SJ6A-EL])
P2721	Shift solenoid G circuit malfunction (short to power)	X	X	1	X	(See DTC P2721 [SJ6A-EL])
P2757	Torque converter clutch (TCC) stuck off	X	X	2	X	(See DTC P2757 [SJ6A-EL])

P2758	Torque converter clutch (TCC) stuck on	X	X	2	X	(See DTC P2758 [SJ6A-EL])
P2762	TCC control solenoid range/performance (stuck)	X	X	1	X	(See DTC P2762 [SJ6A-EL])
P2763	TCC control solenoid circuit malfunction (short to power)	X	X	1	X	(See DTC P2763 [SJ6A-EL])
P2764	TCC control solenoid circuit malfunction (short to ground/open circuit)	X	X	1	X	(See DTC P2764 [SJ6A-EL])
U0073	CAN BUS OFF	X	X	1	X	(See FOREWORD [MULTIPLEX COMMUNICATION SYSTEM])
U0100	TCM cannot receive any signals from PCM	X	X	1	X	
U0121	TCM cannot receive any signals from ABS HU/CM or DSC HU/CM	X	X	1	X	

MIL
Malfunction Indicator Lamp
DC
Drive Cycle
—
N/A

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

DTC P0601 [SJ6A-EL]

DTC P0601	Flash ROM malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Flash ROM (in TCM) internal circuit malfunction is detected. <p>Diagnostic support note:</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. A PENDING CODE is not available. FREEZE FRAME DATA is available. The AT warning light illuminates. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information.
		<ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.

		No	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
3	VERIFY TROUBLESHOOTING OF DTC P0601 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC from the memory using the M-MDS. • Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. • Is same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	Troubleshooting completed.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

DTC P0603 [SJ6A-EL]

DTC P0603	EEPROM malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> Different numeric values for EEPROM and RAM (in TCM) are detected. <p>Diagnostic support note:</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. A PENDING CODE is not available. FREEZE FRAME DATA is available. The AT warning light illuminates. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED	Yes Go to the next step.
	<ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY	Yes Perform repair or diagnosis according to the available repair information.
	<ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.

		No	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
3	VERIFY TROUBLESHOOTING OF DTC P0603 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC from the memory using the M-MDS. • Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. • Is same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	Troubleshooting completed.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

DTC P0604 [SJ6A-EL]

DTC P0604	RAM malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> RAM (in TCM) read/write error is detected. <p>Diagnostic support note:</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. A PENDING CODE is not available. FREEZE FRAME DATA is available. The AT warning light illuminates. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED	Yes Go to the next step.
	<ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY	Yes Perform repair or diagnosis according to the available repair information.
	<ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.

		No	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
3	VERIFY TROUBLESHOOTING OF DTC P0604 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC from the memory using the M-MDS. • Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. • Is same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
4	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	Troubleshooting completed.

[< Previous](#) [Next >](#)

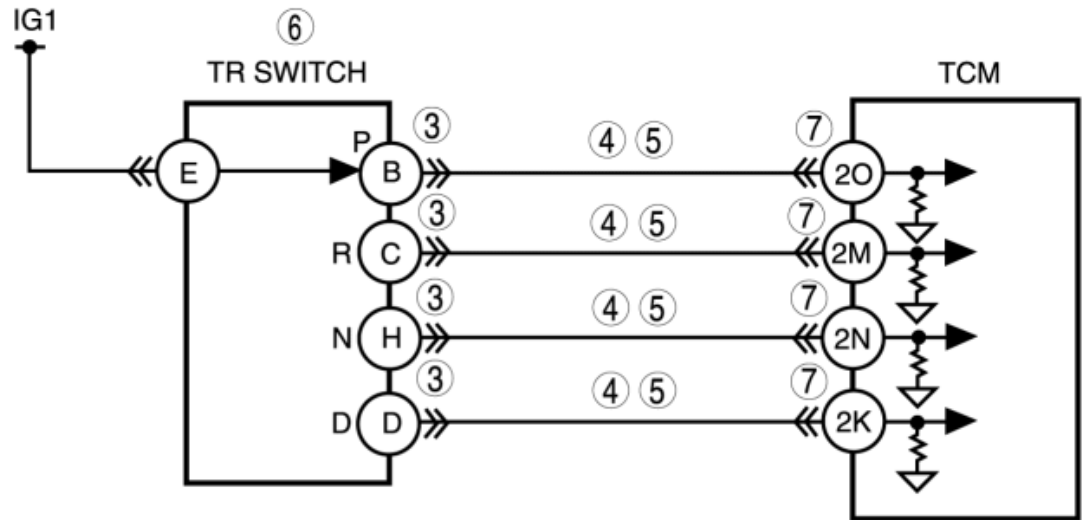
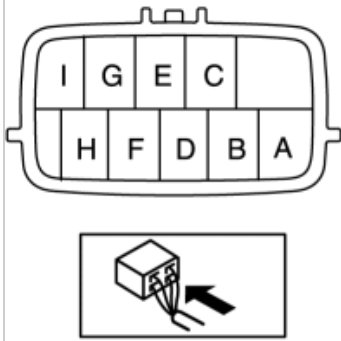
[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

DTC P0707 [SJ6A-EL]

DTC P0707	Transmission range (TR) switch circuit low input (short to ground)
DETECTION CONDITION	<ul style="list-style-type: none">• A signal input from the TR switch to the TCM corresponds to two contact points or more. <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The AT warning light illuminates if the TCM detects the above malfunction condition during the first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• MIL does not illuminate.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TR switch connector or terminal malfunction• Short to power in wiring harness between TR switch terminal B and TCM terminal 2O• Short to power in wiring harness between TR switch terminal C and TCM terminal 2M• Short to power in wiring harness between TR switch terminal H and TCM terminal 2N• Short to power in wiring harness between TR switch terminal D and TCM terminal 2K• TR switch misadjustment• TR switch malfunction• TCM connector or terminal malfunction• TCM malfunction

TR SWITCH WIRING HARNESS-SIDE CONNECTOR



TCM WIRING HARNESS-SIDE CONNECTOR

1AF	1AA	1Y	1R	1P			1H	1D			
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L	1I	1E	1A
1AH	1AD			1W	1T			1M	1J	1F	1B
1AI	1AE			1X	1U			1N	1K	1G	1C

2AF	2AB			2R	2O	2J	2F				
2AG	2AC	2Y	2V	2S	2P	2M	2K	2G	2C		
2AH	2AD	2Z	2W	2T	2Q	2N	2L	2H	2D	2A	
2AI	2AE	2AA	2X	2U				2I	2E	2B	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA on the repair order, then go to the next step.</p>
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION [SJ6A-EL].)</p>
3	INSPECT TR SWITCH CONNECTOR FOR POOR CONNECTION	<p>Yes Go to the next step.</p>

	<ul style="list-style-type: none">• Disconnect the TR switch connector.• Inspect for poor connection at TR switch terminals B, C, D and H (part-side) (such as damaged/pulled-out pins, corrosion)• Are TR switch terminals normal?	No	Repair terminals, then go to Step 8.
4	INSPECT TR SWITCH CIRCUIT <ul style="list-style-type: none">• Connect the TCM connector.• Turn the ignition switch to the ON position. (engine off)• Inspect the voltage between TCM terminal (wiring harness-side) and body ground.<ul style="list-style-type: none">▪ TCM terminal 2O<ul style="list-style-type: none">• P position: B+• Other positions and all ranges: 0V▪ TCM terminal 2M<ul style="list-style-type: none">• R position: B+• Other position and all ranges: 0V▪ TCM terminal 2N<ul style="list-style-type: none">• N position: B+• Other position and all range: 0V▪ TCM terminal 2K<ul style="list-style-type: none">• D range: B+• Other ranges and all positions: 0V• Are any of following terminal voltage turned on for even a moment while shifting selector lever slowly from P position to D range?	Yes	Go to Step 8.
		No	Go to the next step.
5	INSPECT TR SWITCH CIRCUIT <ul style="list-style-type: none">• Are there two or more terminals where the voltage is abnormal in Step 3?	Yes	Adjust the TR switch, then go to Step 8. (See TRANSMISSION RANGE (TR) SWITCH ADJUSTMENT [SJ6A-EL].)
		No	Go to the next step.
6	INSPECT TR SWITCH <ul style="list-style-type: none">• Inspect the TR switch. (See TRANSMISSION RANGE (TR) SWITCH INSPECTION [SJ6A-EL].)	Yes	Go to the next step.
		No	Replace the TR switch, then go to Step 8.

	Is the TR switch normal?		(See TRANSMISSION RANGE (TR) SWITCH REMOVAL/INSTALLATION [SJ6A-EL].)
7	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the TCM connector. • Inspect for poor connection at TCM terminals 2O, 2K, 2M and 2N (such as damaged/pulled-out pins, corrosion). • Is there any malfunction? 	Yes	Repair or replace the connector and/or terminal, then go to the next step.
		No	Go to the next step.
8	VERIFY TROUBLESHOOTING OF DTC P0707 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC from the memory using the M-MDS. • Drive the vehicle in each range (P—D). • Is same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	Troubleshooting completed.

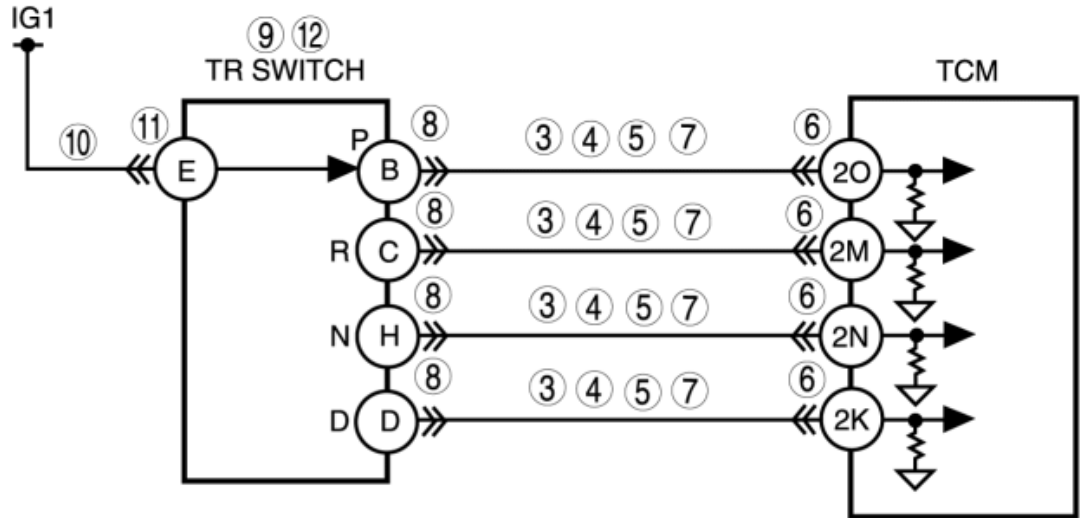
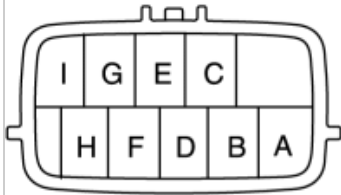
2011 - RX-8 - Transmission/Transaxle

DTC P0708 [SJ6A-EL]

DTC P0708	Transmission range (TR) switch circuit high input (open circuit)
DETECTION CONDITION	<ul style="list-style-type: none"> Vehicle speed is 30 km/h {18.6 mph} or more, and no range signal is input from the TR switch. <p>Diagnostic support note:</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles. PENDING CODE is available. FREEZE FRAME DATA is available. The AT warning light illuminates. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Short to ground in wiring harness between TR switch terminal B and TCM terminal 2O Short to ground in wiring harness between TR switch terminal C and TCM terminal 2M Short to ground in wiring harness between TR switch terminal H and TCM terminal 2N Short to ground in wiring harness between TR switch terminal D and TCM terminal 2K Open circuit in wiring harness between TR switch terminal B and TCM terminal 2O Open circuit in wiring harness between TR switch terminal C and TCM terminal 2M Open circuit in wiring harness between TR switch terminal H and TCM terminal 2N Open circuit in wiring harness between TR switch terminal D and TCM terminal 2K TR switch misadjustment TCM connector or terminal malfunction TR switch connector or terminal malfunction TR switch malfunction Short to ground in wiring harness between TR switch terminal E and ignition switch (IG1) Open circuit in wiring harness between TR switch terminal E and ignition switch (IG1)

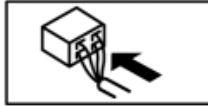
- TCM malfunction

TR SWITCH
WIRING HARNESS-SIDE
CONNECTOR

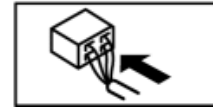


TCM WIRING HARNESS-SIDE CONNECTOR

1AF	1AA	1Y	1R	1P			1H	1D			
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L	1I	1E	1A
1AH	1AD			1W	1T			1M	1J	1F	1B
1AI	1AE			1X	1U			1N	1K	1G	1C



2AF	2AB			2R	2O	2J	2F				
2AG	2AC	2Y	2V	2S	2P	2M	2K	2G	2C		
2AH	2AD	2Z	2W	2T	2Q	2N	2L	2H	2D	2A	
2AI	2AE	2AA	2X	2U				2I	2E	2B	



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA on the repair order, then go to the next step.</p>
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION [SJ6A-EL].)</p>

3	INSPECT TR SWITCH CIRCUIT <ul style="list-style-type: none"> • Connect the TCM connector. • Turn the ignition switch to the ON position. (engine off) • Inspect the voltage between TCM terminal (wiring harness-side) and body ground. <ul style="list-style-type: none"> ▪ TCM terminal 2O <ul style="list-style-type: none"> • P position: B+ • Other positions and all ranges: 0V ▪ TCM terminal 2M <ul style="list-style-type: none"> • R position: B+ • Other position and all ranges: 0V ▪ TCM terminal 2N <ul style="list-style-type: none"> • N position: B+ • Other position and all range: 0V ▪ TCM terminal 2K <ul style="list-style-type: none"> • D range: B+ • Other ranges and all positions: 0V • Are any of following terminal voltage turned on for even a moment while shifting selector lever slowly from P position to D range? 		YesGo to Step 13.
			NoGo to the next step.
4	INSPECT TR SWITCH CIRCUIT <ul style="list-style-type: none"> • Are all terminal voltage 0 V in Step 3? 		YesGo to Step 10.
			NoGo to the next step.
5	INSPECT TR SWITCH CIRCUIT <ul style="list-style-type: none"> • Are there two or more terminals where the voltage is abnormal in Step 3? 		YesAdjust the TR switch, then go to Step 13. (See TRANSMISSION RANGE (TR) SWITCH ADJUSTMENT [SJ6A-EL] .)
			NoGo to the next step.
6	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the TCM connector. • Inspect for poor connection at TCM terminals 2O, 2K, 2M and 2N (such as damaged/pulled-out pins, corrosion). 		YesRepair or replace the connector and/or terminal, then go to Step 13.
			NoGo to the next step.

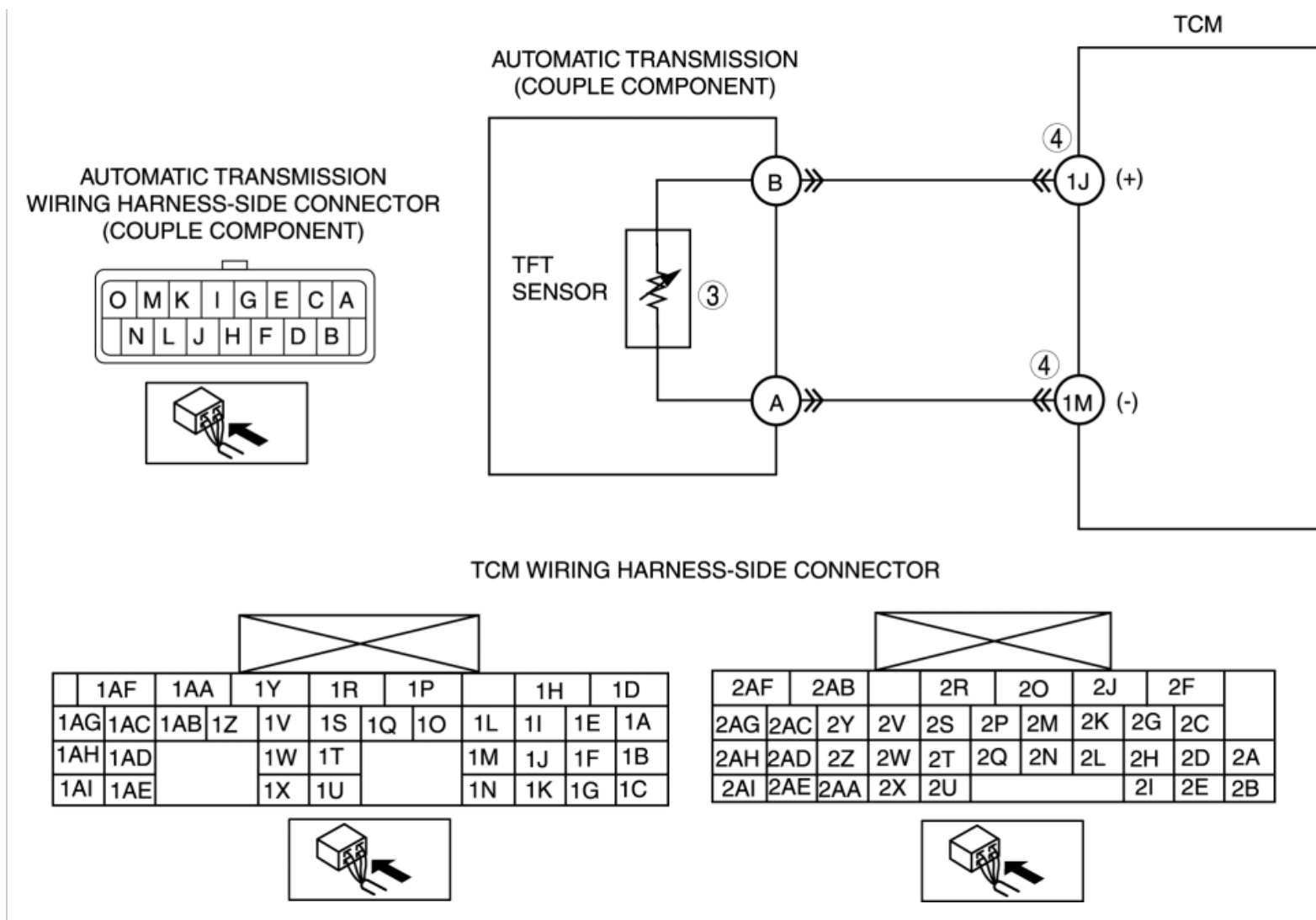
	<ul style="list-style-type: none"> Is there any malfunction? 		
7	INSPECT TR SWITCH SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Inspect for continuity between TR switch terminals (wiring harness-side) and body ground. <ul style="list-style-type: none"> P position: B and body ground R position: C and body ground N position: H and body ground D range: D and body ground Is there continuity? 	YesRepair or replace the wiring harness for short to ground, go to Step 12.	NoGo to the next step.
8	INSPECT TR SWITCH CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Disconnect the TR switch connector. Inspect for poor connection at TR switch terminals B, C, D and H (part-side) (such as damaged/pulled-out pins, corrosion) Are TR switch terminals normal? 	YesGo to the next step.	NoRepair terminals or replace the TR switch, then go to Step 13. (See TRANSMISSION RANGE (TR) SWITCH REMOVAL/INSTALLATION [SJ6A-EL].)
9	INSPECT TR SWITCH <ul style="list-style-type: none"> Inspect the TR switch. (See TRANSMISSION RANGE (TR) SWITCH INSPECTION [SJ6A-EL].) Is the TR switch normal? 	YesRepair or replace the wiring harness for open circuit, then go to Step 13.	NoReplace the TR switch, then go to Step 13. (See TRANSMISSION RANGE (TR) SWITCH REMOVAL/INSTALLATION [SJ6A-EL].)
10	INSPECT TR SWITCH POWER CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TR switch connector. Turn the ignition switch to the ON position (engine off). Inspect the voltage at TR switch (wiring harness-side) terminal E. Is there B+ at TR switch (wiring harness-side) terminal E? 	YesGo to the next step.	NoInspect the METER 15 A fuse. <ul style="list-style-type: none"> If normal, repair or replace the wiring harness, then go to Step 13.
11	INSPECT TR SWITCH CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Disconnect the TR switch connector. Inspect for poor connection at TR switch terminal E (part-side) (such as damaged/pulled-out pins, corrosion) Are TR switch terminals normal? 	YesGo to the next step.	NoRepair terminals or replace the TR switch, then go to Step 13. (See TRANSMISSION RANGE (TR) SWITCH REMOVAL/INSTALLATION [SJ6A-EL].)
	INSPECT TR SWITCH		

12	<ul style="list-style-type: none"> Inspect the TR switch. <p>(See TRANSMISSION RANGE (TR) SWITCH INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> Is the TR switch normal? 	Yes	Go to the next step.
		No	Replace the TR switch, then go to the next step. (See TRANSMISSION RANGE (TR) SWITCH REMOVAL/INSTALLATION [SJ6A-EL].)
13	VERIFY TROUBLESHOOTING OF DTC P0708 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. Drive the vehicle in each range (P—D). Drive the vehicle with vehicle speed of 30 km/h {18.6 mph} or more for 2 s or more. Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
14	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	Troubleshooting completed.

2011 - RX-8 - Transmission/Transaxle

DTC P0711 [SJ6A-EL]

DTC P0711	Transmission fluid temperature (TFT) sensor malfunction (stuck)
DETECTION CONDITION	<ul style="list-style-type: none">• Change in ATF temperature cannot be detected for 10 min or more when driving in D range or R position. <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles.• PENDING CODE is available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TFT sensor malfunction• TCM connector or terminal malfunction• TCM malfunction



Diagnostic procedure

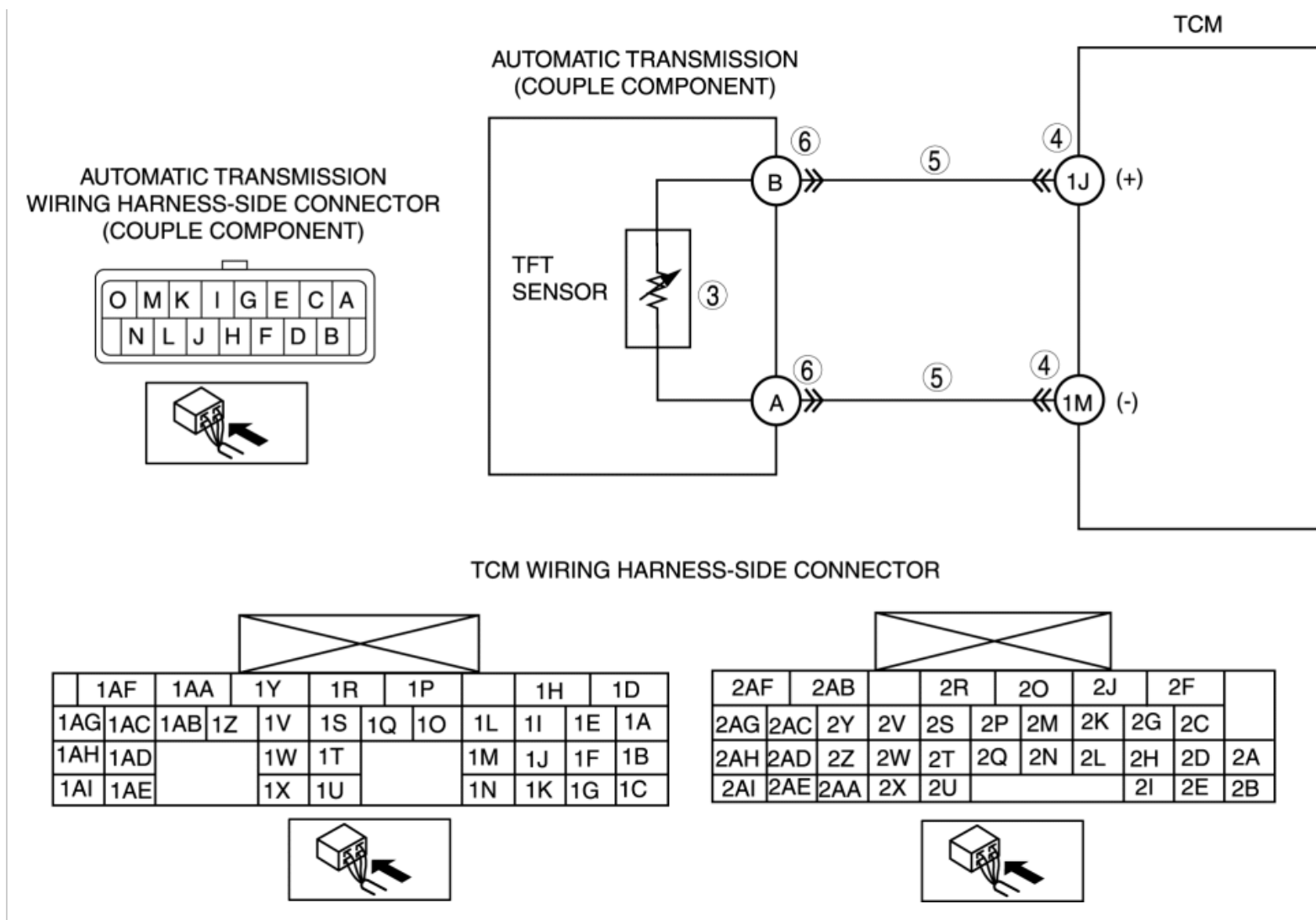
STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT RESISTANCE OF TFT SENSOR CIRCUIT <ul style="list-style-type: none"> Inspect for resistance between TCM terminals 1J and 1M (wiring harness-side). Is resistance as shown below? <ul style="list-style-type: none"> ATF temperature 10°C {50°F}: 	Yes Go to the next step.
		No Replace the TFT sensor, then go to Step 5. (See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION [SJ6A-FL] .)

	<p>approx. 6.445 kilohms</p> <ul style="list-style-type: none"> ATF temperature 25°C {77°F}: approx. 3.5 kilohms ATF temperature 110°C {230°F}: approx. 0.247 kilohms <p>(See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION [SJ6A-EL].)</p>		
4	<p>INSPECT TCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. Inspect for poor connection at TCM terminals 1J and 1M (such as damaged/pulled-out pins, corrosion). Are terminals normal? 	<p>Yes Go to the next step.</p> <p>No Repair or replace the connector and/or terminal, then go to the next step.</p>	
5	<p>VERIFY TROUBLESHOOTING OF DTC P0711 COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. Is the PENDING CODE same as the DTC present? 	<p>Yes Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)</p> <p>No Go to the next step.</p>	
6	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].) Are any DTCs present? 	<p>Yes Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)</p> <p>No Troubleshooting completed.</p>	

2011 - RX-8 - Transmission/Transaxle

DTC P0712 [SJ6A-EL]

DTC P0712	Transmission fluid temperature (TFT) sensor circuit malfunction (short to ground)
DETECTION CONDITION	<ul style="list-style-type: none">• If the TCM detects the following condition for 10 s or more, the TCM determines that the TFT sensor circuit has a malfunction.<ul style="list-style-type: none">▪ ATF temperature 200 °C {392 °F} or more <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition during first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TFT sensor malfunction• TCM connector or terminal malfunction• Short to ground in wiring harness between TFT sensor and TCM terminal 1J• Short to ground in wiring harness between TFT sensor and TCM terminal 1M• Couple component connector or terminal malfunction• TCM malfunction



Diagnostic procedure

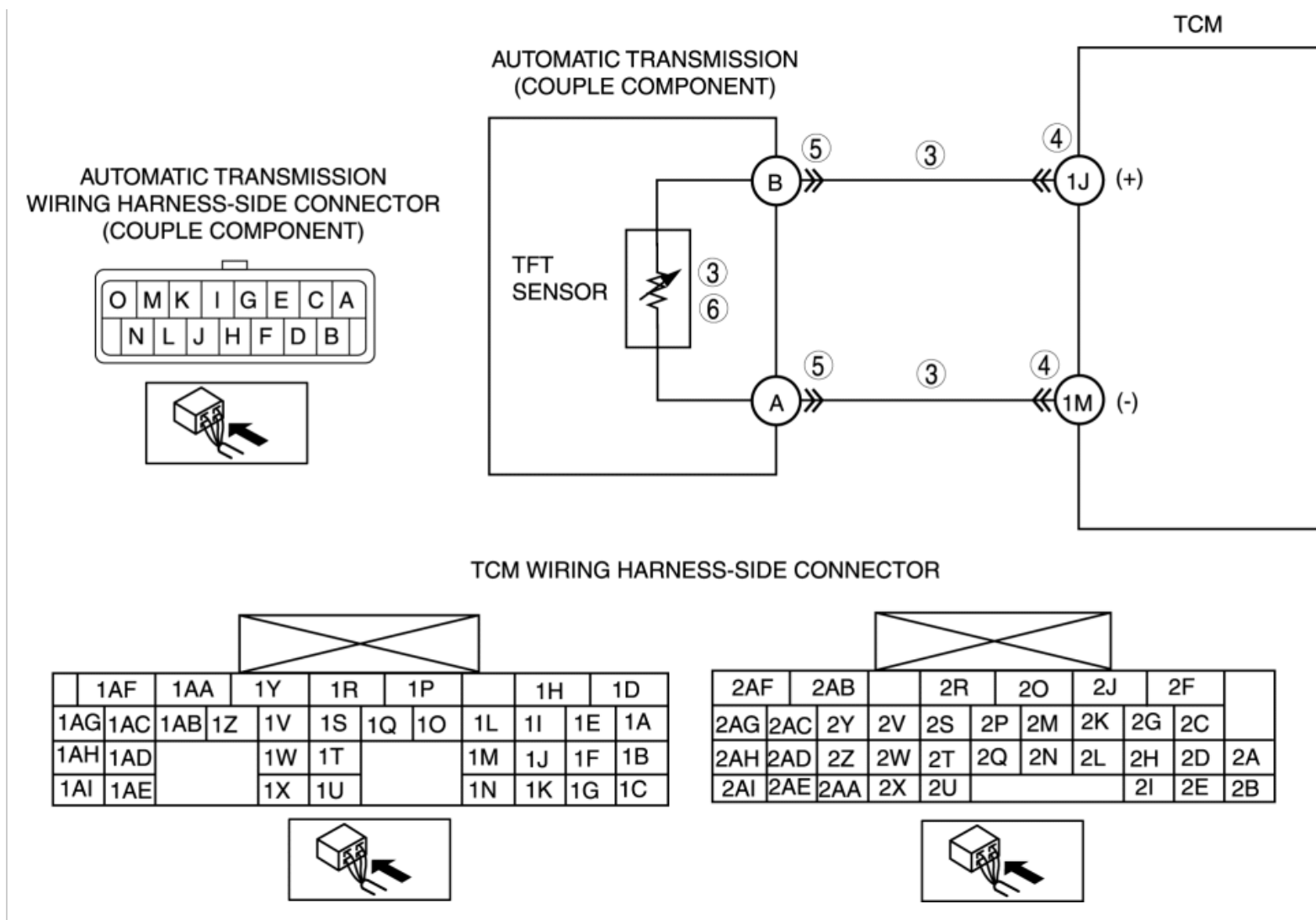
STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	YesGo to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	YesPerform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT RESISTANCE OF TFT SENSOR CIRCUIT <ul style="list-style-type: none"> Inspect for resistance between couple component terminals 1J and 1M (wiring harness-side). Is resistance as shown below? <ul style="list-style-type: none"> ATF temperature 10°C {50°F}: 	YesGo to the next step.
		No Replace the TFT sensor, then go to Step 5. (See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION [SJ6A-FL] .)

	<p>approx. 6.445 kilohms</p> <ul style="list-style-type: none"> ATF temperature 25°C {77°F}: approx. 3.5 kilohms ATF temperature 110°C {230°F}: approx. 0.247 kilohms <p>(See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION [SJ6A-EL].)</p>		
4	<p>INSPECT TCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. Inspect for poor connection at TCM terminals 1J and 1M (such as damaged/pulled-out pins, corrosion). Are terminals normal? 	<p>Yes Go to Step 7.</p> <p>No Repair or replace the connector and/or terminal, then go to Step 7.</p>	
5	<p>INSPECT TFT SENSOR SIGNAL CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> Inspect for continuity between couple component terminals (wiring harness-side) and body ground. <ul style="list-style-type: none"> Terminal A and body ground Terminal B and body ground Is there continuity? 	<p>Yes Repair or replace the wiring harness for short to ground, go to Step 7.</p> <p>No Go to the next step.</p>	
6	<p>INSPECT COUPLE COMPONENT CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the couple component connector. Inspect for poor connection at couple component terminals A and B (such as damaged/pulled-out pins, corrosion). Are terminals normal? 	<p>Yes Replace the TFT sensor, then go to the next step. (See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION [SJ6A-EL].)</p> <p>No Repair or replace the connector and/or terminal, then go to the next step.</p>	
7	<p>VERIFY TROUBLESHOOTING OF DTC P0712 COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. Is same DTC present? 	<p>Yes Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)</p> <p>No Go to the next step.</p>	
8	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].) Are any DTCs present? 	<p>Yes Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)</p> <p>No Troubleshooting completed.</p>	

2011 - RX-8 - Transmission/Transaxle

DTC P0713 [SJ6A-EL]

DTC P0713	Transmission fluid temperature (TFT) sensor circuit malfunction (short to power/open circuit)
DETECTION CONDITION	<ul style="list-style-type: none">• If the TCM detects the following condition for 1 s or more, the TCM determines that the TFT sensor circuit has a malfunction.<ul style="list-style-type: none">▪ Engine warmed-up▪ ATF temperature less than –43 °C {–45.4 °F} <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition during first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Open circuit in wiring harness between TFT sensor and TCM terminal 1J• Open circuit in wiring harness between TFT sensor and TCM terminal 1M• TCM connector or terminal malfunction• Couple component connector or terminal malfunction• TFT sensor malfunction• TCM malfunction



Diagnostic procedure

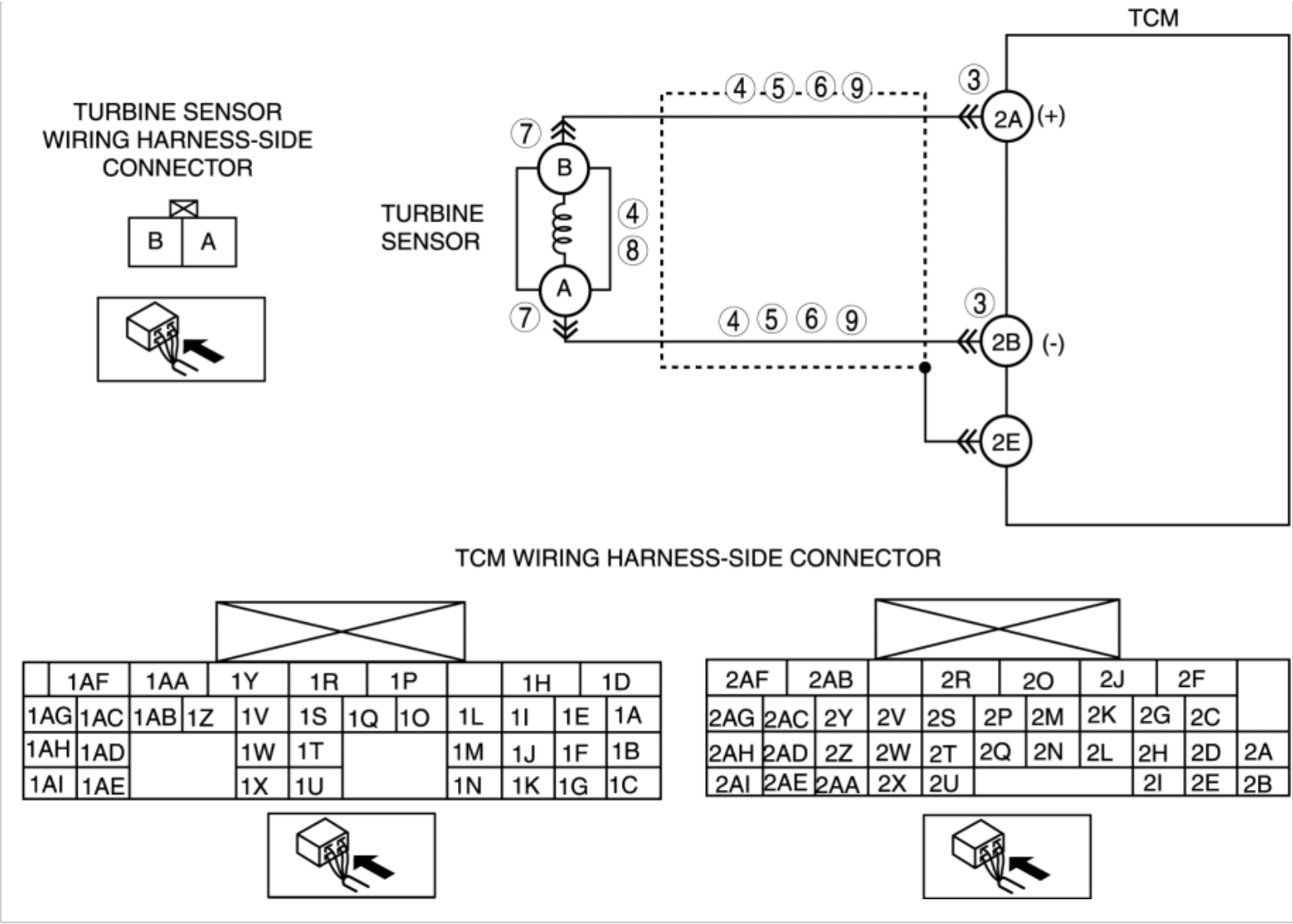
STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step. No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT RESISTANCE OF TFT SENSOR CIRCUIT <ul style="list-style-type: none"> Inspect for resistance between couple component terminals 1J and 1M (wiring harness-side). Is resistance as shown below? <ul style="list-style-type: none"> ATF temperature 10°C {50°F}: 	Yes Go to the next step. No Go to Step 5.

	<p>approx. 6.445 kilohms</p> <ul style="list-style-type: none"> ATF temperature 25°C {77°F}: approx. 3.5 kilohms ATF temperature 110°C {230°F}: approx. 0.247 kilohms <p>(See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION [SJ6A-EL].)</p>		
4	<p>INSPECT TCM CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. Inspect for poor connection at TCM terminals 1J and 1M (such as damaged/pulled-out pins, corrosion). Are terminals normal? 	<p>Yes Go to Step 7.</p> <p>No Repair or replace the connector and/or terminal, then go to Step 7.</p>	
5	<p>INSPECT COUPLE COMPONENT CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Disconnect the couple component connector. Inspect for poor connection at TCM terminals A and B (such as damaged/pulled-out pins, corrosion). Are terminals normal? 	<p>Yes Go to the next step.</p> <p>No Repair or replace the connector and/or terminal, then go to Step 7.</p>	
6	<p>INSPECT TFT SENSOR</p> <ul style="list-style-type: none"> Inspect the TFT sensor. <p>(See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> Is the TFT sensor normal? 	<p>Yes Repair or replace the wiring harness for open circuit, go to the next step.</p> <p>No Replace the TFT sensor, then go to the next step.</p> <p>(See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION [SJ6A-EL].)</p>	
7	<p>VERIFY TROUBLESHOOTING OF DTC P0713 COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. Is same DTC present? 	<p>Yes Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION [SJ6A-EL].)</p> <p>No Go to the next step.</p>	
8	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	<p>Yes Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [SJ6A-EL].)</p> <p>No Troubleshooting completed.</p>	

2011 - RX-8 - Transmission/Transaxle

DTC P0717 [SJ6A-EL]

DTC P0717	Turbine sensor circuit malfunction (open circuit/short circuit)
DETECTION CONDITION	<ul style="list-style-type: none">• When all conditions below are satisfied.<ul style="list-style-type: none">▪ D range of TR switch input▪ Vehicle speed signal 12 pulse input▪ Turbine sensor signal not input <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TCM connector or terminal malfunction• Short to ground in wiring harness between turbine sensor terminal B and TCM terminal 2A• Short to ground in wiring harness between turbine sensor terminal A and TCM terminal 2B• Short to power in wiring harness between turbine sensor terminal B and TCM terminal 2A• Short to power in wiring harness between turbine sensor terminal A and TCM terminal 2B• Turbine sensor connector or terminal malfunction• Turbine sensor malfunction• Open circuit between turbine sensor terminal B and TCM terminal 2A• Open circuit between turbine sensor terminal A and TCM terminal 2B• TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	YesGo to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	YesPerform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. 	YesGo to the next step.
		No Repair or replace the connector and/or

	<ul style="list-style-type: none"> Inspect for poor connection at TCM terminals 2A and 2B (such as damaged/pulled-out pins, corrosion). Are terminals normal? 	terminal, then go to Step 13.
4	INSPECT CONTINUITY OF TURBINE SENSOR CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between the TCM terminals 2A and 2B (wiring harness-side). Is there continuity? 	YesGo to the next step.
		No Go to Step 7.
5	INSPECT TURBINE SENSOR SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Inspect for continuity between the TCM terminals (wiring harness-side) and body ground. <ul style="list-style-type: none"> Terminal 2A and body ground Terminal 2B and body ground Is there continuity? 	YesGo to the next step.
		No Repair or replace the wiring harness for short to ground, then go to Step 10.
6	INSPECT TURBINE SENSOR CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Measure the voltage at TCM (wiring harness-side) terminals 2A and 2B. Is there 0 V at the TCM wiring harness-side connector terminals? 	YesGo to the next step.
		No Repair or replace the wiring harness for short to power supply, then go to Step 10.
7	INSPECT TERMINAL TURBINE SENSOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the turbine sensor connector. Inspect for poor connection at turbine sensor terminals A and B (such as damaged/pulled-out pins, corrosion). Are terminals normal? 	YesGo to the next step.
		No Repair or replace the connector and/or terminal, then go to Step 10.
8	INSPECT TURBINE SENSOR <ul style="list-style-type: none"> Inspect the turbine sensor. (See TURBINE SENSOR INSPECTION [SJ6A-EL].) Is the turbine sensor normal? 	YesGo to the next step.
		No Replace the turbine sensor, then go to Step 10. (See TURBINE SENSOR REMOVAL/INSTALLATION [SJ6A-EL] .)
9	INSPECT TURBINE SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between turbine sensor terminals (wiring harness-side) and TCM terminals (wiring harness-side). <ul style="list-style-type: none"> Terminal B and terminal 2A Terminal A and terminal 2B 	YesGo to the next step.
		No Repair or replace the wiring harness for open circuit, then go to the next step.

	<ul style="list-style-type: none"> • Is there continuity? 		
10	VERIFY TROUBLESHOOTING OF DTC P0717 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC from the memory using the M-MDS. • Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. • Is same DTC present? 	Yes Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)	
		No Go to the next step.	
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)	
		No Troubleshooting completed.	

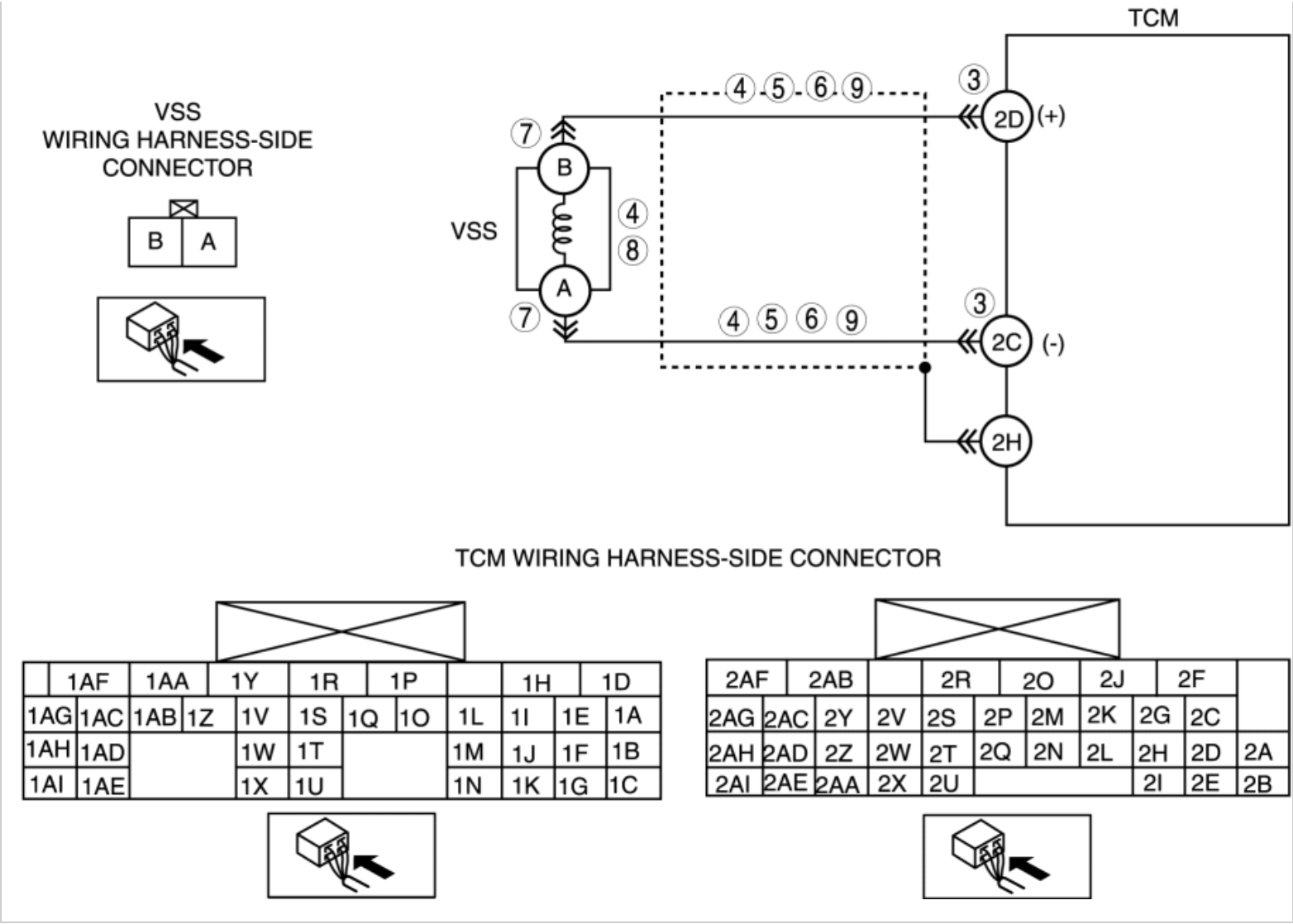
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

DTC P0722 [SJ6A-EL]

DTC P0722	Vehicle speed sensor (VSS) circuit malfunction (open circuit/short circuit)
DETECTION CONDITION	<ul style="list-style-type: none">• When all conditions below are satisfied.<ul style="list-style-type: none">▪ D range of TR switch input▪ Turbine speed signal 12 pulse input▪ VSS signal not input <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TCM connector or terminal malfunction• Short to ground in wiring harness between VSS terminal B and TCM terminal 2D• Short to ground in wiring harness between VSS terminal A and TCM terminal 2C• Short to power in wiring harness between VSS terminal B and TCM terminal 2D• Short to power in wiring harness between VSS terminal A and TCM terminal 2C• VSS connector or terminal malfunction• VSS malfunction• Open circuit between VSS terminal B and TCM terminal 2D• Open circuit between VSS terminal A and TCM terminal 2C• TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	YesGo to the next step.
		NoRecord the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	YesPerform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		NoGo to the next step.
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. 	YesGo to the next step.
		NoRepair or replace the connector and/or terminal, then go to Step 13.

	<ul style="list-style-type: none"> Inspect for poor connection at TCM terminals 2D and 2C (such as damaged/pulled-out pins, corrosion). Are terminals normal? 		
4	INSPECT CONTINUITY OF VSS CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between the couple component terminals 2D and 2C (wiring harness-side). Is there continuity? 	Yes	Go to the next step.
		No	Go to Step 7.
5	INSPECT VSS SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Inspect for continuity between the TCM terminals (wiring harness-side) and body ground. <ul style="list-style-type: none"> Terminal 2D and body ground Terminal 2C and body ground Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for short to ground, then go to Step 10.
6	INSPECT VSS CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Measure the voltage at TCM (wiring harness-side) terminals 2D and 2C. Is there 0 V at the TCM wiring harness-side connector terminals? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for short to power supply, then go to Step 10.
7	INSPECT TERMINAL VSS FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the VSS connector. Inspect for poor connection at VSS terminals A and B (such as damaged/pulled-out pins, corrosion). Are terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 10.
8	INSPECT VSS <ul style="list-style-type: none"> Inspect the VSS. (See VEHICLE SPEED SENSOR (VSS) INSPECTION [SJ6A-EL].) Is the VSS normal? 	Yes	Go to the next step.
		No	Replace the VSS, then go to Step 10. (See VEHICLE SPEED SENSOR (VSS) REMOVAL/INSTALLATION [SJ6A-EL] .)
9	INSPECT VSS CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between VSS terminals (wiring harness-side) and TCM terminals (wiring harness-side). <ul style="list-style-type: none"> Terminal B and terminal 2D Terminal A and terminal 2C Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for open circuit, then go to the next step.
	VERIFY TROUBLESHOOTING OF DTC P0722 COMPLETED		

10	<ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC from the memory using the M-MDS. • Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. • Is same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	Troubleshooting completed.

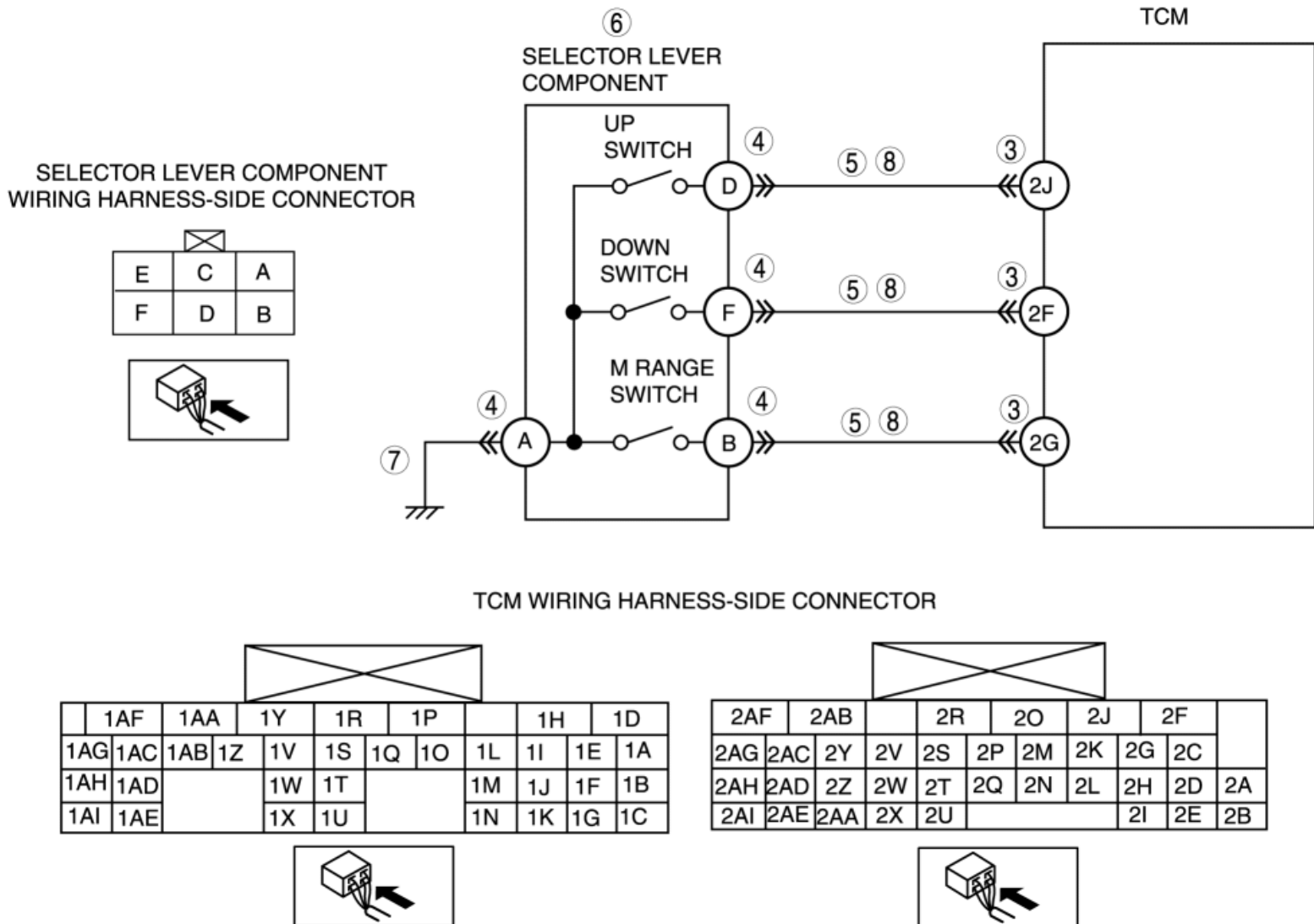
[< Previous](#) [Next >](#)

2011 - RX-8 - Transmission/Transaxle

DTC P0819 [SJ6A-EL]

DTC P0819	Manual switch/up switch/down switch circuit malfunction (open circuit/short circuit)
DETECTION CONDITION	<p>M range switch circuit malfunction</p> <ul style="list-style-type: none"> M range switch remains on for 2 s or more except in D range. <p>Up switch or down switch circuit malfunction</p> <ul style="list-style-type: none"> When all of the following conditions are met: <ul style="list-style-type: none"> M range switch off. Except D range Up or down switch remains on for 10 s or more. <p>Diagnostic support note:</p> <ul style="list-style-type: none"> The MIL does not illuminate if the TCM detects the above malfunction condition during the first drive cycle. A PENDING CODE is not available. FREEZE FRAME DATA is available. The AT warning light illuminates. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> TCM connector or terminal malfunction Selector lever component connector or terminal malfunction Short to ground in wiring harness between selector lever component terminal Band TCM terminal 2G Short to ground in wiring harness between selector lever component terminal D and TCM terminal 2J Short to ground in wiring harness between selector lever component terminal F and TCM terminal 2F M range switch malfunction Up switch malfunction Down switch malfunction Open circuit in wiring harness between selector lever component terminal A and ground Open circuit in wiring harness between selector lever component terminal B and TCM terminal 2G Open circuit in wiring harness between selector lever component terminal D and TCM terminal 2J

- Open circuit in wiring harness between selector lever component terminal F and TCM terminal 2F
- TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step. No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.

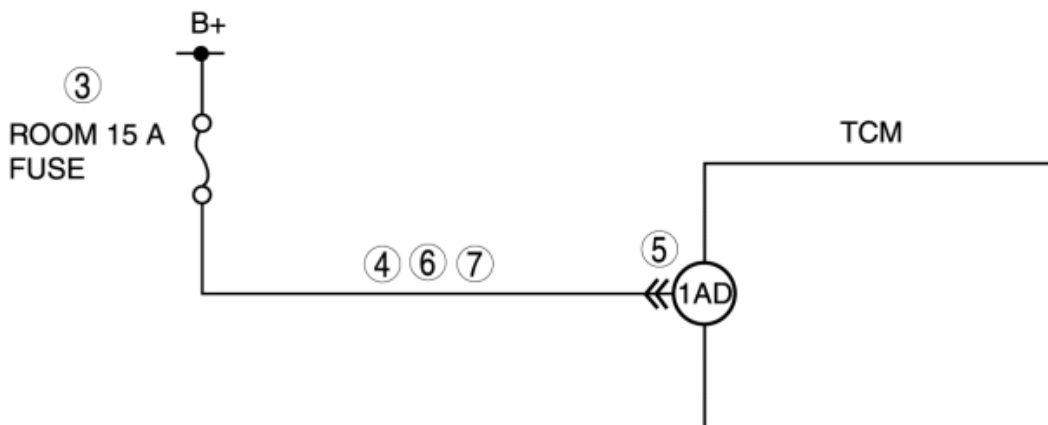
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Disconnect the TCM connector. • Inspect for poor connection at TCM terminals 2F, 2G and 2J (such as damaged/pulled-out pins, corrosion). • Are terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 9.
4	INSPECT SELECTOR LEVER COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Disconnect the selector lever component connector. • Inspect for poor connection at selector lever component terminals A, B, D and F (such as damaged/pulled-out pins, corrosion). • Are terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 9.
5	INSPECT M RANGE SWITCH, UP SWITCH, AND DOWN SWITCH CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Inspect for continuity between selector lever component terminals (wiring harness-side) and body ground. <ul style="list-style-type: none"> ▪ Terminal B and body ground (M range switch) ▪ Terminal D and body ground (up switch) ▪ Terminal F and body ground (down switch) • Is there continuity? 	Yes	Repair or replace the harness, then go to Step 9.
		No	Go to the next step.
6	INSPECT M RANGE SWITCH, UP SWITCH, AND DOWN SWITCH <ul style="list-style-type: none"> • Inspect the M range switch, up switch, and down switch. (See SELECTOR LEVER INSPECTION) • Are the switches normal? 	Yes	Go to the next step.
		No	Replace the selector lever, then go to Step 9. (See SELECTOR LEVER REMOVAL/INSTALLATION.)
7	INSPECT M RANGE SWITCH, UP SWITCH, AND DOWN SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Inspect for continuity between selector lever component terminal A (wiring harness-side) and body ground. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the harness, then go to Step 9.
8	INSPECT M RANGE SWITCH, UP SWITCH, AND DOWN SWITCH CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Inspect for continuity between TCM terminals (wiring harness-side) and selector lever component terminals (wiring harness-side). <ul style="list-style-type: none"> ▪ Terminal 2G and terminal B (M range switch) ▪ Terminal 2J and terminal D (up switch) ▪ Terminal 2F and terminal F (down switch) • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the harness, then go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P0819 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC from the memory using the M-MDS. • Drive the vehicle in M range, and change gears by shifting the 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)

	selector lever (operating the up and down switches).	No	Go to the next step.
	<ul style="list-style-type: none">• Is same DTC present?		
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].)• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	Troubleshooting completed.

2011 - RX-8 - Transmission/Transaxle

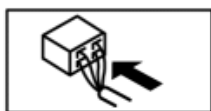
DTC P0882 [SJ6A-EL]

DTC P0882	TCM B+ low (less than 9 V)
DETECTION CONDITION	<ul style="list-style-type: none">• Voltage of less than 9 V detected at TCM terminal 1AD when engine is running. <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL does not illuminate if the TCM detects the above malfunction condition during the first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light not illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Melted ROOM 15 A fuse• TCM connector or terminal malfunction• Short to ground in wiring harness between ROOM 15 A fuse and TCM terminal 1AD• Open circuit in wiring harness between ROOM 15 A fuse and TCM terminal 1AD• TCM malfunction

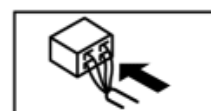


TCM WIRING HARNESS-SIDE CONNECTOR

<div></div>											
	1AF	1AA		1Y	1R	1P			1H	1D	
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L	1I	1E	1A
1AH	1AD			1W	1T			1M	1J	1F	1B
1AI	1AE			1X	1U			1N	1K	1G	1C



<div></div>													
2AF		2AB			2R		2O		2J		2F		
2AG	2AC	2Y	2V	2S	2P	2M	2K	2G	2C				
2AH	2AD	2Z	2W	2T	2Q	2N	2L	2H	2D	2A			
2AI	2AE	2AA	2X	2U					2I	2E	2B		



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT FUSE <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect ROOM 15 A fuse for malfunction. Is it normal? 	Yes Go to the next step.
		No <ul style="list-style-type: none"> If fuse has been melted, go to the next step. If fuse is not installed correctly, install it correctly, then go to Step 8.

4	INSPECT VOLTAGE OF POWER SUPPLY CIRCUIT <ul style="list-style-type: none"> Inspect for voltage TCM terminal 1AD (wiring harness-side). Is the voltage B+? 	Yes	Go to the next step.
		No	Go to Step 6.
5	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. Inspect for poor connection at TCM terminals 1AD (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	Yes	Go to Step 8.
		No	Repair or replace the connector and/or terminal, then go to Step 8.
6	INSPECT POWER SUPPLY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Disconnect the positive battery cable. Inspect for continuity between the fuse terminals and body ground. <ul style="list-style-type: none"> ROOM 15 A fuse terminal and body ground Is there continuity? 	Yes	Repair or replace the wiring harness and install new fuse, then go to Step 8.
		No	Go to the next step.
7	INSPECT POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between TCM terminal and fuse terminals (wiring harness-side). <ul style="list-style-type: none"> Terminal 1AD and ROOM IG 15 A fuse Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the harness, then go to the next step.
8	VERIFY TROUBLESHOOTING OF DTC P0882 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. Start the engine and warm it up completely. Is same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL] .)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL] .)
		No	Troubleshooting completed.

2011 - RX-8 - Transmission/Transaxle

DTC P0961 [SJ6A-EL]

DTC P0961	Line pressure control solenoid range/performance (stuck)
DETECTION CONDITION	<ul style="list-style-type: none"> Feedback current corresponding to solenoid current command value is irregular when engine is running. <p>Diagnostic support note:</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. A PENDING CODE is not available. FREEZE FRAME DATA is available. The AT warning light illuminates. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Deteriorated ATF ATF level low Oil pump malfunction Control valve body malfunction Transmission malfunction TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step. No Record the FREEZE FRAME DATA on the repair

			order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. 	
		No Go to the next step.	
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect the ATF condition. <ul style="list-style-type: none"> ▪ Clear red: Normal ▪ Light red (pink): Water mixed in fluid ▪ Reddish brown: Deteriorated ATF • Is it normal? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	Yes Go to the next step.	
		No If the ATF color is light red or reddish brown, replace ATF, then go to Step 6. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT [SJ6A-EL].)	
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Start the engine. • Warm up the AT. • Is the ATF level within the specification? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	Yes Go to the next step.	
		No Add ATF to the specified level, then go to Step 6. (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)	
5	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Start the engine. • Measure the line pressure. <p>(See MECHANICAL SYSTEM TEST [SJ6A-EL].)</p>	Yes Go to the next step.	
		No <ul style="list-style-type: none"> • All ranges: Replace the oil pump or control valve body, then go to the next step. • Any ranges: Replace the AT, 	

	<ul style="list-style-type: none"> Are the line pressures within the specifications? 		<p>then go the next step.</p> <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION [SJ6A-EL].)</p>
6	VERIFY TROUBLESHOOTING OF DTC P0961 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. Is same DTC present? 	Yes	<p>Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION [SJ6A-EL].)</p>
		No	<p>Go to the next step.</p>
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	Yes	<p>Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [SJ6A-EL].)</p>
		No	<p>Troubleshooting completed.</p>

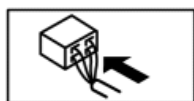
2011 - RX-8 - Transmission/Transaxle

DTC P0962 [SJ6A-EL]

DTC P0962	Line pressure control solenoid circuit malfunction (short to ground/open circuit)
DETECTION CONDITION	<ul style="list-style-type: none">• Open or short circuit in line pressure control solenoid signal system (while TCM monitors solenoid output voltage, the voltage that differs from the signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TCM connector or terminal malfunction• Short to ground in wiring harness between line pressure control solenoid terminal B and TCM terminal 1R• Short to ground in wiring harness between line pressure control solenoid terminal A and TCM terminal 1E• Couple component connector or terminal malfunction• Open circuit between line pressure control solenoid terminal B and TCM terminal 1R• Open circuit between line pressure control solenoid terminal A and TCM terminal 1E• Line pressure control solenoid connector or terminal malfunction• Line pressure control solenoid malfunction• TCM malfunction

**AUTOMATIC TRANSMISSION
WIRING HARNESS-SIDE CONNECTOR
(COUPLE COMPONENT)**

O	M	K	I	G	E	C	A
N	L	J	H	F	D	B	

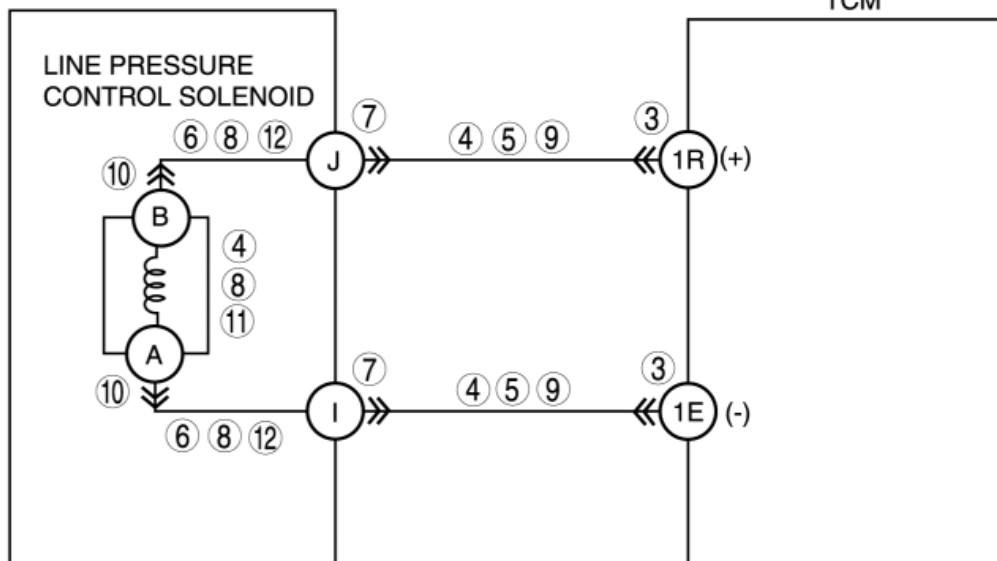


**LINE PRESSURE
CONTROL SOLENOID
WIRING HARNESS-SIDE
CONNECTOR**

B	A
---	---

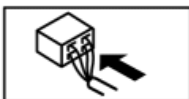


**AUTOMATIC TRANSMISSION
(COUPLE COMPONENT)**

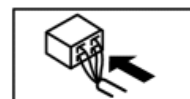


TCM WIRING HARNESS-SIDE CONNECTOR

1AF	1AA	1Y	1R	1P	1H	1D
1AG	1AC	1AB	1Z	1V	1S	1Q
1AH	1AD	1W	1T	1M	1J	1F
1AI	1AE	1X	1U	1N	1K	1G



2AF	2AB	2R	2O	2J	2F
2AG	2AC	2Y	2V	2S	2P
2AH	2AD	2Z	2W	2T	2Q
2AI	2AE	2AA	2X	2U	2I



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA on the repair order, then go to the next step.</p>
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION	<p>Yes Go to the next step.</p>

	<p>Turn the ignition switch to the LOCK position.</p> <ul style="list-style-type: none"> • Disconnect the TCM connector. • Inspect for poor connection at TCM terminals 1R and 1E (such as damaged/pulled-out pins, corrosion). • Are terminals normal? 		No	Repair or replace the connector and/or terminal, then go to Step 13.
4	<p>INSPECT RESISTANCE OF LINE PRESSURE CONTROL SOLENOID CIRCUIT</p> <ul style="list-style-type: none"> • Inspect for resistance between TCM terminals 1R and 1E (wiring harness-side). • Is the resistance within 5.0—5.6 ohms? <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p>		Yes	Go to the next step.
			No	Go to go to Step 7.
5	<p>INSPECT LINE PRESSURE CONTROL SOLENOID CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • Disconnect the couple component connector. • Inspect for continuity between TCM terminals (wiring harness-side) and body ground. <ul style="list-style-type: none"> ▪ Terminal 1R and body ground ▪ Terminal 1E and body ground • Is there continuity? 		Yes	Go to the next step.
			No	Repair or replace the wiring harness for short to ground, then go to Step 13.
6	<p>INSPECT LINE PRESSURE CONTROL SOLENOID CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • Inspect for continuity between couple component terminals (wiring harness-side) and body ground. <ul style="list-style-type: none"> ▪ Terminal J and body ground ▪ Terminal I and body ground • Is there continuity? 		Yes	Go to go to Step 13.
			No	Repair or replace the couple component, then go to the next step.
7	<p>INSPECT COUPLE COMPONENT CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the couple component connector. • Inspect for poor connection at couple component terminals J and I (such as damaged/pulled-out pins, corrosion). • Are terminals normal? 		Yes	Go to the next step.
			No	Repair or replace the connector and/or terminal, then go to Step 13.
8	<p>INSPECT RESISTANCE OF LINE PRESSURE CONTROL SOLENOID CIRCUIT</p> <ul style="list-style-type: none"> • Inspect the resistance between couple component (transmission case side) terminals J and I. • Is the resistance within 5.0—5.6 ohms? <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p>		Yes	Go to the next step.
			No	Go to Step 10.
9	<p>INSPECT LINE PRESSURE CONTROL SOLENOID CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> • Inspect for continuity between TCM terminals and couple component terminals (wiring harness-side). <ul style="list-style-type: none"> ▪ Terminal 1R and terminal J ▪ Terminal 1E and terminal I 		Yes	Go to Step 13.
			No	Repair or replace the wiring harness for open circuit, go to Step 13.

	<ul style="list-style-type: none"> Is there continuity? 		
10	INSPECT LINE PRESSURE CONTROL SOLENOID CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Disconnect the line pressure control solenoid connector. Inspect for poor connection at line pressure control solenoid terminals A and B (such as damaged/pulled-out pins, corrosion). Are terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
11	INSPECT LINE PRESSURE CONTROL SOLENOID <ul style="list-style-type: none"> Inspect the line pressure control solenoid. (See SOLENOID VALVE INSPECTION [SJ6A-EL].) Is the line pressure control solenoid normal? 	Yes	Go to the next step.
		No	Replace the control valve body, then go to Step 13. (See CONTROL VALVE BODY REMOVAL [SJ6A-EL].) (See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)
12	INSPECT LINE PRESSURE CONTROL SOLENOID CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between couple component terminals and line pressure control solenoid terminals (wiring harness-side). <ul style="list-style-type: none"> Terminal J and terminal B Terminal I and terminal A Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the couple component, then go to the next step.
13	VERIFY TROUBLESHOOTING OF DTC P0962 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. Is same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
14	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	Troubleshooting completed.

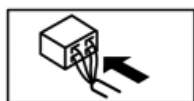
2011 - RX-8 - Transmission/Transaxle

DTC P0963 [SJ6A-EL]

DTC P0963	Line pressure control solenoid circuit malfunction (short to power)
DETECTION CONDITION	<ul style="list-style-type: none">• Short circuit in line pressure control solenoid signal system (while TCM monitors solenoid output voltage, the voltage that differs from the signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TCM connector or terminal malfunction• Short to power in wiring harness between line pressure control solenoid terminal B and TCM terminal 1R• Short to power in wiring harness between line pressure control solenoid terminal A and TCM terminal 1E• Line pressure control solenoid malfunction• TCM malfunction

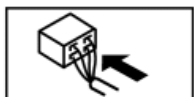
**AUTOMATIC TRANSMISSION
WIRING HARNESS-SIDE CONNECTOR
(COUPLE COMPONENT)**

O	M	K	I	G	E	C	A
N	L	J	H	F	D	B	

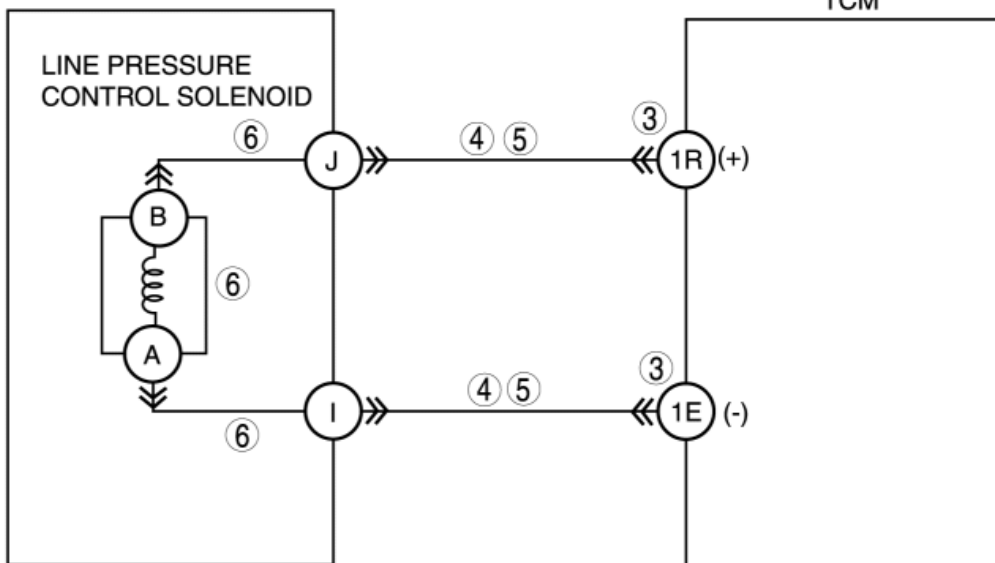


**LINE PRESSURE
CONTROL SOLENOID
WIRING HARNESS-SIDE
CONNECTOR**

B	A
---	---

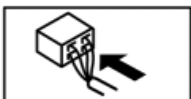


**AUTOMATIC TRANSMISSION
(COUPLE COMPONENT)**

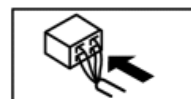


TCM WIRING HARNESS-SIDE CONNECTOR

<div></div>											
	1AF	1AA	1Y	1R	1P			1H	1D		
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L	1I	1E	1A
1AH	1AD			1W	1T			1M	1J	1F	1B
1AI	1AE			1X	1U			1N	1K	1G	1C



<div></div>													
2AF		2AB			2R		2O		2J		2F		
2AG	2AC	2Y	2V	2S	2P	2M	2K	2G	2C				
2AH	2AD	2Z	2W	2T	2Q	2N	2L	2H	2D	2A			
2AI	2AE	2AA	2X	2U				2I	2E	2B			



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED • Has the FREEZE FRAME DATA been recorded on the repair order?	Yes Go to the next step. No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available?	Yes Perform repair or diagnosis according to the available repair information. • If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION • Turn the ignition switch to the LOCK	Yes Go to the next step. No Go to the next step.

	<p>position.</p> <ul style="list-style-type: none"> • Disconnect the TCM connector. • Inspect for poor connection at TCM terminals 1R and 1E (such as damaged/pulled-out pins, corrosion). • Are terminals normal? 	No	Repair or replace the connector and/or terminal, then go to Step 7.
4	<p>INSPECT LINE PRESSURE CONTROL SOLENOID CIRCUIT FOR SHORT TO POWER SUPPLY</p> <ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off). • Measure the voltage at TCM (wiring harness-side) terminals 1R and 1E. • Is there 0 V at the TCM wiring harness-side connector terminals? 	Yes	Go to go to Step 7.
		No	Go to the next step.
5	<p>INSPECT LINE PRESSURE CONTROL SOLENOID CIRCUIT FOR SHORT TO POWER SUPPLY</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the couple component connector. • Turn the ignition switch to the ON position (engine off). • Measure the voltage at TCM (wiring harness-side) terminals 1R and 1E. • Is there 0 V at the TCM wiring harness-side connector terminals? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness (TCM—couple component connector) for short to power supply, then go to Step 7.
6	<p>INSPECT LINE PRESSURE CONTROL SOLENOID</p> <ul style="list-style-type: none"> • Inspect the line pressure control solenoid. <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> • Is the line pressure control solenoid normal? 	Yes	Repair or replace the wiring harness (couple component connector—line pressure control solenoid) for short to power supply, then go to the next step.
		No	<p>Replace the control valve body, then go to the next step.</p> <p>(See CONTROL VALVE BODY REMOVAL [SJ6A-EL].)</p> <p>(See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)</p>
7	<p>VERIFY TROUBLESHOOTING OF DTC P0963 COMPLETED</p> <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC from the memory using the M-MDS. • Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. • Is same DTC present? 	Yes	<p>Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION [SJ6A-EL].)</p>
		No	Go to the next step.
8	<p>VERIFY AFTER REPAIR PROCEDURE</p> <ul style="list-style-type: none"> • Perform the “After Repair Procedure”. <p>(See AFTER REPAIR PROCEDURE [SJ6A-EL].)</p>	Yes	<p>Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [SJ6A-EL].)</p>

	<ul style="list-style-type: none">• Are any DTCs present?	No	Troubleshooting completed.
--	---	----	----------------------------

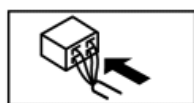
2011 - RX-8 - Transmission/Transaxle

DTC P0973 [SJ6A-EL]

DTC P0973	Shift solenoid A circuit malfunction (short to ground)
DETECTION CONDITION	<ul style="list-style-type: none">• Short to ground in shift solenoid A signal system (while TCM monitors solenoid output voltage, the voltage that differs from the signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition during first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TCM connector or terminal malfunction• Couple component connector or terminal malfunction• Shift solenoid A connector or terminal malfunction• Shift solenoid A malfunction• TCM malfunction

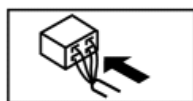
**AUTOMATIC TRANSMISSION
WIRING HARNESS-SIDE CONNECTOR
(COUPLE COMPONENT)**

O	M	K	I	G	E	C	A
N	L	J	H	F	D	B	

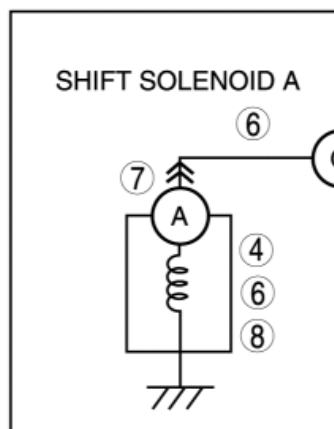


**SHIFT SOLENOID A WIRING
HARNESS-SIDE CONNECTOR**

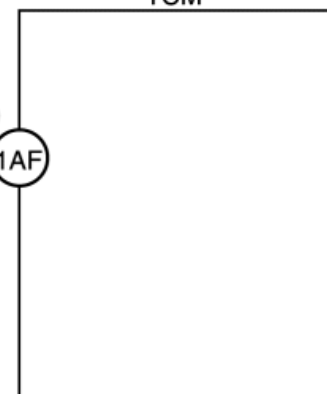
	A
--	---



**AUTOMATIC TRANSMISSION
(COUPLE COMPONENT)**

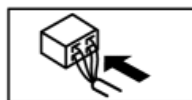


TCM

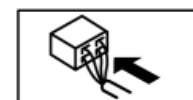


TCM WIRING HARNESS-SIDE CONNECTOR

	1AF	1AA	1Y	1R	1P		1H	1D
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L
1AH	1AD		1W	1T		1M	1J	1F
1AI	1AE		1X	1U		1N	1K	1G



2AF	2AB		2R	2O	2J	2F	
2AG	2AC	2Y	2V	2S	2P	2M	2K
2AH	2AD	2Z	2W	2T	2Q	2N	2L
2AI	2AE	2AA	2X	2U		2I	2E



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. Inspect for poor connection at TCM terminal 	Yes Go to the next step.
		No Repair or replace the connector and/or terminal, then go to Step 9.

	<p>1AF (such as damaged/pulled-out pins, corrosion).</p> <ul style="list-style-type: none"> Is terminal normal? 		
4	INSPECT RESISTANCE OF SHIFT SOLENOID A CIRCUIT <ul style="list-style-type: none"> Inspect for resistance between TCM terminal 1AF (wiring harness-side) and body ground. Is the resistance within 10—16 ohms? (See SOLENOID VALVE INSPECTION [SJ6A-EL].) 	Yes	Go to Step 9.
		No	Go to the next step.
5	INSPECT COUPLE COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the couple component connector. Inspect for poor connection at couple component terminal O (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 9.
6	INSPECT RESISTANCE OF SHIFT SOLENOID A CIRCUIT <ul style="list-style-type: none"> Inspect the resistance between couple component (transmission case side) terminal O and body ground. Is the resistance within 10—16 ohms? (See SOLENOID VALVE INSPECTION [SJ6A-EL].) 	Yes	Go to the next step.
		No	Go to Step 9.
7	INSPECT SHIFT SOLENOID A CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the shift solenoid A connector. Inspect for poor connection at shift solenoid A terminal A (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 9.
8	INSPECT SHIFT SOLENOID A <ul style="list-style-type: none"> Inspect the shift solenoid A. (See SOLENOID VALVE INSPECTION [SJ6A-EL].) Is the shift solenoid A normal? 	Yes	Repair or replace the wiring harness (couple component connector—shift solenoid A) for short to ground, then go to the next step.
		No	Replace the control valve body, then go to the next step. (See CONTROL VALVE BODY REMOVAL [SJ6A-EL].) (See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)
9	VERIFY TROUBLESHOOTING OF DTC P0973 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.

	<ul style="list-style-type: none">• Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR.• Is same DTC present?		
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].)• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	Troubleshooting completed.

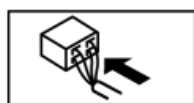
2011 - RX-8 - Transmission/Transaxle

DTC P0974 [SJ6A-EL]

DTC P0974	Shift solenoid A circuit malfunction (short to power/open circuit)
DETECTION CONDITION	<ul style="list-style-type: none">• Open or short circuit in shift solenoid A signal system (while TCM monitors solenoid output voltage, the voltage that differs from the signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition during first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TCM connector or terminal malfunction• Couple component connector or terminal malfunction• Shift solenoid A connector or terminal malfunction• Shift solenoid A malfunction• Short to power in wiring harness between shift solenoid A terminal A and TCM terminal 1AF• TCM malfunction

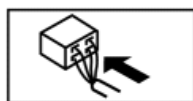
**AUTOMATIC TRANSMISSION
WIRING HARNESS-SIDE CONNECTOR
(COUPLE COMPONENT)**

O	M	K	I	G	E	C	A
N	L	J	H	F	D	B	

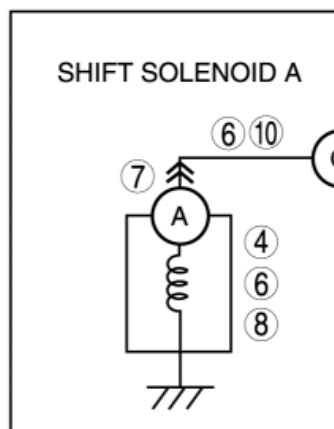


**SHIFT SOLENOID A WIRING
HARNESS-SIDE CONNECTOR**

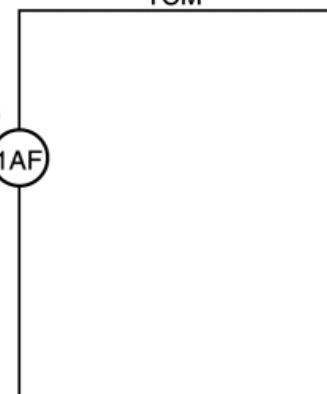
	A
--	---



**AUTOMATIC TRANSMISSION
(COUPLE COMPONENT)**

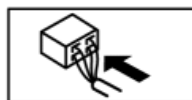


TCM

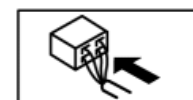


TCM WIRING HARNESS-SIDE CONNECTOR

	1AF	1AA	1Y	1R	1P		1H	1D
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L
1AH	1AD		1W	1T		1M	1J	1F
1AI	1AE		1X	1U		1N	1K	1G



2AF	2AB		2R	2O	2J	2F	
2AG	2AC	2Y	2V	2S	2P	2M	2K
2AH	2AD	2Z	2W	2T	2Q	2N	2L
2AI	2AE	2AA	2X	2U		2I	2E



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA on the repair order, then go to the next step.</p>
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. Inspect for poor connection at TCM terminal 	<p>Yes Go to the next step.</p> <p>No Repair or replace the connector and/or terminal, then go to Step 11.</p>

	<p>1AF (such as damaged/pulled-out pins, corrosion).</p> <ul style="list-style-type: none"> Is terminal normal? 		
4	<p>INSPECT RESISTANCE OF SHIFT SOLENOID A CIRCUIT</p> <ul style="list-style-type: none"> Inspect for resistance between TCM terminal 1AF (wiring harness-side) and body ground. Is the resistance within 10—16 ohms? <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p>	<p>Yes Go to Step 9.</p> <p>No Go to the next step.</p>	
5	<p>INSPECT COUPLE COMPONENT CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the couple component connector. Inspect for poor connection at couple component terminal O (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	<p>Yes Go to the next step.</p> <p>No Repair or replace the connector and/or terminal, then go to Step 11.</p>	
6	<p>INSPECT RESISTANCE OF SHIFT SOLENOID A CIRCUIT</p> <ul style="list-style-type: none"> Inspect the resistance between couple component (transmission case side) terminal O and body ground. Is the resistance within 10—16 ohms? <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p>	<p>Yes Go to Step 11.</p> <p>No Go to the next step.</p>	
7	<p>INSPECT SHIFT SOLENOID A CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the shift solenoid A connector. Inspect for poor connection at shift solenoid A terminal A (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	<p>Yes Go to the next step.</p> <p>No Repair or replace the connector and/or terminal, then go to Step 11.</p>	
8	<p>INSPECT SHIFT SOLENOID A</p> <ul style="list-style-type: none"> Inspect the shift solenoid A. <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> Is the shift solenoid A normal? 	<p>Yes Repair or replace the wiring harness (couple component—shift solenoid A) for short to ground, then go to Step 11.</p> <p>No Replace the control valve body, then go to Step 11.</p> <p>(See CONTROL VALVE BODY REMOVAL [SJ6A-EL].)</p> <p>(See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)</p>	
9	<p>INSPECT SHIFT SOLENOID A CIRCUIT FOR SHORT TO POWER SUPPLY</p> <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Measure the voltage at TCM (wiring harness-side) terminal 1AF. Is there 0 V at the TCM wiring harness-side 	<p>Yes Go to Step 11.</p> <p>No Go to the next step.</p>	

	connector terminals?		
10	INSPECT SHIFT SOLENOID A CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the couple component connector. • Turn the ignition switch to the ON position (engine off). • Measure the voltage at couple component (wiring harness-side) terminal O. • Is there 0 V at the TCM wiring harness-side connector terminals? 	Yes Repair or replace the wiring harness (TCM—couple component) for short to power supply, then go to the next step.	
		No Repair or replace the wiring harness (couple component—shift solenoid A) for short to power supply, then go to the next step.	
11	VERIFY TROUBLESHOOTING OF DTC P0974 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC from the memory using the M-MDS. • Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. • Is same DTC present? 	Yes Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL] .)	
		No Go to the next step.	
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the “After Repair Procedure”. (See AFTER REPAIR PROCEDURE [SJ6A-EL].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL] .)	
		No Troubleshooting completed.	

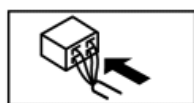
2011 - RX-8 - Transmission/Transaxle

DTC P0976 [SJ6A-EL]

DTC P0976	Shift solenoid B circuit malfunction (short to ground)
DETECTION CONDITION	<ul style="list-style-type: none">Short to ground in shift solenoid B signal system (while TCM monitors solenoid output voltage, the voltage that differs from the signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">The MIL illuminates if the TCM detects the above malfunction condition during first drive cycle.A PENDING CODE is not available.FREEZE FRAME DATA is available.The AT warning light illuminates.The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">TCM connector or terminal malfunctionCouple component connector or terminal malfunctionShift solenoid B connector or terminal malfunctionShift solenoid B malfunctionTCM malfunction

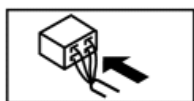
**AUTOMATIC TRANSMISSION
WIRING HARNESS-SIDE CONNECTOR
(COUPLE COMPONENT)**

O	M	K	I	G	E	C	A
N	L	J	H	F	D	B	

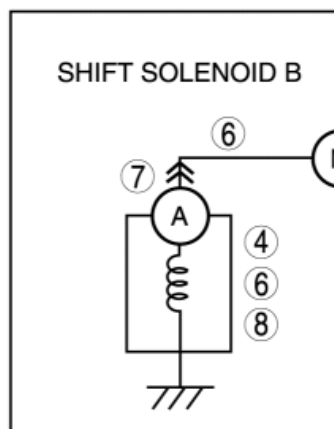


**SHIFT SOLENOID B WIRING
HARNESS-SIDE CONNECTOR**

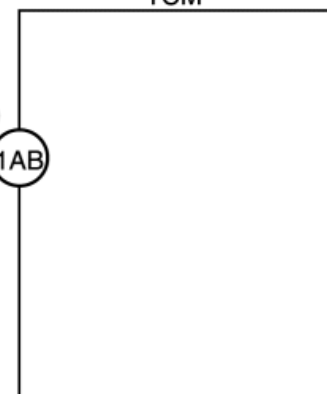
	A
--	---



**AUTOMATIC TRANSMISSION
(COUPLE COMPONENT)**

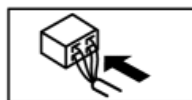


TCM

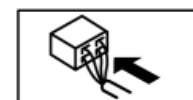


TCM WIRING HARNESS-SIDE CONNECTOR

<div></div>											
	1AF	1AA	1Y	1R	1P			1H	1D		
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L	1I	1E	1A
1AH	1AD			1W	1T			1M	1J	1F	1B
1AI	1AE			1X	1U			1N	1K	1G	1C



<div></div>													
2AF		2AB			2R		2O		2J		2F		
2AG	2AC	2Y	2V	2S	2P	2M	2K	2G	2C				
2AH	2AD	2Z	2W	2T	2Q	2N	2L	2H	2D	2A			
2AI	2AE	2AA	2X	2U				2I	2E	2B			



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. Inspect for poor connection at TCM terminal 	Yes Go to the next step.
		No Repair or replace the connector and/or terminal, then go to Step 9.

	<p>1AB (such as damaged/pulled-out pins, corrosion).</p> <ul style="list-style-type: none"> Is terminal normal? 		
4	INSPECT RESISTANCE OF SHIFT SOLENOID B CIRCUIT <ul style="list-style-type: none"> Inspect for resistance between TCM terminal 1AB (wiring harness-side) and body ground. Is the resistance within 10—16 ohms? (See SOLENOID VALVE INSPECTION [SJ6A-EL].) 	Yes	Go to Step 9.
		No	Go to the next step.
5	INSPECT COUPLE COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the couple component connector. Inspect for poor connection at couple component terminal N (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 9.
6	INSPECT RESISTANCE OF SHIFT SOLENOID B CIRCUIT <ul style="list-style-type: none"> Inspect the resistance between couple component (transmission case side) terminal N and body ground. Is the resistance within 10—16 ohms? (See SOLENOID VALVE INSPECTION [SJ6A-EL].) 	Yes	Go to the next step.
		No	Go to Step 9.
7	INSPECT SHIFT SOLENOID B CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the shift solenoid B connector. Inspect for poor connection at shift solenoid B terminal A (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 9.
8	INSPECT SHIFT SOLENOID B <ul style="list-style-type: none"> Inspect the shift solenoid B. (See SOLENOID VALVE INSPECTION [SJ6A-EL].) Is the shift solenoid B normal? 	Yes	Repair or replace the wiring harness (couple component connector—shift solenoid B) for short to ground, then go to the next step.
		No	Replace the control valve body, then go to the next step. (See CONTROL VALVE BODY REMOVAL [SJ6A-EL].) (See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)
9	VERIFY TROUBLESHOOTING OF DTC P0976 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.

	<ul style="list-style-type: none">• Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR.• Is same DTC present?		
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].)• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	Troubleshooting completed.

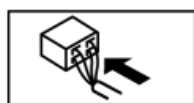
2011 - RX-8 - Transmission/Transaxle

DTC P0977 [SJ6A-EL]

DTC P0977	Shift solenoid B circuit malfunction (short to power/open circuit)
DETECTION CONDITION	<ul style="list-style-type: none">• Open or short circuit in shift solenoid B signal system (while TCM monitors solenoid output voltage, the voltage that differs from the signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition during first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TCM connector or terminal malfunction• Couple component connector or terminal malfunction• Shift solenoid B connector or terminal malfunction• Shift solenoid B malfunction• Short to power in wiring harness between shift solenoid B terminal A and TCM terminal 1AB• TCM malfunction

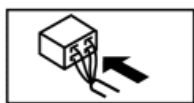
**AUTOMATIC TRANSMISSION
WIRING HARNESS-SIDE CONNECTOR
(COUPLE COMPONENT)**

O	M	K	I	G	E	C	A
N	L	J	H	F	D	B	

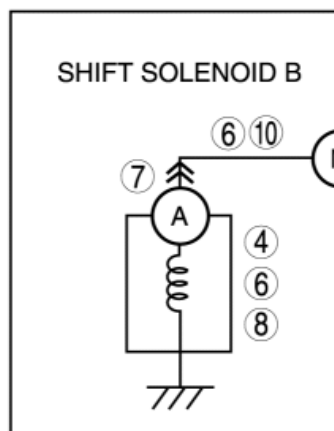


**SHIFT SOLENOID B WIRING
HARNESS-SIDE CONNECTOR**

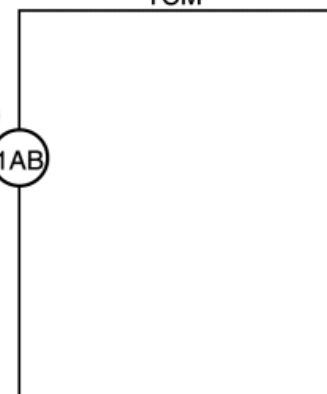
	A
--	---



**AUTOMATIC TRANSMISSION
(COUPLE COMPONENT)**

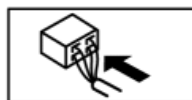


TCM

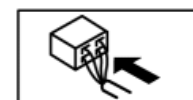


TCM WIRING HARNESS-SIDE CONNECTOR

	1AF	1AA	1Y	1R	1P		1H	1D	
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L	1I
1AH	1AD		1W	1T			1M	1J	1F
1AI	1AE		1X	1U			1N	1K	1G



2AF	2AB		2R	2O	2J	2F	
2AG	2AC	2Y	2V	2S	2P	2M	2K
2AH	2AD	2Z	2W	2T	2Q	2N	2L
2AI	2AE	2AA	2X	2U		2I	2E



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA on the repair order, then go to the next step.</p>
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. Inspect for poor connection at TCM terminal 	<p>Yes Go to the next step.</p> <p>No Repair or replace the connector and/or terminal, then go to Step 11.</p>

	<p>1AB (such as damaged/pulled-out pins, corrosion).</p> <ul style="list-style-type: none"> Is terminal normal? 		
4	INSPECT RESISTANCE OF SHIFT SOLENOID B CIRCUIT <ul style="list-style-type: none"> Inspect for resistance between TCM terminal 1AB (wiring harness-side) and body ground. Is the resistance within 10—16 ohms? (See SOLENOID VALVE INSPECTION [SJ6A-EL].) 	Yes	Go to Step 9.
		No	Go to the next step.
5	INSPECT COUPLE COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the couple component connector. Inspect for poor connection at couple component terminal N (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 11.
6	INSPECT RESISTANCE OF SHIFT SOLENOID B CIRCUIT <ul style="list-style-type: none"> Inspect the resistance between couple component (transmission case side) terminal N and body ground. Is the resistance within 10—16 ohms? (See SOLENOID VALVE INSPECTION [SJ6A-EL].) 	Yes	Go to Step 11.
		No	Go to the next step.
7	INSPECT SHIFT SOLENOID B CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the shift solenoid B connector. Inspect for poor connection at shift solenoid B terminal A (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 11.
8	INSPECT SHIFT SOLENOID B <ul style="list-style-type: none"> Inspect the shift solenoid B. (See SOLENOID VALVE INSPECTION [SJ6A-EL].) Is the shift solenoid B normal? 	Yes	Repair or replace the wiring harness (couple component—shift solenoid B) for short to ground, then go to Step 11.
		No	Replace the control valve body, then go to Step 11. (See CONTROL VALVE BODY REMOVAL [SJ6A-EL].) (See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)
9	INSPECT SHIFT SOLENOID B CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Measure the voltage at TCM (wiring harness-side) terminal 1AB. Is there 0 V at the TCM wiring harness-side 	Yes	Go to Step 11.
		No	Go to the next step.

	connector terminals?		
10	INSPECT SHIFT SOLENOID B CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the couple component connector. • Turn the ignition switch to the ON position (engine off). • Measure the voltage at couple component (wiring harness-side) terminal N. • Is there 0 V at the TCM wiring harness-side connector terminals? 	Yes Repair or replace the wiring harness (TCM—couple component) for short to power supply, then go to the next step.	
		No Repair or replace the wiring harness (couple component—shift solenoid B) for short to power supply, then go to the next step.	
11	VERIFY TROUBLESHOOTING OF DTC P0977 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC from the memory using the M-MDS. • Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. • Is same DTC present? 	Yes Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL] .)	
		No Go to the next step.	
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the “After Repair Procedure”. (See AFTER REPAIR PROCEDURE [SJ6A-EL].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL] .)	
		No Troubleshooting completed.	

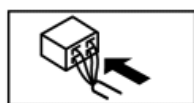
2011 - RX-8 - Transmission/Transaxle

DTC P0979 [SJ6A-EL]

DTC P0979	Shift solenoid C circuit malfunction (short to ground)
DETECTION CONDITION	<ul style="list-style-type: none">• Short to ground in shift solenoid C signal system (while TCM monitors solenoid output voltage, the voltage that differs from the signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition during first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TCM connector or terminal malfunction• Couple component connector or terminal malfunction• Shift solenoid C connector or terminal malfunction• Shift solenoid C malfunction• TCM malfunction

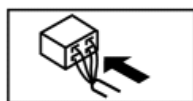
**AUTOMATIC TRANSMISSION
WIRING HARNESS-SIDE CONNECTOR
(COUPLE COMPONENT)**

O	M	K	I	G	E	C	A
N	L	J	H	F	D	B	

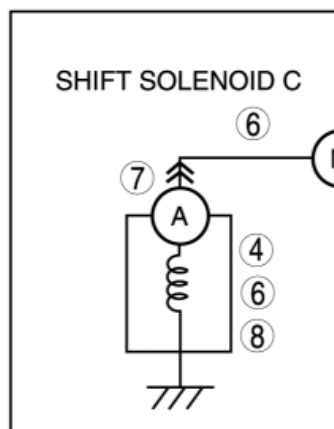


**SHIFT SOLENOID C WIRING
HARNESS-SIDE CONNECTOR**

	A
--	---



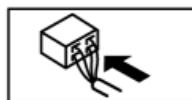
**AUTOMATIC TRANSMISSION
(COUPLE COMPONENT)**



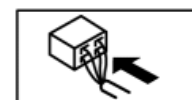
TCM

TCM WIRING HARNESS-SIDE CONNECTOR

	1AF	1AA	1Y	1R	1P		1H	1D	
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L	1I
1AH	1AD		1W	1T			1M	1J	1F
1AI	1AE		1X	1U			1N	1K	1G



	2AF	2AB		2R	2O	2J	2F	
2AG	2AC	2Y	2V	2S	2P	2M	2K	2G
2AH	2AD	2Z	2W	2T	2Q	2N	2L	2H
2AI	2AE	2AA	2X	2U			2I	2E



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. Inspect for poor connection at TCM terminal 	Yes Go to the next step.
		No Repair or replace the connector and/or terminal, then go to Step 9.

	<p>1AA(such as damaged/pulled-out pins, corrosion).</p> <ul style="list-style-type: none"> Is terminal normal? 		
4	<p>INSPECT RESISTANCE OF SHIFT SOLENOID C CIRCUIT</p> <ul style="list-style-type: none"> Inspect for resistance between TCM terminal 1AA (wiring harness-side) and body ground. Is the resistance within 10—16 ohms? <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p>	<p>Yes Go to Step 9.</p> <p>No Go to the next step.</p>	
5	<p>INSPECT COUPLE COMPONENT CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the couple component connector. Inspect for poor connection at couple component terminal M (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	<p>Yes Go to the next step.</p> <p>No Repair or replace the connector and/or terminal, then go to Step 9.</p>	
6	<p>INSPECT RESISTANCE OF SHIFT SOLENOID C CIRCUIT</p> <ul style="list-style-type: none"> Inspect the resistance between couple component (transmission case side) terminal M and body ground. Is the resistance within 10—16 ohms? <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p>	<p>Yes Go to the next step.</p> <p>No Go to Step 9.</p>	
7	<p>INSPECT SHIFT SOLENOID C CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the shift solenoid C connector. Inspect for poor connection at shift solenoid C terminal A (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	<p>Yes Go to the next step.</p> <p>No Repair or replace the connector and/or terminal, then go to Step 9.</p>	
8	<p>INSPECT SHIFT SOLENOID C</p> <ul style="list-style-type: none"> Inspect the shift solenoid C. <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> Is the shift solenoid C normal? 	<p>Yes Repair or replace the wiring harness (couple component connector—shift solenoid C) for short to ground, then go to the next step.</p> <p>No Replace the control valve body, then go to the next step.</p> <p>(See CONTROL VALVE BODY REMOVAL [SJ6A-EL].)</p> <p>(See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)</p>	
9	<p>VERIFY TROUBLESHOOTING OF DTC P0979 COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. 	<p>Yes Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION [SJ6A-EL].)</p> <p>No Go to the next step.</p>	

	<ul style="list-style-type: none">• Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR.• Is same DTC present?		
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].)• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	Troubleshooting completed.

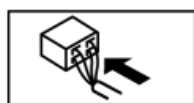
2011 - RX-8 - Transmission/Transaxle

DTC P0980 [SJ6A-EL]

DTC P0980	Shift solenoid C circuit malfunction (short to power/open circuit)
DETECTION CONDITION	<ul style="list-style-type: none">• Open or short circuit in shift solenoid C signal system (while TCM monitors solenoid output voltage, the voltage that differs from the signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition during first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TCM connector or terminal malfunction• Couple component connector or terminal malfunction• Shift solenoid C connector or terminal malfunction• Shift solenoid C malfunction• Short to power in wiring harness between shift solenoid C terminal A and TCM terminal 1AA• TCM malfunction

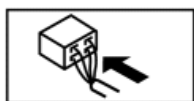
**AUTOMATIC TRANSMISSION
WIRING HARNESS-SIDE CONNECTOR
(COUPLE COMPONENT)**

O	M	K	I	G	E	C	A
N	L	J	H	F	D	B	

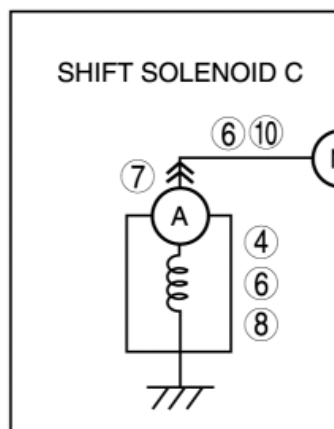


**SHIFT SOLENOID C WIRING
HARNESS-SIDE CONNECTOR**

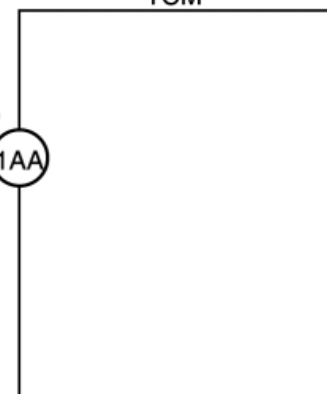
	A
--	---



**AUTOMATIC TRANSMISSION
(COUPLE COMPONENT)**

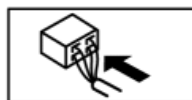


TCM

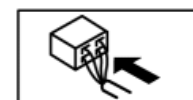


TCM WIRING HARNESS-SIDE CONNECTOR

	1AF	1AA	1Y	1R	1P		1H	1D
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L
1AH	1AD		1W	1T		1M	1J	1F
1AI	1AE		1X	1U		1N	1K	1G



2AF	2AB		2R	2O	2J	2F	
2AG	2AC	2Y	2V	2S	2P	2M	2K
2AH	2AD	2Z	2W	2T	2Q	2N	2L
2AI	2AE	2AA	2X	2U		2I	2E



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA on the repair order, then go to the next step.</p>
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. Inspect for poor connection at TCM terminal 	<p>Yes Go to the next step.</p> <p>No Repair or replace the connector and/or terminal, then go to Step 11.</p>

	<p>1AA (such as damaged/pulled-out pins, corrosion).</p> <ul style="list-style-type: none"> Is terminal normal? 		
4	INSPECT RESISTANCE OF SHIFT SOLENOID C CIRCUIT <ul style="list-style-type: none"> Inspect for resistance between TCM terminal 1AA (wiring harness-side) and body ground. Is the resistance within 10—16 ohms? (See SOLENOID VALVE INSPECTION [SJ6A-EL].) 	Yes	Go to Step 9.
		No	Go to the next step.
5	INSPECT COUPLE COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the couple component connector. Inspect for poor connection at couple component terminal M (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 11.
6	INSPECT RESISTANCE OF SHIFT SOLENOID C CIRCUIT <ul style="list-style-type: none"> Inspect the resistance between couple component (transmission case side) terminal M and body ground. Is the resistance within 10—16 ohms? (See SOLENOID VALVE INSPECTION [SJ6A-EL].) 	Yes	Go to Step 11.
		No	Go to the next step.
7	INSPECT SHIFT SOLENOID C CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the shift solenoid C connector. Inspect for poor connection at shift solenoid C terminal A (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 11.
8	INSPECT SHIFT SOLENOID C <ul style="list-style-type: none"> Inspect the shift solenoid C. (See SOLENOID VALVE INSPECTION [SJ6A-EL].) Is the shift solenoid C normal? 	Yes	Repair or replace the wiring harness (couple component—shift solenoid C) for short to ground, then go to Step 11.
		No	Replace the control valve body, then go to Step 11. (See CONTROL VALVE BODY REMOVAL [SJ6A-EL].) (See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)
9	INSPECT SHIFT SOLENOID C CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Measure the voltage at TCM (wiring harness-side) terminal 1AA. Is there 0 V at the TCM wiring harness-side 	Yes	Go to Step 11.
		No	Go to the next step.

	connector terminals?		
10	INSPECT SHIFT SOLENOID C CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the couple component connector. • Turn the ignition switch to the ON position (engine off). • Measure the voltage at couple component (wiring harness-side) terminal M. • Is there 0 V at the TCM wiring harness-side connector terminals? 	Yes Repair or replace the wiring harness (TCM—couple component) for short to power supply, then go to the next step.	
		No Repair or replace the wiring harness (couple component—shift solenoid C) for short to power supply, then go to the next step.	
11	VERIFY TROUBLESHOOTING OF DTC P0980 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC from the memory using the M-MDS. • Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. • Is same DTC present? 	Yes Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL] .)	
		No Go to the next step.	
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL] .)	
		No Troubleshooting completed.	

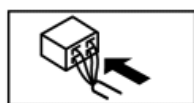
2011 - RX-8 - Transmission/Transaxle

DTC P0982 [SJ6A-EL]

DTC P0982	Shift solenoid D circuit malfunction (short to ground)
DETECTION CONDITION	<ul style="list-style-type: none">• Short to ground in shift solenoid D signal system (while TCM monitors solenoid output voltage, the voltage that differs from the signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition during first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TCM connector or terminal malfunction• Couple component connector or terminal malfunction• Shift solenoid D connector or terminal malfunction• Shift solenoid D malfunction• TCM malfunction

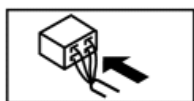
**AUTOMATIC TRANSMISSION
WIRING HARNESS-SIDE CONNECTOR
(COUPLE COMPONENT)**

O	M	K	I	G	E	C	A
N	L	J	H	F	D	B	

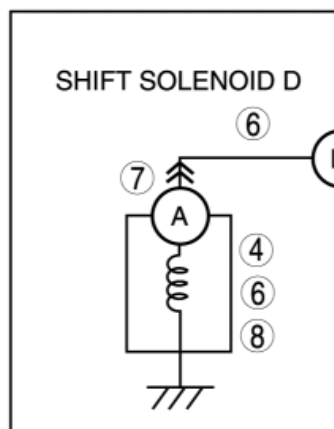


**SHIFT SOLENOID D WIRING
HARNESS-SIDE CONNECTOR**

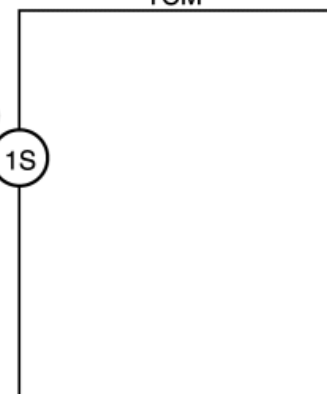
	A
--	---



**AUTOMATIC TRANSMISSION
(COUPLE COMPONENT)**

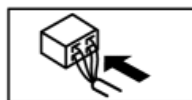


TCM

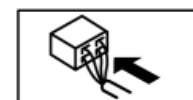


TCM WIRING HARNESS-SIDE CONNECTOR

	1AF	1AA	1Y	1R	1P		1H	1D
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L
1AH	1AD		1W	1T		1M	1J	1F
1AI	1AE		1X	1U		1N	1K	1G



2AF	2AB		2R	2O	2J	2F	
2AG	2AC	2Y	2V	2S	2P	2M	2K
2AH	2AD	2Z	2W	2T	2Q	2N	2L
2AI	2AE	2AA	2X	2U		2I	2E



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step. No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. Inspect for poor connection at TCM terminal 	Yes Go to the next step. No Repair or replace the connector and/or terminal, then go to Step 9.

	<p>1S (such as damaged/pulled-out pins, corrosion).</p> <ul style="list-style-type: none"> Is terminal normal? 		
4	<p>INSPECT RESISTANCE OF SHIFT SOLENOID D CIRCUIT</p> <ul style="list-style-type: none"> Inspect for resistance between TCM terminal 1S (wiring harness-side) and body ground. Is the resistance within 10—16 ohms? <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p>	<p>Yes Go to Step 9.</p> <p>No Go to the next step.</p>	
5	<p>INSPECT COUPLE COMPONENT CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the couple component connector. Inspect for poor connection at couple component terminal L (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	<p>Yes Go to the next step.</p> <p>No Repair or replace the connector and/or terminal, then go to Step 9.</p>	
6	<p>INSPECT RESISTANCE OF SHIFT SOLENOID D CIRCUIT</p> <ul style="list-style-type: none"> Inspect the resistance between couple component (transmission case side) terminal L and body ground. Is the resistance within 10—16 ohms? <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p>	<p>Yes Go to the next step.</p> <p>No Go to Step 9.</p>	
7	<p>INSPECT SHIFT SOLENOID D CONNECTOR FOR POOR CONNECTION</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the shift solenoid D connector. Inspect for poor connection at shift solenoid D terminal A (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	<p>Yes Go to the next step.</p> <p>No Repair or replace the connector and/or terminal, then go to Step 9.</p>	
8	<p>INSPECT SHIFT SOLENOID D</p> <ul style="list-style-type: none"> Inspect the shift solenoid D. <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> Is the shift solenoid D normal? 	<p>Yes Repair or replace the wiring harness (couple component connector—shift solenoid D) for short to ground, then go to the next step.</p> <p>No Replace the control valve body, then go to the next step.</p> <p>(See CONTROL VALVE BODY REMOVAL [SJ6A-EL].)</p> <p>(See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)</p>	
9	<p>VERIFY TROUBLESHOOTING OF DTC P0982 COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. 	<p>Yes Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION [SJ6A-EL].)</p> <p>No Go to the next step.</p>	

	<ul style="list-style-type: none">• Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR.• Is same DTC present?		
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].)• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	Troubleshooting completed.

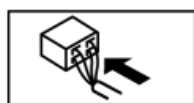
2011 - RX-8 - Transmission/Transaxle

DTC P0983 [SJ6A-EL]

DTC P0983	Shift solenoid D circuit malfunction (short to power/open circuit)
DETECTION CONDITION	<ul style="list-style-type: none">• Open or short circuit in shift solenoid D signal system (while TCM monitors solenoid output voltage, the voltage that differs from the signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition during first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TCM connector or terminal malfunction• Couple component connector or terminal malfunction• Shift solenoid D connector or terminal malfunction• Shift solenoid D malfunction• Short to power in wiring harness between shift solenoid D terminal A and TCM terminal 1S• TCM malfunction

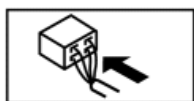
**AUTOMATIC TRANSMISSION
WIRING HARNESS-SIDE CONNECTOR
(COUPLE COMPONENT)**

O	M	K	I	G	E	C	A
N	L	J	H	F	D	B	

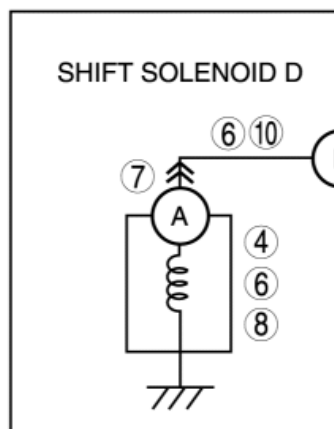


**SHIFT SOLENOID D WIRING
HARNESS-SIDE CONNECTOR**

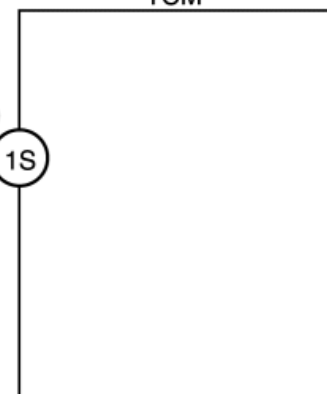
	A
--	---



**AUTOMATIC TRANSMISSION
(COUPLE COMPONENT)**

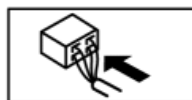


TCM

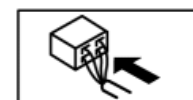


TCM WIRING HARNESS-SIDE CONNECTOR

	1AF	1AA	1Y	1R	1P		1H	1D	
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L	1I
1AH	1AD			1W	1T			1M	1J
1AI	1AE			1X	1U			1N	1K
								1G	1C



	2AF	2AB		2R	2O	2J	2F	
2AG	2AC	2Y	2V	2S	2P	2M	2K	2G
2AH	2AD	2Z	2W	2T	2Q	2N	2L	2H
2AI	2AE	2AA	2X	2U			2I	2E
								2B



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step. No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. Inspect for poor connection at TCM terminal 	Yes Go to the next step. No Repair or replace the connector and/or terminal, then go to Step 11.

	<p>1S (such as damaged/pulled-out pins, corrosion).</p> <ul style="list-style-type: none"> Is terminal normal? 		
4	INSPECT RESISTANCE OF SHIFT SOLENOID D CIRCUIT <ul style="list-style-type: none"> Inspect for resistance between TCM terminal 1S (wiring harness-side) and body ground. Is the resistance within 10—16 ohms? (See SOLENOID VALVE INSPECTION [SJ6A-EL].) 	Yes	Go to Step 9.
		No	Go to the next step.
5	INSPECT COUPLE COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the couple component connector. Inspect for poor connection at couple component terminal L (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 11.
6	INSPECT RESISTANCE OF SHIFT SOLENOID D CIRCUIT <ul style="list-style-type: none"> Inspect the resistance between couple component (transmission case side) terminal L and body ground. Is the resistance within 10—16 ohms? (See SOLENOID VALVE INSPECTION [SJ6A-EL].) 	Yes	Go to Step 11.
		No	Go to the next step.
7	INSPECT SHIFT SOLENOID D CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the shift solenoid D connector. Inspect for poor connection at shift solenoid D terminal A (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 11.
8	INSPECT SHIFT SOLENOID D <ul style="list-style-type: none"> Inspect the shift solenoid D. (See SOLENOID VALVE INSPECTION [SJ6A-EL].) Is the shift solenoid D normal? 	Yes	Repair or replace the wiring harness (couple component—shift solenoid D) for short to ground, then go to Step 11.
		No	Replace the control valve body, then go to Step 11. (See CONTROL VALVE BODY REMOVAL [SJ6A-EL].) (See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)
9	INSPECT SHIFT SOLENOID D CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Measure the voltage at TCM (wiring harness-side) terminal 1S. Is there 0 V at the TCM wiring harness-side 	Yes	Go to Step 11.
		No	Go to the next step.

	connector terminals?		
10	INSPECT SHIFT SOLENOID D CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the couple component connector. • Turn the ignition switch to the ON position (engine off). • Measure the voltage at couple component (wiring harness-side) terminal L. • Is there 0 V at the TCM wiring harness-side connector terminals? 	Yes Repair or replace the wiring harness (TCM—couple component) for short to power supply, then go to the next step.	No Repair or replace the wiring harness (couple component—shift solenoid D) for short to power supply, then go to the next step.
11	VERIFY TROUBLESHOOTING OF DTC P0983 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC from the memory using the M-MDS. • Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. • Is same DTC present? 	Yes Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)	No Go to the next step.
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)	No Troubleshooting completed.

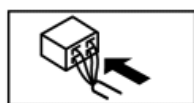
2011 - RX-8 - Transmission/Transaxle

DTC P0985 [SJ6A-EL]

DTC P0985	Shift solenoid E circuit malfunction (short to ground)
DETECTION CONDITION	<ul style="list-style-type: none">Short to ground in shift solenoid E signal system (while TCM monitors solenoid output voltage, the voltage that differs from the signal output by CPU in TCM is detected) <p>Diagnostic support note:</p> <ul style="list-style-type: none">The MIL illuminates if the TCM detects the above malfunction condition during first drive cycle.A PENDING CODE is not available.FREEZE FRAME DATA is available.The AT warning light illuminates.The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">TCM connector or terminal malfunctionCouple component connector or terminal malfunctionShift solenoid E connector or terminal malfunctionShift solenoid E malfunctionTCM malfunction

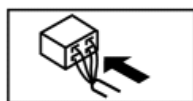
**AUTOMATIC TRANSMISSION
WIRING HARNESS-SIDE CONNECTOR
(COUPLE COMPONENT)**

O	M	K	I	G	E	C	A
N	L	J	H	F	D	B	

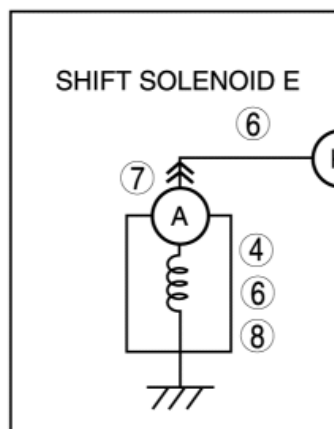


**SHIFT SOLENOID E WIRING
HARNESS-SIDE CONNECTOR**

	A
--	---



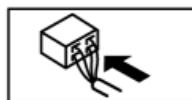
**AUTOMATIC TRANSMISSION
(COUPLE COMPONENT)**



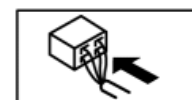
TCM

TCM WIRING HARNESS-SIDE CONNECTOR

	1AF	1AA	1Y	1R	1P		1H	1D	
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L	1I
1AH	1AD		1W	1T			1M	1J	1F
1AI	1AE		1X	1U			1N	1K	1G



	2AF	2AB		2R	2O	2J	2F	
2AG	2AC	2Y	2V	2S	2P	2M	2K	2G
2AH	2AD	2Z	2W	2T	2Q	2N	2L	2H
2AI	2AE	2AA	2X	2U			2I	2E



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. Inspect for poor connection at TCM terminal 	Yes Go to the next step.
		No Repair or replace the connector and/or terminal, then go to Step 9.

	<p>1V (such as damaged/pulled-out pins, corrosion).</p> <ul style="list-style-type: none"> Is terminal normal? 		
4	INSPECT RESISTANCE OF SHIFT SOLENOID E CIRCUIT <ul style="list-style-type: none"> Inspect for resistance between TCM terminal 1V (wiring harness-side) and body ground. Is the resistance within 10—16 ohms? <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p>	Yes	Go to Step 9.
		No	Go to the next step.
5	INSPECT COUPLE COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the couple component connector. Inspect for poor connection at couple component terminal K (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 9.
6	INSPECT RESISTANCE OF SHIFT SOLENOID E CIRCUIT <ul style="list-style-type: none"> Inspect the resistance between couple component (transmission case side) terminal K and body ground. Is the resistance within 10—16 ohms? <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p>	Yes	Go to the next step.
		No	Go to Step 9.
7	INSPECT SHIFT SOLENOID E CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the shift solenoid E connector. Inspect for poor connection at shift solenoid E terminal A (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 9.
8	INSPECT SHIFT SOLENOID E <ul style="list-style-type: none"> Inspect the shift solenoid E. <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> Is the shift solenoid E normal? 	Yes	Repair or replace the wiring harness (couple component connector—shift solenoid E) for short to ground, then go to the next step.
		No	Replace the control valve body, then go to the next step. (See CONTROL VALVE BODY REMOVAL [SJ6A-EL].) (See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)
9	VERIFY TROUBLESHOOTING OF DTC P0985 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.

	<ul style="list-style-type: none">• Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR.• Is same DTC present?		
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].)• Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	Troubleshooting completed.

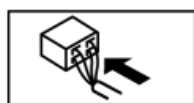
2011 - RX-8 - Transmission/Transaxle

DTC P0986 [SJ6A-EL]

DTC P0986	Shift solenoid E circuit malfunction (short to power/open circuit)
DETECTION CONDITION	<ul style="list-style-type: none">• Open or short circuit in shift solenoid E signal system (while TCM monitors solenoid output voltage, the voltage that differs from the signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition during first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TCM connector or terminal malfunction• Couple component connector or terminal malfunction• Shift solenoid E connector or terminal malfunction• Shift solenoid E malfunction• Short to power in wiring harness between shift solenoid E terminal A and TCM terminal 1V• TCM malfunction

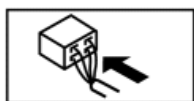
**AUTOMATIC TRANSMISSION
WIRING HARNESS-SIDE CONNECTOR
(COUPLE COMPONENT)**

O	M	K	I	G	E	C	A
N	L	J	H	F	D	B	

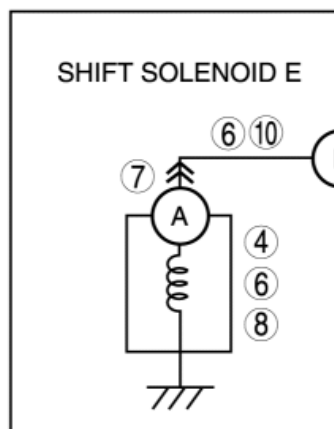


**SHIFT SOLENOID E WIRING
HARNESS-SIDE CONNECTOR**

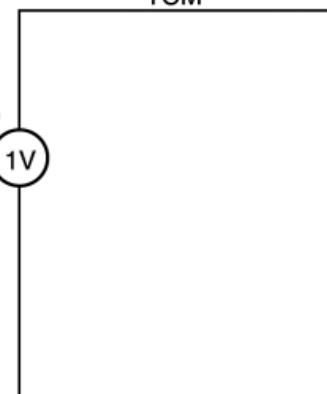
	A
--	---



**AUTOMATIC TRANSMISSION
(COUPLE COMPONENT)**

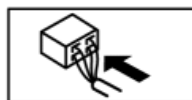


TCM

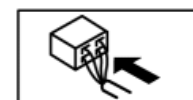


TCM WIRING HARNESS-SIDE CONNECTOR

	1AF	1AA	1Y	1R	1P		1H	1D	
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L	1I
1AH	1AD		1W	1T			1M	1J	1F
1AI	1AE		1X	1U			1N	1K	1G



2AF	2AB		2R	2O	2J	2F	
2AG	2AC	2Y	2V	2S	2P	2M	2K
2AH	2AD	2Z	2W	2T	2Q	2N	2L
2AI	2AE	2AA	2X	2U		2I	2E



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step. No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. Inspect for poor connection at TCM terminal 	Yes Go to the next step. No Repair or replace the connector and/or terminal, then go to Step 11.

	<p>1V (such as damaged/pulled-out pins, corrosion).</p> <ul style="list-style-type: none"> Is terminal normal? 		
4	INSPECT RESISTANCE OF SHIFT SOLENOID E CIRCUIT <ul style="list-style-type: none"> Inspect for resistance between TCM terminal 1V (wiring harness-side) and body ground. Is the resistance within 10—16 ohms? (See SOLENOID VALVE INSPECTION [SJ6A-EL].) 	Yes	Go to Step 9.
		No	Go to the next step.
5	INSPECT COUPLE COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the couple component connector. Inspect for poor connection at couple component terminal K (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 11.
6	INSPECT RESISTANCE OF SHIFT SOLENOID E CIRCUIT <ul style="list-style-type: none"> Inspect the resistance between couple component (transmission case side) terminal K and body ground. Is the resistance within 10—16 ohms? (See SOLENOID VALVE INSPECTION [SJ6A-EL].) 	Yes	Go to Step 11.
		No	Go to the next step.
7	INSPECT SHIFT SOLENOID E CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the shift solenoid E connector. Inspect for poor connection at shift solenoid E terminal A (such as damaged/pulled-out pins, corrosion). Is terminal normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 11.
8	INSPECT SHIFT SOLENOID E <ul style="list-style-type: none"> Inspect the shift solenoid E. (See SOLENOID VALVE INSPECTION [SJ6A-EL].) Is the shift solenoid E normal? 	Yes	Repair or replace the wiring harness (couple component—shift solenoid E) for short to ground, then go to Step 11.
		No	Replace the control valve body, then go to Step 11. (See CONTROL VALVE BODY REMOVAL [SJ6A-EL].) (See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)
9	INSPECT SHIFT SOLENOID E CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Measure the voltage at TCM (wiring harness-side) terminal 1V. Is there 0 V at the TCM wiring harness-side 	Yes	Go to Step 11.
		No	Go to the next step.

	connector terminals?		
10	INSPECT SHIFT SOLENOID E CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the couple component connector. • Turn the ignition switch to the ON position (engine off). • Measure the voltage at couple component (wiring harness-side) terminal K. • Is there 0 V at the TCM wiring harness-side connector terminals? 	Yes Repair or replace the wiring harness (TCM—couple component) for short to power supply, then go to the next step.	
		No Repair or replace the wiring harness (couple component—shift solenoid E) for short to power supply, then go to the next step.	
11	VERIFY TROUBLESHOOTING OF DTC P0986 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC from the memory using the M-MDS. • Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. • Is same DTC present? 	Yes Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL] .)	
		No Go to the next step.	
12	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the “After Repair Procedure”. (See AFTER REPAIR PROCEDURE [SJ6A-EL].) • Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL] .)	
		No Troubleshooting completed.	

2011 - RX-8 - Transmission/Transaxle

DTC P2757 [SJ6A-EL]

DTC P2757	Torque converter clutch (TCC) stuck off
DETECTION CONDITION	<ul style="list-style-type: none"> TCM detects that TCC control solenoid does not change from off when engine is running <p>Diagnostic support note:</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles. PENDING CODE is available. FREEZE FRAME DATA is available. The AT warning light illuminates. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Deteriorated ATF ATF level low Oil pump malfunction Control valve body malfunction TCC control solenoid, and line pressure control solenoid stuck TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step. No Record the FREEZE FRAME DATA on the

		repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	<div> Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. </div> <div> No Go to the next step. </div>
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect the ATF condition. <ul style="list-style-type: none"> ▪ Clear red: Normal ▪ Light red (pink): Water mixed in fluid ▪ Reddish brown: Deteriorated ATF • Is it normal? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	<div> Yes Go to the next step. </div> <div> No If the ATF color is milky or reddish brown, replace ATF, then go to Step 7. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT [SJ6A-EL].) </div>
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Start the engine. • Warm up the AT. • Is the ATF level within the specification? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	<div> Yes Go to the next step. </div> <div> No Add ATF to the specified level, then go to Step 7. (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].) </div>
5	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Start the engine. • Measure the line pressure. <p>(See MECHANICAL SYSTEM TEST [SJ6A-EL].)</p>	<div> Yes Go to the next step. </div> <div> No All ranges: Replace the oil pump, then go to Step 7. Any ranges: Replace the control valve body, then go to Step 6. </div>

	<ul style="list-style-type: none"> Are the line pressures within the specifications? 	<p>(See CONTROL VALVE BODY REMOVAL [SJ6A-EL].)</p> <p>(See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)</p>
6	INSPECT SOLENOID VALVE <ul style="list-style-type: none"> Inspect the solenoid valve. <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> Is it normal? 	<p>Yes Go to the next step.</p> <p>No Replace the control valve body, then go to the next step.</p> <p>(See CONTROL VALVE BODY REMOVAL [SJ6A-EL].)</p> <p>(See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)</p>
7	VERIFY TROUBLESHOOTING OF DTC P2757 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. Start the engine. Warm up engine and AT. Drive the vehicle under the following conditions for 2 s or more. <ul style="list-style-type: none"> ATF temperature (TFT PID): 20 °C {68 °F} or more Drive in the D range, 4GR—6GR (TCC no operation) Is the PENDING CODE same as the DTC present? 	<p>Yes Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION [SJ6A-EL].)</p> <p>No Go to the next step.</p>
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	<p>Yes Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [SJ6A-EL].)</p> <p>No DTC troubleshooting completed.</p>

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

DTC P2758 [SJ6A-EL]

DTC P2758	Torque converter clutch (TCC) stuck on
DETECTION CONDITION	<ul style="list-style-type: none"> TCM detects that TCC control solenoid does not change from on when engine is running <p>Diagnostic support note:</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition in two consecutive drive cycles. PENDING CODE is available. FREEZE FRAME DATA is not available. The AT warning light illuminates. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Deteriorated ATF ATF level low Oil pump malfunction Control valve body malfunction TCC control solenoid, and line pressure control solenoid stuck TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step. No Record the FREEZE FRAME DATA on the

		repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	<div> Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. </div> <div> No Go to the next step. </div>
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect the ATF condition. <ul style="list-style-type: none"> ▪ Clear red: Normal ▪ Light red (pink): Water mixed in fluid ▪ Reddish brown: Deteriorated ATF • Is it normal? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	<div> Yes Go to the next step. </div> <div> No If the ATF color is milky or reddish brown, replace ATF, then go to Step 7. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT [SJ6A-EL].) </div>
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Start the engine. • Warm up the AT. • Is the ATF level within the specification? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	<div> Yes Go to the next step. </div> <div> No Add ATF to the specified level, then go to Step 7. (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].) </div>
5	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Start the engine. • Measure the line pressure. <p>(See MECHANICAL SYSTEM TEST [SJ6A-EL].)</p>	<div> Yes Go to the next step. </div> <div> No All ranges: Replace the oil pump, then go to Step 7. Any ranges: Replace the control valve body, then go to Step 6. </div>

	<ul style="list-style-type: none"> Are the line pressures within the specifications? 	<p>(See CONTROL VALVE BODY REMOVAL [SJ6A-EL].)</p> <p>(See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)</p>
6	INSPECT SOLENOID VALVE <ul style="list-style-type: none"> Inspect the solenoid valve. <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> Is it normal? 	<p>Yes Go to the next step.</p> <p>No Replace the control valve body, then go to the next step.</p> <p>(See CONTROL VALVE BODY REMOVAL [SJ6A-EL].)</p> <p>(See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)</p>
7	VERIFY TROUBLESHOOTING OF DTC P2758 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. Start the engine. Warm up engine and AT. Drive the vehicle under the following conditions for 2 s or more. <ul style="list-style-type: none"> ATF temperature (TFT PID): 20 °C {68 °F} or more Engine speed: less than 3,000 rpm Drive in the D range, 4GR—6GR (TCC operation) Is the PENDING CODE same as the DTC present? 	<p>Yes Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION [SJ6A-EL].)</p> <p>No Go to the next step.</p>
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE [SJ6A-EL].)</p>	<p>Yes Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [SJ6A-EL].)</p> <p>No DTC troubleshooting completed.</p>

- | | | |
|--|---|--|
| | <ul style="list-style-type: none">• Are any DTCs present? | |
|--|---|--|

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

DTC P2762 [SJ6A-EL]

DTC P2762	TCC control solenoid range/performance (stuck)
DETECTION CONDITION	<ul style="list-style-type: none"> Feedback current corresponding to solenoid current command value is irregular when engine is running. <p>Diagnostic support note:</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. A PENDING CODE is not available. FREEZE FRAME DATA is available. The AT warning light illuminates. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Deteriorated ATF ATF level low Oil pump malfunction Control valve body malfunction Transmission malfunction TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	<div>Yes</div> Go to the next step.
		<div>No</div> Record the FREEZE FRAME DATA on the

			repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. 	
		No	Go to the next step.
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect the ATF condition. <ul style="list-style-type: none"> ▪ Clear red: Normal ▪ Light red (pink): Water mixed in fluid ▪ Reddish brown: Deteriorated ATF • Is it normal? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	Yes Go to the next step.	
		No	If the ATF color is light red or reddish brown, replace ATF, then go to Step 6. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT [SJ6A-EL].)
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Start the engine. • Warm up the AT. • Is the ATF level within the specification? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	Yes Go to the next step.	
		No	Add ATF to the specified level, then go to Step 6. (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)
5	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Start the engine. • Measure the line pressure. <p>(See MECHANICAL SYSTEM TEST [SJ6A-EL].)</p> <ul style="list-style-type: none"> • Are the line pressures within the 	Yes Go to the next step.	
		No	<ul style="list-style-type: none"> • All ranges: Replace the oil pump or control valve body, then go to the next step. • Any ranges: Replace the AT, then go the next step.

	specifications?		(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION [SJ6A-EL].)
6	VERIFY TROUBLESHOOTING OF DTC P2762 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all the disconnected connectors. • Clear the DTC from the memory using the M-MDS. • Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR (TCC operation). • Is same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	Troubleshooting completed.

[< Previous](#) [Next >](#)

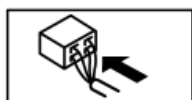
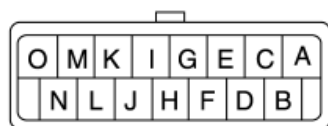
[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

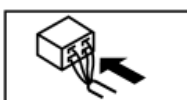
DTC P2763 [SJ6A-EL]

DTC P2763	TCC control solenoid circuit malfunction (short to power)
DETECTION CONDITION	<ul style="list-style-type: none">Short circuit in TCC control solenoid signal system (while TCM monitors solenoid output voltage, the voltage that differs from the signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle.A PENDING CODE is not available.FREEZE FRAME DATA is available.The AT warning light illuminates.The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">TCM connector or terminal malfunctionShort to power in wiring harness between TCC control solenoid terminal B and TCM terminal 1QShort to power in wiring harness between TCC control solenoid terminal A and TCM terminal 1DTCC control solenoid malfunctionTCM malfunction

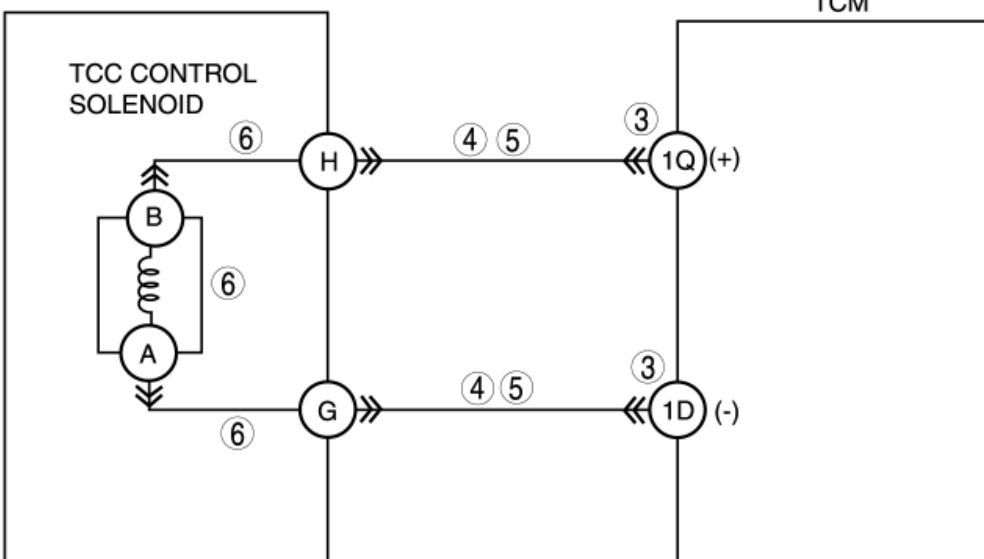
AUTOMATIC TRANSMISSION WIRING HARNESS-SIDE CONNECTOR (COUPLE COMPONENT)



TCC CONTROL SOLENOID WIRING HARNESS-SIDE CONNECTOR

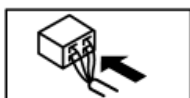


AUTOMATIC TRANSMISSION (COUPLE COMPONENT)

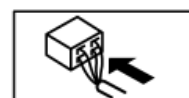


TCM WIRING HARNESS-SIDE CONNECTOR

<div></div>											
	1AF	1AA	1Y	1R	1P		1H	1D			
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L	1I	1E	1A
1AH	1AD			1W	1T			1M	1J	1F	1B
1AI	1AE			1X	1U			1N	1K	1G	1C



<div></div>													
2AF		2AB			2R		2O		2J		2F		
2AG	2AC	2Y	2V	2S	2P	2M	2K	2G	2C				
2AH	2AD	2Z	2W	2T	2Q	2N	2L	2H	2D	2A			
2AI	2AE	2AA	2X	2U					2I	2E	2B		



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step. No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. 	Yes Go to the next step. No Repair or replace the connector and/or terminal, then go to Step 7.

	<ul style="list-style-type: none"> Inspect for poor connection at TCM terminals 1Q and 1D (such as damaged/pulled-out pins, corrosion). Are terminals normal? 		
4	INSPECT TCC CONTROL SOLENOID CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Measure the voltage at TCM (wiring harness-side) terminals 1Q and 1D. Is there 0 V at the TCM wiring harness-side connector terminals? 	YesGo to go to Step 7.	
		NoGo to the next step.	
5	INSPECT TCC CONTROL SOLENOID CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the couple component connector. Turn the ignition switch to the ON position (engine off). Measure the voltage at TCM (wiring harness-side) terminals 1Q and 1D. Is there 0 V at the TCM wiring harness-side connector terminals? 	YesGo to the next step.	
		NoRepair or replace the wiring harness (TCM—couple component connector) for short to power supply, then go to Step 7.	
6	INSPECT TCC CONTROL SOLENOID <ul style="list-style-type: none"> Inspect the TCC control solenoid. (See SOLENOID VALVE INSPECTION [SJ6A-EL].) Is the TCC control solenoid normal? 	YesRepair or replace the wiring harness (couple component connector—TCC control solenoid) for short to power supply, then go to the next step.	
		NoReplace the control valve body, then go to the next step. (See CONTROL VALVE BODY REMOVAL [SJ6A-EL].) (See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)	
7	VERIFY TROUBLESHOOTING OF DTC P2763 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. Is same DTC present? 	YesReplace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)	
		NoGo to the next step.	
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the “After Repair Procedure”. (See AFTER REPAIR PROCEDURE [SJ6A-EL].) Are any DTCs present? 	YesGo to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)	
		NoTroubleshooting completed.	

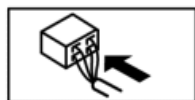
2011 - RX-8 - Transmission/Transaxle

DTC P2764 [SJ6A-EL]

DTC P2764	TCC control solenoid circuit malfunction (short to ground/open circuit)
DETECTION CONDITION	<ul style="list-style-type: none">• Open or short circuit in TCC control solenoid signal system (while TCM monitors solenoid output voltage, the voltage that differs from the signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TCM connector or terminal malfunction• Short to ground in wiring harness between TCC control solenoid terminal B and TCM terminal 1Q• Short to ground in wiring harness between TCC control solenoid terminal A and TCM terminal 1D• Couple component connector or terminal malfunction• Open circuit between TCC control solenoid terminal B and TCM terminal 1Q• Open circuit between TCC control solenoid terminal A and TCM terminal 1D• TCC control solenoid connector or terminal malfunction• TCC control solenoid malfunction• TCM malfunction

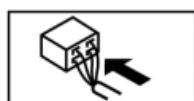
AUTOMATIC TRANSMISSION WIRING HARNESS-SIDE CONNECTOR (COUPLE COMPONENT)

O	M	K	I	G	E	C	A
N	L	J	H	F	D	B	

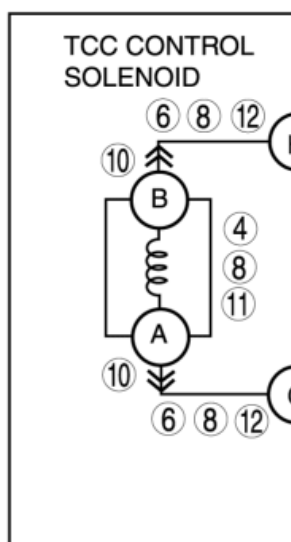


TCC CONTROL SOLENOID WIRING HARNESS-SIDE CONNECTOR

B	A
---	---



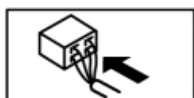
AUTOMATIC TRANSMISSION (COUPLE COMPONENT)



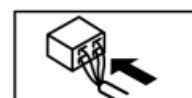
TCM

TCM WIRING HARNESS-SIDE CONNECTOR

<div></div>											
	1AF	1AA	1Y	1R	1P			1H	1D		
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L	1I	1E	1A
1AH	1AD			1W	1T			1M	1J	1F	1B
1AI	1AE			1X	1U			1N	1K	1G	1C



<div></div>										
2AF	2AB			2R	2O	2J	2F			
2AG	2AC	2Y	2V	2S	2P	2M	2K	2G	2C	
2AH	2AD	2Z	2W	2T	2Q	2N	2L	2H	2D	2A
2AI	2AE	2AA	2X	2U				2I	2E	2B



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	<p>YesGo to the next step.</p> <p>No Record the FREEZE FRAME DATA on the repair order, then go to the next step.</p>
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>YesPerform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. 	<p>YesGo to the next step.</p> <p>No Repair or replace the connector and/or terminal, then go to Step 13.</p>

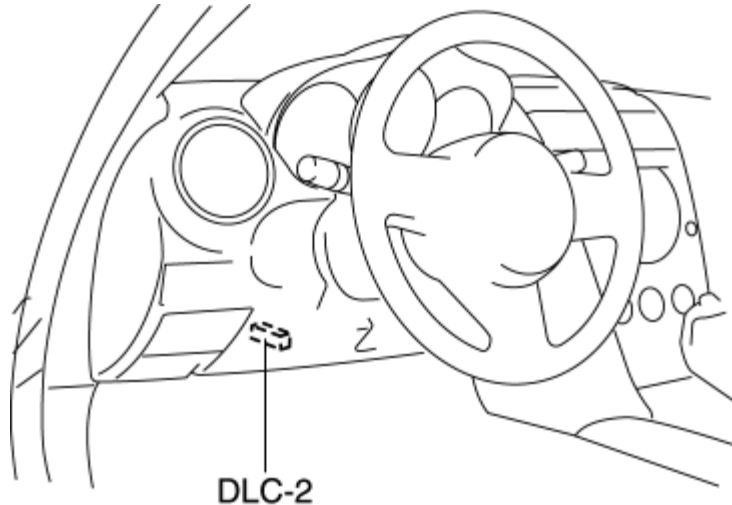
	<ul style="list-style-type: none"> Inspect for poor connection at TCM terminals 1Q and 1D (such as damaged/pulled-out pins, corrosion). Are terminals normal? 		
4	INSPECT RESISTANCE OF TCC CONTROL SOLENOID CIRCUIT <ul style="list-style-type: none"> Inspect for resistance between TCM terminals 1Q and 1D (wiring harness-side). Is the resistance within 5.0—5.6 ohms? (See SOLENOID VALVE INSPECTION [SJ6A-EL].) 	Yes	Go to the next step.
		No	Go to go to Step 7.
5	INSPECT TCC CONTROL SOLENOID CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Disconnect the couple component connector. Inspect for continuity between TCM terminals (wiring harness-side) and body ground. <ul style="list-style-type: none"> Terminal 1Q and body ground Terminal 1D and body ground Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for short to ground, then go to Step 13.
6	INSPECT TCC CONTROL SOLENOID CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Inspect for continuity between couple component terminals (wiring harness-side) and body ground. <ul style="list-style-type: none"> Terminal H and body ground Terminal G and body ground Is there continuity? 	Yes	Go to go to Step 13.
		No	Repair or replace the couple component, then go to the next step.
7	INSPECT COUPLE COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the Ignition switch to the LOCK position. Disconnect the couple component connector. Inspect for poor connection at couple component terminals H and G (such as damaged/pulled-out pins, corrosion). Are terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
8	INSPECT RESISTANCE OF TCC CONTROL SOLENOID CIRCUIT <ul style="list-style-type: none"> Inspect the resistance between couple component (transmission case side) terminals H and G. Is the resistance within 5.0—5.6 ohms? (See SOLENOID VALVE INSPECTION [SJ6A-EL].) 	Yes	Go to the next step.
		No	Go to Step 10.
9	INSPECT TCC CONTROL SOLENOID CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between TCM terminals and couple component terminals (wiring harness-side). <ul style="list-style-type: none"> Terminal 1Q and terminal H Terminal 1D and terminal G Is there continuity? 	Yes	Go to Step 13.
		No	Repair or replace the wiring harness for open circuit, go to Step 13.
10	INSPECT TCC CONTROL SOLENOID CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Disconnect the TCC control solenoid connector. 	Yes	Go to the next step.

	<ul style="list-style-type: none"> Inspect for poor connection at TCC control solenoid terminals A and B (such as damaged/pulled-out pins, corrosion). Are terminals normal? 	No	Repair or replace the connector and/or terminal, then go to Step 13.
11	INSPECT TCC CONTROL SOLENOID <ul style="list-style-type: none"> Inspect the TCC control solenoid. (See SOLENOID VALVE INSPECTION [SJ6A-EL].) Is the TCC control solenoid normal? 	Yes	Go to the next step.
		No	Replace the control valve body, then go to Step 13. (See CONTROL VALVE BODY REMOVAL [SJ6A-EL].) (See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)
12	INSPECT TCC CONTROL SOLENOID CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between couple component terminals and TCC control solenoid terminals (wiring harness-side). <ul style="list-style-type: none"> Terminal H and terminal B Terminal G and terminal A Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the couple component, then go to the next step.
13	VERIFY TROUBLESHOOTING OF DTC P2764 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. Is same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
14	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	Troubleshooting completed.

2011 - RX-8 - Transmission/Transaxle

PID/DATA MONITOR INSPECTION [SJ6A-EL]

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 - When using the IDS (laptop PC)
 - Select "DataLogger".
 - Select "Modules".
 - Select "TCM".
 - When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "TCM".
 - Select "DataLogger".
3. Select the PID from the PID table
4. Verify the PID data according to the directions on the M-MDS screen.

NOTE:

- Perform part inspection for the output device after TCM inspection.
- The PID/DATA MONITOR function monitors the calculated value of the input/output signals in the TCM. Therefore, if a monitored value of an output device is out of specification, it is

necessary to inspect the monitored value of the input device related to the output device control. Since an output device malfunction is not directly indicated as a malfunction of the monitored value for the output device, it is necessary to inspect the output device individually using the simulation function.

PID/DATA MONITOR AND RECORD function table

Monitor item (Definition)	Unit/Condition	Condition/Specification	Action	TCM terminal
BOO TCM (Brake switch)	On/Off	<ul style="list-style-type: none"> Brake pedal depressed: On Other: Off 	Inspect the brake switch. (See BRAKE SWITCH INSPECTION .)	N/A
DTCNT	N/A	Indicates number of DTC	Check DTC. (See DTC TABLE [SJ6A-EL] .)	N/A
DWN SW (Down switch)	On/Off	<ul style="list-style-type: none"> Down shift at M range: On Other: Off 	Inspect the selector lever component. (See SELECTOR LEVER COMPONENT INSPECTION .)	2F
ECT TCM (ECT)	°C, °F	Indicates ECT	<ul style="list-style-type: none"> Inspect the ECT sensor. (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [13B-MSP].) Inspect the PCM. (See PCM INSPECTION [13B-MSP].) 	N/A
FDPDTC (FREEZE FRAME DATA)	N/A	Indicates code of FREEZE FRAME DATA	N/A	N/A
GEAR_RA	N/A	<ul style="list-style-type: none"> 1GR: 3.538 2GR: 2.060 3GR: 1.404 4GR: 1.000 	Inspect following PIDs: OSS, SSA, SSB, SSC, SSD, SSE SSF, SSG, THOP, TSS, VSS	N/A

(Gear ratio)		<ul style="list-style-type: none"> • 5GR: 0.713 • 6GR: 0.582 • R position: 3.168 		
GEAR_SEL (Calculated gear range in TCM)	1/2/3/4/5/6	<ul style="list-style-type: none"> • 1GR: 1 • 2GR: 2 • 3GR: 3 • 4GR: 4 • 5GR: 5 • 6GR: 6 	Inspect following PIDs: SSA, SSB, SSC, SSD, SSE, SSF, SSG, THOP, TSS, VSS	N/A
LPS (Line pressure control solenoid)	A	<ul style="list-style-type: none"> • D range, 1GR (idle): 996 mA • D range, 3GR: 656 mA • R position: 719 mA 	Inspect the line pressure control solenoid. (See SOLENOID VALVE INSPECTION [SJ6A-EL].)	1E, 1R
MNL SW (M range switch)	On/Off	<ul style="list-style-type: none"> • M range: On • Other: Off 	Inspect the selector lever component. (See SELECTOR LEVER COMPONENT INSPECTION.)	2G
OSS (Output shaft speed)	RPM	<ul style="list-style-type: none"> • Vehicle speed 40 km/h {25 mph}: 3,800 RPM • Indicates output shaft speed 	Inspect the VSS. (See VEHICLE SPEED SENSOR (VSS) INSPECTION [SJ6A-EL].)	2C, 2D
PNP_TCM (Park/Neutral)	Drive/Neutral	<ul style="list-style-type: none"> • P, N position: Neutral • D, M range or R position: 	Inspect the TR switch. (See TRANSMISSION RANGE (TR) SWITCH INSPECTION [SJ6A-EL].)	2K, 2M, 2N, 2O

		Drive		
RPM TCM (Engine speed)	RPM	<ul style="list-style-type: none"> Ignition switch ON: 0 rpm Idle: 700—800 rpm 	<ul style="list-style-type: none"> Inspect the PCM. (See PCM INSPECTION [13B-MSP].) 	N/A
SS SW- (Steering shift switch (down switch))	On/Off	M range <ul style="list-style-type: none"> Steering shift down switch on: On Other: Off 	Inspect the steering shift switch. (See STEERING SHIFT SWITCH INSPECTION.)	2AB, 2AF
SS SW+ (Steering shift switch (up switch))	On/Off	M range <ul style="list-style-type: none"> Steering shift up switch on: On Other: Off 	Inspect the steering shift switch. (See STEERING SHIFT SWITCH INSPECTION.)	2AB, 2AF
SSA (Shift solenoid A)	On/Off	<ul style="list-style-type: none"> 2GR, 3GR, 4GR, 5GR, 6GR: On 1GR: Off 	Inspect the shift solenoid A. (See SOLENOID VALVE INSPECTION [SJ6A-EL].)	1AF
SSB (Shift solenoid B)	On/Off	<ul style="list-style-type: none"> 1GR, 2GR, 6GR: On 3GR, 4GR, 5GR: Off 	Inspect the shift solenoid B. (See SOLENOID VALVE INSPECTION [SJ6A-EL].)	1AB
SSC (Shift solenoid C)	On/Off	<ul style="list-style-type: none"> 1GR, 2GR, 3GR: On 4GR, 5GR, 6GR: Off 	Inspect the shift solenoid C. (See SOLENOID VALVE INSPECTION [SJ6A-EL].)	1AA
SSD (Shift solenoid D)	On/Off	<ul style="list-style-type: none"> 5GR, 6GR: On 1GR, 2GR, 3GR, 4GR: Off 	Inspect the shift solenoid D. (See SOLENOID VALVE INSPECTION [SJ6A-EL].)	1S

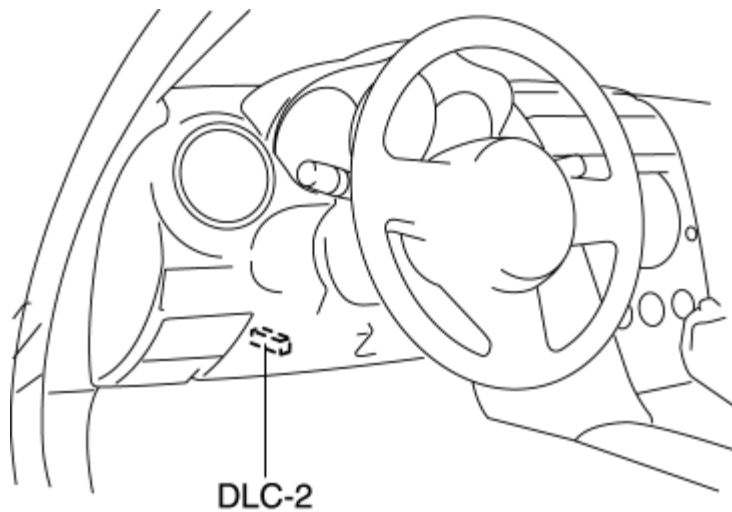
SSE (Shift solenoid E)	On/Off	<ul style="list-style-type: none"> 1GR, 2GR, 3GR, 4GR: On 5GR, 6GR: Off 	Inspect the shift solenoid E. (See SOLENOID VALVE INSPECTION [SJ6A-EL].)	1V
SSF (Shift solenoid F)	A	<ul style="list-style-type: none"> 5GR, 6GR: 996 mA 1GR, 2GR, 3GR, 4GR: 199 mA 	Inspect the shift solenoid F. (See SOLENOID VALVE INSPECTION [SJ6A-EL].)	1O, 1Z
SSG (Shift solenoid G)	A	<ul style="list-style-type: none"> 1GR, 2GR, 3GR, 4GR: 996 mA 5GR, 6GR: 199 mA 	Inspect the shift solenoid G. (See SOLENOID VALVE INSPECTION [SJ6A-EL].)	1L, 1Y
TCCC (TCC solenoid valve)	A	<ul style="list-style-type: none"> TCC on: 996 mA Other: 199 mA 	Inspect the TCC control solenoid. (See SOLENOID VALVE INSPECTION [SJ6A-EL].)	1D, 1Q
TFT (ATF temperature)	°C, °F	<ul style="list-style-type: none"> ATF temperature 20 °C {68 °F}: 20 °C {68 °F} ATF temperature 40 °C {104 °F}: 40 °C {104 °F} ATF temperature 60 °C {140 °F}: 60 °C {140 °F} 	Inspect the TFT sensor. (See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION [SJ6A-EL].)	1J, 1M
TFTV		<ul style="list-style-type: none"> ATF temperature 20 °C {68 °F}: 3 V ATF 	Inspect the TFT sensor. (See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION [SJ6A-EL].)	

(ATF temperature signal voltage)	V	temperature 40 °C {104 °F}: 2.14 V <ul style="list-style-type: none"> ATF temperature 60 °C {140 °F}: 1.38 V 		1J, 1M
THOP (Throttle position)	%	<ul style="list-style-type: none"> CTP: 20% WOT: 89.8% 	<ul style="list-style-type: none"> Inspect the TP sensor. (See TRANSMISSION RANGE (TR) SWITCH INSPECTION [SJ6A-EL].) Inspect the PCM. (See PCM INSPECTION [13B-MSP].) 	N/A
TR (TR switch)	R/N/D/P	<ul style="list-style-type: none"> R position: R N position: N D range: D P position: P 	Inspect the TR switch. (See TRANSMISSION RANGE (TR) SWITCH INSPECTION [SJ6A-EL].)	2K, 2M, 2N, 2O
TRD (TR switch [D range])	On/Off	<ul style="list-style-type: none"> D range: On Other ranges and all positions: Off 	Inspect the TR switch. (See TRANSMISSION RANGE (TR) SWITCH INSPECTION [SJ6A-EL].)	2K
TRR (TR switch [R position])	On/Off	<ul style="list-style-type: none"> R position: On Other positions and all ranges: Off 	Inspect the TR switch. (See TRANSMISSION RANGE (TR) SWITCH INSPECTION [SJ6A-EL].)	2M
TSS		<ul style="list-style-type: none"> Idle: 700—800 RPM Vehicle 	Inspect the turbine sensor. (See TURBINE SENSOR INSPECTION [SJ6A-EL].)	

(Turbine shaft speed)	RPM	speed 40 km/h {25 mph}: 3,800 RPM		2A, 2B
UP SW (Up switch)	On/Off	<ul style="list-style-type: none"> Up shift at M range: On Other: Off 	Inspect the selector lever component. (See SELECTOR LEVER COMPONENT INSPECTION .)	2J
VPWR_TCM (Battery voltage)	V	Ignition switch at ON position: B+	<ul style="list-style-type: none"> Inspect the ignition switch. (See IGNITION SWITCH INSPECTION [WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM].) Inspect the battery. (See BATTERY INSPECTION [13B-MSP].) 	1AD
VSS (Vehicle speed)	KPH, MPH	<ul style="list-style-type: none"> Vehicle speed 40 km/h {25 mph}: 40 KPH {25 MPH} 	Inspect the VSS. (See VEHICLE SPEED SENSOR (VSS) INSPECTION [SJ6A-EL] .)	2C, 2D

Simulation Function Procedure

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initial screen of the M-MDS.

- When using the IDS (laptop PC)
 - Select "DataLogger".
 - Select "Modules".
 - Select "TCM".
- When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "TCM".
 - Select "DataLogger".

3. Select the simulation items from the PID table.

4. Perform the simulation function, inspect the operations for each parts.

- If there is no operation sound from the solenoid after the simulation function inspection is performed, it is possible that there is an open or short circuit in the wiring harness, or solenoid, or sticking and operation malfunction.

Simulation item tableX: Available

Simulation item	Applicable component	Unit/Condition	Operation		TCM terminal
			IG ON	Idle	
LPS	Pressure control solenoid control signal in TCM	A	N/A	X	1E, 1R
SSA	Shift solenoid A	On/Off	N/A	X	1AF
SSB	Shift solenoid B	On/Off	N/A	X	1AB

SSC	Shift solenoid C	On/Off	N/A	X	1AA
SSD	Shift solenoid D	On/Off	N/A	X	1S
SSE	Shift solenoid E	On/Off	N/A	X	1V
SSF	Shift solenoid F	A	N/A	X	1O, 1Z
SSG	Shift solenoid G	A	N/A	X	1L, 1Y
TCCC	TCC solenoid valve	A	N/A	X	1D, 1Q

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Transmission/Transaxle

DTC P0751 [SJ6A-EL]

DTC P0751	Shift solenoid A malfunction (stuck off)
DETECTION CONDITION	<ul style="list-style-type: none"> • TCM detects that shift solenoid A does not change from off when engine is running <p>Diagnostic support note:</p> <ul style="list-style-type: none"> • MIL illuminates if TCM detects the above malfunction conditions in two consecutive drive cycles. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The AT warning light illuminates. • DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Oil pump malfunction • Control valve body malfunction • Transmission malfunction • TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair 	Yes Go to the next step. No Record the FREEZE FRAME DATA on the repair

	order?		order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. 	
		No	Go to the next step.
3	INSPECT FOR DTC <ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off). • Inspect for DTCs. • Are any other DTCs output? 	Yes Follow the applicable DTC inspection procedure, then go to the next step. (See DTC TABLE [SJ6A-EL] .)	
		No	Go to the next step.
4	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect ATF condition. <ul style="list-style-type: none"> ▪ Transparent red: Normal ▪ Milky: Water mixed in fluid ▪ Reddish brown: Deteriorated ATF • Is it normal? (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL] .)	Yes Go to the next step.	
		No	If the ATF color milky or reddish brown, repair or replace AT, then go to Step 7.
5	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Start the engine. • Warm up the AT. • Is the ATF level within the specification? (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL] .)	Yes Go to the next step.	
		No	Add ATF to the specified level, then go to Step 7. (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL] .)

6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> Start the engine. Measure the line pressure. <p>(See MECHANICAL SYSTEM TEST [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are the line pressures within the specifications? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> All ranges: Replace the oil pump or control valve body, then go to the next step. Any ranges: Replace the AT, then go to the next step. <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION [SJ6A-EL].)</p>
7	VERIFY TROUBLESHOOTING OF DTC P0751 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the TCM memory using the M-MDS. Start the engine. Warm up AT. Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 6GR. Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Transmission/Transaxle

DTC P0752 [SJ6A-EL]

DTC P0752	Shift solenoid A malfunction (stuck on)
DETECTION CONDITION	<ul style="list-style-type: none"> • TCM detects that shift solenoid A does not change from on when engine is running <p>Diagnostic support note:</p> <ul style="list-style-type: none"> • MIL illuminates if TCM detects the above malfunction conditions in two consecutive drive cycles. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The AT warning light illuminates. • DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Oil pump malfunction • Control valve body malfunction • Transmission malfunction • TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair 	Yes Go to the next step. No Record the FREEZE FRAME DATA on the repair

	order?		order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. 	
		No	Go to the next step.
3	INSPECT FOR DTC <ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off). • Inspect for DTCs. • Are any other DTCs output? 	Yes Follow the applicable DTC inspection procedure, then go to the next step. (See DTC TABLE [SJ6A-EL] .)	
		No	Go to the next step.
4	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect ATF condition. <ul style="list-style-type: none"> ▪ Transparent red: Normal ▪ Milky: Water mixed in fluid ▪ Reddish brown: Deteriorated ATF • Is it normal? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	Yes Go to the next step.	
		No	If the ATF color milky or reddish brown, repair or replace AT, then go to Step 7.
5	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Start the engine. • Warm up the AT. • Is the ATF level within the specification? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	Yes Go to the next step.	
		No	Add ATF to the specified level, then go to Step 7. <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>

6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> Start the engine. Measure the line pressure. <p>(See MECHANICAL SYSTEM TEST [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are the line pressures within the specifications? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> All ranges: Replace the oil pump or control valve body, then go to the next step. Any ranges: Replace the AT, then go to the next step. <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION [SJ6A-EL].)</p>
7	VERIFY TROUBLESHOOTING OF DTC P0752 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the TCM memory using the M-MDS. Start the engine. Warm up AT. Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 6GR. Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Transmission/Transaxle

DTC P0756 [SJ6A-EL]

DTC P0756	Shift solenoid B malfunction (stuck off)
DETECTION CONDITION	<ul style="list-style-type: none"> • TCM detects that shift solenoid B does not change from off when engine is running <p>Diagnostic support note:</p> <ul style="list-style-type: none"> • MIL illuminates if TCM detects the above malfunction conditions in two consecutive drive cycles. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The AT warning light illuminates. • DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Oil pump malfunction • Control valve body malfunction • Transmission malfunction • TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair 	Yes Go to the next step. No Record the FREEZE FRAME DATA on the repair

	order?		order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. 	
		No	Go to the next step.
3	INSPECT FOR DTC <ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off). • Inspect for DTCs. • Are any other DTCs output? 	Yes Follow the applicable DTC inspection procedure, then go to the next step. (See DTC TABLE [SJ6A-EL].)	
		No	Go to the next step.
4	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect ATF condition. <ul style="list-style-type: none"> ▪ Transparent red: Normal ▪ Milky: Water mixed in fluid ▪ Reddish brown: Deteriorated ATF • Is it normal? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	Yes Go to the next step.	
		No	If the ATF color milky or reddish brown, repair or replace AT, then go to Step 7.
5	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Start the engine. • Warm up the AT. • Is the ATF level within the specification? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	Yes Go to the next step.	
		No	Add ATF to the specified level, then go to Step 7. <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>

6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> Start the engine. Measure the line pressure. <p>(See MECHANICAL SYSTEM TEST [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are the line pressures within the specifications? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> All ranges: Replace the oil pump or control valve body, then go to the next step. Any ranges: Replace the AT, then go to the next step. <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION [SJ6A-EL].)</p>
7	VERIFY TROUBLESHOOTING OF DTC P0756 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the TCM memory using the M-MDS. Start the engine. Warm up AT. Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 6GR. Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Transmission/Transaxle

DTC P0757 [SJ6A-EL]

DTC P0757	Shift solenoid B malfunction (stuck on)
DETECTION CONDITION	<ul style="list-style-type: none"> • TCM detects that shift solenoid B does not change from on when engine is running <p>Diagnostic support note:</p> <ul style="list-style-type: none"> • MIL illuminates if TCM detects the above malfunction conditions in two consecutive drive cycles. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The AT warning light illuminates. • DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Oil pump malfunction • Control valve body malfunction • Transmission malfunction • TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair 	Yes Go to the next step. No Record the FREEZE FRAME DATA on the repair

	order?		order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. 	
		No	Go to the next step.
3	INSPECT FOR DTC <ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off). • Inspect for DTCs. • Are any other DTCs output? 	Yes Follow the applicable DTC inspection procedure, then go to the next step. (See DTC TABLE [SJ6A-EL] .)	
		No	Go to the next step.
4	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect ATF condition. <ul style="list-style-type: none"> ▪ Transparent red: Normal ▪ Milky: Water mixed in fluid ▪ Reddish brown: Deteriorated ATF • Is it normal? (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL] .)	Yes Go to the next step.	
		No	If the ATF color milky or reddish brown, repair or replace AT, then go to Step 7.
5	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Start the engine. • Warm up the AT. • Is the ATF level within the specification? (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL] .)	Yes Go to the next step.	
		No	Add ATF to the specified level, then go to Step 7. (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL] .)

6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> Start the engine. Measure the line pressure. <p>(See MECHANICAL SYSTEM TEST [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are the line pressures within the specifications? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> All ranges: Replace the oil pump or control valve body, then go to the next step. Any ranges: Replace the AT, then go to the next step. <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION [SJ6A-EL].)</p>
7	VERIFY TROUBLESHOOTING OF DTC P0757 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the TCM memory using the M-MDS. Start the engine. Warm up AT. Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 6GR. Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Transmission/Transaxle

DTC P0761 [SJ6A-EL]

DTC P0761	Shift solenoid C malfunction (stuck off)
DETECTION CONDITION	<ul style="list-style-type: none"> TMC detects that shift solenoid C does not change from off when engine is running <p>Diagnostic support note:</p> <ul style="list-style-type: none"> MIL illuminates if TCM detects the above malfunction conditions in two consecutive drive cycles. PENDING CODE is available. FREEZE FRAME DATA is available. The AT warning light illuminates. DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Deteriorated ATF ATF level low Oil pump malfunction Control valve body malfunction Transmission malfunction TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair 	Yes Go to the next step. No Record the FREEZE FRAME DATA on the repair

	order?		order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. 	
		No	Go to the next step.
3	INSPECT FOR DTC <ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off). • Inspect for DTCs. • Are any other DTCs output? 	Yes Follow the applicable DTC inspection procedure, then go to the next step. (See DTC TABLE [SJ6A-EL].)	
		No	Go to the next step.
4	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect ATF condition. <ul style="list-style-type: none"> ▪ Transparent red: Normal ▪ Milky: Water mixed in fluid ▪ Reddish brown: Deteriorated ATF • Is it normal? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	Yes Go to the next step.	
		No	If the ATF color milky or reddish brown, repair or replace AT, then go to Step 7.
5	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Start the engine. • Warm up the AT. • Is the ATF level within the specification? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	Yes Go to the next step.	
		No	Add ATF to the specified level, then go to Step 7. <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>

6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> Start the engine. Measure the line pressure. <p>(See MECHANICAL SYSTEM TEST [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are the line pressures within the specifications? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> All ranges: Replace the oil pump or control valve body, then go to the next step. Any ranges: Replace the AT, then go to the next step. <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION [SJ6A-EL].)</p>
7	VERIFY TROUBLESHOOTING OF DTC P0761 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the TCM memory using the M-MDS. Start the engine. Warm up AT. Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 6GR. Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Transmission/Transaxle

DTC P0762 [SJ6A-EL]

DTC P0762	Shift solenoid C malfunction (stuck on)
DETECTION CONDITION	<ul style="list-style-type: none"> TMC detects that shift solenoid C does not change from on when engine is running <p>Diagnostic support note:</p> <ul style="list-style-type: none"> MIL illuminates if TCM detects the above malfunction conditions in two consecutive drive cycles. PENDING CODE is available. FREEZE FRAME DATA is available. The AT warning light illuminates. DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Deteriorated ATF ATF level low Oil pump malfunction Control valve body malfunction Transmission malfunction TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair 	Yes Go to the next step. No Record the FREEZE FRAME DATA on the repair

	order?		order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. 	
		No	Go to the next step.
3	INSPECT FOR DTC <ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off). • Inspect for DTCs. • Are any other DTCs output? 	Yes Follow the applicable DTC inspection procedure, then go to the next step. (See DTC TABLE [SJ6A-EL] .)	
		No	Go to the next step.
4	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect ATF condition. <ul style="list-style-type: none"> ▪ Transparent red: Normal ▪ Milky: Water mixed in fluid ▪ Reddish brown: Deteriorated ATF • Is it normal? (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL] .)	Yes Go to the next step.	
		No	If the ATF color milky or reddish brown, repair or replace AT, then go to Step 7.
5	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Start the engine. • Warm up the AT. • Is the ATF level within the specification? (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL] .)	Yes Go to the next step.	
		No	Add ATF to the specified level, then go to Step 7. (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL] .)

6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> Start the engine. Measure the line pressure. <p>(See MECHANICAL SYSTEM TEST [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are the line pressures within the specifications? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> All ranges: Replace the oil pump or control valve body, then go to the next step. Any ranges: Replace the AT, then go to the next step. <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION [SJ6A-EL].)</p>
7	VERIFY TROUBLESHOOTING OF DTC P0762 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the TCM memory using the M-MDS. Start the engine. Warm up AT. Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 6GR. Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Transmission/Transaxle

DTC P0766 [SJ6A-EL]

DTC P0766	Shift solenoid D malfunction (stuck off)
	Shift solenoid G malfunction (stuck on)
DETECTION CONDITION	<ul style="list-style-type: none"> • TCM detects that shift solenoid D does not change from off when engine is running • TCM detects that shift solenoid G does not change from on when engine is running <p>Diagnostic support note:</p> <ul style="list-style-type: none"> • MIL illuminates if TCM detects the above malfunction conditions in two consecutive drive cycles. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The AT warning light illuminates. • DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Oil pump malfunction • Control valve body malfunction • Transmission malfunction • TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
------	------------	--------

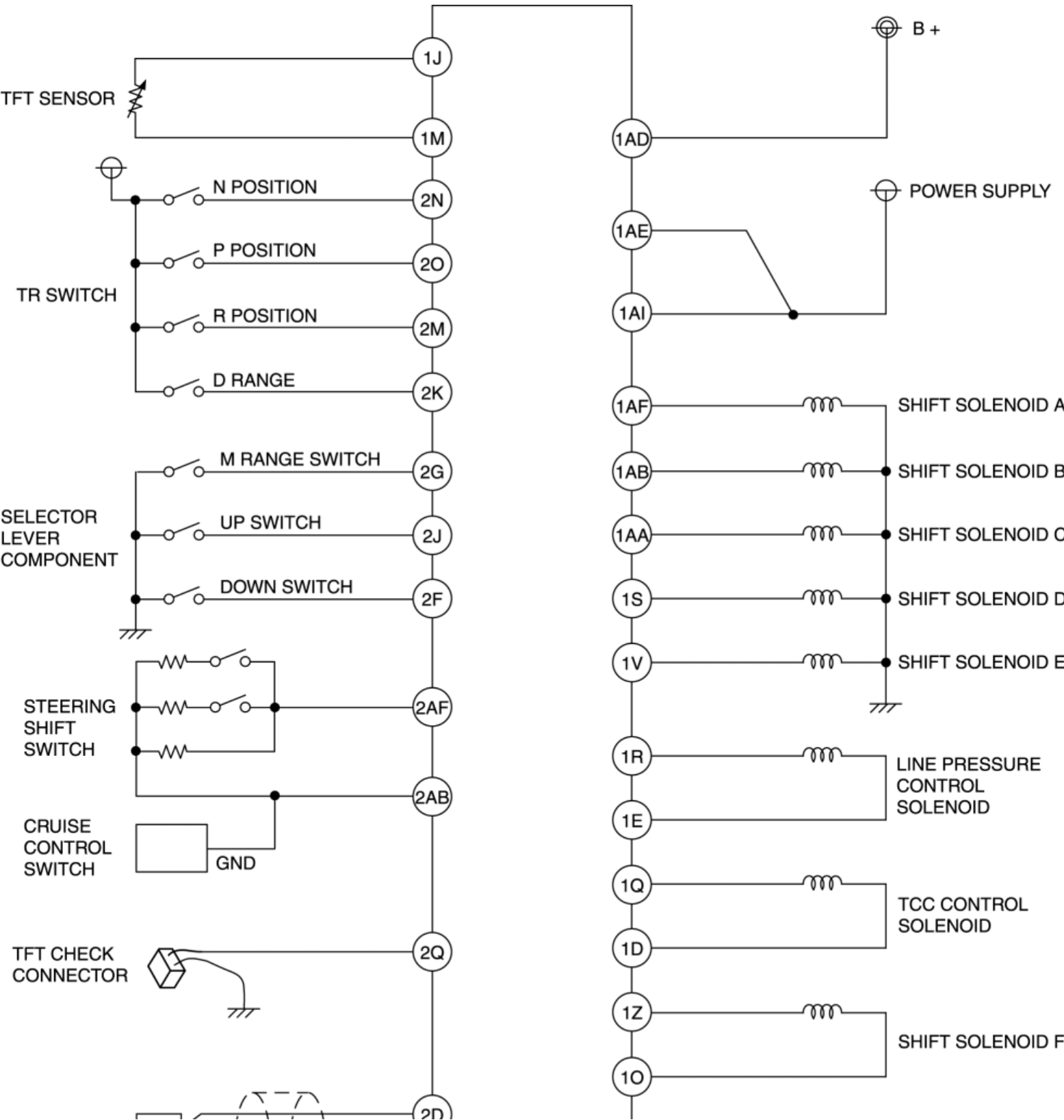
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes	Go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes	Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
3	INSPECT FOR DTC <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Inspect for DTCs. Are any other DTCs output? 	Yes	Follow the applicable DTC inspection procedure, then go to the next step. (See DTC TABLE [SJ6A-EL] .)
4	INSPECT ATF CONDITION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect ATF condition. <ul style="list-style-type: none"> Transparent red: Normal Milky: Water mixed in fluid Reddish brown: Deteriorated ATF Is it normal? (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL] .)	Yes	Go to the next step.
5	INSPECT ATF LEVEL <ul style="list-style-type: none"> Start the engine. Warm up the AT. Is the ATF level within the specification? 	Yes	Go to the next step.
		No	Add ATF to the specified level, then go to Step 7. (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL] .)

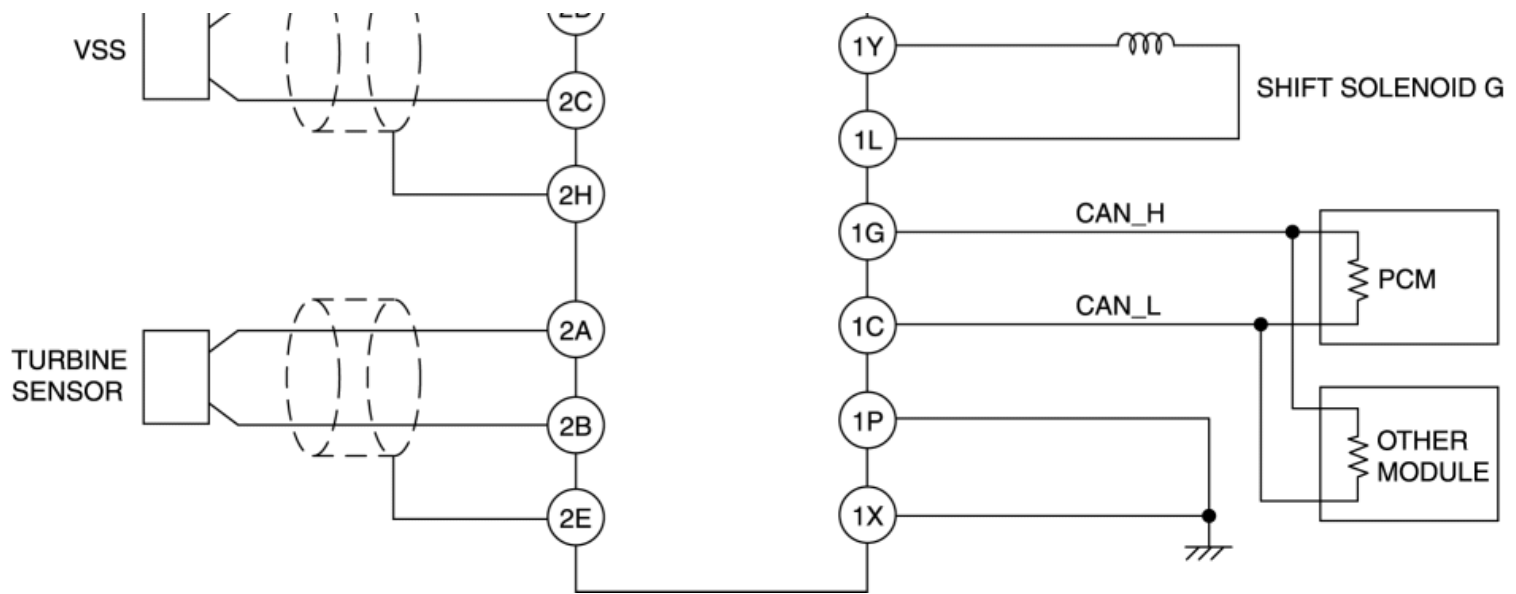
	(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)		
6	INSPECT LINE PRESSURE <ul style="list-style-type: none"> Start the engine. Measure the line pressure. (See MECHANICAL SYSTEM TEST [SJ6A-EL].) <ul style="list-style-type: none"> Are the line pressures within the specifications? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> All ranges: Replace the oil pump or control valve body, then go to the next step. Any ranges: Replace the AT, then go the next step. (See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION [SJ6A-EL].)
7	VERIFY TROUBLESHOOTING OF DTC P0766 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the TCM memory using the M-MDS. Start the engine. Warm up AT. Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 6GR. Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].) <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	DTC troubleshooting completed.

[Next >](#)

2011 - RX-8 - Transmission/Transaxle

AUTOMATIC TRANSMISSION CONTROL SYSTEM WIRING DIAGRAM [SJ6A-EL]





[Next >](#)

© 2010 Mazda North American Operations, U.S.A.

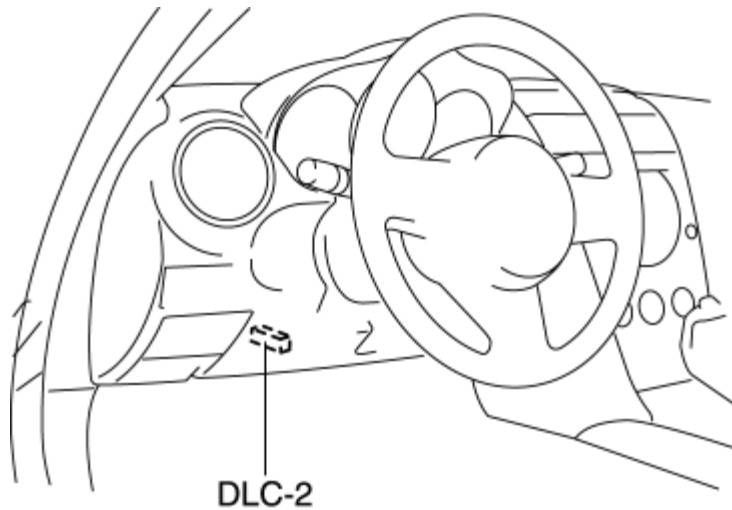
[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

AUTOMATIC TRANSMISSION ON-BOARD DIAGNOSTIC FUNCTION [SJ6A-EL]

DTC Reading Procedure

1. Perform necessary vehicle preparation and visual inspection.
2. Connect the M-MDS to the DLC-2.



3. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 - When using the IDS (laptop PC)
 - Select "Self Test".
 - Select "Modules".
 - Select "TCM".
 - When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "TCM".
 - Select "Self Test".

NOTE:

- Freeze frame data appears at the top of the help screen when the displayed

DTC is selected.

- The freeze frame data consists of data for vehicle and transmission control system operation conditions when malfunctions in the transmission control system are detected and stored in the TCM.
- There are modes 2 and 12 in the freeze frame data.

Freeze frame data (mode 2)

- Freeze frame data is stored at the instant the malfunction indicator lamp illuminates, and only a part of the DTC data is stored.
- For the freeze frame data, if there are several malfunctions in the engine control system, the data for the malfunction which occurred initially is stored. Thereafter, if a misfire or fuel injection control malfunction occurs, data from the misfire or fuel injection control malfunction is written over the initially stored data. However, if the initially stored freeze frame data is a misfire or fuel injection control malfunction, it is not overwritten.

Freeze frame data (mode 12)

- The data for DTCs currently detected is stored.
- The DTC recording timing differs depending on the number of DTC drive cycles.
 - For a DTC with a drive cycle number 1, only the malfunction determination data is recorded.
 - For a DTC with a drive cycle number 2, both the malfunction determination and undetermined data is recorded.

Freeze frame data table (mode2, mode12) table

NOTE:

- Refer to PID monitor table for confirm the engine control system operation status while the PCM does not store the DTC.
- Freeze frame data items are not displayed, according to detected DTC.

Freeze frame data item	Definition	Unit	Corresponding PID data monitor item
LOAD	Engine load	%	—

ECT	Engine coolant temperature	°C {°F}	ECT TCM
RPM	Engine speed	RPM	RPM TCM
VS	Vehicle speed	KPH {MPH}	VSS
TP	Throttle valve position No.1	%	THOP
RUNTM	Time from engine start	hh:mm:ss	—
VPWR	Module supply voltage	V	VPWR_TCM

4. Verify the DTC according to the directions on the screen.

- If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.

5. After completion of repairs, clear all DTCs stored in the TCM. (See [AFTER REPAIR PROCEDURE \[SJ6A-EL\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Transmission/Transaxle

DTC P0781 [SJ6A-EL]

DTC P0781	1-2 shift valve malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • TCM detects 1–2 shift valve malfunction. <p>Diagnostic support note:</p> <ul style="list-style-type: none"> • The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The AT warning light illuminates. • DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Deteriorated ATF • ATF level low • Oil pump malfunction • Control valve body malfunction • Transmission malfunction • TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED	Yes Go to the next step.
	<ul style="list-style-type: none"> • Has the FREEZE FRAME DATA been recorded on the repair order? 	No Record the FREEZE FRAME DATA on the repair order, then go to the next step.

2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT FOR DTC <ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off). • Inspect for DTCs. • Are any other DTCs output? 	Yes Follow the applicable DTC inspection procedure, then go to the next step. (See DTC TABLE [SJ6A-EL] .)
4	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect ATF condition. <ul style="list-style-type: none"> ▪ Transparent red: Normal ▪ Milky: Water mixed in fluid ▪ Reddish brown: Deteriorated ATF • Is it normal? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	Yes Go to the next step.
5	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Start the engine. • Warm up the AT. • Is the ATF level within the specification? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	Yes Go to the next step.
6	INSPECT LINE PRESSURE	Yes Go to the next step.

	<ul style="list-style-type: none"> Start the engine. Measure the line pressure. <p>(See MECHANICAL SYSTEM TEST [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are the line pressures within the specifications? 	No	<ul style="list-style-type: none"> All ranges: Replace the oil pump or control valve body, then go to the next step. Any ranges: Replace the AT, then go to the next step. <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION [SJ6A-EL].)</p>
7	VERIFY TROUBLESHOOTING OF DTC P0781 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the TCM memory using the M-MDS. Start the engine. Warm up AT. Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 6GR. Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Transmission/Transaxle

DTC P0813 [SJ6A-EL]

DTC P0813	Reverse sequence valve malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> TCM detects reverse sequence valve malfunction. <p>Diagnostic support note:</p> <ul style="list-style-type: none"> The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles. PENDING CODE is available. FREEZE FRAME DATA is available. The AT warning light illuminates. DTC is stored in TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Deteriorated ATF ATF level low Oil pump malfunction Control valve body malfunction Transmission malfunction TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA on the repair order, then go to the next step.</p>

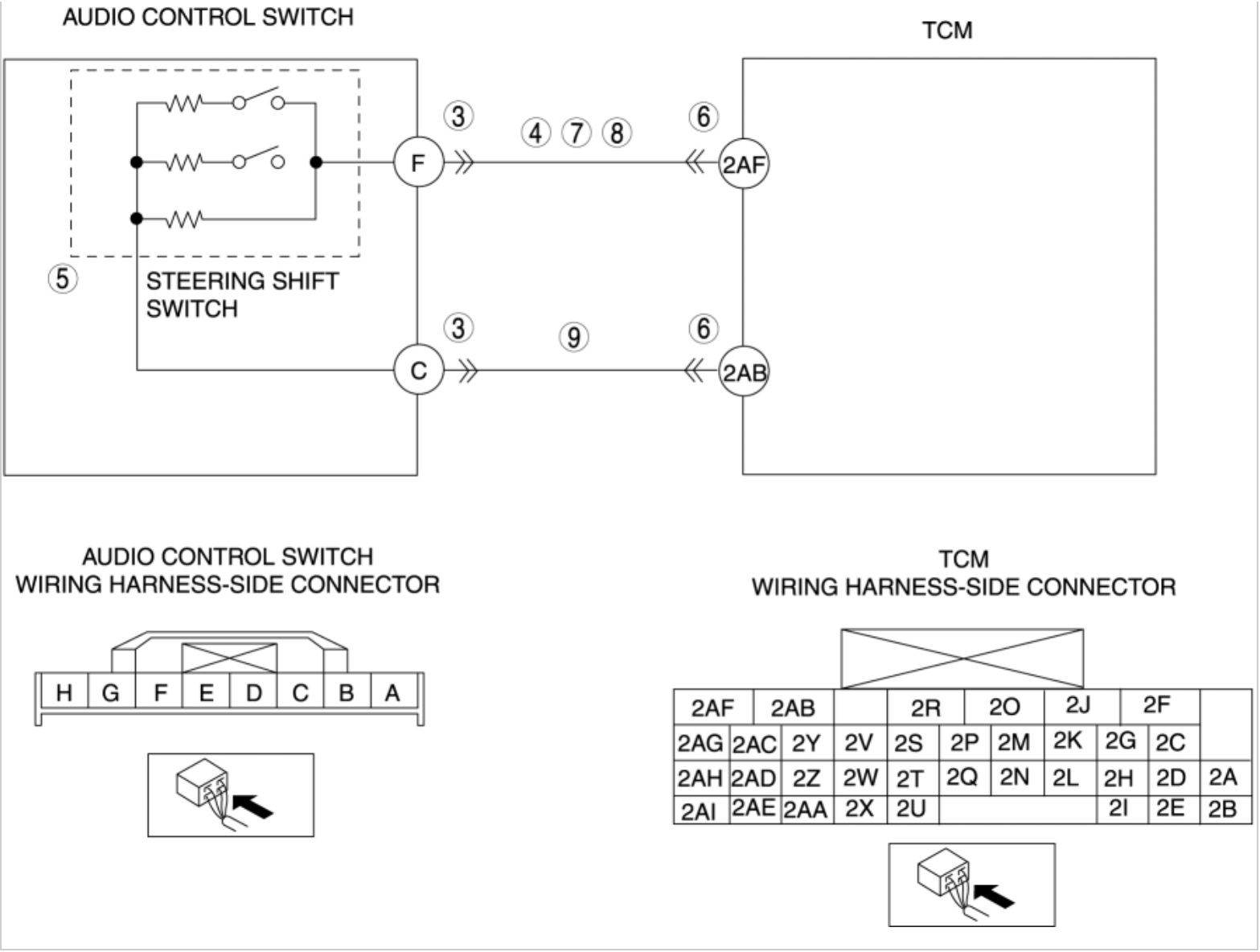
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT FOR DTC <ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off). • Inspect for DTCs. • Are any other DTCs output? 	Yes Follow the applicable DTC inspection procedure, then go to the next step. (See DTC TABLE [SJ6A-EL] .)
4	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect ATF condition. <ul style="list-style-type: none"> ▪ Transparent red: Normal ▪ Milky: Water mixed in fluid ▪ Reddish brown: Deteriorated ATF • Is it normal? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	Yes Go to the next step.
5	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Start the engine. • Warm up the AT. • Is the ATF level within the specification? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	Yes Go to the next step.
6	INSPECT LINE PRESSURE	Yes Go to the next step.

	<ul style="list-style-type: none"> Start the engine. Measure the line pressure. <p>(See MECHANICAL SYSTEM TEST [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are the line pressures within the specifications? 	No	<ul style="list-style-type: none"> All ranges: Replace the oil pump or control valve body, then go to the next step. Any ranges: Replace the AT, then go to the next step. <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION [SJ6A-EL].)</p>
7	VERIFY TROUBLESHOOTING OF DTC P0813 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the TCM memory using the M-MDS. Start the engine. Warm up AT. Drive the vehicle in D range and make sure that the gears shift smoothly from 1GR to 6GR. Is the PENDING CODE same as the DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Transmission/Transaxle

DTC P0826 [SJ6A-EL]

DTC P0826	Steering shift switch circuit malfunction (open circuit/short to ground)
DETECTION CONDITION	<ul style="list-style-type: none">• TCM detects open or short circuit in steering shift switch circuit when engine is running. <p>Diagnostic support note:</p> <ul style="list-style-type: none">• MIL illuminates if TCM detects the above malfunction condition during the first drive cycle.• PENDING CODE is not available.• FREEZE FRAME DATA is available.• AT warning light illuminate.• DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Audio control switch connector or terminal malfunction• Short to ground in wiring harness between audio control switch terminal F and TCM terminal 2AF• Steering shift switch malfunction• TCM connector or terminal malfunction• Short to power in wiring harness between audio control switch terminal F and TCM terminal 2AF• Open circuit in wiring harness between audio control switch terminal F and TCM terminal 2AF• Open circuit in wiring harness between audio control switch terminal C and TCM terminal 2AB• TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none">Has the FREEZE FRAME DATA been recorded on the repair order?	YesGo to the next step.
		NoRecord the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none">Verify related Service Bulletins and/or on-line repair information availability.Is any related repair information available?	YesPerform repair or diagnosis according to the available repair information. <ul style="list-style-type: none">If the vehicle is not repaired, go to the next step.
		NoGo to the next step.
	INSPECT AUDIO CONTROL SWITCH CONNECTOR FOR POOR	

3	CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the audio control switch connector. • Inspect for poor connection at audio control switch terminals F and C (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
4	INSPECT SHIFT CONTROL SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Inspect for continuity between the audio control switch (wiring harness-side) terminal F and body ground. • Is there continuity? 	Yes	Repair or replace the wiring harness, then go to Step 10.
		No	Go to the next step.
5	INSPECT STEERING SHIFT SWITCH <ul style="list-style-type: none"> • Inspect the steering shift switch. (See STEERING SHIFT SWITCH INSPECTION.) • Is the steering shift switch normal? 	Yes	Go to the next step.
		No	Replace the steering shift switch, then go to Step 10. (See AUDIO CONTROL SWITCH REMOVAL/INSTALLATION.)
6	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Disconnect the TCM connector. • Inspect for poor connection at TCM terminals 2AB and 2AF (such as damaged/pulled-out pins, corrosion). • Are the connector and terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 10.
7	INSPECT SHIFT CONTROL SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> • Turn the ignition switch to the ON position (engine off). • Measure the voltage at TCM (wiring harness-side) terminal 2AF. • Is the voltage 5.0 V or more? 	Yes	Repair or replace the wiring harness for short to power supply, then go to Step 10.
		No	Go to the next step.
8	INSPECT SHIFT CONTROL SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Inspect for continuity between the audio control switch (wiring harness-side) terminal F and TCM (wiring harness-side) terminal 2AF. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 10.
9	INSPECT SHIFT CONTROL SIGNAL GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Inspect for continuity between the audio control switch (wiring harness-side) terminal C and TCM (wiring harness-side) terminal 2AB. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 10.

10	VERIFY TROUBLESHOOTING OF DTC P0826 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the TCM memory using the M-MDS. • Drive the vehicle in M range, and change gears by operating the steering shift switch. • Is the same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL] .)
		No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL] .)
		No	DTC troubleshooting completed.

[< Previous](#) [Next >](#)

2011 - RX-8 - Transmission/Transaxle

DTC P0969 [SJ6A-EL]

DTC P0969	Shift solenoid F range/performance (stuck)
DETECTION CONDITION	<ul style="list-style-type: none"> Feedback current corresponding to solenoid current command value is irregular when engine is running. <p>Diagnostic support note:</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. A PENDING CODE is not available. FREEZE FRAME DATA is available. The AT warning light illuminates. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Deteriorated ATF ATF level low Oil pump malfunction Control valve body malfunction Transmission malfunction TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step. No Record the FREEZE FRAME DATA on the repair

			order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. 	
		No Go to the next step.	
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect the ATF condition. <ul style="list-style-type: none"> ▪ Clear red: Normal ▪ Light red (pink): Water mixed in fluid ▪ Reddish brown: Deteriorated ATF • Is it normal? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	Yes Go to the next step.	
		No If the ATF color is light red or reddish brown, replace ATF, then go to Step 6. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT [SJ6A-EL].)	
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Start the engine. • Warm up the AT. • Is the ATF level within the specification? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	Yes Go to the next step.	
		No Add ATF to the specified level, then go to Step 6. (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)	
5	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Start the engine. • Measure the line pressure. <p>(See MECHANICAL SYSTEM TEST [SJ6A-EL].)</p>	Yes Go to the next step.	
		No <ul style="list-style-type: none"> • All ranges: Replace the oil pump or control valve body, then go to the next step. • Any ranges: Replace the AT, 	

	<ul style="list-style-type: none"> Are the line pressures within the specifications? 		<p>then go the next step.</p> <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION [SJ6A-EL].)</p>
6	VERIFY TROUBLESHOOTING OF DTC P0969 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. Is same DTC present? 	Yes	<p>Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION [SJ6A-EL].)</p>
		No	<p>Go to the next step.</p>
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	Yes	<p>Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [SJ6A-EL].)</p>
		No	<p>Troubleshooting completed.</p>

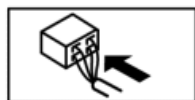
2011 - RX-8 - Transmission/Transaxle

DTC P0970 [SJ6A-EL]

DTC P0970	Shift solenoid F circuit malfunction (short to ground/open circuit)
DETECTION CONDITION	<ul style="list-style-type: none">• Open or short circuit in shift solenoid F signal system (while TCM monitors solenoid output voltage, the voltage that differs from the signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TCM connector or terminal malfunction• Short to ground in wiring harness between shift solenoid F terminal B and TCM terminal 1Z• Short to ground in wiring harness between shift solenoid F terminal A and TCM terminal 1O• Couple component connector or terminal malfunction• Open circuit between shift solenoid F terminal B and TCM terminal 1Z• Open circuit between shift solenoid F terminal A and TCM terminal 1O• Shift solenoid F connector or terminal malfunction• Shift solenoid F malfunction• TCM malfunction

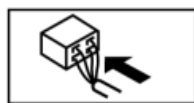
AUTOMATIC TRANSMISSION WIRING HARNESS-SIDE CONNECTOR (COUPLE COMPONENT)

O	M	K	I	G	E	C	A
N	L	J	H	F	D	B	

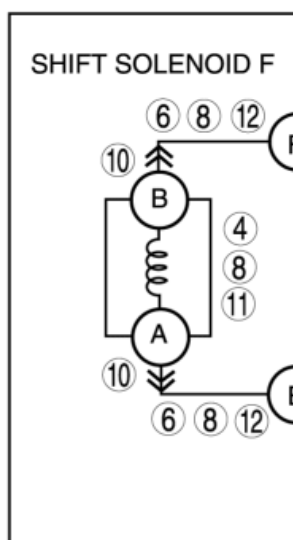


SHIFT SOLENOID F WIRING HARNESS-SIDE CONNECTOR

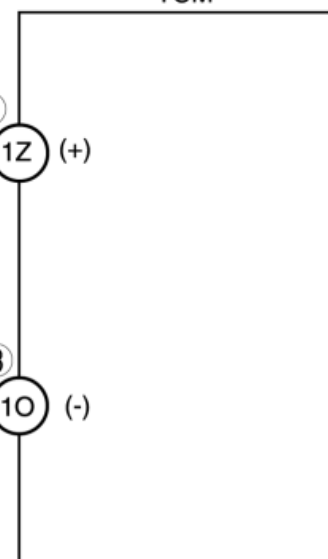
B	A
---	---



AUTOMATIC TRANSMISSION (COUPLE COMPONENT)

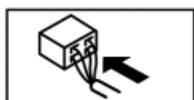


TCM

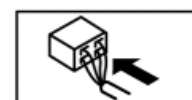


TCM WIRING HARNESS-SIDE CONNECTOR

	1AF	1AA	1Y	1R	1P		1H	1D	
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L	1I
1AH	1AD			1W	1T			1M	1J
1AI	1AE			1X	1U			1N	1K



	2AF	2AB		2R	2O	2J	2F	
2AG	2AC	2Y	2V	2S	2P	2M	2K	2G
2AH	2AD	2Z	2W	2T	2Q	2N	2L	2H
2AI	2AE	2AA	2X	2U			2I	2E



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA on the repair order, then go to the next step.</p>
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	<p>Yes Perform repair or diagnosis according to the available repair information.</p> <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. <p>No Go to the next step.</p>
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. 	<p>Yes Go to the next step.</p> <p>No Repair or replace the connector and/or terminal, then go to Step 13.</p>

	<ul style="list-style-type: none"> Inspect for poor connection at TCM terminals 1Z and 1O (such as damaged/pulled-out pins, corrosion). Are terminals normal? 		
4	INSPECT RESISTANCE OF SHIFT SOLENOID F CIRCUIT <ul style="list-style-type: none"> Inspect for resistance between TCM terminals 1Z and 1O (wiring harness-side). Is the resistance within 5.0—5.6 ohms? (See SOLENOID VALVE INSPECTION [SJ6A-EL].) 	Yes	Go to the next step.
		No	Go to go to Step 7.
5	INSPECT SHIFT SOLENOID F CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Disconnect the couple component connector. Inspect for continuity between TCM terminals (wiring harness-side) and body ground. <ul style="list-style-type: none"> Terminal 1Z and body ground Terminal 1O and body ground Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for short to ground, then go to Step 13.
6	INSPECT SHIFT SOLENOID F CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Inspect for continuity between couple component terminals (wiring harness-side) and body ground. <ul style="list-style-type: none"> Terminal F and body ground Terminal E and body ground Is there continuity? 	Yes	Go to go to Step 13.
		No	Repair or replace the couple component, then go to the next step.
7	INSPECT COUPLE COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the Ignition switch to the LOCK position. Disconnect the couple component connector. Inspect for poor connection at couple component terminals H and G (such as damaged/pulled-out pins, corrosion). Are terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
8	INSPECT RESISTANCE OF SHIFT SOLENOID F CIRCUIT <ul style="list-style-type: none"> Inspect the resistance between couple component (transmission case side) terminals H and G. Is the resistance within 5.0—5.6 ohms? (See SOLENOID VALVE INSPECTION [SJ6A-EL].) 	Yes	Go to the next step.
		No	Go to Step 10.
9	INSPECT SHIFT SOLENOID F CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between TCM terminals and couple component terminals (wiring harness-side). <ul style="list-style-type: none"> Terminal 1Z and terminal F Terminal 1O and terminal E Is there continuity? 	Yes	Go to Step 13.
		No	Repair or replace the wiring harness for open circuit, go to Step 13.
10	INSPECT SHIFT SOLENOID F CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Disconnect the shift solenoid F connector. 	Yes	Go to the next step.

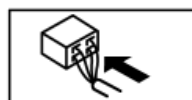
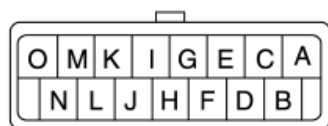
	<ul style="list-style-type: none"> Inspect for poor connection at shift solenoid F terminals A and B (such as damaged/pulled-out pins, corrosion). Are terminals normal? 	No	Repair or replace the connector and/or terminal, then go to Step 13.
11	INSPECT SHIFT SOLENOID F <ul style="list-style-type: none"> Inspect the shift solenoid F. (See SOLENOID VALVE INSPECTION [SJ6A-EL].) Is the shift solenoid F normal? 	Yes	Go to the next step.
		No	Replace the control valve body, then go to Step 13. (See CONTROL VALVE BODY REMOVAL [SJ6A-EL].) (See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)
12	INSPECT SHIFT SOLENOID F CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between couple component terminals and shift solenoid F terminals (wiring harness-side). <ul style="list-style-type: none"> Terminal F and terminal B Terminal E and terminal A Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the couple component, then go to the next step.
13	VERIFY TROUBLESHOOTING OF DTC P0970 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. Is same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
14	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	Troubleshooting completed.

2011 - RX-8 - Transmission/Transaxle

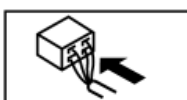
DTC P0971 [SJ6A-EL]

DTC P0971	Shift solenoid F circuit malfunction (short to power)
DETECTION CONDITION	<ul style="list-style-type: none">• Short circuit in shift solenoid F signal system (while TCM monitors solenoid output voltage, the voltage that differs from the signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TCM connector or terminal malfunction• Short to power in wiring harness between shift solenoid F terminal B and TCM terminal 1Z• Short to power in wiring harness between shift solenoid F terminal A and TCM terminal 1O• Shift solenoid F malfunction• TCM malfunction

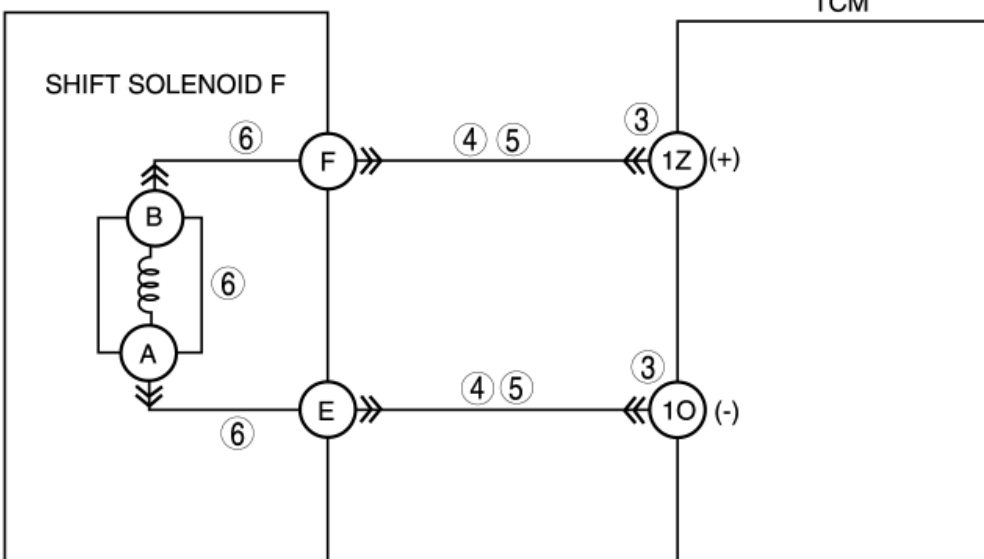
AUTOMATIC TRANSMISSION WIRING HARNESS-SIDE CONNECTOR (COUPLE COMPONENT)



SHIFT SOLENOID F WIRING HARNESS-SIDE CONNECTOR

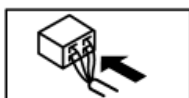


AUTOMATIC TRANSMISSION (COUPLE COMPONENT)

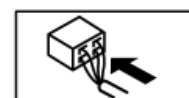


TCM WIRING HARNESS-SIDE CONNECTOR

<div></div>											
	1AF	1AA	1Y	1R	1P		1H	1D			
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L	1I	1E	1A
1AH	1AD			1W	1T			1M	1J	1F	1B
1AI	1AE			1X	1U			1N	1K	1G	1C



<div></div>												
2AF		2AB			2R		2O		2J		2F	
2AG	2AC	2Y	2V	2S	2P	2M	2K	2G	2C			
2AH	2AD	2Z	2W	2T	2Q	2N	2L	2H	2D	2A		
2AI	2AE	2AA	2X	2U					2I	2E	2B	



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. 	Yes Go to the next step.
		No Repair or replace the connector and/or terminal, then go to Step 7.

	<ul style="list-style-type: none"> Inspect for poor connection at TCM terminals 1Z and 1O (such as damaged/pulled-out pins, corrosion). Are terminals normal? 		
4	INSPECT SHIFT SOLENOID F CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Measure the voltage at TCM (wiring harness-side) terminals 1Z and 1O. Is there 0 V at the TCM wiring harness-side connector terminals? 	YesGo to go to Step 7.	
		No	Go to the next step.
5	INSPECT SHIFT SOLENOID F CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the couple component connector. Turn the ignition switch to the ON position (engine off). Measure the voltage at TCM (wiring harness-side) terminals 1Z and 1O. Is there 0 V at the TCM wiring harness-side connector terminals? 	YesGo to the next step.	
		No	Repair or replace the wiring harness (TCM—couple component connector) for short to power supply, then go to Step 7.
6	INSPECT SHIFT SOLENOID F <ul style="list-style-type: none"> Inspect the shift solenoid F. (See SOLENOID VALVE INSPECTION [SJ6A-EL].) Is the shift solenoid F normal? 	YesRepair or replace the wiring harness (couple component connector—shift solenoid F) for short to power supply, then go to the next step.	
		No	Replace the control valve body, then go to the next step. (See CONTROL VALVE BODY REMOVAL [SJ6A-EL].) (See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)
7	VERIFY TROUBLESHOOTING OF DTC P0971 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. Is same DTC present? 	YesReplace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)	
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the “After Repair Procedure”. (See AFTER REPAIR PROCEDURE [SJ6A-EL].) Are any DTCs present? 	YesGo to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)	
		No	Troubleshooting completed.

2011 - RX-8 - Transmission/Transaxle

DTC P2719 [SJ6A-EL]

DTC P2719	Shift solenoid G range/performance (stuck)
DETECTION CONDITION	<ul style="list-style-type: none"> Feedback current corresponding to solenoid current command value is irregular when engine is running. <p>Diagnostic support note:</p> <ul style="list-style-type: none"> The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. A PENDING CODE is not available. FREEZE FRAME DATA is available. The AT warning light illuminates. The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Deteriorated ATF ATF level low Oil pump malfunction Control valve body malfunction Transmission malfunction TCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	<p>Yes Go to the next step.</p> <p>No Record the FREEZE FRAME DATA on the repair</p>

			order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> • If the vehicle is not repaired, go to the next step. 	
		No Go to the next step.	
3	INSPECT ATF CONDITION <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect the ATF condition. <ul style="list-style-type: none"> ▪ Clear red: Normal ▪ Light red (pink): Water mixed in fluid ▪ Reddish brown: Deteriorated ATF • Is it normal? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	Yes Go to the next step.	
		No If the ATF color is light red or reddish brown, replace ATF, then go to Step 6. (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT [SJ6A-EL].)	
4	INSPECT ATF LEVEL <ul style="list-style-type: none"> • Start the engine. • Warm up the AT. • Is the ATF level within the specification? <p>(See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)</p>	Yes Go to the next step.	
		No Add ATF to the specified level, then go to Step 6. (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].)	
5	INSPECT LINE PRESSURE <ul style="list-style-type: none"> • Start the engine. • Measure the line pressure. <p>(See MECHANICAL SYSTEM TEST [SJ6A-EL].)</p>	Yes Go to the next step.	
		No <ul style="list-style-type: none"> • All ranges: Replace the oil pump or control valve body, then go to the next step. • Any ranges: Replace the AT, 	

	<ul style="list-style-type: none"> Are the line pressures within the specifications? 		<p>then go the next step.</p> <p>(See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION [SJ6A-EL].)</p>
6	VERIFY TROUBLESHOOTING OF DTC P2719 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. Is same DTC present? 	Yes	<p>Replace the TCM, then go to the next step.</p> <p>(See TCM REMOVAL/INSTALLATION [SJ6A-EL].)</p>
		No	<p>Go to the next step.</p>
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". <p>(See AFTER REPAIR PROCEDURE [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are any DTCs present? 	Yes	<p>Go to the applicable DTC inspection.</p> <p>(See DTC TABLE [SJ6A-EL].)</p>
		No	<p>Troubleshooting completed.</p>

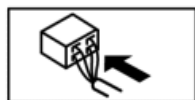
2011 - RX-8 - Transmission/Transaxle

DTC P2720 [SJ6A-EL]

DTC P2720	Shift solenoid G circuit malfunction (short to ground/open circuit)
DETECTION CONDITION	<ul style="list-style-type: none">• Open or short circuit in shift solenoid G signal system (while TCM monitors solenoid output voltage, the voltage that differs from the signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TCM connector or terminal malfunction• Short to ground in wiring harness between shift solenoid G terminal B and TCM terminal 1Y• Short to ground in wiring harness between shift solenoid G terminal A and TCM terminal 1L• Couple component connector or terminal malfunction• Open circuit between shift solenoid G terminal B and TCM terminal 1Y• Open circuit between shift solenoid G terminal A and TCM terminal 1L• Shift solenoid G malfunction• TCM malfunction

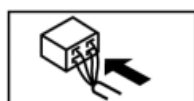
AUTOMATIC TRANSMISSION WIRING HARNESS-SIDE CONNECTOR (COUPLE COMPONENT)

O	M	K	I	G	E	C	A
N	L	J	H	F	D	B	

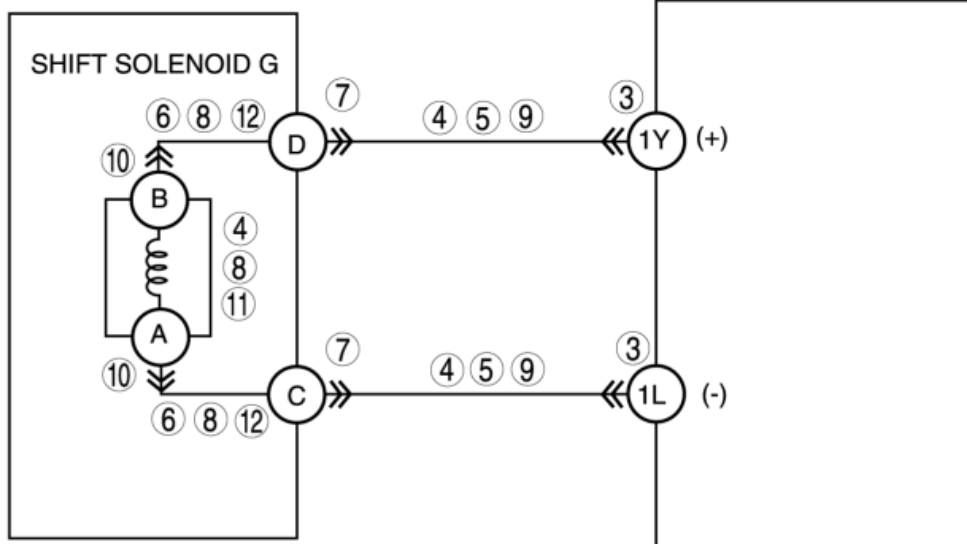


SHIFT SOLENOID G WIRING HARNESS-SIDE CONNECTOR

B	A
---	---

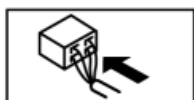


AUTOMATIC TRANSMISSION (COUPLE COMPONENT)

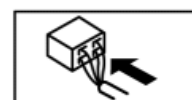


TCM WIRING HARNESS-SIDE CONNECTOR

	1AF	1AA	1Y	1R	1P		1H	1D
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L
1AH	1AD			1W	1T			1M
1AI	1AE			1X	1U			1N



	2AF	2AB		2R	2O	2J	2F
2AG	2AC	2Y	2V	2S	2P	2M	2K
2AH	2AD	2Z	2W	2T	2Q	2N	2L
2AI	2AE	2AA	2X	2U			2I



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step. No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step. No Go to the next step.
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. 	Yes Go to the next step. No Repair or replace the connector and/or terminal, then go to Step 13.

	<ul style="list-style-type: none"> Inspect for poor connection at TCM terminals 1Y and 1L (such as damaged/pulled-out pins, corrosion). Are terminals normal? 		
4	INSPECT RESISTANCE OF SHIFT SOLENOID G CIRCUIT <ul style="list-style-type: none"> Inspect for resistance between TCM terminals 1Y and 1L (wiring harness-side). Is the resistance within 5.0—5.6 ohms? (See SOLENOID VALVE INSPECTION [SJ6A-EL].) 	Yes	Go to the next step.
		No	Go to go to Step 7.
5	INSPECT SHIFT SOLENOID G CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Disconnect the couple component connector. Inspect for continuity between TCM terminals (wiring harness-side) and body ground. <ul style="list-style-type: none"> Terminal 1Y and body ground Terminal 1L and body ground Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for short to ground, then go to Step 13.
6	INSPECT SHIFT SOLENOID G CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Inspect for continuity between couple component terminals (wiring harness-side) and body ground. <ul style="list-style-type: none"> Terminal D and body ground Terminal C and body ground Is there continuity? 	Yes	Go to go to Step 13.
		No	Repair or replace the couple component, then go to the next step.
7	INSPECT COUPLE COMPONENT CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the Ignition switch to the LOCK position. Disconnect the couple component connector. Inspect for poor connection at couple component terminals H and G (such as damaged/pulled-out pins, corrosion). Are terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the connector and/or terminal, then go to Step 13.
8	INSPECT RESISTANCE OF SHIFT SOLENOID G CIRCUIT <ul style="list-style-type: none"> Inspect the resistance between couple component (transmission case side) terminals H and G. Is the resistance within 5.0—5.6 ohms? (See SOLENOID VALVE INSPECTION [SJ6A-EL].) 	Yes	Go to the next step.
		No	Go to Step 10.
9	INSPECT SHIFT SOLENOID G CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between TCM terminals and couple component terminals (wiring harness-side). <ul style="list-style-type: none"> Terminal 1Y and terminal D Terminal 1L and terminal C Is there continuity? 	Yes	Go to Step 13.
		No	Repair or replace the wiring harness for open circuit, go to Step 13.
10	INSPECT SHIFT SOLENOID G CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Disconnect the shift solenoid G connector. 	Yes	Go to the next step.

	<ul style="list-style-type: none"> Inspect for poor connection at shift solenoid G terminals A and B (such as damaged/pulled-out pins, corrosion). Are terminals normal? 	No	Repair or replace the connector and/or terminal, then go to Step 13.
11	INSPECT SHIFT SOLENOID G <ul style="list-style-type: none"> Inspect the shift solenoid G. (See SOLENOID VALVE INSPECTION [SJ6A-EL].) Is the shift solenoid G normal? 	Yes	Go to the next step.
		No	Replace the control valve body, then go to Step 13. (See CONTROL VALVE BODY REMOVAL [SJ6A-EL].) (See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)
12	INSPECT SHIFT SOLENOID G CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Inspect for continuity between couple component terminals and shift solenoid G terminals (wiring harness-side). <ul style="list-style-type: none"> Terminal D and terminal B Terminal C and terminal A Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the couple component, then go to the next step.
13	VERIFY TROUBLESHOOTING OF DTC P2720 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. Is same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
14	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [SJ6A-EL].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	Troubleshooting completed.

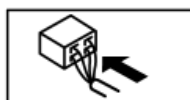
2011 - RX-8 - Transmission/Transaxle

DTC P2721 [SJ6A-EL]

DTC P2721	Shift solenoid G circuit malfunction (short to power)
DETECTION CONDITION	<ul style="list-style-type: none">• Short circuit in shift solenoid G signal system (while TCM monitors solenoid output voltage, the voltage that differs from the signal output by CPU in TCM is detected). <p>Diagnostic support note:</p> <ul style="list-style-type: none">• The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle.• A PENDING CODE is not available.• FREEZE FRAME DATA is available.• The AT warning light illuminates.• The DTC is stored in the TCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none">• TCM connector or terminal malfunction• Short to power in wiring harness between shift solenoid G terminal B and TCM terminal 1Y• Short to power in wiring harness between shift solenoid G terminal A and TCM terminal 1L• Shift solenoid G malfunction• TCM malfunction

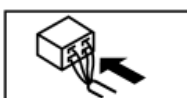
AUTOMATIC TRANSMISSION WIRING HARNESS-SIDE CONNECTOR (COUPLE COMPONENT)

O	M	K	I	G	E	C	A
N	L	J	H	F	D	B	

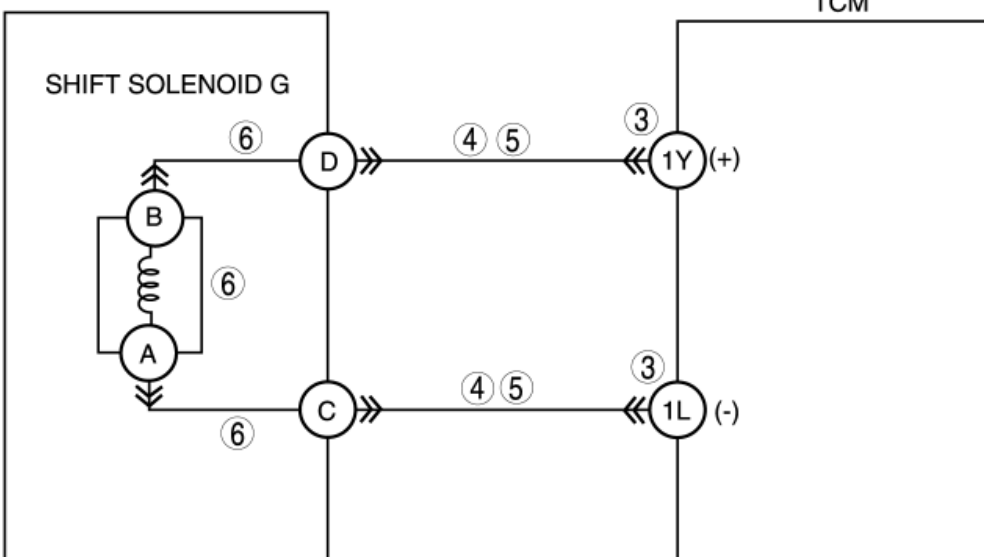


SHIFT SOLENOID G WIRING HARNESS-SIDE CONNECTOR

B	A
---	---

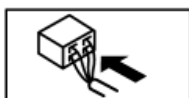


AUTOMATIC TRANSMISSION (COUPLE COMPONENT)

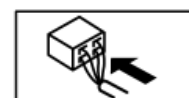


TCM WIRING HARNESS-SIDE CONNECTOR

	1AF	1AA	1Y	1R	1P		1H	1D
1AG	1AC	1AB	1Z	1V	1S	1Q	1O	1L
1AH	1AD		1W	1T			1M	1J
1AI	1AE		1X	1U			1N	1K



	2AF	2AB		2R	2O	2J	2F	
2AG	2AC	2Y	2V	2S	2P	2M	2K	2G
2AH	2AD	2Z	2W	2T	2Q	2N	2L	2H
2AI	2AE	2AA	2X	2U			2I	2E



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded on the repair order? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Verify related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT TCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the TCM connector. 	Yes Go to the next step.
		No Repair or replace the connector and/or terminal, then go to Step 7.

	<ul style="list-style-type: none"> Inspect for poor connection at TCM terminals 1Y and 1L (such as damaged/pulled-out pins, corrosion). Are terminals normal? 		
4	INSPECT SHIFT SOLENOID G CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Turn the ignition switch to the ON position (engine off). Measure the voltage at TCM (wiring harness-side) terminals 1Y and 1L. Is there 0 V at the TCM wiring harness-side connector terminals? 	Yes	Go to go to Step 7.
		No	Go to the next step.
5	INSPECT SHIFT SOLENOID G CIRCUIT FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the couple component connector. Turn the ignition switch to the ON position (engine off). Measure the voltage at TCM (wiring harness-side) terminals 1Y and 1L. Is there 0 V at the TCM wiring harness-side connector terminals? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness (TCM—couple component connector) for short to power supply, then go to Step 7.
6	INSPECT SHIFT SOLENOID G <ul style="list-style-type: none"> Inspect the shift solenoid G. (See SOLENOID VALVE INSPECTION [SJ6A-EL].) Is the shift solenoid G normal? 	Yes	Repair or replace the wiring harness (couple component connector—shift solenoid G) for short to power supply, then go to the next step.
		No	Replace the control valve body, then go to the next step. (See CONTROL VALVE BODY REMOVAL [SJ6A-EL].) (See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)
7	VERIFY TROUBLESHOOTING OF DTC P2721 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the memory using the M-MDS. Drive the vehicle in D range and make sure that gears shift smoothly from 1GR to 6GR. Is same DTC present? 	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
		No	Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the “After Repair Procedure”. (See AFTER REPAIR PROCEDURE [SJ6A-EL].) Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SJ6A-EL].)
		No	Troubleshooting completed.

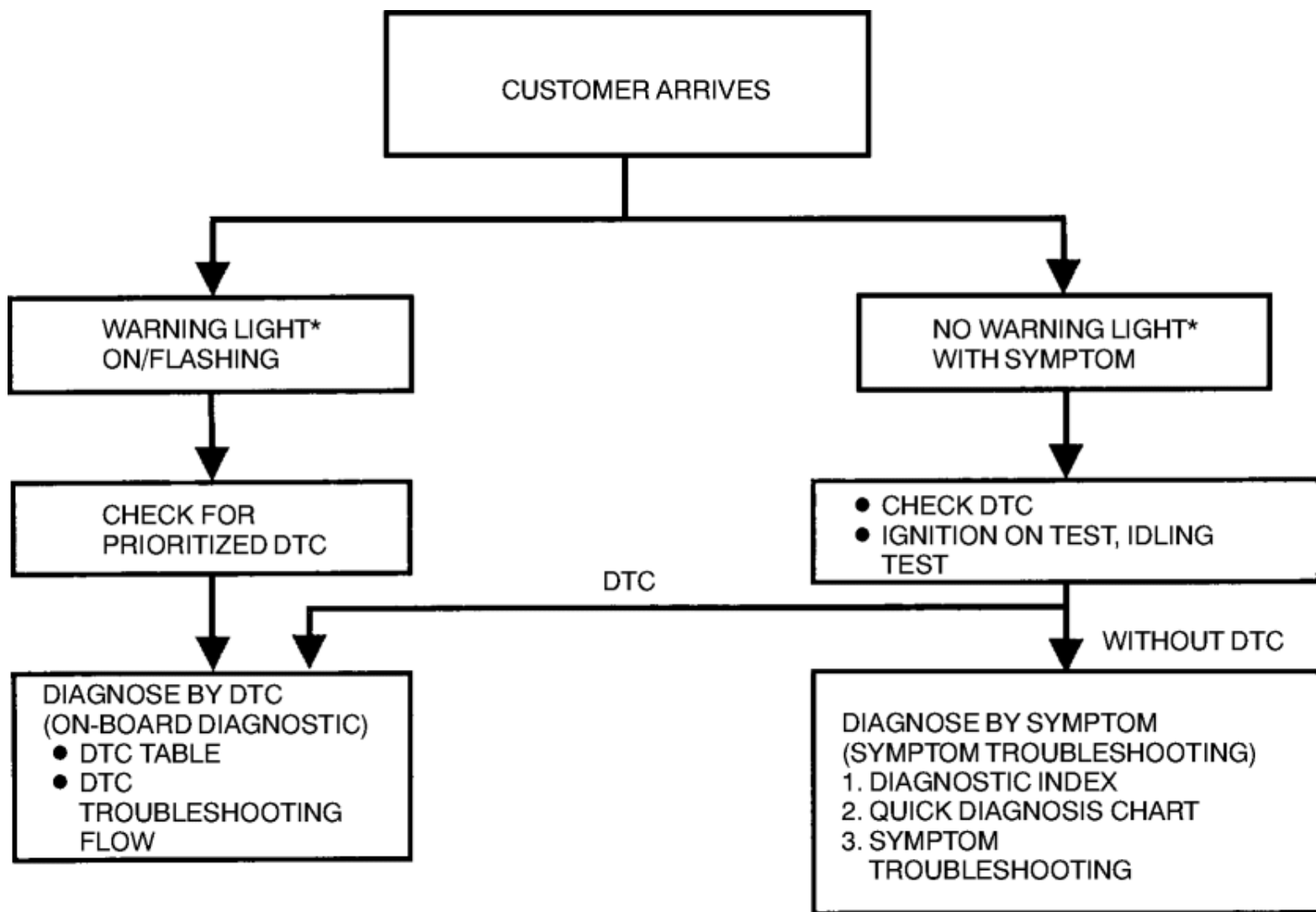
2011 - RX-8 - Transmission/Transaxle

FOREWORD [SJ6A-EL]

- When the customer reports a vehicle malfunction, inspect the malfunction indicator lamp (MIL) indication, AT warning indicator light flash, and diagnostic trouble code (DTC), then diagnose the malfunction according to following flowchart.
 - If a DTC exists, diagnose the applicable DTC inspection. (See [DTC TABLE \[SJ6A-EL\]](#).)
 - If a DTC does not exist, the MIL does not illuminate and the AT warning indicator light illuminate, diagnose the applicable symptom troubleshooting. (See [SYMPTOM TROUBLESHOOTING ITEM TABLE \[SJ6A-EL\]](#).)

NOTE:

- If a tire of a different diameter from the standard tire is installed, the TCM determines that the driving mode is the AAS mode, and may change to a different shift timing from the normal timing.



*: Malfunction Indicator Lamp (MIL), AT warning light.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

BASIC INSPECTION [SJ6A-EL]

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Measure the battery voltage. Is the battery voltage 10.0—14.0 V? 	YesGo to the next step.
		No Replace or recharge the battery. (See BATTERY RECHARGING [13B-MSP] .)
2	<ul style="list-style-type: none"> Inspect the TCM related harnesses, connectors and fuses. Are they normal? 	YesGo to the next step.
		No Repair or replace any malfunctioning parts according to the inspection result.
3	<ul style="list-style-type: none"> Warm up the engine to normal operating temperature. Retrieve DTC using the M-MDS. Is there any DTC present? 	YesRecord Freeze Frame Data and perform appropriate DTC troubleshooting procedures.
		No Go to the next step.
4	<ul style="list-style-type: none"> Inspect ATF color and condition. (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].) Are ATF color and odor normal? 	YesGo to the next step.
		No Repair or replace any malfunctioning parts according to the inspection result. Flush AT and cooler line if necessary.
5	<ul style="list-style-type: none"> Perform the road test. Is the AT operating normally? 	YesGo to the next step.
		No Repair or replace any malfunctioning parts according to the inspection result.
6	<ul style="list-style-type: none"> Perform the time lag test. 	YesGo to the next step.

	<ul style="list-style-type: none"> Is the AT operating normally? 	No	Repair or replace any malfunctioning parts according to the inspection result.
7	<ul style="list-style-type: none"> Perform the stall test. Is the stall speed within the specified? 	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts according to the inspection result.
8	<ul style="list-style-type: none"> Perform the line pressure test. Is the line pressure within the specified? 	Yes	Perform the symptom troubleshooting and follow the procedures.
		No	Repair or replace any malfunctioning parts according to the inspection result.
9	<ul style="list-style-type: none"> Inspect following PCM and TCM part or signal related PIDs using the M-MDS. <p>PCM:</p> <ul style="list-style-type: none"> APP sensor (APP) Brake switch (BOO) Engine speed (RPM) ECT (ECT) <p>TCM:</p> <ul style="list-style-type: none"> Turbine shaft speed (TSS) Vehicle speed (VSS) TFT sensor (TFT) TR switch (TR) M range switch (MNL SW) Up switch (UP SW) Down switch (DWN SW) Throttle position 	Yes	Perform the symptom troubleshooting and follow the procedures.
		No	Repair or replace any malfunctioning parts according to the inspection result.

	signal (THOP)	
--	---------------	--

- Are they normal?

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

SYMPTOM TROUBLESHOOTING ITEM TABLE [SJ6A-EL]

- Use the chart below to verify the symptoms of the trouble in order to diagnose the appropriate area.

No.	TROUBLESHOOTING ITEM	DESCRIPTION	PAGE
1	<ul style="list-style-type: none"> • Vehicle does not move in D range, or in R position 	<ul style="list-style-type: none"> • Vehicle does not move when accelerator pedal is depressed. 	(See NO.1 VEHICLE DOES NOT MOVE IN D RANGE, OR IN R POSITION [SJ6A-EL].)
2	<ul style="list-style-type: none"> • Vehicle moves in N position 	<ul style="list-style-type: none"> • Vehicle creeps in N position. • Vehicle creeps if brake pedal is not depressed in N position. 	(See NO.2 VEHICLE MOVES IN N POSITION [SJ6A-EL].)
3	<ul style="list-style-type: none"> • Vehicle moves in P position, or parking gear does not disengage when P position is disengaged 	<ul style="list-style-type: none"> • Vehicle rolls when on a downward slope and tires do not lock in P position. • Tires locked when P position is disengaged, vehicle does not move in D range, and R position when accelerator pedal is 	(See NO.3 VEHICLE MOVES IN P POSITION, OR PARKING GEAR DOES NOT DISENGAGE WHEN P IS DISENGAGED [SJ6A-EL].)

		depressed, and engine remains in stalled condition.	
4	<ul style="list-style-type: none"> Excessive creep 	<ul style="list-style-type: none"> Vehicle accelerates in D range, and R position when accelerator pedal is not depressed. 	(See NO.4 EXCESSIVE CREEP [SJ6A-EL].)
5	<ul style="list-style-type: none"> No creep at all 	<ul style="list-style-type: none"> Vehicle does not move in D range, or R position when idling on flat paved road. 	(See NO.5 NO CREEP AT ALL [SJ6A-EL].)
6	<ul style="list-style-type: none"> Low maximum speed and poor acceleration 	<ul style="list-style-type: none"> Vehicle acceleration is poor at start. Delayed acceleration when accelerator pedal is depressed while driving. 	(See NO.6 LOW MAXIMUM SPEED AND POOR ACCELERATION [SJ6A-EL].)
7	<ul style="list-style-type: none"> No shifting 	<ul style="list-style-type: none"> Single shift range only. Sometimes shifts correctly. 	(See NO.7 NO SHIFTING [SJ6A-EL].)
8	<ul style="list-style-type: none"> Does not shift to 6GR 	<ul style="list-style-type: none"> Vehicle does not upshift from 5GR to 6GR even though vehicle speed increased. Vehicle does not shift to 6GR even 	(See NO.8 DOES NOT SHIFT TO 6GR [SJ6A-EL].)

		though accelerator pedal is released in D range at 80 km/h {50 mph} .	
9	<ul style="list-style-type: none"> Abnormal shifting 	<ul style="list-style-type: none"> Shifts incorrectly (incorrect shift pattern). 	(See NO.9 ABNORMAL SHIFTING [SJ6A-EL].)
10	<ul style="list-style-type: none"> Frequent shifting 	<ul style="list-style-type: none"> Downshifting occurs suddenly even when accelerator pedal is depressed slightly in D range. 	(See NO.10 FREQUENT SHIFTING [SJ6A-EL].)
11	<ul style="list-style-type: none"> Shift point is high or low 	<ul style="list-style-type: none"> Shift point considerably different from automatic shift diagram. Shift delays when accelerating. Shift occurs suddenly when accelerating and engine speed does not increase. 	(See NO.11 SHIFT POINT IS HIGH OR LOW [SJ6A-EL].)
12	<ul style="list-style-type: none"> Torque converter clutch (TCC) non-operation 	<ul style="list-style-type: none"> TCC does not operate when vehicle reaches TCC operation range. 	(See NO.12 TORQUE CONVERTER CLUTCH (TCC) NON-OPERATION [SJ6A-EL].)
13	<ul style="list-style-type: none"> No kickdown 	<ul style="list-style-type: none"> Does not downshift when accelerator 	(See NO.13 NO KICKDOWN [SJ6A-EL].)

		pedal is fully depressed within kickdown range.	
14	<ul style="list-style-type: none"> Engine flares up or slips when upshifting or downshifting 	<ul style="list-style-type: none"> When accelerator pedal is depressed, engine speed increases normally but vehicle speed increases slowly. When accelerator pedal is depressed while driving, engine speed increases but vehicle speed does not increase. 	<p>(See NO.14 ENGINE FLARES UP OR SLIPS WHEN UPSHIFTING OR DOWNSHIFTING [SJ6A-EL].)</p>
15	<ul style="list-style-type: none"> Engine flares up or slips when accelerating vehicle 	<ul style="list-style-type: none"> Engine flares up when accelerator pedal is depressed for upshifting. Engine flares up suddenly when accelerator pedal is depressed for downshifting. 	<p>(See NO.15 ENGINE FLARES UP OR SLIPS WHEN ACCELERATING VEHICLE [SJ6A-EL].)</p>
16	<ul style="list-style-type: none"> Judder upon torque converter clutch (TCC) operation 	<ul style="list-style-type: none"> Vehicle jolts when TCC is engaged. 	<p>(See NO.16 JUDDER UPON TORQUE CONVERTER CLUTCH (TCC) OPERATION [SJ6A-EL].)</p>
17	<ul style="list-style-type: none"> Excessive shift shock from N to D or N to R position/range 	<ul style="list-style-type: none"> Strong shock is felt when shifting from N to D or N to R 	<p>(See NO.17 EXCESSIVE SHIFT SHOCK FROM N TO D OR N TO R POSITION/RANGE [SJ6A-EL].)</p>

		position/range at idle.	
18	<ul style="list-style-type: none"> Excessive shift shock is given when upshifting and downshifting 	<ul style="list-style-type: none"> Excessive shift shock is felt when depressing accelerator pedal to accelerate at upshifting. During cruising, excessive shift shock is felt when depressing accelerator pedal at downshifting. 	(See NO.18 EXCESSIVE SHIFT SHOCK IS GIVEN WHEN UPSHIFTING AND DOWNSHIFTING [SJ6A-EL].)
19	<ul style="list-style-type: none"> Excessive shift shock on torque converter clutch (TCC) 	<ul style="list-style-type: none"> Strong shock is felt when TCC is engaged. 	(See NO.19 EXCESSIVE SHIFT SHOCK ON TORQUE CONVERTER CLUTCH (TCC) [SJ6A-EL].)
20	<ul style="list-style-type: none"> Noise occurs at idle when vehicle is stopped in all positions/ranges 	<ul style="list-style-type: none"> Transmission is noisy in all positions and ranges when vehicle is idling. 	(See NO.20 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN ALL POSITIONS/RANGES [SJ6A-EL].)
21	<ul style="list-style-type: none"> Noise occurs at idle when vehicle is stopped in D range, or in R position 	<ul style="list-style-type: none"> Transmission is noisy in driving ranges when vehicle is idling. 	(See NO.21 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN D RANGE, OR IN R POSITION [SJ6A-EL].)
22	<ul style="list-style-type: none"> No engine braking 	<ul style="list-style-type: none"> Engine speed drops to idle but vehicle coasts when accelerator pedal is released during cruising at medium to high speeds. 	(See NO.22 NO ENGINE BRAKING [SJ6A-EL].)

		<ul style="list-style-type: none"> Engine speed drops to idle but vehicle coasts when accelerator pedal is released when in M range (1GR) at low vehicle speed. 	
23	<ul style="list-style-type: none"> Transmission overheats 	<ul style="list-style-type: none"> Burnt smell emitted from the transmission. Smoke is emitted from the transmission. 	(See NO.23 TRANSMISSION OVERHEATS [SJ6A-EL].)
24	<ul style="list-style-type: none"> Engine stalls when shifted to D range, or in R position 	<ul style="list-style-type: none"> Engine stalls when shifting from N or P position to D range or R position at idle. 	(See NO.24 ENGINE STALLS WHEN SHIFTED TO D RANGE, OR IN R POSITION [SJ6A-EL].)
25	<ul style="list-style-type: none"> Engine stalls when driving at slow speeds or stopping 	<ul style="list-style-type: none"> Engine stalls when brake pedal is depressed while driving at low speed or stopping. 	(See NO.25 ENGINE STALLS WHEN DRIVING AT SLOW SPEED OR STOPPING [SJ6A-EL].)
26	<ul style="list-style-type: none"> Starter does not work 	<ul style="list-style-type: none"> Starter does not work even when P or N position is selected. 	(See NO.26 STARTER DOES NOT WORK [SJ6A-EL].)
27	<ul style="list-style-type: none"> Gear position indicator light does not illuminate in M range 	<ul style="list-style-type: none"> Gear position indicator light in instrument cluster does not illuminate in M range with ignition switch at ON. 	(See NO.27 GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE [SJ6A-EL].)

28	<ul style="list-style-type: none"> • Gear position indicator light illuminates in D range or P, N, R positions 	<ul style="list-style-type: none"> • Gear position indicator light in instrument cluster illuminates in D range or P, N R positions with ignition switch at ON. 	<p>(See NO.28 GEAR POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE OR P, N, R POSITIONS [SJ6A-EL].)</p>
29	<ul style="list-style-type: none"> • Does not upshift in M range 	<ul style="list-style-type: none"> • Gear position indicator light in instrument cluster illuminates but vehicle does not upshift when selector lever is pushed to "+" side or steering shift switch "UP" is pulled. 	<p>(See NO.29 DOES NOT UPSHIFT IN M RANGE [SJ6A-EL].)</p>
30	<ul style="list-style-type: none"> • Does not downshift in M range 	<ul style="list-style-type: none"> • Gear position indicator light in instrument cluster illuminates but vehicle does not downshift when selector lever is pushed to "-" side or steering shift switch "DOWN" is pushed. 	<p>(See NO.30 DOES NOT DOWNSHIFT IN M RANGE [SJ6A-EL].)</p>
31	<ul style="list-style-type: none"> • M range position indicator light does not illuminate in M range and/or in D range with direct mode/M range position indicator light 	<ul style="list-style-type: none"> • M range position indicator light in instrument cluster does not illuminate in M range and/or in D range in direct mode 	<p>(See NO.31 M RANGE POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE AND/OR IN D RANGE WITH DIRECT MODE/M RANGE POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE WHILE NOT IN DIRECT MODE [SJ6A-EL].)</p>

	illuminates in D range while not in direct mode.	when ignition switch is in ON position. <ul style="list-style-type: none">• M range position indicator light illuminates in D range while not in direct mode when ignition switch is in ON position.	
--	--	--	--

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

switch/Steering
t switch "UP" side

Cause of trouble	Down switch/Steer shift switch "DOWN"		VSS		Turbine sensor		TFT sensor		Starter lock relay	Shift solenoid A	Shift solenoid B	Shift solenoid C	Shift solenoid D	Shift solenoid E	Line pressure control solenoid	TCC control solenoid	Shift solenoid F	Shift solenoid G
	No signal input	Abnormal signal input	No signal input	Abnormal signal input	No signal input	Abnormal signal input	Open/short	Malfunction signal input	Open/short	Open/short	Open/short	Open/short	Open/short	Open/short	Open/short	Open/short	Open/short	Open/short

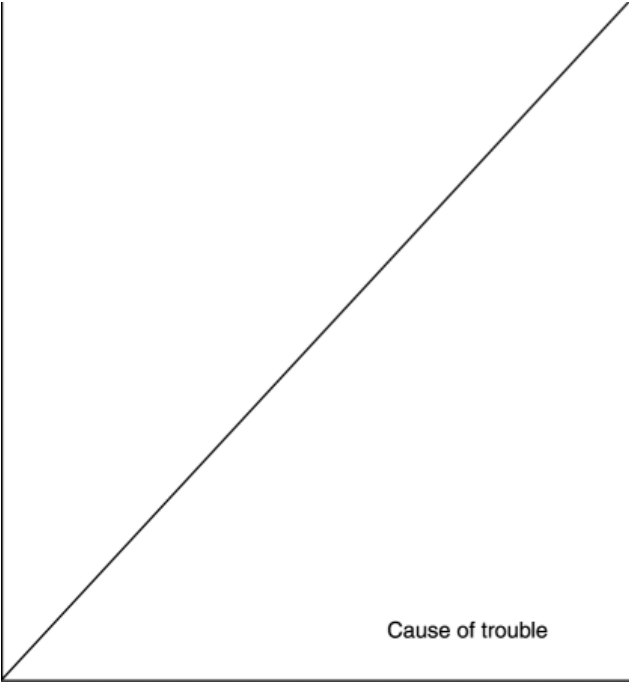
X : Applicable

1	Vehicle does not move in D range, or in R position	X	X		X		X	X	X		X	X			X	
2	Vehicle moves in N position	X	X						X	X		X			X	
3	Vehicle moves in P position, or parking gear does not disengage when P is disengaged															
4	Excessive creep															
5	No creep at all	X	X		X			X	X		X	X			X	
6	Low maximum speed and poor acceleration	X	X	X	X	X						X				
7	No shifting	X	X	X	X	X	X	X	X	X	X	X	X		X	X
8	Does not shift to 6GR	X		X	X		X	X	X	X		X			X	
9	Abnormal shifting	X	X	X	X	X						X				
10	Frequent shifting	X										X				
11	Shift point is high or low															
12	Torque converter clutch (TCC) non-operation	X											X			
13	No kickdown															
14	Engine flares up or slips when upshifting or downshifting	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
15	Engine flares up or slips when accelerating vehicle	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
16	Judder upon torque converter clutch (TCC) operation	X											X			
17	Excessive shift shock from N to D or N to R position/range	X	X		X		X					X	X	X		
18	Excessive shift shock is given when upshifting and downshifting	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
19	Excessive shift shock on torque converter clutch (TCC)	X											X			
20	Noise occurs at idle when vehicle is stopped in all positions/ranges	X	X	X	X	X										
21	Noise occurs at idle when vehicle is stopped in D range, or in R position	X	X	X	X	X										
22	No engine braking	X										X				
23	Transmission overheats															X
24	Engine stalls when shifted to D range, or in R position												X			
25	Engine stalls when driving at slow speeds or stopping												X			X
26	Starter does not work															
27	Gear position indicator light does not illuminate in D or M range															
28	Gear position indicator light illuminate in P, R and N position															
29	Does not upshift in M range															
30	Does not downshift in M range															
31	M range position indicator light does not illuminate in M range and/or in D range with direct mode/M range position indicator light illuminates in D range while not in direct mode															

Symptom item

Hydraulic system components

Control valve body



Valve body spool is not operating properly	
C1 accumulator is not operating properly	
C2 accumulator is not operating properly	
C3 accumulator is not operating properly	
B3 accumulator is not operating properly	
Clogging	Shift solenoid A hydraulic circuit
Clogging	Shift solenoid B hydraulic circuit
Clogging	Shift solenoid C hydraulic circuit
Clogging	Shift solenoid D hydraulic circuit
Clogging	Shift solenoid E hydraulic circuit
Clogging	Line pressure control solenoid hydraulic circuit
Clogging	TCC control solenoid hydraulic circuit
Clogging	Shift solenoid F hydraulic circuit
Clogging	Shift solenoid G hydraulic circuit
ATF cooler is not operating properly	

X : Applicable

[illegible]

X : Applicable

1	Vehicle does not move in D range, or in R position		
2	Vehicle moves in N position		
3	Vehicle moves in P position, or parking gear does not disengage when P is disengaged		
4	Excessive creep		
5	No creep at all		
6	Low maximum speed and poor acceleration		
7	No shifting	X	X
8	Does not shift to 6GR		
9	Abnormal shifting	X	X
10	Frequent shifting		
11	Shift point is high or low	X	X
12	Torque converter clutch (TCC) non-operation		
13	No kickdown		
14	Engine flares up or slips when upshifting or downshifting		
15	Engine flares up or slips when accelerating vehicle		
16	Judder upon torque converter clutch (TCC) operation		
17	Excessive shift shock from N to D or N to R position/range		
18	Excessive shift shock is given when upshifting and downshifting		
19	Excessive shift shock on torque converter clutch (TCC)		
20	Noise occurs at idle when vehicle is stopped in all positions/ranges		
21	Noise occurs at idle when vehicle is stopped in D range, or in R position		
22	No engine braking		
23	Transmission overheats		
24	Engine stalls when shifted to D range, or in R position		
25	Engine stalls when driving at slow speeds or stopping		
26	Starter does not work		
27	Gear position indicator light does not illuminate in D or M range		
28	Gear position indicator light illuminate in P, R and N position		
29	Does not upshift in M range		
30	Does not downshift in M range		
31	M range position indicator light does not illuminate in M range and/or in D range with direct mode/M range position indicator light illuminates in D range while not in direct mode		
Symptom item		Wheel speed signal malfunction	
		Tire of a different diameter from the standard tire is installed	ABS wheel-speed sensor
Cause of trouble			

2011 - RX-8 - Transmission/Transaxle

NO.1 VEHICLE DOES NOT MOVE IN D RANGE, OR IN R POSITION [SJ6A-EL]

1	Vehicle does not move in D range, or in R position
DESCRIPTION	<ul style="list-style-type: none"> Vehicle does not move when accelerator pedal is depressed.
POSSIBLE CAUSE	<ul style="list-style-type: none"> If the vehicle does not move in D range or R position, basically, the malfunction is in the AT. (Vehicle will move even with a malfunction in the TCM.) Since a malfunction is in the sensor circuit or output circuit is the cause of the malfunction in the AT, inspect the sensors, output circuit, and the related wiring harnesses. <ul style="list-style-type: none"> Clutch slippage, worn (D range-C1 clutch, One-way clutch, R position-C3 clutch, B4 brake, One-way clutch) <ul style="list-style-type: none"> Line pressure low Shift solenoid A malfunction Shift solenoid B malfunction Shift solenoid C malfunction Shift solenoid E malfunction Line pressure control solenoid malfunction Shift solenoid G malfunction Sensor GND malfunction Body GND malfunction Control valve body malfunction Selector lever malfunction Parking mechanism not operating properly Torque converter malfunction TCM malfunction

- Foreign materials or water mixed in ATF
- Improper ATF amount

NOTE:

- Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See [BASIC INSPECTION \[SJ6A-EL\]](#).)

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • When the vehicle is stopped on a flat, level road and the engine off, does the vehicle move when pushed? (in D range or N, R positions with the brake pedal released) 	Yes	Go to the next step.
		No	Inspect for parking mechanism.
2	<ul style="list-style-type: none"> • Start the engine. • Does vehicle move when selector lever in between N position and D range? 	Yes	Inspect or adjust selector lever. (See SELECTOR LEVER INSPECTION .)
		No	Go to the next step.
3	<ul style="list-style-type: none"> • Stop the engine. • Inspect following solenoid. (See SOLENOID VALVE INSPECTION [SJ6A-EL].) ▪ Shift solenoid A ▪ Shift solenoid B ▪ Shift solenoid C ▪ Shift solenoid E ▪ Line pressure control solenoid ▪ Shift solenoid G • Are these normal? 	Yes	Overhaul the transmission and repair or replace any malfunctioning parts. (clutch slippage, worn) (See Automatic Transmission Workshop Manual SJ6A-EL.)
		No	Inspect the coupler component. If normal, replace the malfunctioning parts. (See Automatic Transmission Workshop Manual SJ6A-EL.)
4	<ul style="list-style-type: none"> • Verify test results. ▪ If normal, return to the diagnostic index to service any additional symptoms. 		

- If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.
 - If the vehicle is repaired, troubleshooting completed.
 - If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

NO.2 VEHICLE MOVES IN N POSITION [SJ6A-EL]

2	Vehicle moves in N position
DESCRIPTION	<ul style="list-style-type: none"> • Vehicle creeps in N position. • Vehicle creeps if brake pedal is not depressed in N position.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • If the vehicle moves in N position, basically, the malfunction is in the AT. Since a malfunction in the sensor circuit or output circuit is the cause of the malfunction in the AT, inspect the sensors, output circuit, and the related wiring harnesses. <ul style="list-style-type: none"> ▪ Clutch burnt (C1 clutch, C4 clutch, One-way clutch) <ul style="list-style-type: none"> • Line pressure low • Shift solenoid B malfunction • Shift solenoid C malfunction • Shift solenoid E malfunction • Shift solenoid G malfunction • Control valve body malfunction ▪ Selector lever position disparity (Although the selector indicator shows N position, the hydraulic circuit shows D range or R position) <ul style="list-style-type: none"> • TR switch mis-adjustment <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION [SJ6A-EL].)

Diagnostic procedure

--	--	--

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> Does the vehicle creep when selector lever is moved slightly in N position? 	Yes	Go to the next step.
		No	Inspect and adjust the selector lever and TR switch. (See SELECTOR LEVER INSPECTION .) (See TRANSMISSION RANGE (TR) SWITCH INSPECTION [SJ6A-EL] .) (See TRANSMISSION RANGE (TR) SWITCH ADJUSTMENT [SJ6A-EL] .)
2	<ul style="list-style-type: none"> Inspect following solenoid. (See SOLENOID VALVE INSPECTION [SJ6A-EL].) <ul style="list-style-type: none"> Shift solenoid B Shift solenoid C Shift solenoid E Shift solenoid G Are these solenoids normal? 	Yes	Overhaul the transmission and repair or replace any malfunctioning parts. (clutch slippage, worn) (See Automatic Transmission Workshop Manual SJ6A-EL.)
		No	Inspect the coupler component. If normal, replace the malfunctioning parts. (See Automatic Transmission Workshop Manual SJ6A-EL.)
3	<ul style="list-style-type: none"> Verify test results. <ul style="list-style-type: none"> If normal, return to the diagnostic index to service any additional symptoms. If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> If the vehicle is repaired, troubleshooting completed. If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. 		

2011 - RX-8 - Transmission/Transaxle

NO.3 VEHICLE MOVES IN P POSITION, OR PARKING GEAR DOES NOT DISENGAGE WHEN P IS DISENGAGED [SJ6A-EL]

3	Vehicle moves in P position, or parking gear does not disengage when P is disengaged
DESCRIPTION	<ul style="list-style-type: none">• Vehicle rolls on a downward slope in P position.• Tires are locked when P is disengaged. Vehicle does not move in D range, and R position when the accelerator pedal is depressed, and the engine remains in a stalled condition.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Parking mechanism malfunction (May have effect on noise or shock from transmission)• Improper adjustment of selector lever• If the vehicle moves in N position, perform No.2 "VEHICLE MOVES IN N POSITION"

2011 - RX-8 - Transmission/Transaxle

NO.4 EXCESSIVE CREEP [SJ6A-EL]

4	Excessive creep
DESCRIPTION	<ul style="list-style-type: none">• Vehicle accelerates in D range, and R position when accelerator pedal is not depressed.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Engine idle speed is high (transmission system is not cause of problem)• Go to No.9 "FAST IDLE/RUNS ON" <p>(See NO.9 FAST IDLE/RUNS ON [13B-MSP].)</p>

2011 - RX-8 - Transmission/Transaxle

NO.5 NO CREEP AT ALL [SJ6A-EL]

5	No creep at all
DESCRIPTION	<ul style="list-style-type: none"> Vehicle does not move in D range and R position when idling on a flat paved road.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Either engine output low or there is clutch slippage. <ul style="list-style-type: none"> Clutch burnt (C1 clutch, C4 clutch) <ul style="list-style-type: none"> Line pressure low Shift solenoid B malfunction Shift solenoid C malfunction Shift solenoid E malfunction Line pressure control solenoid malfunction Shift solenoid G malfunction Control valve body malfunction Transmission fixed in 4GR or 5GR (Operation of fail-safe function) <ul style="list-style-type: none"> Short or open circuit in wiring harness Poor connection of connector Malfunction of electronic parts of output and input system There is no engine torque <ul style="list-style-type: none"> Torque converter malfunction Foreign material or water mixed in ATF Excessive or low amount of ATF

- TCM malfunction

NOTE:

- Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See [BASIC INSPECTION \[SJ6A-EL\].](#))

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Does the vehicle creep in P and/or N position? 	Yes	Inspect or adjust the selector lever. (See SELECTOR LEVER INSPECTION.)
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Stop the engine. • Inspect following solenoid. (See SOLENOID VALVE INSPECTION [SJ6A-EL].) <ul style="list-style-type: none"> ■ Shift solenoid B ■ Shift solenoid C ■ Shift solenoid E ■ Shift solenoid G ■ Line pressure control solenoid • Are these solenoids normal? 	Yes	Go to the next step.
		No	Inspect the coupler component. If normal, replace suspected solenoid. (See Automatic Transmission Workshop Manual SJ6A-EL.)
3	<ul style="list-style-type: none"> • Inspect the ATF 	Yes	<ul style="list-style-type: none"> • If large amount of metal specks are

	condition. <ul style="list-style-type: none">• Are there any metal specks found in ATF?	<p>found, overhaul the transmission and repair or replace any malfunctioning parts.</p> <p>(See Automatic Transmission Workshop Manual SJ6A-EL.)</p> <ul style="list-style-type: none">• If a large amount of metal specks are not found, replace the control valve body. <p>(See CONTROL VALVE BODY REMOVAL [SJ6A-EL].)</p> <p>(See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)</p>
		<p>No Replace the torque converter.</p> <p>(See TORQUE CONVERTER REMOVAL/INSTALLATION [SJ6A-EL].)</p>
4	<ul style="list-style-type: none">• Verify test results.<ul style="list-style-type: none">▪ If normal, return to the diagnostic index to service any additional symptoms.▪ If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.<ul style="list-style-type: none">• If the vehicle is repaired, troubleshooting completed.• If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM.	

2011 - RX-8 - Transmission/Transaxle

NO.6 LOW MAXIMUM SPEED AND POOR ACCELERATION [SJ6A-EL]

6	Low maximum speed and poor acceleration
DESCRIPTION	<ul style="list-style-type: none"> • Vehicle acceleration is poor at start. • Delayed acceleration when accelerator pedal is depressed while driving.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • If the clutch is stuck or does not stay in 4GR, malfunction is in engine circuit. <ul style="list-style-type: none"> ▪ Clutch slippage, burnt (C1 clutch, C2 clutch, C3 clutch, B1 brake, B2 brake, B3 brake, B4 brake) <ul style="list-style-type: none"> • Line pressure low • Line pressure control solenoid malfunction • Control valve body malfunction ▪ Transmission fixed in 4GR or 5GR (Operation of fail-safe function) <ul style="list-style-type: none"> • Short or open circuit in wiring harness • Poor connection of connector • Malfunction of electronic parts of output and input system ▪ Insufficient starting torque (Suspected when in-gear, shift control and engine circuit are normal) <ul style="list-style-type: none"> • Torque converter malfunction (Poor operation, stuck) ▪ Engine output low <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic

Inspection are conducted. (See [BASIC INSPECTION \[SJ6A-EL\].](#))

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> With the ignition switch at the ON position, does the gear position indicator light indication correspond to the selector lever position? 	Yes	Go to the next step.
		No	Go to No.27 "GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE", or No.28 "GEAR POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE OR P, N, R POSITIONS".
2	<ul style="list-style-type: none"> Go to No.12 "LACK/LOSS OF POWER-ACCELERATION/CRUISE". (See NO.12 LACK/LOSS OF POWER-ACCELERATION/CRUISE [13B-MSP].) Does engine control system normal? 	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts according to the inspection results.
3	<ul style="list-style-type: none"> Stop the engine. Inspect line pressure control solenoid. (See SOLENOID VALVE INSPECTION [SJ6A-EL].) Is the line pressure control solenoid normal? 	Yes	Go to the next step.
		No	Inspect the coupler component. If normal, replace suspected solenoid. (See Automatic Transmission Workshop Manual SJ6A-EL.)
4	<ul style="list-style-type: none"> Inspect the ATF condition. Are there any metal specks found in ATF? 	Yes	<ul style="list-style-type: none"> If large amount of metal specks are found, overhaul the transmission and repair or replace any malfunctioning parts. (See Automatic Transmission Workshop Manual SJ6A-EL.) If a large amount of metal specks are not found, replace the control valve body. (See CONTROL VALVE BODY REMOVAL [SJ6A-EL].)

			(See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)
		No Replace the torque converter.	(See TORQUE CONVERTER REMOVAL/INSTALLATION [SJ6A-EL].)
5	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> ▪ If normal, return to the diagnostic index to service any additional symptoms. ▪ If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. 		

2011 - RX-8 - Transmission/Transaxle

NO.7 NO SHIFTING [SJ6A-EL]

7	No shifting
DESCRIPTION	<ul style="list-style-type: none"> • Single shift range only. • Sometimes it shifts correctly.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • When the gear position is fixed in 4GR or 5GR due to the fail-safe operation, malfunction is in the AT. <ul style="list-style-type: none"> ▪ Clutch burnt (C1 clutch, C2 clutch, C3 clutch, B1 brake, B2 brake, B3 brake, B4 brake) <ul style="list-style-type: none"> • Line pressure low • Incorrect accelerator pedal position signal • Incorrect engine speed signal • Incorrect engine coolant temperature signal • Incorrect engine torque signal • VSS malfunction • Turbine sensor malfunction • Sensor GND malfunction • Shift solenoid A malfunction • Shift solenoid B malfunction • Shift solenoid C malfunction • Shift solenoid D malfunction • Shift solenoid E malfunction • Line pressure control solenoid

malfunction

- Shift solenoid F malfunction
- Shift solenoid G malfunction
- Control valve body malfunction
- 4GR or 5GR is fixed (Operation in fail-safe function)
 - Short or open circuit in wiring harness
 - Poor connection of connector
 - Poor ground of shift solenoid
 - Malfunction of electronic parts of output and input system
- TFT sensor malfunction
- TR switch malfunction
- TCM malfunction

NOTE:

- If a tire of a different diameter from the standard tire is installed, the TCM determines that the driving mode is the AAS mode, and may change to a different shift timing from the normal timing.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none">• With the ignition switch at the ON position, does the gear position indicator light indication corresponded to the selector lever position?	YesGo to the next step.
		No Go to No.27 "GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE", or No.28 "GEAR POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE OR P, N, R POSITIONS".
2	<ul style="list-style-type: none">• Access the following PCM PIDs using the M-MDS.<ul style="list-style-type: none">▪ RPM▪ APP▪ ECT• Are PIDs value normal?	YesGo to the next step.
		No Inspect and repair suspected PID related part.

3	<ul style="list-style-type: none"> Inspect the TFT sensor. <p>(See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> Is the TFT sensor normal? 	Yes	Go to the next step.
4	<ul style="list-style-type: none"> Stop the engine. Inspect following solenoid. <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> Shift solenoid A Shift solenoid B Shift solenoid C Shift solenoid D Shift solenoid E Line pressure control solenoid Shift solenoid F Shift solenoid G <ul style="list-style-type: none"> Are they normal? 	Yes	<p>Inspect the ATF condition.</p> <ul style="list-style-type: none"> If large amount of metal specks are found, overhaul the transmission and repair or replace any malfunctioning parts. <p>(See Automatic Transmission Workshop Manual SJ6A-EL.)</p> <ul style="list-style-type: none"> If a large amount of metal specks are not found, replace the control valve body. <p>(See CONTROL VALVE BODY REMOVAL [SJ6A-EL].)</p> <p>(See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)</p>
5	<ul style="list-style-type: none"> Verify test results. <ul style="list-style-type: none"> If normal, return to the diagnostic index to service any additional symptoms. If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> If the vehicle is repaired, troubleshooting completed. 		
	No	<p>Inspect the coupler component.</p> <p>If normal, replace the malfunctioning parts.</p> <p>(See Automatic Transmission Workshop Manual SJ6A-EL.)</p>	

	If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM.
--	--

[< Previous](#) [Next >](#)

© 2012 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

NO.8 DOES NOT SHIFT TO 6GR [SJ6A-EL]

8	Does not shift to 6GR
DESCRIPTION	<ul style="list-style-type: none"> • Vehicle does not upshift from 5GR to 6GR even though vehicle speed is increased. • Vehicle does not shift to 6GR even though accelerator pedal is released in D range at 80 km/h {50 mph}.
	<ul style="list-style-type: none"> • Basically, TCC does not operate when the fail-safe is operating. Verify the DTC at first. If the TCC operates when driving at high speeds only, the malfunction (improper adjustment) is in the M range switch circuit or TR switch circuit. <p>CAUTION:</p> <ul style="list-style-type: none"> • If the TCC is stuck, inspect it. In addition, inspect the oil cooler for foreign particles which may have mixed in with the ATF. ▪ C2 clutch, C3 clutch, B2 brake slippage, burnt <ul style="list-style-type: none"> • Line pressure low • Incorrect accelerator pedal position signal • Incorrect engine speed signal • Incorrect engine coolant temperature signal • Incorrect engine torque signal • VSS malfunction • Turbine sensor malfunction • Sensor GND malfunction ▪ TFT sensor malfunction

POSSIBLE CAUSE	<ul style="list-style-type: none"> • Short or open circuit in wiring harness • Poor connection of connector • Sensor malfunction <ul style="list-style-type: none"> ▪ TR switch malfunction <ul style="list-style-type: none"> • Selector lever adjustment incorrect • TR switch adjustment incorrect ▪ Shift solenoid A, shift solenoid B, shift solenoid C, shift solenoid D, shift solenoid G, line pressure control solenoid malfunction <ul style="list-style-type: none"> • Short or open circuit in wiring harness • Poor connection of connector • Solenoid valve stuck ▪ M range switch malfunction <ul style="list-style-type: none"> • Selector lever adjustment incorrect • Short or open circuit in wiring harness ▪ Torque converter malfunction ▪ Control valve body malfunction <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION [SJ6A-EL].)
-----------------------	--

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • With the ignition switch at the ON position. 	Yes Go to the next step.
	<ul style="list-style-type: none"> • Does the gear position indicator light indication correspond to selector lever position? 	No Go to No.27 "GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE", or No.28 "GEAR POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE OR P, N, R POSITIONS".
2	<ul style="list-style-type: none"> • Access the following PCM PIDs using the M-MDS. 	Yes Go to the next step.
	<ul style="list-style-type: none"> ▪ RPM 	No Inspect and repair suspected PID related part.

	<ul style="list-style-type: none"> ▪ APP ▪ ECT • Are PIDs value normal? 		
3	<ul style="list-style-type: none"> • Inspect the TFT sensor. (See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION [SJ6A-EL].) • Is the TFT sensor normal? 	Yes	Go to the next step.
		No	Replace the TFT sensor.
4	<ul style="list-style-type: none"> • Drive the vehicle in D range and inspect following: <ul style="list-style-type: none"> ▪ 1–2 shift up and down ▪ 2–3 shift up and down ▪ 3–4 shift up and down ▪ 4–5 shift up and down ▪ 5–6 shift up and down • Are all shift-up and shift-down possible? 	Yes	Go to the next step.
		No	No shift at all: <ul style="list-style-type: none"> • Go to No.7 "NO SHIFTING". Abnormal shift: <ul style="list-style-type: none"> • Go to No.9 "ABNORMAL SHIFTING".
5	<ul style="list-style-type: none"> • Stop the engine. • Inspect following solenoid. (See SOLENOID VALVE 	Yes	Go to the next step.
		No	Inspect for shift solenoid stuck. (See SOLENOID VALVE INSPECTION [SJ6A-EL].)

	<p>INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> ▪ Shift solenoid A ▪ Shift solenoid B ▪ Shift solenoid C ▪ Shift solenoid D ▪ Shift solenoid F ▪ Line pressure control solenoid <ul style="list-style-type: none"> • Are they normal? 		<p>Replace for malfunctioning parts according to inspection result.</p> <p>(See Automatic Transmission Workshop Manual SJ6A-EL.)</p>
6	<ul style="list-style-type: none"> • Inspect the ATF condition. • Are there any metal specks found in ATF? 	Yes	<ul style="list-style-type: none"> • If large amount of metal specks are found, overhaul the transmission and repair or replace any malfunctioning parts. <p>(See Automatic Transmission Workshop Manual SJ6A-EL.)</p> <ul style="list-style-type: none"> • If a large amount of metal specks are not found, replace the control valve body. <p>(See CONTROL VALVE BODY REMOVAL [SJ6A-EL].)</p> <p>(See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)</p>
		No	<p>Replace the torque converter.</p> <p>(See TORQUE CONVERTER REMOVAL/INSTALLATION [SJ6A-EL].)</p>
7	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> ▪ If normal, return to the diagnostic index to service any additional 		

symptoms.

- If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.
 - If the vehicle is repaired, troubleshooting completed.
 - If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

NO.9 ABNORMAL SHIFTING [SJ6A-EL]

9	Abnormal shifting
DESCRIPTION	<ul style="list-style-type: none"> Shift incorrectly (incorrect shift pattern).
POSSIBLE CAUSE	<ul style="list-style-type: none"> There is a malfunction in the signal circuit which controls shifting (Accelerator pedal position signal, turbine sensor, VSS), the control valve is stuck, or the clutch circuit is stuck. <ul style="list-style-type: none"> Clutch slippage, burnt (C1 clutch, C2 clutch, C3 clutch, B1 brake, B2 brake, B3 brake) <ul style="list-style-type: none"> Line pressure low Incorrect accelerator pedal position signal Incorrect engine speed signal Incorrect engine coolant temperature signal Incorrect engine torque signal VSS malfunction Turbine sensor malfunction Sensor GND malfunction TFT sensor malfunction Line pressure control solenoid malfunction Body GND malfunction Control valve body malfunction TCM malfunction Wheel speed signal malfunction

- Tire of a different diameter from the standard tire is installed
- ABS wheel-speed sensor malfunction

NOTE:

- Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See [BASIC INSPECTION \[SJ6A-EL\]](#).)
- If a tire of a different diameter from the standard tire is installed, the TCM determines that the driving mode is the AAS mode, and may change to a different shift timing from the normal timing.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	Verify tire condition. <ul style="list-style-type: none"> • Inspect the tire size and air pressure. • Is the tire of specified size and air pressure? 	Yes Go to the next step.
		No Replace with a specified tire size or adjust the air pressure of each specified tire to the specified value.
2	Inspect the vehicle wheel-speed signal. <ul style="list-style-type: none"> • Display the following ABS CM DSC CM PIDs using the M-MDS. (See ON-BOARD DIAGNOSIS [ABS] .) (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)] .) <ul style="list-style-type: none"> ▪ WSPD_LF ▪ WSPD_LR ▪ WSPD_RF ▪ WSPD_RR • Are the monitoring values displayed uniformly while driving? 	Yes Go to the next step.
		No Perform the following inspections: <p>ABS wheel-speed sensor installation inspection</p> <ul style="list-style-type: none"> ▪ Is the ABS wheel-speed sensor installation normal? <p>ABS sensor rotor installation inspection</p> <ul style="list-style-type: none"> ▪ Is the ABS sensor rotor installed twisted? (may cause output of abnormal wave pattern at high speeds.) <ul style="list-style-type: none"> ▪ Are there missing teeth on the sensor rotor? If there is any malfunction, repair or replace the malfunctioning location.

3	<ul style="list-style-type: none"> Inspect for continuity between the TCM terminal 1P, 1X and battery negative terminal. Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace ground circuit.
4	<ul style="list-style-type: none"> Access the following PCM PIDs using the M-MDS. <ul style="list-style-type: none"> RPM APP ECT Are PIDs value normal? 	Yes	Go to the next step.
		No	Inspect and repair suspected PID related part.
5	<ul style="list-style-type: none"> Inspect the TFT sensor. (See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION [SJ6A-EL.].) Is the TFT sensor normal? 	Yes	Go to the next step.
		No	Replace the TFT sensor.
6	<ul style="list-style-type: none"> Inspect the line pressure control solenoid. (See SOLENOID VALVE INSPECTION [SJ6A-EL.].) Is the line pressure control solenoid normal? 	Yes	Inspect the TCM terminal for bend, damage, corrosion or poor contact.
		No	Inspect the coupler component. If normal, replace suspected solenoid. (See Automatic Transmission Workshop Manual SJ6A-EL.)
7	<ul style="list-style-type: none"> Verify test results. <ul style="list-style-type: none"> If normal, return to the diagnostic index to service any additional symptoms. If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> If the vehicle is repaired, troubleshooting completed. If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. 		

2011 - RX-8 - Transmission/Transaxle

NO.10 FREQUENT SHIFTING [SJ6A-EL]

10	Frequent shifting
DESCRIPTION	<ul style="list-style-type: none">Downshifting occurs suddenly even when accelerator pedal is depressed slightly in D range.
POSSIBLE CAUSE	<ul style="list-style-type: none">The malfunctioning circuit is basically the same as No.9 "ABNORMAL SHIFTING". However, a malfunction of the input signal to the accelerator pedal position sensor, turbine sensor, VSS (including the sensor GND, sensor wiring harness and connector), or clutch slippage (clutch stuck, low pressure in line) may also be the cause.

2011 - RX-8 - Transmission/Transaxle

NO.11 SHIFT POINT IS HIGH OR LOW [SJ6A-EL]

11	Shift point is high or low
DESCRIPTION	<ul style="list-style-type: none">• Shift point considerably different from automatic shift diagram.• Shift delays when accelerating.• Shift occurs quickly when accelerating and engine speed does not increase.
POSSIBLE CAUSE	<ul style="list-style-type: none">• If the transmission does not shift abnormally, there is a malfunction of the input signal to the APP sensor, turbine sensor, or VSS.• If the engine speed is high or low, regardless of normal shifting, inspect the tachometer.• Verify that the output signals of the accelerator pedal position sensor changes linearly. <p>NOTE:</p> <ul style="list-style-type: none">• If a tire of a different diameter from the standard tire is installed, the TCM determines that the driving mode is the AAS mode, and may change to a different shift timing from the normal timing.

2011 - RX-8 - Transmission/Transaxle

NO.12 TORQUE CONVERTER CLUTCH (TCC) NON-OPERATION [SJ6A-EL]

12	Torque converter clutch (TCC) non-operation
DESCRIPTION	<ul style="list-style-type: none"> TCC does not operate when vehicle reaches TCC operation range.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Basically, TCC does not operate when the fail-safe is operating. Verify the DTC at first. If the TCC operates when driving at high speeds only, the malfunction (improper adjustment) is in the M range switch circuit or TR switch circuit. CAUTION: <ul style="list-style-type: none"> If the TCC is stuck, inspect it. In addition, inspect the oil cooler for foreign particles which may have mixed in with the ATF. TCC slippage, burnt <ul style="list-style-type: none"> Line pressure low <ul style="list-style-type: none"> Incorrect accelerator pedal position signal Incorrect engine speed signal Incorrect engine coolant temperature signal Incorrect brake switch signal Incorrect engine torque signal Turbine sensor malfunction VSS malfunction Output solenoid valve system malfunction (Sticking) TCC control solenoid malfunction Control valve body system malfunction

(Poor operation, sticking)

- TCC hydraulic pressure system malfunction

- Accelerator pedal position sensor malfunction (Not operating linearly)
- Turbine sensor or VSS malfunction
- Operation of fail-safe function.
 - Short to power or GND at TCC control solenoid related circuit.

NOTE:

- Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See [BASIC INSPECTION \[SJ6A-EL\]](#).)

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none">• With the ignition switch at the ON position.• Does the gear position indicator light indication correspond to the selector lever position?	Yes	Go to the next step.
		No	Go to No.27 "GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE", or No.28 "GEAR POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE OR P, N, R POSITIONS".
2	<ul style="list-style-type: none">• Disconnect the TCM.• Is the resistance between the TCM ground terminal 1P, 1X and the body GND less than 5.0 ohms?	Yes	Go to the next step.
		No	Repair open ground circuit.
3	<ul style="list-style-type: none">• Access the following PCM PIDs using the M-MDS.<ul style="list-style-type: none">▪ RPM▪ APP▪ BOO	Yes	Go to the next step.
		No	Inspect and repair suspected PID related part.

	<ul style="list-style-type: none"> ▪ ECT • Are PIDs value normal? 		
4	<ul style="list-style-type: none"> • Inspect the TFT sensor. <p>(See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> • Is the TFT sensor normal? 	Yes	Go to the next step.
		No	Replace the TFT sensor.
5	<ul style="list-style-type: none"> • Inspect the TCC control solenoid. <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> • Is the line pressure control solenoid normal? 	Yes	Go to the next step.
		No	Replace suspected solenoid. (See Automatic Transmission Workshop Manual SJ6A-EL.)
6	<ul style="list-style-type: none"> • Inspect the ATF condition. • Are there any metal specks found in ATF? 	Yes	<ul style="list-style-type: none"> • If large amount of metal specks are found, overhaul the transmission and repair or replace any malfunctioning parts. <p>(See Automatic Transmission Workshop Manual SJ6A-EL.)</p> <ul style="list-style-type: none"> • If a large amount of metal specks are not found, replace the control valve body. <p>(See CONTROL VALVE BODY REMOVAL [SJ6A-EL].)</p> <p>(See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)</p>
		No	Replace the torque converter. (See TORQUE CONVERTER REMOVAL/INSTALLATION [SJ6A-EL].)
7	<ul style="list-style-type: none"> • Verify test results. ▪ If normal, return to the diagnostic index to service any additional symptoms. 		

- If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.
 - If the vehicle is repaired, troubleshooting completed.
 - If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

NO.13 NO KICKDOWN [SJ6A-EL]

13	No kickdown
DESCRIPTION	<ul style="list-style-type: none">• Does not downshift when accelerator pedal is fully depressed within kickdown range.
POSSIBLE CAUSE	<ul style="list-style-type: none">• If transmission does not downshift though shifting is normal, the malfunction is in the accelerator pedal position, engine speed, engine coolant temperature sensor, engine torque signals or TCM (including sensor GND, sensor wiring harness and connector, CAN communication).

2011 - RX-8 - Transmission/Transaxle

NO.14 ENGINE FLARES UP OR SLIPS WHEN UPSHIFTING OR DOWNSHIFTING [SJ6A-EL]

14	Engine flares up or slips when upshifting or downshifting
DESCRIPTION	<ul style="list-style-type: none">• When the accelerator pedal is depressed for acceleration from standstill, engine speed increases but the vehicle speed increases slowly.• When the accelerator pedal is depressed while driving, engine speed increases but the vehicle speed does not.
POSSIBLE CAUSE	<ul style="list-style-type: none">• There is clutch slippage because the clutch is stuck or the line pressure is low.<ul style="list-style-type: none">▪ Clutch stuck, slippage (C1 clutch, C2 clutch, C3 clutch, B1 brake, B2 brake, B3 brake)<ul style="list-style-type: none">• Line pressure low• Incorrect accelerator pedal position signal• Incorrect engine speed signal• Incorrect engine coolant temperature signal• Incorrect engine torque signal• VSS malfunction• Turbine sensor malfunction• Sensor GND malfunction• Shift solenoid A malfunction• Shift solenoid B malfunction• Shift solenoid C malfunction• Shift solenoid D malfunction

- Shift solenoid E malfunction
- Line pressure control solenoid malfunction
- TCC control solenoid malfunction
- Shift solenoid F malfunction
- Shift solenoid G malfunction
- Body GND malfunction
- Control valve body malfunction

NOTE:

- Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See [BASIC INSPECTION \[SJ6A-EL\]](#).)

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Is the line pressure normal? (See MECHANICAL SYSTEM TEST [SJ6A-EL].) 	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts according to the inspection results.
2	<ul style="list-style-type: none"> • Is shift point normal? (See ROAD TEST [SJ6A-EL].) 	Yes	Go to the next step.
		No	Go to No.9 "ABNORMAL SHIFTING".
3	<ul style="list-style-type: none"> • Access the following PCM PIDs using the M-MDS. <ul style="list-style-type: none"> ▪ RPM ▪ APP ▪ ECT • Are PIDs value normal? 	Yes	Go to the next step.
		No	Inspect and repair suspected PID related part.
4	<ul style="list-style-type: none"> • Stop the engine. • Inspect following solenoids. (See SOLENOID VALVE 	Yes	Go to the next step.
		No	Replace suspected solenoid.

	<p>INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none">▪ Shift solenoid A▪ Shift solenoid B▪ Shift solenoid C▪ Shift solenoid D▪ Shift solenoid E▪ Line pressure control solenoid▪ TCC control solenoid▪ Shift solenoid F▪ Shift solenoid G <ul style="list-style-type: none">• Are they normal?	(See Automatic Transmission Workshop Manual SJ6A-EL.)
5	<ul style="list-style-type: none">• Inspect the coupler component for open or short.• Are coupler component normal?	YesGo to the next step.
		No Replace the coupler component.
6	<ul style="list-style-type: none">• Inspect the ATF condition.• Are a large amount of specks found?	YesOverhaul the transmission and repair or replace any malfunctioning parts. (See Automatic Transmission Workshop Manual SJ6A-EL.)
		No Replace the control valve body. (See CONTROL VALVE BODY REMOVAL [SJ6A-EL].) (See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)
7	<ul style="list-style-type: none">• Verify test results.	

- If normal, return to the diagnostic index to service any additional symptoms.
- If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.
 - If the vehicle is repaired, troubleshooting completed.
 - If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

NO.15 ENGINE FLARES UP OR SLIPS WHEN ACCELERATING VEHICLE [SJ6A-EL]

15	Engine flares up or slips when accelerating the vehicle
DESCRIPTION	<ul style="list-style-type: none">• Engine flares up when the accelerator pedal is depressed for upshifting.• Engine flares up suddenly when the accelerator pedal is depressed for downshifting.
POSSIBLE CAUSE	<ul style="list-style-type: none">• The malfunction is basically the same as for No.14 "ENGINE FLARES UP OR SLIPS WHEN UPSHIFTING OR DOWNSHIFTING".<ul style="list-style-type: none">▪ If conditions for No.14 worsen, the malfunction will develop to No.15.

2011 - RX-8 - Transmission/Transaxle

NO.16 JUDDER UPON TORQUE CONVERTER CLUTCH (TCC) OPERATION [SJ6A-EL]

16	Judder upon torque converter clutch (TCC) operation
DESCRIPTION	<ul style="list-style-type: none">• Vehicle jolts when TCC is engaged.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Poor TCC engagement due to either slippage because the TCC piston is stuck or the line pressure is low. CAUTION:<ul style="list-style-type: none">• If the TCC is stuck, inspect it. In addition, inspect the oil cooler for foreign particles which may have mixed in with the ATF.▪ TCC slippage, burnt<ul style="list-style-type: none">• Line pressure low• Incorrect accelerator pedal position signal• Incorrect engine speed signal• Incorrect engine coolant temperature signal• Incorrect brake switch signal• Incorrect engine torque signal• VSS malfunction• Turbine sensor malfunction• Sensor GND malfunction• TCC control solenoid malfunction• Control valve body malfunction▪ Torque converter malfunction

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

NO.17 EXCESSIVE SHIFT SHOCK FROM N TO D OR N TO R POSITION/RANGE [SJ6A-EL]

17	Excessive shift shock from N to D or N to R position/range
DESCRIPTION	<ul style="list-style-type: none"> • Strong shock felt when shifting from N to D or N to R position/range at idle.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Shift shock may worsen when the fail-safe is operating. If no DTC is output, the shift shock may worsen due to poor operation of the control valve body or sticking of the clutch. <ul style="list-style-type: none"> ▪ Clutch burnt (N→D: C1 clutch, N→R: C3 clutch or B4 brake) <ul style="list-style-type: none"> • ATF level low • Line pressure low • Incorrect accelerator pedal position signal • Incorrect engine speed signal • Incorrect engine coolant temperature signal • Incorrect brake switch signal • Incorrect engine torque signal • Incorrect turbine sensor signal (N→D) • TFT sensor malfunction • Sensor GND malfunction • Shift solenoid A malfunction • Shift solenoid F malfunction • Line pressure control solenoid

malfunction

- TCC control solenoid malfunction (N→R)
- Control valve body malfunction
 - Poor hydraulic operation (Malfunction in range change)
 - Idle speed high
 - Poor tightening torque of engine mount, exhaust mount, suspension, propeller shaft
 - Line pressure high
 - Insufficient battery voltage
 - Harness or connector malfunction
 - AT malfunction

NOTE:

- Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See [BASIC INSPECTION \[SJ6A-EL\]](#).)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none">• Does the shift shock occur only when the engine is cold?	Yes Go to the next step.
		No Go to Step 3.
2	<ul style="list-style-type: none">• Inspect the TFT sensor and related wiring harness: vibration, intermittent open/short circuit. (See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION [SJ6A-EL].)• Is it normal?	Yes Go to the next step.
		No Repair or replace part if necessary.
3	<ul style="list-style-type: none">• Perform the initial learning procedure. (See Initial Learning.)	Yes Troubleshooting is completed.
		No Go to the next step.

	<ul style="list-style-type: none"> Does symptom eliminate? 		
4	<ul style="list-style-type: none"> Is the line pressure normal? <p>(See MECHANICAL SYSTEM TEST [SJ6A-EL].)</p>	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts according to the inspection results.
5	<ul style="list-style-type: none"> Is stall speed normal? <p>(See MECHANICAL SYSTEM TEST [SJ6A-EL].)</p>	Yes	Go to the next step.
		No	Repair or replace any malfunctioning parts according to the inspection results.
6	<ul style="list-style-type: none"> Access the following PCM PIDs using the M-MDS. <ul style="list-style-type: none"> RPM APP BOO ECT Are PIDs value normal? 	Yes	Go to the next step.
		No	Inspect and repair suspected PID related part.
7	<ul style="list-style-type: none"> Stop the engine. Inspect following solenoids. <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> Line pressure control solenoid Shift solenoid A Shift solenoid F TCC control solenoid Are they normal? 	Yes	<p>Inspect the ATF condition.</p> <ul style="list-style-type: none"> If large amount of metal specks are found, overhaul the transmission and repair or replace any malfunctioning parts. <p>(See Automatic Transmission Workshop Manual SJ6A-EL.)</p> If a large amount of metal specks are not found, replace the control valve body. <p>(See CONTROL VALVE BODY REMOVAL [SJ6A-EL].)</p> <p>(See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)</p>
		No	<p>Inspect the coupler component.</p> <p>If normal, replace the malfunctioning parts.</p> <p>(See Automatic Transmission Workshop Manual SJ6A-EL.)</p>

- Verify test results.
 - If normal, return to the diagnostic index to service any additional symptoms.
 - If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.
 - If the vehicle is repaired, troubleshooting completed.
 - If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM.

Initial Learning

WARNING:

- When performing a initial learning, be aware of other vehicles, people, and other impediments to order to avoid an accident.

NOTE:

- While self-learning control gradually reduces shock during normal driving, initial learning is performed to initially learn a certain amount of driving conditions.

1. Warm-up

- Increase the ATF temperature by leaving the vehicle idling or performing city driving. Verify that the ATF temperature is **between 50—120 °C {122—248 °F}**. If the ATF temperature is outside this range, work to bring it inside the range.

CAUTION:

- Do not raise the ATF temperature by stalling the engine.

NOTE:

- If the ATF temperature is not **between 50—120 °C {122—248 °F}**, initial learning cannot be performed.

Before learning, inspect for variable shift shock.

2. Gear shift control learning

- In D range, with the throttle opening between **25—30 %**, drive until you reach 6th gear and a vehicle speed of **80 km/h {50 mph}** or higher. Then, release the accelerator pedal and coast, and bring the vehicle to a stop in at least **60 s**. Repeat this procedure **10 times**.

3. Inspect learning results

- Verify that variable speed shock and shift shock have decreased compared to the conditions before learning.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Transmission/Transaxle

NO.18 EXCESSIVE SHIFT SHOCK IS GIVEN WHEN UPSHIFTING AND DOWNSHIFTING [SJ6A-EL]

18	Excessive shift shock is given when upshifting and downshifting
DESCRIPTION	<ul style="list-style-type: none"> Excessive shift shock is felt when depressing the accelerator pedal at upshifting. During cruising, excessive shift shock is felt when depressing accelerator pedal at downshifting.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Shift shock may worsen when the fail-safe is operating. The shift shock may worsen if the APP sensor or turbine sensor malfunctions. <ul style="list-style-type: none"> Clutch slippage, burnt (C1 clutch, C2 clutch, C3 clutch, B1 brake, B2 brake, B3 brake, B4 brake) <ul style="list-style-type: none"> ATF level low Line pressure low, high Incorrect accelerator pedal position signal Turbine sensor malfunction Shift solenoid A malfunction Shift solenoid B malfunction Shift solenoid C malfunction Shift solenoid D malfunction Shift solenoid E malfunction Line pressure control solenoid malfunction TCC control solenoid malfunction Shift solenoid F malfunction

- Shift solenoid G malfunction
 - Body GND and sensor GND malfunction
 - Control valve body malfunction
 - TCM malfunction
 - AT internal malfunction
 - TR switch malfunction
 - Harness and/or connector malfunction
 - Insufficient battery voltage
 - Loose parts installation (engine or transmission mounts, suspension, propeller shaft)
- Poor hydraulic operation (Malfunction in range change)

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

[< Previous](#) [Next >](#)

2011 - RX-8 - Transmission/Transaxle

NO.19 EXCESSIVE SHIFT SHOCK ON TORQUE CONVERTER CLUTCH (TCC) [SJ6A-EL]

19	Excessive shift shock on torque converter clutch (TCC)
DESCRIPTION	<ul style="list-style-type: none">• Strong shock is felt when the TCC is engaged.
POSSIBLE CAUSE	<ul style="list-style-type: none">• The troubleshooting flow is the same as No.16 "JUDDER UPON TORQUE CONVERTER CLUTCH (TCC) OPERATION".

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

NO.20 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN ALL POSITIONS/RANGES [SJ6A-EL]

20	Noise occurs at idle when vehicle is stopped in all positions/ranges
DESCRIPTION	<ul style="list-style-type: none"> Transmission is noisy in all positions and ranges when the vehicle is idling.
POSSIBLE CAUSE	<ul style="list-style-type: none"> The malfunction is in the pressure solenoid or oil pump which causes a high-pitched noise to be emitted from the transmission at idle. <p>NOTE:</p> <ul style="list-style-type: none"> If a noise is emitted during shifting only, the malfunction is in the C1 clutch, C2 clutch, C3 clutch, B1 brake, B2 brake, B3 brake, or B4 brake. If a noise is emitted during shifting at certain gears only or during deceleration only, it is gear noise. Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION [SJ6A-EL].)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Inspect engine condition. Is there any engine concern (e.g. Rough idle, vibration)? 	Yes Go to appropriate symptom troubleshooting. (See SYMPTOM DIAGNOSTIC INDEX [13B-MSP] .)
		No Replace basic inspection and repair or replace any malfunctioning parts according to the inspection result
2	<ul style="list-style-type: none"> Verify test results. 	

If normal, return to the diagnostic index to service any additional symptoms.

- If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.
 - If the vehicle is repaired, troubleshooting completed.
 - If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

NO.21 NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN D RANGE, OR IN R POSITION [SJ6A-EL]

21	Noise occurs at idle when vehicle is stopped in D range, or in R position
DESCRIPTION	<ul style="list-style-type: none">• Transmission is noisy in driving ranges when vehicle idling.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Although the malfunction is basically the same as No.20 "NOISE OCCURS AT IDLE WHEN VEHICLE IS STOPPED IN ALL POSITIONS/RANGES", other causes may include selector lever position disparity or TR switch position disparity.

2011 - RX-8 - Transmission/Transaxle

NO.24 ENGINE STALLS WHEN SHIFTED TO D RANGE, OR IN R POSITION [SJ6A-EL]

24	Engine stalls when shifted to D range, or in R position
DESCRIPTION	<ul style="list-style-type: none"> Engine stalls when shifting from N or P position to D range or R position at idle.
POSSIBLE CAUSE	<ul style="list-style-type: none"> The malfunction is on the engine control side (e.g. electronic controlled throttle system). Otherwise, the malfunction is in the turbine sensor (engine sometimes starts) or the TCC circuit (engine always stalls). <p>NOTE:</p> <ul style="list-style-type: none"> Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION [SJ6A-EL].)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Go to symptom troubleshooting No.5 "ENGINE STALLS-AFTER START/AT IDLE". (See NO.5 ENGINE STALLS-AFTER START/AT IDLE [13B-MSP].) Is the engine control system normal? 	Yes Go to the next step.
		No Repair or replace any malfunctioning parts according to the inspection results.
2	<ul style="list-style-type: none"> Inspect for bending, damage, corrosion or kinks of the oil cooler pipes. Are the oil cooler pipes normal? 	Yes Replace the control valve body. (See CONTROL VALVE BODY REMOVAL [SJ6A-EL] .) (See CONTROL VALVE BODY

			INSTALLATION [SJ6A-EL].) Then go to the next step.
			No Repair or replace malfunctioning part. Then go to the next step.
3	<ul style="list-style-type: none"> • Verify that the symptom is solved. • Is the problem remained? 	Yes Overhaul the transmission and repair or replace any malfunctioning parts. (See Automatic Transmission Workshop Manual SJ6A-EL.)	
		No	Troubleshooting completed.
4	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> ▪ If normal, return to the diagnostic index to service any additional symptoms. ▪ If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. 		

2011 - RX-8 - Transmission/Transaxle

NO.25 ENGINE STALLS WHEN DRIVING AT SLOW SPEED OR STOPPING [SJ6A-EL]

25	Engine stalls when driving at slow speeds or stopping
DESCRIPTION	<ul style="list-style-type: none"> Engine stalls when the brake pedal is depressed while driving at low speed or stopping.
POSSIBLE CAUSE	<ul style="list-style-type: none"> The malfunction is in the engine control system (e.g. Fuel injection control, electronic controlled throttle system). Otherwise the TCC circuit. <ul style="list-style-type: none"> Line pressure low <ul style="list-style-type: none"> Incorrect accelerator pedal position signal Incorrect engine speed signal Incorrect engine coolant temperature signal Incorrect brake switch signal Oil cooler malfunction (Foreign material mixed in ATF) ATF amount is Low <p>NOTE:</p> <ul style="list-style-type: none"> Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION [SJ6A-EL].)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Go to symptom troubleshooting No.10 "LOW IDLE/STALLS DURING 	YesGo to the next step.

	<p>DECELERATION".</p> <p>(See NO.10 LOW IDLE/STALLS DURING DECELERATION [13B-MSP].)</p> <ul style="list-style-type: none"> Is the engine control system normal? 	No	Repair or replace any malfunctioning parts according to the inspection results.
2	<ul style="list-style-type: none"> Access TCM PID TCCC using the M-MDS. Operate the TCC solenoid valve by M-MDS simulation function. Does the TCC solenoid valve operate properly? 	Yes	Go to the next step.
		No	<p>Replace the control valve body.</p> <p>(See CONTROL VALVE BODY REMOVAL [SJ6A-EL].)</p> <p>(See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)</p>
3	<ul style="list-style-type: none"> Access the following PCM and TCM PIDs using the M-MDS. <p>PCM:</p> <ul style="list-style-type: none"> APP ECT BOO <p>TCM:</p> <ul style="list-style-type: none"> TSS OSS VSS <ul style="list-style-type: none"> Are PIDs value normal? 	Yes	Go to the next step.
		No	Inspect and repair suspected PID related part and wiring harness.
4	<ul style="list-style-type: none"> Perform the oil cooler flushing by air blow. <p>(See OIL COOLER FLUSHING [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are there any foreign material from oil cooler? 	Yes	<p>Clean the oil cooler and cooler line.</p> <p>(See OIL COOLER FLUSHING [SJ6A-EL].)</p>
		No	<p>Replace the torque converter.</p> <p>(See TORQUE CONVERTER REMOVAL/INSTALLATION [SJ6A-EL].)</p>
5	<ul style="list-style-type: none"> Verify test results. <ul style="list-style-type: none"> If normal, return to the diagnostic index to service any additional symptoms. 		

- If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.
 - If the vehicle is repaired, troubleshooting completed.
 - If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

NO.26 STARTER DOES NOT WORK [SJ6A-EL]

26	Starter does not work
DESCRIPTION	<ul style="list-style-type: none"> • Starter does not work even when in P or N position.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Selector lever mis-adjustment • Manual shaft malfunction • TR switch malfunction • TR switch mis-adjustment • Transmission operates in fail-safe function (Starter lock system related circuit open or short) • Immobilizer system operating or system malfunction.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Inspect selector lever, TR switch and manual shaft positions. • Are these position normal? 	Yes Go to the next step.
		No Adjust the suspect part position.
2	<ul style="list-style-type: none"> • Inspect the TR switch. (See TRANSMISSION RANGE (TR) SWITCH INSPECTION [SJ6A-EL].) • Is the TR switch normal? 	Yes Go to engine system troubleshooting No.3 "WILL NOT CRANK" troubleshooting procedure.
		No Replace the TR switch. (See TRANSMISSION RANGE (TR) SWITCH REMOVAL/INSTALLATION [SJ6A-EL])

- Verify test results.
 - If normal, return to the diagnostic index to service any additional symptoms.
 - If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.
 - If the vehicle is repaired, troubleshooting completed.
 - If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM.

2011 - RX-8 - Transmission/Transaxle

NO.27 GEAR POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE [SJ6A-EL]

27	Gear position indicator light does not illuminate in M range
DESCRIPTION	<ul style="list-style-type: none"> Gear position indicator light in instrument cluster does not illuminate in M range with the ignition switch at ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> M range switch, gear position indicator light or related wiring harness malfunction <p>NOTE:</p> <ul style="list-style-type: none"> Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION [SJ6A-EL].)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Do other indicator lights illuminate with the ignition switch at ON? 	Yes Go to the next step.
		No Inspect the meter fuse.
2	<ul style="list-style-type: none"> Access TCM PID MNL_SW using the M-MDS. Monitor the PID at all selector lever positions. <p>(See TCM INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are PID values normal? 	Yes Inspect the instrument cluster.
		No Inspect the M range switch. (See SELECTOR LEVER COMPONENT INSPECTION .) <ul style="list-style-type: none"> If the M range switch is normal, inspect for followings; <ul style="list-style-type: none"> Between the selector

				lever component terminal B (M range switch) and TCM terminal 2G. ▪ Between the selector lever component terminal A and GND.
3	<ul style="list-style-type: none">• Verify test results.<ul style="list-style-type: none">▪ If normal, return to the diagnostic index to service any additional symptoms.▪ If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.<ul style="list-style-type: none">• If the vehicle is repaired, troubleshooting completed.• If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM.			

2011 - RX-8 - Transmission/Transaxle

NO.28 GEAR POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE OR P, N, R POSITIONS [SJ6A-EL]

28	Gear position indicator light illuminates when in D range or P, N, R positions
DESCRIPTION	<ul style="list-style-type: none"> Gear position indicator light in instrument cluster illuminates in D range or P, N, R position with the ignition switch at ON.
POSSIBLE CAUSE	<ul style="list-style-type: none"> M range switch or related wiring harness malfunction <p>NOTE:</p> <ul style="list-style-type: none"> Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION [SJ6A-EL].)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Access TCM PID MNL_SW using the M-MDS. Monitor the PID at all selector lever positions. <p>(See TCM INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are PID values 	Yes Inspect the instrument cluster.
		No Inspect the M range switch. (See SELECTOR LEVER COMPONENT INSPECTION .) <ul style="list-style-type: none"> If the M range switch is normal, inspect for short to GND between the selector lever component terminal B (M range switch) and TCM terminal 2G.

	normal?		
2	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> ▪ If normal, return to the diagnostic index to service any additional symptoms. ▪ If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> • If the vehicle is repaired, troubleshooting completed. • If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. 		

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Transmission/Transaxle

NO.29 DOES NOT UPSHIFT IN M RANGE [SJ6A-EL]

29	Does not upshift in M range
DESCRIPTION	<ul style="list-style-type: none"> Gear position indicator light in instrument cluster illuminates, but the vehicle does not upshift when the selector lever is pushed to "+" side or steering shift switch "UP" is pulled.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Up switch or related wiring harness malfunction Steering shift switch or related circuit malfunction.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Access TCM PID UP_SW using the M-MDS. Monitor the PID at selector lever is pushed to "+" side. <p>(See TCM INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are PID values normal? 	Yes Go to next step.
		No Inspect the up switch. (See SELECTOR LEVER COMPONENT INSPECTION .) <ul style="list-style-type: none"> If the up switch is normal, inspect for followings;. <ul style="list-style-type: none"> Between the selector lever component terminal D (up switch) and TCM terminal 2J. Between the selector lever component terminal A and GND.
2	<ul style="list-style-type: none"> Access TCM PID SS SS+ using the M-MDS. Monitor the PID 	Yes Inspect the instrument cluster.
		No Inspect the steering shift switch.

	<p>steering shift switch "UP" is pulled.</p> <p>(See TCM INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none">• Are PID values normal?	<p>(See STEERING SHIFT SWITCH INSPECTION.)</p> <ul style="list-style-type: none">• If the steering shift switch is normal, inspect for followings;.▪ Between the audio control switch terminal F (steering shift switch) and TCM terminal 2AF.▪ Between the audio control switch terminal C (steering shift switch GND) and TCM terminal 2AB.
3	<ul style="list-style-type: none">• Verify test results.<ul style="list-style-type: none">▪ If normal, return to the diagnostic index to service any additional symptoms.▪ If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.<ul style="list-style-type: none">• If the vehicle is repaired, troubleshooting completed.• If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM.	

2011 - RX-8 - Transmission/Transaxle

NO.30 DOES NOT DOWNSHIFT IN M RANGE [SJ6A-EL]

30	Does not downshift in M range
DESCRIPTION	<ul style="list-style-type: none"> Gear position indicator light in instrument cluster illuminates, but the vehicle does not downshift when the selector lever is pushed to “-” side or steering shift switch “DOWN” is pushed.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Down switch or related wiring harness malfunction Steering shift switch or related circuit malfunction.

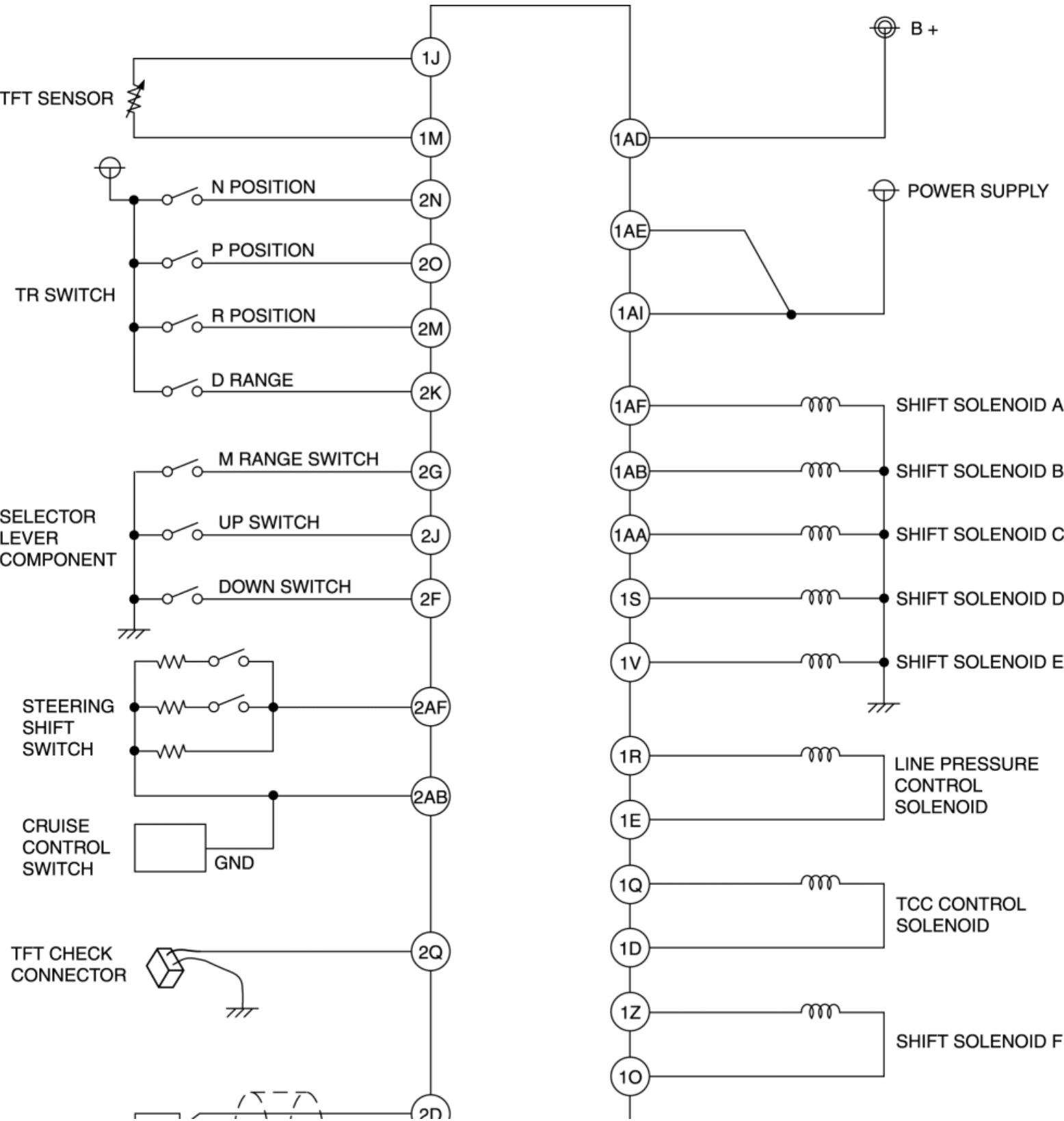
Diagnostic procedure

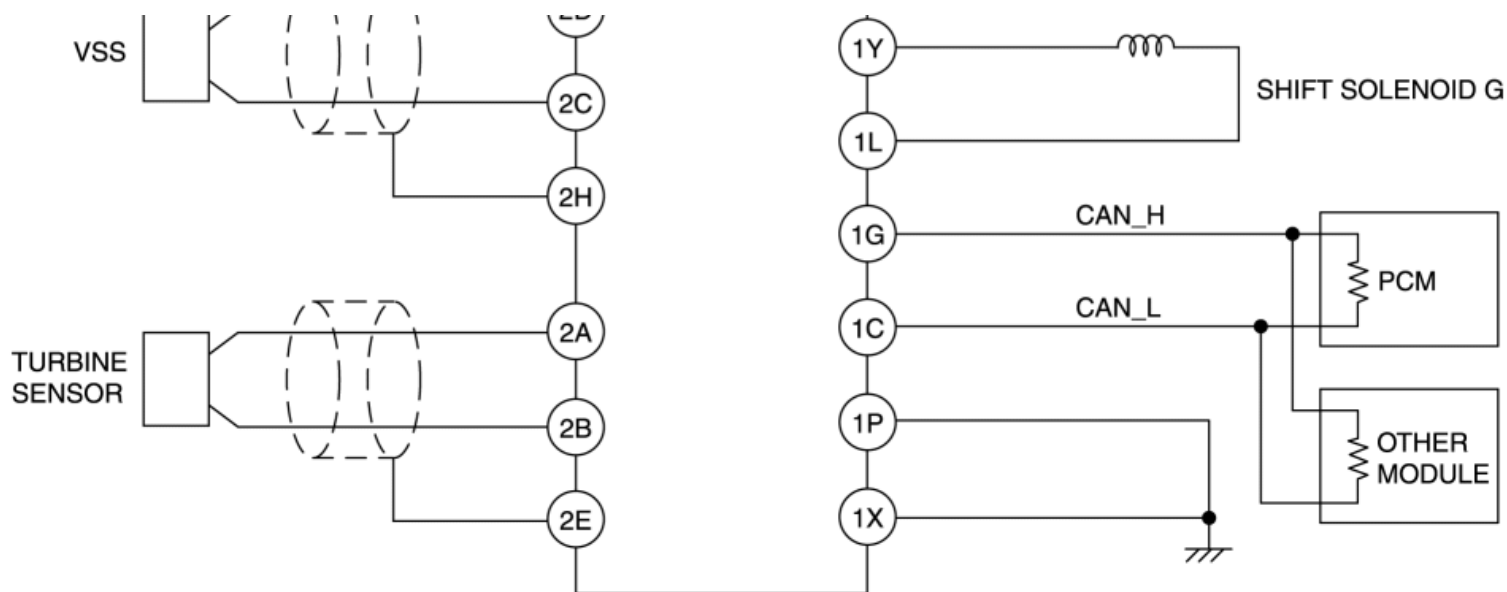
STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Access TCM PID DWN_SW using the M-MDS. Monitor the PID at selector lever is pushed to “-” side. (See TCM INSPECTION [SJ6A-EL].) Are PID values normal? 	YesGo to next step.
		No Inspect the down switch. (See SELECTOR LEVER COMPONENT INSPECTION.) <ul style="list-style-type: none"> If the down switch is normal, inspect for followings;. <ul style="list-style-type: none"> Between the selector lever component terminal F (down switch) and TCM terminal 2F. Between the selector lever component terminal A and GND.
2	<ul style="list-style-type: none"> Access TCM PID SS SS- using the M-MDS. 	YesInspect the instrument cluster.
		No Inspect the steering shift switch.

	<ul style="list-style-type: none"> Monitor the PID steering shift switch "DOWN" is pushed. <p>(See TCM INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> Are PID values normal? 	<p>(See STEERING SHIFT SWITCH INSPECTION.)</p> <ul style="list-style-type: none"> If the steering shift switch is normal, inspect for followings;. <ul style="list-style-type: none"> Between the audio control switch terminal F (steering shift switch) and TCM terminal 2AF. Between the audio control switch terminal C (steering shift switch GND) and TCM terminal 2AB.
3	<ul style="list-style-type: none"> Verify test results. <ul style="list-style-type: none"> If normal, return to the diagnostic index to service any additional symptoms. If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> If the vehicle is repaired, troubleshooting completed. If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. 	

2011 - RX-8 - Transmission/Transaxle

AUTOMATIC TRANSMISSION CONTROL SYSTEM WIRING DIAGRAM [SJ6A-EL]





[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

NO.22 NO ENGINE BRAKING [SJ6A-EL]

22	No engine braking
DESCRIPTION	<ul style="list-style-type: none"> • Engine speed drops to idle but the vehicle coasts when the accelerator pedal is released during cruising at medium to high speeds. • Engine speed drops to idle but the vehicle coasts when accelerator pedal is released when in M range (1GR) at low vehicle speed.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Clutch slippage, burnt (C4 clutch/B1 brake/B2 brake/B4 brake) <ul style="list-style-type: none"> ▪ Line pressure low <ul style="list-style-type: none"> • VSS malfunction • Improper signal from PCM (engine speed, accelerator pedal position, engine coolant temperature, engine torque signals) • Line pressure control solenoid malfunction • Control valve body malfunction <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION [SJ6A-EL].)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Do the following symptoms occur concurrently? <ul style="list-style-type: none"> ▪ Engine 	<p>Yes Go to No.14 "ENGINE FLARES UP OR SLIPS WHEN UPSHIFTING OR DOWNSHIFTING", or No.15 "ENGINE FLARES UP OR SLIPS WHEN ACCELERATING VEHICLE".</p>

	<p>flares up or slips during acceleration</p> <ul style="list-style-type: none"> ▪ Engine flares up or slips when shifting 	No	Go to the next step.
2	<ul style="list-style-type: none"> • Access the following PCM PIDs using the M-MDS. <ul style="list-style-type: none"> ▪ RPM ▪ APP ▪ ECT • Are PIDs value normal? 	Yes	Go to the next step.
		No	Inspect and repair suspected PID related part.
3	<ul style="list-style-type: none"> • Stop the engine. • Inspect line pressure control solenoid. (See SOLENOID VALVE INSPECTION [SJ6A-EL].) • Is the normal? 	Yes	<p>Inspect the ATF condition.</p> <ul style="list-style-type: none"> • If large amount of metal specks are found, overhaul the transmission and repair or replace any malfunctioning parts. (See Automatic Transmission Workshop Manual SJ6A-EL.) • If a large amount of metal specks are not found, replace the control valve body. (See CONTROL VALVE BODY REMOVAL [SJ6A-EL].) (See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)
		No	<p>Inspect the coupler component.</p> <p>If normal, replace the malfunctioning parts.</p> <p>(See Automatic Transmission Workshop Manual SJ6A-EL.)</p>
4	<ul style="list-style-type: none"> • Verify test results. <ul style="list-style-type: none"> ▪ If normal, return to the diagnostic index to service any additional symptoms. ▪ If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. 		

- If the vehicle is repaired, troubleshooting completed.
- If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

NO.23 TRANSMISSION OVERHEATS [SJ6A-EL]

23	Transmission overheats
DESCRIPTION	<ul style="list-style-type: none"> • Burnt smell emitted from transmission. • Smoke emitted from transmission.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • The malfunction is restricted to the hindrance of coolant at the oil cooler. In addition, overheating of the transmission may be caused by a malfunction of the TFT sensor. <ul style="list-style-type: none"> ▪ Line pressure low <ul style="list-style-type: none"> • ATF level low • Incorrect accelerator position signal ▪ Oil cooler malfunction (Foreign material mixed in with ATF) ▪ TFT sensor malfunction ▪ Excessive amount of ATF <p>NOTE:</p> <ul style="list-style-type: none"> • Before following the troubleshooting steps, make sure that the Automatic Transmission On-Board Diagnostic and Automatic Transmission Basic Inspection are conducted. (See BASIC INSPECTION [SJ6A-EL].)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Is the line pressure normal? <p>(See MECHANICAL SYSTEM TEST [SJ6A-EL].)</p>	<p>Yes Go to the next step.</p> <p>No Repair or replace any malfunctioning parts according to the inspection results.</p>

2	<ul style="list-style-type: none"> Is stall speed normal? <p>(See MECHANICAL SYSTEM TEST [SJ6A-EL].)</p>	Yes	Go to the next step.
3	<ul style="list-style-type: none"> Inspect the TFT sensor and related wiring harness: vibration, intermittent open/short circuit <p>(See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> Is it normal? 	Yes	Go to the next step.
4	<ul style="list-style-type: none"> Inspect the line pressure control solenoid. <p>(See SOLENOID VALVE INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> Is it normal? 	Yes	Go to the next step.
5	<ul style="list-style-type: none"> Inspect for bending, damage, corrosion or kinks of the oil cooler pipes. Are oil cooler pipes normal? 	Yes	<p>Inspect the coupler component.</p> <p>If normal, replace the malfunctioning parts.</p> <p>(See Automatic Transmission Workshop Manual SJ6A-EL.)</p>
6	<ul style="list-style-type: none"> Verify test results. <ul style="list-style-type: none"> If normal, return to the diagnostic index to service any additional symptoms. If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis. <ul style="list-style-type: none"> If the vehicle is repaired, troubleshooting completed. If the vehicle is not repaired or additional diagnostic information is not available, replace the TCM. 		
	No	Replace any malfunctioning parts.	

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Transmission/Transaxle

NO.31 M RANGE POSITION INDICATOR LIGHT DOES NOT ILLUMINATE IN M RANGE AND/OR IN D RANGE WITH DIRECT MODE/M RANGE POSITION INDICATOR LIGHT ILLUMINATES IN D RANGE WHILE NOT IN DIRECT MODE [SJ6A-EL]

31	M range position indicator light does not illuminate in M range and/or in D range with direct mode/M range position indicator light illuminates in D range while not in direct mode
DESCRIPTION	<ul style="list-style-type: none"> M range position indicator light in instrument cluster does not illuminate in M range and/or in D range in direct mode when ignition switch is in ON position. M range position indicator light illuminates in D range while not in direct mode when ignition switch is in ON position.
POSSIBLE CAUSE	<ul style="list-style-type: none"> M range switch malfunction Steering shift switch malfunction Open or short circuit in wiring harness between manual switch (built-in selector lever) and TCM Open or short circuit in wiring harness between steering shift switch and TCM

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Access TCM PID MNL SW using the M-MDS. <p>(See PID/DATA MONITOR INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none"> Monitor the MLN SW PID with move the selector lever to all 	<p>Yes Go to the next step.</p> <p>No Inspect the M range switch.</p> <p>(See SELECTOR LEVER COMPONENT INSPECTION.)</p>

	<p>position and range.</p> <ul style="list-style-type: none">Does the MNL SW PID indicate properly?		<p>If the M range is normal, inspect for followings;.</p> <ul style="list-style-type: none">Between the selector lever component terminal B (M range switch) and TCM terminal 2G.Between the selector lever component terminal A and GND.
2	<ul style="list-style-type: none">Access TCM PIDs UP SW and DWN SW using the M-MDS. <p>(See PID/DATA MONITOR INSPECTION [SJ6A-EL].)</p> <ul style="list-style-type: none">Monitor the UP SW and DWN SW PIDs by pressing the steering shift switch while the selector lever is in the D range.Are the UP SW and DWN SW PIDs indicated correctly?	Yes	<p>Inspect the instrument cluster using the input/output test mode.</p> <p>(See INSTRUMENT CLUSTER INSPECTION.)</p>
		No	<p>Inspect the steering shift switch.</p> <p>(See STEERING SHIFT SWITCH INSPECTION.)</p> <p>If the steering shift switch is normal, inspect and repair the following wiring harnesses:</p> <ul style="list-style-type: none">Between steering shift switch terminal F (steering shift switch) and TCM terminal 2AFBetween steering shift switch terminal C (steering shift switch GND) and TCM terminal 2AB
3	<ul style="list-style-type: none">Verify test results.<ul style="list-style-type: none">If normal, return to the diagnostic index to service any additional symptoms.If malfunction remains, inspect the related Service Bulletins and/or On-line Repair Information and perform repair or diagnosis.<ul style="list-style-type: none">If the vehicle is repaired, troubleshooting completed.If the vehicle is not repaired or additional diagnostic		

	information is not available, replace the TCM.
--	--

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

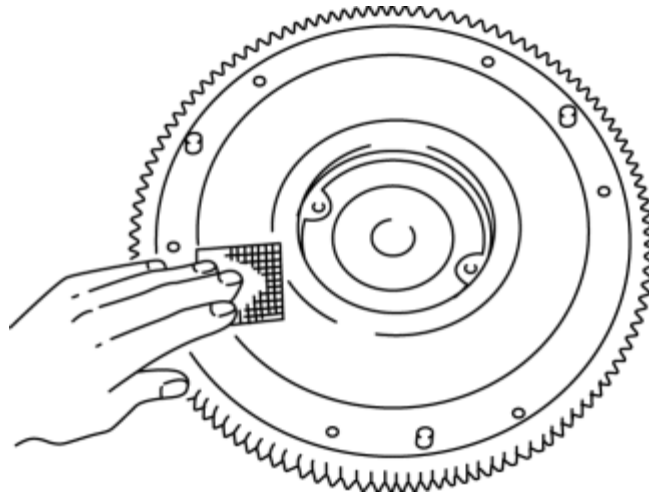
2011 - RX-8 - Transmission/Transaxle

FLYWHEEL INSPECTION

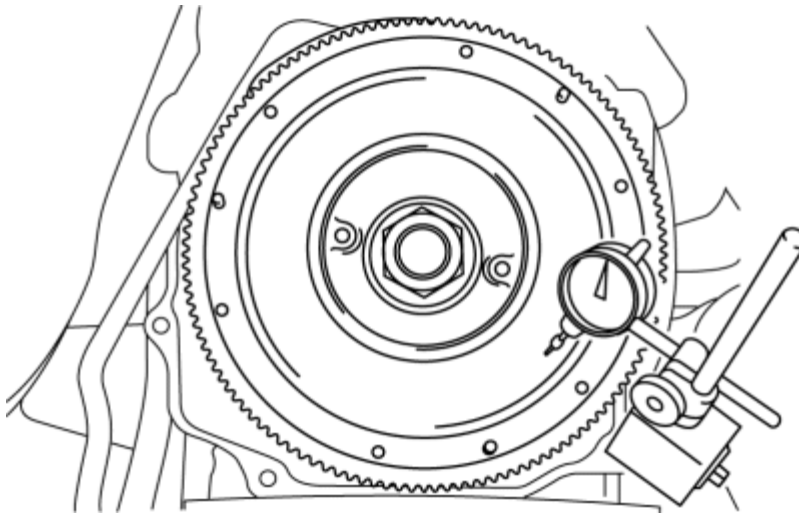
1. Remove the flywheel. (See [CLUTCH UNIT REMOVAL/INSTALLATION](#).)
2. Inspect the surface that contacts the clutch disc for scratches, nicks, and discoloration.

NOTE:

1. Correct slight scratches and discoloration using sandpaper.



2. Inspect the runout of the surface that contacts the clutch disc with the flywheel installed to the eccentric shaft.
3. Inspect the ring gear teeth for damage and wear.
4. Install the flywheel.
5. Measure the runout of the surface that contacts the clutch disc using a dial gauge.



- If it exceeds the maximum specification, replace the flywheel.

Flywheel maximum runout

- 0.2 mm {0.008 in}

[< Previous](#) [Next >](#)

[Back to Top](#)

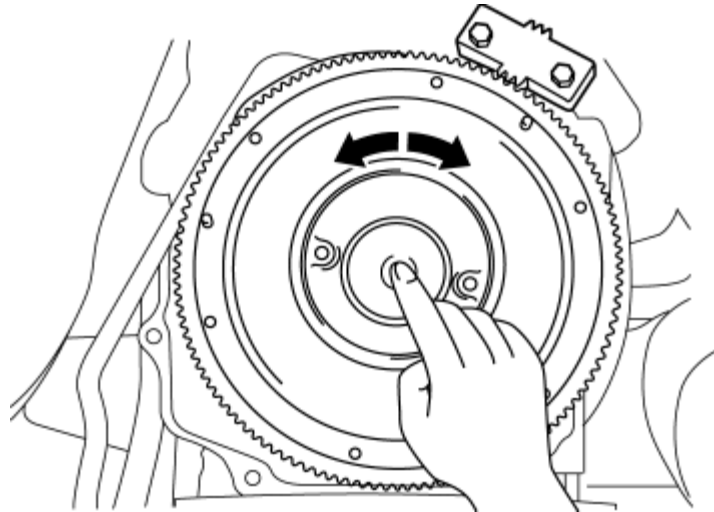
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Transmission/Transaxle

PILOT BEARING INSPECTION

NOTE:

- Inspect the pilot bearing when it is installed to the eccentric shaft.
1. Remove the clutch unit so that the pilot bearing can be inspected. (See [CLUTCH UNIT REMOVAL/INSTALLATION](#).)
 2. Inspect the pilot bearing for damage, wear, and proper rotation.

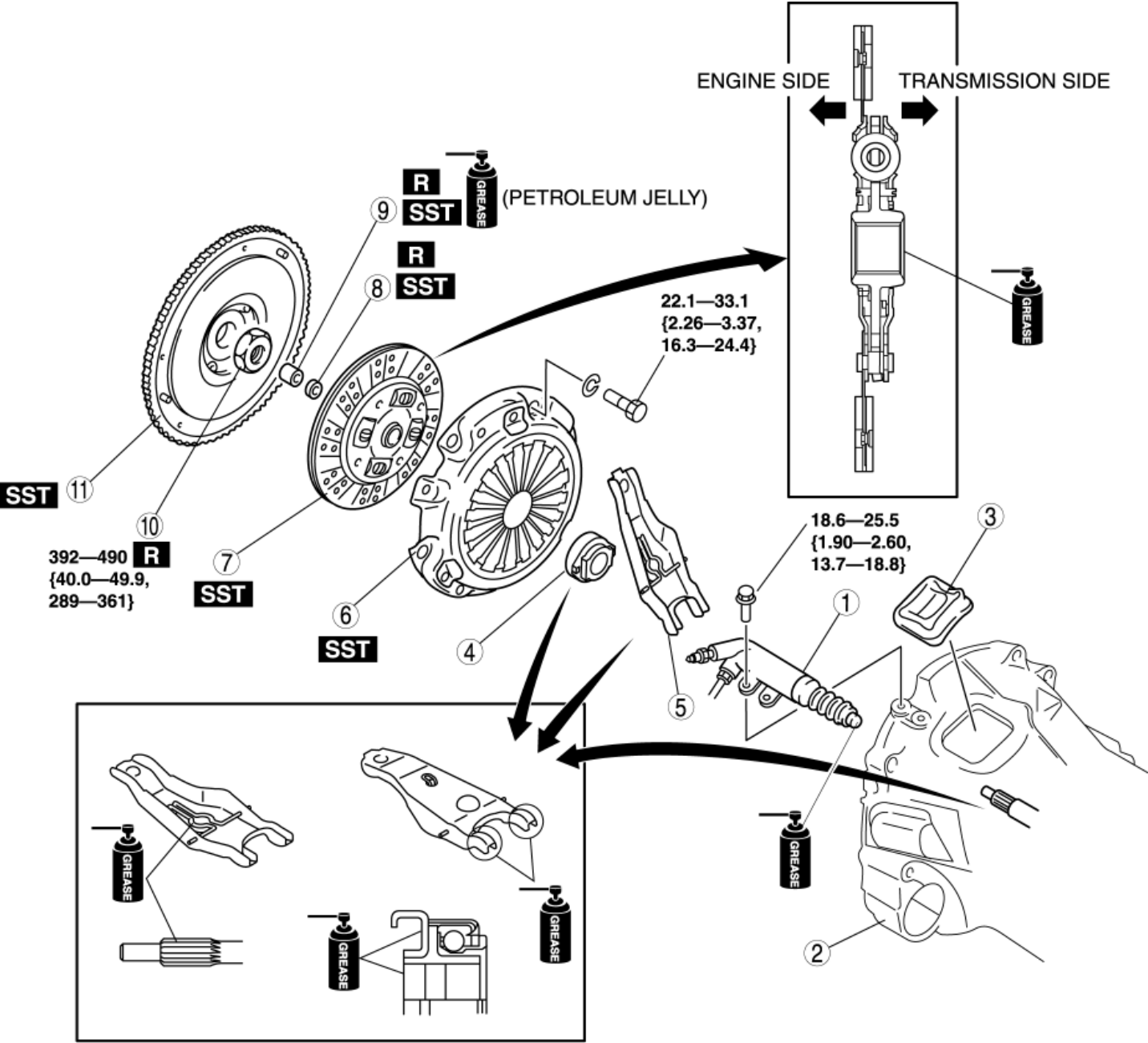


- If there is any malfunction, replace the pilot bearing.

2011 - RX-8 - Transmission/Transaxle

CLUTCH UNIT REMOVAL/INSTALLATION

- 1. Remove in the order indicated in the table.
- 2. Install in the reverse order of removal.

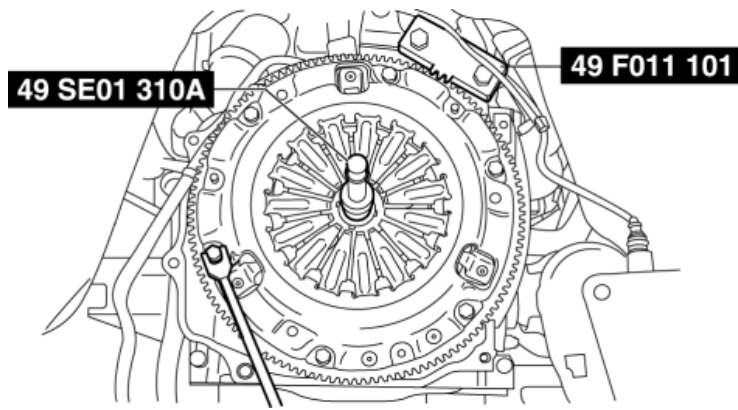


N·m {kgf·m, ft·lbf}

	(See CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION.)
2	Manual transmission (See TRANSMISSION REMOVAL/INSTALLATION [P66M-D].)
3	Boot
4	Clutch release collar
5	Clutch release fork
6	Clutch cover (See Clutch Cover, Clutch Disc Removal Note.) (See Clutch Cover Installation Note.)
7	Clutch disc (See Clutch Cover, Clutch Disc Removal Note.) (See Clutch Disc Installation Note.)
8	Oil seal (See Oil Seal, Pilot Bearing Removal Note.) (See Pilot Bearing, Oil Seal Installation Note.)
9	Pilot bearing (See Oil Seal, Pilot Bearing Removal Note.) (See Pilot Bearing, Oil Seal Installation Note.)
10	Locknut
11	Flywheel (See Flywheel Removal Note.) (See Flywheel Installation Note.)

Clutch Cover, Clutch Disc Removal Note

1. Install the **SSTs**.

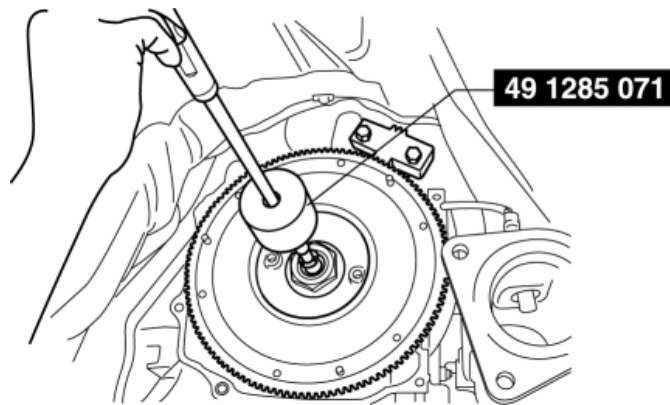


2. In criss-cross pattern, loosen the bolts one rotation at a time until there is no remaining spring pressure.
3. Remove the clutch cover and the clutch disc.

Oil Seal, Pilot Bearing Removal Note

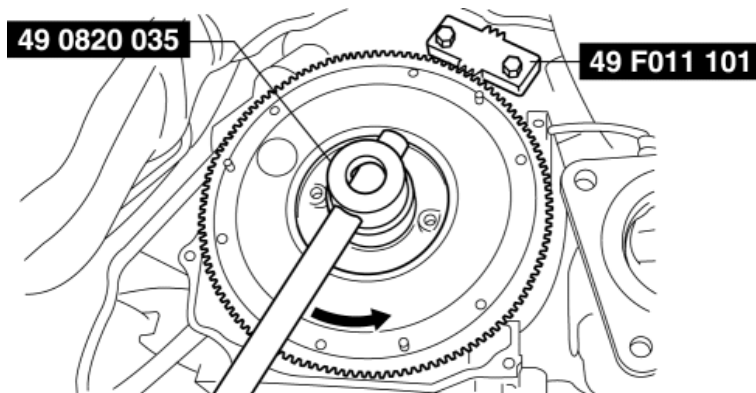
NOTE:

- Remove the pilot bearing only if there is a malfunction.
1. Remove the pilot bearing and the oil seal together using the **SST**.



Flywheel Removal Note

1. Install the **SST** to the flywheel.
2. Remove the locknut using the **SST**.

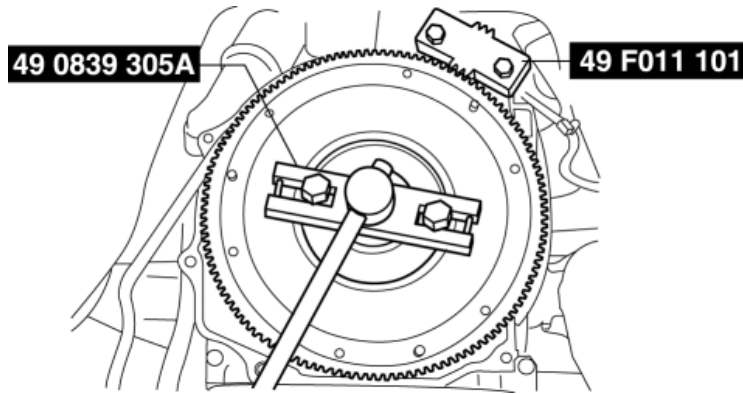


NOTE:

- Inspect the eccentric shaft for oil leakage after removing the flywheel. If necessary, replace the oil seal. (See

REAR OIL SEAL REPLACEMENT [13B-MSP].)

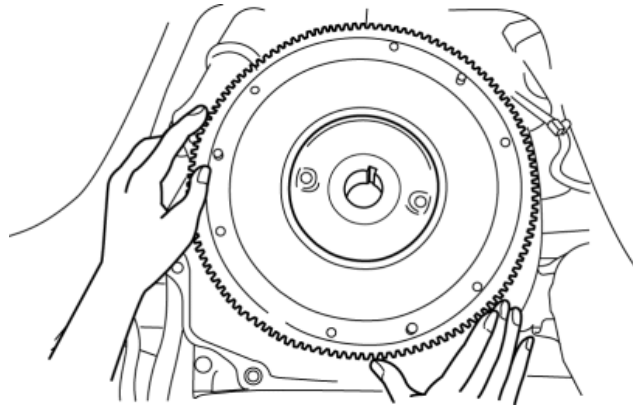
3. Remove the flywheel using the **SST**.



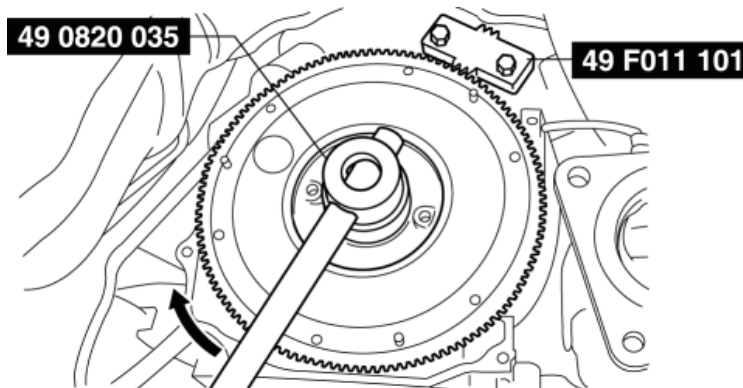
4. Remove the key from the eccentric shaft.

Flywheel Installation Note

1. Install the key to the eccentric shaft.
2. Align the flywheel key groove with the eccentric shaft key and install.



3. Install the **SST** to the flywheel.
4. Tighten the locknut using the **SST**.



Tightening torque

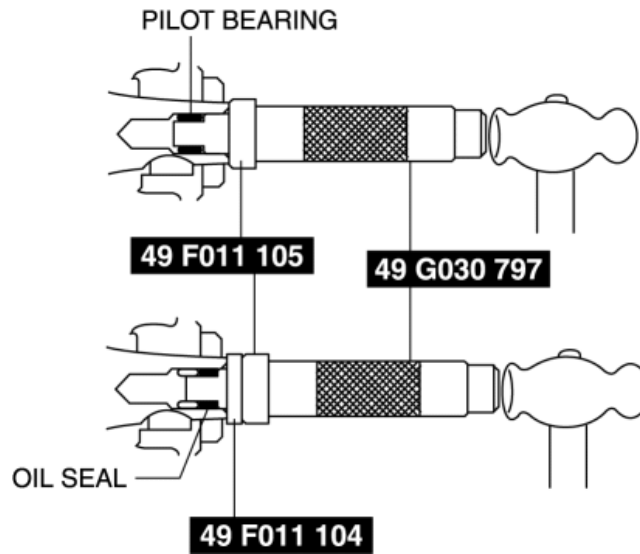
- 392—490 N·m {40.0—49.9 kgf·m, 289—361 ft·lbf}

CAUTION:

- Remove the seal protruding from the threads without it becoming caught in the pilot bearing.

Pilot Bearing, Oil Seal Installation Note

1. Install the pilot bearing using the **SSTs**.



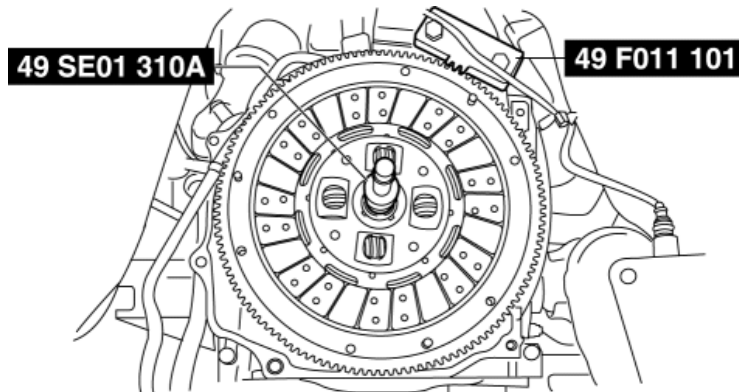
NOTE:

- Bearing outer diameter: **20 mm {0.787 in}**
- Press-in depth: **11.5—12.25 mm {0.453—0.482 in}**

2. Install a new oil seal using the **SSTs**.

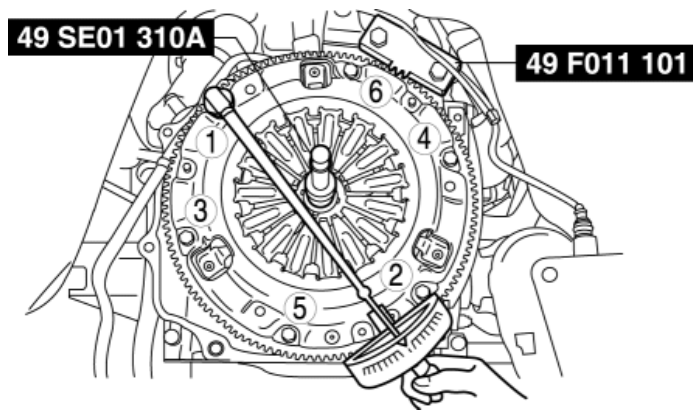
Clutch Disc Installation Note

1. Clean the splines of the clutch disc and the main drive gear with a brush.
2. Spread a thin layer of clutch grease on the splines.
3. Secure the clutch disc to the flywheel using the **SSTs**.



Clutch Cover Installation Note

1. Align the clutch cover with the flywheel knock pin and install.
2. Tighten the bolts evenly and gradually in the order shown in the figure.



Tightening torque

- 22.1—33.1 N·m {2.26—3.37 kgf·m, 16.3—24.4 ft·lbf}

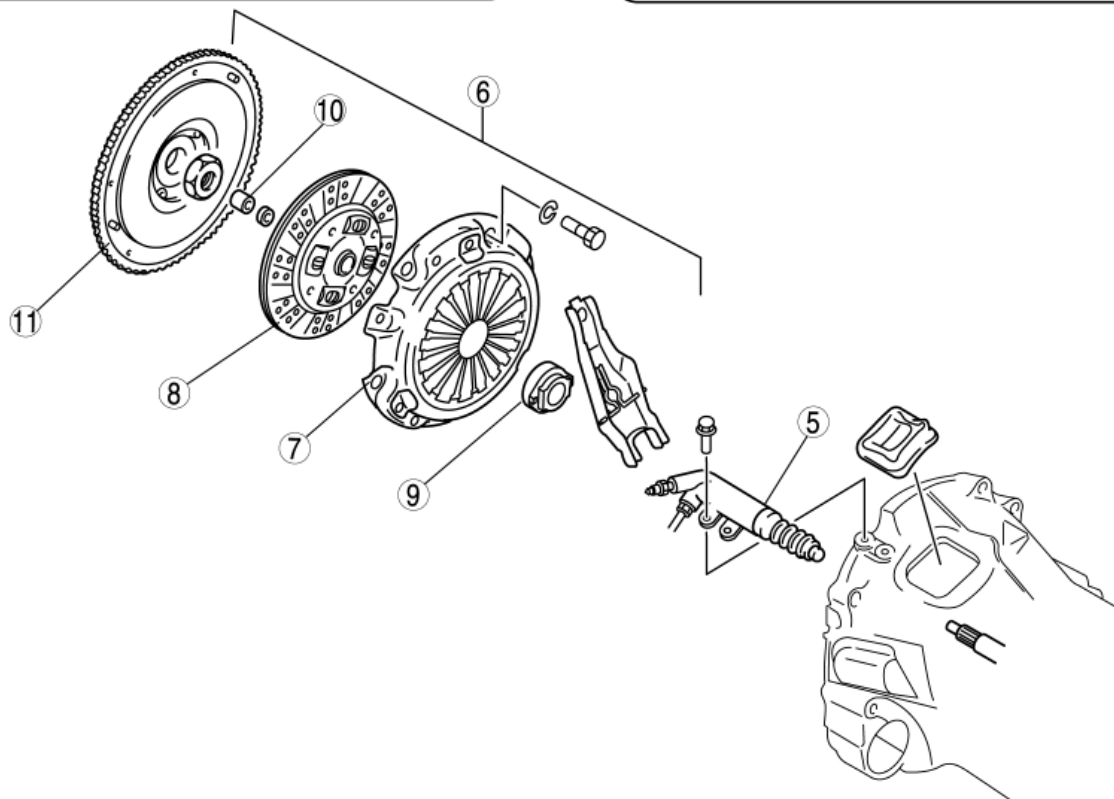
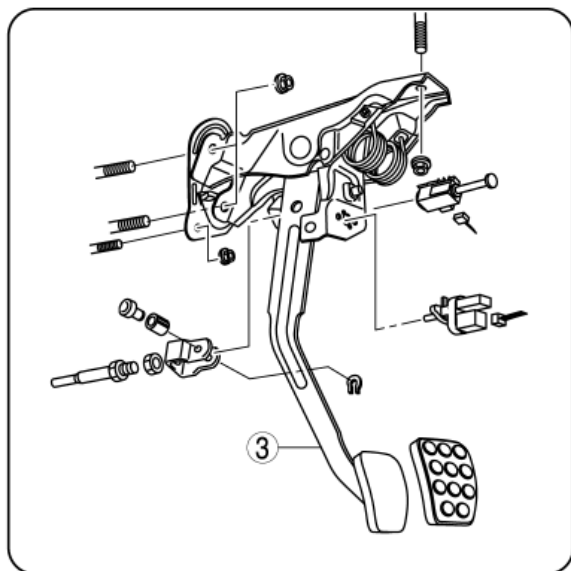
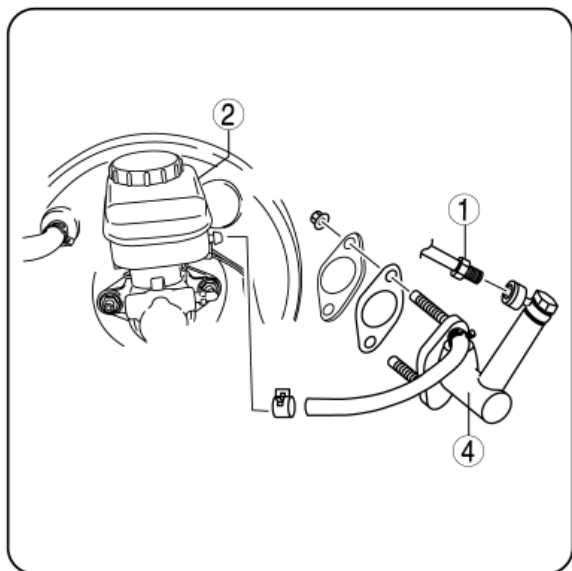
[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

CLUTCH LOCATION INDEX



1 Clutch pipe

(See [GENERAL PROCEDURES \(CLUTCH\)](#).)

2	Clutch fluid (See CLUTCH FLUID INSPECTION.) (See CLUTCH FLUID REPLACEMENT.)
3	Clutch pedal (See CLUTCH PEDAL INSPECTION/ADJUSTMENT.) (See CLUTCH PEDAL REMOVAL/INSTALLATION.)
4	Clutch master cylinder (See CLUTCH MASTER CYLINDER REMOVAL/INSTALLATION.) (See CLUTCH MASTER CYLINDER DISASSEMBLY/ASSEMBLY.)
5	Clutch release cylinder (See CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION.) (See CLUTCH RELEASE CYLINDER DISASSEMBLY/ASSEMBLY.)
6	Clutch unit (See CLUTCH UNIT REMOVAL/INSTALLATION.)
7	Clutch cover (See CLUTCH COVER INSPECTION.)
8	Clutch disc (See CLUTCH DISC INSPECTION.)
9	Clutch release collar (See CLUTCH RELEASE COLLAR INSPECTION.)
10	Pilot bearing (See PILOT BEARING INSPECTION.)
11	Flywheel (See FLYWHEEL INSPECTION.)

[< Previous](#) [Next >](#)

2011 - RX-8 - Transmission/Transaxle

GENERAL PROCEDURES (CLUTCH)

CAUTION:

- Clutch fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If fluid does get on painted surfaces, wipe it off immediately.

NOTE:

- If any hydraulic related parts of the clutch sytem are removed during the procedure, add clutch fluid, bleed the system and inspect for leakage after the procedure has been completed.

[< Previous](#) [Next >](#)

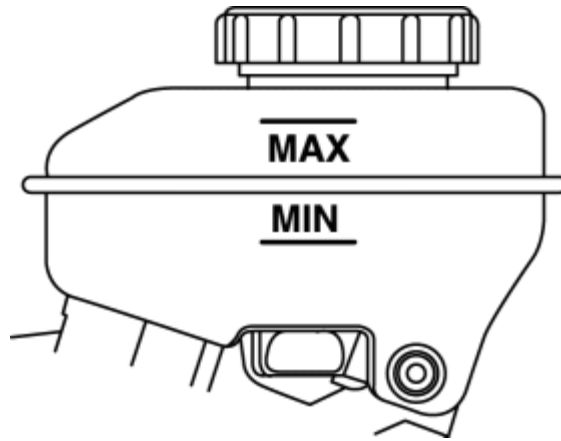
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Transmission/Transaxle

CLUTCH FLUID INSPECTION

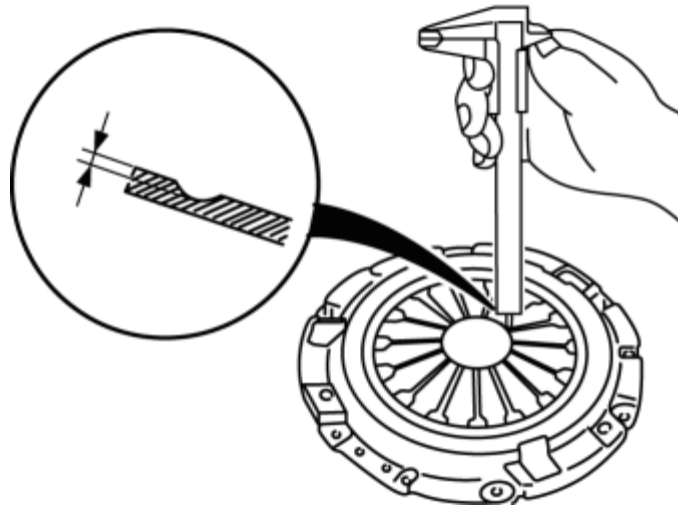
1. Inspect whether the fluid level in the reserve tank is between MIN and MAX.
 - If the fluid is not at the specified level, adjust the fluid level (MIN-MAX on reserve tank) by adding/draining the fluid.



2011 - RX-8 - Transmission/Transaxle

CLUTCH COVER INSPECTION

1. Remove the clutch cover. (See [CLUTCH UNIT REMOVAL/INSTALLATION](#).)
2. Measure the wear of the diaphragm spring fingers using a vernier caliper.

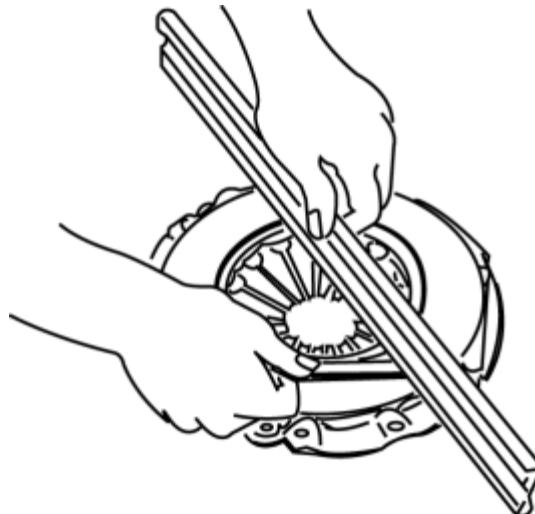


- If it exceeds the maximum specification, replace the clutch cover.

Clutch cover diaphragm spring fingers maximum depth

- 0.6 mm {0.024 in}

3. Measure the pressure plate flatness using a straight edge and a feeler gauge.



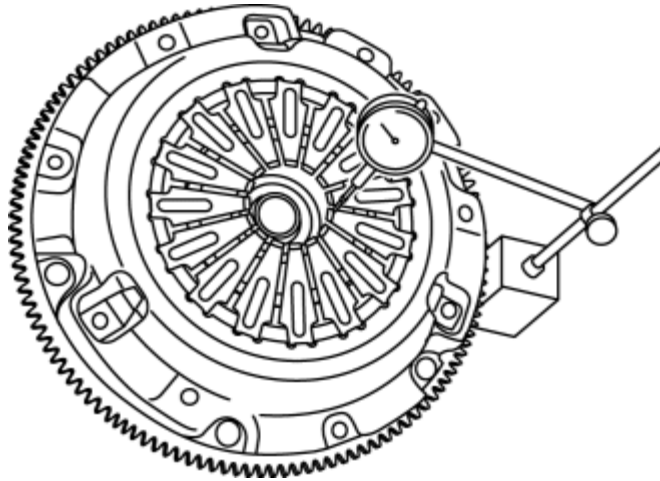
NOTE:

- Measure the pressure plate flatness across the center.
- If it exceeds the maximum specification, replace the clutch cover.

Clutch cover maximum clearance

- 0.5 mm {0.020 in}

4. Attach a dial gauge to the rear housing, rotate the flywheel, then inspect for height difference between the diaphragm spring fingers.



- If it exceeds the maximum specification, replace the clutch cover.

Clutch cover maximum height difference

- 1.0 mm {0.039 in}

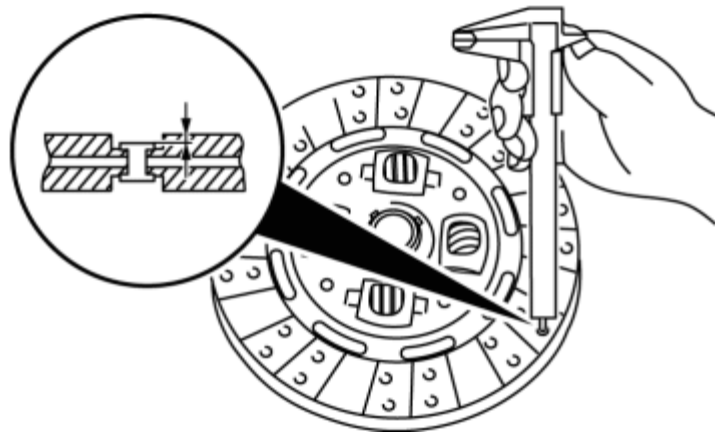
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

CLUTCH DISC INSPECTION

1. Remove the clutch disc. (See [CLUTCH UNIT REMOVAL/INSTALLATION](#).)
2. Inspect the lining surface for discoloration and grease adhesion.
3. Inspect the torsion spring for weakness and the rivet for looseness.
4. Using a vernier caliper, measure the depth between the lining surface and the rivet head.

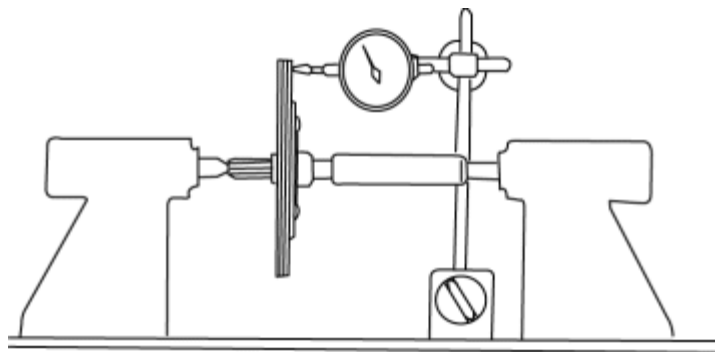


- If it is less than the minimum specification, replace the clutch disc.

Clutch disc minimum depth

- 0.3 mm {0.012 in}

5. Measure the clutch disc runout using a dial gauge.



- If it exceeds the maximum specification, replace the clutch disc.

Clutch disc maximum runout

- 0.7 mm {0.028 in}

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

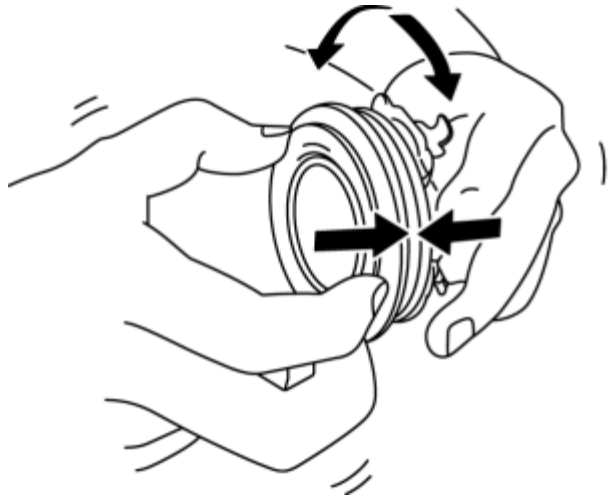
[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

CLUTCH RELEASE COLLAR INSPECTION

CAUTION:

- Do not clean the clutch release collar with cleaning fluids or a steam cleaner because it is filled with grease.
1. Remove the clutch release collar. (See [CLUTCH UNIT REMOVAL/INSTALLATION](#).)
 2. Turn the collar while applying force in the axial direction, and inspect for sticking, excessive resistance, and an abnormal noise.

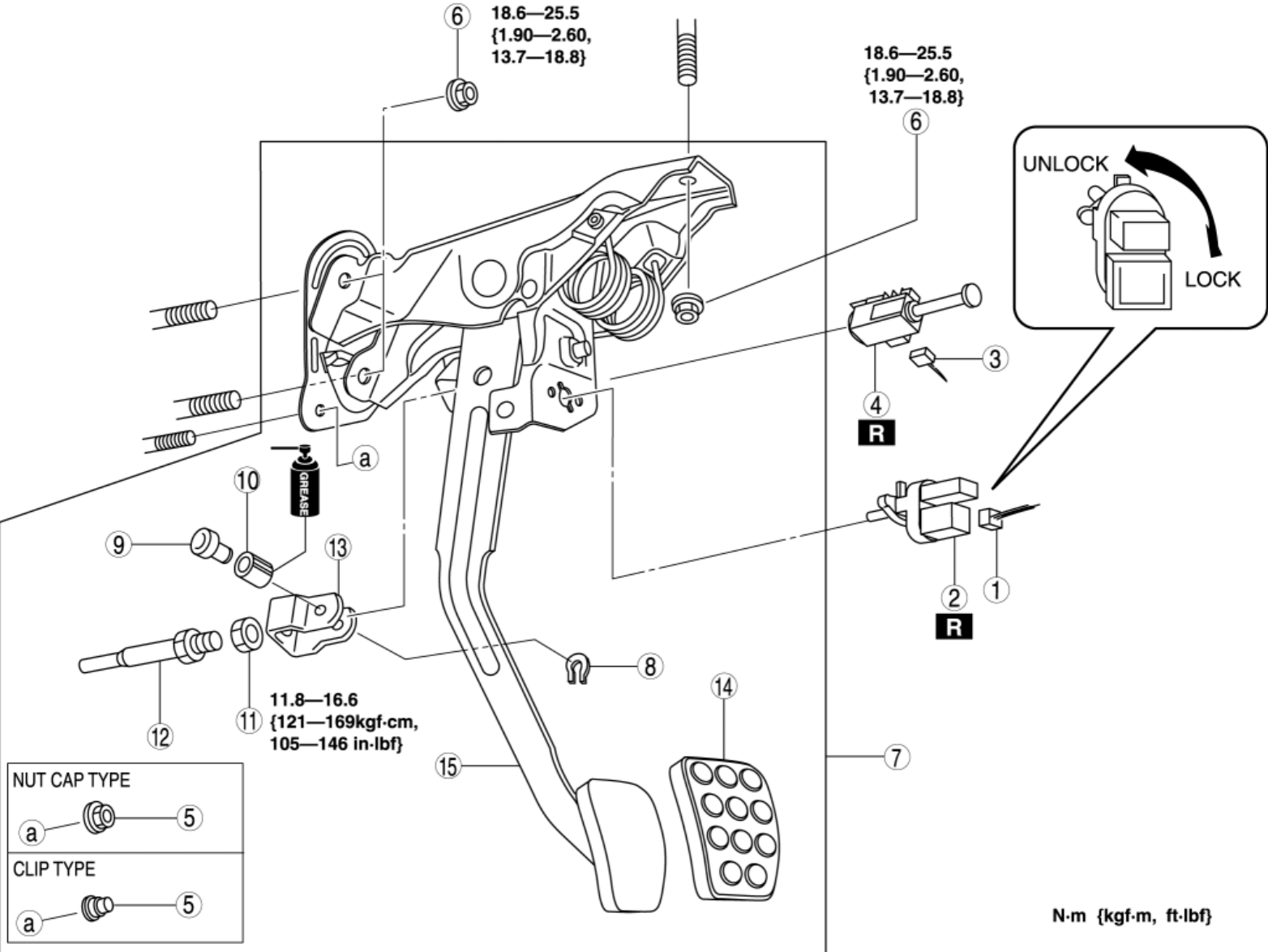


- If there is any malfunction, replace the clutch release collar.

2011 - RX-8 - Transmission/Transaxle

CLUTCH PEDAL REMOVAL/INSTALLATION

- 1. Disconnect the negative battery cable.
- 2. Remove in the order indicated in the table.
- 3. Install in the reverse order of removal.
- 4. Fully depress the clutch pedal, and verify that the engine starts.



1	CPP switch connector
2	CPP switch

3	Starter interlock switch connector
4	Starter interlock switch (See Starter Interlock Switch Installation Note.)
5	Nut cap / Clip (See Nut Cap Removal Note.)
6	Nut
7	Clutch pedal component (See Clutch Pedal Component Installation Note)
8	Retaining ring
9	Joint pin
10	Bush
11	Nut
12	Push rod
13	Fork
14	Pedal pad
15	Clutch pedal

Nut Cap Removal Note

1. Dispose of the nut cap after removal.

NOTE:

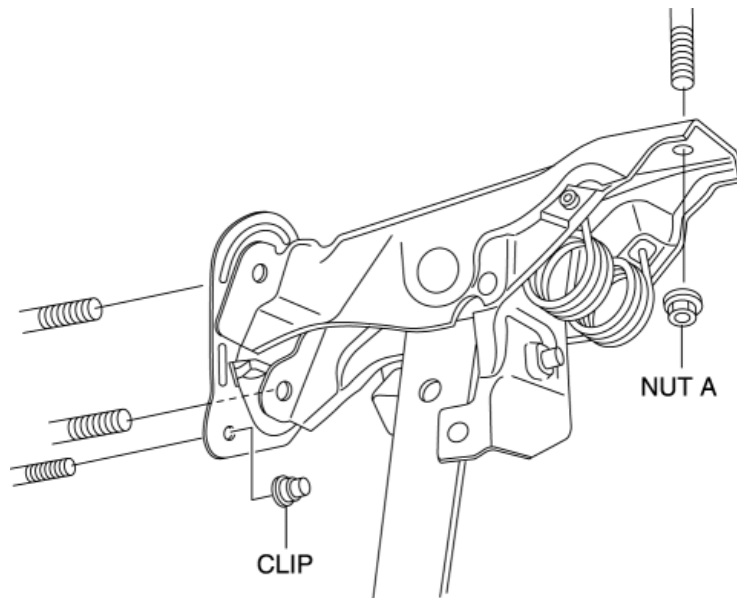
- When installing the clutch pedal, install the clip instead of the nut cap.

Clutch Pedal Component Installation Note

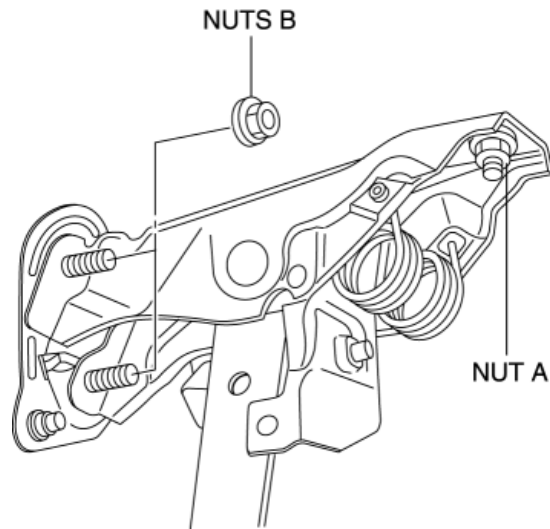
CAUTION:

- Always verify the tightening order for the clutch pedal installation nuts before performing the procedure. If there is a malfunction in the tightening order, it could result in bracket deformation.

1. Install the clutch pedal component, and then temporarily tighten the nut A.



2. Insert the clip completely so that the clutch pedal adheres to the installation surface and there are no gaps between them.
3. Tighten the nuts B(2).



Tightening torque

- 18.6—25.5 N·m {1.90—2.60 kgf·m, 13.7—18.8 ft·lbf}

4. Tighten the nut A.

Tightening torque

- 18.6—25.5 N·m {1.90—2.60 kgf·m, 13.7—18.8 ft·lbf}

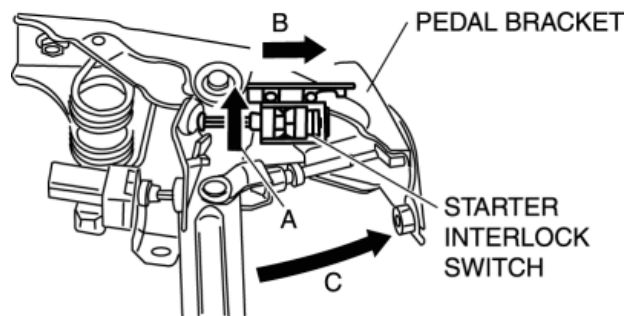
5. After installing the clutch pedal component, adjust/inspect the clutch pedal. (See [CLUTCH PEDAL INSPECTION/ADJUSTMENT](#).)

Starter Interlock Switch Installation Note

CAUTION:

- If the rod is pushed in, it may not operate properly. Be careful not to push the rod in when installing the starter interlock switch.

1. Insert a new starter interlock switch into the pedal bracket hole in direction A.
2. While pushing the starter interlock switch in direction A, slide it in direction B until it locks securely.
3. Fully depress the clutch pedal in the direction of arrow C, and verify that a click sound from the starter interlock switch is heard.



[< Previous](#) [Next >](#)

© 2012 Mazda North American Operations, U.S.A.

[Back to Top](#)

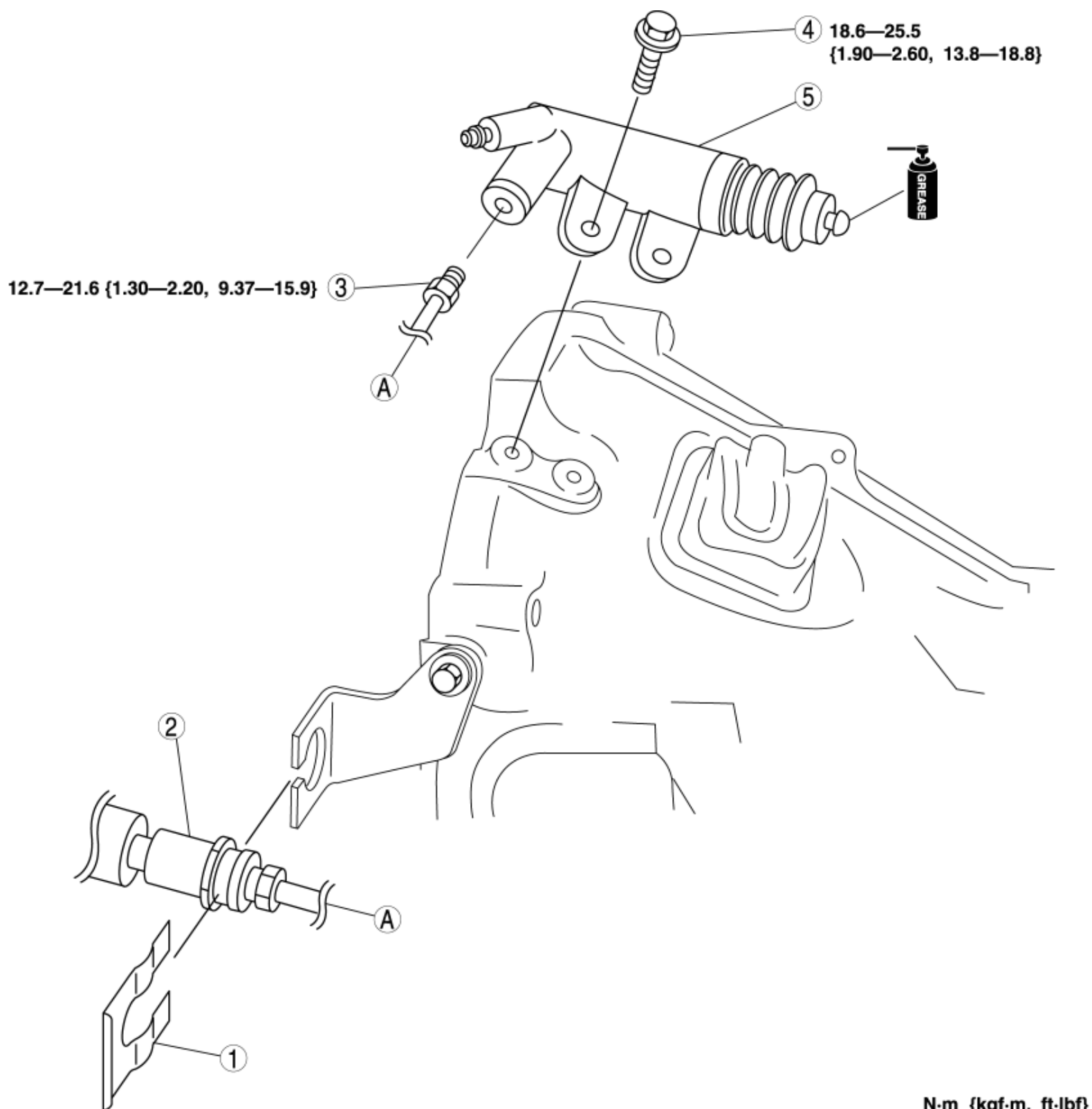
[< Previous](#) [Next >](#)

2011 - RX-8 - Transmission/Transaxle

CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION

CAUTION:

- Fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If fluid does get on painted surfaces, wipe it off immediately.
1. Remove in the order indicated in the table.
 2. Install in the reverse order of removal.
 3. Bleed the air from the system. (See [CLUTCH FLUID REPLACEMENT](#).)
 4. Inspect and adjust the clutch pedal. (See [CLUTCH PEDAL INSPECTION/ADJUSTMENT](#).)



N·m {kgf·m, ft·lbf}

1 Clip

2 Clutch pipe, clutch hose

3 Clutch pipe

4	Bolt
5	Clutch release cylinder

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

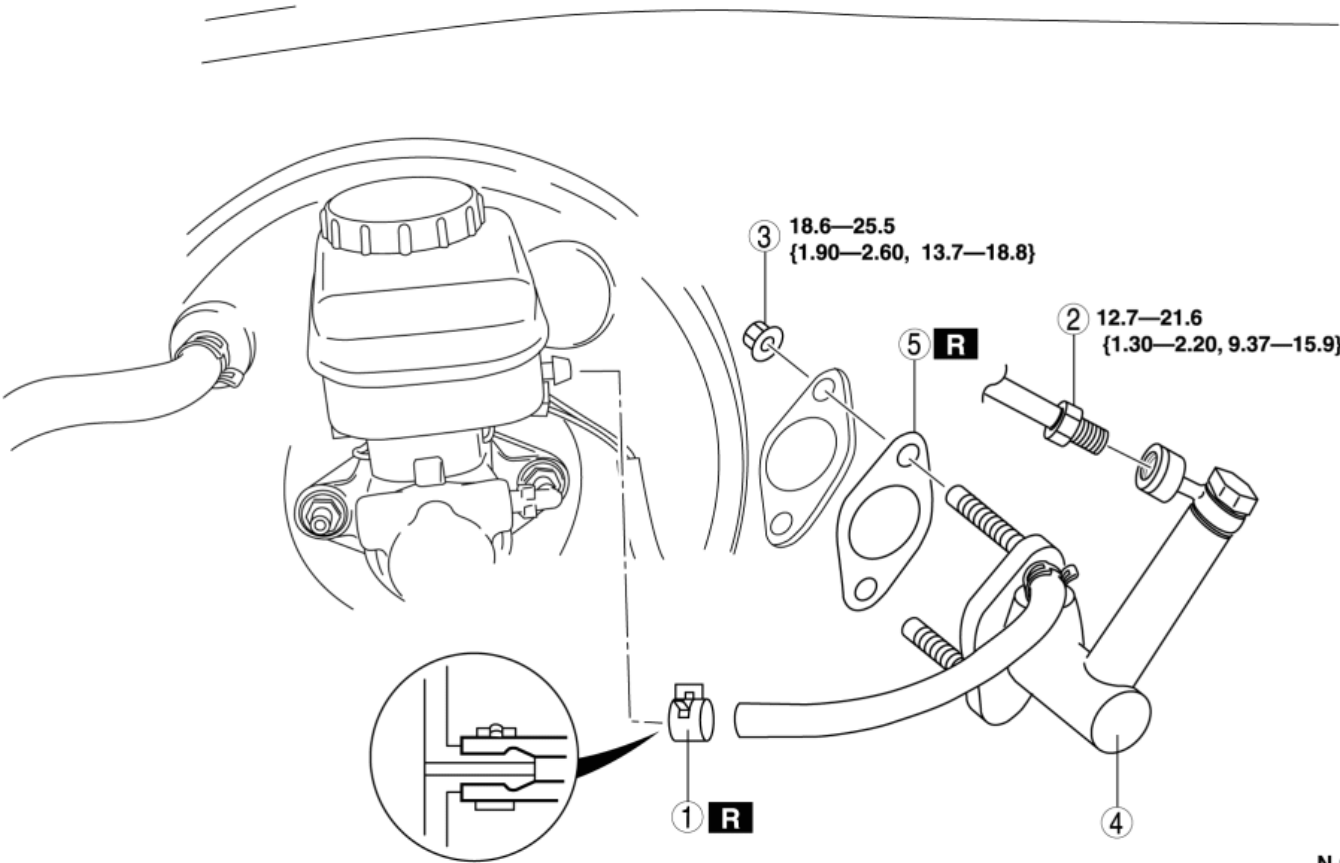
[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

CLUTCH MASTER CYLINDER REMOVAL/INSTALLATION

CAUTION:

- Fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If it is spilled, wipe it off immediately.
1. Remove in the order indicated in the table.
 2. Install in the reverse order of removal.
 3. Bleed the air from the system. (See [CLUTCH FLUID REPLACEMENT.](#))
 4. Inspect and adjust the clutch pedal. (See [CLUTCH PEDAL INSPECTION/ADJUSTMENT.](#))



N·m {kgf·m, ft·lbf}

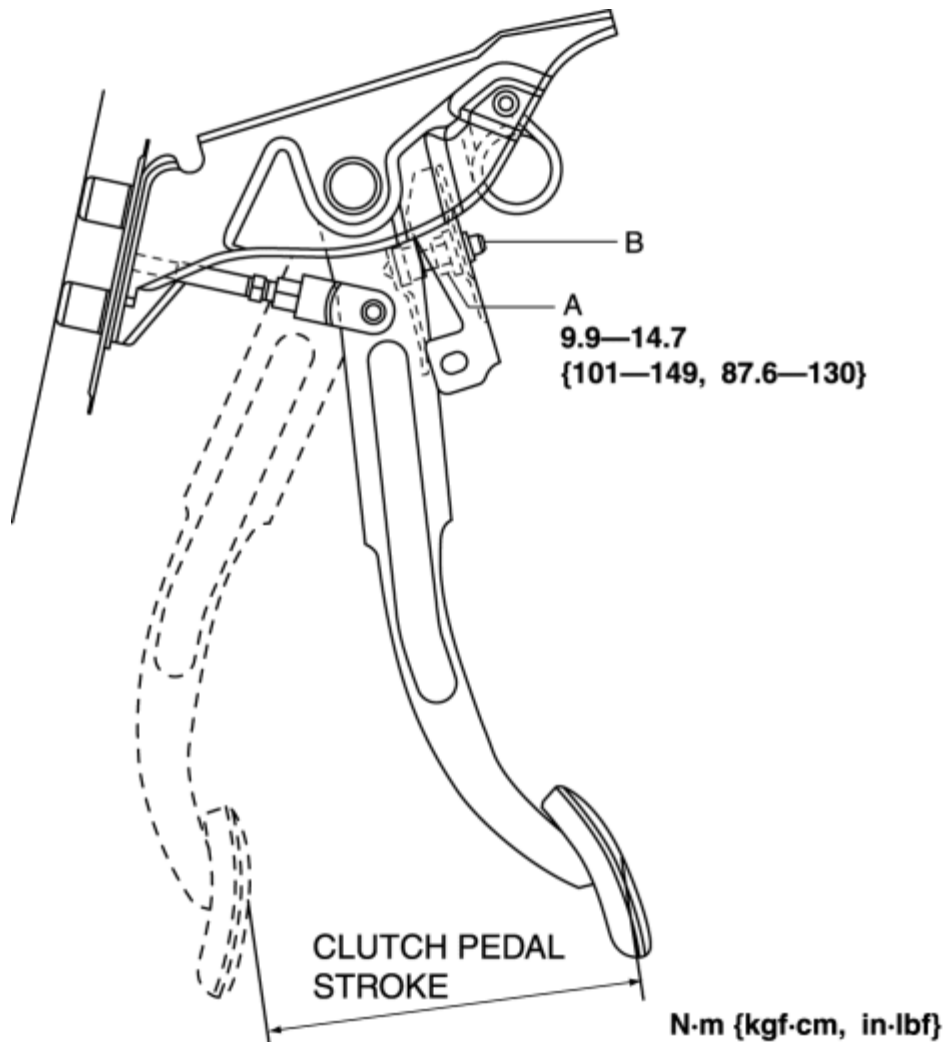
1	Hose clip
2	Clutch pipe
3	Nut
4	Clutch master cylinder
5	Packing

2011 - RX-8 - Transmission/Transaxle

CLUTCH PEDAL INSPECTION/ADJUSTMENT

Clutch Pedal Stroke Inspection/Adjustment

1. Measure the clutch pedal stroke.



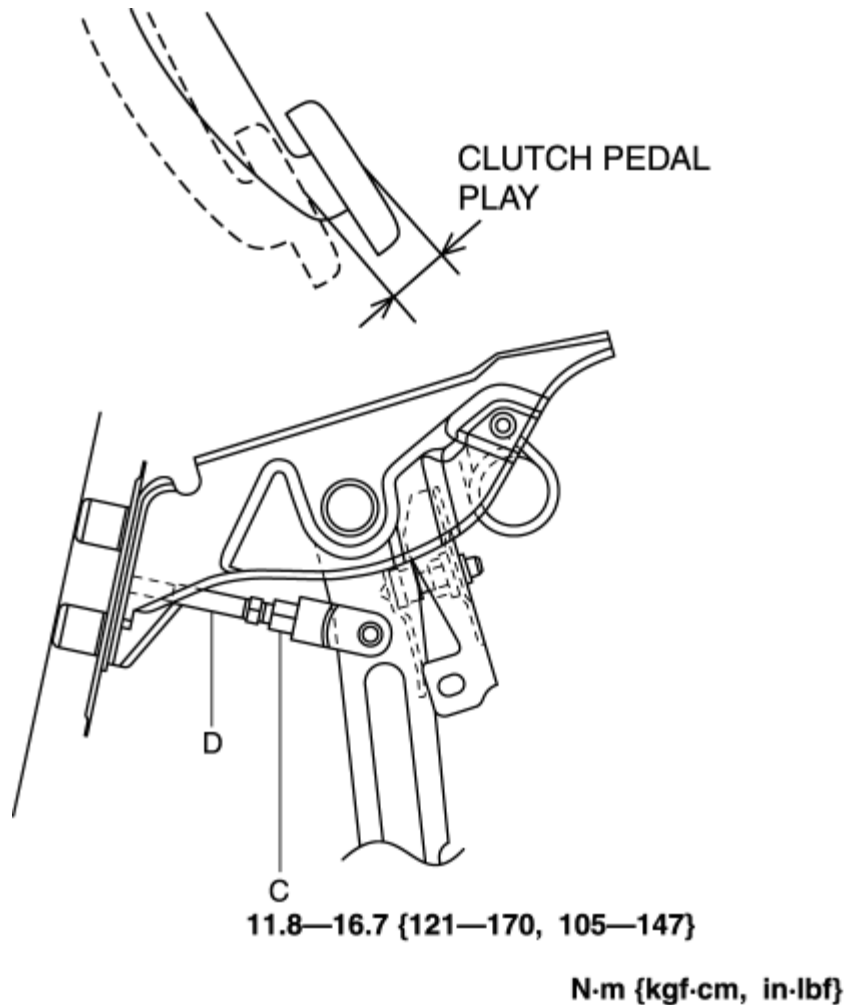
- If there is any malfunction, loosen locknut A and adjust the pedal stroke with adjusting bolt B. Tighten locknut A after adjustment.

Clutch pedal stroke

- 130 mm {5.12 in}

Clutch Pedal Play Inspection/Adjustment

1. Lightly depress the clutch pedal by hand until clutch resistance is felt and then measure the pedal play.



- If it is not within the specification, loosen locknut C and turn push rod D to adjust the pedal play.

Clutch pedal play

- 5—15 mm {0.20—0.59 in}

Clutch pedal push rod play

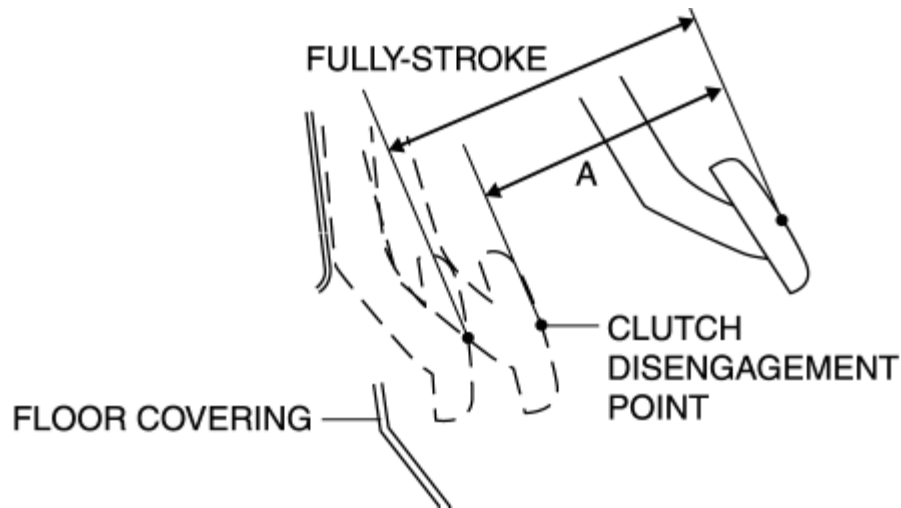
- At push rod setting line : 0.1—0.5 mm {0.004—0.020 in} (Reference value)
At pedal pad : 0.5—2.9 mm {0.020—0.110 in}

2. Remeasure the pedal play and, if it is within the specification, tighten locknut C.

Clutch Disengagement Point Inspection

1. Start the engine.

2. With the clutch pedal depressed, move the shift lever to the position just before engaging the reverse gear. (Do not shift completely to reverse position)
 3. Gradually release the clutch pedal and then hold it at the point where the sound of gear-grinding begins (clutch disengagement point).
 4. Measure distance A from the clutch disengagement point to the position where the pedal has returned completely (not depressed), and verify that the measurement is within the specification.
- If the measurement is not within the specification, inspect the clutch fluid level and the fluid lines for air infiltration.



Distance A (From clutch disengagement point to fully-returned pedal position)

- 111.8 mm {4.402 in}

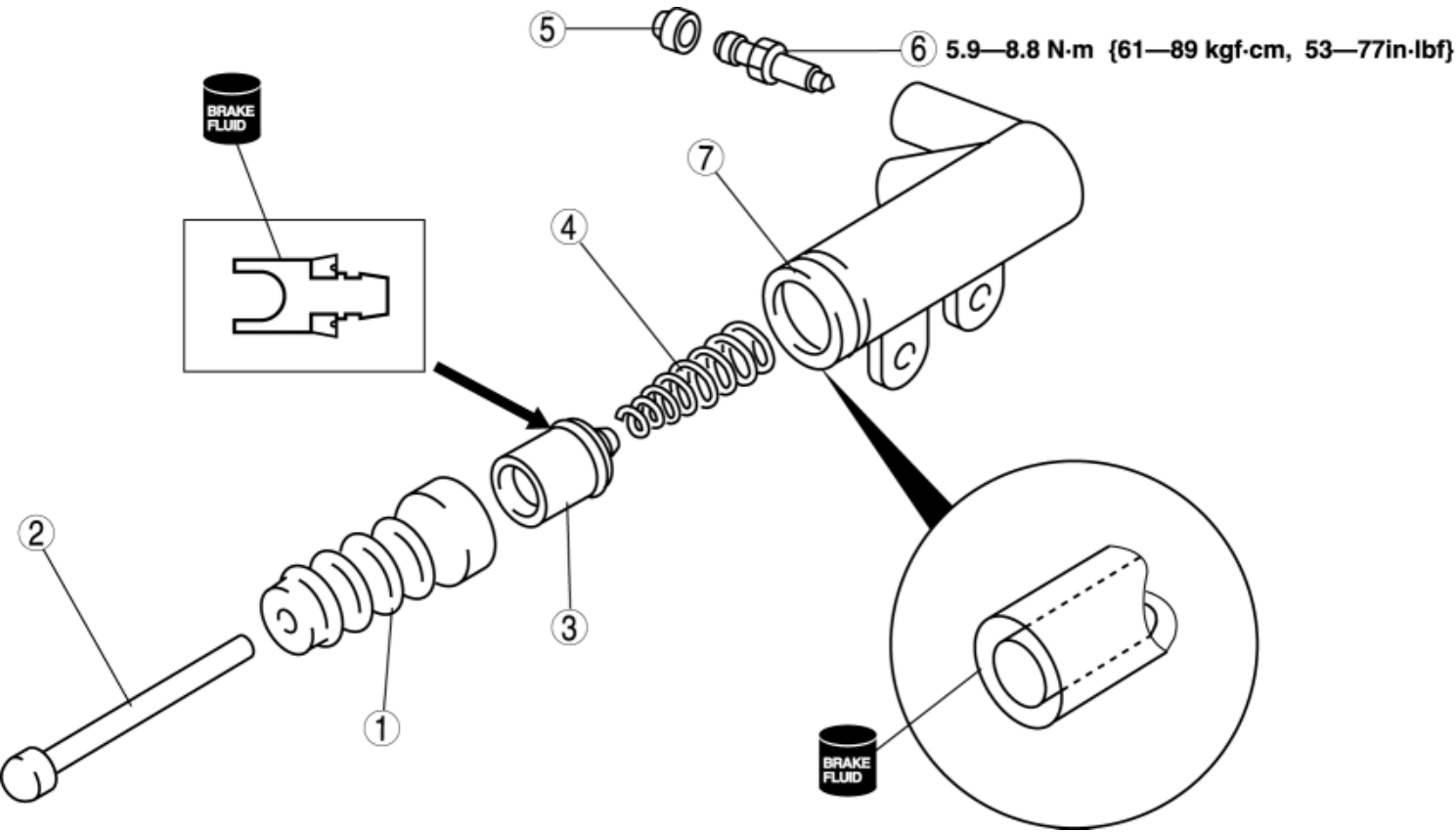
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

CLUTCH RELEASE CYLINDER DISASSEMBLY/ASSEMBLY

- 1. Disassemble in the order indicated in the table.
- 2. Assemble in the reverse order of disassembly.



1	Boot
2	Push rod
3	Piston, piston cup component
4	Return spring
5	Bleeder cap
6	Bleeder screw

7	Clutch release cylinder body
---	------------------------------

[< Previous](#) [Next >](#)

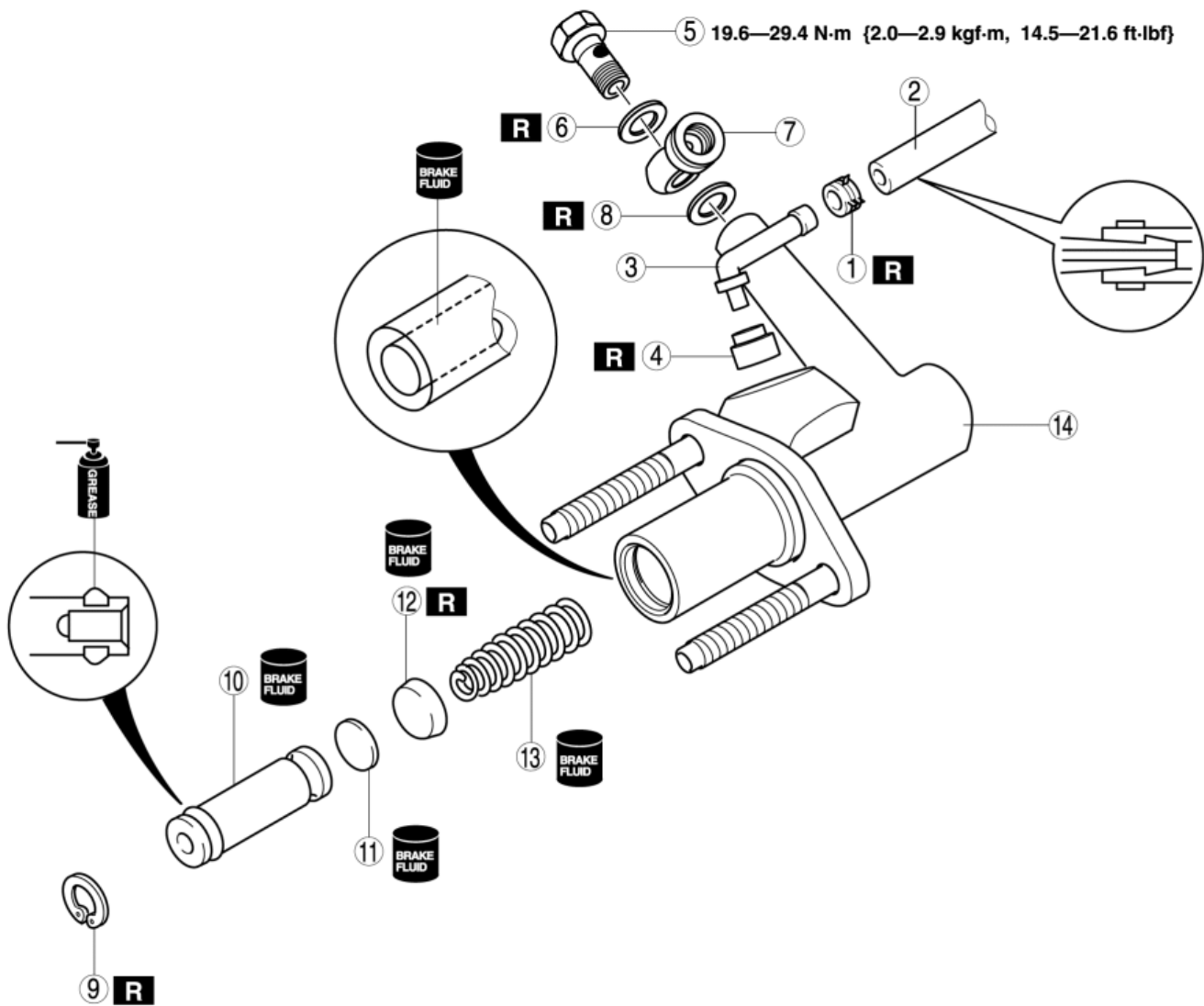
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

CLUTCH MASTER CYLINDER DISASSEMBLY/ASSEMBLY

- 1. Disassemble in the order indicated in the table.
- 2. Assemble in the reverse order of disassembly.

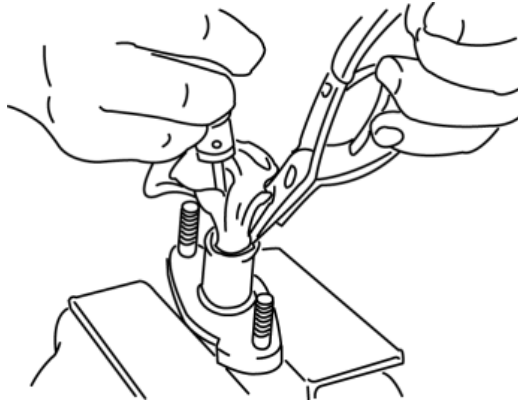


1	Hose clip
2	Reserve tank hose
3	Joint
4	Bushing

5	Bolt
6	Packing
7	Connector
8	Packing
9	Snap ring (See Snap Ring Disassembly/Assembly Note.)
10	Piston, secondary cup component
11	Spacer
12	Primary cup
13	Return spring
14	Clutch master cylinder body

Snap Ring Disassembly/Assembly Note

1. While pressing the piston in with a cloth-wrapped pin punch to protect the push rod contacting surface, remove/install the snap ring.



[< Previous](#) [Next >](#)

2011 - RX-8 - Transmission/Transaxle

CLUTCH FLUID REPLACEMENT

CAUTION:

- Fluid will damage painted surfaces. Be careful not to spill any on painted surfaces. If fluid does get on painted surfaces, wipe it off immediately.
- Keep the fluid level in the reserve tank at 3/4 full or more during air bleeding.

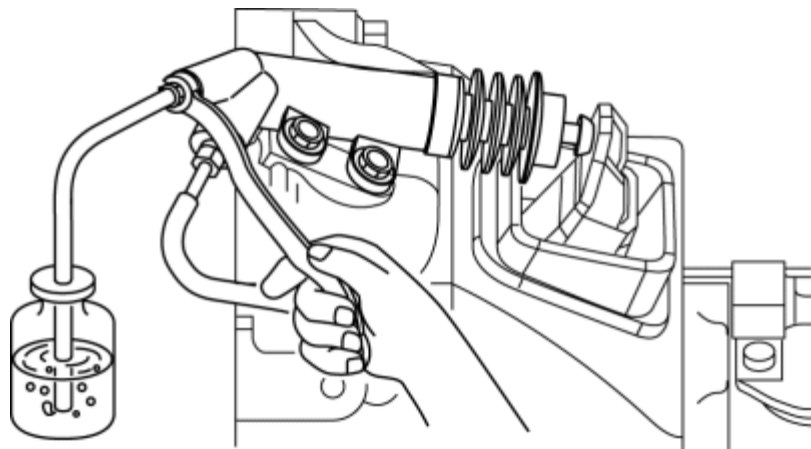
NOTE:

- When replacing the fluid, drain the old fluid, fill the reserve tank with new fluid and then perform Steps 1—6 below.

Specified clutch fluid

- SAE J1703 or FMVSS116 DOT-3

1. Remove the bleeder cap from the clutch release cylinder, and connect a vinyl hose to the bleeder plug.
2. Place the other end of the vinyl tube in a clear container, and fill fluid in the container during air bleeding.
3. Working with two people, one should depress the clutch pedal a few times and then depress and hold the pedal down.
4. While the clutch pedal is being held down, the other person should loosen the bleeder screw, and bleed any fluid containing air bubbles. Once completed, tighten the bleeder screw.
5. Continue to perform Steps 3 and 4 until no air comes from the vinyl hose.
6. Tighten the bleeder screw.



Tightening torque

- 5.9—8.8 N·m {61—89 kgf·cm, 53—77 in·lbf}

7. Fill the reserve tank to MAX with the recommended fluid.

8. Perform the following inspections:

- Clutch operation
- Fluid leakage
- Fluid level

[< Previous](#) [Next >](#)

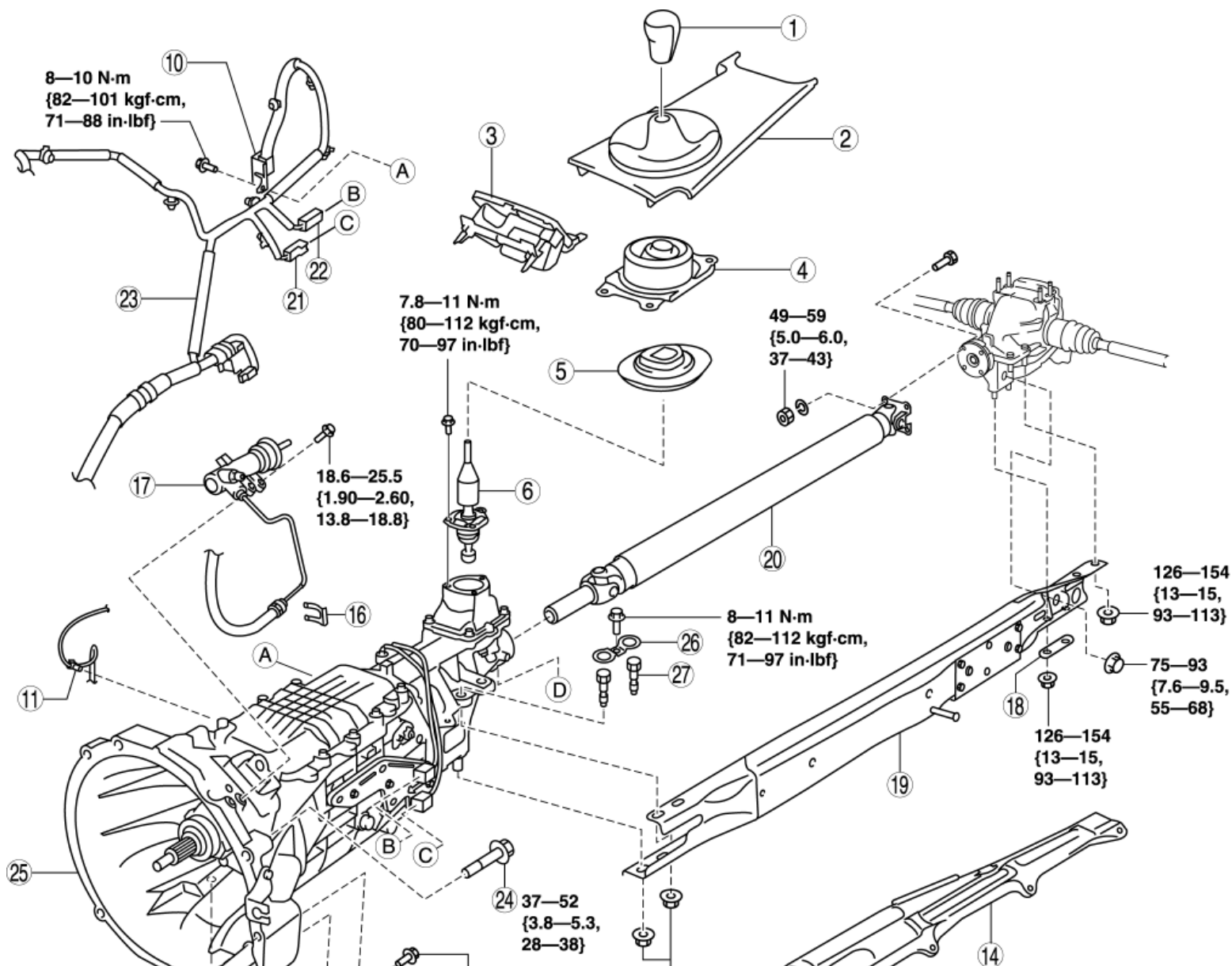
© 2010 Mazda North American Operations, U.S.A.

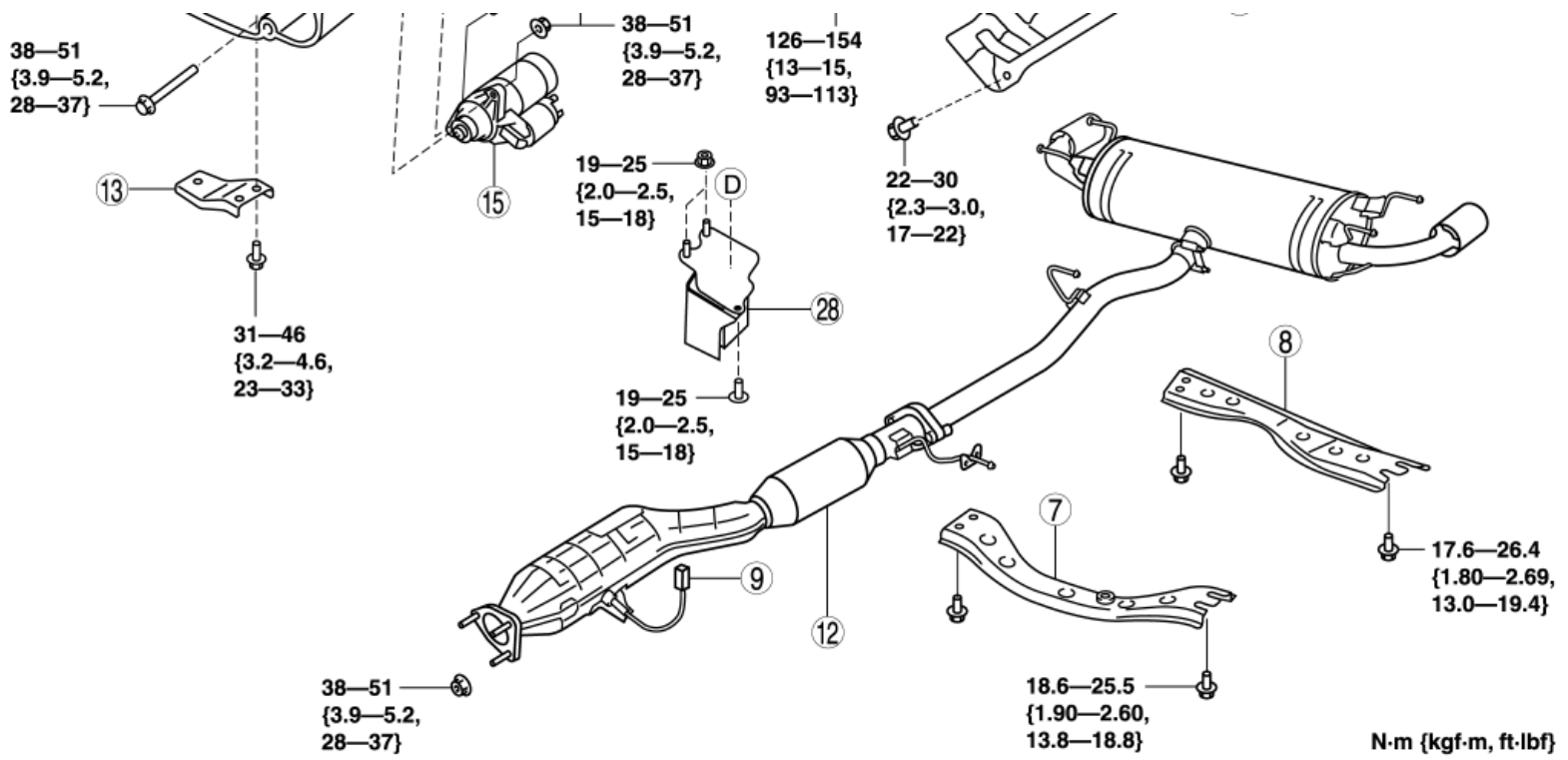
[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

TRANSMISSION REMOVAL/INSTALLATION [P66M-D]

1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Drain the transmission oil. (See [TRANSMISSION OIL REPLACEMENT \[P66M-D\].](#))
5. Remove in the order indicated in the table.
6. Install in the reverse order of removal.
7. Add transmission oil. (See [TRANSMISSION OIL REPLACEMENT \[P66M-D\].](#))
8. Perform the "INSPECTION AFTER TRANSMISSION INSTALLATION", and verify that there is no malfunction. (See [INSPECTION AFTER TRANSMISSION INSTALLATION \[P66M-D\].](#))



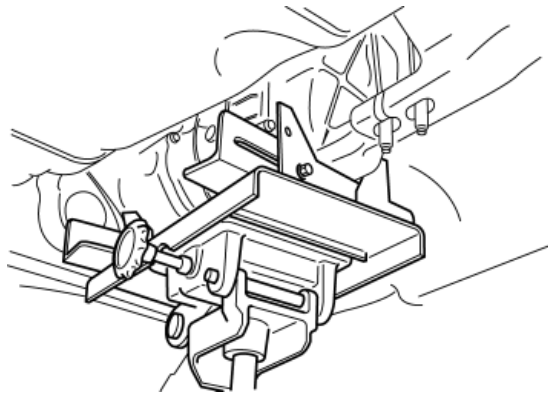


1	Shift lever knob
2	Upper panel
3	Ashtray panel
4	Shift insulator component (outer)
5	Shift insulator component (inner)
6	Shift lever component (See Shift Lever Component Installation Note.)
7	Front tunnel member
8	Rear tunnel member
9	HO2S connector
10	HO2S connector bracket
11	Clip
12	Catalytic converter, middle pipe, main silencer (See EXHAUST SYSTEM REMOVAL/INSTALLATION [13B-MSP].)
13	Exhaust manifold stay

14	Heat insulator
15	Starter (See STARTER REMOVAL/INSTALLATION [13B-MSP].)
16	Clutch release cylinder clip
17	Clutch release cylinder (See CLUTCH RELEASE CYLINDER REMOVAL/INSTALLATION.)
18	Plate
19	Power plant frame (See Power Plant Frame Removal Note.) (See Power Plant Frame Installation Note.)
20	Propeller shaft (See Propeller Shaft Removal Note.) (See PROPELLER SHAFT REMOVAL/INSTALLATION.)
21	Back-up light switch connector
22	Neutral switch connector
23	Wiring Harness (See Wiring Harness Removal Note.)
24	Transmission installation bolt
25	Transmission (See Transmission Removal Note.) (See Transmission Installation Note.)
26	Stopper
27	Bolt
28	Dynamic damper

Power Plant Frame Removal Note

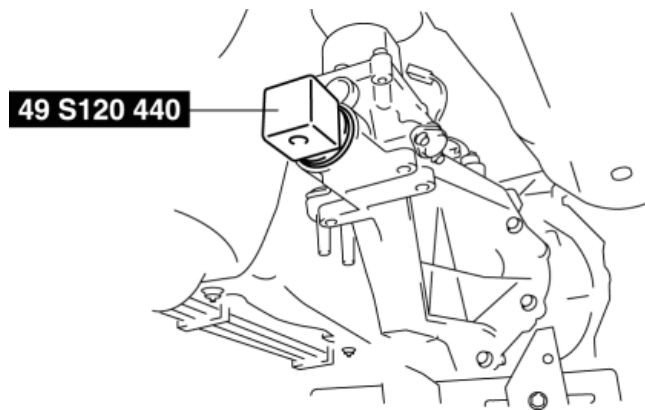
1. Support the transmission using a transmission jack.



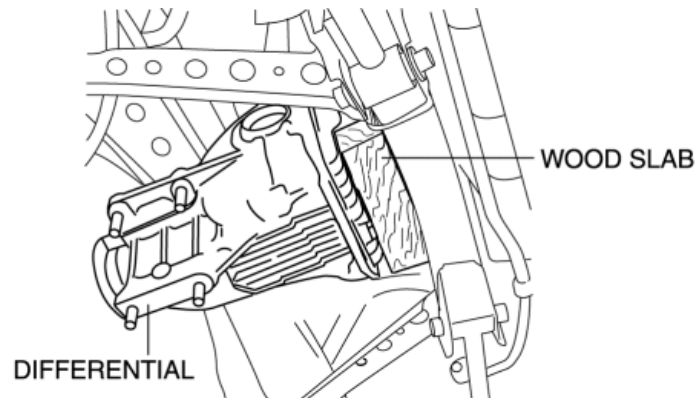
2. Remove the power plant frame.

Propeller Shaft Removal Note

1. Install the **SST** to the main shaft.

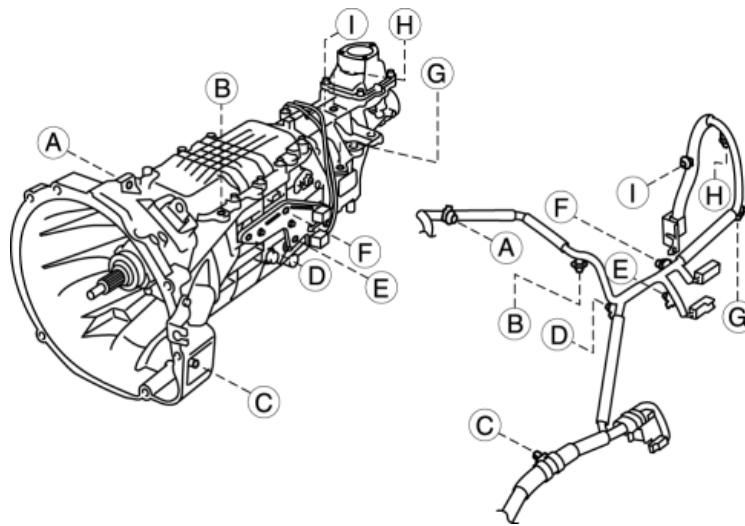


2. Insert a slab of wood behind the rear differential, and remove the propeller shaft.



Wiring Harness Removal Note

1. Remove the wiring harness clip from the transmission as shown in the figure.



Transmission Removal Note

WARNING:

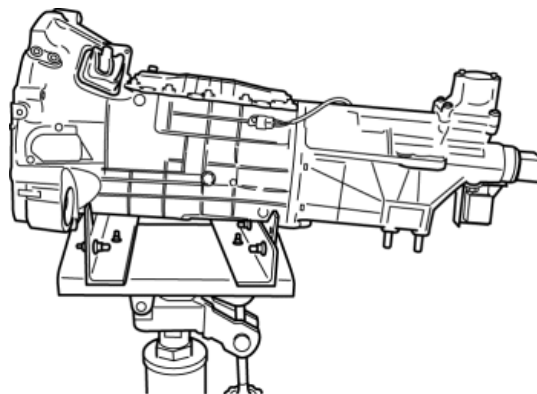
- Remove the transmission carefully, holding it steady. If the transmission falls it could be damaged or cause injury.

CAUTION:

- To prevent part interference in the engine compartment, position the installation part of the exhaust manifold stay of the front pipe on the transverse member to control the inclination of the transmission under its own weight.



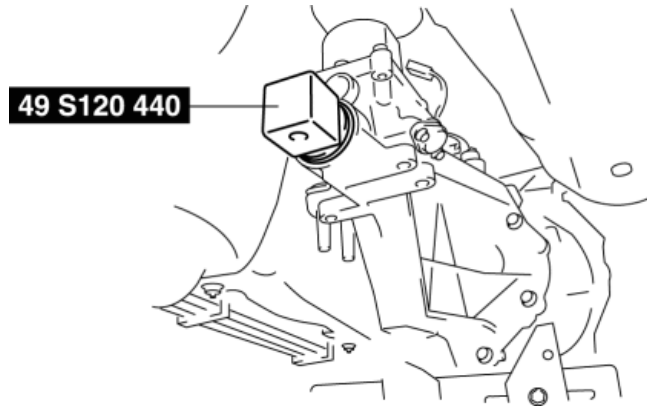
1. Support the transmission securely using a transmission jack.



2. Remove the transmission installation bolt.
3. Remove the transmission.

Transmission Installation Note

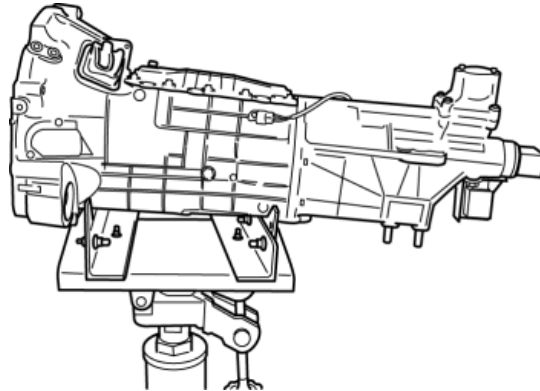
1. Shift to any gear position.
2. Install the **SST** to the main shaft.



WARNING:

- Remove the transmission carefully, holding it steady. If the transmission falls it could be damaged or cause injury.

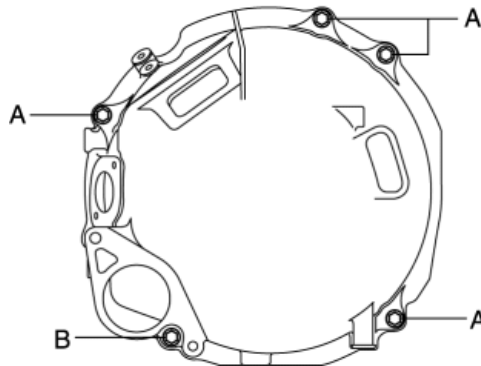
3. Place the transmission on the transmission jack and raise it.



NOTE:

- Slowly rotate the **SST** to engage the clutch with the main drive gear spline, and install the transmission.

4. Install the transmission.
5. Tighten the transmission installation bolt.



Bolt length

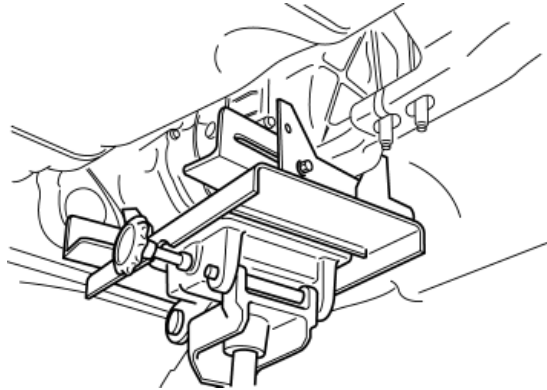
- A: 55 mm {2.1 in}
- B: 90 mm {3.5 in}

Tightening torque

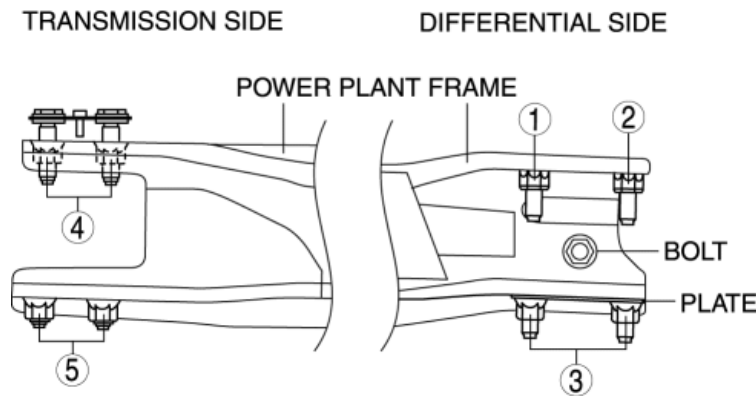
- 37—52 N·m {3.8—5.3 kgf·m, 28—38 ft·lbf}

Power Plant Frame Installation Note

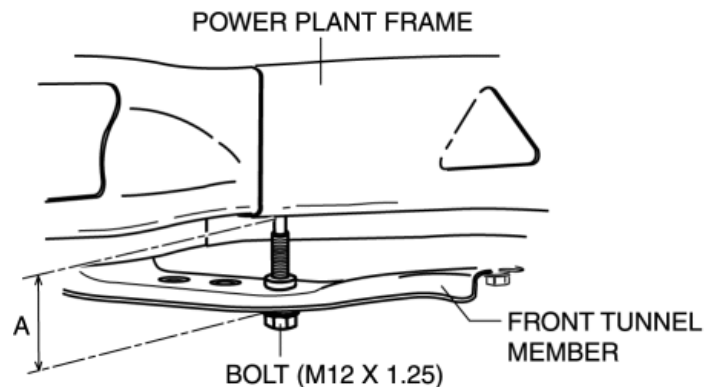
1. Support the transmission using a transmission jack.



2. Install the power plant frame.
3. Install the plate.
4. Temporarily tighten the nuts in the order shown in the figure.



5. Tighten nut 1 until the power plant frame is seated in the rear differential.
6. Install the heat insulator, exhaust manifold stay, catalytic converter, middle pipe, main silencer and front tunnel member.
7. Raise the power plant frame front end (transmission side) or transmission using a transmission jack so that dimension A (between power plant frame lower surface and front tunnel member lower surface) shown in the figure is within the adjustment value.



NOTE:

- When raising the power plant frame without a transmission jack, use bolts **(M12x1.25)** with a thread length of **55 mm {2.17 in}** or more. Tighten the bolts from the underside of the front tunnel member as shown in the figure and raise the power plant frame.

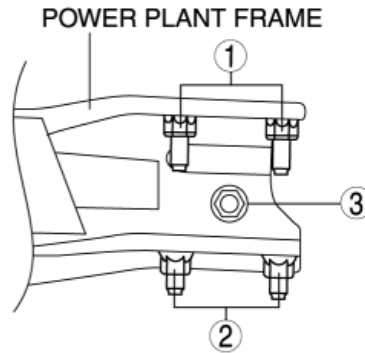
- When using bolts, the underside of the power plant frame could be damaged. Affix tape to the underside of the frame to prevent damage.
- If there is the possibility of age-related bending/deterioration of the mount, adjust dimension A to **approx. 15 mm {0.59 in}** higher than the adjustment value to facilitate obtaining the specification.

Adjustment dimension A

- 55—57 mm {2.17—2.24 in}

8. Tighten the nuts and bolts on the rear differential side in the order shown in the figure.

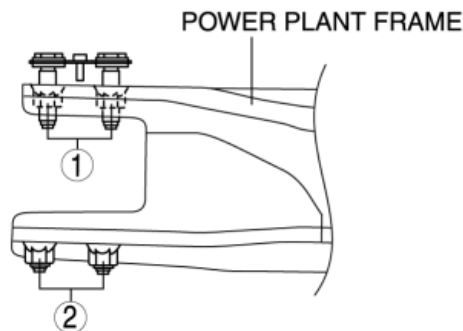
REAR DIFFERENTIAL SIDE



Bolt, nut number	Tightening torque N·m {kgf·m, ft·lbf}
1, 2	126—154 {13—15, 93—113}
3	75—93 {7.6—9.5, 55—68}

9. Tighten the nuts on the rear differential side in the order shown in the figure.

TRANSMISSION SIDE



Tightening torque

- 126—154 N·m {13—15 kgf·m, 93—113 ft·lbf}

10. Verify that dimension A is within the specification with the transmission jack and the adjustment bolt removed.

- If it is not within the specification, adjust dimension A again.

Standard dimension A

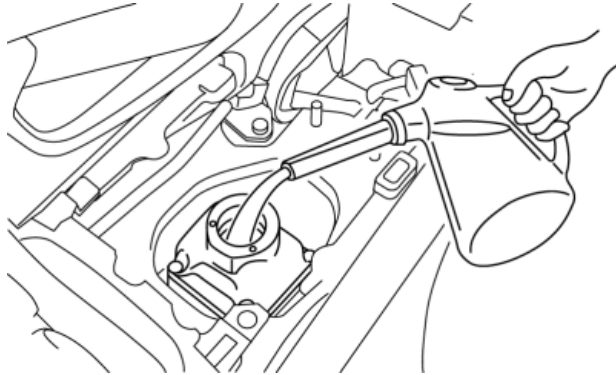
48.4—56.4 mm {1.91—2.22 in}

Shift Lever Component Installation Note

NOTE:

- If the extension housing has been removed or the transmission has been disassembled and inspected, always add the specified type and amount of transmission oil.

1. Add the specified type and amount of oil to the shift control case.



Shift control case specified oil grade

- API Service GL-4

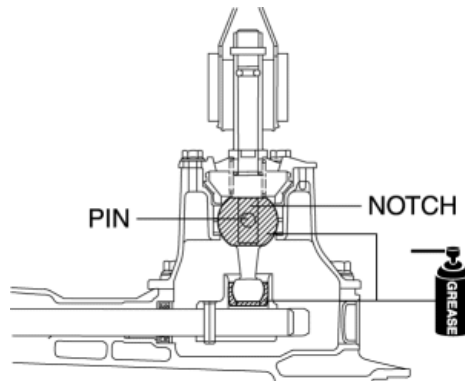
Shift control case specified oil viscosity

- SAE 75W-90

Shift control case capacity (approx. quantity)

- 80—230 ml {80—230 cc, 4.9—14.0 in³}

2. Apply grease to the areas of the shift lever component as shown in the figure.



3. Align the shift lever component notch with the shift control case pin and install the shift lever component.

[< Previous](#) [Next >](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Transmission/Transaxle

INSPECTION AFTER TRANSMISSION INSTALLATION [P66M-D]

1. After warming up the engine, perform a road test and inspect the following items:
 - a. No abnormal noise in each shift position.
 - b. Smooth shift operation when shifting gears.
 - c. No gear slipout after shifting gears.
 - d. Back-up light switch operates correctly.

[< Previous](#) [Next >](#)

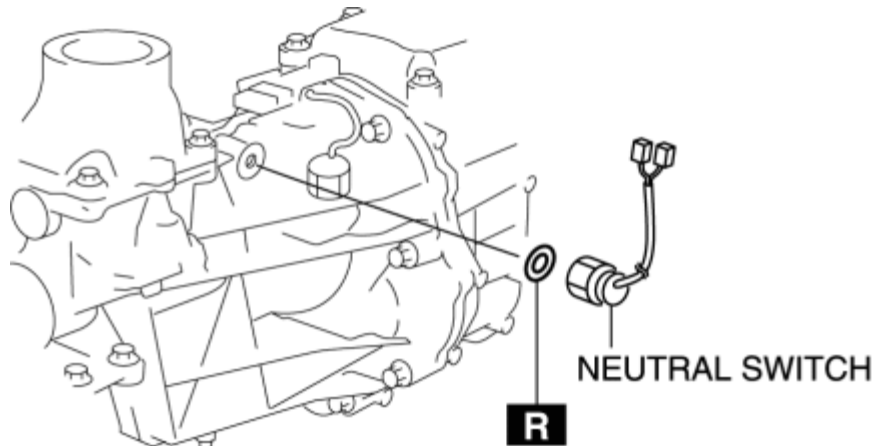
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

NEUTRAL SWITCH REMOVAL/INSTALLATION [P66M-D]

1. Remove the transmission. (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#).)
2. Remove the neutral switch with the packing.



3. Install the neutral switch and a new packing to the transmission case.

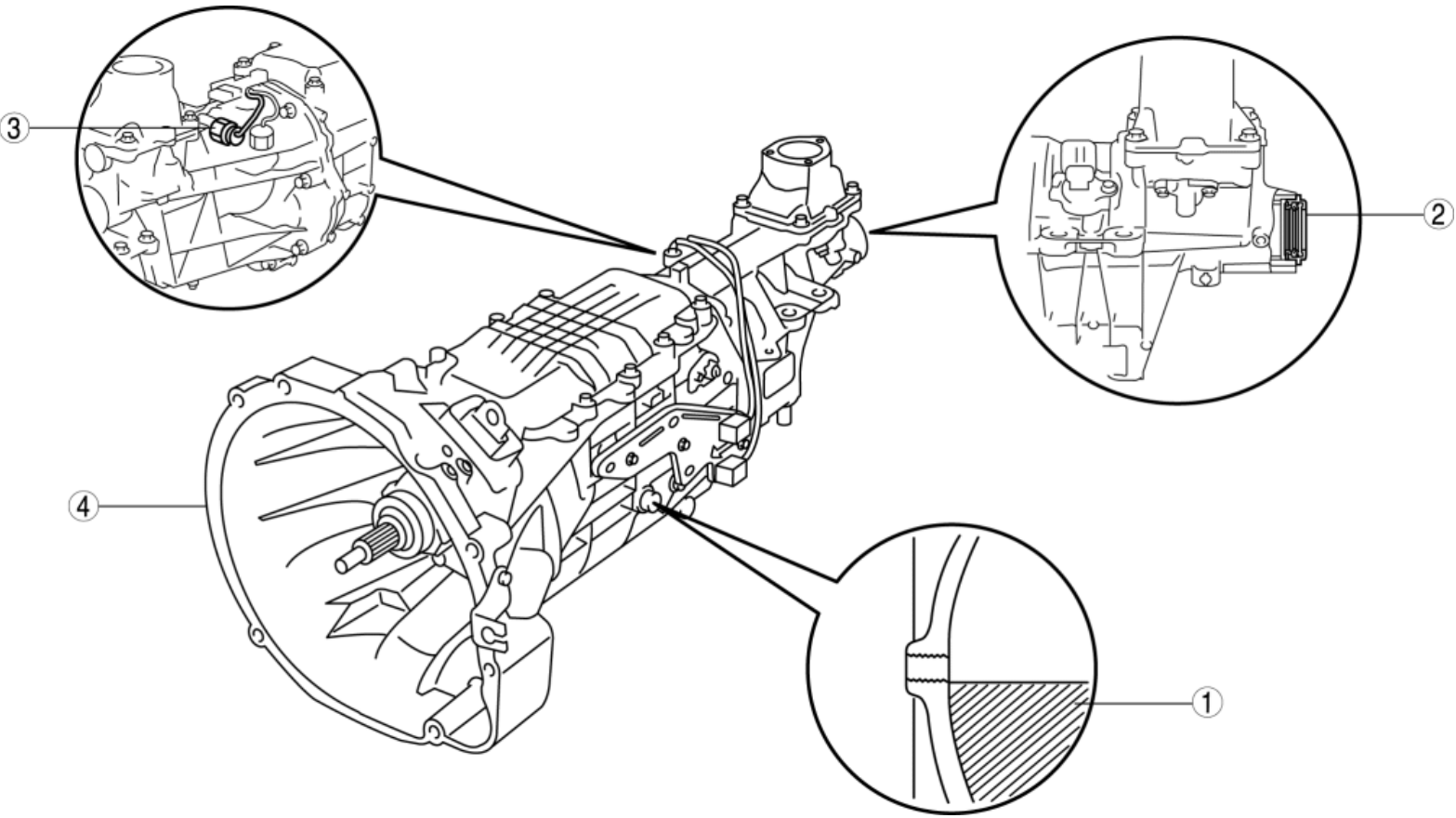
Tightening torque

- 23.6—35.3 N·m {2.5—3.5 kgf·m, 18—26 ft·lbf}

4. Install the transmission. (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#).)

2011 - RX-8 - Transmission/Transaxle

MANUAL TRANSMISSION LOCATION INDEX [P66M-D]

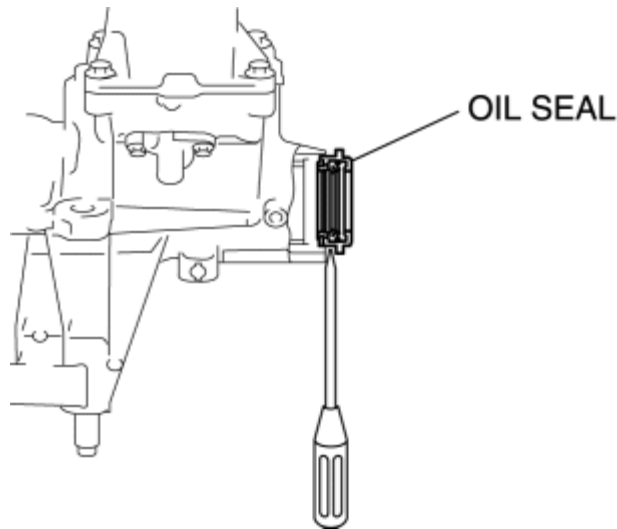


1	Transmission oil (See TRANSMISSION OIL INSPECTION [P66M-D].) (See TRANSMISSION OIL REPLACEMENT [P66M-D].)
2	Oil seal (extension housing) (See OIL SEAL (EXTENSION HOUSING) REPLACEMENT [P66M-D].)
3	Neutral switch (See NEUTRAL SWITCH REMOVAL/INSTALLATION [P66M-D].)
4	Transmission (See TRANSMISSION REMOVAL/INSTALLATION [P66M-D].) (See INSPECTION AFTER TRANSMISSION INSTALLATION [P66M-D].)

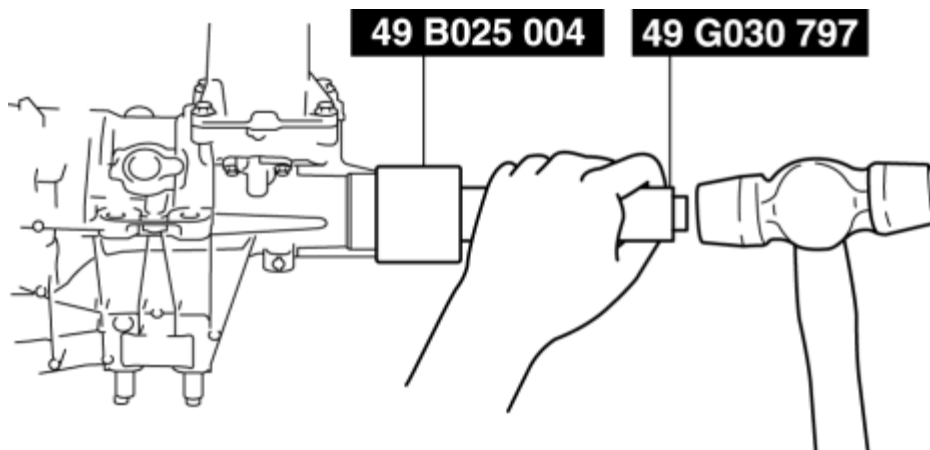
2011 - RX-8 - Transmission/Transaxle

OIL SEAL (EXTENSION HOUSING) REPLACEMENT [P66M-D]

1. Position the vehicle on level ground.
2. Drain the transmission oil. (See [TRANSMISSION OIL REPLACEMENT \[P66M-D\]](#).)
3. Remove the following parts:
 - a. Member bracket (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#).)
 - b. Tunnel member (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#).)
 - c. Catalytic converter, middle pipe (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 - d. Propeller shaft (See [PROPELLER SHAFT REMOVAL/INSTALLATION](#).)
4. Remove the oil seal using a flathead screwdriver.



5. Tap a new oil seal into the case using the **SSTs**.



6. Apply the specified oil to the oil seal lip.
7. Install in the reverse order of removal.
8. Add transmission oil. (See [TRANSMISSION OIL REPLACEMENT \[P66M-D\]](#).)

[< Previous](#) [Next >](#)

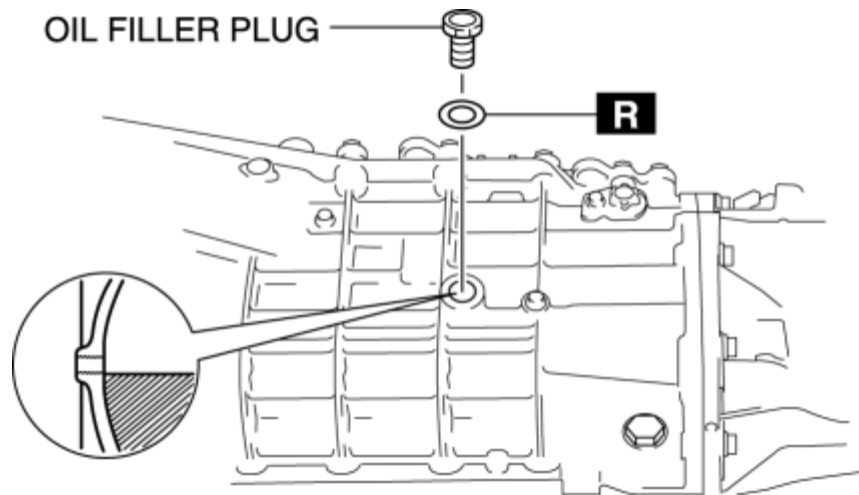
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Transmission/Transaxle

TRANSMISSION OIL INSPECTION [P66M-D]

1. Position the vehicle on level ground.
2. Remove the oil filler plug with washer.



3. Verify that the transmission oil is near the brim of the plug port.
 - If the oil is not near the brim of the plug port, add the specified amount and type of oil.

Specified manual transmission oil grade

- API Service GL-4

Specified manual transmission oil viscosity

- SAE 75W-90

4. Install the oil filler plug and a new washer.

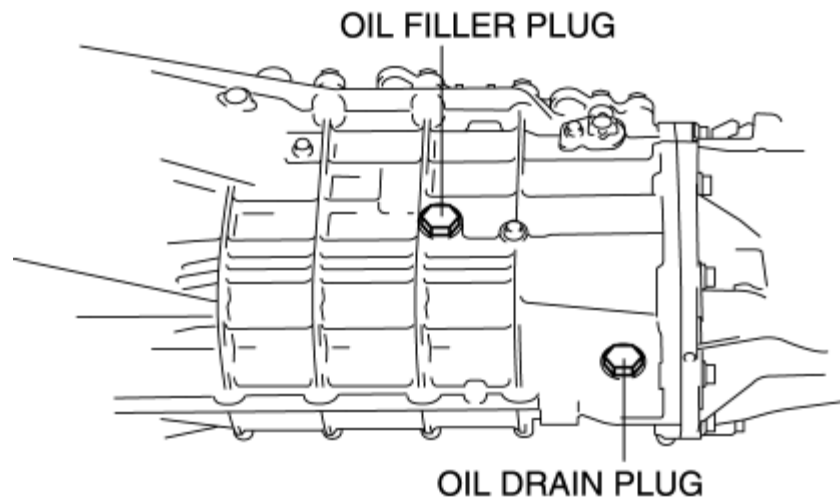
Tightening torque

- 40—59 N·m {4.1—6.0 kgf·m, 30—43 ft·lbf}

2011 - RX-8 - Transmission/Transaxle

TRANSMISSION OIL REPLACEMENT [P66M-D]

1. Position the vehicle on level ground.
2. Remove the oil filler plug with the washer and drain plug with the washer, and then drain the oil.

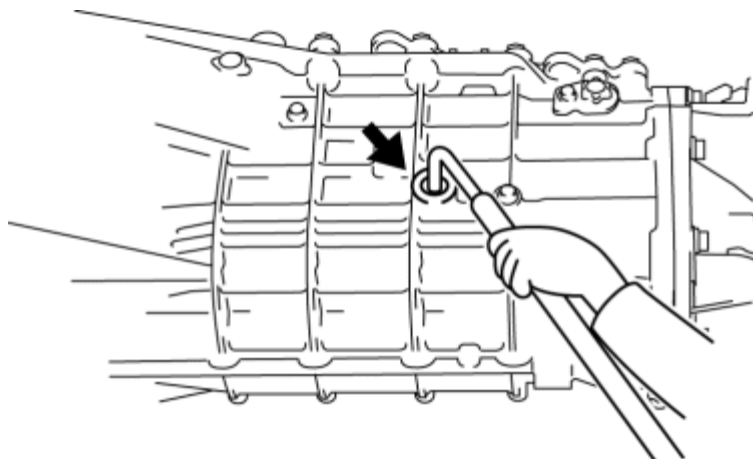


3. Clean drain plug.
4. Install drain plug and a new washer.

Tightening torque

- 40—59 N·m {4.1—6.0 kgf·m, 30—43 ft·lbf}

5. Add the specified amount and type of oil through the plug port for oil filler plug to near the brim of the port.



Specified manual transmission oil grade

- API Service GL-4

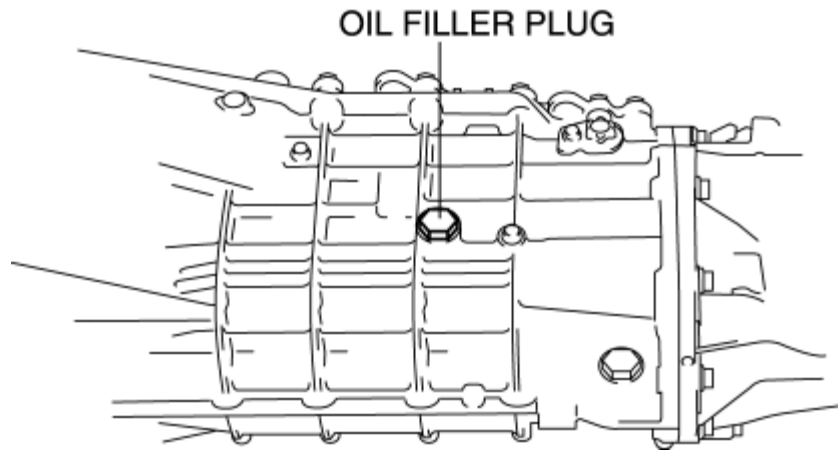
Specified manual transmission oil viscosity

- SAE 75W-90

Manual transmission oil capacity (approx. quantity)

- 1.95 L {2.06 US qt, 1.72 Imp qt}

6. Install the oil filler plug and a new washer.



Tightening torque

- 40—59 N·m {4.1—6.0 kgf·m, 30—43 ft·lbf}

[< Previous](#) [Next >](#)

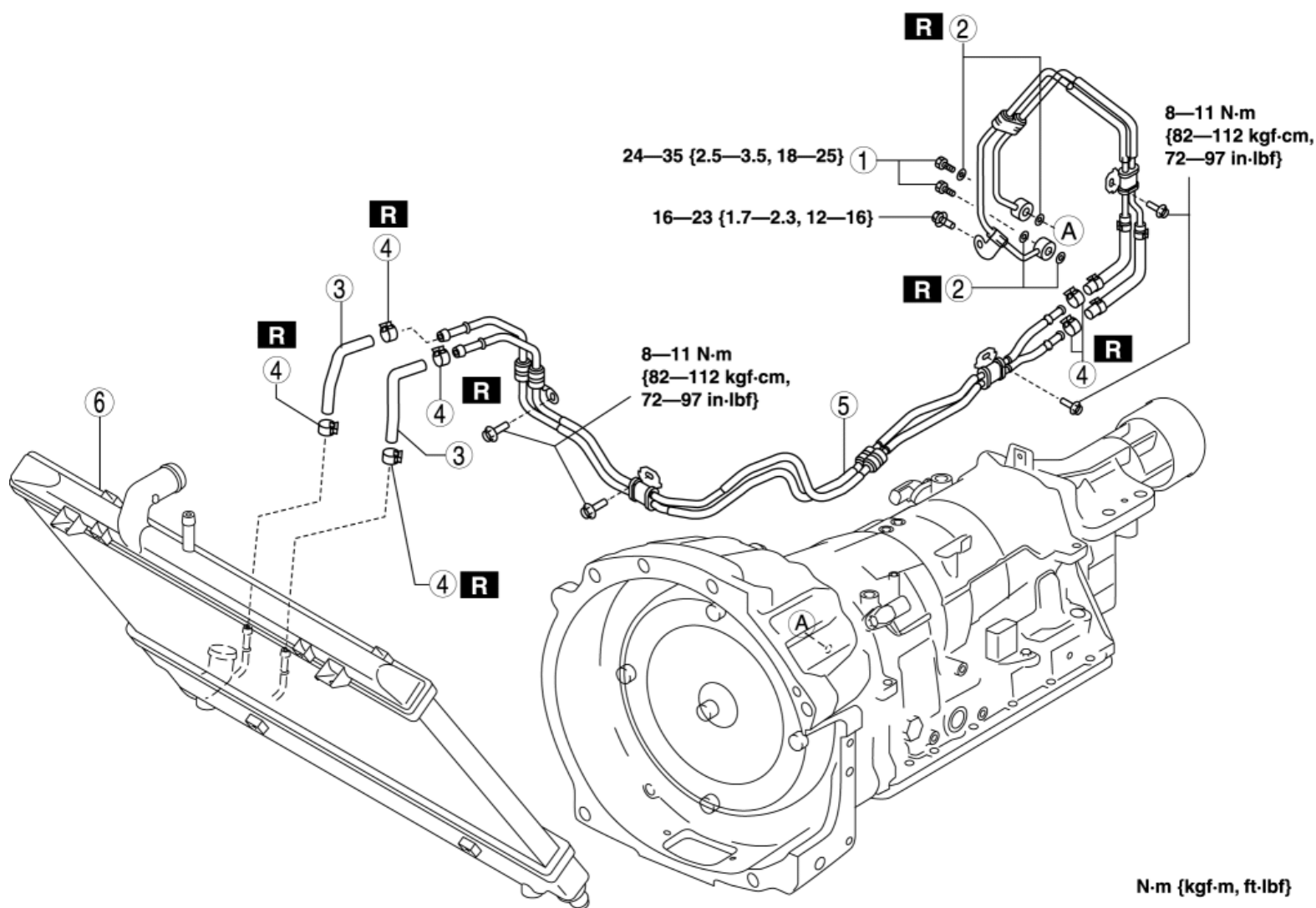
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Transmission/Transaxle

OIL COOLER REMOVAL/INSTALLATION [SJ6A-EL]

1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Drain the ATF. (See [AUTOMATIC TRANSMISSION FLUID \(ATF\) REPLACEMENT \[SJ6A-EL\].](#))
5. Remove the following parts.
 - a. Splash shield
 - b. Under cover
 - c. Battery tray, battery duct (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 - d. Air cleaner duct, air cleaner, air cleaner bracket
 - e. PCM duct
 - f. Front tunnel member
 - g. Rear tunnel member
 - h. Catalytic converter (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))
 - i. Insulator
 - j. Manual shaft lever component (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\].](#))
 - k. TR switch connector
 - l. Solenoid valve connector
 - m. VSS connector
 - n. Turbine sensor connector
 - o. Heat insulator
 - p. Power plant frame (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\].](#))
 - q. Propeller shaft (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\].](#)) (See [PROPELLER SHAFT REMOVAL/INSTALLATION.](#))
 - r. Breather hose
6. Remove in the order indicated in the table.
7. Install in the reverse order of removal.
8. Add ATF to the specified level. (See [AUTOMATIC TRANSMISSION FLUID \(ATF\) REPLACEMENT \[SJ6A-EL\].](#))
9. Inspect for oil leakage from the oil pipes and oil hoses.
10. Inspect for coolant from the hoses.
11. Inspect the ATF level and condition. (See [AUTOMATIC TRANSMISSION FLUID \(ATF\) INSPECTION \[SJ6A-EL\].](#))
12. Perform the line pressure test. (See [MECHANICAL SYSTEM TEST \[SJ6A-EL\].](#))
13. Perform the road test. (See [ROAD TEST \[SJ6A-EL\].](#))



1	Connector bolt
2	Washer
3	Oil hose (See Oil Pipe, Hose clamp, Oil hose Installation Note.)
4	Hose clamp (See Oil Pipe, Hose clamp, Oil hose Installation Note.)
5	Oil pipe, oil hose (See Oil Pipe, Hose clamp, Oil hose Installation Note.)
6	Radiator (in tank oil cooler) (See RADIATOR REMOVAL/INSTALLATION [13B-MSPI.]) (See Radiator (In Tank Oil Cooler) Installation Note.)

Radiator (In Tank Oil Cooler) Installation Note

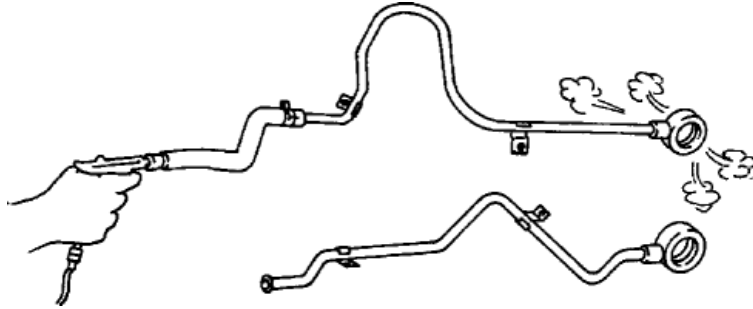
1. The automatic transmission oil cooler flushing must be performed whenever a transmission is removed for service because the existing fluid may be contaminated, and to prevent contamination of new fluid.

NOTE:

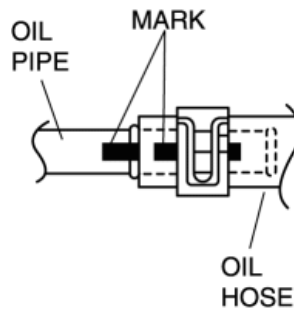
- Flushing must be performed after installation of the overhauled or replaced transmission.
2. Follow the instructions in the manufacturer's publication for flushing operation.

Oil Pipe, Hose clamp, Oil hose Installation Note

1. Apply compressed air to cooler-side opening, and blow any remaining grime and foreign material from the cooler pipes. Compressed air should be applied for **more than 1 min.**



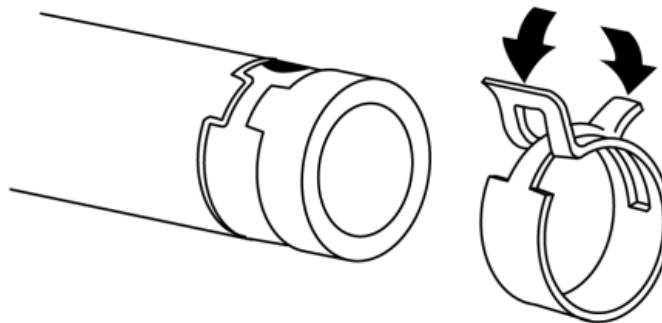
2. Align the marks, and slide the oil hose onto the oil pipe until it is fully seated as shown.



3. Install the hose clamp onto the hose.

NOTE:

- If reusing the hose, install the new hose clamp exactly on the mark left by the previous hose clamp. Then apply force to the hose clamp in the direction of the arrow in order to fit the clamp in place.



4. Verify that the hose clamp does not interfere with any other components.

2011 - RX-8 - Transmission/Transaxle

ROAD TEST [SJ6A-EL]

WARNING:

- When performing a road test, be aware of other vehicles, people, impediments to avoid an accident.

NOTE:

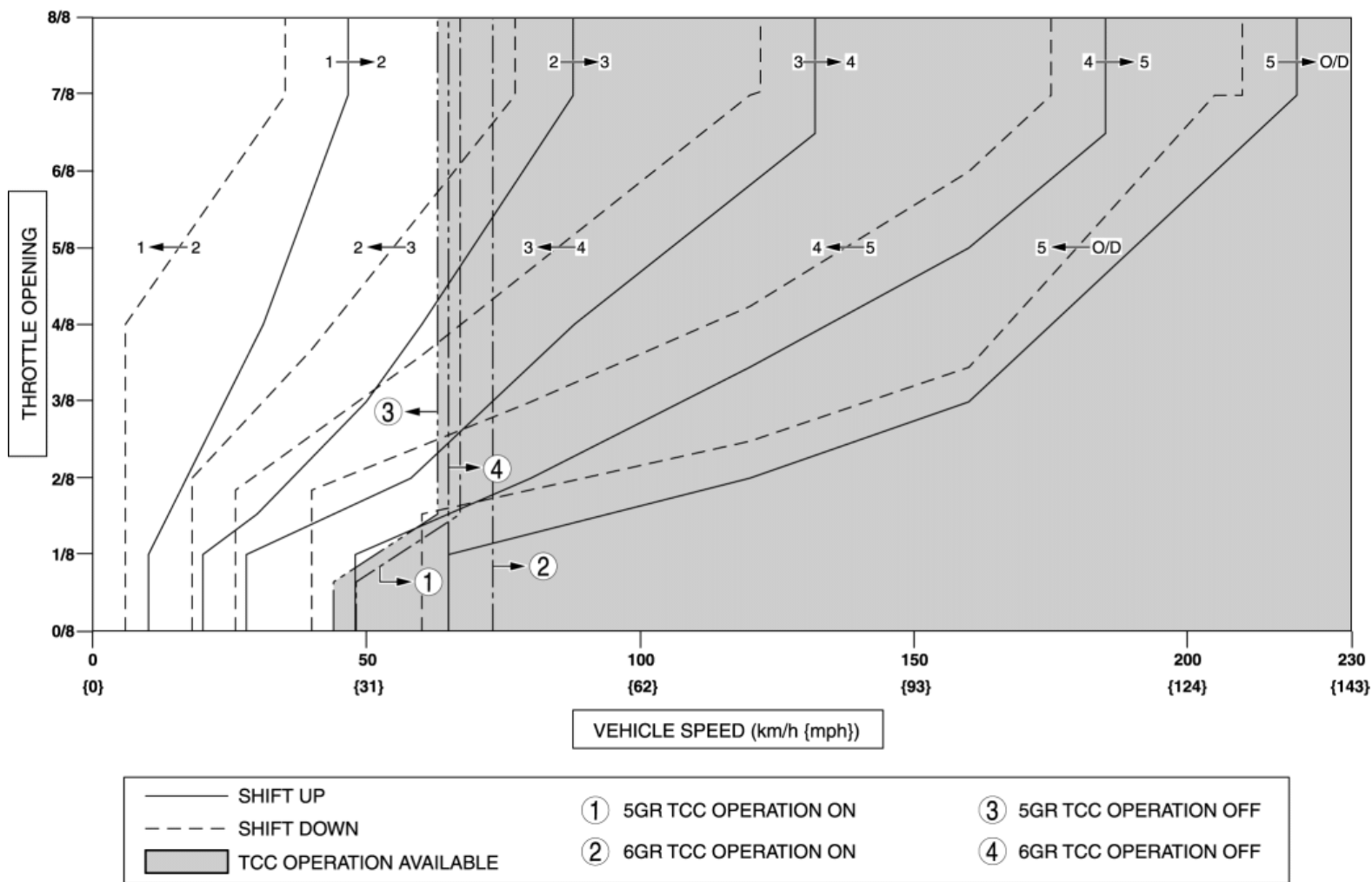
- When the legal speed limit must be exceeded, use a chassis dynamometer instead of performing a road test.

Road Test Preparation

1. Inspect the engine coolant level. (See [ENGINE COOLANT LEVEL INSPECTION \[13B-MSP\].](#))
2. Inspect the engine oil level. (See [ENGINE OIL LEVEL INSPECTION \[13B-MSP\].](#))
3. Inspect the ATF level. (See [AUTOMATIC TRANSMISSION FLUID \(ATF\) INSPECTION \[SJ6A-EL\].](#))
4. Inspect the idle speed. (See [ENGINE TUNE-UP \[13B-MSP\].](#))
5. Inspect the ignition timing. (See [ENGINE TUNE-UP \[13B-MSP\].](#))
6. Verify that no DTCs are stored. (See [AUTOMATIC TRANSMISSION ON-BOARD DIAGNOSTIC FUNCTION \[SJ6A-EL\].](#))

Shift Diagram

D range (normal mode)



D Range Test

1. Perform road test preparation. (See [Road Test Preparation](#).)
2. Shift the selector lever to the D range.
3. Accelerate with the throttle half and then wide open.
4. Verify that 1→2, 2→3, 3→4, 4→5, and 5→6 upshifts can be obtained. The shift points must be as shown in the table below.
 - If there is any malfunction, inspect the TCM and AT. (See [SYMPTOM TROUBLESHOOTING ITEM TABLE \[SJ6A-EL\]](#).)
5. Drive the vehicle in 6GR, 5GR, 4GR, 3GR, 2GR and verify that kickdown occurs for 6→5, 5→4, 4→3, 3→2, and 2→1 downshifts, and that the shift points are as shown in the table below.
 - If there is any malfunction, inspect the TCM and AT. (See [SYMPTOM TROUBLESHOOTING ITEM TABLE \[SJ6A-EL\]](#).)
6. Decelerate the vehicle and verify that engine braking effect is felt in 4GR, 5GR, and 6GR.
 - If there is any malfunction, inspect the TCM and AT. (See [SYMPTOM TROUBLESHOOTING ITEM TABLE \[SJ6A-EL\]](#).)
7. Drive the vehicle and verify that TCC operation is obtained. The operation points must be as shown in the table below.
 - If there is any malfunction, inspect the TCM and AT. (See [SYMPTOM TROUBLESHOOTING ITEM TABLE \[SJ6A-EL\]](#).)

Shift point table

Range	Mode	Throttle condition	Shift	Vehicle speed (km/h {mph})	Turbine speed (rpm)

D	NORMAL	Wide open throttle	D ₁ →D ₂	46—51 {29—31}	5,800—6,550
			D ₂ →D ₃	86—93 {54—57}	6,350—6,900
			D ₃ →D ₄	129—139 {80—86}	6,500—6,950
			D ₄ →D ₅	182—192 {113—119}	6,550—6,850
			TCC ON (D ₅)	182—192 {113—119}	4,700—4,900
			D ₅ →D ₆	217—227 {135—140}	5,550—5,800
			TCC ON (D ₆)	217—227 {135—140}	4,550—4,700
		Half throttle	D ₁ →D ₂	26—35 {17—21}	3,300—4,450
			D ₂ →D ₃	52—67 {33—41}	3,800—5,000
			D ₃ →D ₄	76—102 {48—63}	3,850—5,100
			D ₄ →D ₅	119—149 {74—92}	4,300—5,350
			TCC ON (D ₅)	119—149 {74—92}	3,050—3,800
			D ₅ →D ₆	163—187 {102—115}	4,150—4,800
			TCC ON (D ₆)	163—187 {102—115}	3,400—3,900
		Closed throttle position	D ₆ →D ₅	57—63 {36—39}	1,200—1,300
			D ₅ →D ₄	37—43 {23—26}	950—1,050
			D ₄ →D ₃	23—29 {15—17}	850—1,000
			D ₃ →D ₂	15—21 {10—13}	800—1,050
			D ₂ →D ₁	3—9 {2—5}	250—650
		Kickdown	D ₆ →D ₅	205—215 {128—133}	4,300—4,450
			D ₅ →D ₄	170—180 {106—111}	4,350—4,600
			D ₄ →D ₃	117—127 {73—78}	4,200—4,550
			D ₃ →D ₂	73—81 {46—50}	3,700—4,050
			D ₂ →D ₁	32—38 {20—23}	2,400—2,800

AAS	Wide open throttle	D ₁ →D ₂	46—51 {29—31}	5,800—6,550
		D ₂ →D ₃	86—93 {54—57}	6,350—6,900
		D ₃ →D ₄	129—139 {80—86}	6,500—6,950
		D ₄ →D ₅	182—192 {113—119}	6,550—6,850
		TCC ON (D ₅)	182—192 {113—119}	4,700—4,900
		D ₅ →D ₆	216—226 {134—140}	5,550—5,750
		TCC ON (D ₆)	216—226 {134—140}	4,550—4,700
	Half throttle	D ₁ →D ₂	26—34 {17—21}	3,250—4,350
		D ₂ →D ₃	52—67 {33—41}	3,800—5,000
		D ₃ →D ₄	76—102 {48—63}	3,850—5,100
		D ₄ →D ₅	118—148 {74—91}	4,250—5,300
		TCC ON (D ₅)	118—148 {74—91}	3,000—3,800
		D ₅ →D ₆	210—228 {131—141}	5,400—5,800
		TCC ON (D ₆)	210—228 {131—141}	4,400—4,750
	Closed throttle position	D ₆ →D ₅	57—63 {36—39}	1,200—1,300
		D ₅ →D ₄	37—43 {23—26}	950—1,050
		D ₄ →D ₃	25—31 {16—19}	900—1,100
		D ₃ →D ₂	15—21 {10—13}	800—1,050
		D ₂ →D ₁	3—9 {2—5}	250—650
	Kickdown	D ₆ →D ₅	204—214 {127—132}	4,300—4,450
		D ₅ →D ₄	170—180 {106—111}	4,350—4,600
		D ₄ →D ₃	117—127 {73—78}	4,200—4,550
		D ₃ →D ₂	73—81 {46—50}	3,700—4,050
		D ₂ →D ₁	32—38 {20—23}	2,400—2,800

Direct Mode Test

NOTE:

- Direct mode inspection is performed representatively between 3rd and 4th gears.
1. Perform road test preparation. (See [Road Test Preparation](#).)
 2. Shift the selector lever to D range.
 3. Perform the following tests.
 - If there is any malfunction, inspect the steering shift switch. (See [STEERING SHIFT SWITCH INSPECTION](#).)
 - a. When the vehicle is driven according to the following table, inspect the point at which the system switches from automatic shift mode to direct mode.

Driving conditions					Inspection item
Range	Mode	Gear position	Accelerator opening angle (%)	Vehicle speed (km/h {mph})	
D	Automatic shift mode	3GR	10—15	35—45 {22—27}	<ul style="list-style-type: none">• While driving under condition indicated on left with up-switch of steering shift switch operated, verify shift-up to 4GR with system switched to direct mode.
D	Automatic shift mode	4GR	10—15	35—45 {22—27}	<ul style="list-style-type: none">• While driving under condition indicated on left with down-switch of steering shift switch operated, verify shift-down to 3GR with system switched to direct mode.

-
- b. When the vehicle is driven according to the following table, inspect the point at which the system switches from direct mode to automatic shift mode.

Driving conditions					Inspection item
Range	Mode	Gear position	Accelerator opening angle (%)	Vehicle speed (km/h {mph})	
D	Direct mode	4GR	10—15	35—45 {22—27}	<ul style="list-style-type: none">• While driving under condition indicated on left and at constant speed for several seconds *, verify that system switches to automatic shift mode automatically.

*

Depending on the driving conditions, the time required to switch to automatic shift mode may vary.

M Range Test

1. Perform road test preparation. (See [Road Test Preparation](#).)
2. Shift the selector lever to M range.
3. Verify that 1→2, 2→3, 3→4, 4→5, and 5→6 upshifts and 6→5, 5→4, 4→3, 3→2, and 2→1 downshifts are obtained by manual shifting.

- If there is any malfunction, inspect the TCM and AT. (See [SYMPTOM TROUBLESHOOTING ITEM TABLE \[SJ6A-EL\].](#))
4. Decelerate the vehicle and verify that 6→5, 5→4, 4→3, 3→2, and 2→1 downshifts are obtained. The shift points must be as shown in the table below.
- If there is any malfunction, inspect the TCM and AT. (See [SYMPTOM TROUBLESHOOTING ITEM TABLE \[SJ6A-EL\].](#))
5. Decelerate the vehicle and verify that engine braking effect is felt in all gears.
- If there is any malfunction, inspect the TCM and AT. (See [SYMPTOM TROUBLESHOOTING ITEM TABLE \[SJ6A-EL\].](#))
6. Drive the vehicle and verify that TCC operation is obtained in 5GR and 6GR. The operation points must be as shown in the table below.
- If there is any malfunction, inspect the TCM and AT. (See [SYMPTOM TROUBLESHOOTING ITEM TABLE \[SJ6A-EL\].](#))
7. Drive the vehicle in 6GR and 5GR and verify that kickdown occurs for 6→5 and 5→4 downshifts, and that the shift points are as shown in the table below.
- If there is any malfunction, inspect the TCM and AT. (See [SYMPTOM TROUBLESHOOTING ITEM TABLE \[SJ6A-EL\].](#))

Vehicle speed at shift point table

Range	Mode	Throttle condition	Shift	Vehicle speed km/h {mph}	Turbine speed (rpm)
M	Normal	Closed throttle position	M ₆ →M ₅	57—63 {36—39}	1,200—1,300
			M ₅ →M ₄	37—43 {23—26}	950—1,050
			M ₄ →M ₃	23—29 {15—17}	850—1,000
			M ₃ →M ₂	15—21 {10—13}	800—1,050
			M ₂ →M ₁	12—18 {8—11}	900—1,300

P Position Test

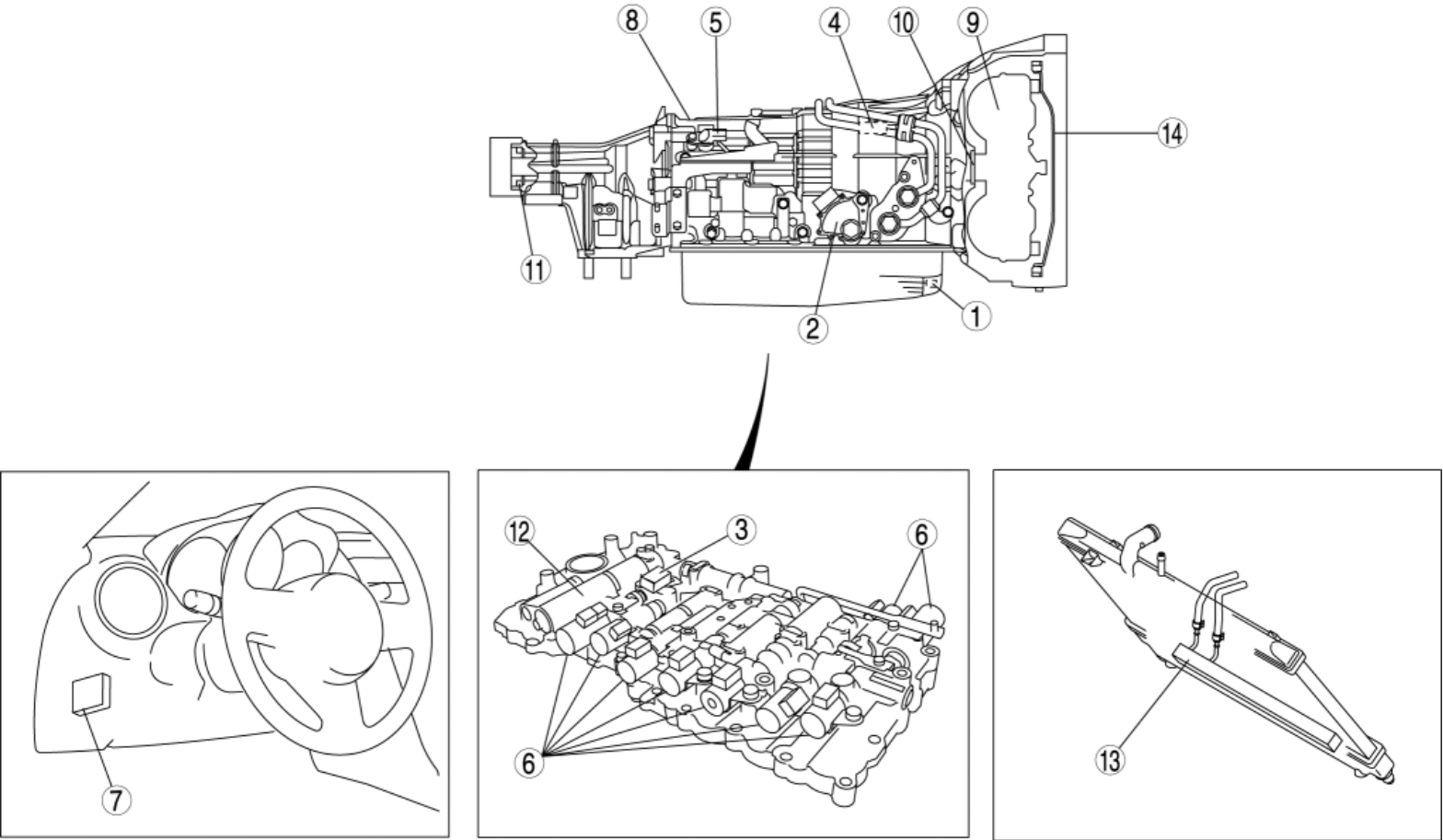
- Shift into the P position on a gentle slope. Release the brake, and verify that the vehicle does not roll.
 - If there is any malfunction, inspect the AT. (See [SYMPTOM TROUBLESHOOTING ITEM TABLE \[SJ6A-EL\].](#))

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

AUTOMATIC TRANSMISSION LOCATION INDEX [SJ6A-EL]



1	Automatic transmission fluid (ATF) (See AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL].) (See AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT [SJ6A-EL].)
2	Transmission range (TR) switch (See TRANSMISSION RANGE (TR) SWITCH INSPECTION [SJ6A-EL].) (See TRANSMISSION RANGE (TR) SWITCH REMOVAL/INSTALLATION [SJ6A-EL].) (See TRANSMISSION RANGE (TR) SWITCH ADJUSTMENT [SJ6A-EL].)
3	Transmission fluid temperature (TFT) sensor (See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION [SJ6A-EL].) (See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION [SJ6A-EL].)
4	Turbine sensor

	(See TURBINE SENSOR INSPECTION [SJ6A-EL].) (See TURBINE SENSOR REMOVAL/INSTALLATION [SJ6A-EL].)
5	Vehicle speed sensor (VSS) (See VEHICLE SPEED SENSOR (VSS) INSPECTION [SJ6A-EL].) (See VEHICLE SPEED SENSOR (VSS) REMOVAL/INSTALLATION [SJ6A-EL].)
6	Solenoid valve (See SOLENOID VALVE INSPECTION [SJ6A-EL].)
7	TCM (See TCM INSPECTION [SJ6A-EL].) (See TCM REMOVAL/INSTALLATION [SJ6A-EL].)
8	Automatic transmission (See AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION [SJ6A-EL].)
9	Torque converter (See TORQUE CONVERTER REMOVAL/INSTALLATION [SJ6A-EL].)
10	Oil seal (oil pump) (See OIL SEAL (OIL PUMP) REPLACEMENT [SJ6A-EL].)
11	Oil seal (extension housing) (See OIL SEAL (EXTENSION HOUSING) REPLACEMENT [SJ6A-EL].)
12	Control valve body (See CONTROL VALVE BODY REMOVAL [SJ6A-EL].) (See CONTROL VALVE BODY INSTALLATION [SJ6A-EL].)
13	Oil cooler (See OIL COOLER FLUSHING [SJ6A-EL].) (See OIL COOLER REMOVAL/INSTALLATION [SJ6A-EL].) (See OIL COOLER DISASSEMBLY/ASSEMBLY [SJ6A-EL].)
14	Drive plate (See DRIVE PLATE REMOVAL/INSTALLATION [SJ6A-EL].)

2011 - RX-8 - Transmission/Transaxle

MECHANICAL SYSTEM TEST [SJ6A-EL]

Mechanical System Test Preparation

1. Engage the parking brake and use wheel chocks at the front and rear of the wheels.
2. Inspect the engine coolant level. (See [ENGINE COOLANT LEVEL INSPECTION \[13B-MSP\]](#).)
3. Inspect the engine oil level. (See [ENGINE OIL LEVEL INSPECTION \[13B-MSP\]](#).)
4. Inspect the ATF level. (See [AUTOMATIC TRANSMISSION FLUID \(ATF\) INSPECTION \[SJ6A-EL\]](#).)
5. Inspect the idle speed. (See [ENGINE TUNE-UP \[13B-MSP\]](#).)
6. Inspect the ignition timing. (See [ENGINE TUNE-UP \[13B-MSP\]](#).)
7. Verify that no DTCs are stored. (See [AUTOMATIC TRANSMISSION ON-BOARD DIAGNOSTIC FUNCTION \[SJ6A-EL\]](#).)

Line Pressure Test

1. Perform mechanical system test preparation. (See [Mechanical System Test Preparation](#).)

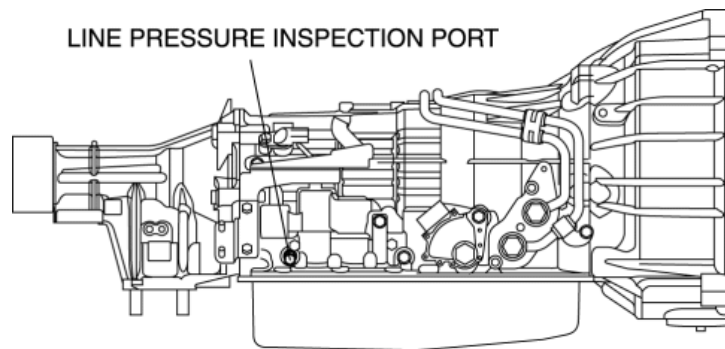
WARNING:

- Removing the square head plug when the ATF is hot can be dangerous. Hot ATF can come out of the opening and badly burn you. Before removing the square head plug, allow the ATF to cool.

NOTE:

- Use a suitable oil pressure gauge that corresponds to the line pressure because the maximum scale value differs depending on the oil pressure gauge.

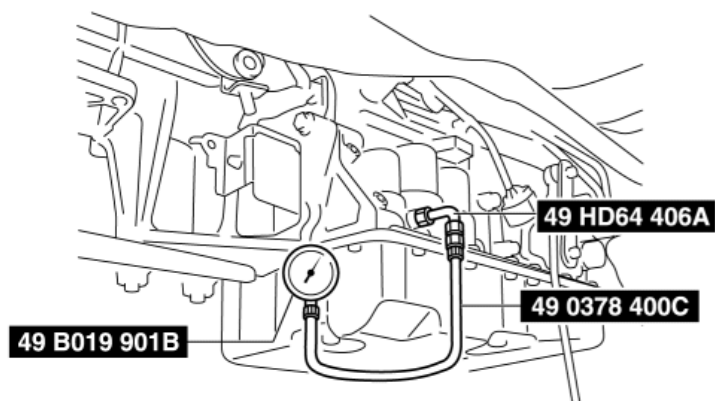
2. Remove the test plug and O-ring from the line pressure inspection port.



3. Connect the SSTs as following:

- When using the oil pressure gauge set (49 0378 400C), connect the SSTs (49 HD64 406A, 49 0378 400C, 49 B019 901B) to the line pressure inspection port as shown in the figure.
- When using the oil pressure gauge set (49 D019 9A2), connect the SSTs (49 D019 910, 49 D019 911, 49 D019 912, 49 D019 909, 49 D019 908) to the line pressure inspection port as shown in the figure.

USING OIL PRESSURE GAUGE SET (49 0378 400C)



• 49 0378 400C

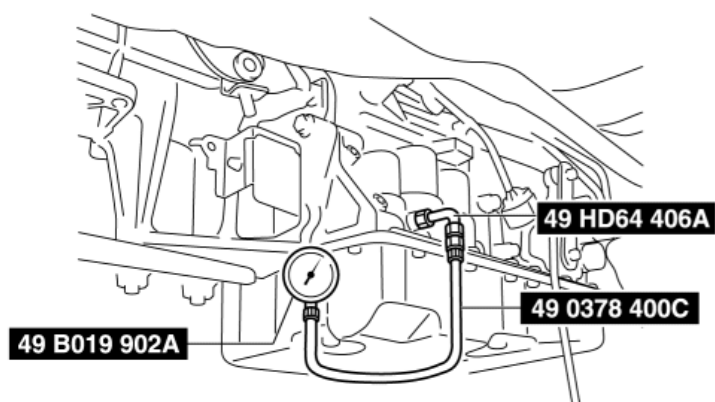
- 49 B019 901B (LOW Pressure Gauge): 0—1,000 kPa {0.00—10.19 kgf/cm², 0.0—145.0 psi}
- 49 B019 902A (HIGH Pressure Gauge): 0—2,500 kPa {0.00—25.49 kgf/cm², 0.0—362.5 psi}

• 49 D019 9A2

- 49 D019 908 (LOW Pressure Gauge): 0—1,000 kPa {0.00—10.19 kgf/cm², 0.0—145.0 psi}
- 49 D019 907 (HIGH Pressure Gauge): 0—3,000 kPa {0.00—30.59 kgf/cm², 0.0—435.1 psi}

4. Start the engine and warm it up until the ATF reaches **60—70 °C {140—158 °F}**.
5. Shift the selector lever to the D range.
6. Read the line pressure while the engine is idling for the D range.
7. Read the line pressure while the engine is idling for the R position and M range in the same manner.
8. Stop the engine.
9. Replace the oil pressure gauge as following:
 - When using the oil pressure gauge set (49 0378 400C), replace the SST (49 B019 901B) with SST (49 B019 902A).
 - When using the oil pressure gauge set (49 D019 9A2), replace the SST (49 D019 908) with SST (49 D019 907).

USING OIL PRESSURE GAUGE SET (49 0378 400C)



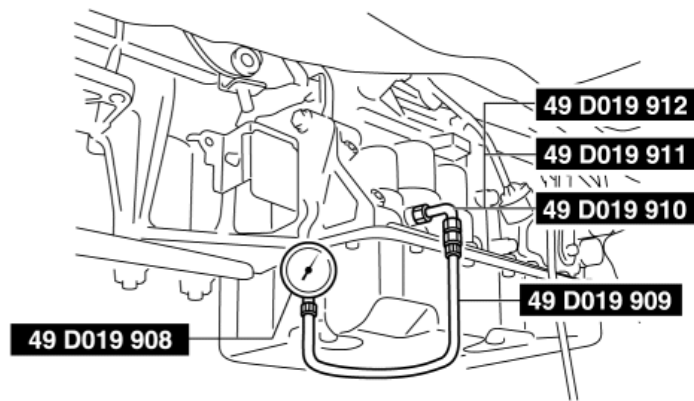
• 49 0378 400C

- 49 B019 901B (LOW Pressure Gauge): 0—1,000 kPa {0.00—10.19 kgf/cm², 0.0—145.0 psi}
- 49 B019 902A (HIGH Pressure Gauge): 0—2,500 kPa {0.00—25.49 kgf/cm², 0.0—362.5 psi}

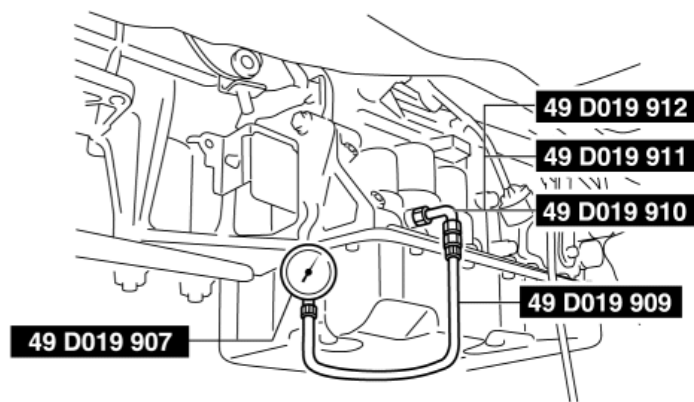
• 49 D019 9A2

- 49 D019 908 (LOW Pressure Gauge): 0—1,000 kPa {0.00—10.19 kgf/cm², 0.0—145.0 psi}
- 49 D019 907 (HIGH Pressure Gauge): 0—3,000 kPa {0.00—30.59 kgf/cm², 0.0—435.1 psi}

USING OIL PRESSURE GAUGE SET (49 D019 9A2)



USING OIL PRESSURE GAUGE SET (49 D019 9A2)



10. Start the engine.
11. Firmly depress the brake pedal with the left foot.
12. Shift the selector lever to the D range.

CAUTION:

- If the accelerator pedal is pressed for more than 5 s while the brake pedal is pressed, the transmission could be damaged. Therefore, perform Steps 13 and 14 within 5 s.

13. Gradually depress the accelerator pedal with the right foot.
14. When the engine speed no longer increases, quickly read the line pressure and release the accelerator pedal.
15. Shift the selector lever to the N position and idle the engine for **1 min or more** to cool the ATF.
16. Read the line pressure at the engine stall speed for the M range and R position in the same manner as in Steps 11—15. **Line pressure**

Position/Range		Specification (kPa {kgf/cm ² , psi})
D, M range	Idle	355—425 {3.7—4.3, 52—61}
	Stall	1,395—1,505 {14.3—15.3, 203—218}
R position	Idle	485—585 {5.0—5.9, 71—84}
	Stall	1,639—1,847 {16.8—18.8, 238—267}

WARNING:

- Removing the square head plug when the ATF is hot can be dangerous. Hot ATF can come out of the opening and badly burn you. Before removing the square head plug, allow the ATF to cool.

17. Remove the **SSTs**.
18. Install the test plug and O-ring in the inspection port.

Tightening torque

- 5.9—8.8 N·m {61—89 kgf·cm, 53—77 in·lbf}

Evaluation of line pressure test

Condition	Possible cause
High pressure in all ranges	<ul style="list-style-type: none"> • Line pressure control solenoid malfunction • Primary regulator valve malfunction
Low pressure in all ranges	<ul style="list-style-type: none"> • Line pressure control solenoid malfunction • Primary regulator valve malfunction • Oil pump malfunction
Low pressure in D range only	<ul style="list-style-type: none"> • Hydraulic circuit of D malfunction • C1 clutch malfunction
Low pressure in R position only	<ul style="list-style-type: none"> • Hydraulic circuit of R malfunction • C3 clutch malfunction

- B4 brake malfunction

Stall Speed Test

1. Perform mechanical system test preparation. (See [Mechanical System Test Preparation](#).)
2. Start the engine.
3. Firmly depress the brake pedal with the left foot.
4. Shift the selector lever to the D range.

CAUTION:

- If the accelerator pedal is pressed for more than 5 s while the brake pedal is pressed, the transmission could be damaged. Therefore, perform Steps 5 and 6 within 5 s.
5. Gently depress the accelerator pedal with the right foot.
 6. When the engine speed no longer increases, quickly read the engine speed and release the accelerator pedal.
 7. Shift the selector lever to the N position and idle the engine for **1 min or more** to cool the ATF.
 8. Perform a stall test of the M range and R position in the same manner as in Steps 3—7.
 9. Turn off the engine. **Engine stall speed**

Position/Range	Specification (rpm)
D, M range	2,150—2,800
R position	1,750—2,250

Evaluation of stall test

Condition	Possible cause
Low pressure in all ranges	<ul style="list-style-type: none"> • Engine lack of power • Torque converter one-way clutch malfunction
High pressure in D range only	<ul style="list-style-type: none"> • Insufficient line pressure • C1 clutch malfunction (slippage) • F3 one-way clutch malfunction
High pressure in R range only	<ul style="list-style-type: none"> • Insufficient line pressure • B4 brake malfunction (slippage) • C3 clutch malfunction (slippage) • F1 one-way clutch malfunction
High pressure in all ranges	<ul style="list-style-type: none"> • Insufficient line pressure • Oil leakage from each range circuit

Time Lag Test

1. Perform mechanical system test preparation. (See [Mechanical System Test Preparation](#).)
2. Start the engine.
3. Warm up the engine until the ATF temperature reaches **60—70°C {140—158°F}**.
4. Shift the selector lever from the N position to D range.
5. Use a stopwatch to measure the time it takes from shifting until shock is felt. Take three measurements for each test and average from the results using the following formula.

Formula

- Average time lag = (Time 1 + Time 2 + Time 3) / 3

6. Perform the test for the following shifts in the same manner Step 5.

- N position → R position

Time lag

- N position → D range: 1.0 s or less
- N position → R position: 1.2 s or less

Evaluation of time lag test

Condition	Possible Cause
N position → D range	<ul style="list-style-type: none">• Insufficient line pressure• C1 clutch malfunction (slippage)• F3 one-way clutch malfunction
N position → R position	<ul style="list-style-type: none">• Insufficient line pressure• C1 clutch malfunction (slippage)• C3 clutch malfunction (slippage)• F1 one-way clutch malfunction

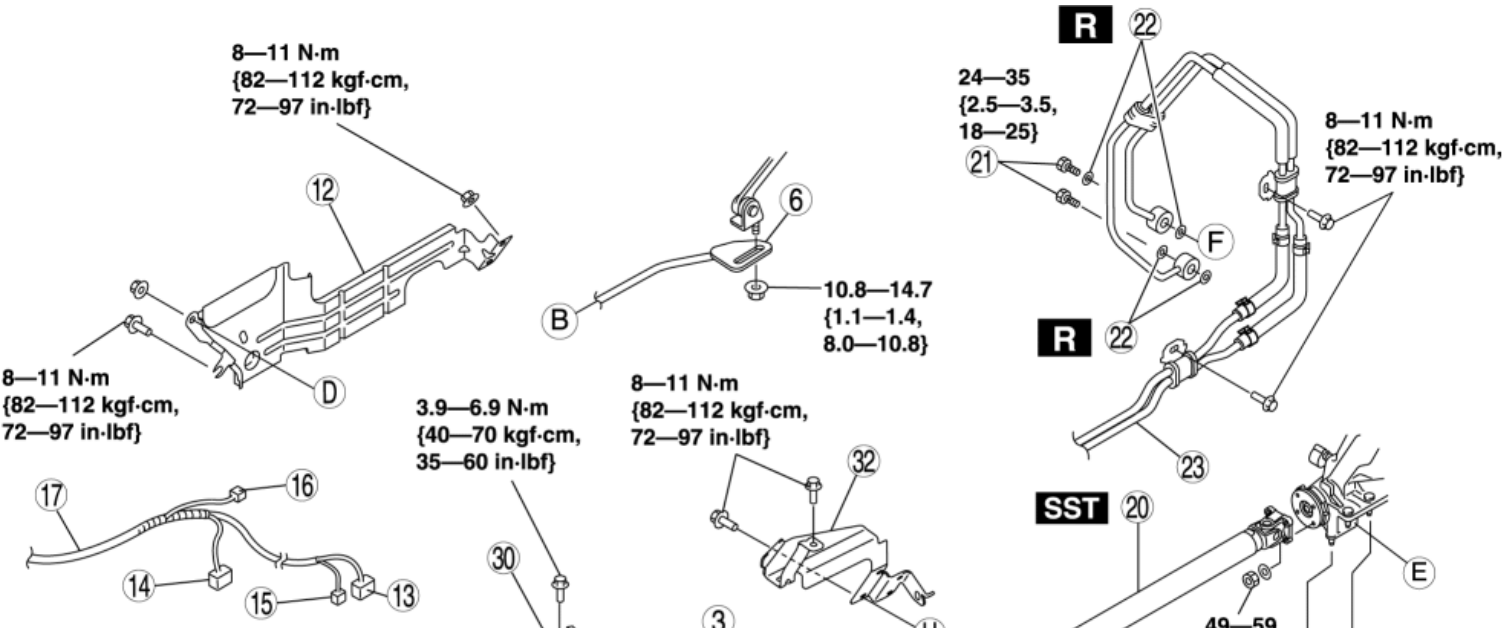
2011 - RX-8 - Transmission/Transaxle

AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION [SJ6A-EL]

- 1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- 2. Remove the battery cover.
- 3. Disconnect the negative battery cable.
- 4. Drain the ATF. (See [AUTOMATIC TRANSMISSION FLUID \(ATF\) REPLACEMENT \[SJ6A-EL\]](#).)
- 5. Remove in the order indicated in the table.
- 6. Install in the reverse order of removal.
- 7. Add ATF and, with the engine idling, inspect the ATF level and inspect for leakage. (See [AUTOMATIC TRANSMISSION FLUID \(ATF\) REPLACEMENT \[SJ6A-EL\]](#).) (See [AUTOMATIC TRANSMISSION FLUID \(ATF\) INSPECTION \[SJ6A-EL\]](#).)
- 8. Inspect selector lever operation. (See [SELECTOR LEVER INSPECTION](#).)
- 9. Inspect for leakage of ATF from all connecting points.
- 10. Perform the mechanical system test. (See [MECHANICAL SYSTEM TEST \[SJ6A-EL\]](#).)

Service item	Test item		
	Line pressure test	Stall speed test	Time lag test
Automatic transmission replacement	×		
Control valve body replacement	×	×	×
Torque converter replcement	×	×	

- 11. Perform the road test. (See [ROAD TEST \[SJ6A-EL\]](#).)

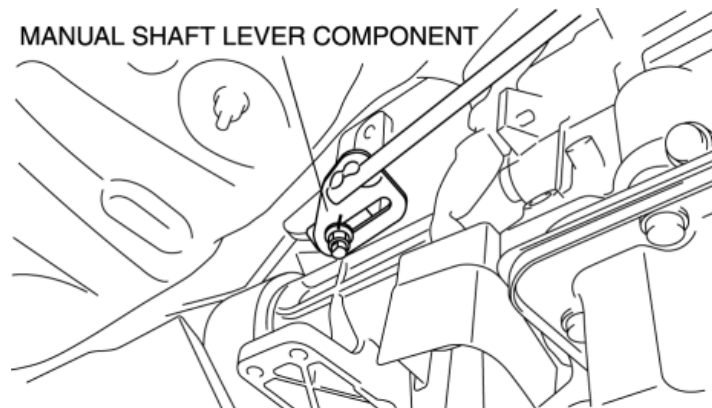


	(See Manual Shaft Lever Component Installation Note.)
7	Heat insulator
8	Transverse member
9	Starter (See STARTER REMOVAL/INSTALLATION [13B-MSP].)
10	Under cover
11	Torque converter installation nuts (See Torque Converter Installation Nuts Removal Note.) (See Torque Converter Installation Nuts Installation Note.)
12	Insulator
13	TR switch connector
14	Solenoid valve connector
15	VSS connector
16	Turbine sensor connector
17	Wiring harness
18	Power plant frame (See Power Plant Frame Removal Note.) (See Power Plant Frame Installation Note.)
19	Plate
20	Propeller shaft (See PROPELLER SHAFT REMOVAL/INSTALLATION.)
21	Connector bolt
22	Washer
23	Oil pipe, oil hose (See OIL COOLER REMOVAL/INSTALLATION [SJ6A-EL].)
24	Transmission installation bolt
25	Transmission (See Transmission Removal Note.) (See Transmission Installation Note.)

26	Stopper
27	Bolt
28	Hose clamp
29	Breather hose
30	Breather tube
31	Bracket
32	Coupler bracket
33	Driven plate

Manual Shaft Lever Component Removal Note

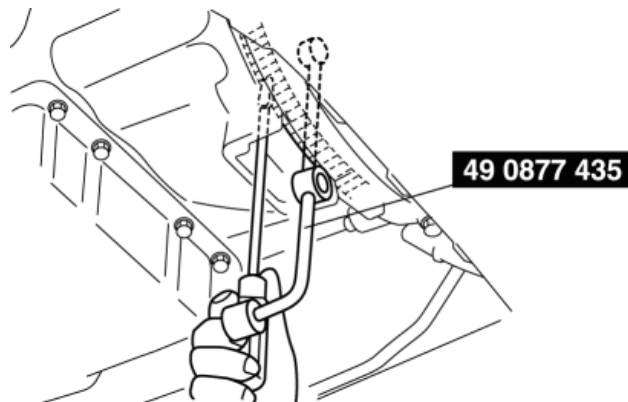
1. Mark the manual shaft lever component as shown in the figure.



2. Remove the manual shaft lever component installation nut.

Torque Converter Installation Nuts Removal Note

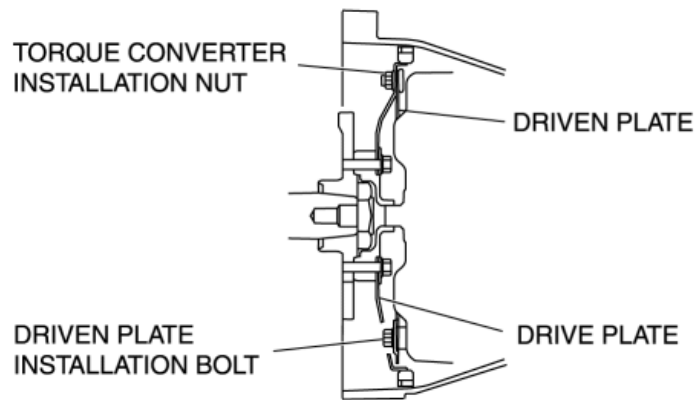
1. Lock the drive plate using a flathead screwdriver as shown in the figure.
2. Remove the torque converter installation nuts using a **SST**.



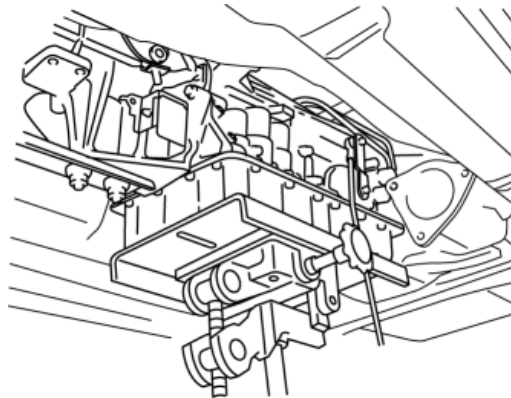
NOTE:

- After separate the transmission from engine, remove the driven plate.

3. Loosen the driven plate installation bolts.

**Power Plant Frame Removal Note**

1. Support the transmission using a transmission jack.



2. Remove the power plant frame.

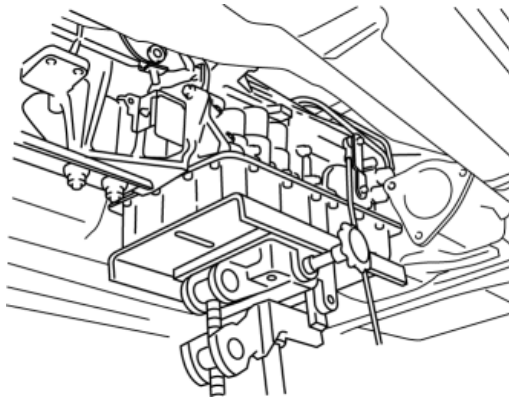
Transmission Removal Note**WARNING:**

- Verify that the transmission is securely supported by the jack. If the transmission falls, serious injury or death and damage to the vehicle could result. Before removing the transmission make sure that the jack is securely supporting the transmission.

CAUTION:

- To prevent the torque converter and transmission from separating, remove the transmission without tilting it toward the torque converter.

1. Support the transmission securely using a transmission jack.



2. Remove the transmission installation bolt.

Transmission Installation Note

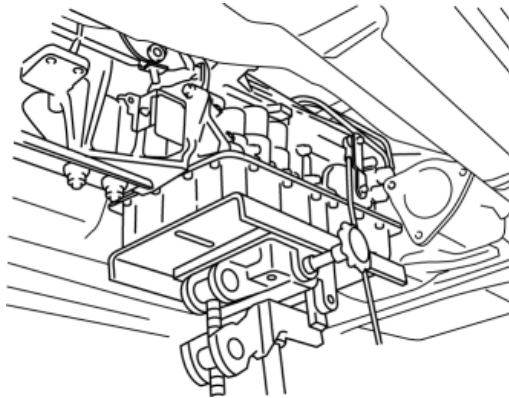
WARNING:

- Verify that the transmission is securely supported by the jack. If the transmission falls, serious injury or death and damage to the vehicle could result. Before removing the transmission make sure that the jack is securely supporting the transmission.

CAUTION:

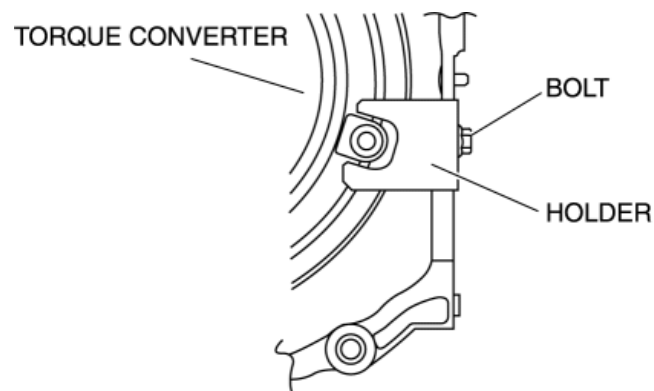
- To prevent the torque converter and transmission from separating, remove the transmission without tilting it toward the torque converter

1. Support the transmission securely using a transmission jack.

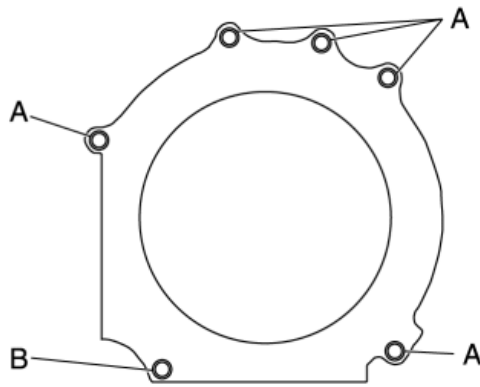


CAUTION:

- When install the new transmission, remove the holder with a bolt as shown in the figure.



2. Install the driven plate to the transmission (torque converter), and temporarily tighten.
3. Tighten the transmission mounting bolts.



Bolt length

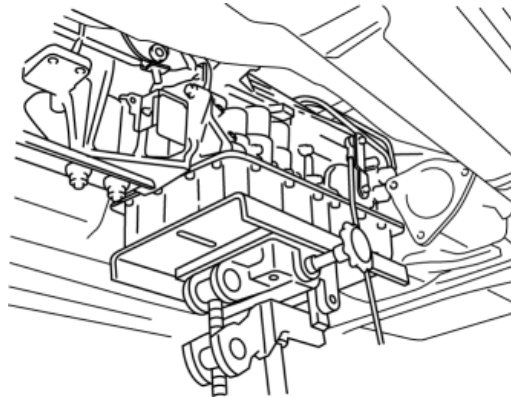
- A: 55 mm {2.2 in}
- B: 70 mm {2.8 in}

Tightening torque

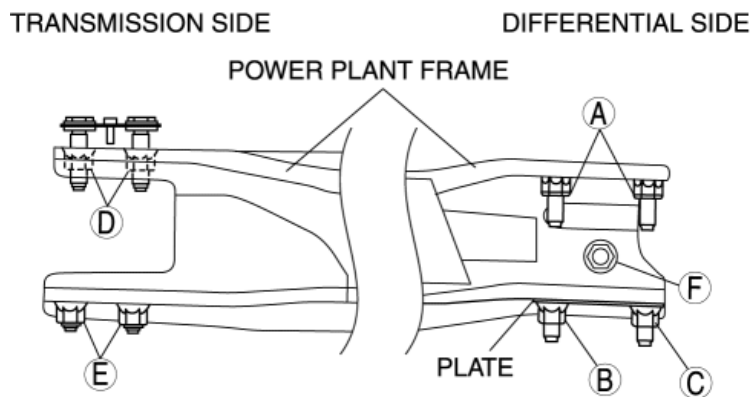
- 37—52 N·m {3.8—5.3 kgf·m, 28—38 ft·lbf}

Power Plant Frame Installation Note

1. Support the transmission and differential so that they are level using a transmission jack.

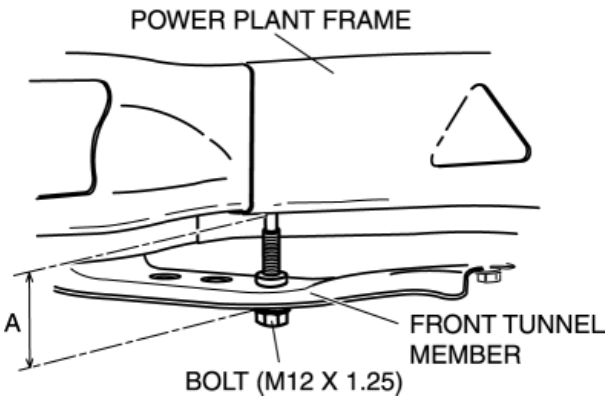


2. Install the power plant frame.
3. Install the plate.
4. Temporarily tighten the bolts and nuts as shown in the figure.



5. Tighten the nut B until the power plant frame is seated in the differential.
6. Install the heat insulator, exhaust manifold stay, catalytic converter, middle pipe, main silencer and front tunnel member.

7. Raise the power plant frame front end (transmission side) or transmission using a transmission jack so that dimension A (between power plant frame lower surface and front tunnel member lower surface) shown in the figure is within the adjustment value.



NOTE:

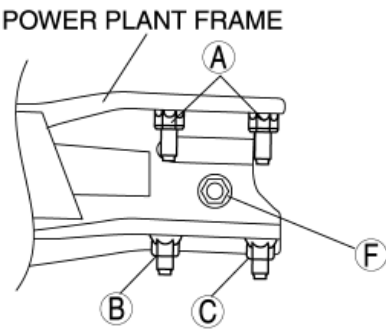
- When raising the power plant frame without a transmission jack, use bolts (M12x1.25) with a thread length of **55 mm {2.17 in} or more**. Tighten the bolts from the underside of the front tunnel member as shown in the figure and raise the power plant frame.
- When using bolts, the underside of the power plant frame could be damaged. Affix tape to the underside of the frame to prevent damage.
- If there is the possibility of age-related bending/deterioration of the mount, adjust dimension A to approx. 15 mm {0.59 in} higher than the adjustment value to facilitate obtaining the specification.

Adjustment dimension A

- 55—57 mm {2.17—2.24 in}

8. Tighten the bolts and nuts on the differential side in the order shown in the figure.

DIFFERENTIAL SIDE

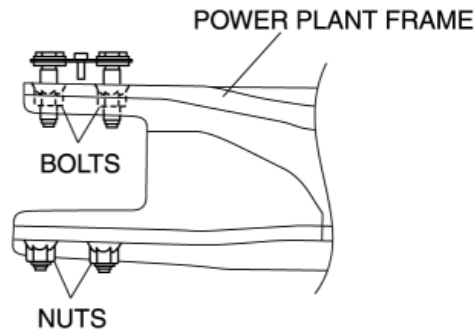


Step	Bolt, nut	Tightening torque (N·m {kgf·m, ft·lbf})
1	A	126.0—154.0 {12.9—15.7, 93.0—113.5}
2	B	126.0—154.0 {12.9—15.7, 93.0—113.5}
3	C	126.0—154.0 {12.9—15.7, 93.0—113.5}

4	F	74.5—93.2 {7.6—9.5, 55.0—68.7}
---	---	-----------------------------------

9. Tighten the bolts and nuts on the transmission side as shown in the figure.

TRANSMISSION SIDE



Tightening torque

- 126.0—154.0 N·m {12.9—15.7 kgf·m, 93.0—113.5 ft·lbf}

10. Verify that dimension A is within the specification with the transmission jack and the adjustment bolt removed.

- If not within the specification, adjust dimension A again.

Standard dimension A

- 48.4—56.4 mm {1.91—2.22 in}

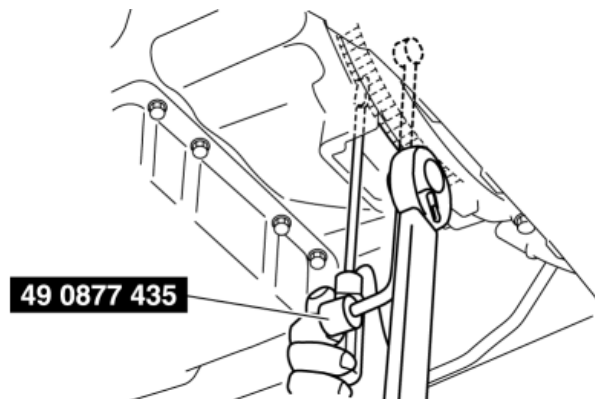
Torque Converter Installation Nuts Installation Note

1. Align the holes by turning the torque converter.
2. Lock the drive plate using a flathead screwdriver.

CAUTION:

- Loosely and equally tighten the torque converter nuts, then further tighten them to the specified tightening torque.

3. Tighten the torque converter installation nuts.



Tightening torque

- 34—49 N·m {3.5—4.9 kgf·m, 26—36 ft·lbf}

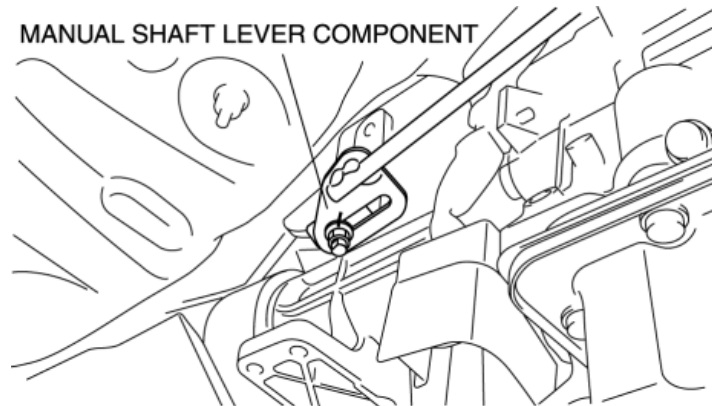
4. Tighten the driven plate installation bolts.

Tightening torque

- 34—49 N·m {3.5—4.9 kgf·m, 26—36 ft·lbf}

Manual Shaft Lever Component Installation Note

1. Align the mark of the manual shaft lever component as shown in the figure.



2. Install the manual shaft lever component installation nut.

Tightening torque

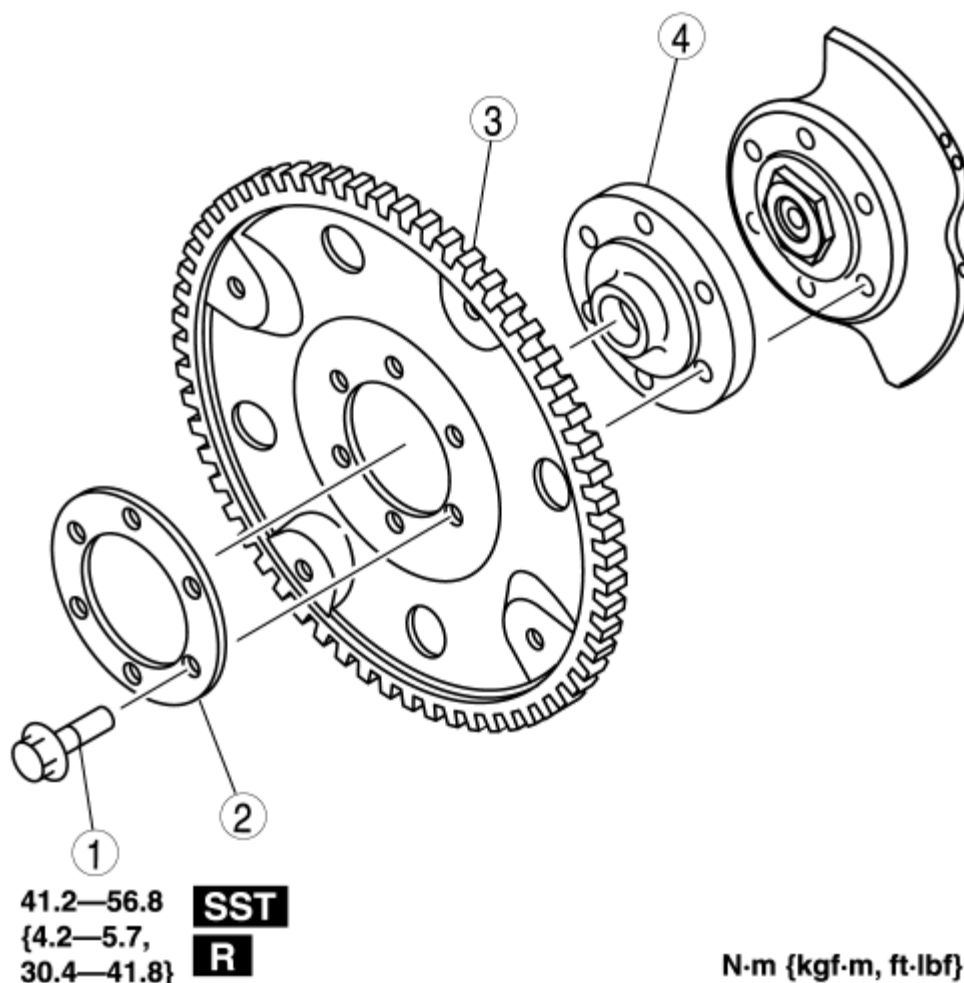
- 10.8—14.7 N·m {1.1—1.4 kgf·m, 8.0—10.8 ft·lbf}

[< Previous](#) [Next >](#)

2011 - RX-8 - Transmission/Transaxle

DRIVE PLATE REMOVAL/INSTALLATION [SJ6A-EL]

- 1. Remove the transmission (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)
- 2. Remove in the order indicated in the table.



1	Bolt
2	Backing plate

3 Drive plate

(See [Drive Plate Removal Note.](#))

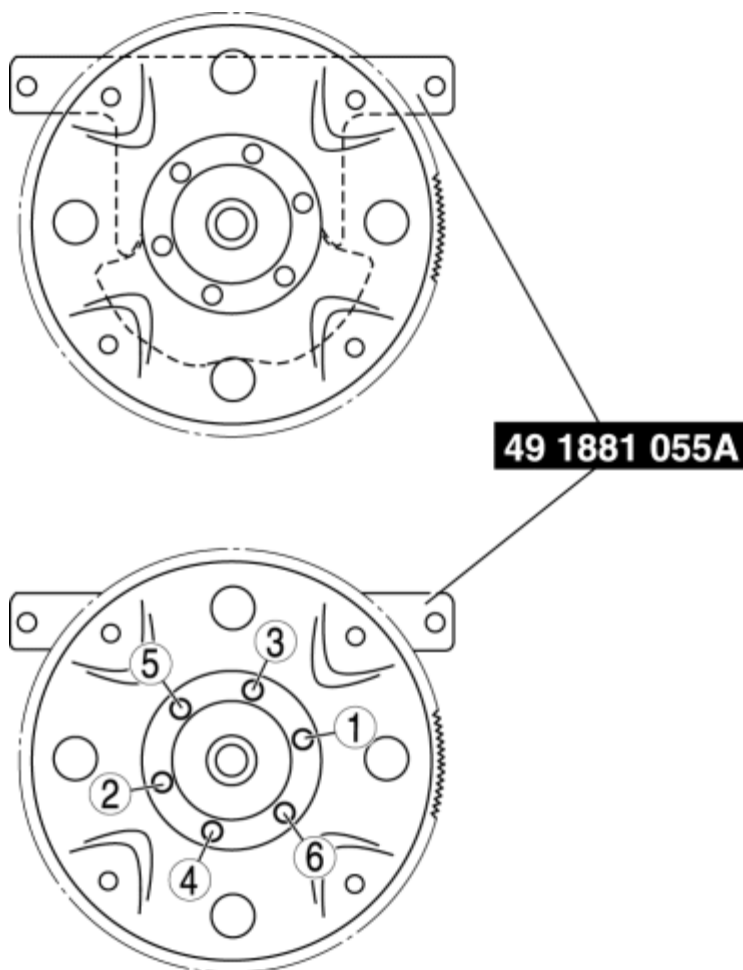
(See [Drive Plate Installation Note.](#))

4 Adapter

3. Install in the reverse order of removal.

Drive Plate Removal Note

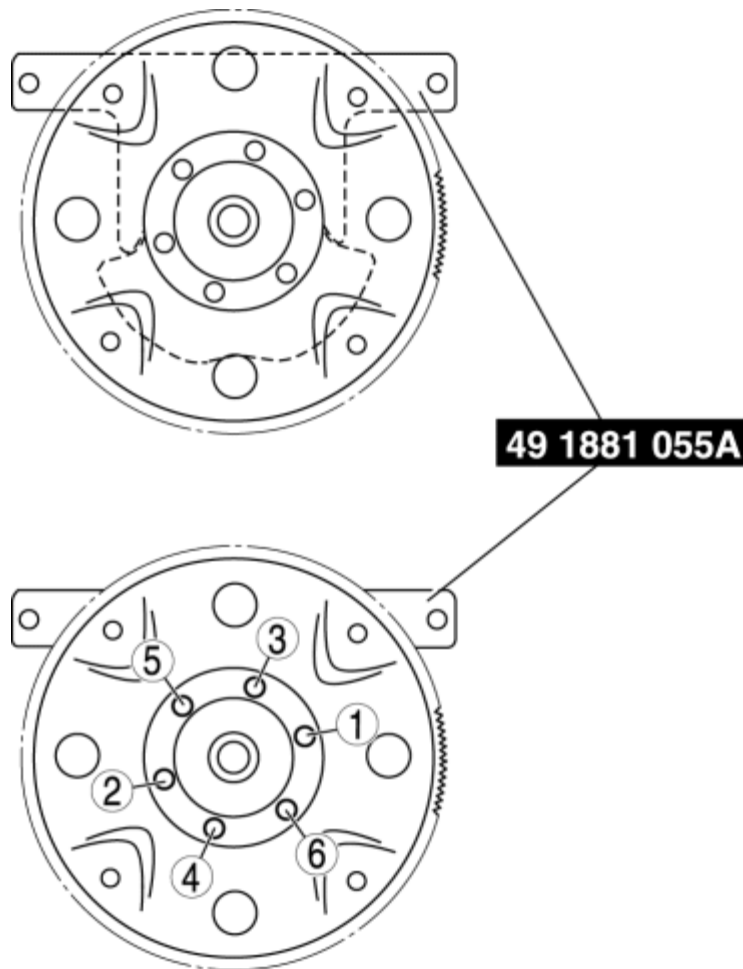
1. Set the **SST** against the engine.



2. Remove the bolts and the drive plate.

Drive Plate Installation Note

1. Set the **SST** against the engine.



2. Tighten the drive plate mounting bolts in two or three steps in the order as shown in the figure.

Tightening torque

- 41.2—56.8 N·m
{4.2—5.7 kgf·m, 30.4—41.8 ft·lbf}

3. Install the transmission. (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

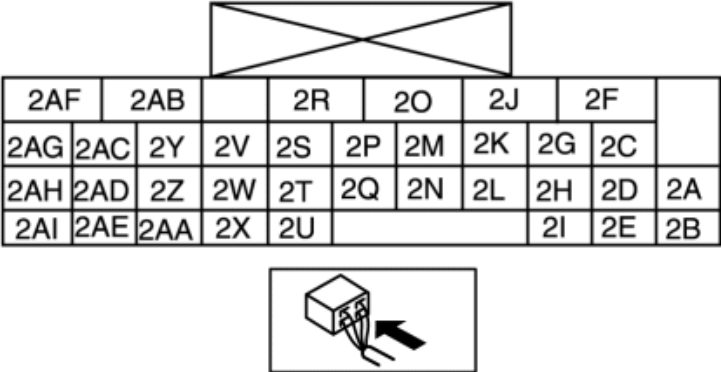
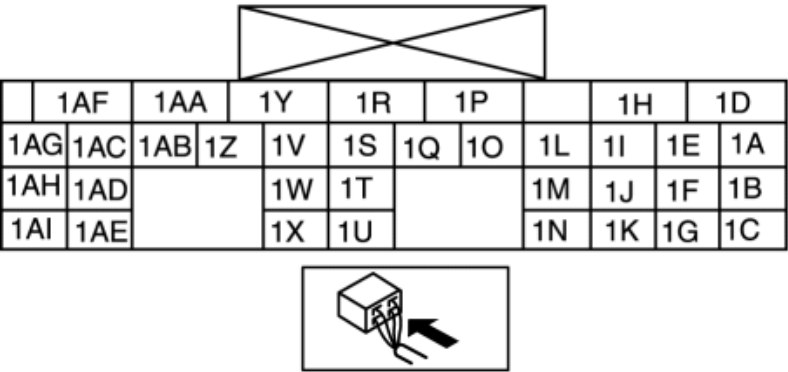
TCM INSPECTION [SJ6A-EL]

Terminal Voltage Table (Reference)

NOTE:

- Use the ground of terminal 1P and 1X of the TCM when measuring terminal voltage, as an error may occur when connecting the negative circuit tester to ground.

TCM WIRING HARNESS-SIDE CONNECTOR



Terminal	Signal	Connected to	Test Condition	Voltage (V)	Action
1A	—	—	—	—	—
1B	—	—	—	—	—
1C	CAN_L	PCM	Because this terminal is for serial communication, good/no good judgment by terminal voltage is not possible. Carry out inspection according to DTCs.	—	<ul style="list-style-type: none">• Inspect the related wiring harness
1D	TCC control solenoid GND	TCC control solenoid	<ul style="list-style-type: none">• Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference).)		<ul style="list-style-type: none">• Inspect the TCC control solenoid (See SOLENOID VALVE INSPECTION [SJ6A-EL])• Inspect the

					related wiring harness
1E	Line pressure control solenoid GND	Line pressure control solenoid	Idle and selector lever is at P position or N position	Below 1.0	<ul style="list-style-type: none"> Inspect the line pressure control solenoid (See SOLENOID VALVE INSPECTION [SJ6A-EL]) Inspect the related wiring harness
1F	—	—	—	—	—
1G	CAN_H	PCM	Idle	—	<ul style="list-style-type: none"> Inspect the related wiring harness
1H	—	—	—	—	—
1I	—	—	—	—	—
1J	ATF temperature (+)	TFT sensor	ATF temperature 20°C {68°F}	Approx. 3.0	<ul style="list-style-type: none"> Inspect the TFT sensor (See TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION [SJ6A-EL]) Inspect the related wiring harness
			ATF temperature 40°C {104°F}	Approx. 2.14	
			ATF temperature 60°C {140°F}	Approx. 1.38	
1K	—	—	—	—	—
1L	Shift solenoid G GND	Shift solenoid G	<ul style="list-style-type: none"> Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Inspect the shift solenoid G (See SOLENOID VALVE INSPECTION [SJ6A-EL]) Inspect the related wiring harness
1M	TFT sensor GND	TFT sensor	Under any condition	Continuity	<ul style="list-style-type: none"> Inspect the related wiring

					harness
1N	—	—	—	—	—
1O	Shift solenoid F GND	Shift solenoid F	<ul style="list-style-type: none"> Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Inspect the shift solenoid F (See SOLENOID VALVE INSPECTION [SJ6A-EL]) Inspect the related wiring harness
1P	System GND	GND	Under any condition	Continuity	<ul style="list-style-type: none"> Inspect the related wiring harness
1Q	TCC control solenoid control	TCC control solenoid	<ul style="list-style-type: none"> Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Inspect the TCC control solenoid (See SOLENOID VALVE INSPECTION [SJ6A-EL]) Inspect the related wiring harness
1R	Line pressure control solenoid control	Line pressure control solenoid	<ul style="list-style-type: none"> Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Inspect the line pressure control solenoid (See SOLENOID VALVE INSPECTION [SJ6A-EL]) Inspect the related wiring harness
1S	Shift solenoid D control	Shift solenoid D	5GR, 6GR	B+	<ul style="list-style-type: none"> Inspect the shift solenoid D (See SOLENOID VALVE INSPECTION [SJ6A-EL]) Inspect the related wiring harness
			1GR, 2GR, 3GR, 4GR	Below 1.0	
1T	—	—	—	—	—

1U	—	—	—	—	—
1V	Shift solenoid E control	Shift solenoid E	1GR, 2GR, 3GR, 4GR	B+	<ul style="list-style-type: none"> Inspect the shift solenoid E (See SOLENOID VALVE INSPECTION [SJ6A-EL]) <ul style="list-style-type: none"> Inspect the related wiring harness
			5GR, 6GR	Below 1.0	
1W	—	—	—	—	—
1X	System GND	GND	Under any condition	Continuity	<ul style="list-style-type: none"> Inspect the related wiring harness
1Y	Shift solenoid G control	Shift solenoid G	<ul style="list-style-type: none"> Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference) .)		<ul style="list-style-type: none"> Inspect the shift solenoid G (See SOLENOID VALVE INSPECTION [SJ6A-EL]) <ul style="list-style-type: none"> Inspect the related wiring harness
1Z	Shift solenoid F control	Shift solenoid F	<ul style="list-style-type: none"> Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference) .)		<ul style="list-style-type: none"> Inspect the shift solenoid F (See SOLENOID VALVE INSPECTION [SJ6A-EL]) <ul style="list-style-type: none"> Inspect the related wiring harness
1AA	Shift solenoid C control	Shift solenoid C	1GR, 2GR, 3GR	B+	<ul style="list-style-type: none"> Inspect the shift solenoid C (See SOLENOID VALVE INSPECTION [SJ6A-EL]) <ul style="list-style-type: none"> Inspect the related wiring harness
			4GR, 5GR, 6GR	Below 1.0	
			1GR, 2GR, 6GR	B+	<ul style="list-style-type: none"> Inspect the shift solenoid B

1AB	Shift solenoid B control	Shift solenoid B	3GR, 4GR, 5GR	Below 1.0	(See SOLENOID VALVE INSPECTION [SJ6A-EL]) <ul style="list-style-type: none"> Inspect the related wiring harness
1AC	—	—	—	—	—
1AD	Power supply	Battery	Constant	B+	<ul style="list-style-type: none"> Inspect the related wiring harness
1AE	IG	Ignition switch	Ignition switch ON	B+	<ul style="list-style-type: none"> Inspect the Ignition switch (See IGNITION SWITCH INSPECTION [WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM]) <ul style="list-style-type: none"> Inspect the related wiring harness
			Ignition switch OFF	Below 1.0	
1AF	Shift solenoid A control	Shift solenoid A	2GR, 3GR, 4GR, 5GR, 6GR	B+	<ul style="list-style-type: none"> Inspect the shift solenoid A (See SOLENOID VALVE INSPECTION [SJ6A-EL]) <ul style="list-style-type: none"> Inspect the related wiring harness
			1GR	Below 1.0	
1AG	—	—	—	—	—
1AH	—	—	—	—	—
1AI	IG	Ignition switch	Ignition switch ON	B+	<ul style="list-style-type: none"> Inspect the Ignition switch (See IGNITION SWITCH INSPECTION [WITHOUT ADVANCED KEYLESS ENTRY AND
			Ignition switch OFF	Below 1.0	

					START SYSTEM) <ul style="list-style-type: none"> Inspect the related wiring harness
2A	Turbine speed (+)	Turbine sensor	<ul style="list-style-type: none"> Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Inspect the turbine sensor (See TURBINE SENSOR INSPECTION [SJ6A-EL]) Inspect the related wiring harness
2B	Turbine speed (-)	Turbine sensor	Ignition switch ON	Approx. 2.54	<ul style="list-style-type: none"> Inspect the turbine sensor (See TURBINE SENSOR INSPECTION [SJ6A-EL]) Inspect the related wiring harness
2C	Vehicle speed (-)	VSS	Ignition switch ON	Approx. 2.5	<ul style="list-style-type: none"> Inspect the VSS (See VEHICLE SPEED SENSOR (VSS) INSPECTION [SJ6A-EL]) Inspect the related wiring harness
2D	Vehicle speed (+)	VSS	<ul style="list-style-type: none"> Inspect using the wave profile. (See Inspection Using An Oscilloscope (Reference).) 		<ul style="list-style-type: none"> Inspect the VSS (See VEHICLE SPEED SENSOR (VSS) INSPECTION [SJ6A-EL]) Inspect the related wiring harness
2E	Turbine sensor wiring harness shield GND	GND	Under any condition	Continuity	<ul style="list-style-type: none"> Inspect the related wiring harness

2F	Down switch (Selector lever component)	Down switch (Selector lever component)	Shift down (M range)	Below 1.0	<ul style="list-style-type: none"> Inspect the selector lever component <p>(See SELECTOR LEVER COMPONENT INSPECTION)</p> <ul style="list-style-type: none"> Inspect the related wiring harness
			Other ranges, all positions	B+	
2G	M range switch	M range switch	M range	Below 1.0	<ul style="list-style-type: none"> Inspect the selector lever component <p>(See SELECTOR LEVER COMPONENT INSPECTION)</p> <ul style="list-style-type: none"> Inspect the related wiring harness
			Other positions, all ranges	B+	
2H	VSS wiring harness shield GND	GND	Under any condition	Continuity	<ul style="list-style-type: none"> Inspect the related wiring harness
2I	—	—	—	—	—
2J	Up switch (Selector lever component)	Up switch (Selector lever component)	Shift up (M range)	Below 1.0	<ul style="list-style-type: none"> Inspect the selector lever component <p>(See SELECTOR LEVER COMPONENT INSPECTION)</p> <ul style="list-style-type: none"> Inspect the related wiring harness
			Other ranges, all positions	B+	
2K	TR switch (D range)	TR switch	D range	B+	<ul style="list-style-type: none"> Inspect the TR switch <p>(See TRANSMISSION RANGE (TR) SWITCH INSPECTION [SJ6A-EL])</p> <ul style="list-style-type: none"> Inspect the related wiring harness
			Other ranges, all positions	Below 1.0	

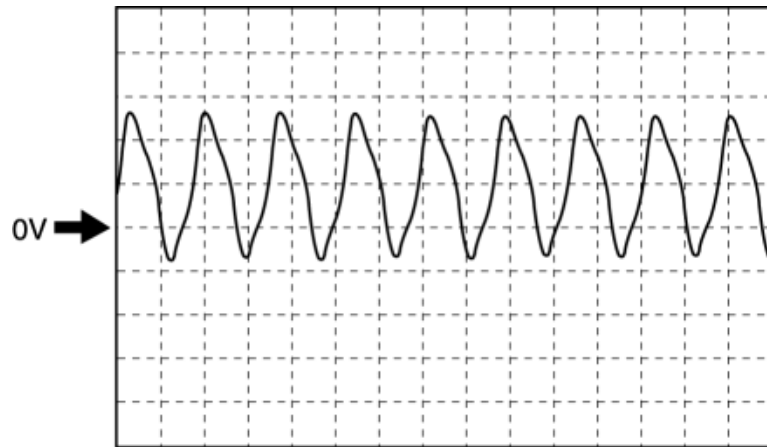
2L	—	—	—	—	—
2M	TR switch (R position)	TR switch	R position	B+	<ul style="list-style-type: none"> Inspect the TR switch (See TRANSMISSION RANGE (TR) SWITCH INSPECTION [SJ6A-EL]) <ul style="list-style-type: none"> Inspect the related wiring harness
			Other ranges, all positions	Below 1.0	
2N	TR switch (N position)	TR switch	N position	B+	<ul style="list-style-type: none"> Inspect the TR switch (See TRANSMISSION RANGE (TR) SWITCH INSPECTION [SJ6A-EL]) <ul style="list-style-type: none"> Inspect the related wiring harness
			Other positions, all ranges	Below 1.0	
2O	TR switch (P position)	TR switch	P position	B+	<ul style="list-style-type: none"> Inspect the TR switch (See TRANSMISSION RANGE (TR) SWITCH INSPECTION [SJ6A-EL]) <ul style="list-style-type: none"> Inspect the related wiring harness
			Other positions, all ranges	Below 1.0	
2P	—	—	—	—	—
2Q	ATF temperature monitor mode control	TFT check connector	Under any condition	B+	<ul style="list-style-type: none"> Inspect the related wiring harness
2R	—	—	—	—	—
2S	—	—	—	—	—
2T	—	—	—	—	—

2U	—	—	—	—	—
2V	—	—	—	—	—
2W	—	—	—	—	—
2X	—	—	—	—	—
2Y	—	—	—	—	—
2Z	—	—	—	—	—
2AA	—	—	—	—	—
2AB	Steering shift switch GND	Steering shift switch	Under any condition	Below 1.0	<ul style="list-style-type: none"> Inspect the related wiring harness
2AC	—	—	—	—	—
2AD	—	—	—	—	—
2AE	—	—	—	—	—
2AF	Shift up/Shift down signal (Steering shift switch)	Steering shift switch	Up switch operated (Steering shift switch)	Approx. 2.0	<ul style="list-style-type: none"> Inspect the steering shift switch (See STEERING SHIFT SWITCH INSPECTION) <ul style="list-style-type: none"> Inspect the related wiring harness
			Down switch operated (Steering shift switch)	Approx. 2.53	
			Others	Approx. 4.0	
2AG	—	—	—	—	—
2AH	—	—	—	—	—
2AI	—	—	—	—	—

Inspection Using An Oscilloscope (Reference)

Turbine sensor (+)

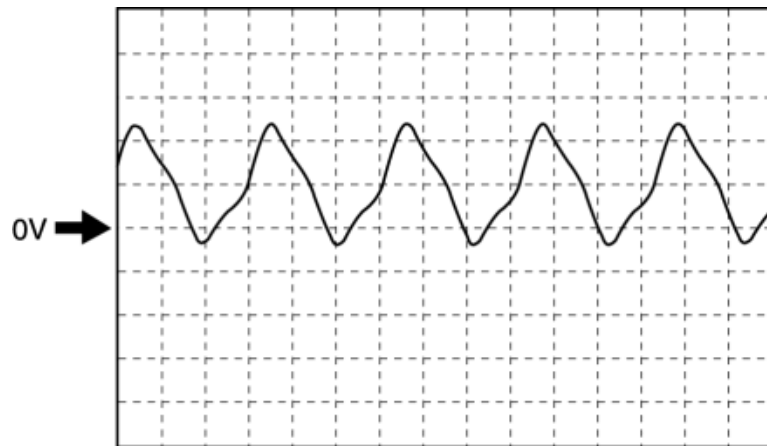
- TCM terminal: 2A



- Oscilloscope setting: 2 V/DIV (Y) 2 ms/DIV (X)
- Measuring condition: Vehicle speed at **30 km/h {19 mph}** (D range 1GR)

Vehicle speed (+)

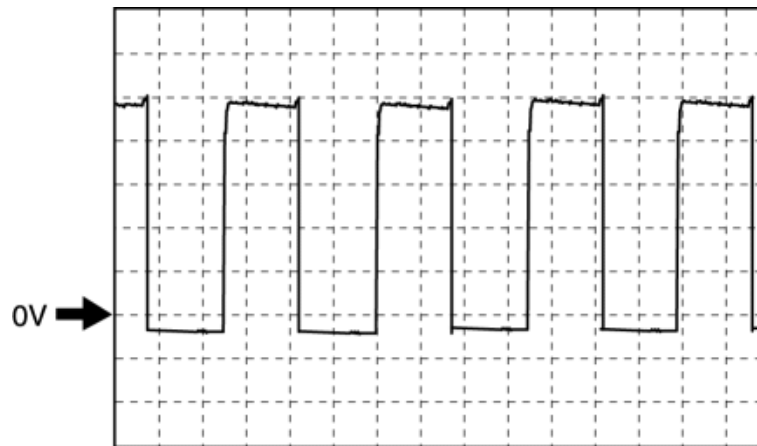
- TCM terminal: 2D



- Oscilloscope setting: 2.5 V/DIV (Y) 1 ms/DIV (X)
- Measuring condition: Vehicle speed at **30 km/h {19 mph}** (D range 1GR)

Shift solenoid F control (+)

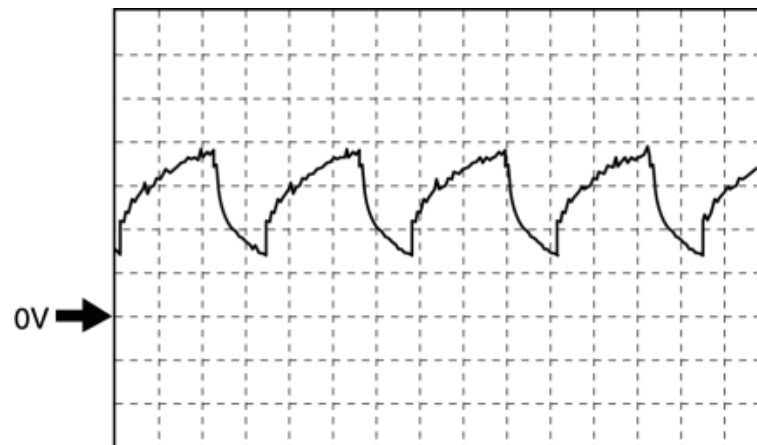
- TCM terminal: 1Z



- Oscilloscope setting: 2.5 V/DIV (Y) 1 ms/DIV (X)
- Measuring condition: M range 5GR

Shift solenoid F control (-)

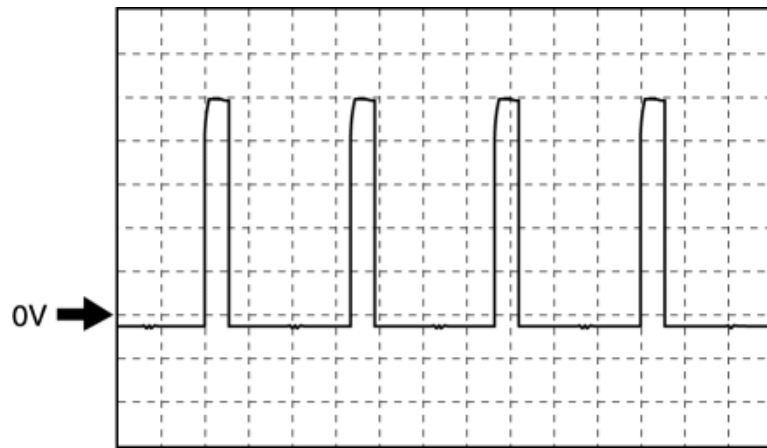
- TCM terminal: 1O



- Oscilloscope setting: 100 mV/DIV (Y) 1 ms/DIV (X)
- Measuring condition: M range 5GR

Shift solenoid G control (+)

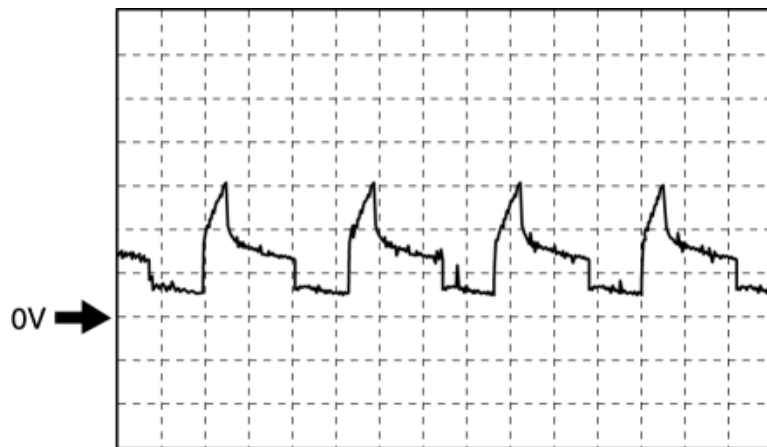
- TCM terminal: 1Y



- Oscilloscope setting: 2.5 V/DIV (Y) 1 ms/DIV (X)
- Measuring condition: M range 1GR

Shift solenoid G control (-)

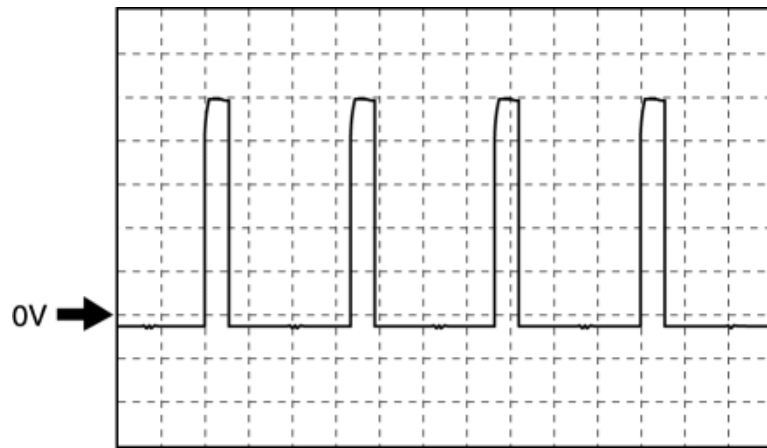
- TCM terminal: 1L



- Oscilloscope setting: 50 mV/DIV (Y) 1ms/DIV (X)
- Measuring condition: M range 1GR

TCC control solenoid control (+)

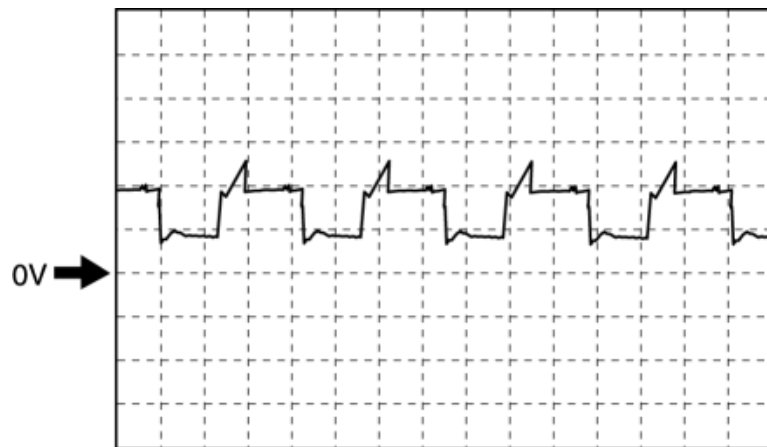
- TCM terminal: 1Q



- Oscilloscope setting: 2.5 V/DIV (Y) 1 ms/DIV (X)
- Measuring condition: P, N position, Idle

TCC control solenoid control (-)

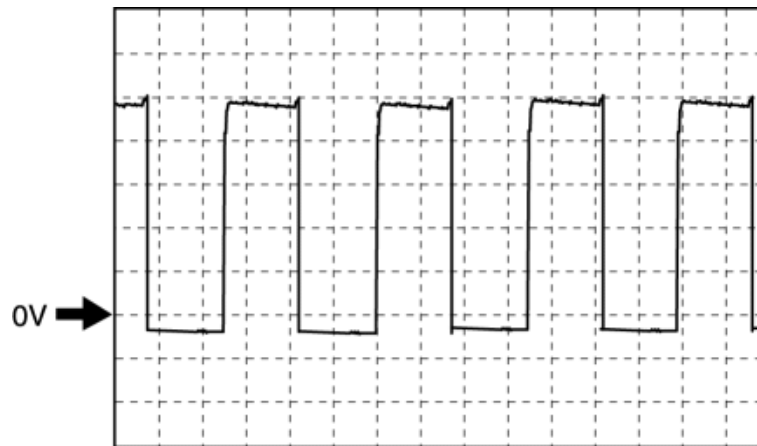
- TCM terminal: 1D



- Oscilloscope setting: 50 mV/DIV (Y) 1 ms/DIV (X)
- Measuring condition: P, N position, Idle

Line pressure control solenoid control (+)

- TCM terminal: 1R



- Oscilloscope setting: 2.5 V/DIV (Y) 1 ms/DIV (X)
- Measuring condition: P, N position, Idle

[< Previous](#) [Next >](#)

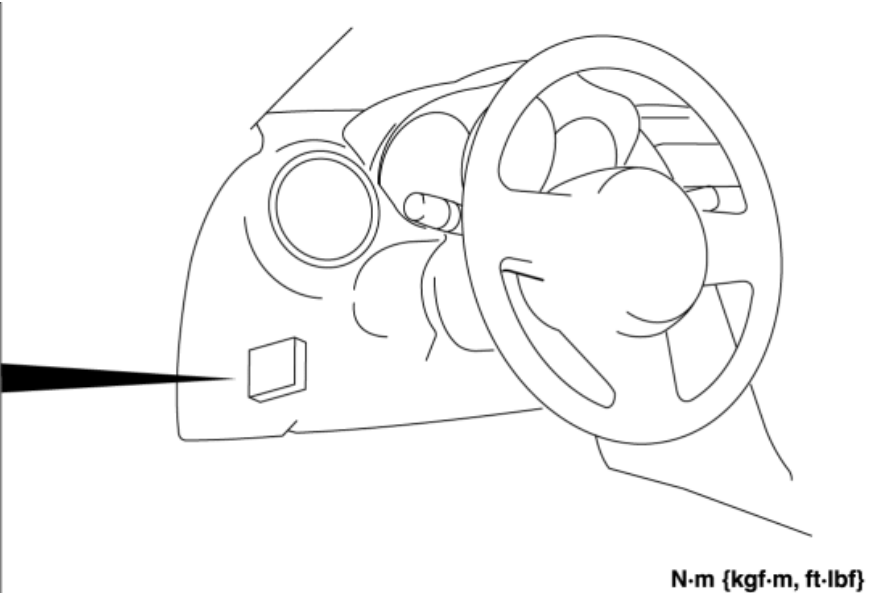
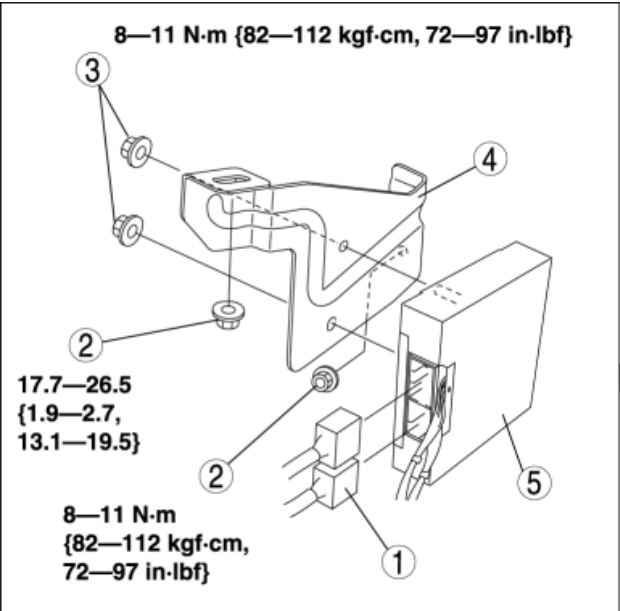
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

TCM REMOVAL/INSTALLATION [SJ6A-EL]

- 1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- 2. Remove the battery cover.
- 3. Disconnect the negative battery cable.
- 4. Remove in the order indicated in the table.
- 5. Install in the reverse order of removal.



1	TCM connector
2	Nut
3	Nut
4	Bracket
5	TCM

2011 - RX-8 - Transmission/Transaxle

AUTOMATIC TRANSMISSION FLUID (ATF) INSPECTION [SJ6A-EL]

Automatic Transmission Fluid (ATF) Condition Inspection

1. Inspect the ATF for the following to determine whether the transmission should be disassembled.

- The ATF is muddy.
- The ATF smells strange or unusual.

ATF Condition

Condition		Possible cause
Clear dark red	Normal	—
Light red (pink)	Contaminated with water	<ul style="list-style-type: none"> • Damaged oil cooler inside of the radiator <p>Problem could occur to parts inside the transmission by water contamination. It is necessary to overhaul the transmission and detect defected parts.</p> <p>If necessary, replace the transmission.</p>
Reddish brown	Has burnt smell and metal particles are found	<p>Deteriorated ATF</p> <p>Defective the powertrain components inside the transmission:</p> <p>Particles cause wide range of problems by plugging up in oil pipe, control valve body and oil cooler in radiator.</p> <ul style="list-style-type: none"> • When large amount of metal particles are found, overhaul the transmission and inspect for defective parts. <p>If necessary, replace the transmission.</p> <ul style="list-style-type: none"> • Implement flushing operation as there is a possibility to have particles plugging up the oil pipe or oil cooler inside the radiator.

	Has no burnt smell	Normal	Discoloration by oxidation
--	--------------------	--------	----------------------------

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Transmission/Transaxle

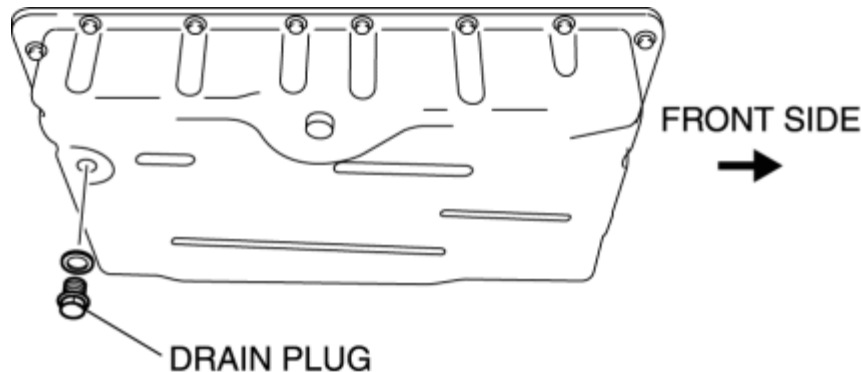
AUTOMATIC TRANSMISSION FLUID (ATF) REPLACEMENT [SJ6A-EL]

WARNING:

- A hot transmission and ATF can cause severe burns. Turn off the engine and wait until they are cool before replacing ATF.

NOTE:

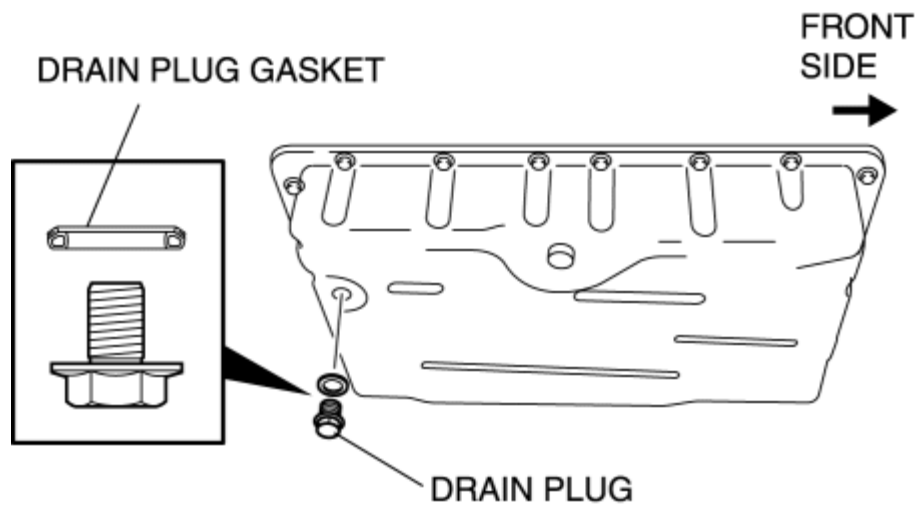
- Do not mistake the overflow plug for the drain plug.
1. Remove the drain plug and the drain plug gasket from the oil pan.



2. Drain the ATF into a container.
3. Clean the drain plug.

CAUTION:

- Be sure to install the drain plug gasket in the correct direction as shown in the figure.
4. Install a new drain plug gasket and the drain plug to the oil pan.

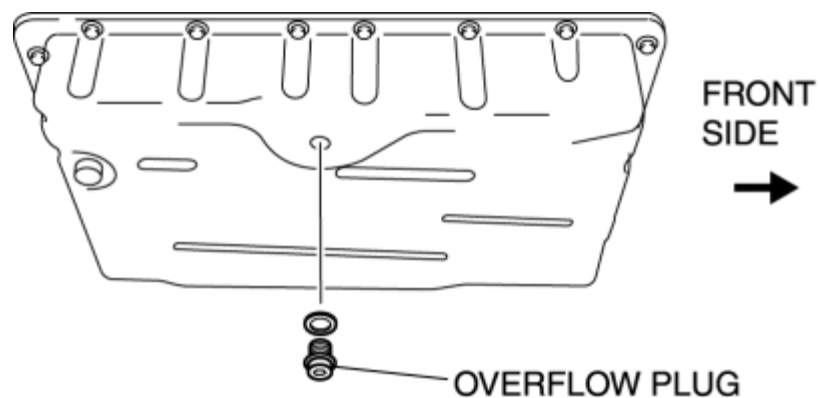


Tightening torque

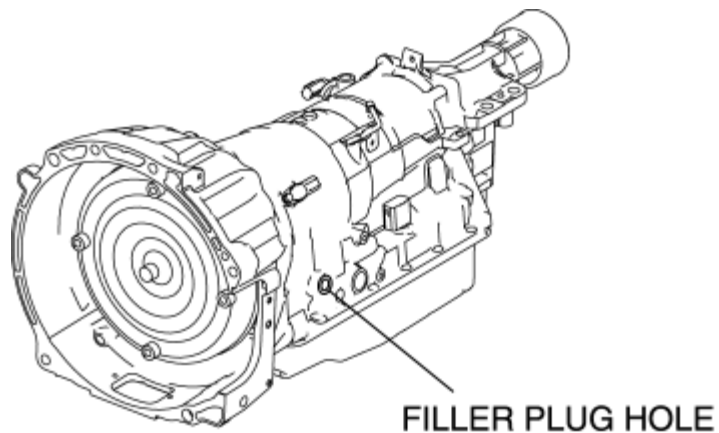
- 17.5—22.5 N·m {1.8—2.2 kgf·m, 13.0—16.5 ft·lbf}

NOTE:

- Do not mistake the overflow plug for the drain plug.
5. Remove the overflow plug and the overflow plug gasket.



6. Remove the filler plug and the O-ring.



7. Add the specified type of ATF through the filler plug hole.

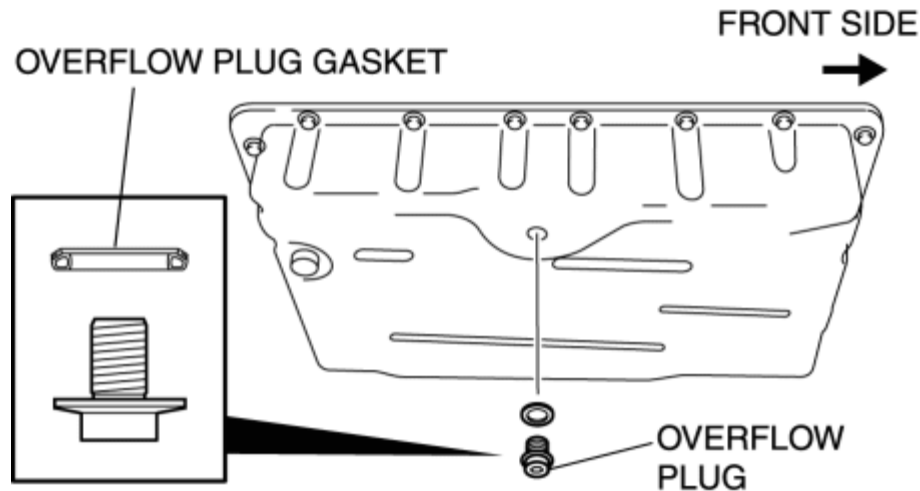
ATF

- Type: Mazda Genuine JWS3309
- Capacity (approx. quantity): 8.0 L {8.5 US qt, 7.0 Imp qt}

8. Verify the ATF is dripping from the overflow orifice.

CAUTION:

- Be sure to install the overflow plug gasket in the correct direction as shown in the figure.



9. Install a new overflow plug gasket and the overflow plug.

Tightening torque

- 17.5—22.5 N·m {1.8—2.2 kgf·m, 13.0—16.5 ft·lbf}

NOTE:

- Replace the O-ring if it has malfunction.

10. Coat a new O-ring with ATF, and install it to the filler plug.

Tightening torque

- 23.5—54.9 N·m {2.4—5.5 kgf·m, 17.4—40.4 ft·lbf}

CAUTION:

- Always adjust the ATF level when replacing the ATF so that the appropriate level is maintained.

11. Adjust the ATF level. (See [AUTOMATIC TRANSMISSION FLUID \(ATF\) LEVEL ADJUSTMENT \[SJ6A-EL\].](#))

[< Previous](#) [Next >](#)

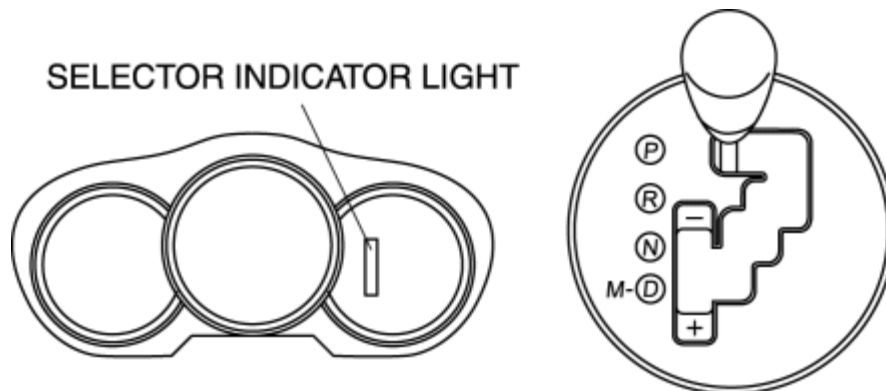
[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

TRANSMISSION RANGE (TR) SWITCH INSPECTION [SJ6A-EL]

Operating inspection

1. Verify that the starter operates only when the ignition switch is turned to the START position with the selector lever in the P or N position.
 - If there is any malfunction, adjust the TR switch. (See [TRANSMISSION RANGE \(TR\) SWITCH ADJUSTMENT \[SJ6A-EL\]](#).)
2. Verify that the back-up lights illuminate when shifted to the R position with the ignition switch at the ON position.
 - If there is any malfunction, adjust the TR switch. (See [TRANSMISSION RANGE \(TR\) SWITCH ADJUSTMENT \[SJ6A-EL\]](#).)
3. Verify that the positions of the selector lever and the indicator are aligned.



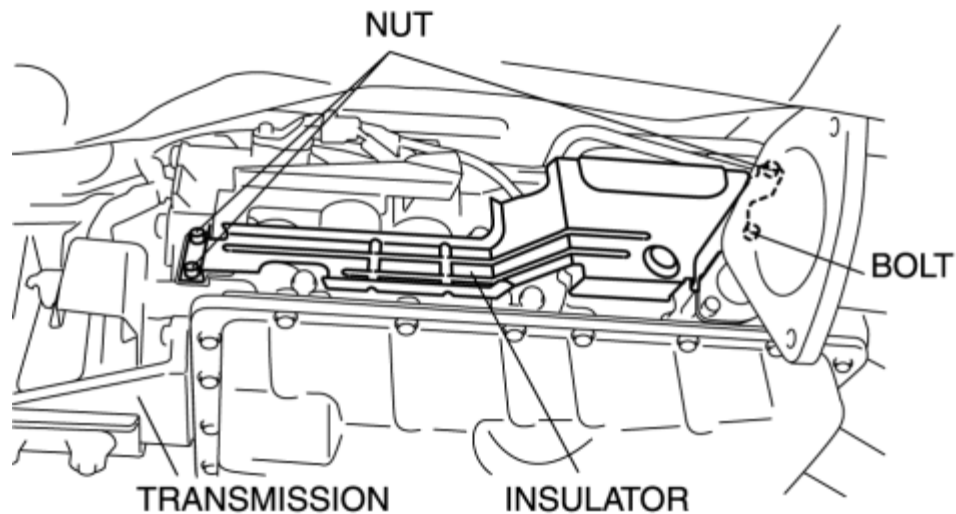
- If there is any malfunction, adjust the TR switch. (See [TRANSMISSION RANGE \(TR\) SWITCH ADJUSTMENT \[SJ6A-EL\]](#).)

Continuity Inspection

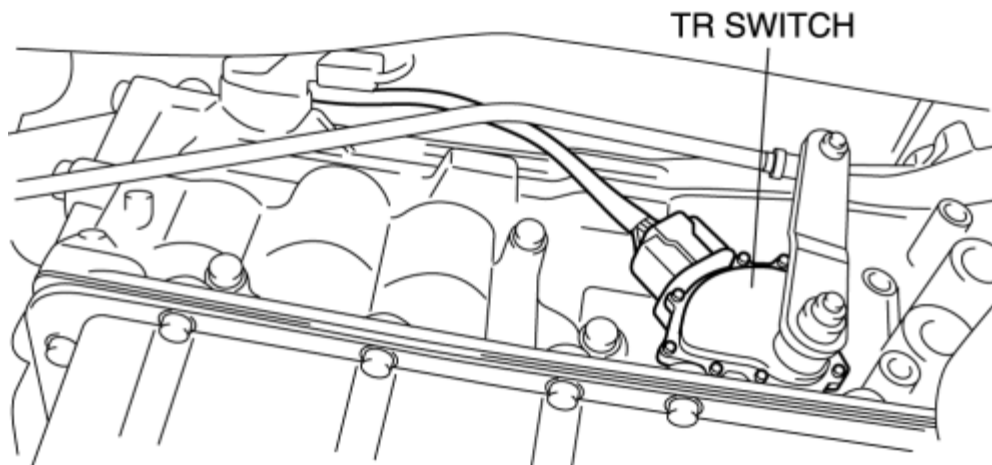
CAUTION:

- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)

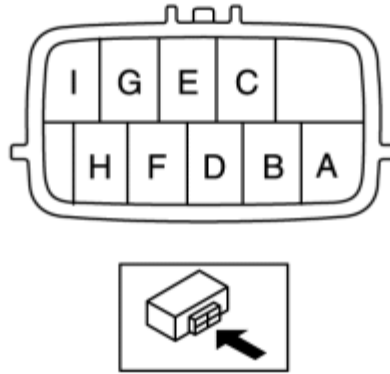
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Remove the front tunnel member.
5. Remove the rear tunnel member.
6. Remove the catalytic converter. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
7. Remove the insulator.



8. Disconnect the TR switch connector.



9. Verify continuity as indicated in the table.



- If there is any malfunction, adjust the TR switch. (See [TRANSMISSION RANGE \(TR\) SWITCH ADJUSTMENT \[SJ6A-EL\]](#).)

○—○ : Continuity

Selector position \ Terminal	Starter circuit		Position-circuit				
	A	I	E	B	C	H	D
P	○—○		○—○				
R			○—○		○—○		
N	○—○		○—○			○—○	
D			○—○				○—○

10. Reinspect for continuity at TR switch.

- If there is any malfunction, replace the TR switch. (See [TRANSMISSION RANGE \(TR\) SWITCH REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)

11. Connect the TR switch connector.

12. Install the insulator.

Tightening torque

- 8—11 N·m {82—112 kgf·cm, 72—97 in·lbf}

13. Install the catalytic converter. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)

14. Install the rear tunnel member.

15. Install the front tunnel member.

16. Connect the negative battery cable.

17. Install the battery cover.

18. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

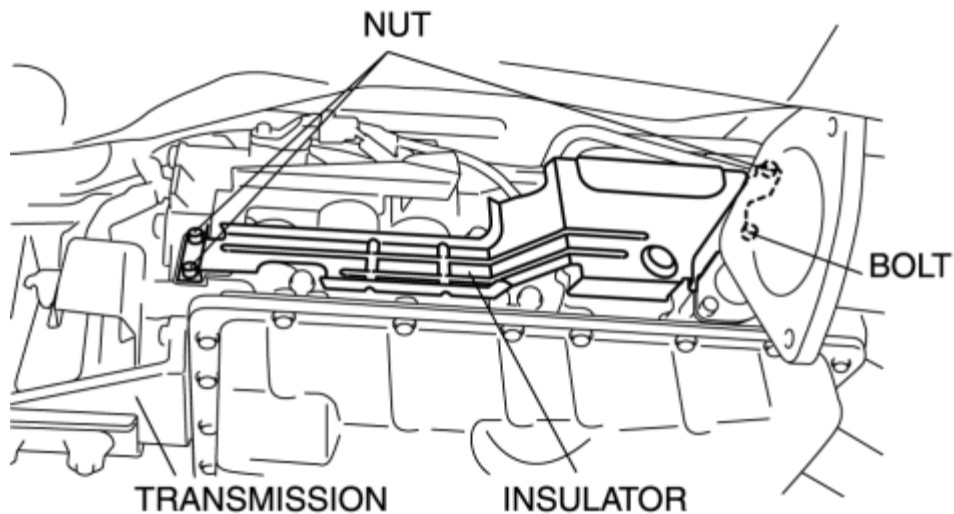
[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

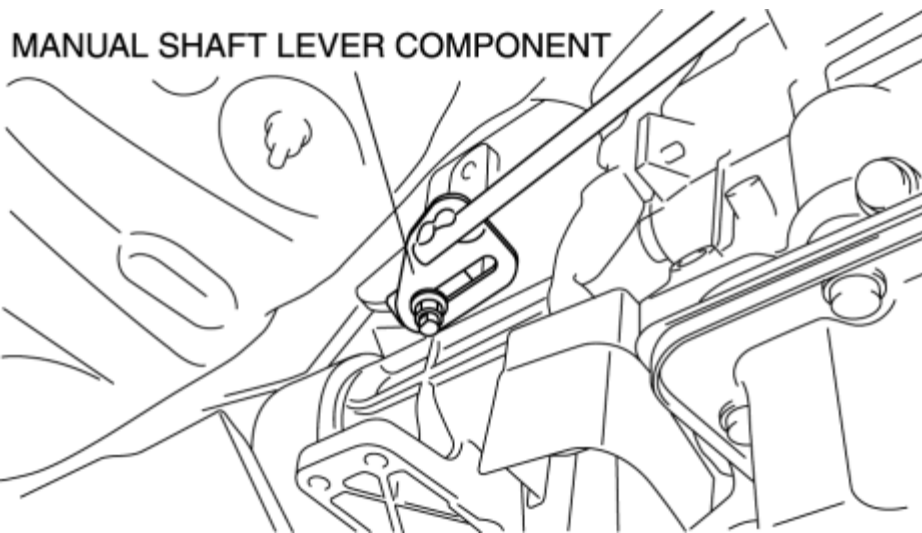
TRANSMISSION RANGE (TR) SWITCH ADJUSTMENT [SJ6A-EL]

CAUTION:

- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Remove the battery cover.
 3. Disconnect the negative battery cable.
 4. Remove the front tunnel member.
 5. Remove the rear tunnel member.
 6. Remove the catalytic converter. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 7. Remove the insulator.

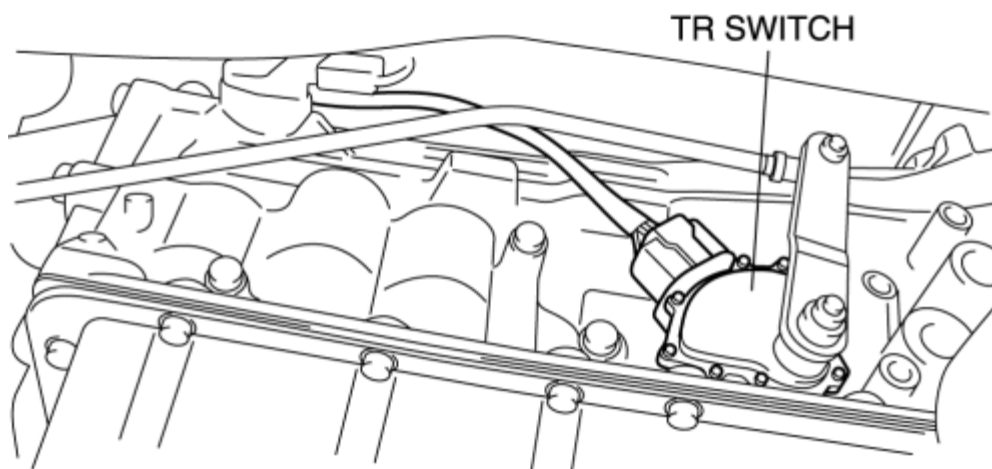


8. Mark the manual shaft lever component as shown in the figure.



9. Separate the manual shaft lever component from selector lever.

10. Disconnect the TR switch connector.

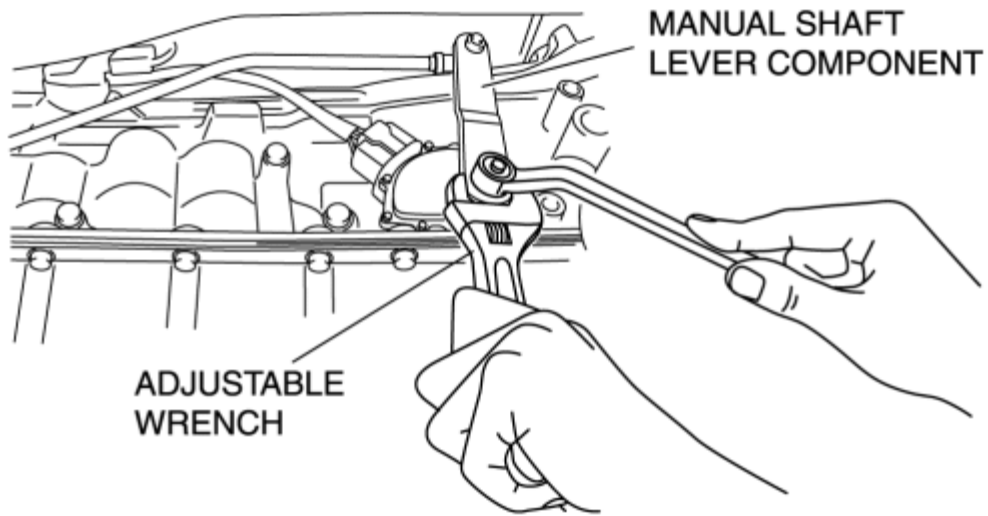


11. Rotate the manual shaft to the N position.

CAUTION:

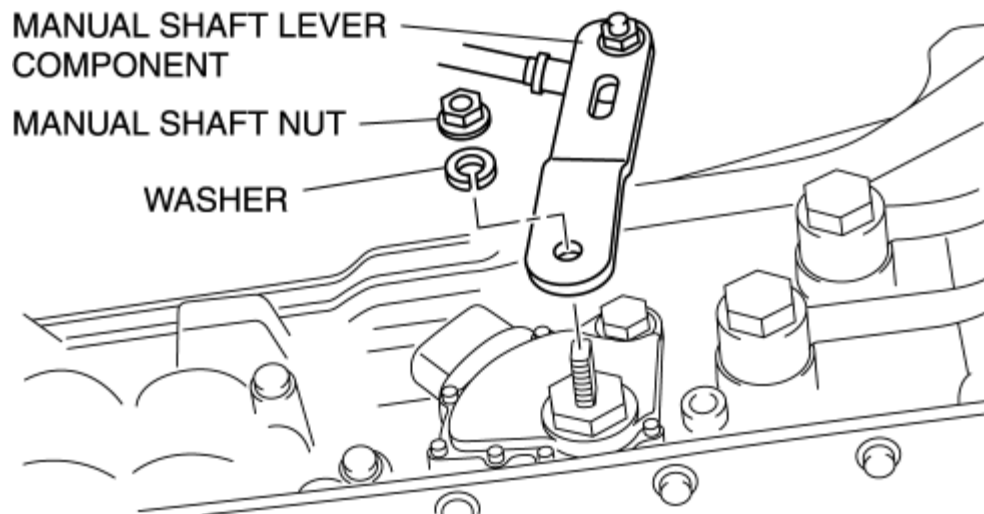
- Do not use an impact wrench. Hold the manual shaft lever when removing the manual shaft nut, otherwise the transmission may be damaged.

12. Set the adjustable wrench as shown in the figure to hold the manual shaft lever.



13. Remove the manual shaft nut.

14. Remove the washer and manual shaft lever component.



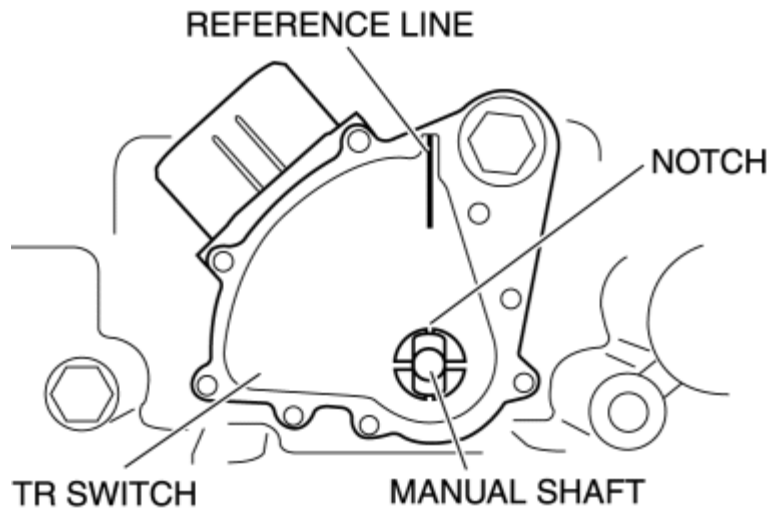
15. Loosen the TR switch mounting bolts.

16. Temporarily install the TR switch mounting bolt.

CAUTION:

- Improper adjustment of the TR switch will cause abnormal operation of the automatic transmission. Be sure to adjust the TR switch correctly.

17. Verify the TR switch reference line and the notch of the manual shaft are aligned.

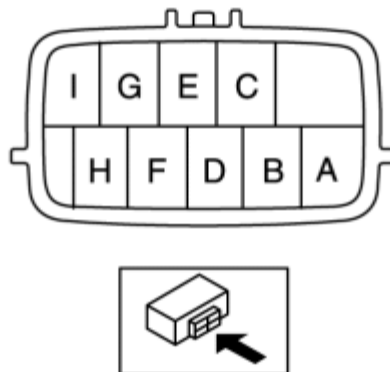


18. Tighten the TR switch mounting bolts.

Tightening torque

- 9.8—15.7 N·m {100—160 kgf·cm, 87—138 in·lbf}

19. Inspect for continuity between TR switch terminals E and H.

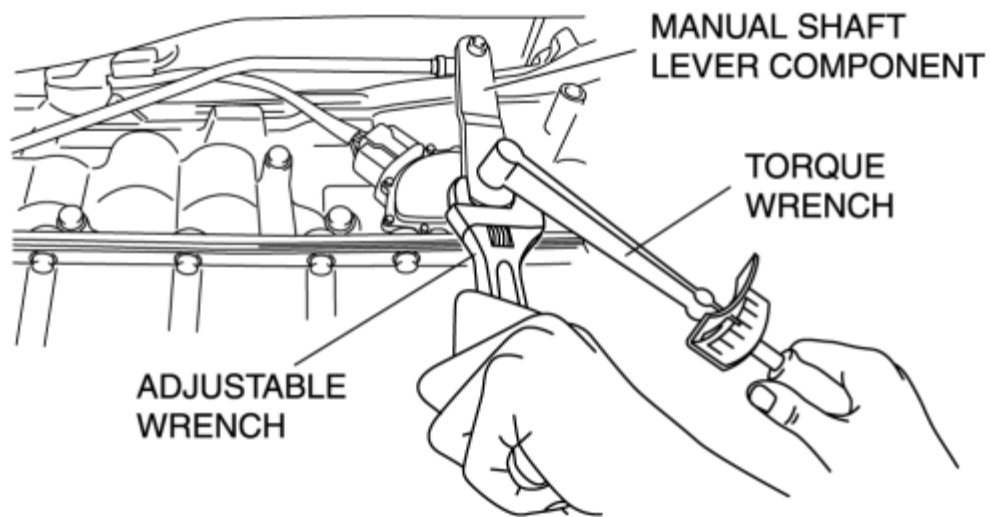


20. Install the manual shaft lever component and washer.

CAUTION:

- Do not use an impact wrench. Hold the manual shaft lever when tightening the manual shaft nut, otherwise the transmission may be damaged.

21. Set the adjustable wrench as shown in the figure to hold the manual shaft lever.



22. Tighten the manual shaft nut using a torque wrench.

Tightening torque

- 13.7—17.6 N·m {1.4—1.8 kgf·m, 11—13 ft·lbf}

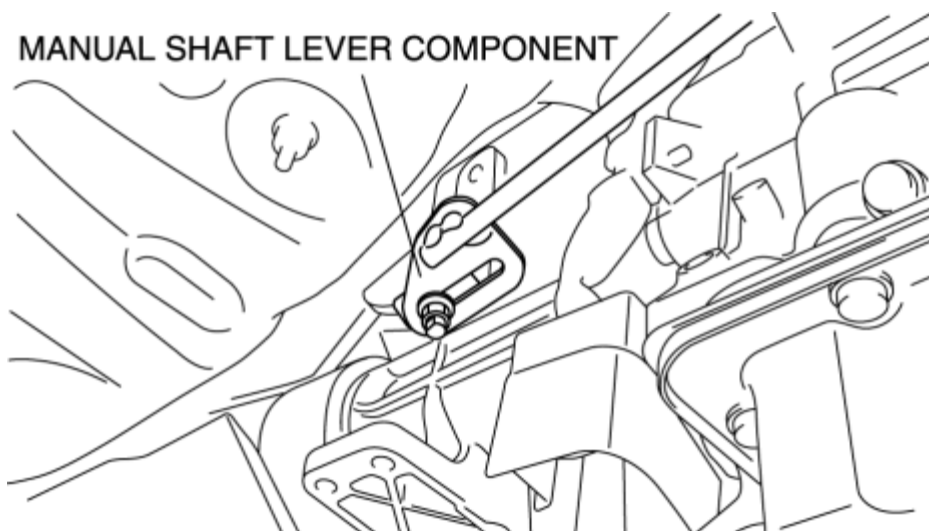
23. Shift the selector lever to P position.

24. Turn the manual shaft lever to P position.

25. Inspect TR switch continuity. (See [TRANSMISSION RANGE \(TR\) SWITCH INSPECTION \[SJ6A-EL\]](#).)

26. Connect the TR switch connector.

27. Align the mark of the manual shaft lever component as shown in the figure.



28. Install the manual shaft lever component installation nut.

Tightening torque

- 10.8—14.7 N·m {1.1—1.4 kgf·m, 8.0—10.8 ft·lbf}

29. Install the insulator.

Tightening torque

- 8—11 N·m {82—112 kgf·cm, 72—97 in·lbf}

30. Install the catalytic converter. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
31. Install the rear tunnel member.
32. Install the front tunnel member.
33. Connect the negative battery cable.
34. Install the battery cover.
35. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
36. Inspect TR switch operation. (See [TRANSMISSION RANGE \(TR\) SWITCH INSPECTION \[SJ6A-EL\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

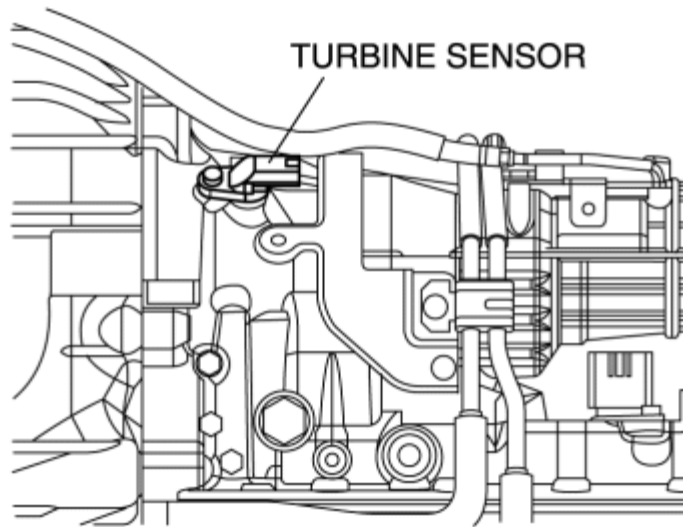
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Transmission/Transaxle

TURBINE SENSOR INSPECTION [SJ6A-EL]

CAUTION:

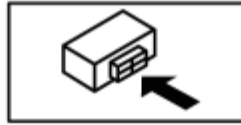
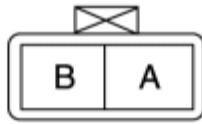
- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
 2. Remove the battery cover.
 3. Disconnect the negative battery cable.
 4. Disconnect the turbine sensor connector.



CAUTION:

- Do not apply a shock in the turbine sensor.
 - Do not damage the terminals.
5. Measure the resistance between the turbine sensor terminals.

TURBINE SENSOR



- If there is any malfunction, replace the turbine sensor. (See [TURBINE SENSOR REMOVAL/INSTALLATION \[SJ6A-EL\].](#))

Turbine sensor resistance

- 560—680 ohm

6. Connect the turbine sensor connector.
7. Connect the negative battery cable.
8. Install the battery cover.
9. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))

[< Previous](#) [Next >](#)

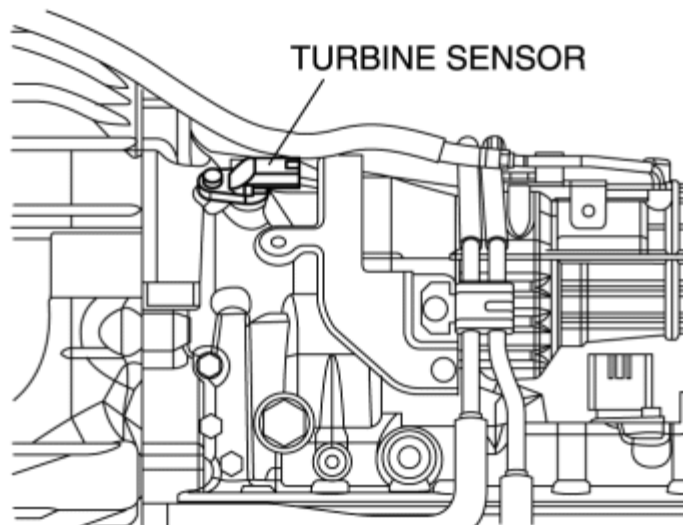
[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

TURBINE SENSOR REMOVAL/INSTALLATION [SJ6A-EL]

CAUTION:

- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.
 - Do not damage the turbine sensor.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Remove the battery cover.
 3. Disconnect the negative battery cable.
 4. Disconnect the turbine sensor connector.
 5. Remove the turbine sensor.



6. Install the turbine sensor.

Tightening torque

- 3.9—6.9 N·m {40—70 kgf·cm, 35—60 in·lbf}
7. Connect the turbine sensor connector.
 8. Connect the negative battery cable.
 9. Install the battery cover.

10. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))

[< Previous](#) [Next >](#)

[Back to Top](#)

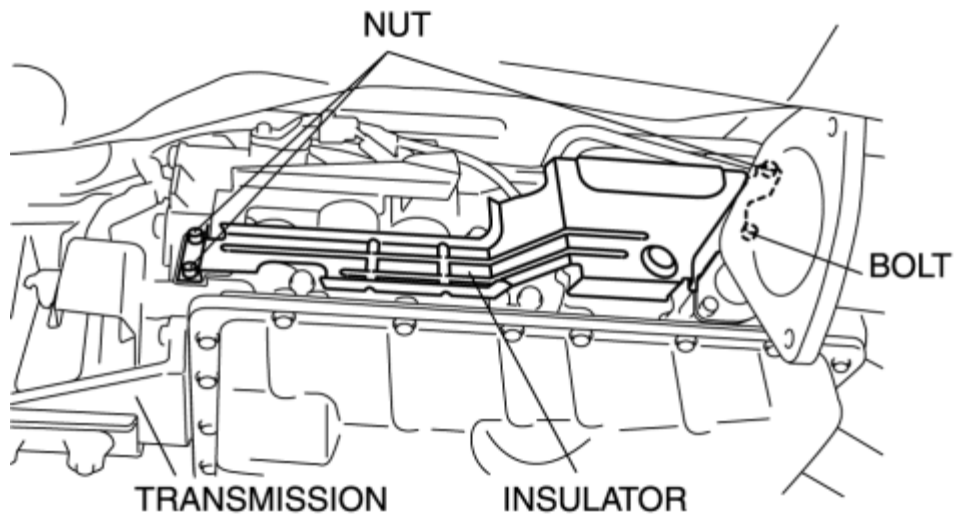
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Transmission/Transaxle

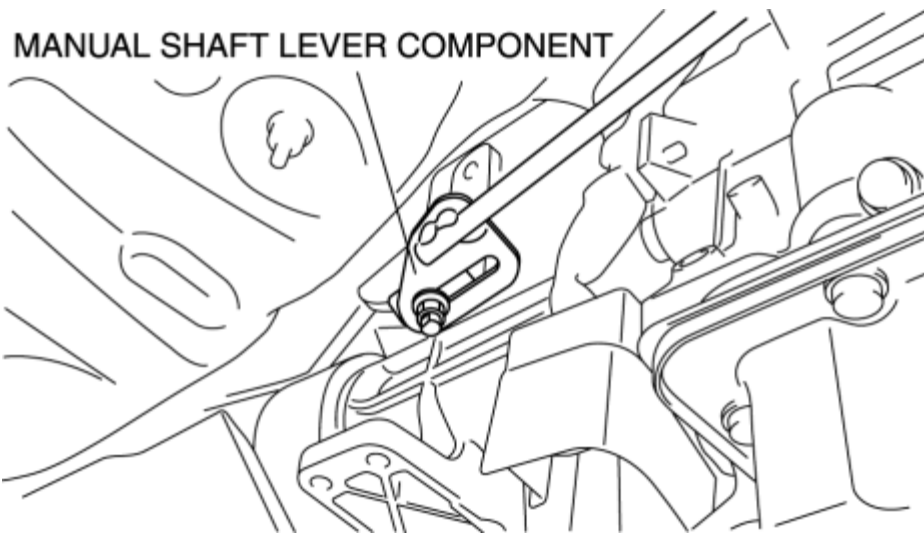
VEHICLE SPEED SENSOR (VSS) INSPECTION [SJ6A-EL]

CAUTION:

- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Remove the battery cover.
 3. Disconnect the negative battery cable.
 4. Remove the front tunnel member.
 5. Remove the rear tunnel member.
 6. Remove the catalytic converter. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 7. Remove the insulator.

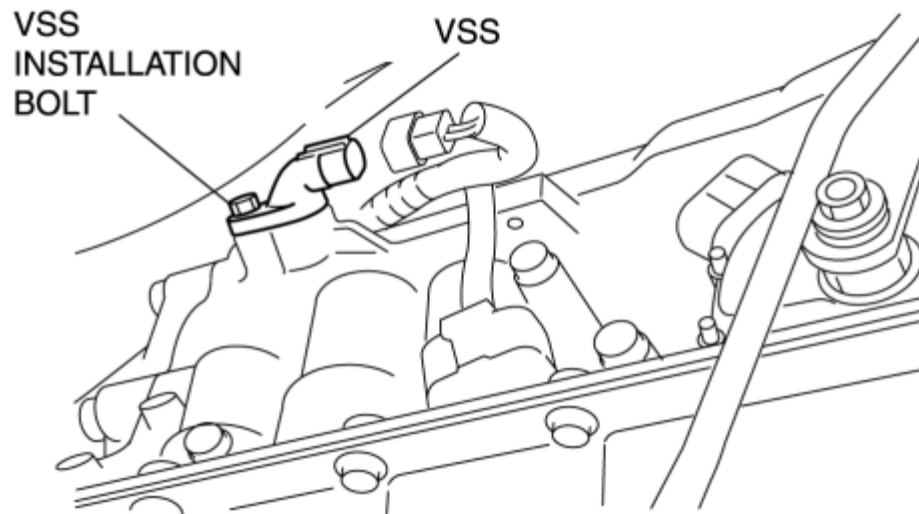


8. Mark the manual shaft lever component as shown in the figure.



9. Separate the manual shaft lever component from selector lever.

10. Disconnect the VSS connector.

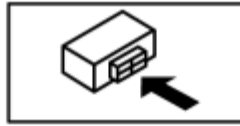
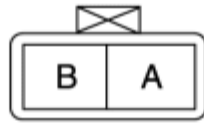


CAUTION:

- Do not apply a shock in the VSS.
- Do not damage the terminals.

11. Measure the resistance between the VSS terminals.

VSS



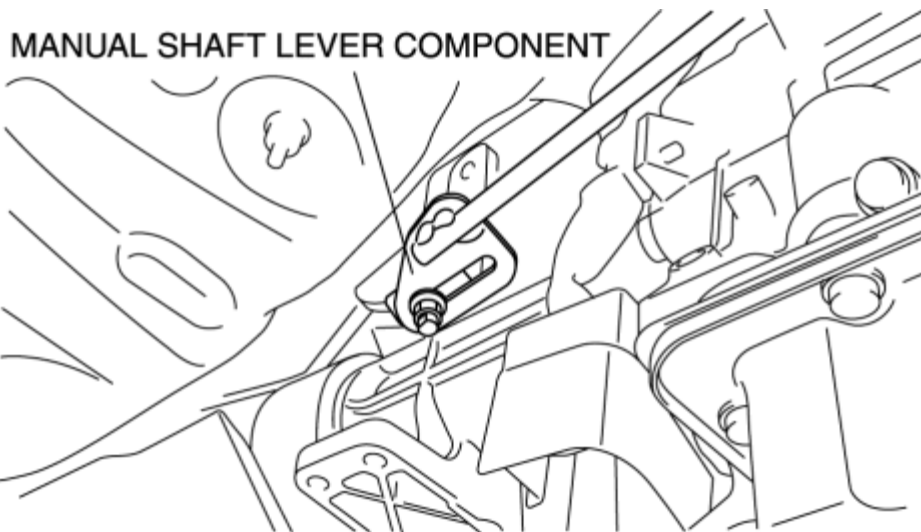
- If there is any malfunction, replace the VSS. (See [VEHICLE SPEED SENSOR \(VSS\) REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)

VSS resistance

- 560—680 ohm

12. Connect the VSS connector.

13. Align the mark of the manual shaft lever component as shown in the figure.



14. Install the manual shaft lever component installation nut.

Tightening torque

- 10.8—14.7 N·m {111—149 kgf·cm, 96.4—129.3 in·lbf}

15. Install the insulator.

Tightening torque

- 8—11 N·m {82—112 kgf·cm, 72—97 in·lbf}

16. Install the catalytic converter. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-](#)

[MSP\].\)](#)

17. Install the rear tunnel member.
18. Install the front tunnel member.
19. Connect the negative battery cable.
20. Install the battery cover.
21. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].\)](#)

[< Previous](#) [Next >](#)

[Back to Top](#)

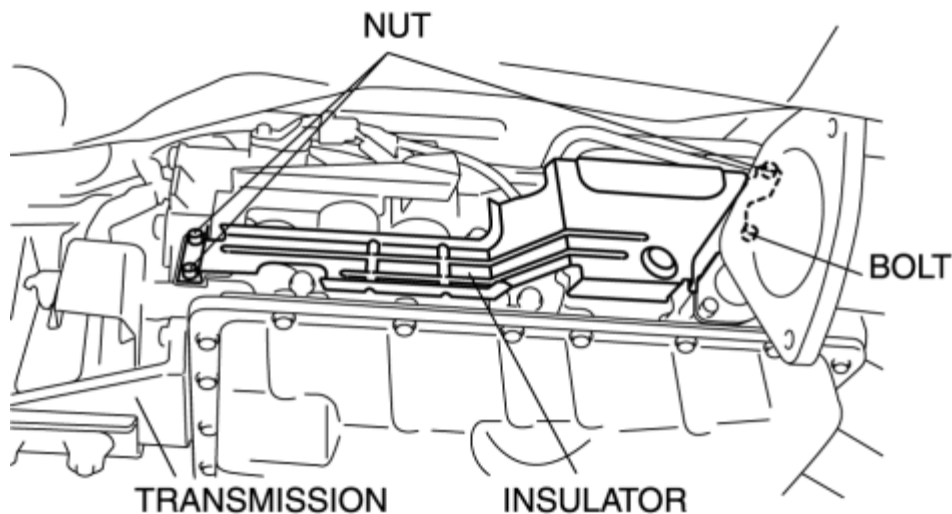
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Transmission/Transaxle

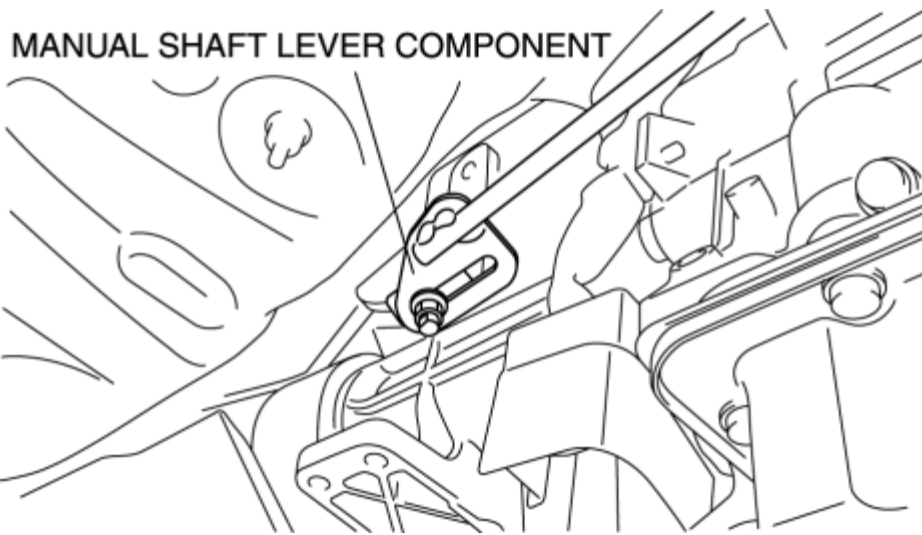
VEHICLE SPEED SENSOR (VSS) REMOVAL/INSTALLATION [SJ6A-EL]

CAUTION:

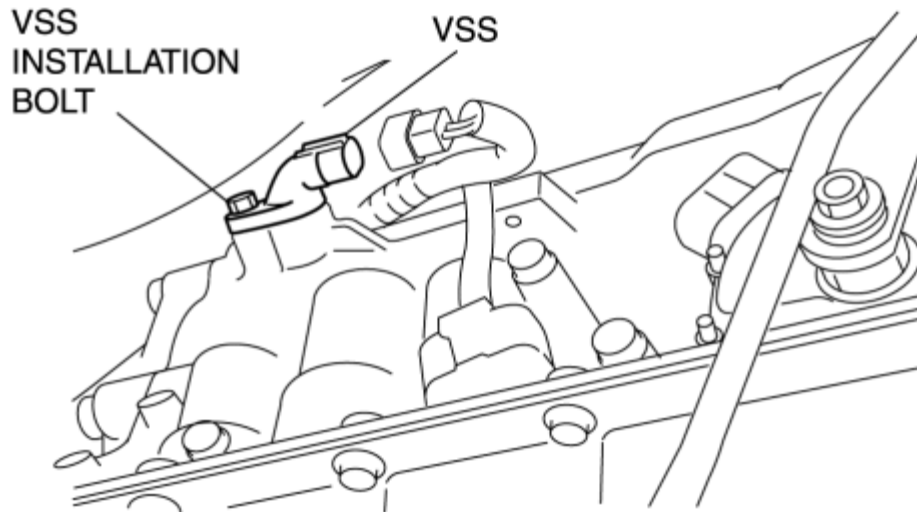
- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.
 - Do not damage the VSS.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Remove the battery cover.
 3. Disconnect the negative battery cable.
 4. Remove the front tunnel member.
 5. Remove the rear tunnel member.
 6. Remove the catalytic converter. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 7. Remove the insulator.



8. Mark the manual shaft lever component as shown in the figure.



9. Separate the manual shaft lever component from the selector lever.
10. Disconnect the VSS connector.
11. Support the transmission using a transmission jack.
12. Remove the power plant frame. (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\].](#))
13. Remove the VSS.

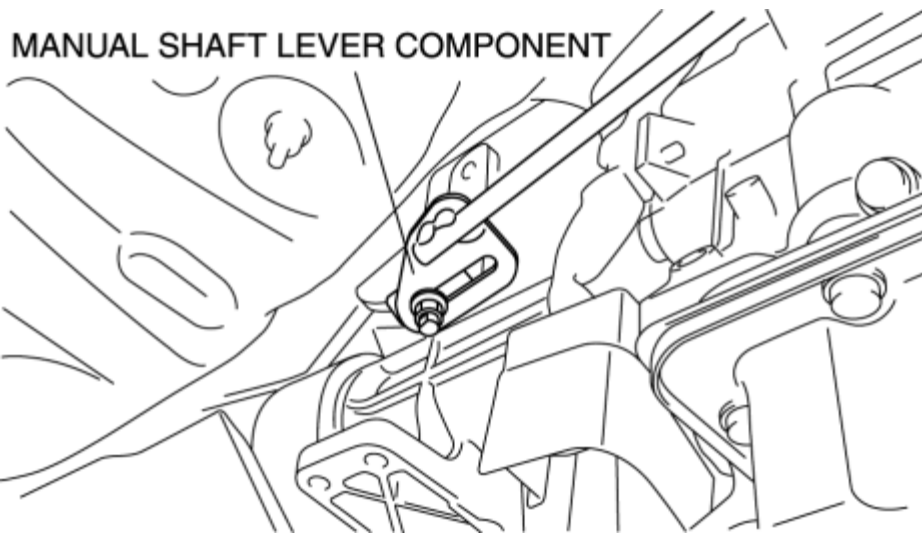


14. Install the VSS.

Tightening torque

- 3.9—6.9 N·m {40—70 kgf·cm, 35—60 in·lbf}

15. Install the power plant frame. (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\].](#))
16. Connect the VSS connector.
17. Align the mark of the manual shaft lever component as shown in the figure.



18. Install the manual shaft lever component installation nut.

Tightening torque

- 10.8—14.7 N·m {1.1—1.4 kgf·m, 8.0—10.8 ft·lbf}

19. Install the insulator.

Tightening torque

- 8—11 N·m {82—112 kgf·cm, 72—97 in·lbf}

20. Install the catalytic converter. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)

21. Install the rear tunnel member.

22. Install the front tunnel member.

23. Connect the negative battery cable.

24. Install the battery cover.

25. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

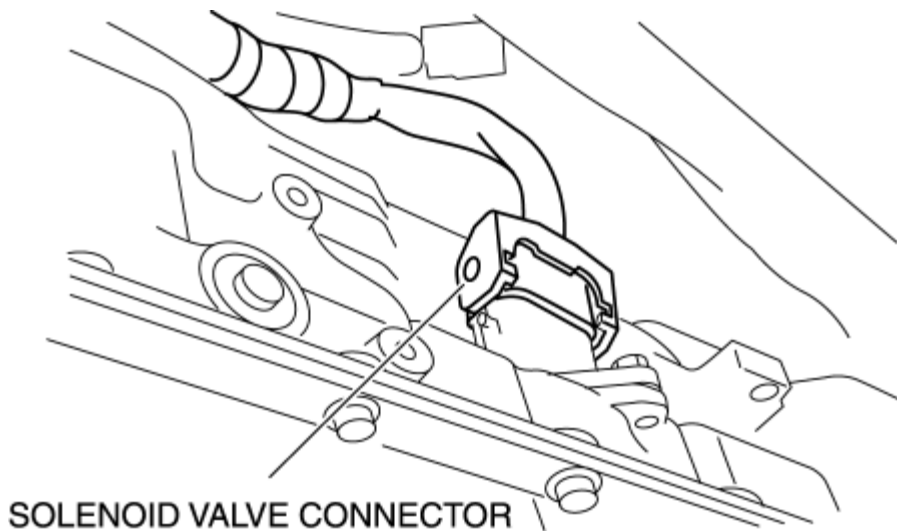
SOLENOID VALVE INSPECTION [SJ6A-EL]

CAUTION:

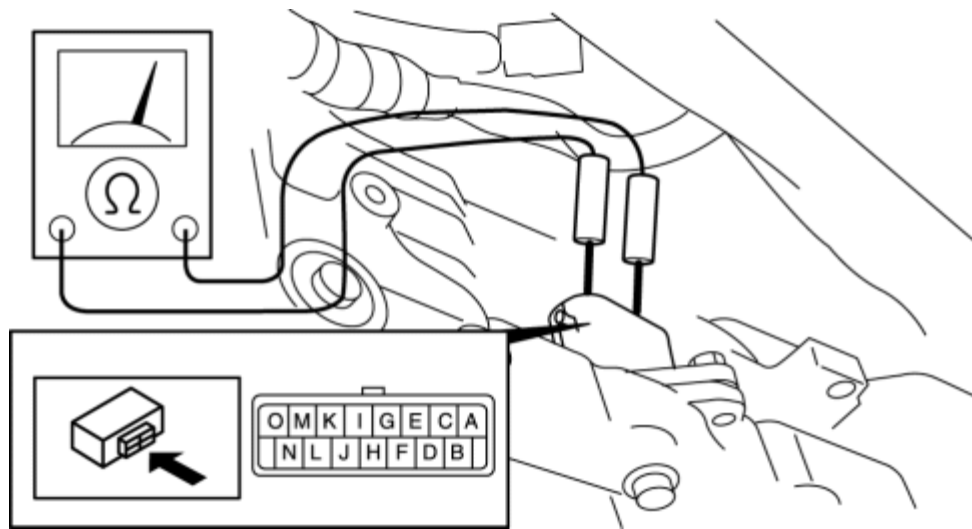
- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.
- Do not damage the terminals.

Resistance inspection (On-vehicle)

1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Disconnect the solenoid valve connector.



5. Measure the resistance between the following terminals.



- If there is any malfunction, inspect the coupler component.
- If the coupler component is normal, replace the control valve body. (See [CONTROL VALVE BODY REMOVAL \[SJ6A-EL\]](#).) (See [CONTROL VALVE BODY INSTALLATION \[SJ6A-EL\]](#).)

Solenoid valve resistance (ATF temperature: 20 °C {68 °F})

Terminals	Solenoid valve	Resistance (ohm)
O—GND	Shift solenoid A	11—15
N—GND	Shift solenoid B	11—15
M—GND	Shift solenoid C	11—15
L—GND	Shift solenoid D	11—15
K—GND	Shift solenoid E	11—15
E—F	Shift solenoid F	5.0—5.6
C—D	Shift solenoid G	5.0—5.6
I—J	Line pressure control solenoid	5.0—5.6
G—H	TCC control solenoid	5.0—5.6

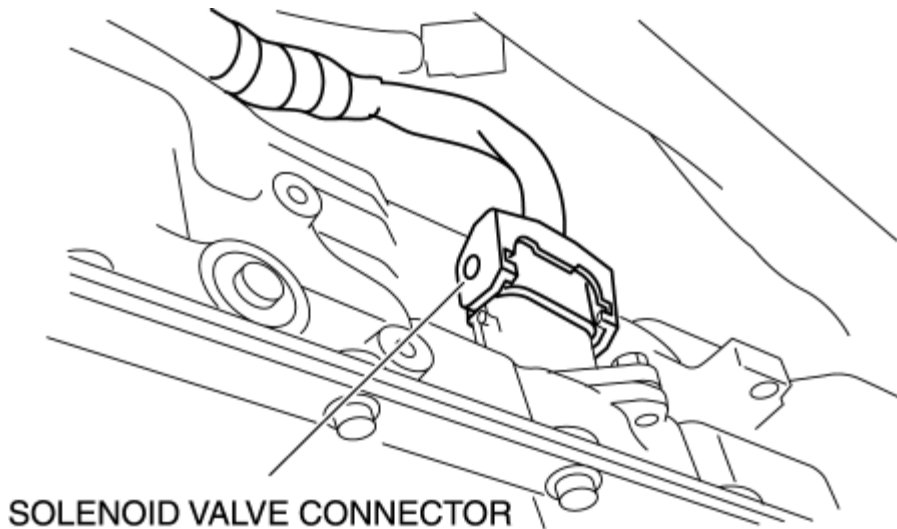
6. Connect the solenoid valve connector.

7. Connect the negative battery cable.
8. Install the battery cover.
9. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))

Continuity Inspection (On-Vehicle Inspection)

CAUTION:

- Water or foreign material entering the connector can cause a poor connection or corrosion. Be sure not to allow water or foreign material on the connector when disconnecting.
 - Do not damage the terminals.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
 2. Remove the battery cover.
 3. Disconnect the negative battery cable.
 4. Disconnect the solenoid valve connector.



5. Verify that there is no continuity between coupler component terminals C, D, E, F, G, H, I, J and GND.
 - If there is any malfunction, inspect the coupler component.
 - If the coupler component is normal, replace the control valve body. (See [CONTROL VALVE BODY REMOVAL \[SJ6A-EL\].](#)) (See [CONTROL VALVE BODY INSTALLATION \[SJ6A-EL\].](#))
6. Connect the solenoid valve connector.
7. Connect the negative battery cable.
8. Install the battery cover.
9. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

AUTOMATIC TRANSMISSION FLUID (ATF) LEVEL ADJUSTMENT [SJ6A-EL]

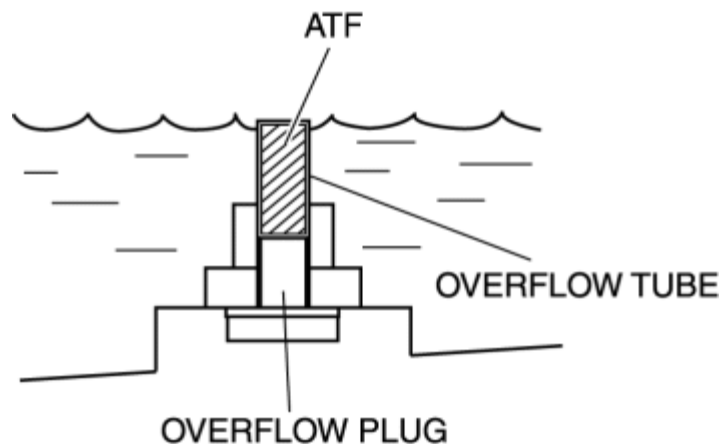
Automatic Transmission Fluid (ATF) Level Inspection

CAUTION:

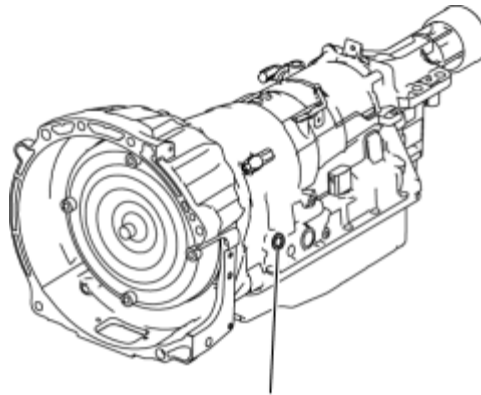
- The ATF level cannot be adjusted correctly if the ATF temperature is not within a normal range (39—54 °C {103—129 °F}). Always perform the servicing according to the adjustment procedure.
- Remaining ATF may drip from the overflow tube even when the ATF level is less than the specified value, therefore careful determination is required.

NOTE:

- An overflow-type SJ6A-EL automatic transmission has been adopted with an overflow tube installed to the oil pan for inspection of the ATF level. Therefore, no dipstick has been equipped.



1. Lift up the vehicle.
2. Remove the filler plug and O-ring.



FILLER PLUG HOLE

NOTE:

- Do not mistake the overflow plug for the drain plug.
3. Remove the overflow plug and the overflow plug gasket.
 4. Fill with ATF from the filler plug hole until it starts flowing off from the overflow orifice.

ATF type

- Mazda Genuine JWS3309

Supplemental ATF amount (approx. quantity)

Service	Supplemental ATF amount
Procedure including ATF draining <ul style="list-style-type: none"> • Transmission replacement • Torque converter replacement • Oil cooler replacement • Control valve body replacement • TFT sensor replacement 	Fill ATF to the specified amount (approx. quantity: 8.0 L {8.5 US qt, 7.0 Imp qt})
Procedure without ATF draining <ul style="list-style-type: none"> • Oil seal (extension housing) replacement • Fixing oil leakage or stains 	Add small amount of ATF

NOTE:

- Replace the O-ring if it has malfunction.
5. Coat a new O-ring with ATF, and install it to the filler plug.

Tightening torque

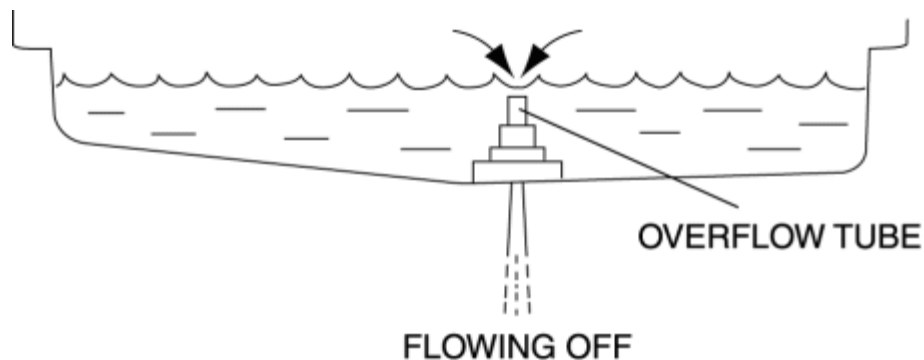
- 23.5—54.9 N·m {2.4—5.5 kgf·m, 17.4—40.4 ft·lbf}
6. Temporarily tighten the overflow plug.
7. Start the engine and warm it up by idling to increase the ATF temperature.

NOTE:

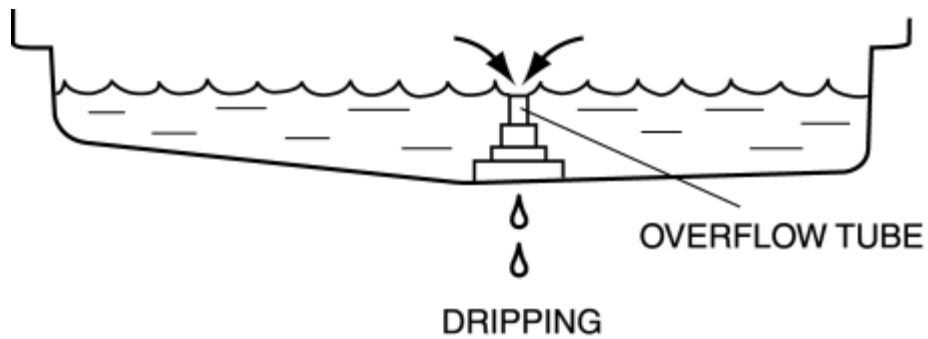
- Perform the following procedure quickly, otherwise, the ATF temperature will exceed the proper range.
8. Shift to all ranges, from the P position to the D range, taking **2 s or more** for each position or range, then after repeating the procedure two times, shift to the P position again.

CAUTION:

- Do not shift from the N position when the AT warning light is illuminated.
9. Verify that the ATF temperature is in the proper range (**39—54 °C {103—129 °F}**). (See [Using the M-MDS](#).) (See [Using the AT warning light](#).)
10. Remove the overflow plug and inspect whether the ATF is flowing off from the overflow orifice with the transmission in park and engine idling.

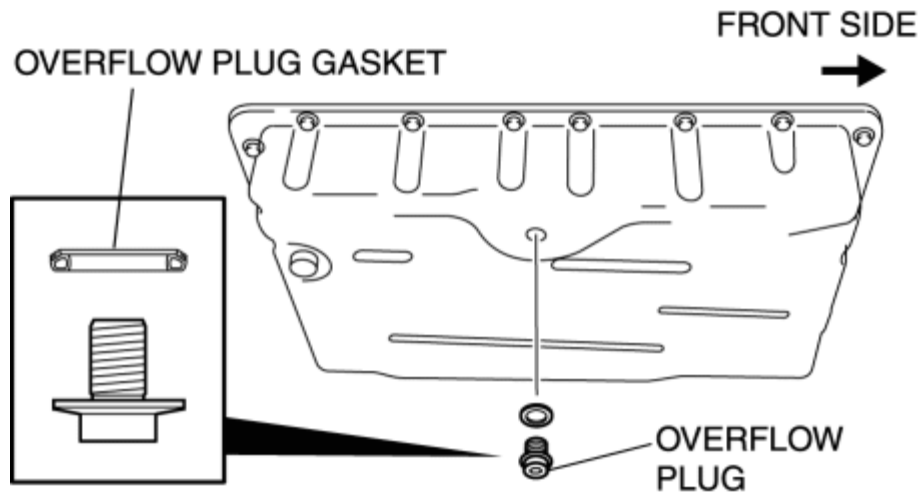


- If there is no ATF flowing, install the overflow plug after the engine is stopped, refill with ATF from the filler plug hole, and repeat the procedure from Step 7.
11. Wait until the ATF starts dripping from the overflow plug.



CAUTION:

- Be sure to install the overflow plug gasket in the correct direction as shown in the figure



12. If ATF dripping is verified, install a new overflow plug gasket and overflow plug.

Tightening torque

- 17.5—22.5 N·m {1.8—2.2 kgf·m, 13.0—16.5 ft·lbf}

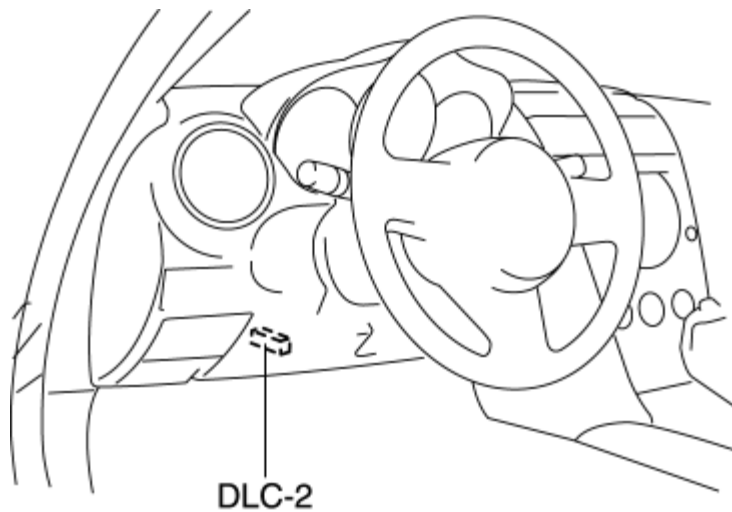
13. Wipe off any ATF drips after tightening the overflow plug.

14. Lower the vehicle.

ATF Temperature Verification

Using the M-MDS

1. Connect the M-MDS to the vehicle DLC-2.

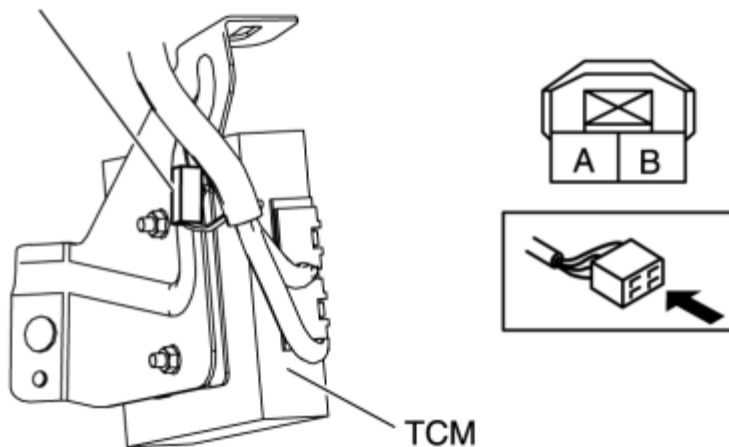


2. Verify the ATF temperature using the PID/data monitor "TFT".
3. Warm up the automatic transmission until the ATF temperature is **39–54 °C {103–129 °F}**.

Using the AT warning light

1. Short the TFT check connector terminal A and B of the TCM.

TFT CHECK CONNECTOR



2. Perform the following operations to activate the control for the oil level adjustment.
 - Continue the shifting operation from N to D, D to N **within 1.5 s** until the AT warning light illuminates.

NOTE:

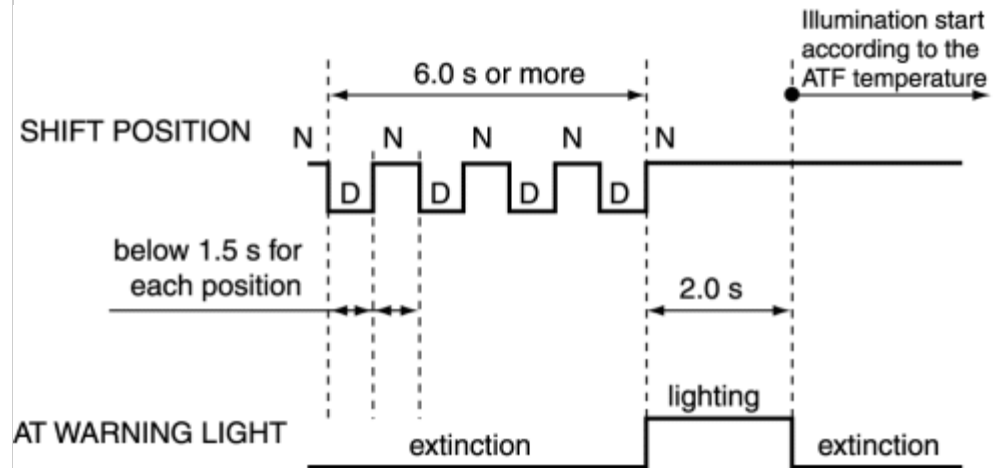
- When adjusting the ATF level, refer to the following chart and verify the specified ATF temperature (**39–54 °C {103–129 °F}**).

AT warning light illumination chart for ATF level adjustment

ATF condition	Time chart
---------------	------------

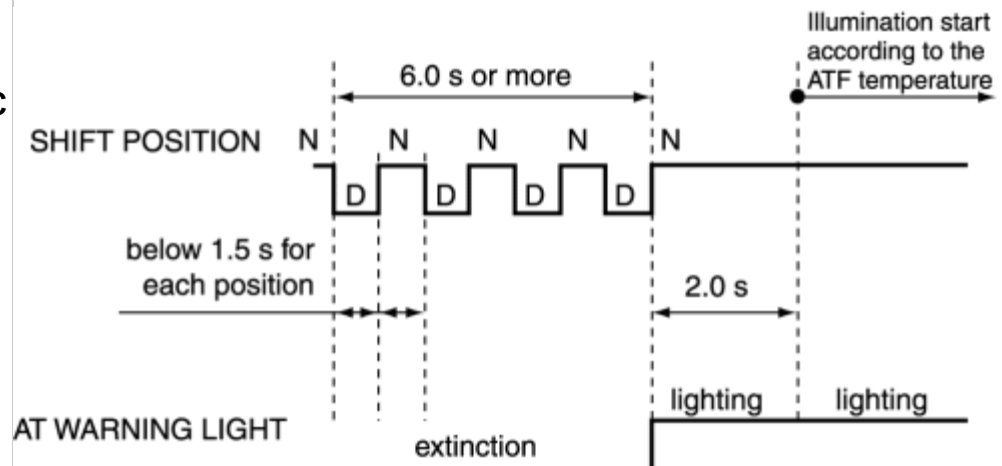
ATF Temperature **below 39 °C {103 °F}**

- ATF temperature is lower than a ATF level adjustable temperature.



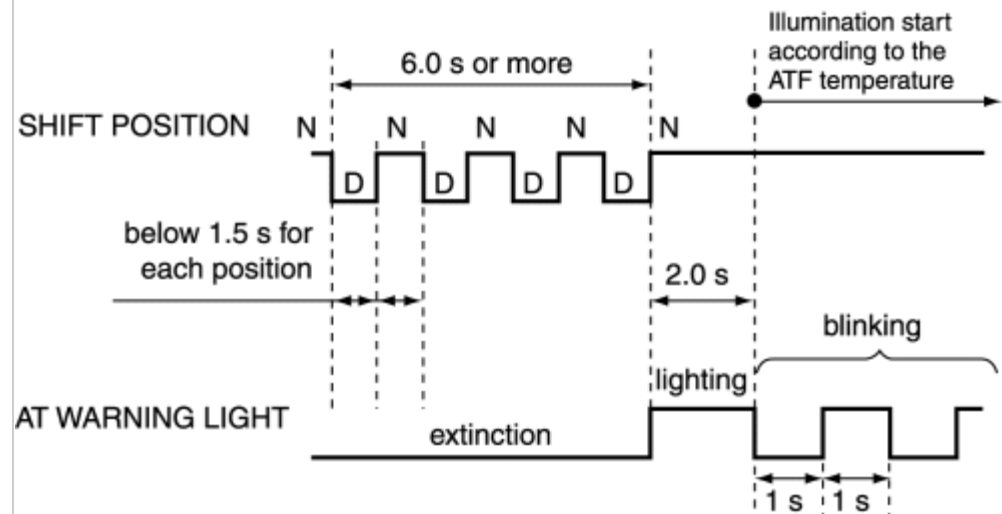
ATF Temperature **39—54 °C {103—129 °F}**

- ATF temperature is same a ATF level adjustable temperature.



ATF Temperature **above 54 °C {129 °F}**

- ATF temperature is higher than a ATF level adjustable temperature.



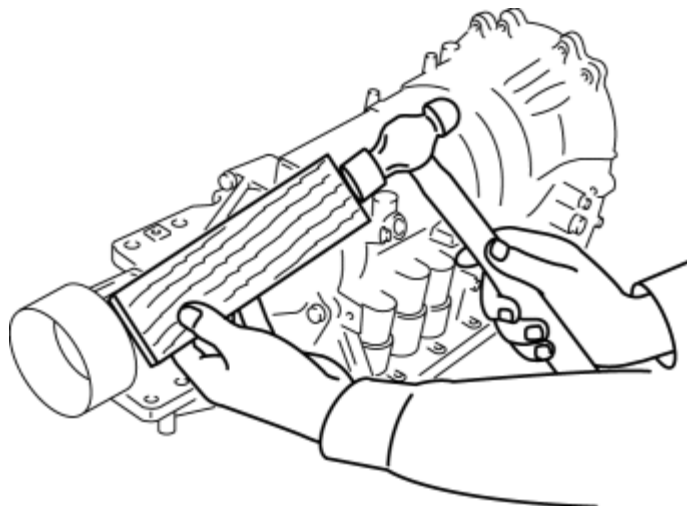
2011 - RX-8 - Transmission/Transaxle

OIL SEAL (EXTENSION HOUSING) REPLACEMENT [SJ6A-EL]

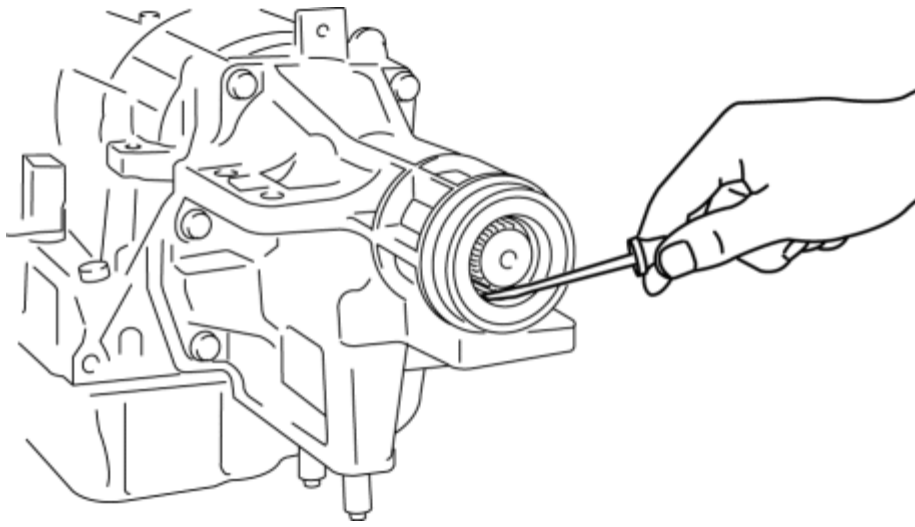
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Clean the transmission exterior thoroughly using a steam cleaner or cleaning solvent.
5. Remove the following parts.
 - a. Front tunnel member
 - b. Rear tunnel member
 - c. Catalytic converter (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))
 - d. Power plant frame
 - e. Propeller shaft (See [PROPELLER SHAFT REMOVAL/INSTALLATION.](#))

CAUTION:

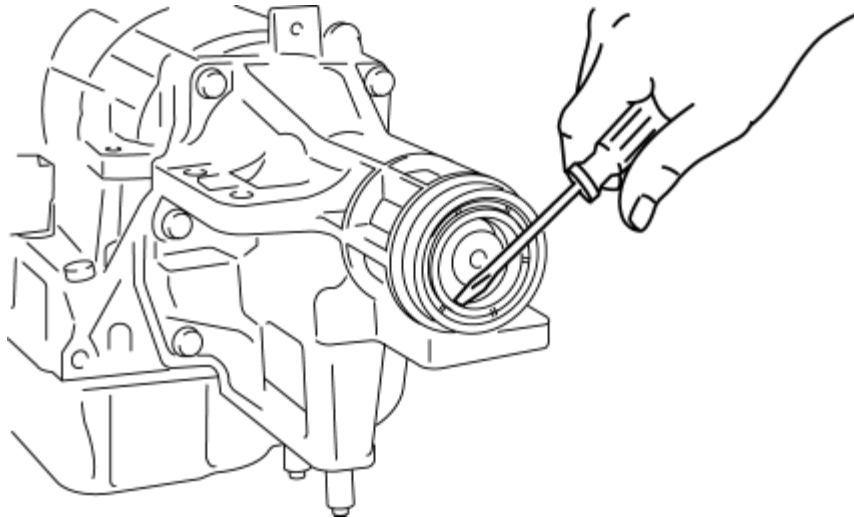
- Do not to damage the extension dust deflector.
 - Do not to damage the extension housing.
6. Using a plastic hammer and slab of wood, tap the extension dust deflector to remove it.



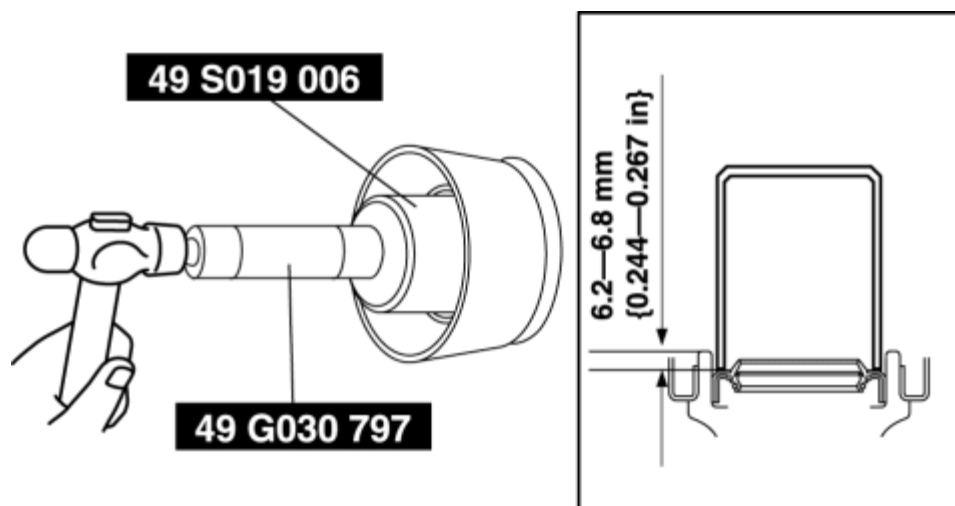
7. Using a tape-wrapped flathead screwdriver, remove the extension housing shroud.



8. Using a tape-wrapped flathead screwdriver, remove the oil seal.

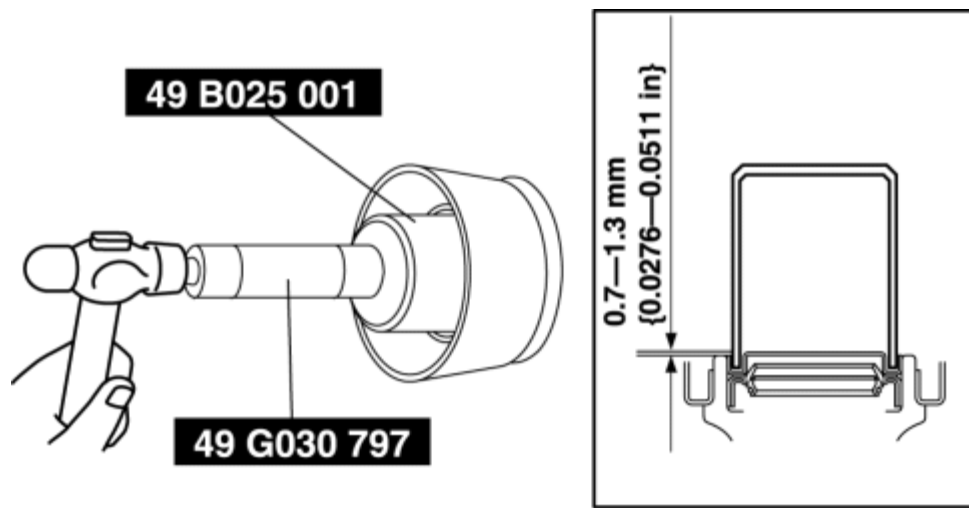


9. Using the **SST** and a hammer, install the new oil seal to the extension housing.

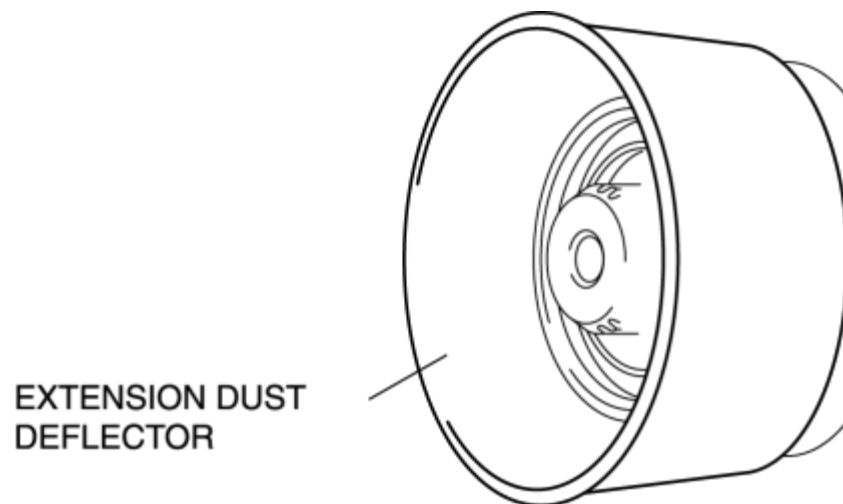


10. Coat the oil seal lip with grease.

11. Using the **SST** and a hammer, install the new extension housing shroud to the extension housing.



12. Using a hammer and slab of wood, install the extension dust deflector to the extension housing.



13. Install the following parts.

- Propeller shaft (See [PROPELLER SHAFT REMOVAL/INSTALLATION](#).)
- Power plant frame
- Catalytic converter (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- Rear tunnel member
- Front tunnel member

14. Inspect the ATF level. (See [AUTOMATIC TRANSMISSION FLUID \(ATF\) INSPECTION \[SJ6A-EL\]](#).)

15. Connect the negative battery cable.

16. Install the battery cover.

17. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)

2011 - RX-8 - Transmission/Transaxle

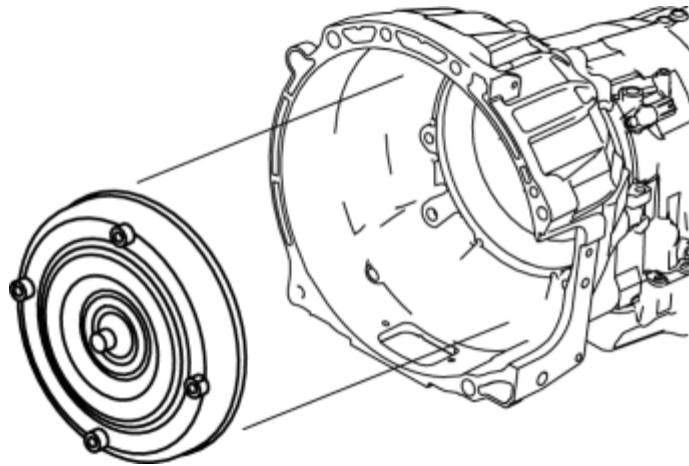
TORQUE CONVERTER REMOVAL/INSTALLATION [SJ6A-EL]

1. Remove the transmission. (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)

CAUTION:

- The oil seal is easily damaged by the sharp edges of the torque converter splines. Do not let the splines contact the oil seal.
- Do not drop the torque converter.
- Do not pinch fingers.

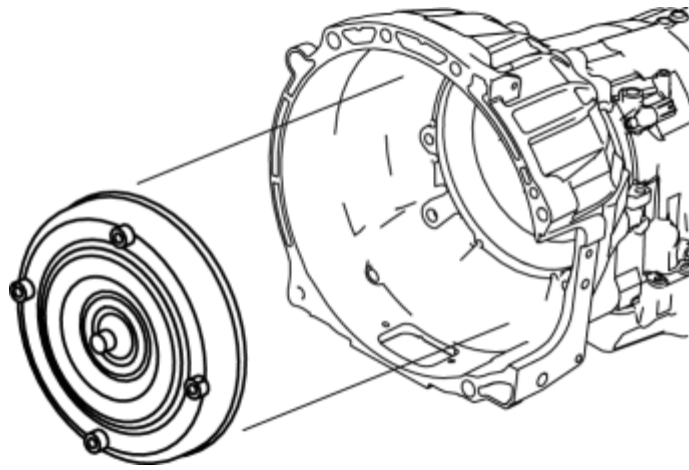
2. Remove the torque converter, and immediately turn it so that the hole faces upward. This will help to keep any remaining ATF from spilling.



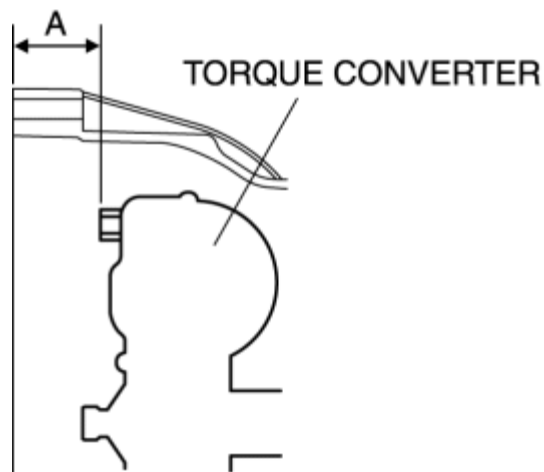
3. Drain any ATF remaining in the torque converter.

4. Using a flathead screwdriver, position the drive gear on the oil pump component in the center.

5. Install the torque converter to the transmission.



6. To ensure that the torque converter is installed accurately, measure distance A between the end of the torque converter and the end of the converter housing.



Distance A between end of torque converter and face of converter housing

- 38.6 mm {1.52 in}

7. Install the automatic transmission. (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)

8. Perform the mechanical system test. (See [MECHANICAL SYSTEM TEST \[SJ6A-EL\]](#).)

[< Previous](#) [Next >](#)

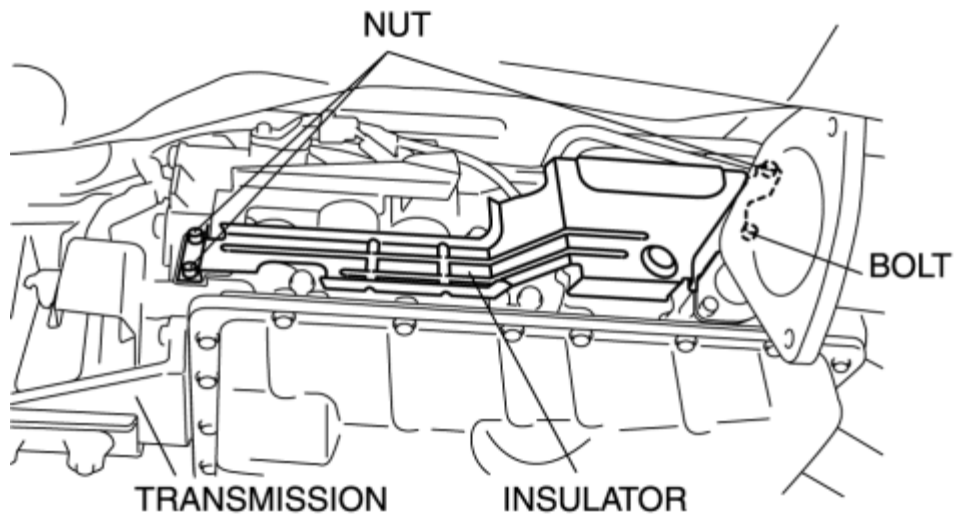
[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

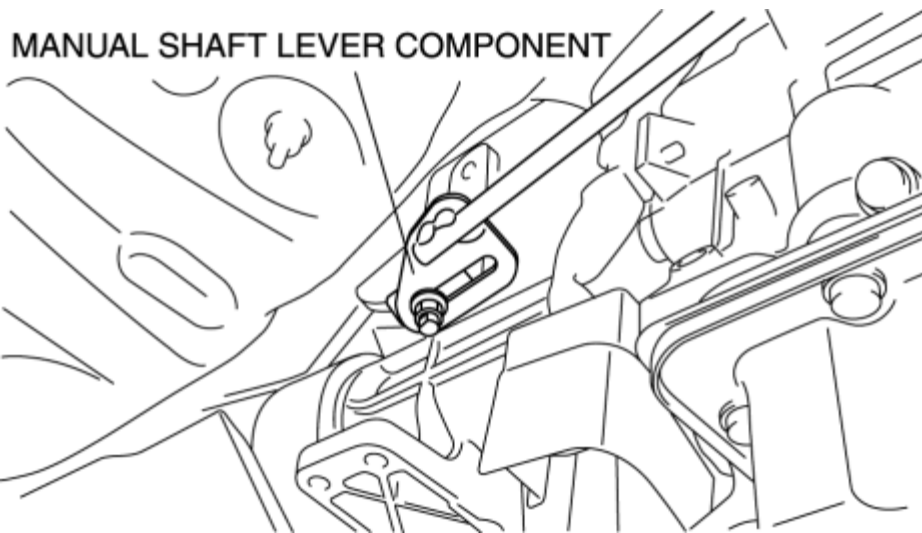
TRANSMISSION RANGE (TR) SWITCH REMOVAL/INSTALLATION [SJ6A-EL]

CAUTION:

- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Remove the battery cover.
 3. Disconnect the negative battery cable.
 4. Remove the front tunnel member.
 5. Remove the rear tunnel member.
 6. Remove the catalytic converter. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 7. Remove the insulator.

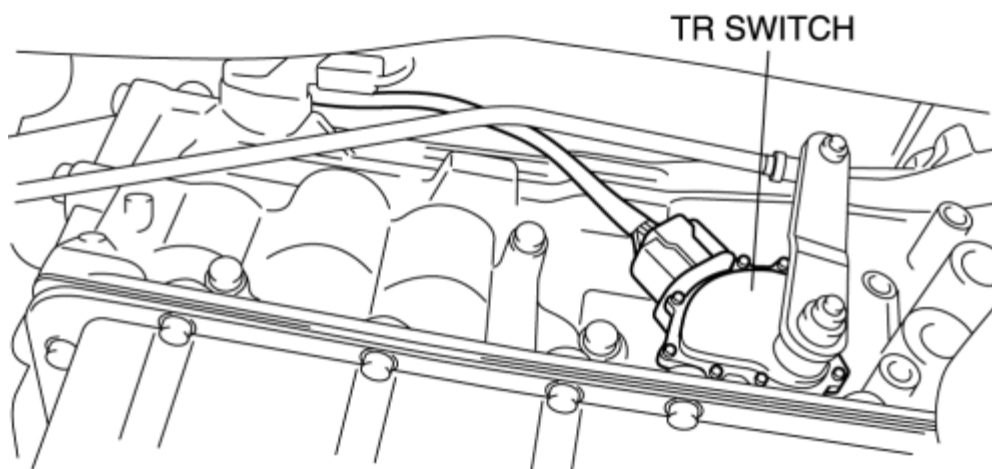


8. Mark the manual shaft lever component as shown in the figure.



9. Separate the manual shaft lever component from selector lever.

10. Disconnect the TR switch connector.

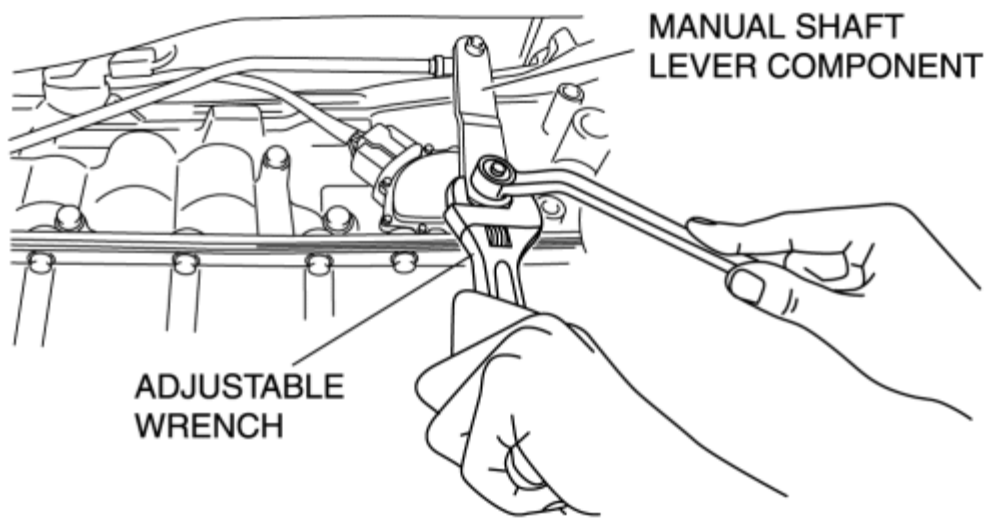


11. Rotate the manual shaft to the N position.

CAUTION:

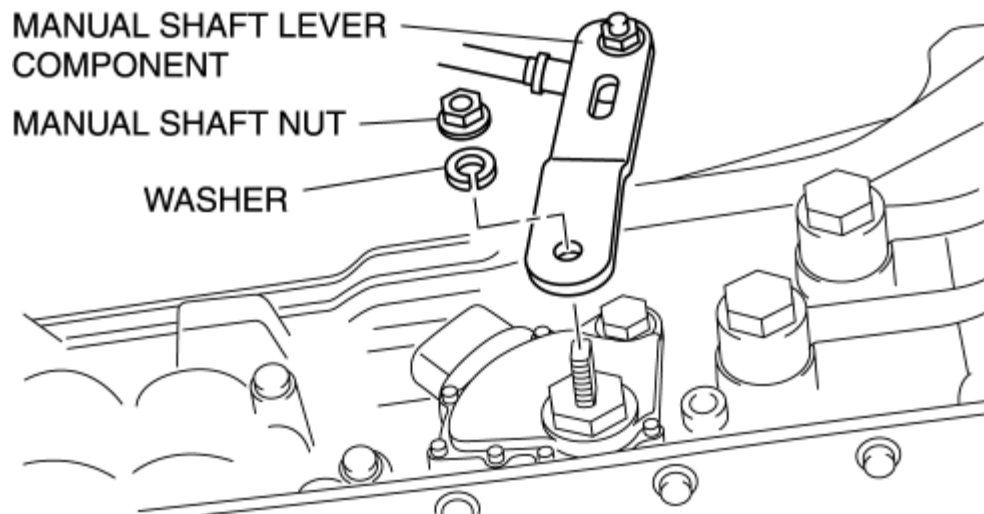
- Do not use an impact wrench. Hold the manual shaft lever when removing the manual shaft nut, otherwise the transmission may be damaged.

12. Set the adjustable wrench as shown in the figure to hold the manual shaft lever.

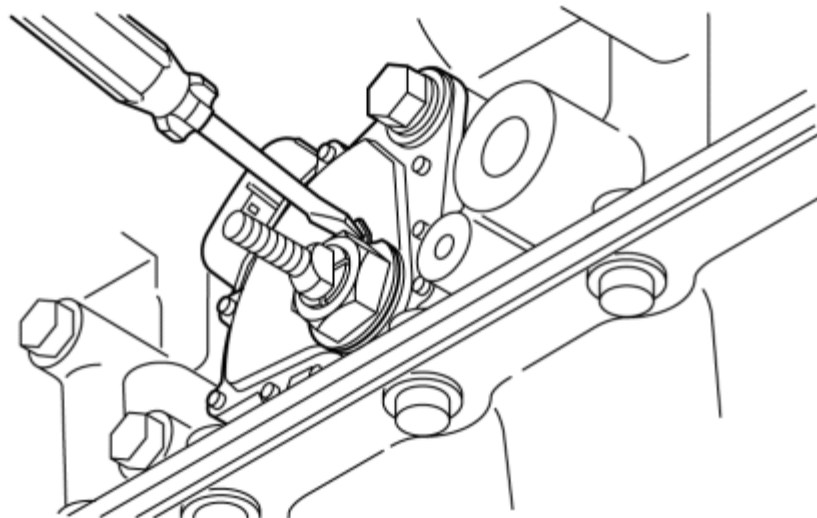


13. Remove the manual shaft nut.

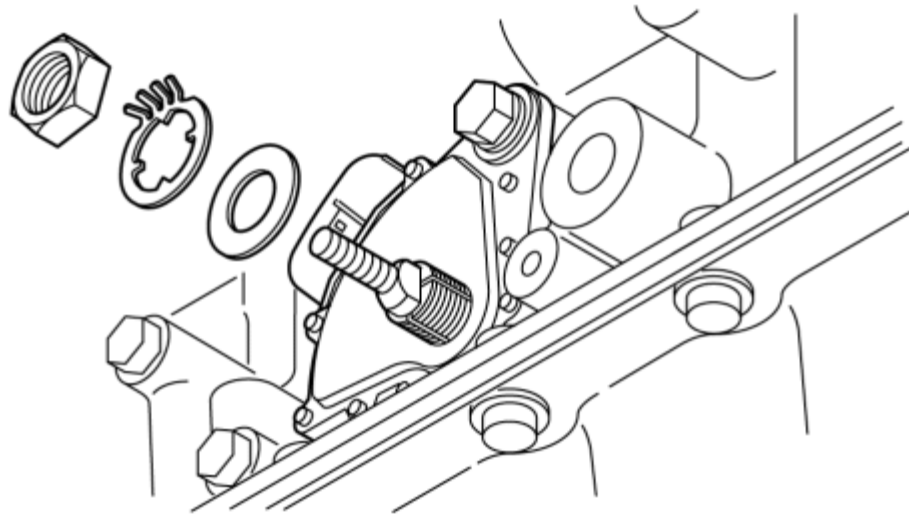
14. Remove the washer and manual shaft lever component.



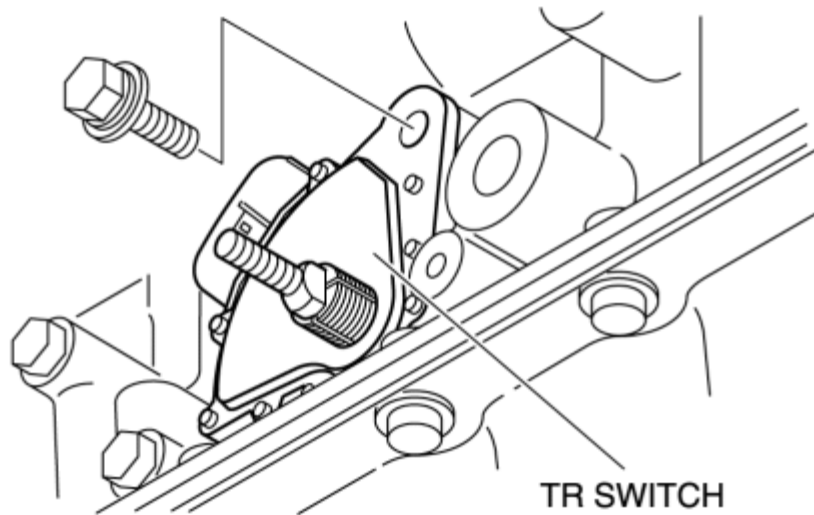
15. Pry off the lock washer using a flathead screwdriver.



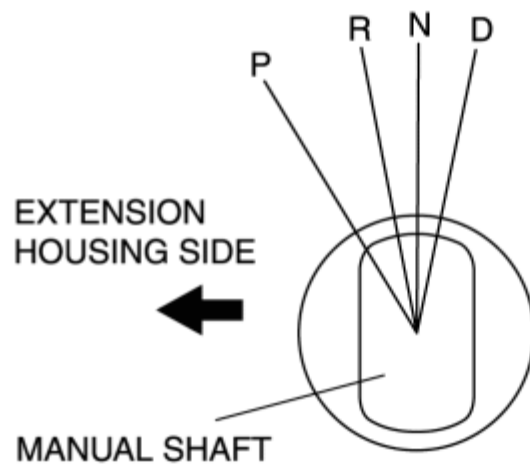
16. Remove the nut, lock washer and the washer.



17. Remove the TR switch.



18. Rotate the manual shaft to the extension housing side fully and return two notches to set the N position.

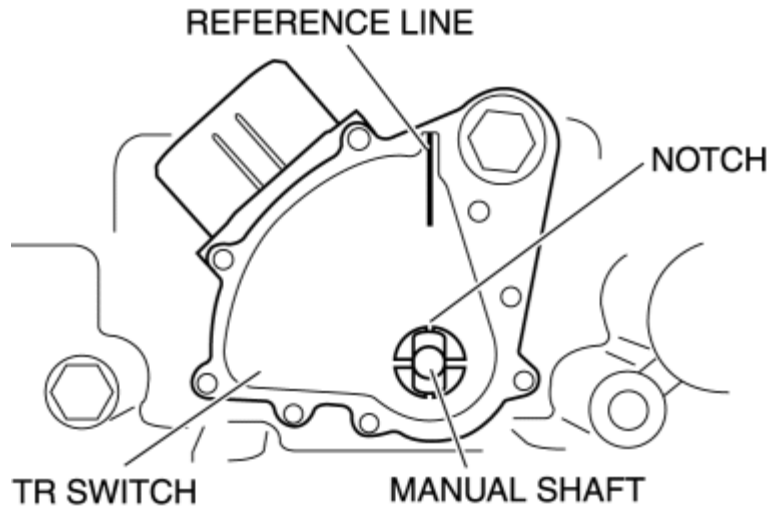


19. Install the TR switch and hand-tighten the new mounting bolts.

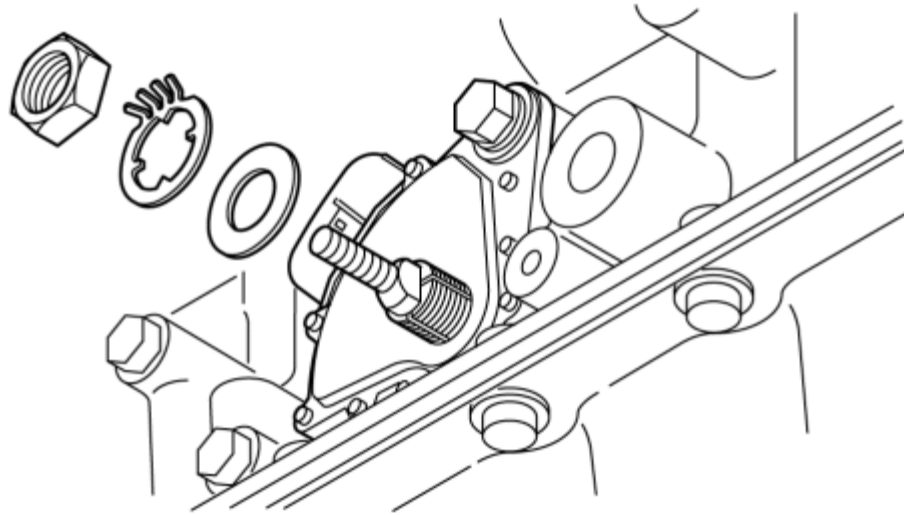
CAUTION:

- Improper adjustment of the TR switch will cause abnormal operation of the automatic transmission. Be sure to adjust the TR switch correctly.

20. Verify the TR switch reference line and the notch of the manual shaft are aligned.

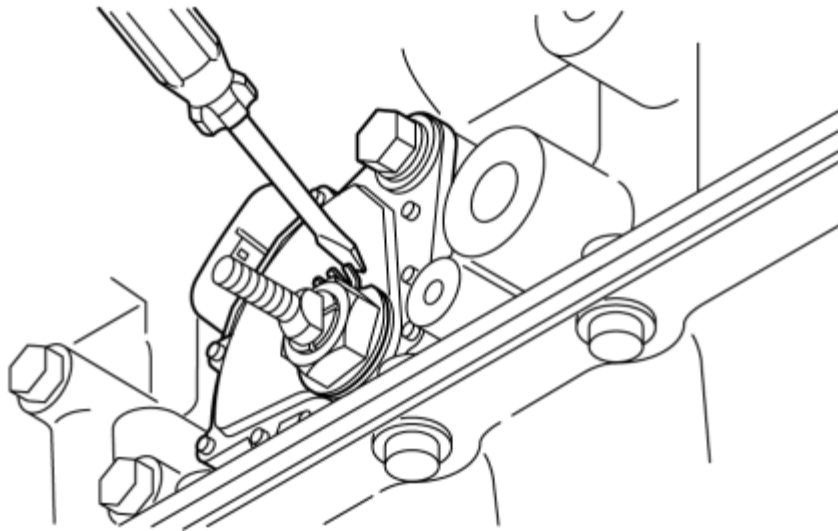


21. Install the washer and the lock washer with the nut.

**Tightening torque**

- 5.9—7.8 N·m {61—79 kgf·cm, 53—68 in·lbf}

22. Stake the lock washer using a flathead screwdriver.

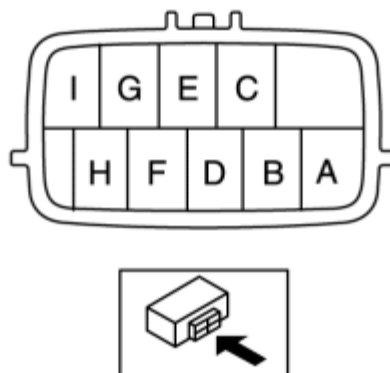


23. Tighten the TR switch mounting bolts.

Tightening torque

- 9.8—15.7 N·m {100—160 kgf·cm, 87—138 in·lbf}

24. Inspect for continuity between TR switch terminals E and H.

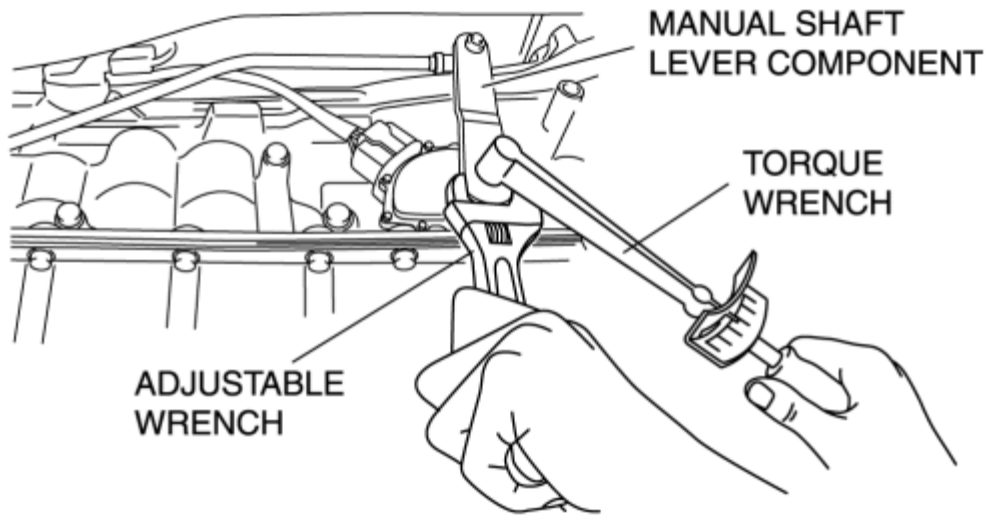


25. Install the manual shaft lever component and washer.

CAUTION:

- Do not use an impact wrench. Hold the manual shaft lever when tightening the manual shaft nut, otherwise the transmission may be damaged.

26. Set the adjustable wrench as shown in the figure to hold the manual shaft lever.



27. Tighten the manual shaft nut using a torque wrench.

Tightening torque

- 13.7—17.6 N·m {1.4—1.8 kgf·m, 11—13 ft·lbf}

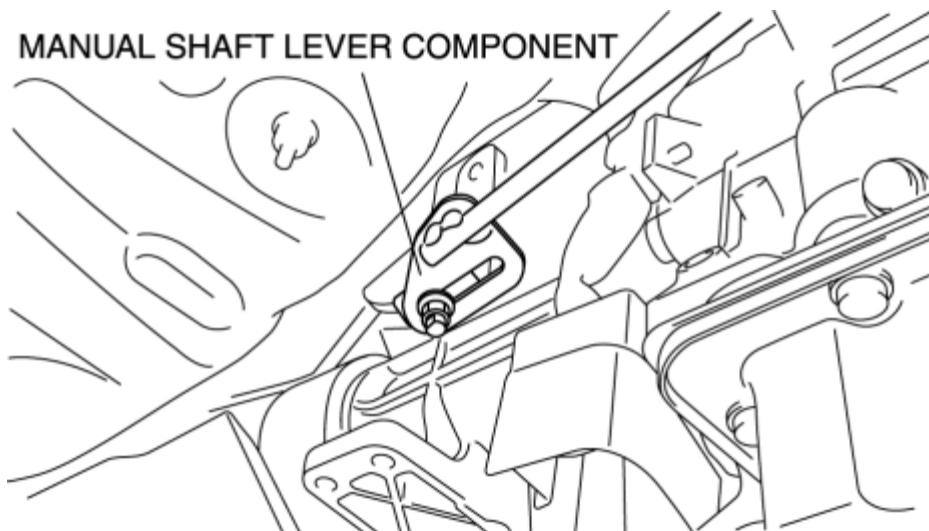
28. Shift the selector lever to the P position.

29. Turn the manual shaft lever to the P position.

30. Inspect TR switch continuity. (See [TRANSMISSION RANGE \(TR\) SWITCH INSPECTION \[SJ6A-EL\]](#).)

31. Connect the TR switch connector.

32. Align the mark of the manual shaft lever component as shown in the figure.



33. Install the manual shaft lever component installation nut.

Tightening torque

- 10.8—14.7 N·m {1.1—1.4 kgf·m, 8.0—10.8 ft·lbf}

34. Install the insulator.

Tightening torque

- 8—11 N·m {82—112 kgf·cm, 72—97 in·lbf}

35. Install the catalytic converter. (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)

36. Install the rear tunnel member.

37. Install the front tunnel member.

38. Connect the negative battery cable.

39. Install the battery cover.

40. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)

41. Inspect TR switch operation. (See [TRANSMISSION RANGE \(TR\) SWITCH INSPECTION \[SJ6A-EL\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Transmission/Transaxle

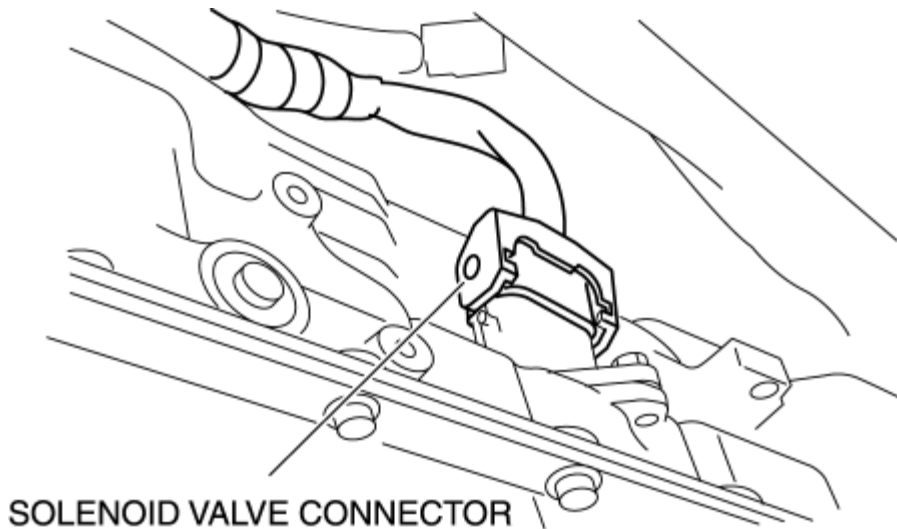
TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR INSPECTION [SJ6A-EL]

CAUTION:

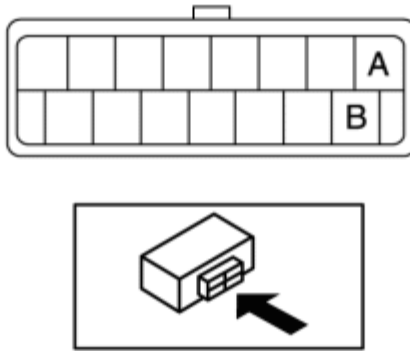
- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.

On-Vehicle Inspection

1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Disconnect the solenoid valve connector.



5. Measure resistance between the terminals A and B.



- If there is any malfunction, perform the off-vehicle inspection for TFT sensor. (See [Off-Vehicle Inspection](#).)

Transmission fluid temperature (TFT) sensor

ATF temperature (°C {°F})	Resistance (kilohm)
10 {50}	Approx. 6.445
25 {77}	Approx. 3.500
110 {230}	Approx. 0.247

6. Connect the solenoid valve connector.
7. Connect the negative battery cable.
8. Install the battery cover.
9. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)

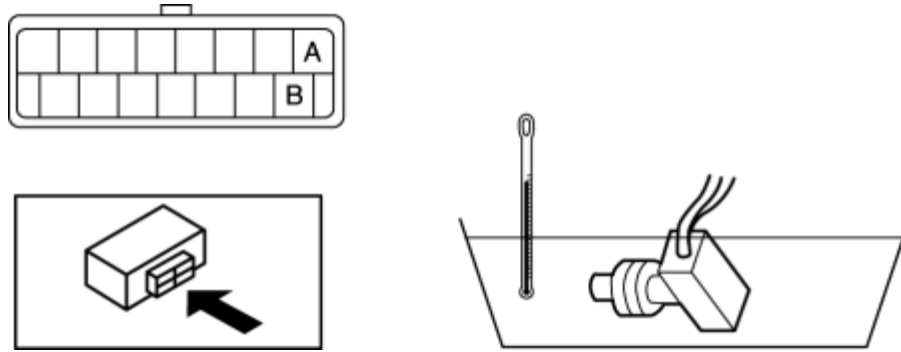
Off-Vehicle Inspection

WARNING:

- A hot the transmission and ATF can cause severe burns. Turn off the engine and wait until they are cool before replacing ATF.
1. Remove the TFT sensor. (See [TRANSMISSION FLUID TEMPERATURE \(TFT\) SENSOR REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)
 2. Place the TFT sensor and a thermometer in ATF as shown in the figure, and heat the ATF

gradually.

3. Measure the resistance between the TFT sensor terminals.



- If there is any malfunction, replace the TFT sensor. (See [TRANSMISSION FLUID TEMPERATURE \(TFT\) SENSOR REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)

Transmission fluid temperature (TFT) sensor

ATF temperature (°C {°F})	Resistance (kilohm)
10 {50}	Approx. 6.445
25 {77}	Approx. 3.500
110 {230}	Approx. 0.247

4. Install the TFT sensor. (See [TRANSMISSION FLUID TEMPERATURE \(TFT\) SENSOR REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

TRANSMISSION FLUID TEMPERATURE (TFT) SENSOR REMOVAL/INSTALLATION [SJ6A-EL]

WARNING:

- A hot transmission and ATF can cause severe burns. Turn off the engine and wait until they are cool before replacing ATF.

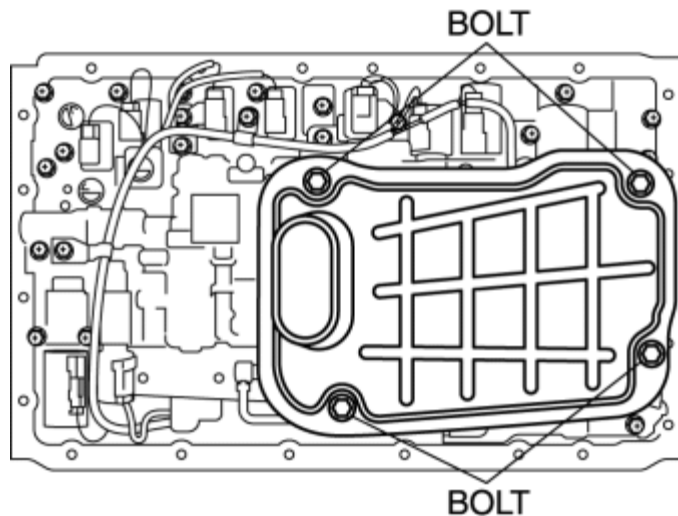
CAUTION:

- Water or foreign material entering the connector can cause poor connections or corrosion. Be sure that water or foreign material do not enter the connector when disconnecting it.

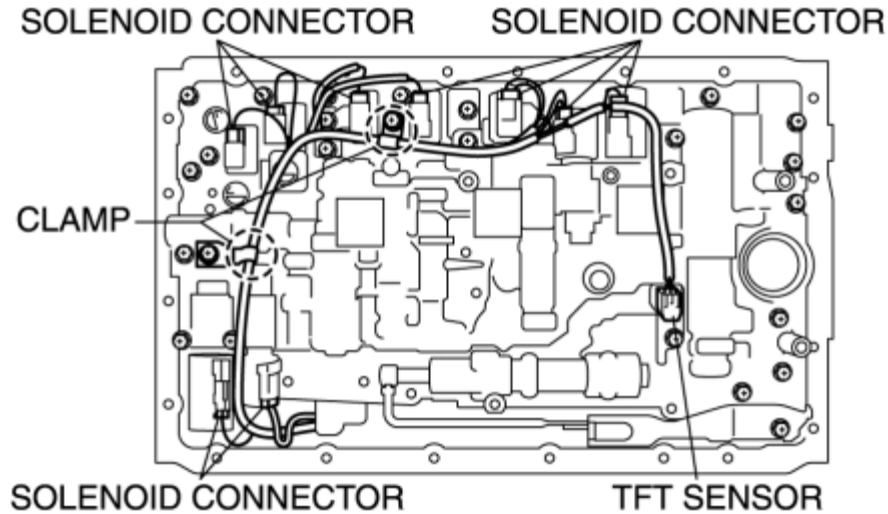
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Drain the ATF. (See [AUTOMATIC TRANSMISSION FLUID \(ATF\) REPLACEMENT \[SJ6A-EL\].](#))

CAUTION:

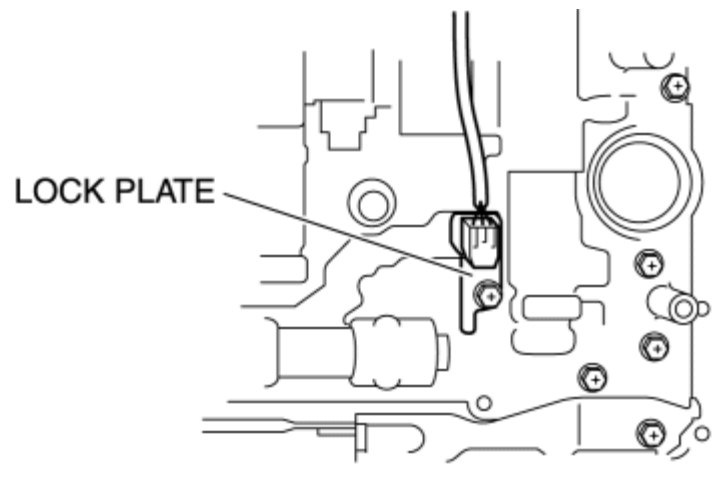
- Do not damage the fitting surface of the transmission case and the oil pan.
 - Do not deform the oil pan.
5. Remove the oil pan and gasket.
 6. Remove the oil strainer from the control valve body component.



7. Remove the O-ring from the oil strainer.
8. Disconnect the solenoid connectors from the solenoids.



9. Disconnect the coupler component from the clamps.
10. Remove the lock plate from the control valve body component.

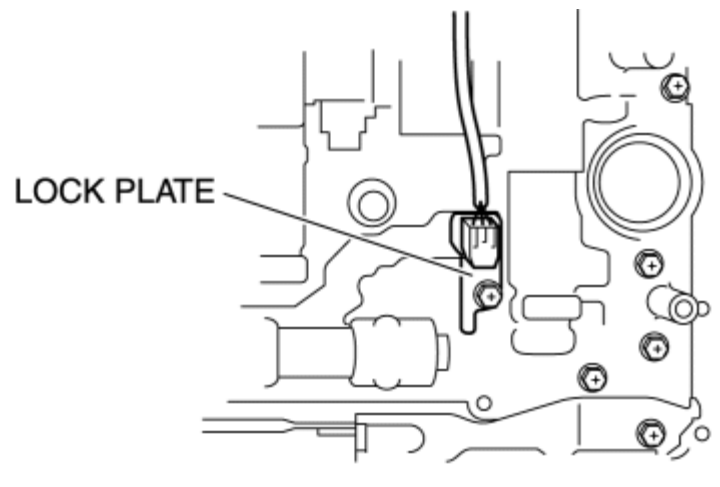


11. Pull the TFT sensor from the control valve body component.
12. Remove the coupler component mounting bolt from the transmission case.
13. Remove the coupler component from the transmission case.
14. Remove the O-ring from the coupler component.
15. Install a new O-ring to the coupler component.
16. Tighten the coupler component mounting bolt to the transmission case.

Tightening torque

- 3.9—6.9 N·m {40—49 kgf·cm, 35—42 in·lbf}

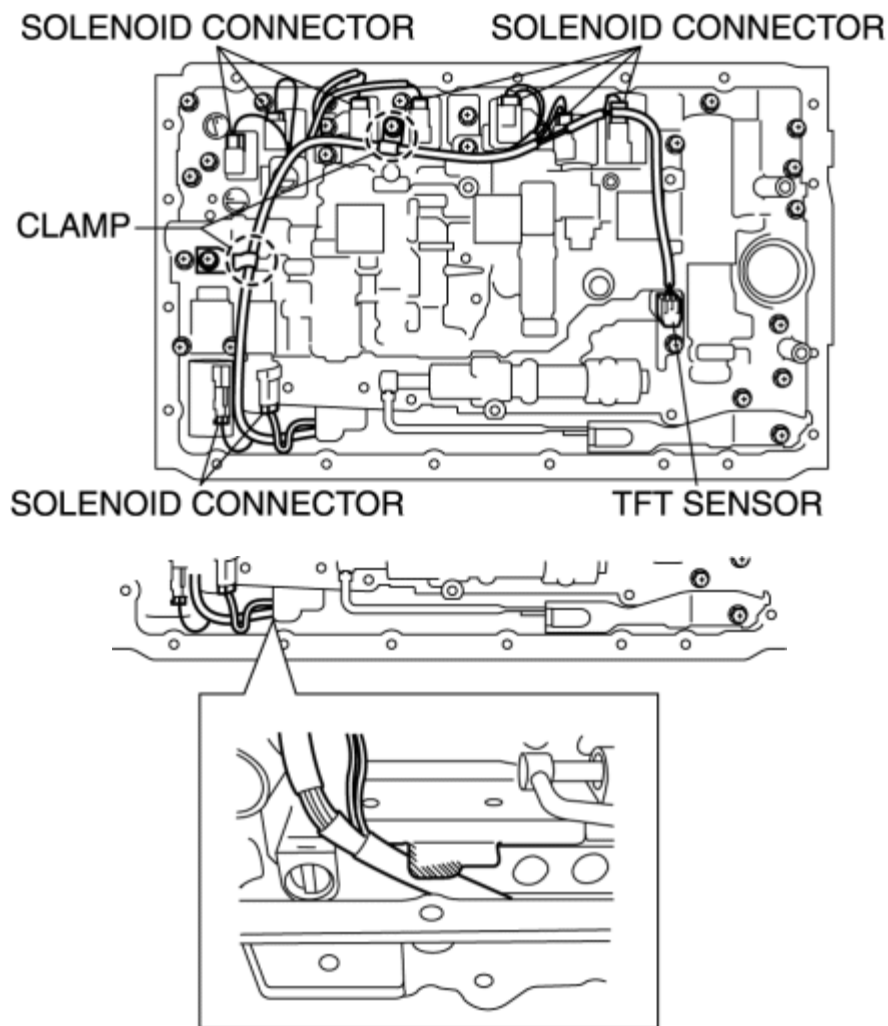
17. Install the TFT sensor and the lock plate with the bolt to the control valve body component.



Tightening torque

- 8.0—12.0 N·m {82—122 kgf·cm, 26—42 in·lbf}

18. Connect the coupler component to the clamps.



19. Connect the solenoid connectors to the solenoids.

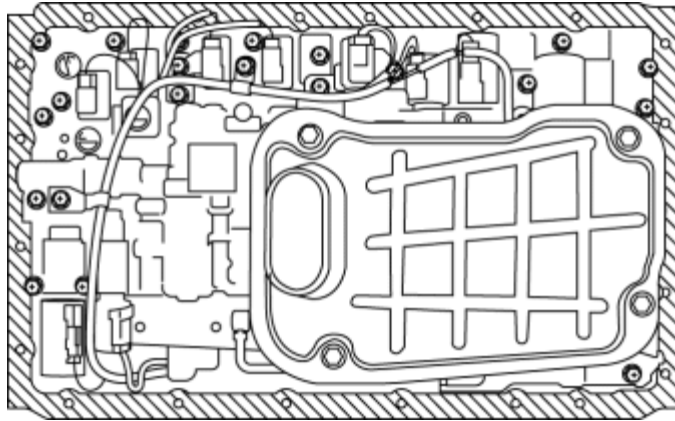
20. Coat a new O-ring with ATF and install it to the oil strainer.

21. Install the oil strainer with the bolts to the control valve body component.

CAUTION:

- Pay attention to the fabric so that foreign materials from it cannot come out in the transmission.

22. Clean the contact surface of oil pan and transmission case.

**CAUTION:**

- Do not damage the fitting surface of the transmission case and the oil pan.
- Do not deform the oil pan.

23. Install a new oil pan gasket and the oil pan to the transmission case.

CAUTION:

- Be reminded that bolts might be damaged if tightened too much since the gasket is cork-made and there is little tightening sense.

24. Tighten the oil pan installation bolt.

Tightening torque

- 6.0—7.9 N·m {62—80 kgf·cm, 54—69 in·lbf}

25. Connect the negative battery cable.

26. Install the battery cover.

27. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)

28. Add ATF and, with the engine idling, inspect the ATF level and inspect for leakage. (See [AUTOMATIC TRANSMISSION FLUID \(ATF\) REPLACEMENT \[SJ6A-EL\]](#).) (See [AUTOMATIC TRANSMISSION FLUID \(ATF\) INSPECTION \[SJ6A-EL\]](#).)

2011 - RX-8 - Transmission/Transaxle

OIL SEAL (OIL PUMP) REPLACEMENT [SJ6A-EL]

1. Remove the automatic transmission. (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)

CAUTION:

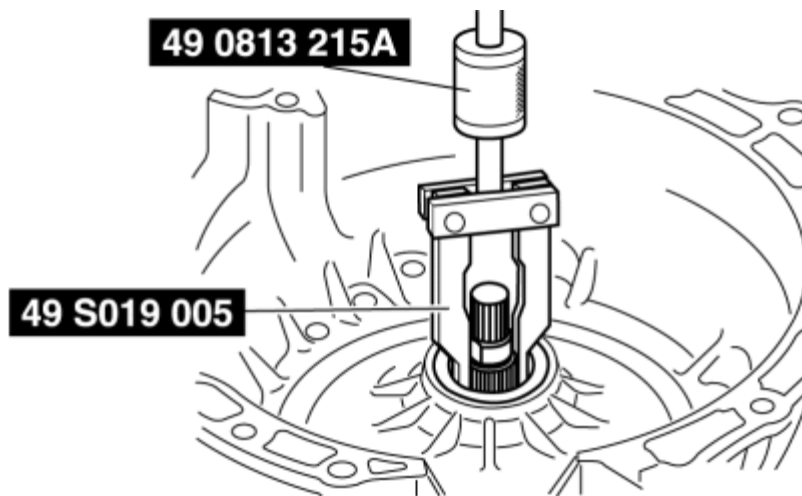
- The oil seal is easily damaged by the sharp edges of the torque converter splines. Do not let the splines contact the oil seal.
- Do not drop the torque converter.
- Do not pinch fingers.

2. Remove the torque converter. (See [TORQUE CONVERTER REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)

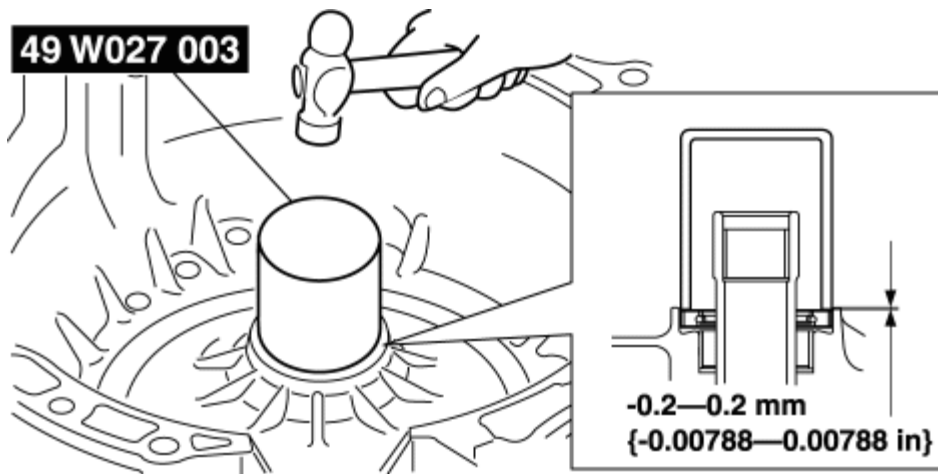
CAUTION:

- Do not to damage the bushing on the oil pump body.

3. Remove the oil seal from the oil pump body using the **SST**.



4. Using the **SST** and a hammer, install the new oil seal to the oil pump body.



5. Coat the lip of the oil seal with grease.
6. Install the torque converter. (See [TORQUE CONVERTER REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)
7. Install the automatic transmission. (See [AUTOMATIC TRANSMISSION REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)
8. Perform the mechanical system test. (See [MECHANICAL SYSTEM TEST \[SJ6A-EL\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Transmission/Transaxle

CONTROL VALVE BODY REMOVAL [SJ6A-EL]

On-Vehicle Removal

WARNING:

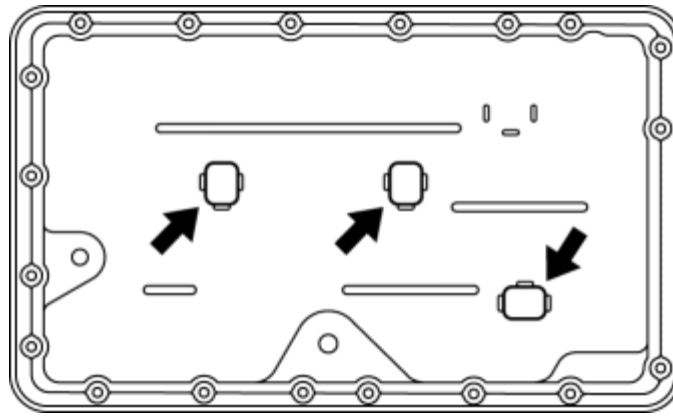
- A hot transmission and ATF can cause severe burns. Turn off the engine and wait until they are cool before replacing ATF.
- Using compressed air can cause dirt and other particles to fly out, causing injury to the eyes. Wear protective eye wear whenever using compressed air.

CAUTION:

- Clean the transmission exterior thoroughly with a stream cleaner or cleaning solvents before removal.
 - If any old sealant gets into the transmission during installation of the oil pan, trouble may occur in the transmission case and oil pan. Clean with cleaning fluids.
1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
 2. Remove the battery cover.
 3. Disconnect the negative battery cable.
 4. Drain the ATF. (See [AUTOMATIC TRANSMISSION FLUID \(ATF\) REPLACEMENT \[SJ6A-EL\].](#))

CAUTION:

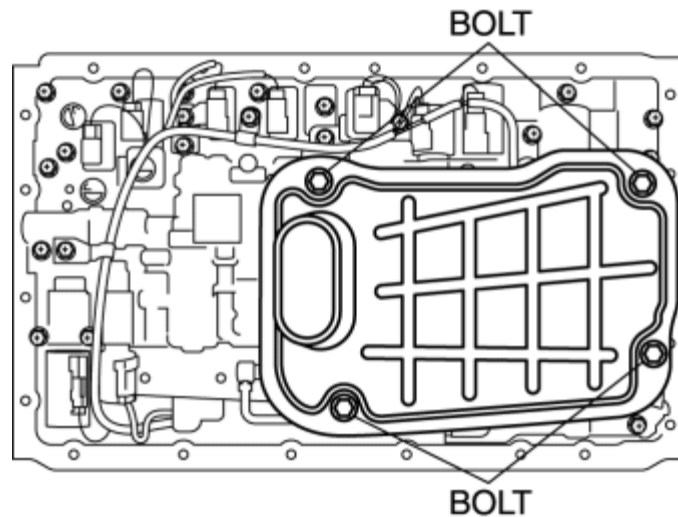
- Do not damage the fitting surface of the transmission case and the oil pan.
 - Do not to deform the oil pan.
5. Remove the oil pan and the oil pan gasket.
 6. Remove the magnets from the oil pan.



NOTE:

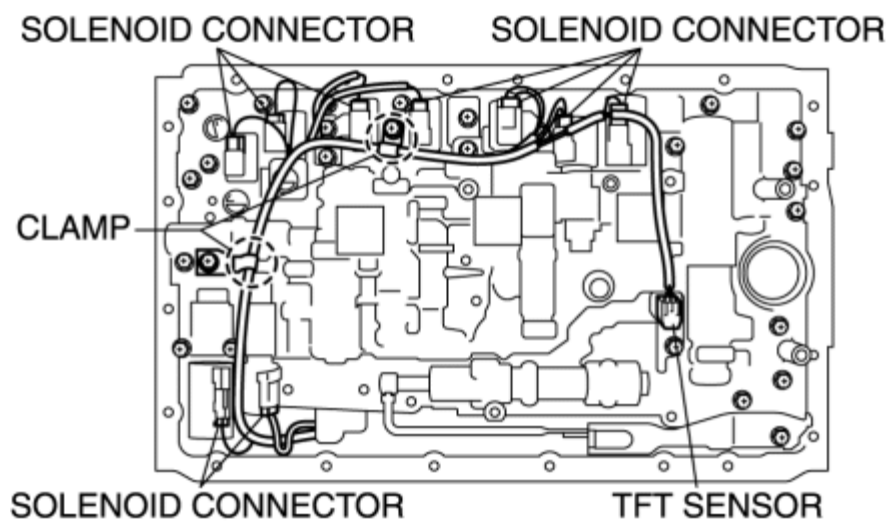
- Examine the chips and particles in the oil pan to determine what type of wear has occurred in the transmission. Steel (magnetic)= bearing, gear and plate wear. Brass (non-magnetic)= busing wear.

7. Remove the oil strainer from the control valve body component.

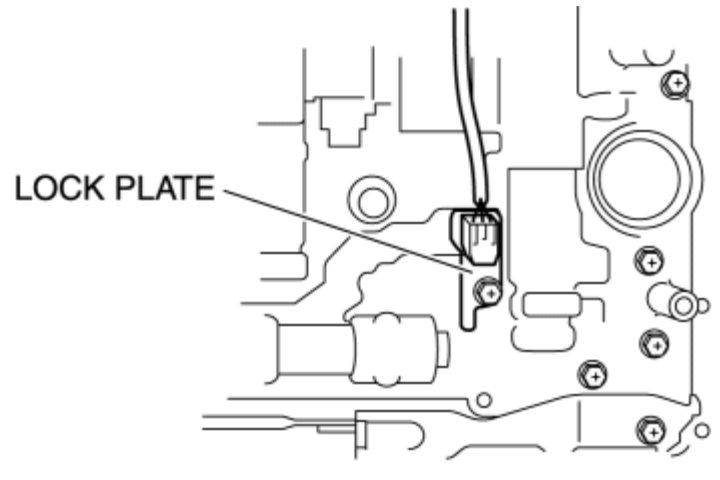


8. Remove the O-ring from the oil strainer.

9. Disconnect the solenoid connectors from the solenoids.



10. Disconnect the coupler component from the clamps.
11. Remove the lock plate from the control valve body component.

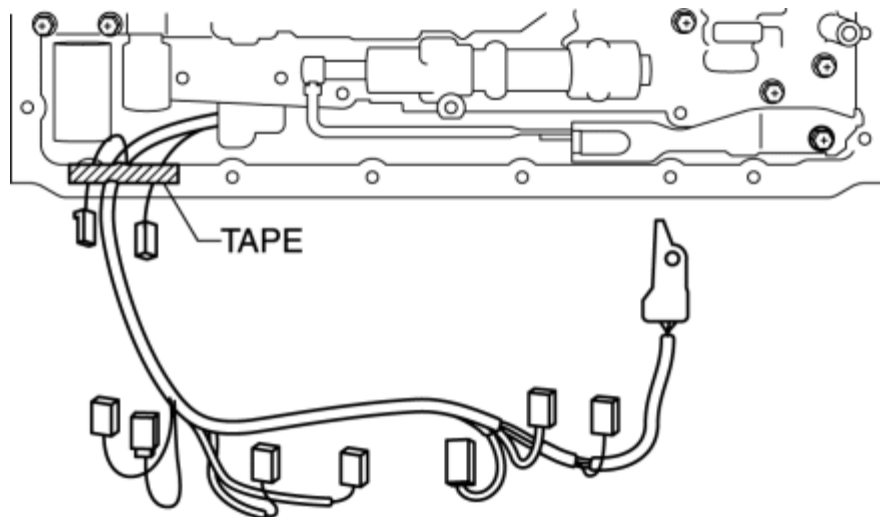


12. Pull the TFT sensor from the control valve body component.

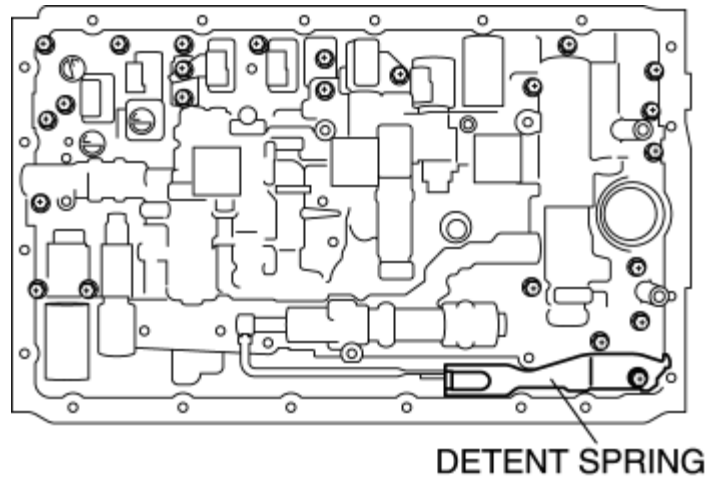
NOTE:

- Be sure that the coupler component does not interface with the control valve body component when installing.

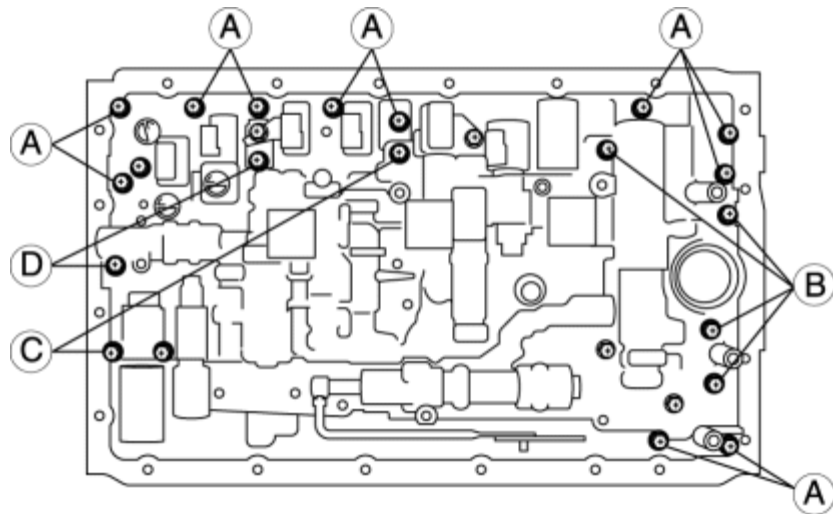
13. Fix the coupler component with tape to the transmission case as shown in the figure.



14. Remove the detent spring cover and detent spring from the control valve body component.



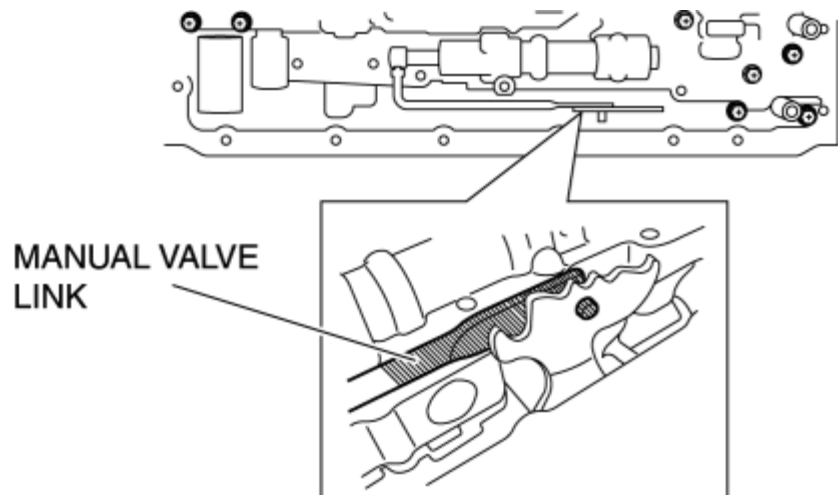
15. Remove the bolts from the transmission case as shown in the figure.



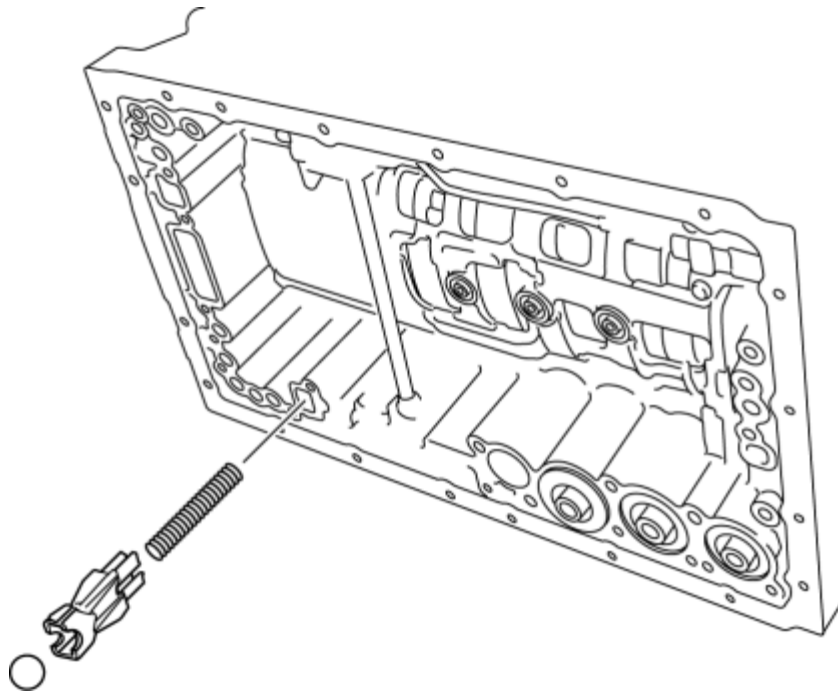
CAUTION:

- Do not to drop the control valve body component.

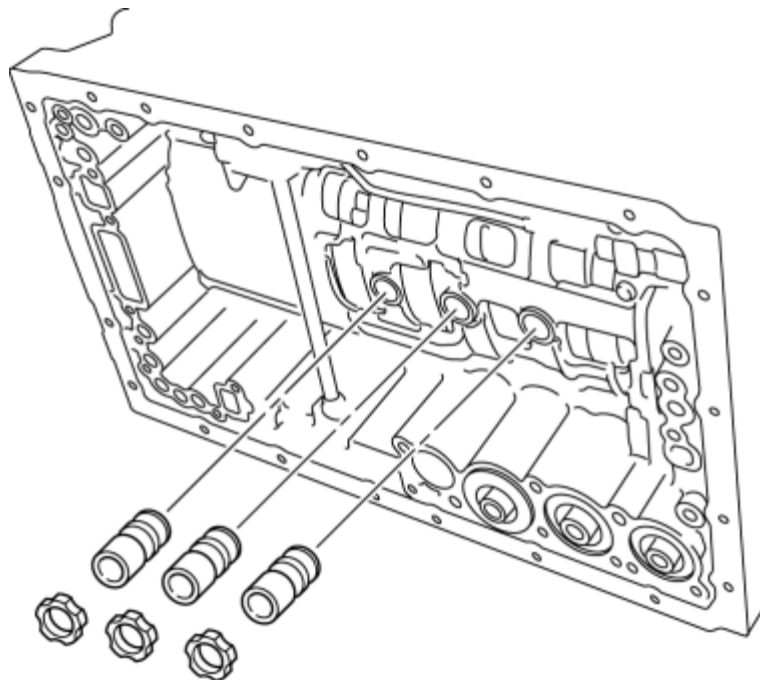
16. Disconnect the manual valve link and remove the control valve body component.



17. Remove the check valve sub-component and the compression spring from the transmission case.



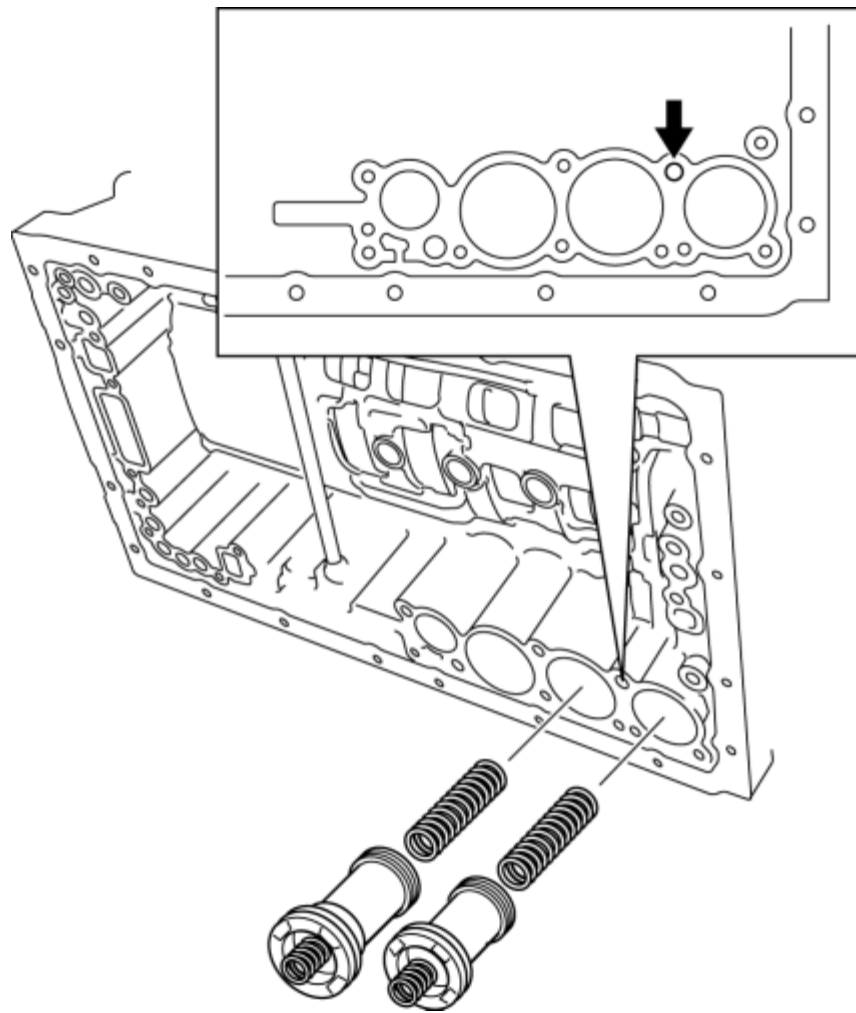
18. Remove the transmission case gaskets and the brake drum gaskets from the transmission case.



CAUTION:

- Take care as the C-2 and B-3 accumulator piston may eject.

19. Apply compressed air into the oil passage as shown in the figure and remove the accumulator pistons (C-2, B-3) and the compression springs from the transmission case.



CAUTION:

- Do not to damage the accumulator pistons.

20. Remove the snap rings from the accumulator pistons (C-2, B-3) using a flathead screwdriver.

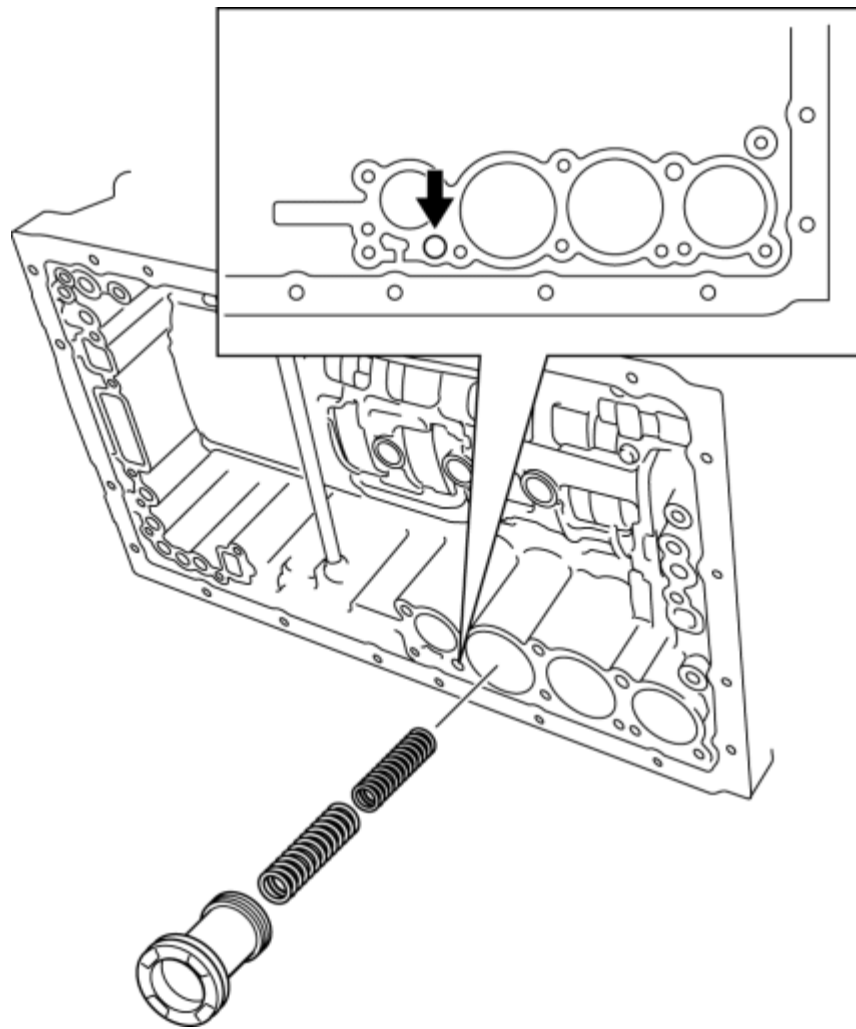
21. Remove the compression springs from the accumulator pistons (C-2, B-3).

22. Remove the O-rings from the accumulator pistons (C-2, B-3) using a flathead screwdriver.

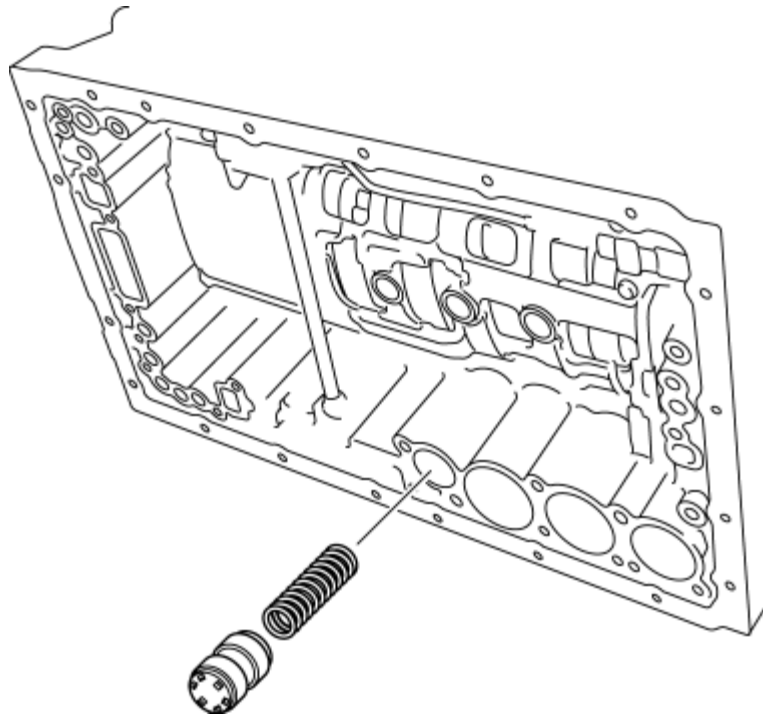
CAUTION:

- Take care as the C-3 accumulator piston may eject.

23. Apply compressed air into the oil passage as shown in the figure and remove the accumulator piston (C-3) and compression springs from the transmission case.



24. Remove the O-rings from the accumulator piston (C-3) using a flathead screwdriver.
25. Remove the accumulator valve and compression springs from the transmission case.



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

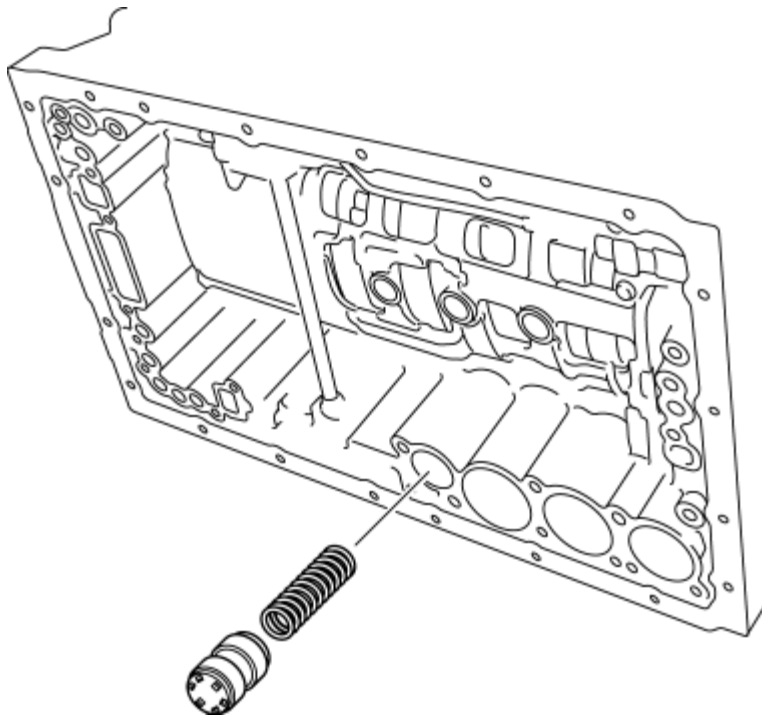
CONTROL VALVE BODY INSTALLATION [SJ6A-EL]

On-Vehicle Installation

CAUTION:

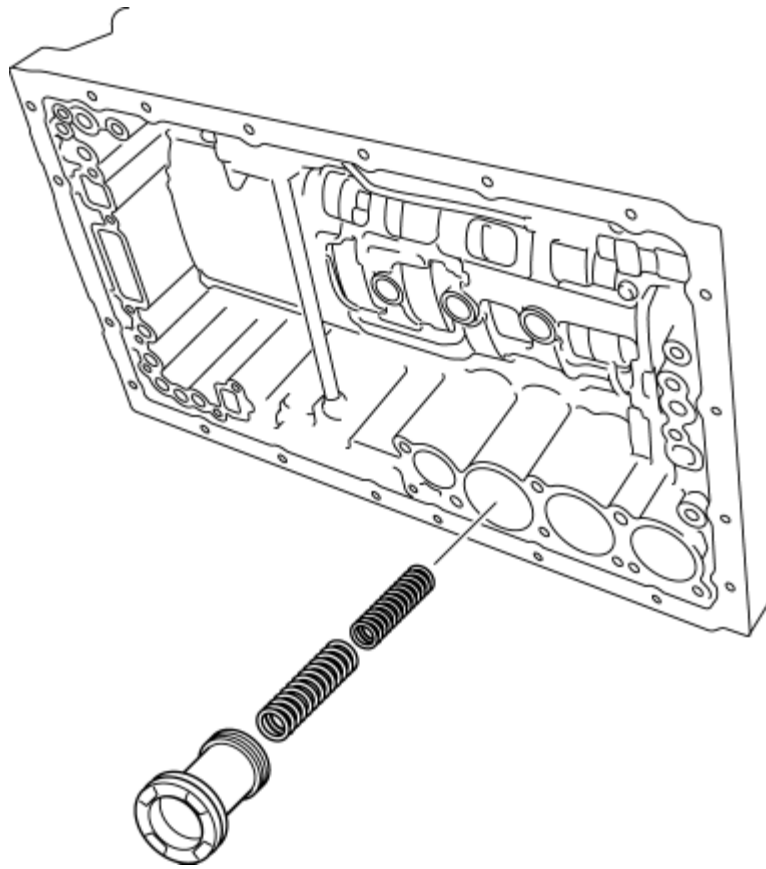
- When installing the control valve body component, do not put the coupler component in the open space of the separate plate in the control valve body component.
- Do not pinch the coupler component between the separate plate and the control valve body component.

1. Install the accumulator valve and compression springs to the transmission case.

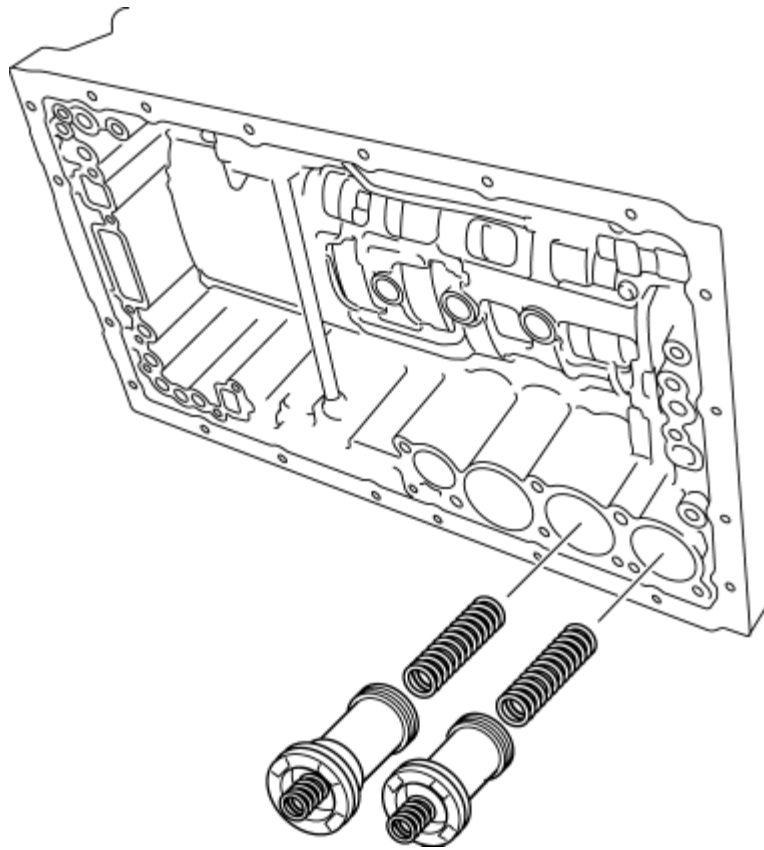


CAUTION:

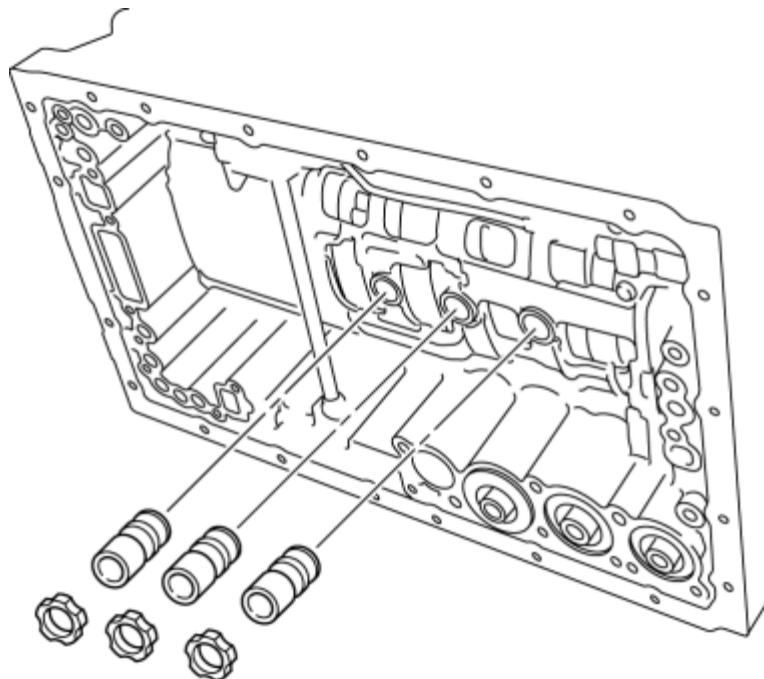
- Do not to damage the O-ring and accumulator piston.
2. Coat the new O-rings with ATF, and install it to the accumulator piston (C-3).
 3. Install the accumulator piston (C-3) and the compression spring to the transmission case.



4. Coat the new O-rings with ATF, and install it to the accumulator pistons (C-2, B-3).
5. Install the compression springs and the snap rings to the accumulator pistons (C-2, B-3) using a flathead screwdriver.
6. Install the accumulator pistons (C-2, B-3) and the compression springs to the transmission case.



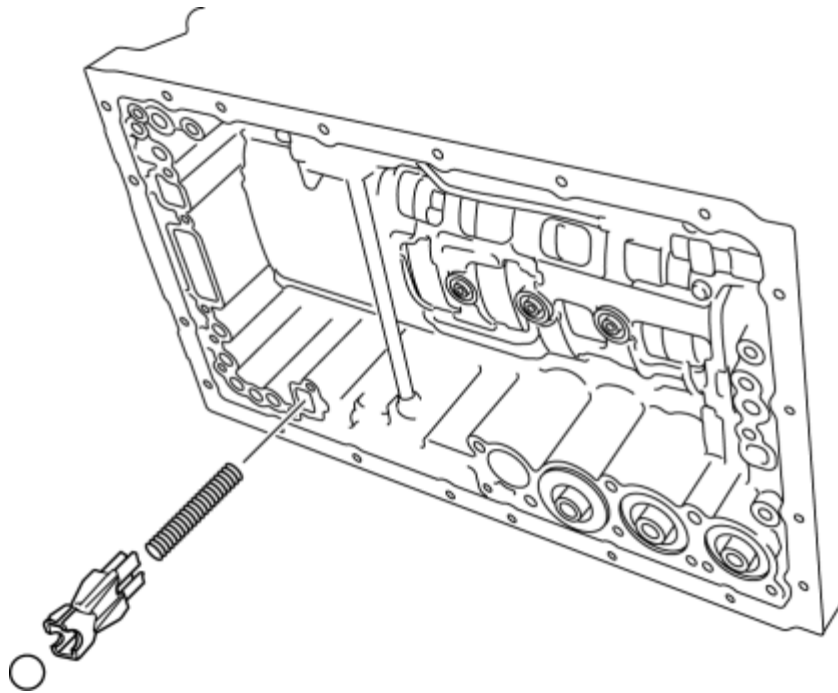
7. Coat the new transmission gaskets and the new brake drum gaskets with ATF, and install it to the transmission case.



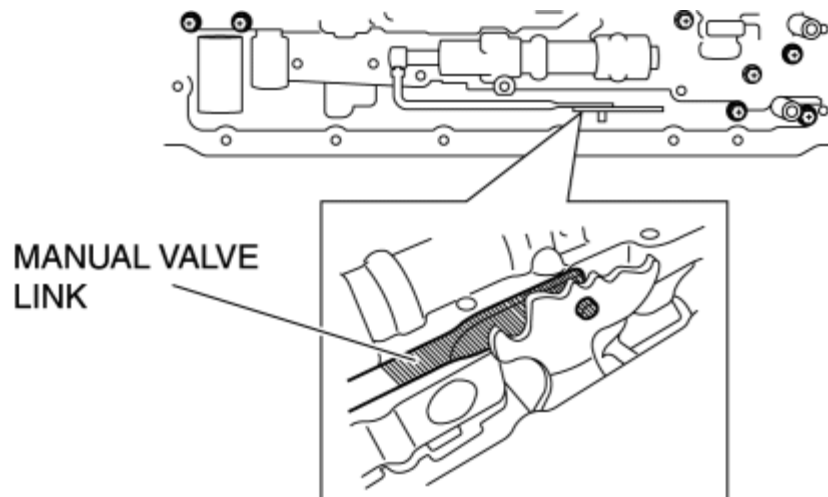
CAUTION:

- Do not to damage the gasket.

8. Install the check valve sub-component and the compression spring to the transmission case.

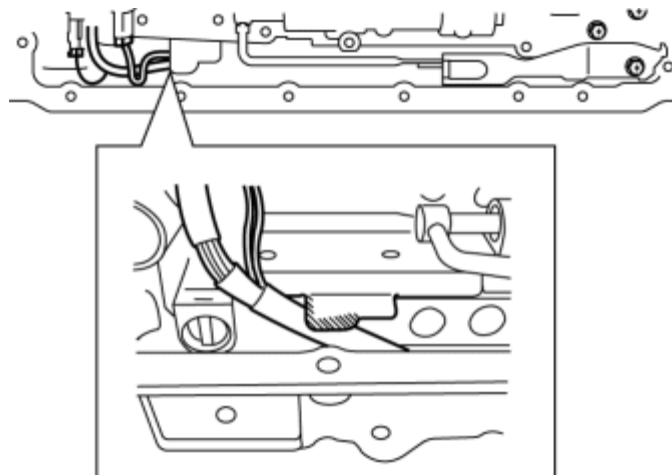


9. Connect the manual valve link and install the control valve body component.

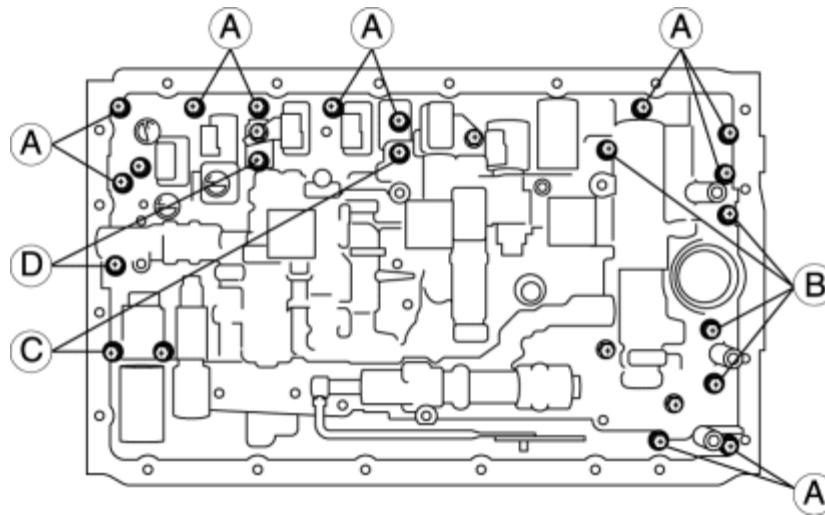


CAUTION:

- When installing, be sure to put the wiring harness in the concave portion of the separator plate in the control valve body component as shown in the figure.



10. Temporarily install the control valve body component with the bolts.



Bolt length (measured from below the head)

- A: 25 mm {0.984 in}
- B: 36mm {1.42 in}
- C: 45mm {1.77 in}
- D: 50mm {1.97 in}

NOTE:

- Aligning the bolt holes, temporarily tighten the bolts by hand.
- Tighten the bolts starting from the inner ones and moving in a criss-cross pattern.

11. Tighten the bolts.

Tightening torque

- 10.0—12.0 N·m {102—122 kgf·cm, 89—105 in·lbf}

12. Install the detent spring cover and detent spring with the bolt to the control valve body component.

Tightening torque

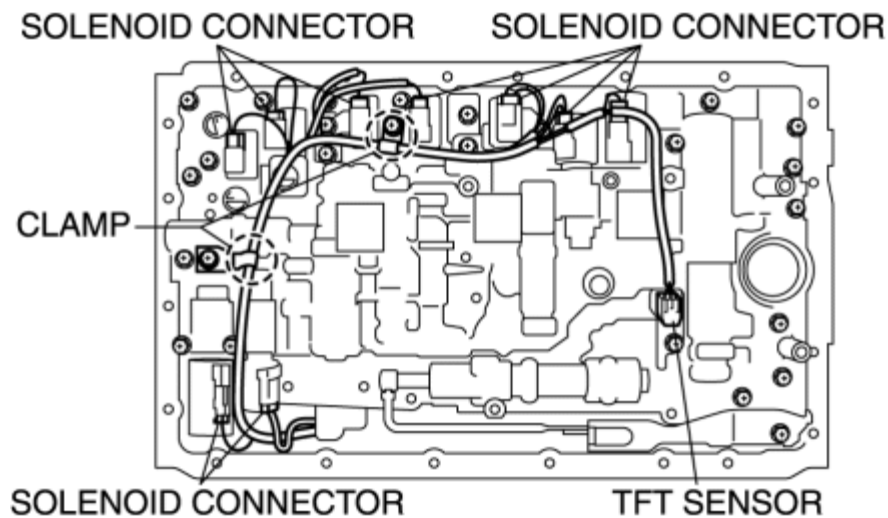
- 8.0—12.0 N·m {82—122 kgf·cm, 72—105 in·lbf}

13. Install the TFT sensor and the lock plate with the bolt to the control valve body component.

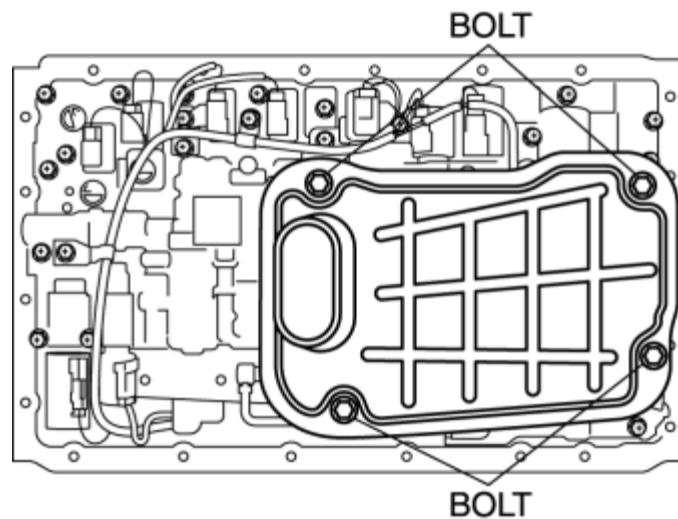
Tightening torque

- 8.0—12.0 N·m {82—122 kgf·cm, 72—105 in·lbf}

14. Connect the coupler component to the clamps.



15. Connect the solenoid connectors to the solenoids.
16. Coat a new O-ring with ATF and install it to the oil strainer.
17. Install the oil strainer with the bolts to the control valve body component.



Tightening torque

- 8.0—12.0 N·m {82—122 kgf·cm, 72—105 in·lbf}

CAUTION:

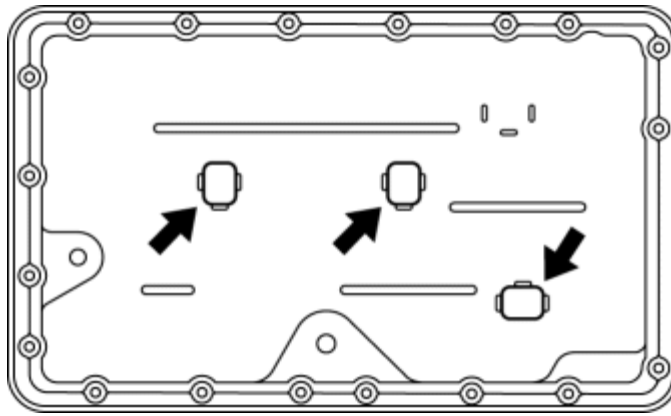
- Pay attention to the fabric so that foreign materials from it cannot come out in the transmission.

18. Clean the contact surface of oil pan and transmission case.

NOTE:

- Clean the oil cleaner magnets before install it.

19. Install the magnets to the oil pan.



CAUTION:

- Do not to damage the contact surface of the transmission case and the oil pan.
- Do not to deform the oil pan.

20. Install a new oil pan gasket and the oil pan to the transmission case.

CAUTION:

- Be careful that bolts might be damaged if tightened too much since the gasket is cork-made.

21. Install the bolts to the transmission case.

Tightening torque

- 6.0—7.9 N·m {62—80 kgf·cm, 54—69 in·lbf}

22. Connect the negative battery cable.

23. Install the battery cover.

24. Install the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)

25. Add ATF and, with the engine idling, inspect the ATF level and for leakage. (See [AUTOMATIC TRANSMISSION FLUID \(ATF\) INSPECTION \[SJ6A-EL\]](#).)

26. Perform the mechanical system test. (See [MECHANICAL SYSTEM TEST \[SJ6A-EL\]](#).)

27. Perform the road test. (See [ROAD TEST \[SJ6A-EL\]](#).)

[< Previous](#) [Next >](#)

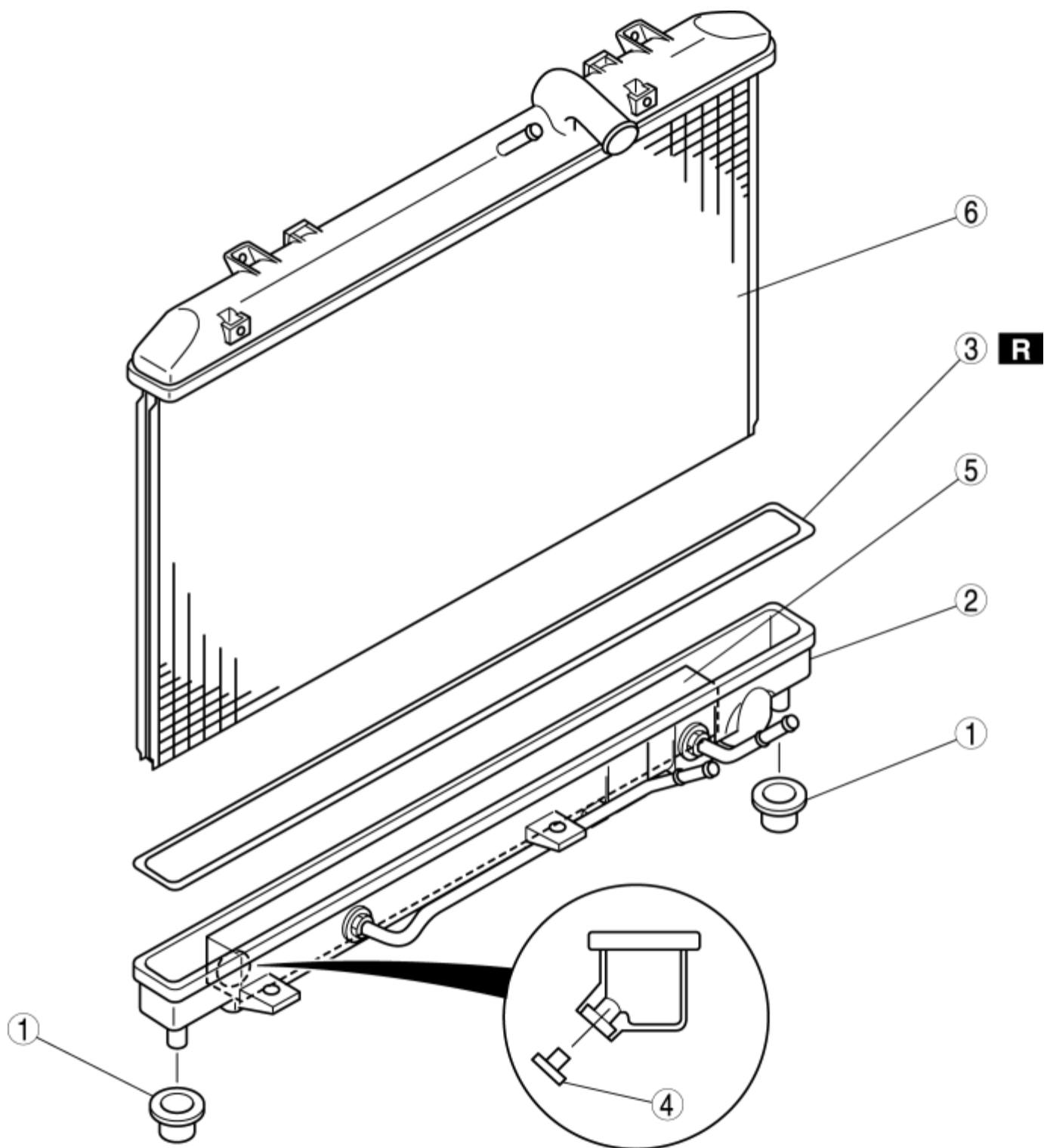
[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Transmission/Transaxle

OIL COOLER DISASSEMBLY/ASSEMBLY [SJ6A-EL]

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.



1 Mount rubber

2 Radiator outer tank (in-tank oil cooler)

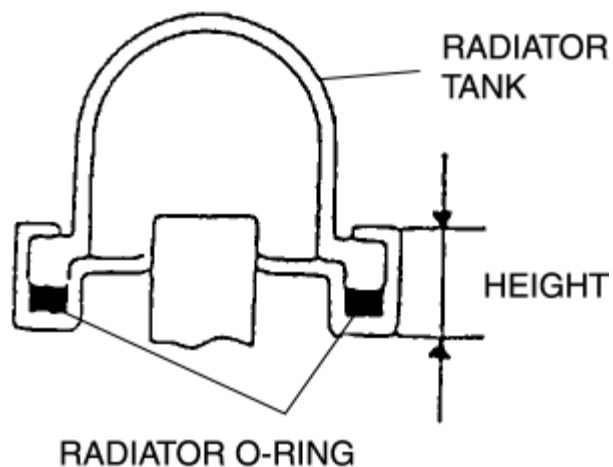
(See [Radiator Outer Tank \(In-Tank Oil Cooler\) Disassembly Note.](#))

(See [Radiator Outer Tank \(In Tank Oil Cooler\) Assembly Note.](#))

3	O-ring
4	Drain cock
5	ATF cooler
6	Radiator

Radiator Outer Tank (In-Tank Oil Cooler) Disassembly Note

1. Inspect the height of the header tabs.

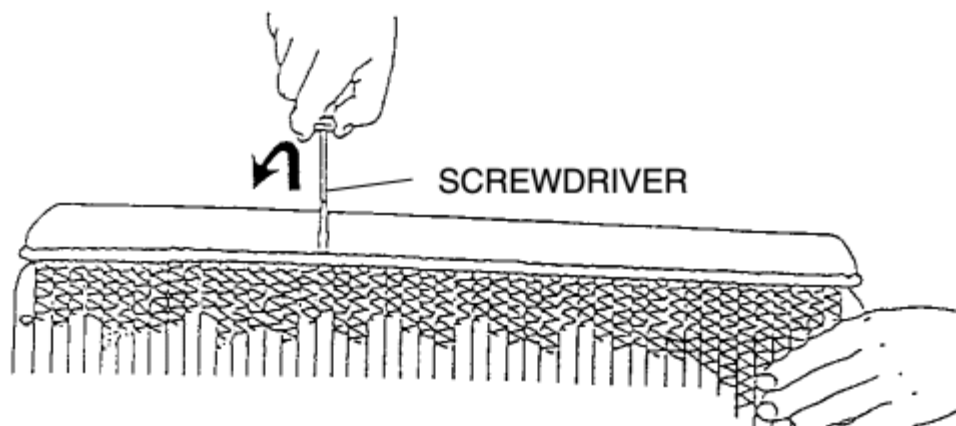


2. Insert the end of a medium tip screwdriver between the end of the header tab and the outer tank.

NOTE:

- Do not open more tabs than necessary for tank removal.

3. Pivot the screwdriver to pry the tab away from the tank and repeat the procedure for each tab.

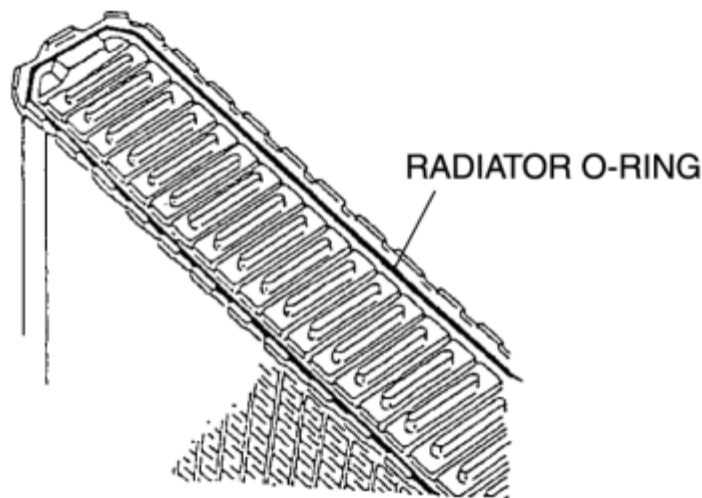


NOTE:

- If any header tabs are missing from the core, replace the radiator.
4. Remove the radiator outer tank and O-ring (gasket) from the core header when all of the tabs are opened.
 5. Inspect the gasket surface of the radiator core header to ensure it is clean and free of foreign material or damage.
 6. Inspect the radiator outer tank for warping. If it is warped, replace the radiator tank.

Radiator Outer Tank (In Tank Oil Cooler) Assembly Note

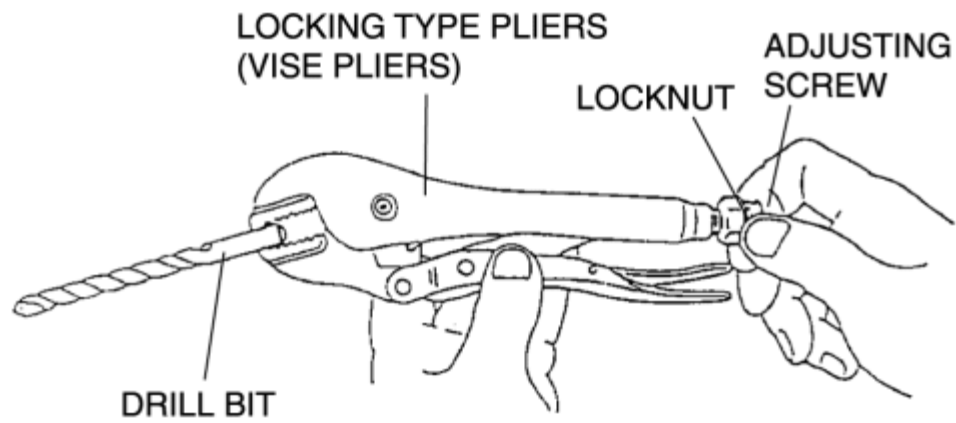
1. Install a new O-ring and ensure it is not twisted.

**NOTE:**

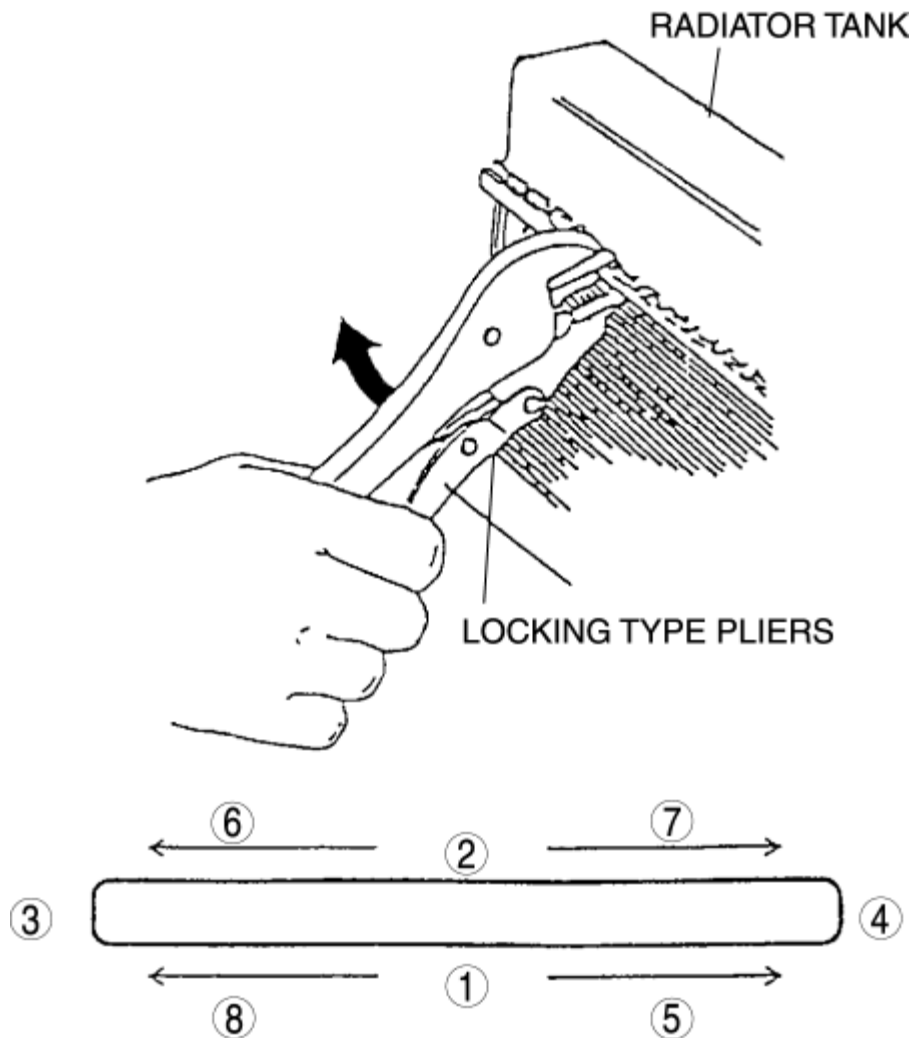
- The old O-ring must be replaced.
2. Position the radiator tank in the original direction to the core using care not to scratch the tank sealing surface with the header tabs.

NOTE:

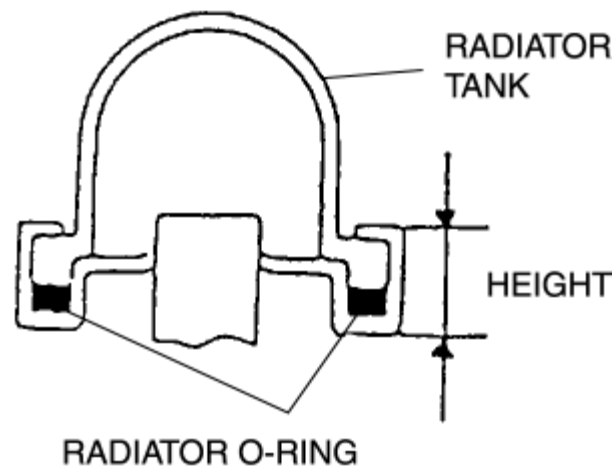
- Step 3 will set jaw opening to the correct specification.
3. With the jaws of locking-type pliers (vise grips) closed and locked, turn the adjusting screw to position the jaws against the drill bit with the diameter measured (height) in removal procedure 1. Tighten the lock nut on the adjusting screw against the handle to lock the adjustment in place.



4. Squeeze the header tabs down in the order as shown in the figure against the lip of the radiator outer tank base with the locking-type pliers while rotating the pliers toward the tank.



5. Verify that the height of the header tabs is same as the height before removal.



6. Inspect for leakage from radiator. (See [ENGINE COOLANT LEAKAGE INSPECTION \[13B-MSP\].](#))

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

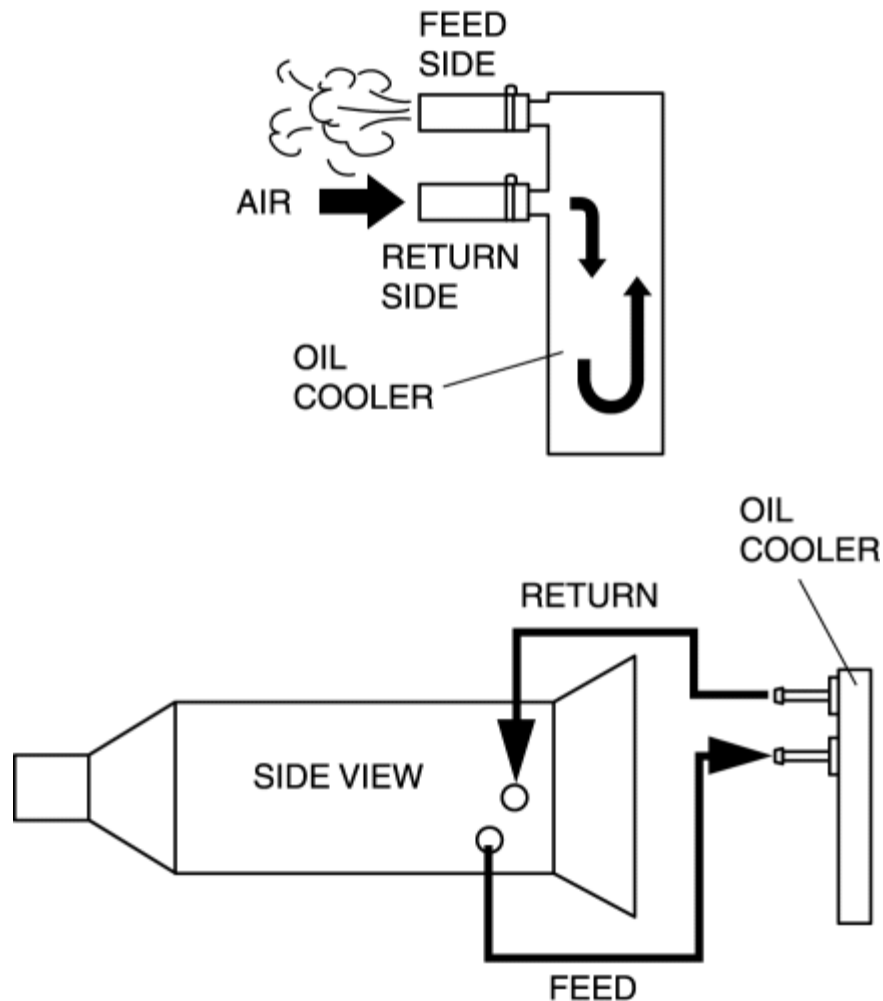
2011 - RX-8 - Transmission/Transaxle

OIL COOLER FLUSHING [SJ6A-EL]

NOTE:

- The contaminated cooler line (oil pipes and hoses) and auxiliary cooler must be flushed completely when AT is overhauled or replaced.

1. Remove the two oil cooler line hoses and apply air pressure of **196 kPa {2.0 kgf/cm², 28 psi}** from the return hose (pipe) side.



CAUTION:

- Power flushing should be performed very carefully when removing the accumulated debris from the fluid baffle, otherwise the debris cannot be removed or the problem becomes even worse.

NOTE:

- Performing back and reverse power flushing two times each does not work because debris or particles flow out from the feed pipe side of AT.

2. If there is no air blown out the feed side, flush the oil cooler lines using the power-flushing tool. (See [Power Flushing](#).) **Recommended power-flushing manufacturer**

Manufacturer	Part number	Description
Kent Moore	J35944-AMAZ	Flushing kit or equivalent
OTC	60081	Portable torque converter, oil cooler cleaner or equivalent

Power Flushing

Repair procedure

1. Before power flushing, inspect the hoses/lines and clamps. Power flushing must begin with back flushing followed by forward flushing to quickly dislodge the restriction. If back flushing is not performed before forward flushing, the restriction could further reduce the ATF flow through the internal mesh type baffle of the cooler and flushing will not be effective or possible.

Inspecting oil lines and clamps

1. Be sure to inspect the lines (hoses/pipes) for cuts, crimps (pinched), cracks or any other damage before reusing them.

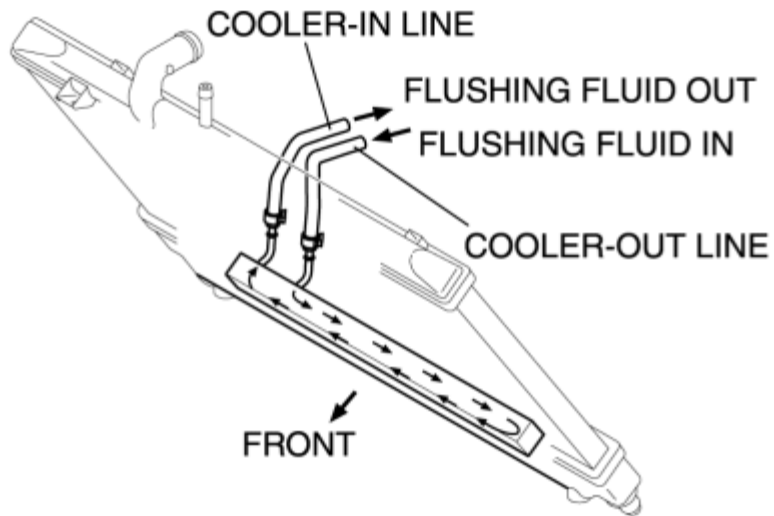
- If there is any malfunction, replace lines and clamps.

CAUTION:

- Always use new clamps when replacing hoses.

Back flushing

1. Using the power flushing equipment manufacturer's instructions, connect equipment so the flushing fluid flows in the opposite direction of normal fluid flow.



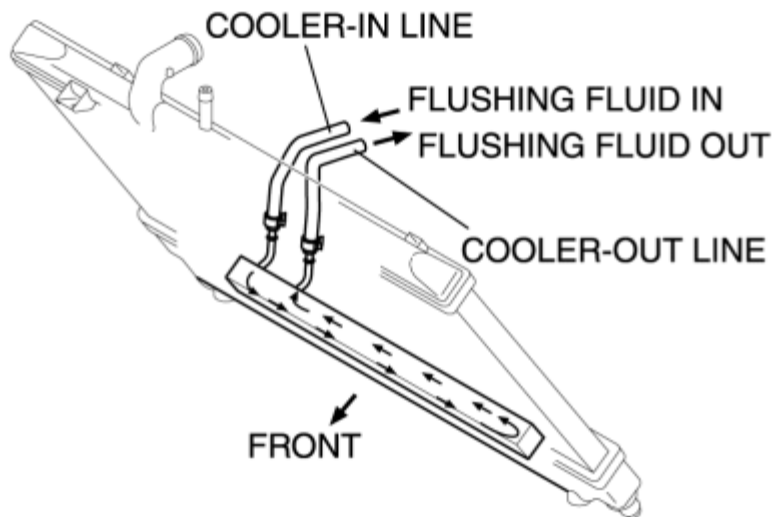
2. Flush oil cooler/lines until discharge fluid is clean.

CAUTION:

- If the cooler can not be properly flushed using recommended equipment, send the radiator out for sublet cleaning or replace.

Forward flushing

1. Connect power flushing equipment so the flushing fluid flows in the direction of normal fluid flow.



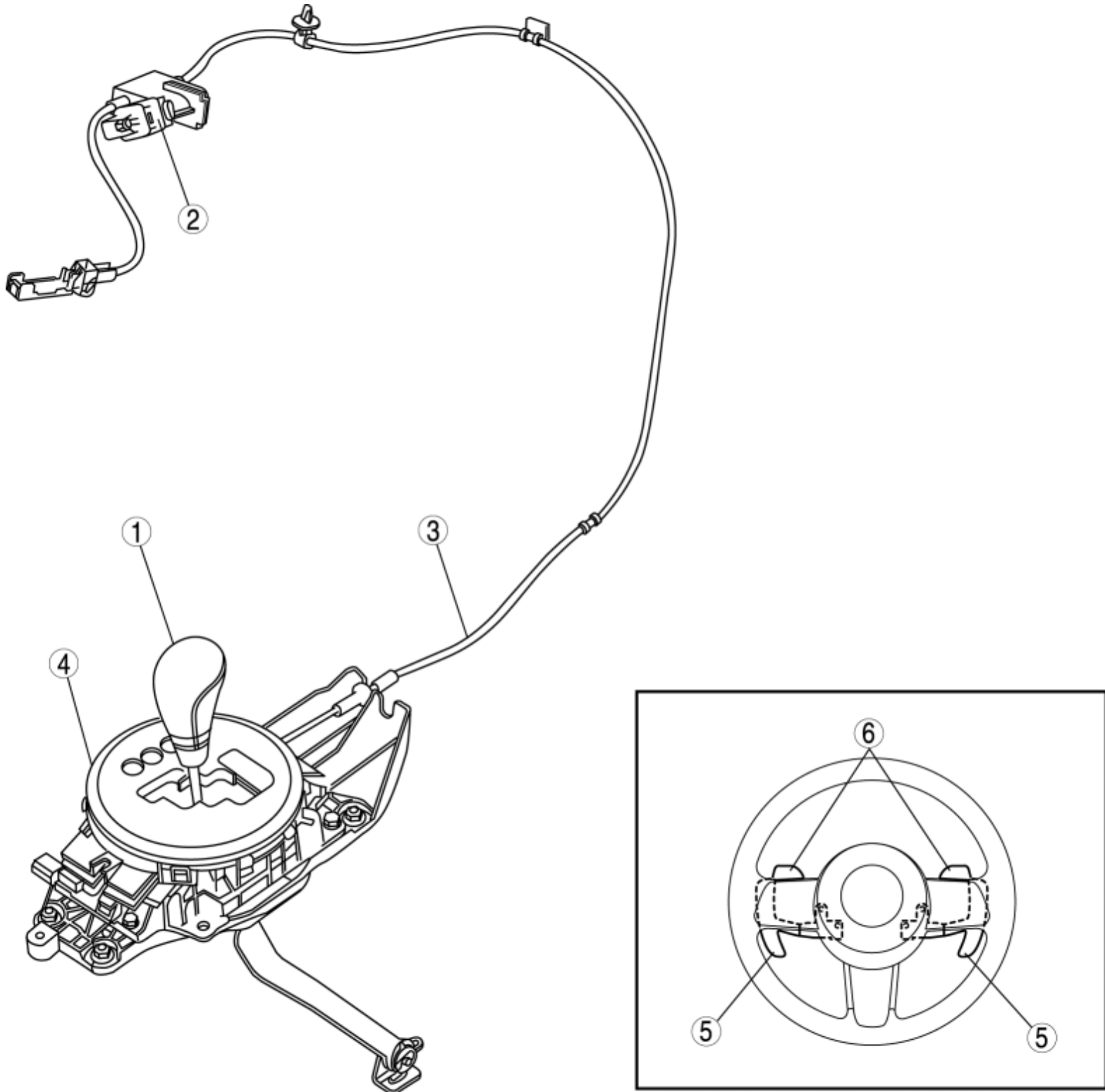
2. Flush oil cooler/lines until discharged fluid is clean.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

AUTOMATIC TRANSMISSION SHIFT MECHANISM LOCATION INDEX



1	Shift lock (See SHIFT LOCK INSPECTION.)
2	Key interlock (See KEY INTERLOCK INSPECTION.)
3	Interlock cable (See INTERLOCK CABLE INSPECTION.) (See INTERLOCK CABLE ADJUSTMENT.)
4	Selector lever (See SELECTOR LEVER INSPECTION.) (See SELECTOR LEVER COMPONENT INSPECTION.) (See SELECTOR LEVER REMOVAL/INSTALLATION.)
5	Steering shift switch (up switch) (See STEERING SHIFT SWITCH REMOVAL/INSTALLATION.) (See STEERING SHIFT SWITCH INSPECTION.)
6	Steering shift switch (down switch) (See STEERING SHIFT SWITCH REMOVAL/INSTALLATION.) (See STEERING SHIFT SWITCH INSPECTION.)

[< Previous](#) [Next >](#)

2011 - RX-8 - Transmission/Transaxle

KEY INTERLOCK INSPECTION

1. Verify that the key cannot be pulled out except in the P position.
 - If there is any malfunction, inspect the interlock cable. (See [INTERLOCK CABLE INSPECTION](#).)

[< Previous](#) [Next >](#)

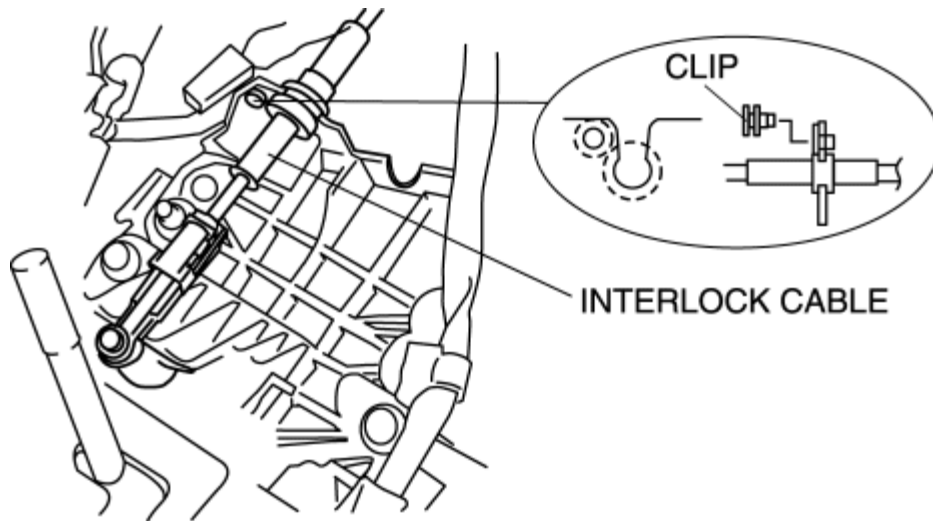
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

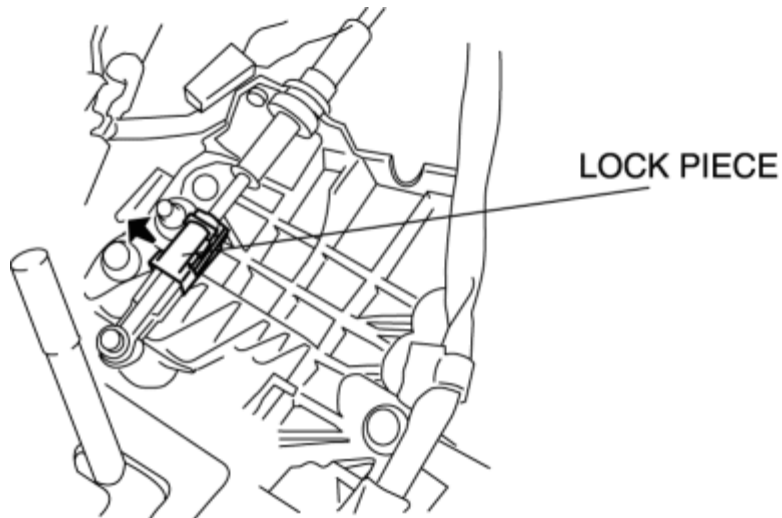
2011 - RX-8 - Transmission/Transaxle

INTERLOCK CABLE INSPECTION

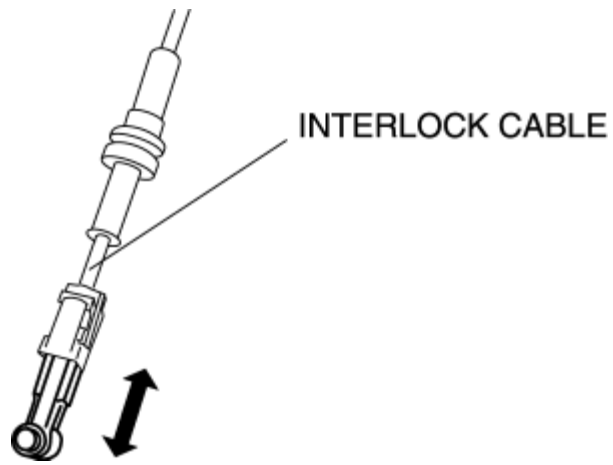
1. Turn the ignition switch to ON position. (engine OFF)
2. Remove the clip of the selector lever base plate, then remove the interlock cable from the U-groove.



3. Remove the interlock cable from the selector lever.



4. Verify that the interlock cable moves freely with the brake pedal depressed.



- If there is any malfunction, replace the interlock cable.

[< Previous](#) [Next >](#)

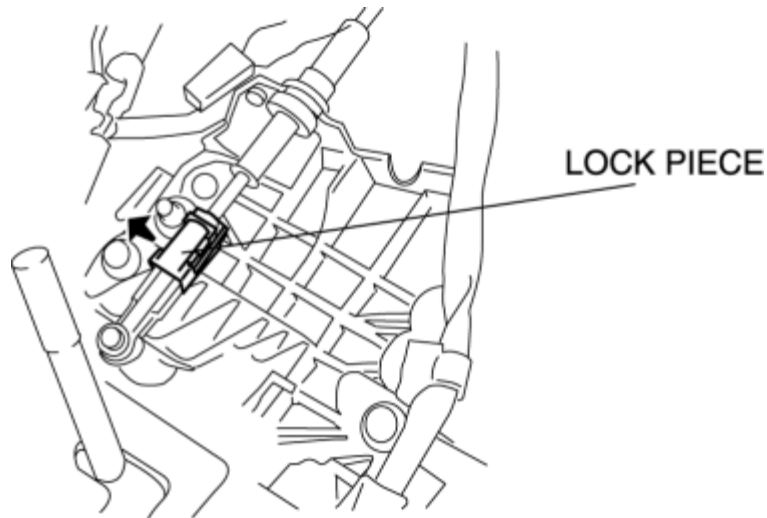
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

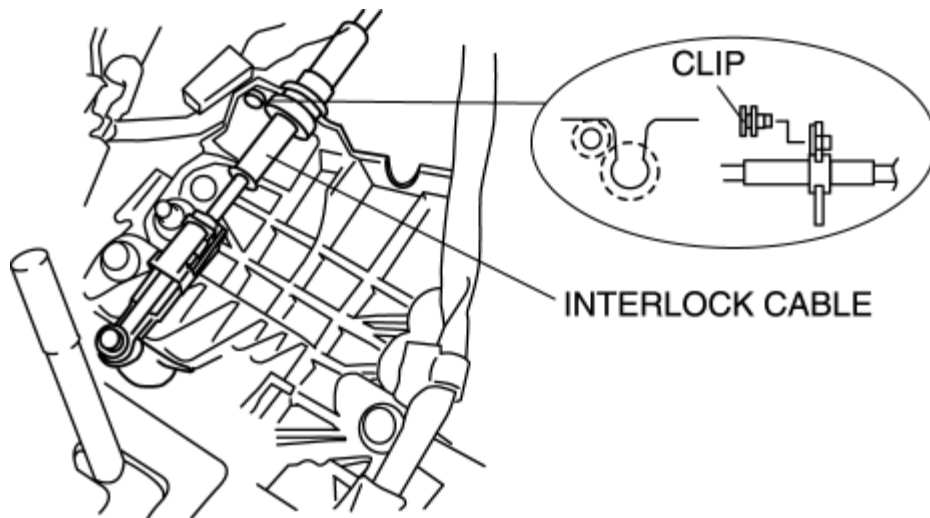
2011 - RX-8 - Transmission/Transaxle

INTERLOCK CABLE ADJUSTMENT

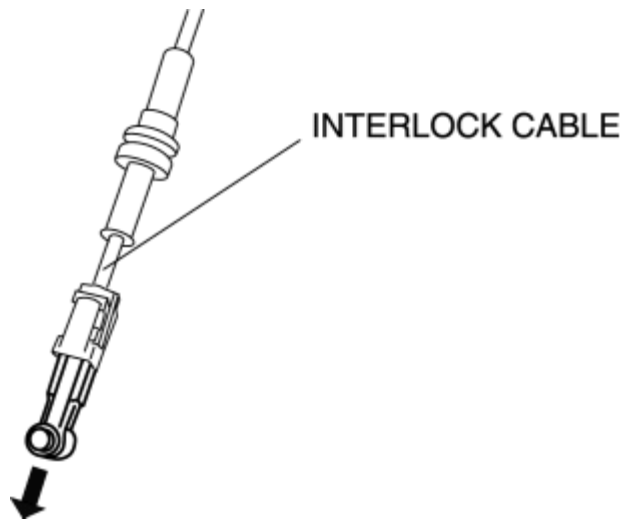
1. Turn the ignition switch to ON position. (engine OFF)
2. Pull up the lock piece of the interlock cable to release the lock.



3. Remove the clip of the selector lever base plate, then remove the interlock cable from the U-groove.

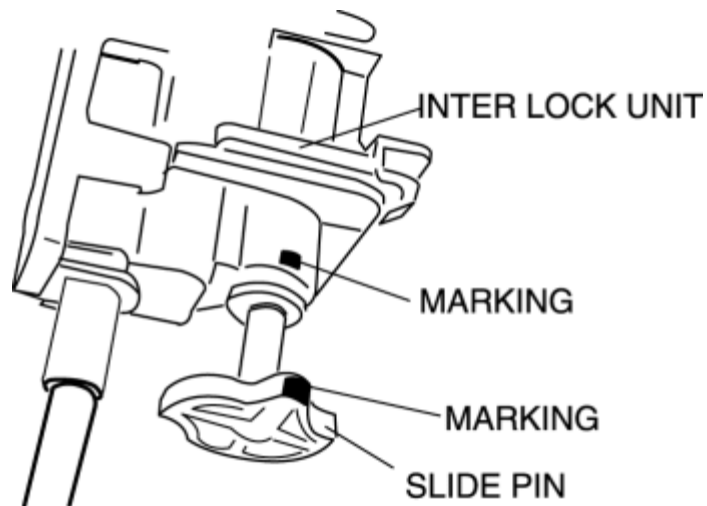


4. Remove the interlock cable from the selector lever.
5. Fully pull the end of the interlock cable to the selector lever.

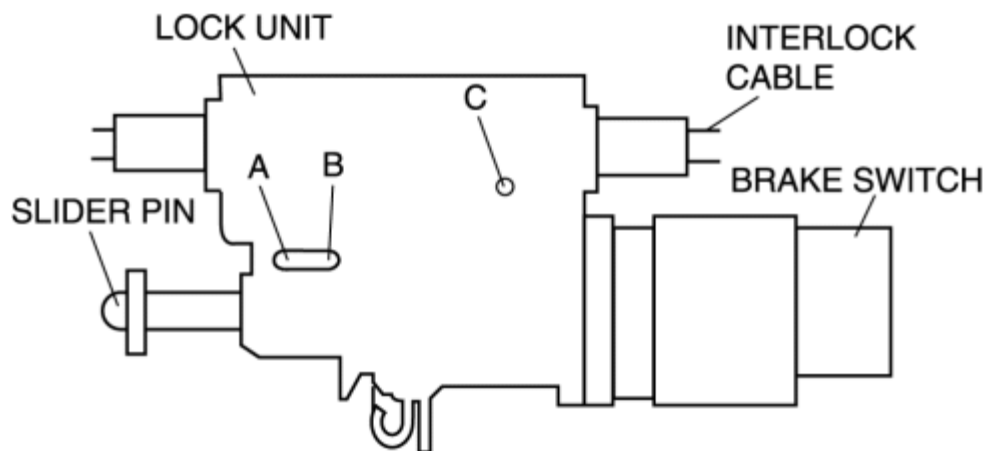


6. Remove the lock unit from the bracket.

7. Verify that the markings on the slider pin and the lock unit are aligned.



8. Push a **1.5 mm {0.06 in}** round bar or similar into hole A by fully pushing the slider pin in.



9. Push a **1.5 mm {0.06 in}** round bar or similar into hole B and hole C of the lock unit until it passes through.

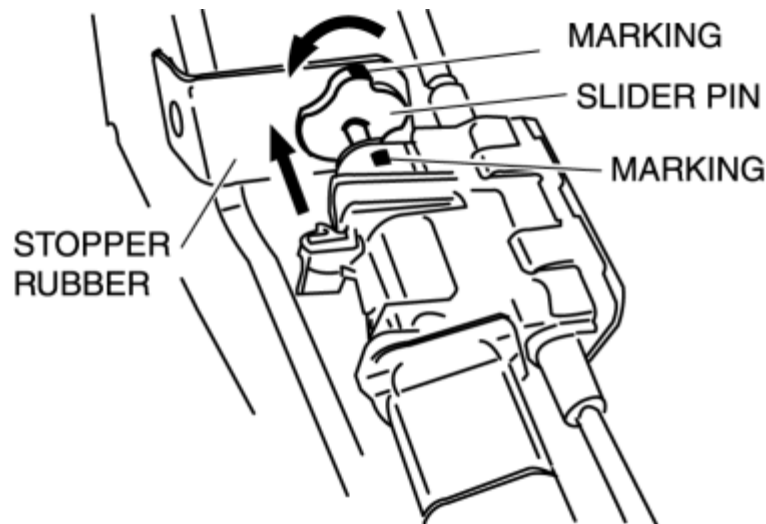
10. Disconnect the brake switch connector.

11. Remove the brake switch. (See [BRAKE PEDAL REMOVAL/INSTALLATION.](#))
12. Install the new brake switch. (See [BRAKE PEDAL REMOVAL/INSTALLATION.](#))

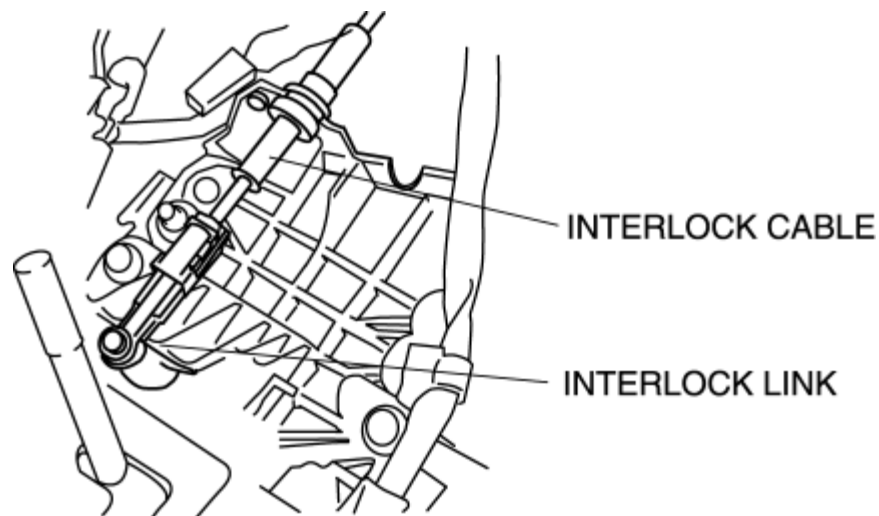
CAUTION:

- Do not connect the brake switch connector until the interlock cable adjustment is completed.

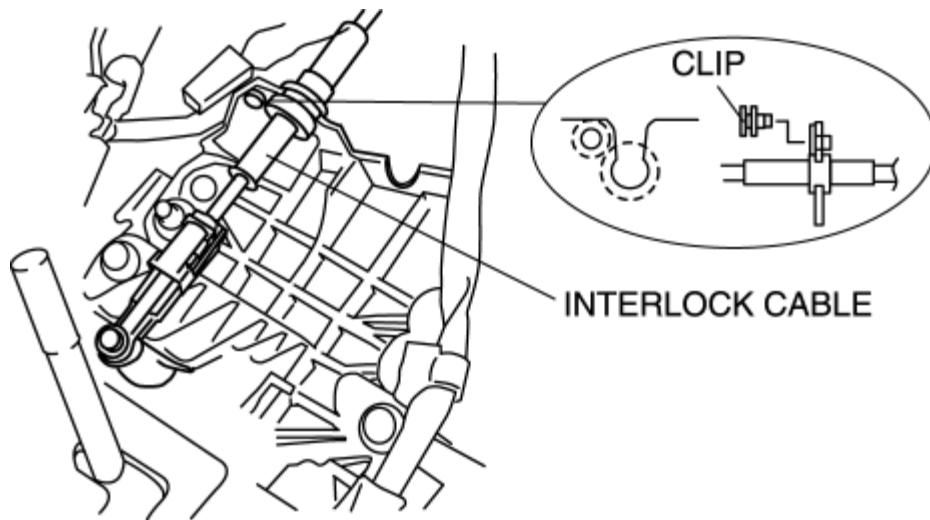
13. Install the lock unit to the bracket. (See [SELECTOR LEVER REMOVAL/INSTALLATION.](#))
14. Rotate the slider pin to release the lock, and verify that it slides freely.
15. Verify that the slider pin contacts the brake pedal stopper rubber and rotate the slider pin to lock.



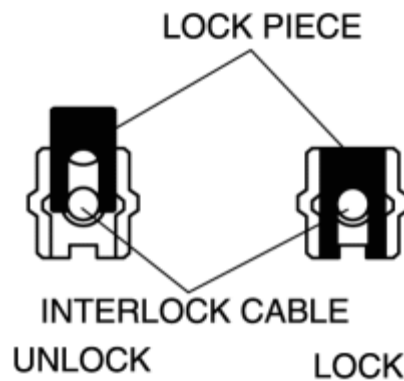
16. Install the interlock cable end to the interlock link on the selector lever.



17. Fit the interlock cable in the U-groove in the selector lever base plate and install the clip.



18. Press the interlock cable lock piece in until it is locked.

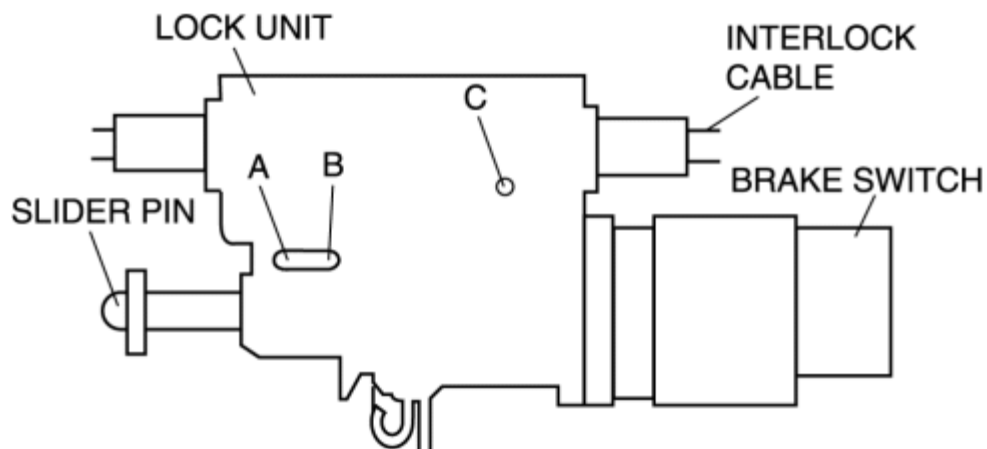


CAUTION:

- Applying a load to the interlock cable while pressing the lock piece in can affect the lock unit operation.

19. Remove a **1.5 mm {0.06 in}** round bar or similar from the lock unit hole A, B and C.

20. Connect the brake switch connector with the brake pedal released.



CAUTION:

- The clearance between the brake switch and the brake pedal is automatically adjusted to the correct amount when the brake switch connector is connected

after the brake switch has been properly installed. If the brake switch is not properly installed or the connector is connected before installation, the clearance may be incorrect, causing a brake light malfunction. Therefore, always verify that the brake switch is properly installed before connecting the connector.

- Once the brake switch clearance has automatically been adjusted, it cannot be adjusted again. Therefore, replace the switch with a new one when replacing the power brake unit or the pedal, or performing any procedure that changes the pedal stroke.

21. Inspect shift lock operation. (See [SHIFT LOCK INSPECTION](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

[< Previous](#) [Next >](#)

2011 - RX-8 - Transmission/Transaxle

SHIFT LOCK INSPECTION

1. Turn the ignition switch to the ON position.
2. Verify that the selector lever is in the P position.
3. Depress the brake pedal and verify that the selector lever can be shifted from the P position.
 - If there is any malfunction, adjust the interlock cable.
(See [INTERLOCK CABLE ADJUSTMENT](#).)

[< Previous](#) [Next >](#)

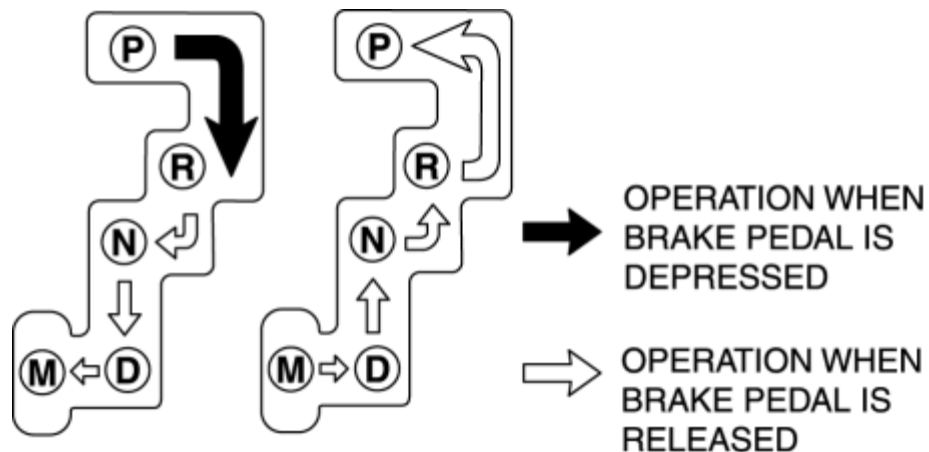
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

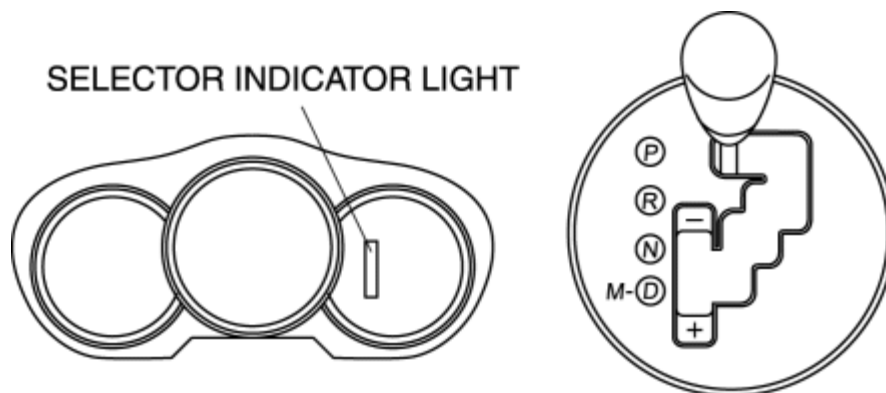
2011 - RX-8 - Transmission/Transaxle

SELECTOR LEVER INSPECTION

1. Turn the ignition switch to the ON position (engine OFF).
2. With the brake pedal depressed, verify that there is a “click” at each range when shifted.



3. Verify that the selector lever can be shifted.
4. Verify that there is a “click” at each position when shifted from the P position to the M range.
5. Verify that the positions of the selector lever and the indicator are aligned.



- If there is any malfunction, adjust the TR switch. (See [TRANSMISSION RANGE \(TR\) SWITCH ADJUSTMENT \[SJ6A-EL\]](#).)

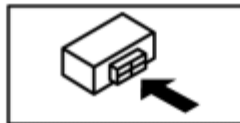
6. Verify that the vehicle operates in each selected range.

2011 - RX-8 - Transmission/Transaxle

SELECTOR LEVER COMPONENT INSPECTION

1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Remove the ashtray. (See [CONSOLE REMOVAL/INSTALLATION](#).)
5. Remove the shift knob. (See [SELECTOR LEVER REMOVAL/INSTALLATION](#).)
6. Remove the console panel and indicator assembly. (See [SELECTOR LEVER REMOVAL/INSTALLATION](#).)
7. Disconnect the selector lever component connector.
8. Verify continuity as indicated in the table.

E	C	A
F	D	B



- If there is any malfunction, replace the selector lever. (See [SELECTOR LEVER REMOVAL/INSTALLATION](#).)

○ — ○ : Continuity

Selector lever position/range		Connector terminal					
		A	B	C	D	E	F
M range	Up switch	○ — ○	—	—	○ —		
	Down switch	○ —	○ —	—	—	—	○ —
	Other	○ —	○ —				
Other							

[< Previous](#) [Next >](#)

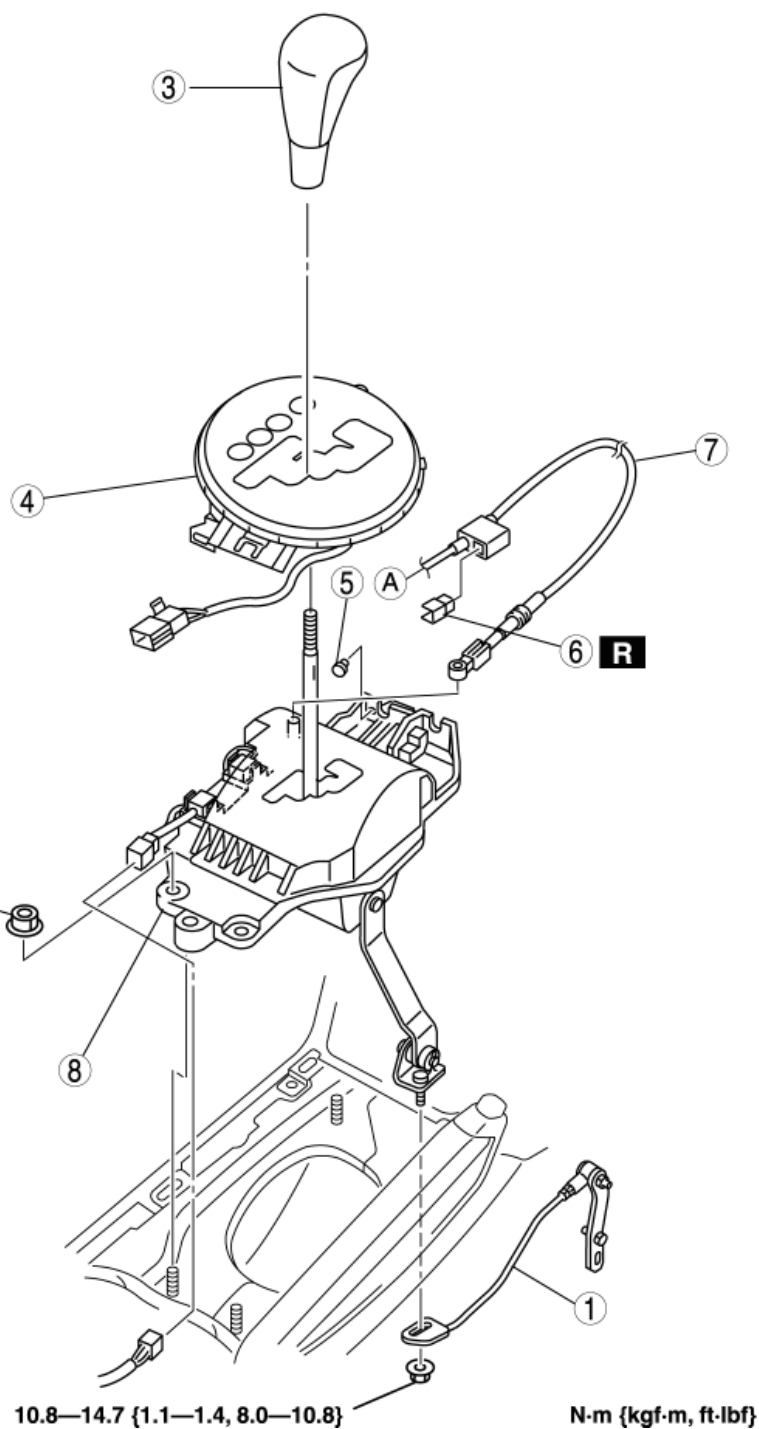
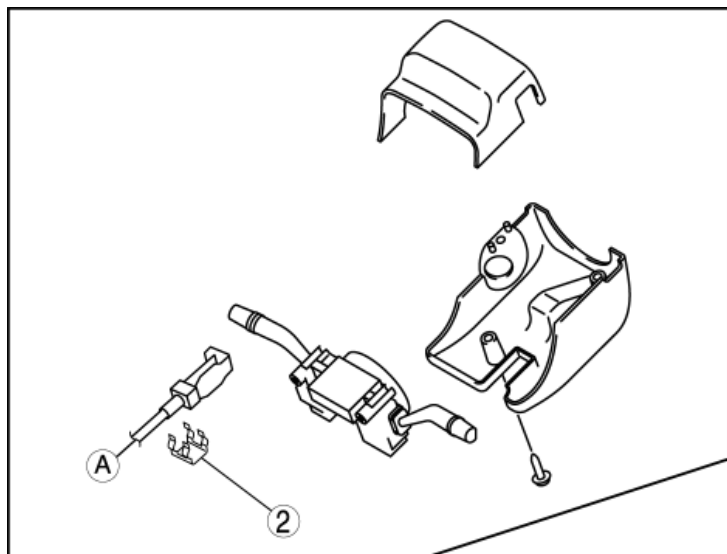
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Transmission/Transaxle

SELECTOR LEVER REMOVAL/INSTALLATION

1. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Remove the following parts.
 - a. Ashtray (See [CONSOLE REMOVAL/INSTALLATION.](#))
 - b. Console (See [CONSOLE REMOVAL/INSTALLATION.](#))
 - c. Glove compartment (See [GLOVE COMPARTMENT REMOVAL/INSTALLATION.](#))
 - d. Side panel (See [SIDE PANEL REMOVAL/INSTALLATION.](#))
 - e. Lower panel (See [LOWER PANEL REMOVAL/INSTALLATION.](#))
 - f. Column cover (See [COLUMN COVER REMOVAL/INSTALLATION.](#))
 - g. Driver-side air bag module (See [DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.](#))
 - h. Steering shaft (See [STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.](#))
 - i. Instrument cluster (See [INSTRUMENT CLUSTER REMOVAL/INSTALLATION.](#))
 - j. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - k. Dashboard (See [DASHBOARD REMOVAL/INSTALLATION.](#))
 - l. SAS control module (See [SAS CONTROL MODULE REMOVAL/INSTALLATION.](#))
 - m. Exhaust pipe (See [EXHAUST SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))
5. Shift the selector lever to the P position.
6. Remove in the order indicated in the table.
7. Install in the reverse order of removal.
8. After installation, carry out the shift lock inspection and key interlock inspection.
(See [SHIFT LOCK INSPECTION.](#))
(See [KEY INTERLOCK INSPECTION.](#))



1 Manual shaft lever component
(See [Manual Shaft Lever Component Removal Note.](#))
(See [Manual Shaft Lever Component Installation Note.](#))

2 Clip

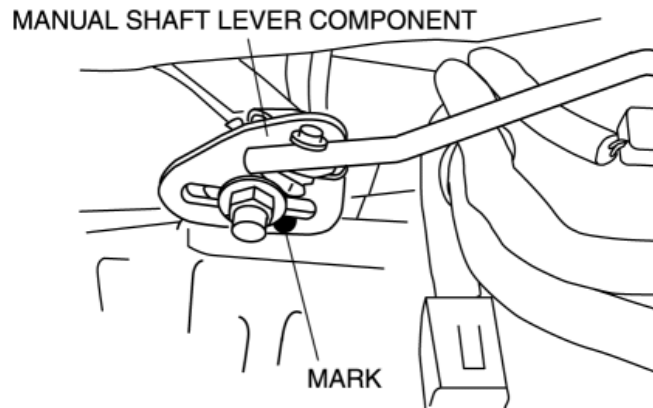
3 Shift knob

4 Console panel

5	Indicator component
6	Clip
7	Brake switch (See BRAKE PEDAL REMOVAL/INSTALLATION.)
8	Interlock cable (See Interlock Cable Installation Note.)
9	Selector lever

Manual Shaft Lever Component Removal Note

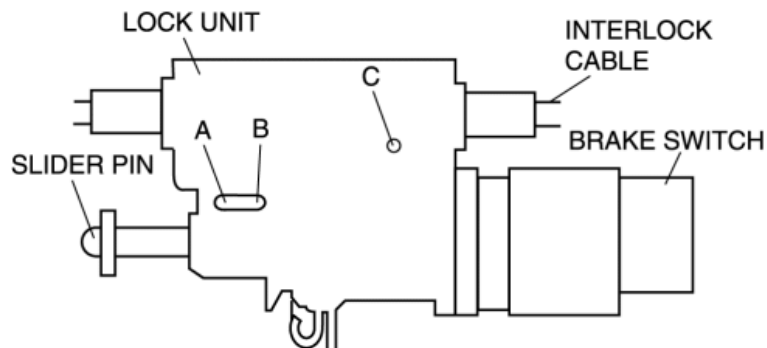
1. Mark the manual shaft lever component as shown in the figure.



2. Remove the manual shaft lever component installation nut.

Interlock Cable Installation Note

1. Push a **1.5 mm {0.06 in}** round bar or similar into hole A by fully pushing the slider pin in.

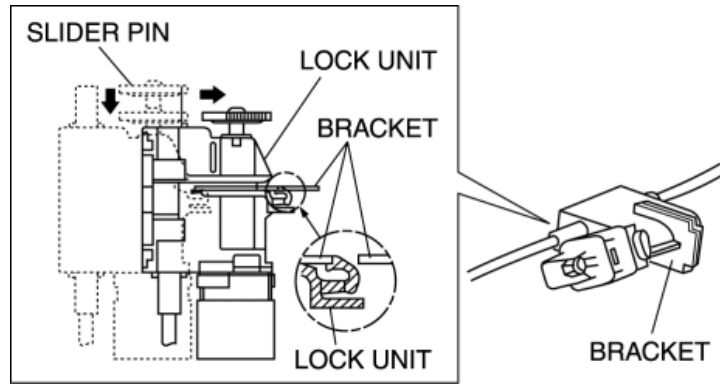


2. Push a **1.5 mm {0.06 in}** round bar or similar into hole B and hole C of the lock unit until it passes through.
3. Disconnect the brake switch connector.
4. Remove the brake switch. (See [BRAKE PEDAL REMOVAL/INSTALLATION.](#))
5. Install the new brake switch. (See [BRAKE PEDAL REMOVAL/INSTALLATION.](#))

CAUTION:

- Do not connect the brake switch connector until the interlock cable is installed.

6. With the slider pin pressed, slide the lock unit to fix the lock unit hook into the bracket hole securely as shown in the figure.

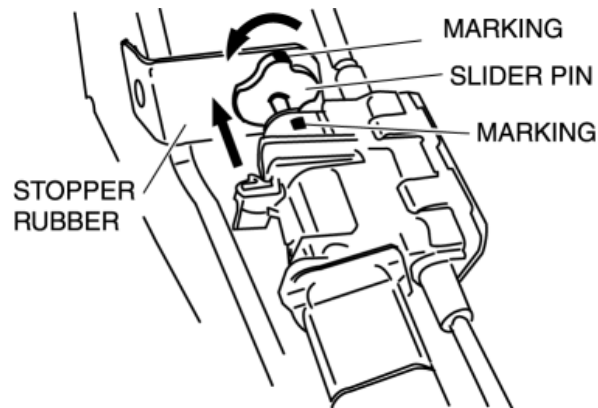


CAUTION:

- Allowing the interlock cable to be bent or twisted during installation can affect the lock unit operation.

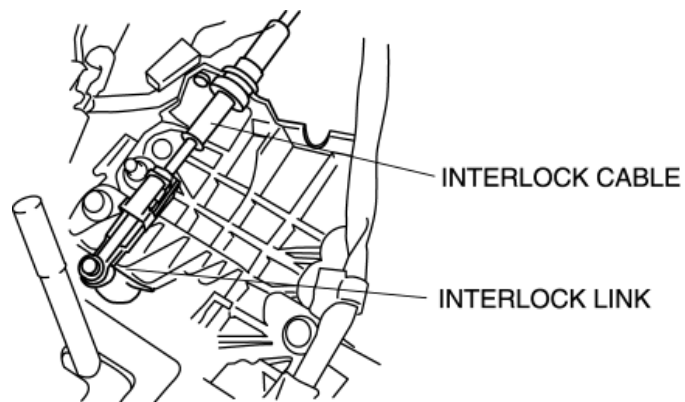
7. Rotate the slider pin to release the lock, and verify that it slides freely.

8. Pull the slider pin outward until it contacts the brake pedal stopper rubber and rotate the slider pin to lock.

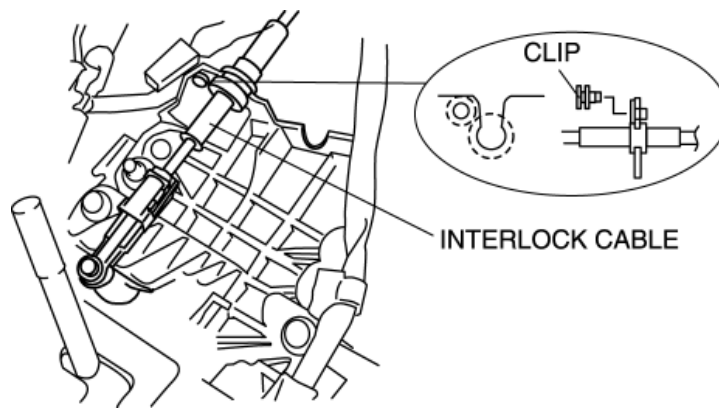


9. Verify that the shift the selector lever in P position.

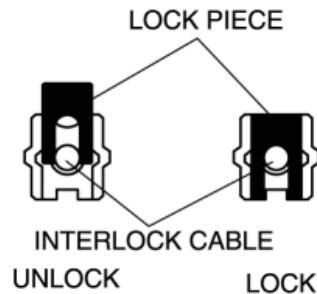
10. Install the interlock cable end to the cam pin on the selector lever.



11. Fit the interlock cable in the U-groove in the selector lever base plate, and install the clip.



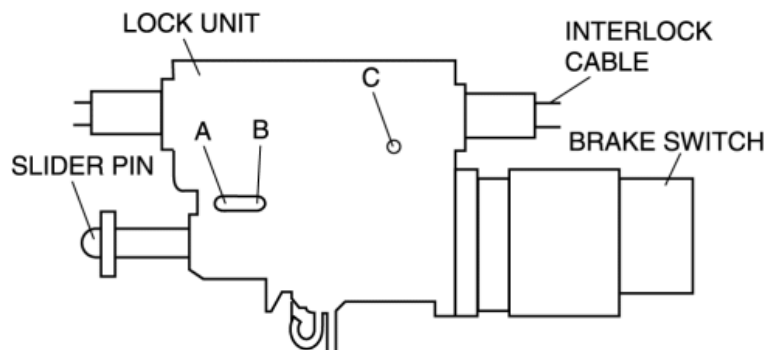
12. Press the interlock cable lock piece in until it is locked.



CAUTION:

- Applying a load to the interlock cable while pressing the lock piece in can affect the lock unit operation.

13. Remove a **1.5 mm {0.06 in}** round bar or similar from the lock unit hole A, B and C.



14. Connect the brake switch connector with the brake pedal released.

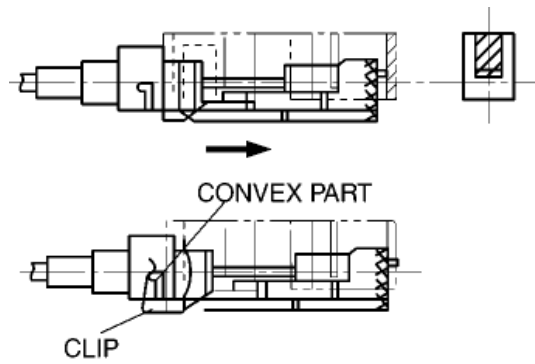
CAUTION:

- The clearance between the brake switch and the brake pedal is automatically adjusted to the correct amount when the brake switch connector is connected after the brake switch has been properly installed. If the brake switch is not properly installed or the connector is connected before installation, the clearance may be incorrect, causing a brake light malfunction. Therefore, always verify that the brake switch is properly installed before connecting the connector.
- Once the brake switch clearance has automatically been adjusted, it cannot be adjusted again. Therefore, replace the switch with a new one when replacing the power brake unit or the pedal, or performing any procedure that changes the pedal stroke.

15. Turn the ignition switch to ON position.

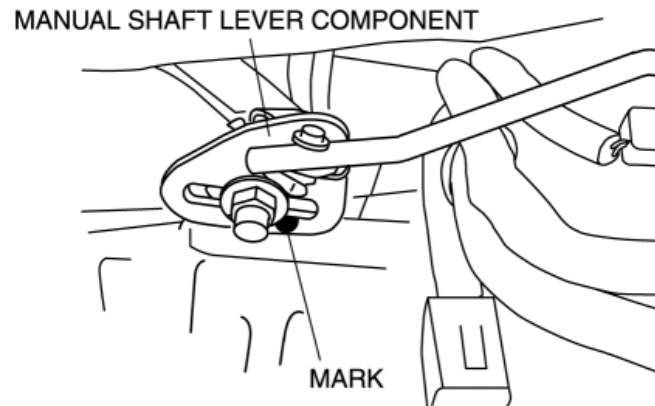
16. Install the interlock cable to the key cylinder.

17. Slide the outer casing to the key cylinder, and insert the clip over the convex part of the outer casing.



Manual Shaft Lever Component Installation Note

1. Align the mark of the manual shaft lever component as shown in the figure.



2. Install the manual shaft lever component installation nut.

Tightening torque

- 10.8—14.7 N·m
{1.1—1.4 kgf·m, 8.0—10.8 ft·lbf}

[< Previous](#) [Next >](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Transmission/Transaxle

STEERING SHIFT SWITCH REMOVAL/INSTALLATION

NOTE:

- The down switch is built into the audio control switch.
1. Remove the steering shift switch. (See [AUDIO CONTROL SWITCH REMOVAL/INSTALLATION.](#))
 2. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

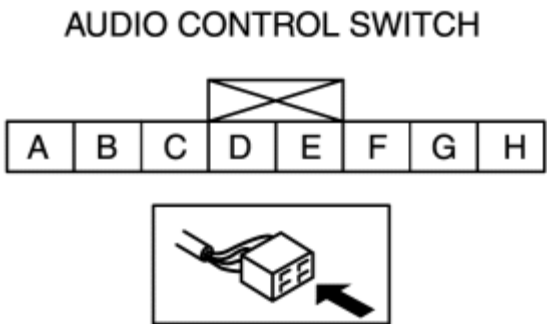
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

STEERING SHIFT SWITCH INSPECTION

1. Remove the engine cover.
2. Remove the battery cover.
3. Disconnect the negative battery cable.
4. Disconnect the audio control switch connector. (See [AUDIO CONTROL SWITCH REMOVAL/INSTALLATION](#).)
5. Measure resistance between the terminals F and C.



Test condition	Resistance (ohm)	Action
Steering shift switch off	1,764—1,836	<ul style="list-style-type: none">• Replace the audio control switch. (See AUDIO CONTROL SWITCH REMOVAL/INSTALLATION.)
LH up-switch on	352.8—367.2	<ul style="list-style-type: none">• If not within the specification, replace the audio control switch. (See AUDIO CONTROL SWITCH REMOVAL/INSTALLATION.)
RH up-switch on	352.8—367.2	
		<ul style="list-style-type: none">• If there is no continuity, replace the up switch. (See AUDIO CONTROL SWITCH REMOVAL/INSTALLATION.)

LH down-switch on	607.6—632.4	<ul style="list-style-type: none"> Replace the audio control switch. <p>(See AUDIO CONTROL SWITCH REMOVAL/INSTALLATION.)</p>
RH down-switch on	607.6—632.4	

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Transmission/Transaxle

TRANSMISSION/TRANSAXLE TECHNICAL DATA

Clutch

Item	Specification
Clutch fluid	SAE J1703 or FMVSS116 DOT-3
Clutch pedal stroke	130 mm {5.12 in}
Clutch pedal play	5—15 mm {0.20—0.59 in}
Clutch pedal push rod play	At push rod setting line : 0.1—0.5 mm {0.004—0.020 in} (Reference value) At pedal pad : 0.5—2.9 mm {0.020—0.110 in}
Clutch disengagement stroke	111.8 mm {4.402 in}
Clutch cover diaphragm spring fingers maximum depth	0.6 mm {0.024 in}
Clutch cover maximum clearance	0.5 mm {0.020 in}
Clutch cover maximum height difference	1.0 mm {0.039 in}
Clutch disc minimum depth	0.3 mm {0.012 in}
Clutch disc maximum runout	0.7 mm {0.028 in}
Flywheel maximum runout	0.2 mm {0.008 in}

Manual Transmission [P66M-D]

Item	Specification
Manual transmission oil grade	API Service GL-4
Manual transmission oil viscosity	SAE 75W-90
Manual transmission oil capacity (approx. quantity)	1.95 L {2.06 US qt, 1.72 Imp qt}
Shift control case oil grade	API Service GL-4
Shift control case oil viscosity	SAE 75W-90
Shift control case oil capacity (approx. quantity)	80—230 ml {80—230 cc, 4.9—14.0 in ³ }

Automatic Transmission [SJ6A-EL]

Item	Specification
ATF type	Mazda Genuine JWS3309
ATF capacity (approx. quantity)	8.0 L {8.5 US qt, 7.0 Imp qt}

Line pressure

Position/Range		Specification (kPa {kgf/cm2, psi})
D, M range	Idle	355—425 {3.7—4.3, 52—61}
	Stall	1,395—1,505 {14.3—15.3, 203—218}

R position	Idle	485—585 {5.0—5.9, 71—84}
	Stall	1,639—1,847 {16.8—18.8, 238—267}

Engine stall speed

Position/Range	Specification (rpm)
D, M range	2,150—2,800
R position	1,750—2,250

Time lag

Position/Range	Specification (s)
From N position to D range	1.0 or less
From N position to R position	1.2 or less

[< Previous](#) [Next >](#)

[Back to Top](#)

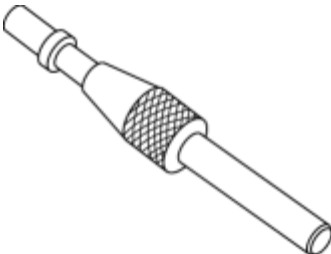
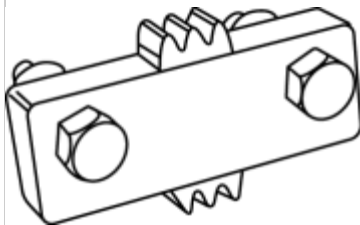


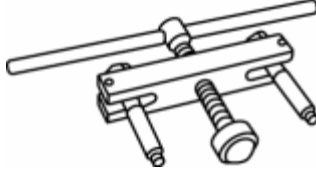
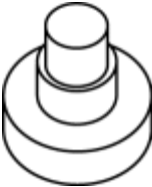

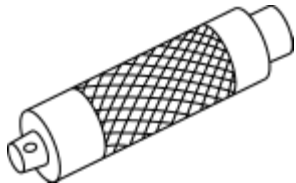
© 2010 Mazda North American Operations, U.S.A.

[< Previous](#)


2011 - RX-8 - Transmission/Transaxle


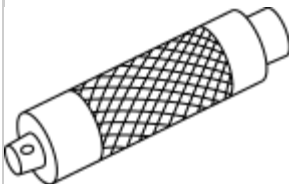
TRANSMISSION/TRANSAXLE SST

Clutch

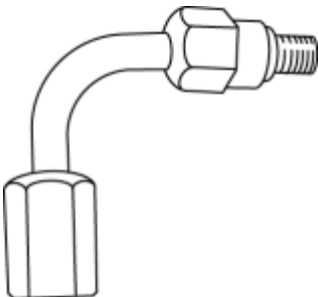
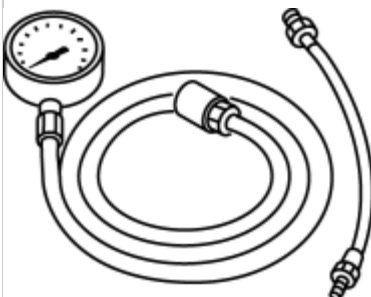


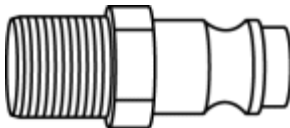

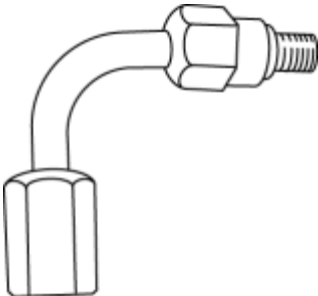


49 SE01 310A Clutch disc centering tool		49 F011 101 Ring gear brake		49 1285 071 Needle bearing puller	
49 0820 035 Flywheel box wrench		49 0839 305A Counterweight puller		49 F011 104 Installer	
49 F011 105 Collar		49 G030 797 Handle		—	



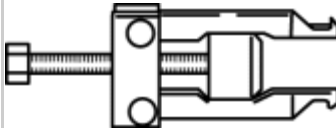
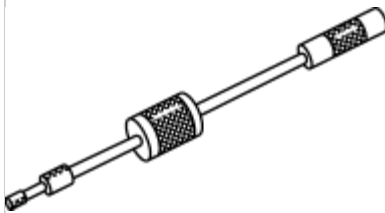
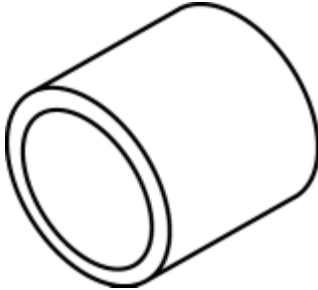
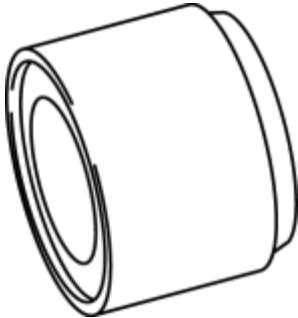
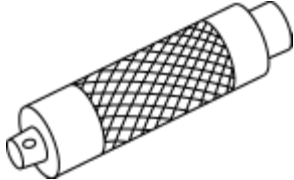


Manual Transmission [P66M-D]

49 S120 440 Mainshaft holder		49 B025 004 Dust seal installer	49 G030 797 Handle	
---------------------------------	---	------------------------------------	-----------------------	--

					
--	--	--	---	--	---

Automatic Transmission [SJ6A-EL]

<p>49 HD64 406A</p> <p>Adapter</p>		<p>49 0378 400C</p> <p>Oil pressure gauge set</p>		<p>49 B019 901B</p> <p>Oil pressure gauge</p>	
<p>49 B019 902A</p> <p>Oil pressure gauge</p>		<p>49 D019 910</p> <p>Adapter (Part of 49 D019 9A2)</p>		<p>49 D019 911</p> <p>Adapter (Part of 49 D019 9A2)</p>	
<p>49 D019 912</p> <p>Adapter (Part of 49 D019 9A2)</p>		<p>49 D019 909</p> <p>Hose (Part of 49 D019 9A2)</p>		<p>49 D019 908</p> <p>Oil pressure gauge (Part of 49 D019 9A2)</p>	
<p>49 D019 907</p> <p>Oil pressure gauge</p>		<p>49 0877 435</p> <p>Wrench</p>		<p>49 S019 005</p> <p>Oil seal remover</p>	

(Part of 49 D019 9A2)					
49 0813 215A Dowel puller and oil pump puller		49 W027 003 Bearing installer		49 S019 006 Oil seal installer	
49 G030 797 Handle		49 B025 001 Body		49 1881 055A Stopper, counter weight	

[< Previous](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

Workshop Manual - Steering

2011 - RX-8

On-Board Diagnostics

- [ELECTRIC POWER STEERING \(EPS\) SYSTEM WIRING DIAGRAM](#)
- [ELECTRIC POWER STEERING \(EPS\) ON-BOARD DIAGNOSIS](#)
- [DTC B1318](#)
- [DTC B1342](#)
- [DTC B2141](#)
- [DTC B2278](#)
- [DTC C1099](#)

Symptom Troubleshooting

- [ELECTRIC POWER STEERING \(EPS\) SYSTEM WIRING DIAGRAM](#)
- [FOREWORD](#)
- [PRECAUTION](#)
- [SYMPTOM TROUBLESHOOTING](#)
- [NO.1 ELECTRIC POWER STEERING \(EPS\) WARNING LIGHT DOES NOT ILLUMINATE WITH IGNITION SWITCH AT ON](#)
- [NO.2 ELECTRIC POWER STEERING \(EPS\) WARNING LIGHT DOES NOT GO OUT EVEN THOUGH ENGINE HAS STARTED](#)
- [NO.3 POWER ASSIST DIFFERS BETWEEN RIGHT AND LEFT TURNS](#)

General Procedures

- [GENERAL PROCEDURES \(STEERING\)](#)

Engine Speed Sensing - Power Steering

- [STEERING LOCATION INDEX](#)
- [STEERING WHEEL AND COLUMN INSPECTION](#)
- [STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION](#)
- [STEERING SHAFT INSPECTION](#)
- [STEERING GEAR AND LINKAGE REMOVAL/INSTALLATION](#)
- [STEERING GEAR AND LINKAGE DISASSEMBLY/ASSEMBLY](#)
- [STEERING GEAR AND LINKAGE INSPECTION](#)
- [STEERING GEAR AND LINKAGE ADJUSTMENT](#)
- [TORQUE SENSOR INSPECTION](#)
- [EPS CONTROL MODULE REMOVAL/INSTALLATION](#)

- [EPS CONTROL MODULE INSPECTION](#)
- [EPS SYSTEM NEUTRAL POSITION SETTING](#)

Technical Data

- [STEERING TECHNICAL DATA](#)

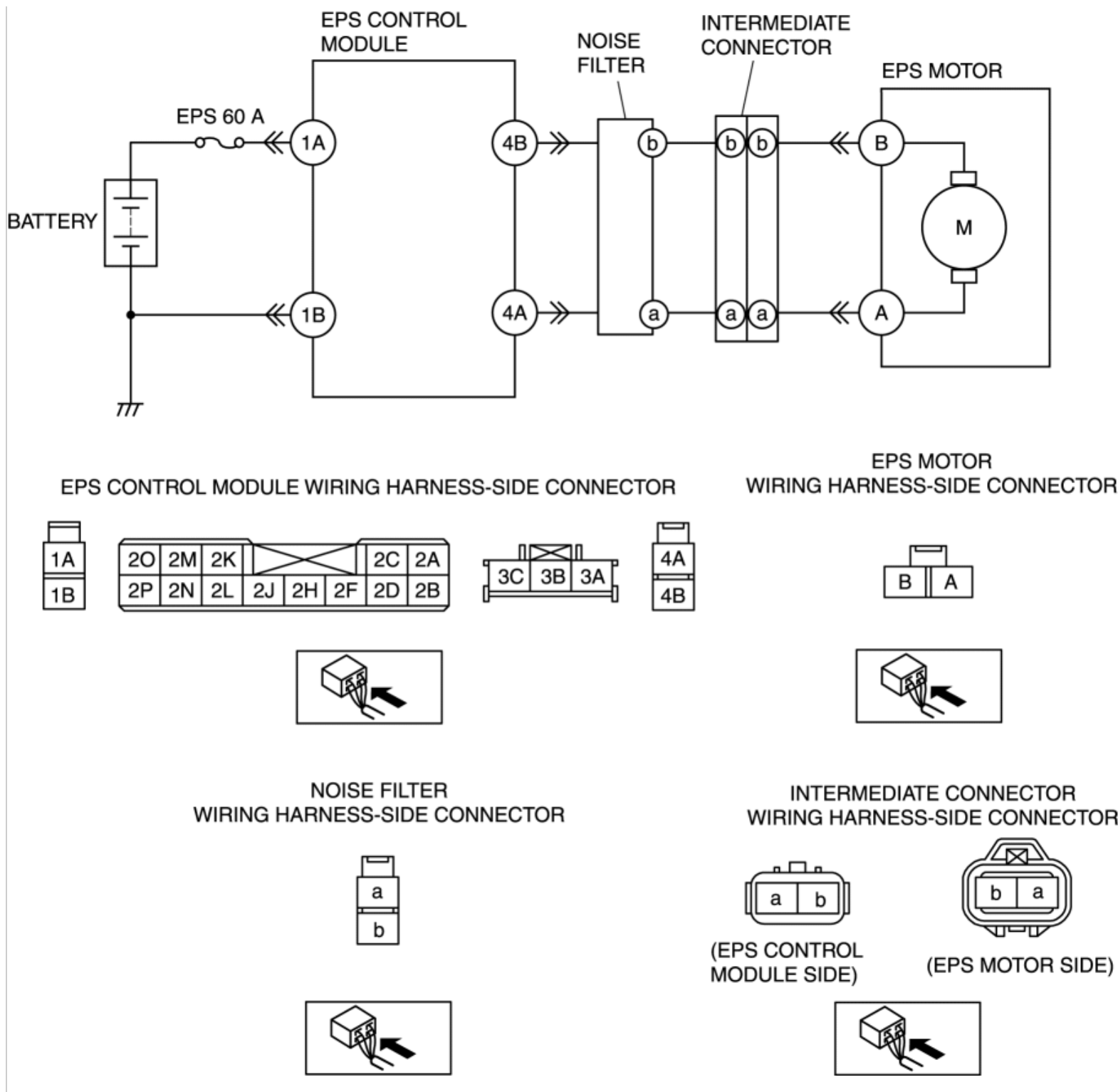
Maintenance/Service Tools

- [STEERING SST](#)

2011 - RX-8 - Steering

DTC B1342

DTC	B1342	EPS control module
DETECTION CONDITION	<ul style="list-style-type: none">• The on-board diagnostic function detects control module malfunction.	
POSSIBLE CAUSE	<ul style="list-style-type: none">• EPS 60 A fuse malfunction• Poor connection of EPS control module connector• EPS control module connector or terminal malfunction• Open or short to ground circuit in wiring harness between EPS control module terminal 1A and battery positive terminal.• Open or short circuit in wiring harness between the following EPS control module terminals and EPS motor terminals:<ul style="list-style-type: none">▪ EPS control module terminal 4A—EPS motor terminal A▪ EPS control module terminal 4B—EPS motor terminal B• Noise filter malfunction• EPS motor malfunction• Open circuit in wiring harness between EPS control module terminal 1B and battery negative terminal• EPS control module malfunction	



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT FUSE <ul style="list-style-type: none"> Inspect EPS 60 A fuse. Is EPS 60 A fuse normal? 	YesGo to the next step.
		No Replace EPS 60 A fuse, then go to Step 10.
2	INSPECT WHETHER MALFUNCTION IS CAUSED BY POOR CONNECTION OF EPS CONTROL MODULE OR	YesGo to the next step.

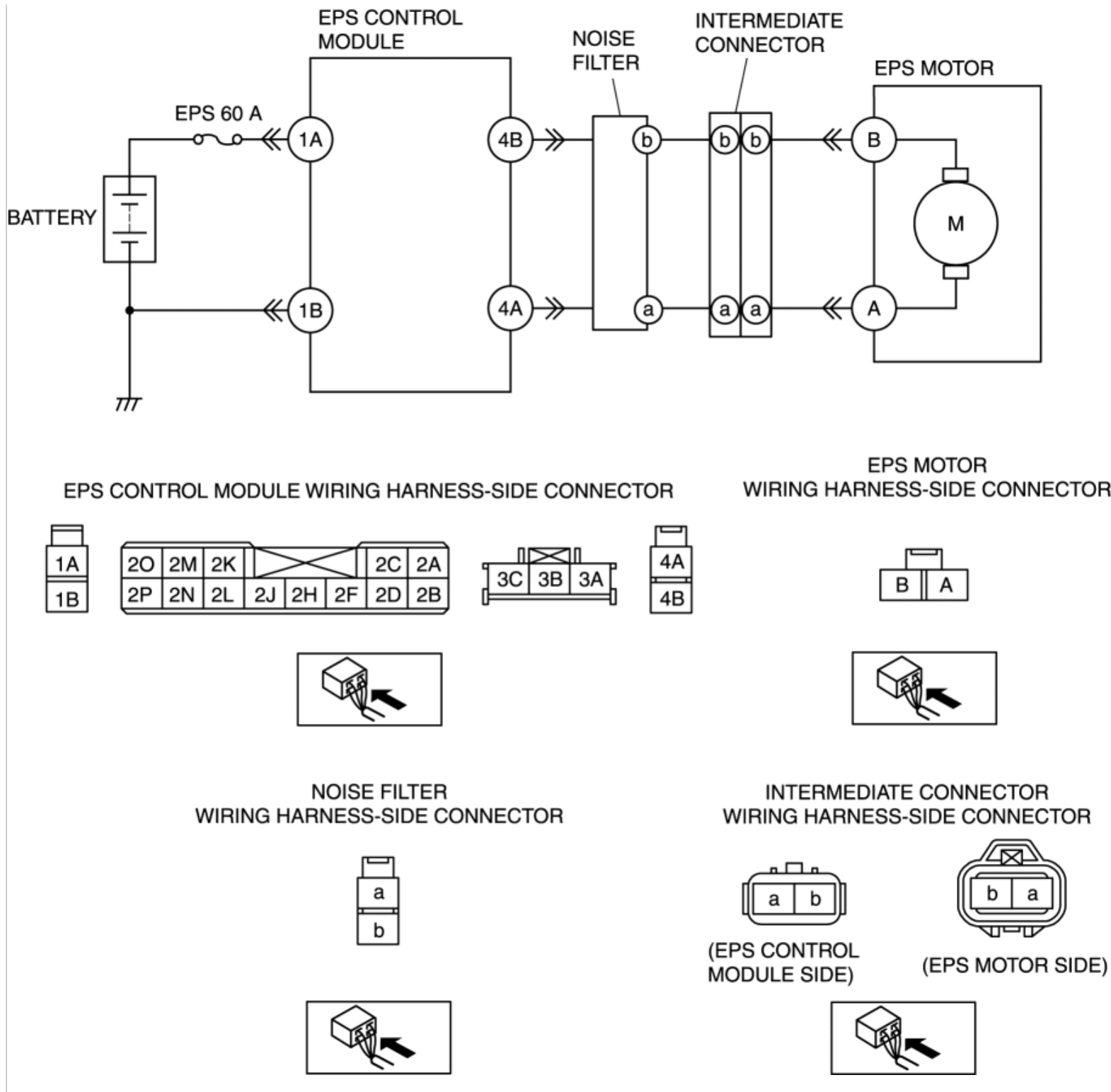
	PIN DEFORMATION <ul style="list-style-type: none"> • Turn the ignition switch off. • Inspect connection of the EPS control module and wiring harness. • Disconnect the EPS control module connector. • Inspect whether malfunction is caused by bent or poorly connected EPS control module connector pin. • Are connection and pin of connector and wiring harness normal? 		No Repair or replace faulty connector harness, then go to Step 6.
3	INSPECT EPS MOTOR POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the battery positive terminal. • Inspect for continuity between EPS control module terminal 1A and battery positive terminal. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for open circuit between the EPS control module and battery, then go to Step 10.
4	INSPECT EPS MOTOR POWER SUPPLY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Inspect for continuity between EPS control module terminal 1A and ground. • Is there continuity? 	Yes	Repair or replace the wiring harness for short to ground between the EPS control module and battery, then go to Step 10.
		No	Go to the next step.
5	INSPECT EPS MOTOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the noise filter connector. • Inspect for continuity between the EPS control module terminals and noise filter terminals. <ul style="list-style-type: none"> ▪ EPS control module terminal 4A—noise filter terminal a. ▪ EPS control module terminal 4B—noise filter terminal b. • Is there continuity? 	Yes	Go to the next step.
		No	Replace the noise filter, then go to Step 10.
6	INSPECT EPS MOTOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the EPS motor connector. • Inspect for continuity between the EPS motor terminals and noise filter terminals. <ul style="list-style-type: none"> ▪ EPS motor terminal A—noise filter terminal a. ▪ EPS motor terminal B—noise filter terminal b. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for open circuit between the EPS motor and noise filter, then go to Step 10.

7	INSPECT EPS MOTOR CIRCUIT FOR SHORT TO POWER <ul style="list-style-type: none"> Measure the voltage between the EPS motor terminals and ground. <ul style="list-style-type: none"> EPS motor terminal A—ground EPS motor terminal B—ground Is there any B+? 	Yes Repair or replace the wiring harness for short to power between the EPS motor and noise filter, then go to Step 10. No Go to the next step.
8	INSPECT EPS MOTOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Inspect for continuity between the EPS motor terminals and ground. <ul style="list-style-type: none"> EPS motor terminal A—ground EPS motor terminal B—ground Is there continuity? 	Yes Repair or replace the wiring harness for short to ground between the EPS motor and noise filter, then go to Step 10. No Go to the next step.
9	INSPECT EPS MOTOR GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Disconnect the battery negative terminal. Measure continuity between EPS control module terminal 1B and battery negative terminal. Is there continuity? 	Yes Go to the next step. No Repair or replace the wiring harness for open circuit between the EPS control module and battery, then go to the next step.
10	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the memory. (See ELECTRIC POWER STEERING (EPS) ON-BOARD DIAGNOSIS.) Turn the ignition switch off. Start the engine. Is the same DTC present? 	Yes Replace the EPS control module and/or steering gear and linkage, then go to the next step. (See EPS CONTROL MODULE REMOVAL/INSTALLATION.) (See STEERING GEAR AND LINKAGE REMOVAL/INSTALLATION.) No Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Are any other DTCs present? 	Yes Go to the applicable DTC inspection. (See ELECTRIC POWER STEERING (EPS) ON-BOARD DIAGNOSIS.) No DTC troubleshooting completed.

2011 - RX-8 - Steering

DTC C1099

DTC	C1099	EPS motor
DETECTION CONDITION	<ul style="list-style-type: none">Abnormality detected in control current from EPS control module to EPS motor.	
POSSIBLE CAUSE	<ul style="list-style-type: none">EPS 60 A fuse malfunctionPoor connection of EPS control module connectorEPS control module connector or terminal malfunctionOpen or short to ground circuit in wiring harness between EPS control module terminal 1A and battery positive terminalOpen or short circuit in wiring harness between the following EPS control module terminals and EPS motor terminals:<ul style="list-style-type: none">EPS control module terminal 4A—EPS motor terminal AEPS control module terminal 4B—EPS motor terminal BNoise filter malfunctionEPS motor malfunctionOpen circuit in wiring harness between EPS control module terminal 1B and battery negative terminalEPS control module malfunction	



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT FUSE <ul style="list-style-type: none"> Inspect EPS 60 A fuse. Is EPS 60 A fuse normal? 	YesGo to the next step.
		No Replace EPS 60 A fuse, then go to Step 10.
2	INSPECT WHETHER MALFUNCTION IS CAUSED BY	YesGo to the next step.

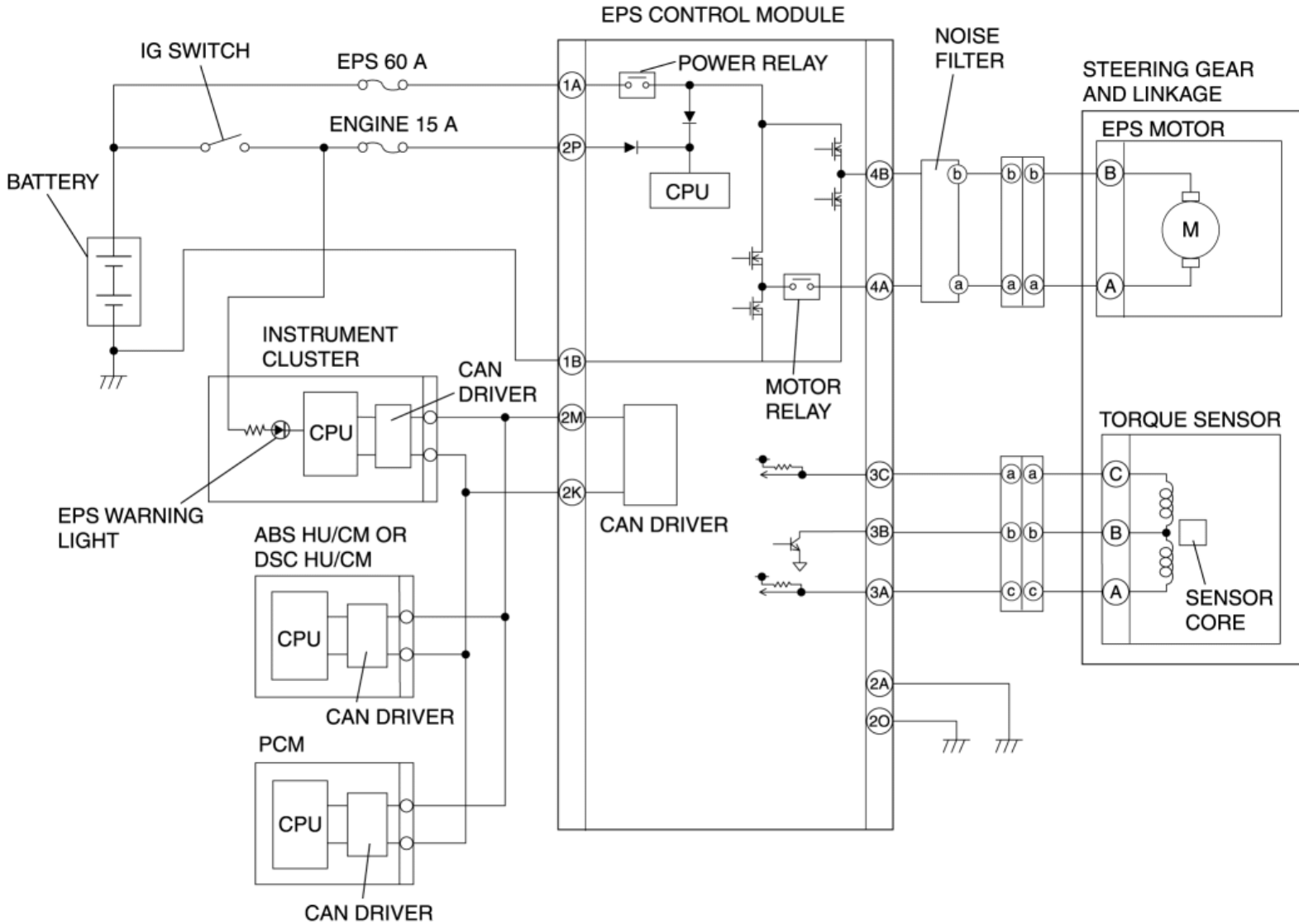
	POOR CONNECTION OF EPS CONTROL MODULE OR PIN DEFORMATION <ul style="list-style-type: none"> • Turn the ignition switch off. • Inspect connection of the EPS control module and wiring harness. • Disconnect the EPS control module connector. • Inspect whether malfunction is caused by bent or poorly connected EPS control module connector pin. • Are the connector connection, connector pins, and wiring harness normal? 		No Repair or replace the faulty connector wiring harness, then go to Step 6.
3	INSPECT EPS MOTOR POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the battery positive terminal. • Inspect for continuity between EPS control module terminal 1A and battery positive terminal. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for open circuit between the EPS control module and battery, then go to Step 10.
4	INSPECT EPS MOTOR POWER SUPPLY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Measure the voltage between EPS control module terminal 1A and ground. • Is there continuity? 	Yes	Repair or replace the wiring harness for short to ground between the EPS control module and battery, then go to Step 10.
		No	Go to the next step.
5	INSPECT EPS MOTOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the noise filter connector. • Inspect for continuity between the EPS control module terminals and noise filter terminals. <ul style="list-style-type: none"> ▪ EPS control module terminal 4A—noise filter terminal a. ▪ EPS control module terminal 4B—noise filter terminal b. • Is there continuity? 	Yes	Go to the next step.
		No	Replace the noise filter, then go to Step 10.
6	INSPECT EPS MOTOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the EPS motor connector. • Inspect for continuity between the EPS motor terminals and noise filter terminals. <ul style="list-style-type: none"> ▪ EPS motor terminal A—noise filter terminal a. ▪ EPS motor terminal B—noise filter terminal b. • Is there continuity? 	Yes	Go to next step.
		No	Repair or replace the wiring harness for open circuit between the EPS motor and noise filter, then go to Step 10.

7	INSPECT EPS MOTOR CIRCUIT FOR SHORT TO POWER <ul style="list-style-type: none"> Measure the voltage between the EPS motor terminals and ground. <ul style="list-style-type: none"> EPS motor terminal A—ground EPS motor terminal B—ground Is there any B+? 	Yes	Repair or replace the wiring harness for short to power between the EPS motor and noise filter, then go to Step 10.
		No	Go to the next step.
8	INSPECT EPS MOTOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Inspect for continuity between the EPS motor terminals and ground. <ul style="list-style-type: none"> EPS motor terminal A—ground EPS motor terminal B—ground Is there continuity? 	Yes	Repair or replace the wiring harness for short to ground between the EPS motor and noise filter, then go to Step 10.
		No	Go to the next step.
9	INSPECT EPS MOTOR GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Disconnect the battery negative terminal. Measure continuity between EPS control module terminal 1B and battery negative terminal. Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for open circuit between the EPS control module and battery, then go to the next step.
10	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the memory. <p>(See ELECTRIC POWER STEERING (EPS) ON-BOARD DIAGNOSIS.)</p> <ul style="list-style-type: none"> Turn the ignition switch off. Start the engine. Is the same DTC present? 	Yes	Replace the EPS control module, then go to the next step. (See EPS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
11	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Are any other DTCs present? 	Yes	Go to the applicable DTC inspection. (See ELECTRIC POWER STEERING (EPS) ON-BOARD DIAGNOSIS.)
		No	DTC troubleshooting completed.

[Next >](#)

2011 - RX-8 - Steering

ELECTRIC POWER STEERING (EPS) SYSTEM WIRING DIAGRAM



[Next >](#)

2011 - RX-8 - Steering

ELECTRIC POWER STEERING (EPS) ON-BOARD DIAGNOSIS

On-Board Diagnostic (OBD) Test Description

- The OBD test inspects the integrity and function of the EPS and outputs the results when requested by the specific tests.
- On-board diagnostic test also:
 - Provides a quick inspection of the EPS usually performed at the start of each diagnostic procedure.
 - Provides verification after repairs to ensure that no other faults occurred during service.
- The OBD test is divided into 3 tests:
 - Read/clear diagnostic results, PID monitor and record and active command modes.

Read/clear diagnostic results

- This function allows reading or clearing of DTCs in the EPS control module memory.

PID/Data monitor and record

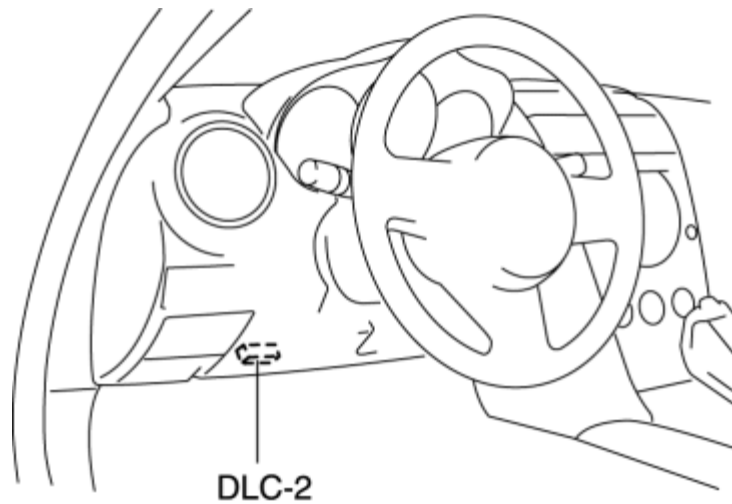
- This function allows access of certain data values, input signals, calculated values, and system status information.

Active command modes

- This function allows control of devices through the M-MDS.

Reading DTCs Procedure

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "EPS".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "EPS".
 3. Select "Self Test".

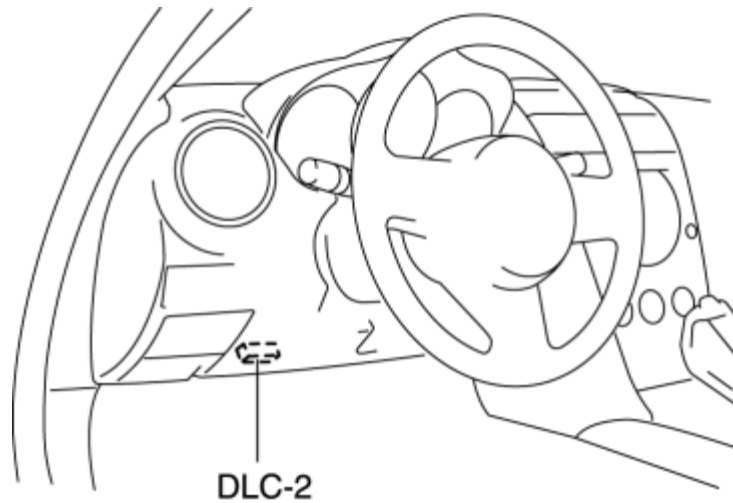
3. Verify the DTC according to the directions on the screen.

- If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.

4. After completion of repairs, clear all DTCs stored in the EPS. (See [Clearing DTCs Procedures](#))

Clearing DTCs Procedures

1. Connect the M-MDS to the DLC-2.



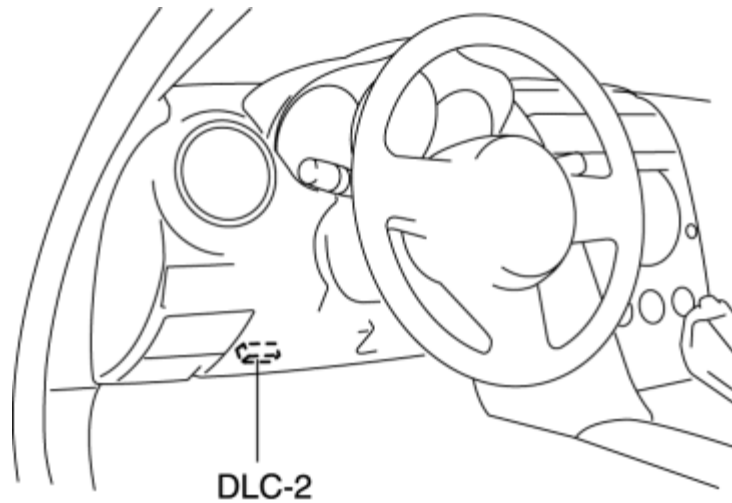
2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "EPS".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "EPS".
 3. Select "Self Test".

3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Turn the ignition switch to the LOCK position.
6. Turn the ignition switch to the ON position and wait for **5 s or more**.
7. Perform DTC inspection. (See [Reading DTCs Procedure](#).)
8. Verify that no DTCs are displayed.

PID/Data Monitor and Record Procedure

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "EPS".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "EPS".
 3. Select "DataLogger".

3. Select the applicable PID from the PID table.

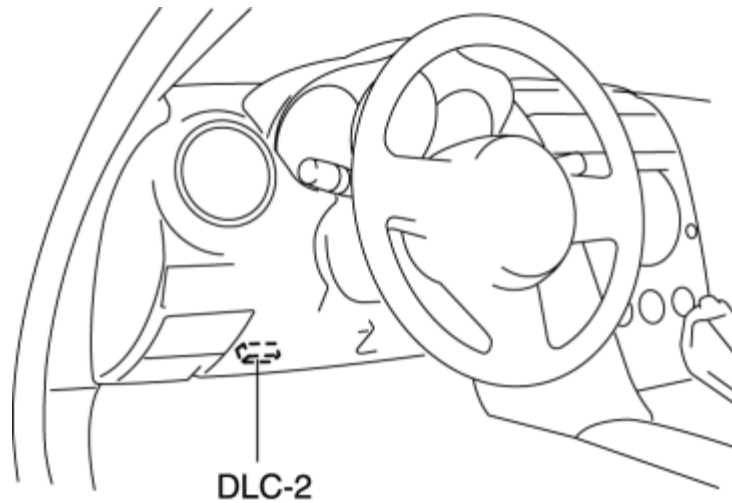
4. Verify the PID data according to the directions on the screen.

NOTE:

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

Active Command Modes Procedure

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "EPS".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "EPS".
 3. Select "DataLogger".

3. Select the active command modes from the PID table.

4. Perform the active command modes, inspect the operations for each parts.

- If the operation of output parts cannot be verified after the active command mode inspection is performed, this could indicate the possibility of an open or short circuit, sticking, or operation malfunction in the output parts.

DTC Table

DTC		
M-MDS	Diagnosis system component	Page

B1318	Battery power supply	(See DTC B1318.)
B1342	EPS control module	(See DTC B1342.)
B2141	EPS system (neutral position setting not performed)	(See DTC B2141.)
B2278	Torque sensor	(See DTC B2278.)
C1099	EPS motor	(See DTC C1099.)
U0073	CAN bus communication error	(See FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U1900	CAN communication error	
U2023	CAN communication error	

PID/DATA Monitor Table

PID Name (Definition)	Unit/Condition	Condition/Specification	Action	EPS control module terminal
B+ (System battery voltage value)	V	<ul style="list-style-type: none"> IG switch ON: B+ 	Inspect battery. (See BATTERY INSPECTION [13B-MSP].) Inspect power supply circuit (such as IG switch, fuse).	2P
CCNT (Number of continuous codes)	—	<ul style="list-style-type: none"> DTCs are detected: 1—255 No DTCs are detected: 0 	Perform inspection using appropriate DTC.	—
		<ul style="list-style-type: none"> Steering wheel is not turned: Near 0 A 	Inspect EPS control module. (See EPS CONTROL MODULE INSPECTION.)	

EPS_MTR (EPS motor drive signal)	A	<ul style="list-style-type: none"> Steering wheel is turned right: 0— 127 A Steering wheel is turned left: 0— - 128 A 	<p>Inspect EPS motor circuit.</p> <p>Inspect power supply circuit (such as IG switch, fuse).</p>	4A, 4B
EPSLAMP (EPS warning light output state)	On/Off	<ul style="list-style-type: none"> EPS warning light is illuminated: On EPS warning light is not illuminated: Off 	<p>Inspect EPS control module. (See EPS CONTROL MODULE INSPECTION.)</p> <p>Inspect instrument cluster.</p>	—
RPM (Engine speed signal)	RPM	<ul style="list-style-type: none"> Engine speed 1,000 rpm: 1000 RPM 	Inspect PCM. (See PCM INSPECTION [13B-MSP].)	—
TRQ_S_CORR (System neutral position setting)	Nm	<ul style="list-style-type: none"> Steering wheel is not turned: Near 0 Nm <p>(If system neutral position setting has not been performed, 31.75 Nm is output.)</p>	Perform EPS system neutral position setting. (See EPS SYSTEM NEUTRAL POSITION SETTING.)	—
TRQ_SENS (Torque sensor signal)	Nm	<ul style="list-style-type: none"> Steering wheel is not turned: Near 0 Nm Steering wheel is turned right: 0— 31.75 Nm Steering wheel is turned left: 0— - 32 Nm 	<p>Inspect torque sensor. (See TORQUE SENSOR INSPECTION.)</p> <p>Inspect torque sensor circuit.</p>	3A, 3B, 3C
VSS (Vehicle speed signal)	KPH, MPH	<ul style="list-style-type: none"> Vehicle is stopped: 0 KPH/0 MPH Vehicle speed 20 km/h {12 mph}: 20 KPH/12 MPH 	<p>Inspect PCM. (See PCM INSPECTION [13B-MSP].)</p> <p>Inspect instrument cluster. (See INSTRUMENT CLUSTER INSPECTION.)</p> <p>Inspect DSC HU/CM. (See DSC HU/CM INSPECTION.)</p>	—

Active Command Mode Table

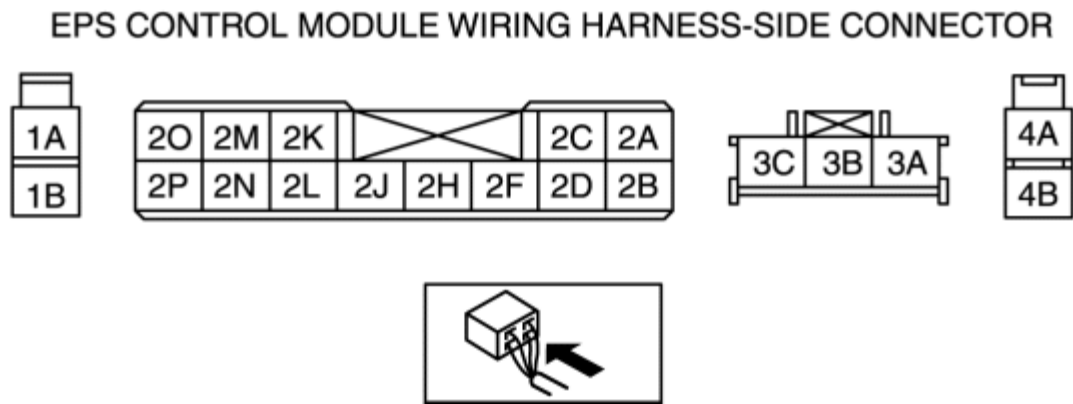
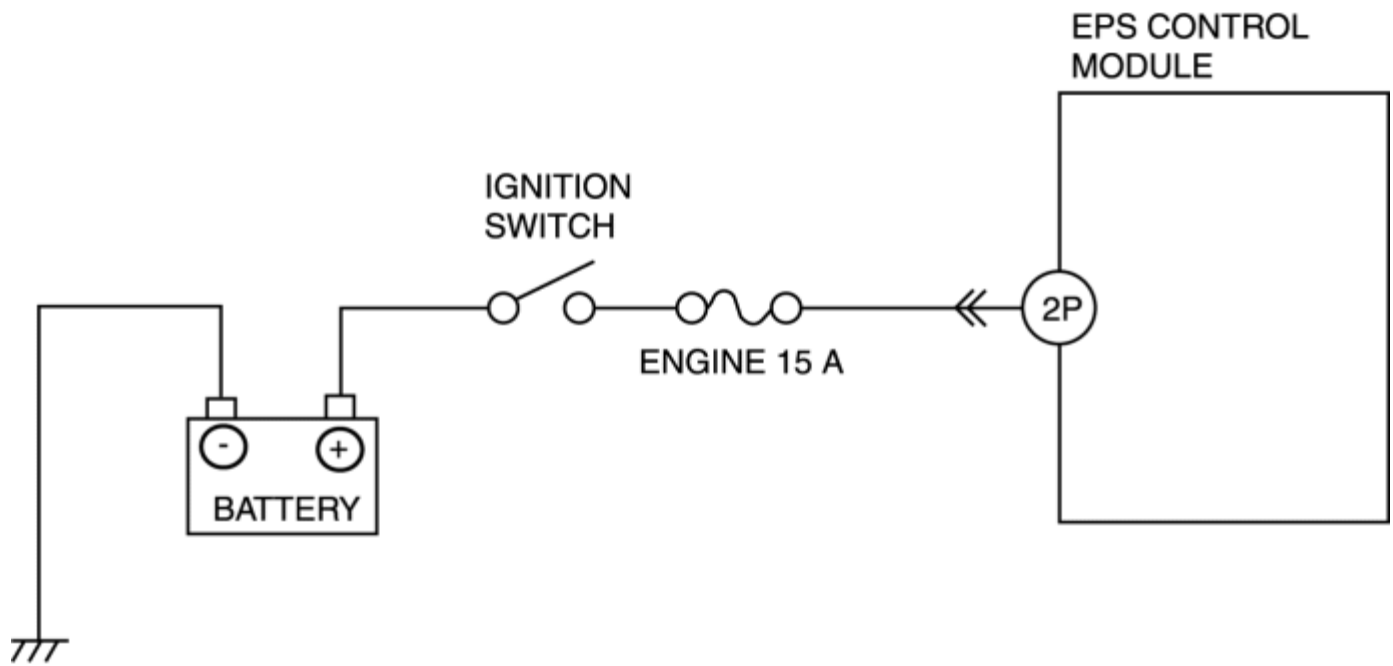
Command Name	Definition	Operation	Note
TRQ_S_CAL	EPS system neutral position setting	On/Off	Ignition switch at ON

[< Previous](#) [Next >](#)

2011 - RX-8 - Steering

DTC B1318

DTC	B1318	Battery power supply
DETECTION CONDITION	<ul style="list-style-type: none">• Voltage of 10 V or less or 16 V or more detected by EPS control module internal ignition voltage observation.	
POSSIBLE CAUSE	<ul style="list-style-type: none">• Battery malfunction• Generator malfunction• Poor connection of EPS control module connector• EPS control module connector or terminal malfunction• Short to ground in wiring harness between EPS control module terminal 2P and battery• EPS control module malfunction	



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT POWER SUPPLY VOLTAGE USING M-MDS <ul style="list-style-type: none"> Turn the ignition switch off. Connect the M-MDS to the DLC-2. Turn the ignition switch to the ON position (engine off). Access B+ PID. Is the voltage normal? 	Yes Malfunction may be temporary. Go to Step 6. No Go to the next step.
2	INSPECT BATTERY <ul style="list-style-type: none"> Inspect the battery. 	Yes Go to the next step.

	<p>(See BATTERY INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is it normal? 	<p>No Repair or replace the battery, then go to Step 6.</p> <p>(See BATTERY REMOVAL/INSTALLATION [13B-MSP].)</p>
3	<p>INSPECT GENERATOR</p> <ul style="list-style-type: none"> Inspect the generator. <p>(See GENERATOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is it normal? 	<p>Yes Go to the next step.</p>
		<p>No Repair or replace the generator, then go to Step 6.</p> <p>(See BATTERY REMOVAL/INSTALLATION [13B-MSP].)</p>
4	<p>INSPECT WHETHER MALFUNCTION IS CAUSED BY POOR CONNECTION OF EPS CONTROL MODULE OR PIN DEFORMATION</p> <ul style="list-style-type: none"> Turn the ignition switch off. Inspect connection of the EPS control module and wiring harness. Disconnect the EPS control module connector. Inspect whether malfunction is caused by bent or poorly connected EPS control module connector pin. Are the connector connection, connector pins, and wiring harness normal? 	<p>Yes Go to the next step.</p>
		<p>No Repair or replace the malfunction connector wiring harness, then go to Step 6.</p>
5	<p>INSPECT EPS CONTROL MODULE POWER SUPPLY CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> Disconnect the battery positive terminal. Inspect for continuity between EPS control module terminal 2P and ground. Is there continuity? 	<p>Yes Repair or replace the wiring harness for short to ground between EPS control module terminal 2P and ground, then go to Step 6.</p>
		<p>No Go to the next step.</p>
6	<p>VERIFY TROUBLESHOOTING COMPLETED</p> <ul style="list-style-type: none"> Make sure to reconnect all disconnected connectors. Clear the DTC from the memory. <p>(See ELECTRIC POWER STEERING (EPS) ON-BOARD DIAGNOSIS.)</p>	<p>Yes Replace the EPS control module, then go to the next step.</p> <p>(See EPS CONTROL MODULE REMOVAL/INSTALLATION.)</p>
		<p>No Go to the next step.</p>

	<ul style="list-style-type: none">• Turn the ignition switch off.• Start the engine.• Is the same DTC present?		
7	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none">• Are any other DTCs present?	Yes	Go to the applicable DTC inspection. (See ELECTRIC POWER STEERING (EPS) ON-BOARD DIAGNOSIS.)
		No	DTC troubleshooting completed.

2011 - RX-8 - Steering

DTC B2141

DTC	B2141	EPS system (neutral position setting not performed)
DETECTION CONDITION		<ul style="list-style-type: none"> Failure to perform EPS control module neutral position setting detected.
POSSIBLE CAUSE		<ul style="list-style-type: none"> EPS system neutral position setting not performed EPS control module malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	PERFORM EPS SYSTEM NEUTRAL POSITION SETTING <ul style="list-style-type: none"> Perform the EPS system neutral position setting. (See EPS SYSTEM NEUTRAL POSITION SETTING.)	After completing the EPS system neutral position setting, go to the next step.
2	VERIFY CURRENT MALFUNCTION STATUS <ul style="list-style-type: none"> Clear the DTC from the memory. (See ELECTRIC POWER STEERING (EPS) ON-BOARD DIAGNOSIS.) <ul style="list-style-type: none"> Turn the ignition switch off. Start the engine. Is the same DTC present? 	Yes Replace the EPS control module, then go to the next step. (See EPS CONTROL MODULE REMOVAL/INSTALLATION.) No Go to the next step.
3	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Are any other DTCs present? 	Yes Go to the applicable DTC inspection. (See ELECTRIC POWER STEERING (EPS) ON-

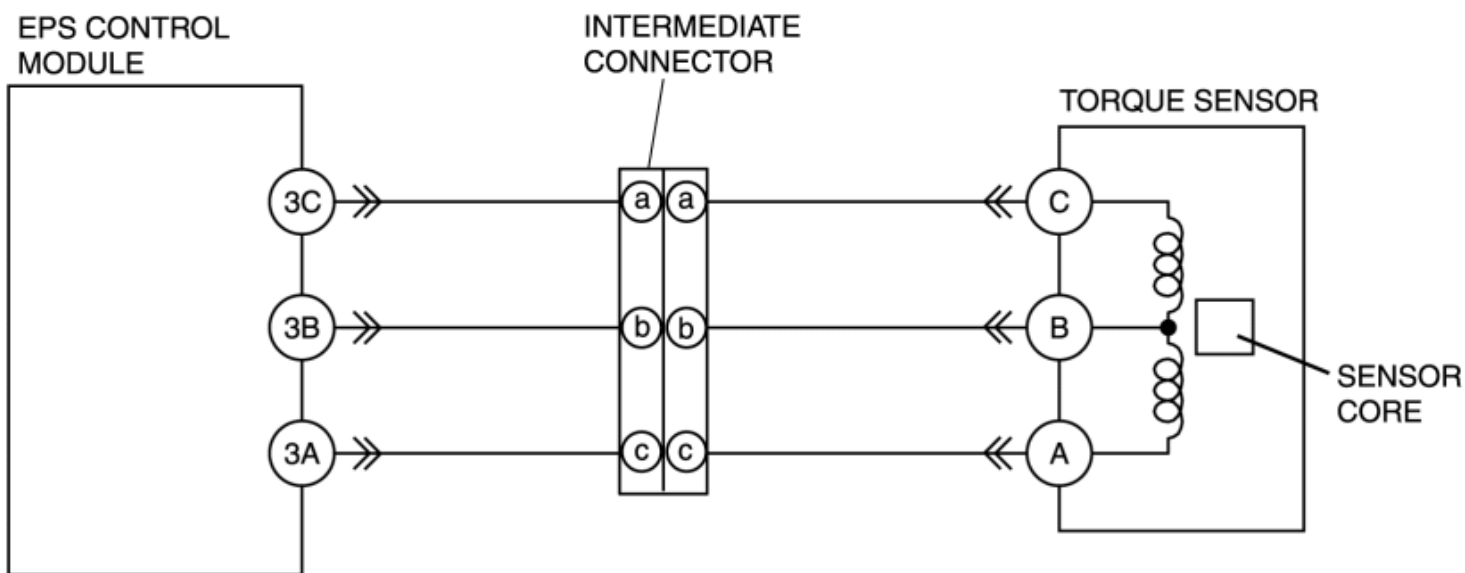
		BOARD DIAGNOSIS.)
		No DTC troubleshooting completed.

[< Previous](#) [Next >](#)

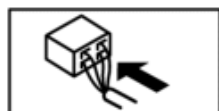
2011 - RX-8 - Steering

DTC B2278

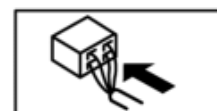
DTC	B2278	Torque sensor
DETECTION CONDITION	<ul style="list-style-type: none">Abnormal input signal detected from torque sensor.	
POSSIBLE CAUSE	<ul style="list-style-type: none">Poor connection of EPS control module connectorEPS control module connector or terminal malfunctionOpen or short circuit in wiring harness between EPS control module terminals and torque sensor terminals:<ul style="list-style-type: none">EPS control module terminal 3A—torque sensor terminal AEPS control module terminal 3B—torque sensor terminal BEPS control module terminal 3C—torque sensor terminal CTorque sensor malfunctionEPS control module malfunction	



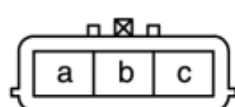
EPS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



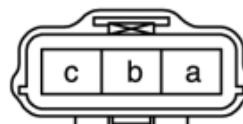
TORQUE SENSOR WIRING HARNESS-SIDE CONNECTOR



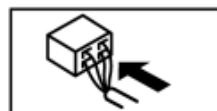
INTERMEDIATE CONNECTOR WIRING HARNESS-SIDE CONNECTOR



(EPS CONTROL MODULE SIDE)



(TORQUE SENSOR SIDE)



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT TORQUE SENSOR USING M-MDS <ul style="list-style-type: none"> Turn the ignition switch off. Connect the M-MDS to the DLC-2. Turn the ignition switch to the ON position (engine OFF). 	<p>Yes Malfunction may be temporary. Go to step 7.</p> <p>No Go to the next step.</p>

	<ul style="list-style-type: none"> • Access TRQ_SENS PID. • Verify that the data monitor value changes when the steering wheel is turned. <p>Left: 0— -32 NM</p> <p>Right: 0—31.75 NM</p> <ul style="list-style-type: none"> • Do the torque sensor signal values change in the same way? 		
2	INSPECT WHETHER MALFUNCTION IS CAUSED BY POOR CONNECTION OF EPS CONTROL MODULE OR PIN DEFORMATION <ul style="list-style-type: none"> • Turn the ignition switch off. • Inspect connection of the EPS control module and wiring harness. • Disconnect the EPS control module connector. • Inspect whether malfunction is caused by bent or poorly connected EPS control module connector pin. • Are the connector connection, connector pins, and wiring harness normal? 	Yes	Go to the next step.
		No	Repair or replace the faulty connector wiring harness, then go to Step 7.
3	INSPECT TORQUE SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Inspect for continuity between the EPS control module terminals and torque sensor terminals. <ul style="list-style-type: none"> ▪ EPS control module terminal 3A—torque sensor terminal A ▪ EPS control module terminal 3B—torque sensor terminal B ▪ EPS control module terminal 3C—torque sensor terminal C • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for open circuit between the EPS control module and torque sensor, then go to Step 7.
4	INSPECT TORQUE SENSOR CIRCUIT FOR SHORT TO POWER <ul style="list-style-type: none"> • Measure the voltage between the torque sensor terminals and ground. <ul style="list-style-type: none"> ▪ Torque sensor terminal A—ground ▪ Torque sensor terminal B—ground 	Yes	Repair or replace the wiring harness for short to power between the EPS control module and torque sensor, then go to Step 7.
		No	Go to the next step.

	<ul style="list-style-type: none"> ▪ Torque sensor terminal C—ground <ul style="list-style-type: none"> • Is there any B+? 		
5	INSPECT TORQUE SENSOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Inspect for continuity between the torque sensor terminals and ground. <ul style="list-style-type: none"> ▪ Torque sensor terminal A—ground ▪ Torque sensor terminal B—ground ▪ Torque sensor terminal C—ground • Is there continuity? 	Yes Repair or replace the wiring harness for short to ground between the EPS control module and torque sensor, then go to the next step.	
		No Go to the next step.	
6	INSPECT TORQUE SENSOR <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the torque sensor connector. • Measure the resistance between the torque sensor terminals. <ul style="list-style-type: none"> ▪ Terminals A—B ▪ Terminals B—C <p>Resistance: 12—15 ohms</p> • Is the torque sensor normal? 	Yes Go to the next step.	
		No Replace the steering gear and linkage, then go to Step 7. (See STEERING GEAR AND LINKAGE REMOVAL/INSTALLATION.)	
7	VERIFY TROUBLESHOOTING COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the memory. (See ELECTRIC POWER STEERING (EPS) ON-BOARD DIAGNOSIS.) • Turn the ignition switch off. • Start the engine. • Is the same DTC present? 	Yes Replace the EPS control module, then go to the next step. (See EPS CONTROL MODULE REMOVAL/INSTALLATION.)	
		No Go to the next step.	
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Are any other DTCs present? 	Yes Go to the applicable DTC inspection. (See ELECTRIC POWER STEERING (EPS) ON-BOARD DIAGNOSIS.)	
		No DTC troubleshooting completed.	

[< Previous](#) [Next >](#)

2011 - RX-8 - Steering

FOREWORD

- Before performing the steps in Symptom Troubleshooting, perform the On-board Diagnostic Inspection. To inspect the DTC, follow the DTC Inspection steps. (See [ELECTRIC POWER STEERING \(EPS\) ON-BOARD DIAGNOSIS](#).)

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Steering

PRECAUTION

Intermittent Concern Troubleshooting

Vibration method

- If a malfunction occurs or becomes worse while driving on a rough road or when the engine is vibrating, perform the following steps.

NOTE:

- There are several reasons why vehicle or engine vibration could cause an electrical malfunction. Inspect the following:
 - Connectors not fully seated.
 - Wiring harnesses not having full play.
 - Wires laying across brackets or moving parts.
 - Wires routed too close to hot parts.
- An improperly routed, improperly clamped, or loose harness can cause wiring to become pinched between parts.
- The connector joints, points of vibration, and places where wiring harnesses pass through the firewall, body panels and other panels are the major areas to be inspected.

Inspection method for switch and/or sensor connectors or wires

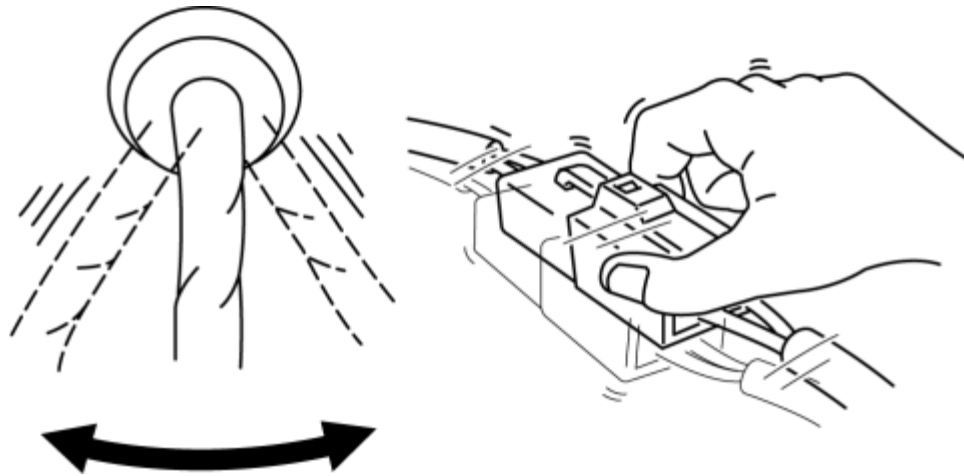
1. Connect the M-MDS to the DLC-2.
2. Turn the ignition switch to the ON position (engine off).

NOTE:

- If the engine starts and runs, perform the following steps at idle.
3. Access PIDs for the switch you are inspecting.

4. Turn the switch on manually.

5. Slightly shake each connector or wiring harness vertically and horizontally while monitoring the PID.



- If the PID value is unstable, inspect for poor connection.

Inspection method for sensors

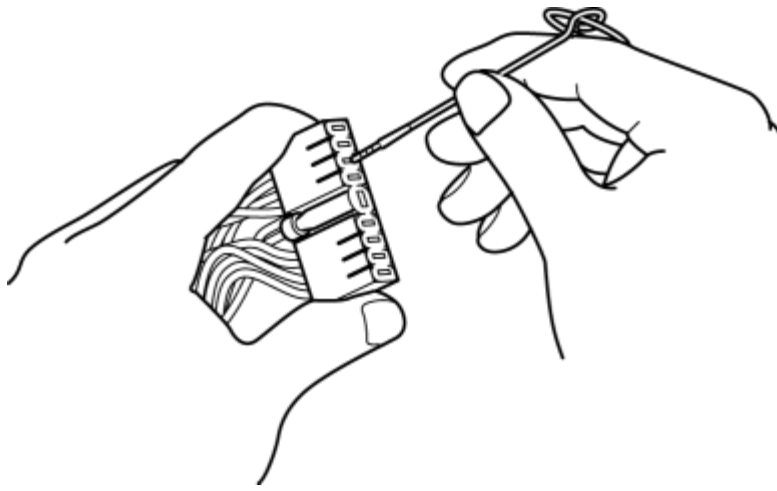
1. Connect the M-MDS to the DLC-2.
2. Turn the ignition switch to the ON position (engine off).

NOTE:

- If the engine starts and runs, perform the following steps at idle.
3. Access PIDs for the switch you are inspecting.
 4. Vibrate the sensor slightly with your finger.
- If the PID value is unstable or a malfunction occurs, inspect for poor connection and/or poorly mounted sensor.

Connector terminal check method

1. Inspect the connection of each female terminal.
2. Insert the male terminal and then fit the female terminal side to female terminal. Inspect whether the malfunction is in the female terminal.



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Steering

SYMPTOM TROUBLESHOOTING

- Verify the symptom, and perform troubleshooting according to the appropriate number.

No.	Symptom
1	EPS warning light does not illuminate with ignition switch at ON.
2	EPS warning light does not go out even though engine has started.
3	Power assist differs between right and left turns.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Steering

NO.1 ELECTRIC POWER STEERING (EPS) WARNING LIGHT DOES NOT ILLUMINATE WITH IGNITION SWITCH AT ON

1 EPS warning light does not illuminate with ignition switch at ON.

TROUBLESHOOTING HINTS

- EPS warning light circuit malfunction in the instrument cluster
- An error originates from the EPS control module, and the "off" signal is generated.
 - EPS control module malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT PID/DATA IN EPS CONTROL MODULE <ul style="list-style-type: none">• Select the following items using the M-MDS Datalogger function.<ul style="list-style-type: none">▪ EPSLAMP (EPS warning light)• Is the EPSLAMP ON while the ignition switch is turned to the ON position?	Yes EPS warning light circuit malfunction in the instrument cluster. Inspect the instrument cluster. (See INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE.)
		No EPS control module malfunction. Replace the EPS control module. (See EPS CONTROL MODULE REMOVAL/INSTALLATION.)

2011 - RX-8 - Steering

NO.2 ELECTRIC POWER STEERING (EPS) WARNING LIGHT DOES NOT GO OUT EVEN THOUGH ENGINE HAS STARTED

2	EPS warning light does not go out even though engine has started.
TROUBLESHOOTING HINTS <ul style="list-style-type: none">• EPS system malfunction<ul style="list-style-type: none">▪ Wiring harness malfunction▪ Connector condition malfunction▪ Torque sensor malfunction▪ EPS motor malfunction▪ Fuse malfunction▪ EPS control module malfunction• EPS control module detects an EPS system malfunction even though the EPS system is normal.• CAN communication line malfunction<ul style="list-style-type: none">▪ Vehicle speed signal malfunction▪ Engine speed signal malfunction▪ CAN wiring harness malfunction• EPS warning light circuit malfunction in the instrument cluster• CAN wiring harness malfunction<ul style="list-style-type: none">▪ Malfunction in wiring harness between EPS control module and instrument cluster	

Diagnostic procedure

STEP	INSPECTION	ACTION
------	------------	--------

1	INSPECT EPS CONTROL MODULE AND DLC-2 FOR CONTINUITY OR SHORT <ul style="list-style-type: none"> Perform the DTC inspection. Is an error message regarding the communication between the EPS control module and the M-MDS displayed? 	Yes	If a communication error message is displayed even after inspecting according to the procedures displayed on the M-MDS, go to Step 5.
		No	Go to the next step.
2	INSPECT FOR DTCS IN EPS CONTROL MODULE <ul style="list-style-type: none"> Have DTCs been recorded in the memory? 	Yes	Perform inspection using the appropriate DTC.
3	INSPECT PID/DATA IN EPS CONTROL MODULE <ul style="list-style-type: none"> Select the following items using the M-MDS Datalogger function. <ul style="list-style-type: none"> EPSSLAMP (EPS warning light) Is the EPSSLAMP ON after the engine is already running? 	Yes	Repeat the DTC inspection. If no DTCs have been recorded in the memory, replace the EPS control module. (See EPS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	The EPS system is normal. Go to the next step.
4	INSPECT WIRING HARNESS FOR CONTINUITY BETWEEN EPS CONTROL MODULE AND INSTRUMENT CLUSTER <ul style="list-style-type: none"> Disconnect the EPS control module connector and the instrument cluster connector. Inspect for continuity between the EPS control module and the instrument cluster at the following terminals. <ul style="list-style-type: none"> Terminal 2M (13-pin) and terminal 1J (12-pin) 	Yes	Inspect the instrument cluster. (EPS warning light circuit malfunction in the instrument cluster) (See INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE.)
		No	Repair the wiring harness between the EPS control module and the instrument cluster, then reinspect the malfunction symptoms.

	<p>Terminal 2K (13-pin) and terminal 1L (12-pin)</p> <ul style="list-style-type: none"> Is there continuity? 		
5	<p>INSPECT WIRING HARNESS FOR CONTINUITY BETWEEN EPS CONTROL MODULE AND DLC-2</p> <ul style="list-style-type: none"> Disconnect the EPS control module connector. Inspect for continuity between the EPS control module and the DLC-2 at the following terminals. <ul style="list-style-type: none"> Terminal 2M (13-pin) and CAN_H terminal (16-pin) Terminal 2K (13-pin) and CAN_L terminal (16-pin) Is there continuity? 	<p>Yes Go to the next step.</p> <p>No Repair the wiring harness between the EPS control module and the DLC-2, then repeat from Step 1 if the malfunction.</p>	
6	<p>INSPECT VOLTAGE AT EPS CONTROL MODULE</p> <ul style="list-style-type: none"> Measure the voltage at EPS control module connector terminal 2P (13-pin, IG1 signal). Is the voltage within the following range? <ul style="list-style-type: none"> IG ON: 10 —16 V 	<p>Yes Inspect the EPS control module connectors, then repeat from Step 1 if the malfunction recurs. If the same symptoms recur, replace the EPS control module.</p> <p>(See EPS CONTROL MODULE REMOVAL/INSTALLATION.)</p> <p>No Inspect the battery. If the battery condition is normal, inspect and repair the EPS control module wiring harness (IG1 signal). Reinspect the malfunction symptoms.</p>	

2011 - RX-8 - Steering

NO.3 POWER ASSIST DIFFERS BETWEEN RIGHT AND LEFT TURNS

3	Power assist differs between right and left turns.
TROUBLESHOOTING HINTS <ul style="list-style-type: none"> Steering gear and linkage malfunction EPS motor malfunction Torque sensor malfunction EPS control module malfunction EPS system neutral position setting not performed. 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT FOR DTC IN EPS CONTROL MODULE <ul style="list-style-type: none"> Have DTCs been recorded in the memory? 	Yes	Perform inspection using the appropriate DTC, then go to Step 3.
		No	Go to the next step.
2	INSPECT STEERING WHEEL POWER ASSIST <ul style="list-style-type: none"> Disconnect the EPS motor connector. Inspect the steering wheel power assist. Is there a difference in the steering wheel power assist between right and left turns? 	Yes	Inspect the steering gear and linkage. If it is abnormal, replace it. (See STEERING GEAR AND LINKAGE REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	INSPECT TORQUE SENSOR AND EPS MOTOR	Yes	Inspect the torque sensor wiring harness and the

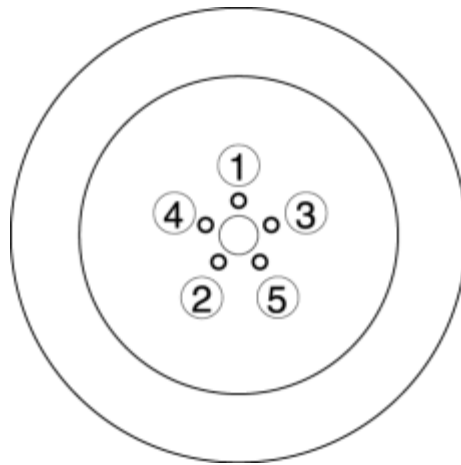
	<ul style="list-style-type: none">• Inspect the following items:<ul style="list-style-type: none">▪ Measure the resistance of the torque sensor. Resistance: 12—15 ohms▪ Inspect the operating condition of the EPS motor.• Are they normal?	<p>EPS motor wiring harness. If they are normal, replace the EPS control module.</p> <p>(See EPS CONTROL MODULE REMOVAL/INSTALLATION.)</p>
		<p>No Replace the steering gear and linkage.</p> <p>(See STEERING GEAR AND LINKAGE REMOVAL/INSTALLATION.)</p>

2011 - RX-8 - Steering

GENERAL PROCEDURES (STEERING)

Wheel And Tire Installation

1. When installing the wheels and tires, tighten the wheel nuts in a criss-cross pattern to the following tightening torque.



Tightening torque

- 88—118 N·m
{9.0—12.0 kgf·m, 65.0—87.0 ft·lbf}

Connector Disconnection

1. Perform the following works, before the connectors are disconnected.
 - a. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))
 - b. Remove the battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))
 - c. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))

EPS Related Parts

1. Make sure that there are no DTCs in the EPS memory after working on EPS related parts. If there are any codes in the memory, clear them.

EPS System Neutral Setting

CAUTION:

- After working on the steering system, always set the EPS system to the neutral position to prevent system malfunction.
1. After performing the following, set the EPS system to the neutral position. (See [EPS SYSTEM NEUTRAL POSITION SETTING](#).)
- Steering gear and linkage replacement
 - EPS control unit replacement
 - Disconnecting the steering shaft joint (gear side)

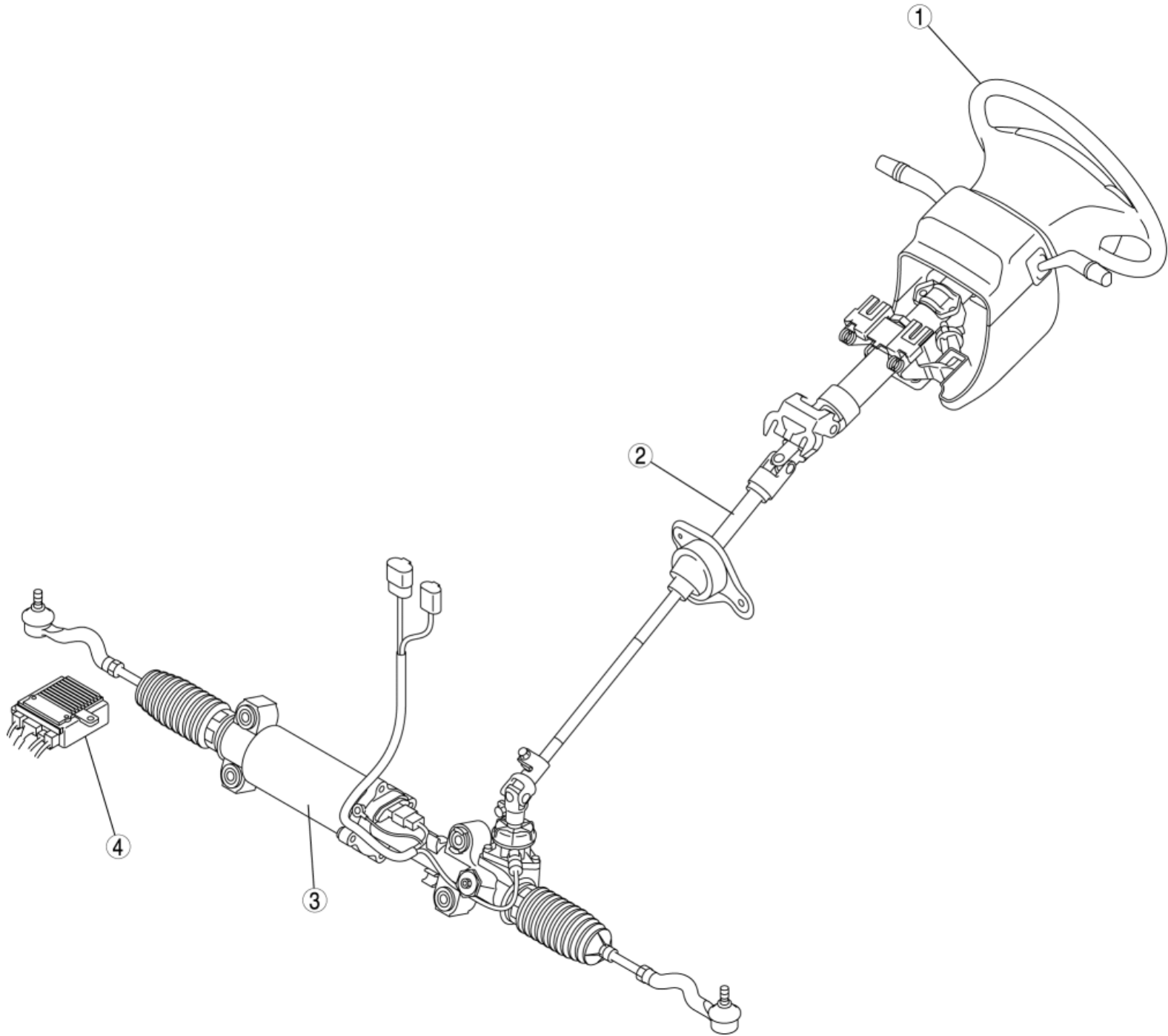
[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Steering

STEERING LOCATION INDEX



1 Steering wheel and column

(See [STEERING WHEEL AND COLUMN INSPECTION.](#))

(See [STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.](#))

2Steering shaft

(See [STEERING SHAFT INSPECTION.](#))

3Steering gear and linkage

(See [STEERING GEAR AND LINKAGE REMOVAL/INSTALLATION.](#))

(See [STEERING GEAR AND LINKAGE INSPECTION.](#))

(See [STEERING GEAR AND LINKAGE DISASSEMBLY/ASSEMBLY.](#))

(See [STEERING GEAR AND LINKAGE ADJUSTMENT.](#))

4EPS control module

(See [EPS CONTROL MODULE REMOVAL/INSTALLATION.](#))

(See [EPS CONTROL MODULE INSPECTION.](#))

(See [EPS SYSTEM NEUTRAL POSITION SETTING.](#))

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Steering

STEERING WHEEL AND COLUMN INSPECTION

Play Inspection

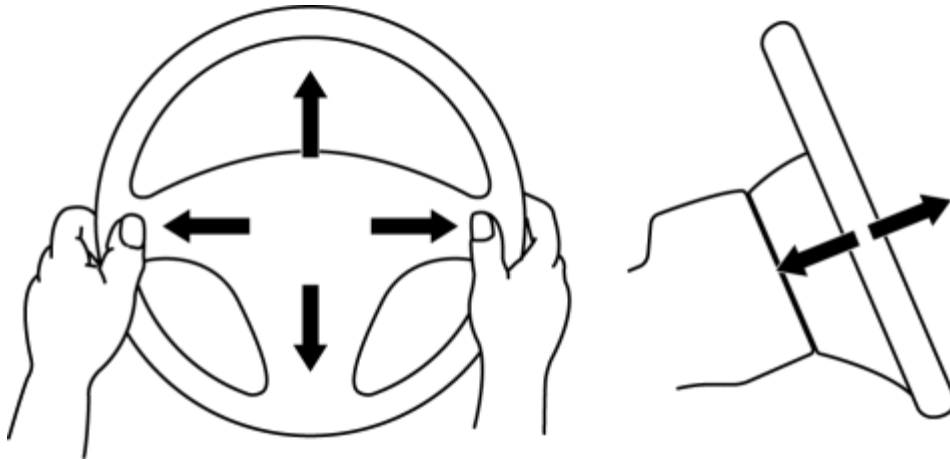
1. With the wheels in the straight-ahead position, start the engine.
2. Turn the steering wheel to the left and right gently, and verify that the steering wheel play is within the specification.

Steering wheel play

- 0—30 mm {0—1.2 in}

Looseness, Play Inspection

1. Move the steering wheel toward the shaft and in four right angle directions to inspect for looseness and play.



- If there is any malfunction, inspect the following, and repair or replace the applicable part.
 - Column bearing wear
 - Looseness of the steering wheel installation part
 - Looseness of the column installed part
 - Excessive play of the steering shaft joint

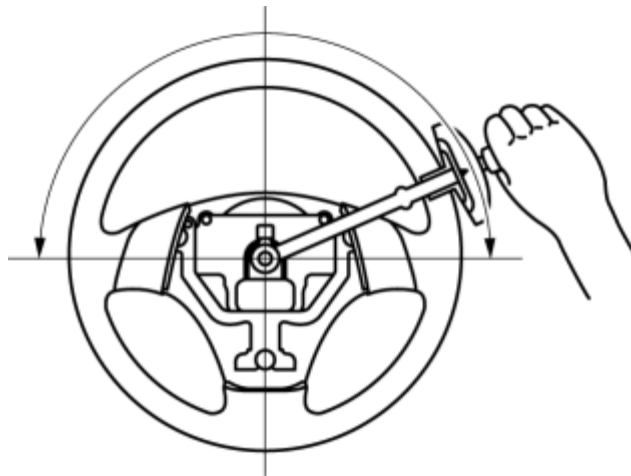
- Excessive play of the steering gear

Steering Wheel Effort Inspection

1. Verify that the equipped tire size and tire air pressure is as specified.
2. With the vehicle on a hard, level surface, put the wheels in the straight-ahead position.

WARNING:

- Handling the air bag module improperly can accidentally deploy the air bag module, which may seriously injure you. Read the service warnings before handling the air bag module. (See [AIR BAG SYSTEM SERVICE WARNINGS](#).)
3. Remove the air bag module.
 4. Start the engine and idle it.
 5. Verify that the EPS warning light does not illuminate.
 6. Inspect the steering wheel effort using a torque wrench.



- If it exceeds the reference value, adjust the steering gear and linkage. (See [STEERING GEAR AND LINKAGE ADJUSTMENT](#).)

Steering wheel effort

- 5.0 N·m {50 kgf·cm, 44 in·lbf} or less

NOTE:

- To determine whether the steering effort is satisfactory or not, perform the inspection on another vehicle of the same model and under the same conditions, and compare the results.
- The steering wheel effort varies with conditions indicated below.
 - Road conditions: such as dry or wet, asphalt or concrete
 - Tire conditions: such as brand, wear, and tire air pressure

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Steering

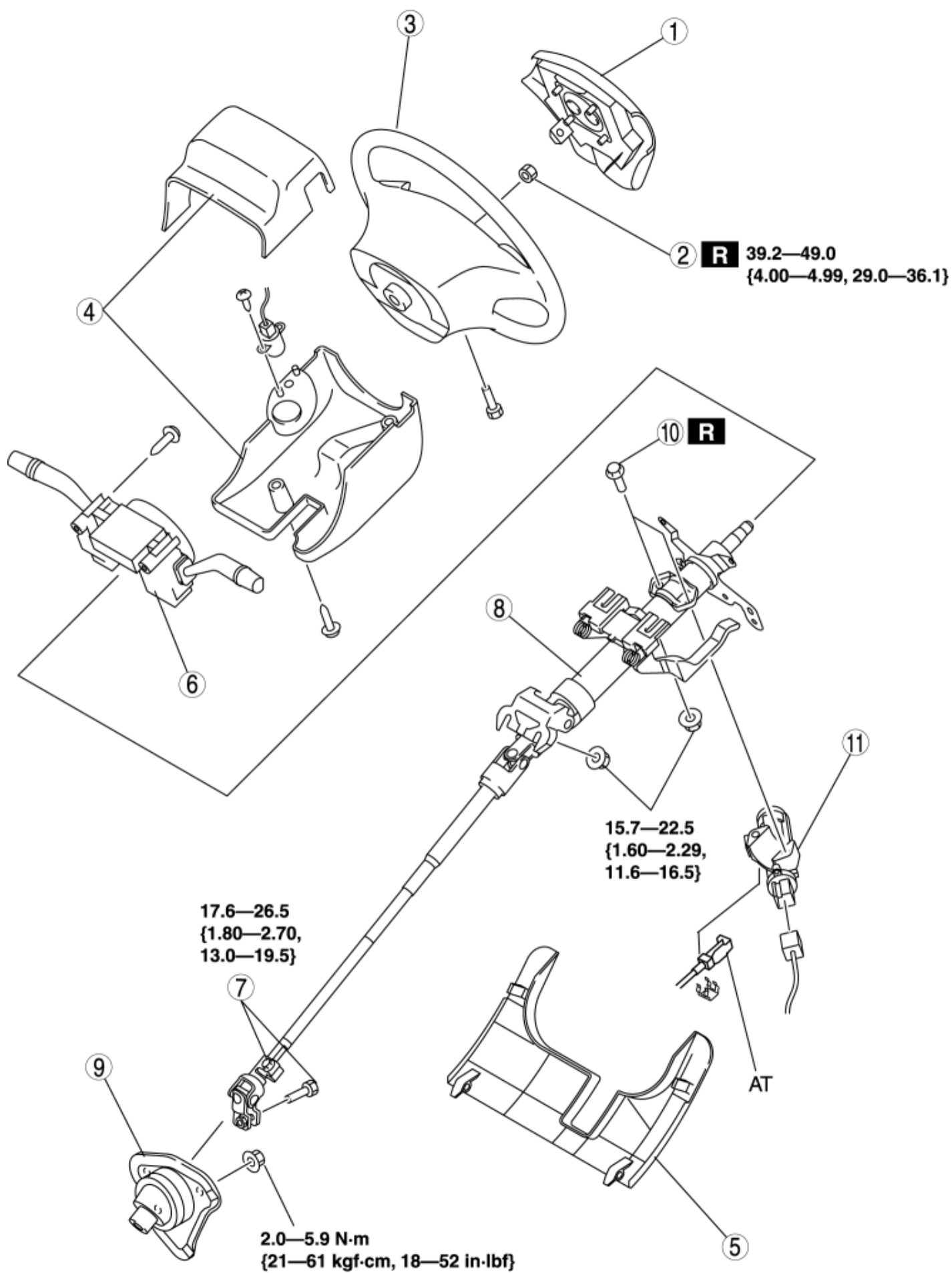
STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION

WARNING:

- Handling the air bag module improperly can accidentally deploy the air bag module, which may seriously injure you. Read the service warnings before handling the air bag module. (See [AIR BAG SYSTEM SERVICE WARNINGS](#).)

CAUTION:

- The EPS system may not operate correctly if it is detached from the steering gear (pinion) when doing procedures such as steering shaft and column removal/installation or intermediate shaft disconnection. After doing these procedures, always set the EPS system to the neutral position so that the EPS operates normally. (See [EPS SYSTEM NEUTRAL POSITION SETTING](#).)
1. Remove the air cleaner and air cleaner insulator. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
 2. Remove in the order indicated in the table.
 3. Install in the reverse order of removal.
 4. If the steering lock component is replaced, perform programming for the immobilizer system related parts. (See [IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING \[WITH KEYLESS ENTRY SYSTEM\]](#).) (See [IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#).)
 5. After installation, set the EPS system to the neutral position. (See [EPS SYSTEM NEUTRAL POSITION SETTING](#).)



N·m {kgf·m, ft·lbf}

1	Air bag module (See DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
2	Locknut
3	Steering wheel (See Steering Wheel Removal Note.) (See Steering Wheel Installation Note.)
4	Column cover
5	Under cover
6	Clock spring, combination switch (See COMBINATION SWITCH REMOVAL/INSTALLATION.)
7	Bolt (intermediate shaft) (See Bolt (Intermediate Shaft) Removal Note.) (See Bolt (Intermediate Shaft) Installation Note.)
8	Steering shaft (See Steering Shaft Installation Note.)
9	Dust cover
10	Steering lock mounting bolt (See Steering Lock Mounting Bolt Removal Note.) (See Steering Lock Mounting Bolt Installation Note.)
11	Steering lock

Steering Wheel Removal Note

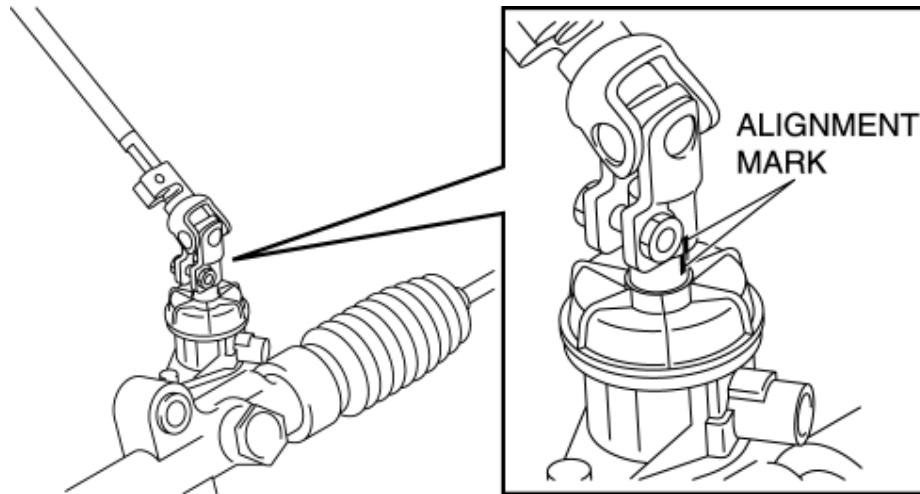
CAUTION:

- Do not try to remove the steering wheel by hitting the shaft with a hammer. The column will be damaged.

1. Set the wheels in the straight-ahead position.
2. Remove the steering wheel using any commercially available puller.

Bolt (Intermediate Shaft) Removal Note

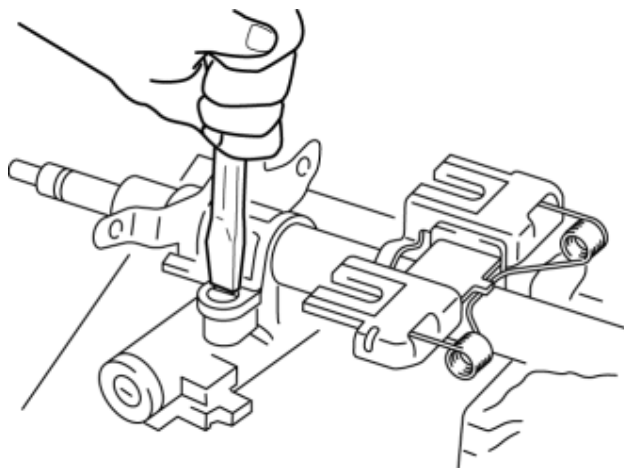
1. Place alignment marks on the intermediate shaft joint, and the steering gear and linkage for proper installation.



2. Loosen the joint upper bolt.
3. Remove the joint lower bolt and detach the intermediate shaft from the steering gear.

Steering Lock Mounting Bolt Removal Note

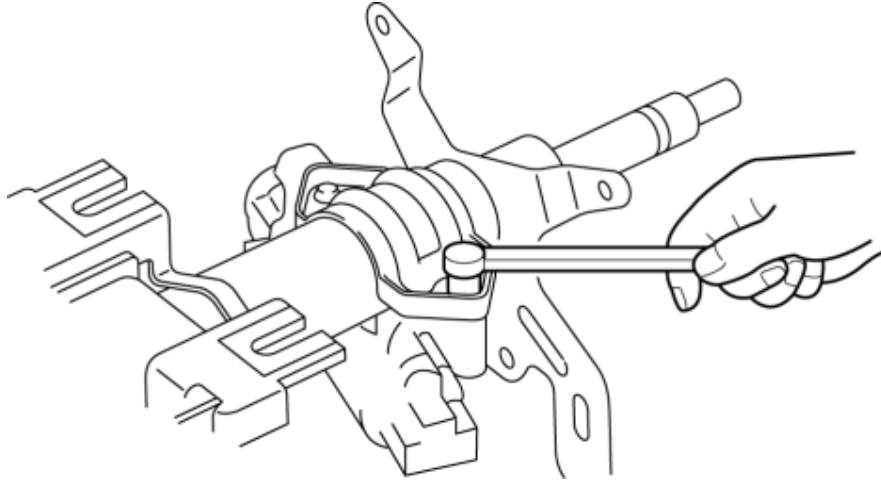
1. Make a groove in the heads of the steering lock mounting bolts using a chisel and hammer.



2. Remove the bolts using a flathead screwdriver.
3. Remove the steering lock.

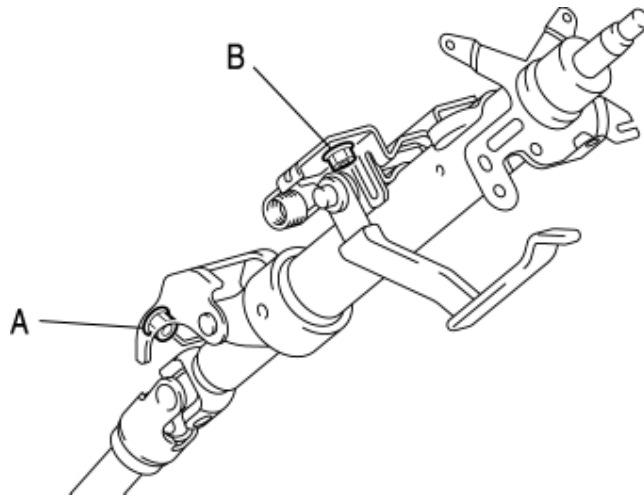
Steering Lock Mounting Bolt Installation Note

1. Assemble the steering lock to the steering shaft.
2. Verify the operation condition of the steering lock system.
3. Install new steering lock mounting bolts.
4. Tighten the bolts until the heads break off.



Steering Shaft Installation Note

1. Verify that the tilt lever is in the LOCK position.
2. Temporarily tighten nuts A and B as shown in the figure.



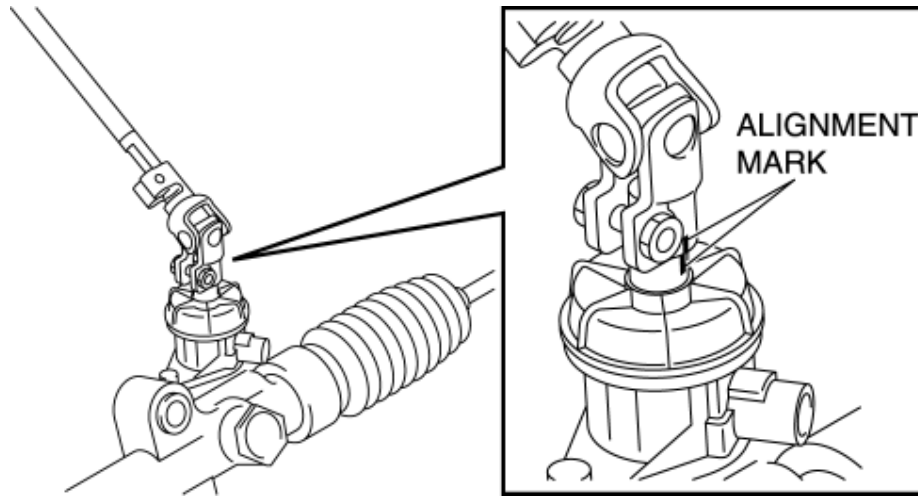
3. Tighten the nuts to the specified torque in the order of A, B.

Tightening torque

- 15.7—22.5 N·m
{1.60—2.29 kgf·m, 11.6—16.5 ft·lbf}

Bolt (Intermediate Shaft) Installation Note

1. Align the marks made during removal and install the steering shaft to the steering gear.



2. Tighten the joint bolts (lower and upper).

Tightening torque

- 17.6—26.5 N·m
{1.80—2.70 kgf·m, 13.0—19.5 ft·lbf}

3. After tightening the bolts, move the intermediate shaft joint up and down and verify that it is securely installed.

Steering Wheel Installation Note

1. Set the wheels in the straight-ahead position, and install the steering wheel.

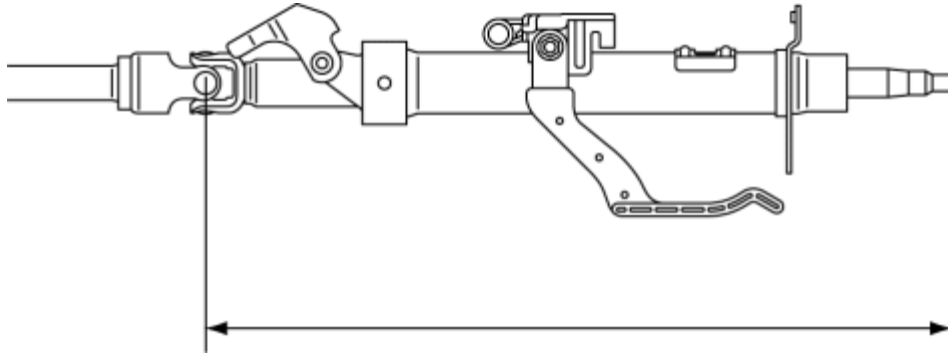
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Steering

STEERING SHAFT INSPECTION

1. Inspect the column bearing for excessive play and damage.
2. Verify that the measurement of the steering shaft is as specified in the figure.

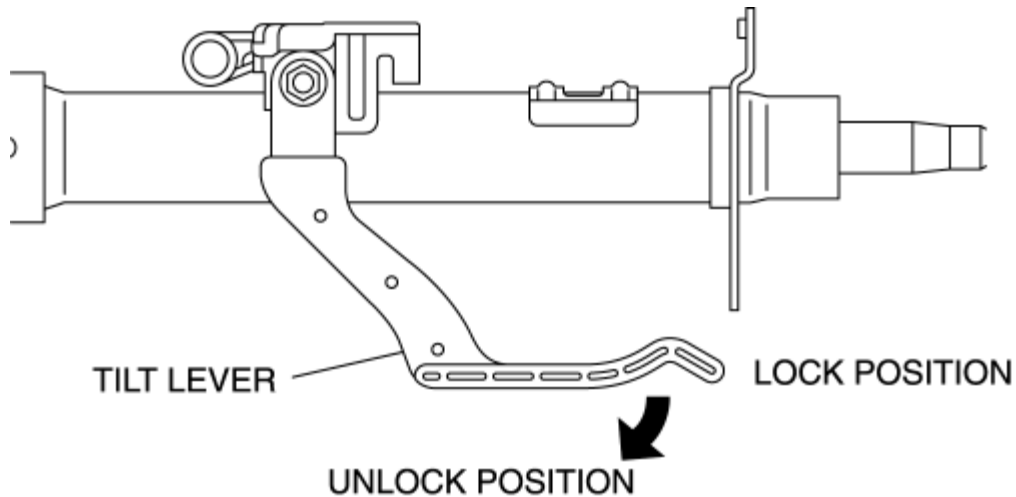


- If not within the specification, replace the steering shaft component.

Steering shaft length

- 513.5 mm {20.22 in}

3. Inspect the tilt function operation for the following.



- a. Verify that the tilt lever moves smoothly from the lock to the unlock position.
 - b. Verify that the steering shaft is fixed firmly when the tilt lever is locked.
- If there is any malfunction, replace the steering shaft.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

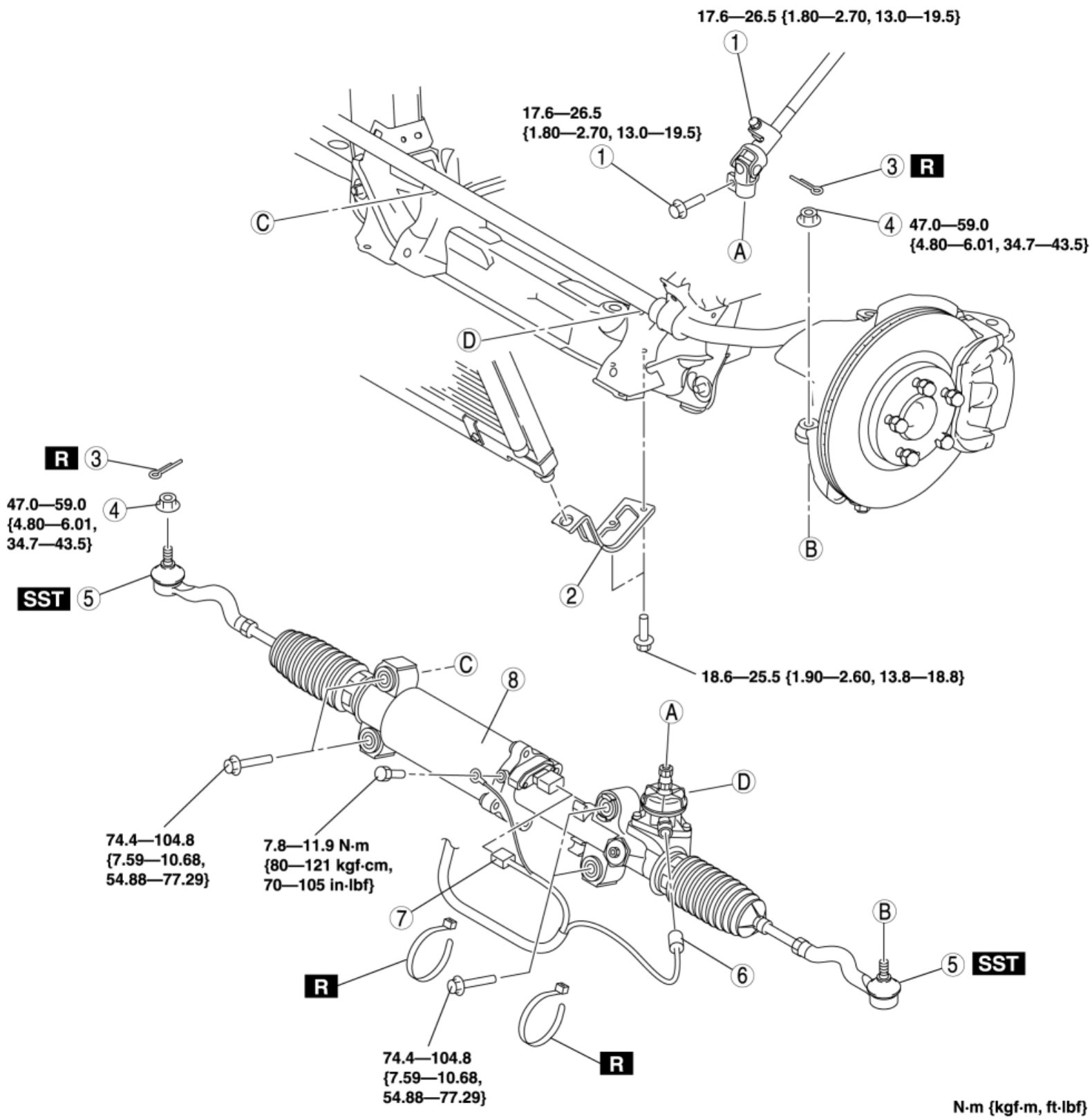
2011 - RX-8 - Steering

STEERING GEAR AND LINKAGE REMOVAL/INSTALLATION

CAUTION:

- Performing the following procedures without first removing the ABS wheel-speed sensor may possibly cause an open circuit in the wiring harness if it is pulled by mistake. Before performing the following procedures, remove the ABS wheel-speed sensor harness (axle side) and fix it to an appropriate place where the harness will not be pulled by mistake while servicing the vehicle.
- After replacing the steering gear and linkage, always set the EPS system to the neutral position to prevent system malfunction. (See [EPS SYSTEM NEUTRAL POSITION SETTING](#).)

1. Slightly bend back the front mudguard. (See [FRONT MUDGUARD REMOVAL/INSTALLATION](#).)
2. Remove the aerodynamic under cover. (See [AERODYNAMIC UNDER COVER REMOVAL/INSTALLATION](#).)
3. Remove the under cover. (See [FRONT CROSSMEMBER REMOVAL/INSTALLATION](#).)
4. Remove in the order indicated in the table.
5. Install in the reverse order of removal.
6. After installation, inspect the front wheel alignment and adjust it if necessary. (See [FRONT WHEEL ALIGNMENT](#).)
7. Set the EPS system to the neutral position. (See [EPS SYSTEM NEUTRAL POSITION SETTING](#).)



1 Bolt (intermediate shaft)

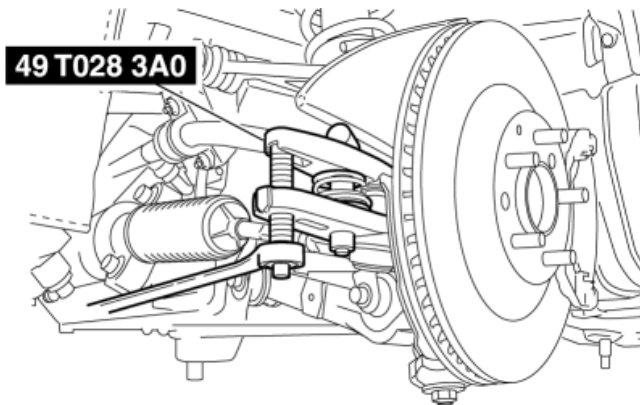
(See [STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.](#))

2 Radiator bracket

3	Cotter pin
4	Locknut (tie-rod end)
5	Tie-rod end (See Tie-rod End Removal Note.)
6	Torque sensor connector
7	EPS motor connector
8	Steering gear and linkage (See Steering Gear and Linkage Installation Note.)

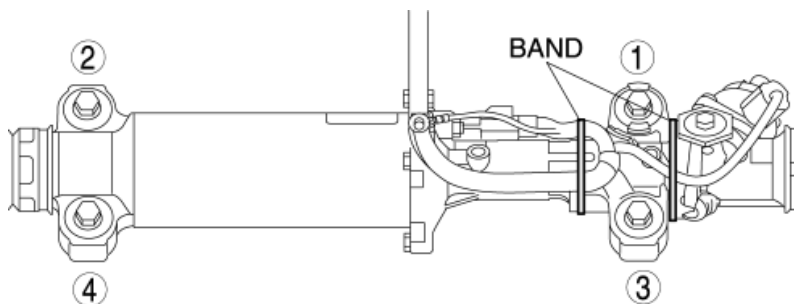
Tie-rod End Removal Note

1. Remove the outer ball joint locknut.
2. Detach the outer ball joint from the steering knuckle using the **SST**.



Steering Gear and Linkage Installation Note

1. Temporarily tighten the bolts.
2. Tighten the steering gear and linkage installation bolts to the specified torque in the order shown in the figure.



Tightening torque

- 74.4—104.8 N·m
{7.59—10.68 kgf·m, 54.88—77.29 ft·lbf}

3. After connecting the connector, fix the wiring harness with the bands as shown in the figure.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

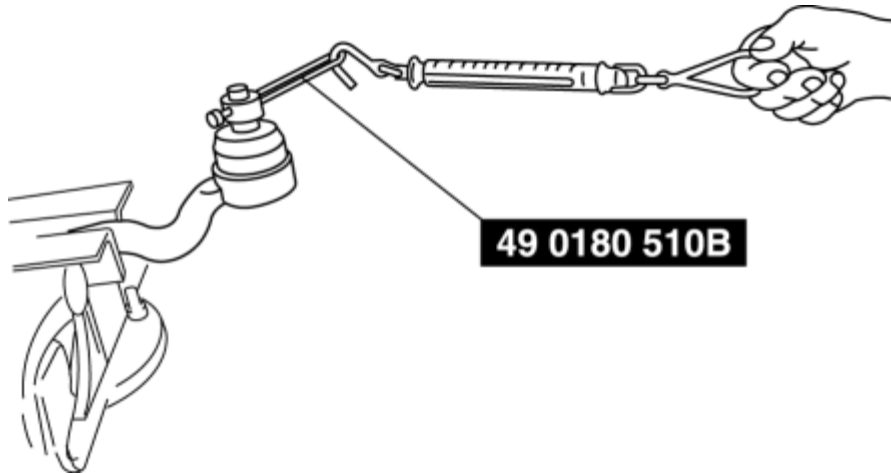
[Back to Top](#)

2011 - RX-8 - Steering

STEERING GEAR AND LINKAGE INSPECTION

Tie-rod End Inspection

1. Inspect the tie-rod end for damage and excessive play.
 - If there are any cracks, replace the tie-rod end.
2. Inspect the boot for cracks.
 - If there is any malfunction, replace the tie-rod end boot.
3. Rotate the ball joint **5 times**.
4. Measure the rotational torque of the tie-rod end using the **SST** and a pull scale.



- If not within the specification, replace the tie-rod end.

Tie-rod end rotation torque

- 0.6—2.0 N·m {6—20 kgf·cm, 5—17 in·lbf}
- Pull scale reading: 5.9—19.6 N {0.61—1.99 kgf, 1.33—4.40 lbf}

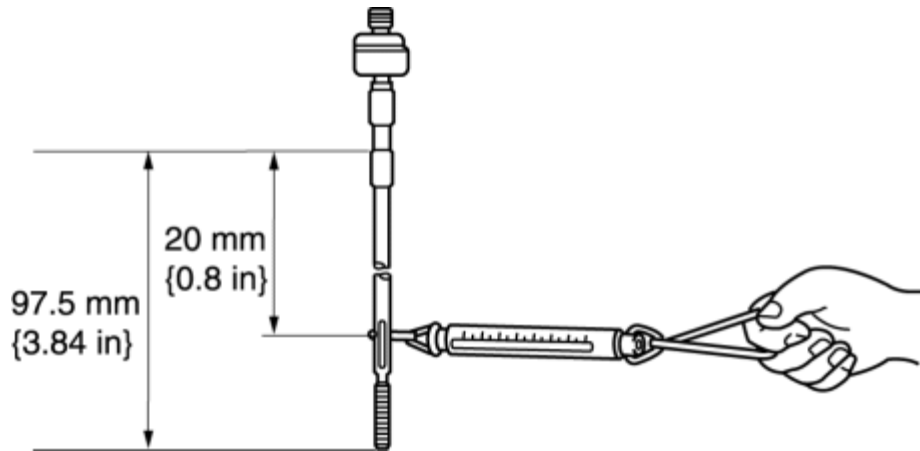
Tie rod Inspection

1. Inspect for damage, bending and excessive play.

- If there is any malfunction, replace the tie rod.

2. Swing the ball joint **5 times**.

3. Measure the swing torque using a pull scale.



- If it exceeds the specification, replace the tie rod.

Tie-rod end swing torque

- 0.68—2.45 N·m {7.0—24.9 kgf·cm, 6.1—21.6 in·lbf}
- Pull scale reading: 6.8—24.5 N {0.70—2.49 kgf, 1.53—5.50 lbf}

[< Previous](#) [Next >](#)

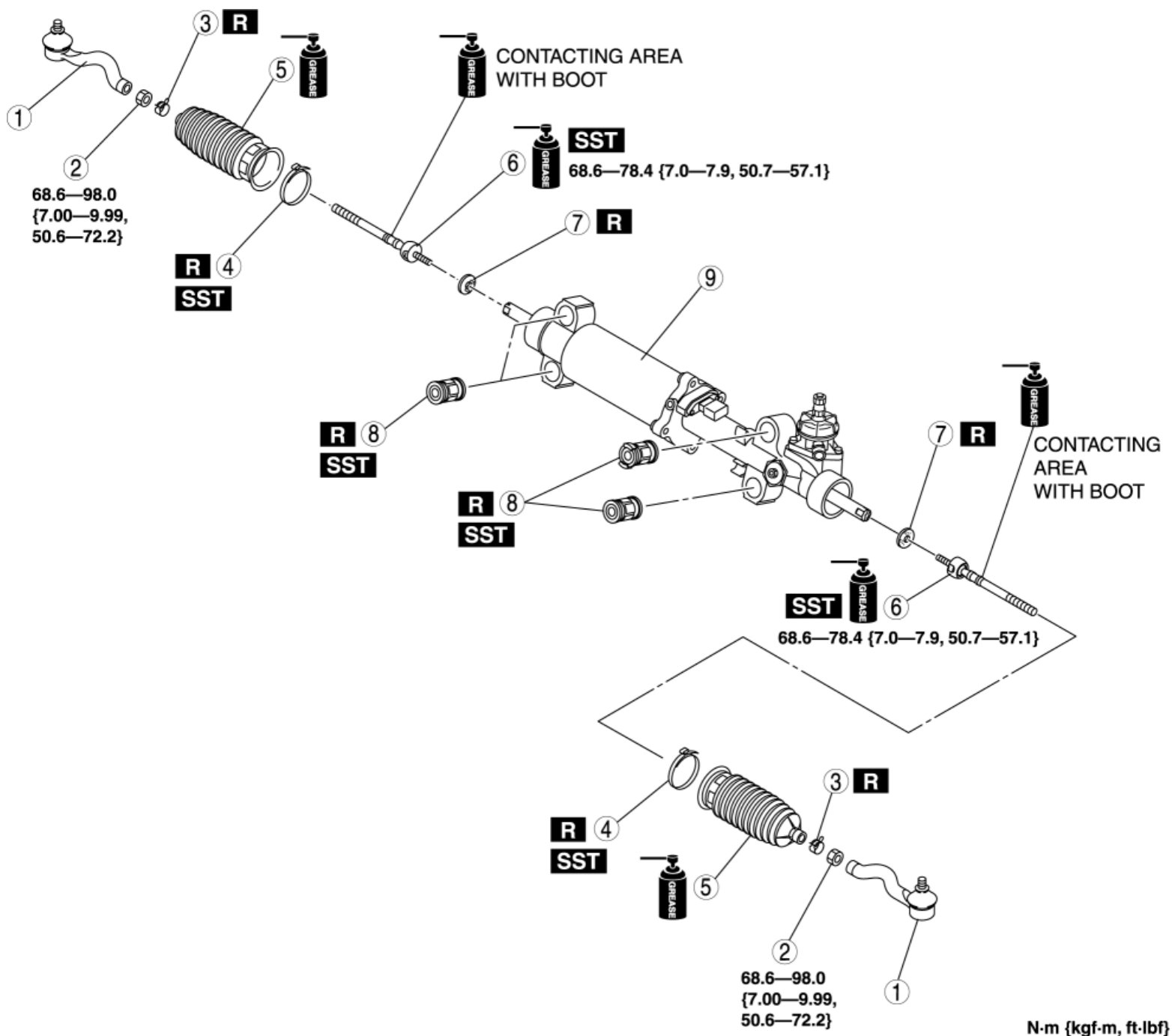
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Steering

STEERING GEAR AND LINKAGE DISASSEMBLY/ASSEMBLY

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.



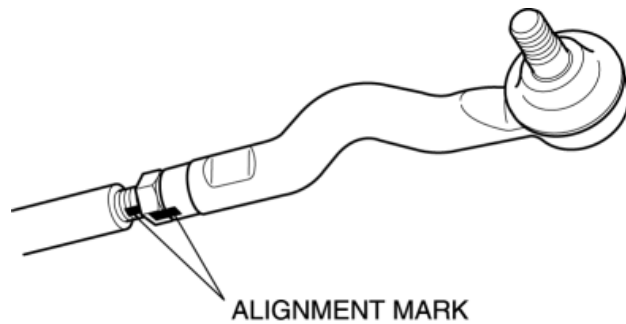
N·m {kgf·m, ft·lbf}

1 Tie-rod end

	(See Tie-rod End Disassembly Note.)
2	Locknut
3	Boot clamp
4	Boot band (See Boot Band Assembly Note.)
5	Boot
6	Tie rod (See Tie Rod Disassembly Note.) (See Tie Rod Assembly Note.)
7	Lock washer
8	Mounting rubber (See Mounting Rubber Disassembly Note.) (See Mounting Rubber Assembly Note.)
9	Steering gear and linkage

Tie-rod End Disassembly Note

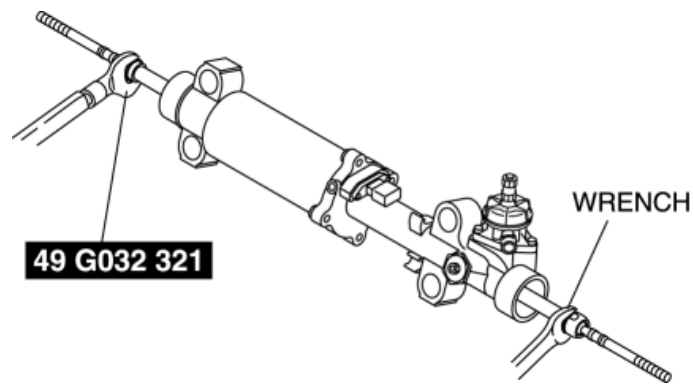
1. Place alignment marks as shown in the figure for proper installation.



2. Remove the tie-rod end.

Tie Rod Disassembly Note

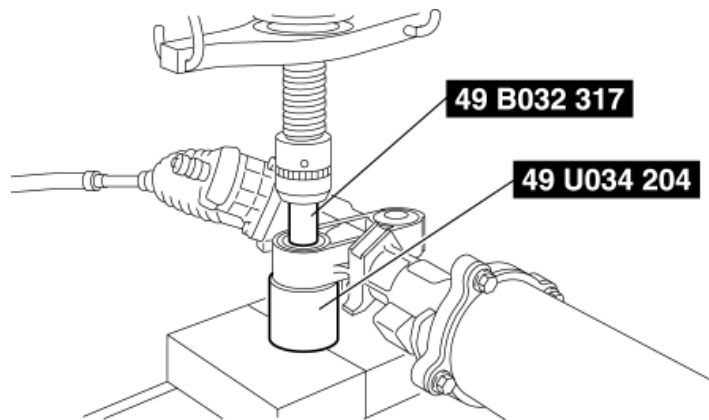
1. Lock the steering rack end (pinion gear side) against rotation with a wrench.



2. Using the **SST**, remove the tie rod.

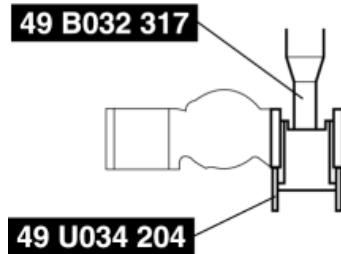
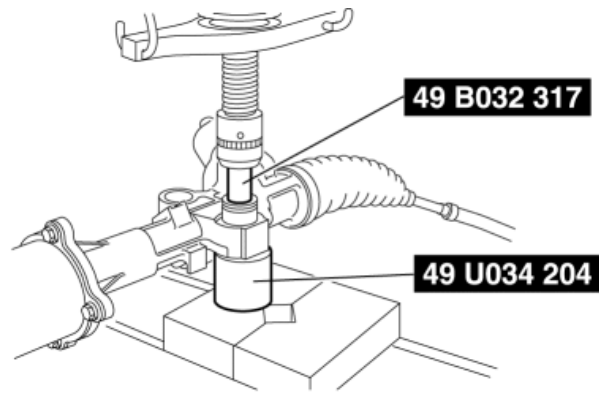
Mounting Rubber Disassembly Note

1. Press the mounting rubber out from the gear housing using the **SSTs** and a press.

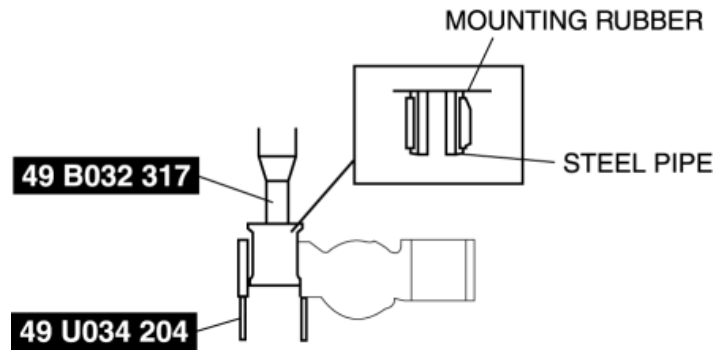


Mounting Rubber Assembly Note

1. Apply soapy water to the rubber part of the mounting rubber.
2. Press the mounting rubber until the mounting rubber end comes out completely from the gear housing using the **SSTs** and a press.

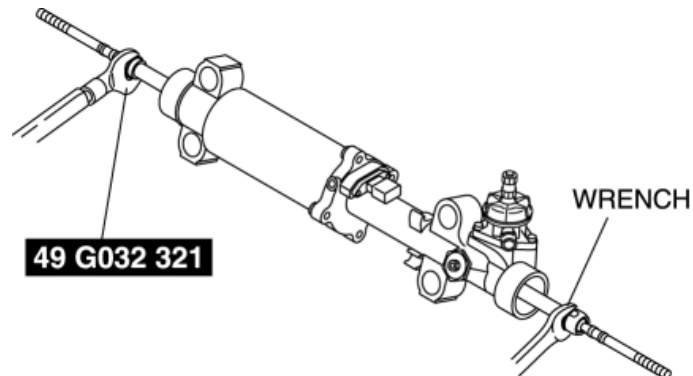


3. Reverse the gear housing, then press the mounting rubber until the mounting rubber end comes out completely from the other side. At this time, verify that the mounting rubber and steel pipe are aligned.



Tie Rod Assembly Note

1. Lock the steering rack end (pinion gear side) against rotation with a wrench.



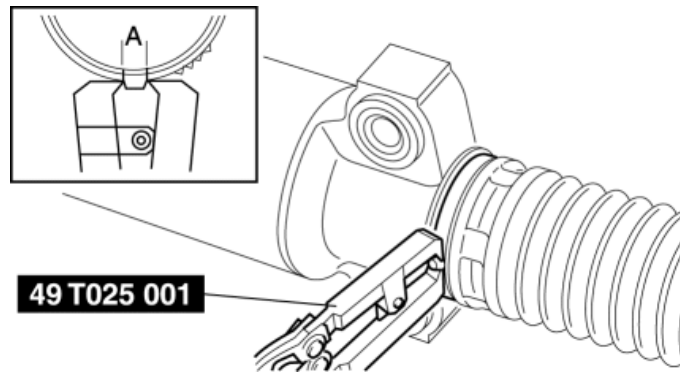
2. Using the **SST**, tighten the tie rod.

Tightening torque

- 68.6—78.4 N·m {7.0—7.9 kgf·m, 50.7—57.1 ft·lbf}

Boot Band Assembly Note

1. Crimp the boot band using the **SST**.



2. Verify that the crimping clearance **A** is within the specification.
 - If crimping clearance **A** exceeds the specification, reduce **SST** clearance, and crimp the boot band again.
 - If crimping clearance **A** is less than the specification, increase **SST** clearance, and crimp a new boot band.

Standard clearance **A**

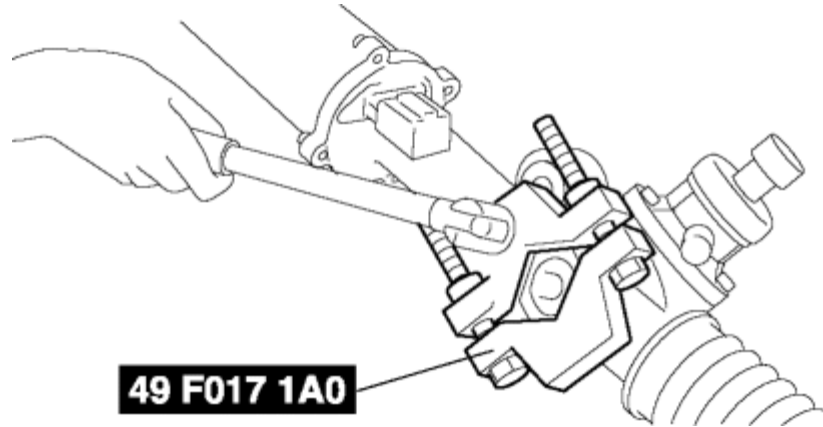
- 2—3 mm {0.08—0.11 in}
3. Rotate the boot by hand and verify that it is securely installed to the boot band.

[< Previous](#) [Next >](#)

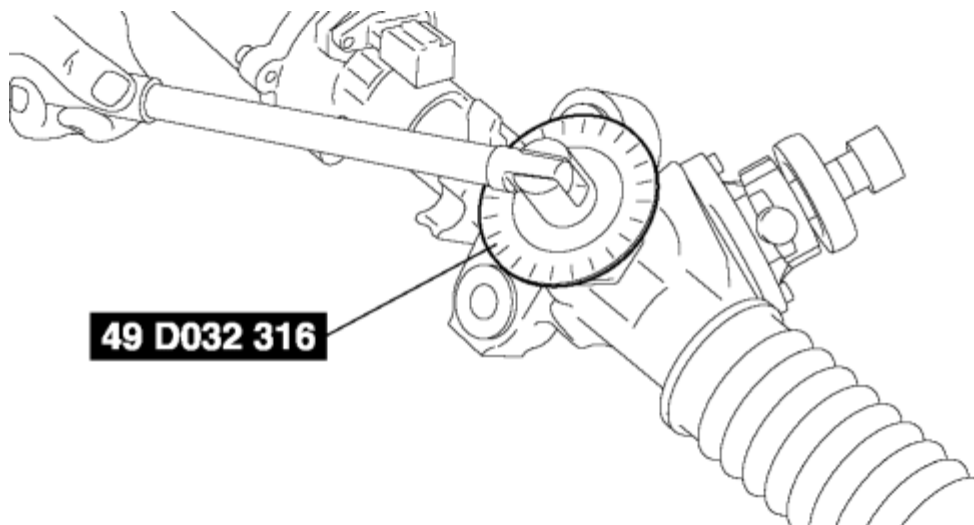
2011 - RX-8 - Steering

STEERING GEAR AND LINKAGE ADJUSTMENT

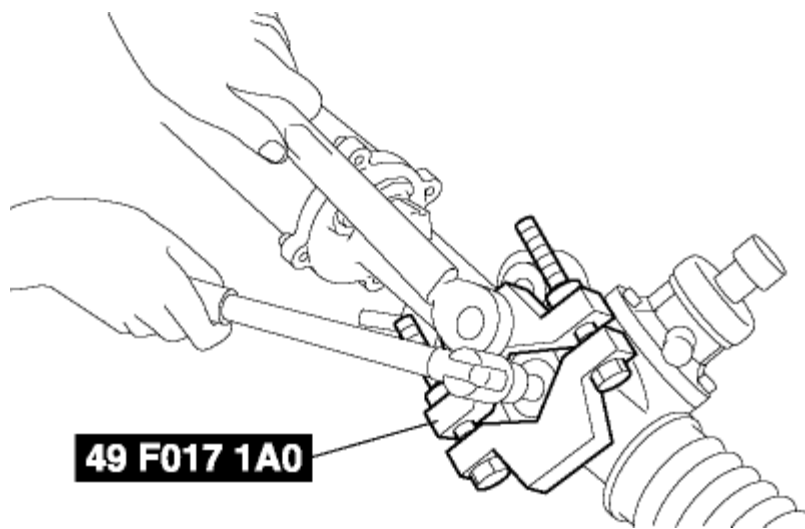
1. Remove the locknut using the **SST**.



2. Apply sealant to the threads of the adjustment cover.
3. Tighten the adjustment cover to **20—29 N·m {2.1—2.9 kgf·m, 15—21 ft·lbf}**.
4. After swinging the steering rack left and right **10 times**, tighten the adjustment cover again to **5.8 N·m {59 kgf·cm, 51 in·lbf}**.
5. Loosen the adjustment cover **10—20°**.



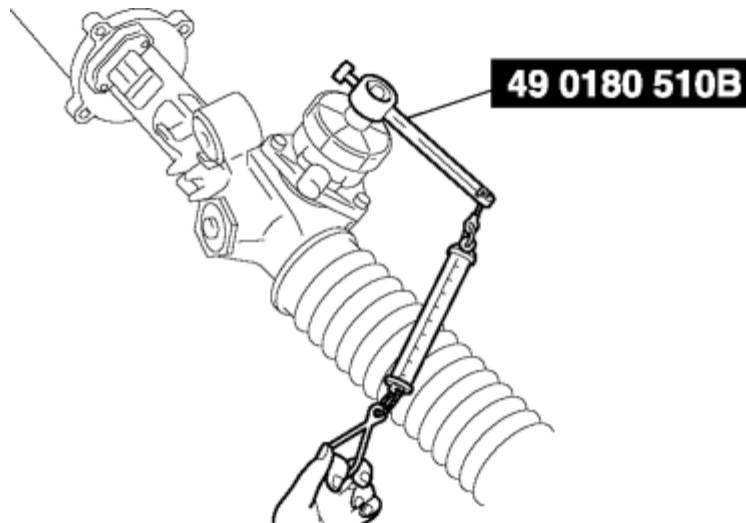
6. Lock the adjustment cover against rotation and tighten the locknut using the **SST**.



Tightening torque

- 20—29 N·m {2.1—2.9 kgf·m, 15—21 ft·lbf}

7. Measure the pinion shaft rotational torque using the **SST** and a pull scale.



- If not within the specification, repeat from Steps 1—6.

Pinion shaft rotation torque

- 1.2—2.0 N·m {13—20 kgf·cm, 11—17 in·lbf}
- Pull scale reading: 11.2—20.0 N {1.15—2.03 kgf, 2.52—4.48 lbf}

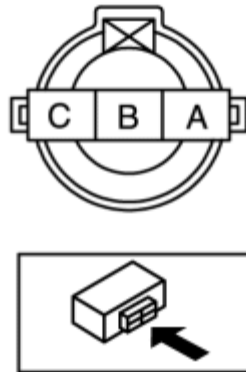
[< Previous](#) [Next >](#)

2011 - RX-8 - Steering

TORQUE SENSOR INSPECTION

1. Measure the resistance between torque sensor connector terminals A and B, and B and C.

TORQUE SENSOR CONNECTOR



- If there is any malfunction, replace the steering gear and linkage.

Standard

- A—B: 12—15 ohms
- B—C: 12—15 ohms

2011 - RX-8 - Steering

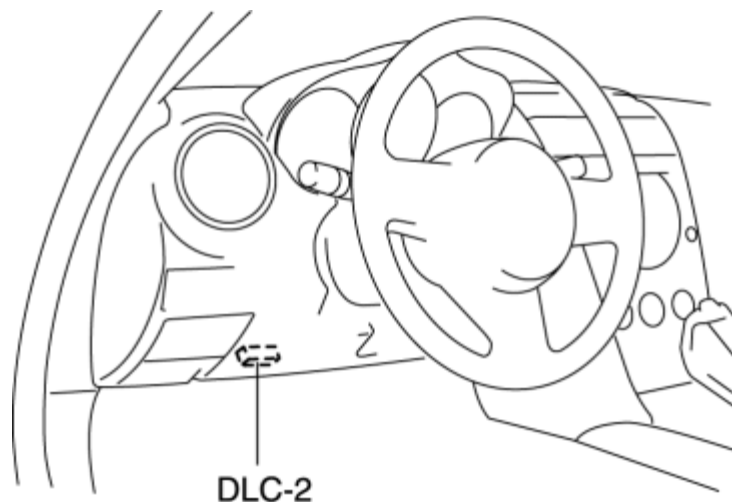
EPS SYSTEM NEUTRAL POSITION SETTING

NOTE:

- Use the IDS (laptop PC) because the PDS (Pocket PC) does not support the EPS system neutral position setting.
1. Set the front wheels in the straight-ahead position. (Steering wheel is within **45°** to the left or right of center position.)
 2. Jack up both front tires so that there is no weight on them.
 3. Lower the jack until the front tires touch the ground completely before removing the jack from the vehicle.

CAUTION:

- After lowering the jack and placing the vehicle completely on the ground, do not touch the steering wheel and front tires until the EPS system neutral position setting is completed. Otherwise, the EPS system may not operate normally.
4. Connect the M-MDS to the DLC-2.



5. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "Chassis".
 2. Select "EPS".

3. Select "Neutral Position Setting".

6. Perform the procedure according to the directions on the screen.

7. After setting to neutral, start the engine, rotate the steering wheel slowly in both directions within a range of **90°**, and verify that the steering force does not differ in either directions.

- If the steering force is different in either direction, inspect the power steering system following a separate troubleshooting procedure. (See [NO.3 POWER ASSIST DIFFERS BETWEEN RIGHT AND LEFT TURNS.](#))

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Steering

EPS CONTROL MODULE REMOVAL/INSTALLATION

CAUTION:

- If the EPS control module is replaced, set the EPS system to the neutral position. If not set to the neutral position, the system may not operate correctly. (See [EPS SYSTEM NEUTRAL POSITION SETTING](#).)
- Do not drop the EPS control module. Replace the EPS control module if it subjected to an impact.

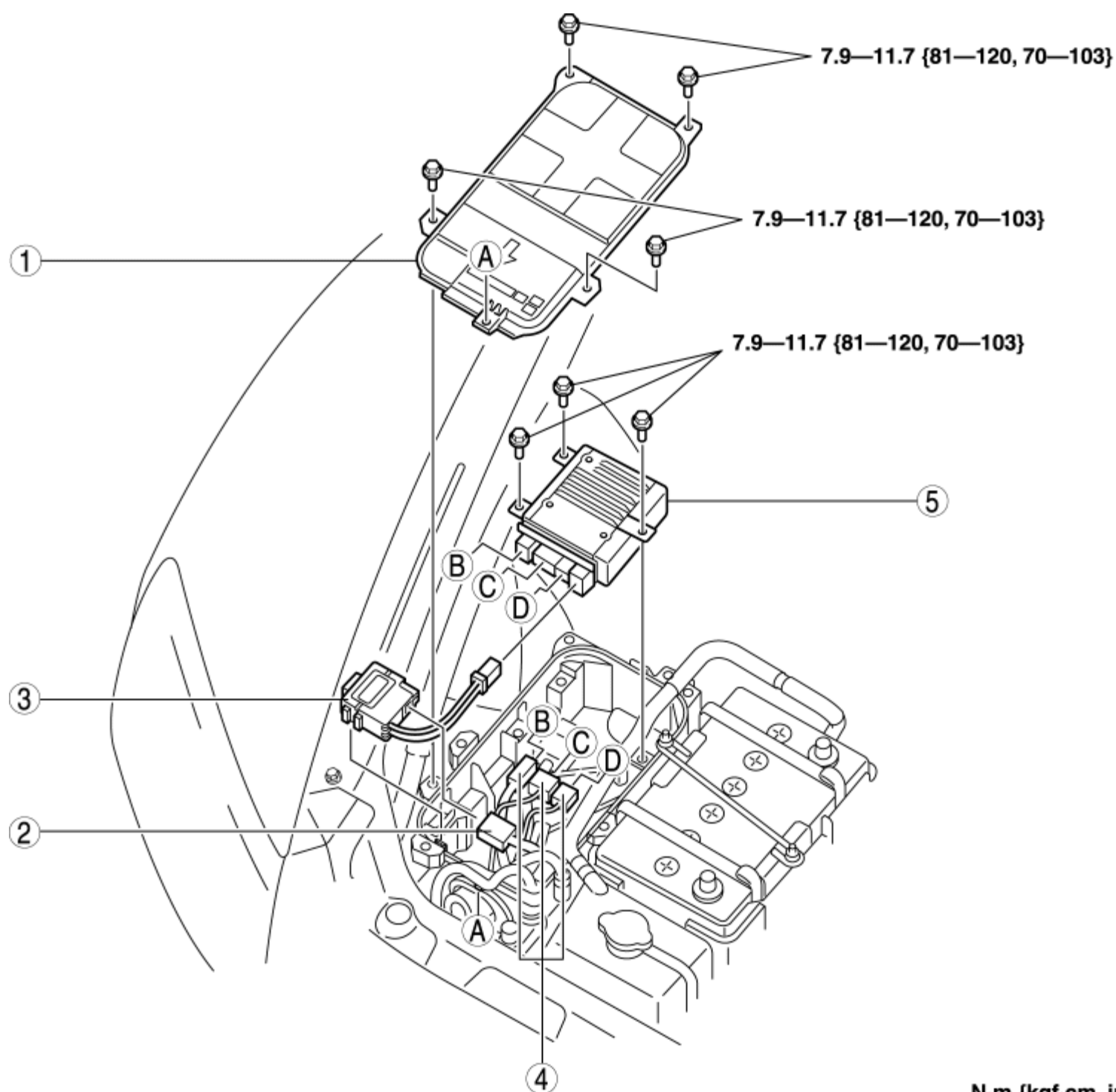
1. Remove the following parts:

- a. Engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- b. Battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- c. PCM cover (See [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- d. PCM (See [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- e. PCM bracket No.1 (See [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- f. PCM bracket No.2 (See [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- g. PCM bracket No.3 (See [PCM REMOVAL/INSTALLATION \[13B-MSP\]](#).)

2. Remove in the order indicated in the table.

3. Install in the reverse order of removal.

4. After installation, set the EPS system to the neutral position. (See [EPS SYSTEM NEUTRAL POSITION SETTING](#).)



N·m {kgf·cm, in·lbf}

1	Cover
2	Connector
3	Noise filter
4	Connector

5EPS control module

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Steering

EPS CONTROL MODULE INSPECTION

1. Remove the following parts:
- a. Engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\].](#))

b. Battery cover. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\].](#))

c. PCM cover (See [PCM REMOVAL/INSTALLATION \[13B-MSP\].](#))

d. PCM (See [PCM REMOVAL/INSTALLATION \[13B-MSP\].](#))

e. PCM bracket No.1 (See [PCM REMOVAL/INSTALLATION \[13B-MSP\].](#))

f. PCM bracket No.2 (See [PCM REMOVAL/INSTALLATION \[13B-MSP\].](#))

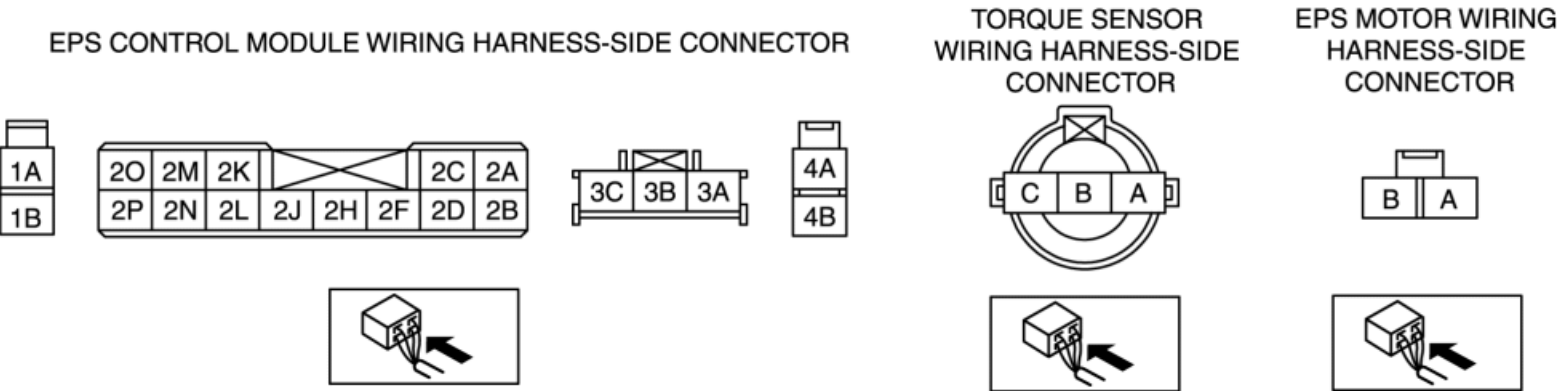
g. PCM bracket No.3 (See [PCM REMOVAL/INSTALLATION \[13B-MSP\].](#))

h. EPS control module (See [EPS CONTROL MODULE REMOVAL/INSTALLATION.](#))
2. Connect the PCM and EPS control module connectors.
3. Attach the tester lead to the underside of the control module connector and inspect the voltage and continuity according to the Terminal Voltage Table (Reference) indicated in the table.

NOTE:

- When inspecting the torque sensor and EPS motor for continuity, turn the ignition switch off and inspect with the connectors for the EPS control module, torque sensor, and EPS motor disconnected.

Terminal Voltage Table (Reference)



Terminal	Signal name	Connected to	Measured item	Measured terminal (measured condition)	Standard	Inspection item(s)
1A	Battery power supply	Battery	Voltage	Under any condition	B+	<div><div>• Wiring harness (1A—battery)</div><div>• Fuse (60 A)</div></div>

1B	Ground	Ground point	Voltage	Under any condition	1 V or less	<ul style="list-style-type: none"> Wiring harness (1B—ground point)
2A	Ground	Ground point	Voltage	Under any condition	1 V or less	<ul style="list-style-type: none"> Wiring harness (2A—ground point)
2B	—	—	—	—	—	—
2C	—	—	—	—	—	—
2D	—	—	—	—	—	—
2E	—	—	—	—	—	—
2F	—	—	—	—	—	—
2H	—	—	—	—	—	—
2J	—	—	—	—	—	—
2K	CAN_L	—	Inspect under DTC inspection.			—
2L	—	—	—	—	—	—
2M	CAN_H	—	Inspect under DTC inspection.			—
2N	—	—	—	—	—	—
2O	Ground	Ground point	Voltage	Under any condition	1 V or less	<ul style="list-style-type: none"> Wiring harness (2O—ground point)
2P	Ignition power supply	Ignition switch	Voltage	Ignition switch is ON	B+	<ul style="list-style-type: none"> Wiring harness (2P—ignition switch—battery) Fuse (15 A)
				Ignition switch is OFF	1 or less	
3A	Torque sensor (Signal 2)	Torque sensor	Continuity	Terminal 3A—torque sensor terminal A	Continuity detected	<ul style="list-style-type: none"> Wiring harness (3A—torque sensor A)
3B	Torque sensor (Drive signal)	Torque sensor	Continuity	Terminal 3B—torque sensor terminal B	Continuity detected	<ul style="list-style-type: none"> Wiring harness (3B—torque sensor B)
3C	Torque sensor (Signal 1)	Torque sensor	Continuity	Terminal 3C—torque sensor terminal C	Continuity detected	<ul style="list-style-type: none"> Wiring harness (3C—torque sensor C)
4A	EPS motor	EPS motor	Continuity	Terminal 4A—EPS motor terminal A	Continuity detected	<ul style="list-style-type: none"> Wiring harness (4A—EPS motor A)
4B	EPS motor	EPS motor	Continuity	Terminal 4B—EPS motor terminal B	Continuity detected	<ul style="list-style-type: none"> Wiring harness (4B—EPS motor B)

2011 - RX-8 - Steering

STEERING TECHNICAL DATA

Item	Specification
Steering wheel play	0—30 mm {0—1.2 in}
Steering wheel effort	5.0 N·m {50 kgf·cm, 44 in·lbf} or less
Steering shaft length	513.5 mm {20.22 in}
Tie-rod end rotation torque	0.6—2.0 N·m {6—20 kgf·cm, 5—17 in·lbf} Pull scale reading: 5.9—19.6 N {0.61—1.99 kgf, 1.33—4.40 lbf}
Tie-rod end swing torque	0.68—2.45 N·m {7.0—24.9 kgf·cm, 6.1—21.6 in·lbf} Pull scale reading: 6.8—24.5 N {0.70—2.49 kgf, 1.53—5.50 lbf}
Pinion shaft rotation torque	1.2—2.0 N·m {13—20 kgf·cm, 11—17 in·lbf} Pull scale reading: 11.2—20.0 N {1.15—2.03 kgf, 2.52—4.48 lbf}

[< Previous](#)

2011 - RX-8 - Steering

STEERING SST

49 T028 3A0 Ball joint puller set		49 B032 317 Bearing & oil seal remover		49 U034 204 Dust boot installer	
49 T025 001 Boot clamp crisper		49 G032 321 Wrench		49 D032 316 Protractor	
49 F017 1A0 Universal wrench		49 0180 510B Preload measuring attachment		—	

[< Previous](#)

[Back to Top](#)

Workshop Manual - HVAC

2011 - RX-8

On-Board Diagnostics

- [HVAC SYSTEM WIRING DIAGRAM](#)
- [DIAGNOSTIC TROUBLE CODE NUMBER INSPECTION](#)
- [DTC 02](#)
- [DTC 02, 18, 21](#)
- [DTC 06](#)
- [DTC 06, 10, 12, 18, 21](#)
- [DTC 07](#)
- [DTC 07, 11, 13, 19, 22](#)
- [DTC 10](#)
- [DTC 11](#)
- [DTC 12](#)
- [DTC 13](#)
- [DTC 14](#)
- [DTC 15](#)
- [DTC 18](#)
- [DTC 19](#)
- [DTC 19, 22](#)
- [DTC 21](#)
- [DTC 22](#)
- [DTC 58](#)
- [DTC 59](#)

Symptom Troubleshooting

- [HVAC SYSTEM WIRING DIAGRAM \[FULL-AUTO AIR CONDITIONER\]](#)
- [FOREWORD \[FULL-AUTO AIR CONDITIONER\]](#)
- [TROUBLESHOOTING INDEX \[FULL-AUTO AIR CONDITIONER\]](#)
- [NO.1 INSUFFICIENT AIR \(OR NO AIR\) BLOWN FROM VENTS \[FULL-AUTO AIR CONDITIONER\]](#)
- [NO.2 AMOUNT OF AIR BLOWN FROM VENTS DOES NOT CHANGE \[FULL-AUTO AIR CONDITIONER\]](#)
- [NO.3 AIR INTAKE MODE DOES NOT CHANGE \[FULL-AUTO AIR CONDITIONER\]](#)
- [NO.4 NO TEMPERATURE CONTROL WITH A/C AMPLIFIER \[FULL-AUTO AIR CONDITIONER\]](#)
- [NO.5 WINDSHIELD FOGGED \[FULL-AUTO AIR CONDITIONER\]](#)
- [NO.6 AIR FROM VENTS NOT COLD ENOUGH \[FULL-AUTO AIR CONDITIONER\]](#)
- [NO.7 NO COOL AIR \[FULL-AUTO AIR CONDITIONER\]](#)
- [NO.8 NOISE WHILE OPERATING A/C SYSTEM \[FULL-AUTO AIR CONDITIONER\]](#)

Symptom Troubleshooting

- [HVAC SYSTEM WIRING DIAGRAM \[MANUAL AIR CONDITIONER\]](#)
- [FOREWORD \[MANUAL AIR CONDITIONER\]](#)
- [TROUBLESHOOTING INDEX \[MANUAL AIR CONDITIONER\]](#)
- [NO.1 INSUFFICIENT AIR \(OR NO AIR\) BLOWN FROM VENTS \[MANUAL AIR CONDITIONER\]](#)
- [NO.2 AMOUNT OF AIR BLOWN FROM VENTS DOES NOT CHANGE \[MANUAL AIR CONDITIONER\]](#)
- [NO.3 AIR INTAKE MODE DOES NOT CHANGE \[MANUAL AIR CONDITIONER\]](#)
- [NO.4 NO TEMPERATURE CONTROL WITH A/C AMPLIFIER \[MANUAL AIR CONDITIONER\]](#)
- [NO.5 WINDSHIELD FOGGED \[MANUAL AIR CONDITIONER\]](#)
- [NO.6 AIR FROM VENTS NOT COLD ENOUGH \[MANUAL AIR CONDITIONER\]](#)
- [NO.7 NO COOL AIR \[MANUAL AIR CONDITIONER\]](#)
- [NO.8 NOISE WHILE OPERATING A/C SYSTEM \[MANUAL AIR CONDITIONER\]](#)

Refrigerant System

- [REFRIGERANT SYSTEM SERVICE WARNINGS](#)
- [REFRIGERANT SYSTEM SERVICE CAUTIONS](#)
- [REFRIGERANT SYSTEM GENERAL PROCEDURES](#)
- [REFRIGERANT CHARGING](#)
- [REFRIGERANT RECOVERY](#)
- [REFRIGERANT PRESSURE CHECK](#)
- [REFRIGERANT SYSTEM PERFORMANCE TEST](#)

Basic System

- [HVAC BASIC SYSTEM LOCATION INDEX](#)
- [BLOWER UNIT REMOVAL/INSTALLATION](#)
- [BLOWER UNIT DISASSEMBLY/ASSEMBLY](#)
- [A/C UNIT REMOVAL/INSTALLATION](#)
- [A/C UNIT DISASSEMBLY/ASSEMBLY](#)
- [AIR FILTER REMOVAL/INSTALLATION](#)
- [AIR FILTER INSPECTION](#)
- [EVAPORATOR INSPECTION](#)
- [HEATER CORE INSPECTION](#)
- [AIRFLOW MODE MAIN LINK REMOVAL/INSTALLATION](#)
- [REAR HEAT DUCT REMOVAL/INSTALLATION](#)
- [A/C COMPRESSOR REMOVAL/INSTALLATION](#)
- [CONDENSER REMOVAL/INSTALLATION](#)
- [CONDENSER INSPECTION](#)
- [REFRIGERANT LINE REMOVAL/INSTALLATION](#)

Control System

- [HVAC CONTROL SYSTEM LOCATION INDEX \[FULL-AUTO AIR CONDITIONER\]](#)
- [AIR INTAKE ACTUATOR REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\]](#)
- [AIR INTAKE ACTUATOR INSPECTION \[FULL-AUTO AIR CONDITIONER\]](#)
- [AIR MIX ACTUATOR REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\]](#)
- [AIR MIX ACTUATOR INSPECTION \[FULL-AUTO AIR CONDITIONER\]](#)
- [AIRFLOW MODE ACTUATOR REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\]](#)
- [AIRFLOW MODE ACTUATOR INSPECTION \[FULL-AUTO AIR CONDITIONER\]](#)
- [BLOWER MOTOR REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\]](#)
- [BLOWER MOTOR INSPECTION \[FULL-AUTO AIR CONDITIONER\]](#)
- [POWER TRANSISTOR REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\]](#)
- [POWER TRANSISTOR INSPECTION \[FULL-AUTO AIR CONDITIONER\]](#)
- [MAGNETIC CLUTCH DISASSEMBLY/ASSEMBLY \[FULL-AUTO AIR CONDITIONER\]](#)

- [MAGNETIC CLUTCH ADJUSTMENT \[FULL-AUTO AIR CONDITIONER\]](#)
- [MAGNETIC CLUTCH INSPECTION \[FULL-AUTO AIR CONDITIONER\]](#)
- [SOLAR RADIATION SENSOR REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\]](#)
- [SOLAR RADIATION SENSOR INSPECTION \[FULL-AUTO AIR CONDITIONER\]](#)
- [AMBIENT TEMPERATURE SENSOR REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\]](#)
- [AMBIENT TEMPERATURE SENSOR INSPECTION \[FULL-AUTO AIR CONDITIONER\]](#)
- [PASSENGER COMPARTMENT TEMPERATURE SENSOR REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\]](#)
- [PASSENGER COMPARTMENT TEMPERATURE SENSOR INSPECTION \[FULL-AUTO AIR CONDITIONER\]](#)
- [EVAPORATOR TEMPERATURE SENSOR REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\]](#)
- [EVAPORATOR TEMPERATURE SENSOR INSPECTION \[FULL-AUTO AIR CONDITIONER\]](#)
- [REFRIGERANT PRESSURE SWITCH REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\]](#)
- [REFRIGERANT PRESSURE SWITCH INSPECTION \[FULL-AUTO AIR CONDITIONER\]](#)
- [CLIMATE CONTROL UNIT REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\]](#)
- [CLIMATE CONTROL UNIT INSPECTION \[FULL-AUTO AIR CONDITIONER\]](#)
- [A/C AMPLIFIER REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\]](#)
- [A/C AMPLIFIER INSPECTION \[FULL-AUTO AIR CONDITIONER\]](#)

Control System

- [HVAC CONTROL SYSTEM LOCATION INDEX \[MANUAL AIR CONDITIONER\]](#)
- [AIR INTAKE ACTUATOR REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\]](#)
- [AIR INTAKE ACTUATOR INSPECTION \[MANUAL AIR CONDITIONER\]](#)
- [AIR MIX ACTUATOR REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\]](#)
- [AIR MIX ACTUATOR INSPECTION \[MANUAL AIR CONDITIONER\]](#)
- [AIRFLOW MODE ACTUATOR REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\]](#)
- [AIRFLOW MODE ACTUATOR INSPECTION \[MANUAL AIR CONDITIONER\]](#)
- [BLOWER MOTOR REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\]](#)
- [BLOWER MOTOR INSPECTION \[MANUAL AIR CONDITIONER\]](#)
- [RESISTOR REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\]](#)
- [RESISTOR INSPECTION \[MANUAL AIR CONDITIONER\]](#)
- [MAGNETIC CLUTCH DISASSEMBLY/ASSEMBLY \[MANUAL AIR CONDITIONER\]](#)
- [MAGNETIC CLUTCH ADJUSTMENT \[MANUAL AIR CONDITIONER\]](#)
- [MAGNETIC CLUTCH INSPECTION \[MANUAL AIR CONDITIONER\]](#)
- [AMBIENT TEMPERATURE SENSOR REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\]](#)
- [AMBIENT TEMPERATURE SENSOR INSPECTION \[MANUAL AIR CONDITIONER\]](#)
- [EVAPORATOR TEMPERATURE SENSOR REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\]](#)
- [EVAPORATOR TEMPERATURE SENSOR INSPECTION \[MANUAL AIR CONDITIONER\]](#)
- [REFRIGERANT PRESSURE SWITCH REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\]](#)
- [REFRIGERANT PRESSURE SWITCH INSPECTION \[MANUAL AIR CONDITIONER\]](#)
- [CLIMATE CONTROL UNIT REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\]](#)
- [CLIMATE CONTROL UNIT INSPECTION \[MANUAL AIR CONDITIONER\]](#)
- [A/C AMPLIFIER REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\]](#)
- [A/C AMPLIFIER INSPECTION \[MANUAL AIR CONDITIONER\]](#)
- [FAN SWITCH INSPECTION \[MANUAL AIR CONDITIONER\]](#)

Technical Data

- [HVAC TECHNICAL DATA](#)

Maintenance/Service Tools

- [HVAC SST](#)

2011 - RX-8 - HVAC

DTC 06, 10, 12, 18, 21

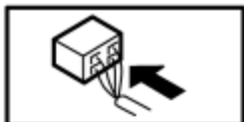
DTC 06, 10, 12, 18, 21	A/C amplifier (sensor ground) system inspection
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Connector or terminal malfunction • Open circuit in wiring harness between A/C amplifier connector terminal 2N and evaporator temperature sensor connector terminal A • Open circuit in wiring harness between A/C amplifier connector terminal 2N and ambient temperature sensor connector terminal A • Open circuit in wiring harness between A/C amplifier connector terminal 2N and passenger compartment temperature sensor connector terminal B • Open circuit in wiring harness between A/C amplifier connector terminal 2N and air mix actuator connector terminal A • Open circuit in wiring harness between A/C amplifier connector terminal 2N and airflow mode actuator connector terminal C

Diagnostic Procedure

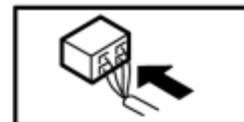
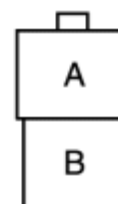
STEP	INSPECTION	ACTION
1	INSPECT SENSOR GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the A/C amplifier connector (16-pin) and the evaporator temperature sensor connector. • Is there continuity between A/C amplifier connector (16-pin) terminal 2N and evaporator temperature sensor connector terminal A? 	Yes Inspect the connection at the A/C amplifier connector (16-pin).
		No Repair the wiring harness.

A/C AMPLIFIER CONNECTOR

2O	2M	*	2I	2G	*	2C	2A
2P	2N	2L	2J	*	2F	2D	*



EVAPORATOR TEMPERATURE SENSOR CONNECTOR



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

DTC 07, 11, 13, 19, 22

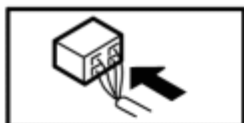
DTC 07, 11, 13, 19, 22	A/C amplifier (sensor ground) system inspection
POSSIBLE CAUSE	<ul style="list-style-type: none">• Open circuit in wiring harness between A/C amplifier connector terminal 2N and evaporator temperature sensor connector terminal A• Open circuit in wiring harness between A/C amplifier connector terminal 2N and ambient temperature sensor connector terminal A• Open circuit in wiring harness between A/C amplifier connector terminal 2N and passenger compartment temperature sensor connector terminal B• Open circuit in wiring harness between A/C amplifier connector terminal 2N and air mix actuator connector terminal A• Open circuit in wiring harness between A/C amplifier connector terminal 2N and airflow mode actuator connector terminal C

Diagnostic Procedure

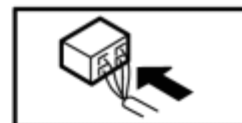
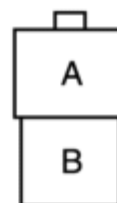
STEP	INSPECTION	ACTION
1	INSPECT SENSOR GROUND CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none">• Disconnect the A/C amplifier connector (16-pin) and the evaporator temperature sensor connector.• Is there an open circuit in the wiring harness between A/C amplifier connector (16-pin) terminal 2N and evaporator temperature sensor connector terminal A?	YesRepair the wiring harness.
		NoThe system is normal at present. (Clear the past malfunction from memory.)

A/C AMPLIFIER CONNECTOR

2O	2M	*	2I	2G	*	2C	2A
2P	2N	2L	2J	*	2F	2D	*



EVAPORATOR TEMPERATURE SENSOR CONNECTOR



[< Previous](#) [Next >](#)

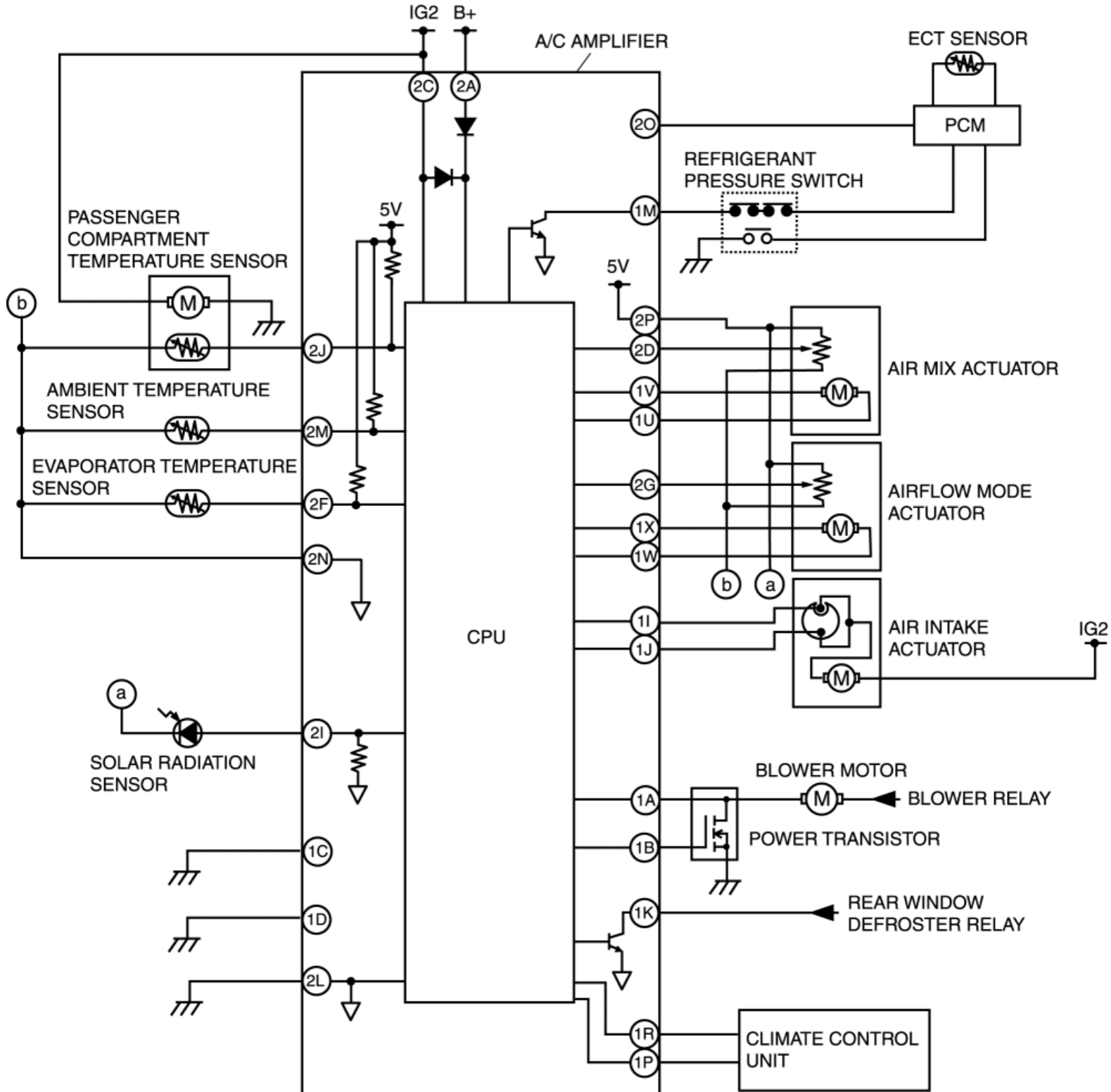
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

[Next >](#)

2011 - RX-8 - HVAC

HVAC SYSTEM WIRING DIAGRAM



[Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

DIAGNOSTIC TROUBLE CODE NUMBER INSPECTION

1. Expose the solar radiation sensor to natural sunlight

NOTE:

- If natural sunlight is not shone on the solar radiation sensor, the climate control unit determines a malfunction and indicates DTC "02".
2. With the REC/FRESH switch and the A/C switch pressed at the same time, turn the ignition switch to the ACC position, and wait for **3 s**, then turn the ignition switch to the ON position and wait for **3 s or more** while continuing to press both switches.
 3. Perform the DTC inspection (present and past malfunction indication modes). Read the DTCs on the information display. If the system is normal, "00" will be indicated on the display.
 - If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.
 4. After completion of repairs, clear all DTCs from memory. (See [After Repair Procedure](#).)

Present Malfunction Indication Mode

- The on-board diagnostic function displays the present malfunction indication mode directly after start up. In the present malfunction indication mode, present malfunctions in the control system circuits (open/short circuits) are detected, and the DTCs are indicated on the information display.

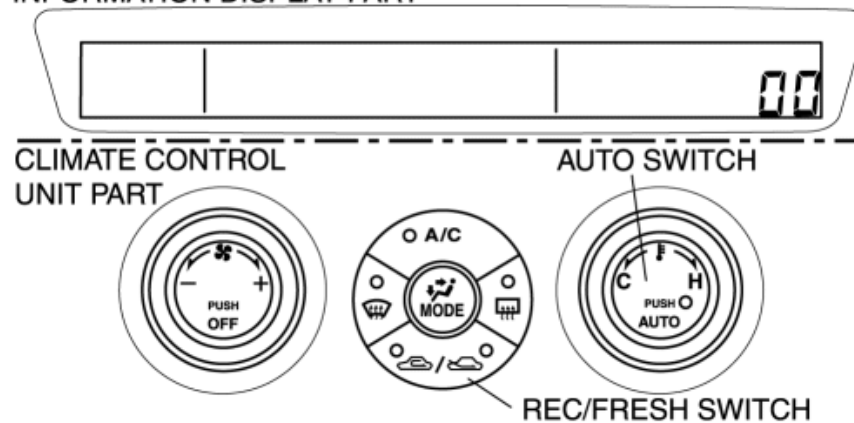
Past Malfunction Indication Mode

- While in the present malfunction indication mode, press the A/C switch to change to the past malfunction indication mode. In the past malfunction indication mode, past malfunctions (intermittent problems) in the input sensor circuits (open/short circuits) are stored and indicated on the information display. If the A/C switch is pressed again while in the past malfunction indication mode, the on-board diagnostic function will return to the present malfunction indication mode.

After Repair Procedure

- When DTCs are displayed in the past malfunction indication mode, they remain in the memory after the failed systems are corrected. Consequently, the next time the past malfunction indication mode is used, the same past malfunction DTCs will be indicated on the information display. Therefore, clear the past malfunction memory after correcting all failed systems. To clear the past malfunction memory, press the AUTO switch and the REC/FRESH switch at the same time while in the past malfunction indication mode. If cleared, "00" will be indicated on the information display.

INFORMATION DISPLAY PART



DTC Table

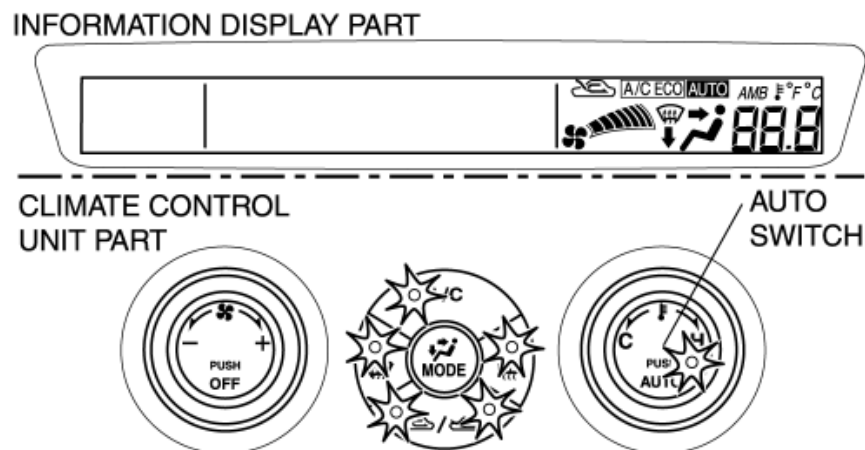
No.	Indicator pattern	Diagnosed circuit
02	02	Solar radiation sensor (present malfunction)
06	06	Passenger compartment temperature sensor (present malfunction)
07	07	Passenger compartment temperature sensor (past malfunction)
10	10	Evaporator temperature sensor (present malfunction)
11	11	Evaporator temperature sensor (past malfunction)
12	12	Ambient temperature sensor (present malfunction)
13	13	Ambient temperature sensor (past malfunction)
14	14	ECT sensor (present malfunction)
15	15	ECT sensor (past malfunction)

18	18	Air mix actuator [potentiometer] (present malfunction)
19	19	Air mix actuator [potentiometer] (past malfunction)
21	21	Airflow mode actuator [potentiometer] (present malfunction)
22	22	Airflow mode actuator [potentiometer] (past malfunction)
58	58	Air mix actuator [motor lock] (past malfunction)
59	59	Airflow mode actuator [motor lock] (past malfunction)

A/C Operation Check Mode

Inspection procedure

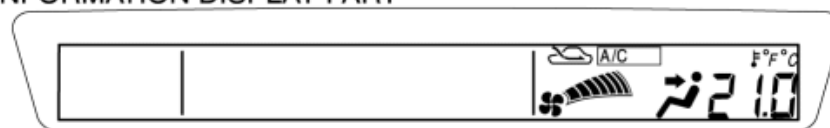
1. Warm up the engine and turn the ignition switch to the LOCK position.
2. Start the present malfunction indication mode referring to the DTC inspection.
3. Turn the ignition switch to the ON position and press the AUTO switch.
4. Verify that all the indicator lights of the climate control unit and the information display illuminate for **4 s**.



5. Verify the operation of each output device when changing steps by pressing the REC/FRESH switch, and referring to the output device operation check table.

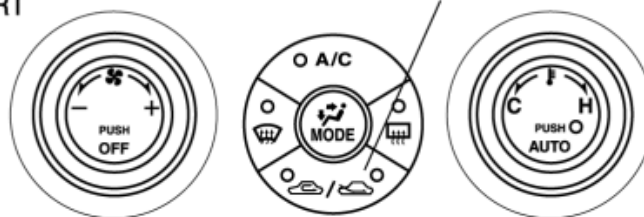
- If any abnormality is found, inspect the malfunctioning system.

INFORMATION DISPLAY PART



CLIMATE CONTROL UNIT PART

REC/FRESH SWITCH



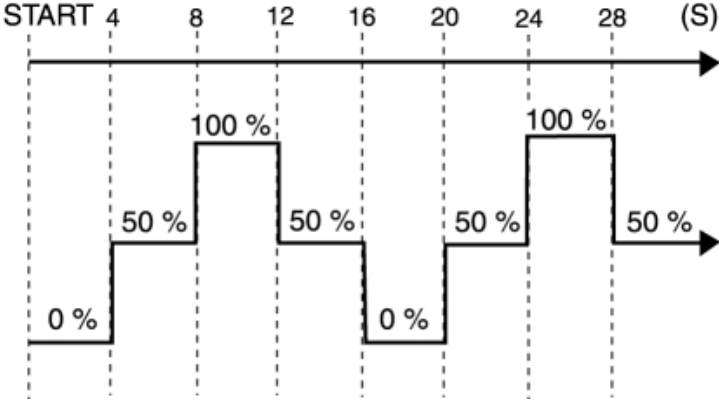
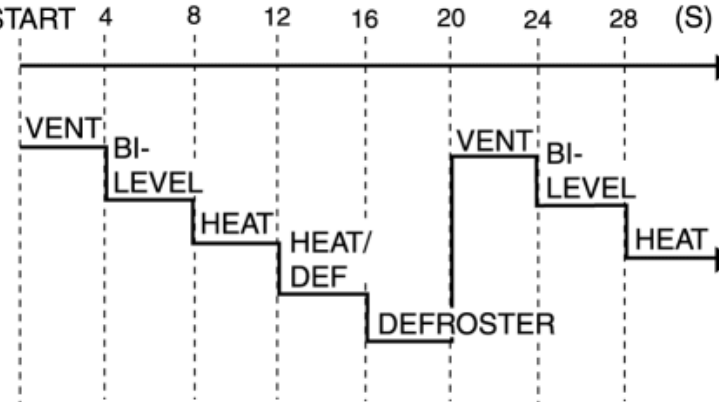
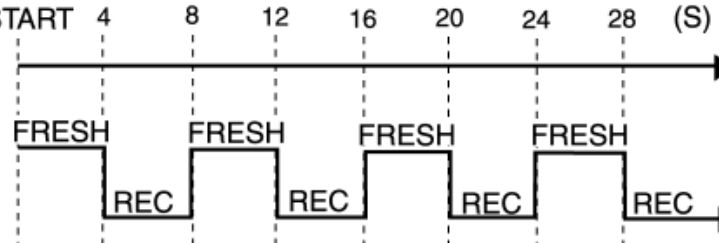
NOTE:

- If the AUTO switch is pressed during the A/C operation check mode, the on-board diagnostic function will return to the present malfunction indication mode.

6. Turn the ignition switch to the LOCK position to end the A/C operation check mode.

Operation check table

Step	Device and operation	Operation condition	Monitor display*	Other output condition
1	Blower motor speed	<p>START</p>	1	<ul style="list-style-type: none"> Air mix door opening angle <ul style="list-style-type: none"> 50 % Airflow mode <ul style="list-style-type: none"> VENT A/C compressor <ul style="list-style-type: none"> ON (OFF when the blower is OFF) Air intake mode <ul style="list-style-type: none"> FRESH
	Air mix door		20.5	<ul style="list-style-type: none"> Blower fan <ul style="list-style-type: none"> 2nd
			20.5	<ul style="list-style-type: none"> Airflow mode
			21.0	<ul style="list-style-type: none"> VENT

2	opening angle		20.5	<ul style="list-style-type: none"> A/C compressor <ul style="list-style-type: none"> ON Air intake mode <ul style="list-style-type: none"> FRESH
3	Airflow mode door switching		3	<ul style="list-style-type: none"> Blower fan <ul style="list-style-type: none"> 2nd Air mix door opening angle <ul style="list-style-type: none"> 50 % A/C compressor <ul style="list-style-type: none"> ON Air intake mode <ul style="list-style-type: none"> FRESH
4	Air intake door switching		4	<ul style="list-style-type: none"> Blower fan <ul style="list-style-type: none"> 2nd Air mix door opening angle <ul style="list-style-type: none"> 0 % Airflow mode <ul style="list-style-type: none"> VENT <p>NOTE:</p> <ul style="list-style-type: none"> A/C compressor ON/OFF can be verified "A/C" display on the information display.

*

Shown on the information display (at the set temperature display) according to the step.

A/C Cut-off Control Inspection

Without using M-MDS

1. Apply the parking brake securely and position wheel blocks against the front and rear tires.
2. Start the engine.
3. Turn the A/C switch and the fan switch on.
4. Verify that the magnetic clutch is engaged.
 - If the magnetic clutch engagement is not verified, inspect the following, and repair or replace the malfunctioning part:
 - A/C switch
 - Fan switch
 - Refrigerant pressure switch (high/low pressure)
 - Wiring harnesses (open circuit) between the fan switch, A/C switch, refrigerant pressure switch (high/low pressure), and PCM terminal 1AU
 - Refrigerant pressure switch (medium pressure)
 - Wiring harness (open circuit) between the refrigerant pressure switch (medium pressure) and PCM terminal 1J
 - Magnetic clutch
 - A/C relay
 - Wiring harnesses (open circuit) between the battery, A/C relay, magnetic clutch, and ground
 - Wiring harness (open circuit) between the A/C relay and PCM terminal 1I
5. Fully depress the accelerator pedal (wide open throttle) and verify that the magnetic clutch is disengaged.
 - If the magnetic clutch is not disengaged, inspect the following, and repair or replace the malfunctioning part:
 - PCM terminals 1AO (No.1), 1AP (No.2) (accelerator position sensor input signal)
 - PCM terminals 2AK (No.1), 2AL (No.2) (throttle position sensor input signal)
 - A/C relay
 - Wiring harnesses (open circuit) between the ignition switch, A/C relay, and PCM terminal 1I

Using M-MDS

1. Connect the M-MDS to the DLC-2.
2. Start the engine.
3. Monitor the "ACCS" referring to the PCM monitor inspection. (See [PCM INSPECTION \[13B-MSP\].](#))
4. Turn the A/C switch and the fan switch on.
5. Verify that the "ACCS" monitor displays "ON".
 - If the "ACCS" monitor does not display "ON", inspect the following items:

A/C switch

- Fan switch
- Refrigerant pressure switch (high/low pressure)
- Wiring harnesses (open circuit) between the fan switch, A/C switch, refrigerant pressure switch (high/low pressure), and PCM terminal 1AU

6. Monitor the "COLP".

7. Verify that the magnetic clutch engages when the "COLP" monitor displays "ON".

- If the magnetic clutch engagement is not verified, inspect the following items:
 - Magnetic clutch
 - A/C relay
 - Wiring harnesses (open/short circuit) between the battery, A/C relay, magnetic clutch, and ground
 - Wiring harness (open circuit) between the A/C relay and PCM terminal 1I
- If the "COLP" monitor does not display "ON", inspect the following items:
 - Refrigerant pressure switch (medium pressure)
 - Wiring harness (open circuit) between the refrigerant pressure switch (medium pressure) and PCM terminal 1J

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

DTC 02

DTC 02	Solar radiation sensor system inspection
POSSIBLE CAUSE	<ul style="list-style-type: none"> Solar radiation sensor malfunction Open circuit in wiring harness between solar radiation sensor connector terminal 2I and A/C amplifier connector terminal B Open circuit in wiring harness between solar radiation sensor connector terminal 2P and A/C amplifier connector terminal A Short to ground in wiring harness between solar radiation sensor connector terminal 2I and A/C amplifier connector terminal B Connector or terminal malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	INSPECT SOLAR RADIATION SENSOR <ul style="list-style-type: none"> Inspect the solar radiation sensor. (See SOLAR RADIATION SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) Is it normal? 	YesGo to the next step.
		No Replace the solar radiation sensor. (See SOLAR RADIATION SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
2	INSPECT SOLAR RADIATION SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Disconnect the A/C amplifier connector (16-pin) and the solar radiation sensor connector. Is there continuity between the following terminals of the A/C amplifier connector (16-pin) and the solar radiation sensor connector? 	YesGo to the next step.
		No Repair the wiring harness.

- 2I—B
- 2P—A

3

INSPECT SOLAR RADIATION SENSOR CIRCUIT FOR SHORT TO GROUND

- Is there a short circuit to ground in the wiring harness between A/C amplifier connector (16-pin) terminal 2I and solar radiation sensor connector terminal B?

Yes Repair the wiring harness.

No Inspect the connection at the A/C amplifier connector (16-pin).

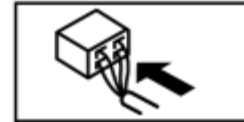
A/C AMPLIFIER CONNECTOR

2O	2M	*	2I	2G	*	2C	2A
2P	2N	2L	2J	*	2F	2D	*



SOLAR RADIATION SENSOR CONNECTOR

B	A
---	---



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

DTC 06

DTC 06	Passenger compartment temperature sensor system inspection
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Connector or terminal malfunction • Open circuit in wiring harness between A/C amplifier connector terminals 2J and 2N • Short to ground in wiring harness between A/C amplifier connector terminals 2J and 2N • Passenger compartment temperature sensor malfunction

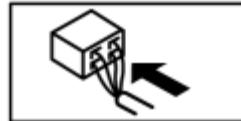
Diagnostic Procedure

STEP	INSPECTION	ACTION
1	INSPECT PASSENGER COMPARTMENT TEMPERATURE SENSOR CIRCUIT <ul style="list-style-type: none"> • Is the resistance between terminals 2J and 2N of the A/C amplifier connector (16-pin) as indicated below? <ul style="list-style-type: none"> ▪ 0.35—120 kilohms 	Yes Inspect the connection at the A/C amplifier connector (16-pin).
		No Go to the next step.
2	INSPECT PASSENGER COMPARTMENT TEMPERATURE SENSOR <ul style="list-style-type: none"> • Inspect the passenger compartment temperature sensor. (See PASSENGER COMPARTMENT)	Yes Repair the wiring harness.
		No Replace the passenger compartment temperature sensor. (See PASSENGER COMPARTMENT TEMPERATURE SENSOR)

- Is it normal?

A/C AMPLIFIER CONNECTOR

2O	2M	*	2I	2G	*	2C	2A
2P	2N	2L	2J	*	2F	2D	*



2011 - RX-8 - HVAC

DTC 07

DTC 07	Passenger compartment temperature sensor system inspection
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Passenger compartment temperature sensor malfunction • Open circuit in wiring harness between A/C amplifier connector terminal 2J and passenger compartment temperature sensor connector terminal D • Open circuit in wiring harness between A/C amplifier connector terminal 2N and passenger compartment temperature sensor connector terminal B • Short to ground in wiring harness between A/C amplifier connector terminal 2J and passenger compartment temperature sensor connector terminal D • Connector or terminal malfunction


Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	INSPECT PASSENGER COMPARTMENT TEMPERATURE SENSOR <ul style="list-style-type: none"> • Inspect the passenger compartment temperature sensor. (See PASSENGER COMPARTMENT TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER] .) <ul style="list-style-type: none"> • Is it normal? 	Yes	Go to the next step.
		No	Replace the passenger compartment temperature sensor. (See PASSENGER COMPARTMENT TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER] .)
2	INSPECT PASSENGER COMPARTMENT TEMPERATURE SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the A/C amplifier connector (16-pin) and the passenger compartment temperature sensor connector. 	Yes	Repair the wiring harness.
		No	Go to the next step.

	<p>Is there an open circuit in the wiring harness between the following terminals of the A/C amplifier connector (16-pin) and the passenger compartment temperature sensor connector?</p> <ul style="list-style-type: none"> ▪ 2J—D ▪ 2N—B 		
3	<p>INSPECT PASSENGER COMPARTMENT TEMPERATURE SENSOR CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • Is there a short circuit to ground in the wiring harness between A/C amplifier connector (16-pin) terminal 2J and passenger compartment temperature sensor connector terminal D? 	Yes	Repair the wiring harness.
		No	Connect the A/C amplifier connector (16-pin) and go to the next step.
4	<p>INSPECT PASSENGER COMPARTMENT TEMPERATURE SENSOR CIRCUIT</p> <ul style="list-style-type: none"> • Turn the ignition switch to the ON position • Inspect the voltage at the following A/C amplifier terminal (wiring harness side). <ul style="list-style-type: none"> ▪ Terminal 2J (16-pin, passenger compartment temperature sensor input signal) • Is the voltage normal? (Approx. 5 V) 	Yes	The system is normal at present. (Clear the past malfunction from memory.)
		No	Inspect the connection at the A/C amplifier connector (16-pin).


A/C AMPLIFIER CONNECTOR

2O	2M	*	2I	2G	*	2C	2A
2P	2N	2L	2J	*	2F	2D	*



PASSENGER COMPARTMENT TEMPERATURE SENSOR CONNECTOR

D	C	B	A
---	---	---	---



2011 - RX-8 - HVAC

DTC 10

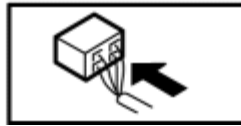
DTC 10	Evaporator temperature sensor system inspection
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Connector or terminal malfunction • Open circuit in wiring harness between A/C amplifier connector terminals 2F and 2N • Short to ground in wiring harness between A/C amplifier connector terminals 2F and 2N • Evaporator temperature sensor malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	INSPECT EVAPORATOR TEMPERATURE SENSOR CIRCUIT <ul style="list-style-type: none"> • Is the resistance between terminals 2F and 2N of the A/C amplifier connector (16-pin) as indicated below? <ul style="list-style-type: none"> ▪ 0.34—120 kilohms 	Yes Inspect the connection at the A/C amplifier connector (16-pin).
		No Go to the next step.
2	INSPECT EVAPORATOR TEMPERATURE SENSOR <ul style="list-style-type: none"> • Inspect the evaporator temperature sensor. (See EVAPORATOR INSPECTION.) • Is it normal? 	Yes Repair the wiring harness.
		No Replace the evaporator temperature sensor. (See A/C UNIT DISASSEMBLY/ASSEMBLY .)

A/C AMPLIFIER CONNECTOR

2O	2M	*	2I	2G	*	2C	2A
2P	2N	2L	2J	*	2F	2D	*



[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - HVAC

DTC 11

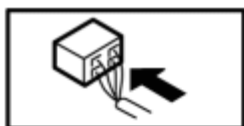
DTC 11	Evaporator temperature sensor system inspection
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Evaporator temperature sensor malfunction • Open circuit in wiring harness between A/C amplifier connector terminal 2F and evaporator temperature sensor connector terminal B • Open circuit in wiring harness between A/C amplifier connector terminal 2N and evaporator temperature sensor connector terminal A • Short to ground in wiring harness between A/C amplifier connector terminal 2F and evaporator temperature sensor connector terminal B • Connector or terminal malfunction

Diagnostic Procedure

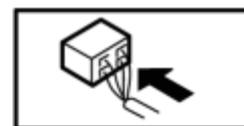
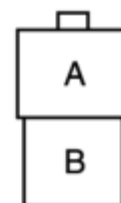
STEP	INSPECTION	ACTION
1	INSPECT EVAPORATOR TEMPERATURE SENSOR <ul style="list-style-type: none"> • Inspect the evaporator temperature sensor. (See EVAPORATOR TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is it normal? 	Yes Go to the next step.
		No Replace the evaporator temperature sensor. (See A/C UNIT DISASSEMBLY/ASSEMBLY .)
2	INSPECT EVAPORATOR TEMPERATURE SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the A/C amplifier connector (16-pin) and the evaporator temperature sensor connector. • Is there an open circuit in the wiring harness between the following terminals of the A/C amplifier connector (16-pin) and the evaporator temperature sensor connector? 	Yes Repair the wiring harness.
		No Go to the next step.

	<ul style="list-style-type: none"> ▪ 2F—B ▪ 2N—A 		
3	INSPECT EVAPORATOR TEMPERATURE SENSOR CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Is there a short circuit to ground in the wiring harness between A/C amplifier connector (16-pin) terminal 2F and evaporator temperature sensor connector terminal B? 	Yes	Repair the wiring harness.
		No	Connect the A/C amplifier connector (16-pin), then go to the next step.
4	INSPECT EVAPORATOR TEMPERATURE SENSOR CIRCUIT <ul style="list-style-type: none"> • Turn the ignition switch to the ON position. • Inspect the voltage at the following A/C amplifier terminal (wiring harness side). <ul style="list-style-type: none"> ▪ Terminal 2F (16-pin, evaporator temperature sensor input signal) • Is the voltage normal? (Approx. 5 V) 	Yes	The system is normal at present. (Clear the past malfunction from memory.)
		No	Inspect the connection at the A/C amplifier connector (16-pin).

A/C AMPLIFIER CONNECTOR



EVAPORATOR TEMPERATURE SENSOR CONNECTOR



2011 - RX-8 - HVAC

DTC 12

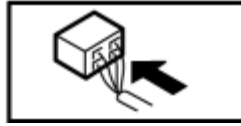
DTC 12	Ambient temperature sensor system inspection
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Connector or terminal malfunction • Open circuit in wiring harness between A/C amplifier connector terminals 2M and 2N • Short to ground in wiring harness between A/C amplifier connector terminals 2M and 2N • Ambient temperature sensor malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	INSPECT AMBIENT TEMPERATURE SENSOR CIRCUIT <ul style="list-style-type: none"> • Is the resistance between terminals 2M and 2N of the A/C amplifier connector (16-pin) as indicated below? <ul style="list-style-type: none"> ▪ 0.35—120 kilohms 	Yes Inspect the connection at the A/C amplifier connector (16-pin).
		No Go to the next step.
2	INSPECT AMBIENT TEMPERATURE SENSOR <ul style="list-style-type: none"> • Inspect the ambient temperature sensor. <p>(See AMBIENT TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].)</p> <ul style="list-style-type: none"> • Is it normal? 	Yes Repair the wiring harness.
		No Replace the ambient temperature sensor. (See AMBIENT TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER] .)

A/C AMPLIFIER CONNECTOR

2O	2M	*	2I	2G	*	2C	2A
2P	2N	2L	2J	*	2F	2D	*



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

DTC 13

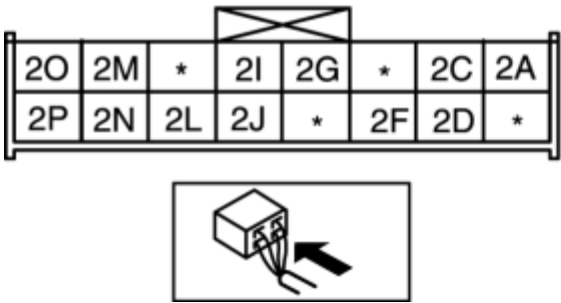
DTC 13	Ambient temperature sensor system inspection
POSSIBLE CAUSE	<ul style="list-style-type: none"> Ambient temperature sensor malfunction Open circuit in wiring harness between A/C amplifier connector terminal 2M and ambient temperature sensor connector terminal B Open circuit in wiring harness between A/C amplifier connector terminal 2N and ambient temperature sensor connector terminal A Short to ground in wiring harness between A/C amplifier terminal 2M and ambient temperature sensor connector terminal B Connector or terminal malfunction

Diagnostic Procedure

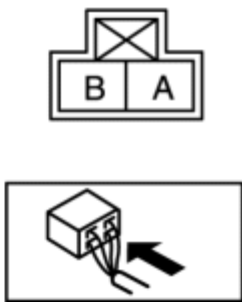
STEP	INSPECTION	ACTION
1	INSPECT AMBIENT TEMPERATURE SENSOR <ul style="list-style-type: none"> Inspect the ambient temperature sensor. (See AMBIENT TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].) Is it normal? 	Yes Go to the next step.
		No Replace the ambient temperature sensor. (See AMBIENT TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER] .)
2	INSPECT AMBIENT TEMPERATURE SENSOR CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Disconnect the A/C amplifier connector (16-pin) and the ambient temperature sensor connector. Is there an open circuit in the wiring harness between the following terminals of the A/C 	Yes Repair the wiring harness.
		No Go to the next step.

	<p>amplifier connector (16-pin) and the ambient temperature sensor connector?</p> <ul style="list-style-type: none"> ▪ 2M—B ▪ 2N—A 		
3	<p>INSPECT AMBIENT TEMPERATURE SENSOR CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none"> • Is there a short circuit to ground in the wiring harness between A/C amplifier connector (16-pin) terminal 2M and ambient temperature sensor connector terminal B? 	Yes	Repair the wiring harness.
		No	Connect the A/C amplifier connector (16-pin), then go to the next step.
4	<p>INSPECT AMBIENT TEMPERATURE SENSOR CIRCUIT</p> <ul style="list-style-type: none"> • Turn the ignition switch to the ON position • Inspect the voltage at the following A/C amplifier terminal (wiring harness side). <ul style="list-style-type: none"> ▪ Terminal 2M (16-pin, ambient temperature sensor input signal) • Is the voltage normal? (Approx. 5 V) 	Yes	The system is normal at present. (Clear the past malfunction from memory.)
		No	Inspect the connection at the A/C amplifier connector (16-pin).

A/C AMPLIFIER CONNECTOR



AMBIENT TEMPERATURE SENSOR CONNECTOR



2011 - RX-8 - HVAC

DTC 14

DTC 14	ECT sensor system inspection
POSSIBLE CAUSE	<ul style="list-style-type: none"> ECT sensor malfunction PCM malfunction Open or short circuit in wiring harnesses between ECT sensor connector and PCM connector A/C amplifier malfunction Open circuit in wiring harness between A/C amplifier connector terminal 20 and PCM connector terminal 1AN Short to ground in wiring harness between A/C amplifier connector terminal 20 and PCM connector terminal 1AN

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	VERIFY THAT THE DTC OF THE PCM <ul style="list-style-type: none"> Connect the M-MDS to the DLC-2. Verify that the DTC of the PCM. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP] .) <ul style="list-style-type: none"> Is displayed P0117 or P0118? 	Yes Perform troubleshooting according to the corresponding DTC inspection.
		No Go to the next step.
2	INSPECT ECT SENSOR SIGNAL CIRCUIT <ul style="list-style-type: none"> Inspect the voltage at the following A/C amplifier terminal (wiring harness side). 	Yes Replace the A/C amplifier.
		No Repair the wiring harness.

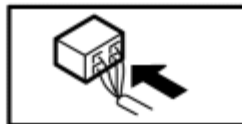
- Terminal 2O (16-pin, ECT sensor input signal)

- Is the voltage normal?

(See [A/C AMPLIFIER INSPECTION \[FULL-AUTO AIR CONDITIONER\]](#).)

A/C AMPLIFIER CONNECTOR

2O	2M	*	2I	2G	*	2C	2A
2P	2N	2L	2J	*	2F	2D	*



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

DTC 15

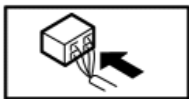
DTC 15	ECT sensor system inspection
POSSIBLE CAUSE	<ul style="list-style-type: none"> ECT sensor malfunction PCM malfunction Open or short circuit in wiring harnesses between ECT sensor connector and PCM connector Open circuit in wiring harness between A/C amplifier connector terminal 2O and PCM connector terminal 1AN Short to ground in wiring harness between A/C amplifier connector terminal 2O and PCM connector terminal 1AN

Diagnostic Procedure

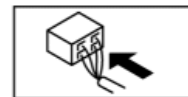
STEP	INSPECTION		ACTION
1	VERIFY THAT THE DTC OF THE PCM <ul style="list-style-type: none"> Connect the M-MDS to the DLC-2. Verify that the DTC of the PCM. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) <ul style="list-style-type: none"> Is displayed P0117 or P0118? 	Yes	Perform troubleshooting according to the corresponding DTC inspection.
		No	Go to the next step.
2	INSPECT ECT SENSOR SIGNAL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Disconnect the A/C amplifier connector (16-pin) and the PCM connector (60-pin). Is there an open circuit in the wiring harness between A/C amplifier connector (16-pin) terminal 2O and PCM connector terminal 1AN? 	Yes	Repair the wiring harness.
		No	Go to the next step.
3	INSPECT ECT SENSOR SIGNAL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Is there a short circuit to ground in the wiring harness between A/C amplifier connector (16-pin) terminal 2O and PCM connector terminal 1AN? 	Yes	Repair the wiring harness.
		No	The system is normal at present. (Clear the past malfunction from memory.)

A/C AMPLIFIER CONNECTOR

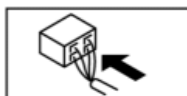
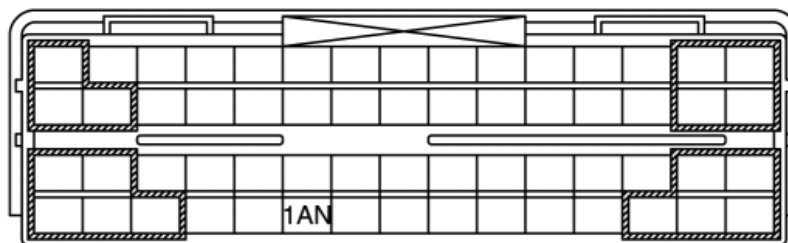
2O	2M	*	2I	2G	*	2C	2A
2P	2N	2L	2J	*	2F	2D	*



ECT SENSOR CONNECTOR



PCM CONNECTOR



2011 - RX-8 - HVAC

DTC 18

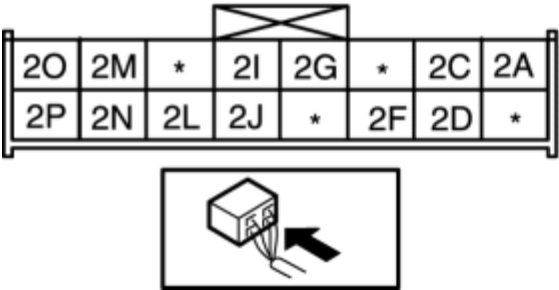
DTC 18	Air mix actuator (potentiometer) system inspection
POSSIBLE CAUSE	<ul style="list-style-type: none"> Air mix actuator malfunction Short to ground in wiring harness between A/C amplifier connector terminals 2D and 2N Open circuit in wiring harness between A/C amplifier connector terminals 2P and 2N Connector or terminal malfunction Open circuit in wiring harness between A/C amplifier connector terminals 2D and 2P

Diagnostic Procedure

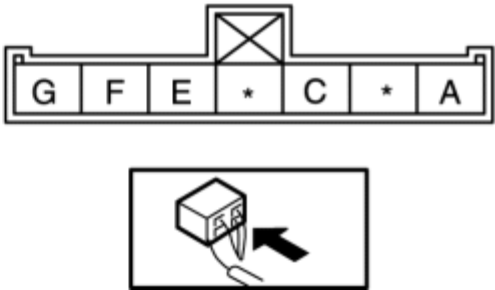
STEP	INSPECTION	ACTION
1	INSPECT AIR MIX ACTUATOR <ul style="list-style-type: none"> Inspect the air mix actuator. (See AIR MIX ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER].) Is it normal? 	YesGo to the next step.
		No Replace the air mix actuator. (See AIR MIX ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER] .)
2	INSPECT AIR MIX ACTUATOR (POTENTIOMETER) CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Disconnect the airflow mode actuator connector. Is the resistance between terminals 2D and 2N of the A/C amplifier connector (16-pin) 698 ohms or more? 	YesGo to the next step.
		No Repair the wiring harness. (Short circuit)

3	INSPECT AIR MIX ACTUATOR (POTENTIOMETER) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Disconnect the A/C amplifier connector (16-pin). Is the resistance between terminals 2P and 2N of the A/C amplifier connector (16-pin) 6.0 kilohms or less? 	Yes	Go to the next step.
		No	Repair the wiring harness. (Open circuit)
4	INSPECT AIR MIX ACTUATOR (POTENTIOMETER) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Is the resistance between terminals 2D and 2P of the A/C amplifier connector (16-pin) 5.2 kilohms or less? 	Yes	Inspect the connection at the A/C amplifier connector (16-pin).
		No	Repair the wiring harness. (Open circuit)

A/C AMPLIFIER CONNECTOR



AIR MIX ACTUATOR CONNECTOR



2011 - RX-8 - HVAC

DTC 19

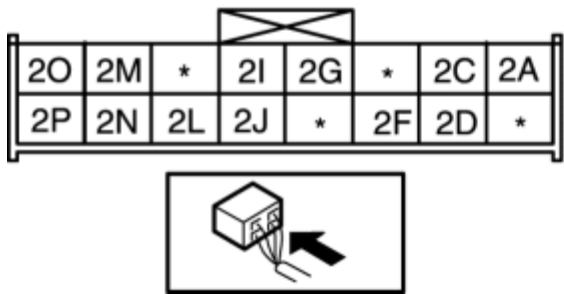
DTC 19	Air mix actuator (potentiometer) system inspection
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Air mix actuator malfunction • Open circuit in wiring harness between A/C amplifier connector terminal 2P and air mix actuator connector terminal C • Open circuit in wiring harness between A/C amplifier connector terminal 2D and air mix actuator connector terminal E • Open circuit in wiring harness between A/C amplifier connector terminal 2N and air mix actuator connector terminal A • Short to ground in wiring harness between A/C amplifier connector terminal 2D and air mix actuator connector terminal E

Diagnostic Procedure

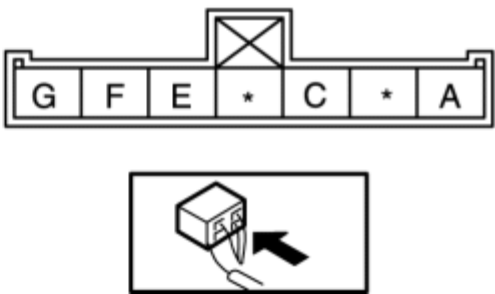
STEP	INSPECTION	ACTION
1	INSPECT AIR MIX ACTUATOR <ul style="list-style-type: none"> • Inspect the air mix actuator. (See AIR MIX ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is it normal? 	Yes Go to the next step.
		No Replace the air mix actuator. (See AIR MIX ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER] .)
2	INSPECT AIR MIX ACTUATOR (POTENTIOMETER) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the A/C amplifier connector (16-pin) and the air mix actuator connector. • Is there an open circuit in the wiring harness 	Yes Repair the wiring harness.
		No Go to the next step.

	<p>between the following terminals of the A/C amplifier connector (16-pin) and the air mix actuator connector?</p> <ul style="list-style-type: none">▪ 2P—C▪ 2D—E▪ 2N—A		
3	<p>INSPECT AIR MIX ACTUATOR (POTENTIOMETER) CIRCUIT FOR SHORT TO GROUND</p> <ul style="list-style-type: none">• Is there a short circuit to ground in the wiring harness between A/C amplifier connector (16-pin) terminal 2D and air mix actuator connector terminal E?	Yes	Repair the wiring harness.
		No	The system is normal at present. (Clear the past malfunction from memory.)

A/C AMPLIFIER CONNECTOR



AIR MIX ACTUATOR CONNECTOR



2011 - RX-8 - HVAC

DTC 21

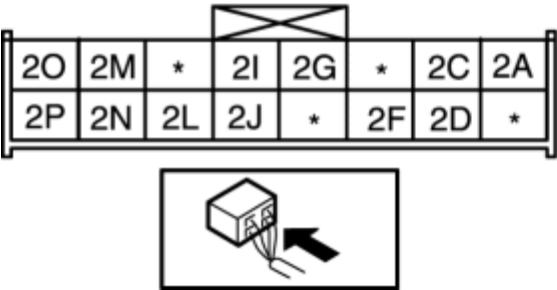
DTC 21	Airflow mode actuator (potentiometer) system inspection
POSSIBLE CAUSE	<ul style="list-style-type: none"> Airflow mode actuator malfunction Short to ground in wiring harness between A/C amplifier connector terminals 2G and 2N Open circuit in wiring harness between A/C amplifier connector terminals 2P and 2N Connector or terminal malfunction Open circuit in wiring harness between A/C amplifier connector terminals 2P and 2G

Diagnostic Procedure

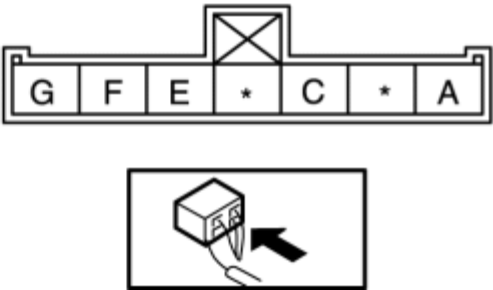
STEP	INSPECTION	ACTION
1	INSPECT AIRFLOW MODE ACTUATOR <ul style="list-style-type: none"> Inspect the airflow mode actuator. (See AIRFLOW MODE ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER].) Is it normal? 	YesGo to the next step.
		No Replace the airflow mode actuator. (See AIRFLOW MODE ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER] .)
2	INSPECT AIRFLOW MODE ACTUATOR (POTENTIOMETER) CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Disconnect the air mix actuator connector. Is the resistance between terminals 2G 	YesGo to the next step.
		No Repair the wiring harness. (Short circuit)

	and 2N of the A/C amplifier connector (16-pin) 698 ohms or more?		
3	INSPECT AIRFLOW MODE ACTUATOR (POTENTIOMETER) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Disconnect the A/C amplifier connector (16-pin). Is the resistance between terminals 2P and 2N of the A/C amplifier connector (16-pin) 6.0 kilohms or less? 	Yes	Go to the next step.
		No	Repair the wiring harness. (Open circuit)
4	INSPECT AIRFLOW MODE ACTUATOR (POTENTIOMETER) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Is the resistance between terminals 2P and 2G of the A/C amplifier connector (16-pin) 5.2 kilohms or less? 	Yes	Inspect the connection at the A/C amplifier connector (16-pin).
		No	Repair the wiring harness. (Open circuit)

A/C AMPLIFIER CONNECTOR



AIRFLOW MODE ACTUATOR CONNECTOR



2011 - RX-8 - HVAC

DTC 22

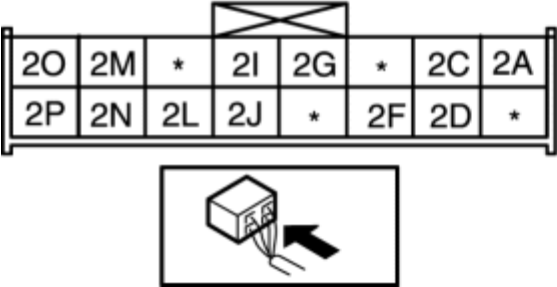
DTC 22	Airflow mode actuator (potentiometer) system inspection
POSSIBLE CAUSE	<ul style="list-style-type: none"> Airflow mode actuator malfunction Open circuit in wiring harness between A/C amplifier connector terminal 2P and airflow mode actuator connector terminal A Open circuit in wiring harness between A/C amplifier connector terminal 2G and airflow mode actuator connector terminal E Open circuit in wiring harness between A/C amplifier connector terminal 2N and airflow mode actuator connector terminal C Short to ground in wiring harness between A/C amplifier connector terminal 2G and airflow mode actuator connector terminal E

Diagnostic Procedure

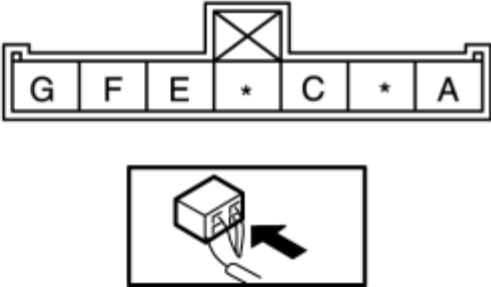
STEP	INSPECTION		ACTION
1	INSPECT AIRFLOW MODE ACTUATOR <ul style="list-style-type: none"> Inspect the airflow mode actuator. (See AIRFLOW MODE ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER].) Is it normal? 	Yes	Go to the next step.
		No	Replace the airflow mode actuator. (See AIRFLOW MODE ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER] .)
2	INSPECT AIRFLOW MODE ACTUATOR (POTENTIOMETER) CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Disconnect the A/C amplifier connector (16-pin) and the airflow mode actuator connector. 	Yes	Repair the wiring harness.
		No	Go to the next step.

	<ul style="list-style-type: none"> Is there an open circuit in the wiring harness between the following terminals of the A/C amplifier connector (16-pin) and the airflow mode actuator connector? <ul style="list-style-type: none"> 2P—A 2G—E 2N—C 		
3	INSPECT AIRFLOW MODE ACTUATOR (POTENTIOMETER) CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> Is there a short circuit to ground in the wiring harness between A/C amplifier connector (16-pin) terminal 2G and airflow mode actuator connector terminal E? 	Yes	Repair the wiring harness.
		No	The system is normal at present. (Clear the past malfunction from memory.)

A/C AMPLIFIER CONNECTOR



AIRFLOW MODE ACTUATOR CONNECTOR



2011 - RX-8 - HVAC

DTC 58

DTC 58	Air mix actuator (motor lock) system inspection
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Air mix actuator malfunction • A/C unit (air mix link and air mix crank) malfunction • Connector or terminal malfunction • Open circuit in wiring harness between A/C amplifier connector terminals 1U and 1V • Short to ground in wiring harness between A/C amplifier connector terminals 1U and 1V

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	INSPECT AIR MIX ACTUATOR OPERATION <ul style="list-style-type: none"> • Disconnect the air mix actuator connector. • Connect battery positive voltage to air mix actuator terminal F (or terminal G) and ground to terminal G (or terminal F). • Does the air mix actuator operate? 	Yes Connect the connector, then go to Step 3.
		No Go to the next step.
2	INSPECT AIR MIX LINK OPERATION <ul style="list-style-type: none"> • Remove the air mix actuator. • Operate the air mix link manually. • Does the air mix link operate smoothly? 	Yes Replace the air mix actuator. (See AIR MIX ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER] .)
		No Replace the air mix link and the air mix crank.

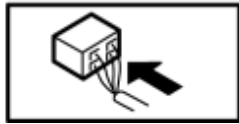
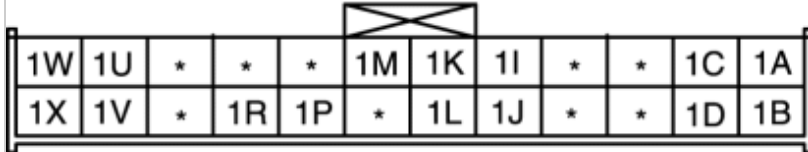
INSPECT AIR MIX ACTUATOR CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND

- Disconnect the A/C amplifier connector (24-pin).
- Connect battery positive voltage to A/C amplifier connector (24-pin) terminal 1V (or terminal 1U) and ground to terminal 1U (or terminal 1V).
- Does the air mix actuator operate?

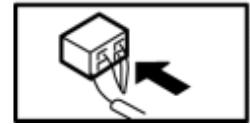
Yes Inspect the connection at the A/C amplifier connector (24-pin).

No Repair the wiring harness.

A/C AMPLIFIER CONNECTOR



AIR MIX ACTUATOR CONNECTOR



[< Previous](#) [Next >](#)

2011 - RX-8 - HVAC

DTC 59

DTC 59	Airflow mode actuator (motor lock) system inspection
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Airflow mode actuator malfunction • A/C unit (airflow mode link and airflow mode crank) malfunction • Connector or terminal malfunction • Open circuit in wiring harness between A/C amplifier connector terminals 1W and 1X • Short to ground in wiring harness between A/C amplifier connector terminals 1W and 1X

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Disconnect the airflow mode actuator connector. • Connect battery positive voltage to airflow mode actuator terminal F (or terminal G) and ground to terminal G (or terminal F). • Does the airflow mode actuator operate? 	Yes Connect the connector, then go to Step 3.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Remove the airflow mode actuator. • Operate the airflow mode main link manually. • Does the airflow mode main link operate smoothly? 	Yes Replace the airflow mode actuator. (See AIRFLOW MODE ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER] .)
		No Replace the airflow mode main link, airflow mode sub link, and the airflow mode crank.
3	<ul style="list-style-type: none"> • Disconnect the A/C amplifier connector (24-pin). • Connect battery positive voltage to A/C amplifier 	Yes Inspect the connection at the A/C amplifier connector (24-pin).

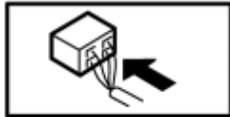
connector (24-pin) terminal 1W (or terminal 1X)
and ground to terminal 1X (or terminal 1W).

No Repair the wiring harness.

- Does the airflow mode actuator operate?

A/C AMPLIFIER CONNECTOR

1W	1U	*	*	*	1M	1K	1I	*	*	1C	1A
1X	1V	*	1R	1P	*	1L	1J	*	*	1D	1B



AIRFLOW MODE ACTUATOR CONNECTOR

G	F	E	*	C	*	A
---	---	---	---	---	---	---



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

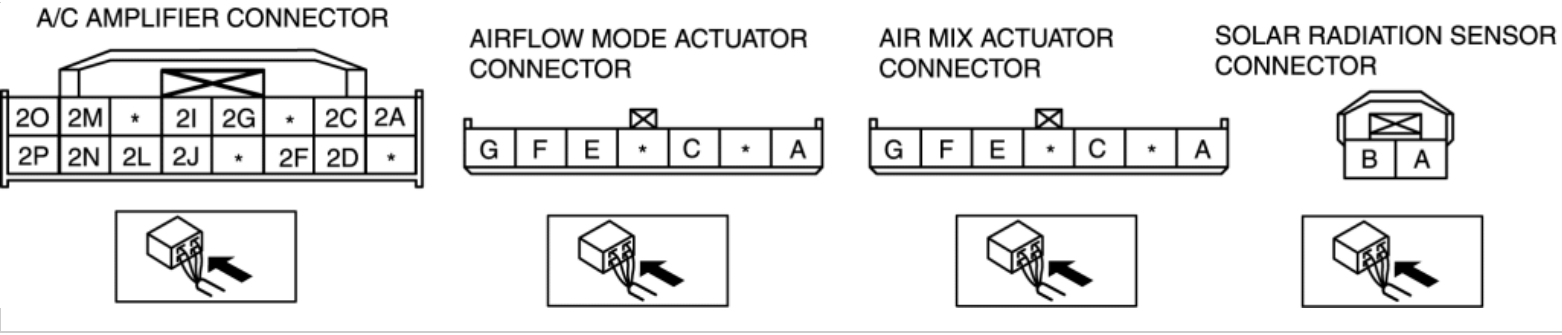
2011 - RX-8 - HVAC

DTC 02, 18, 21

DTC 02, 18, 21	A/C amplifier (+5 V power supply) system inspection
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Open circuit in wiring harness between A/C amplifier connector terminal 2P and airflow mode actuator connector terminal A • Short to ground in wiring harness between A/C amplifier connector terminal 2P and airflow mode actuator connector terminal A • Short to ground in wiring harness between A/C amplifier connector terminal 2P and air mix actuator connector terminal C • Short to ground in wiring harness between A/C amplifier connector terminal 2P and solar radiation sensor connector terminal A • Connector or terminal malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	INSPECT +5 V POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the A/C amplifier connector (16-pin) and the airflow mode actuator connector. • Is there continuity between A/C amplifier connector (16-pin) terminal 2P and airflow mode actuator connector terminal A? 	YesGo to the next step.
		NoRepair the wiring harness.
2	INSPECT +5 V POWER SUPPLY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Is there a short circuit to ground in the wiring harness between A/C amplifier connector (16-pin) terminal 2P and airflow mode actuator connector terminal A? 	YesRepair the wiring harness.
		NoGo to the next step.
3	INSPECT +5 V POWER SUPPLY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Is there a short circuit to ground in the wiring harness between A/C amplifier connector (16-pin) terminal 2P and air mix actuator connector terminal C? 	YesRepair the wiring harness.
		NoGo to the next step.
4	INSPECT +5 V POWER SUPPLY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Is there a short circuit to ground in the wiring harness between A/C amplifier connector (16-pin) terminal 2P and solar radiation sensor connector terminal A? 	YesRepair the wiring harness.
		NoInspect the connection at the A/C amplifier connector (16-pin).



2011 - RX-8 - HVAC

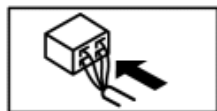
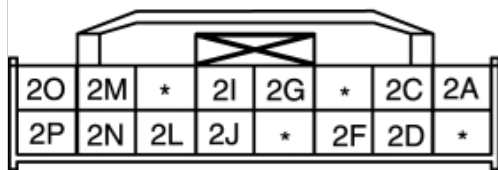
DTC 19, 22

DTC 19, 22	Air mix actuator, airflow mode actuator (+5 V power supply) system inspection
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Open circuit in wiring harness between A/C amplifier connector terminal 2P and airflow mode actuator connector terminal A • Short to ground in wiring harness between A/C amplifier connector terminal 2P and airflow mode actuator connector terminal A • Short to ground in wiring harness between A/C amplifier connector terminal 2P and air mix actuator connector terminal C

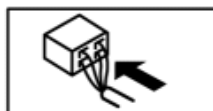
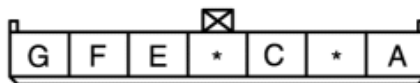
Diagnostic Procedure

STEP	INSPECTION	ACTION
1	INSPECT +5 V POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the A/C amplifier connector (16-pin) and the airflow mode actuator connector. • Is there continuity between A/C amplifier connector (16-pin) terminal 2P and airflow mode actuator connector terminal A? 	YesGo to the next step.
		No Repair the wiring harness.
2	INSPECT +5 V POWER SUPPLY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Is there a short circuit to ground in the wiring harness between A/C amplifier connector (16-pin) terminal 2P and airflow mode actuator connector terminal A? 	YesRepair the wiring harness.
		No Go to the next step.
3	INSPECT +5 V POWER SUPPLY CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Is there a short circuit to ground in the wiring harness between A/C amplifier connector (16-pin) terminal 2P and air mix actuator connector terminal C? 	YesRepair the wiring harness.
		No The system is normal at present. (Clear the past malfunction from memory.)

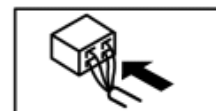
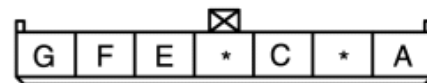
A/C AMPLIFIER CONNECTOR



AIRFLOW MODE ACTUATOR CONNECTOR



AIR MIX ACTUATOR CONNECTOR



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

NO.7 NO COOL AIR [FULL-AUTO AIR CONDITIONER]

7	No cool air
DESCRIPTION	<ul style="list-style-type: none"> • Magnetic clutch does not operate.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Malfunction in PCM A/C cut control system (Step 3) • Open or short circuit in wiring harness between evaporator temperature sensor and A/C amplifier (Step 3) • Malfunction in evaporator temperature sensor (internal circuit malfunction) (Step 3) • Malfunction in A/C amplifier (Step 4) • Malfunction in refrigerant pressure switch (Steps 5, 7—9) • Malfunction in PCM (A/C signal) (Step 6) • Malfunction in PCM (IG1 signal) (Steps 10, 11) • Malfunction in A/C compressor (Step 12) • Malfunction in A/C relay (Steps 14—16)

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, inspect to make sure connectors, terminals and wiring harnesses are connected correctly and undamaged.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	AIR FLOW INSPECTION	YesGo to next step.
	<ul style="list-style-type: none"> • Does air blow form vents? 	No Go to Step 1 of troubleshooting indexes No.1

			and 2.
2	INSPECT A/C COMPRESSOR OPERATION <ul style="list-style-type: none"> Start engine. Turn A/C switch and fan switch on. Does A/C compressor operate? 	Yes	Go to Step 1 of troubleshooting index No.6.
		No	Go to next step.
3	INSPECT FOR DTC IN PCM AND HVAC SYSTEM <ul style="list-style-type: none"> Inspect for DTCs related to the PCM and HVAC system on-board diagnostic system. Are any DTCs displayed? 	Yes	Go to appropriate inspection procedure.
		No	Go to next step.
4	INSPECT TO SEE WHETHER MALFUNCTION IS IN A/C AMPLIFIER OR ELSEWHERE <ul style="list-style-type: none"> Does cool air blow out when terminal 1M of A/C amplifier connector (24-pin, A/C signal) is grounded by a jumper wire? 	Yes	Replace A/C amplifier, then go to Step 17.
		No	Remove the jumper wire, then go to next step.
5*	INSPECT TO SEE WHETHER MALFUNCTION IS IN A/C SIGNAL CIRCUIT (BETWEEN REFRIGERANT PRESSURE SWITCH AND PCM) OR ELSEWHERE <ul style="list-style-type: none"> Test voltage at the following terminal of refrigerant pressure switch: <ul style="list-style-type: none"> Terminal B (A/C signal) Is voltage approx. 12 V? 	Yes	Go to Step 7.
		No	Go to next step.
6*	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN WIRING HARNESS (BETWEEN REFRIGERANT PRESSURE SWITCH AND PCM) OR PCM <ul style="list-style-type: none"> Test voltage at A/C signal terminal of PCM. Is voltage approx. 12 V? 	Yes	Repair wiring harness between PCM and refrigerant pressure switch, then go to Step 17.
		No	Inspect PCM, then go to Step 17. (See PCM INSPECTION [13B-MSP] .)

7	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN REFRIGERANT PRESSURE SWITCH, REFRIGERANT AMOUNT, OR ELSEWHERE</p> <ul style="list-style-type: none"> Does cool air blow out when terminals A and B of refrigerant pressure switch connector are shorted? 	Yes	Go to Step 9.
8*	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (BETWEEN REFRIGERANT PRESSURE SWITCH AND A/C AMPLIFIER) OR ELSEWHERE</p> <ul style="list-style-type: none"> Test voltage at the following terminal of A/C amplifier. <ul style="list-style-type: none"> Terminal 1M (24-pin, A/C signal) Is voltage approx. 12 V? 	Yes	Go to Step 10.
9	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN REFRIGERANT PRESSURE SWITCH OR REFRIGERANT AMOUNT</p> <ul style="list-style-type: none"> Inspect refrigerant pressure switch. Is it normal? 	Yes	If there is no refrigerant, replace condenser, bleed the refrigerant line for 30 min or more using a vacuum pump, and add refrigerant to specified level, then go to Step 17.
10	<p>INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN A/C CONTROL SIGNAL CIRCUIT (BETWEEN A/C RELAY AND PCM) OR ELSEWHERE</p> <ul style="list-style-type: none"> Does cool air blow out when terminal A of A/C relay connector (A/C control signal) is grounded by a jumper wire? 	Yes	Remove the jumper wire, then go to next step.
11*	<p>INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN PCM OR WIRING HARNESS (BETWEEN A/C RELAY AND PCM)</p> <ul style="list-style-type: none"> Test voltage at the A/C relay control signal terminal of PCM. Is voltage approx. 12 V? 	Yes	Inspect PCM, then go to Step 17.
			No Repair wiring harness between A/C relay and PCM, then go to Step 17.

12*	INSPECT TO SEE WHETHER MALFUNCTION IS IN MAGNETIC CLUTCH OR ELSEWHERE <ul style="list-style-type: none"> Test voltage at the following terminal of magnetic clutch thermal protector: <ul style="list-style-type: none"> Terminal B (magnetic clutch operation signal) Is voltage approx. 12 V? 	Yes Go to the next step. No Go to Step 14.
13	INSPECT MAGNETIC CLUTCH CLEARANCE <ul style="list-style-type: none"> Inspect the magnetic clutch clearance. (See MAGNETIC CLUTCH ADJUSTMENT [FULL-AUTO AIR CONDITIONER].) Is the magnetic clutch clearance normal? 	Yes Inspect and repair the magnetic clutch, then go to Step 17. (See MAGNETIC CLUTCH INSPECTION [FULL-AUTO AIR CONDITIONER] .) No Adjust the magnetic clutch clearance, then go to Step 17. (See MAGNETIC CLUTCH ADJUSTMENT [FULL-AUTO AIR CONDITIONER] .)
14	INSPECT FUSE <ul style="list-style-type: none"> Are A/C relay power supply fuses normal? 	Yes Go to next step. No Replace fuse, then go to Step 17. If fuse blows immediately, go to next step.
15	INSPECT WIRING HARNESS BETWEEN FUSE BLOCK AND A/C RELAY FOR LACK OF CONTINUITY <ul style="list-style-type: none"> Turn the ignition switch to the ON position. Test voltages at the following terminals of A/C relay. <ul style="list-style-type: none"> Terminal E (A/C relay control signal) Terminal D (A/C control signal) Are voltages approx. 12 V? 	Yes Go to next step. No Repair wiring harness between fuse block and A/C relay, then go to Step 17.
16	INSPECT TO SEE WHETHER MALFUNCTION IS IN A/C RELAY OR WIRING HARNESS (BETWEEN A/C RELAY AND MAGNETIC	Yes Inspect wiring harness between A/C relay and magnetic clutch.

	CLUTCH) <ul style="list-style-type: none"> Test voltage at the following terminal of A/C relay: <ul style="list-style-type: none"> Terminal C (magnetic clutch operation signal) Is voltage approx. 12 V? 		<ul style="list-style-type: none"> If above wiring harness is normal, go to next step. If above wiring harness malfunctions, repair wiring harness, then go to the next step.
		No	Replace A/C relay, then go to the next step.
17	CONFIRM THAT MALFUNCTION SYMPTOMS DO NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> Does cool air blow out? (Are the results of refrigerant system performance test normal?) 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - HVAC

NO.7 NO COOL AIR [MANUAL AIR CONDITIONER]

7	No cool air
DESCRIPTION	<ul style="list-style-type: none"> • Magnetic clutch does not operate.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Malfunction in PCM A/C cut control system (Step 3) • Open or short circuit in wiring harness between evaporator temperature sensor and A/C amplifier (Step 5) • Malfunction in A/C amplifier (Step 6) • Malfunction in evaporator temperature sensor (internal circuit malfunction) (Step 6) • Malfunction in refrigerant pressure switch (Steps 7, 9—11) • Malfunction in PCM (A/C signal) (Step 8) • Malfunction in PCM (IG1 signal) (Steps 12, 13) • Malfunction in A/C compressor (Step 14) • Malfunction in A/C relay (Steps 16—18)

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, inspect to make sure connectors, terminals and wiring harnesses are connected correctly and undamaged.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	AIR FLOW INSPECTION	YesGo to next step.
	<ul style="list-style-type: none"> • Does air blow form vents? 	No Go to Step 1 of troubleshooting indexes No.1

			and 2.
2	INSPECT A/C COMPRESSOR OPERATION <ul style="list-style-type: none"> Start engine. Turn A/C switch and fan switch on. Does A/C compressor operate? 	Yes	Go to Step 1 of troubleshooting index No.6.
		No	Go to next step.
3	INSPECT FOR DTC IN PCM <ul style="list-style-type: none"> Inspect for DTCs related to the PCM on-board diagnostic system. Are any DTCs displayed? 	Yes	Go to appropriate inspection procedure.
		No	Go to next step.
4	INSPECT TO SEE WHETHER MALFUNCTION IS IN A/C REQUEST SIGNAL OR ELSEWHERE <ul style="list-style-type: none"> Does cool air blow out when terminal 1M of A/C amplifier connector (24-pin, A/C signal) is grounded by a jumper wire? 	Yes	Go to the next step.
		No	Remove the jumper wire, then go to Step 7.
5*	INSPECT EVAPORATOR TEMPERATURE SENSOR RELATED HARNESS <ul style="list-style-type: none"> inspect following evaporator temperature sensor wiring harness (open or short circuit) and connectors (corrosion, pulled out pins). <ul style="list-style-type: none"> A/C amplifier terminal 2N and evaporator temperature sensor terminal A A/C amplifier terminal 2F and evaporator temperature sensor terminal B Is there any malfunction? 	Yes	Repair or replace malfunctioning part according to inspection result, then go to Step 19.
		No	Go to the next step.
6	INSPECT TO SEE WHETHER MALFUNCTION IS IN EVAPORATOR TEMPERATURE SENSOR OR A/C AMPLIFIER	Yes	Replace A/C amplifier, then go to Step 19. (See A/C AMPLIFIER REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER] .)

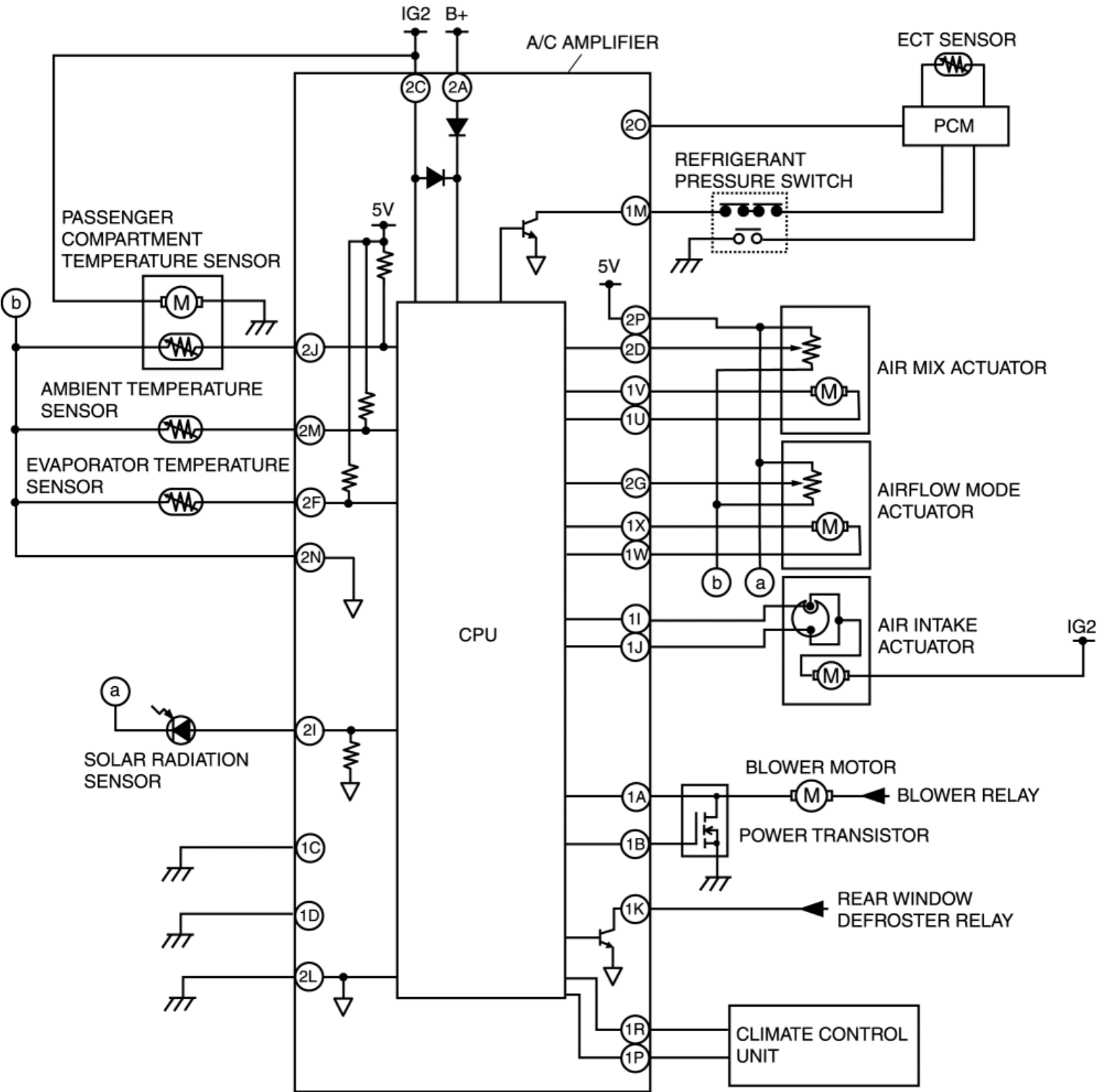
	<ul style="list-style-type: none"> Inspect evaporator temperature sensor. <p>(See EVAPORATOR TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].)</p> <ul style="list-style-type: none"> Is it okay? 		<p>No Replace evaporator temperature sensor, then go to Step 19.</p> <p>(See EVAPORATOR TEMPERATURE SENSOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)</p>
7*	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN A/C SIGNAL CIRCUIT (BETWEEN REFRIGERANT PRESSURE SWITCH AND PCM) OR ELSEWHERE</p> <ul style="list-style-type: none"> Test voltage at the following terminal of refrigerant pressure switch: <ul style="list-style-type: none"> Terminal B (A/C signal) Is voltage approx. 12 V? 	<p>Yes Go to Step 9.</p> <p>No Go to next step.</p>	
8*	<p>INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN WIRING HARNESS (BETWEEN REFRIGERANT PRESSURE SWITCH AND PCM) OR PCM</p> <ul style="list-style-type: none"> Test voltage at A/C signal terminal of PCM. Is voltage approx. 12 V? 	<p>Yes Repair wiring harness between PCM and refrigerant pressure switch, then go to Step 19.</p> <p>No Inspect PCM, then go to Step 19. (See PCM INSPECTION [13B-MSP].)</p>	
9	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN REFRIGERANT PRESSURE SWITCH, REFRIGERANT AMOUNT, OR ELSEWHERE</p> <ul style="list-style-type: none"> Does cool air blow out when terminals A and B of refrigerant pressure switch connector are shorted? 	<p>Yes Go to Step 11.</p> <p>No Go to next step.</p>	
10*	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (BETWEEN REFRIGERANT PRESSURE SWITCH AND A/C AMPLIFIER) OR ELSEWHERE</p> <ul style="list-style-type: none"> Test voltage at the following terminal of A/C amplifier: <ul style="list-style-type: none"> Terminal 1M (24-pin, A/C signal) Is voltage approx. 12 V? 	<p>Yes Go to Step 12.</p> <p>No Repair wiring harness between refrigerant pressure switch and A/C amplifier, then go to Step 19.</p>	

11	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN REFRIGERANT PRESSURE SWITCH OR REFRIGERANT AMOUNT</p> <ul style="list-style-type: none"> Inspect refrigerant pressure switch. Is it normal? 	<p>Yes If there is no refrigerant, replace condenser, bleed the refrigerant line for 30 min or more using a vacuum pump, and add refrigerant to specified level, then go to Step 19.</p> <p>No Replace refrigerant pressure switch, then go to Step 19. (See REFRIGERANT PRESSURE SWITCH REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)</p>
12	<p>INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN A/C CONTROL SIGNAL CIRCUIT (BETWEEN A/C RELAY AND PCM) OR ELSEWHERE</p> <ul style="list-style-type: none"> Does cool air blow out when terminal A of A/C relay connector (A/C control signal) is grounded by a jumper wire? 	<p>Yes Remove the jumper wire, then go to next step.</p> <p>No Go to Step 14.</p>
13*	<p>INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN PCM OR WIRING HARNESS (BETWEEN A/C RELAY AND PCM)</p> <ul style="list-style-type: none"> Test voltage at the A/C relay control signal terminal of PCM. Is voltage approx. 12 V? 	<p>Yes Inspect PCM, then go to Step 19.</p> <p>No Repair wiring harness between A/C relay and PCM, then go to Step 19.</p>
14*	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN MAGNETIC CLUTCH OR ELSEWHERE</p> <ul style="list-style-type: none"> Test voltage at the following terminal of magnetic clutch thermal protector: <ul style="list-style-type: none"> Terminal B (magnetic clutch operation signal) Is voltage approx. 12 V? 	<p>Yes Go to the next step.</p> <p>No Go to Step 17.</p>
15	<p>INSPECT MAGNETIC CLUTCH CLEARANCE</p> <ul style="list-style-type: none"> Inspect the magnetic clutch clearance. <p>(See MAGNETIC CLUTCH ADJUSTMENT [MANUAL AIR CONDITIONER].)</p>	<p>Yes Inspect and repair the magnetic clutch, then go to Step 19.</p> <p>(See MAGNETIC CLUTCH INSPECTION [MANUAL AIR CONDITIONER].)</p> <p>No Adjust the magnetic clutch clearance, then go</p>

	<ul style="list-style-type: none"> Is the magnetic clutch clearance normal? 		<p>to Step 19.</p> <p>(See MAGNETIC CLUTCH ADJUSTMENT [MANUAL AIR CONDITIONER].)</p>
16	INSPECT FUSE <ul style="list-style-type: none"> Are A/C relay power supply fuses normal? 	Yes	Go to next step.
		No	Replace fuse, then go to Step 19. If fuse blows immediately, go to next step.
17	INSPECT WIRING HARNESS BETWEEN FUSE BLOCK AND A/C RELAY FOR LACK OF CONTINUITY <ul style="list-style-type: none"> Turn the ignition switch to the ON position. Test voltages at the following terminals of A/C relay. <ul style="list-style-type: none"> Terminal E (A/C relay control signal) Terminal D (A/C control signal) Are voltages approx. 12 V? 	Yes	Go to next step.
		No	Repair wiring harness between fuse block and A/C relay, then go to Step 19.
18	INSPECT TO SEE WHETHER MALFUNCTION IS IN A/C RELAY OR WIRING HARNESS (BETWEEN A/C RELAY AND MAGNETIC CLUTCH) <ul style="list-style-type: none"> Test voltage at the following terminal of A/C relay: <ul style="list-style-type: none"> Terminal C (magnetic clutch operation signal) Is voltage approx. 12 V? 	Yes	<p>Inspect wiring harness between A/C relay and magnetic clutch.</p> <ul style="list-style-type: none"> If above wiring harness is normal, go to next step. If above wiring harness malfunctions, repair wiring harness, then go to the next step.
		No	Replace A/C relay, then go to the next step.
19	CONFIRM THAT MALFUNCTION SYMPTOMS DO NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> Does cool air blow out? (Are the results of refrigerant system performance test normal?) 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

2011 - RX-8 - HVAC

HVAC SYSTEM WIRING DIAGRAM [FULL-AUTO AIR CONDITIONER]



[< Previous](#) [Next >](#)

2011 - RX-8 - HVAC

FOREWORD [FULL-AUTO AIR CONDITIONER]

- The areas for inspection (steps) are given according to various circuit malfunctions. Use the following chart to verify the symptoms of the trouble in order to diagnose the appropriate area.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

TROUBLESHOOTING INDEX [FULL-AUTO AIR CONDITIONER]

No.	TROUBLESHOOTING ITEM	DESCRIPTION
1	Insufficient air (or no air) blown from vents.	<ul style="list-style-type: none">• Problem with each vent or duct or both.• Airflow mode does not change.
2	Amount of air blown from vents does not change.	<ul style="list-style-type: none">• Malfunction in blower system.
3	Air intake mode does not change.	<ul style="list-style-type: none">• Air intake mode does not change when switching REC/FRESH mode.
4	No temperature control with A/C amplifier.	<ul style="list-style-type: none">• Temperature does not change when operating temperature control dial.
5	Windshield fogged.	<ul style="list-style-type: none">• A/C compressor does not operate while airflow mode is in DEFROSTER or HEAT/DEF modes.• Air intake mode does not change to FRESH while airflow mode is in DEFROSTER or HEAT/DEF modes.
6	Air from vents not cold enough.	<ul style="list-style-type: none">• Magnetic clutch operates but A/C system malfunctions.
7	No cool air.	<ul style="list-style-type: none">• Magnetic clutch does not operate.
8	Noise while operating A/C system.	<ul style="list-style-type: none">• Noise from magnetic clutch, A/C compressor, hose or refrigerant line.

2011 - RX-8 - HVAC

NO.1 INSUFFICIENT AIR (OR NO AIR) BLOWN FROM VENTS [FULL-AUTO AIR CONDITIONER]

1	Insufficient air (or no air) blown from vents.
DESCRIPTION	<ul style="list-style-type: none"> • Problem with each vent or duct or both. • Airflow mode does not change.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Malfunction in airflow mode actuator (Step 1) • Malfunction in VENT mode system (Steps 2—5) • Malfunction in HEAT mode system (Step 6) • Malfunction in DEFROSTER mode system (Steps 7—9)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT AIRFLOW MODE ACTUATOR	YesGo to next step
	<ul style="list-style-type: none"> • Inspect airflow mode actuator. (See AIRFLOW MODE ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER].) • Is it normal? 	No Repair or replace malfunctioning part in accordance with further inspection result. (See AIRFLOW MODE ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
2	INSPECT TO SEE WHETHER MALFUNCTION IS IN VENT MODE OR OTHER MODES	YesGo to Step 5.
	<ul style="list-style-type: none"> • Does air blow out when in VENT mode? 	No Go to next step.

3	INSPECT VENT • Is vent clogged?	Yes	Remove obstruction, then go to Step 9.
		No	Go to next step.
4	VERIFY THAT DUCT IN DASHBOARD IS INSTALLED • Is duct in dashboard properly installed?	Yes	Inspect duct for clogging, deformity and air leakage, then go to Step 9.
		No	Install duct securely in the proper position, then go to Step 9.
5	INSPECT TO SEE WHETHER MALFUNCTION IS IN HEAT MODE OR DEFROSTER MODE • Does air blow out when in HEAT mode?	Yes	Go to next step.
		No	Inspect vent for clogging, then go to Step 9.
6	INSPECT DEFROSTER MODE • Does air blow out when in DEFROSTER mode?	Yes	Operation is normal. Recheck malfunction symptoms.
		No	Go to next step.
7	INSPECT VENT • Is vent clogged?	Yes	Remove obstruction, then go to Step 9.
		No	Go to next step.
8	VERIFY THAT DEFROSTER DUCT IS INSTALLED • Is defroster duct properly installed?	Yes	Inspect duct for clogging, deformity, and air leakage, then go to next step.
		No	Install duct securely in proper position, then go to next step.
9	CONFIRM THAT MALFUNCTION SYMPTOMS DO NOT RECUR AFTER REPAIR • Does air blow out?	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

2011 - RX-8 - HVAC

NO.2 AMOUNT OF AIR BLOWN FROM VENTS DOES NOT CHANGE [FULL-AUTO AIR CONDITIONER]

2	Amount of air blown from vents does not change.
DESCRIPTION	<ul style="list-style-type: none"> • Malfunction in blower system.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Blower motor malfunction (Steps 3, 4, 12) • Blower unit malfunction (Steps 5—9) • Power transistor system malfunction (Steps 10, 11, 13, 14) • Climate control unit malfunction (Step 15)

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, check to make sure connectors, terminals and wiring harnesses are connected correctly and undamaged.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT A/C 7.5 A FUSE <ul style="list-style-type: none"> • Inspect A/C 7.5 A fuse. • Is it normal? 	Yes Go to next step.
		No Replace fuse, then go to Step 15. If fuse burns out immediately, go to next step.
2	CHECK TO SEE WHETHER MALFUNCTION IS IN BLOWER UNIT OR ELSEWHERE <ul style="list-style-type: none"> • Turn ignition switch to ON position. • Recirculate air inside vehicle. 	Yes Go to Step 4.
		No Go to next step.

	<ul style="list-style-type: none"> Does fan in blower unit rotate smoothly? 		
3	INSPECT BLOWER UNIT INTAKE VENT <ul style="list-style-type: none"> Is intake vent of blower unit clogged? 	Yes	Remove obstruction, then go to Step 15.
		No	Inspect if there are any obstruction in passage between blower unit to A/C unit, then go to Step 15.
4*	CHECK TO SEE WHETHER MALFUNCTION IS IN BLOWER RELAY SYSTEM OR POWER TRANSISTOR SYSTEM <ul style="list-style-type: none"> Turn ignition switch to ON position. Test voltage at the following terminal of blower motor. <ul style="list-style-type: none"> Terminal B (blower motor operation signal) Is voltage approx. 12 V? 	Yes	Go to Step 8.
		No	Go to next step.
5*	CHECK TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (LACK OF CONTINUITY BETWEEN FUSE BLOCK AND BLOWER RELAY) OR ELSEWHERE <ul style="list-style-type: none"> Test voltage at the following terminal of blower relay. <ul style="list-style-type: none"> Terminal A (IG2 signal) Terminal D (B+ signal) Is voltage approx. 12 V? 	Yes	Go to next step.
		No	Repair wiring harness between blower relay and HEATER 40 A fuse, then go to Step 15.
6*	CHECK TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (LACK OF CONTINUITY BETWEEN BLOWER RELAY AND GROUND) OR ELSEWHERE <ul style="list-style-type: none"> Test voltage at the following terminal of blower relay. <ul style="list-style-type: none"> Terminal E (GND signal) Is voltage approx. 0 V? 	Yes	Go to next step.
		No	Repair wiring harness between blower relay and ground, then go to Step 15.
7*	CHECK TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (LACK OF CONTINUITY BETWEEN BLOWER RELAY AND BLOWER MOTOR) OR BLOWER RELAY <ul style="list-style-type: none"> Test voltage at the following terminal of blower 	Yes	Repair wiring harness between blower relay and blower motor, then go to Step 15.

	<p>relay.</p> <ul style="list-style-type: none"> ▪ Terminal C (blower motor operation signal) <ul style="list-style-type: none"> • Is voltage approx. 12 V? 	No	Replace blower relay, then go to Step 15.
8*	<p>CHECK TO SEE WHETHER MALFUNCTION IS IN BLOWER MOTOR OR ELSEWHERE</p> <ul style="list-style-type: none"> • Test voltage at the following terminal of blower motor. <ul style="list-style-type: none"> ▪ Terminal A (blower motor operation signal) • Is voltage approx. 12 V? 	Yes	Go to next step.
		No	Inspect blower motor, then go to Step 15. (See BLOWER MOTOR INSPECTION [FULL-AUTO AIR CONDITIONER] .)
9*	<p>CHECK TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (LACK OF CONTINUITY BETWEEN BLOWER MOTOR AND POWER TRANSISTOR) OR ELSEWHERE</p> <ul style="list-style-type: none"> • Test voltage at the following terminal of power transistor. <ul style="list-style-type: none"> ▪ Terminal B (blower motor operation signal) • Is voltage approx. 12 V? 	Yes	Go to next step.
		No	Repair wiring harness between blower motor and power transistor, then go to Step 15.
10*	<p>CHECK TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (LACK OF CONTINUITY BETWEEN POWER TRANSISTOR AND GROUND) OR ELSEWHERE</p> <ul style="list-style-type: none"> • Test voltage at the following terminal of power transistor. <ul style="list-style-type: none"> ▪ Terminal A (blower motor operation signal) • Is voltage approx. 0 V? 	Yes	Go to next step.
		No	Repair wiring harness between power transistor and ground, then go to Step 15.
11	<p>INSPECT BLOWER UNIT</p> <ul style="list-style-type: none"> • Inspect fan in blower unit. <ul style="list-style-type: none"> ▪ Is fan free of interference with blower unit case? ▪ Is fan free of foreign material and obstruction? • Is voltage approx. 0 V? 	Yes	Go to next step.
		No	Remove obstruction, repair or replace fan and blower unit case, then go to Step 15.

12*	CHECK TO SEE WHETHER MALFUNCTION IS IN POWER TRANSISTOR OR ELSEWHERE <ul style="list-style-type: none"> • Disconnect power transistor connector. • Test voltage at the following terminal of power transistor. <ul style="list-style-type: none"> ▪ Terminal B (blower motor control signal) • Is voltage approx. 10 V? 	Yes	Replace power transistor, then go to Step 15.
		No	Go to next step.
13*	CHECK TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (LACK OF CONTINUITY BETWEEN POWER TRANSISTOR AND A/C AMPLIFIER) OR ELSEWHERE <ul style="list-style-type: none"> • Turn ignition switch to LOCK position. • Disconnect A/C amplifier connector. • Inspect for continuity at the following terminals between power transistor and A/C amplifier. <ul style="list-style-type: none"> ▪ Terminal D—1A (24-pin, blower motor feedback signal) ▪ Terminal C—1B (24-pin, blower motor control signal) • Is there continuity? 	Yes	Go to next step.
		No	Repair wiring harness between power transistor and A/C amplifier, then go to Step 15.
14*	CHECK TO SEE WHETHER MALFUNCTION IS IN A/C AMPLIFIER OR WIRING HARNESS (SHORT TO GROUND BETWEEN POWER TRANSISTOR AND A/C AMPLIFIER) OR ELSEWHERE <ul style="list-style-type: none"> • Inspect for continuity at the following terminal between power transistor and ground. <ul style="list-style-type: none"> ▪ Terminal A (24-pin, blower motor control signal)—ground • Is there continuity? 	Yes	Repair wiring harness between power transistor and ground, then go to next step.
		No	Replace A/C amplifier, then go to next step.
15	VERIFY THAT MALFUNCTION SYMPTOM OCCURS AFTER REPAIR <ul style="list-style-type: none"> • Is air discharged from vent? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

NO.5 WINDSHIELD FOGGED [FULL-AUTO AIR CONDITIONER]

5	Windshield fogged.
DESCRIPTION	<ul style="list-style-type: none"> A/C compressor does not operate while airflow mode is in DEFROSTER or HEAT/DEF modes. Air intake mode does not change to FRESH while airflow mode is in DEFROSTER or HEAT/DEF modes.
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/C amplifier (B+ signal) system malfunction (Steps 2, 4, 5) Air intake actuator malfunction (Steps 3, 7) A/C amplifier (RECIRCULATE, FRESH signal) system malfunction (Steps 9—11) Malfunction in blower unit air intake doors (Steps 12, 13)

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while doing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, check to make sure connectors, terminals and wiring harness are connected correctly and undamaged.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	COOL AIR BLOW OUT INSPECTION <ul style="list-style-type: none"> When both A/C and fan switch in A/C amplifier are on, does cool air blow out from front vent? 	Yes Go to next step.
		No Go to Step 1 of troubleshooting index No.7.
2	INSPECT A/C AMPLIFIER POWER SUPPLY FUSE FOR B+ SIGNAL <ul style="list-style-type: none"> Is A/C amplifier power supply fuse 	Yes Go to next step.
		No Inspect for a short to ground on blown fuse

	for B+ signal normal?	circuit.	<ul style="list-style-type: none"> Repair or replace as necessary. Install appropriate amperage fuse.
3	INSPECT AIR INTAKE ACTUATOR <ul style="list-style-type: none"> Inspect air intake actuator. <ul style="list-style-type: none"> Is there grease on link? Is link securely and properly positioned? Is link free of obstructions? Are above items normal? 	Yes	Go to next step.
		No	Apply grease or install link properly and securely, remove obstruction, then go to Step 14.
4*	INSPECT WIRING HARNESS BETWEEN FUSE BLOCK AND A/C AMPLIFIER FOR CONTINUITY <ul style="list-style-type: none"> Disconnect A/C amplifier connector (16-pin). Turn ignition switch to ON position. Test voltage at A/C amplifier connector terminal 2A (B+ signal). Is voltage approx. 12 V? 	Yes	Go to next step.
		No	Repair wiring harness between fuse block and A/C amplifier, then go to Step 14.
5*	INSPECT WIRING HARNESS BETWEEN A/C AMPLIFIER AND GROUND FOR VOLTAGE <ul style="list-style-type: none"> Test voltage at A/C amplifier connector terminal 2L (Ground). Is voltage approx. 0V? 	Yes	Go to next step.
		No	Repair wiring harness between A/C amplifier and ground, then go to Step 14.
6	VERIFY WHETHER MALFUNCTION IS IN BLOWER UNIT AIR INTAKE DOOR OR ELSEWHERE <ul style="list-style-type: none"> Turn ignition switch to LOCK position. Connect A/C amplifier connector (16-pin). 	Yes	Go to next step.
		No	Go to Step 12.

	<ul style="list-style-type: none"> • Remove air intake actuator. • Turn ignition switch to ON position. • Set fan switch to 4th position. • Does air intake mode (RECIRCULATE, FRESH) change smoothly when air intake link is operated by hand? 		
7	INSPECT AIR INTAKE ACTUATOR <ul style="list-style-type: none"> • Inspect air intake actuator. <p>(See AIR INTAKE ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER])</p> <ul style="list-style-type: none"> • Is it normal? 	YesGo to next step.	No Replace air intake actuator, go to Step 14. (See AIR INTAKE ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER] .)
8	INSPECT AIR INTAKE SELECTOR SWITCH AND DEFROSTER SWITCH IN A/C AMPLIFIER <ul style="list-style-type: none"> • Test voltage at A/C amplifier connector (24-pin) terminals 1I and 1J. • Is it normal? 	YesGo to next step.	No Replace A/C amplifier, then go to Step 14.
9*	INSPECT WIRING HARNESS BETWEEN A/C AMPLIFIER AND AIR INTAKE ACTUATOR FOR CONTINUITY <ul style="list-style-type: none"> • Turn ignition switch to LOCK position. • Is there continuity between the following A/C amplifier connector (24-pin) terminals and air intake actuator connector terminals? <ul style="list-style-type: none"> ▪ Terminal 1I— Terminal A (FRESH signal) ▪ Terminal 1J— Terminal C (RECIRCULATE signal) 	YesGo to next step.	No Repair wiring harness between A/C amplifier and air intake actuator, then go to Step 14.
10*	INSPECT WIRING HARNESS BETWEEN A/C AMPLIFIER AND AIR INTAKE ACTUATOR FOR SHORT TO GROUND	YesRepair wiring harness between A/C amplifier and air intake actuator, then go to Step 14.	

	<ul style="list-style-type: none"> Is there continuity between the following A/C amplifier connector (24-pin) terminals and ground? <ul style="list-style-type: none"> Terminal 1I (FRESH signal) Terminal 1J (RECIRCULATE signal) 	No	Go to next step.
11*	INSPECT WIRING HARNESS BETWEEN A/C AMPLIFIER AND AIR INTAKE ACTUATOR FOR SHORT TO B+ <ul style="list-style-type: none"> Turn ignition switch to ON position Test voltage at the following A/C amplifier connector (24-pin) terminal: <ul style="list-style-type: none"> Terminal 1I (FRESH signal) Terminal 1J (RECIRCULATE signal) Is voltage approx. 12 V? 	Yes	Repair wiring harness between A/C amplifier and air intake actuator, then go to Step 14.
		No	Replace A/C amplifier, then go to Step 14.
12	INSPECT BLOWER UNIT AIR INTAKE DOOR <ul style="list-style-type: none"> Is there any foreign material or obstruction in blower unit air intake door? 	Yes	Remove obstruction, then go to Step 14.
		No	Go to next step.
13	VERIFY THAT BLOWER UNIT AIR INTAKE DOOR IS POSITIONED SECURELY AND PROPERLY <ul style="list-style-type: none"> Is blower unit air intake door securely and properly positioned? 	Yes	Inspect air intake door for cracks or damage, then go to next step.
		No	Install air intake door securely in proper position, then go to next step.
14	VERIFY THAT MALFUNCTION SYMPTOM OCCURS AFTER REPAIR <ul style="list-style-type: none"> Does malfunction disappear? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - HVAC

NO.3 AIR INTAKE MODE DOES NOT CHANGE [FULL-AUTO AIR CONDITIONER]

3	Air intake mode does not change.
DESCRIPTION	<ul style="list-style-type: none"> Air intake mode does not change when switching REC/FRESH mode.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Malfunction in air intake actuator (Steps 1—6) Malfunction in air intake door (Step 7)

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, check to make sure connectors, terminals and wiring harnesses are connected correctly and undamaged.

Diagnostic procedure

STEP	INSPECTION	ACTION
1*	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN AIR INTAKE ACTUATOR, WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR INTAKE ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> Turn ignition switch to ON position. Test voltages at the following terminals of A/C amplifier: <ul style="list-style-type: none"> Terminal 1I (24-pin, FRESH motor drive signal) Terminal 1J (24-pin, RECIRCULATE motor drive signal) <p>(See A/C AMPLIFIER INSPECTION [FULL-AUTO AIR CONDITIONER].)</p>	<div>Yes</div> Go to next step. <div>No</div> Go to Step 3.

	<ul style="list-style-type: none"> Are voltages normal? 		
2*	<p>INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN AIR INTAKE ACTUATOR OR WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR INTAKE ACTUATOR)</p> <ul style="list-style-type: none"> Test voltages at the following terminals of air intake actuator: <ul style="list-style-type: none"> Terminal A (FRESH motor drive signal) Terminal C (RECIRCULATE motor drive signal) Are voltages as shown below? <ul style="list-style-type: none"> Terminal A: approx. 0.5 V switched to RECIRCULATE and approx. 10 V switched to FRESH Terminal C: approx. 10 V switched to RECIRCULATE and approx. 0.5 V switched to FRESH 	<p>Yes Replace air intake actuator, then go to Step 8. (See AIR INTAKE ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)</p> <p>No Repair wiring harness between A/C amplifier and air intake actuator, then go to Step 8.</p>	
3	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN AIR INTAKE ACTUATOR OR ELSEWHERE</p> <ul style="list-style-type: none"> Disconnect air intake actuator connector. Test voltages at the following terminals of A/C amplifier: <ul style="list-style-type: none"> Terminal 1I (24-pin, FRESH motor drive signal) Terminal 1J (24-pin, RECIRCULATE motor drive signal) <p>(See A/C AMPLIFIER INSPECTION [FULL-AUTO AIR CONDITIONER])</p> Are voltages normal? 	<p>Yes Inspect air intake actuator, then go to Step 8. (See AIR INTAKE ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER].)</p> <p>No Go to next step.</p>	
4	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (SHORT TO B+ BETWEEN A/C AMPLIFIER AND AIR INTAKE ACTUATOR) OR ELSEWHERE</p>	<p>Yes Go to next step.</p> <p>No Repair wiring harness between A/C amplifier and air intake actuator,</p>	

	<ul style="list-style-type: none">• Disconnect A/C amplifier connector.• Test voltages at the following terminals of A/C amplifier:<ul style="list-style-type: none">▪ Terminal 1I (24-pin, FRESH motor drive signal)▪ Terminal 1J (24-pin, RECIRCULATE motor drive signal)• Are voltages approx. 0 V?		then go to Step 8.
5	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (SHORT TO GROUND BETWEEN A/C AMPLIFIER AND AIR INTAKE ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none">• Turn ignition switch to LOCK position.• Inspect for continuity at the following terminals between A/C amplifier and ground:<ul style="list-style-type: none">▪ Terminal 1I (24-pin, FRESH motor drive signal)▪ Terminal 1J (24-pin, RECIRCULATE motor drive signal)• Is there continuity?	Yes	Repair wiring harness between A/C amplifier and air intake actuator, then go to Step 8.
		No	Go to next step.
6	INSPECT AIR INTAKE LINK <ul style="list-style-type: none">• Inspect air intake links.<ul style="list-style-type: none">▪ Is there grease on link?▪ Are links securely and properly installed?▪ Are links free of obstructions and hindrances?• Are above items normal?	Yes	Go to next step.
		No	Apply grease to links. If any links are damaged, replace air intake actuator, then go to Step 8.
7	INSPECT TO SEE WHETHER MALFUNCTION IS IN A/C AMPLIFIER OR AIR INTAKE DOOR <ul style="list-style-type: none">• Inspect blower unit air intake door.<ul style="list-style-type: none">▪ Is door free of obstructions, cracks, and damage?	Yes	Replace A/C amplifier, then go to next step.
		No	Remove obstruction, or install doors in proper position. If any doors are cracked or damaged, replace them, then go to next step.

	<ul style="list-style-type: none"> ▪ Are doors securely and properly installed? • Are above items normal? 		
8	CONFIRM THAT MALFUNCTION SYMPTOMS DO NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> • Does air intake mode change smoothly? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

NO.6 AIR FROM VENTS NOT COLD ENOUGH [FULL-AUTO AIR CONDITIONER]

6	Air from vents not cold enough.
DESCRIPTION	<ul style="list-style-type: none"> • Magnetic clutch operates but A/C system malfunctions.
POSSIBLE CAUSE	<p>NOTE:</p> <ul style="list-style-type: none"> • If the engine coolant temperature increases due to a cooling system malfunction, the fail-safe function disables the A/C operation. • Drive belt malfunction (Step 3) • Refrigerant pressure switch malfunction (Step 4) • Cooling fan system malfunction (Step 5) • Condenser or related part malfunction (Step 6, 16) • Expansion valve or related part malfunction (Step 8, 17) • A/C unit air mix door system malfunction (Step 9, 19) • Blower unit malfunction (Step 10) • Refrigerant lines malfunction (Step 12—15) • Evaporative temperature sensor malfunction (Step 18)

Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT CLIMATE CONTROL UNIT FOR DTC <ul style="list-style-type: none">Retrieve the climate control unit DTC using the A/C Operation Check Mode.	Yes	Go to the applicable DTC troubleshooting procedures. (See DIAGNOSTIC TROUBLE CODE NUMBER INSPECTION.)
		No	Go to the next step.

	<ul style="list-style-type: none"> Are there DTC displayed? 		
2	INSPECT REFRIGERANT PRESSURE TO LOCATE MALFUNCTION <ul style="list-style-type: none"> Perform refrigerant pressure check. (See REFRIGERANT PRESSURE CHECK.) Is the refrigerant pressure normal? 	Yes	Go to the next step.
		No	Record the inspection result. <ul style="list-style-type: none"> If the refrigerant high-pressure and low-pressure values are both high, go to Step 6. If the refrigerant high-pressure and low-pressure values are approximately the same, go to Step 9. If the refrigerant high-pressure and low-pressure values are both low, go to Step 11. If there is a vacuum on the low pressure side and extremely low pressure on the high pressure side, go to Step 17. If there is low pressure on the high pressure side and high pressure on the low pressure side, replace the A/C compressor, then go to Step 21. (See A/C COMPRESSOR REMOVAL/INSTALLATION.) If the refrigerant pressure is other than above condition, go to Step 19.
3	INSPECT REFRIGERANT SYSTEM PERFORMANCE <ul style="list-style-type: none"> Perform refrigerant system performance test. (See REFRIGERANT SYSTEM PERFORMANCE TEST.) Is the operation normal? 	Yes	Operation is normal. (Recheck malfunction symptoms.)
		No	Go to the next step.
4	INSPECT DRIVE BELT <ul style="list-style-type: none"> Inspect the drive belt. (See DRIVE BELT DEFLECTION/TENSION INSPECTION [13B-MSP].) 	Yes	Go to the next step.
		No	Adjust or replace the drive belt, then the next step. (See DRIVE BELT REPLACEMENT [13B-MSP].)

	<ul style="list-style-type: none"> Is it normal? 		
5	INSPECT REFRIGERANT PRESSURE SWITCH <ul style="list-style-type: none"> Inspect the refrigerant pressure switch. (See REFRIGERANT PRESSURE SWITCH INSPECTION [FULL-AUTO AIR CONDITIONER].) Is it normal? 	Yes	Go to the next step.
		No	Repair or replace malfunctioning part according to inspection result, then go to Step 21.
6	INSPECT COOLING FAN OPERATION <ul style="list-style-type: none"> Verify the cooling fan operation. (See FAN MOTOR INSPECTION [13B-MSP].) Is the cooling fan operation normal? 	Yes	Go to the next step.
		No	Repair or replace the malfunctioning location according to the inspection results. Then go to Step 21.
7	VISUALLY INSPECT CONDENSER <ul style="list-style-type: none"> Is the condenser fin clogged or obstructed by foreign material? 	Yes	Remove the foreign material. Repair the condenser fin. Then go to Step 21.
		No	Go to the next step.
8	CHECK REFRIGERATION SYSTEM FOR OVERCHARGE OR AIR CONTAMINATION <ul style="list-style-type: none"> Is the low side line hot to the touch? 	Yes	Recover refrigerant. Evacuate system for one hour. Refill with correct amount of refrigerant, and go to step 21.
		No	Recover refrigerant, evacuate for 15 minutes, refill with correct amount and go to step 21.
9	CHECK TO SEE WHETHER MALFUNCTION IS IN EXPANSION VALVE OR ELSEWHERE <ul style="list-style-type: none"> Compare the refrigerant pressure of the low pressure side with the high pressure side at Step 2. Is there little difference between the high pressure 	Yes	Replace the expansion valve. After performing the following servicing, go to Step 21. <ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.

	<p>side and low pressure side readings (refer to graph in REFRIGERANT PRESSURE CHECK procedure)?</p> <p>(See REFRIGERANT PRESSURE CHECK.)</p>		No Go to the next step.
10	<p>INSPECT AIR MIX DOOR RELATED PART INSTALLATION</p> <ul style="list-style-type: none"> • Measure the A/C amplifier terminal 2D voltage when the temperature control dials are set to MAX COLD and MAX HOT by control panel. • Are voltages normal? 	Yes	<p>Adjust the compressor oil to the specified amount, then go to Step 21.</p> <p>(See A/C COMPRESSOR REMOVAL/INSTALLATION.)</p>
		No	<ul style="list-style-type: none"> • Inspect the air mix link, air mix crank, and air mix rod of the A/C unit correctly and securely installed to their positions. <p>(See A/C UNIT REMOVAL/INSTALLATION.)</p> <ul style="list-style-type: none"> • Repair or install correctly for suspect part according to inspection result, then go to Step 21.
11	<p>INSPECT BLOWER UNIT FOR BLOCKAGE</p> <ul style="list-style-type: none"> • Is the blower unit intake and air filter clogged? 	Yes	<p>Remove the cause of the clogging. Replace the air filter if it is clogged.</p> <p>(See AIR FILTER REMOVAL/INSTALLATION.)</p> <p>Then go to Step 21.</p>
		No	No Go to the next step.
12	<p>CHECK TO SEE WHETHER MALFUNCTION IS REFRIGERANT LINE LEAKAGE OR ELSEWHERE</p> <ul style="list-style-type: none"> • Verify if there is gas leakage from the system hoses using the gas leak tester. • Is there gas leakage? 	Yes	<p>If there is leakage from a system hose connection area, go to Step 14. If there is leakage other than from a system hose connection area, go to Step 16.</p>
		No	No Go to the next step.
13	<p>VISUALLY INSPECT REFRIGERANT LINE</p> <ul style="list-style-type: none"> • Is a system hose crushed? 	Yes	<p>Replace the crushed system hose.</p> <p>(See REFRIGERANT LINE REMOVAL/INSTALLATION.)</p> <p>After performing the following servicing, go to Step 21.</p>

			<ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.
		No	Go to Step 21.
14	<p>CHECK TO SEE WHETHER MALFUNCTION IS IN REFRIGERANT LINE JOINT LOOSE OR O-RING</p> <ul style="list-style-type: none"> Tighten the system hose connection area to the specified torque. <p>(See REFRIGERANT LINE REMOVAL/INSTALLATION.)</p> <ul style="list-style-type: none"> Has the leakage stopped? 	Yes	Go to the next step.
		No	Go to Step 16.
15	<p>VISUALLY INSPECT REFRIGERANT LINE</p> <ul style="list-style-type: none"> Is a system hose crushed? 	Yes	<p>Replace the crushed system hose.</p> <p>(See REFRIGERANT LINE REMOVAL/INSTALLATION.)</p> <p>After performing the following servicing, go to Step 21.</p> <ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.
		No	<p>Adjust the compressor oil to the specified amount, then go to Step 21.</p> <p>(See A/C COMPRESSOR REMOVAL/INSTALLATION.)</p>
16	<p>VISUALLY INSPECT REFRIGERANT LINE</p> <ul style="list-style-type: none"> Is a system hose crushed? 	Yes	<p>Replace the O-ring of the leaking area.</p> <p>Replace the crushed system hose.</p> <p>(See REFRIGERANT LINE REMOVAL/INSTALLATION.)</p> <p>After performing the following servicing, go to Step 21.</p> <ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.

		No	<p>Replace the O-ring of the leaking area.</p> <p>After performing the following servicing, go to Step 21.</p> <ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.
17	<p>CHECK TO SEE WHETHER MALFUNCTION IS WATER IN REFRIGERANT SYSTEM OR ELSEWHERE</p> <ul style="list-style-type: none"> Is there is no refrigerant pressure on the low pressure side, or is it normal? 	Yes	<p>Replace the condenser.</p> <p>(Water in refrigerant system)</p> <p>(See CONDENSER REMOVAL/INSTALLATION.)</p> <p>Then go to Step 21.</p>
		No	Go to the next step.
18	<p>CHECK TO SEE WHETHER MALFUNCTION IS IN RECEIVER/DRYER FILTER OR EXPANSION VALVE</p> <ul style="list-style-type: none"> Remove the expansion valve and verify its condition. Is there refrigerant leakage or valve clogging? 	Yes	<p>If there is foreign matter clogging the valve, remove the foreign matter. If there is refrigerant leakage or clogging, replace the expansion valve. Perform discharge, charge with new refrigerant, and then go to Step 21.</p>
		No	<p>Replace the condenser.</p> <p>(Receiver/Dryer filter is clogged.)</p> <p>(See CONDENSER REMOVAL/INSTALLATION.)</p> <p>Then go to Step 21.</p>
19	<p>INSPECT EVAPORATIVE TEMPERATURE SENSOR</p> <ul style="list-style-type: none"> Inspect the evaporator temperature sensor. <p>(See EVAPORATOR TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].)</p> <ul style="list-style-type: none"> Is it normal? 	Yes	<p>Verify the evaporator temperature sensor position.</p> <p>(See A/C UNIT DISASSEMBLY/ASSEMBLY.)</p> <p>Then go to Step 21.</p>
		No	<p>Replace the evaporator temperature sensor, then go to Step 21.</p> <p>(See A/C UNIT DISASSEMBLY/ASSEMBLY.)</p>
20	INSPECT AIR MIX DOOR RELATED PART INSTALLATION	Yes	Go to the next step.

	<ul style="list-style-type: none"> • Measure the A/C amplifier terminal 2D voltage when the temperature control dials are set to MAX COLD and MAX HOT by control panel. • Are voltages are normal? 	No	<ul style="list-style-type: none"> • Inspect the air mix link, air mix crank, and air mix rod of the A/C unit correctly and securely installed to their positions. <p>(See A/C UNIT DISASSEMBLY/ASSEMBLY.)</p> <ul style="list-style-type: none"> • Repair or install correctly for suspect part according to inspection result, then go to the next step.
21	VERIFY THAT MALFUNCTION SYMPTOM DOES NOT OCCURS AFTER REPAIR <ul style="list-style-type: none"> • If the refrigerant discharged during inspection has not been recharged, discharge and charge with new refrigerant to the specified level. • Does cool air blow out? (Are results of refrigerant system performance test normal?) 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

2011 - RX-8 - HVAC

NO.8 NOISE WHILE OPERATING A/C SYSTEM [FULL-AUTO AIR CONDITIONER]

8	Noise while operating A/C system.
DESCRIPTION	<ul style="list-style-type: none"> Noise from magnetic clutch, A/C compressor, hose or refrigerant line.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Magnetic clutch operation noise (Step 3) A/C compressor slippage noise (Steps 4—6) Hose or refrigerant line interference noise (Step 7)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT A/C COMPRESSOR SLIPPAGE NOISE	Yes Go to Step 4.
	<ul style="list-style-type: none"> Is there a squeaking or whirling sound (A/C compressor slippage noise)? 	No Go to next step.
2	INSPECT A/C COMPRESSOR INTERFERENCE NOISE	Yes Go to Step 7.
	<ul style="list-style-type: none"> Is there a rattling or vibrating sound (interference noise)? 	No Go to next step.
3	INSPECT MAGNETIC CLUTCH OPERATION NOISE	Yes Adjust clearance between pressure plate of magnetic clutch and A/C compressor pulley, then go to Step 8.
	<ul style="list-style-type: none"> Is larger than other this type vehicle clicking sound (magnetic clutch 	No Condition is normal. (Recheck malfunction symptoms.)

	operation noise)?		
4	INSPECT DRIVE BELT <ul style="list-style-type: none"> Inspect drive belt. (See DRIVE BELT DEFLECTION/TENSION INSPECTION [13B-MSP].) <ul style="list-style-type: none"> Is it normal? 	Yes	Go to next step.
		No	Adjust the drive belt tension. (See DRIVE BELT DEFLECTION/TENSION INSPECTION [13B-MSP].) If the symptom does not improve after drive belt adjustment, replace the drive belt. (See DRIVE BELT REPLACEMENT [13B-MSP].)
5	INSPECT DRIVE BELT CONDITION <ul style="list-style-type: none"> Is drive belt worn? Does it have foreign material imbedded in it, or have oil on it? 	Yes	Remove obstruction, remove oil, or replace drive belt, then go to Step 8.
		No	Go to next step.
6	INSPECT MAGNETIC CLUTCH <ul style="list-style-type: none"> Inspect magnetic clutch. Is it normal? 	Yes	Replace A/C compressor (excluding pressure plate, A/C compressor pulley, and stator), then go to Step 8. (See A/C COMPRESSOR REMOVAL/INSTALLATION.)
		No	Replace magnetic clutch, then go to Step 8.
7	CHECK TO SEE WHETHER MALFUNCTION IS IN A/C COMPRESSOR OR REFRIGERANT LINES <ul style="list-style-type: none"> Is noise emitted from A/C compressor? 	Yes	Visually inspect A/C compressor, replace appropriate parts if necessary, then go to next step.
		No	If noise is due to refrigerant lines, repair detached or missing clips, tighten loose bolts, then go to next step.
8	VERIFY THAT MALFUNCTION SYMPTOM OCCURS AFTER REPAIR <ul style="list-style-type: none"> Has A/C compressor noise stopped? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

2011 - RX-8 - HVAC

NO.4 NO TEMPERATURE CONTROL WITH A/C AMPLIFIER [FULL-AUTO AIR CONDITIONER]

4	No temperature control with A/C amplifier.
DESCRIPTION	<ul style="list-style-type: none"> • Temperature does not change with operating temperature control dial.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Air mix actuator (+5 V signal) system malfunction (Steps 3—7, 10) • A/C amplifier (potentiometer GND signal) system malfunction (Steps 8, 9) • Air mix actuator (potentiometer input signal) system malfunction (Steps 11—13) • Air mix actuator (potentiometer GND signal, motor drive signal) system malfunction (Step 14) • Air mix actuator system malfunction (Steps 15, 16) • A/C unit air mix door malfunction (Steps 17, 18)

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, check to make sure connectors, terminals and wiring harnesses are connected correctly and undamaged.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT COOLANT TEMPERATURE <ul style="list-style-type: none"> • Is coolant sufficiently warmed up? 	YesGo to next step.
		No Warm engine up, then go to Step 19.
2	CHECK CIRCUITS COMMON TO BOTH AIR MIX ACTUATOR AND AIRFLOW MODE ACTUATOR	YesGo to Step 10.

	<ul style="list-style-type: none"> Does airflow mode change when operating airflow mode selector switch? 	No	Go to next step.
3	CHECK TO SEE WHETHER PROBLEM IS IN AIR MIX ACTUATOR +5 V SIGNAL OR POTENTIOMETER GND SIGNAL <ul style="list-style-type: none"> Is air mix actuator set at MAX HOT and airflow mode actuator at VENT? <p>(Verify position of air mix actuator link and airflow mode actuator link.)</p>	Yes	Go to next step.
		No	Go to Step 8. (Set actuator at MAX COLD and DEFROSTER.)
4*	CHECK TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR MIX ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> Turn the ignition switch to ON position. Is there voltage of approx. 5 V at A/C amplifier connector (16-pin) terminal 2P (+5 V signal)? 	Yes	Go to Step 10.
		No	Go to next step.
5*	CHECK TO SEE WHETHER MALFUNCTION IS IN AIR MIX ACTUATOR (SHORT TO GROUND) OR ELSEWHERE <ul style="list-style-type: none"> Disconnect air mix actuator connector. Is there voltage of approx. 5 V at A/C amplifier connector (16-pin) terminal 2P (+5 V signal)? 	Yes	Inspect air mix actuator, then go to Step 19. (See AIR MIX ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER] .)
		No	Go to next step.
6*	CHECK TO SEE WHETHER MALFUNCTION IS IN AIRFLOW MODE ACTUATOR (SHORT TO GROUND) OR ELSEWHERE <ul style="list-style-type: none"> Disconnect airflow actuator connector. Is there voltage of approx. 5 V at A/C amplifier connector (16-pin) terminal 2P (+5 V signal)? 	Yes	Inspect airflow mode actuator, then go to Step 19. (See AIRFLOW MODE ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER] .)
		No	Go to next step.
7*	CHECK TO SEE WHETHER MALFUNCTION (SHORT TO GROUND) IS IN A/C AMPLIFIER OR WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR MIX ACTUATOR) <ul style="list-style-type: none"> Disconnect A/C amplifier connector (16-pin). 	Yes	Repair wiring harness between A/C amplifier and air mix actuator, then go to Step 19.
		No	Replace A/C amplifier, then go to Step 19.

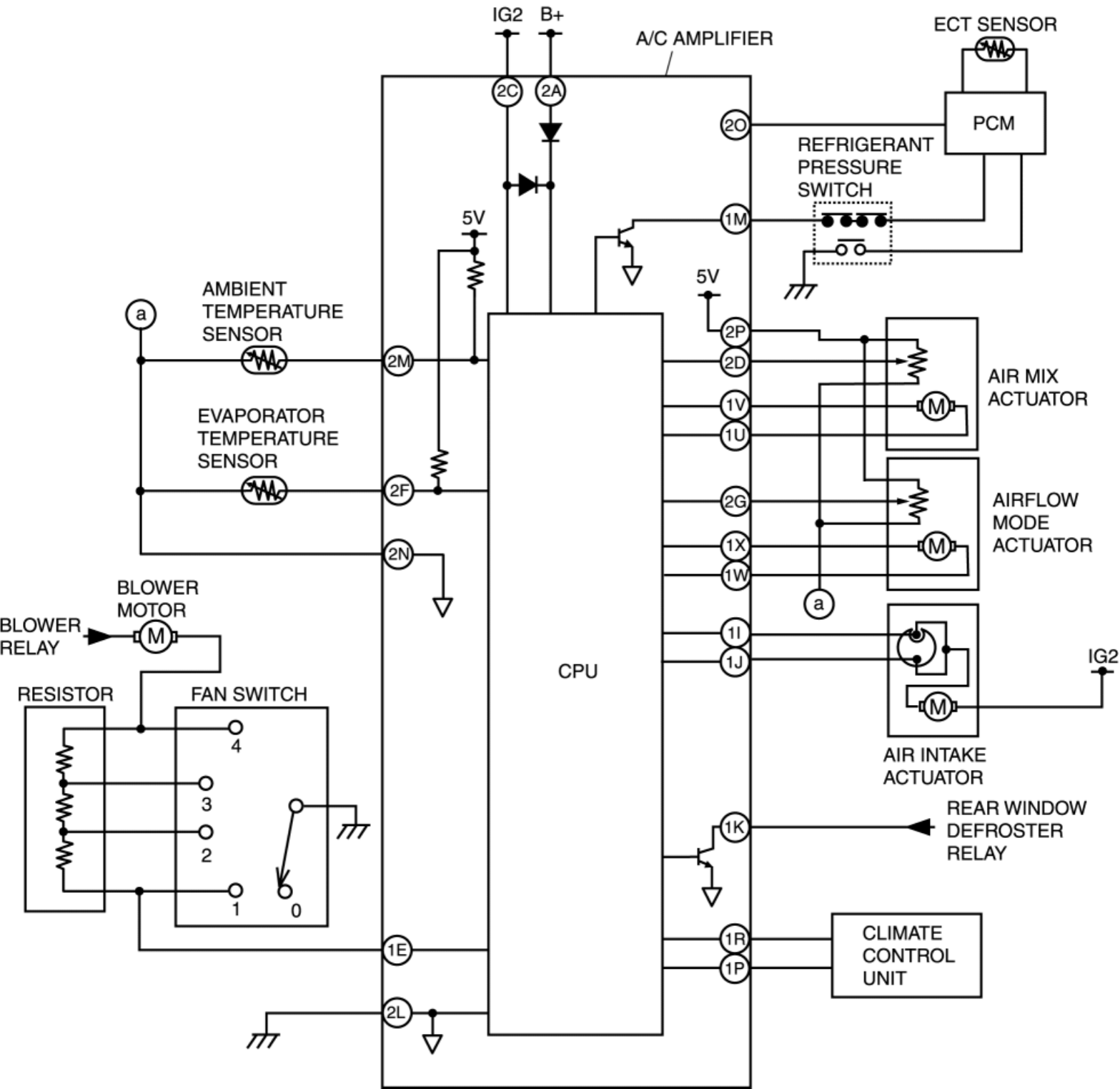
	Is there continuity between A/C amplifier connector (16-pin) terminal 2P (+5 V signal) and body ground?		
8*	CHECK TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN A/C AMPLIFIER OR WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR MIX ACTUATOR) <ul style="list-style-type: none"> • Disconnect A/C amplifier connector (16-pin) and air mix actuator connector. • Is there continuity between A/C amplifier connector (16-pin) terminal 2N (potentiometer GND signal) and air mix actuator connector terminal A? 	Yes	Go to next step.
		No	Repair wiring harness between A/C amplifier and air mix actuator, then go to Step 19.
9*	CHECK TO SEE WHETHER MALFUNCTION (SHORT TO B+) IS IN A/C AMPLIFIER OR WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR MIX ACTUATOR) <ul style="list-style-type: none"> • Turn the ignition switch to ON position. • Test voltage at A/C amplifier connector (16-pin) and terminal 2N (potentiometer GND signal). • Is voltage approx. 12 V? 	Yes	Repair wiring harness between A/C amplifier and air mix actuator, then go to Step 19.
		No	Replace A/C amplifier, then go to Step 19.
10*	CHECK TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR MIX ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> • Turn the ignition switch to ON position. • Test voltage at air mix actuator connector terminal C (+5 V signal). • Is voltage approx. 5 V? 	Yes	Go to next step.
		No	Repair wiring harness between A/C amplifier and air mix actuator, then go to Step 19.
11*	CHECK TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR MIX ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> • Turn the ignition switch to LOCK position. • Disconnect A/C amplifier connector (16-pin) and air mix actuator connector. • Is there continuity between A/C amplifier connector (16-pin) terminal 2D 	Yes	Go to next step.
		No	Repair wiring harness between A/C amplifier and air mix actuator, then go to Step 19.

	(potentiometer input signal) and air mix actuator connector terminal E?		
12*	CHECK TO SEE WHETHER MALFUNCTION (SHORT TO GROUND) IS IN WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR MIX ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> Is there continuity between A/C amplifier connector (16-pin) terminal 2D (potentiometer input signal) and ground? 	Yes	Repair wiring harness between A/C amplifier and air mix actuator, then go to Step 19.
		No	Go to next step.
13*	CHECK TO SEE WHETHER MALFUNCTION (SHORT TO B+) IS IN WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR MIX ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> Turn the ignition switch to ON position. Test voltage at A/C amplifier connector (16-pin) terminal 2D (potentiometer input signal). Is voltage approx. 12 V? 	Yes	Repair wiring harness between A/C amplifier and air mix actuator, then go to Step 19.
		No	Go to next step.
14*	CHECK TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR MIX ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> Turn the ignition switch to LOCK position. Is there continuity between following A/C amplifier connector (16-PIN, 24-pin) terminals and air mix actuator connector terminals? <ul style="list-style-type: none"> Terminal 1V and terminal G (motor drive signal) Terminal 1U and terminal F (motor drive signal) 	Yes	Go to next step.
		No	Repair wiring harness between A/C amplifier and air mix actuator, then go to Step 19.
15	INSPECT A/C UNIT AIR MIX ACTUATOR LINK AND CRANK <ul style="list-style-type: none"> Is there grease on the link and crank? 	Yes	Go to next step.
		No	Apply grease, then go to Step 19.
16	INSPECT AIR MIX ACTUATOR <ul style="list-style-type: none"> Inspect air mix actuator. Is it normal? 	Yes	Go to next step.
		No	Replace air mix actuator, then go to Step 19. (See AIR MIX ACTUATOR)

			REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].)
17	VERIFY THAT A/C UNIT AIR MIX DOORS DO NOT HAVE ANY FOREIGN MATERIAL OR OBSTRUCTION <ul style="list-style-type: none"> Is there any foreign material or obstructions on any A/C unit door? 	Yes	Remove material/obstruction, then go to Step 19.
		No	Go to next step.
18	INSPECT A/C UNIT AIR MIX DOORS <ul style="list-style-type: none"> Are all doors within A/C unit securely and properly positioned? Inspect A/C unit doors. <ul style="list-style-type: none"> Are doors cranked or damaged? Are doors securely and properly installed? Are they normal? 	Yes	Replace A/C amplifier, then go to next step. (Malfunction in A/C amplifier temperature control lever circuit)
		No	Replace or install door(s) in proper position, then go to next step.
19	CONFIRM THAT MALFUNCTION SYMPTOMS DO NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> Does temperature change when operating temperature control dial? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

2011 - RX-8 - HVAC

HVAC SYSTEM WIRING DIAGRAM [MANUAL AIR CONDITIONER]



[< Previous](#) [Next >](#)

2011 - RX-8 - HVAC

FOREWORD [MANUAL AIR CONDITIONER]

- The areas for inspection (steps) are given according to various circuit malfunctions. Use the following chart to verify the symptoms of the trouble in order to diagnose the appropriate area.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

TROUBLESHOOTING INDEX [MANUAL AIR CONDITIONER]

No.	TROUBLESHOOTING ITEM	DESCRIPTION
1	Insufficient air (or no air) blown from vents.	<ul style="list-style-type: none">• Problem with each vent or duct or both.• Airflow mode does not change.
2	Amount of air blown from vents does not change.	<ul style="list-style-type: none">• Malfunction in blower system.
3	Air intake mode does not change.	<ul style="list-style-type: none">• Air intake mode does not change when switching REC/FRESH mode.
4	No temperature control with A/C amplifier.	<ul style="list-style-type: none">• Temperature does not change when operating temperature control dial.
5	Windshield fogged.	<ul style="list-style-type: none">• A/C compressor does not operate while airflow mode is in DEFROSTER or HEAT/DEF modes.• Air intake mode does not change to FRESH while airflow mode is in DEFROSTER or HEAT/DEF modes.
6	Air from vents not cold enough.	<ul style="list-style-type: none">• Magnetic clutch operates but A/C system malfunctions.
7	No cool air.	<ul style="list-style-type: none">• Magnetic clutch does not operate.
8	Noise while operating A/C system.	<ul style="list-style-type: none">• Noise from magnetic clutch, A/C compressor, hose or refrigerant line.

2011 - RX-8 - HVAC

NO.1 INSUFFICIENT AIR (OR NO AIR) BLOWN FROM VENTS [MANUAL AIR CONDITIONER]

1	Insufficient air (or no air) blown from vents.
DESCRIPTION	<ul style="list-style-type: none"> • Problem with each vent or duct or both. • Airflow mode does not change.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Malfunction in airflow mode actuator (Step 1) • Malfunction in VENT mode system (Steps 2—5) • Malfunction in HEAT mode system (Step 6) • Malfunction in DEFROSTER mode system (Steps 7—9)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT AIRFLOW MODE ACTUATOR <ul style="list-style-type: none"> • Inspect airflow mode actuator. (See AIRFLOW MODE ACTUATOR INSPECTION [MANUAL AIR CONDITIONER].) • Is it normal? 	Yes Go to next step
		No Repair or replace malfunctioning part in accordance with further inspection result. (See AIRFLOW MODE ACTUATOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
2	INSPECT TO SEE WHETHER MALFUNCTION IS IN VENT MODE OR OTHER MODES <ul style="list-style-type: none"> • Does air blow out when in VENT mode? 	Yes Go to Step 5.
		No Go to next step.

3	INSPECT VENT • Is vent clogged?	Yes	Remove obstruction, then go to Step 9.
		No	Go to next step.
4	VERIFY THAT DUCT IN DASHBOARD IS INSTALLED • Is duct in dashboard properly installed?	Yes	Inspect duct for clogging, deformity and air leakage, then go to Step 9.
		No	Install duct securely in the proper position, then go to Step 9.
5	INSPECT TO SEE WHETHER MALFUNCTION IS IN HEAT MODE OR DEFROSTER MODE • Does air blow out when in HEAT mode?	Yes	Go to next step.
		No	Inspect vent for clogging, then go to Step 9.
6	INSPECT DEFROSTER MODE • Does air blow out when in DEFROSTER mode?	Yes	Operation is normal. Recheck malfunction symptoms.
		No	Go to next step.
7	INSPECT VENT • Is vent clogged?	Yes	Remove obstruction, then go to Step 9.
		No	Go to next step.
8	VERIFY THAT DEFROSTER DUCT IS INSTALLED • Is defroster duct properly installed?	Yes	Inspect duct for clogging, deformity, and air leakage, then go to next step.
		No	Install duct securely in proper position, then go to next step.
9	CONFIRM THAT MALFUNCTION SYMPTOMS DO NOT RECUR AFTER REPAIR • Does air blow out?	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

2011 - RX-8 - HVAC

NO.2 AMOUNT OF AIR BLOWN FROM VENTS DOES NOT CHANGE [MANUAL AIR CONDITIONER]

2	Amount of air blown from vents does not change.
DESCRIPTION	<ul style="list-style-type: none"> • Malfunction in blower system.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Blower relay, blower motor, resistor, fan switch malfunction (Step 1) • Blower unit malfunction (Steps 2—4)

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT BLOWER SYSTEM <ul style="list-style-type: none"> • Inspect the following systems and electrical parts: <ul style="list-style-type: none"> ▪ Blower relay ▪ Blower motor ▪ Resistor ▪ Fan switch ▪ Related wiring harnesses • Are they normal? 	Yes	Go to next step.
		No	Repair or replace malfunctioning part, then go to Step 5.
2	CHECK TO SEE WHETHER MALFUNCTION IS IN BLOWER UNIT OR ELSEWHERE	Yes	Go to Step 4.

	<p>Turn ignition switch to ON position.</p> <ul style="list-style-type: none"> • Turn fan switch on. • Recirculate air inside vehicle. • Does fan in blower unit rotate smoothly? 	No	Go to next step.
3	<p>INSPECT BLOWER UNIT</p> <ul style="list-style-type: none"> • Inspect fan in blower unit. <ul style="list-style-type: none"> ▪ Is fan free of interference from blower unit case? ▪ Is fan free of foreign material and obstructions? • Is fan normal? 	Yes	Go to next step.
		No	Remove obstruction, repair or replace fan and blower unit case, then go to Step 5.
4	<p>INSPECT BLOWER UNIT INTAKE VENT</p> <ul style="list-style-type: none"> • Is blower unit intake vent clogged? 	Yes	Remove obstruction, then go to next step.
		No	Inspect if there are any obstructions in passage between blower unit and A/C unit, then go to next step.
5	<p>VERIFY THAT MALFUNCTION SYMPTOM OCCURS AFTER REPAIR</p> <ul style="list-style-type: none"> • Does air blow out? 	Yes	<p>Troubleshooting completed.</p> <p>Explain repairs to customer.</p>
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

2011 - RX-8 - HVAC

NO.5 WINDSHIELD FOGGED [MANUAL AIR CONDITIONER]

5	Windshield fogged.
DESCRIPTION	<ul style="list-style-type: none"> A/C compressor does not operate while airflow mode is in DEFROSTER or HEAT/DEF modes. Air intake mode does not change to FRESH while airflow mode is in DEFROSTER or HEAT/DEF modes.
POSSIBLE CAUSE	<ul style="list-style-type: none"> A/C amplifier (B+ signal) system malfunction (Steps 2, 4, 5) Air intake actuator malfunction (Steps 3, 7) A/C amplifier (RECIRCULATE, FRESH signal) system malfunction (Steps 9—11) Malfunction in blower unit air intake doors (Steps 12, 13)

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while doing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, check to make sure connectors, terminals and wiring harness are connected correctly and undamaged.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	COOL AIR BLOW OUT INSPECTION <ul style="list-style-type: none"> When both A/C and fan switch in A/C amplifier are on, does cool air blow out from front vent? 	YesGo to next step.
		No Go to Step 1 of troubleshooting index No.7.
2	INSPECT A/C AMPLIFIER POWER SUPPLY FUSE FOR B+ SIGNAL <ul style="list-style-type: none"> Is A/C amplifier power supply fuse 	YesGo to next step.
		No Inspect for a short to ground on blown fuse

	for B+ signal normal?		circuit. <ul style="list-style-type: none"> Repair or replace as necessary. Install appropriate amperage fuse.
3	INSPECT AIR INTAKE ACTUATOR <ul style="list-style-type: none"> Inspect air intake actuator. <ul style="list-style-type: none"> Is there grease on link? Is link securely and properly positioned? Is link free of obstructions? Are above items normal? 	Yes	Go to next step.
		No	Apply grease or install link properly and securely, remove obstruction, then go to Step 14.
4*	INSPECT WIRING HARNESS BETWEEN FUSE BLOCK AND A/C AMPLIFIER FOR CONTINUITY <ul style="list-style-type: none"> Disconnect A/C amplifier connector (16-pin). Turn ignition switch to ON position. Test voltage at A/C amplifier connector terminal 2A (B+ signal). Is voltage approx. 12 V? 	Yes	Go to next step.
		No	Repair wiring harness between fuse block and A/C amplifier, then go to Step 14.
5*	INSPECT WIRING HARNESS BETWEEN A/C AMPLIFIER AND GROUND FOR VOLTAGE <ul style="list-style-type: none"> Test voltage at A/C amplifier connector terminal 2L (Ground). Is voltage approx. 0V? 	Yes	Go to next step.
		No	Repair wiring harness between A/C amplifier and ground, then go to Step 14.
6	VERIFY WHETHER MALFUNCTION IS IN BLOWER UNIT AIR INTAKE DOOR OR ELSEWHERE <ul style="list-style-type: none"> Turn ignition switch to LOCK position. Connect A/C amplifier connector (16-pin). Remove air intake actuator. 	Yes	Go to next step.
		No	Go to Step 12.

	<ul style="list-style-type: none"> • Turn ignition switch to ON position. • Set fan switch to 4th position. • Does air intake mode (RECIRCULATE, FRESH) change smoothly when air intake link is operated by hand? 		
7	INSPECT AIR INTAKE ACTUATOR <ul style="list-style-type: none"> • Inspect air intake actuator. <p>(See AIR INTAKE ACTUATOR INSPECTION [MANUAL AIR CONDITIONER].)</p> <ul style="list-style-type: none"> • Is it normal? 	Yes	Go to next step.
		No	Replace air intake actuator, go to Step 14. (See AIR INTAKE ACTUATOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
8	INSPECT AIR INTAKE SELECTOR SWITCH AND DEFROSTER SWITCH IN A/C AMPLIFIER <ul style="list-style-type: none"> • Test voltage at A/C amplifier connector (24-pin) terminals 1I and 1J. • Is it normal? 	Yes	Go to next step.
		No	Replace A/C amplifier, then go to Step 14.
9*	INSPECT WIRING HARNESS BETWEEN A/C AMPLIFIER AND AIR INTAKE ACTUATOR FOR CONTINUITY <ul style="list-style-type: none"> • Turn ignition switch to LOCK position. • Is there continuity between the following A/C amplifier connector (24-pin) terminals and air intake actuator connector terminals? <ul style="list-style-type: none"> ▪ Terminal 1I— Terminal A (FRESH signal) ▪ Terminal 1J— Terminal C (RECIRCULATE signal) 	Yes	Go to next step.
		No	Repair wiring harness between A/C amplifier and air intake actuator, then go to Step 14.
10*	INSPECT WIRING HARNESS BETWEEN A/C AMPLIFIER AND AIR INTAKE ACTUATOR FOR SHORT TO GROUND	Yes	Repair wiring harness between A/C amplifier and air intake actuator, then go to Step 14.

	<ul style="list-style-type: none"> Is there continuity between the following A/C amplifier connector (24-pin) terminals and ground? <ul style="list-style-type: none"> Terminal 1I (FRESH signal) Terminal 1J (RECIRCULATE signal) 	No	Go to next step.
11*	INSPECT WIRING HARNESS BETWEEN A/C AMPLIFIER AND AIR INTAKE ACTUATOR FOR SHORT TO B+ <ul style="list-style-type: none"> Turn ignition switch to ON position Test voltage at the following A/C amplifier connector (24-pin) terminal: <ul style="list-style-type: none"> Terminal 1I (FRESH signal) Terminal 1J (RECIRCULATE signal) Is voltage approx. 12 V? 	Yes	Repair wiring harness between A/C amplifier and air intake actuator, then go to Step 14.
		No	Replace A/C amplifier, then go to Step 14.
12	INSPECT BLOWER UNIT AIR INTAKE DOOR <ul style="list-style-type: none"> Is there any foreign material or obstruction in blower unit air intake door? 	Yes	Remove obstruction, then go to Step 14.
		No	Go to next step.
13	VERIFY THAT BLOWER UNIT AIR INTAKE DOOR IS POSITIONED SECURELY AND PROPERLY <ul style="list-style-type: none"> Is blower unit air intake door securely and properly positioned? 	Yes	Inspect air intake door for cracks or damage, then go to next step.
		No	Install air intake door securely in proper position, then go to next step.
14	VERIFY THAT MALFUNCTION SYMPTOM OCCURS AFTER REPAIR <ul style="list-style-type: none"> Does malfunction disappear? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

2011 - RX-8 - HVAC

NO.3 AIR INTAKE MODE DOES NOT CHANGE [MANUAL AIR CONDITIONER]

3	Air intake mode does not change.
DESCRIPTION	<ul style="list-style-type: none"> Air intake mode does not change when switching REC/FRESH mode.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Malfunction in air intake actuator (Steps 1—6) Malfunction in air intake door (Step 7)

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, check to make sure connectors, terminals and wiring harnesses are connected correctly and undamaged.

Diagnostic procedure

STEP	INSPECTION	ACTION
1*	INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN AIR INTAKE ACTUATOR, WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR INTAKE ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> Turn ignition switch to ON position. Test voltages at the following terminals of A/C amplifier: <ul style="list-style-type: none"> Terminal 1I (24-pin, FRESH motor drive signal) Terminal 1J (24-pin, RECIRCULATE motor drive signal) <p>(See A/C AMPLIFIER INSPECTION [MANUAL AIR CONDITIONER].)</p>	<div>Yes</div> Go to next step. <div>No</div> Go to Step 3.

	<ul style="list-style-type: none"> • Are voltages normal? 		
2*	<p>INSPECT TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN AIR INTAKE ACTUATOR OR WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR INTAKE ACTUATOR)</p> <ul style="list-style-type: none"> • Test voltages at the following terminals of air intake actuator: <ul style="list-style-type: none"> ▪ Terminal A (FRESH motor drive signal) ▪ Terminal C (RECIRCULATE motor drive signal) • Are voltages as shown below? <ul style="list-style-type: none"> ▪ Terminal A: approx. 0.5 V switched to RECIRCULATE and approx. 10 V switched to FRESH ▪ Terminal C: approx. 10 V switched to RECIRCULATE and approx. 0.5 V switched to FRESH 	<p>Yes Replace air intake actuator, then go to Step 8. (See AIR INTAKE ACTUATOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)</p> <p>No Repair wiring harness between A/C amplifier and air intake actuator, then go to Step 8.</p>	
3	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN AIR INTAKE ACTUATOR OR ELSEWHERE</p> <ul style="list-style-type: none"> • Disconnect air intake actuator connector. • Test voltages at the following terminals of A/C amplifier: <ul style="list-style-type: none"> ▪ Terminal 1I (24-pin, FRESH motor drive signal) ▪ Terminal 1J (24-pin, RECIRCULATE motor drive signal) <p>(See A/C AMPLIFIER INSPECTION [MANUAL AIR CONDITIONER].)</p> • Are voltages normal? 	<p>Yes Inspect air intake actuator, then go to Step 8. (See AIR INTAKE ACTUATOR INSPECTION [MANUAL AIR CONDITIONER].)</p> <p>No Go to next step.</p>	
4	<p>INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (SHORT TO B+ BETWEEN A/C AMPLIFIER AND AIR INTAKE ACTUATOR) OR ELSEWHERE</p>	<p>Yes Go to next step.</p> <p>No Repair wiring harness between A/C amplifier and air intake actuator,</p>	

	<ul style="list-style-type: none">• Disconnect A/C amplifier connector.• Test voltages at the following terminals of A/C amplifier:<ul style="list-style-type: none">▪ Terminal 1I (24-pin, FRESH motor drive signal)▪ Terminal 1J (24-pin, RECIRCULATE motor drive signal)• Are voltages approx. 0 V?		then go to Step 8.
5	INSPECT TO SEE WHETHER MALFUNCTION IS IN WIRING HARNESS (SHORT TO GROUND BETWEEN A/C AMPLIFIER AND AIR INTAKE ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none">• Turn ignition switch to LOCK position.• Inspect for continuity at the following terminals between A/C amplifier and ground:<ul style="list-style-type: none">▪ Terminal 1I (24-pin, FRESH motor drive signal)▪ Terminal 1J (24-pin, RECIRCULATE motor drive signal)• Is there continuity?	Yes	Repair wiring harness between A/C amplifier and air intake actuator, then go to Step 8.
		No	Go to next step.
6	INSPECT AIR INTAKE LINK <ul style="list-style-type: none">• Inspect air intake links.<ul style="list-style-type: none">▪ Is there grease on link?▪ Are links securely and properly installed?▪ Are links free of obstructions and hindrances?• Are above items normal?	Yes	Go to next step.
		No	Apply grease to links. If any links are damaged, replace air intake actuator, then go to Step 8.
7	INSPECT TO SEE WHETHER MALFUNCTION IS IN A/C AMPLIFIER OR AIR INTAKE DOOR <ul style="list-style-type: none">• Inspect blower unit air intake door.<ul style="list-style-type: none">▪ Is door free of obstructions, cracks, and damage?	Yes	Replace A/C amplifier, then go to next step.
		No	Remove obstruction, or install doors in proper position. If any doors are cracked or damaged, replace them, then go to next step.

	<ul style="list-style-type: none"> ▪ Are doors securely and properly installed? • Are above items normal? 		
8	CONFIRM THAT MALFUNCTION SYMPTOMS DO NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> • Does air intake mode change smoothly? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

NO.6 AIR FROM VENTS NOT COLD ENOUGH [MANUAL AIR CONDITIONER]

6	Air from vents not cold enough.
DESCRIPTION	<ul style="list-style-type: none"> • Magnetic clutch operates but A/C system malfunctions.
POSSIBLE CAUSE	<p>NOTE:</p> <ul style="list-style-type: none"> • If the engine coolant temperature increases due to a cooling system malfunction, the fail-safe function disables the A/C operation. • Drive belt malfunction (Step 3) • Refrigerant pressure switch malfunction (Step 4) • Cooling fan system malfunction (Step 5) • Condenser or related part malfunction (Step 6, 16) • Expansion valve or related part malfunction (Step 8, 17) • A/C unit air mix door system malfunction (Step 9, 19) • Blower unit malfunction (Step 10) • Refrigerant lines malfunction (Step 12—15) • Evaporative temperature sensor malfunction (Step 18)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT REFRIGERANT PRESSURE TO LOCATE MALFUNCTION	Yes Go to the next step.
	<ul style="list-style-type: none"> • Perform refrigerant pressure check. <p>(See REFRIGERANT</p>	<p>No Record the inspection result.</p> <ul style="list-style-type: none"> • If the refrigerant high-pressure and low-pressure values are both high,

	<p>PRESSURE CHECK.)</p> <ul style="list-style-type: none">Is the refrigerant pressure normal?		<p>go to Step 5.</p> <ul style="list-style-type: none">If the refrigerant high-pressure and low-pressure values are approximately the same, go to Step 8.If the refrigerant high-pressure and low-pressure values are both low, go to Step 10.If there is a vacuum on the low pressure side and extremely low pressure on the high pressure side, go to Step 16.If there is low pressure on the high pressure side and high pressure on the low pressure side, replace the A/C compressor, then go to Step 20. <p>(See A/C COMPRESSOR REMOVAL/INSTALLATION.)</p> <ul style="list-style-type: none">If the refrigerant pressure is other than above condition, go to Step 18.
2	<p>INSPECT REFRIGERANT SYSTEM PERFORMANCE</p> <ul style="list-style-type: none">Perform refrigerant system performance test. <p>(See REFRIGERANT SYSTEM PERFORMANCE TEST.)</p> <ul style="list-style-type: none">Is the operation normal?	Yes	Operation is normal. (Recheck malfunction symptoms.)
		No	Go to the next step.
3	<p>INSPECT DRIVE BELT</p> <ul style="list-style-type: none">Inspect the drive belt. <p>(See DRIVE BELT DEFLECTION/TENSION INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none">Is it normal?	Yes	Go to the next step.
		No	Adjust or replace the drive belt, then the next step. (See DRIVE BELT REPLACEMENT [13B-MSP].)
4	<p>INSPECT REFRIGERANT PRESSURE SWITCH</p> <ul style="list-style-type: none">Inspect the refrigerant pressure switch. <p>(See REFRIGERANT</p>	Yes	Go to the next step.
		No	Repair or replace malfunctioning part according to inspection result, then go to Step 20.

	<p>PRESSURE SWITCH INSPECTION [MANUAL AIR CONDITIONER].)</p> <ul style="list-style-type: none"> Is it normal? 		<p>(See REFRIGERANT PRESSURE SWITCH REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)</p>
5	<p>INSPECT COOLING FAN OPERATION</p> <ul style="list-style-type: none"> Verify the cooling fan operation. <p>(See FAN MOTOR INSPECTION [13B-MSP].)</p> <ul style="list-style-type: none"> Is the cooling fan operation normal? 	Yes	Go to the next step.
		No	<p>Repair or replace the malfunctioning location according to the inspection results.</p> <p>Then go to Step 20.</p>
6	<p>VISUALLY INSPECT CONDENSER</p> <ul style="list-style-type: none"> Is the condenser fin clogged or obstructed by foreign material? 	Yes	<p>Remove the foreign material.</p> <p>Repair the condenser fin.</p> <p>Then go to Step 20.</p>
		No	Go to the next step.
7	<p>CHECK REFRIGERATION SYSTEM FOR OVERCHARGE OR AIR CONTAMINATION</p> <ul style="list-style-type: none"> Is the low side line hot to the touch? 	Yes	Recover refrigerant. Evacuate system for one hour. Refill with correct amount of refrigerant, and go to step 20.
		No	Recover refrigerant, evacuate for 15 minutes, refill with correct amount and go to step 20.
8	<p>CHECK TO SEE WHETHER MALFUNCTION IS IN EXPANSION VALVE OR ELSEWHERE</p> <ul style="list-style-type: none"> Compare the refrigerant pressure of the low pressure side with the high pressure side at Step 1. Is there little difference between the high pressure side and low pressure side readings (refer to graph in REFRIGERANT PRESSURE CHECK procedure)? <p>(See REFRIGERANT PRESSURE CHECK.)</p>	Yes	<p>Replace the expansion valve.</p> <p>After performing the following servicing, go to Step 20.</p> <ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.
		No	Go to the next step.
9	INSPECT AIR MIX DOOR RELATED PART	Yes	Adjust the compressor oil to the specified amount,

	<p>INSTALLATION</p> <ul style="list-style-type: none"> • Measure the A/C amplifier terminal 2D voltage when the temperature control dials are set to MAX COLD and MAX HOT by control panel. • Are voltages are normal? 		<p>then go to Step 20.</p> <p>(See A/C COMPRESSOR REMOVAL/INSTALLATION.)</p>
		<p>No</p>	<p>Inspect the air mix link, air mix crank, and air mix rod of the A/C unit correctly and securely installed to their positions.</p> <p>(See A/C UNIT REMOVAL/INSTALLATION.)</p> <ul style="list-style-type: none"> • Repair or install correctly for suspect part according to inspection result, then go to Step 20.
10	<p>INSPECT BLOWER UNIT FOR BLOCKAGE</p> <ul style="list-style-type: none"> • Is the blower unit intake and air filter clogged? 	<p>Yes</p>	<p>Remove the cause of the clogging. Replace the air filter if it is clogged.</p> <p>(See AIR FILTER REMOVAL/INSTALLATION.)</p> <p>Then go to Step 20.</p>
		<p>No</p>	<p>Go to the next step.</p>
11	<p>CHECK TO SEE WHETHER MALFUNCTION IS REFRIGERANT LINE LEAKAGE OR ELSEWHERE</p> <ul style="list-style-type: none"> • Verify if there is gas leakage from the system hoses using the gas leak tester. • Is there gas leakage? 	<p>Yes</p>	<p>If there is leakage from a system hose connection area, go to Step 13. If there is leakage other than from a system hose connection area, go to Step 15.</p>
		<p>No</p>	<p>Go to the next step.</p>
12	<p>VISUALLY INSPECT REFRIGERANT LINE</p> <ul style="list-style-type: none"> • Is a system hose crushed? 	<p>Yes</p>	<p>Replace the crushed system hose.</p> <p>(See REFRIGERANT LINE REMOVAL/INSTALLATION.)</p> <p>After performing the following servicing, go to Step 20.</p> <ul style="list-style-type: none"> • Adjust the compressor oil to the specified level. • After discharging, charge with new refrigerant to the specified level.
		<p>No</p>	<p>Go to Step 19.</p>
13	<p>CHECK TO SEE WHETHER MALFUNCTION IS IN REFRIGERANT LINE JOINT LOOSE OR</p>	<p>Yes</p>	<p>Go to the next step.</p>

	<p>O-RING</p> <ul style="list-style-type: none"> Tighten the system hose connection area to the specified torque. <p>(See REFRIGERANT LINE REMOVAL/INSTALLATION.)</p> <ul style="list-style-type: none"> Has the leakage stopped? 	No	Go to Step 15.
14	<p>VISUALLY INSPECT REFRIGERANT LINE</p> <ul style="list-style-type: none"> Is a system hose crushed? 	Yes	<p>Replace the crushed system hose.</p> <p>(See REFRIGERANT LINE REMOVAL/INSTALLATION.)</p> <p>After performing the following servicing, go to Step 20.</p> <ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.
		No	<p>Adjust the compressor oil to the specified amount, then go to Step 20.</p> <p>(See A/C COMPRESSOR REMOVAL/INSTALLATION.)</p>
15	<p>VISUALLY INSPECT REFRIGERANT LINE</p> <ul style="list-style-type: none"> Is a system hose crushed? 	Yes	<p>Replace the O-ring of the leaking area.</p> <p>Replace the crushed system hose.</p> <p>(See REFRIGERANT LINE REMOVAL/INSTALLATION.)</p> <p>After performing the following servicing, go to Step 20.</p> <ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.
		No	<p>Replace the O-ring of the leaking area.</p> <p>After performing the following servicing, go to Step 20.</p> <ul style="list-style-type: none"> Adjust the compressor oil to the specified level. After discharging, charge with new refrigerant to the specified level.

16	<p>CHECK TO SEE WHETHER MALFUNCTION IS WATER IN REFRIGERANT SYSTEM OR ELSEWHERE</p> <ul style="list-style-type: none"> Is there is no refrigerant pressure on the low pressure side, or is it normal? 	Yes	<p>Replace the condenser.</p> <p>(Water in refrigerant system)</p> <p>(See CONDENSER REMOVAL/INSTALLATION.)</p> <p>Then go to Step 20.</p>
		No	<p>Go to the next step.</p>
17	<p>CHECK TO SEE WHETHER MALFUNCTION IS IN RECEIVER/DRYER FILTER OR EXPANSION VALVE</p> <ul style="list-style-type: none"> Remove the expansion valve and verify its condition. Is there refrigerant leakage or valve clogging? 	Yes	<p>If there is foreign matter clogging the valve, remove the foreign matter. If there is refrigerant leakage or clogging, replace the expansion valve. Perform discharge, charge with new refrigerant, and then go to Step 20.</p>
		No	<p>Replace the condenser.</p> <p>(Receiver/Dryer filter is clogged.)</p> <p>(See CONDENSER REMOVAL/INSTALLATION.)</p> <p>Then go to Step 20.</p>
18	<p>INSPECT EVAPORATIVE TEMPERATURE SENSOR</p> <ul style="list-style-type: none"> Inspect the evaporator temperature sensor. <p>(See EVAPORATOR TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER].)</p> <ul style="list-style-type: none"> Is it normal? 	Yes	<p>Verify the evaporator temperature sensor position.</p> <p>(See A/C UNIT DISASSEMBLY/ASSEMBLY.)</p> <p>Then go to Step 20.</p>
		No	<p>Replace the evaporator temperature sensor, then go to Step 20.</p> <p>(See A/C UNIT DISASSEMBLY/ASSEMBLY.)</p>
19	<p>INSPECT AIR MIX DOOR RELATED PART INSTALLATION</p> <ul style="list-style-type: none"> Measure the A/C amplifier terminal 2D voltage when the temperature control dials are set to MAX COLD and MAX HOT by control panel. Are voltages are normal? 	Yes	<p>Go to the next step.</p>
		No	<ul style="list-style-type: none"> Inspect the air mix link, air mix crank, and air mix rod of the A/C unit correctly and securely installed to their positions. <p>(See A/C UNIT DISASSEMBLY/ASSEMBLY.)</p> <ul style="list-style-type: none"> Repair or install correctly for suspect part according to inspection result. Then go to the next step.

20	<p>VERIFY THAT MALFUNCTION SYMPTOM DOES NOT OCCURS AFTER REPAIR</p> <ul style="list-style-type: none"> • If the refrigerant discharged during inspection has not been recharged, discharge and charge with new refrigerant to the specified level. • Does cool air blow out? (Are results of refrigerant system performance test normal?) 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - HVAC

NO.8 NOISE WHILE OPERATING A/C SYSTEM [MANUAL AIR CONDITIONER]

8	Noise while operating A/C system.
DESCRIPTION	<ul style="list-style-type: none"> Noise from magnetic clutch, A/C compressor, hose or refrigerant line.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Magnetic clutch operation noise (Step 3) A/C compressor slippage noise (Steps 4—6) Hose or refrigerant line interference noise (Step 7)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT A/C COMPRESSOR SLIPPAGE NOISE	Yes Go to Step 4.
	<ul style="list-style-type: none"> Is there a squeaking or whirling sound (A/C compressor slippage noise)? 	No Go to next step.
2	INSPECT A/C COMPRESSOR INTERFERENCE NOISE	Yes Go to Step 7.
	<ul style="list-style-type: none"> Is there a rattling or vibrating sound (interference noise)? 	No Go to next step.
3	INSPECT MAGNETIC CLUTCH OPERATION NOISE	Yes Adjust clearance between pressure plate of magnetic clutch and A/C compressor pulley, then go to Step 8.
	<ul style="list-style-type: none"> Is larger than other this type vehicle clicking sound (magnetic clutch 	No Condition is normal. (Recheck malfunction symptoms.)

	operation noise)?		
4	INSPECT DRIVE BELT <ul style="list-style-type: none"> Inspect drive belt. (See DRIVE BELT DEFLECTION/TENSION INSPECTION [13B-MSP].) <ul style="list-style-type: none"> Is it normal? 	Yes	Go to next step.
		No	Adjust the drive belt tension. (See DRIVE BELT DEFLECTION/TENSION INSPECTION [13B-MSP].) If the symptom does not improve after drive belt adjustment, replace the drive belt. (See DRIVE BELT REPLACEMENT [13B-MSP].)
5	INSPECT DRIVE BELT CONDITION <ul style="list-style-type: none"> Is drive belt worn? Does it have foreign material imbedded in it, or have oil on it? 	Yes	Remove obstruction, remove oil, or replace drive belt, then go to Step 8.
		No	Go to next step.
6	INSPECT MAGNETIC CLUTCH <ul style="list-style-type: none"> Inspect magnetic clutch. Is it normal? 	Yes	Replace A/C compressor (excluding pressure plate, A/C compressor pulley, and stator), then go to Step 8. (See A/C COMPRESSOR REMOVAL/INSTALLATION.)
		No	Replace magnetic clutch, then go to Step 8.
7	CHECK TO SEE WHETHER MALFUNCTION IS IN A/C COMPRESSOR OR REFRIGERANT LINES <ul style="list-style-type: none"> Is noise emitted from A/C compressor? 	Yes	Visually inspect A/C compressor, replace appropriate parts if necessary, then go to next step.
		No	If noise is due to refrigerant lines, repair detached or missing clips, tighten loose bolts, then go to next step.
8	VERIFY THAT MALFUNCTION SYMPTOM OCCURS AFTER REPAIR <ul style="list-style-type: none"> Has A/C compressor noise stopped? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

2011 - RX-8 - HVAC

NO.4 NO TEMPERATURE CONTROL WITH A/C AMPLIFIER [MANUAL AIR CONDITIONER]

4	No temperature control with A/C amplifier.
DESCRIPTION	<ul style="list-style-type: none"> • Temperature does not change with operating temperature control dial.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Air mix actuator (+5 V signal) system malfunction (Steps 3—7, 10) • A/C amplifier (potentiometer GND signal) system malfunction (Steps 8, 9) • Air mix actuator (potentiometer input signal) system malfunction (Steps 11—13) • Air mix actuator (potentiometer GND signal, motor drive signal) system malfunction (Step 14) • Air mix actuator system malfunction (Steps 15, 16) • A/C unit air mix door malfunction (Steps 17, 18)

- When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, check to make sure connectors, terminals and wiring harnesses are connected correctly and undamaged.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT COOLANT TEMPERATURE <ul style="list-style-type: none"> • Is coolant sufficiently warmed up? 	YesGo to next step.
		No Warm engine up, then go to Step 19.
2	CHECK CIRCUITS COMMON TO BOTH AIR MIX ACTUATOR AND AIRFLOW MODE ACTUATOR	YesGo to Step 10.

	<ul style="list-style-type: none"> Does airflow mode change when operating airflow mode selector switch? 	No	Go to next step.
3	CHECK TO SEE WHETHER PROBLEM IS IN AIR MIX ACTUATOR +5 V SIGNAL OR POTENTIOMETER GND SIGNAL <ul style="list-style-type: none"> Is air mix actuator set at MAX HOT and airflow mode actuator at VENT? <p>(Verify position of air mix actuator link and airflow mode actuator link.)</p>	Yes	Go to next step.
		No	Go to Step 8. (Set actuator at MAX COLD and DEFROSTER.)
4*	CHECK TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR MIX ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> Turn the ignition switch to ON position. Is there voltage of approx. 5 V at A/C amplifier connector (16-pin) terminal 2P (+5 V signal)? 	Yes	Go to Step 10.
		No	Go to next step.
5*	CHECK TO SEE WHETHER MALFUNCTION IS IN AIR MIX ACTUATOR (SHORT TO GROUND) OR ELSEWHERE <ul style="list-style-type: none"> Disconnect air mix actuator connector. Is there voltage of approx. 5 V at A/C amplifier connector (16-pin) terminal 2P (+5 V signal)? 	Yes	Inspect air mix actuator, then go to Step 19. (See AIR MIX ACTUATOR INSPECTION [MANUAL AIR CONDITIONER] .)
		No	Go to next step.
6*	CHECK TO SEE WHETHER MALFUNCTION IS IN AIRFLOW MODE ACTUATOR (SHORT TO GROUND) OR ELSEWHERE <ul style="list-style-type: none"> Disconnect airflow actuator connector. Is there voltage of approx. 5 V at A/C amplifier connector (16-pin) terminal 2P (+5 V signal)? 	Yes	Inspect airflow mode actuator, then go to Step 19. (See AIRFLOW MODE ACTUATOR INSPECTION [MANUAL AIR CONDITIONER] .)
		No	Go to next step.
7*	CHECK TO SEE WHETHER MALFUNCTION (SHORT TO GROUND) IS IN A/C AMPLIFIER OR WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR MIX ACTUATOR) <ul style="list-style-type: none"> Disconnect A/C amplifier connector (16-pin). 	Yes	Repair wiring harness between A/C amplifier and air mix actuator, then go to Step 19.
		No	Replace A/C amplifier, then go to Step 19.

	Is there continuity between A/C amplifier connector (16-pin) terminal 2P (+5 V signal) and ground?		
8*	CHECK TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN A/C AMPLIFIER OR WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR MIX ACTUATOR) <ul style="list-style-type: none"> • Disconnect A/C amplifier connector (16-pin) and air mix actuator connector. • Is there continuity between A/C amplifier connector (16-pin) terminal 2N (potentiometer GND signal) and air mix actuator connector terminal A? 	Yes	Go to next step.
		No	Repair wiring harness between A/C amplifier and air mix actuator, then go to Step 19.
9*	CHECK TO SEE WHETHER MALFUNCTION (SHORT TO B+) IS IN A/C AMPLIFIER OR WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR MIX ACTUATOR) <ul style="list-style-type: none"> • Turn the ignition switch to ON position. • Test voltage at A/C amplifier connector (16-pin) and terminal 2N (potentiometer GND signal). • Is voltage approx. 12 V? 	Yes	Repair wiring harness between A/C amplifier and air mix actuator, then go to Step 19.
		No	Replace A/C amplifier, then go to Step 19.
10*	CHECK TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR MIX ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> • Turn the ignition switch to ON position. • Test voltage at air mix actuator connector terminal C (+5 V signal). • Is voltage approx. 5 V? 	Yes	Go to next step.
		No	Repair wiring harness between A/C amplifier and air mix actuator, then go to Step 19.
11*	CHECK TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR MIX ACTUATOR) OR ELSEWHERE <ul style="list-style-type: none"> • Turn the ignition switch to LOCK position. • Disconnect A/C amplifier connector (16-pin) and air mix actuator connector. • Is there continuity between A/C amplifier connector (16-pin) terminal 2D 	Yes	Go to next step.
		No	Repair wiring harness between A/C amplifier and air mix actuator, then go to Step 19.

	(potentiometer input signal) and air mix actuator connector terminal E?		
12*	CHECK TO SEE WHETHER MALFUNCTION (SHORT TO GROUND) IS IN WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR MIX ACTUATOR) OR ELSEWHERE	Yes	Repair wiring harness between A/C amplifier and air mix actuator, then go to Step 19.
	<ul style="list-style-type: none"> Is there continuity between A/C amplifier connector (16-pin) terminal 2D (potentiometer input signal) and ground? 	No	Go to next step.
13*	CHECK TO SEE WHETHER MALFUNCTION (SHORT TO B+) IS IN WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR MIX ACTUATOR) OR ELSEWHERE	Yes	Repair wiring harness between A/C amplifier and air mix actuator, then go to Step 19.
	<ul style="list-style-type: none"> Turn the ignition switch to ON position. Test voltage at A/C amplifier connector (16-pin) terminal 2D (potentiometer input signal). Is voltage approx. 12 V? 	No	Go to next step.
14*	CHECK TO SEE WHETHER MALFUNCTION (LACK OF CONTINUITY) IS IN WIRING HARNESS (BETWEEN A/C AMPLIFIER AND AIR MIX ACTUATOR) OR ELSEWHERE	Yes	Go to next step.
	<ul style="list-style-type: none"> Turn the ignition switch to LOCK position. Is there continuity between following A/C amplifier connector (16-PIN, 24-pin) terminals and air mix actuator connector terminals? <ul style="list-style-type: none"> Terminal 1V and terminal G (motor drive signal) Terminal 1U and terminal F (motor drive signal) 	No	Repair wiring harness between A/C amplifier and air mix actuator, then go to Step 19.
15	INSPECT A/C UNIT AIR MIX ACTUATOR LINK AND CRANK	Yes	Go to next step.
	<ul style="list-style-type: none"> Is there grease on the link and crank? 	No	Apply grease, then go to Step 19.
16	INSPECT AIR MIX ACTUATOR	Yes	Go to next step.
	<ul style="list-style-type: none"> Inspect air mix actuator. Is it normal? 	No	Replace air mix actuator, then go to Step 19. (See AIR MIX ACTUATOR

			REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER].)
17	VERIFY THAT A/C UNIT AIR MIX DOORS DO NOT HAVE ANY FOREIGN MATERIAL OR OBSTRUCTION <ul style="list-style-type: none"> Is there any foreign material or obstructions on any A/C unit door? 	Yes	Remove material/obstruction, then go to Step 19.
		No	Go to next step.
18	INSPECT A/C UNIT AIR MIX DOORS <ul style="list-style-type: none"> Are all doors within A/C unit securely and properly positioned? Inspect A/C unit doors. <ul style="list-style-type: none"> Are doors cranked or damaged? Are doors securely and properly installed? Are they normal? 	Yes	Replace A/C amplifier, then go to next step. (Malfunction in A/C amplifier temperature control lever circuit)
		No	Replace or install door(s) in proper position, then go to next step.
19	CONFIRM THAT MALFUNCTION SYMPTOMS DO NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> Does temperature change when operating temperature control dial? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

2011 - RX-8 - HVAC

REFRIGERANT SYSTEM SERVICE WARNINGS

Using/Handling Unapproved Refrigerant

- Using a flammable refrigerant, such as OZ-12, in this vehicle is dangerous. In an accident, the refrigerant may catch fire, resulting in serious injury or death. When servicing this vehicle, use only R-134a.
- Checking for system leakage on a vehicle that has been serviced with flammable refrigerant, such as OZ-12, is dangerous. Conventional leak detectors use an electronically generated arc which can ignite the refrigerant, causing serious injury or death. If a flammable refrigerant may have been used to service the system, or if you suspect a flammable refrigerant has been used, contact the local fire marshal or EPA office for information on handling the refrigerant.

Handling Refrigerant

- Avoid breathing air conditioning refrigerant or lubricant vapor. Exposure may irritate eyes, nose and throat. Also, due to environmental concerns, use service equipment certified to meet the requirements of SAE J2210 (R-134a recycling equipment) when draining R-134a from the air conditioning system. If accidental system discharge occurs, ventilate work area before resuming service.
- Do not pressure test or leak test R-134a service equipment and/or vehicle air conditioning system with compressed air. Some mixtures of air and R-134a have been shown to be combustible at elevated pressures. These mixtures, if ignited, may cause injury or property damage. Additional health and safety information may be obtained from refrigerant manufacturers.
- Do not allow the refrigerant to leak near fire or any kind of heat. A poisonous gas may be generated if the refrigerant gas contacts fire or heat such as from cigarettes and heaters. When carrying out any operation that can cause refrigerant leakage, extinguish or remove the above-mentioned heat sources and maintain adequate ventilation.
- Handling liquid refrigerant is dangerous. A drop of it on the skin can result in localized frostbite. When handling the refrigerant, wear gloves and safety goggles. If refrigerant splashes into the eyes, immediately wash them with clean water and consult a doctor.

Storing Refrigerant

- The refrigerant container is highly pressurized. If it is subjected to high heat, it could explode, scattering metal fragments and liquid refrigerant that can seriously injure you. Store the refrigerant at temperatures below 40 °C {104 °F}.

[< Previous](#) [Next >](#)

[Back to Top](#)

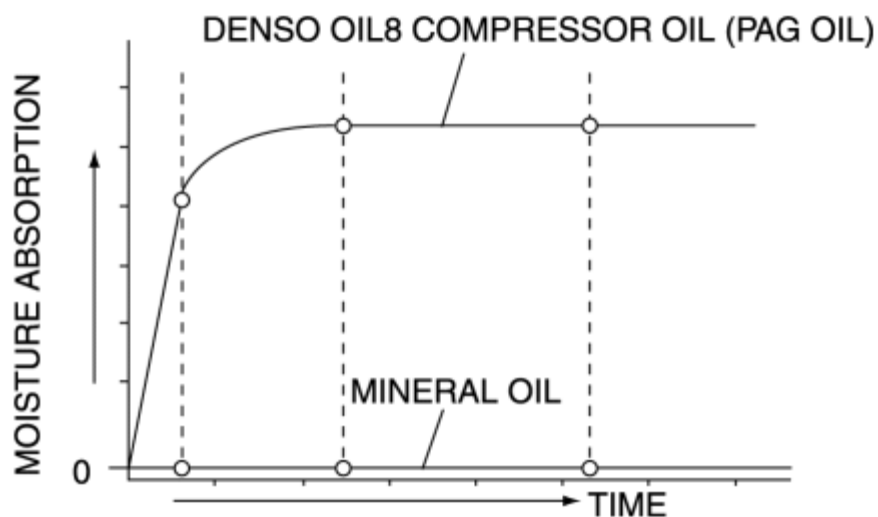
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - HVAC

REFRIGERANT SYSTEM SERVICE CAUTIONS

Handling Compressor Oil

- Use only DENSO OIL8 compressor oil for this vehicle. Using PAG oil other than DENSO OIL8 compressor oil can damage the A/C compressor.
- Do not spill DENSO OIL8 compressor oil on the vehicle. A drop of compressor oil on the vehicle surface can eat away at the paint. If oil gets on the vehicle, wipe it off immediately.
- DENSO OIL8 compressor oil (PAG oil) has a higher moisture absorption efficiency than the previously used mineral oil. If moisture mixes with the compressor oil, the refrigerant system could be damaged. Therefore, install caps immediately after using the compressor oil or removing refrigerant system parts to prevent moisture absorption.

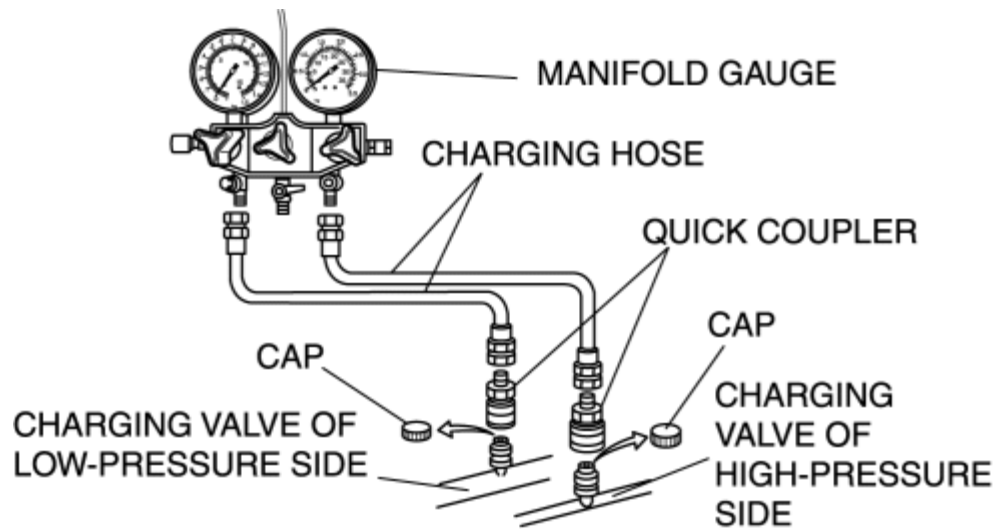


2011 - RX-8 - HVAC

REFRIGERANT SYSTEM GENERAL PROCEDURES

Manifold Gauge Set Installation

1. Fully close the valves of the manifold gauge.
2. Connect the charging hoses to the high/low pressure side joints of the manifold gauge.



3. Connect the quick couplers to the ends of the charging hoses.
4. Connect the quick couplers to the charging valves.

2011 - RX-8 - HVAC

REFRIGERANT CHARGING

WARNING:

- Avoid breathing air conditioning refrigerant or lubricant vapor. Exposure may irritate eyes, nose and throat. Also, due to environmental concerns, use service equipment certified to meet the requirements of SAE J2210 (R-134a recycling equipment) when draining R-134a from the air conditioning system. If accidental system discharge occurs, ventilate work area before resuming service.

CAUTION:

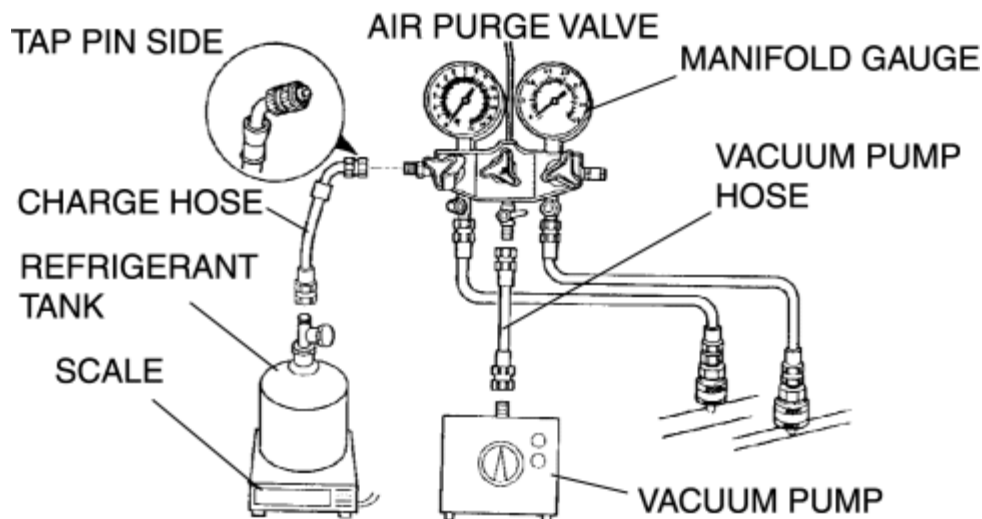
- Do not exceed the specification when charging the system with refrigerant. Doing so will decrease the efficiency of the air conditioner or damage the refrigeration cycle parts.

Charging Recycled R-134a Refrigerant

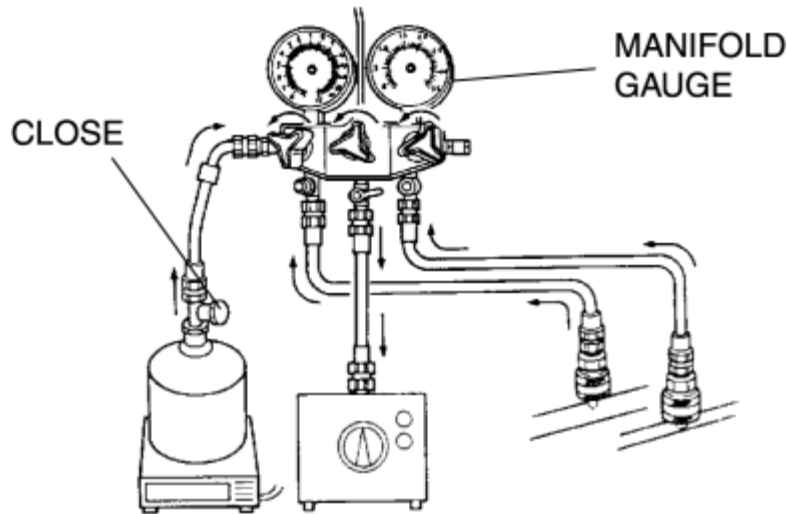
1. Connect an R-134a recovery/recycling/recharging device to the vehicle and follow the device manufacturer's instructions.

Charging New R-134a Refrigerant

1. Install the manifold gauge set.
2. Connect the tap pin side of the charging hose to the air purge valve of the manifold gauge.



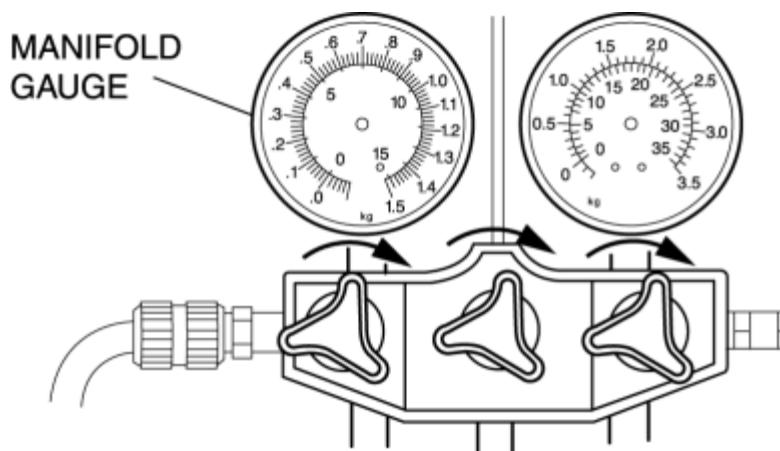
3. Connect the vacuum pump hose to the center joint of the manifold gauge.
4. Connect the vacuum pump hose to the vacuum pump.
5. Connect the charging hose to the refrigerant tank.
6. Place the refrigerant tank on the scale.
7. Open all the valves of the manifold gauge.



CAUTION:

- Close the manifold gauge valve immediately after stopping the vacuum pump. If the valve is left open, the vacuum pump oil will back flow into the refrigeration cycle and cause a decrease in the efficiency of the air conditioner.

8. Start the vacuum pump and let it operate for **15 min**.
9. Verify that high- and low-pressure side readings of the manifold gauge are at **-101 kPa {-760 mmHg, -29.9 inHg}**. Close each valve of the manifold gauge.



10. Stop the vacuum pump and wait for **5 min**.
11. Inspect the high- and low-pressure side readings of the manifold gauge.
 - If the reading has changed, inspect for leakage and then repeat from Step 7.

If the reading has not changed, go to next step.

12. Open the valve of the refrigerant tank.

13. Weigh the refrigerant tank to charge the suitable amount of refrigerant.

Refrigerant type

- R-134a

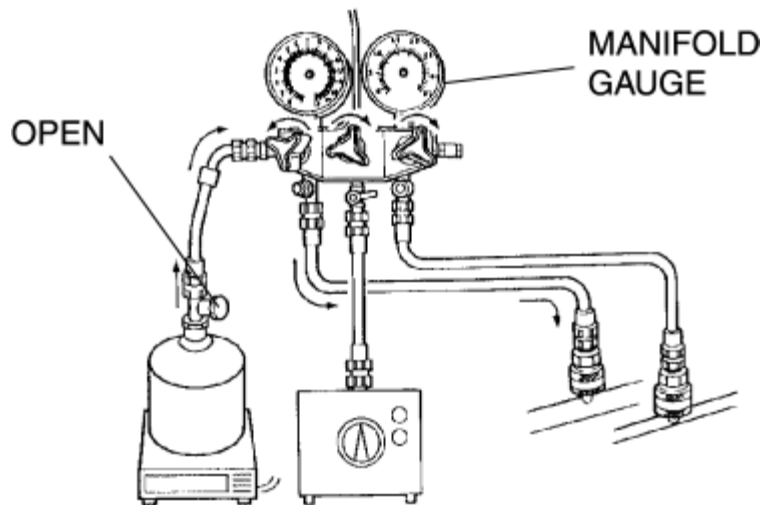
Regular amount of refrigerant (approx. quantity)

- 430 g {15.2 oz}

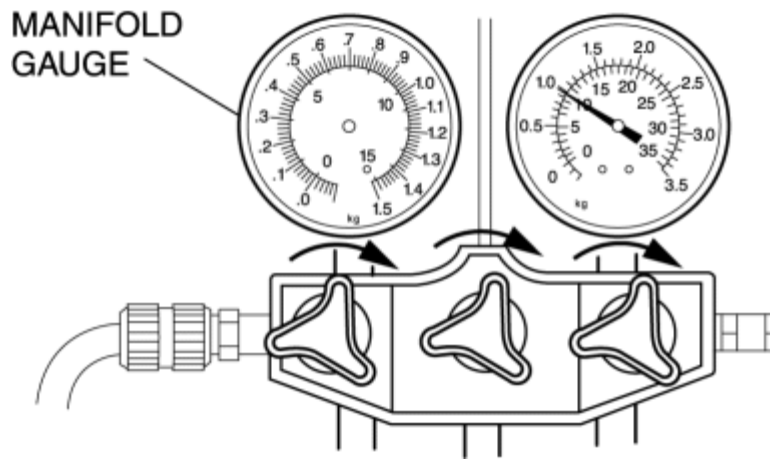
WARNING:

- If the refrigerant system is charged with a large amount of refrigerant when checking for gas leakage, and if any leakage should occur, the refrigerant will be released into the atmosphere. In order to prevent the accidental release of refrigerant which can destroy the ozone layer in the stratosphere, follow the proper procedures and charge with only a small amount of refrigerant when checking for gas leakage.
- If charging the system with refrigerant by service cans or refrigerant tank, running the engine with the high-pressure side valve open is dangerous. Pressure within the service cans or refrigerant tank will increase and they could explode, scattering metal fragments and liquid refrigerant that can seriously injure you. Therefore, do not open the high-pressure side valve while the engine is running.

14. Open the low-pressure side valve of the manifold gauge.



15. When the high-pressure side reading increases to **98 kPa {1.0 kgf/cm², 14 psi}**, close the low-pressure side valve of the manifold gauge.



16. Inspect for leakage from the cooler pipe/hose connections using a gas leak tester.

- If there is no leakage, go to Step 18.
- If leakage is found at a loose joint, tighten the joint, go to next step.

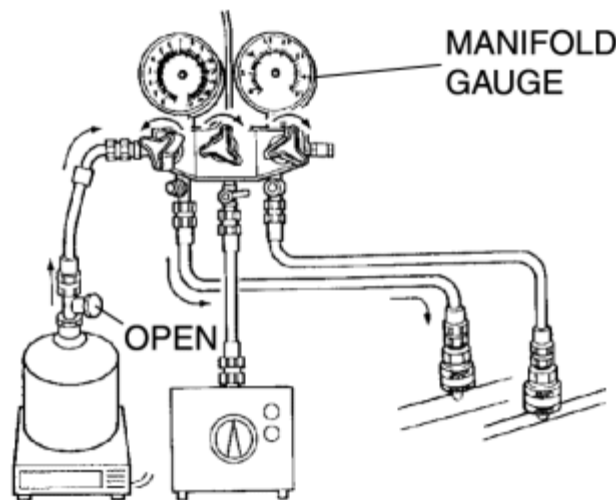
17. Inspect for leakage again.

- If there is no leakage after tightening the joint, go to next step.
- If there is still a leakage at the same joint, discharge the refrigerant and then repair the joint. Repeat the charging procedure from Step 7.

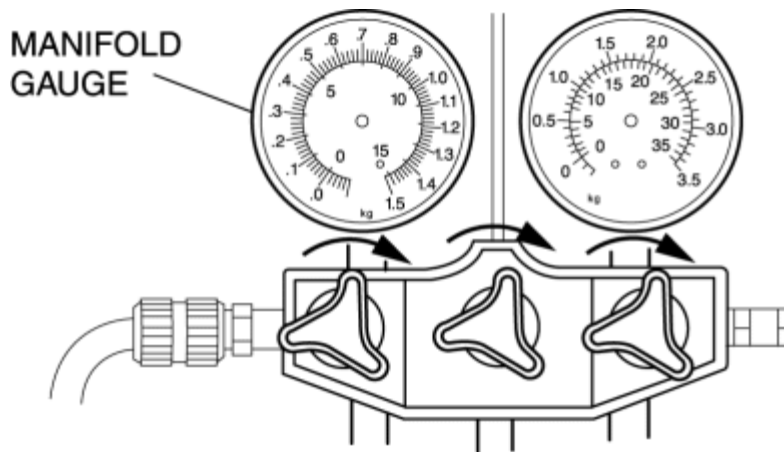
WARNING:

- If charging the system with refrigerant by service cans or refrigerant tank, running the engine with the high-pressure side valve open is dangerous. Pressure within the service cans or refrigerant tank will increase and they could explode, scattering metal fragments and liquid refrigerant that can seriously injure you. Therefore, do not open the high-pressure side valve while the engine is running.

18. Open the low-pressure side valve of the manifold gauge and charge with refrigerant until the weight of refrigerant tank has decreased **200 g {7.06 oz}** from the amount in Step 13.



19. Close the low-pressure side valve of the manifold gauge.

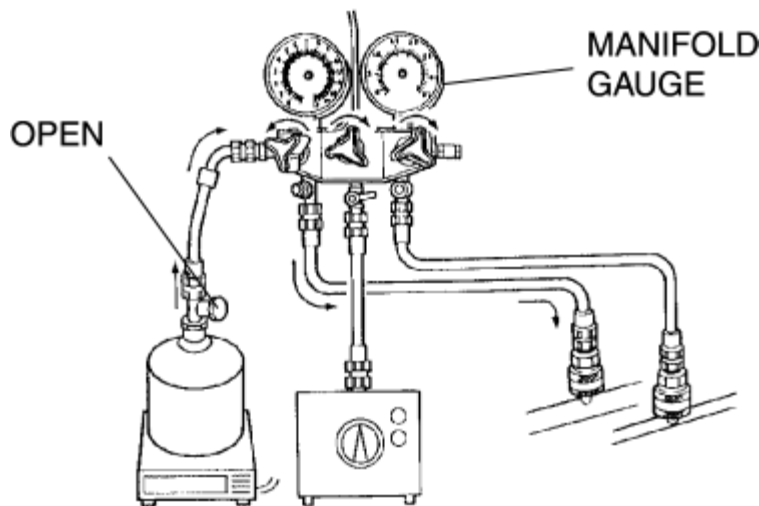


WARNING:

- If charging the system with refrigerant by service cans or refrigerant tank, running the engine with the high-pressure side valve open is dangerous. Pressure within the service cans or refrigerant tank will increase and they could explode, scattering metal fragments and liquid refrigerant that can seriously injure you. Therefore, do not open the high-pressure side valve while the engine is running.

20. Start the engine and actuate the A/C compressor.

21. Open the low-pressure side valve of the manifold gauge and charge with refrigerant until the weight of the refrigerant tank has decreased **430 g {15.2 oz}** from the amount in Step 13.



22. Close the low-pressure side valve of the manifold gauge and the valve of the refrigerant tank.

23. Stop the engine and A/C compressor.

24. Inspect for leakage using a gas leak tester.

- If there is no leakage, go to Step 26.
- If leakage is found at a loose joint, tighten the joint, then go to next step.

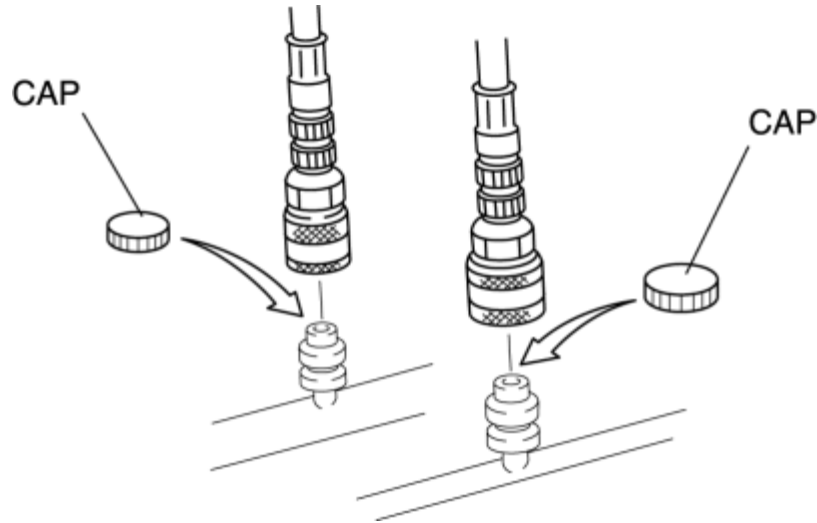
25. Inspect for leakage again.

If there is still leakage after tightening the joint, go to next step.

- If there is still leakage at the same joint, discharge the refrigerant and then repair the joint. Repeat the charging procedure from Step 7.

26. Remove the manifold gauge set.

27. Install the caps to the charging valves.



[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

[< Previous](#) [Next >](#)

2011 - RX-8 - HVAC

REFRIGERANT RECOVERY

WARNING:

- Avoid breathing air conditioning refrigerant or lubricant vapor. Exposure may irritate eyes, nose and throat. Also, due to environmental concerns, use service equipment certified to meet the requirements of SAE J2210 (R-134a recycling equipment) when draining R-134a from the air conditioning system. If accidental system discharge occurs, ventilate work area before resuming service.
1. Connect an R-134a recovery/recycling/recharging device to the vehicle and follow the device manufacturer's instructions.

[< Previous](#) [Next >](#)

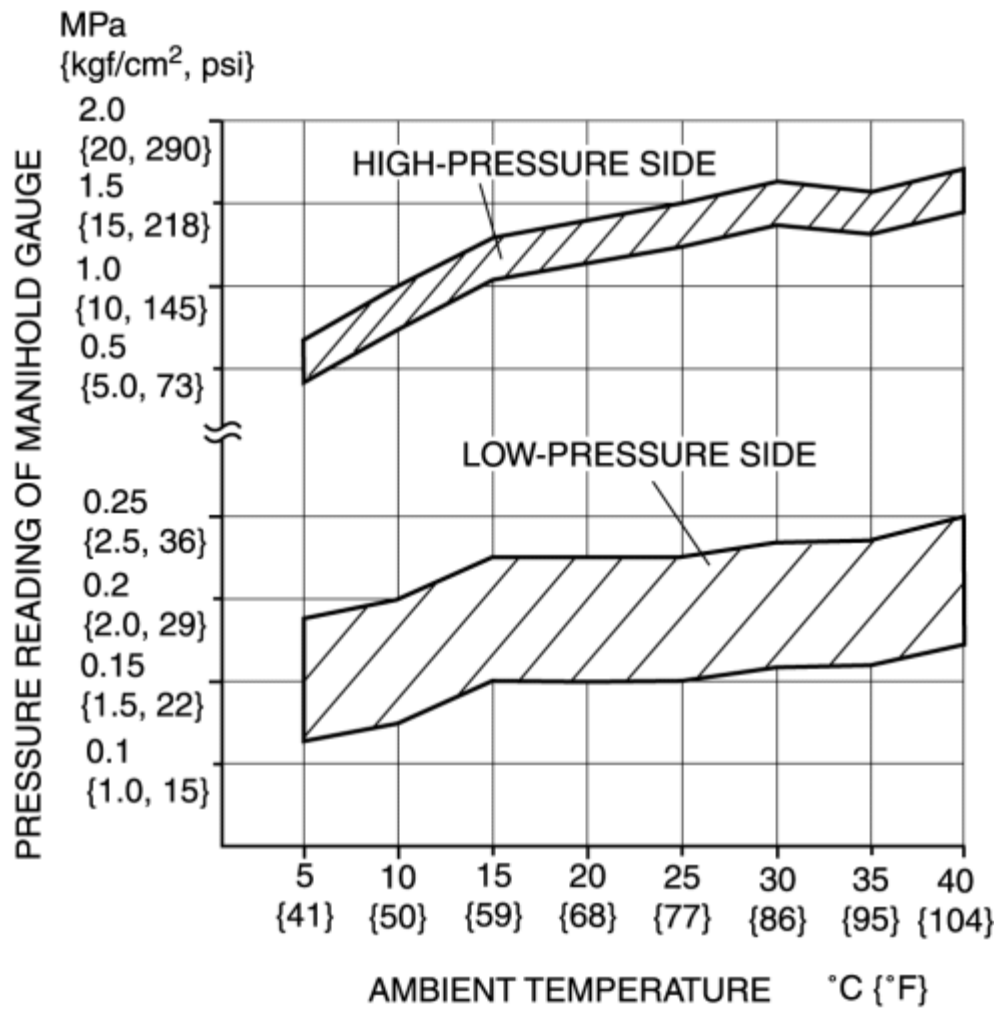
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - HVAC

REFRIGERANT PRESSURE CHECK

1. Connect the manifold gauge.
2. Start the engine and after it is warmed up, run it at a constant **1,500 rpm**.
3. Set the fan switch to 4th speed.
4. Turn the A/C switch on.
5. Set to RECIRCULATE mode.
6. Set the temperature control to MAX COLD.
7. Set to VENT mode.
8. Close all the doors and all the windows.
9. Measure the manifold gauge reading and ambient temperature.
10. Verify that the high and low pressure readings are within each shaded zone.
 - If there is any malfunction, inspect the refrigerant system according to the troubleshooting chart.



[< Previous](#) [Next >](#)

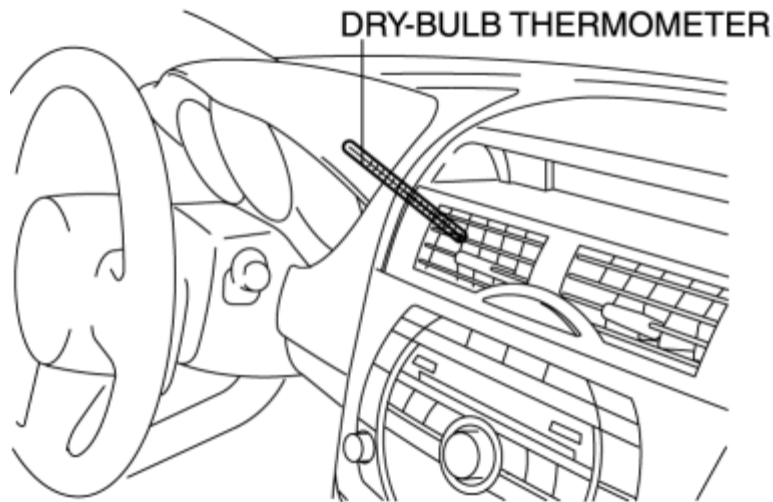
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - HVAC

REFRIGERANT SYSTEM PERFORMANCE TEST

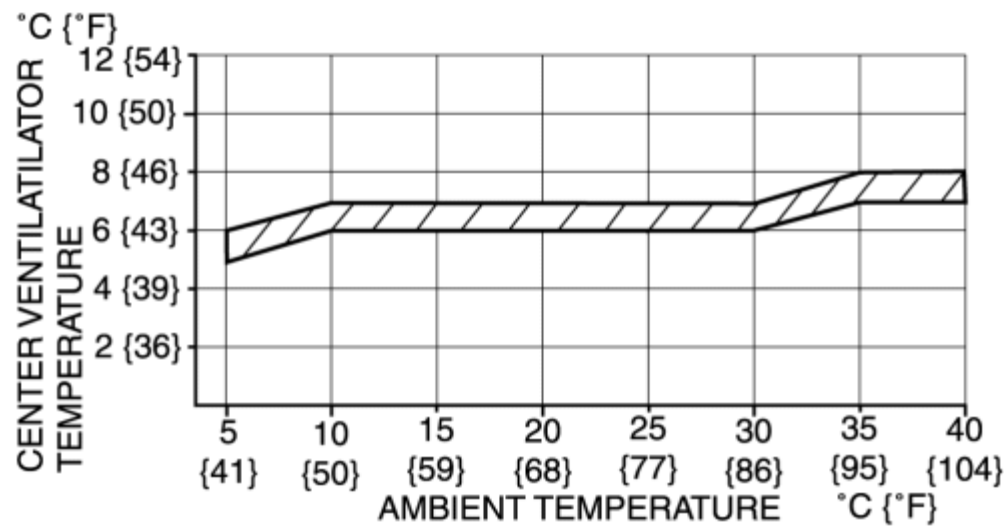
1. Inspect the refrigerant pressure. (See [REFRIGERANT PRESSURE CHECK](#).)
2. Place a dry-bulb thermometer in the driver-side center ventilator outlet.



3. Start the engine and after it is warmed up, run it at a constant **1,500 rpm**.
4. Set the fan switch to 4th speed.
5. Turn the A/C switch on.
6. Set to RECIRCULATE mode.
7. Set the temperature control to MAX COLD.
8. Set to VENT mode.
9. Close all the doors and windows.
10. Wait until the air conditioner output temperature stabilizes.

Stabilized condition

- The A/C compressor repeatedly turns on and off at regular intervals.
11. After the blower air is stabilized, read the dry-bulb thermometer.
 12. Verify the ambient temperature.
 13. Verify that the temperature reading is in the shaded zone.



- If there is any malfunction, inspect the refrigerant system according to the troubleshooting chart.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - HVAC

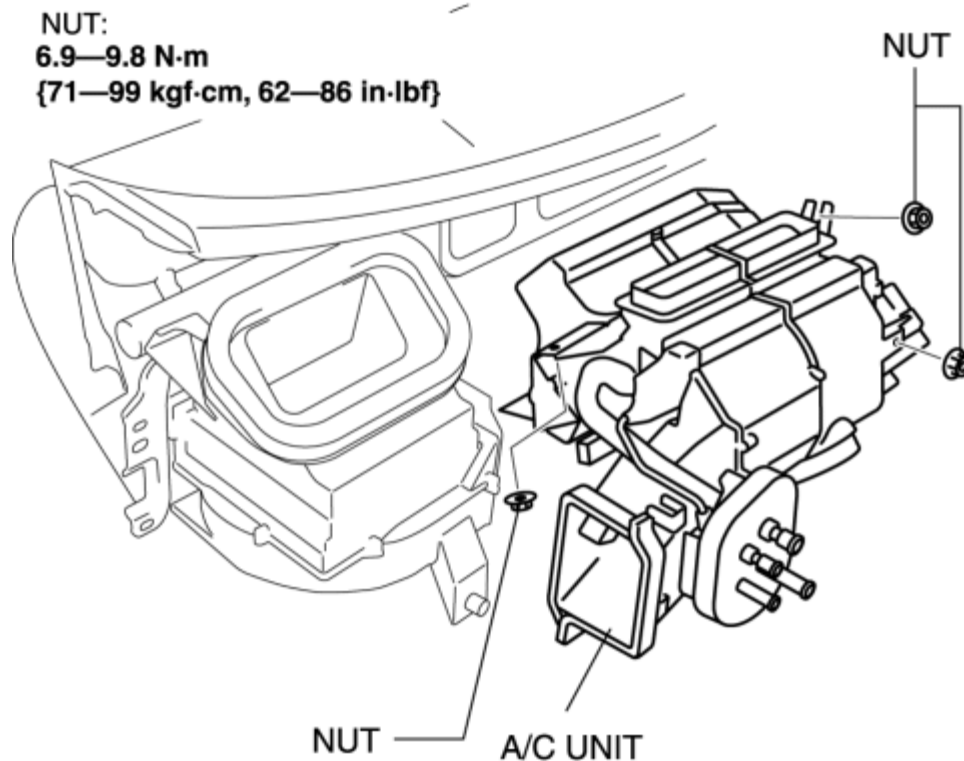
A/C UNIT REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Discharge the refrigerant from the system. (See [REFRIGERANT CHARGING](#).)
3. Drain the engine coolant. (See [ENGINE COOLANT REPLACEMENT \[13B-MSP\]](#).)
4. Remove the following parts:
 - a. Console (See [CONSOLE REMOVAL/INSTALLATION](#).)
 - b. Ashtray
 - c. Glove compartment (See [GLOVE COMPARTMENT REMOVAL/INSTALLATION](#).)
 - d. Side panel (See [SIDE PANEL REMOVAL/INSTALLATION](#).)
 - e. Lower panel (See [LOWER PANEL REMOVAL/INSTALLATION](#).)
 - f. Column cover (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
 - g. Center panel unit (See [CENTER PANEL UNIT REMOVAL/INSTALLATION](#).)
 - h. Steering shaft installation nuts (See [STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION](#).)
 - i. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION](#).)
 - j. A/C amplifier (See [A/C AMPLIFIER REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\]](#).) (See [A/C AMPLIFIER REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\]](#).)
 - k. TCM (AT) (See [TCM REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)
 - l. Auto light/wiper control module (See [AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION](#).)
 - m. Door lock control module (See [DOOR LOCK CONTROL MODULE REMOVAL/INSTALLATION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#).)
 - n. Dashboard (See [DASHBOARD REMOVAL/INSTALLATION](#).)

CAUTION:

- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise or other malfunction could occur. Always plug open fittings immediately after removing any refrigeration cycle parts.

5. Remove the A/C unit as shown in the figure.
6. Install in the reverse order of removal.



7. Inspect for engine coolant leakage. (See [ENGINE COOLANT LEAKAGE INSPECTION \[13B-MSP\]](#).)
8. Perform the refrigerant system performance test. (See [REFRIGERANT SYSTEM PERFORMANCE TEST](#).)

A/C Unit Installation Note

1. When installing a new A/C unit or evaporator, add compressor oil to the refrigerant cycle.

Supplemental amount (approx. quantity)

- 20 ml {20 cc, 0.7 fl oz}

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - HVAC

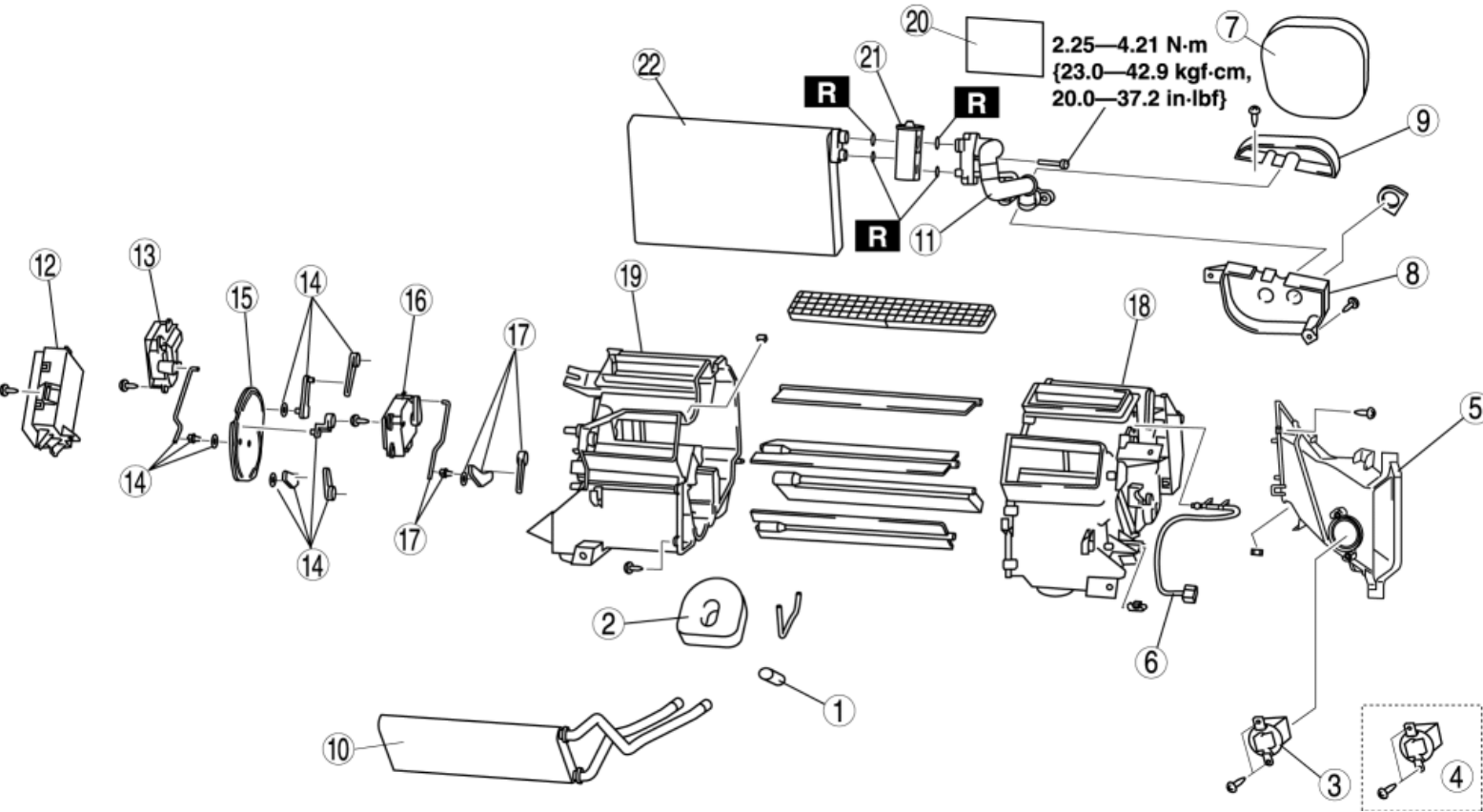
A/C UNIT DISASSEMBLY/ASSEMBLY

1. Disassemble in the order indicated in the table.

CAUTION:

- If a non-specified grease is used, it may result in abnormal noise or improper operation of the links. Apply only the specified grease to each link.

2. Assemble in the reverse order of disassembly.



1	Drain hose
2	Polyurethane foam (1)
3	Power transistor (Full-auto air conditioner)
4	Resistor (Manual air conditioner)
5	Air duct
6	Evaporator temperature sensor

	(See Evaporator Temperature Sensor Disassembly Note.)
	(See Evaporator Temperature Sensor Assembly Note.)
7	Polyurethane foam (2)
8	Bracket (1)
9	Bracket (2)
10	Heater core
11	Evaporator pipe
12	A/C amplifier
13	Airflow mode actuator
14	Airflow mode link set
15	Airflow mode main link
16	Air mix actuator
17	Air mix link set
18	A/C case (1)
19	A/C case (2)
20	Adhesive polyurethane
21	Expansion valve
22	Evaporator

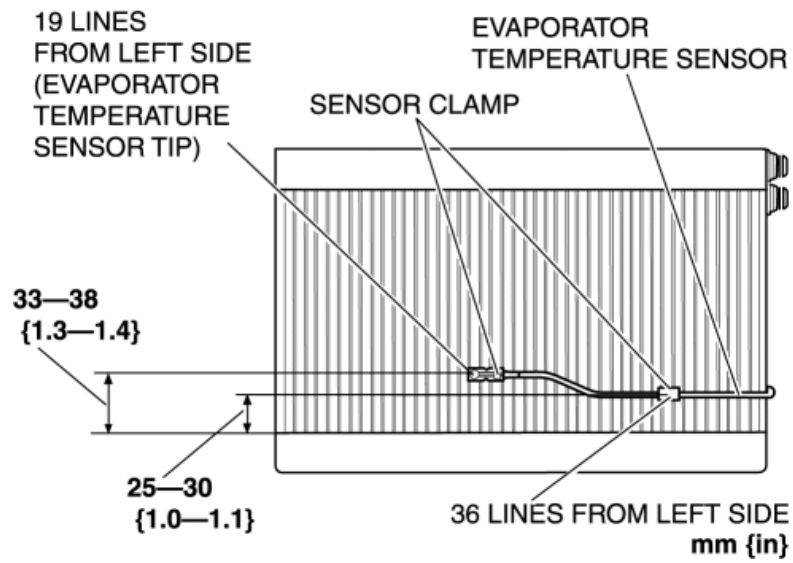
Evaporator Temperature Sensor Disassembly Note

1. Mark the installation positions (2 locations) for the sensor clamps used to install the evaporator temperature sensor to the evaporator, and the position for the tip of the evaporator temperature sensor.
2. Remove the evaporator temperature sensor.

Evaporator Temperature Sensor Assembly Note

When evaporator is replaced

1. Assemble the evaporator temperature sensor as shown in the figure.



When evaporator is not replaced

1. Install the evaporator temperature sensor by aligning it with the positions marked prior to removal.

[< Previous](#) [Next >](#)

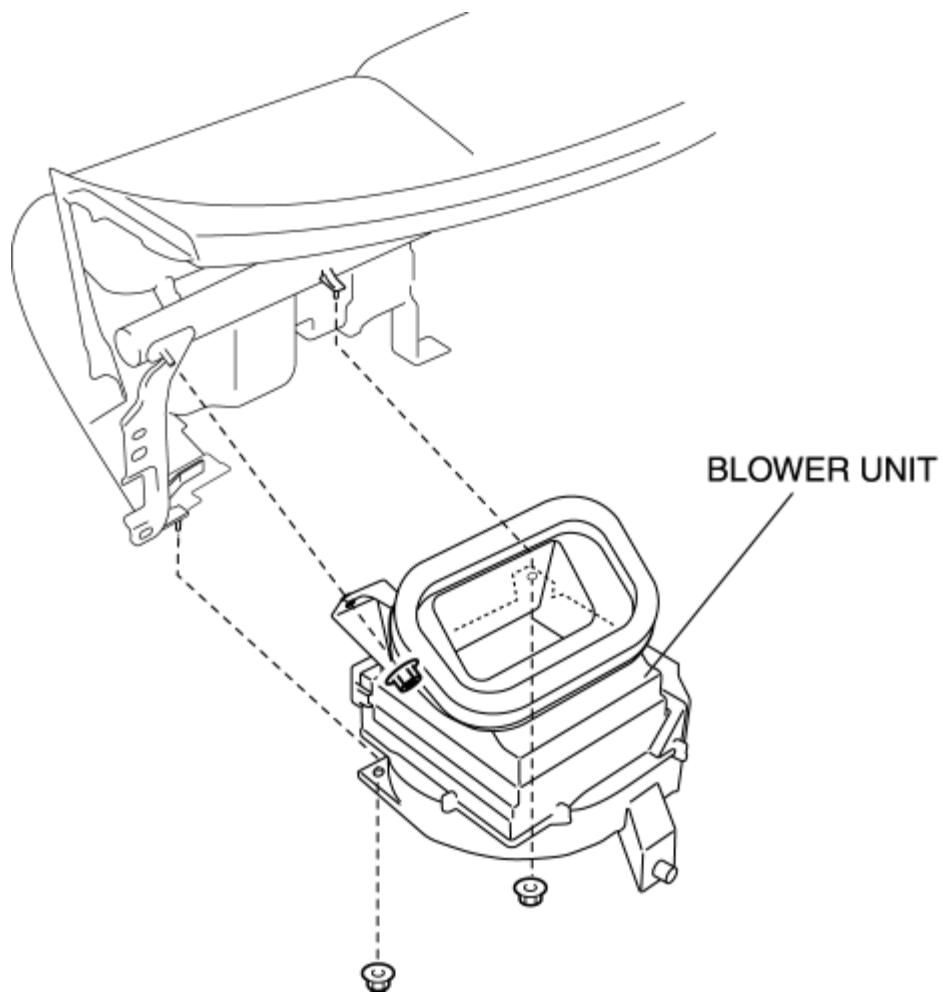
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

BLOWER UNIT REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Console (See [CONSOLE REMOVAL/INSTALLATION](#).)
 - b. Ashtray
 - c. Glove compartment (See [GLOVE COMPARTMENT REMOVAL/INSTALLATION](#).)
 - d. Side panel (See [SIDE PANEL REMOVAL/INSTALLATION](#).)
 - e. Lower panel (See [LOWER PANEL REMOVAL/INSTALLATION](#).)
 - f. Column cover (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
 - g. Center panel unit (See [CENTER PANEL UNIT REMOVAL/INSTALLATION](#).)
 - h. Steering shaft installation nuts (See [STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION](#).)
 - i. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION](#).)
 - j. A/C amplifier (See [A/C AMPLIFIER REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\]](#).) (See [A/C AMPLIFIER REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\]](#).)
 - k. TCM (AT) (See [TCM REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)
 - l. Auto light/wiper control module (See [AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION](#).)
 - m. Door lock control module (See [DOOR LOCK CONTROL MODULE REMOVAL/INSTALLATION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#).)
 - n. Dashboard (See [DASHBOARD REMOVAL/INSTALLATION](#).)
3. Remove the blower unit as shown in the figure.



4. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

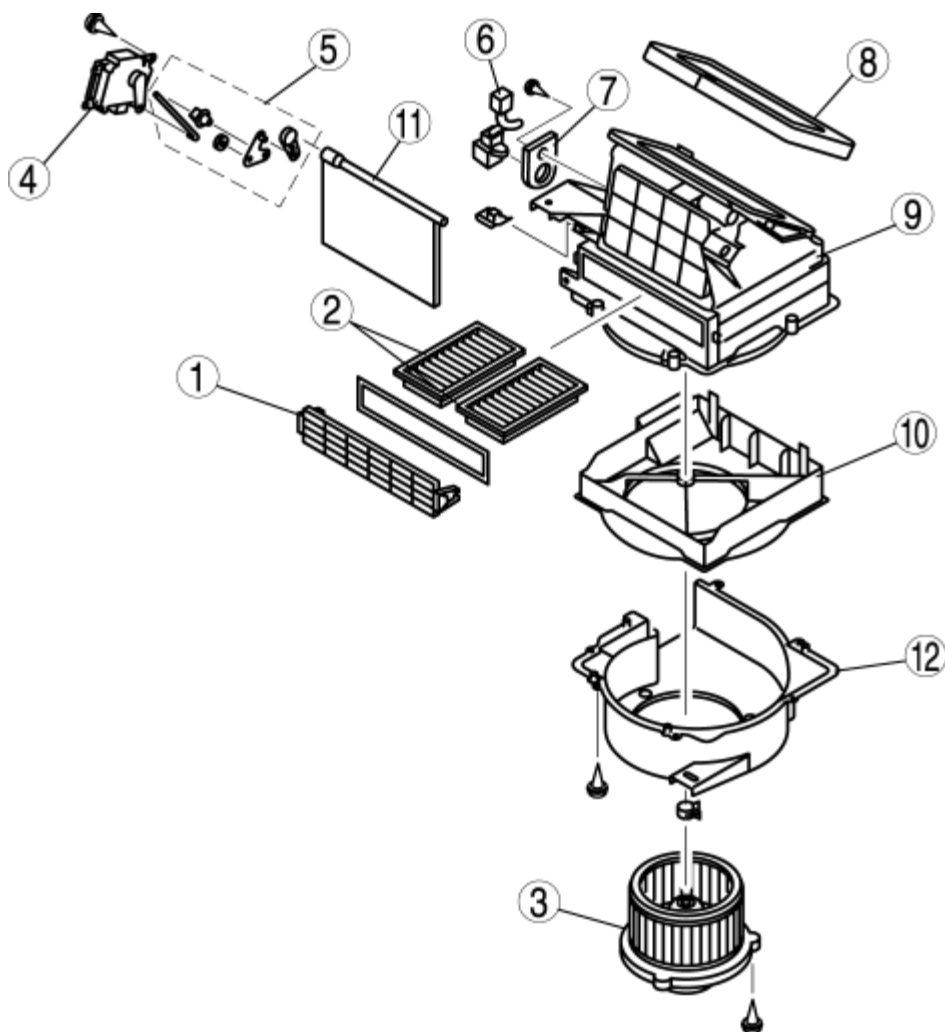
2011 - RX-8 - HVAC

BLOWER UNIT DISASSEMBLY/ASSEMBLY

1. Disassemble in the order indicated in the table.

CAUTION:

- If a non-specified grease is used, it may result in abnormal noise or improper operation of the links. Apply only the specified grease to each link.



1	Air filter cover
2	Air filter

3	Blower motor
4	Air intake actuator
5	Air intake link
6	Harness
7	Bracket
8	Adhesive polyurethane
9	Blower case (1)
10	Plate
11	Air intake door
12	Blower case (2)

2. Assemble in the reverse order of disassembly.

[< Previous](#) [Next >](#)

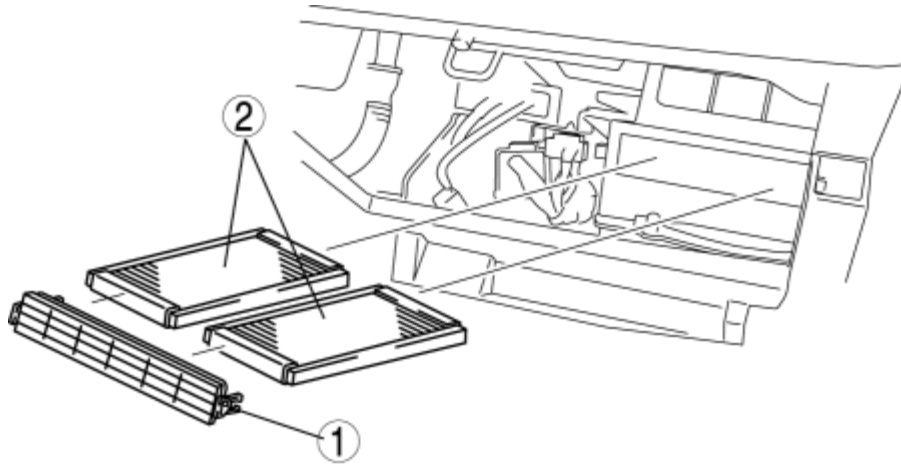
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

AIR FILTER REMOVAL/INSTALLATION

1. Remove the glove compartment. (See [GLOVE COMPARTMENT REMOVAL/INSTALLATION](#).)
2. Remove in the order indicated in the table.



1	Air filter cover
2	Air filter

3. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

2011 - RX-8 - HVAC

AIR FILTER INSPECTION

1. Verify that there is no damage, excessive dirt or abnormal odor on the air filter.
 - If there is any malfunction, replace the air filter.

NOTE:

- The air filter cannot be reused by cleaning it with water or compressed air.

[< Previous](#) [Next >](#)

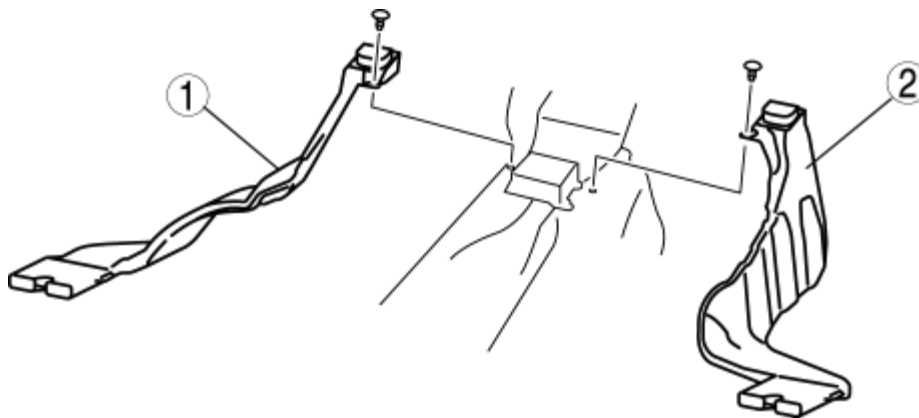
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

REAR HEAT DUCT REMOVAL/INSTALLATION

1. Remove the following parts:
 - a. Front seat (See [FRONT SEAT REMOVAL/INSTALLATION.](#))
 - b. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - c. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
 - d. Ashtray illumination bulb (See [ASHTRAY ILLUMINATION BULB REMOVAL/INSTALLATION.](#))
 - e. Console (See [CONSOLE REMOVAL/INSTALLATION.](#))
 - f. Front side trim (See [FRONT SIDE TRIM REMOVAL/INSTALLATION.](#))
 - g. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
 - h. Seat belt rail (See [FRONT SEAT BELT REMOVAL/INSTALLATION.](#))
 - i. Floor covering (See [FLOOR COVERING REMOVAL/INSTALLATION.](#))
2. Remove in the order indicated in the table.



1	Rear heat duct (LH)
2	Rear heat duct (RH)

3. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

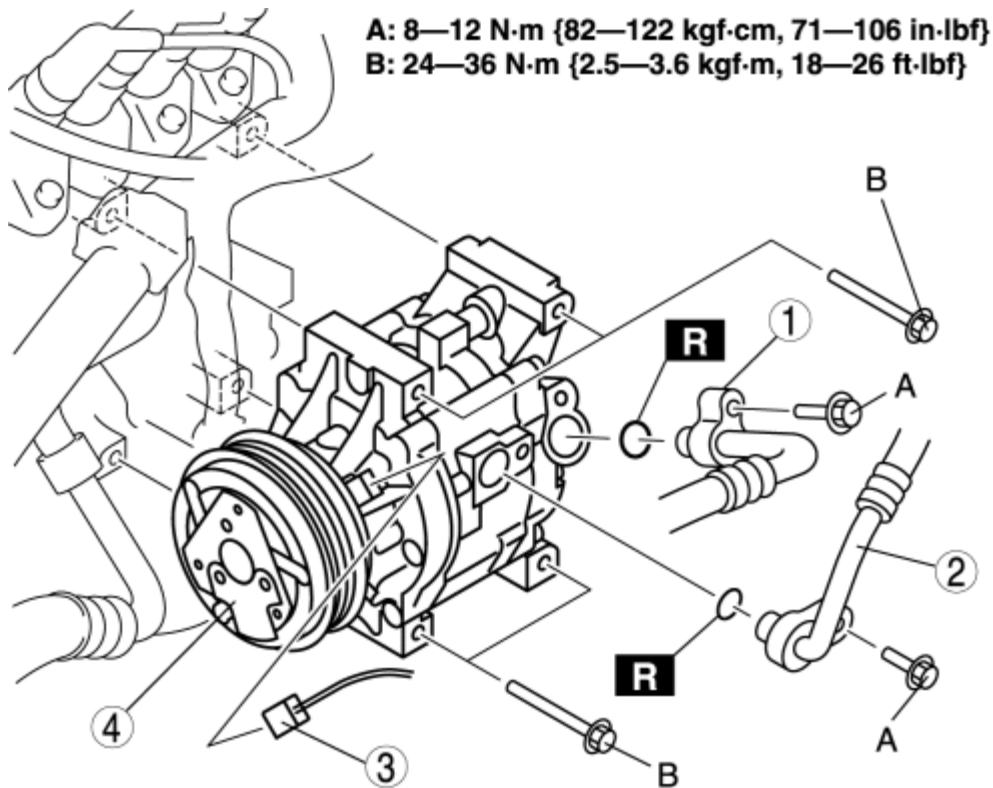
2011 - RX-8 - HVAC

A/C COMPRESSOR REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Discharge the refrigerant from the system. (See [REFRIGERANT CHARGING](#).)
3. Remove the fresh-air duct and air cleaner. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
4. Remove the drive belt. (See [DRIVE BELT REPLACEMENT \[13B-MSP\]](#).)
5. Do not allow remaining compressor oil in the A/C compressor and pipes to spill, and remove in the order indicated in the table.

CAUTION:

- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise or other malfunction could occur. Always plug open fittings immediately after removing any refrigeration cycle parts.



1	Cooler hose (HI) (See REFRIGERANT LINE REMOVAL/INSTALLATION.)
2	Cooler hose (LO) (See REFRIGERANT LINE REMOVAL/INSTALLATION.)
3	A/C compressor connector
4	A/C compressor (See A/C Compressor Installation Note.)

6. Install in the reverse order of removal.

7. Perform the refrigerant system performance test. (See [REFRIGERANT SYSTEM PERFORMANCE TEST.](#))

A/C Compressor Installation Note

CAUTION:

- Due to the high moisture-absorption characteristics of the compressor oil, it may absorb moisture if left over a long period of time thereby negatively affecting A/C operation. Drain the compressor oil and refill within 10 min. of each other.
1. Rotate new A/C compressor shaft six to eight revolutions while collecting refrigerant oil in a clean measuring device. Use this refrigerant oil to refill new compressor. Do not allow refrigerant oil to become contaminated.
 2. Rotate old A/C compressor shaft six to eight revolutions while collecting refrigerant oil in a separate, clean measuring device.
 3. Compare those oil amounts. The amount of the oil drained from the new A/C compressor should be greater than the old one.
 4. Pour the same amount oil of drained from the old A/C compressor back into the new A/C compressor.

A/C compressor oil type

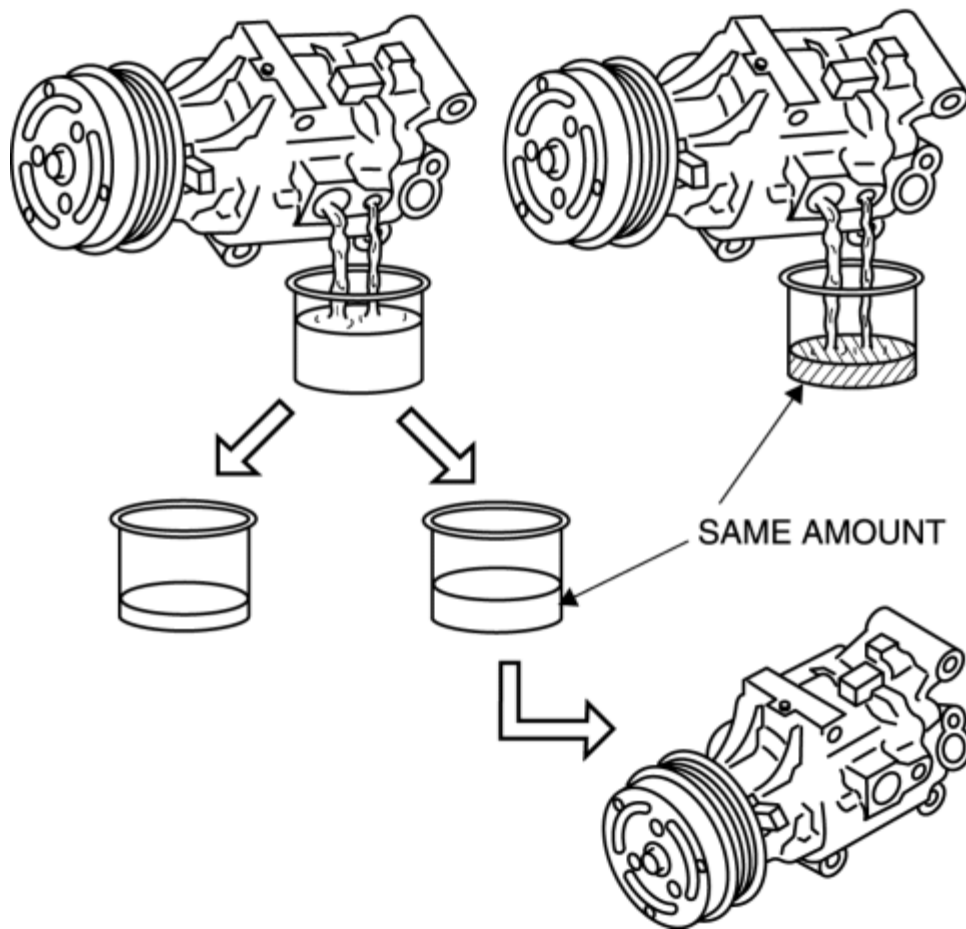
- DENSO OIL8

A/C compressor oil sealed volume (approx. quantity)

- 60 ml {60 cc, 2.03 fl oz}

NEW A/C COMPRESSOR

OLD A/C COMPRESSOR



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

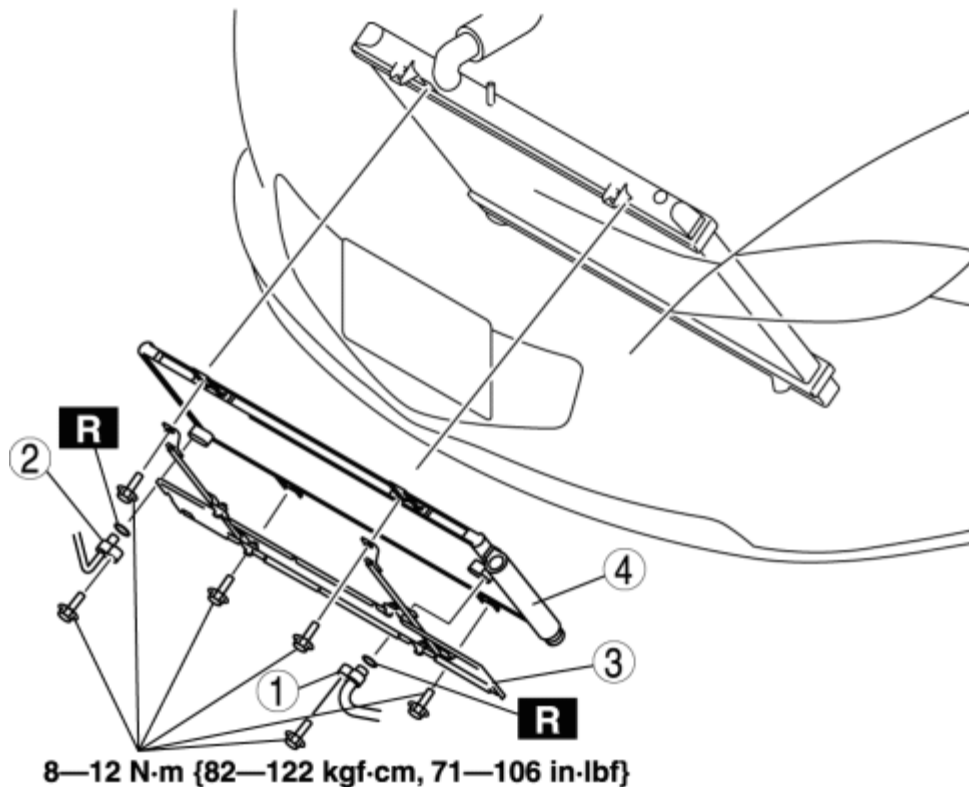
2011 - RX-8 - HVAC

CONDENSER REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Discharge the refrigerant from the system. (See [REFRIGERANT CHARGING](#).)
3. Remove the aerodynamic under cover. (See [AERODYNAMIC UNDER COVER REMOVAL/INSTALLATION](#).)
4. Do not allow remaining compressor oil in the condenser and pipes to spill, and remove in the order indicated in the table.

CAUTION:

- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise or other malfunction could occur. Always plug open fittings immediately after removing any refrigeration cycle parts.



1 Cooler hose (HI)

	(See REFRIGERANT LINE REMOVAL/INSTALLATION.)
2	Cooler pipe No.1 (See REFRIGERANT LINE REMOVAL/INSTALLATION.)
3	Condenser protector
4	Condenser (See Condenser Installation Note.)

5. Install in the reverse order of removal.

6. Perform the refrigerant system performance test. (See [REFRIGERANT SYSTEM PERFORMANCE TEST.](#))

Condenser Installation Note

1. When replacing the new condenser, add compressor oil to the refrigeration cycle.

Supplemental amount (approx. quantity)

- 20 ml {20 cc, 0.7 fl oz}

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - HVAC

CONDENSER INSPECTION

1. Inspect the condenser for cracks, damage, and oil leakage.
 - If there is any malfunction, replace the condenser.
2. Visually inspect the fins for clogging of foreign material.
 - If any fins are clogged, remove the foreign material.
3. Visually inspect the fins for bending.
 - If there is any bending, use the end of a flathead screwdriver to straighten fins.

[< Previous](#) [Next >](#)

2011 - RX-8 - HVAC

EVAPORATOR INSPECTION

1. Inspect the evaporator for damage, cracks and oil leakage.
 - If there is any malfunction, replace the evaporator.
2. Visually inspect the fins for bending.
 - If there is any bending, use the end of a flathead screwdriver to straighten the fins.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

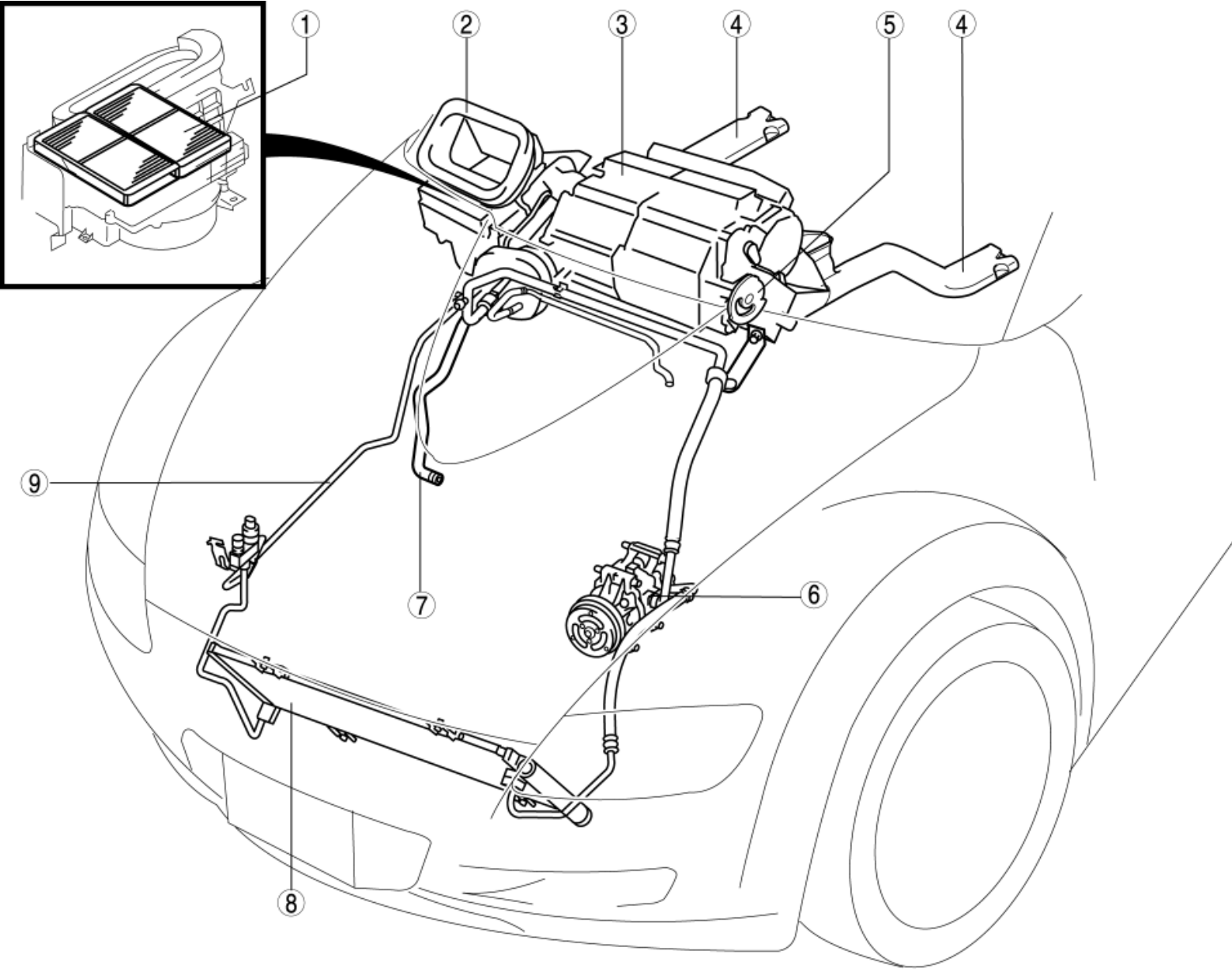
2011 - RX-8 - HVAC

HEATER CORE INSPECTION

1. Inspect the heater core for damage, cracks and water leakage.
 - If there is any malfunction, replace the heater core.
2. Visually inspect the fins for bending.
 - If there is any bending, use the end of a flathead screwdriver to straighten the fins.
3. Visually inspect the heater hose for deformation.
 - Repair with pliers if there is deformation. If there is any malfunction, replace the heater core.

2011 - RX-8 - HVAC

HVAC BASIC SYSTEM LOCATION INDEX



1	Air filter (See AIR FILTER REMOVAL/INSTALLATION.) (See AIR FILTER INSPECTION.)
2	Blower unit (See BLOWER UNIT REMOVAL/INSTALLATION.)

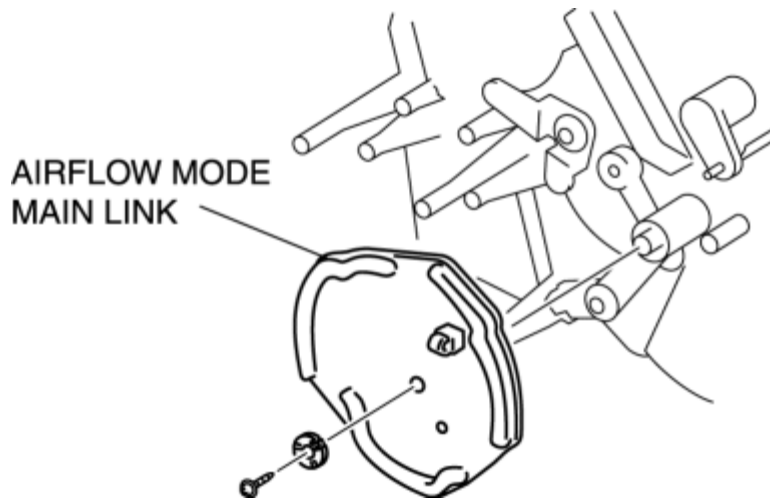
	(See BLOWER UNIT DISASSEMBLY/ASSEMBLY.)
3	A/C unit (See A/C UNIT REMOVAL/INSTALLATION.) (See A/C UNIT DISASSEMBLY/ASSEMBLY.) (See EVAPORATOR INSPECTION.) (See HEATER CORE INSPECTION.)
4	Rear heat duct (See REAR HEAT DUCT REMOVAL/INSTALLATION.)
5	Airflow mode main link (See AIRFLOW MODE MAIN LINK REMOVAL/INSTALLATION.)
6	A/C compressor (See A/C COMPRESSOR REMOVAL/INSTALLATION.)
7	Heater hose
8	Condenser (See CONDENSER REMOVAL/INSTALLATION.) (See CONDENSER INSPECTION.)
9	Refrigerant line (See REFRIGERANT LINE REMOVAL/INSTALLATION.)

[< Previous](#) [Next >](#)

2011 - RX-8 - HVAC

AIRFLOW MODE MAIN LINK REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the A/C amplifier. (See [A/C AMPLIFIER REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\]](#).) (See [A/C AMPLIFIER REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\]](#).)
3. Remove the airflow mode link set.
4. Remove the airflow mode main link as shown in the figure.

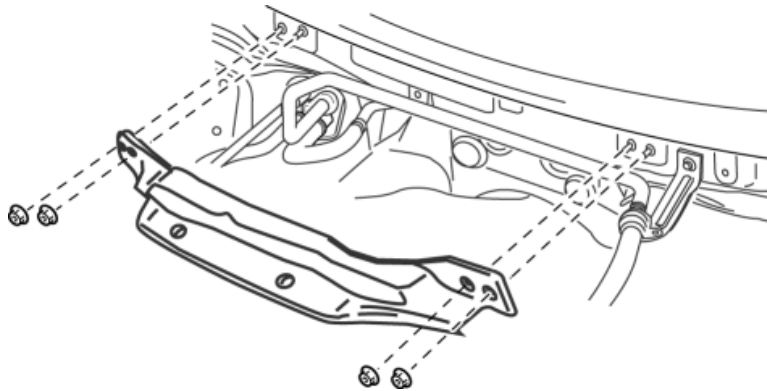


5. Install in the reverse order of removal.

2011 - RX-8 - HVAC

REFRIGERANT LINE REMOVAL/INSTALLATION

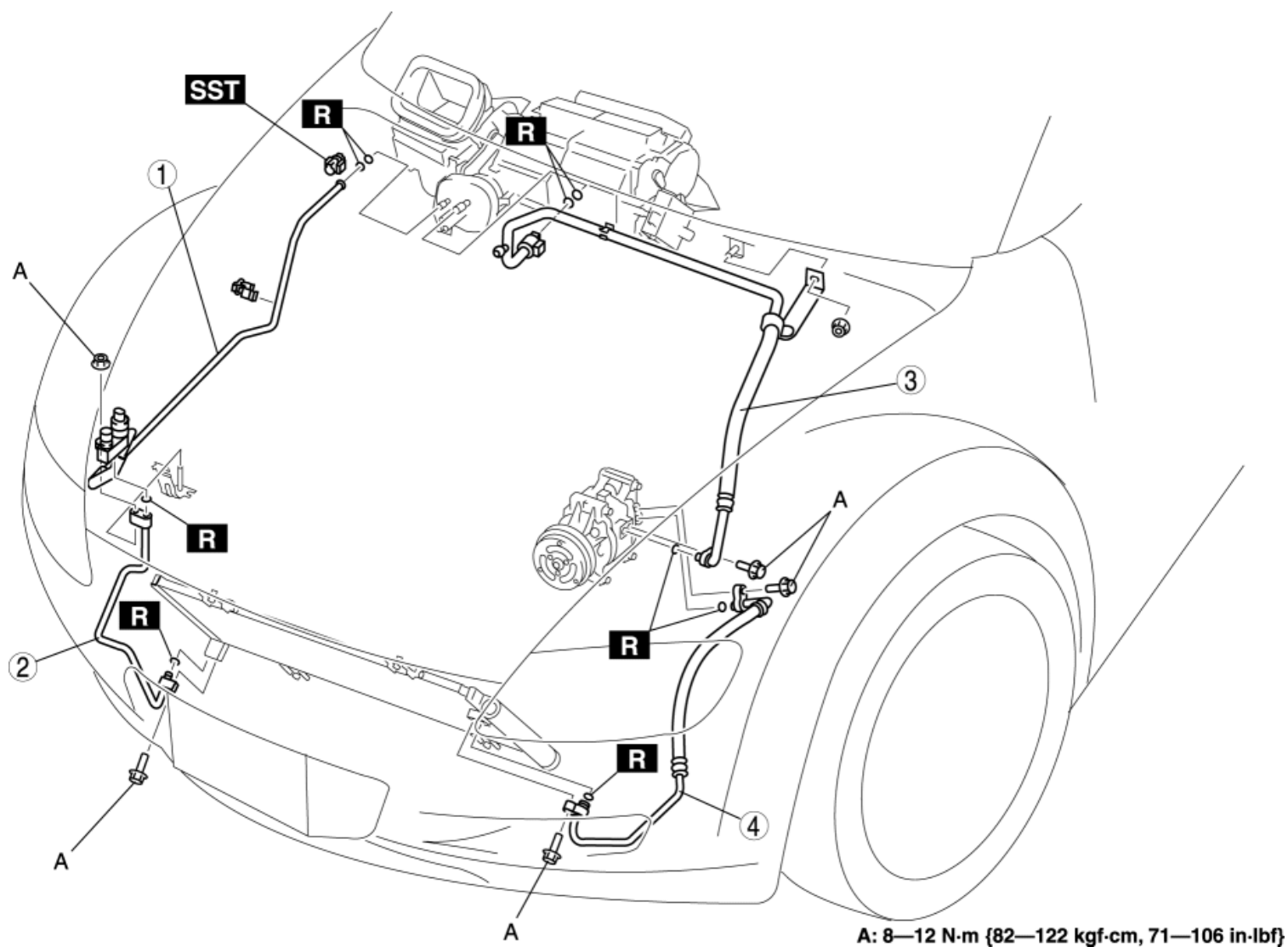
1. Remove the battery.
2. Remove the fresh-air duct and air cleaner. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\].](#))
3. Remove the windshield washer tank. (See [WINDSHIELD WASHER TANK REMOVAL/INSTALLATION.](#))
4. Remove the PCM. (See [PCM REMOVAL/INSTALLATION \[13B-MSP\].](#))
5. Remove the EPS control module. (See [EPS CONTROL MODULE REMOVAL/INSTALLATION.](#))
6. Remove the front suspension tower bar. (MT) (See [FRONT SUSPENSION TOWER BAR REMOVAL/INSTALLATION \[MT\].](#))
7. Remove the bracket.



8. Discharge the refrigerant from the system. (See [REFRIGERANT CHARGING.](#))
9. Remove the front bumper. (See [FRONT BUMPER REMOVAL/INSTALLATION.](#))
10. Do not allow remaining compressor oil in the piping and connecting parts to spill, and remove in the order indicated in the table.

CAUTION:

- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise or other malfunction could occur. Always plug open fittings immediately after removing any refrigeration cycle parts.



1 Cooler pipe No.2
 (See [Refrigerant Line Removal Note.](#))
 (See [Refrigerant Line Installation Note.](#))

2 Cooler pipe No.1
 (See [Refrigerant Line Removal Note.](#))
 (See [Refrigerant Line Installation Note.](#))

3 Cooler hose (LO)
 (See [Refrigerant Line Removal Note.](#))
 (See [Refrigerant Line Installation Note.](#))

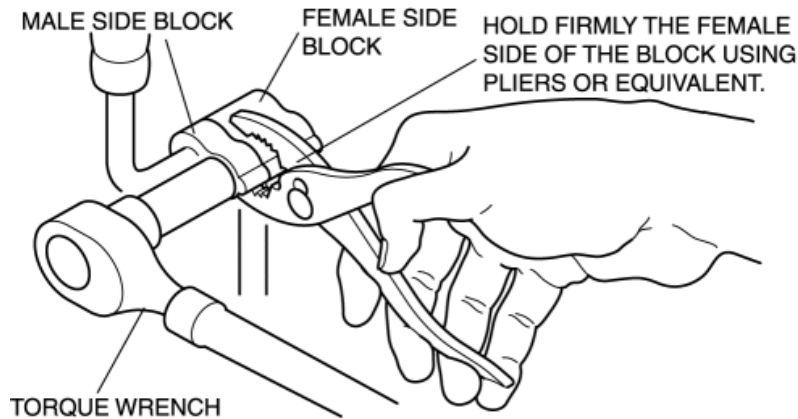
4 Cooler hose (HI)
 (See [Refrigerant Line Removal Note.](#))
 (See [Refrigerant Line Installation Note.](#))

11. Install in the reverse order of removal.
12. Perform the refrigerant system performance test. (See [REFRIGERANT SYSTEM PERFORMANCE TEST](#).)

Refrigerant Line Removal Note

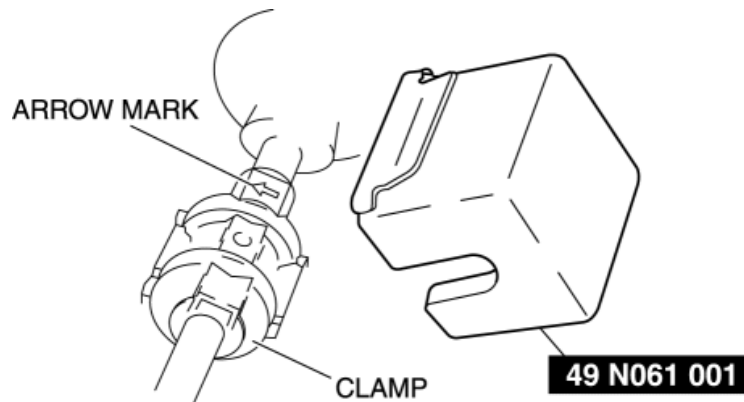
Block joint type

1. Disconnect the block joint type pipes by grasping the female side of the block with pliers or similar tool and holding firmly, and then remove the connection bolt or nut.



Quick joint type

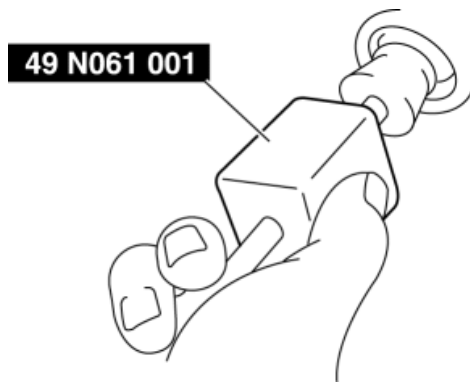
1. Install the **SST (49 N061 001)** to the arrow side of the clamp.



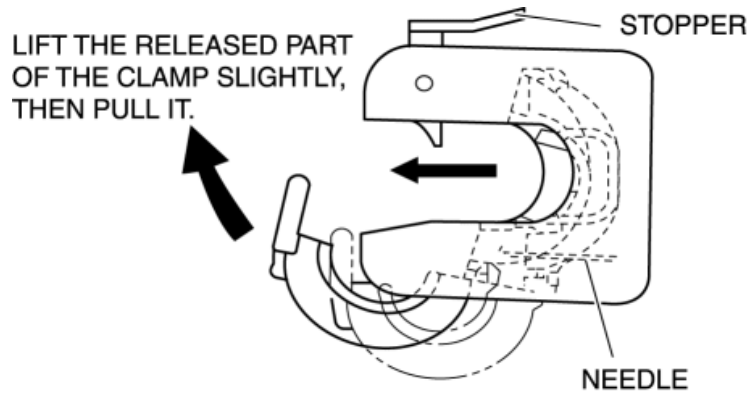
2. Push the **SST (49 N061 001)** with your thumb until it snaps into the clamp.

CAUTION:

- Excessive force to the SST (49 N061 001) may damage the clamp. Be careful not to press hard when inserting the SST (49 N061 001) into the clamp.



3. Raise the stopper, and pull the **SST (49 N061 001)** from the piping.



4. Remove the **SST (49 N061 001)** from the clamp.

CAUTION:

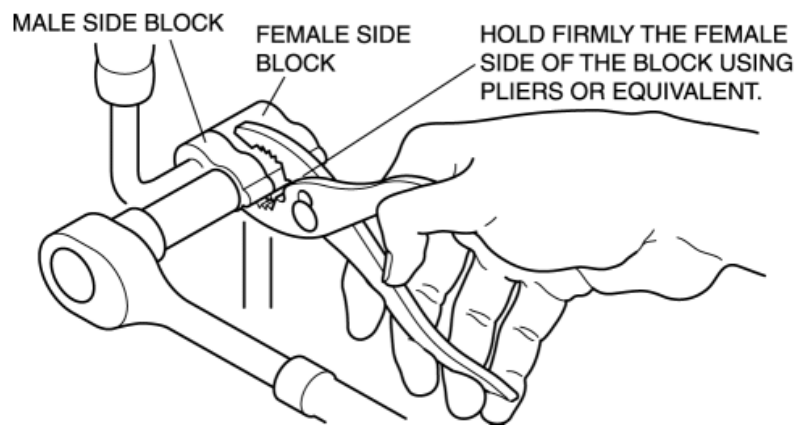
- Be careful not to bend the SST (49 N061 001) needle when removing the clamp. If the SST (49 N061 001) needle is bent, the clamp can not be opened.

Refrigerant Line Installation Note

1. Apply compressor oil to the O-ring joints.
2. Tighten the piping joints.

Block joint type

1. Temporarily tighten the joint bolt by hand.
2. Connect the block joint type pipes by grasping the female side of the block with pliers or similar tool and holding firmly, and then tighten the connection bolt or nut with a torque wrench.



[< Previous](#) [Next >](#)

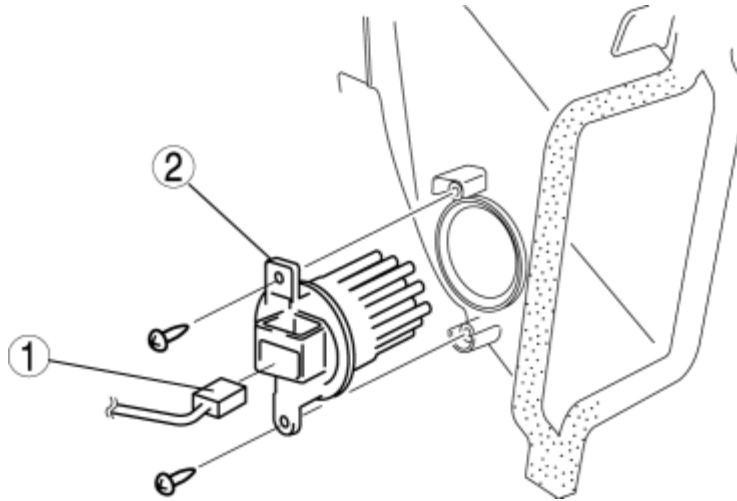
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

POWER TRANSISTOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Remove the glove compartment. (See [GLOVE COMPARTMENT REMOVAL/INSTALLATION](#).)
3. Remove in the order indicated in the table.



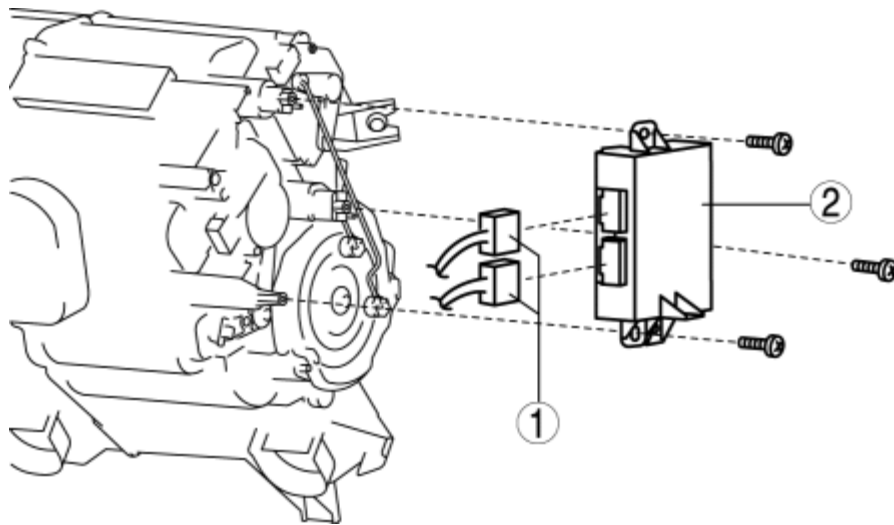
1	Power transistor connector
2	Power transistor

4. Install in the reverse order of removal.

2011 - RX-8 - HVAC

A/C AMPLIFIER REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Remove the TCM. (AT) (See [TCM REMOVAL/INSTALLATION \[SJ6A-EL\].](#))
3. Remove in the order indicated in the table.



1	A/C amplifier connector
2	A/C amplifier

4. Install in the reverse order of removal.

2011 - RX-8 - HVAC

A/C AMPLIFIER INSPECTION [FULL-AUTO AIR CONDITIONER]

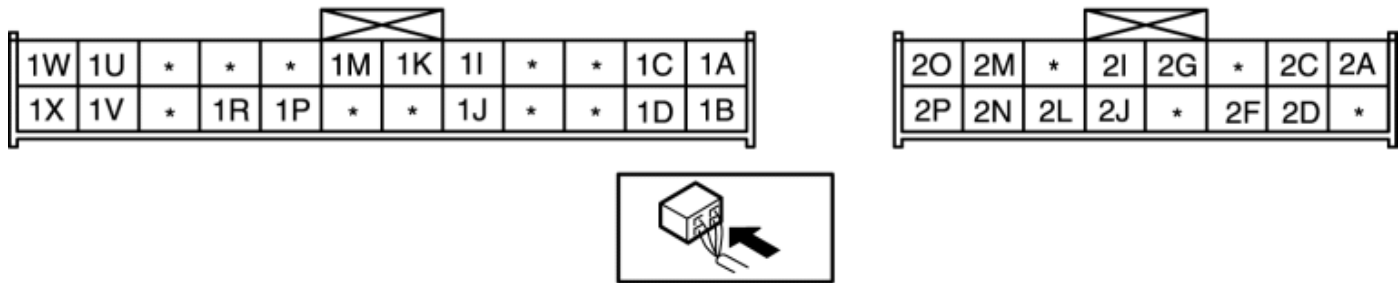
1. Turn the ignition switch to the ON position.
2. Connect the negative (-) lead of the tester to body ground.
3. By inserting the positive (+) lead of the tester into each A/C amplifier terminal, measure the voltage according to the terminal voltage table.
- If there is any malfunction, inspect the parts under “Inspection item(s)”.

▪ If the parts under “Inspection item(s)” are found to be normal (except for terminal 1A), replace the A/C amplifier.

▪ For terminal 1A, first try replacing the power transistor. If there is still any malfunction, replace the A/C amplifier.

Terminal Voltage Table (Reference)

A/C AMPLIFIER CONNECTOR



Terminal	Signal name	Connected to	Measurement condition	Voltage (V)	Inspection item(s)
1A	Blower motor feedback	<div><div>• Blower motor</div><div>• Power</div></div>	Fan stopped	B+	<div>1. Related wiring harness</div> <div>2. Power transistor</div> <div>3. Blower motor</div> <div>4. Blower relay</div>
			Fan: manual LO	9.0	

		transistor	Fan: manual HI	0.7	5. A/C 7.5 A fuse 6. HEATER 40 A fuse 7. Power transistor replacement
1B	Blower fan speed control	Power transistor	Fan stopped	1.0 or less	<ul style="list-style-type: none"> A/C amplifier: terminal voltage (1A)
			Fan: manual LO	2.1	
			Fan: manual HI	2.9	
1C	Version signal	Body ground	Under any condition	1.0 or less	<ul style="list-style-type: none"> Related wiring harness
1D	Version signal	Body ground	Under any condition	1.0 or less	<ul style="list-style-type: none"> Related wiring harness
1E	—	—	—	—	—
1F	—	—	—	—	—
1G	—	—	—	—	—
1H	—	—	—	—	—
1I	Motor operation	Air intake actuator	Switched to RECIRCULATE	1.0 or less	<ul style="list-style-type: none"> Related wiring harness Air intake actuator
			Switched to FRESH	12	
1J	Motor operation	Air intake actuator	Switched to RECIRCULATE	12	<ul style="list-style-type: none"> Related wiring harness Air intake actuator
			Switched to FRESH	1.0 or less	
			Rear window defroster switch OFF	B+	<ul style="list-style-type: none"> Related wiring harness Rear window

1K	Rear window defroster operation	Rear window defroster relay			defroster relay
			Rear window defroster switch ON	1.0 or less	<ul style="list-style-type: none"> A/C amplifier: terminal voltage (2C, 2L)
1L	—	—	—	—	—
1M	A/C	Refrigerant pressure switch	Fan stopped	B+	<ul style="list-style-type: none"> Related wiring harness Refrigerant pressure switch PCM: terminal voltage (1AU)
			Fan switch: ON and A/C switch: ON	1.0 or less	<ul style="list-style-type: none"> A/C amplifier: terminal voltage (2C, 2L)
1N	—	—	—	—	—
1O	—	—	—	—	—
1P	Serial signal	Climate control unit	Terminal used for communication therefore determination based on terminal voltage inspection not possible. Only inspect for an open or short circuit in wiring harness between A/C amplifier terminal 1P and climate control unit terminal K.	—	<ul style="list-style-type: none"> Related wiring harness
1Q	—	—	—	—	—
1R	Serial signal	Climate control unit	Terminal used for communication therefore determination based on terminal voltage inspection not possible. Only inspect for an open or short circuit in wiring harness between	—	<ul style="list-style-type: none"> Related wiring harness

			A/C amplifier terminal 1R and climate control unit terminal I.		
1S	—	—	—	—	—
1T	—	—	—	—	—
1U	Motor operation	Air mix actuator	Moving towards COLD	1.0 or less	<ul style="list-style-type: none">• Related wiring harness• Air mix actuator
			Moving towards HOT	12	
1V	Motor operation	Air mix actuator	Moving towards COLD	12	<ul style="list-style-type: none">• Related wiring harness• Air mix actuator
			Moving towards HOT	1.0 or less	
1W	Motor operation	Airflow mode actuator	Switched to DEFROSTER	12	<ul style="list-style-type: none">• Related wiring harness• Airflow mode actuator
			Switched to VENT	1.0 or less	
1X	Motor operation	Airflow mode actuator	Switched to DEFROSTER	1.0 or less	<ul style="list-style-type: none">• Related wiring harness• Airflow mode actuator
			Switched to VENT	12	
2A	B+	ROOM 15 A fuse	Under any condition	B+	<ul style="list-style-type: none">• Related wiring harness• ROOM 15 A fuse
2B	—	—	—	—	—
2C	IG2	A/C 7.5 A fuse	IG SW ON	B+	<ul style="list-style-type: none">• Related wiring harness• A/C 7.5 A fuse
				1.0 or	<ul style="list-style-type: none">• Related

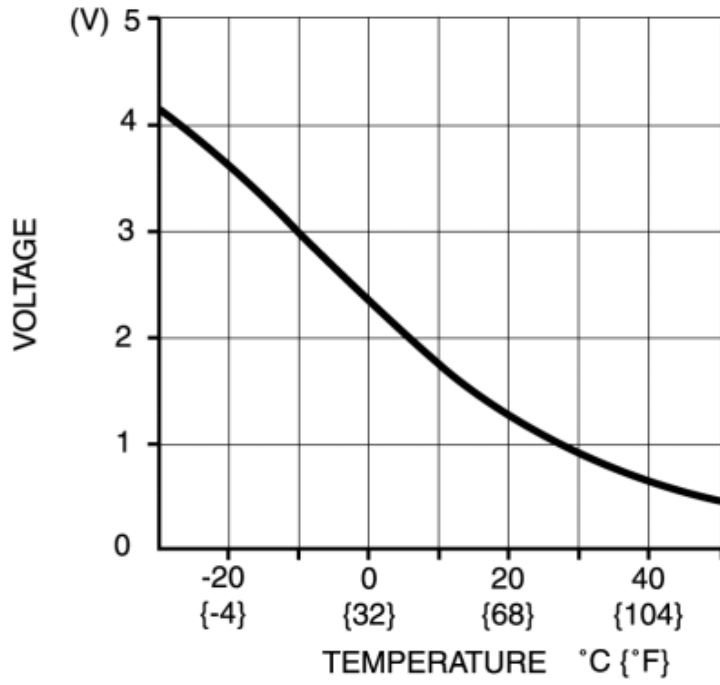
			IG SW LOCK	less	wiring harness
2D	Potentiometer input	Air mix actuator	Set temperature at MAX COLD	3.9	<ul style="list-style-type: none">Related wiring harnessAir mix actuatorA/C amplifier: terminal voltage (2P)
			Set temperature at MAX HOT	1.1	
2E	—	—	—	—	—
2F	Evaporator temperature sensor input	Evaporator temperature sensor	Compared with temperature detected by evaporator temperature sensor	Refer to graph 1	<ul style="list-style-type: none">Related wiring harnessEvaporator temperature sensorA/C amplifier: terminal voltage (2C, 2L)
2G	Potentiometer input	Airflow mode actuator	VENT	4.0	<ul style="list-style-type: none">Related wiring harnessAirflow mode actuatorA/C amplifier: terminal voltage (2P)
			BILEVEL	3.3	
			HEAT	2.6	
			HEAT/DEF	1.8	
			DEFROSTER	1.0	
2H	—	—	—	—	—
2I	Solar radiation sensor input	Solar radiation sensor	Natural sunlight shined directly on the solar radiation sensor	4.0	<ul style="list-style-type: none">Related wiring harnessA/C amplifier: terminal voltage (2P)Solar
			Blocking light to solar radiation sensor	1.0 or less	

					radiation sensor
2 J	Passenger compartment temperature sensor input	Passenger compartment temperature sensor	Compared with temperature detected by Passenger compartment temperature sensor	Refer to graph 3	<ul style="list-style-type: none">• Related wiring harness• Passenger compartment temperature sensor• A/C amplifier: terminal voltage (2C, 2L)
2K	—	—	—	—	—
2L	GND	Body ground	Under any condition	1.0 or less	<ul style="list-style-type: none">• Related wiring harness
2M	Ambient temperature sensor input	Ambient temperature sensor	Compared with temperature detected by ambient temperature sensor	Refer to graph 2	<ul style="list-style-type: none">• Related wiring harness• Ambient temperature sensor• A/C amplifier: terminal voltage (2C, 2L)
2N	Sensor GND	<ul style="list-style-type: none">• Ambient temperature sensor• Passenger compartment temperature sensor• Evaporator temperature sensor• Air mix actuator• Airflow mode actuator	Under any condition	1.0 or less	<ul style="list-style-type: none">• A/C amplifier: terminal voltage (2L)

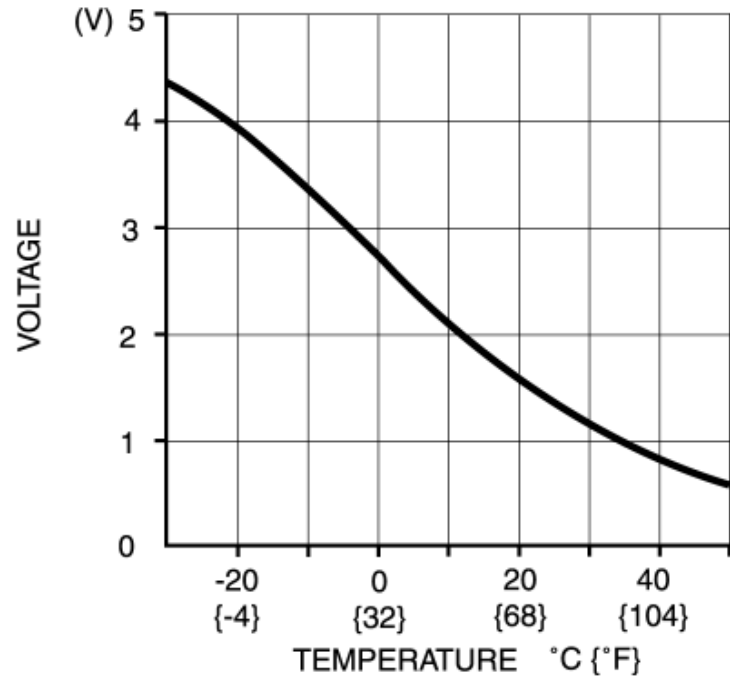
2O	ECT sensor input	PCM	Compared with temperature detected by ECT sensor	Refer to graph 4	<div>Related wiring harness</div> <ul style="list-style-type: none">ECT sensorA/C amplifier: terminal voltage (2C, 2L)
2P	+5 V	<ul style="list-style-type: none">Air mix actuatorAirflow mode actuatorSolar radiation sensor	IG SW ON	5.0	<ul style="list-style-type: none">Related wiring harnessAir mix actuatorAirflow mode actuatorSolar radiation sensorA/C amplifier: terminal voltage (2C, 2L)
			IG SW LOCK	1.0 or less	<ul style="list-style-type: none">A/C amplifier replacement

--	--

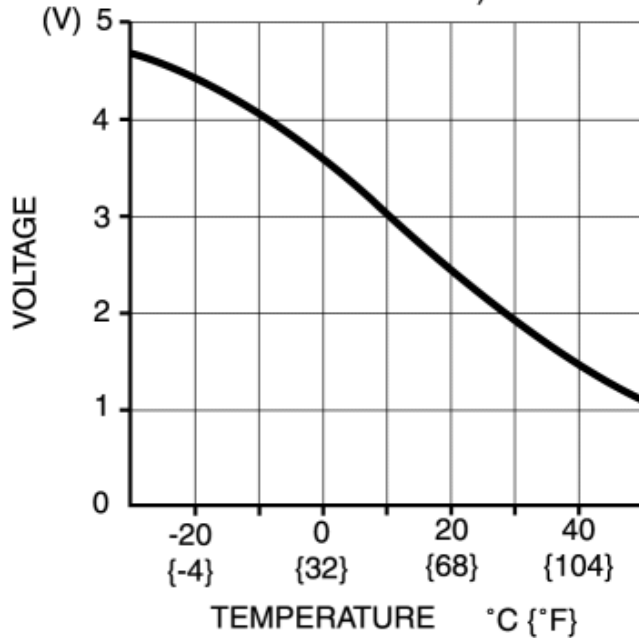
GRAPH 1 (EVAPORATOR TEMPERATURE SENSOR)



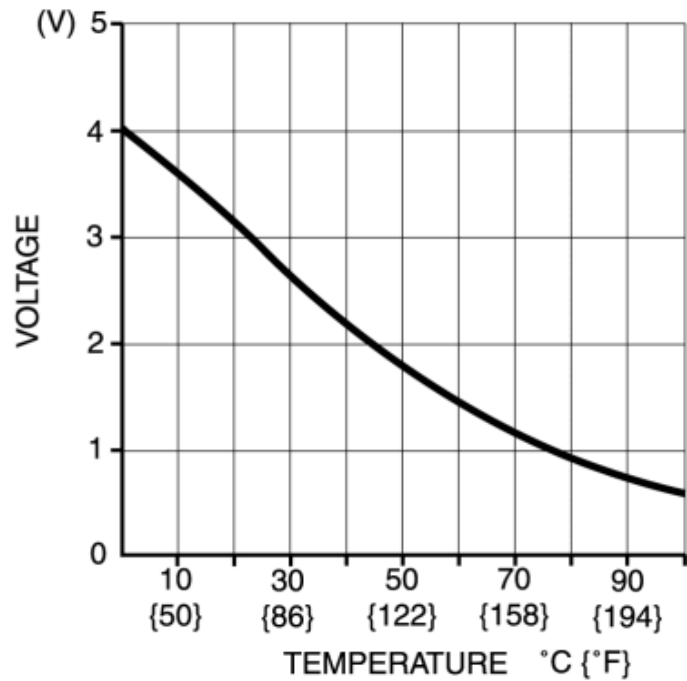
GRAPH 2 (AMBIENT TEMPERATURE SENSOR)



GRAPH 3 (PASSENGER COMPARTMENT TEMPERATURE SENSOR)



GRAPH 4 (ECT SENSOR)



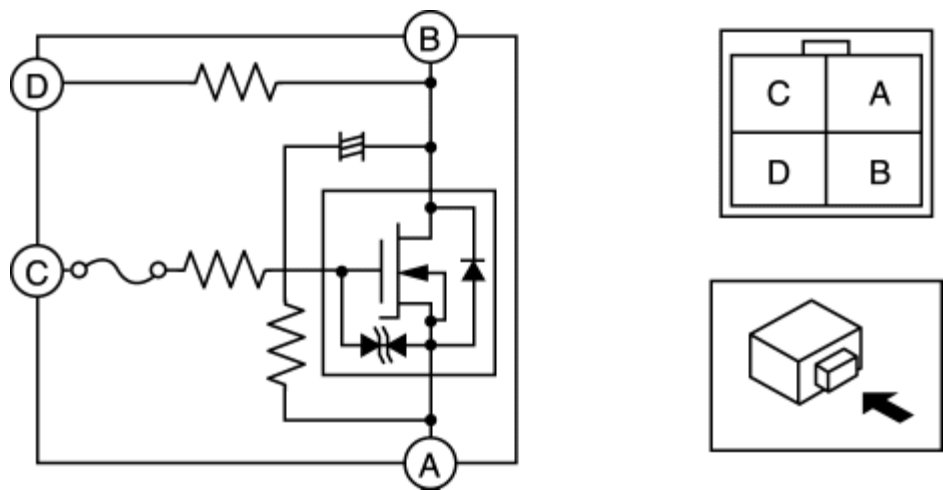
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - HVAC

POWER TRANSISTOR INSPECTION [FULL-AUTO AIR CONDITIONER]

1. Verify that the continuity between the power transistor terminals is as indicated in the table.
- If there is any malfunction, replace the power transistor.
 - If the blower motor operation is not normal even though no malfunction can be verified, inspect the A/C amplifier. (See [A/C AMPLIFIER INSPECTION \[FULL-AUTO AIR CONDITIONER\]](#).)



Tester lead		Resistance (kilohm)
+	-	
A	B	∞
A	C	11.0
A	D	∞
B	A	Continuity detected
B	C	Continuity detected

B	D	1.5
C	A	11.0
C	B	∞
C	D	∞
D	A	Continuity detected
D	B	1.5
D	C	Continuity detected

[< Previous](#) [Next >](#)

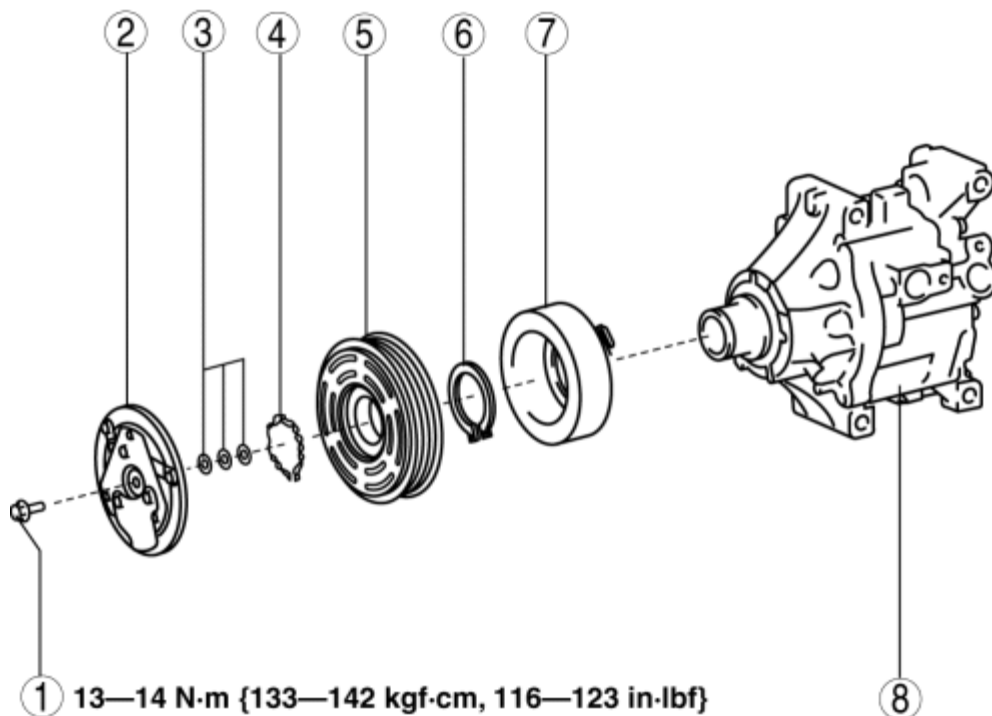
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

MAGNETIC CLUTCH DISASSEMBLY/ASSEMBLY [FULL-AUTO AIR CONDITIONER]

1. Disassemble in the order indicated in the table.



1 Bolt

(See [Bolt Removal/Installation Note.](#))

2 Pressure plate

3 Shim

(See [Shim Installation Note.](#))

4 Snap ring

(See [Snap Ring Removal/Installation Note.](#))

5 A/C compressor pulley

6	Snap ring
	(See Snap Ring Removal/Installation Note .)
7	Stator
8	A/C compressor body

2. Assemble in the reverse order of disassembly.

3. Adjust the magnetic clutch clearance. (See [MAGNETIC CLUTCH ADJUSTMENT \[FULL-AUTO AIR CONDITIONER\]](#).)

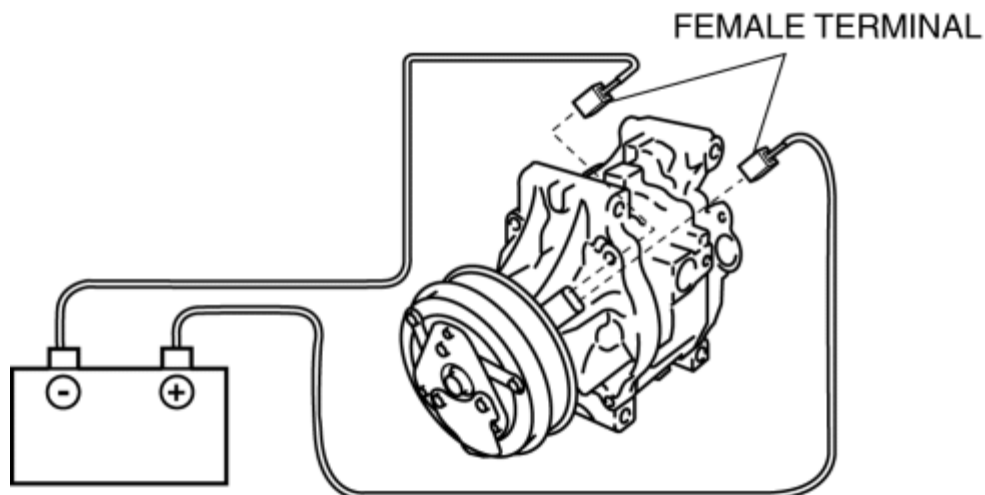
Bolt Removal/Installation Note

1. When removing or installing the bolt, lock the A/C compressor pulley against rotation using the following procedure.

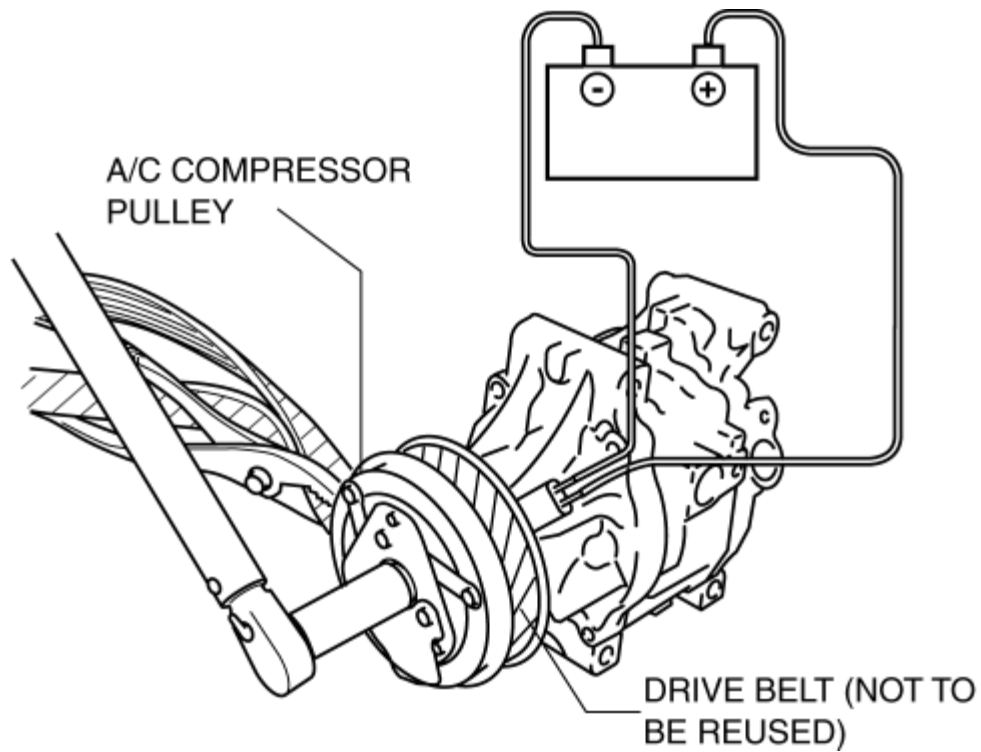
CAUTION:

- When connecting the positive battery cable to the magnetic clutch connector, use a cable with a female terminal of the correct size. Otherwise, load will be applied to the terminal, resulting in deformation or damage, and poor contact. In addition, the positive battery cable could disconnect from the connector resulting in a short circuit.

a. Apply battery positive voltage to the magnetic clutch terminal B and connect the magnetic clutch terminal A to the ground.



b. Wrap the drive belt, which is no longer of use, tightly around the A/C compressor pulley.



c. Hold the drive belt in place with pliers.

d. Remove/installation the bolt.

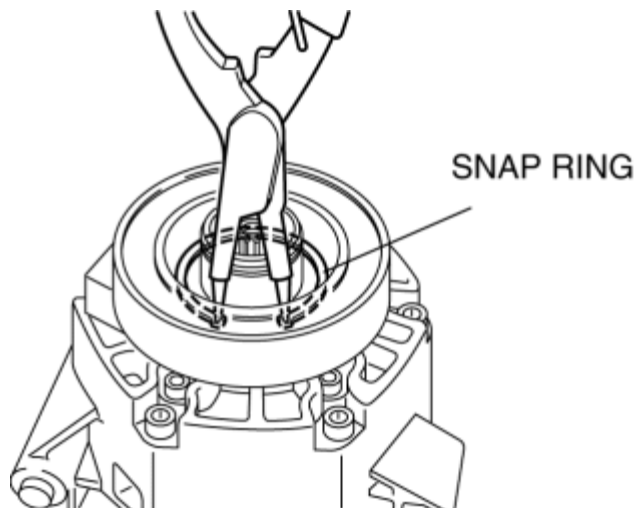
Tightening torque

- 13—14 N·m {133 —142 kgf·cm, 116—123 in·lbf}

2. When installing a new A/C compressor body, replace the recommended bolt.

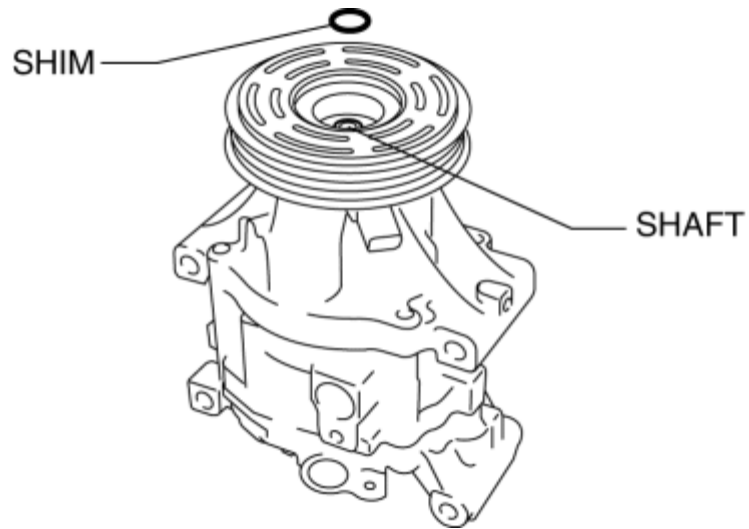
Snap Ring Removal/Installation Note

1. Remove/installation the snap ring using a snap ring pliers.



Shim Installation Note

1. First, insert the 1 mm {0.039 in} thick shim into the shaft.



[< Previous](#) [Next >](#)

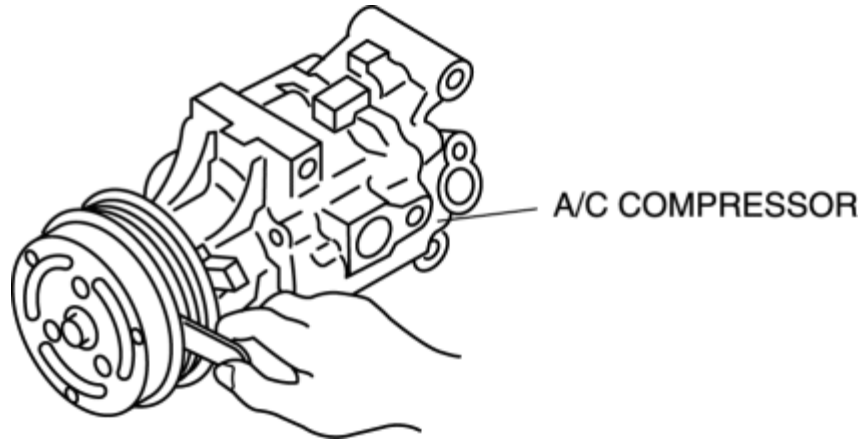
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - HVAC

MAGNETIC CLUTCH ADJUSTMENT [FULL-AUTO AIR CONDITIONER]

1. Measure the clearance around the entire circumference between the pressure plate and A/C compressor pulley using a feeler gauge.



2. Inspect the clearance.

- If not within the specification, adjust the clearance by changing the shim (**0.2 mm {0.008 in}, 0.5 mm {0.02 in}**) or the number of shims.

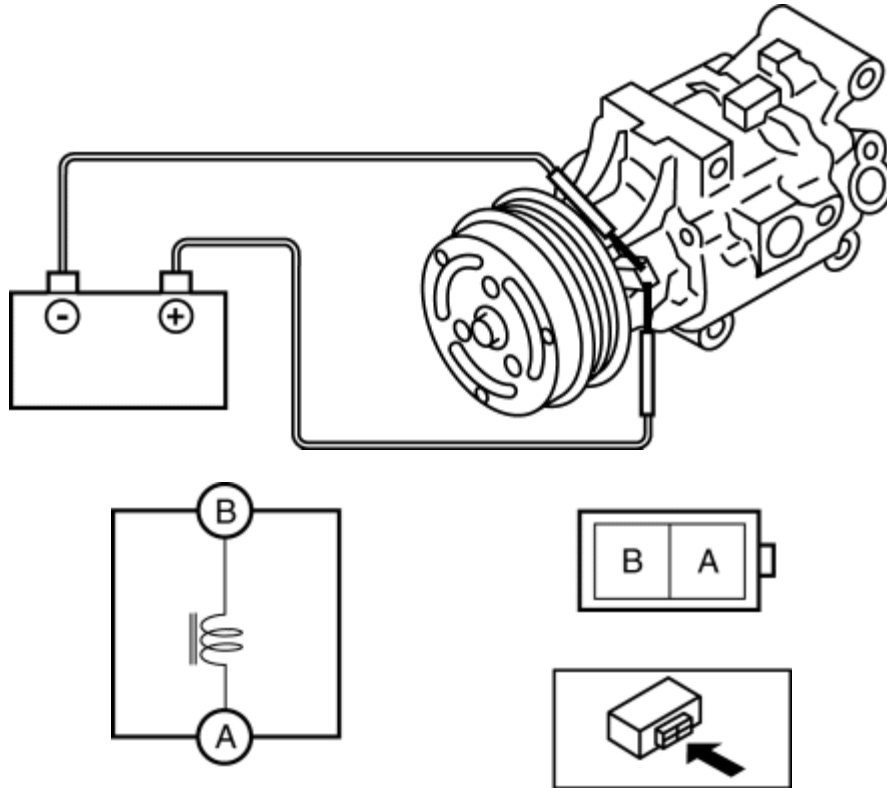
Magnetic clutch clearance

- 0.20—0.45 mm {0.008—0.017 in}

2011 - RX-8 - HVAC

MAGNETIC CLUTCH INSPECTION [FULL-AUTO AIR CONDITIONER]

1. Connect battery positive voltage to magnetic clutch terminal B and ground to terminal A.

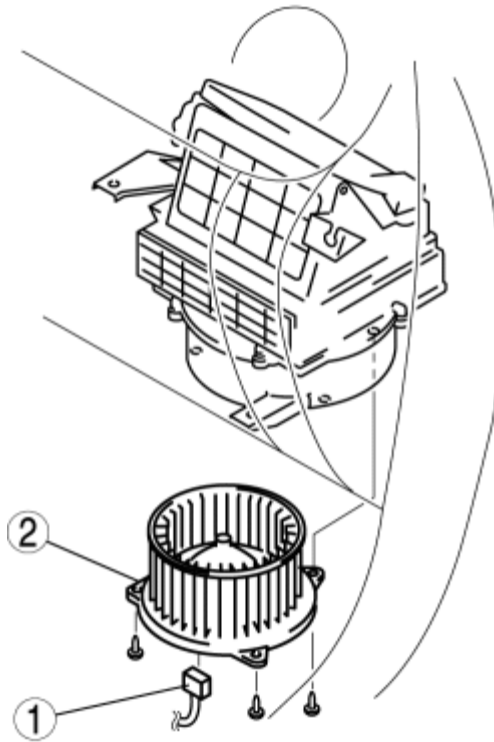


2. Verify that the magnetic clutch turns on.
 - If the magnetic clutch does not turn on, replace the magnetic clutch. (See [MAGNETIC CLUTCH DISASSEMBLY/ASSEMBLY \[FULL-AUTO AIR CONDITIONER\]](#).)

2011 - RX-8 - HVAC

BLOWER MOTOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Remove in the order indicated in the table.



1	Blower motor connector
2	Blower motor

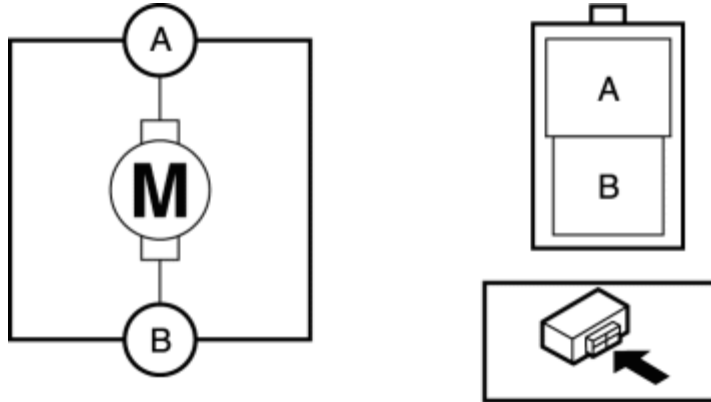
3. Install in the reverse order of removal.

2011 - RX-8 - HVAC

BLOWER MOTOR INSPECTION [FULL-AUTO AIR CONDITIONER]

1. Connect battery positive voltage to blower motor terminal A, ground to terminal B, and then verify that the blower motor operates smoothly.

- If the operation condition is not normal, replace the blower motor.



[< Previous](#) [Next >](#)

2011 - RX-8 - HVAC

EVAPORATOR TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

1. Remove the evaporator temperature sensor from the A/C unit. (See [A/C UNIT DISASSEMBLY/ASSEMBLY](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

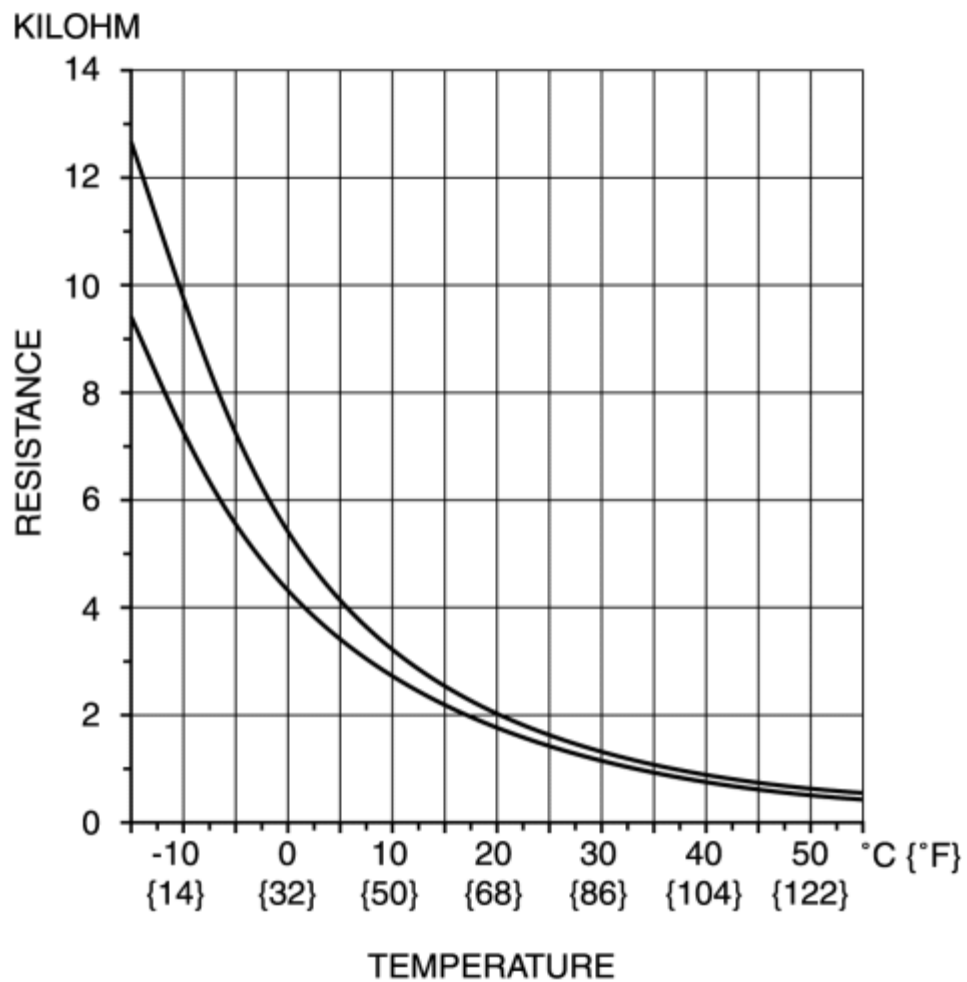
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - HVAC

EVAPORATOR TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER]

NOTE:

- Inspect the evaporator temperature sensor when it is installed to the A/C unit.
1. Set the fan switch to 4th speed.
 2. Set the temperature control to MAX COLD.
 3. Set the air intake mode to RECIRCULATE.
 4. Turn the A/C switch off.
 5. Close all of the doors and roll up all the windows.
 6. Wait for **5 min.**
 7. Disconnect the evaporator temperature sensor connector.
 8. Measure the temperature at the air intake.
 9. Measure the resistance between evaporator temperature sensor terminals.
 - If the characteristics of the evaporator temperature sensor are not as shown in the graph, replace the evaporator temperature sensor.



[< Previous](#) [Next >](#)

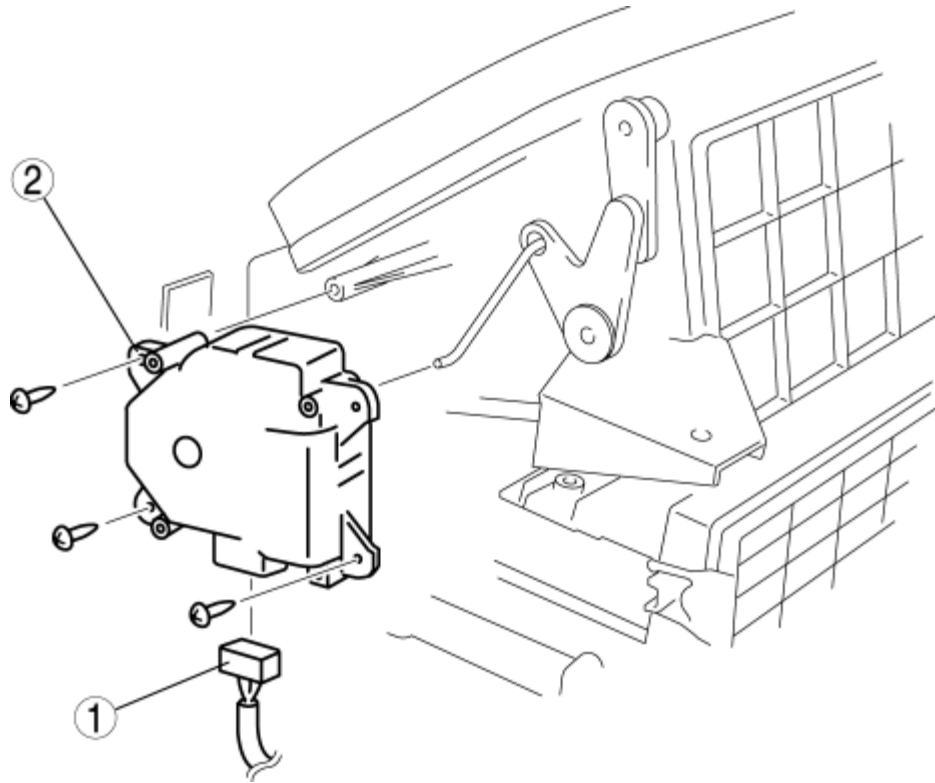
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - HVAC

AIR INTAKE ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Remove the glove compartment. (See [GLOVE COMPARTMENT REMOVAL/INSTALLATION](#).)
3. Remove the keyless control module. (See [KEYLESS CONTROL MODULE REMOVAL/INSTALLATION](#).)
4. Remove in the order indicated in the table.



1	Air intake actuator connector
2	Air intake actuator

5. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

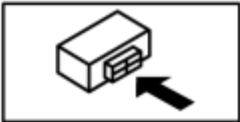
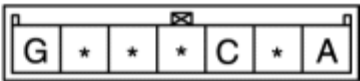
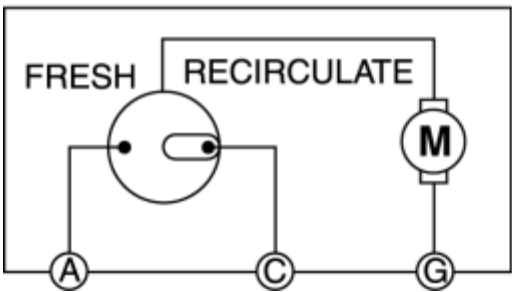
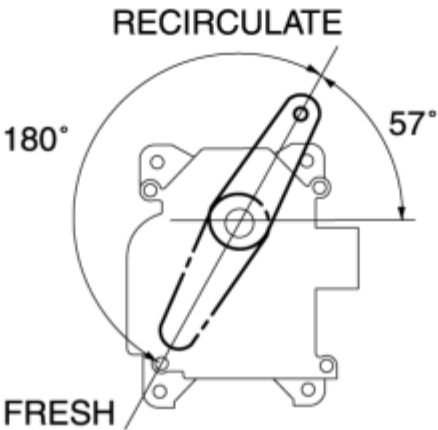
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

AIR INTAKE ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER]

1. Connect battery positive voltage to air intake actuator terminal G, and ground to terminal C (or A), and then verify that the air intake actuator operates as shown in the table.
- If the operation condition is not normal, replace the air intake actuator.



Terminal			Air intake actuator operation
G	A	C	
B+	Ground	-	RECIRCULATE→FRESH
B+	-	Ground	FRESH→RECIRCULATE

[< Previous](#) [Next >](#)

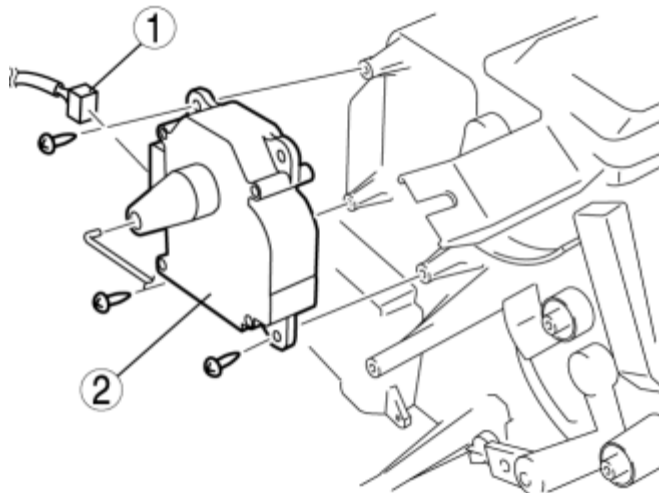
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - HVAC

AIRFLOW MODE ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Remove the TCM. (AT) (See [TCM REMOVAL/INSTALLATION \[SJ6A-EL\].](#))
3. Remove the A/C amplifier. (See [A/C AMPLIFIER REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\].](#))
4. Remove in the order indicated in the table.



1	Airflow mode actuator connector
2	Airflow mode actuator

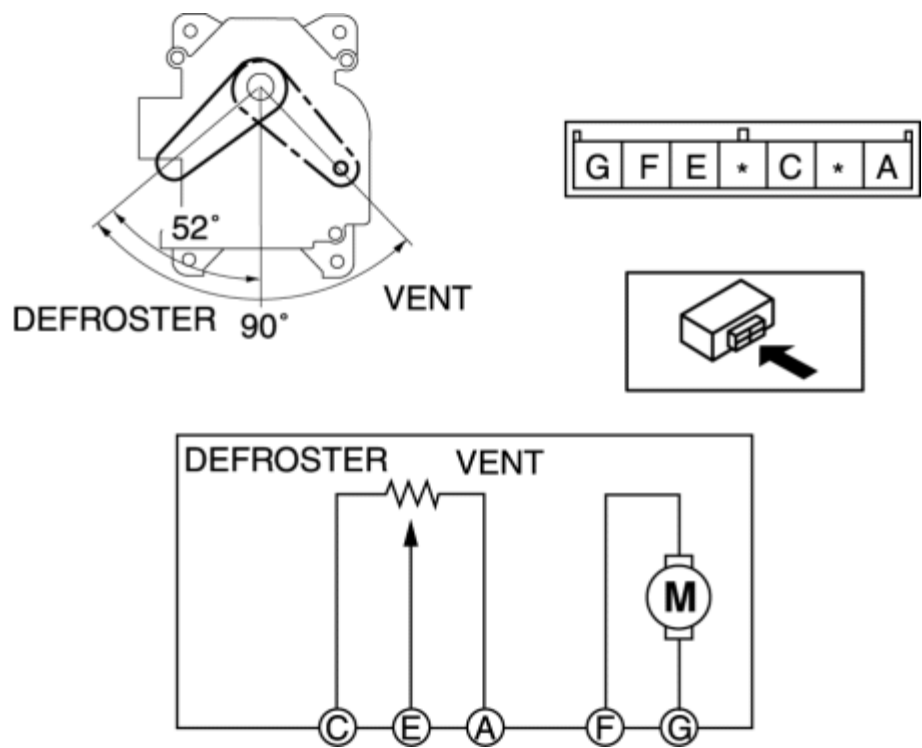
5. Install in the reverse order of removal.

2011 - RX-8 - HVAC

AIRFLOW MODE ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER]

1. Connect battery positive voltage to airflow mode actuator terminal F (or G), and ground to terminal G (or F), and then verify that the airflow mode actuator operates as shown in the table.

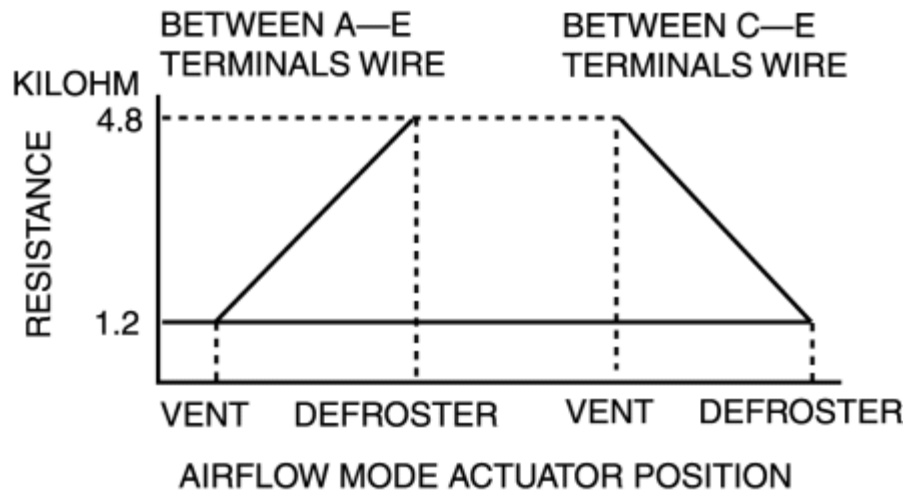
- Apply the external power supply.
- If the operation condition is not normal, replace the airflow mode actuator.



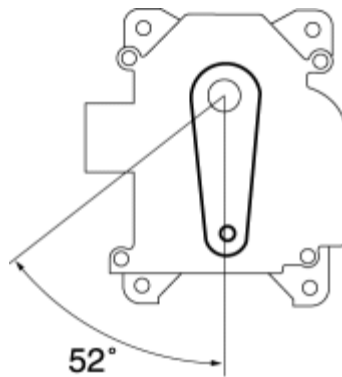
Terminal		Airflow mode actuator operation
F	G	
B+	Ground	DEFROSTER→VENT
Ground	B+	VENT→DEFROSTER

2. Verify that the resistance between terminals A and E, and C and E matches the airflow mode actuator operation as shown in the graph.

- If the operation condition and resistance are not normal, replace the airflow mode actuator.



3. Install the airflow mode actuator with the lever the position shown in the figure.



[< Previous](#) [Next >](#)

[Back to Top](#)

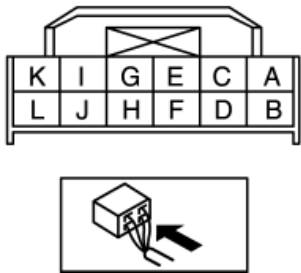
2011 - RX-8 - HVAC

CLIMATE CONTROL UNIT INSPECTION [FULL-AUTO AIR CONDITIONER]

1. Turn the ignition switch to the ON position.
2. Connect the negative (-) lead of the tester to body ground.
3. By inserting the positive (+) lead of the tester into each climate control unit terminal, measure the voltage according to the terminal voltage table.
 - If there is any malfunction, inspect the parts under “Inspection item(s)”.
 - If the parts under “Inspection item(s)” are found to be normal, replace the climate control unit.

Terminal voltage table (reference)

CLIMATE CONTROL UNIT CONNECTOR



Terminal	Signal name	Connected to	Measurement condition	Voltage (V)	Inspection item(s)
A	B+	ROOM 15 A fuse	Under any condition	B+	<ul style="list-style-type: none">• ROOM 15 A fuse• Related wiring harness
B	ACC	<ul style="list-style-type: none">• ACC 7.5 A fuse• ACC relay• Ignition switch	Ignition switch ACC	B+	<ul style="list-style-type: none">• ACC 7.5 A fuse• ACC relay• Ignition switch• Related wiring harness
			Ignition switch LOCK	1.0 or less	
			When light switch TNS	B+	<ul style="list-style-type: none">• light

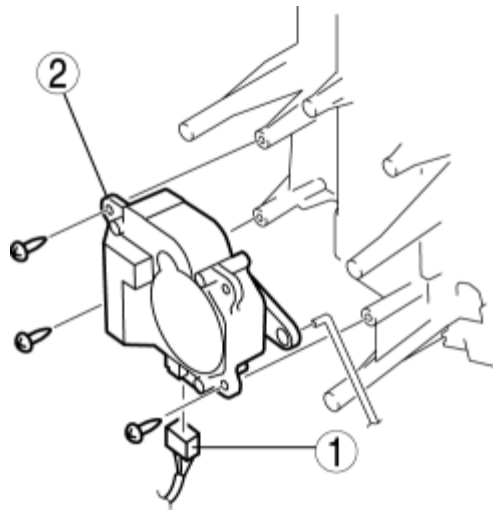
C	TNS	TNS relay			switch
			When light switch OFF	1.0 or less	<ul style="list-style-type: none"> Related wiring harness
D	Panel light control	Panel light control switch	Light switch ON and panel light control switch at max	1.0 or less	<ul style="list-style-type: none"> Panel light control switch
			Light switch ON and panel light control switch at min	11.5	<ul style="list-style-type: none"> Related wiring harness
E	IG2	<ul style="list-style-type: none"> ACC 7.5 A fuse Ignition switch 	Ignition switch ON	B+	<ul style="list-style-type: none"> ACC 7.5 A fuse Ignition switch Related wiring harness
			Ignition switch LOCK or ACC	1.0 or less	
F	Vehicle speed	<ul style="list-style-type: none"> ABS HU/CM DSC HU/CM 	When vehicle driving	1.0 or less	<ul style="list-style-type: none"> ABS HU/CM DSC HU/CM Related wiring harness
G	Shield GND	A/C amplifier	Under any condition	1.0 or less	<ul style="list-style-type: none"> A/C amplifier Related wiring harness
H	GND	Body ground	Under any condition	1.0 or less	<ul style="list-style-type: none"> Related wiring harness
I	Serial signal 1	A/C amplifier	<p>Inspect the continuity in the wiring harness between climate control unit terminal I and A/C amplifier terminal 1R.</p> <p>Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.</p>	Continuity	<ul style="list-style-type: none"> A/C amplifier Related wiring harness
J	MS-CAN_H	CAN related module	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.		<ul style="list-style-type: none"> Related wiring harness
K	Serial signal 2	A/C amplifier	<p>Inspect the continuity in the wiring harness between climate control unit terminal K and A/C amplifier terminal 1P.</p> <p>Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.</p>	Continuity	<ul style="list-style-type: none"> A/C amplifier Related wiring harness

L	MS-CAN_L	CAN related module	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.	<ul style="list-style-type: none">• Related wiring harness
---	----------	--------------------	--	--

2011 - RX-8 - HVAC

AIR MIX ACTUATOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Remove the TCM. (AT) (See [TCM REMOVAL/INSTALLATION \[SJ6A-EL\].](#))
3. Remove the A/C amplifier. (See [A/C AMPLIFIER REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\].](#))
4. Remove in the order indicated in the table.



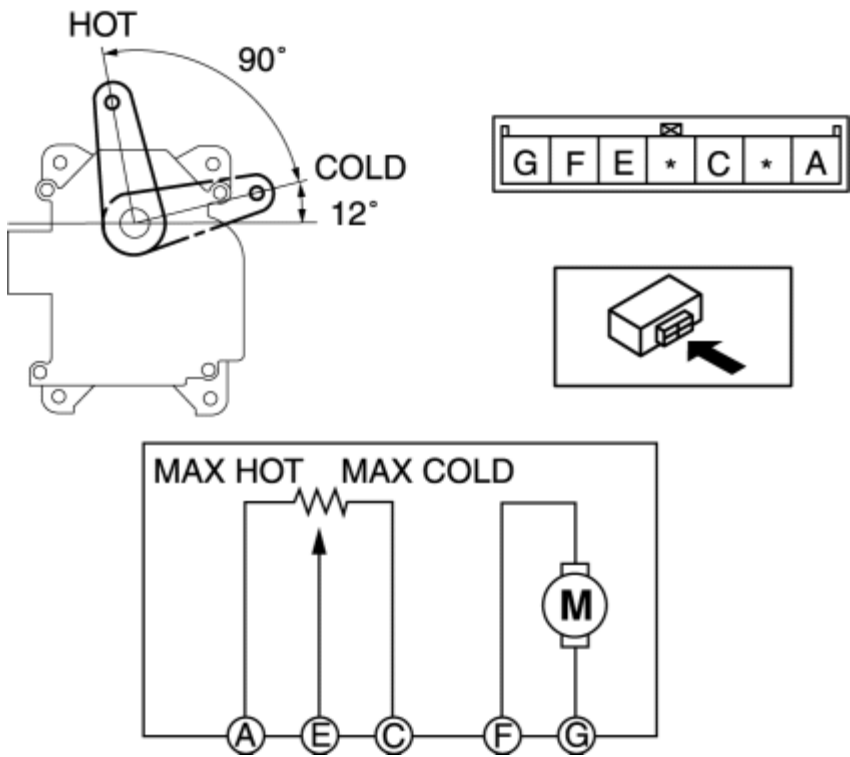
1	Air mix actuator connector
2	Air mix actuator

5. Install in the reverse order of removal.

2011 - RX-8 - HVAC

AIR MIX ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER]

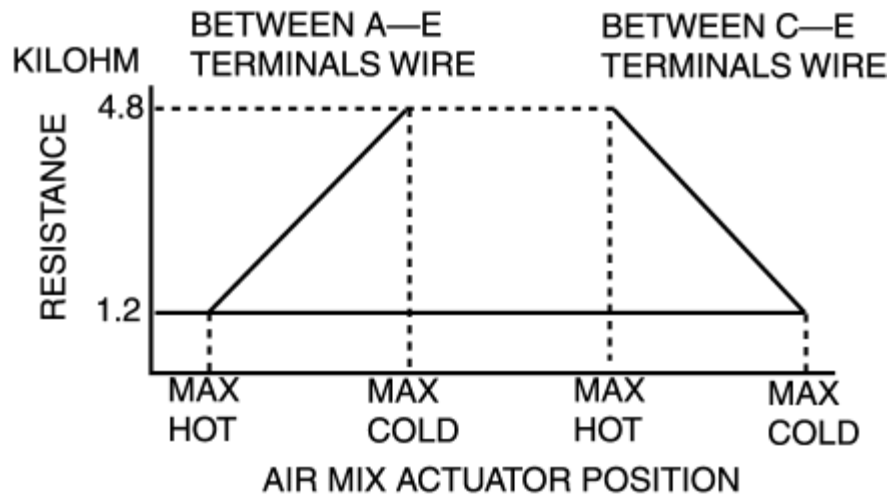
1. Connect battery positive voltage to air mix actuator terminal F (or G), and ground to terminal G (or F), and then verify that the air mix actuator operates as shown in the table.



- Apply the external power supply.
- If the operation condition is not normal, replace the air mix actuator.

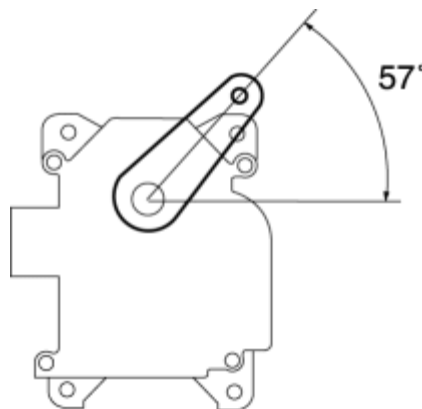
Terminal		Air mix actuator operation
F	G	
B+	Ground	COLD→HOT
Ground	B+	HOT→COLD

2. Verify that the resistance between terminals A and E, and C and E matches the air mix actuator operation as shown in the graph.



- If the operation condition and resistance are not normal, replace the air mix actuator.

3. Install the air mix actuator with the lever the position shown in the figure.



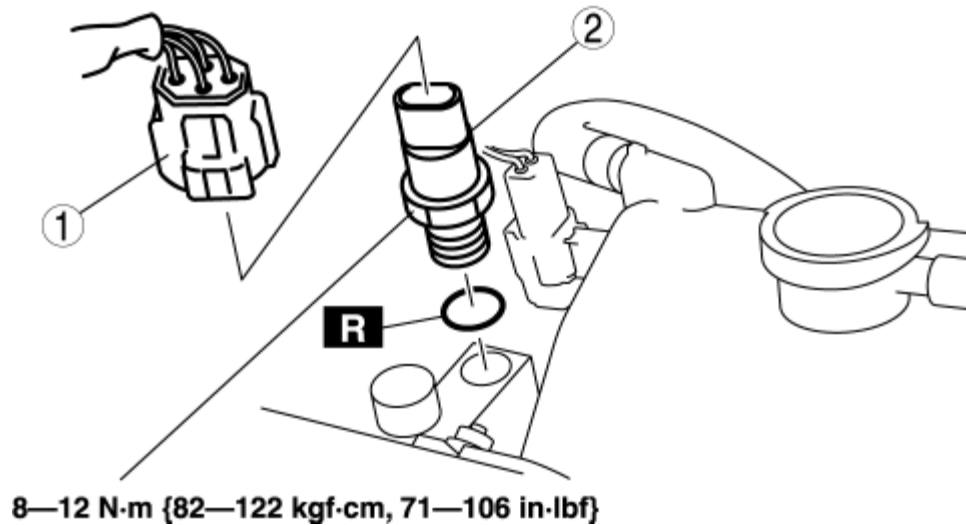
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - HVAC

REFRIGERANT PRESSURE SWITCH REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Discharge the refrigerant from the system. (See [REFRIGERANT CHARGING](#).)
3. Hold the piping block with pliers or a similar tool and loosen the refrigerant pressure switch using a wrench.
4. Remove in the order indicated in the table.



1	Refrigerant pressure switch connector
2	Refrigerant pressure switch
(See Refrigerant Pressure Switch Installation Note .)	

5. Install in the reverse order of removal.

Refrigerant Pressure Switch Installation Note

1. Apply compressor oil to the O-ring joints.

[< Previous](#) [Next >](#)

[Back to Top](#)

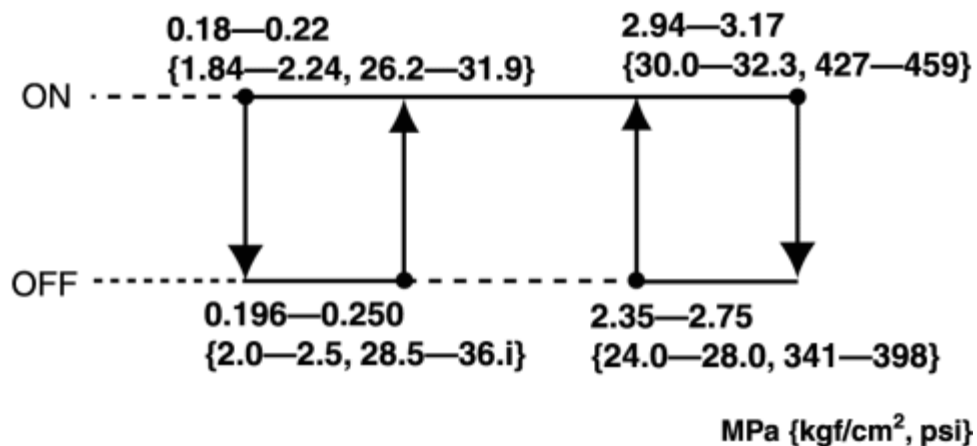
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - HVAC

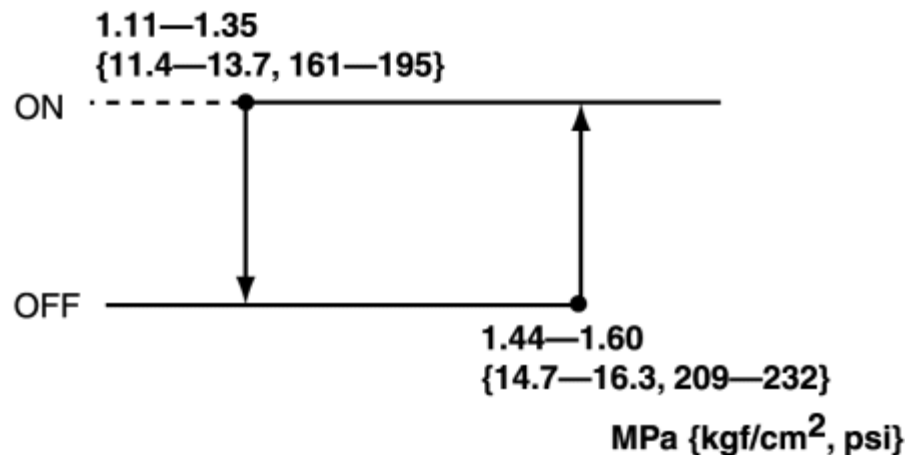
REFRIGERANT PRESSURE SWITCH INSPECTION [FULL-AUTO AIR CONDITIONER]

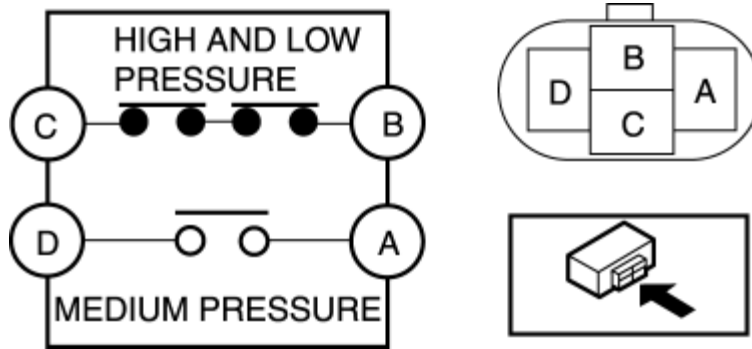
1. Connect the manifold gauge.
2. Verify the high-pressure side reading.
3. Disconnect the refrigerant pressure switch connector.
4. Verify continuity between the terminals of the refrigerant pressure switch.
 - If the continuity is not normal, replace the refrigerant pressure switch.

HI AND LO PRESSURE



MEDIUM PRESSURE





[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

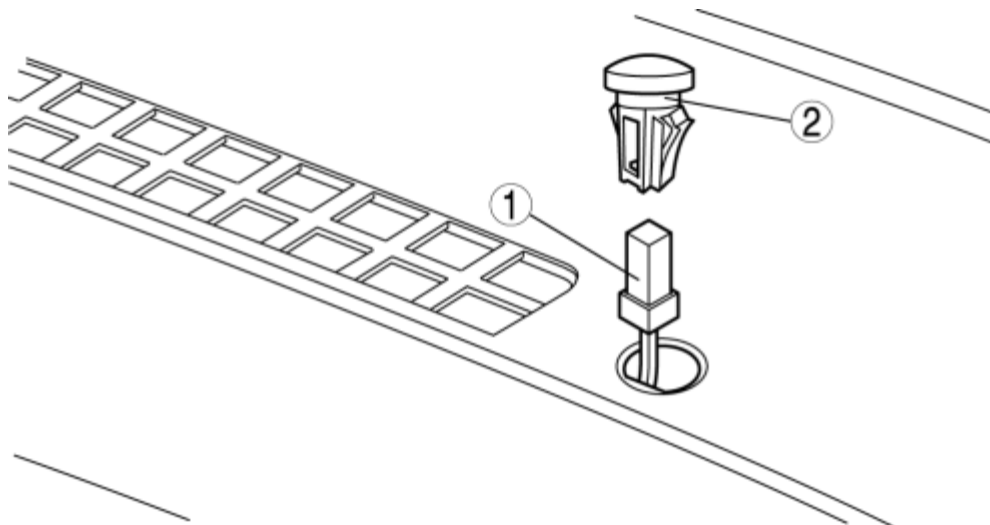
2011 - RX-8 - HVAC

SOLAR RADIATION SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Pry the solar radiation sensor from the dashboard using a flathead screwdriver wrapped with protective tape.
3. Remove in the order indicated in the table.

CAUTION:

- After the solar radiation sensor removal, the sensor connector could fall in the dashboard making the installation difficult. Therefore, hold the rooted end of the sensor connector using a clip or similar tool to prevent it from falling.



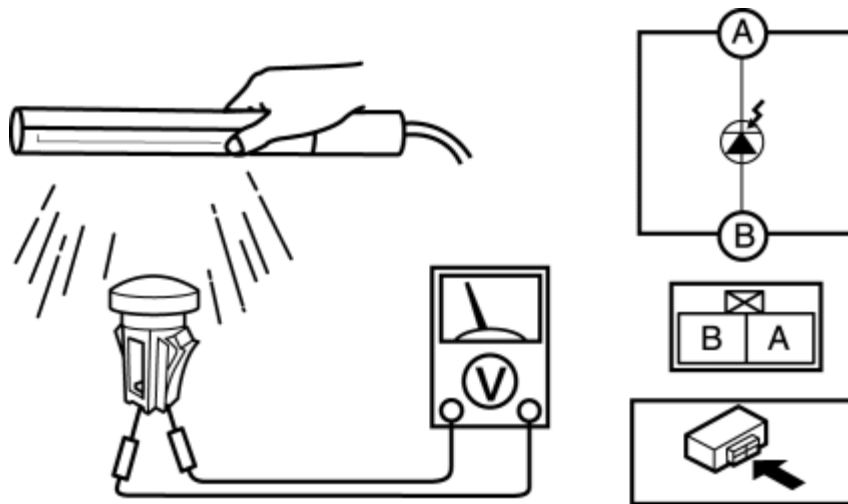
1	Solar radiation sensor connector
2	Solar radiation sensor

4. Install in the reverse order of removal.

2011 - RX-8 - HVAC

SOLAR RADIATION SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER]

1. Shine a fluorescent light or expose the solar radiation sensor to natural sunlight.
2. Connect the positive (+) lead to terminal A and the negative (-) lead to terminal B of the solar radiation sensor, and verify that the voltage value is output.

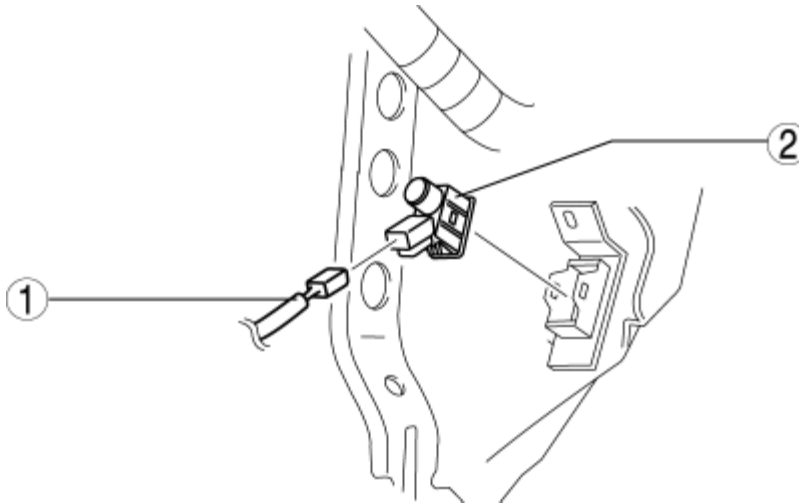


- If the voltage is **0 V**, replace the solar radiation sensor.

2011 - RX-8 - HVAC

PASSENGER COMPARTMENT TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Remove the driver's side lower panel. (See [LOWER PANEL REMOVAL/INSTALLATION](#).)
3. Remove the order indicated in the table.



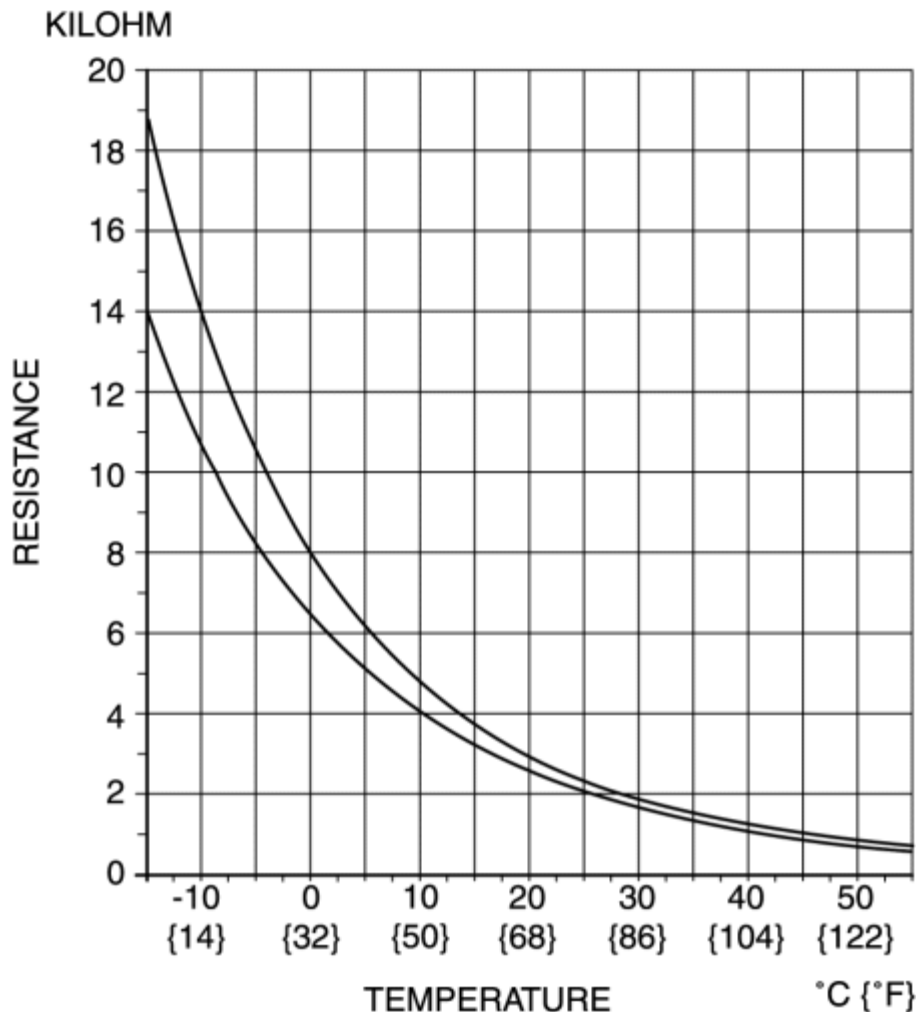
1	Passenger compartment temperature sensor connector
2	Passenger compartment temperature sensor

4. Install in the reverse order of removal.

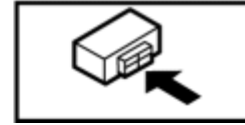
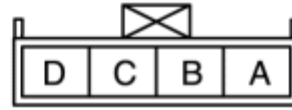
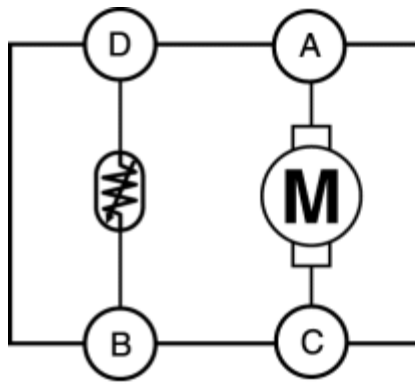
2011 - RX-8 - HVAC

PASSENGER COMPARTMENT TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER]

1. Measure the temperature around the passenger compartment temperature sensor and measure the resistance between passenger compartment temperature sensor terminal.
- If the characteristics of the passenger compartment temperature sensor are not as shown in the graph, replace the passenger compartment temperature sensor.



2. Connect battery positive voltage to passenger compartment temperature sensor terminal A, ground to terminal C, and then verify that the fan operation.
- If there is any malfunction, replace the passenger compartment temperature sensor.



[< Previous](#) [Next >](#)

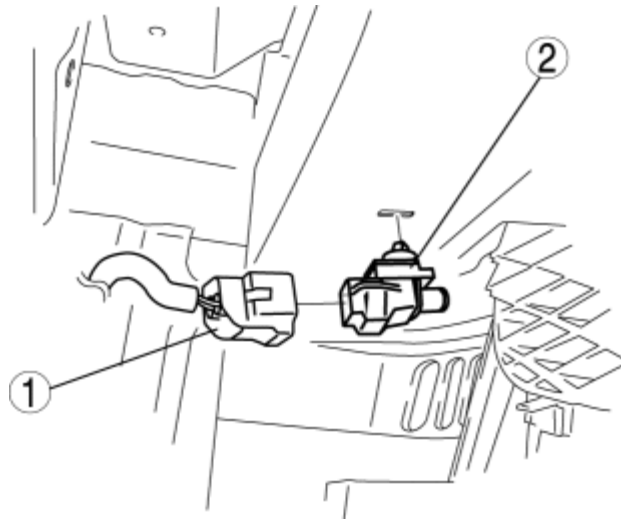
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

AMBIENT TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Remove the aerodynamic under cover. (See [AERODYNAMIC UNDER COVER REMOVAL/INSTALLATION](#).)
3. Remove in the order indicated in the table.



1	Ambient temperature sensor connector
2	Ambient temperature sensor

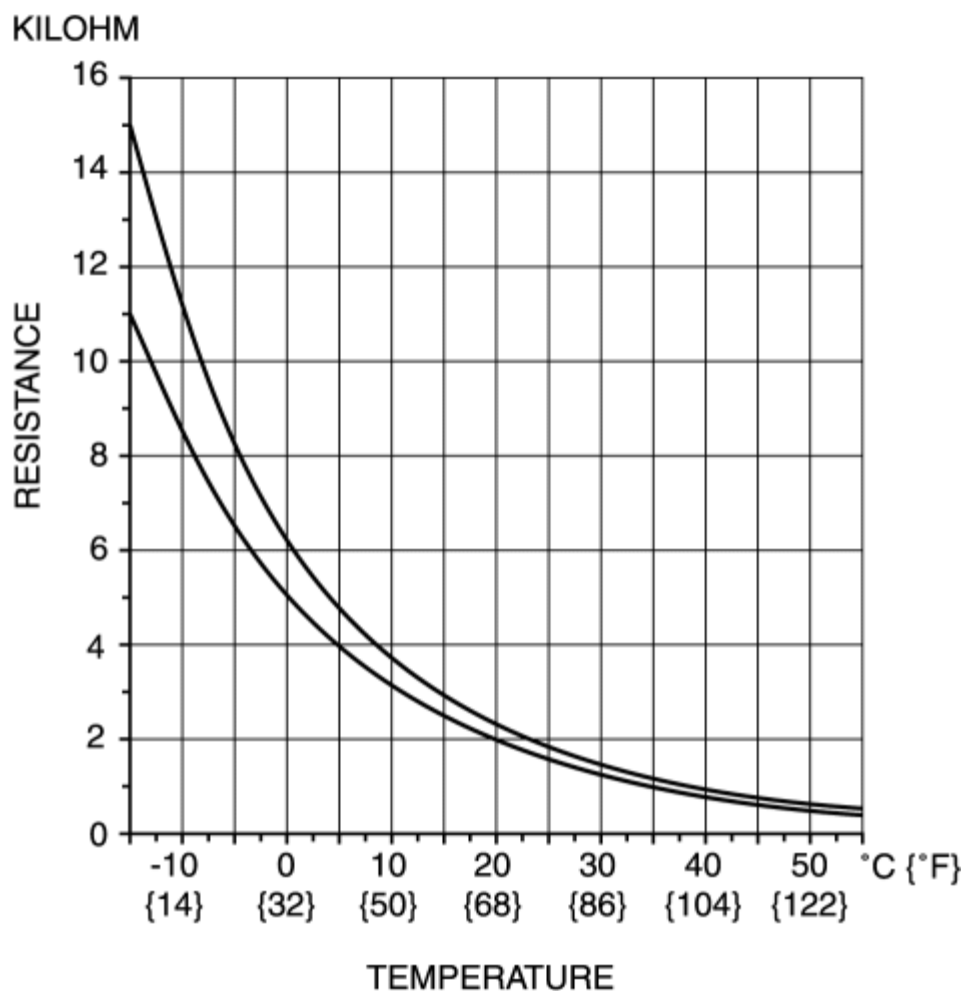
4. Install in the reverse order of removal.

2011 - RX-8 - HVAC

AMBIENT TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER]

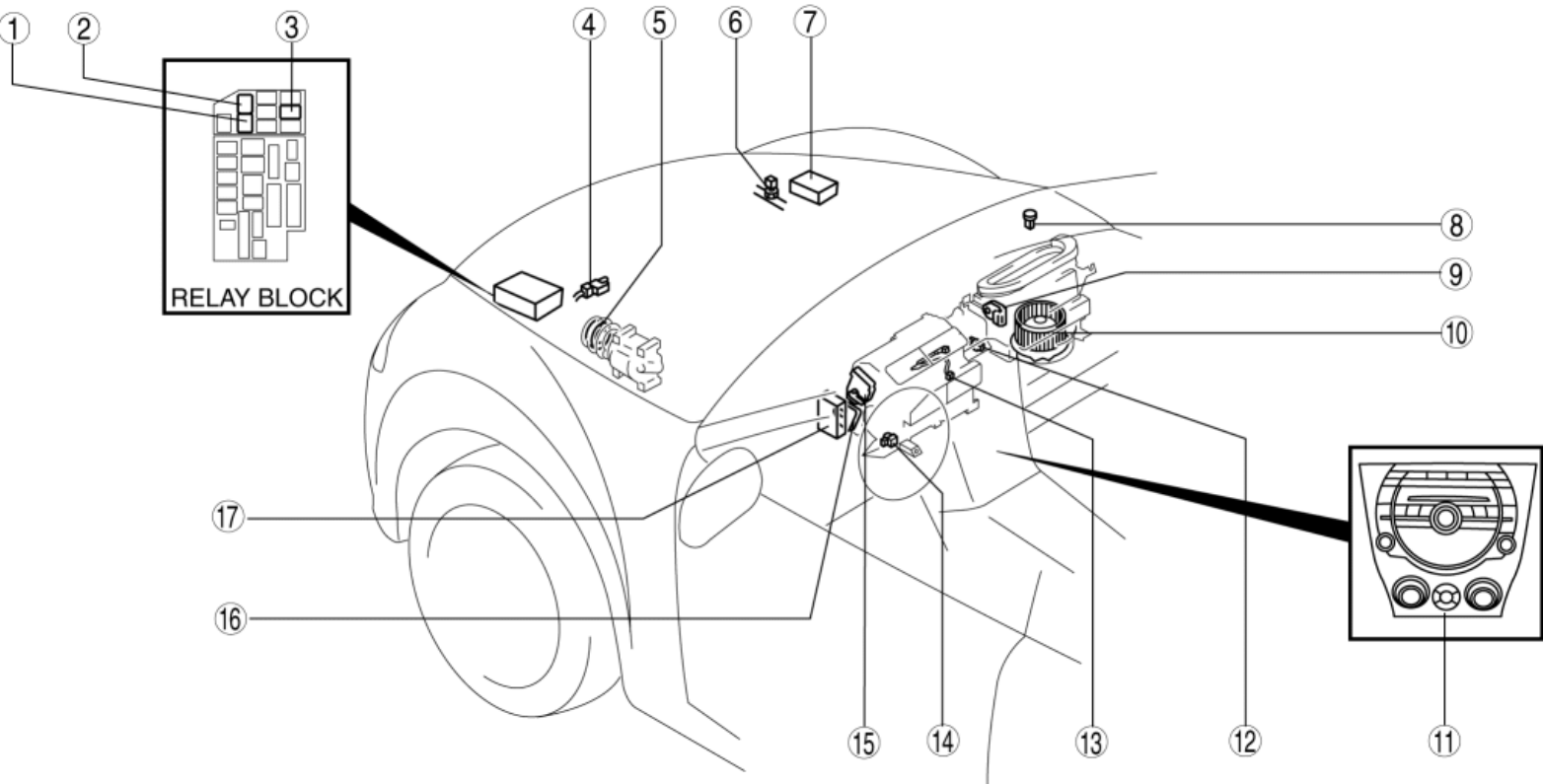
1. Measure the temperature around the ambient temperature sensor, then measure the resistance between the terminals of the ambient temperature sensor.

- If the characteristics of the ambient temperature sensor are not as shown in the graph, replace the ambient temperature sensor.



2011 - RX-8 - HVAC

HVAC CONTROL SYSTEM LOCATION INDEX [FULL-AUTO AIR CONDITIONER]



1	A/C relay (See RELAY INSPECTION.)
2	Rear window defroster relay (See RELAY INSPECTION.)
3	Blower relay (See RELAY INSPECTION.)
4	Ambient temperature sensor (See AMBIENT TEMPERATURE SENSOR REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See AMBIENT TEMPERATURE SENSOR INSPECTION [FULL-AUTO AIR CONDITIONER].)
5	Magnetic clutch (See MAGNETIC CLUTCH DISASSEMBLY/ASSEMBLY [FULL-AUTO AIR CONDITIONER].) (See MAGNETIC CLUTCH ADJUSTMENT [FULL-AUTO AIR CONDITIONER].) (See MAGNETIC CLUTCH INSPECTION [FULL-AUTO AIR CONDITIONER].)

6 Refrigerant pressure switch

(See [REFRIGERANT PRESSURE SWITCH REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\].](#))

(See [REFRIGERANT PRESSURE SWITCH INSPECTION \[FULL-AUTO AIR CONDITIONER\].](#))

7 PCM

(See [PCM REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [PCM INSPECTION \[13B-MSP\].](#))

8 Solar radiation sensor

(See [SOLAR RADIATION SENSOR REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\].](#))

(See [SOLAR RADIATION SENSOR INSPECTION \[FULL-AUTO AIR CONDITIONER\].](#))

9 Air intake actuator

(See [AIR INTAKE ACTUATOR REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\].](#))

(See [AIR INTAKE ACTUATOR INSPECTION \[FULL-AUTO AIR CONDITIONER\].](#))

10 Blower motor

(See [BLOWER MOTOR REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\].](#))

(See [BLOWER MOTOR INSPECTION \[FULL-AUTO AIR CONDITIONER\].](#))

11 Climate control unit

(See [CLIMATE CONTROL UNIT REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\].](#))

(See [CLIMATE CONTROL UNIT INSPECTION \[FULL-AUTO AIR CONDITIONER\].](#))

12 Power transistor

(See [POWER TRANSISTOR REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\].](#))

(See [POWER TRANSISTOR INSPECTION \[FULL-AUTO AIR CONDITIONER\].](#))

13 Evaporator temperature sensor

(See [EVAPORATOR TEMPERATURE SENSOR REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\].](#))

(See [EVAPORATOR TEMPERATURE SENSOR INSPECTION \[FULL-AUTO AIR CONDITIONER\].](#))

14 Passenger compartment temperature sensor

(See [PASSENGER COMPARTMENT TEMPERATURE SENSOR REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\].](#))

(See [PASSENGER COMPARTMENT TEMPERATURE SENSOR INSPECTION \[FULL-AUTO AIR CONDITIONER\].](#))

15 Airflow mode actuator

(See [AIRFLOW MODE ACTUATOR REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\].](#))

(See [AIRFLOW MODE ACTUATOR INSPECTION \[FULL-AUTO AIR CONDITIONER\].](#))

16 Air mix actuator

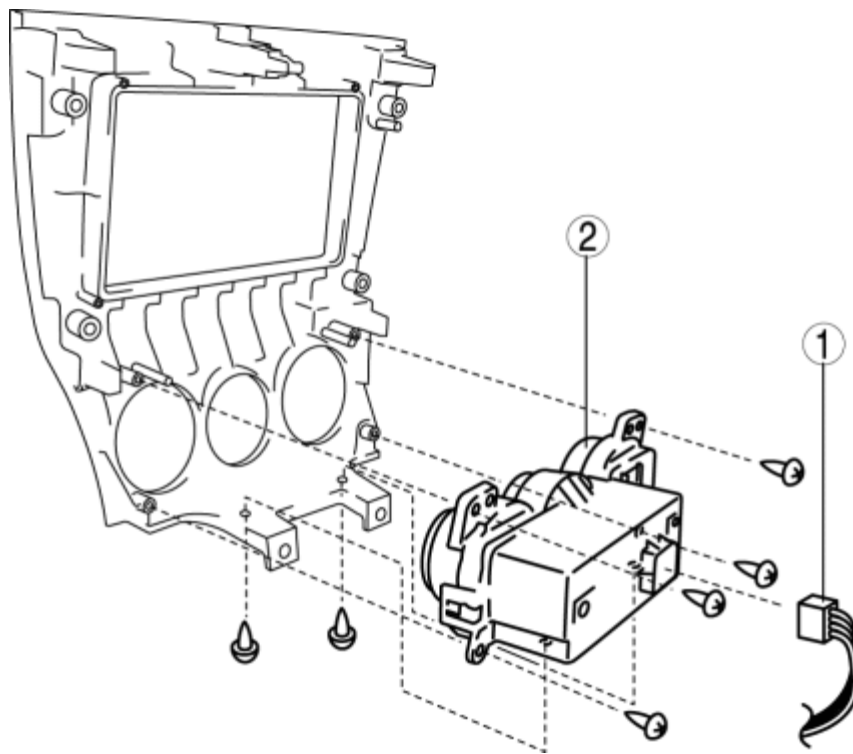
(See [AIR MIX ACTUATOR REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\].](#))

	(See AIR MIX ACTUATOR INSPECTION [FULL-AUTO AIR CONDITIONER].)
17 A/C amplifier	(See A/C AMPLIFIER REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER].) (See A/C AMPLIFIER INSPECTION [FULL-AUTO AIR CONDITIONER].)

2011 - RX-8 - HVAC

CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Remove the lower panel. (See [LOWER PANEL REMOVAL/INSTALLATION](#).)
3. Remove the console. (See [CONSOLE REMOVAL/INSTALLATION](#).)
4. Remove the center panel unit. (See [CENTER PANEL UNIT REMOVAL/INSTALLATION](#).)
5. Remove in the order indicated in the table.



1	Climate control unit connector
2	Climate control unit

6. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

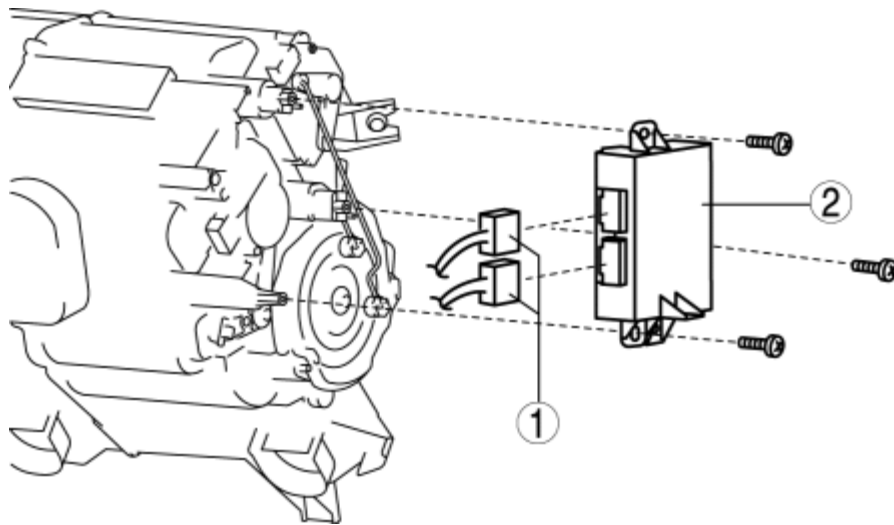
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

A/C AMPLIFIER REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Remove the TCM. (AT) (See [TCM REMOVAL/INSTALLATION \[SJ6A-EL\].](#))
3. Remove in the order indicated in the table.



1	A/C amplifier connector
2	A/C amplifier

4. Install in the reverse order of removal.

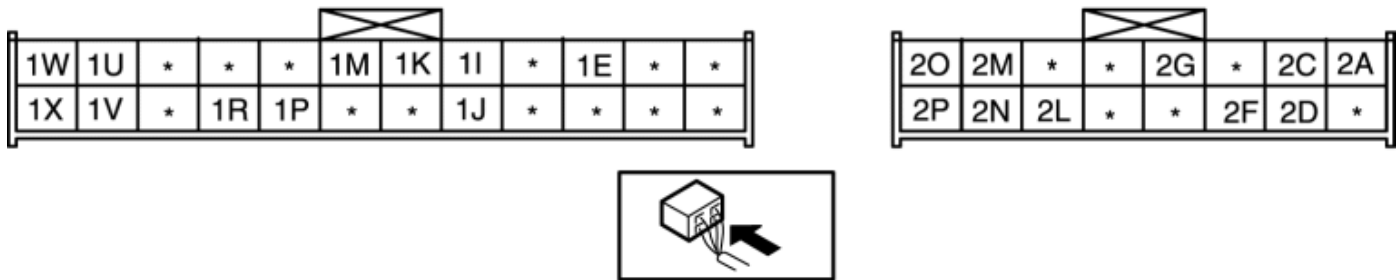
2011 - RX-8 - HVAC

A/C AMPLIFIER INSPECTION [MANUAL AIR CONDITIONER]

1. Turn the ignition switch to the ON position.
2. Connect the negative (-) lead of the tester to body ground.
3. By inserting the positive (+) lead of the tester into each A/C amplifier terminal, measure the voltage according to the terminal voltage table.
 - If there is any malfunction, inspect the parts under "Inspection item(s)".
 - If the parts under "Inspection item(s)" are found to be normal, replace the A/C amplifier.

Terminal Voltage Table (Reference)

A/C AMPLIFIER CONNECTOR



Terminal	Signal name	Connected to	Measured condition	Voltage (V)	Inspection item(s)
1A	—	—	—	—	—
1B	—	—	—	—	—
1C	—	—	—	—	—
1D	—	—	—	—	—
			Fan stopped	B+	1. Related wiring harness

1E	Blower motor feedback	<ul style="list-style-type: none"> • Resistor • Fan switch 	Fan switch: 1st	0.3	2. Resistor 3. Fan switch 4. Blower motor 5. Blower relay 6. A/C 7.5 A fuse 7. HEATER 40 A fuse
			Fan switch: 2nd	1.5	
			Fan switch: 3rd	1.3	
			Fan switch: 4th	0.7	
1F	—	—	—	—	—
1G	—	—	—	—	—
1H	—	—	—	—	—
1I	Motor operation	Air intake actuator	Switched to RECIRCULATE	1.0 or less	<ul style="list-style-type: none"> • Related wiring harness • Air intake actuator
			Switched to FRESH	12	
1J	Motor operation	Air intake actuator	Switched to RECIRCULATE	12	<ul style="list-style-type: none"> • Related wiring harness • Air intake actuator
			Switched to FRESH	1.0 or less	
1K	Rear window defroster operation	Rear window defroster relay	Rear window defroster switch OFF	B+	<ul style="list-style-type: none"> • Related wiring harness • Rear window defroster relay
			Rear window defroster switch ON	1.0 or less	
1L	—	—	—	—	—
					<ul style="list-style-type: none"> • Related wiring

1M	A/C	Refrigerant pressure switch	Fan stopped	B+	<div>harness</div> <ul style="list-style-type: none">• Refrigerant pressure switch• PCM: terminal voltage (1AU)
			Fan switch: ON and A/C switch: ON	1.0 or less	<ul style="list-style-type: none">• A/C amplifier: terminal voltage (2C, 2L)
1N	—	—	—	—	—
1O	—	—	—	—	—
1P	Serial signal	Climate control unit	Terminal used for communication therefore determination based on terminal voltage inspection not possible. Only inspect for an open or short circuit in wiring harness between A/C amplifier terminal 1P and climate control unit terminal K.	—	<ul style="list-style-type: none">• Related wiring harness
1Q	—	—	—	—	—
1R	Serial signal	Climate control unit	Terminal used for communication therefore determination based on terminal voltage inspection not possible. Only inspect for an open or short circuit in wiring harness between A/C amplifier terminal 1R and climate control unit terminal I.	—	<ul style="list-style-type: none">• Related wiring harness
1S	—	—	—	—	—
1T	—	—	—	—	—
1U	Motor operation	Air mix actuator	Moving towards COLD	1.0 or less	<ul style="list-style-type: none">• Related wiring harness• Air mix actuator
			Moving towards HOT	12	

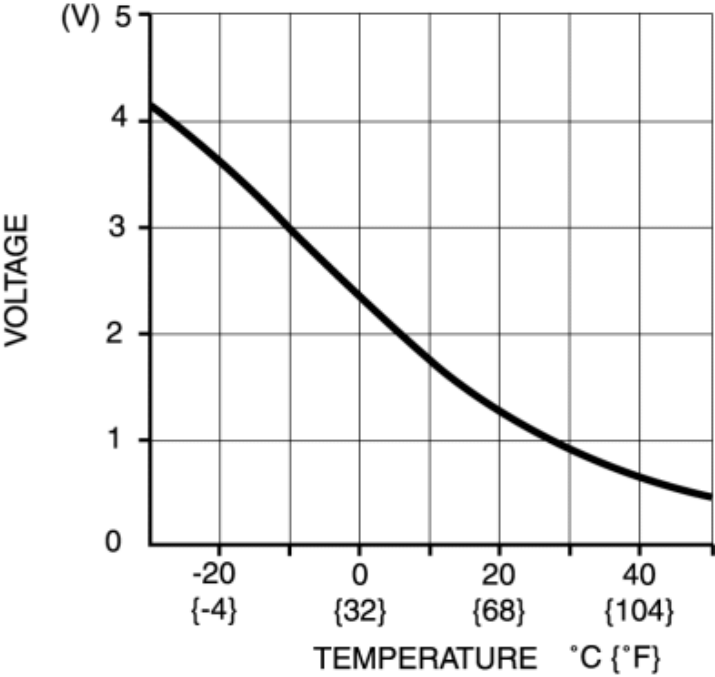
1V	Motor operation	Air mix actuator	Moving towards COLD	12	<ul style="list-style-type: none">• Related wiring harness• Air mix actuator
			Moving towards HOT	1.0 or less	
1W	Motor operation	Airflow mode actuator	Switched to DEFROSTER	12	<ul style="list-style-type: none">• Related wiring harness• Airflow mode actuator
			Switched to VENT	1.0 or less	
1X	Motor operation	Airflow mode actuator	Switched to DEFROSTER	1.0 or less	<ul style="list-style-type: none">• Related wiring harness• Airflow mode actuator
			Switched to VENT	12	
2A	B+	ROOM 15 A fuse	Under any condition	B+	<ul style="list-style-type: none">• Related wiring harness• ROOM 15 A fuse
2B	—	—	—	—	—
2C	IG2	A/C 7.5 A fuse	IG SW ON	B+	<ul style="list-style-type: none">• Related wiring harness• A/C 7.5 A fuse
			IG SW LOCK	1.0 or less	<ul style="list-style-type: none">• Related wiring harness
2D	Potentiometer input	Air mix actuator	Set temperature at MAX COLD	3.9	<ul style="list-style-type: none">• Related wiring harness• Air mix actuator• A/C amplifier: terminal voltage (2P)
			Set temperature at MAX HOT	1.1	

2E	—	—	—	—	—
2F	Evaporator temperature sensor input	Evaporator temperature sensor	Compared with temperature detected by evaporator temperature sensor	Refer to graph 1	<ul style="list-style-type: none">• Related wiring harness• Evaporator temperature sensor• A/C amplifier: terminal voltage (2C, 2L)
2G	Potentiometer input	Airflow mode actuator	VENT	4.0	<ul style="list-style-type: none">• Related wiring harness• Airflow mode actuator• A/C amplifier: terminal voltage (2P)
			BI-LEVEL	3.3	
			HEAT	2.6	
			HEAT/DEF	1.8	
			DEFROSTER	1.0	
2H	—	—	—	—	—
2I	—	—	—	—	—
2J	—	—	—	—	—
2K	—	—	—	—	—
2L	GND	Body ground	Under any condition	1.0 or less	<ul style="list-style-type: none">• Related wiring harness
2M	Ambient temperature sensor input	Ambient temperature sensor	Compared with temperature detected by ambient temperature sensor	Refer to graph 2	<ul style="list-style-type: none">• Related wiring harness• Ambient temperature sensor• A/C amplifier: terminal voltage (2C, 2L)

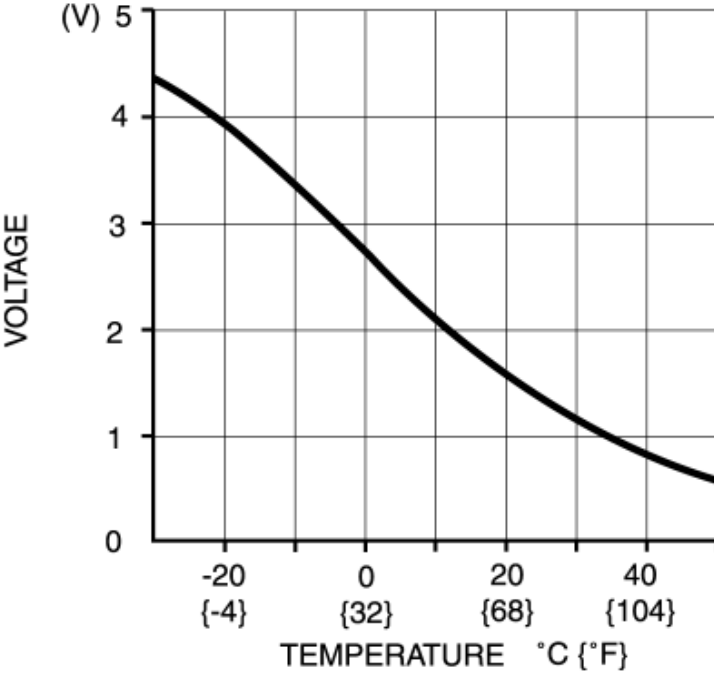
2N	Sensor GND	<ul style="list-style-type: none">Ambient temperature sensorEvaporator temperature sensorAir mix actuatorAirflow mode actuator	Under any condition	1.0 or less	<ul style="list-style-type: none">A/C amplifier: terminal voltage (2L)
2O	ECT sensor input	PCM	Compared with temperature detected by ECT sensor	Refer to graph 3	<ul style="list-style-type: none">Related wiring harnessECT sensorA/C amplifier: terminal voltage (2C, 2L)
2P	+5 V	<ul style="list-style-type: none">Air mix actuatorAirflow mode actuator	IG SW ON	5.0	<ul style="list-style-type: none">Related wiring harnessAir mix actuatorAirflow mode actuatorA/C amplifier: terminal voltage (2C, 2L)
			IG SW LOCK	1.0 or less	<ul style="list-style-type: none">A/C amplifier replacement

--	--

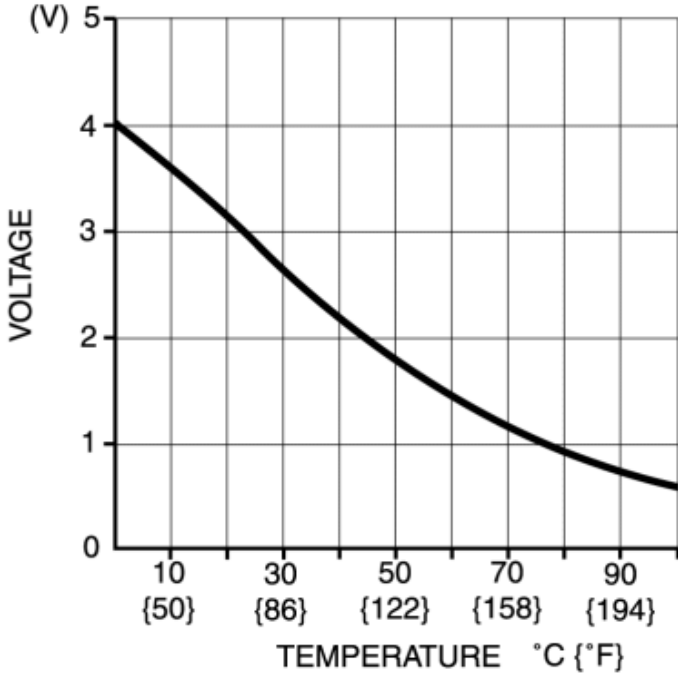
GRAPH 1 (EVAPORATOR TEMPERATURE SENSOR)



GRAPH 2 (AMBIENT TEMPERATURE SENSOR)



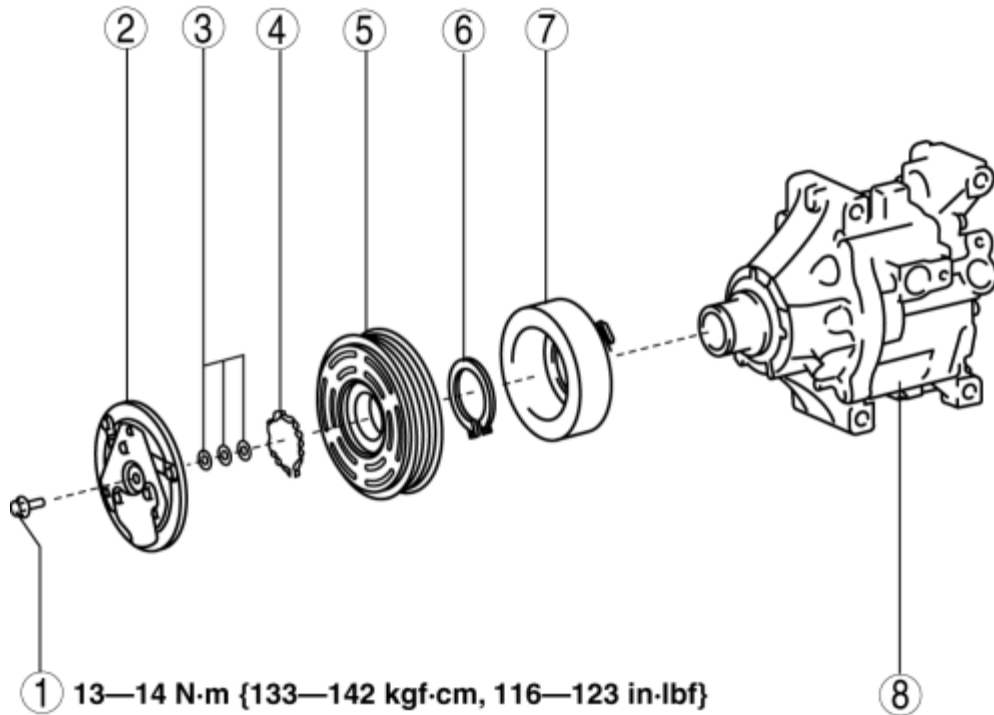
GRAPH 3 (ECT SENSOR)



2011 - RX-8 - HVAC

MAGNETIC CLUTCH DISASSEMBLY/ASSEMBLY [MANUAL AIR CONDITIONER]

1. Disassemble in the order indicated in the table.



1 Bolt (See Bolt Removal/Installation Note.)
2 Pressure plate
3 Shim (See Shim Installation Note.)
4 Snap ring (See Snap Ring Removal/Installation Note.)
5 A/C compressor pulley

6 Snap ring
(See Snap Ring Removal/Installation Note.)
7 Stator
8 A/C compressor body

2. Assemble in the reverse order of disassembly.

3. Adjust the magnetic clutch clearance. (See [MAGNETIC CLUTCH ADJUSTMENT \[MANUAL AIR CONDITIONER\]](#).)

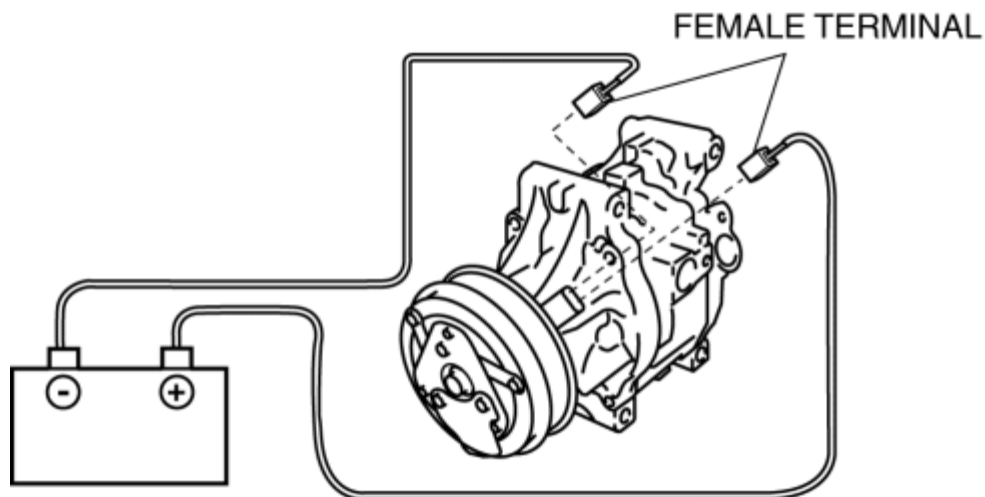
Bolt Removal/Installation Note

1. When removing or installing the bolt, lock the A/C compressor pulley against rotation using the following procedure.

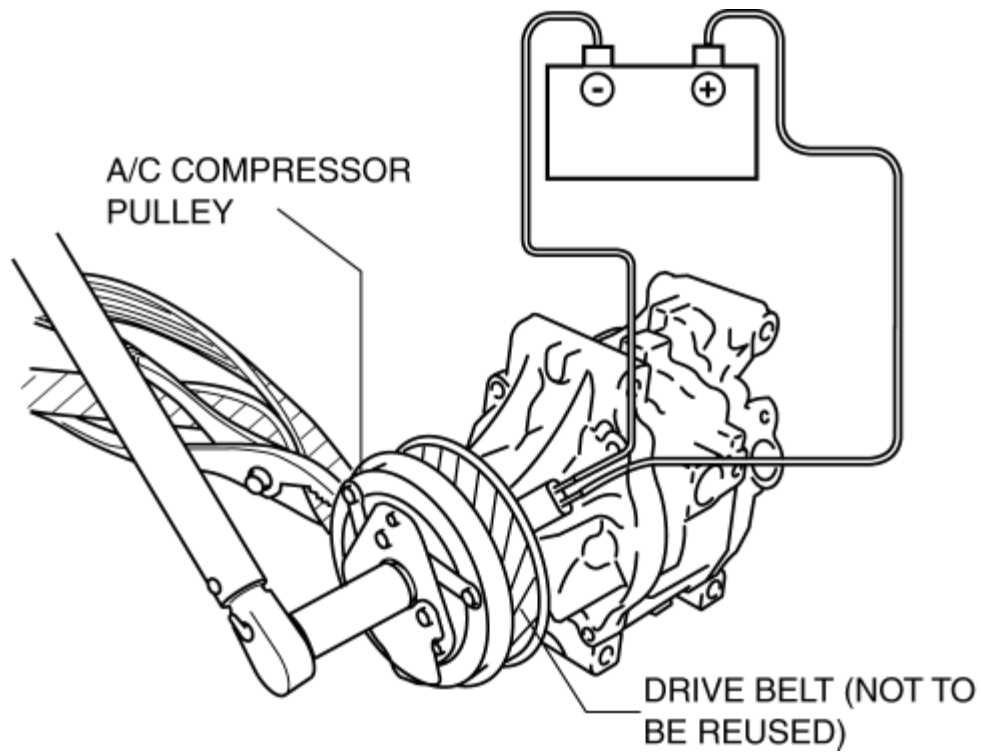
CAUTION:

- When connecting the positive battery cable to the magnetic clutch connector, use a cable with a female terminal of the correct size. Otherwise, load will be applied to the terminal, resulting in deformation or damage, and poor contact. In addition, the positive battery cable could disconnect from the connector resulting in a short circuit.

a. Apply battery positive voltage to the magnetic clutch terminal B and connect the magnetic clutch terminal A to the ground.



b. Wrap the drive belt, which is no longer of use, tightly around the A/C compressor pulley.



c. Hold the drive belt in place with pliers.

d. Remove/installation the bolt.

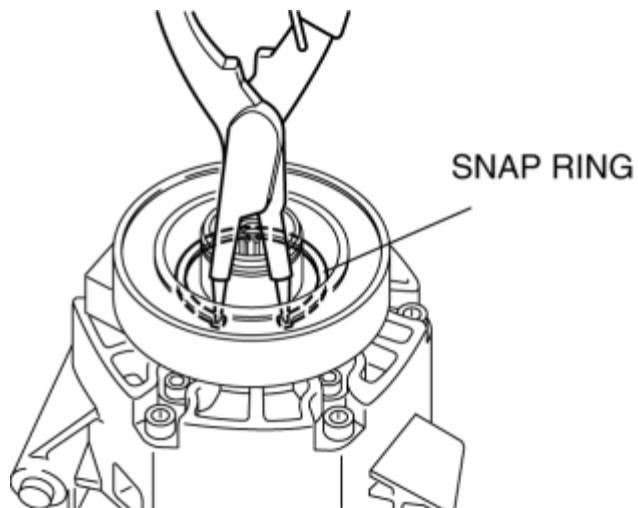
Tightening torque

- 13—14 N·m {133 —142 kgf·cm, 116—123 in·lbf}

2. When installing a new A/C compressor body, replace the recommended bolt.

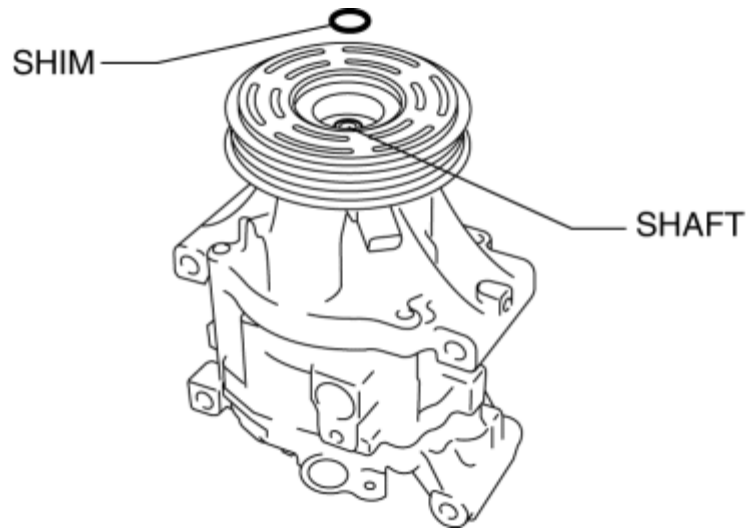
Snap Ring Removal/Installation Note

1. Remove/installation the snap ring using a snap ring pliers.



Shim Installation Note

1. First, insert the 1 mm {0.039 in} thick shim into the shaft.



[< Previous](#) [Next >](#)

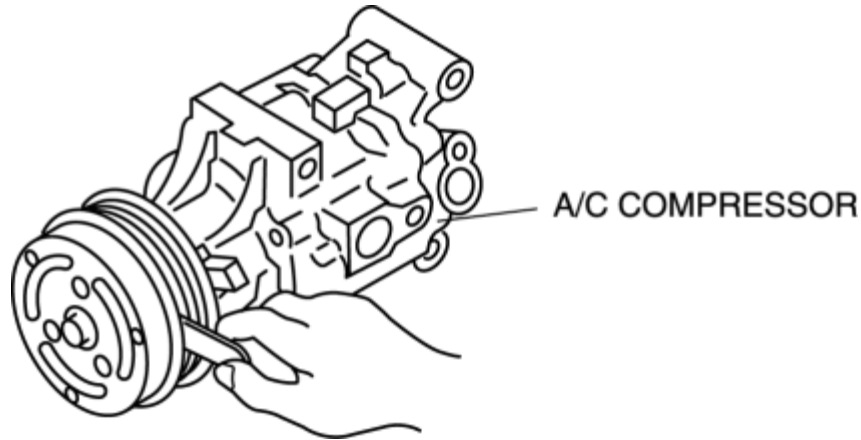
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - HVAC

MAGNETIC CLUTCH ADJUSTMENT [MANUAL AIR CONDITIONER]

1. Measure the clearance around the entire circumference between the pressure plate and A/C compressor pulley using a feeler gauge.



2. Inspect the clearance.

- If not within the specification, adjust the clearance by changing the shim (**0.2 mm {0.008 in}, 0.5 mm {0.02 in}**) or the number of shims.

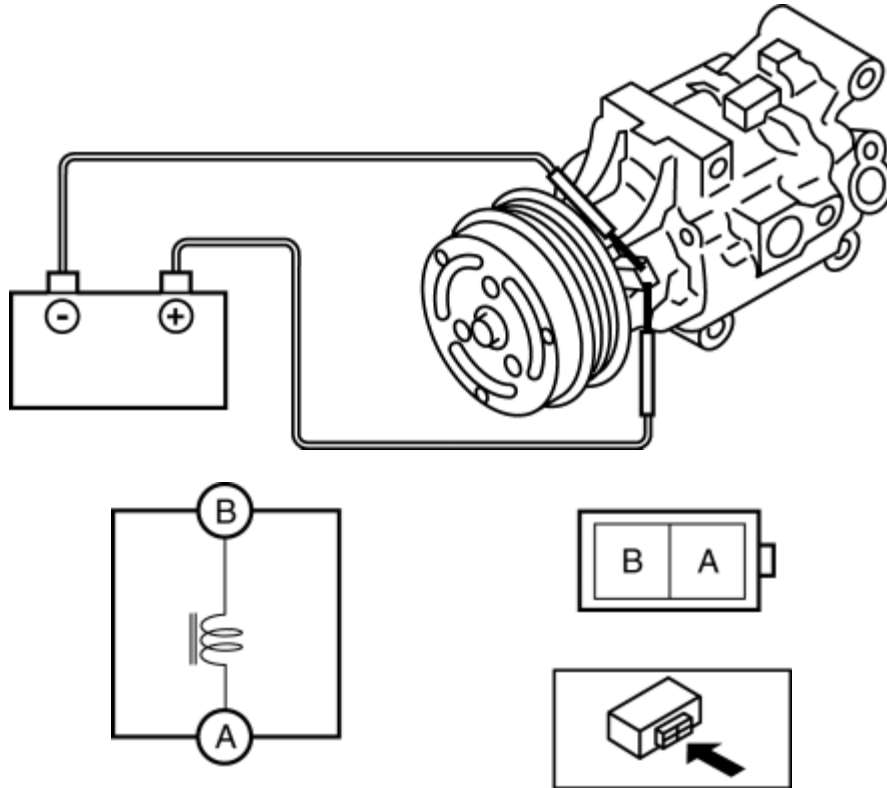
Magnetic clutch clearance

- 0.20—0.45 mm {0.008—0.017 in}

2011 - RX-8 - HVAC

MAGNETIC CLUTCH INSPECTION [MANUAL AIR CONDITIONER]

1. Connect battery positive voltage to magnetic clutch terminal B and ground to terminal A.

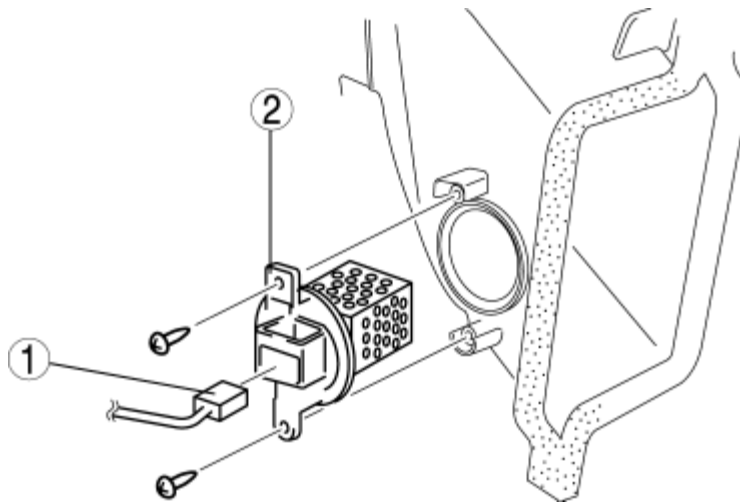


2. Verify that the magnetic clutch turns on.
 - If the magnetic clutch does not turn on, replace the magnetic clutch. (See [MAGNETIC CLUTCH DISASSEMBLY/ASSEMBLY \[MANUAL AIR CONDITIONER\]](#).)

2011 - RX-8 - HVAC

RESISTOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Remove the glove compartment. (See [GLOVE COMPARTMENT REMOVAL/INSTALLATION](#).)
3. Remove in the order indicated in the table.



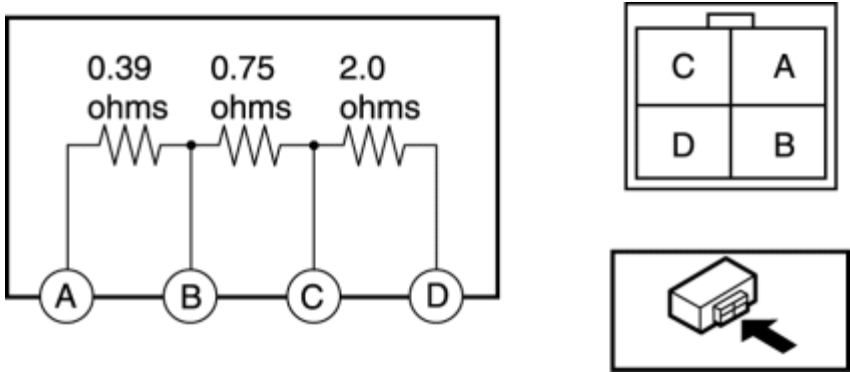
1	Resistor connector
2	Resistor

4. Install in the reverse order of removal.

2011 - RX-8 - HVAC

RESISTOR INSPECTION [MANUAL AIR CONDITIONER]

1. Verify that the resistance between the resistor terminals is as indicated in the table.



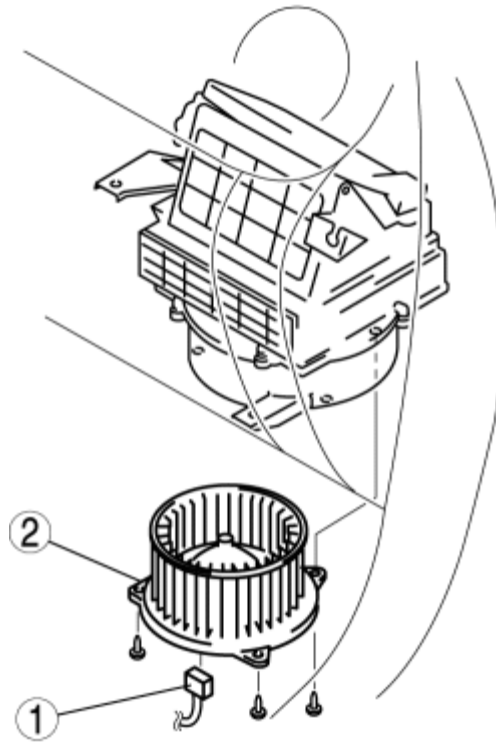
- If there is any malfunction, replace the resistor.

Terminal	Resistance (ohm)
A—B	0.39
A—C	1.14
A—D	3.14

2011 - RX-8 - HVAC

BLOWER MOTOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Remove in the order indicated in the table.



1	Blower motor connector
2	Blower motor

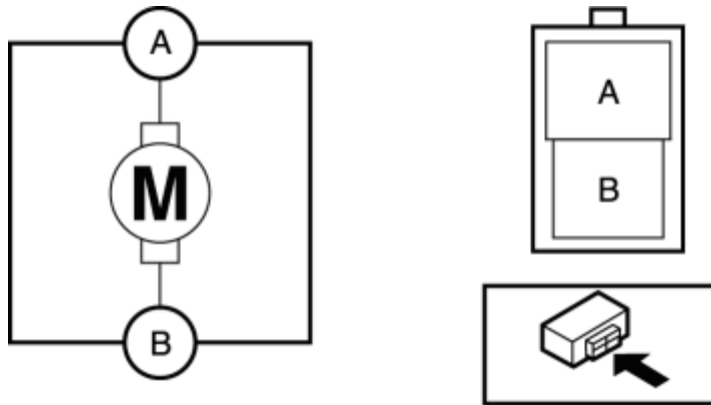
3. Install in the reverse order of removal.

2011 - RX-8 - HVAC

BLOWER MOTOR INSPECTION [MANUAL AIR CONDITIONER]

1. Connect battery positive voltage to blower motor terminal A, ground to terminal B, and then verify that the blower motor operates smoothly.

- If the operation condition is not normal, replace the blower motor.



[< Previous](#) [Next >](#)

2011 - RX-8 - HVAC

EVAPORATOR TEMPERATURE SENSOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER]

1. Remove the evaporator temperature sensor from the A/C unit. (See [A/C UNIT DISASSEMBLY/ASSEMBLY](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

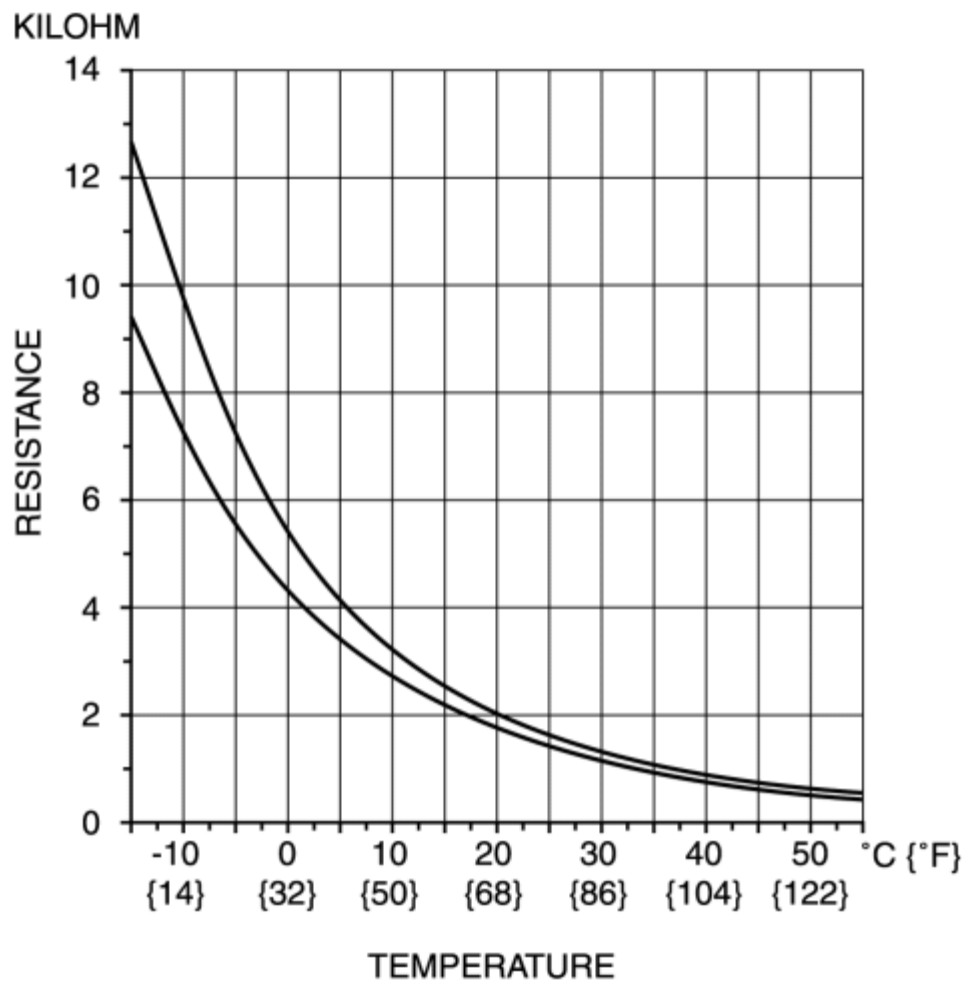
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - HVAC

EVAPORATOR TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER]

NOTE:

- Inspect the evaporator temperature sensor when it is installed to the A/C unit.
1. Set the fan switch to 4th speed.
 2. Set the temperature control to MAX COLD.
 3. Set the air intake mode to RECIRCULATE.
 4. Turn the A/C switch off.
 5. Close all of the doors and roll up all the windows.
 6. Wait for **5 min.**
 7. Disconnect the evaporator temperature sensor connector.
 8. Measure the temperature at the air intake.
 9. Measure the resistance between evaporator temperature sensor terminals.
 - If the characteristics of the evaporator temperature sensor are not as shown in the graph, replace the evaporator temperature sensor.



[< Previous](#) [Next >](#)


[Back to Top](#)









© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - HVAC

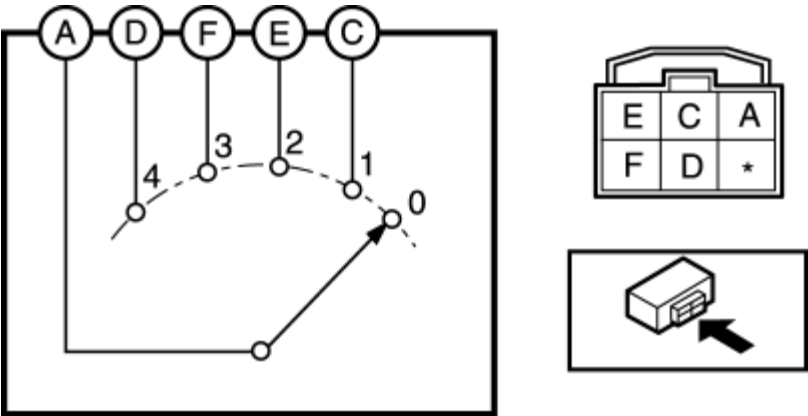
FAN SWITCH INSPECTION [MANUAL AIR CONDITIONER]

- 1. Inspect for continuity between the fan switch terminals using a tester.

 : Continuity

Switch position	Terminal				
	A	C	D	E	F
0					
1					
2					
3					
4					

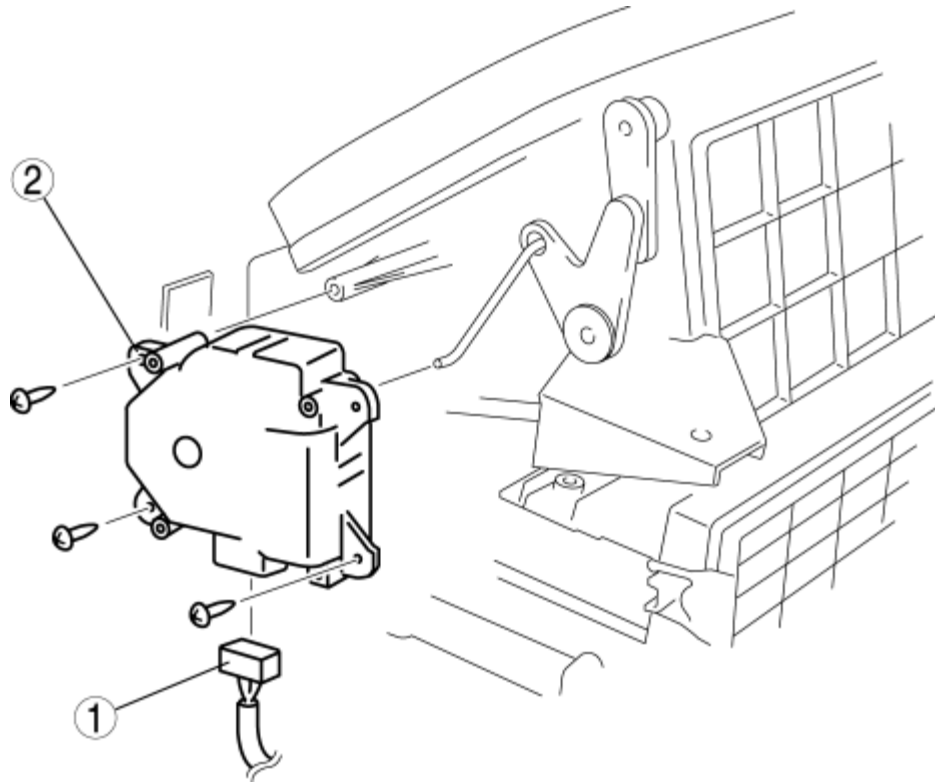
- If there is any malfunction, replace the fan switch.



2011 - RX-8 - HVAC

AIR INTAKE ACTUATOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Remove the glove compartment. (See [GLOVE COMPARTMENT REMOVAL/INSTALLATION](#).)
3. Remove the keyless control module. (See [KEYLESS CONTROL MODULE REMOVAL/INSTALLATION](#).)
4. Remove in the order indicated in the table.



1	Air intake actuator connector
2	Air intake actuator

5. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

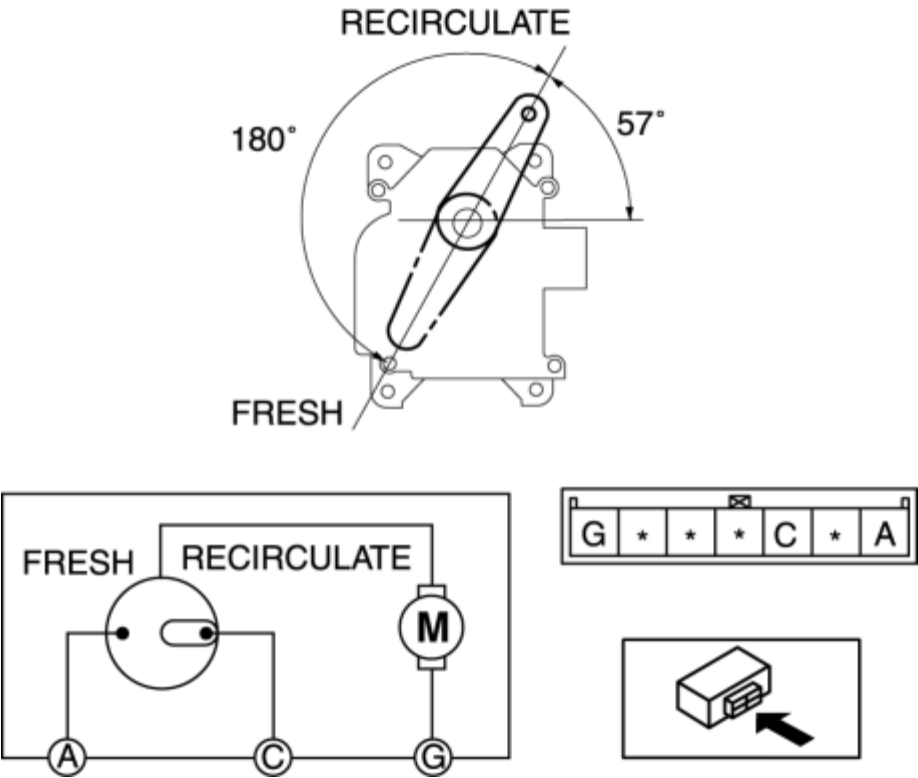
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

AIR INTAKE ACTUATOR INSPECTION [MANUAL AIR CONDITIONER]

1. Connect battery positive voltage to air intake actuator terminal G, and ground to terminal C (or A), and then verify that the air intake actuator operates as shown in the table.
- If the operation condition is not normal, replace the air intake actuator.



Terminal			Air intake actuator operation
G	A	C	
B+	Ground	-	RECIRCULATE→FRESH
B+	-	Ground	FRESH→RECIRCULATE

[< Previous](#) [Next >](#)

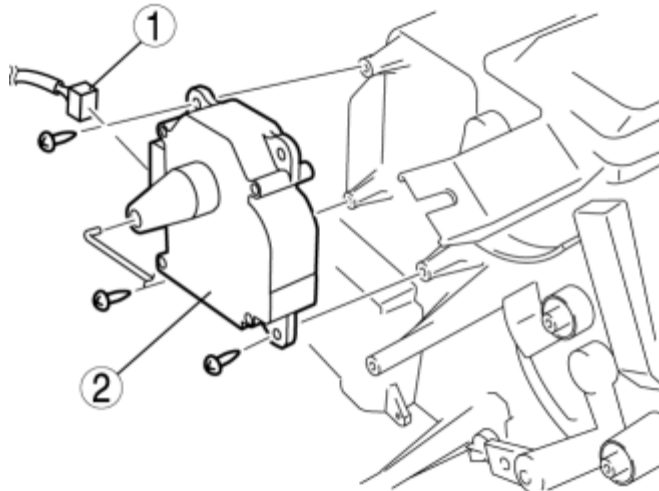
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - HVAC

AIRFLOW MODE ACTUATOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Remove the TCM. (AT) (See [TCM REMOVAL/INSTALLATION \[SJ6A-EL\].](#))
3. Remove the A/C amplifier. (See [A/C AMPLIFIER REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\].](#))
4. Remove in the order indicated in the table.



1	Airflow mode actuator connector
2	Airflow mode actuator

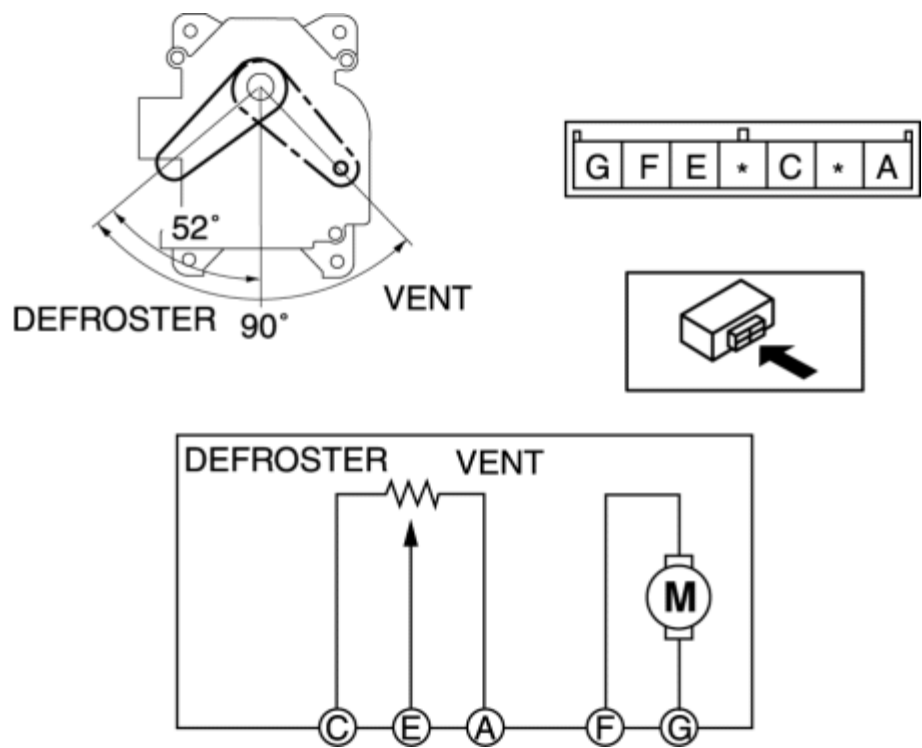
5. Install in the reverse order of removal.

2011 - RX-8 - HVAC

AIRFLOW MODE ACTUATOR INSPECTION [MANUAL AIR CONDITIONER]

1. Connect battery positive voltage to airflow mode actuator terminal F (or G), and ground to terminal G (or F), and then verify that the airflow mode actuator operates as shown in the table.

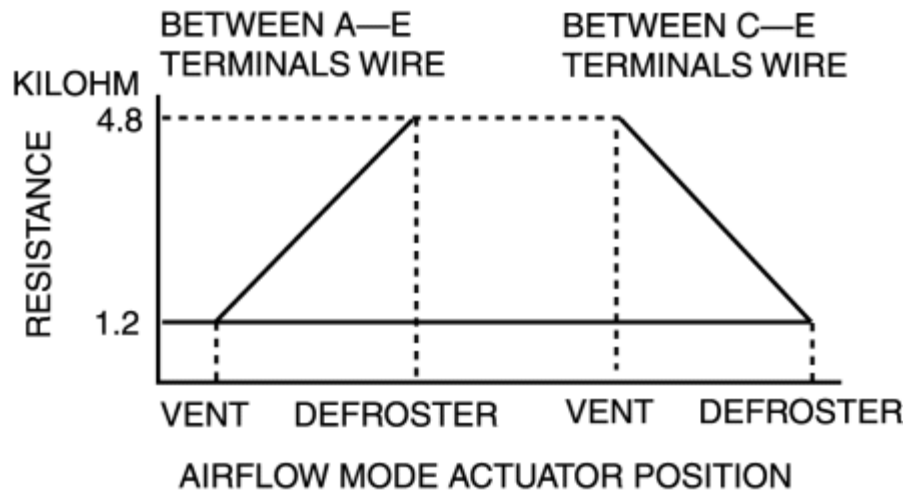
- Apply the external power supply.
- If the operation condition is not normal, replace the airflow mode actuator.



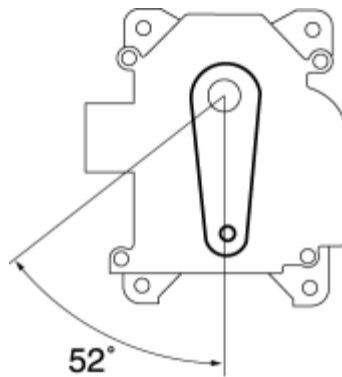
Terminal		Airflow mode actuator operation
F	G	
B+	Ground	DEFROSTER→VENT
Ground	B+	VENT→DEFROSTER

2. Verify that the resistance between terminals A and E, and C and E matches the airflow mode actuator operation as shown in the graph.

- If the operation condition and resistance are not normal, replace the airflow mode actuator.



3. Install the airflow mode actuator with the lever the position shown in the figure.



[< Previous](#) [Next >](#)

[Back to Top](#)

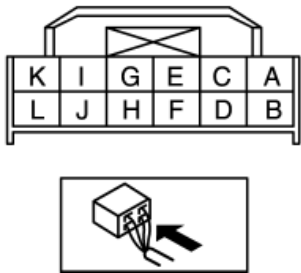
2011 - RX-8 - HVAC

CLIMATE CONTROL UNIT INSPECTION [MANUAL AIR CONDITIONER]

1. Turn the ignition switch to the ON position.
2. Connect the negative (-) lead of the tester to body ground.
3. By inserting the positive (+) lead of the tester into each climate control unit terminal, measure the voltage according to the terminal voltage table.
 - If there is any malfunction, inspect the parts under “Inspection item(s)”.
 - If the parts under “Inspection item(s)” are found to be normal, replace the climate control unit.

Terminal voltage table (reference)

CLIMATE CONTROL UNIT CONNECTOR



Terminal	Signal name	Connected to	Measurement condition	Voltage (V)	Inspection item(s)
A	B+	ROOM 15 A fuse	Under any condition	B+	<ul style="list-style-type: none">• ROOM 15 A fuse• Related wiring harness
B	ACC	<ul style="list-style-type: none">• ACC 7.5 A fuse• ACC relay• Ignition switch	Ignition switch ACC	B+	<ul style="list-style-type: none">• ACC 7.5 A fuse• ACC relay• Ignition switch• Related wiring harness
			Ignition switch LOCK	1.0 or less	
			When light switch TNS	B+	<ul style="list-style-type: none">• light

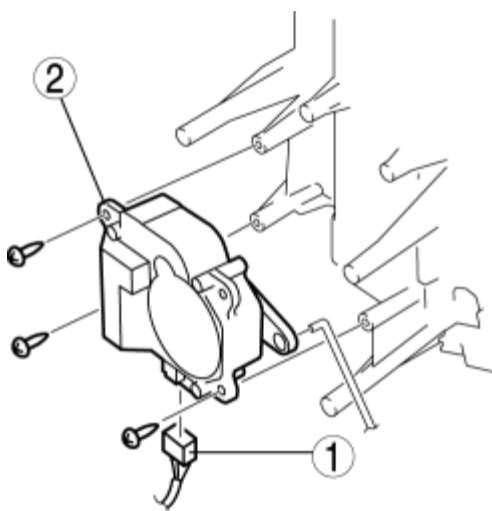
C	TNS	TNS relay			switch
			When light switch OFF	1.0 or less	<ul style="list-style-type: none"> Related wiring harness
D	Panel light control	Panel light control switch	Light switch ON and panel light control switch at max	1.0 or less	<ul style="list-style-type: none"> Panel light control switch
			Light switch ON and panel light control switch at min	11.5	<ul style="list-style-type: none"> Related wiring harness
E	IG2	<ul style="list-style-type: none"> A/C 7.5 A fuse Ignition switch 	Ignition switch ON	B+	<ul style="list-style-type: none"> A/C 7.5 A fuse
			Ignition switch LOCK or ACC	1.0 or less	<ul style="list-style-type: none"> Ignition switch Related wiring harness
F	Vehicle speed	<ul style="list-style-type: none"> ABS HU/CM DSC HU/CM 	When vehicle driving	1.0 or less	<ul style="list-style-type: none"> ABS HU/CM DSC HU/CM Related wiring harness
G	Shield GND	A/C amplifier	Under any condition	1.0 or less	<ul style="list-style-type: none"> A/C amplifier Related wiring harness
H	GND	Body ground	Under any condition	1.0 or less	<ul style="list-style-type: none"> Related wiring harness
I	Serial signal 1	A/C amplifier	<p>Inspect the continuity in the wiring harness between climate control unit terminal I and A/C amplifier terminal 1R.</p> <p>Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.</p>	Continuity	<ul style="list-style-type: none"> A/C amplifier Related wiring harness
J	MS-CAN_H	CAN related module	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.		<ul style="list-style-type: none"> Related wiring harness
K	Serial signal 2	A/C amplifier	<p>Inspect the continuity in the wiring harness between climate control unit terminal K and A/C amplifier terminal 1P.</p> <p>Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.</p>	Continuity	<ul style="list-style-type: none"> A/C amplifier Related wiring harness

L	MS-CAN_L	CAN related module	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.	<ul style="list-style-type: none">• Related wiring harness
---	----------	--------------------	--	--

2011 - RX-8 - HVAC

AIR MIX ACTUATOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Remove the TCM. (AT) (See [TCM REMOVAL/INSTALLATION \[SJ6A-EL\].](#))
3. Remove the A/C amplifier. (See [A/C AMPLIFIER REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\].](#))
4. Remove in the order indicated in the table.



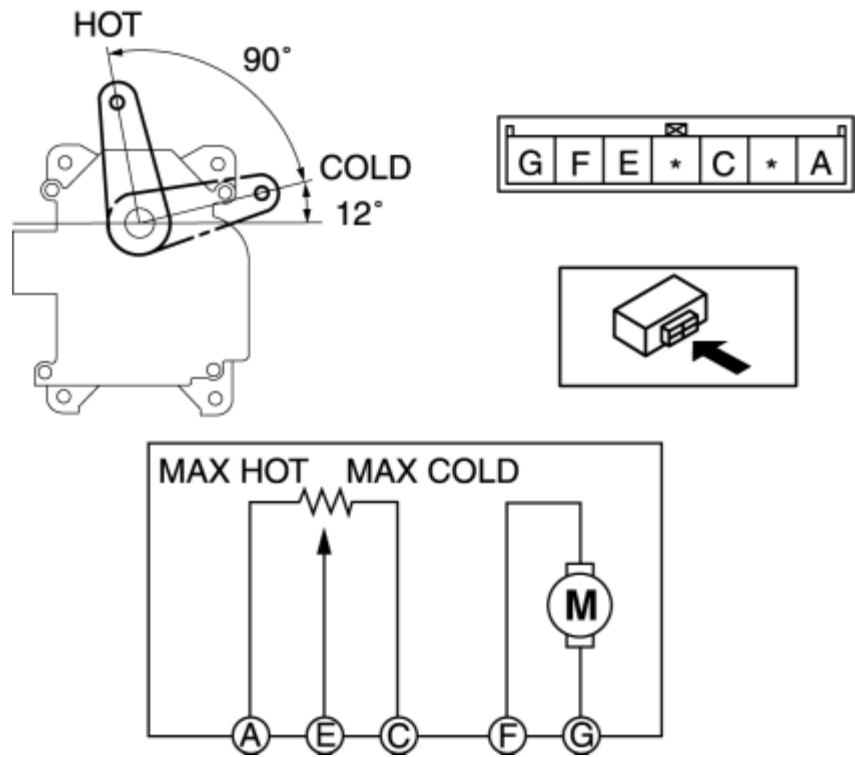
1	Air mix actuator connector
2	Air mix actuator

5. Install in the reverse order of removal.

2011 - RX-8 - HVAC

AIR MIX ACTUATOR INSPECTION [MANUAL AIR CONDITIONER]

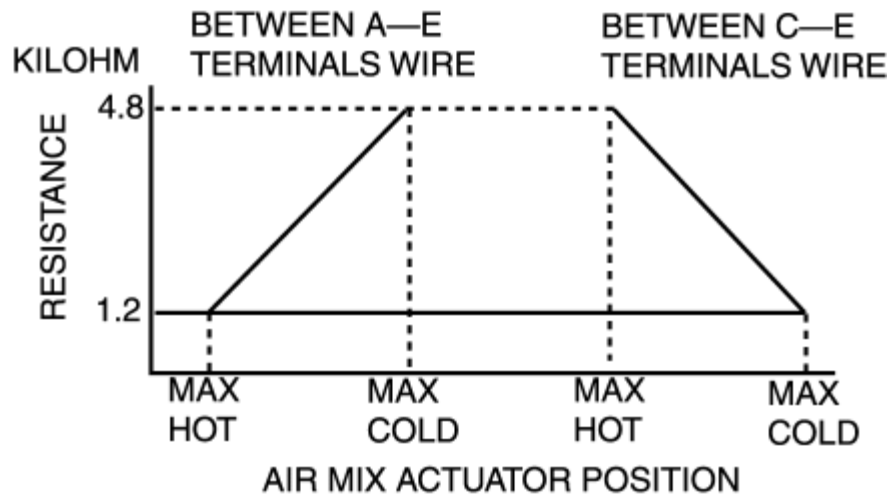
1. Connect battery positive voltage to air mix actuator terminal F (or G), and ground to terminal G (or F), and then verify that the air mix actuator operates as shown in the table.



- Apply the external power supply.
- If the operation condition is not normal, replace the air mix actuator.

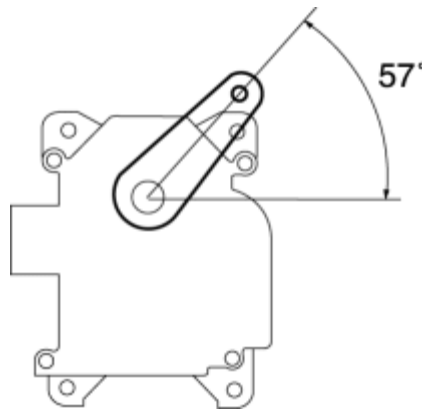
Terminal		Air mix actuator operation
F	G	
B+	Ground	COLD→HOT
Ground	B+	HOT→COLD

2. Verify that the resistance between terminals A and E, and C and E matches the air mix actuator operation as shown in the graph.



- If the operation condition and resistance are not normal, replace the air mix actuator.

3. Install the air mix actuator with the lever the position shown in the figure.

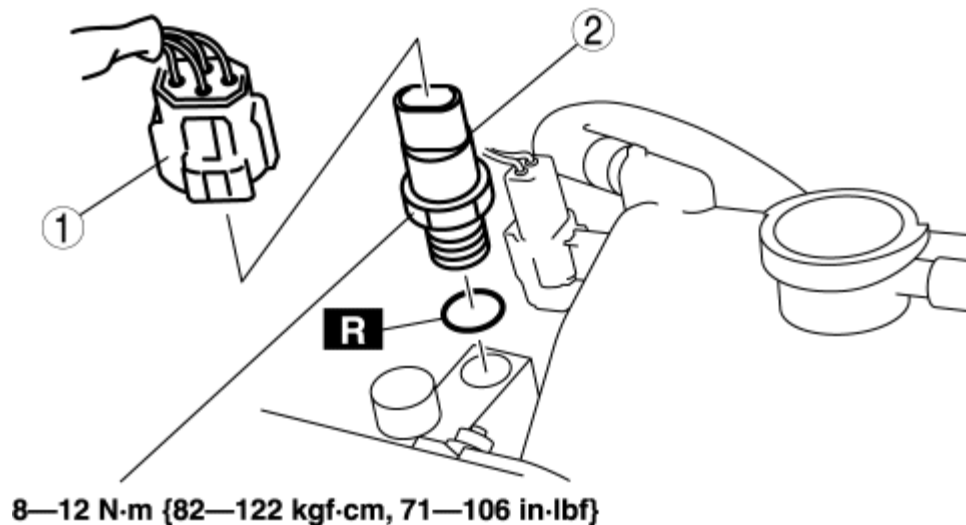


[< Previous](#) [Next >](#)

2011 - RX-8 - HVAC

REFRIGERANT PRESSURE SWITCH REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Discharge the refrigerant from the system. (See [REFRIGERANT CHARGING](#).)
3. Hold the piping block with pliers or a similar tool and loosen the refrigerant pressure switch using a wrench.
4. Remove in the order indicated in the table.



1	Refrigerant pressure switch connector
2	Refrigerant pressure switch
(See Refrigerant Pressure Switch Installation Note .)	

5. Install in the reverse order of removal.

Refrigerant Pressure Switch Installation Note

1. Apply compressor oil to the O-ring joints.

[< Previous](#) [Next >](#)

[Back to Top](#)

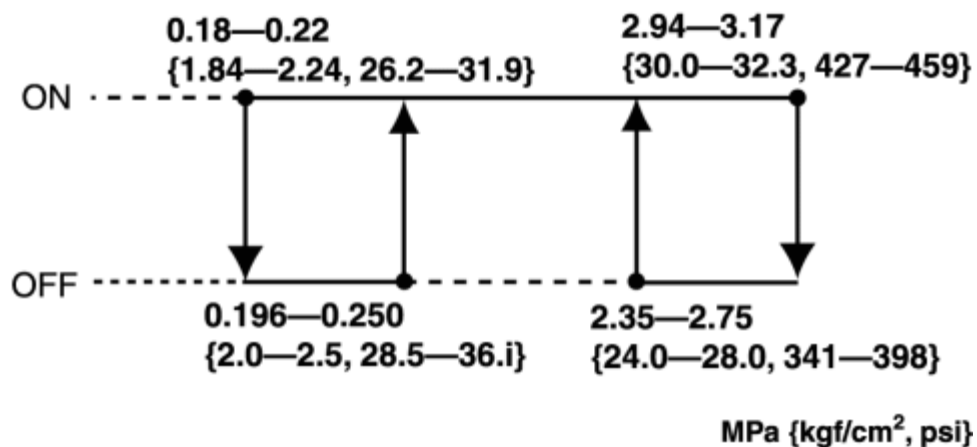
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - HVAC

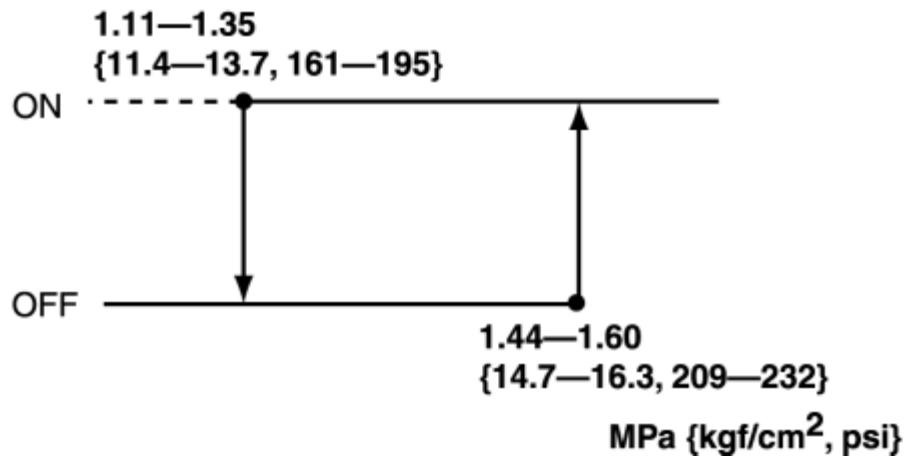
REFRIGERANT PRESSURE SWITCH INSPECTION [MANUAL AIR CONDITIONER]

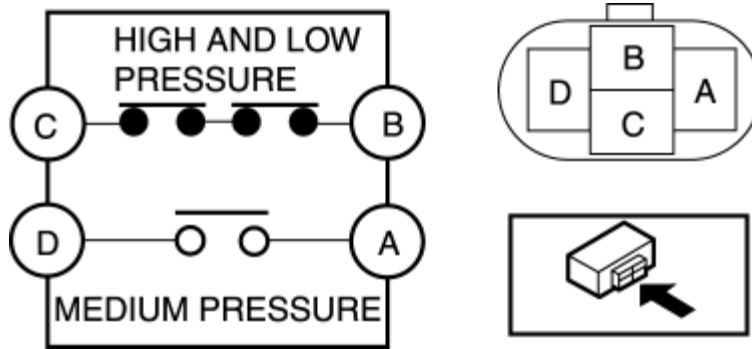
1. Connect the manifold gauge.
2. Verify the high-pressure side reading.
3. Disconnect the refrigerant pressure switch connector.
4. Verify continuity between the terminals of the refrigerant pressure switch.
 - If the continuity is not normal, replace the refrigerant pressure switch.

HI AND LO PRESSURE



MEDIUM PRESSURE





[< Previous](#) [Next >](#)

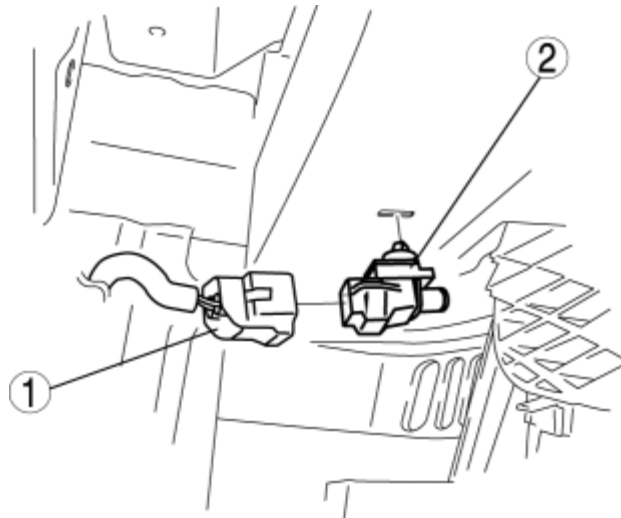
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - HVAC

AMBIENT TEMPERATURE SENSOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Remove the aerodynamic under cover. (See [AERODYNAMIC UNDER COVER REMOVAL/INSTALLATION](#).)
3. Remove in the order indicated in the table.



1	Ambient temperature sensor connector
2	Ambient temperature sensor

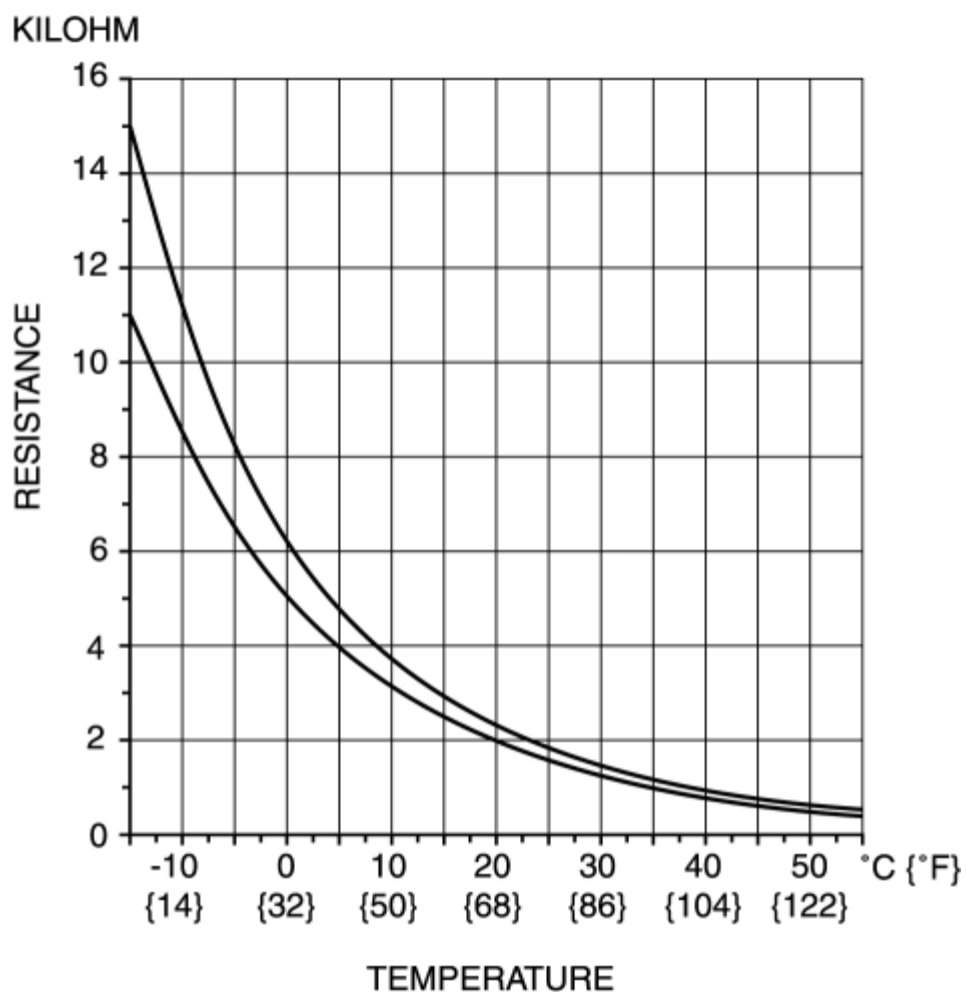
4. Install in the reverse order of removal.

2011 - RX-8 - HVAC

AMBIENT TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER]

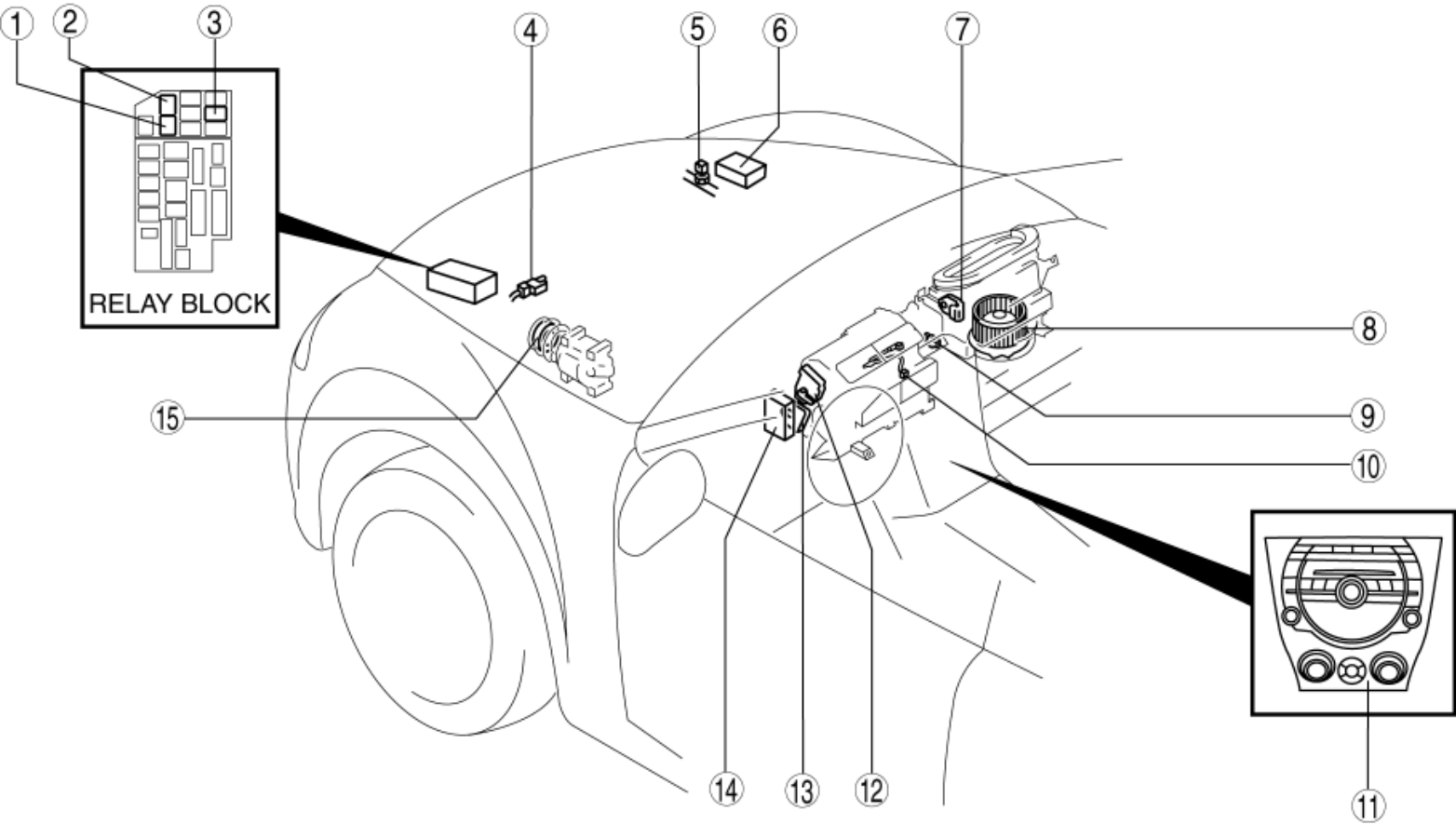
1. Measure the temperature around the ambient temperature sensor, then measure the resistance between the terminals of the ambient temperature sensor.

- If the characteristics of the ambient temperature sensor are not as shown in the graph, replace the ambient temperature sensor.



2011 - RX-8 - HVAC

HVAC CONTROL SYSTEM LOCATION INDEX [MANUAL AIR CONDITIONER]



1	A/C relay (See RELAY INSPECTION .)
2	Rear window defroster relay (See RELAY INSPECTION .)
3	Blower relay (See RELAY INSPECTION .)
4	Ambient temperature sensor (See AMBIENT TEMPERATURE SENSOR REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER]) (See AMBIENT TEMPERATURE SENSOR INSPECTION [MANUAL AIR CONDITIONER] .)

5 Refrigerant pressure switch

(See [REFRIGERANT PRESSURE SWITCH REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\].](#))

(See [REFRIGERANT PRESSURE SWITCH INSPECTION \[MANUAL AIR CONDITIONER\].](#))

6 PCM

(See [PCM REMOVAL/INSTALLATION \[13B-MSP\].](#))

(See [PCM INSPECTION \[13B-MSP\].](#))

7 Air intake actuator

(See [AIR INTAKE ACTUATOR REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\].](#))

(See [AIR INTAKE ACTUATOR INSPECTION \[MANUAL AIR CONDITIONER\].](#))

8 Blower motor

(See [BLOWER MOTOR REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\].](#))

(See [BLOWER MOTOR INSPECTION \[MANUAL AIR CONDITIONER\].](#))

9 Resistor

(See [RESISTOR REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\].](#))

(See [RESISTOR INSPECTION \[MANUAL AIR CONDITIONER\].](#))

10 Evaporator temperature sensor

(See [EVAPORATOR TEMPERATURE SENSOR REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\].](#))

(See [EVAPORATOR TEMPERATURE SENSOR INSPECTION \[MANUAL AIR CONDITIONER\].](#))

11 Climate control unit

(See [CLIMATE CONTROL UNIT REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\].](#))

(See [CLIMATE CONTROL UNIT INSPECTION \[MANUAL AIR CONDITIONER\].](#))

12 Airflow mode actuator

(See [AIRFLOW MODE ACTUATOR REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\].](#))

(See [AIRFLOW MODE ACTUATOR INSPECTION \[MANUAL AIR CONDITIONER\].](#))

13 Air mix actuator

(See [AIR MIX ACTUATOR REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\].](#))

(See [AIR MIX ACTUATOR INSPECTION \[MANUAL AIR CONDITIONER\].](#))

14 A/C amplifier

(See [A/C AMPLIFIER REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\].](#))

(See [A/C AMPLIFIER INSPECTION \[MANUAL AIR CONDITIONER\].](#))

15Magnetic clutch

(See [MAGNETIC CLUTCH DISASSEMBLY/ASSEMBLY \[MANUAL AIR CONDITIONER\].](#))

(See [MAGNETIC CLUTCH ADJUSTMENT \[MANUAL AIR CONDITIONER\].](#))

(See [MAGNETIC CLUTCH INSPECTION \[MANUAL AIR CONDITIONER\].](#))

[< Previous](#) [Next >](#)

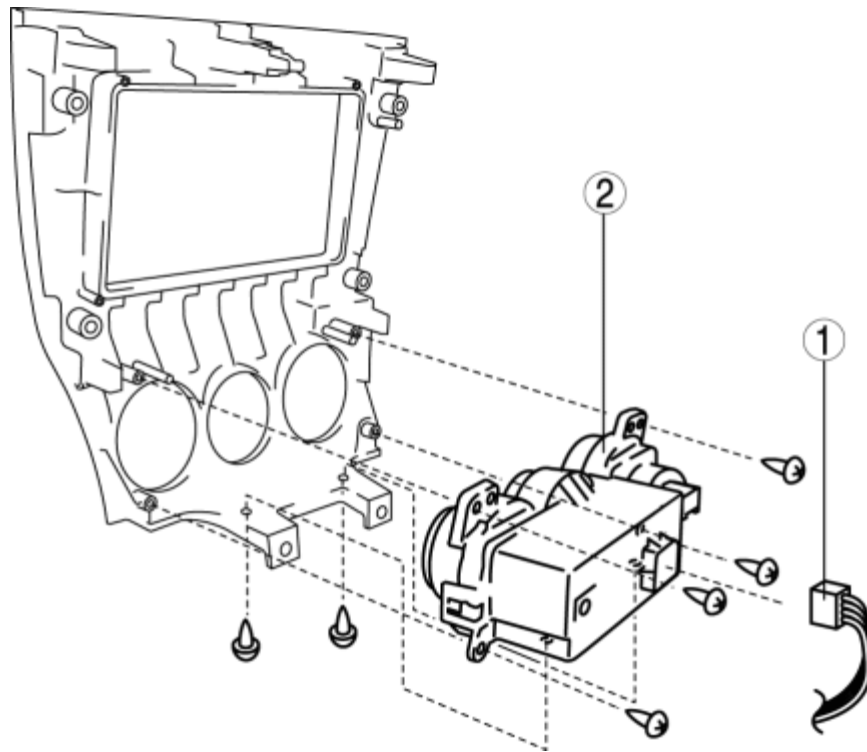
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - HVAC

CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [MANUAL AIR CONDITIONER]

1. Disconnect the negative battery cable.
2. Remove the lower panel. (See [LOWER PANEL REMOVAL/INSTALLATION](#).)
3. Remove the console. (See [CONSOLE REMOVAL/INSTALLATION](#).)
4. Remove the center panel unit. (See [CENTER PANEL UNIT REMOVAL/INSTALLATION](#).)
5. Remove in the order indicated in the table.



1	Climate control unit connector
2	Climate control unit

6. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - HVAC

HVAC TECHNICAL DATA

Item	Specification
Refrigerant type	R-134a
Regular amount of refrigerant (approx. quantity)	430 g {15.2 oz}
A/C compressor oil type	DENSO OIL8
A/C compressor oil sealed volume (approx. quantity)	60 ml {60 cc, 2.03 fl oz}
Magnetic clutch clearance	0.20—0.45 mm {0.008—0.017 in}

[< Previous](#) [Next >](#)

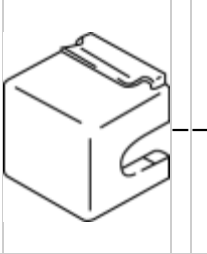
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

[< Previous](#)

2011 - RX-8 - HVAC

HVAC SST

49 N061 001 Remover A (Part of 49 N061 0A0)	
---	---

[< Previous](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

Workshop Manual - Restraints

2011 - RX-8

On-Board Diagnostics

- [AIR BAG SYSTEM WIRING DIAGRAM](#)
- [FOREWORD](#)
- [FLOWCHART](#)
- [DTC DISPLAY](#)
- [CLEARING DTC](#)
- [DTC TABLE](#)
- [DTC B1013](#)
- [DTC B1017](#)
- [DTC B1231](#)
- [DTC B1342](#)
- [DTC B1869, B1870](#)
- [DTC B1877, B1878, B1879, B1885](#)
- [DTC B1881, B1882, B1883, B1886](#)
- [DTC B1884, B1890](#)
- [DTC B1913, B1916, B1932, B1934](#)
- [DTC B1913, B1925, B1933, B1935](#)
- [DTC B1992, B1993, B1994, B1995](#)
- [DTC B1996, B1997, B1998, B1999](#)
- [DTC B2228, B2230, B2232, B2234](#)
- [DTC B2229, B2231, B2233, B2235](#)
- [DTC B2290](#)
- [DTC B2296](#)
- [DTC B2434, B2435, B2691](#)
- [DTC B2438, B2439, B2692](#)
- [DTC B2444, U2017](#)
- [DTC B2445, U2018](#)
- [DTC B2477](#)
- [DTC B2773, B2774, B2775, B2776](#)
- [DTC B2777, B2778, B2779, B2780](#)
- [DTC B2867](#)
- [DTC C1947, C1948, C1981](#)
- [PID/DATA MONITOR DISPLAY](#)
- [PID/DATA MONITOR TABLE](#)

Symptom Troubleshooting

- [AIR BAG SYSTEM WIRING DIAGRAM \(SYMPTOM TROUBLESHOOTING\)](#)

- [TROUBLESHOOTING INDEX](#)
- [NO.1 AIR BAG SYSTEM WARNING LIGHT DOES NOT ILLUMINATE](#)
- [NO.2 AIR BAG SYSTEM WARNING LIGHT IS ILLUMINATED CONSTANTLY](#)
- [NO.3 PASSENGER AIR BAG DEACTIVATION \(PAD\) INDICATOR LIGHT ILLUMINATES INCORRECTLY](#)

Air Bag System

- [LOCATION INDEX](#)
- [AIR BAG SYSTEM SERVICE WARNINGS](#)
- [AIR BAG SYSTEM SERVICE CAUTIONS](#)
- [DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION](#)
- [PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION](#)
- [SIDE AIR BAG MODULE REMOVAL/INSTALLATION](#)
- [CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION](#)
- [CRASH ZONE SENSOR REMOVAL/INSTALLATION](#)
- [SAS CONTROL MODULE REMOVAL/INSTALLATION](#)
- [SAS CONTROL MODULE CONFIGURATION](#)
- [SEAT WEIGHT SENSOR CONTROL MODULE REMOVAL/INSTALLATION](#)
- [SEAT WEIGHT SENSOR CALIBRATION](#)
- [SEAT WEIGHT SENSOR INSPECTION](#)
- [SIDE AIR BAG SENSOR REMOVAL/INSTALLATION](#)
- [CLOCK SPRING REMOVAL/INSTALLATION](#)
- [CLOCK SPRING ADJUSTMENT](#)
- [CLOCK SPRING INSPECTION](#)
- [AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DEPLOYMENT PROCEDURES](#)
- [AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DISPOSAL PROCEDURES](#)
- [INSPECTION OF SST \(DEPLOYMENT TOOL\)](#)

Seat Belt

- [LOCATION INDEX](#)
- [FRONT SEAT BELT REMOVAL/INSTALLATION](#)
- [LOCK RELEASE SOLENOID INSPECTION](#)
- [REAR SEAT BELT REMOVAL/INSTALLATION](#)
- [SEAT BELT INSPECTION](#)
- [FRONT BUCKLE REMOVAL/INSTALLATION](#)
- [FRONT BUCKLE SWITCH INSPECTION](#)
- [REAR BUCKLE REMOVAL/INSTALLATION](#)
- [CHILD-RESTRAINT SEAT ANCHOR REMOVAL/INSTALLATION](#)

Maintenance/Service Tools

- [RESTRAINTS SST](#)

2011 - RX-8 - Restraints

FOREWORD

Outline

- The OBD (on-board diagnostic) system has the following functions:
 - Malfunction detection function: Detects malfunctions in the air bag system and outputs DTCs.
 - Data monitor function: Reads out specific input/output signals and the system status.
- Diagnostic DTCs can be read/cleared using the M-MDS.

NOTE:

- When the air bag system is malfunctioning, turn the ignition switch to the ON position to display the current DTC using the air bag system warning light on the instrument cluster. However this light is strictly for reference. Make sure to inspect the system using the M-MDS.

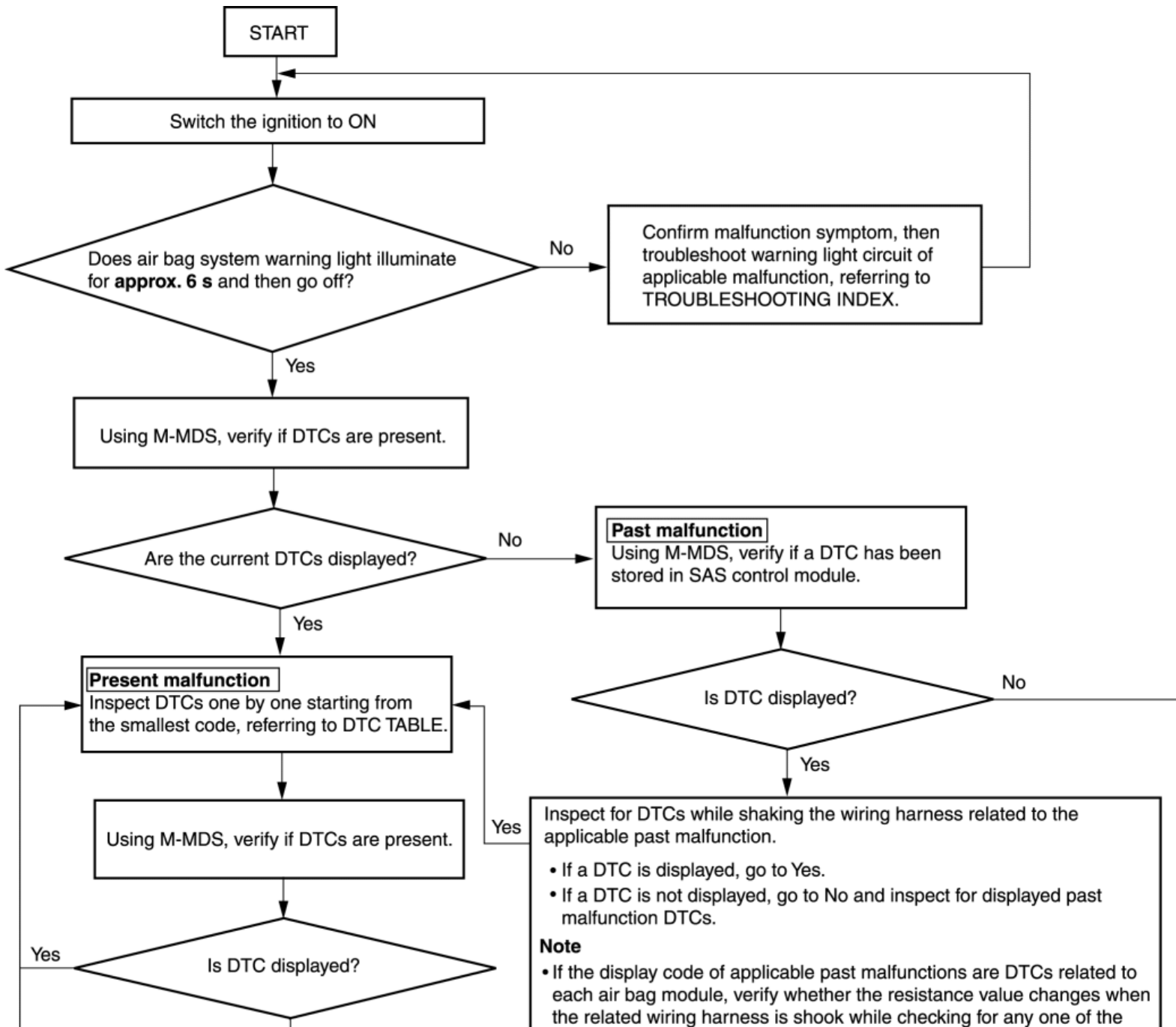
2011 - RX-8 - Restraints

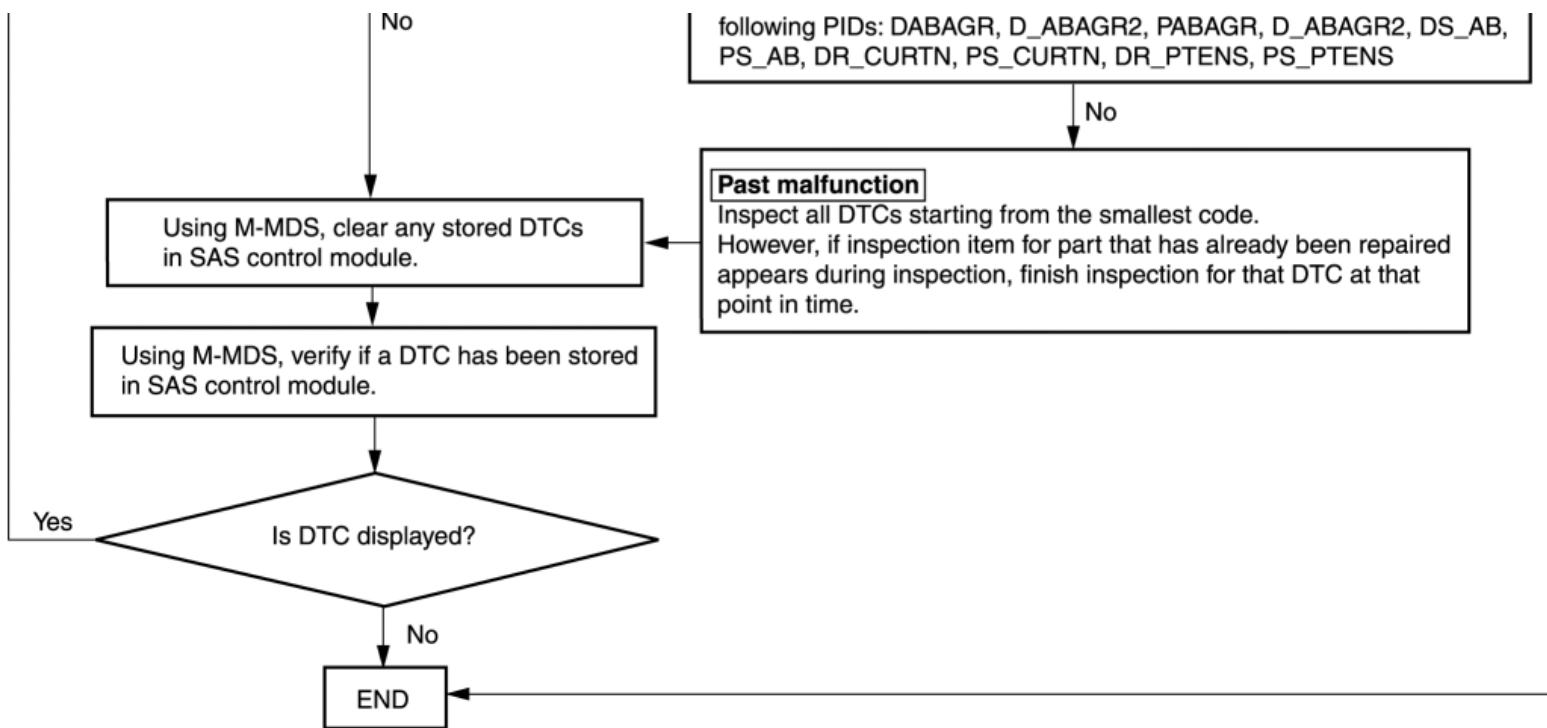
FLOWCHART

- Use the following flowchart to verify the cause of the trouble.

NOTE:

- While performing the inspection of the past malfunction code, the applicable DTCs may be added to memory by removing or disconnecting the related parts. Inspect only the DTCs that were indicated before inspecting.
- When DTCs of the present malfunction are no longer output after present or past malfunctions or both have been repaired, be sure to perform past malfunction display cancellation to prevent repair of malfunctions that have already been repaired.

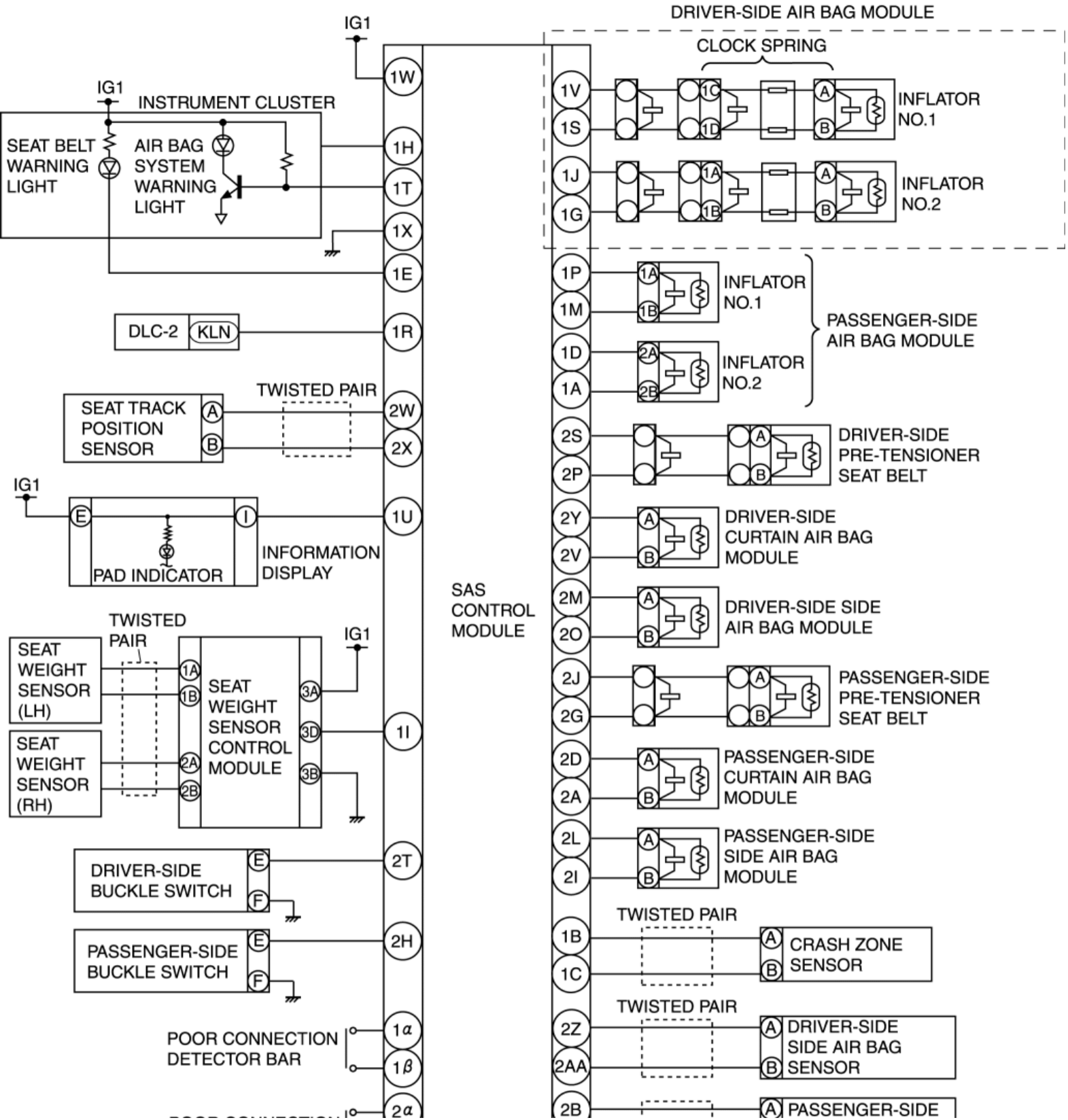


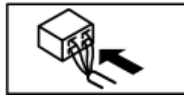
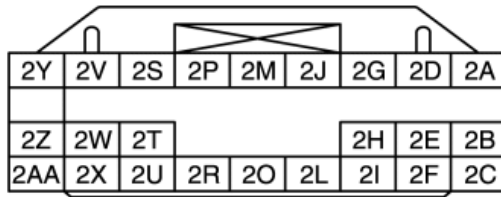
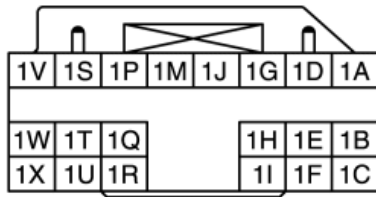
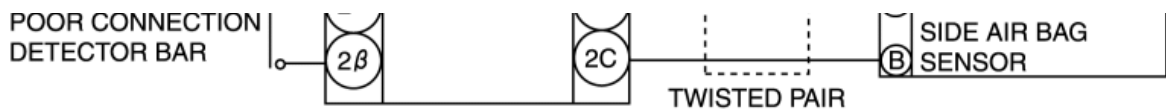


[Next >](#)

2011 - RX-8 - Restraints

AIR BAG SYSTEM WIRING DIAGRAM





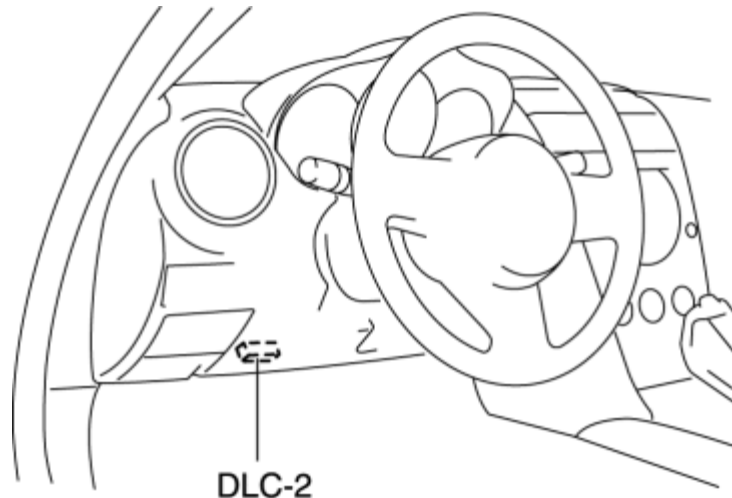
[Next >](#)

[Back to Top](#)

2011 - RX-8 - Restraints

DTC DISPLAY

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "RCM".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "RCM".
 3. Select "Self Test".

3. Verify the DTC according to the directions on the screen.

- If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.

4. After completion of repairs, clear all DTCs stored in the SAS control module. (See [CLEARING DTC.](#))

[< Previous](#) [Next >](#)

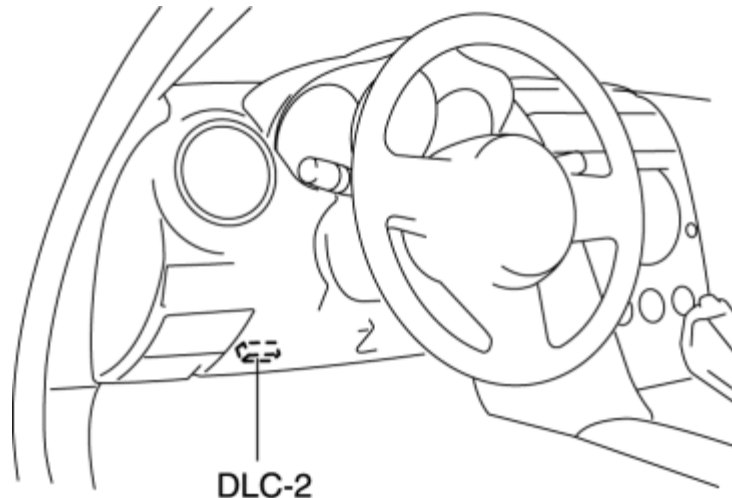
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Restraints

CLEARING DTC

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "RCM".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "RCM".
 3. Select "Self Test".

3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Turn the ignition switch to the LOCK position.
6. Turn the ignition switch to the ON position and wait for **5 s more**.
7. Perform DTC inspection. (See [DTC DISPLAY](#).)

8. Verify that no DTCs are displayed.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)




2011 - RX-8 - Restraints





DTC TABLE

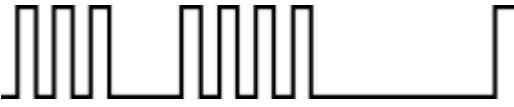







- DTCs are common for present and past malfunction diagnosis.






NOTE:









- When DTCs not shown in the DTC table are displayed, replace the SAS control module.
- If the air bag system warning light does not illuminate or remains illuminated when the ignition switch is turned to the ON position, inspect and repair the air bag system warning light circuit, and then confirm that the air bag system warning light is operational.
- The air bag system warning light flashes the DTC pattern for five cycles, and then remains illuminated until the ignition switch is turned to the LOCK position.









DTC				System malfunction location	Page
M-MDS display	Air bag system warning light				
	Flashing pattern		Priority ranking		
B1013	16		17	Seat weight sensor calibration error	(See DTC B1013 .)
B1017	14		3	Deployment prohibited because configuration is not set	(See DTC B1017 .)
B1231	13		2	SAS control module activation (deployment) control freeze	(See DTC B1231 .)
B1342	—	Continuously illuminated	1	SAS control module (DTC 12 detection circuit malfunction)	(See DTC B1342 .)





B1869	—	Continuously illuminated	1	Air bag system warning light circuit open	
	—	Does not illuminate	—	Air bag system warning light circuit short to body ground	(See DTC B1869 , B1870 .)
B1870	—	Continuously illuminated	1	Air bag system warning light circuit short to power supply	
B1877				Driver-side pre-tensioner seat belt circuit resistance high	
B1878	33		12	Driver-side pre-tensioner seat belt circuit short to power supply	(See DTC B1877 , B1878 , B1879 , B1885 .)
B1879				Driver-side pre-tensioner seat belt circuit short to body ground	
B1881				Passenger-side pre-tensioner seat belt circuit resistance high	
B1882	34		11	Passenger-side pre-tensioner seat belt circuit short to power supply	(See DTC B1881 , B1882 , B1883 , B1886 .)
B1883				Passenger-side pre-tensioner seat belt circuit short to body ground	
B1884	18		20	Passenger air bag deactivation (PAD) indicator open or short to body ground	(See DTC B1884 , B1890 .)
B1885	33		12	Driver-side pre-tensioner seat belt circuit resistance low	(See DTC B1877 , B1878 , B1879 , B1885 .)



B1886	34		11	Passenger-side pre-tensioner seat belt circuit resistance low	(See DTC B1881 , B1882 , B1883 , B1886 .)
B1890	18		20	Passenger air bag deactivation (PAD) indicator circuit short to power supply	(See DTC B1884 , B1890 .)
B1913	19		10	Driver-side air bag module (inflator No.1) circuit short to body ground	(See DTC B1913 , B1916 , B1932 , B1934 .)
	21		9	Passenger-side air bag module (inflator No.1) circuit short to body ground	(See DTC B1913 , B1925 , B1933 , B1935 .)
B1916	19		10	Driver-side air bag module (inflator No.1) circuit short to power supply	(See DTC B1913 , B1916 , B1932 , B1934 .)
B1925	21		9	Passenger-side air bag module (inflator No.1) circuit short to power supply	(See DTC B1913 , B1925 , B1933 , B1935 .)
B1932	19		10	Driver-side air bag module (inflator No.1) circuit resistance high	(See DTC B1913 , B1916 , B1932 , B1934 .)
B1933	21		9	Passenger-side air bag module (inflator No.1) circuit resistance high	(See DTC B1913 , B1925 , B1933 , B1935 .)
				Driver-side air bag module	(See DTC B1913 .)

B1934	19		10	(inflator No.1) circuit resistance low	B1916. B1932. B1934.)
B1935	21		9	Passenger-side air bag module (inflator No.1) circuit resistance low	(See DTC B1913. B1925. B1933. B1935.)
B1992	22		14	Driver-side side air bag module circuit short to power supply	(See DTC B1992. B1993. B1994. B1995.)
B1993				Driver-side side air bag module circuit short to body ground	
B1994				Driver-side side air bag module circuit resistance high	
B1995				Driver-side side air bag module circuit resistance low	
B1996	23		13	Passenger-side side air bag module circuit short to power supply	(See DTC B1996. B1997. B1998. B1999.)
B1997				Passenger-side side air bag module circuit short to body ground	
B1998				Passenger-side side air bag module circuit resistance high	
B1999				Passenger-side side air bag module circuit resistance low	
B2228	19		10	Driver-side air bag module (inflator No.2) circuit short to body ground	(See DTC B2228. B2230. B2232.

					B2234.)
B2229	21		9	Passenger-side air bag module (inflator No.2) circuit short to body ground	(See DTC B2229. B2231. B2233. B2235.)
B2230	19		10	Driver-side air bag module (inflator No.2) circuit short to power supply	(See DTC B2228. B2230. B2232. B2234.)
B2231	21		9	Passenger-side air bag module (inflator No.2) circuit short to power supply	(See DTC B2229. B2231. B2233. B2235.)
B2232	19		10	Driver-side air bag module (inflator No.2) circuit resistance high	(See DTC B2228. B2230. B2232. B2234.)
B2233	21		9	Passenger-side air bag module (inflator No.2) circuit resistance high	(See DTC B2229. B2231. B2233. B2235.)
B2234	19		10	Driver-side air bag module (inflator No.2) circuit resistance low	(See DTC B2228. B2230. B2232. B2234.)
B2235	21		17	Passenger-side air bag module (inflator No.2) circuit resistance low	(See DTC B2229. B2231. B2233. B2235.)
B2290	16		17	Passenger sensing system malfunction	(See DTC B2290.)

B2296	42		8	Crash zone sensor (communication error, internal circuit abnormal)	(See DTC B2296.)
B2434	51		18	Driver-side front buckle switch circuit short to ground	(See DTC B2434. B2435. B2691.)
B2435				Driver-side front buckle switch circuit resistance not within specification	
B2438	52		19	Passenger-side front buckle switch circuit short to ground	(See DTC B2438. B2439. B2692.)
B2439				Passenger-side front buckle switch circuit resistance not within specification	
B2444	43		7	Driver-side side air bag sensor (internal circuit abnormal)	(See DTC B2444. U2017.)
B2445	44		6	Passenger-side side air bag sensor (internal circuit abnormal)	(See DTC B2445. U2018.)
B2477	54		4	Configuration error	(See DTC B2477.)
B2691	51		18	Driver-side front buckle switch circuit open or short to power supply	(See DTC B2434. B2435. B2691.)
B2692	52		19	Passenger-side front buckle switch circuit open or short to power supply	(See DTC B2438. B2439. B2692.)
B2773				Driver-side curtain air bag module circuit resistance low	

B2774	24		16	Driver-side curtain air bag module circuit resistance high	(See DTC B2773 , B2774 , B2775 , B2776 .)
B2775				Driver-side curtain air bag module circuit short to body ground	
B2776				Driver-side curtain air bag module circuit short to power supply	
B2777	25		15	Passenger-side curtain air bag module circuit resistance low	(See DTC B2777 , B2778 , B2779 , B2780 .)
B2778				Passenger-side curtain air bag module circuit resistance high	
B2779				Passenger-side curtain air bag module circuit short to body ground	
B2780				Passenger-side curtain air bag module circuit short to power supply	
B2867	31		5	Poor connection of any SAS control module connectors	(See DTC B2867 .)
C1947	49		21	Seat track position sensor circuit short to body ground	(See DTC C1947 , C1948 , C1981 .)
C1948				Seat track position sensor circuit resistance not within specification	
C1981				Seat track position sensor circuit open or short to power supply	
U2017	43		7	Driver-side side air bag sensor (communication	(See DTC B2444 .)

				error)	U2017.)
U2018	44		6	Passenger-side side air bag sensor (communication error)	(See DTC B2445. U2018.)

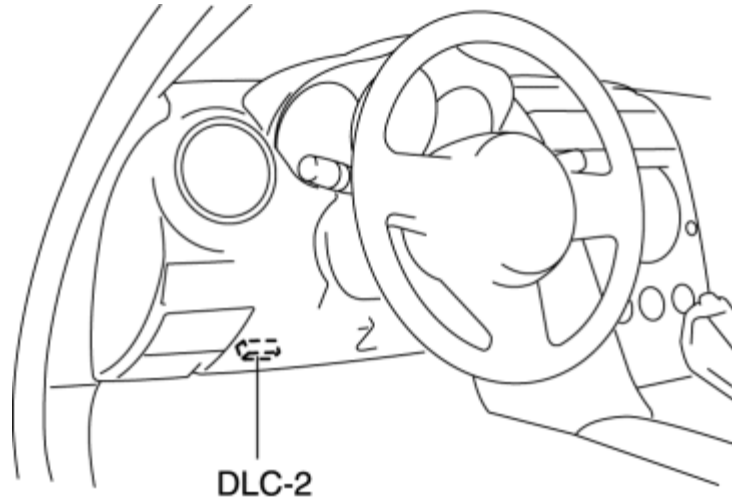
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Restraints

PID/DATA MONITOR DISPLAY

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "RCM".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "RCM".
 3. Select "DataLogger".

3. Select the applicable PID from the PID table.
4. Verify the PID data according to the directions on the screen.

NOTE:

- The PID data screen function is used for monitoring the calculated value. Therefore, if the monitored value of the output parts is not within the specification, inspection of the monitored value of input parts corresponding to applicable output part control is necessary.

In addition, because the system does not display output part malfunction as abnormality in the monitored value, it is necessary to inspect the output part individually.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Restraints

PID/DATA MONITOR TABLE

PID name (definition)	Unit/Condition	Operation Condition (Reference)	Terminal
CCNT_RCM (Number of continuous DTCs)	—	<ul style="list-style-type: none"> DTCs detected: 1—255 No DTCs detected: 0 	—
CRSH_ST_D1 (Driver-side side air bag sensor communication state)	OK/ FAULT	<ul style="list-style-type: none"> Sensor normal: OK Sensor communication error: FAULT 	2Z, 2AA
CRSH_ST_D2 (Driver-side side air bag sensor circuit state)	OK/ FAULT	<ul style="list-style-type: none"> Sensor normal: OK Sensor internal circuit error: FAULT 	2Z, 2AA
CRSH_ST_F1 (Crash zone sensor communication state)	OK/ FAULT	<ul style="list-style-type: none"> Sensor normal: OK Sensor communication error: FAULT 	1B, 1C
CRSH_ST_F2 (Crash zone sensor circuit state)	OK/ FAULT	<ul style="list-style-type: none"> Sensor normal: OK Sensor internal circuit error: FAULT 	1B, 1C
CRSH_ST_P1 (Passenger-side side air bag sensor communication state)	OK/ FAULT	<ul style="list-style-type: none"> Sensor normal: OK Sensor communication error: FAULT 	2B, 2C
CRSH_ST_P2 (Passenger-side side air bag sensor circuit state)	OK/ FAULT	<ul style="list-style-type: none"> Sensor normal: OK Sensor internal circuit error: FAULT 	2B, 2C

D_ABAGR2 (Driver-side air bag module (inflator No.2) resistance)	Ohm	Under any condition: 1.5—3.7 ohms	1G, 1J
DABAGR (Driver-side air bag module (inflator No.1) resistance)	Ohm	Under any condition: 1.5—3.7 ohms	1S, 1V
D_PTENSFLT (Driver-side pre-tensioner seat belt circuit status)	SHRT_B+/ SHRT_GND/ OPEN/ SQ_LOWRES/ Normal	<ul style="list-style-type: none"> • Related wiring harness short to power supply: SHRT_B+ • Related wiring harness short to ground: SHRT_GND • Related wiring harness circuit open: OPEN • Pre-tensioner seat belt circuit resistance low: SQ_LOWRES • Related wiring harness normal: Normal 	2P, 2S
DR_BUKL (Driver-side buckle switch status)	Buckled/ Unbuckled	<ul style="list-style-type: none"> • Driver-side buckle switch on: Buckled • Driver-side buckle switch off: Unbuckled 	2T
DR_CURTN (Driver-side curtain air bag module resistance)	Ohm	Under any condition: 1.4—3.2 ohms	2V, 2Y
DR_PTENS (Driver-side pre-tensioner seat belt resistance)	Ohm	Under any condition: 1.5—3.1 ohms	2P, 2S
DS_AB (Driver-side side air bag module resistance)	Ohm	Under any condition: 1.4—3.2 ohms	2M, 2O
		<ul style="list-style-type: none"> • Related wiring harness 	

DS_AB_ST (Driver-side side air bag module circuit status)	SHRT_B+/ SHRT_GND/ OPEN/ SQ_LOWRES/ Normal	short to power supply: SHRT_B+ <ul style="list-style-type: none"> Related wiring harness short to ground: SHRT_GND Related wiring harness circuit open: OPEN Air bag module circuit resistance low: SQ_LOWRES Related wiring harness normal: Normal 	2M, 2O
DS_CURT_ST (Driver-side curtain air bag module circuit status)	SHRT_B+/ SHRT_GND/ OPEN/ SQ_LOWRES/ Normal	<ul style="list-style-type: none"> Related wiring harness short to power supply: SHRT_B+ Related wiring harness short to ground: SHRT_GND Related wiring harness circuit open: OPEN Air bag module circuit resistance low: SQ_LOWRES Related wiring harness normal: Normal 	2V, 2Y
DS1_STAT (Driver-side air bag module (inflator No.1) circuit status)	SHRT_B+/ SHRT_GND/ OPEN/ SQ_LOWRES/ Normal	<ul style="list-style-type: none"> Related wiring harness short to power supply: SHRT_B+ Related wiring harness short to ground: SHRT_GND Related wiring harness circuit open: OPEN Air bag module circuit resistance low: SQ_LOWRES Related wiring harness normal: Normal 	1S, 1V
		<ul style="list-style-type: none"> Related wiring harness short to power supply: 	

DS2_STAT (Driver-side air bag module (inflator No.2) circuit status)	SHRT_B+/ SHRT_GND/ OPEN/ SQ_LOWRES/ Normal	SHRT_B+ <ul style="list-style-type: none"> Related wiring harness short to ground: SHRT_GND Related wiring harness circuit open: OPEN Air bag module circuit resistance low: SQ_LOWRES Related wiring harness normal: Normal 	1G, 1J
DSB_P_ST (Driver-side pre-tensioner seat belt circuit status)	SHRT_B+/ SHRT_GND/ OPEN/ SQ_LOWRES/ Normal	<ul style="list-style-type: none"> Related wiring harness short to power supply: SHRT_B+ Related wiring harness short to ground: SHRT_GND Related wiring harness circuit open: OPEN Pre-tensioner seat belt circuit resistance low: SQ_LOWRES Related wiring harness normal: Normal 	2P, 2S
DTC_CLR_ST*1 (Seat weight sensor DTC cleared status)	Started/ Normal End/ In Process/ OCS Fault	Fault information cleared at seat weight sensor	1I
IGN_V_2 (IG1 voltage)	V	Ignition switch to ON position: B+	1W
		<ul style="list-style-type: none"> Seat weight sensor calibration start-up: Starting Seat weight sensor calibration completed normally: Normal End 	

OCS_CAL_ST*2 (Seat weight sensor calibration status)	Starting/ Normal End/ Commanding/ NG (Voltage)/ NG (Weight)/ In Process Timeout/ OCS Fault	<ul style="list-style-type: none"> • Seat weight sensor calibration command being sent: Commanding • Voltage malfunction during seat weight sensor calibration: NG (Voltage) • Weight error during seat weight sensor calibration: NG (Weight) • Seat weight sensor calibration time limit passed: Timeout • Seat weight sensor calibration being processed: In Process • Seat weight sensor or Seat weight sensor control module malfunction: OCS Fault 	1I
OCS_SYS_ST*1 (Seat weight sensor status)	Empty/ SMALL/ LARGE/ Indeterminate/ Invalid	Occupant classification status determined by seat weight sensor	1I
OCSFLT_CAL (Passenger sensing system calibration status)	OK/ FAULT	<ul style="list-style-type: none"> • Sensor normal: OK • Seat weight sensor calibration error: FAULT 	1I
OCSFLT_COM (Passenger sensing system communication status)	OK/ FAULT	<ul style="list-style-type: none"> • Sensor normal: OK • Seat weight sensor control module communication error: FAULT 	1I
OCSFLT_L (Passenger sensing system (LH) malfunction status)	OK/ FAULT	<ul style="list-style-type: none"> • Sensor normal: OK • Seat weight sensor (LH) malfunction: FAULT 	1I
OCSFLT_MDL	OK/	<ul style="list-style-type: none"> • Sensor normal: OK 	

(Passenger sensing system control module malfunction status)	FAULT	<ul style="list-style-type: none"> Seat weight sensor control module malfunction: FAULT 	1I
OCSFLT_R (Passenger sensing system (RH) malfunction status)	OK/ FAULT	<ul style="list-style-type: none"> Sensor normal: OK Seat weight sensor (RH) malfunction: FAULT 	1I
OD_CRST_D1 (On demand driver-side side air bag sensor communication state)	OK/ FAULT	<ul style="list-style-type: none"> Sensor normal: OK Sensor communication error: FAULT 	2Z, 2AA
OD_CRST_D2 (On demand driver-side side air bag sensor circuit state)	OK/ FAULT	<ul style="list-style-type: none"> Sensor normal: OK Sensor internal circuit error: FAULT 	2Z, 2AA
OD_CRST_F1 (On demand crash zone sensor communication state)	OK/ FAULT	<ul style="list-style-type: none"> Sensor normal: OK Sensor communication error: FAULT 	1B, 1C
OD_CRST_F2 (On demand crash zone sensor circuit state)	OK/ FAULT	<ul style="list-style-type: none"> Sensor normal: OK Sensor internal circuit error: FAULT 	1B, 1C
OD_CRST_P1 (On demand passenger-side side air bag sensor communication state)	OK/ FAULT	<ul style="list-style-type: none"> Sensor normal: OK Sensor communication error: FAULT 	2B, 2C
OD_CRST_P2 (On demand passenger-side side air bag sensor circuit state)	OK/ FAULT	<ul style="list-style-type: none"> Sensor normal: OK Sensor internal circuit error: FAULT 	2B, 2C
OD_D_CURT (Driver-side curtain air bag module circuit status)	SHRT_B+/ SHRT_GND/ OPEN/	<ul style="list-style-type: none"> Related wiring harness short to power supply: SHRT_B+ Related wiring harness short to ground: SHRT_GND Related wiring harness circuit open: OPEN 	2V, 2Y

	SQ_LOWRES/ Normal	<ul style="list-style-type: none"> • Air bag module circuit resistance low: SQ_LOWRES • Related wiring harness normal: Normal 	
OD_DAB1_ST (Driver-side air bag module (inflator No.1) circuit status)	SHRT_B+/ SHRT_GND/ OPEN/ SQ_LOWRES/ Normal	<ul style="list-style-type: none"> • Related wiring harness short to power supply: SHRT_B+ • Related wiring harness short to ground: SHRT_GND • Related wiring harness circuit open: OPEN • Air bag module circuit resistance low: SQ_LOWRES • Related wiring harness normal: Normal 	1S, 1V
OD_DAB2_ST (Driver-side air bag module (inflator No.2) circuit status)	SHRT_B+/ SHRT_GND/ OPEN/ SQ_LOWRES/ Normal	<ul style="list-style-type: none"> • Related wiring harness short to power supply: SHRT_B+ • Related wiring harness short to ground: SHRT_GND • Related wiring harness circuit open: OPEN • Air bag module circuit resistance low: SQ_LOWRES • Related wiring harness normal: Normal 	1G, 1J
OD_DSAB_ST (Driver-side side air bag module circuit status)	SHRT_B+/ SHRT_GND/ OPEN/ SQ_LOWRES/	<ul style="list-style-type: none"> • Related wiring harness short to power supply: SHRT_B+ • Related wiring harness short to ground: SHRT_GND • Related wiring harness circuit open: OPEN 	2M, 2O

	Normal	<ul style="list-style-type: none"> • Air bag module circuit resistance low: SQ_LOWRES • Related wiring harness normal: Normal 	
OD_P_CURT (Passenger-side curtain air bag module circuit status)	SHRT_B+/ SHRT_GND/ OPEN/ SQ_LOWRES/ Normal	<ul style="list-style-type: none"> • Related wiring harness short to power supply: SHRT_B+ • Related wiring harness short to ground: SHRT_GND • Related wiring harness circuit open: OPEN • Air bag module circuit resistance low: SQ_LOWRES • Related wiring harness normal: Normal 	2A, 2D
OD_PAB1_ST (Passenger-side air bag module (inflator No.1) circuit status)	SHRT_B+/ SHRT_GND/ OPEN/ SQ_LOWRES/ Normal	<ul style="list-style-type: none"> • Related wiring harness short to power supply: SHRT_B+ • Related wiring harness short to ground: SHRT_GND • Related wiring harness circuit open: OPEN • Air bag module circuit resistance low: SQ_LOWRES • Related wiring harness normal: Normal 	1M, 1P
OD_PAB2_ST (Passenger-side air bag module (inflator No.2) circuit status)	SHRT_B+/ SHRT_GND/ OPEN/ SQ_LOWRES/	<ul style="list-style-type: none"> • Related wiring harness short to power supply: SHRT_B+ • Related wiring harness short to ground: SHRT_GND • Related wiring harness circuit open: OPEN • Air bag module circuit 	1A, 1D

	Normal	resistance low: SQ_LOWRES <ul style="list-style-type: none"> Related wiring harness normal: Normal 	
OD_PSAB_ST (Passenger-side side air bag module circuit status)	SHRT_B+/ SHRT_GND/ OPEN/ SQ_LOWRES/ Normal	<ul style="list-style-type: none"> Related wiring harness short to power supply: SHRT_B+ Related wiring harness short to ground: SHRT_GND Related wiring harness circuit open: OPEN Air bag module circuit resistance low: SQ_LOWRES Related wiring harness normal: Normal 	2I, 2L
P_ABAGR2 (Passenger-side air bag module (inflator No.2) resistance)	Ohm	Under any condition: 1.4—2.9 ohms	1A, 1D
P_PTENSFLT (Passenger-side pre-tensioner seat belt circuit status)	SHRT_B+/ SHRT_GND/ OPEN/ SQ_LOWRES/ Normal	<ul style="list-style-type: none"> Related wiring harness short to power supply: SHRT_B+ Related wiring harness short to ground: SHRT_GND Related wiring harness circuit open: OPEN Pre-tensioner seat belt circuit resistance low: SQ_LOWRES Related wiring harness normal: NORMAL 	2G, 2J
PABAGR (Passenger-side air bag module (inflator No.1) resistance)	Ohm	Under any condition: 1.4—2.9 ohms	1M, 1P
PS_AB			

(Passenger-side side air bag module resistance)	Ohm	Under any condition: 1.4—3.2 ohms	2I, 2L
PS_AB_ST (Passenger-side side air bag sensor circuit status)	SHRT_B+/ SHRT_GND/ OPEN/ SQ_LOWRES/ Normal	<ul style="list-style-type: none"> Related wiring harness short to power supply: SHRT_B+ Related wiring harness short to ground: SHRT_GND Related wiring harness circuit open: OPEN Air bag module circuit resistance low: SQ_LOWRES Related wiring harness normal: Normal 	2I, 2L
PS_BUKL (Passenger-side buckle switch status)	Buckled/ Unbuckled	<ul style="list-style-type: none"> Passenger-side buckle switch on: Buckled Passenger-side buckle switch off: Unbuckled 	2H
PS_CURTN (Passenger-side curtain air bag module resistance)	Ohm	Under any condition: 1.4—3.2 ohms	2A, 2D
PS_CURT_ST (Passenger-side curtain air bag module circuit status)	SHRT_B+/ SHRT_GND/ OPEN/ SQ_LOWRES/ Normal	<ul style="list-style-type: none"> Related wiring harness short to power supply: SHRT_B+ Related wiring harness short to ground: SHRT_GND Related wiring harness circuit open: OPEN Air bag module circuit resistance low: SQ_LOWRES Related wiring harness normal: Normal 	2A, 2D
PS_PTENS			

(Passenger-side pre-tensioner seat belt resistance)	Ohm	Under any condition: 1.5—3.1 ohms	2G, 2J
PS_WEIGHT (Seat weight sensor measured weight of passenger)	kg	Display of load (body weight) on passenger-side seat	1I
PS1_STAT (Passenger-side air bag module (inflator No.1) circuit status)	SHRT_B+/ SHRT_GND/ OPEN/ SQ_LOWRES/ Normal	<ul style="list-style-type: none"> • Related wiring harness short to power supply: SHRT_B+ • Related wiring harness short to ground: SHRT_GND • Related wiring harness circuit open: OPEN • Air bag module circuit resistance low: SQ_LOWRES • Related wiring harness normal: Normal 	1M, 1P
PS2_STAT (Passenger-side air bag module (inflator No.2) circuit status)	SHRT_B+/ SHRT_GND/ OPEN/ SQ_LOWRES/ Normal	<ul style="list-style-type: none"> • Related wiring harness short to power supply: SHRT_B+ • Related wiring harness short to ground: SHRT_GND • Related wiring harness circuit open: OPEN • Air bag module circuit resistance low: SQ_LOWRES • Related wiring harness normal: Normal 	1A, 1D
PSAB_DepSt (Passenger-side air bag module deployment status)	Active/ Inactive	<ul style="list-style-type: none"> • Passenger-side air bag module operation (deployment) enabled status: Active • Passenger-side air bag module non-operation (non-deployment) status: Inactive 	1I

PSB_P_ST (Passenger-side pre-tensioner seat belt circuit status)	SHRT_B+/ SHRT_GND/ OPEN/ SQ_LOWRES/ Normal	<ul style="list-style-type: none"> • Related wiring harness short to power supply: SHRT_B+ • Related wiring harness short to ground: SHRT_GND • Related wiring harness circuit open: OPEN • Pre-tensioner seat belt circuit resistance low: SQ_LOWRES • Related wiring harness normal: Normal 	2G, 2J
TRAK_SW (Seat track position sensor state)	Forward/Rearward	<ul style="list-style-type: none"> • Front seat front position: Forward • Front seat rear position: Rearward 	2W, 2X

*1

Used during seat weight sensor calibration setting. Not necessary for diagnostic.

*2

When the calibration error is displayed, the error can be cleared by turning the ignition switch to the LOCK position.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Restraints

DTC B1013

DTC B1013	Seat weight sensor calibration error
DETECTION CONDITION	<p>WARNING:</p> <ul style="list-style-type: none"> Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure. Calibration set value not within valid range.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Seat weight sensor deformed or malfunction Load to or deformation of the seat belt rail Deformed passenger-side seat under-bracket or frame Weight acting on passenger-side seat during calibration Improperly installed passenger-side seat part at time of calibration Deformed floor where attached to passenger-side seat Seat weight sensor control module malfunction SAS control module malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<p>INSPECT SEAT WEIGHT SENSOR</p> <ul style="list-style-type: none"> Properly install the passenger-side seat. Inspect the seat weight sensor. (See SEAT WEIGHT 	<p>Yes Replace the SAS control module.</p> <p>(See SAS CONTROL MODULE REMOVAL/INSTALLATION.)</p>

	<p>SENSOR CALIBRATION.)</p> <ul style="list-style-type: none">Is the seat weight sensor normal?	No	Go to the next step.
2	<p>INSPECT SEAT BELT RAIL</p> <ul style="list-style-type: none">Is the seat belt rail properly installed?Is there any external load to the seat belt rail?Is the seat belt rail deformed?Is the seat belt rail normal?	Yes	Replace the seat belt rail. (See FRONT SEAT BELT REMOVAL/INSTALLATION .)
		No	Go to the next step.
3	<p>INSPECT PASSENGER-SIDE SEAT</p> <ul style="list-style-type: none">Turn the ignition switch to the LOCK position.Disconnect the negative battery cable and wait for 1 min or more.Remove the passenger-side seat and visually inspect for the following:<ul style="list-style-type: none">Seat under-bracket deformationSeat frame deformationSeat weight sensor deformationForeign objects stuck in seatAre any of the parts deformed or are any foreign objects stuck in the seat?	Yes	Replace any deformed parts or remove any foreign objects. <ul style="list-style-type: none">After replacement, perform seat weight sensor calibration and reperform the DTC inspection. If the DTC is displayed, go the next step. (See SEAT WEIGHT SENSOR CALIBRATION.)
		No	Go to the next step.
4	<p>INSPECT FLOOR</p> <ul style="list-style-type: none">Visually inspect the installation parts of the passenger-side seat for the following:	Yes	Go to the next step.
		No	Repair floor deformation. <ul style="list-style-type: none">After repair, perform seat weight

	<ul style="list-style-type: none"> ▪ Abnormal floor deformation ▪ Installation hole of passenger-side seat is improperly positioned <ul style="list-style-type: none"> • Is the floor normal? 		<p>sensor calibration and reperform the DTC inspection. If the DTC is displayed even though the floor has been repaired, go the next step. (See SEAT WEIGHT SENSOR CALIBRATION.)</p>
5	INSPECT SEAT WEIGHT SENSOR CONTROL MODULE <ul style="list-style-type: none"> • Replace the seat weight sensor. • After replacement, perform seat weight sensor calibration. (See SEAT WEIGHT SENSOR CALIBRATION.) • Reperform the DTC inspection. • Is DTC B1013 displayed? 	Yes	<p>Replace the seat weight sensor control module. (See SEAT WEIGHT SENSOR CONTROL MODULE REMOVAL/INSTALLATION.)</p> <ul style="list-style-type: none"> • After replacement, perform seat weight sensor calibration and reperform the DTC inspection. If the DTC is displayed even though the seat weight sensor control module has been replaced, replace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	<p>DTC troubleshooting completed.</p>

2011 - RX-8 - Restraints

DTC B1231

DTC B1231	SAS control module activation (deployment) control freeze
DETECTION CONDITION	<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection with only detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• SAS control module determined collision

Diagnostic procedure

ACTION
Replace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION.)

2011 - RX-8 - Restraints

DTC B1342

DTC B1342	SAS control module (DTC 12 detection circuit malfunction)
DETECTION CONDITION	<p>WARNING:</p> <ul style="list-style-type: none"> Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure. SAS control module configuration has not been performed. Malfunction in the SAS control module internal circuit
POSSIBLE CAUSE	<ul style="list-style-type: none"> SAS control module malfunction No SAS control module configuration

Diagnostic Procedure

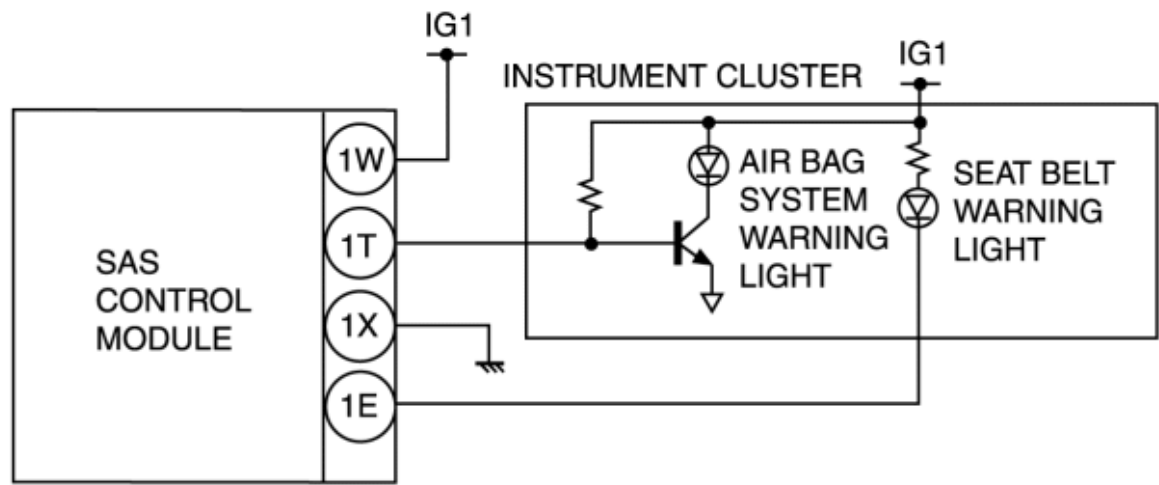
Step	Inspection	Action
1	<p>PERFORM SAS CONTROL MODULE INSPECTION</p> <ul style="list-style-type: none"> Perform the configuration for the SAS control module using the M-MDS. <p>(See SAS CONTROL MODULE CONFIGURATION.)</p> <ul style="list-style-type: none"> Clear DTCs using the M-MDS. <p>(See CLEARING DTC.)</p> <ul style="list-style-type: none"> Inspect the SAS control module DTCs. 	<p>Yes Perform the SAS control module configuration again, then go to the next step.</p> <p>(See SAS CONTROL MODULE CONFIGURATION.)</p> <p>No Go to the next step.</p>

	(See DTC DISPLAY.)		
	<ul style="list-style-type: none">• Are DTCs B1342 displayed?		
2	PERFORM SAS CONTROL MODULE DTC INSPECTION <ul style="list-style-type: none">• Inspect the SAS control module DTCs. (See DTC DISPLAY.)	Yes	Replace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.
	<ul style="list-style-type: none">• Are DTCs B1342 displayed?		

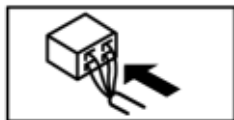
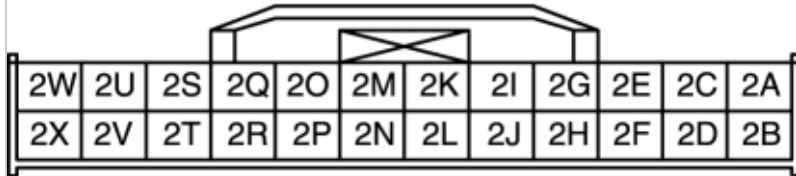
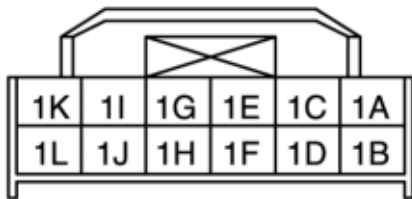
2011 - RX-8 - Restraints

DTC B1869, B1870

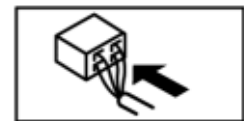
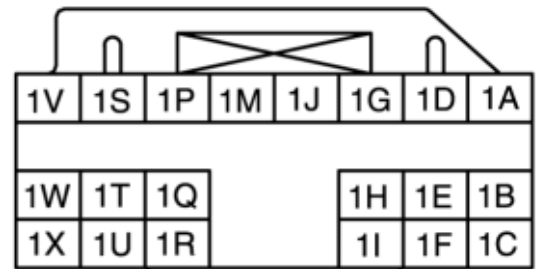
DTC	B1869	<ul style="list-style-type: none">• Air bag system warning light circuit open (the air bag system warning light is continuously illuminated.)• Air bag system warning light circuit short to body ground (the air bag system warning light is never illuminated.)
	B1870	Air bag system warning light system circuit short to power supply (the air bag system warning light is continuously illuminated.)
DETECTION CONDITION		<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• Malfunction in the air bag system warning light circuit
POSSIBLE CAUSE		<ul style="list-style-type: none">• Open or short circuit in the wiring harness between the battery and the instrument cluster• Open or short circuit in the wiring harness between the instrument cluster and SAS control module• Instrument cluster malfunction• SAS control module malfunction



INSTRUMENT CLUSTER WIRING HARNESS-SIDE CONNECTOR



SAS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT FOR CONTINUITY BETWEEN BATTERY FUSE AND INSTRUMENT CLUSTER <ul style="list-style-type: none"> Turn the ignition switch to the ON position. Measure the voltage at instrument cluster connector terminal 2K. <p>NOTE:</p> <ul style="list-style-type: none"> Measure the voltage while shaking the wiring harness between the battery and instrument cluster. Is the voltage 9 V or more? 	<p>Yes Go to the next step.</p> <p>No Repair the related wiring harness.</p>
	INSPECT WIRING HARNESS BETWEEN INSTRUMENT CLUSTER	

WARNING:

- Handling the air bag system components improperly can accidentally deploy the air bag modules and pre-tensioner seat belts, which may seriously injure you. Read the service warnings and cautions before handling the air bag system components.

(See [AIR BAG SYSTEM SERVICE WARNINGS.](#))

(See [AIR BAG SYSTEM SERVICE CAUTIONS.](#))

- Turn the ignition switch to the LOCK position.
- Disconnect the negative battery cable and wait for **1 min or more**.
- Remove the column cover.

(See [COLUMN COVER REMOVAL/INSTALLATION.](#))

- Disconnect the clock spring connector.
- Remove the glove compartment.
- Disconnect the passenger-side air bag module connector.
- Disconnect the driver and passenger-side curtain air bag module connectors.
- Disconnect the driver and passenger-side side air bag module connectors.
- Remove the rear door lower trim.

(See [REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.](#))

- Disconnect the driver and passenger-side pre-tensioner seat belt connectors.
- Partially peel back the floor covering.
- Disconnect the SAS control module connector.
- Disconnect the instrument cluster connector.
- Inspect the wiring harness between SAS control module terminal 1T and instrument cluster terminal 2K for the following:

NOTE:

- Measure the voltage while shaking the wiring harness between the SAS control module and instrument cluster.

No Replace the air bag wiring harness.

	Is the wiring harness normal?		
3	INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND INSTRUMENT CLUSTER FOR A SHORT CIRCUIT TO THE POWER SUPPLY <ul style="list-style-type: none"> • Connect the negative battery cable. • Turn the ignition switch to the ON position with SAS control module connector and instrument cluster connector disconnected. • Measure the voltage of SAS control module connector terminals 2T of SAS control module harness side connector. NOTE: <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and instrument cluster. • Is the voltage measured? 	Yes	Replace the wiring harness between the SAS control module and the Instrument cluster.
		No	Go to the next step.
4	INSPECT INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the negative battery cable and wait for 1 min or more. • Connect the instrument cluster connector. • Ground instrument cluster connector terminal 2K using a jumper wire. • Connect the negative battery cable. • Turn the ignition switch to the ON position. • Does the seat belt warning light illuminate? 	Yes	Go to the next step.
		No	Replace the instrument cluster. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION)
5	INSPECT DTCs <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the negative battery cable and wait for 1 min or more. • Reconnect all disconnected connectors. • Connect the negative battery cable. • Turn the ignition switch to the ON position. • Clear DTCs using the M-MDS.(See CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.) • Is DTC B1869 and/or B1870 displayed again? 	Yes	Replace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

[< Previous](#) [Next >](#)

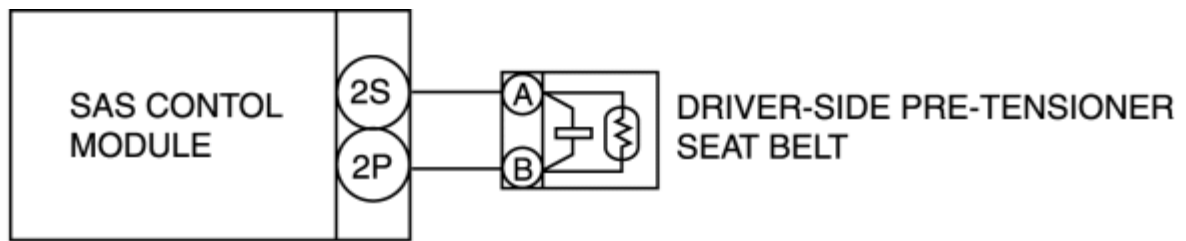
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

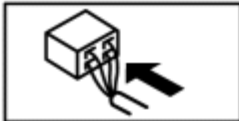
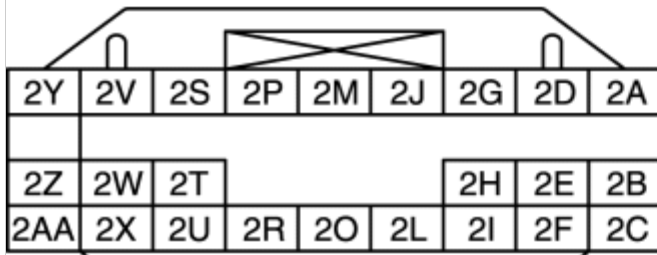
2011 - RX-8 - Restraints

DTC B1877, B1878, B1879, B1885

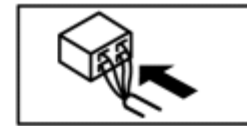
DTC	B1877	Driver-side pre-tensioner seat belt circuit resistance high
	B1878	Driver-side pre-tensioner seat belt circuit short to power supply
	B1879	Driver-side pre-tensioner seat belt circuit short to ground
	B1885	Driver-side pre-tensioner seat belt circuit resistance low
DETECTION CONDITION	<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• Abnormal resistance (other than 1.5—3.1 ohms) detected in the driver-side pre-tensioner seat belt circuit• Malfunction in the wiring harness between the driver-side pre-tensioner seat belt and SAS control module	
POSSIBLE CAUSE	<ul style="list-style-type: none">• Driver-side pre-tensioner seat belt connector malfunction• Open or short circuit in the wiring harness between the driver-side pre-tensioner seat belt and SAS control module• Driver-side pre-tensioner seat belt malfunction• SAS control module malfunction	



SAS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



DRIVER-SIDE PRE-TENSIONER SEAT BELT WIRING HARNESS-SIDE CONNECTOR



Diagnostic Procedure

Step	Inspection	Action
1	INSPECT DRIVER-SIDE PRE-TENSIONER SEAT BELT CONNECTOR WARNING: <ul style="list-style-type: none"> Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. <p>(See AIR BAG SYSTEM SERVICE WARNINGS.)</p> <p>(See AIR BAG SYSTEM SERVICE CAUTIONS.)</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the negative battery cable and wait for 1 min or more. Remove the driver-side rear door lower trim. <p>(See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.)</p> <ul style="list-style-type: none"> Disconnect the driver-side pre-tensioner seat belt connector. 	<p>Yes Replace the driver-side pre-tensioner seat belt wiring harness.</p> <p>No Go to the next step.</p>

	<ul style="list-style-type: none">• Inspect the driver-side pre-tensioner seat belt connector. (Corrosion, damage, and disconnected pins)• Is there any malfunction of the driver-side pre-tensioner seat belt connector?		
2	INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND DRIVER-SIDE PRE-TENSIONER SEAT BELT <ul style="list-style-type: none">• Remove the column cover. (See COLUMN COVER REMOVAL/INSTALLATION.)• Disconnect the clock spring connector.• Remove the glove compartment. (See GLOVE COMPARTMENT REMOVAL/INSTALLATION.)• Disconnect the passenger-side air bag module connector.• Disconnect the driver and passenger-side curtain air bag module connectors.• Disconnect the driver and passenger-side side air bag module connectors.• Remove the rear door lower trim. (See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.)• Disconnect the passenger-side pre-tensioner seat belt connector.• Partially peel back the floor covering.• Disconnect the SAS control module connector.• Inspect the wiring harnesses between SAS control module connector terminal 2S and driver-side pre-tensioner seat belt connector terminal A, and SAS control module connector terminal 2P and driver-side pre-tensioner seat belt connector terminal B for the following:<ul style="list-style-type: none">▪ Short to body ground▪ Open circuit▪ Short circuit between terminals	Yes	Go to the next step.
		No	Replace the wiring harness between the SAS control module and the driver-side pre-tensioner seat belt.
	NOTE: <ul style="list-style-type: none">• Inspect for continuity while shaking the wiring harness		

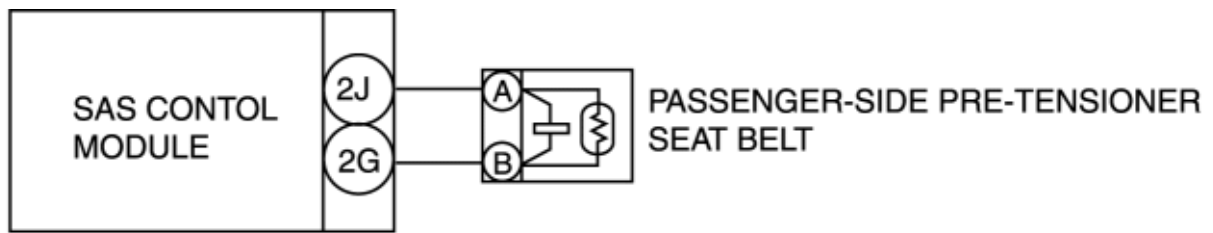
	<p>between the SAS control module and driver-side pre-tensioner seat belt.</p> <ul style="list-style-type: none"> Is the wiring harness normal? 		
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND DRIVER-SIDE PRE-TENSIONER SEAT BELT FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none"> Connect the negative battery cable. Turn the ignition switch to the ON position with SAS control module connector and driver-side pre-tensioner seat belt connector disconnected. Measure the voltage of SAS control module connector terminals 2S and 2P of SAS control module harness side connector. <p>NOTE:</p> <ul style="list-style-type: none"> Measure the voltage while shaking the wiring harness between the SAS control module and driver-side pre-tensioner seat belt. Is the voltage measured? 	Yes	Replace the wiring harness between the SAS control module and the driver-side pre-tensioner seat belt.
		No	Go to the next step.
4	<p>INSPECT DRIVER-SIDE PRE-TENSIONER SEAT BELT</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the negative battery cable and wait for 1 min or more. Connect the SST (Fuel and thermometer checker) or apply 2 ohms resistance to the driver-side pre-tensioner seat belt connector terminals A and B. Set the SST (Fuel and thermometer checker) to 2 ohms. Except for the driver-side pre-tensioner seat belt connector, reconnect all disconnected connectors. Connect the negative battery cable. Turn the ignition switch to the ON position. Clear DTCs using the M-MDS. (See CLEARING DTC.) Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.) Are DTCs B1877, B1878, B1879 and/or B1885 displayed? 	Yes	Go to the next step.
		No	Replace the driver-side pre-tensioner seat belt. (See FRONT SEAT BELT REMOVAL/INSTALLATION.)
5	<p>INSPECT DTCs</p>	Yes	Replace the SAS control

	<ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Disconnect the negative battery cable and wait for 1min or more.• Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance.• Connect the driver-side pre-tensioner seat belt connector.• Connect the negative battery cable.• Clear DTCs using the M-MDS. (See CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)• Is DTC B1877, B1878, B1879 and/or B1885 displayed again?	<p>module.</p> <p>(See SAS CONTROL MODULE REMOVAL/INSTALLATION.)</p>
		No DTC troubleshooting completed.

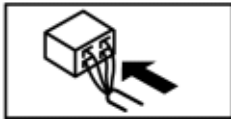
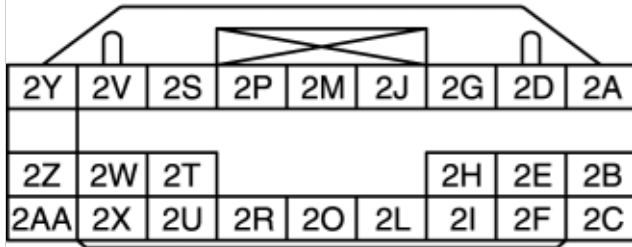
2011 - RX-8 - Restraints

DTC B1881, B1882, B1883, B1886

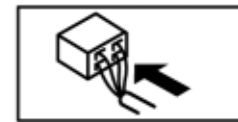
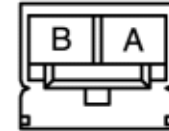
DTC	B1881	Passenger-side pre-tensioner seat belt circuit resistance high
	B1882	Passenger-side pre-tensioner seat belt circuit short to power supply
	B1883	Passenger-side pre-tensioner seat belt circuit short to body ground
	B1886	Passenger-side pre-tensioner seat belt circuit resistance low
DETECTION CONDITION	<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• Abnormal resistance (other than 1.5—3.1 ohms) detected in the passenger-side pre-tensioner seat belt circuit• Malfunction in the wiring harness between the passenger-side pre-tensioner seat belt and SAS control module	
POSSIBLE CAUSE	<ul style="list-style-type: none">• Passenger-side pre-tensioner seat belt connector malfunction• Open or short circuit in the wiring harness between the passenger-side pre-tensioner seat belt and SAS control module• Passenger-side pre-tensioner seat belt malfunction• SAS control module malfunction	



SAS CONTROL MODULE WIRING
HARNESS-SIDE CONNECTOR



PASSENGER-SIDE PRE-TENSIONER SEAT BELT
WIRING HARNESS-SIDE CONNECTOR



Diagnostic Procedure

Step	Inspection	Action
1	INSPECT PASSENGER-SIDE PRE-TENSIONER SEAT BELT CONNECTOR WARNING: <ul style="list-style-type: none"> Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. <p>(See AIR BAG SYSTEM SERVICE WARNINGS.)</p> <p>(See AIR BAG SYSTEM SERVICE CAUTIONS.)</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the negative battery cable and wait for 1 min or more. Remove the passenger-side rear door lower trim. (See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.) Disconnect the passenger-side pre-tensioner seat belt connector. Inspect the passenger-side pre-tensioner seat belt connector. (Corrosion, damage, and disconnected pins) 	<p>Yes Replace the passenger-side pre-tensioner seat belt wiring harness.</p> <p>No Go to the next step.</p>

	<ul style="list-style-type: none">• Is there any malfunction of the passenger-side pre-tensioner seat belt connector?		
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND PASSENGER-SIDE PRE-TENSIONER SEAT BELT</p> <ul style="list-style-type: none">• Remove the column cover. (See COLUMN COVER REMOVAL/INSTALLATION.)• Disconnect the clock spring connector.• Remove the glove compartment. (See GLOVE COMPARTMENT REMOVAL/INSTALLATION.)• Disconnect the passenger-side air bag module connector.• Disconnect the driver and passenger-side curtain air bag module connectors.• Disconnect the driver and passenger-side side air bag module connectors.• Remove the rear door lower trim. (See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.)• Disconnect the driver-side pre-tensioner seat belt connectors.• Partially peel back the floor covering.• Disconnect the SAS control module connector.• Inspect the wiring harnesses between SAS control module connector terminal 2J and passenger-side pre-tensioner seat belt connector terminal A, and SAS control module connector terminal 2G and passenger-side pre-tensioner seat belt connector terminal B for the following:<ul style="list-style-type: none">▪ Short to body ground▪ Open circuit▪ Short circuit between terminals <p>NOTE:</p> <ul style="list-style-type: none">• Inspect for continuity while shaking the wiring harness between the SAS control module and passenger-side pre-tensioner seat belt.• Is the wiring harness normal?	Yes	Go to the next step.
		No	Replace the wiring harness between the SAS control module and the passenger-side pre-tensioner seat belt.
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND PASSENGER-SIDE PRE-TENSIONER SEAT BELT FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none">• Connect the negative battery cable.	Yes	Replace the wiring harness between the SAS control module and the passenger-side pre-tensioner seat

	<ul style="list-style-type: none">• Turn the ignition switch to the ON position with SAS control module connector and passenger-side pre-tensioner seat belt connector disconnected.• Measure the voltage of SAS control module connector terminals 2J and 2G of SAS control module harness side connector. <p>NOTE:</p> <ul style="list-style-type: none">• Measure the voltage while shaking the wiring harness between the SAS control module and passenger-side pre-tensioner seat belt.• Is the voltage measured?	belt.	No Go to the next step.
4	<p>INSPECT PASSENGER-SIDE PRE-TENSIONER SEAT BELT</p> <ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Disconnect the negative battery cable and wait for 1 min or more.• Connect the SST (Fuel and thermometer checker) or apply 2 ohms resistance to the passenger-side pre-tensioner seat belt connector terminals A and B.• Set the SST (Fuel and thermometer checker) to 2 ohms.• Except for the passenger-side pre-tensioner seat belt connector, reconnect all disconnected connectors.• Connect the negative battery cable.• Turn the ignition switch to the ON position.• Clear DTCs using the M-MDS. (See CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)• Are DTCs B1881, B1882, B1883 and/or B1886 displayed?	YesGo to the next step.	No Replace the passenger-side pre-tensioner seat belt. (See FRONT SEAT BELT REMOVAL/INSTALLATION.)
5	<p>INSPECT DTCs</p> <ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Disconnect the negative battery cable and wait for 1min or more.• Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance.• Connect the passenger-side pre-tensioner seat belt connector.• Connect the negative battery cable.• Turn the ignition switch to the ON position.	YesReplace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION.)	No DTC troubleshooting completed.

- | | | |
|--|--|--|
| | <ul style="list-style-type: none">• Clear DTCs using the M-MDS. (See CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)• Is DTC B1881, B1882, B1883 and/or B1886 displayed again? | |
|--|--|--|

[< Previous](#) [Next >](#)

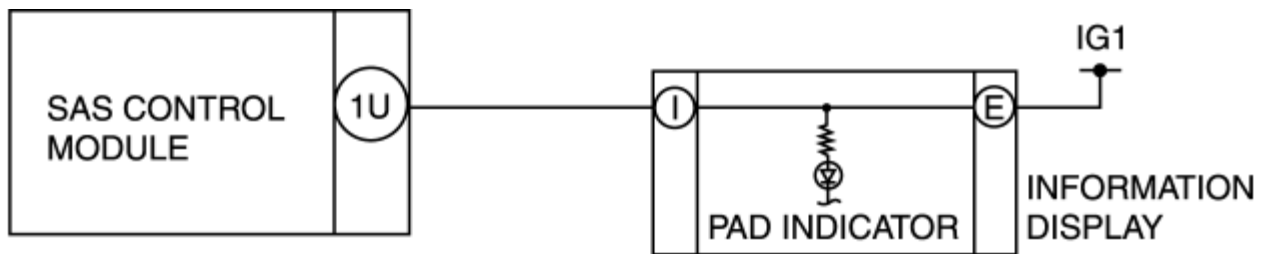
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

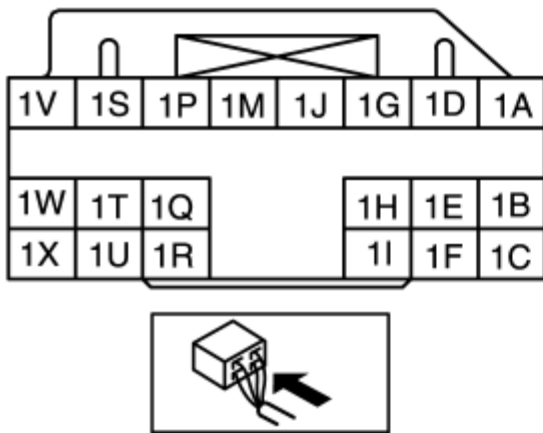
2011 - RX-8 - Restraints

DTC B1884, B1890

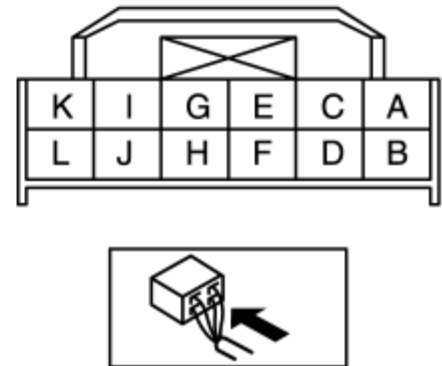
DTC	B1884	Passenger air bag deactivation (PAD) indicator circuit open or short to body ground
	B1890	Passenger air bag deactivation (PAD) indicator circuit short to power supply
DETECTION CONDITION		<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• Malfunction in PAD indicator circuit
POSSIBLE CAUSE		<ul style="list-style-type: none">• ENGINE 15 A fuse malfunction• Battery malfunction• Open circuit in wiring harness between battery and information display• Open or short circuit in wiring harness between information display and SAS control module• information display malfunction• SAS control module malfunction



SAS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



INFORMATION DISPLAY HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT OPERATION OF PAD INDICATOR <ul style="list-style-type: none"> Turn the ignition switch to the ON position. Does the PAD indicator illuminate? 	Yes Go to the next step. No Go to Step 5.
2	INSPECT FUSE <ul style="list-style-type: none"> Remove the ENGINE 15 A fuse. Is the fuse normal? 	Yes Install the fuse, then go to the next step. No Replace the fuse.
3	INSPECT BATTERY <ul style="list-style-type: none"> Measure the battery positive voltage. Is the voltage 9 V—16 V? 	Yes Go to the next step. No Battery is malfunctioning Inspect the charge/discharge system.
4	INSPECT WIRING HARNESS BETWEEN BATTERY AND PAD INDICATOR	Yes Go to the next step.

	<ul style="list-style-type: none">• Turn the ignition switch to the ON position.• Measure the information display connector terminal E voltage. <p>NOTE:</p> <ul style="list-style-type: none">• Measure the voltage while shaking the wiring harness between the battery and PAD indicator. <ul style="list-style-type: none">• Is the voltage 9 V or more?		No Repair the wiring harness between the battery and information display.
5	<p>INSPECT WIRING HARNESS BETWEEN PAD INDICATOR AND SAS CONTROL MODULE</p> <p>WARNING:</p> <ul style="list-style-type: none">• Handling the air bag system components improperly can accidentally deploy the air bag modules and pretensioner front buckles, which may seriously injure you. Read the service warnings before handling the air bag system components. <p>(See AIR BAG SYSTEM SERVICE WARNINGS.)</p> <p>(See AIR BAG SYSTEM SERVICE CAUTIONS.)</p> <ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Disconnect the negative battery cable and wait for 1 min or more.• Remove the column cover. (See COLUMN COVER REMOVAL/INSTALLATION.)• Disconnect the clock spring connector.• Remove the glove compartment. (See GLOVE COMPARTMENT REMOVAL/INSTALLATION.)• Disconnect the passenger-side air bag module connector.• Disconnect the driver and passenger-side side air bag module connectors.• Disconnect the driver and passenger-side curtain air bag module connector.• Remove the rear door lower trim. (See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.)• Disconnect the driver and passenger-side pretensioner seat belt connectors.• Partially peel back the floor covering.	Yes Go to the next step.	No Replace the air bag wiring harness.

	<ul style="list-style-type: none">• Disconnect the SAS control module connector.• Inspect the wiring harness between information display connector terminal I and SAS control module connector terminal 1U for the following:<ul style="list-style-type: none">▪ Short to ground▪ Open circuit▪ Short circuit between terminals <p>NOTE:</p> <ul style="list-style-type: none">• Inspect for continuity while shaking the wiring harness between the information display and SAS control module.• Is the wiring harness normal?		
6	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND PAD INDICATOR FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none">• Connect the negative battery cable.• Turn the ignition switch to the ON position with SAS control module connector and information display connector disconnected.• Measure the voltage of SAS control module connector terminal 1U. <p>NOTE:</p> <ul style="list-style-type: none">• Measure the voltage while shaking the wiring harness between the SAS control module and information display.• Is the voltage measured?	Yes	Replace the air bag wiring harness.
		No	Replace the information display, then go to the next step. (See INFORMATION DISPLAY REMOVAL/INSTALLATION.)
7	<p>INSPECT DTCs</p> <ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Disconnect the negative battery cable and wait for 1min or more.• Reconnect all disconnected connectors.• Connect the negative battery cable.• Turn the ignition switch to the ON position.• Clear DTCs using the M-MDS. (See CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)	Yes	Replace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

- | | | | |
|--|--|--|--|
| | <ul style="list-style-type: none">• Are DTCs B1884 and/or B1890 displayed. | | |
|--|--|--|--|

[< Previous](#) [Next >](#)

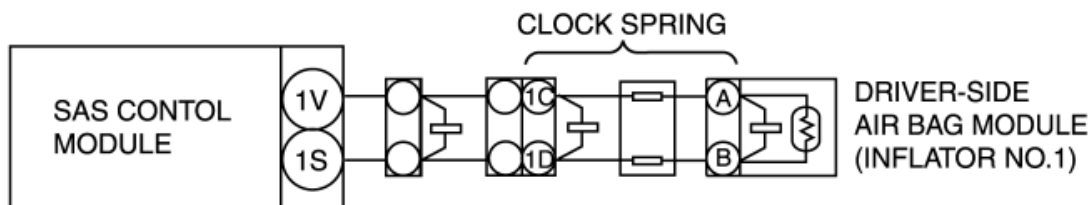
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

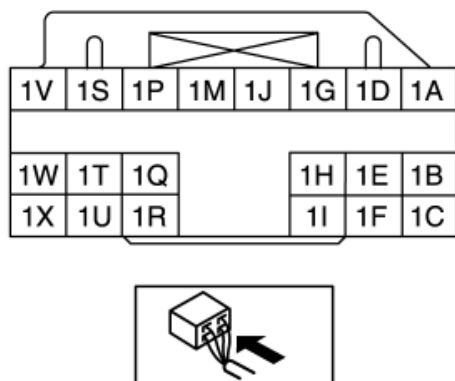
2011 - RX-8 - Restraints

DTC B1913, B1916, B1932, B1934

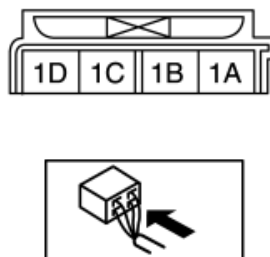
DTC	B1913	Driver-side air bag module (inflator No.1) circuit short to body ground
	B1916	Driver-side air bag module (inflator No.1) circuit short to power supply
	B1932	Driver-side air bag module (inflator No.1) circuit resistance high
	B1934	Driver-side air bag module (inflator No.1) circuit resistance low
DETECTION CONDITION	<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• Abnormal resistance (other than 1.5—3.7 ohms) detected in the driver-side air bag module (inflator No.1) circuit• Malfunction in the wiring harness between the driver-side air bag module (inflator No.1) and SAS control module	
POSSIBLE CAUSE	<ul style="list-style-type: none">• Driver-side air bag module (inflator No.1) connector malfunction• Open or short circuit in the wiring harness between the clock spring and SAS control module• Clock spring malfunction• Driver-side air bag module (inflator No.1) malfunction• SAS control module malfunction	



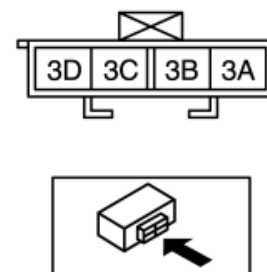
SAS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



CLOCK SPRING WIRING HARNESS-SIDE CONNECTOR



CLOCK SPRING CONNECTOR



Diagnostic Procedure

Step	Inspection	Action
1	INSPECT DRIVER-SIDE AIR BAG MODULE (INFLATOR NO.1) CONNECTOR WARNING: <ul style="list-style-type: none"> Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. (See AIR BAG SYSTEM SERVICE WARNINGS.) (See AIR BAG SYSTEM SERVICE CAUTIONS.) Turn the ignition switch to the LOCK position. Disconnect the negative battery cable and wait for 1min or more. Disconnect the driver-side air bag module. (See DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) Inspect the driver-side air bag module (inflator No.1) connector. (Corrosion, damage, and disconnected pins) Is there any malfunction of the driver-side air bag module (inflator No.1) connector? 	<p>Yes Replace the driver-side air bag wiring harness.</p> <p>No Go to the next step.</p>
2	INSPECT CLOCK SPRING <ul style="list-style-type: none"> Remove the steering wheel. (See STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.) Remove the column cover. (See COLUMN COVER REMOVAL/INSTALLATION.) 	<p>Yes Go to the next step.</p> <p>No Replace the clock spring.</p> <p>(See CLOCK SPRING REMOVAL/INSTALLATION.)</p>

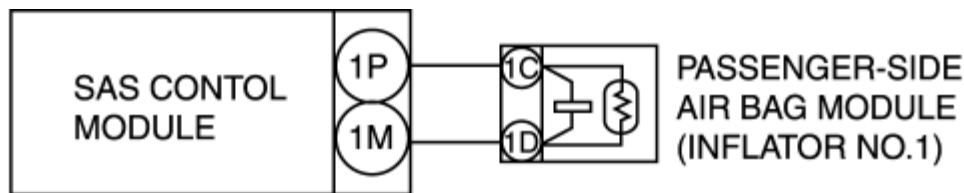
	<ul style="list-style-type: none"> Remove the clock spring. <p>(See CLOCK SPRING REMOVAL/INSTALLATION.)</p> <ul style="list-style-type: none"> Inspect for continuity between clock spring connector terminals 1C—B and 1D—A. Is there continuity? 		
3	INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND CLOCK SPRING <ul style="list-style-type: none"> Remove the glove compartment. <p>(See GLOVE COMPARTMENT REMOVAL/INSTALLATION.)</p> <ul style="list-style-type: none"> Disconnect the passenger-side air bag module connector. Disconnect the driver and passenger-side curtain air bag module connectors. Disconnect the driver and passenger-side side air bag module connectors. Remove the rear door lower trim. <p>(See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.)</p> <ul style="list-style-type: none"> Disconnect the driver and passenger-side pre-tensioner seat belt connectors. Partially peel back the floor covering. Disconnect the SAS control module connector. Inspect the wiring harness between SAS control module connector terminal 1V and clock spring connector terminal 1C, and SAS control module connector terminal 1S and clock spring connector terminal 1D for the following: <ul style="list-style-type: none"> Short to ground Open circuit Short circuit between terminals <p>NOTE:</p> <ul style="list-style-type: none"> Inspect for continuity while shaking the wiring harness between the SAS control module and clock spring. Is the wiring harness normal? 	Yes	Go to the next step.
		No	Replace the wiring harness between the SAS control module and the clock spring.
4	INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND CLOCK SPRING FOR A SHORT CIRCUIT TO THE POWER SUPPLY <ul style="list-style-type: none"> Connect the negative battery cable. Turn the ignition switch to the ON position with SAS control module connector and clock spring connector disconnected. Measure the voltage of SAS control module connector terminals 1V and 1S. <p>NOTE:</p> <ul style="list-style-type: none"> Measure the voltage while shaking the wiring harness between the SAS control module and clock spring. Is the voltage measured? 	Yes	Replace the wiring harness between the SAS control module and the clock spring.
		No	Go to the next step.
5	INSPECT DRIVER-SIDE AIR BAG MODULE (INFLATOR NO.1) <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. 	Yes	Go to the next step.

	<ul style="list-style-type: none"> • Disconnect the negative battery cable and wait for 1min or more. • Connect the leads of the SST (Fuel and thermometer checker) or apply 2 ohms resistance to clock spring connector terminals 3A and 3B. • Set the resistance of the SST (Fuel and thermometer checker) to the 2 ohms position. • Except for the clock spring connector, reconnect all disconnected connectors. • Connect the negative battery cable. • Turn the ignition switch to the ON position. • Clear DTCs using the M-MDS. (See CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.) • Are DTCs B1913, B1916, B1932 and/or B1934 displayed? 	No	Replace the driver-side air bag module. (See DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
6	INSPECT DTCs <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the negative battery cable and wait for 1min or more. • Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance. • Connect the clock spring connector. • Connect the negative battery cable. • Turn the ignition switch to the ON position. • Clear DTCs using the M-MDS. (See CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.) • Is DTC B1913, B1916, B1932 and/or B1934 displayed again? 	Yes	Replace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

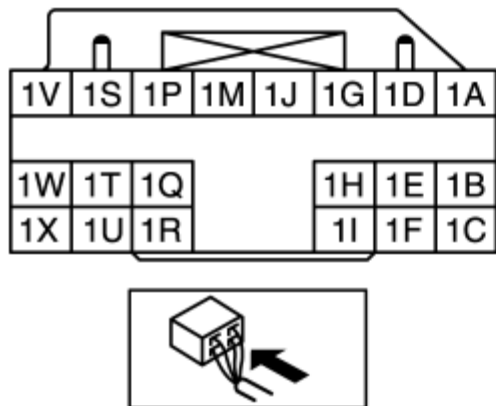
2011 - RX-8 - Restraints

DTC B1913, B1925, B1933, B1935

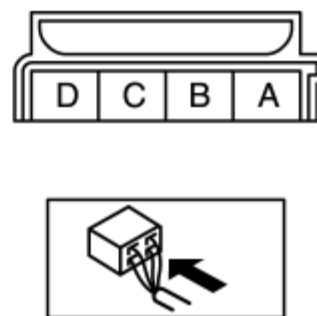
DTC	B1913	Passenger-side air bag module (inflator No.1) circuit short to body ground
	B1925	Passenger-side air bag module (inflator No.1) circuit short to power supply
	B1933	Passenger-side air bag module (inflator No.1) circuit resistance high
	B1935	Passenger-side air bag module (inflator No.1) circuit resistance low
DETECTION CONDITION	<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• Abnormal resistance (other than 1.4—2.9 ohms) detected in the passenger-side driver-side air bag module (inflator No.1) circuit• Malfunction in the wiring harness between the passenger-side air bag module (inflator No.1) and SAS control module	
POSSIBLE CAUSE	<ul style="list-style-type: none">• Passenger-side air bag module (inflator No.1) connector malfunction• Open or short circuit in the wiring harness between the passenger-side air bag module (inflator No.1) and SAS control module• Passenger-side air bag module (inflator No.1) malfunction• SAS control module malfunction	



SAS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



PASSENGER-SIDE AIR BAG MODULE WIRING HARNESS-SIDE CONNECTOR



Diagnostic Procedure

Step	Inspection	Action
1	<p>INSPECT PASSENGER-SIDE AIR BAG MODULE (INFLATOR NO.1) CONNECTOR</p> <p>WARNING:</p> <ul style="list-style-type: none"> Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. <p>(See AIR BAG SYSTEM SERVICE WARNINGS.)</p> <p>(See AIR BAG SYSTEM SERVICE CAUTIONS.)</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the negative battery cable and wait for 1 min or more. Remove the glove compartment. (See GLOVE COMPARTMENT REMOVAL/INSTALLATION.) Disconnect the passenger-side air bag module connector. (See PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) Inspect the passenger-side air bag module (inflator 	<p>Yes Replace the passenger-side air bag module wiring harness.</p> <p>No Go to the next step.</p>

	<p>No.1) connector. (Corrosion, damage, and disconnected pins)</p> <ul style="list-style-type: none">• Is there any malfunction of the passenger-side air bag module (inflator No.1) connector?		
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND PASSENGER-SIDE AIR BAG MODULE (INFLATOR NO.1)</p> <ul style="list-style-type: none">• Remove the column cover. (See COLUMN COVER REMOVAL/INSTALLATION.)• Disconnect the clock spring connector.• Disconnect the driver and passenger-side curtain air bag module connectors.• Disconnect the driver and passenger-side side air bag module connectors.• Remove the rear door lower trim. (See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.)• Disconnect the driver and passenger-side pre-tensioner seat belt connectors.• Partially peel back the floor covering.• Disconnect the SAS control module connector.• Inspect the wiring harnesses between SAS control module connector terminal 1P and passenger-side air bag module connector (inflator No.1) terminal 1C, and SAS control module connector terminal 1M and passenger-side air bag module (inflator No.1) connector terminal 1D for the following:<ul style="list-style-type: none">▪ Short to body ground▪ Open circuit▪ Short circuit between terminals <p>NOTE:</p> <ul style="list-style-type: none">• Inspect for continuity while shaking the wiring harness between the SAS control module and passenger-side air bag module.• Is the wiring harness normal?	Yes	Go to the next step.
		No	Replace the wiring harness between the SAS control module and the passenger-side air bag module (inflator No.1).
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND PASSENGER-SIDE AIR BAG MODULE (INFLATOR NO.1) FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p>	Yes	Replace the wiring harness between the SAS control module and the passenger-

	<ul style="list-style-type: none">• Connect the negative battery cable.• Turn the ignition switch to the ON position with SAS control module connector and passenger-side air bag module connector disconnected.• Measure the voltage of SAS control module connector terminals 1P and 1M of SAS control module harness side connector. <p>NOTE:</p> <ul style="list-style-type: none">• Measure the voltage while shaking the wiring harness between the SAS control module and passenger-side air bag module (inflator No.1).• Is the voltage measured?	side air bag module (inflator No.1).	No Go to the next step.
4	<p>INSPECT PASSENGER-SIDE AIR BAG MODULE (INFLATOR NO.1)</p> <ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Disconnect the negative battery cable and wait for 1 min or more.• Connect the SST (Fuel and thermometer checker) or apply 2 ohms resistance to the passenger-side air bag module connector terminals 1C and 1D.• Set the SST (fuel and thermometer checker) to 2 ohms.• Except for the passenger-side air bag module connector, reconnect all disconnected connectors.• Connect the negative battery cable.• Turn the ignition switch to the ON position.• Clear DTCs using the M-MDS. (See CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)• Are DTCs B1913, B1925, B1933 and/or B1935 displayed?	YesGo to the next step.	No Replace the passenger-side air bag module. (See PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
5	<p>INSPECT DTCs</p> <ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Disconnect the negative battery cable and wait for 1min or more.• Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance.	YesReplace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION.)	No DTC troubleshooting

- | | |
|--|------------|
| <ul style="list-style-type: none">• Connect the passenger-side air bag module connector.• Connect the negative battery cable.• Turn the ignition switch to the ON position.• Clear DTCs using the M-MDS. (See CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)• Is DTC B1913, B1925, B1933 and/or B1935 displayed again? | completed. |
|--|------------|

[< Previous](#) [Next >](#)

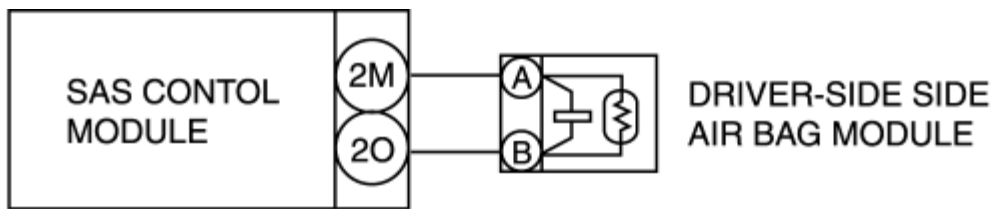
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

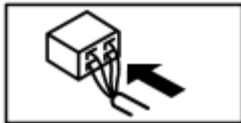
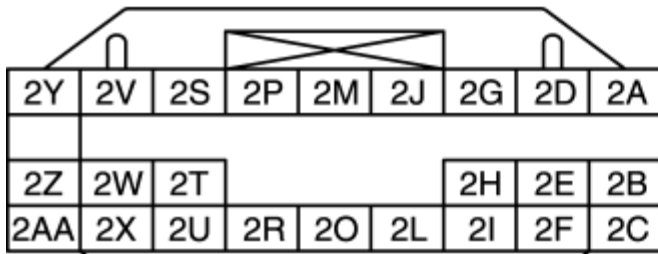
2011 - RX-8 - Restraints

DTC B1992, B1993, B1994, B1995

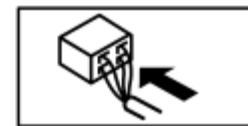
DTC	B1992	Driver–side side air bag module circuit short to power supply
	B1993	Driver–side side air bag module circuit short to body ground
	B1994	Driver–side side air bag module circuit resistance high
	B1995	Driver–side side air bag module circuit resistance low
DETECTION CONDITION	<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• Abnormal resistance (other than 1.4—3.2 ohms) detected in the driver-side side air bag module circuit• Malfunction in the wiring harness between the driver-side side air bag module and SAS control module	
POSSIBLE CAUSE	<ul style="list-style-type: none">• Driver-side side air bag module connector malfunction• Open or short circuit in the wiring harness between the driver-side side air bag module and SAS control module• Driver-side side air bag module malfunction• SAS control module malfunction	



SAS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



DRIVER-SIDE SIDE AIR BAG MODULE WIRING HARNESS-SIDE CONNECTOR



Diagnostic Procedure

Step	Inspection	Action
1	<p>INSPECT DRIVER-SIDE SIDE AIR BAG MODULE CONNECTOR</p> <p>WARNING:</p> <ul style="list-style-type: none"> Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. <p>(See AIR BAG SYSTEM SERVICE WARNINGS.)</p> <p>(See AIR BAG SYSTEM SERVICE CAUTIONS.)</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the negative battery cable and wait for 1 min or more. Disconnect the driver-side side air bag module connector installed to the lower side of the seat cushion of the front seat. Is there any malfunction of the driver-side side air bag module connector? 	<p>Yes Replace the driver-side side air bag module wiring harness.</p> <p>No Go to the next step.</p>
	INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE	

<p>2</p>	<p>AND DRIVER-SIDE SIDE AIR BAG MODULE</p> <ul style="list-style-type: none"> Remove the column cover. (See COLUMN COVER REMOVAL/INSTALLATION.) Disconnect the clock spring connector. Remove the glove compartment. (See GLOVE COMPARTMENT REMOVAL/INSTALLATION.) Disconnect the passenger-side air bag module connector. Disconnect the driver and passenger-side curtain air bag module connectors. Disconnect the passenger-side side air bag module connectors. Remove the rear door lower trim. (See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.) Disconnect the driver and passenger-side pre-tensioner seat belt connectors. Partially peel back the floor covering. Disconnect the SAS control module connector. Inspect the wiring harnesses between SAS control module connector terminal 2M and driver-side side air bag module connector terminal A, and SAS control module connector terminal 2O and driver-side side air bag module connector terminal B for the following: <ul style="list-style-type: none"> Short to body ground Open circuit Short circuit between terminals <p>NOTE:</p> <ul style="list-style-type: none"> Inspect for continuity while shaking the wiring harness between the SAS control module and driver-side side air bag module. Is the wiring harness normal? 	<p>YesGo to the next step.</p> <p>No Replace the wiring harness between the SAS control module and the driver-side side air bag module.</p>
<p>3</p>	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND DRIVER-SIDE SIDE AIR BAG MODULE FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p>	<p>YesReplace the wiring harness between the SAS control module and the driver-side</p>

	<ul style="list-style-type: none">• Connect the negative battery cable.• Turn the ignition switch to the ON position with SAS control module connector and driver-side side air bag module connector disconnected.• Measure the voltage of SAS control module connector terminals 2M and 2O of SAS control module harness side connector. <p>NOTE:</p> <ul style="list-style-type: none">• Measure the voltage while shaking the wiring harness between the SAS control module and driver-side side air bag module.• Is the voltage measured?	side air bag module.
		No Go to the next step.
4	<p>INSPECT DRIVER-SIDE SIDE AIR BAG MODULE</p> <ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Disconnect the negative battery cable and wait for 1 min or more.• Connect the SST (Fuel and thermometer checker) or apply 2 ohms resistance to the driver-side side air bag module connector terminals A and B.• Set the SST (Fuel and thermometer checker) to 2 ohms.• Except for the driver-side side air bag module connector, reconnect all disconnected connectors.• Connect the negative battery cable.• Turn the ignition switch to the ON position.• Clear DTCs using the M-MDS. (See CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)• Are DTCs B1992, B1993, B1994 and/or B1995 displayed?	YesGo to the next step.
		No Replace the driver-side side air bag module. (See SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
5	<p>INSPECT DTCs</p> <ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Disconnect the negative battery cable and wait for 1min or more.• Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance.• Connect the driver-side side air bag module connector.	YesReplace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No DTC troubleshooting completed.

- | | | |
|--|---|--|
| | <ul style="list-style-type: none">• Connect the negative battery cable.• Turn the ignition switch to the ON position.• Clear DTCs using the M-MDS. (See CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)• Is DTC B1992, B1993, B1994 and/or B1995 displayed again? | |
|--|---|--|

[< Previous](#) [Next >](#)

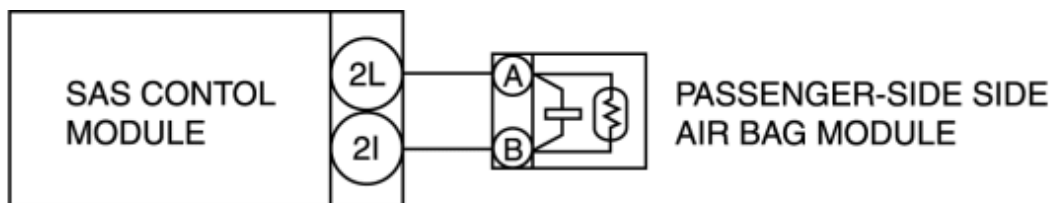
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

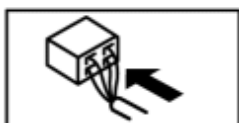
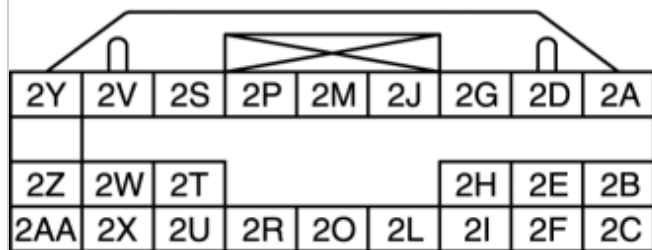
2011 - RX-8 - Restraints

DTC B1996, B1997, B1998, B1999

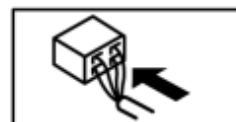
DTC	B1996	Passenger–side side air bag module circuit short to power supply
	B1997	Passenger–side side air bag module circuit short to body ground
	B1998	Passenger–side side air bag module circuit resistance high
	B1999	Passenger–side side air bag module circuit resistance low
DETECTION CONDITION	<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• Abnormal resistance (other than 1.4—3.2 ohms) detected in the passenger-side side air bag module circuit• Malfunction in the wiring harness between the passenger-side side air bag module and SAS control module	
POSSIBLE CAUSE	<ul style="list-style-type: none">• Passenger-side side air bag module connector malfunction• Open or short circuit in the wiring harness between the passenger-side side air bag module and SAS control module• Passenger-side side air bag module malfunction• SAS control module malfunction	



SAS CONTOL MODULE WIRING HARNESS-SIDE CONNECTOR



PASSENGER-SIDE SIDE AIR BAG MODULE WIRING HARNESS-SIDE CONNECTOR



Diagnostic Procedure

Step	Inspection	Action
1	INSPECT PASSENGER-SIDE SIDE AIR BAG MODULE CONNECTOR WARNING: <ul style="list-style-type: none"> Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. <p>(See AIR BAG SYSTEM SERVICE WARNINGS.)</p> <p>(See AIR BAG SYSTEM SERVICE CAUTIONS.)</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the negative battery cable and wait for 1 min or more. Disconnect the passenger-side side air bag module connector installed to the lower side of the seat cushion of the front seat. Is there any malfunction of the passenger-side side air bag module connector? 	<p>Yes Replace the passenger-side side air bag module wiring harness.</p> <p>No Go to the next step.</p>
2	INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND PASSENGER-SIDE SIDE AIR BAG MODULE	<p>Yes Go to the next step.</p>

	<ul style="list-style-type: none">• Remove the column cover. (See COLUMN COVER REMOVAL/INSTALLATION.)• Disconnect the clock spring connector.• Remove the glove compartment. (See GLOVE COMPARTMENT REMOVAL/INSTALLATION.)• Disconnect the passenger-side air bag module connector.• Disconnect the driver and passenger-side curtain air bag module connectors.• Disconnect the driver-side side air bag module connectors.• Remove the rear door lower trim. (See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.)• Disconnect the driver and passenger-side pre-tensioner seat belt connectors.• Partially peel back the floor covering.• Disconnect the SAS control module connector.• Inspect the wiring harnesses between SAS control module connector terminal 2L and passenger-side side air bag module connector terminal A, and SAS control module connector terminal 2I and passenger-side side air bag module connector terminal B for the following:<ul style="list-style-type: none">▪ Short to body ground▪ Open circuit▪ Short circuit between terminals <p>NOTE:</p> <ul style="list-style-type: none">• Inspect for continuity while shaking the wiring harness between the SAS control module and passenger-side side air bag module.• Is the wiring harness normal?	No	Replace the wiring harness between the SAS control module and the passenger-side side air bag module.
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND PASSENGER-SIDE SIDE AIR BAG MODULE FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none">• Connect the negative battery cable.• Turn the ignition switch to the ON position with SAS	Yes	Replace the wiring harness between the SAS control module and the passenger-side side air bag module.

	<p>control module connector and passenger-side side air bag module connector disconnected..</p> <ul style="list-style-type: none">• Measure the voltage of SAS control module connector terminals 2L and 2I of SAS control module harness side connector. <p>NOTE:</p> <ul style="list-style-type: none">• Measure the voltage while shaking the wiring harness between the SAS control module and passenger-side side air bag module.• Is the voltage measured?	No	Go to the next step.
4	<p>INSPECT PASSENGER-SIDE SIDE AIR BAG MODULE</p> <ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Disconnect the negative battery cable and wait for 1 min or more.• Connect the SST (Fuel and thermometer checker) or apply 2 ohms resistance to the passenger-side side air bag module connector terminals A and B.• Set the SST (Fuel and thermometer checker) to 2 ohms.• Except for the passenger-side side air bag module connector, reconnect all disconnected connectors.• Connect the negative battery cable.• Turn the ignition switch to the ON position.• Clear DTCs using the M-MDS. (See CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)• Are DTCs B1996, B1997, B1998 and/or B1999 displayed?	Yes	Go to the next step.
		No	Replace the passenger-side side air bag module. (See SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
5	<p>INSPECT DTCs</p> <ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Disconnect the negative battery cable and wait for 1min or more.• Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance.• Connect the passenger-side side air bag module connector.• Connect the negative battery cable.• Turn the ignition switch to the ON position.	Yes	Replace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

- | | | |
|--|--|--|
| | <ul style="list-style-type: none">• Clear DTCs using the M-MDS. (See CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)• Is DTC B1996, B1997, B1998 and/or B1999 displayed again? | |
|--|--|--|

[< Previous](#) [Next >](#)

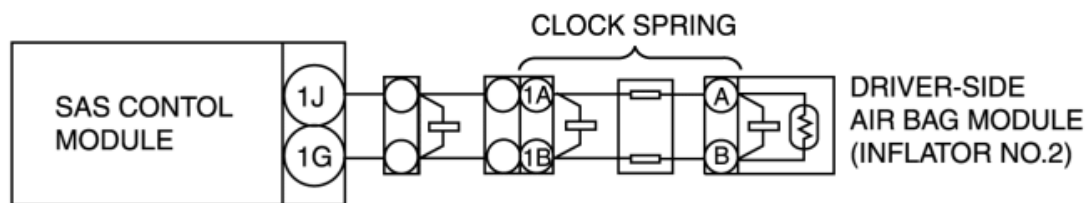
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

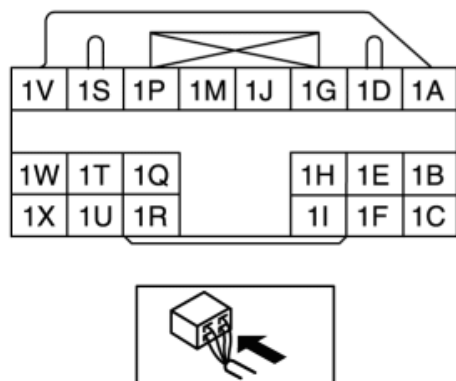
2011 - RX-8 - Restraints

DTC B2228, B2230, B2232, B2234

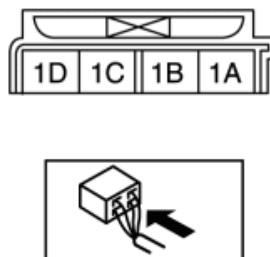
DTC	B2228	Driver–side air bag module (inflator No.2) circuit short to body ground
	B2230	Driver–side air bag module (inflator No.2) circuit short to power supply
	B2232	Driver–side air bag module (inflator No.2) circuit resistance high
	B2234	Driver–side air bag module (inflator No.2) circuit resistance low
DETECTION CONDITION		<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• Abnormal resistance (other than 1.5—3.7 ohms) detected in the driver-side air bag module (inflator No.2) circuit• Malfunction in the wiring harness between the driver-side air bag module (inflator No.2) and SAS control module
POSSIBLE CAUSE		<ul style="list-style-type: none">• Driver-side air bag module (inflator No.2) connector malfunction• Open or short circuit in the wiring harness between the clock spring and SAS control module• Clock spring malfunction• Driver-side air bag module (inflator No.2) malfunction• SAS control module malfunction



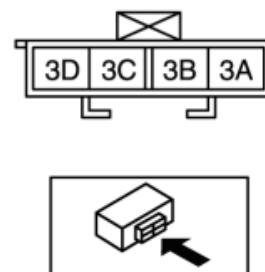
SAS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



CLOCK SPRING WIRING HARNESS-SIDE CONNECTOR



CLOCK SPRING CONNECTOR



Diagnostic Procedure

Step	Inspection	Action
1	INSPECT DRIVER-SIDE AIR BAG MODULE (INFLATOR NO.2) CONNECTOR WARNING: <ul style="list-style-type: none"> Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. (See AIR BAG SYSTEM SERVICE WARNINGS.) (See AIR BAG SYSTEM SERVICE CAUTIONS.) Turn the ignition switch to the LOCK position. Disconnect the negative battery cable and wait for 1min or more. Disconnect the driver-side air bag module. (See DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) Inspect the driver-side air bag module (inflator No.2) connector. (Corrosion, damage, and disconnected pins) Is there any malfunction of the driver-side air bag module (inflator No.2) connector? 	<div>Yes</div> Replace the driver-side air bag wiring harness. <div>No</div> Go to the next step.
2	INSPECT CLOCK SPRING <ul style="list-style-type: none"> Remove the steering wheel. (See STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.) Remove the column cover. (See COLUMN COVER REMOVAL/INSTALLATION.) 	<div>Yes</div> Go to the next step. <div>No</div> Replace the clock spring. (See CLOCK SPRING REMOVAL/INSTALLATION.)

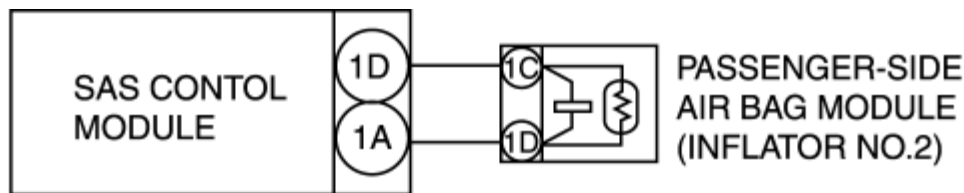
	<ul style="list-style-type: none"> Remove the clock spring. (See CLOCK SPRING REMOVAL/INSTALLATION.) Inspect for continuity between clock spring connector terminals 1A—B and 1B—C. Is there continuity? 		
3	INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND CLOCK SPRING <ul style="list-style-type: none"> Remove the glove compartment. (See GLOVE COMPARTMENT REMOVAL/INSTALLATION.) Disconnect the passenger-side air bag module connector. Disconnect the driver and passenger-side curtain air bag module connectors. Disconnect the driver and passenger-side side air bag module connectors. Remove the rear door lower trim. (See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.) Disconnect the driver and passenger-side pre-tensioner seat belt connectors. Partially peel back the floor covering. Disconnect the SAS control module connector. Inspect the wiring harness between SAS control module connector terminal 1J and clock spring connector terminal 1A, and SAS control module connector terminal 1G and clock spring connector terminal 1B for the following: <ul style="list-style-type: none"> Short to ground Open circuit Short circuit between terminals <p>NOTE:</p> <ul style="list-style-type: none"> Inspect for continuity while shaking the wiring harness between the SAS control module and clock spring. Is the wiring harness normal? 	Yes	Go to the next step.
		No	Replace the wiring harness between the SAS control module and the clock spring.
4	INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND CLOCK SPRING FOR A SHORT CIRCUIT TO THE POWER SUPPLY <ul style="list-style-type: none"> Connect the negative battery cable. Turn the ignition switch to the ON position with SAS control module connector and clock spring connector disconnected. Measure the voltage of SAS control module connector terminals 1J and 1G. <p>NOTE:</p> <ul style="list-style-type: none"> Measure the voltage while shaking the wiring harness between the SAS control module and clock spring. Is the voltage measured? 	Yes	Replace the wiring harness between the SAS control module and the clock spring.
		No	Go to the next step.
5	INSPECT DRIVER-SIDE AIR BAG MODULE (INFLATOR NO.2)	Yes	Go to the next step.

	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the negative battery cable and wait for 1 min or more. • Connect the leads of the SST (Fuel and thermometer checker) or apply 2 ohms resistance to clock spring connector terminals 3C and 3D. • Set the resistance of the SST (Fuel and thermometer checker) to the 2 ohms position. • Except for the clock spring connector, reconnect all disconnected connectors. • Connect the negative battery cable. • Turn the ignition switch to the ON position. • Clear DTCs using the M-MDS. (See CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.) • Are DTCs B2228, B2230, B2232 and/or B2234 displayed? 		<p>No Replace the driver-side air bag module (inflator No.2).</p> <p>(See DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)</p>
6	<p>INSPECT DTCs</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the negative battery cable and wait for 1 min or more. • Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance. • Connect the clock spring connector. • Connect the negative battery cable. • Turn the ignition switch to the ON position. • Clear DTCs using the M-MDS. (See CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.) • Is DTC B2228, B2230, B2232 and/or B2234 displayed again? 	<p>Yes Replace the SAS control module.</p> <p>(See SAS CONTROL MODULE REMOVAL/INSTALLATION.)</p>	<p>No DTC troubleshooting completed.</p>

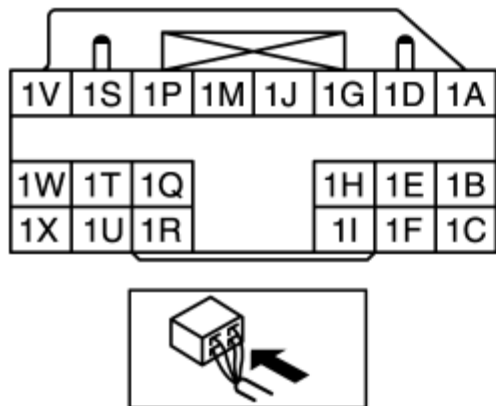
2011 - RX-8 - Restraints

DTC B2229, B2231, B2233, B2235

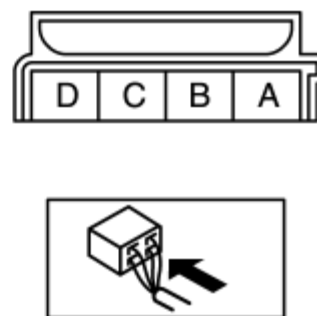
DTC	B2229	Passenger–side air bag module (inflator No.2) circuit short to body ground
	B2231	Passenger–side air bag module (inflator No.2) circuit short to power supply
	B2233	Passenger–side air bag module (inflator No.2) circuit resistance high
	B2235	Passenger–side air bag module (inflator No.2) circuit resistance low
DETECTION CONDITION	<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• Abnormal resistance (other than 1.4—2.9 ohms) detected in the passenger-side side side air bag module circuit• Malfunction in the wiring harness between the passenger-side air bag module (inflator No.2) and SAS control module	
POSSIBLE CAUSE	<ul style="list-style-type: none">• Passenger-side air bag module (inflator No.2) connector malfunction• Open or short circuit in the wiring harness between the passenger-side air bag module (inflator No.2) and SAS control module• Passenger-side air bag module (inflator No.2) malfunction• SAS control module malfunction	



SAS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



PASSENGER-SIDE AIR BAG MODULE WIRING HARNESS-SIDE CONNECTOR



Diagnostic Procedure

Step	Inspection	Action
1	<p>INSPECT PASSENGER-SIDE AIR BAG MODULE (INFLATOR NO.2) CONNECTOR</p> <p>WARNING:</p> <ul style="list-style-type: none"> Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. <p>(See AIR BAG SYSTEM SERVICE WARNINGS.)</p> <p>(See AIR BAG SYSTEM SERVICE CAUTIONS.)</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the negative battery cable and wait for 1 min or more. Remove the glove compartment. (See GLOVE COMPARTMENT REMOVAL/INSTALLATION.) Disconnect the passenger-side air bag module (inflator No.2) connector. (See PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) Inspect the passenger-side air bag module (inflator 	<p>Yes Replace the passenger-side air bag module wiring harness.</p> <p>No Go to the next step.</p>

	<p>No.2) connector. (Corrosion, damage, and disconnected pins)</p> <ul style="list-style-type: none">• Is there any malfunction of the passenger-side air bag module (inflator No.2) connector?		
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND PASSENGER-SIDE AIR BAG MODULE (INFLATOR NO.2)</p> <ul style="list-style-type: none">• Remove the column cover. (See COLUMN COVER REMOVAL/INSTALLATION.)• Disconnect the clock spring connector.• Disconnect the driver and passenger-side curtain air bag module connectors.• Disconnect the driver and passenger-side side air bag module connectors.• Remove the rear door lower trim. (See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.)• Disconnect the driver and passenger-side pre-tensioner seat belt connectors.• Partially peel back the floor covering.• Disconnect the SAS control module connector.• Inspect the wiring harnesses between SAS control module connector terminal 1D and passenger-side air bag module (inflator No.2) connector terminal 1C, and SAS control module connector terminal 1A and passenger-side air bag module (inflator No.2) connector terminal 1D for the following:<ul style="list-style-type: none">▪ Short to body ground▪ Open circuit▪ Short circuit between terminals <p>NOTE:</p> <ul style="list-style-type: none">• Inspect for continuity while shaking the wiring harness between the SAS control module and passenger-side air bag module (inflator No.2).• Is the wiring harness normal?	Yes	Go to the next step.
		No	Replace the wiring harness between the SAS control module and the passenger-side air bag module (inflator No.2).
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND PASSENGER-SIDE AIR BAG MODULE (INFLATOR NO.2) FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p>	Yes	Replace the wiring harness between the SAS control module and the passenger-

	<ul style="list-style-type: none">• Connect the negative battery cable.• Turn the ignition switch to the ON position with SAS control module connector and passenger-side air bag module connector disconnected.• Measure the voltage of SAS control module connector terminals 1A and 1D of SAS control module harness side connector. <p>NOTE:</p> <ul style="list-style-type: none">• Measure the voltage while shaking the wiring harness between the SAS control module and passenger-side air bag module (inflator No.2).• Is the voltage measured?	side air bag module (inflator No.2).	
		No	Go to the next step.
4	INSPECT PASSENGER-SIDE AIR BAG MODULE (INFLATOR NO.2) <ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Disconnect the negative battery cable and wait for 1 min or more.• Connect the SST (Fuel and thermometer checker) or apply 2 ohms resistance to the passenger-side air bag module connector terminals 1C and 1D.• Set the SST (fuel and thermometer checker) to 2 ohm.• Except for the passenger-side air bag module connector, reconnect all disconnected connectors.• Connect the negative battery cable.• Turn the ignition switch to the ON position.• Clear DTCs using the M-MDS. (See CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)• Are DTCs B2229, B2231, B2233 and/or B2235 displayed?	Yes	Go to the next step.
		No	Replace the passenger-side air bag module (inflator No.2). (See PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)
5	INSPECT DTCs <ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Disconnect the negative battery cable and wait for 1min or more.• Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance.	Yes	Replace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting

- | | |
|--|------------|
| <ul style="list-style-type: none">• Connect the passenger-side air bag module connector.• Connect the negative battery cable.• Turn the ignition switch to the ON position.• Clear DTCs using the M-MDS. (See CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)• Is DTC B2229, B2231, B2233 and/or B2235 displayed again? | completed. |
|--|------------|

[< Previous](#) [Next >](#)

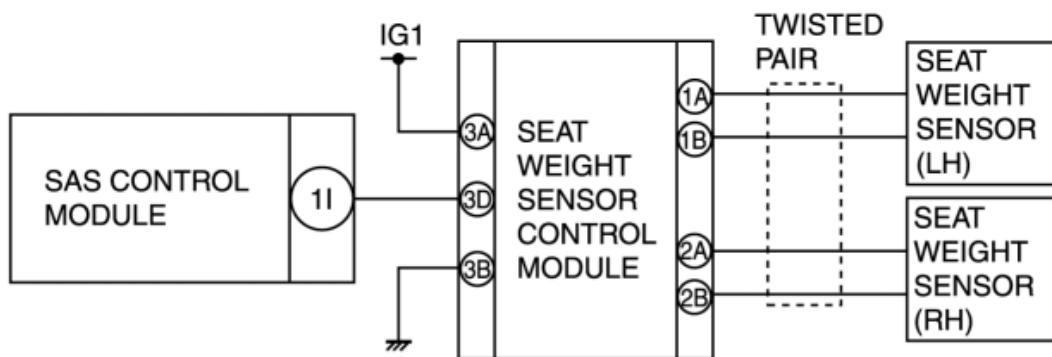
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

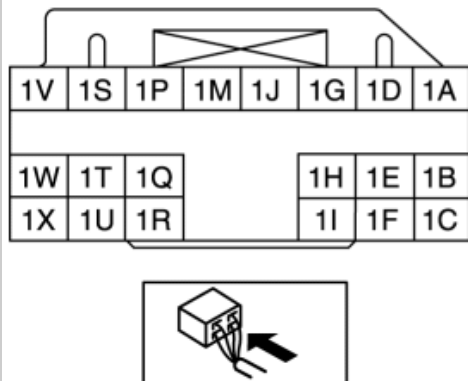
2011 - RX-8 - Restraints

DTC B2290

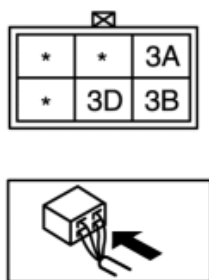
DTC B2290	Passenger sensing system malfunction
DETECTION CONDITION	<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• Passenger sensing system circuit malfunction
POSSIBLE CAUSE	<ul style="list-style-type: none">• Seat weight sensor control module connector malfunction• Open or short circuit in the wiring harness between the SAS control module and seat weight sensor• Open or short circuit in the wiring harness between the battery and the seat weight sensor control module• Open or short circuit in the wiring harness between the seat weight sensor control module and body ground• Seat weight sensor calibration not properly set• Communication error between SAS control module and seat weight sensor control module• Seat weight sensor control module internal malfunction• LH or RH seat weight sensor malfunction• SAS control module malfunction



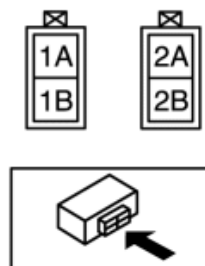
SAS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



SEAT WEIGHT SENSOR CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



SEAT WEIGHT SENSOR CONTROL MODULE



Diagnostic Procedure

STEP	INSPECTION	ACTION
1	INSPECT SEAT WEIGHT SENSOR CONTROL MODULE CONNECTOR WARNING: <ul style="list-style-type: none"> Handling the air bag system components improperly can accidentally operate (deploy) the air bag modules and pre-tensioner seat belts, which may seriously injure you. Read the service warnings and cautions before handling the air bag system components. <p>(See AIR BAG SYSTEM SERVICE WARNINGS.)</p> <p>(See AIR BAG SYSTEM SERVICE CAUTIONS.)</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the negative battery cable and wait for 1 min or more. Disconnect the seat weight sensor control module connector. Is there any malfunction of the seat 	<p>Yes Repair or replace the wiring harness.</p> <p>After replacement, reperform the DTC inspection and verify that no DTCs are displayed.</p> <p>No Go to the next step.</p>

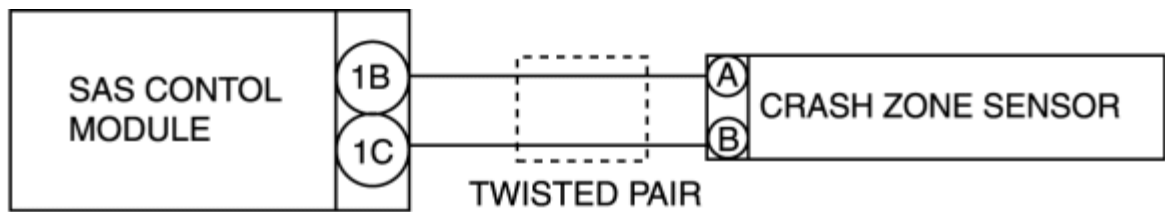
	weight sensor control module connector?		
2	INSPECT SEAT WEIGHT SENSOR CONTROL MODULE POWER SUPPLY CIRCUIT <ul style="list-style-type: none"> Turn the ignition switch to the ON position. Measure voltage at terminal 3A of seat weight sensor control module connector. <p>NOTE:</p> <ul style="list-style-type: none"> Measure the voltage while shaking the wiring harness between the relay and main fuse block and seat weight sensor control module. Is voltage more than B+? 	Yes Go to the next step.	No If there is any malfunction in the wiring harnesses, repair or replace the applicable wiring harness. After replacement, reperform the DTC inspection and verify that no DTCs are displayed.
3	INSPECTION WIRING HARNESS <ul style="list-style-type: none"> Disconnect the SAS control module connector. (See SAS CONTROL MODULE REMOVAL/INSTALLATION.) Verify continuity in the following wiring harnesses: <ul style="list-style-type: none"> Between SAS control module terminal 1I and seat weight sensor control module terminal 3D Between seat weight sensor control module terminal 3B and body ground <p>NOTE:</p> <ul style="list-style-type: none"> Inspect for continuity while shaking the wiring harness between the SAS control module and seat weight sensor control module. Is the continuity normal? 	Yes Go to the next step.	No If there is any malfunction in the wiring harnesses, repair or replace the applicable wiring harness. After replacement, reperform the DTC inspection and verify that no DTCs are displayed.
4	INSPECT PASSENGER SENSING SYSTEM <ul style="list-style-type: none"> Connect the seat weight sensor control module connector. Connect the SAS control module. Connect the negative battery cable. Verify the following PIDs using the M-MDS. (See PID/DATA MONITOR TABLE.) <ul style="list-style-type: none"> OCSFLT_CAL 	Yes Go to the Step 6.	No Perform the following procedures according to the M-MDS screen indication: <ul style="list-style-type: none"> If FAULT is displayed for OCSFLT_CAL: <ul style="list-style-type: none"> Perform the seat weight sensor calibration. (See SEAT WEIGHT SENSOR CALIBRATION.) If FAULT is displayed for OCSFLT_COM or OCSFLT_MDL:

	<ul style="list-style-type: none"> ▪ OCSFLT_COM ▪ OCSFLT_L ▪ OCSFLT_MDL ▪ OCSFLT_R <ul style="list-style-type: none"> • Do all PIDs display “OK”? 		<ul style="list-style-type: none"> ▪ Replace the seat weight sensor control module. (See SEAT WEIGHT SENSOR CONTROL MODULE REMOVAL/INSTALLATION.) <ul style="list-style-type: none"> • If FAULT is displayed for OCSFLT_L or OCSFLT_R: <ul style="list-style-type: none"> ▪ Go to the next step.
5	INSPECT SEAT WEIGHT SENSOR CONTROL MODULE <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the negative battery cable and wait for 1 min or more. • Disconnect the seat weight sensor connector from the seat weight sensor control module. • Connect the negative battery cable. • Turn the ignition switch to the ON position. • Measure the voltage between the following terminals: <p>CAUTION:</p> <ul style="list-style-type: none"> • When measuring the voltage at a terminal of the seat weight sensor control module, measure it being careful not to bend or damage the terminal. ▪ Seat weight sensor control module terminal 1A (module side) and body ground ▪ Seat weight sensor control module terminal 2A (module side) and body ground <ul style="list-style-type: none"> • Is the voltage approx. 0 V? 	Yes Replace the seat weight sensor control module, then go to the next step. (See SEAT WEIGHT SENSOR CONTROL MODULE REMOVAL/INSTALLATION.)	No <ul style="list-style-type: none"> • Replace the slide adjuster. (See FRONT SEAT SLIDE ADJUSTER REMOVAL/INSTALLATION.) • Perform the DTC inspection again. <ul style="list-style-type: none"> ▪ If the same DTC is displayed, replace the seat weight sensor control module, then go to the next step. (See SEAT WEIGHT SENSOR CONTROL MODULE REMOVAL/INSTALLATION.)
6	INSPECT SAS CONTROL MODULE <ul style="list-style-type: none"> • Reperform the DTC inspection. • Is DTC B2290 displayed? 	Yes Replace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION.)	No DTC troubleshooting completed.

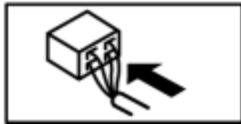
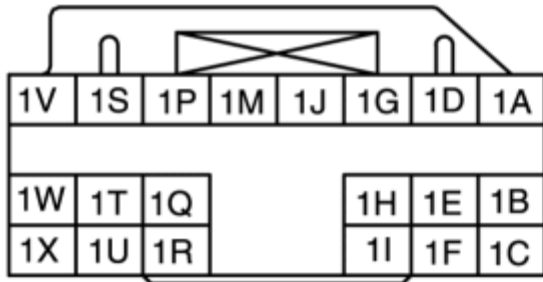
2011 - RX-8 - Restraints

DTC B2296

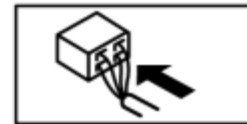
DTC B2296	Crash zone sensor (communication error, internal circuit abnormal)
DETECTION CONDITION	<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• Malfunction in the wiring harness between the crash zone sensor and SAS control module• Malfunction in the crash zone sensor circuit
POSSIBLE CAUSE	<ul style="list-style-type: none">• Crash zone sensor connector malfunction• Open or short circuit in the wiring harness between the crash zone sensor and SAS control module• Crash zone sensor malfunction• SAS control module malfunction



SAS CONTROL MODULE WIRING
HARNESS-SIDE CONNECTOR



CRASH ZONE SENSOR WIRING
HARNESS-SIDE CONNECTOR



Diagnostic Procedure

Step	Inspection	Action
1	INSPECT CRASH ZONE SENSOR CONNECTOR WARNING: <ul style="list-style-type: none"> Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. <p>(See AIR BAG SYSTEM SERVICE WARNINGS.)</p> <p>(See AIR BAG SYSTEM SERVICE CAUTIONS.)</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the negative battery cable and wait for 1 min or more. Disconnect the crash zone sensor connector. (See CRASH ZONE SENSOR REMOVAL/INSTALLATION.) Inspect the crash zone sensor connector. (Corrosion, damage, and disconnected pins) Is there any malfunction of the crash zone sensor 	<p>Yes Replace the crash zone sensor wiring harness.</p> <p>No Go to the next step.</p>

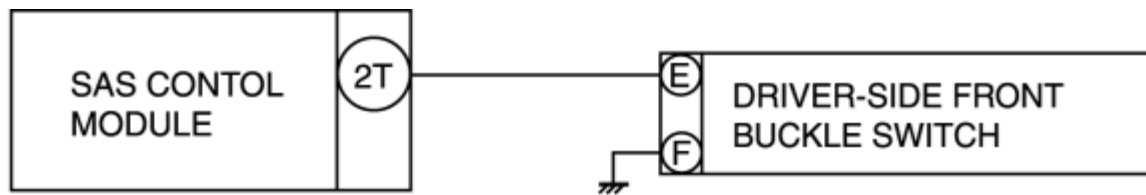
	connector?		
2	INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND CRASH ZONE SENSOR	Yes	Go to the next step.
	<ul style="list-style-type: none">• Remove the column cover. (See COLUMN COVER REMOVAL/INSTALLATION.)• Disconnect the clock spring connector.• Remove the glove compartment. (See GLOVE COMPARTMENT REMOVAL/INSTALLATION.)• Disconnect the passenger-side air bag module connector.• Disconnect the driver and passenger-side curtain air bag module connectors.• Disconnect the driver and passenger-side side air bag module connectors.• Remove the rear door lower trim. (See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.)• Disconnect the driver and passenger-side pre-tensioner seat belt connectors.• Partially peel back the floor covering.• Disconnect the SAS control module connector.• Inspect the wiring harnesses between SAS control module connector terminal 1B and crash zone sensor connector terminal A, and SAS control module terminal 1C and crash zone sensor connector terminal B for the following:<ul style="list-style-type: none">▪ Short to body ground▪ Open circuit▪ Short circuit between terminals <p>NOTE:</p> <ul style="list-style-type: none">• Inspect for continuity while shaking the wiring harness between the SAS control module and crash zone sensor.• Is the wiring harness normal?	No	Replace the wiring harness between the SAS control module and the crash zone sensor.
	INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL		

<p>3</p>	<p>MODULE AND CRASH ZONE SENSOR CONNECTOR FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none"> • Connect the negative battery cable. • Turn the ignition switch to the ON position with SAS control module connector and crash zone sensor connector disconnected. • Measure the voltage of SAS control module connector terminals 1B and 1C of SAS control module harness side connector. <p>NOTE:</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and crash zone sensor. • Is the voltage measured? 	<p>Yes Replace the wiring harness between the SAS control module and the crash zone sensor.</p>	<p>No Replace the crash zone sensor, then go to the next step.</p> <p>(See CRASH ZONE SENSOR REMOVAL/INSTALLATION.)</p>
<p>4</p>	<p>PERFORM DTC INSPECTION</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the negative battery cable and wait for 1 min or more. • Reconnect all disconnected connectors • Connect the negative battery cable. • Turn the ignition switch to the ON position. • Clear DTCs using the M-MDS. (See CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.) • Are DTCs B2296 displayed? 	<p>Yes Replace the SAS control module.</p> <p>(See SAS CONTROL MODULE REMOVAL/INSTALLATION.)</p>	<p>No DTC troubleshooting completed.</p>

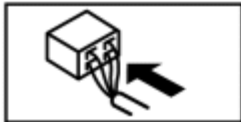
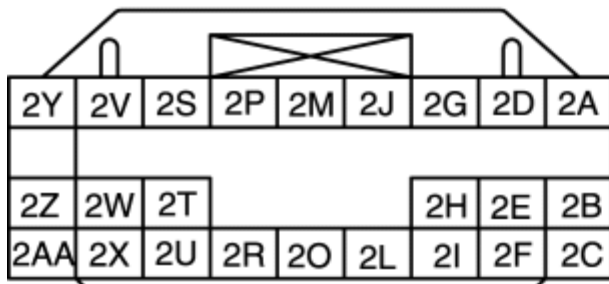
2011 - RX-8 - Restraints

DTC B2434, B2435, B2691

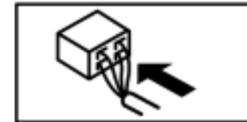
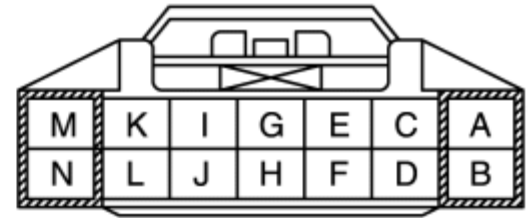
DTC	B2434	Driver-side front buckle switch circuit short to body ground
	B2435	Driver-side front buckle switch circuit resistance not within specification
	B2691	Driver-side front buckle switch circuit open or short to power supply
DETECTION CONDITION		<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• Malfunction in the driver-side front buckle switch circuit
POSSIBLE CAUSE		<ul style="list-style-type: none">• Driver-side front buckle switch connector malfunction• Driver-side front buckle switch malfunction• Open or short circuit in the wiring harness between the driver-side front buckle switch and body ground• Open or short circuit in the wiring harness between the driver-side front buckle switch and SAS control module• SAS control module malfunction



SAS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



DRIVER-SIDE FRONT BUCKLE SWITCH WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

Step	Inspection	Action
1	INSPECT DRIVER-SIDE FRONT BUCKLE SWITCH CONNECTOR WARNING: <ul style="list-style-type: none"> Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. <p>(See AIR BAG SYSTEM SERVICE WARNINGS.)</p> <p>(See AIR BAG SYSTEM SERVICE CAUTIONS.)</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the negative battery cable and wait for 1 min or more. Disconnect the driver-side front buckle switch connector. (See FRONT BUCKLE REMOVAL/INSTALLATION.) Is there any malfunction of the driver-side front buckle switch connector? 	<p>Yes Replace the driver-side front buckle switch wiring harness.</p> <p>No Go to the next step.</p>

2	<p>INSPECT DRIVER-SIDE FRONT BUCKLE SWITCH</p> <ul style="list-style-type: none"> Inspect the driver-side front buckle switch. (See FRONT BUCKLE SWITCH INSPECTION.) Is the driver-side front buckle switch normal? 	<p>Yes Go to the next step.</p> <p>No Replace the driver-side front buckle.</p> <p>(See FRONT BUCKLE REMOVAL/INSTALLATION.)</p>
3	<p>INSPECT WIRING HARNESS BETWEEN DRIVER-SIDE BUCKLE SWITCH AND GROUND</p> <ul style="list-style-type: none"> Inspect the wiring harness between driver-side front buckle switch terminal F and ground for the following: <ul style="list-style-type: none"> Open circuit <p>NOTE:</p> <ul style="list-style-type: none"> Measure the voltage while shaking the wiring harness between the SAS control module and driver-side front buckle switch. Is the wiring harness normal? 	<p>Yes Go to the next step.</p> <p>No Replace the wiring harness.</p>
4	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND DRIVER-SIDE BUCKLE SWITCH</p> <ul style="list-style-type: none"> Remove the column cover. (See COLUMN COVER REMOVAL/INSTALLATION.) Disconnect the clock spring connector. Remove the glove compartment. (See GLOVE COMPARTMENT REMOVAL/INSTALLATION.) Disconnect the passenger-side air bag module connector. Disconnect the driver and passenger-side curtain air bag module connectors. Disconnect the driver and passenger-side side air bag module connectors. Remove the rear door lower trim. (See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.) Disconnect the driver and passenger-side pre-tensioner seat belt connectors. 	<p>Yes Go to the next step.</p> <p>No Replace the wiring harness between the SAS control module and the driver-side front buckle switch.</p>

	<p>Partially peel back the floor covering.</p> <ul style="list-style-type: none">• Disconnect the SAS control module connector.• Inspect the wiring harnesses between SAS control module connector terminal 2T and driver-side front buckle switch connector terminal E, for the following:<ul style="list-style-type: none">▪ Short to body ground▪ Open circuit▪ Short circuit between terminals <p>NOTE:</p> <ul style="list-style-type: none">• Inspect for continuity while shaking the wiring harness between the SAS control module and driver-side front buckle switch.• Is the wiring harness normal?		
5	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND DRIVER-SIDE BUCKLE SWITCH FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none">• Connect the negative battery cable.• Turn the ignition switch to the ON position with SAS control module connector and driver-side front buckle switch connector disconnected.• Measure the voltage of SAS control module connector terminals 2T of SAS control module harness side connector. <p>NOTE:</p> <ul style="list-style-type: none">• Measure the voltage while shaking the wiring harness between the SAS control module and driver-side front buckle switch.• Is the voltage measured?	Yes	Replace the wiring harness between the SAS control module and the driver-side front buckle switch.
		No	Go to the next step.
6	<p>INSPECT DTCs</p> <ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Disconnect the negative battery cable and wait for 1 min or more.• Reconnect all disconnected connectors• Connect the negative battery cable.• Turn the ignition switch to the ON position.• Clear DTCs using the M-MDS. (See CLEARING DTC.)	Yes	Replace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

- | | | |
|--|---|--|
| | <ul style="list-style-type: none">• Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)• Is DTC B2434, B2435 and/or B2691 displayed again? | |
|--|---|--|

[< Previous](#) [Next >](#)

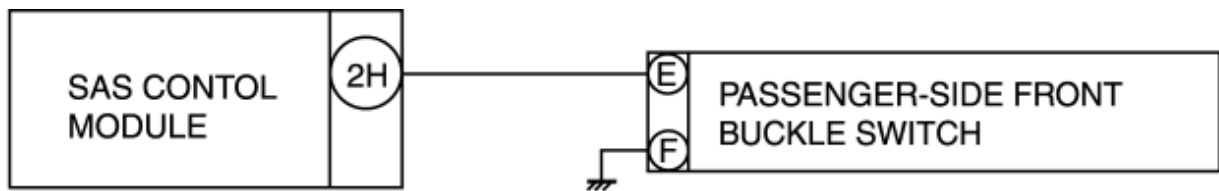
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

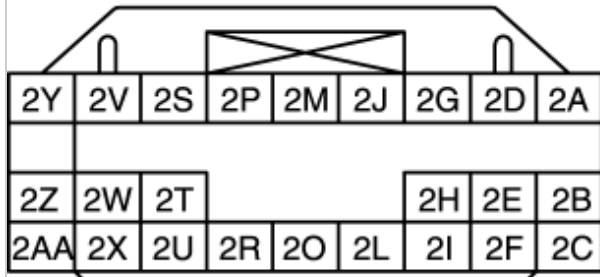
2011 - RX-8 - Restraints

DTC B2438, B2439, B2692

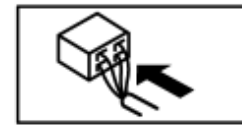
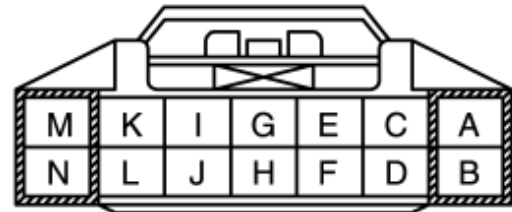
DTC	B2438	Passenger-side front buckle switch circuit short to body ground
	B2439	Passenger-side front buckle switch circuit resistance not within specification
	B2692	Passenger-side front buckle switch circuit open or short to power supply
DETECTION CONDITION		<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• Malfunction in the passenger-side front buckle switch circuit
POSSIBLE CAUSE		<ul style="list-style-type: none">• Passenger-side front buckle switch connector malfunction• Passenger-side front buckle switch malfunction• Open or short circuit in the wiring harness between the passenger-side front buckle switch and body ground• Open or short circuit in the wiring harness between the passenger-side front buckle switch and SAS control module• SAS control module malfunction



SAS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



PASSENGER-SIDE FRONT BUCKLE SWITCH WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

Step	Inspection	Action
1	INSPECT PASSENGER-SIDE FRONT BUCKLE SWITCH CONNECTOR WARNING: <ul style="list-style-type: none"> Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. <p>(See AIR BAG SYSTEM SERVICE WARNINGS.)</p> <p>(See AIR BAG SYSTEM SERVICE CAUTIONS.)</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the negative battery cable and wait for 1 min or more. Disconnect the passenger-side front buckle switch connector. (See FRONT BUCKLE REMOVAL/INSTALLATION.) Is there any malfunction of the passenger-side front buckle switch connector? 	<p>Yes Replace the passenger-side front buckle switch wiring harness.</p> <p>No Go to the next step.</p>
	INSPECT PASSENGER-SIDE FRONT BUCKLE SWITCH	

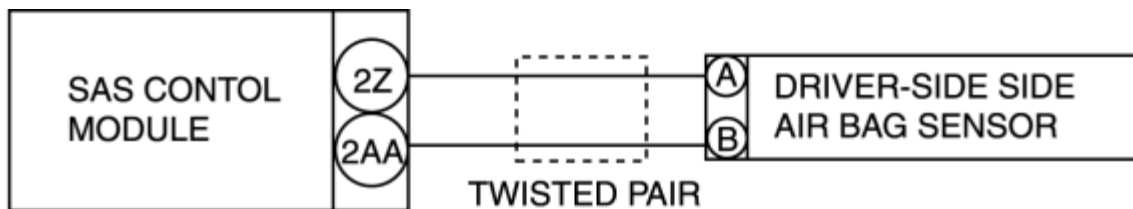
2	<ul style="list-style-type: none">Inspect the passenger-side front buckle switch. (See FRONT BUCKLE SWITCH INSPECTION.)Is the passenger-side front buckle switch normal?	<table><tr><td>Yes</td><td>Go to the next step.</td></tr><tr><td>No</td><td>Replace the passenger-side front buckle switch. (See FRONT BUCKLE REMOVAL/INSTALLATION.)</td></tr></table>	Yes	Go to the next step.	No	Replace the passenger-side front buckle switch. (See FRONT BUCKLE REMOVAL/INSTALLATION.)
Yes	Go to the next step.					
No	Replace the passenger-side front buckle switch. (See FRONT BUCKLE REMOVAL/INSTALLATION.)					
3	<p>INSPECT WIRING HARNESS BETWEEN PASSENGER-SIDE BUCKLE SWITCH AND GROUND</p> <ul style="list-style-type: none">Inspect the wiring harness between passenger-side front buckle switch terminal F and ground for the following:<ul style="list-style-type: none">Open circuit <p>NOTE:</p> <ul style="list-style-type: none">Measure the voltage while shaking the wiring harness between the SAS control module and passenger-side front buckle switch.Is the wiring harness normal?	<table><tr><td>Yes</td><td>Go to the next step.</td></tr><tr><td>No</td><td>Replace the wiring harness.</td></tr></table>	Yes	Go to the next step.	No	Replace the wiring harness.
Yes	Go to the next step.					
No	Replace the wiring harness.					
4	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND PASSENGER-SIDE BUCKLE SWITCH</p> <ul style="list-style-type: none">Remove the column cover. (See COLUMN COVER REMOVAL/INSTALLATION.)Disconnect the clock spring connector.Remove the glove compartment. (See GLOVE COMPARTMENT REMOVAL/INSTALLATION.)Disconnect the passenger-side air bag module connector.Disconnect the driver and passenger-side curtain air bag module connectors.Disconnect the driver and passenger-side side air bag module connectors.Remove the rear door lower trim. (See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.)Disconnect the driver and passenger-side pre-tensioner seat belt connectors.Partially peel back the floor covering.Disconnect the SAS control module connector.	<table><tr><td>Yes</td><td>Go to the next step.</td></tr><tr><td>No</td><td>Replace the wiring harness between the SAS control module and the passenger-side front buckle switch.</td></tr></table>	Yes	Go to the next step.	No	Replace the wiring harness between the SAS control module and the passenger-side front buckle switch.
Yes	Go to the next step.					
No	Replace the wiring harness between the SAS control module and the passenger-side front buckle switch.					

	<ul style="list-style-type: none">Inspect the wiring harnesses between SAS control module connector terminal 2H and passenger-side front buckle switch connector terminal E, for the following:<ul style="list-style-type: none">Short to body groundOpen circuitShort circuit between terminals <p>NOTE:</p> <ul style="list-style-type: none">Inspect for continuity while shaking the wiring harness between the SAS control module and passenger-side front buckle switch.Is the wiring harness normal?		
5	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND PASSENGER-SIDE BUCKLE SWITCH FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none">Connect the negative battery cable.Turn the ignition switch to the ON position with SAS control module connector and passenger-side front buckle switch connector disconnected.Measure the voltage of SAS control module connector terminals 2H of SAS control module harness side connector. <p>NOTE:</p> <ul style="list-style-type: none">Measure the voltage while shaking the wiring harness between the SAS control module and passenger-side front buckle switch.Is the voltage measured?	Yes	Replace the wiring harness between the SAS control module and the passenger-side front buckle switch.
		No	Go to the next step.
6	<p>INSPECT DTCs</p> <ul style="list-style-type: none">Turn the ignition switch to the LOCK position.Disconnect the negative battery cable and wait for 1 min or more.Reconnect all disconnected connectorsConnect the negative battery cable.Turn the ignition switch to the ON position.Clear DTCs using the M-MDS. (See CLEARING DTC.)Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)Is DTC B2438, B2439 and/or B2692 displayed again?	Yes	Replace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

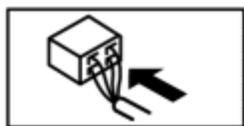
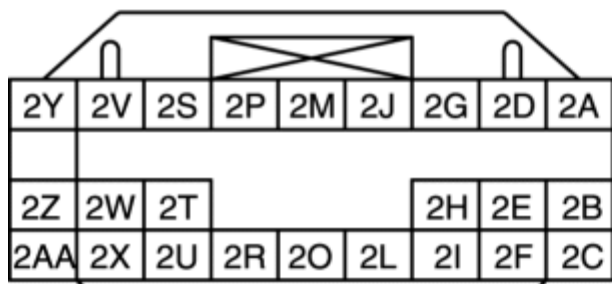
2011 - RX-8 - Restraints

DTC B2444, U2017

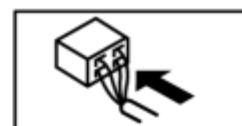
DTC	B2444	Driver–side side air bag sensor (internal circuit abnormal)
	U2017	Driver–side side air bag sensor (communication error)
DETECTION CONDITION	WARNING: <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• Malfunction in the wiring harness between the driver-side side air bag sensor and SAS control module• Malfunction in the driver-side side air bag sensor circuit	
POSSIBLE CAUSE	<ul style="list-style-type: none">• Driver-side side air bag sensor connector malfunction• Open or short circuit in the wiring harness between the driver-side side air bag sensor and SAS control module• Driver-side side air bag sensor malfunction• SAS control module malfunction	



SAS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



DRIVER-SIDE SIDE AIR BAG SENSOR WIRING HARNESS-SIDE CONNECTOR



Diagnostic Procedure

Step	Inspection	Action
1	<p>INSPECT DRIVER-SIDE SIDE AIR BAG SENSOR CONNECTOR</p> <p>WARNING:</p> <ul style="list-style-type: none"> Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. <p>(See AIR BAG SYSTEM SERVICE WARNINGS.)</p> <p>(See AIR BAG SYSTEM SERVICE CAUTIONS.)</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the negative battery cable and wait for 1 min or more. Disconnect the driver-side side air bag sensor connector. (See SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) Inspect the driver-side side air bag sensor connector. (Corrosion, damage, and disconnected pins) 	<p>Yes Replace the driver-side side air bag sensor wiring harness.</p> <p>No Go to the next step.</p>

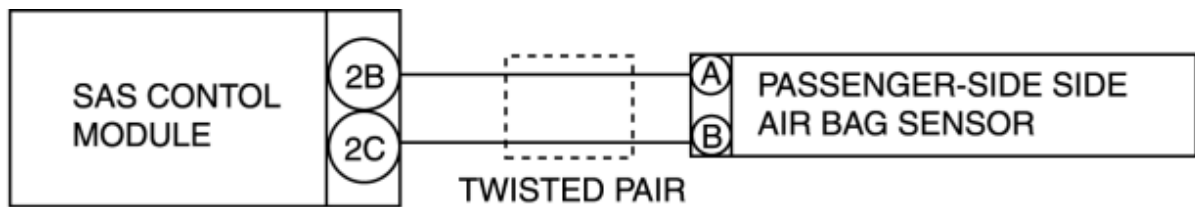
	<ul style="list-style-type: none">• Is there any malfunction of the driver-side side air bag sensor connector?		
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND DRIVER-SIDE SIDE AIR BAG SENSOR</p> <ul style="list-style-type: none">• Remove the column cover. (See COLUMN COVER REMOVAL/INSTALLATION.)• Disconnect the clock spring connector.• Remove the glove compartment. (See GLOVE COMPARTMENT REMOVAL/INSTALLATION.)• Disconnect the passenger-side air bag module connector.• Disconnect the driver and passenger-side curtain air bag module connectors.• Disconnect the passenger-side side air bag module connectors.• Remove the rear door lower trim. (See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.)• Disconnect the driver and passenger-side pre-tensioner seat belt connectors.• Partially peel back the floor covering.• Disconnect the SAS control module connector.• Inspect the wiring harnesses between SAS control module connector terminal 2Z and driver-side side air bag connector terminal A, and SAS control module terminal 2AA and driver-side side air bag sensor connector terminal B for the following:<ul style="list-style-type: none">▪ Short to body ground▪ Open circuit▪ Short circuit between terminals <p>NOTE:</p> <ul style="list-style-type: none">• Inspect for continuity while shaking the wiring harness between the SAS control module and driver-side side air bag sensor.• Is the wiring harness normal?	Yes	Go to the next step.
		No	Replace the wiring harness between the SAS control module and the driver-side side air bag sensor.

3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND DRIVER-SIDE SIDE AIR BAG SENSOR FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none">• Connect the negative battery cable.• Turn the ignition switch to the ON position with SAS control module connector and driver-side side air bag sensor connector disconnected.• Measure the voltage of SAS control module connector terminals 2Z and 2AA of SAS control module harness side connector. <p>NOTE:</p> <ul style="list-style-type: none">• Measure the voltage while shaking the wiring harness between the SAS control module and driver-side side air bag sensor.• Is the voltage measured?	<table><tr><td>Yes</td><td>Replace the wiring harness between the SAS control module and the driver-side side air bag sensor.</td></tr><tr><td>No</td><td>Replace the driver-side side air bag sensor, then go to the next step. (See SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)</td></tr></table>	Yes	Replace the wiring harness between the SAS control module and the driver-side side air bag sensor.	No	Replace the driver-side side air bag sensor, then go to the next step. (See SIDE AIR BAG MODULE REMOVAL/INSTALLATION .)
Yes	Replace the wiring harness between the SAS control module and the driver-side side air bag sensor.					
No	Replace the driver-side side air bag sensor, then go to the next step. (See SIDE AIR BAG MODULE REMOVAL/INSTALLATION .)					
4	<p>PERFORM DTC INSPECTION</p> <ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Disconnect the negative battery cable and wait for 1 min or more.• Reconnect all disconnected connectors• Connect the negative battery cable.• Turn the ignition switch to the ON position.• Clear DTCs using the M-MDS. (See CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)• Are DTCs B2444 and/or U2017 displayed?	<table><tr><td>Yes</td><td>Replace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION.)</td></tr><tr><td>No</td><td>DTC troubleshooting completed.</td></tr></table>	Yes	Replace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION .)	No	DTC troubleshooting completed.
Yes	Replace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION .)					
No	DTC troubleshooting completed.					

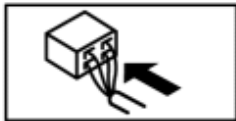
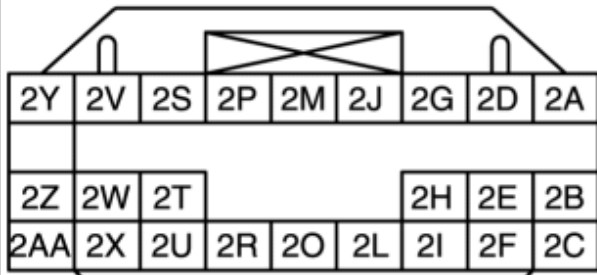
2011 - RX-8 - Restraints

DTC B2445, U2018

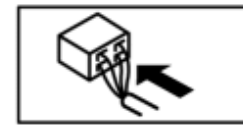
DTC	B2445	Passenger–side side air bag sensor (internal circuit abnormal)
	U2018	Passenger–side side air bag sensor (communication error)
DETECTION CONDITION	<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• Malfunction in the wiring harness between the passenger-side side air bag sensor and SAS control module• Malfunction in the passenger-side side air bag sensor circuit	
POSSIBLE CAUSE	<ul style="list-style-type: none">• Passenger-side side air bag sensor connector malfunction• Open or short circuit in the wiring harness between the passenger-side side air bag sensor and SAS control module• Passenger-side side air bag sensor malfunction• SAS control module malfunction	



SAS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



PASSENGER-SIDE SIDE AIR BAG SENSOR WIRING HARNESS-SIDE CONNECTOR



Diagnostic Procedure

Step	Inspection	Action
1	<p>INSPECT PASSENGER-SIDE SIDE AIR BAG SENSOR CONNECTOR</p> <p>WARNING:</p> <ul style="list-style-type: none"> Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. <p>(See AIR BAG SYSTEM SERVICE WARNINGS.)</p> <p>(See AIR BAG SYSTEM SERVICE CAUTIONS.)</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the negative battery cable and wait for 1 min or more. Disconnect the passenger-side side air bag sensor connector. (See SIDE AIR BAG SENSOR REMOVAL/INSTALLATION.) Inspect the passenger-side side air bag sensor connector. (Corrosion, damage, and disconnected pins) Is there any malfunction of the passenger-side side air 	<p>Yes Replace the passenger-side side air bag sensor wiring harness.</p> <p>No Go to the next step.</p>

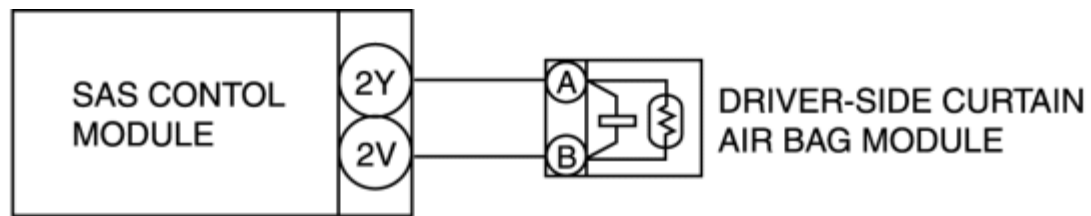
	bag sensor connector?		
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND PASSENGER-SIDE SIDE AIR BAG SENSOR</p> <ul style="list-style-type: none">• Remove the column cover. (See COLUMN COVER REMOVAL/INSTALLATION.)• Disconnect the clock spring connector.• Remove the glove compartment. (See GLOVE COMPARTMENT REMOVAL/INSTALLATION.)• Disconnect the passenger-side air bag module connector.• Disconnect the driver and passenger-side curtain air bag module connectors.• Disconnect the driver and passenger-side side air bag module connectors.• Remove the rear door lower trim. (See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.)• Disconnect the driver and passenger-side pre-tensioner seat belt connectors.• Partially peel back the floor covering.• Disconnect the SAS control module connector.• Inspect the wiring harnesses between SAS control module connector terminal 2B and passenger-side side air bag connector terminal A, and SAS control module terminal 2C and passenger-side side air bag sensor connector terminal B for the following:<ul style="list-style-type: none">▪ Short to body ground▪ Open circuit▪ Short circuit between terminals <p>NOTE:</p> <ul style="list-style-type: none">• Inspect for continuity while shaking the wiring harness between the SAS control module and passenger-side side air bag sensor.• Is the wiring harness normal?	YesGo to the next step.	No Replace the wiring harness between the SAS control module and the passenger-side side air bag sensor.
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND PASSENGER-SIDE SIDE AIR BAG SENSOR FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p>	Yes	Replace the wiring harness between the SAS control module and the passenger-

	<p>Connect the negative battery cable.</p> <ul style="list-style-type: none">• Turn the ignition switch to the ON position with SAS control module connector and passenger-side side air bag sensor connector disconnected.• Measure the voltage of SAS control module connector terminals 2B and 2C of SAS control module harness side connector. <p>NOTE:</p> <ul style="list-style-type: none">• Measure the voltage while shaking the wiring harness between the SAS control module and passenger-side side air bag sensor.• Is the voltage measured?	<p>side side air bag sensor.</p> <p>No Replace the passenger-side side air bag sensor, then go to the next step.</p> <p>(See SIDE AIR BAG MODULE REMOVAL/INSTALLATION.)</p>
4	<p>PERFORM DTC INSPECTION</p> <ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Disconnect the negative battery cable and wait for 1 min or more.• Reconnect all disconnected connectors• Connect the negative battery cable.• Turn the ignition switch to the ON position.• Clear DTCs using the M-MDS. (See CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)• Are DTCs B2445 and/or U2018 displayed?	<p>Yes Replace the SAS control module.</p> <p>(See SAS CONTROL MODULE REMOVAL/INSTALLATION.)</p> <p>No DTC troubleshooting completed.</p>

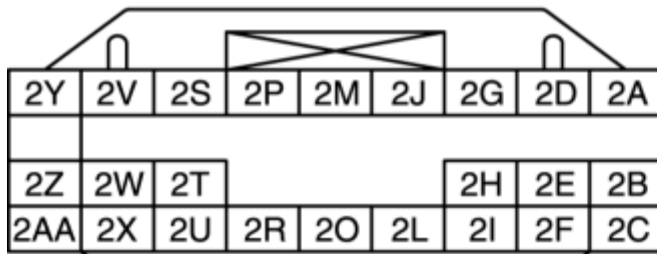
2011 - RX-8 - Restraints

DTC B2773, B2774, B2775, B2776

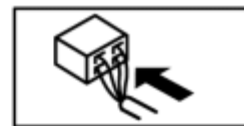
DTC	B2773	Driver–side curtain air bag module circuit resistance low
	B2774	Driver–side curtain air bag module circuit resistance high
	B2775	Driver–side curtain air bag module circuit short to body ground
	B2776	Driver–side curtain air bag module circuit short to power supply
DETECTION CONDITION	<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• Abnormal resistance (other than 1.4—3.2 ohms) detected in the driver-side curtain air bag module circuit• Malfunction in the wiring harness between the driver-side curtain air bag module and SAS control module	
POSSIBLE CAUSE	<ul style="list-style-type: none">• Driver-side curtain air bag module connector malfunction• Open or short circuit in the wiring harness between the driver-side curtain air bag module and SAS control module• Driver-side curtain air bag module malfunction• SAS control module malfunction	



SAS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



DRIVER-SIDE CURTAIN AIR BAG MODULE WIRING HARNESS-SIDE CONNECTOR



Diagnostic Procedure

Step	Inspection	Action
1	INSPECT DRIVER-SIDE CURTAIN AIR BAG MODULE CONNECTOR WARNING: <ul style="list-style-type: none"> Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. <p>(See AIR BAG SYSTEM SERVICE WARNINGS.)</p> <p>(See AIR BAG SYSTEM SERVICE CAUTIONS.)</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the negative battery cable and wait for 1 min or more. Remove the headliner. <p>(See HEADLINER REMOVAL/INSTALLATION.)</p> <ul style="list-style-type: none"> Disconnect the driver-side curtain air bag module connector. (See CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) 	<p>Yes Replace the driver-side curtain air bag module wiring harness.</p> <p>No Go to the next step.</p>

	<ul style="list-style-type: none">• Is there any malfunction of the driver-side curtain air bag module connector?		
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND DRIVER-SIDE CURTAIN AIR BAG MODULE</p> <ul style="list-style-type: none">• Remove the column cover. (See COLUMN COVER REMOVAL/INSTALLATION.)• Disconnect the clock spring connector.• Remove the glove compartment. (See GLOVE COMPARTMENT REMOVAL/INSTALLATION.)• Disconnect the passenger-side air bag module connector.• Disconnect the passenger-side curtain air bag module connectors.• Disconnect the driver and passenger-side side air bag module connectors.• Remove the rear door lower trim. (See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.)• Disconnect the driver and passenger-side pre-tensioner seat belt connectors.• Partially peel back the floor covering.• Disconnect the SAS control module connector.• Inspect the wiring harnesses between SAS control module connector terminal 2Y and driver-side curtain air bag module connector terminal A, and SAS control module terminal 2V and driver-side curtain air bag module connector terminal B for the following:<ul style="list-style-type: none">▪ Short to body ground▪ Open circuit▪ Short circuit between terminals	Yes	Go to the next step.
		No	Replace the wiring harness between the SAS control module and the driver-side curtain air bag module.
	<p>NOTE:</p> <ul style="list-style-type: none">• Inspect for continuity while shaking the wiring harness between the SAS control module and driver-side curtain air bag module.• Is the wiring harness normal?		

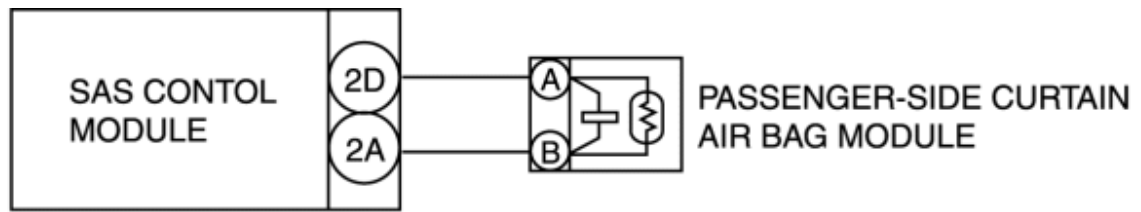
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND DRIVER-SIDE CURTAIN AIR BAG MODULE FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p> <ul style="list-style-type: none"> • Connect the negative battery cable. • Turn the ignition switch to the ON position with SAS control module connector and driver-side curtain air bag module connector disconnected. • Measure the voltage of SAS control module connector terminals 2Y and 2V of SAS control module harness side connector. <p>NOTE:</p> <ul style="list-style-type: none"> • Measure the voltage while shaking the wiring harness between the SAS control module and driver-side curtain air bag module. • Is the voltage measured? 	<p>Yes Replace the wiring harness between the SAS control module and the driver-side curtain air bag module.</p> <p>No Go to the next step.</p>
4	<p>INSPECT DRIVER-SIDE CURTAIN AIR BAG MODULE</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the negative battery cable and wait for 1 min or more. • Connect the SST (Fuel and thermometer checker) or apply 2 ohms resistance to the driver-side curtain air bag module connector terminals A and B. • Set the SST (Fuel and thermometer checker) to 2 ohms. • Except for the driver-side curtain air bag module connector, reconnect all disconnected connectors. • Connect the negative battery cable. • Turn the ignition switch to the ON position. • Clear DTCs using the M-MDS. (See CLEARING DTC.) • Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.) • Are DTCs B2773, B2774, B2775 and/or B2776 displayed? 	<p>Yes Go to the next step.</p> <p>No Replace the driver-side curtain air bag module. (See CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.)</p>
5	<p>INSPECT DTCs</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the negative battery cable and wait for 1min or more. 	<p>Yes Replace the SAS control module.</p> <p>(See SAS CONTROL MODULE REMOVAL/INSTALLATION.)</p>

<ul style="list-style-type: none">• Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance.• Connect the driver-side curtain air bag module connector.• Connect the negative battery cable.• Turn the ignition switch to the ON position.• Clear DTCs using the M-MDS. (See CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)• Is DTC B2773, B2774, B2775 and/or B2776 displayed again?	No DTC troubleshooting completed.
---	-----------------------------------

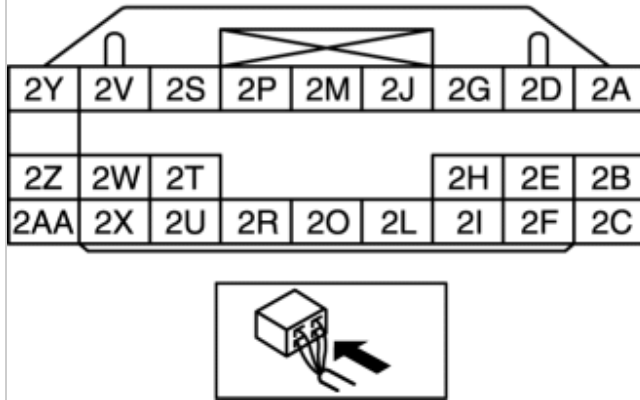
2011 - RX-8 - Restraints

DTC B2777, B2778, B2779, B2780

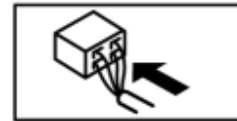
DTC	B2777	Passenger-side curtain air bag module circuit resistance low
	B2778	Passenger-side curtain air bag module circuit resistance high
	B2779	Passenger-side curtain air bag module circuit short to body ground
	B2780	Passenger-side curtain air bag module circuit short to power supply
DETECTION CONDITION	<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• Abnormal resistance (other than 1.4—3.2 ohms) detected in the passenger-side curtain air bag module circuit• Malfunction in the wiring harness between the passenger-side curtain air bag module and SAS control module	
POSSIBLE CAUSE	<ul style="list-style-type: none">• Passenger-side curtain air bag module connector malfunction• Open or short circuit in the wiring harness between the passenger-side curtain air bag module and SAS control module• Passenger-side curtain air bag module malfunction• SAS control module malfunction	



SAS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



PASSENGER-SIDE CURTAIN AIR BAG MODULE WIRING HARNESS-SIDE CONNECTOR



Diagnostic Procedure

Step	Inspection	Action
1	<p>INSPECT PASSENGER-SIDE CURTAIN AIR BAG MODULE CONNECTOR</p> <p>WARNING:</p> <ul style="list-style-type: none"> Handling the component parts improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings/cautions and the workshop manual before handling the air bag system components. <p>(See AIR BAG SYSTEM SERVICE WARNINGS.)</p> <p>(See AIR BAG SYSTEM SERVICE CAUTIONS.)</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the negative battery cable and wait for 1 min or more. Remove the headliner. <p>(See HEADLINER REMOVAL/INSTALLATION.)</p> <ul style="list-style-type: none"> Disconnect the passenger-side curtain air bag module connector. (See CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) Is there any malfunction of the passenger-side curtain air 	<p>Yes Replace the passenger-side curtain air bag module wiring harness.</p> <p>No Go to the next step.</p>

	bag module connector?		
2	<p>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND PASSENGER–SIDE CURTAIN AIR BAG MODULE</p> <ul style="list-style-type: none">• Remove the column cover. (See COLUMN COVER REMOVAL/INSTALLATION.)• Disconnect the clock spring connector.• Remove the glove compartment. (See GLOVE COMPARTMENT REMOVAL/INSTALLATION.)• Disconnect the passenger-side air bag module connector.• Disconnect the driver-side curtain air bag module connectors.• Disconnect the driver and passenger-side side air bag module connectors.• Remove the rear door lower trim. (See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.)• Disconnect the driver and passenger-side pre-tensioner seat belt connectors.• Partially peel back the floor covering.• Disconnect the SAS control module connector.• Inspect the wiring harnesses between SAS control module connector terminal 2D and passenger-side curtain air bag module connector terminal A, and SAS control module terminal 2A and passenger-side curtain air bag module connector terminal B for the following:<ul style="list-style-type: none">▪ Short to body ground▪ Open circuit▪ Short circuit between terminals <p>NOTE:</p> <ul style="list-style-type: none">• Inspect for continuity while shaking the wiring harness between the SAS control module and passenger-side curtain air bag module.• Is the wiring harness normal?	Yes	Go to the next step.
		No	Replace the wiring harness between the SAS control module and the passenger-side curtain air bag module.
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND PASSENGER–SIDE CURTAIN AIR BAG MODULE FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p>	Yes	Replace the wiring harness between the SAS control module and the passenger-

	<p>Connect the negative battery cable.</p> <ul style="list-style-type: none">• Turn the ignition switch to the ON position with SAS control module connector and passenger-side curtain air bag module connector disconnected.• Measure the voltage of SAS control module connector terminals 2D and 2A of SAS control module harness side connector. <p>NOTE:</p> <ul style="list-style-type: none">• Measure the voltage while shaking the wiring harness between the SAS control module and passenger-side curtain air bag module.• Is the voltage measured?		side curtain air bag module.
		No	Go to the next step.
4	<p>INSPECT PASSENGER-SIDE CURTAIN AIR BAG MODULE</p> <ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Disconnect the negative battery cable and wait for 1 min or more.• Connect the SST (Fuel and thermometer checker) or apply 2 ohms resistance to the passenger-side curtain air bag module connector terminals A and B.• Set the SST (Fuel and thermometer checker) to 2 ohms.• Except for the passenger-side curtain air bag module connector, reconnect all disconnected connectors.• Connect the negative battery cable.• Turn the ignition switch to the ON position.• Clear DTCs using the M-MDS. (See CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)• Are DTCs B2777, B2778, B2779 and/or B2780 displayed?	Yes	Go to the next step.
		No	Replace the passenger-side curtain air bag module. (See CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.)
5	<p>INSPECT DTCs</p> <ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Disconnect the negative battery cable and wait for 1 min or more.• Disconnect the SST (Fuel and thermometer checker) or the 2 ohms resistance.• Connect the passenger-side curtain air bag module connector.• Connect the negative battery cable.	Yes	Replace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION.)
		No	DTC troubleshooting completed.

- | | | |
|--|---|--|
| | <ul style="list-style-type: none">• Clear DTCs using the M-MDS. (See CLEARING DTC.)• Turn the ignition switch to the ON position.• Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)• Is DTC B2777, B2778, B2779 and/or B2780 displayed again? | |
|--|---|--|

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

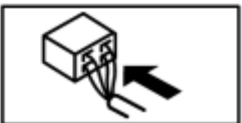
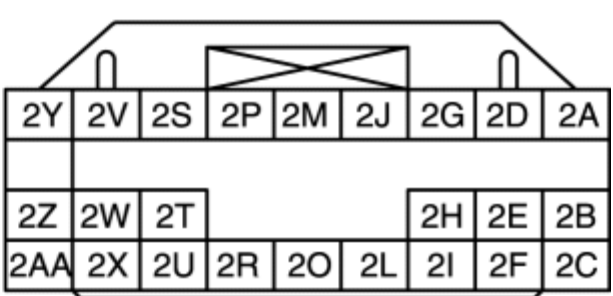
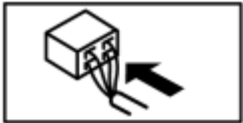
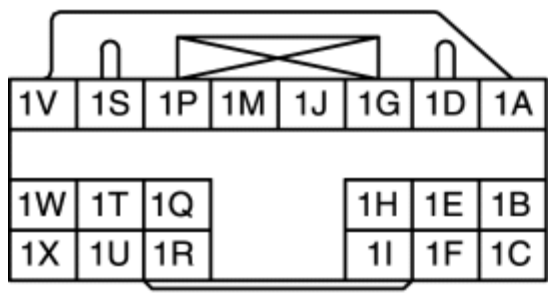
[Back to Top](#)

2011 - RX-8 - Restraints

DTC B2867

DTC B2867	Poor connection of any SAS control module connectors
DETECTION CONDITION	<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• There is no continuity between the poor connection detector bar terminals of the SAS control module.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Malfunction of any SAS control module connectors• Poor connection of any SAS control module connectors• SAS control module malfunction

SAS CONTROL MODULE WIRING
HARNESS-SIDE CONNECTOR



STEP	INSPECTION	ACTION	
1	VERIFY THAT ALL SAS CONTROL MODULE CONNECTORS ARE CONNECTED WITH SAS CONTROL MODULE WARNING: <ul style="list-style-type: none"> Handling the air bag system components improperly can accidentally deploy the air bag modules and pre-tensioner seat belts, which may seriously injure you. Read the service warnings and cautions before handling the air bag system components. (See AIR BAG SYSTEM SERVICE WARNINGS .) (See AIR BAG SYSTEM SERVICE CAUTIONS .) <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the negative battery cable and wait for 1 min or more. Partially peel back the floor covering. Are all SAS control module connectors securely connected? 	Yes	Go to the next step.
		No	Reconnect the connector properly.
2	INSPECT ALL SAS CONTROL MODULE CONNECTORS <ul style="list-style-type: none"> Remove the column cover. Disconnect the clock spring connector. Remove the glove compartment. Disconnect the passenger-side air bag module connector. Disconnect the driver and passenger-side side air bag module connectors. Disconnect the driver and passenger-side curtain air bag module connectors. Remove the rear door lower trim. 	Yes	[Present malfunction diagnosis] <ul style="list-style-type: none"> Replace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION .) [Past malfunction diagnosis] <ul style="list-style-type: none"> DTC troubleshooting completed.
		No	Replace the air bag wiring harness.

- | | | |
|--|--|--|
| | <ul style="list-style-type: none">• Disconnect the driver and passenger-side pre-tensioner seat belt connectors.• Disconnect the SAS control module connector.• Are the poor connection detector bars of SAS control module connectors normal? | |
|--|--|--|

[< Previous](#) [Next >](#)

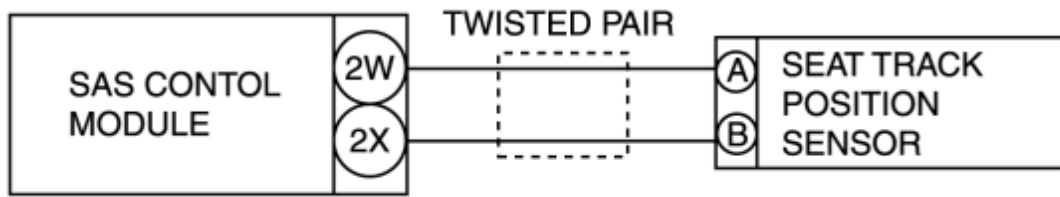
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

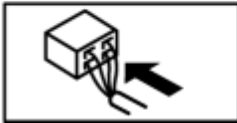
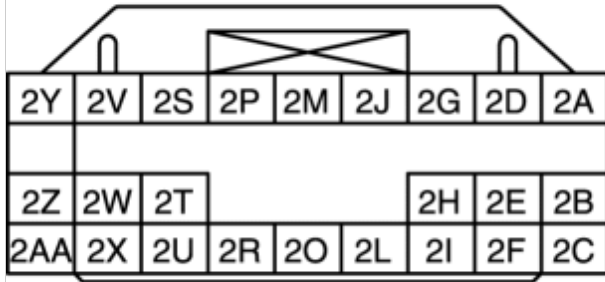
2011 - RX-8 - Restraints

DTC C1947, C1948, C1981

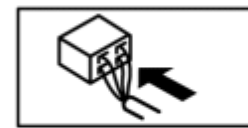
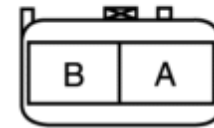
DTC	C1947	Seat track position sensor circuit short to body ground
	C1948	Seat track position sensor circuit resistance not within specification
	C1981	Seat track position sensor circuit open or short to power supply
DETECTION CONDITION		<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• Malfunction in seat track position sensor circuit.
POSSIBLE CAUSE		<ul style="list-style-type: none">• Seat track position sensor connector malfunction• Open or short circuit in wiring harness between seat track position sensor and SAS control module.• Seat track position sensor malfunction• SAS control module malfunction



SAS CONTROL MODULE WIRING
HARNESS-SIDE CONNECTOR



SEAT TRACK POSITION SENSOR WIRING
HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT SEAT TRACK POSITION SENSOR CONNECTOR WARNING: <ul style="list-style-type: none"> Handling the air bag system components improperly can accidentally deploy the air bag modules and pre-tensioner seat belts, which may seriously injure you. Read the service warnings and cautions before handling the air bag system components. <p>(See AIR BAG SYSTEM SERVICE WARNINGS.)</p> <p>(See AIR BAG SYSTEM SERVICE CAUTIONS.)</p> <ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the negative battery cable and wait for 1 min or more. Disconnect the seat track position sensor connector. Inspect the seat track position sensor connection. (Corrosion, damage, and disconnected pins) Is there any malfunction of the seat track position sensor connector? 	<p>Yes Replace the seat track position sensor wiring harness.</p> <p>No Go to the next step.</p>

2	<p>INSPECT WIRING HARNESS BETWEEN SEAT TRACK POSITION SENSOR AND SAS CONTROL MODULE</p> <ul style="list-style-type: none">• Remove the column cover. (See COLUMN COVER REMOVAL/INSTALLATION.)• Disconnect the clock spring connector.• Remove the glove compartment. (See GLOVE COMPARTMENT REMOVAL/INSTALLATION.)• Disconnect the passenger-side air bag module connector.• Disconnect the driver and passenger-side curtain air bag module connectors.• Disconnect the driver and passenger-side side air bag module connectors.• Remove the rear door lower trim. (See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.)• Disconnect the driver and passenger-side pre-tensioner seat belt connectors.• Partially peel back the floor covering.• Disconnect the SAS control module connector.• Inspect the wiring harnesses between SAS control module connector terminal 2W and seat track position sensor connector terminal A, and SAS control module terminal 2X and seat track position sensor connector terminal B for the following:<ul style="list-style-type: none">▪ Short to body ground▪ Open circuit▪ Short circuit between terminals <p>NOTE:</p> <ul style="list-style-type: none">• Inspect for continuity while shaking the wiring harness between the SAS control module and seat track position sensor.• Is the wiring harness normal?	<div>YesGo to the next step.</div> <div>NoReplace the wiring harness between the SAS control module and the seat track position sensor.</div>
3	<p>INSPECT THE WIRING HARNESS BETWEEN THE SAS CONTROL MODULE AND SEAT TRACK POSITION SENSOR FOR A SHORT CIRCUIT TO THE POWER SUPPLY</p>	<div>YesReplace the wiring harness between the SAS control</div>

	<ul style="list-style-type: none">• Connect the negative battery cable.• Turn the ignition switch to the ON position with SAS control module connector and seat track position sensor connector disconnected.• Measure the voltage of SAS control module connector terminals 2W and 2X of SAS control module harness side connector. <p>NOTE:</p> <ul style="list-style-type: none">• Measure the voltage while shaking the wiring harness between the SAS control module and seat track position sensor.• Is the voltage measured?	module and the seat track position sensor.
		No Replace the seat track position sensor, then go to the next step.
4	<p>PERFORM DTC INSPECTION</p> <ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Disconnect the negative battery cable and wait for 1 min or more.• Reconnect all disconnected connectors• Connect the negative battery cable.• Turn the ignition switch to the ON position.• Clear DTCs using the M-MDS. (See CLEARING DTC.)• Perform the DTC inspection for the SAS control module using the M-MDS. (See DTC DISPLAY.)• Are DTCs C1947, C1948 and/or C1981 displayed?	<p>Yes Replace the SAS control module.</p> <p>(See SAS CONTROL MODULE REMOVAL/INSTALLATION.)</p> <p>No DTC troubleshooting completed.</p>

2011 - RX-8 - Restraints

DTC B2477

DTC B2477	Configuration error
DETECTION CONDITION	<p>WARNING:</p> <ul style="list-style-type: none"> Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection according to only the detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure. SAS control module configuration has not been performed correctly.
POSSIBLE CAUSE	<ul style="list-style-type: none"> SAS control module configuration setting not implemented SAS control module configuration error SAS control module malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT SAS CONTROL MODULE <ul style="list-style-type: none"> Using the M-MDS, perform SAS control module configuration. (See SAS CONTROL MODULE CONFIGURATION.) Is DTC B2477 displayed? 	Yes Replace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION .)
		No DTC troubleshooting completed.

2011 - RX-8 - Restraints

DTC B1017

DTC B1017	Deployment prohibited because configuration is not set
DETECTION CONDITION	<p>WARNING:</p> <ul style="list-style-type: none">• Detection conditions are for understanding the DTC outline before performing an inspection. Performing an inspection with only detection conditions may cause injury due to an operating error, or damage the system. When performing an inspection, always follow the inspection procedure.• SAS control module configuration has not been set
POSSIBLE CAUSE	<ul style="list-style-type: none">• SAS control module configuration has not been set• SAS control module malfunction

Diagnostic procedure

INSPECTION		ACTION
CONFIGURATION <ul style="list-style-type: none">• Using the M-MDS, perform SAS control module configuration.• Is DTC B1017 displayed?	Yes	Replace the SAS control module. (See SAS CONTROL MODULE REMOVAL/INSTALLATION.)
	No	DTC troubleshooting completed.

2011 - RX-8 - Restraints

NO.1 AIR BAG SYSTEM WARNING LIGHT DOES NOT ILLUMINATE

1	Air bag system warning light does not illuminate
DESCRIPTION	Air bag system warning light does not illuminate while the air bag system is performing initialization.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • SAS control module malfunction • Instrument cluster (circuit board) malfunction • Short to ground circuit in wiring harness between instrument cluster and SAS control module

Diagnostic Procedure

- When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that connectors, terminals and wiring harness are connected correctly and undamaged.

STEP	INSPECTION	ACTION
1	INSPECT OTHER WARNING AND INDICATOR LIGHTS CIRCUIT IN INSTRUMENT CLUSTER <ul style="list-style-type: none"> • Switch the ignition to on. • Do other warning and indicator lights illuminate? 	Yes Turn the ignition switch to the LOCK position, then go to the next step.
		No Inspect instrument cluster power supply system and ground system the, then go to Step 4.
2	INSPECT SAS CONTROL MODULE	Yes Replace the SAS control

<div>WARNING:</div> <div><ul style="list-style-type: none">• Handling the air bag system components improperly can accidentally deploy the air bag modules and pretensioner seat belts, which may seriously injure you. Read the service warnings and cautions before handling the air bag system components.<div>(See AIR BAG SYSTEM SERVICE WARNINGS.)</div><div>(See AIR BAG SYSTEM SERVICE CAUTIONS.)</div><ul style="list-style-type: none">• Switch the ignition to off.• Disconnect the negative battery cable and wait for 1 min or more.• Remove the column cover. (See COLUMN COVER REMOVAL/INSTALLATION.)• Disconnect the clock spring connector.• Remove the glove compartment. (See GLOVE COMPARTMENT REMOVAL/INSTALLATION.)• Disconnect the passenger-side air bag module connector.• Disconnect the driver and passenger-side side air bag module connectors.• Disconnect the driver and passenger-side curtain air bag module connectors.• Remove the rear door lower trim. (See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.)• Disconnect the driver- and passenger-side pretensioner seat belt connectors.• Partially peel back the floor covering.• Disconnect all SAS control module connectors.• Connect the negative battery cable.• Switch the ignition to on.• Does the air bag system warning light illuminate?</div>	<div>module, then go to Step 4.</div> <div>(See SAS CONTROL MODULE REMOVAL/INSTALLATION)</div> <div>No Go to the next step.</div>
<div><div>*3</div><div>INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND INSTRUMENT CLUSTER FOR SHORT TO GROUND</div><div><ul style="list-style-type: none">• Switch the ignition to off.• Disconnect the negative battery cable.• Disconnect the instrument cluster connector.</div></div>	<div>Yes Replace the wiring harness, then go to the next step.</div> <div>No Replace the instrument cluster, then go to the</div>

	<ul style="list-style-type: none"> Is there continuity between terminal 2K of the instrument cluster connector and ground? 	<p>next step.</p> <p>(See INSTRUMENT CLUSTER REMOVAL/INSTALLATION)</p>
4	<p>CONFIRM THAT MALFUNCTION SYMPTOMS DO NOT RECUR AFTER REPAIR</p> <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable and wait for 1 min or more. Connect all disconnected SAS system connectors during diagnosis. Connect the negative battery cable. Switch the ignition to on. Does the air bag system warning light operate properly? 	<p>Yes Complete troubleshooting, then explain repairs to customer.</p> <p>No Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.</p>

[< Previous](#) [Next >](#)

2011 - RX-8 - Restraints

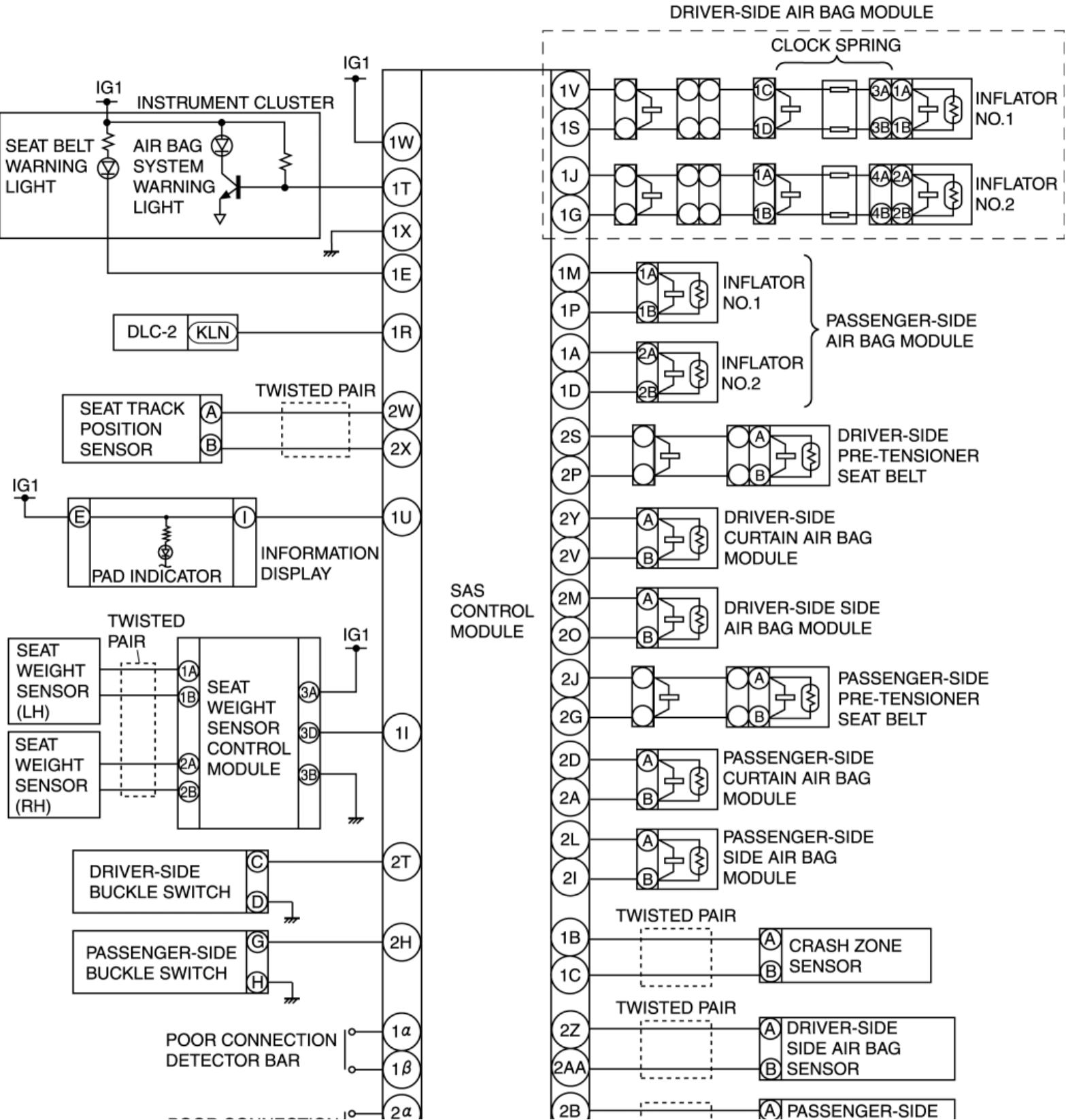
TROUBLESHOOTING INDEX

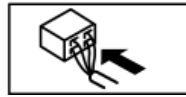
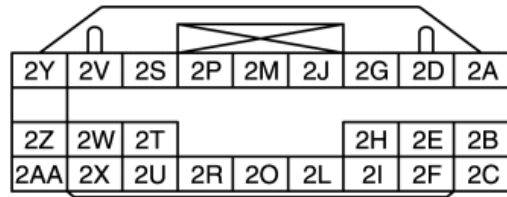
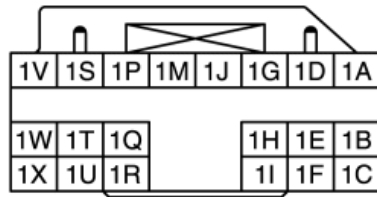
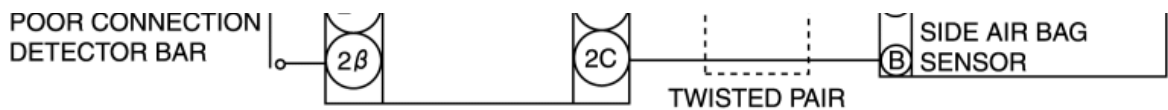
- Use the chart below verify the symptoms of the trouble in order to diagnose the appropriate area.

No.	Troubleshooting item	Description	Page
1	Air bag system warning light does not illuminate	Air bag system warning light does not illuminate while the air bag system is performing initialization.	(See NO.1 AIR BAG SYSTEM WARNING LIGHT DOES NOT ILLUMINATE.)
2	Air bag system warning light is illuminated constantly	Air bag system warning light is illuminated constantly and remains illuminated after 6 s have elapsed.	(See NO.2 AIR BAG SYSTEM WARNING LIGHT IS ILLUMINATED CONSTANTLY.)
3	Passenger air bag deactivation (PAD) indicator light illuminates incorrectly	<ul style="list-style-type: none">• PAD indicator light illuminates except child seated (Empty or adult is seated).• PAD indicator light does not illuminate while child is seated.	(See NO.3 PASSENGER AIR BAG DEACTIVATION (PAD) INDICATOR LIGHT ILLUMINATES INCORRECTLY.)

2011 - RX-8 - Restraints

AIR BAG SYSTEM WIRING DIAGRAM (SYMPTOM TROUBLESHOOTING)





[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Restraints

NO.2 AIR BAG SYSTEM WARNING LIGHT IS ILLUMINATED CONSTANTLY

2	Air bag system warning light is illuminated constantly
DESCRIPTION	Air bag system warning light is illuminated constantly and remains illuminated after 6 s have elapsed.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Weak battery • No connection in SAS control module connector • Open or short to power supply circuit in wiring harness between instrument cluster and SAS control module • Instrument cluster (circuit board) malfunction • Poor contact in instrument cluster connector (24-pin) • Poor contact at terminals 1T, 1X and/or 1W of SAS control module connector • Poor contact in wiring harness between battery and terminal 1W of SAS control module • Poor contact in wiring harness between terminal 1X of SAS control module connector and ground • SAS control module malfunction

Diagnostic Procedure

- When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that connectors, terminals and wiring harness are connected correctly and undamaged.

--	--	--

STEP	INSPECTION	ACTION
1	INSPECT BATTERY <ul style="list-style-type: none"> Measure the voltage of battery. Is the voltage 9 V or more? 	Yes Go to the next step.
		No Battery is weak. Inspect charge/discharge system, then go to Step 9. (See BATTERY INSPECTION [13B-MSP])
2	VERIFY THAT SAS CONTROL MODULE CONNECTOR IS CONNECTED WARNING: <ul style="list-style-type: none"> Handling the air bag system components improperly can accidentally deploy the air bag modules and pretensioner seat belts, which may seriously injure you. Read the service warnings and cautions before handling the air bag system components. (See AIR BAG SYSTEM SERVICE WARNINGS.) (See AIR BAG SYSTEM SERVICE CAUTIONS.) Switch the ignition to off. Disconnect the negative battery cable and wait for 1 min or more. Turn up the floor covering. Are all SAS control module connectors securely connected? 	Yes Go to the next step.
		No Reconnect the connector properly, then go to Step 9.
* 3	INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND INSTRUMENT CLUSTER FOR CONTINUITY <ul style="list-style-type: none"> Remove the column cover. (See COLUMN COVER REMOVAL/INSTALLATION.) Disconnect the clock spring connector. Remove the glove compartment. (See GLOVE COMPARTMENT REMOVAL/INSTALLATION.) Disconnect the passenger-side air bag module connector. Disconnect the driver and passenger-side side air bag module connectors. Disconnect the driver and passenger-side curtain air bag module connectors. 	Yes Go to the next step.
		No Replace the wiring harness, then go to Step 9.

	<ul style="list-style-type: none"> Remove the rear door lower trims. (See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.) Disconnect the driver- and passenger-side pre-tensioner seat belt connectors. Partially peel back the floor covering. Disconnect all SAS control module connectors. Disconnect the instrument cluster connector. Is there continuity between SAS control module connector terminal 1T and instrument cluster connector terminal 2K? 		
* 4	INSPECT WIRING HARNESS BETWEEN SAS CONTROL MODULE AND INSTRUMENT CLUSTER FOR SHORT TO POWER SUPPLY <ul style="list-style-type: none"> Connect the negative battery cable. Turn the ignition switch to ON position. Measure the voltage at instrument cluster connector terminal 2K. Is the voltage 9 V or more? 	Yes	Replace the wiring harness, then go to Step 9.
		No	Go to the next step.
5	CHECK TO SEE WHETHER MALFUNCTION IS IN AIR BAG SYSTEM WARNING LIGHT IN INSTRUMENT CLUSTER <ul style="list-style-type: none"> Connect instrument cluster connector terminal 2K to ground, then reconnect the connector Does the air bag system warning light illuminate with ignition switch ON? 	Yes	Replace the instrument cluster, then go to Step 9. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION)
		No	Go to the next step.
6	INSPECT POWER SUPPLY CIRCUIT OF SAS CONTROL MODULE (TERMINAL 1W) <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable and wait for 1 min or more. Connect all disconnected SAS system connectors during diagnosis. Connect the driver and passenger-side pre-tensioner seat belt connectors. Connect the driver and passenger-side curtain air bag module connectors. 	Yes	Go to the Step 8.
		No	Go to the next step.

	<ul style="list-style-type: none"> • Connect the driver and passenger–side side air bag module connectors. • Connect the passenger–side air bag module connector. • Connect the clock spring connector. • Inspect the voltage for PID/DATA monitor IGN_V_2 item using M-MDS. • Is the voltage of at least one terminal 9 V or more? 		
7	INSPECT WIRING HARNESS BETWEEN BATTERY AND FUSE BLOCK <ul style="list-style-type: none"> • Connect the negative battery cable. • Switch the ignition to on. • Measure the voltage at instrument cluster connector terminal 1G. • Is the voltage 9 V or more? 	Yes	Go to the next step.
		No	Repair the wiring harnesses, then go to Step 9.
8	VERIFY THAT SAS CONTROL MODULE CONNECTOR TERMINAL 1X IS GROUND <ul style="list-style-type: none"> • Inspect the wiring harness between SAS control module connector terminal 1X and ground for the following: <ul style="list-style-type: none"> ▪ Short to power supply ▪ Open circuit • Is the wiring harness normal? 	Yes	Replace the SAS control module, then go to the next step. (See SAS CONTROL MODULE REMOVAL/INSTALLATION)
		No	Replace the wiring harnesses, then go to the next step.
9	CONFIRM THAT MALFUNCTION SYMPTOMS DO NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> • Switch the ignition to off. • Disconnect the negative battery cable and wait for 1 min or more. • Connect all disconnected SAS system connectors during diagnosis. • Connect the driver and passenger-side pre-tensioner seat belt connectors. • Connect the driver and passenger–side curtain air bag module connectors. • Connect the driver and passenger–side side air bag module connectors. 	Yes	Complete troubleshooting, then explain repairs to customer.
		No	Recheck malfunction symptoms, then repeat from Step 1 if malfunction recurs.

- | | | |
|--|---|--|
| | <ul style="list-style-type: none">• Connect the passenger–side air bag module connector.• Connect the clock spring connector.• Connect the instrument cluster connector.• Connect the negative battery cable.• Turn the ignition switch to ON position.• Does the air bag system warning light operate properly? | |
|--|---|--|

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Restraints

NO.3 PASSENGER AIR BAG DEACTIVATION (PAD) INDICATOR LIGHT ILLUMINATES INCORRECTLY

3	Passenger air bag deactivation (PAD) indicator light illuminates incorrectly
DESCRIPTION	<ul style="list-style-type: none"> PAD indicator light illuminates except child is seated (Empty or adult is seated). PAD indicator light does not illuminate while child is seated.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Seat weight sensor calibration procedure does not complete Seat weight sensor malfunction SAS control module malfunction PAD indicator or related circuit malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	PERFORM SAS CONTROL MODULE SELF-TEST <ul style="list-style-type: none"> Connect the M-MDS to DLC-2. Perform the SAS control module self-test procedure. (See DTC TABLE.) Are there following DTCs displayed? <ul style="list-style-type: none"> B1013, B1884, B1890, B2438, B2439 	Yes Go to the applicable DTC troubleshooting procedure.
		No Go to the next step.
2	VERIFY SEAT WEIGHT SENSOR CALIBRATION PROCEDURE COMPLETED <ul style="list-style-type: none"> Access OCS_CAL_ST PID for SAS control module using the M-MDS. 	Yes Go to the next step.
		No Perform the seat weight sensor calibration

	<ul style="list-style-type: none"> Does the OCS_CAL_ST PID indicate "Normal End"? 		<p>procedure, then go to Step.</p> <p>(See SEAT WEIGHT SENSOR CALIBRATION.)</p>
3	VERIFY RECONIZED SEAT WEIGHT BY SAS CONTROL MODULE <ul style="list-style-type: none"> Access OCS_SYS_ST PID for SAS control module using the M-MDS. Does the OCS_SYS_ST PID indicate correctly for passenger seat condition? 	Yes	Go to the next step.
		No	<p>Inspection seat weight sensor, then go to Step.</p> <p>(See SEAT WEIGHT SENSOR INSPECTION.)</p>
4	VERIFY PASSENGER SEAT BELT BUCKLE SIGNAL <ul style="list-style-type: none"> Access PS_BUKL PID for SAS control module using the M-MDS. Does the PS_BUKL PID indicate passenger seat belt buckle condition correctly? 	Yes	Go to the next step.
		No	<p>Inspect the passenger seat belt buckle switch, then go to Step.</p>
5	INSPECT PAD INDICATOR LIGHT <ul style="list-style-type: none"> Ground information display connector terminal I using a jumper wire. Switch the ignition to on. Does the PAD indicator light illuminate? 	Yes	<p>Replace the SAS control module, then go to the next step.</p> <p>(See SAS CONTROL MODULE REMOVAL/INSTALLATION.)</p>
		No	<p>Replace the information display, then go to the next step.</p> <p>(See INFORMATION DISPLAY REMOVAL/INSTALLATION.)</p>
6	CONFIRM THAT MALFUNCTION SYSPMTOMS DO NOT RECUR AFTER REPAIR <ul style="list-style-type: none"> Switch the ignition to off. Disconnect the negative battery cable and wait for 1 min or more. Connect all disconnected connectors. Connect the negative battery cable. Recheck the PAD indicator light condition. Does the PAD indicator operate normally? 	Yes	Complete troubleshooting, then explain repairs customer.
		No	<p>Recheck malfunction symptoms, then repeat form Step 1 if malfunction recurs.</p>

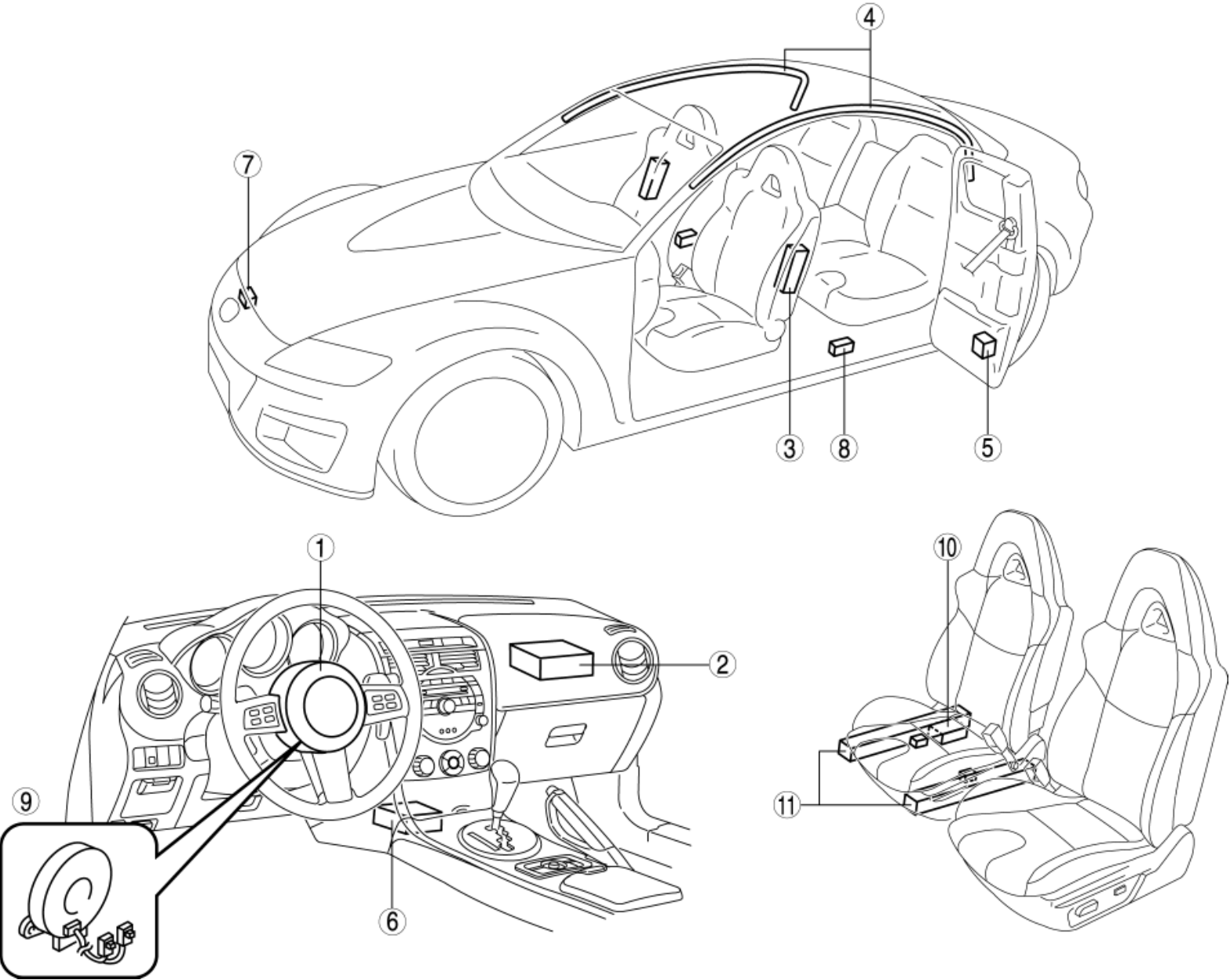
[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Restraints

LOCATION INDEX



1	Driver-side air bag module (See DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) (See AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DEPLOYMENT PROCEDURES.)
2	Passenger-side air bag module

	(See PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) (See AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DEPLOYMENT PROCEDURES.)
3	Side air bag module (See SIDE AIR BAG MODULE REMOVAL/INSTALLATION.) (See AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DEPLOYMENT PROCEDURES.)
4	Curtain air bag module (See CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION.) (See AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DEPLOYMENT PROCEDURES.)
5	Pre-tensioner seat belt (See AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DEPLOYMENT PROCEDURES.)
6	SAS control module (See SAS CONTROL MODULE REMOVAL/INSTALLATION.)
7	Crash zone sensor (See CRASH ZONE SENSOR REMOVAL/INSTALLATION.)
8	Side air bag sensor (See SIDE AIR BAG SENSOR REMOVAL/INSTALLATION.)
9	Clock spring (See CLOCK SPRING REMOVAL/INSTALLATION.) (See CLOCK SPRING INSPECTION.) (See CLOCK SPRING ADJUSTMENT.)
10	Seat weight sensor control module (See SEAT WEIGHT SENSOR CONTROL MODULE REMOVAL/INSTALLATION.)
11	Seat weight sensor (See SEAT WEIGHT SENSOR CALIBRATION.) (See SEAT WEIGHT SENSOR INSPECTION.)

[< Previous](#) [Next >](#)

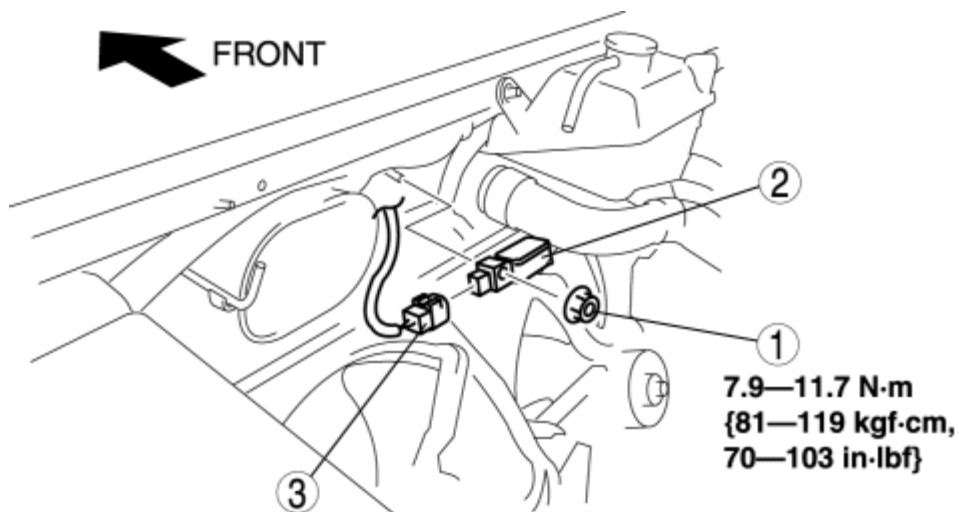
2011 - RX-8 - Restraints

CRASH ZONE SENSOR REMOVAL/INSTALLATION

WARNING:

- Handling the crash zone sensor improperly can accidentally deploy the air bags and pretensioner seat belts, which may seriously injure you. Read the service warnings and cautions before handling the crash zone sensor. (See [AIR BAG SYSTEM SERVICE WARNINGS](#).) (See [AIR BAG SYSTEM SERVICE CAUTIONS](#).)

1. Turn the ignition switch to the LOCK position.
2. Disconnect the negative battery cable and wait for **1 min or more**.
3. Remove the engine cover. (See [ENGINE COVER REMOVAL/INSTALLATION \[13B-MSP\]](#).)
4. Remove the air cleaner box. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
5. Remove the air cleaner box tray. (See [INTAKE-AIR SYSTEM REMOVAL/INSTALLATION \[13B-MSP\]](#).)
6. Remove in the order indicated in the table.



1	Nut
2	Crash zone sensor
3	Connector



7. Install in the reverse order of removal.
8. Turn the ignition switch to the ON position.
9. Verify that the air bag system warning light illuminates for **approx. 6 s** and goes out.
 - If the air bag system warning light does not operate normally, refer to the on-board diagnostic system (air bag system) and perform inspection of the system.

[< Previous](#) [Next >](#)

[Back to Top](#)

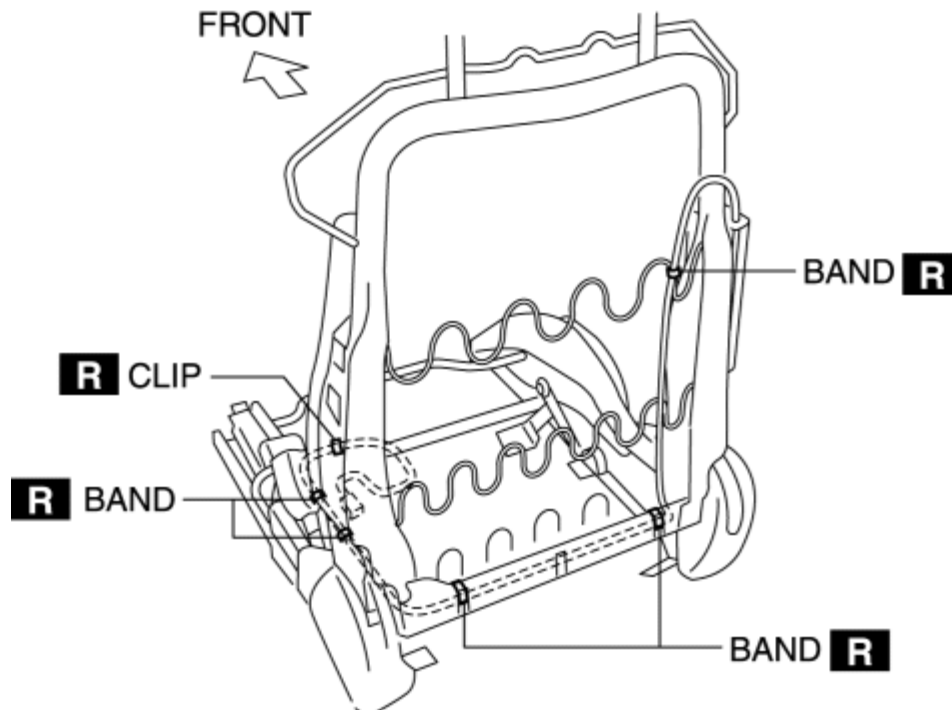
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Restraints

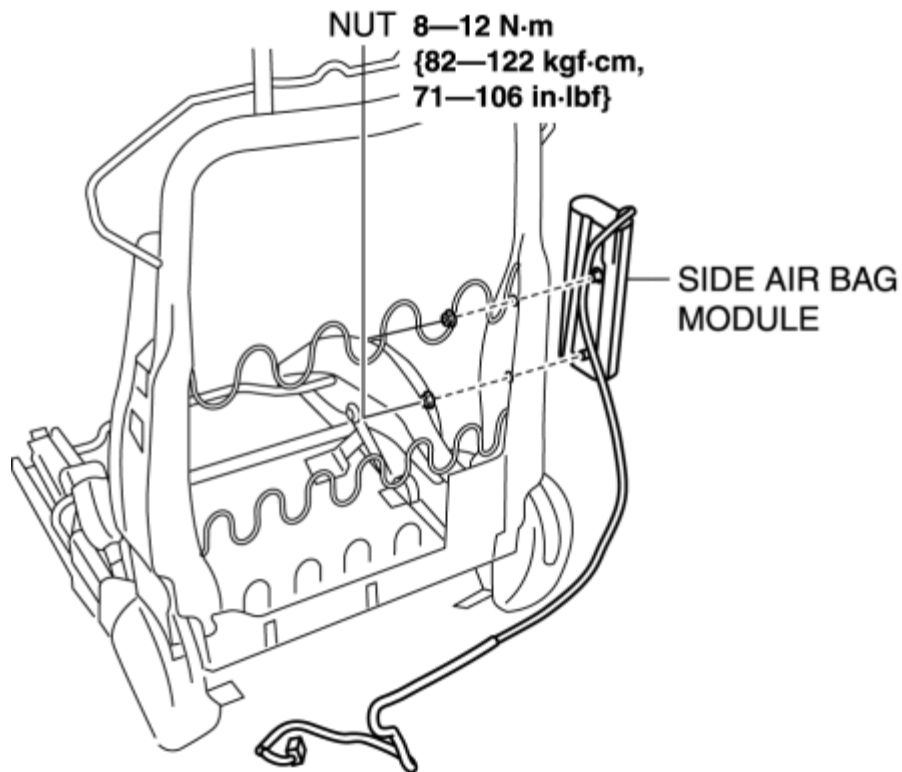
SIDE AIR BAG MODULE REMOVAL/INSTALLATION

WARNING:

- Handling the air bag module improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings and cautions before handling the air bag module. (See [AIR BAG SYSTEM SERVICE WARNINGS.](#)) (See [AIR BAG SYSTEM SERVICE CAUTIONS.](#))
 - If the side air bag module is installed with debris in the seat back, the foreign material may be scattered when the side air bag module operates (deploys), causing injury. Verify that there is no foreign material in the seat back before installing the side air bag module.
1. Turn the ignition switch to the LOCK position.
 2. Disconnect the negative battery cable and wait for **1 min or more**.
 3. Remove the front seat back trim. (See [FRONT SEAT BACK TRIM REMOVAL/INSTALLATION.](#))
 4. Remove the front seat cushion. (See [FRONT SEAT CUSHION TRIM REMOVAL/INSTALLATION.](#))
 5. Remove the clip as shown in the figure.



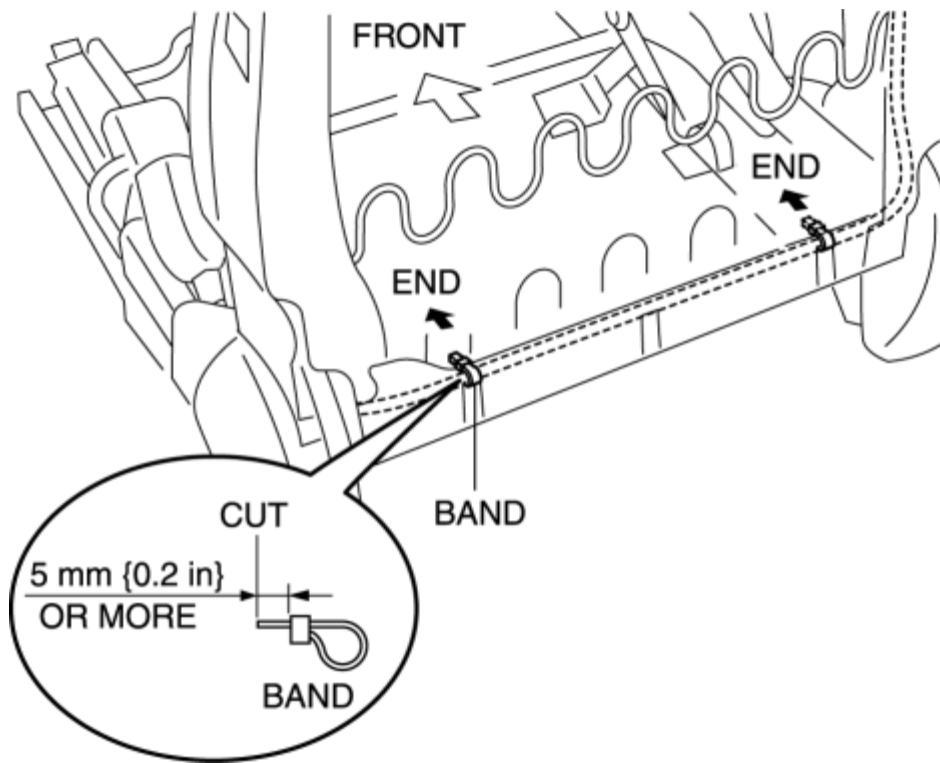
6. Remove the nuts.



7. Remove the side air bag module.
8. Install in the reverse order of removal.
9. Turn the ignition switch to the ON position.
10. Verify that the air bag system warning light illuminates for **approx. 6 s** and goes out.
 - If the air bag system warning light does not operate normally, refer to the on-board diagnostic system (air bag system) and perform inspection of the system.

Band Installation Note

1. Install the band with the end pointed to the front.



2. Cut off the end of the band at the position shown in the figure.

[< Previous](#) [Next >](#)

[Back to Top](#)

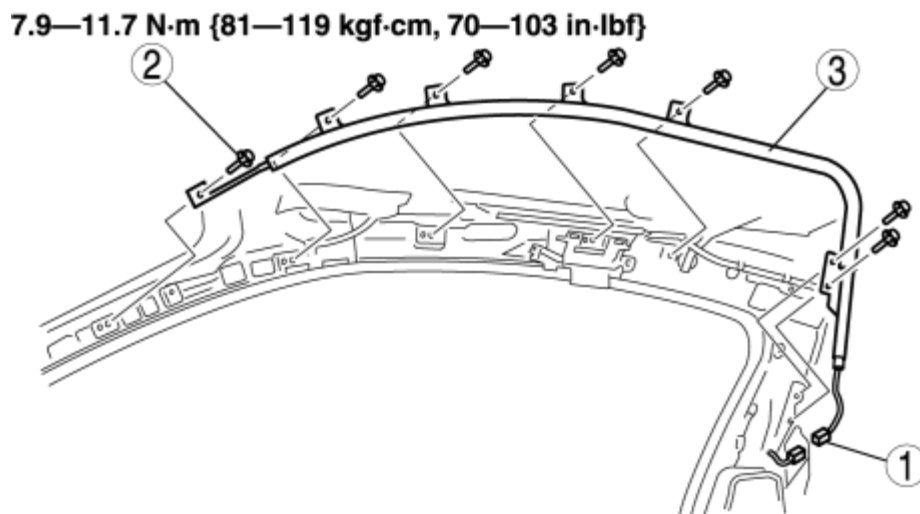
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Restraints

CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION

WARNING:

- Handling the air bag module improperly can accidentally deploy the air bag module, which may seriously injure you. Read the service warnings and cautions before handling the air bag module. (See [AIR BAG SYSTEM SERVICE WARNINGS.](#)) (See [AIR BAG SYSTEM SERVICE CAUTIONS.](#))
1. Turn the ignition switch to the LOCK position.
 2. Disconnect the negative battery cable and wait for **1 min or more**.
 3. Remove the following parts:
 - a. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - b. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - c. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
 - d. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - e. Headliner (See [HEADLINER REMOVAL/INSTALLATION.](#))
 - f. Head impact pad (See [HEAD IMPACT PAD REMOVAL/INSTALLATION.](#))
 4. Remove in the order indicated in the table.



1	Connector
2	Bolt
3	Curtain air bag module

5. Install in the reverse order of removal.

6. When the ignition switch is turned to the ON position verify that the air bag system warning light illuminates for **approx. 6 s** and goes out.

- If the air bag system warning light does not operate normally, refer to the on-board diagnostic system (air bag system) and perform inspection of the system.

[< Previous](#) [Next >](#)

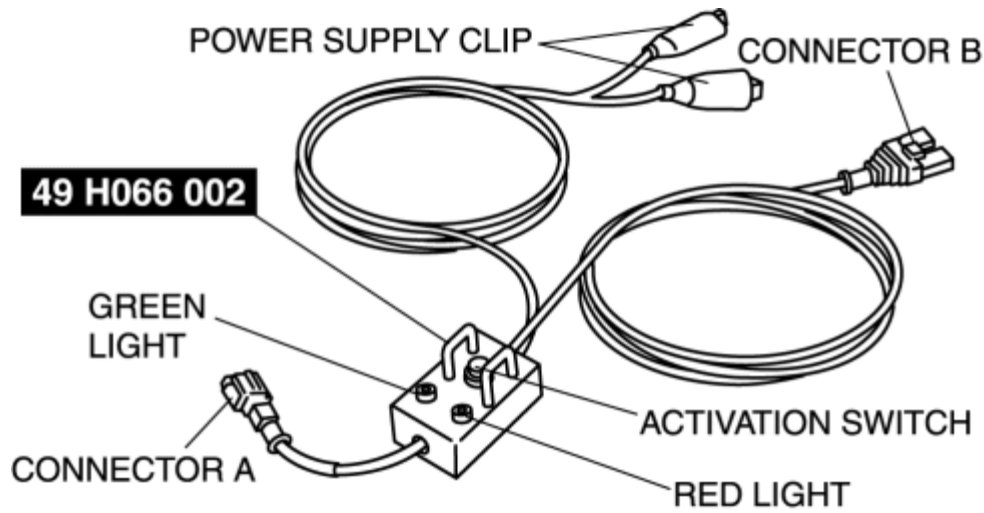
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Restraints

INSPECTION OF SST (DEPLOYMENT TOOL)

1. Before using the **SST** (49 H066 002), inspect its operation.



Inspection Procedure

1. Follow the steps below to inspect the **SST** (49 H066 002).
- If not as indicated in the table, replace the **SST** (49 H066 002) because it has a malfunction.

WARNING:

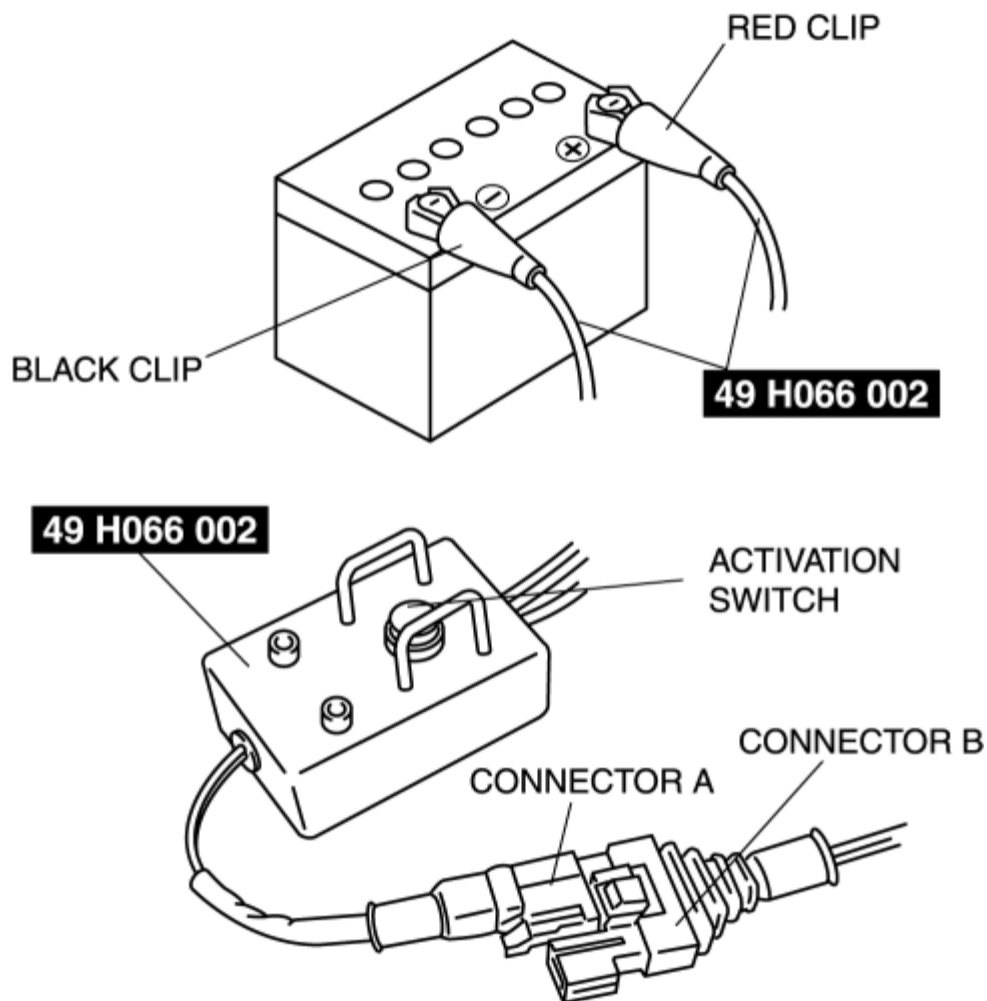
- Do not use a malfunctioning SST (49 H066 002), otherwise it could cause the air bag module or pre-tensioner seat belt to accidentally operate (deploy).

CAUTION:

- Because the permissible voltage for the SST (49 H066 002) is 12 V, do not connect a 24 V power source because it will damage the SST. Always connect only a 12 V power source.

Step	Inspection procedure	Light condition	

		Green	Red
1	Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.	On	Off
2	Connect connectors A and B.	Off	On
3	Press the activation switch.	On	Off



[< Previous](#) [Next >](#)

2011 - RX-8 - Restraints

AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DEPLOYMENT PROCEDURES

WARNING:

- A live (undeployed) air bag module or pre-tensioner seat belt may accidentally operate (deploy) when it is disposed of and cause serious injury. Do not dispose of a live (undeployed) air bag module and pre-tensioner seat belt. If the SSTs (Deployment tool and Adapter harness) are not available, consult the nearest Mazda representative for assistance.

CAUTION:

- Deploying the air bag modules and pre-tensioner seat belts inside the vehicle may cause damage to the vehicle interior. When the vehicle is not to be scrapped, always deploy the air bag modules and pre-tensioner seat belts outside the vehicle.
- If the vehicle is to be scrapped, or when disposing of any air bag modules or pre-tensioner seat belts, operate (deploy) them inside the vehicle by following the deployment procedure below and using the **SST** (Deployment tool).
- When disposing of a operated (deployed) air bag module and pre-tensioner seat belt, refer to "AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DISPOSAL PROCEDURES".

Deployment Procedure for Inside of Vehicle

1. Inspect the **SST** (Deployment tool). (See [INSPECTION OF SST \(DEPLOYMENT TOOL\)](#).)
2. Move the vehicle to an open space, away from strong winds, and close all of the vehicle doors and windows.
3. Turn the ignition switch to the LOCK position.
4. Disconnect the negative battery cable and wait for **1 min or more**.
5. Follow the procedure below for operating (deploying) the applicable air bag module or pre-tensioner seat belt.

Driver-side air bag module

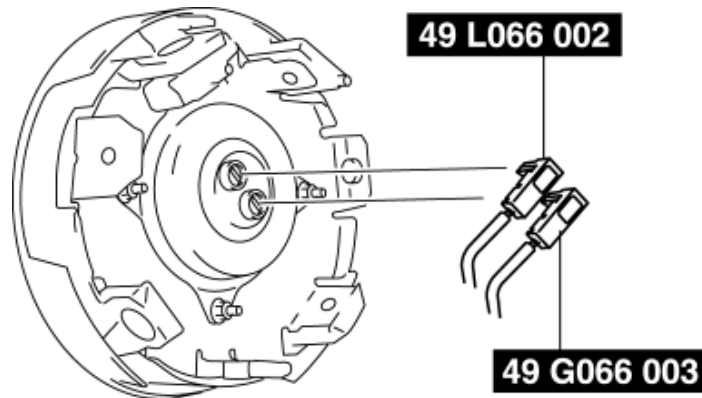
WARNING:

- The driver-side air bag module is a dual inflator type. If one inflator is forced to operate (deploy), the other may operate (deploy) accidentally. To prevent injury while disposing of the air bag module, make sure to operate (deploy) both driver-side air bag module inflators simultaneously, following the procedure below.

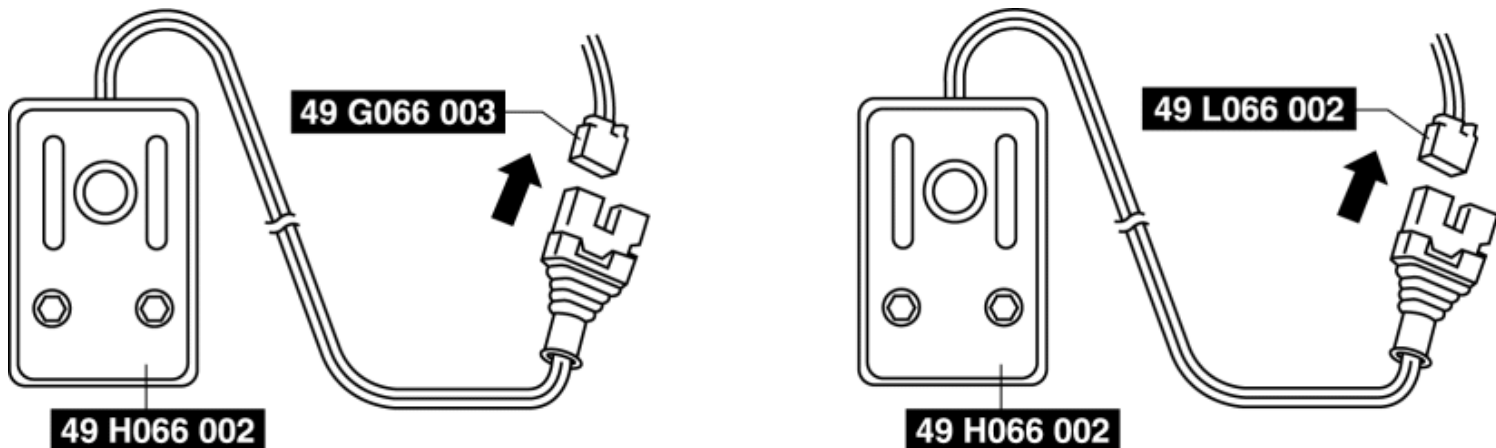
NOTE:

- The **SSTs**, two types of adapter harnesses (for inflators No.1 and No.2) and two deployment tools are to be used to operate (deploy) the driver-side air bag module.

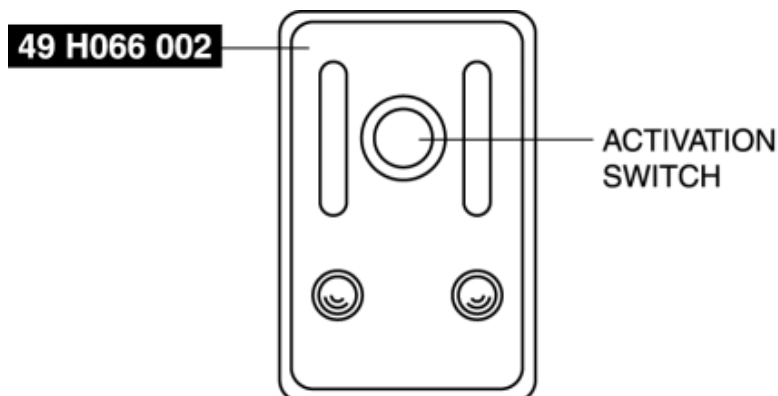
1. Remove the driver-side air bag module. (See [DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.](#))
2. Connect the **SSTs** (Adapter harness) to the driver-side air bag module as shown in the figure.



3. Install the driver-side air bag module. (See [DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.](#))
4. Connect the **SSTs** (Deployment tool) to the **SSTs** (Adapter harness).



5. Connect both **SSTs** (Deployment tool) to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.
6. Verify that the red lamp on both **SSTs** (Deployment tool) is illuminated.
7. Verify that all persons are standing **at least 6 m {20 ft}** away from the vehicle.
8. Press the activation switch on the **SST** (Deployment tool) connected with 49 L066 002 (a yellow connector) of the **SST** (Adapter harness), and **after 3 s**, press the activation switch on the other **SST** (Deployment tool) to operate (deploy) the air bag module (both inflators).



WARNING:

- Verify that air bag module operation (explosive) sound occurs twice. If no operation (explosive) sound was heard or a single operation (explosive) sound was heard, both inflators would not have operated (deployed) properly. This may cause serious injury because the air bag module may operate (deploy) accidentally. If the two operation (explosive) sounds are not heard, perform Step 8 again. In case that the two operation (explosive) sounds in total are not verified even though Step 8 is performed again, leave the air bag module alone for 30 min or more before getting near it again.
- The air bag module is very hot immediately after it is operated (deployed). You can get burned. Do not touch the air bag module for at least 15 min after deployment.

9. Disconnect the **SSTs** (Deployment tool) from the **SSTs** (Adapter harness).

Passenger-side air bag module

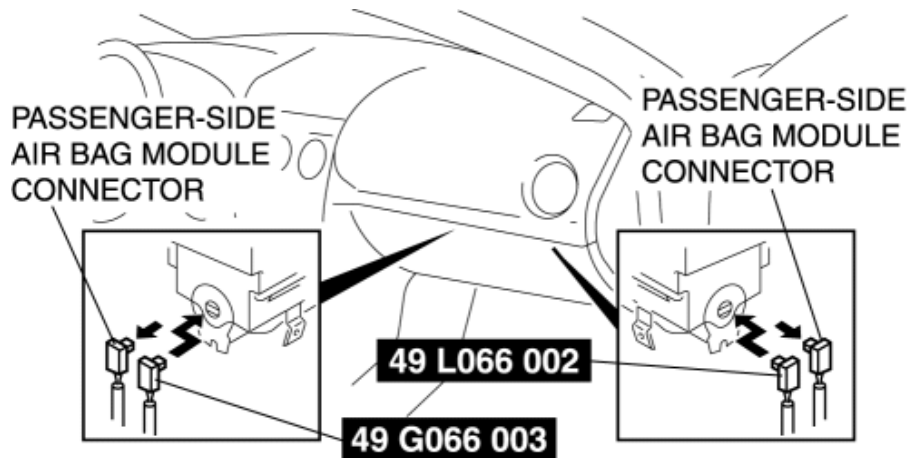
WARNING:

- The passenger-side air bag module is a dual inflator type. If one inflator is forced to operate (deploy), the other may operate (deploy) accidentally. To prevent injury while disposing of the air bag module, make sure to operate (deploy) both passenger-side air bag module inflators simultaneously, following the procedure below.

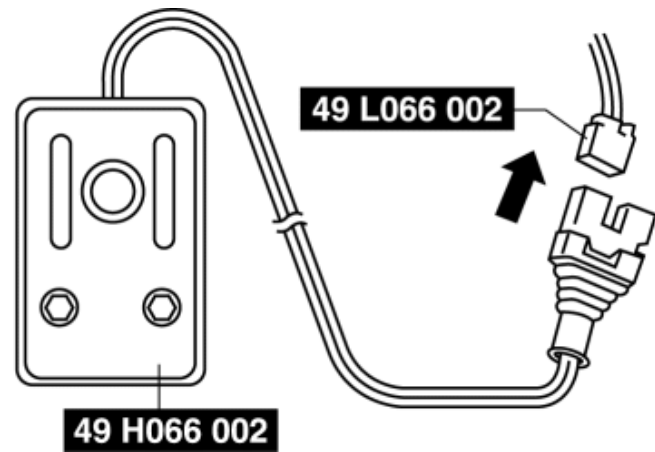
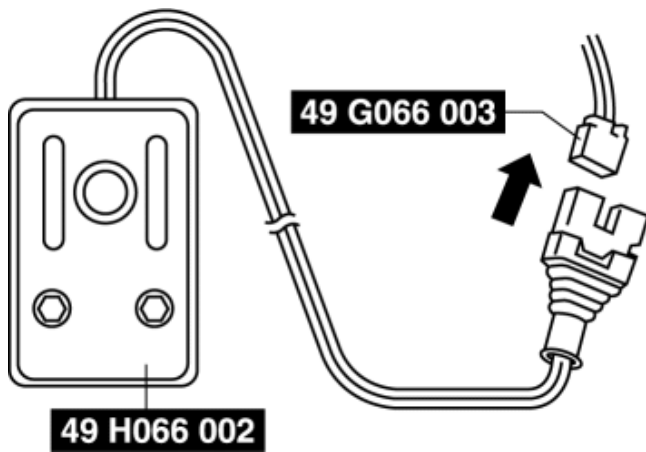
NOTE:

- The **SSTs**, two types of adapter harnesses (for inflators No.1 and No.2) and two deployment tools are to be used to operate (deploy) the passenger-side air bag module.

1. Remove the glove compartment. (See [GLOVE COMPARTMENT REMOVAL/INSTALLATION.](#))
2. Disconnect the passenger-side air bag module connector.
3. Connect the **SSTs** (Adapter harness) to the passenger-side air bag module as shown in the figure.



4. Connect the **SSTs** (Deployment tool) to the **SSTs** (Adapter harness).

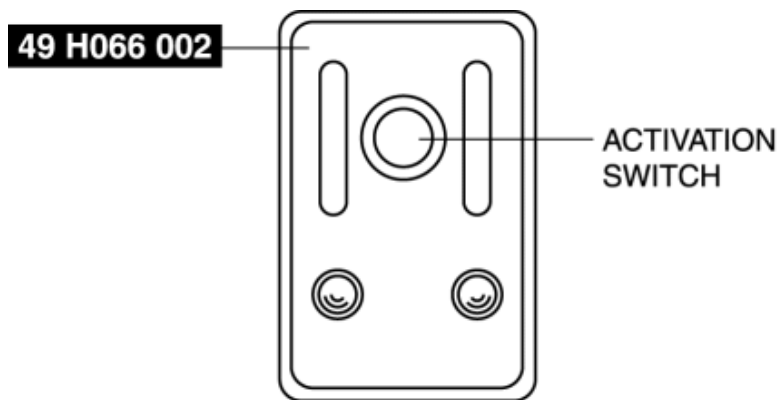


5. Connect both **SSTs** (Deployment tool) to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.

6. Verify that the red lamp on both **SSTs** (Deployment tool) is illuminated.

7. Verify that all persons are standing **at least 6 m {20 ft}** away from the vehicle.

8. Press the activation switch on the **SST** (Deployment tool) connected with 49 L066 002 (a yellow connector) of the **SST** (Adapter harness), and **after 3 s**, press the activation switch on the other **SST** (Deployment tool) to operate (deploy) the air bag module (both inflators).



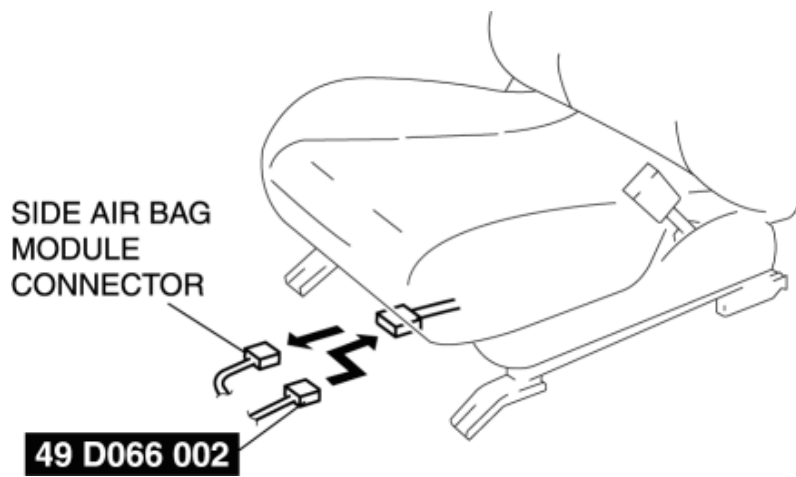
WARNING:

- Verify that air bag module operation (explosive) sound occurs twice. If no operation (explosive) sound was heard or a single operation (explosive) sound was heard, both inflators would not have operated (deployed) properly. This may cause serious injury because the air bag module may operate (deploy) accidentally. If the two operation (explosive) sounds are not heard, perform Step 8 again. In case that the two operation (explosive) sounds in total are not verified even though Step 8 is performed again, leave the air bag module alone for 30 min or more before getting near it again.
- The air bag module is very hot immediately after it is operated (deployed). You can be burned. Do not touch the air bag module for at least 15 min after deployment.

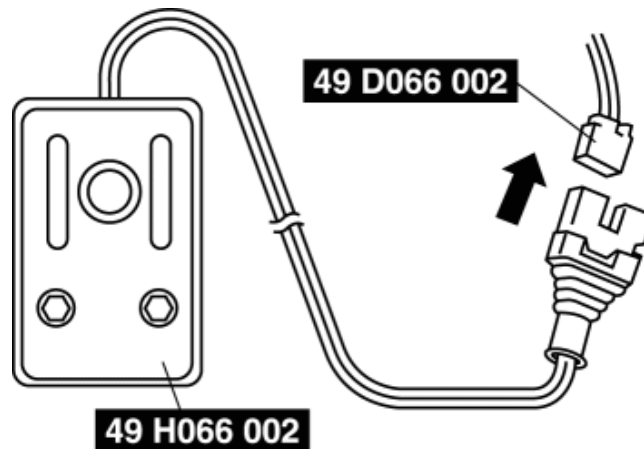
9. Disconnect the **SSTs** (Deployment tool) from the **SSTs** (Adapter harness).

Side air bag module

1. Disconnect the side air bag module connector.
2. Connect the **SST** (Adapter harness) to the side air bag module as shown in the figure.



3. Connect the **SST** (Deployment tool) to the **SST** (Adapter harness).

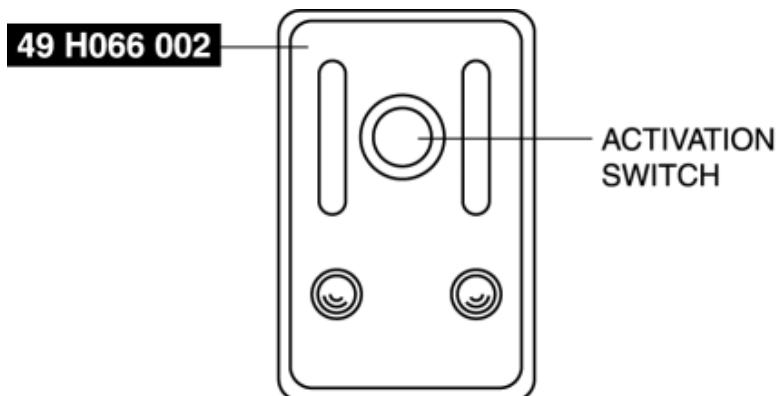


4. Connect the **SST** (Deployment tool) to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.

5. Verify that the red lamp on the **SST** (Deployment tool) is illuminated.

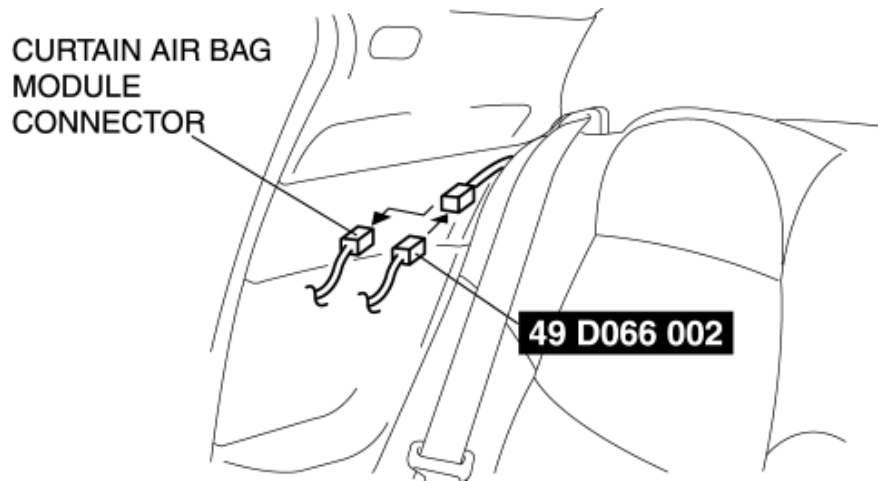
6. Verify that all persons are standing **at least 6 m {20 ft}** away from the vehicle.

7. Press the activation switch on the **SST** (Deployment tool) to operate (deploy) the side air bag module.

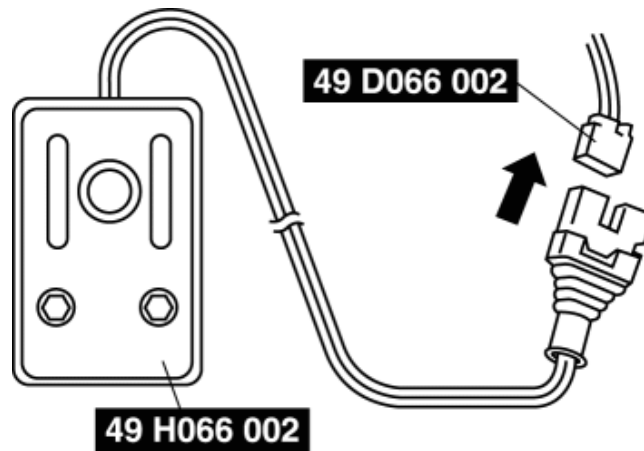


Curtain air bag module

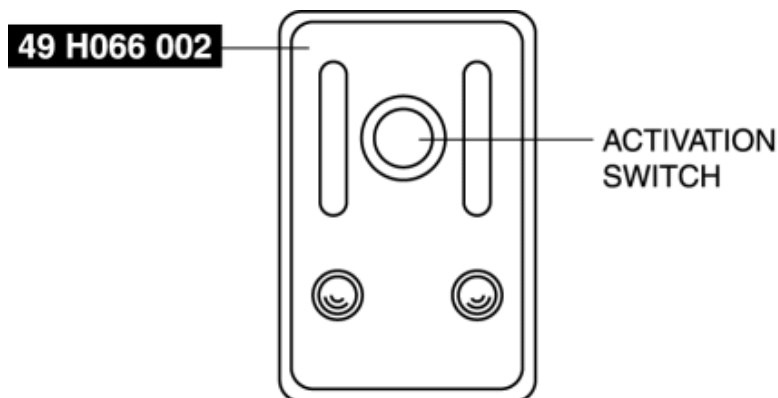
1. Remove the tire house trim. (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
2. Disconnect the curtain air bag module connector.



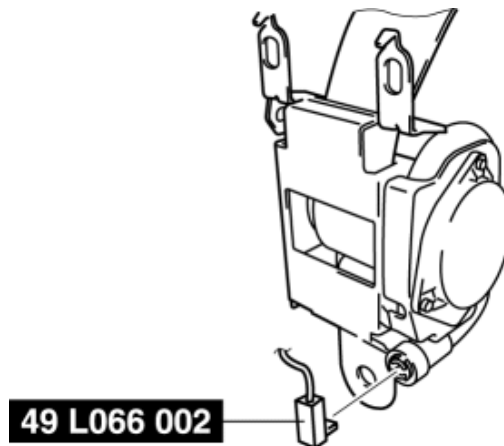
3. Connect the **SST** (Adapter harness) to the curtain air bag module as shown in the figure.
4. Connect the **SST** (Deployment tool) to the **SST** (Adapter harness).



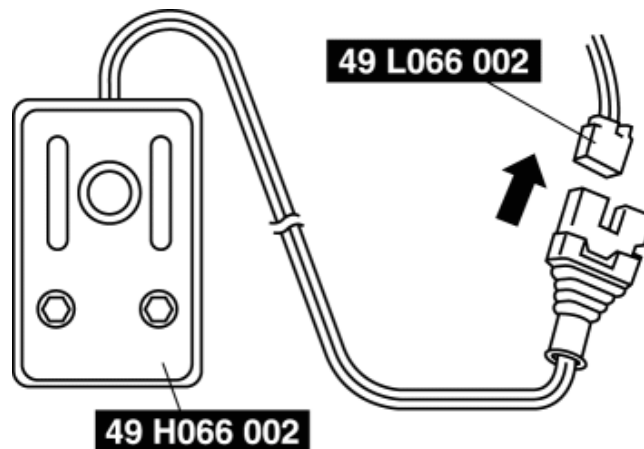
5. Connect the **SST** (Deployment tool) to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.
6. Verify that the red lamp on the **SST** (Deployment tool) is illuminated.
7. Verify that all persons are standing **at least 6 m {20 ft}** away from the vehicle.
8. Press the activation switch on the **SST** (Deployment tool) to operate (deploy) the curtain air bag module.



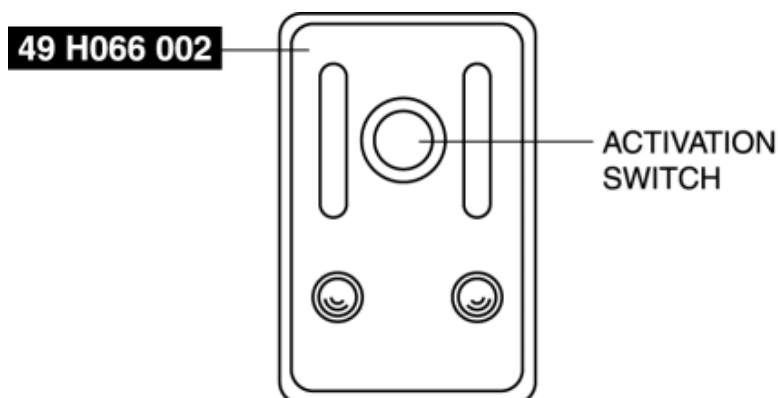
1. Remove the rear door lower trim. (See [REAR DOOR LOWER TRIM REMOVAL/INSTALLATION](#).)
2. Remove the pre-tensioner seat belt and connect the **SST** (Adapter harness) as shown in the figure. (See [FRONT SEAT BELT REMOVAL/INSTALLATION](#).)



3. Install the pre-tensioner seat belt.
4. Connect the **SST** (Deployment tool) to the **SST** (Adapter harness).



5. Connect the **SST** (Deployment tool) to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.
6. Verify that the red lamp on the **SST** (Deployment tool) is illuminated.
7. Verify that all persons are standing **at least 6 m {20 ft}** away from the vehicle.
8. Press the activation switch on the **SST** (Deployment tool) to operate (deploy) the pre-tensioner seat belt.



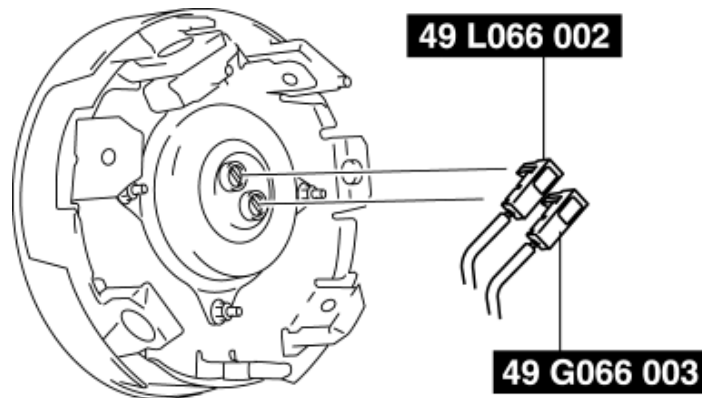
Deployment Procedure for Outside of Vehicle

1. Inspect the **SST** (Deployment tool). (See [INSPECTION OF SST \(DEPLOYMENT TOOL\)](#).)
2. Turn the ignition switch to the LOCK position.
3. Disconnect the negative battery cable and wait for **1 min or more**.
4. Follow the procedure below for operating (deploying) the applicable air bag module or pre-tensioner seat belt.

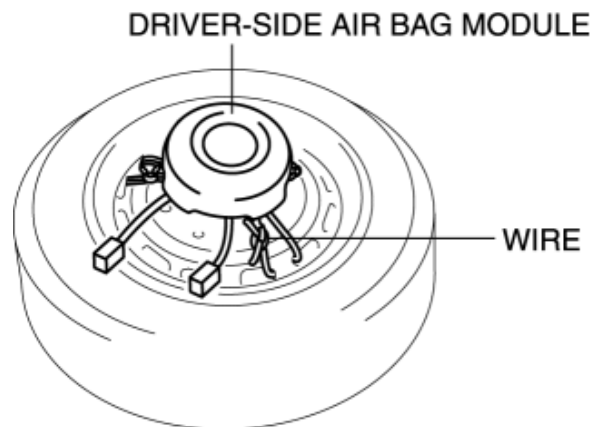
Driver-side air bag module

WARNING:

- The driver-side air bag module is a dual inflator type. If one inflator is forced to operate (deploy), the other may operate (deploy) accidentally. To prevent injury while disposing of the air bag module, make sure to operate (deploy) both driver-side air bag module inflators simultaneously, following the procedure below.
1. Remove the driver-side air bag module. (See [DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION](#).)
 2. Connect the **SSTs** (Adapter harness) to the driver-side air bag module as shown in the figure.



3. Place the driver-side air bag module on the center of the tire wheel with the padded surface facing up. To secure the air bag module to the tire wheel, wrap a wire (cross section **1.25 mm² {0.002 in²}** or more) through the wheel and the bolt installation holes of the air bag module **at least 4 times**.

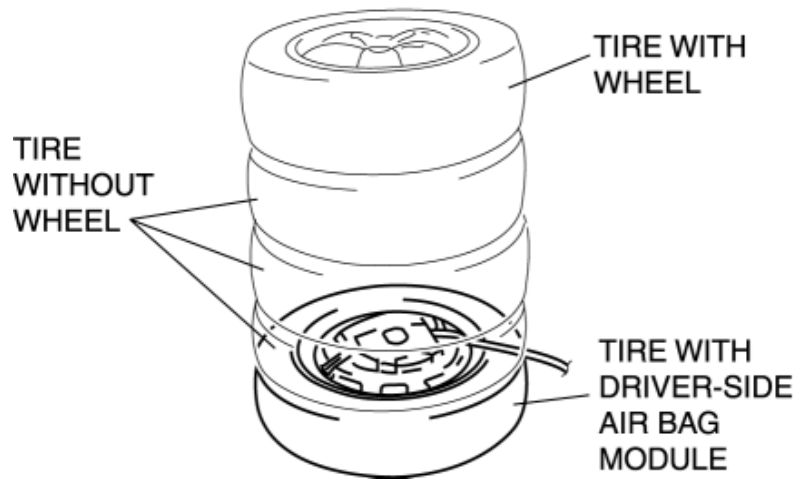


WARNING:

- If the air bag module is not properly installed to the tire wheel, serious injury may occur

when the module is operated (deployed). When installing the air bag module to the tire wheel, make sure the padded surface is facing up.

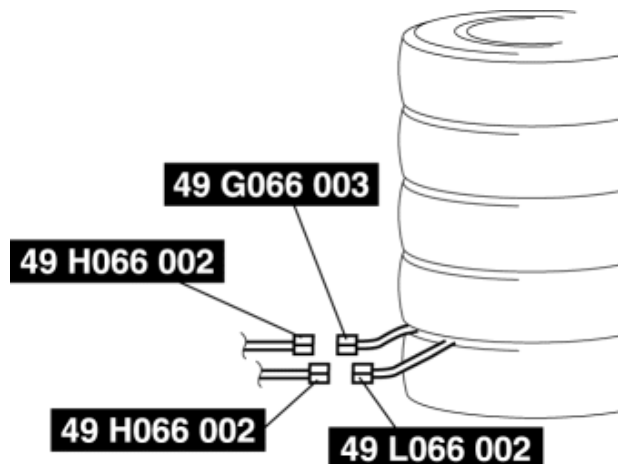
4. Stack three tires without wheels on top of the tire with the driver-side air bag module, and then stack another tire with a wheel on the very top.



5. Secure the tires with wire.



6. Connect the **SSTs** (Deployment tool) to the **SSTs** (Adapter harness).

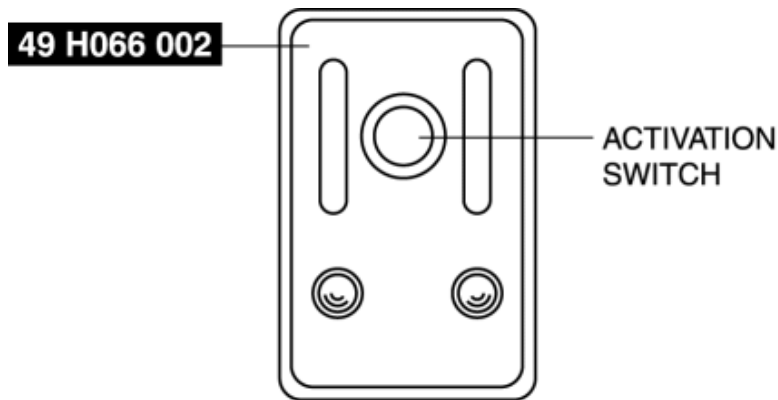


7. Connect both **SSTs** (Deployment tool) to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.

8. Verify that the red lamp on both **SSTs** (Deployment tool) is illuminated.

9. Verify that all persons are standing **at least 6 m {20 ft}** away from the vehicle.

10. Press the activation switch on the **SST** (Deployment tool) connected with 49 L066 002 (a yellow connector) of the **SST** (Adapter harness), and **after 3 s**, press the activation switch on the other **SST** (Deployment tool) to operate (deploy) the air bag module (both inflators).



WARNING:

- Verify that air bag module operation (explosive) sound occurs twice. If no operation (explosive) sound was heard or a single operation (explosive) sound was heard, both inflators would not have operated (deployed) properly. This may cause serious injury because the air bag module may operate (deploy) accidentally. If the two operation (explosive) sounds are not heard, perform Step 10 again. In case that the two operation (explosive) sounds in total are not verified even though Step 10 is performed again, leave the air bag module alone for 30 min or more before getting near it again.
- The air bag module is very hot immediately after it is operated (deployed). You can be burned. Do not touch the air bag module for at least 15 min after deployment.

11. Disconnect the **SSTs** (Deployment tool) from the **SSTs** (Adapter harness).

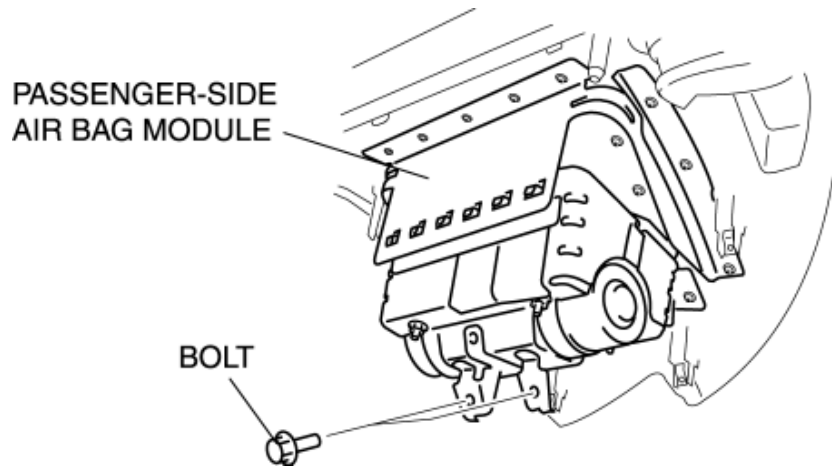
Passenger-side air bag module

WARNING:

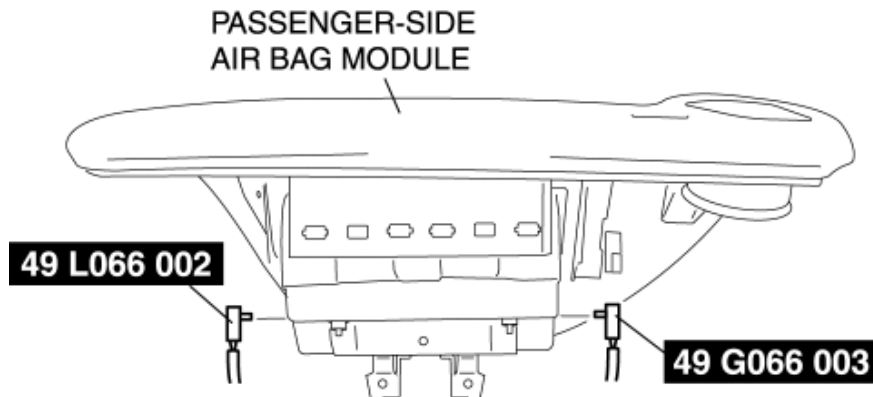
- The passenger-side air bag module is a dual inflator type. If one inflator is forced to operate (deploy), the other may operate (deploy) accidentally. To prevent injury while disposing of the air bag module, make sure to operate (deploy) both passenger-side air bag module inflators simultaneously, following the procedure below.

1. Remove the passenger-side air bag module. (See [PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION](#).)

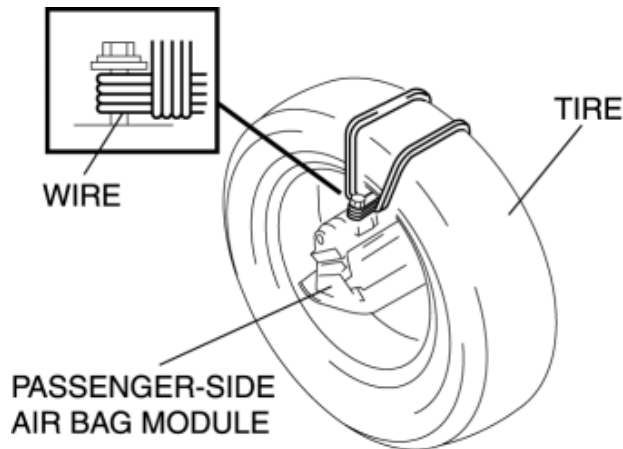
2. Install the bolts to the passenger-side air bag module.



3. Connect the **SSTs** (Adapter harness) to the passenger-side air bag module as shown in the figure.



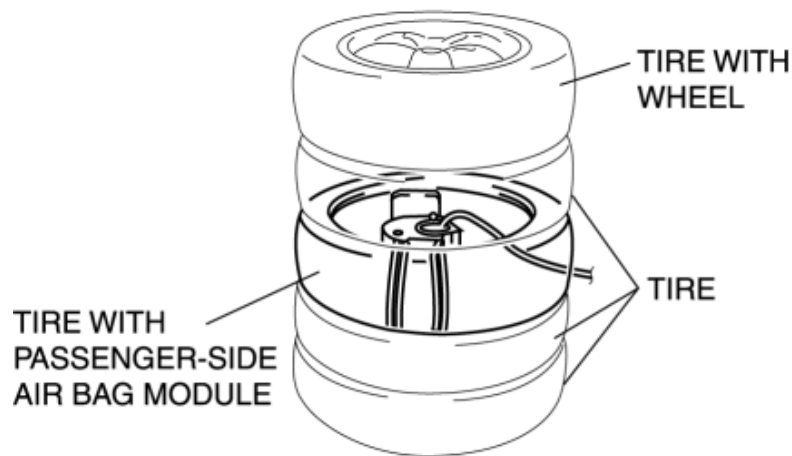
4. Place the padded surface of the passenger-side air bag module facing the center of the tire as shown in the figure. To secure the air bag module to the tire wheel, wrap a wire (cross section **1.25 mm² {0.002 in²} or more**) through the tire and around the bolts **at least 4 times**.



WARNING:

- If the air bag module is not properly installed to the tire, serious injury may occur when the module is operated (deployed). When installing the air bag module to the tire, make sure the padded surface is facing the center of the tire.

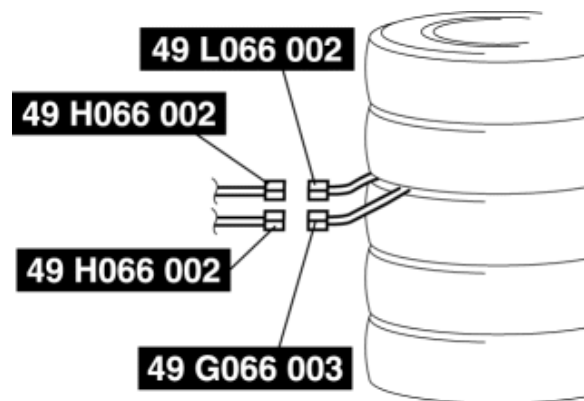
5. Stack the tire with the passenger-side air bag module on top of two tires without wheels. Stack a tire without a wheel on top of the tire with the passenger-side air bag module, and then stack another tire with a wheel on the very top.



6. Secure the tires with wire.



7. Connect the **SSTs** (Deployment tool) to the **SSTs** (Adapter harness).

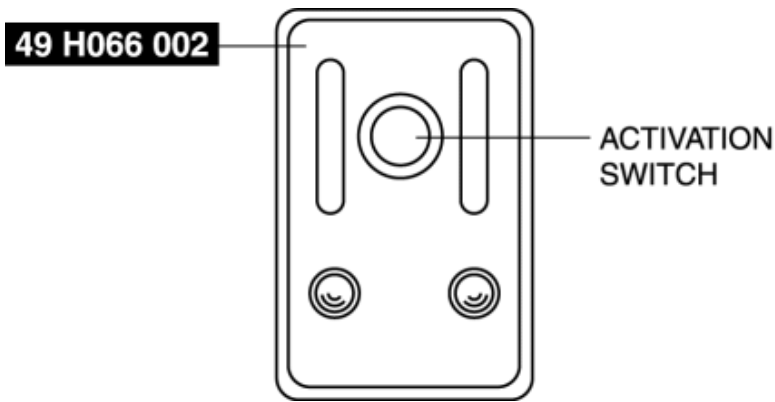


8. Connect both **SSTs** (Deployment tool) to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.

9. Verify that the red lamp on both **SSTs** (Deployment tool) is illuminated.

10. Verify that all persons are standing **at least 6 m {20 ft}** away from the vehicle.

11. Press the activation switch on the **SST** (Deployment tool) connected with 49 L066 002 (a yellow connector) of the **SST** (Adapter harness), and **after 3 s**, press the activation switch on the other **SST** (Deployment tool) to operate (deploy) the air bag module (both inflators).



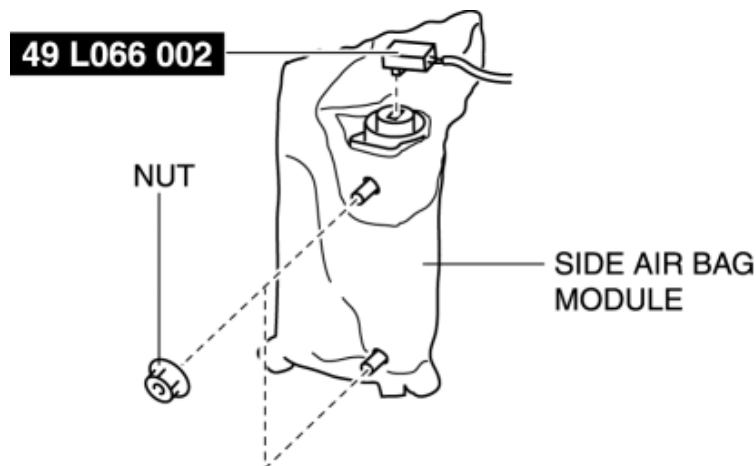
WARNING:

- Verify that air bag module operation (explosive) sound occurs twice. If no operation (explosive) sound was heard or a single operation (explosive) sound was heard, both inflators would not have operated (deployed) properly. This may cause serious injury because the air bag module may operate (deploy) accidentally. If the two operation (explosive) sounds are not heard, perform Step 11 again. In case that the two operation (explosive) sounds in total are not verified even though Step 11 is performed again, leave the air bag module alone for 30 min or more before getting near it again.
- The air bag module is very hot immediately after it is operated (deployed). You can be burned. Do not touch the air bag module for at least 15 min after deployment.

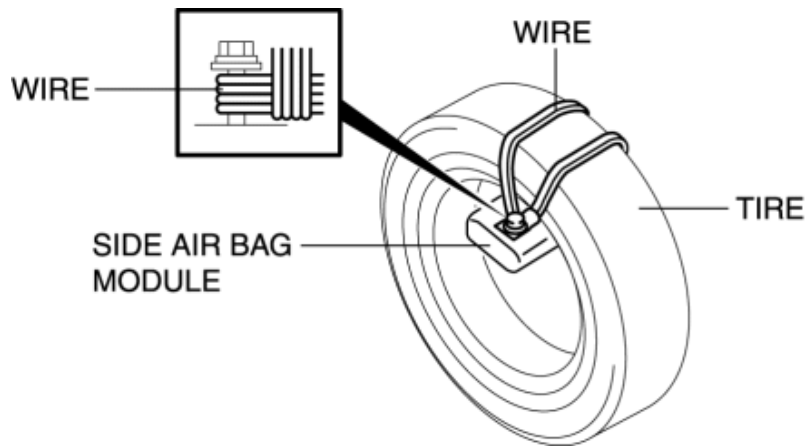
12. Disconnect the **SSTs** (Deployment tool) from the **SSTs** (Adapter harness).

Side air bag module

1. Remove the side air bag module. (See [SIDE AIR BAG MODULE REMOVAL/INSTALLATION](#).)
2. Install the nuts to the side air bag module as shown in the figure, and connect the **SST** (Adapter harness).



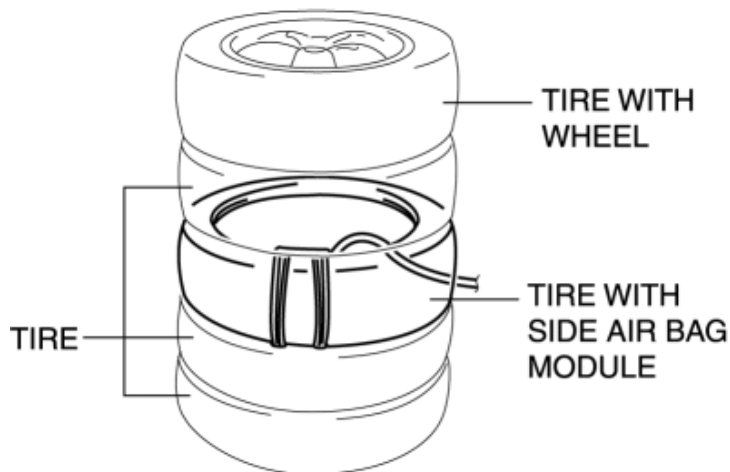
3. Place the padded surface of the side air bag module facing the center of the tire as shown in the figure. To secure the air bag module to the tire wheel, wrap a wire (cross section **1.25 mm² {0.002 in²}** or **more**) through the tire and around the brackets **at least 4 times**.



WARNING:

- If the air bag module is not properly installed to the tire, serious injury may occur when the module is operated (deployed). When installing the air bag module to the tire, make sure the padded surface is facing the center of the tire.

4. Stack the tire with the side air bag module on top of two tires without wheels. Stack a tire without a wheel on top of the tire with the side air bag module, and then stack another tire with a wheel on the very top.



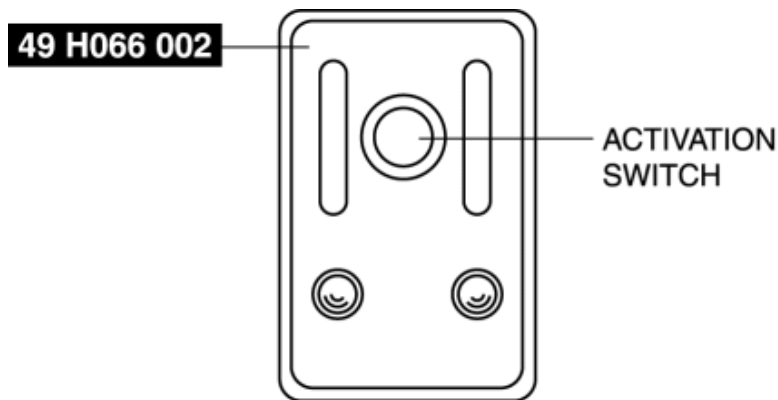
5. Secure the tires with wire.



6. Connect the **SST** (Deployment tool) to the **SST** (Adapter harness).

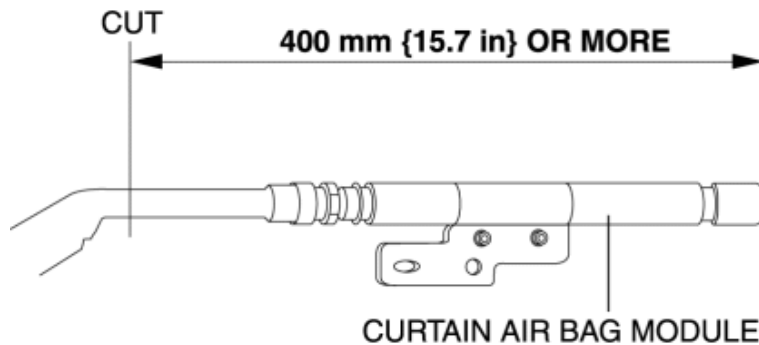


7. Connect the **SST** (Deployment tool) to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.
8. Verify that the red lamp on the **SST** (Deployment tool) is illuminated.
9. Verify that all persons are standing **at least 6 m {20 ft}** away from the vehicle.
10. Press the activation switch on the **SST** (Deployment tool) to operate (deploy) the side air bag module.



Curtain air bag module

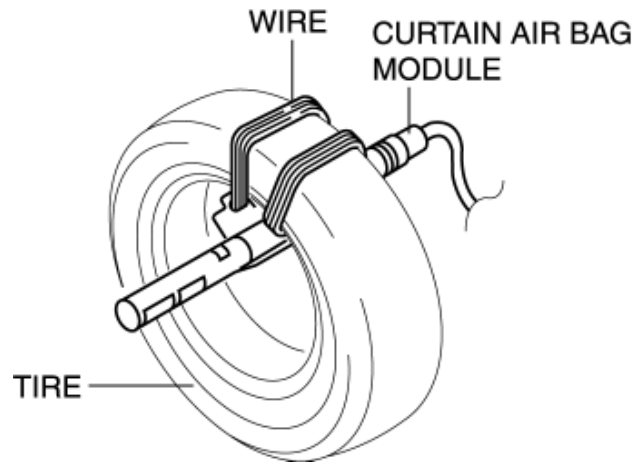
1. Remove the curtain air bag module. (See [CURTAIN AIR BAG MODULE REMOVAL/INSTALLATION](#).)
2. Secure the curtain air bag module in a vise, and cut off the deployment section, as shown in the figure.



WARNING:

- Be sure not to crush the pipe on the side where it is cut. If it is crushed completely, the interior pressure of the pipe will build up and can cause it to explode during air bag module operation (deployment).

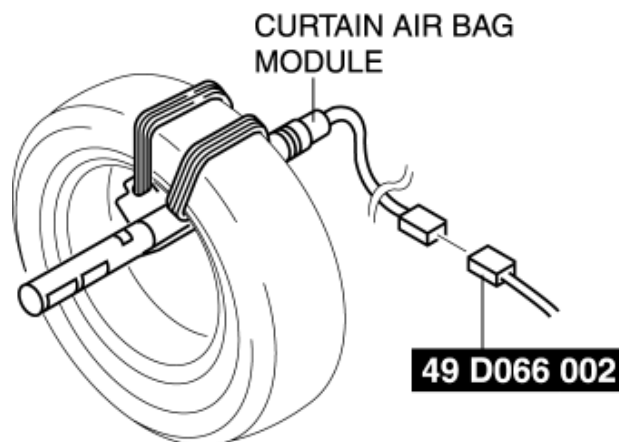
3. Secure the curtain air bag module to the tire, by wrapping a wire (cross section **1.25 mm² {0.002 in²}** or more) through the tire and the bolt installation holes **at least 4 times** as shown in the figure.



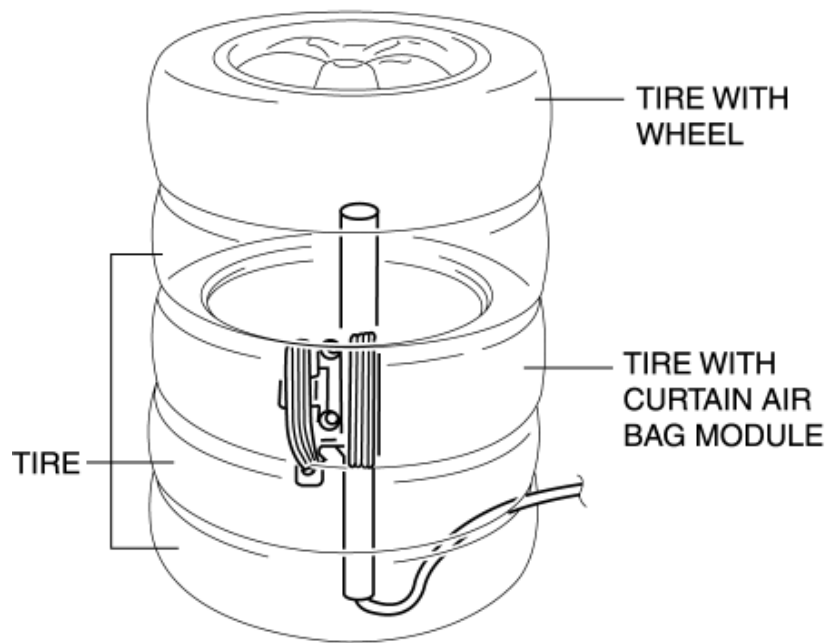
WARNING:

- If the air bag module is not properly installed to the tire, serious injury may occur when the module is operated (deployed). Make sure to install the air bag module securely.

4. Connect the **SST** (Adapter harness) to the curtain air bag module as shown in the figure.



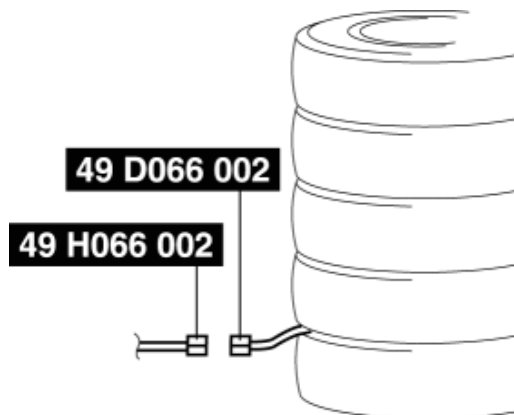
5. Stack the tire with the curtain air bag module on top of two tires without wheels. Stack a tire without a wheel on top of the tire with the curtain air bag module, and then stack another tire with a wheel on the very top.



6. Secure the tires with wire.



7. Connect the **SST** (Deployment tool) to the **SST** (Adapter harness).



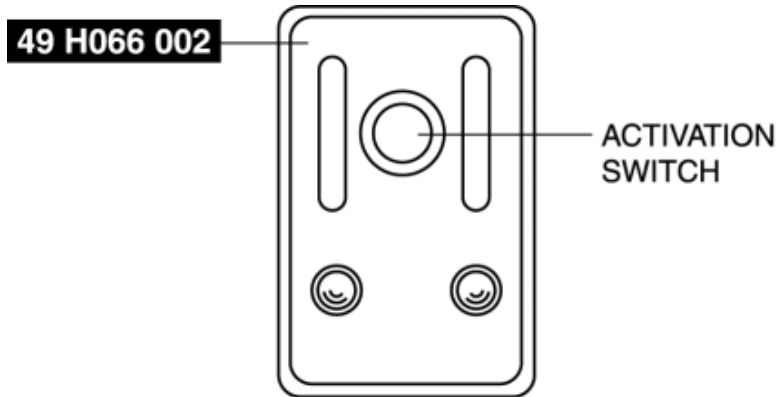
8. Connect the **SST** (Deployment tool) to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.

9. Verify that the red lamp on the **SST** (Deployment tool) is illuminated.

10. Verify that all persons are standing **at least 6 m {20 ft}** away from the vehicle.

11. Press the activation switch on the **SST** (Deployment tool) to operate (deploy) the curtain air bag

module.



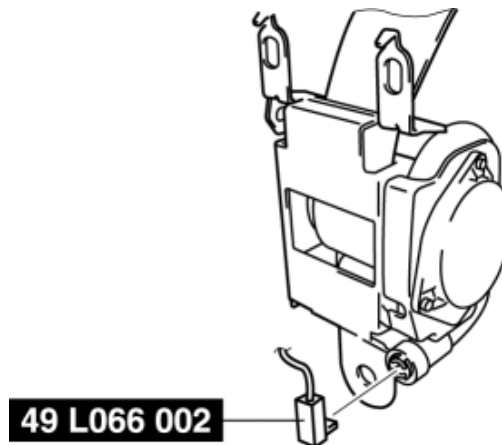
Pre-tensioner seat belt

1. Remove the pre-tensioner seat belt. (See [FRONT SEAT BELT REMOVAL/INSTALLATION](#).)

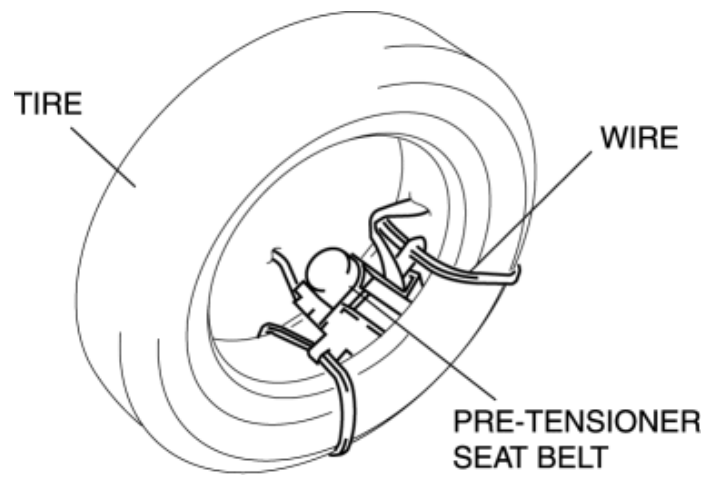
WARNING:

- If the pre-tensioner seat belt is not properly installed to the tire, serious injury may occur when the pre-tensioner part is operated (deployed). When installing the pre-tensioner seat belt to the tire, make sure the pre-tensioner part is inside the tire.

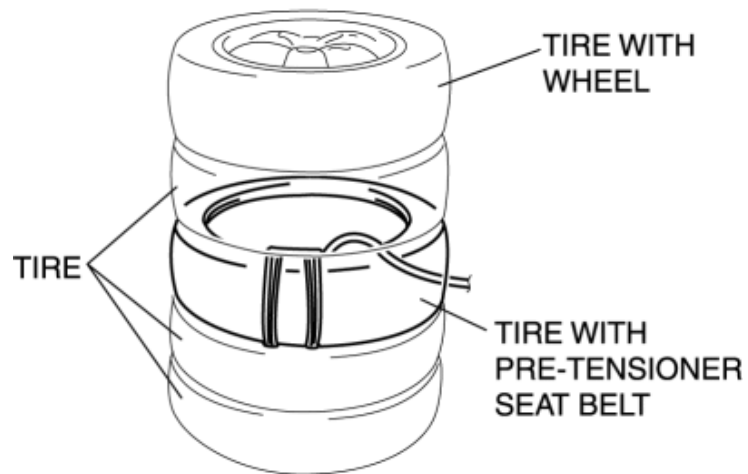
2. Connect the **SST** (Adapter harness) to the pre-tensioner seat belt as shown in the figure.



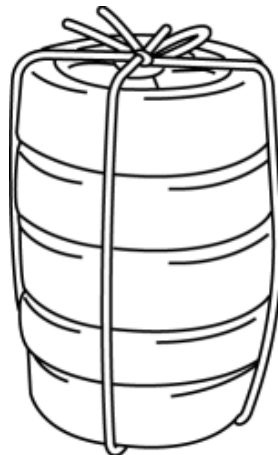
3. Put the pre-tensioner seat belt inside the tire and secure it to the tire by wrapping a wire (cross section 1.25 mm^2 { 0.002 in^2 } or more) through the tire and the bolt installation holes **at least 4 times**.



4. Stack the tire with the pre-tensioner seat belt on top of two tires without wheels. Stack a tire without a wheel on top of the tire with the pre-tensioner seat belt, and then stack another tire with a wheel on the very top.



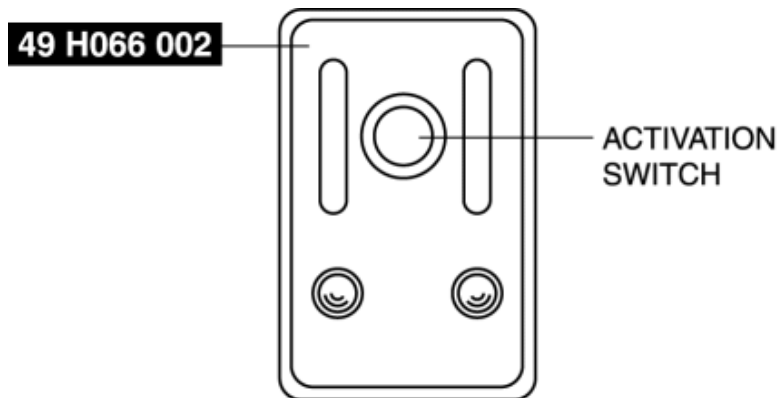
5. Secure the tires with wire.



6. Connect the **SST** (Deployment tool) to the **SST** (Adapter harness).



7. Connect the **SST** (Deployment tool) to the battery. Connect the power supply red clip to the positive battery terminal, and the black clip to the negative battery terminal.
8. Verify that the red lamp on the **SST** (Deployment tool) is illuminated.
9. Verify that all persons are standing **at least 6 m {20 ft}** away from the vehicle.
10. Press the activation switch on the **SST** (Deployment tool) to operate (deploy) the pre-tensioner seat belt.

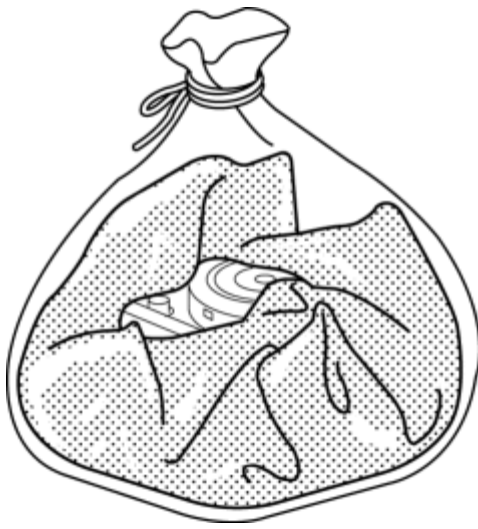


2011 - RX-8 - Restraints

AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DISPOSAL PROCEDURES

WARNING:

- A live (undeployed) air bag module or pre-tensioner seat belt may accidentally operate (deploy) when it is disposed of and cause serious injury. Always refer to the "AIR BAG MODULE AND PRE-TENSIONER SEAT BELT DEPLOYMENT PROCEDURES" and dispose of air bag modules and pre-tensioner seat belts in a deployed condition.
 - The air bag modules and the pre-tensioner seat belts are very hot immediately after they are deployed. You can be burned. Do not touch an air bag module and pre-tensioner seat belt for at least 15 min after deployment.
 - Pouring water on the deployed air bag module and pre-tensioner seat belt is dangerous. The water will mix with the residual gases to form a gas that can make breathing difficult. Do not pour water on the deployed air bag module and pre-tensioner seat belt.
 - The deployed air bag module or pre-tensioner seat belt may contain deposits of sodium hydroxide, a caustic byproduct of the gas-generated combustion. If this substance gets into your eyes or on your hands, it can cause irritation and itching. When handling the deployed air bag module and pre-tensioner seat belt, wear gloves and safety glasses.
 - Due to the adoption of 2-step deployment control in both the driver and passenger-side air bag modules, depending on the impact force, it is possible that inflator No.2 might not operate (deploy). Before disposing of the air bag module, always follow the inflator deployment procedures and verify the complete operation (deployment) of inflators No.1 and 2.
1. Remove the deployed air bag module or pre-tensioner seat belt.
 2. Put the air bag module or pre-tensioner seat belt in a plastic bag, seal the bag, and then dispose of it.



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

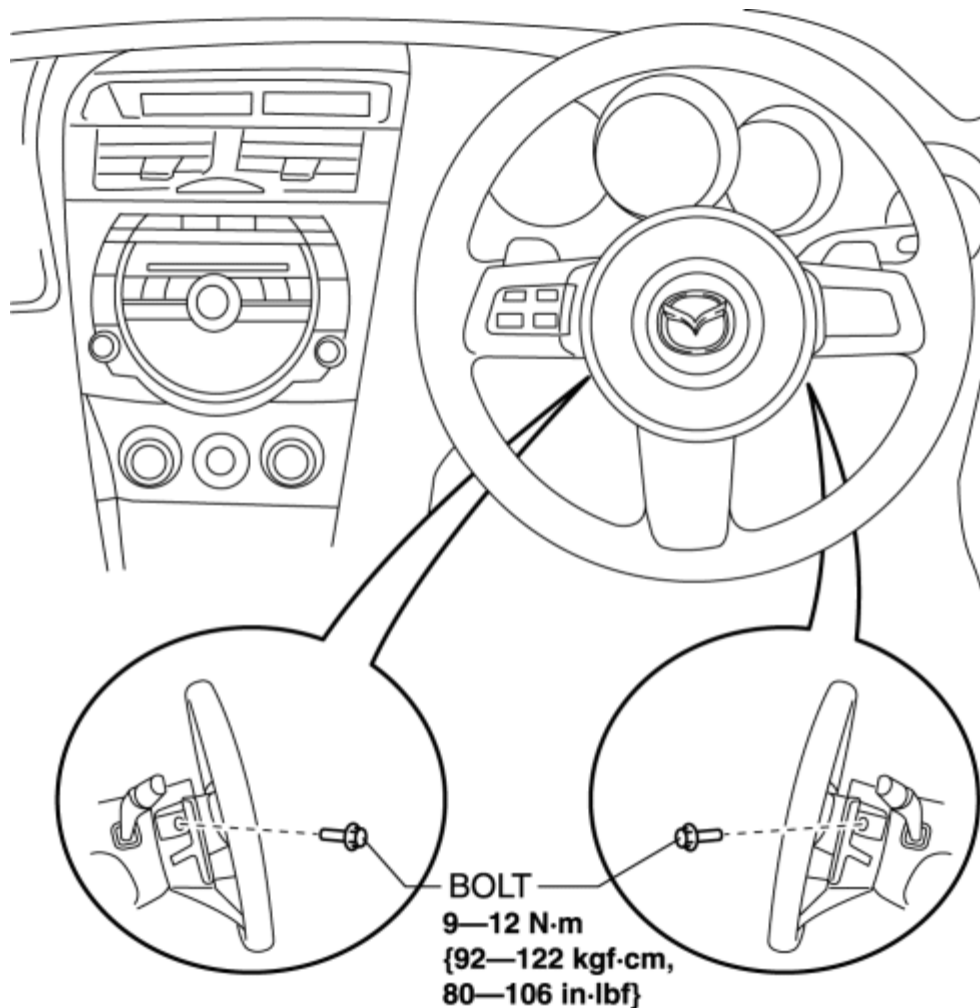
[Back to Top](#)

2011 - RX-8 - Restraints

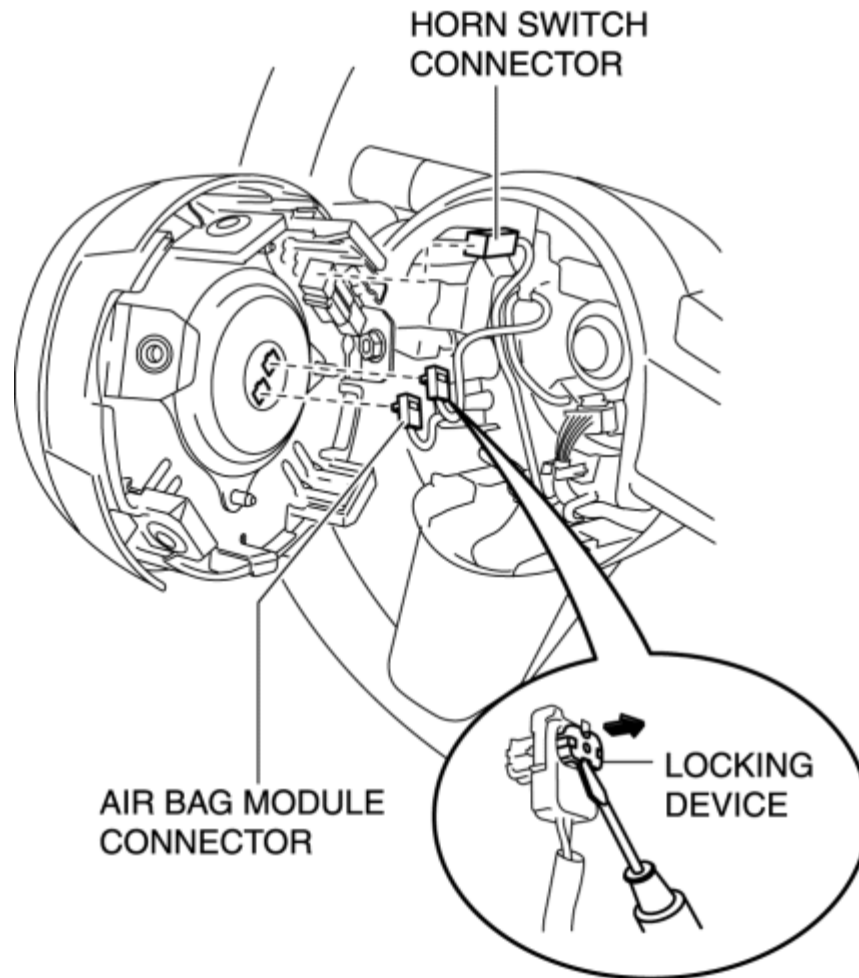
DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION

WARNING:

- Handling the air bag module improperly can accidentally deploy the air bag module, which may seriously injure you. Read the service warnings and cautions before handling the air bag module. (See [AIR BAG SYSTEM SERVICE WARNINGS.](#)) (See [AIR BAG SYSTEM SERVICE CAUTIONS.](#))
1. Turn the ignition switch to the LOCK position.
 2. Disconnect the negative battery cable and wait for **1 min or more**.
 3. Remove the bolts.



4. Using a flathead screwdriver, lift the locking device carefully, however do not remove it.



5. Disconnect the air bag module connector.
6. Disconnect the horn switch connector.
7. Remove the driver-side air bag module.
8. Install in the reverse order of removal.
9. Turn the ignition switch to the ON position.
10. Verify that the air bag system warning light illuminates for **approx. 6 s** and goes out.
 - If the air bag system warning light does not operate normally, refer to the on-board diagnostic system (air bag system) and perform inspection of the system.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Restraints

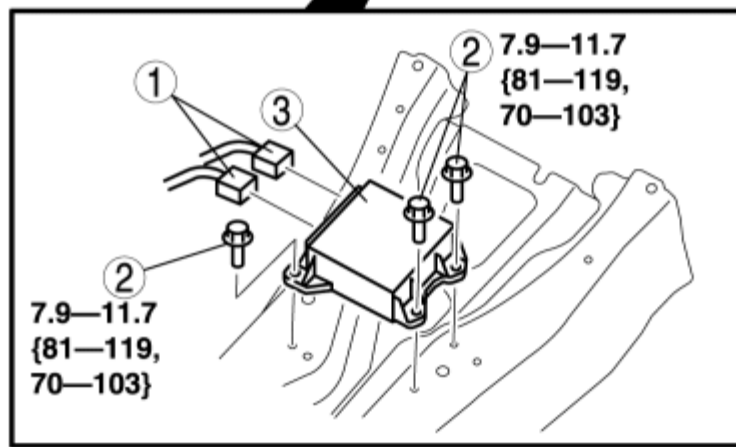
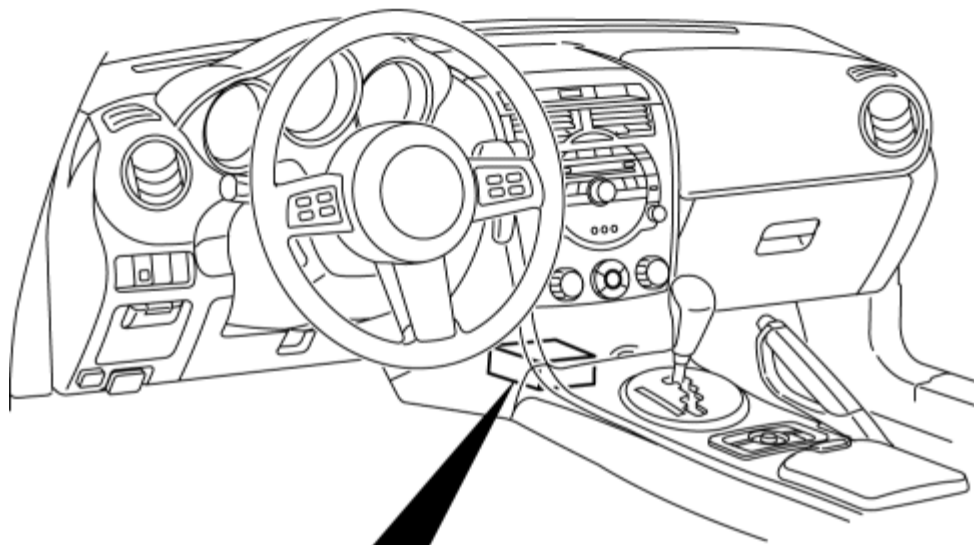
SAS CONTROL MODULE REMOVAL/INSTALLATION

WARNING:

- Handling the SAS control module improperly can accidentally deploy the air bag modules and pre-tensioner seat belt, which may seriously injure you. Read the service warnings and cautions before handling the air bag module. (See [AIR BAG SYSTEM SERVICE WARNINGS](#).) (See [AIR BAG SYSTEM SERVICE CAUTIONS](#).)

CAUTION:

- Handling the SAS control module improperly can accidentally deploy the air bag modules and pre-tensioner seat belt, which may seriously injure you. If configuration is not completed before removing the SAS control module, DTC B1342 will be displayed.
1. Perform SAS control module configuration when replacing it. (See [SAS CONTROL MODULE CONFIGURATION](#).)
 2. Turn the ignition switch to the LOCK position.
 3. Disconnect the negative battery cable and wait for **1 min or more**.
 4. Remove the following parts:
 - a. Console (See [CONSOLE REMOVAL/INSTALLATION](#).)
 - b. Glove compartment (See [GLOVE COMPARTMENT REMOVAL/INSTALLATION](#).)
 - c. Side panel (See [SIDE PANEL REMOVAL/INSTALLATION](#).)
 - d. Lower panel (See [LOWER PANEL REMOVAL/INSTALLATION](#).)
 - e. Column cover (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
 - f. Steering shaft (See [STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION](#).)
 - g. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION](#).)
 - h. Dashboard (See [DASHBOARD REMOVAL/INSTALLATION](#).)
 5. Remove in the order indicated in the table.



N·m {kgf·cm, in·lbf}

1	Connector
2	Bolt
3	SAS control module

6. Install in the reverse order of removal.

7. Turn the ignition switch to the ON position.

- If the SAS control module is replaced, turn the ignition switch to the ON position for **20 s or more** after completing the configuration.

8. Verify that the air bag system warning light illuminates for **approx. 6 s** and goes out.

- If the air bag system warning light does not operate normally, refer to the on-board diagnostic system (air bag system) and perform inspection of the system.

[< Previous](#) [Next >](#)

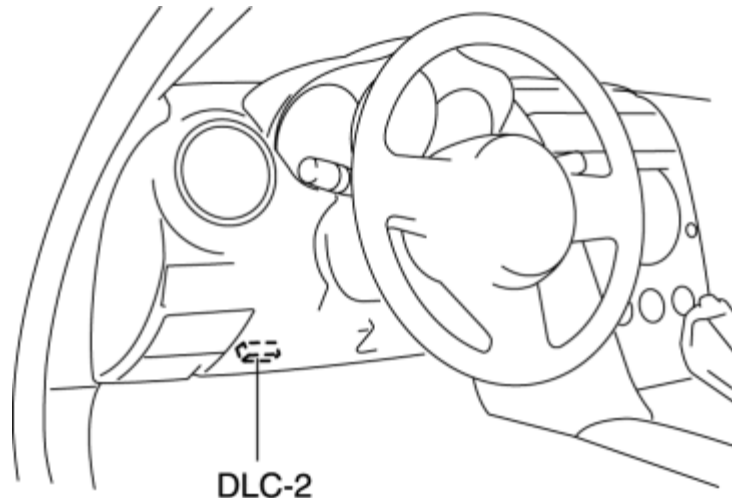
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Restraints

SAS CONTROL MODULE CONFIGURATION

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 - Select "Module Programming".
- When using the PDS (Pocket PC)
 - Select "Programming".
 - Select "Module Programming".

3. Then, select items from the screen menu in the following order.

- Select "Programmable Module Installation".
- Select "RCM".

4. Perform the configuration according to the directions on the screen.

5. Retrieve DTCs by the M-MDS, then verify that there is no DTC present.

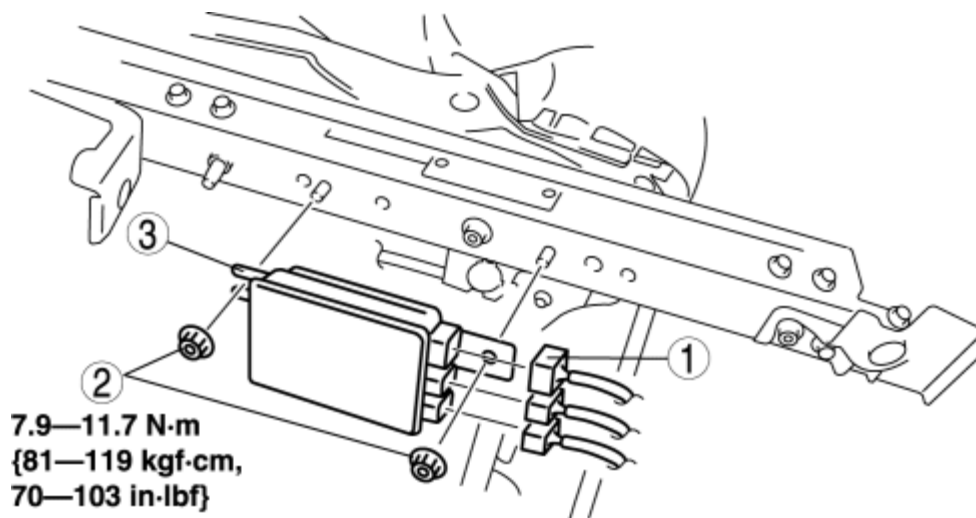
- If a DTC(s) is detected, perform the applicable DTC inspection. (See [DTC TABLE](#).)

2011 - RX-8 - Restraints

SEAT WEIGHT SENSOR CONTROL MODULE REMOVAL/INSTALLATION

CAUTION:

- When the seat weight sensor control module is replaced with a new one, perform the seat weight sensor calibration using the M-MDS. (See [SEAT WEIGHT SENSOR CALIBRATION](#).)
- Turn the ignition switch to the LOCK position.
 - Remove the battery cover.
 - Disconnect the negative battery cable and wait for **1 min or more**.
 - Remove the front passenger's seat (See [FRONT SEAT REMOVAL/INSTALLATION](#).)
 - Remove in the order indicated in the table.



1	Connector
2	Nut
3	Seat weight sensor control module

- Install in the reverse order of removal.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

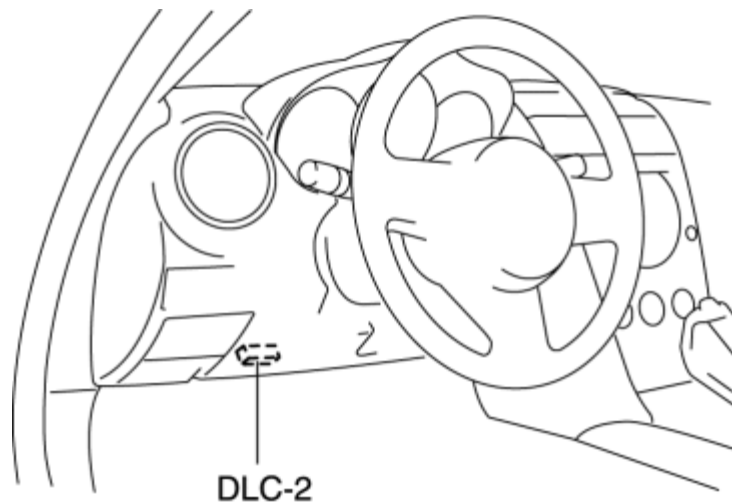
[Back to Top](#)

2011 - RX-8 - Restraints

SEAT WEIGHT SENSOR CALIBRATION

CAUTION:

- If any of the following work is performed, perform the seat weight sensor calibration using the M-MDS.
 - Replacement with a new seat weight sensor
 - Replacement with a new seat weight sensor control module
 - Replacement with new passenger-side seat parts
 - Disassembly of the passenger-side seat
 - If any of the following work is performed, perform the seat weight sensor inspection using the M-MDS. (See [SEAT WEIGHT SENSOR INSPECTION](#).)
 - Removal of the passenger-side seat
 - Loosening and retightening of passenger's seat fixing bolts
 - Or, the vehicle is involved in a collision
1. Have two **20 kg {44 lb}** weights ready to use.
 2. Connect the M-MDS to the DLC-2 connector.



3. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - When using the IDS (laptop PC)

- Select "Body".
 - Select "Restraints".
 - When using the PDS (Pocket PC)
 - Select "All Tests and Calibrations".
4. Then, select item from the screen menu in the following order.
- Select "Passenger Seat Weight Sensor ReZero".
5. Perform calibration following the procedures on the M-MDS screen.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

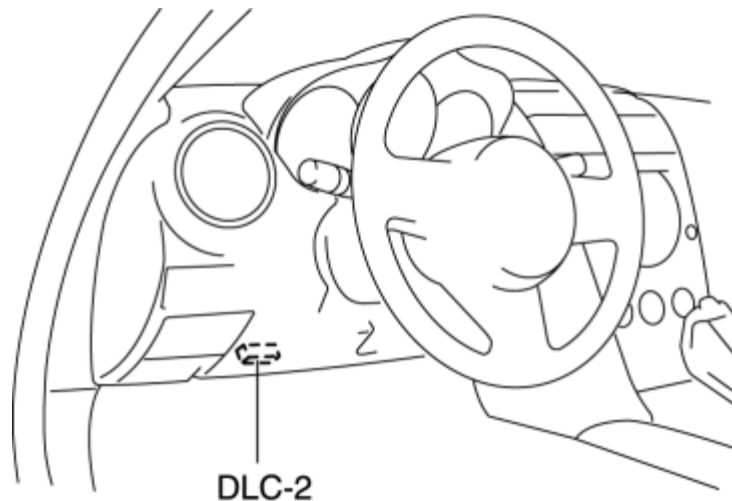
2011 - RX-8 - Restraints

SEAT WEIGHT SENSOR INSPECTION

CAUTION:

- If any of the following work is performed, perform the seat weight sensor inspection using the M-MDS.
 - Removal of the passenger-side seat
 - Loosening and retightening of passenger's seat fixing bolts
 - Or, the vehicle is involved in a collision
- If any of the following work is performed, perform the seat weight sensor calibration using the M-MDS. (See [SEAT WEIGHT SENSOR CALIBRATION](#).)
 - Replacement with a new seat weight sensor
 - Replacement with a new seat weight sensor control module
 - Replacement with new passenger-side seat parts
 - Disassembly of the passenger-side seat

1. Connect the M-MDS to the DLC-2 (16-pin).



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "Body".

2. Select "Restraints".

- When using the PDS (Pocket PC)

1. Select "All Tests and Calibrations".

3. Then, select item from the screen menu in the following order.

1. Select "Passenger Seat Weight Sensor ReZero".

4. Perform inspection following the procedures on the M-MDS screen.

CAUTION:

- Because the seat belt rail is installed to the seat weight sensor bracket, do not apply a load to the seat belt rail during the inspection.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

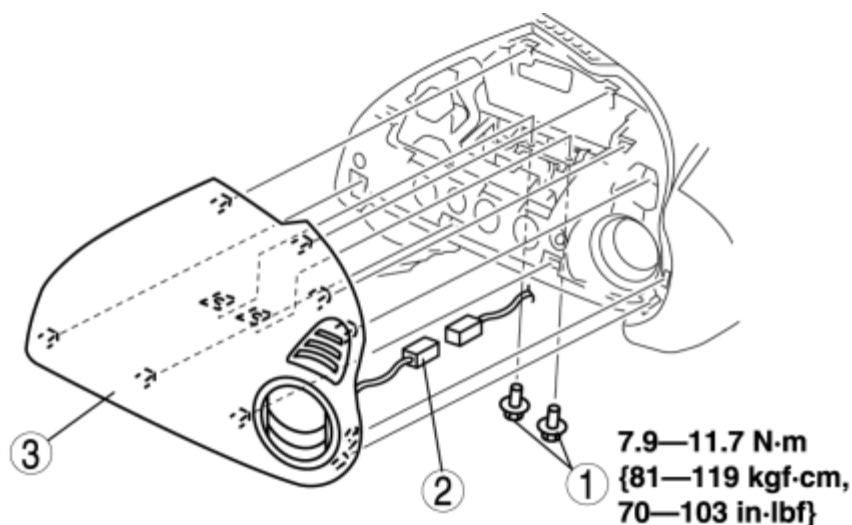
2011 - RX-8 - Restraints

PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION

WARNING:

- Handling the air bag module improperly can accidentally deploy the air bag module, which may seriously injure you. Read the service warnings and cautions before handling the air bag module. (See [AIR BAG SYSTEM SERVICE WARNINGS.](#)) (See [AIR BAG SYSTEM SERVICE CAUTIONS.](#))
- Due to the adoption of 2-step deployment control in the passenger-side air bag module, depending on the impact force, it is possible that inflator No.2 might not deploy. In such cases, before disposing of the air bag module, make sure to follow the inflator deployment procedures and verify complete deployment of inflators No.1 and 2.

1. Turn the ignition switch to the LOCK position.
2. Disconnect the negative battery cable and wait for **1 min or more**.
3. Remove the glove compartment. (See [GLOVE COMPARTMENT REMOVAL/INSTALLATION.](#))
4. Remove in the order indicated in the table.



1 Bolt
2 Connector

5. Install in the reverse order of removal.
6. Turn the ignition switch to the ON position.
7. Verify that the air bag system warning light illuminates for **approx. 6 s** and goes out.
 - If the air bag system warning light does not operate, refer to the on-board diagnostic system (air bag system) and perform inspection of the system.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Restraints

CLOCK SPRING REMOVAL/INSTALLATION

CAUTION:

- For vehicles with DSC: If the disc on the combination switch is deformed or has foreign material adhering to it, performance of the steering angle sensor may be reduced, causing abnormal operation. When handling the clock spring, be careful not to deform the disc and make sure there is no foreign material on it.

1. Disconnect the negative battery cable.

2. Remove the driver-side air bag module.

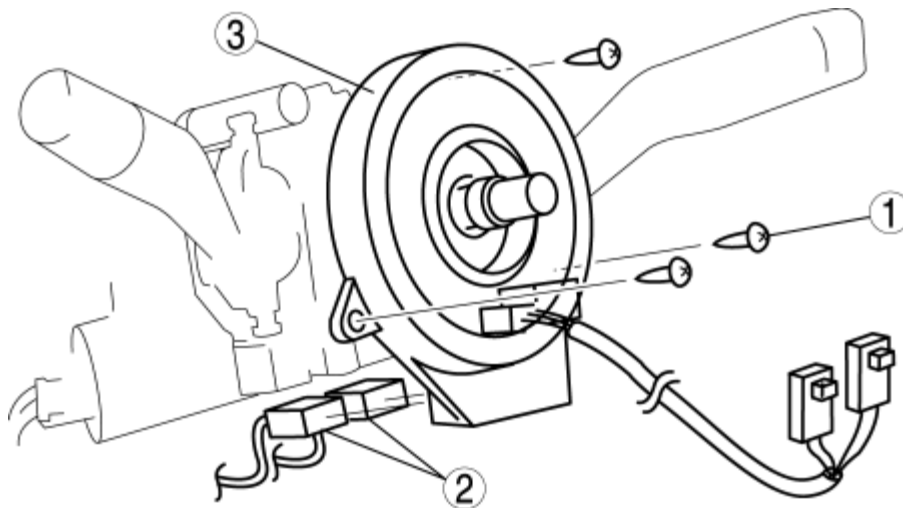
(See [DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION](#).)

3. Remove the steering wheel.

(See [STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION](#).)

4. Remove the column cover. (See [COLUMN COVER REMOVAL/INSTALLATION](#).)

5. Remove in the order indicated in the table.



1	Screw
2	Connector
3	

3 Clock spring.

(See [Clock Spring Installation Note](#).)

6. Install in the reverse order of removal.
7. Turn the ignition switch to the ON position.
8. Verify that the air bag system warning light illuminates for **approx. 6 s** and goes out.
 - If the air bag system warning light does not operate normally, refer to the on-board diagnostic system (air bag system) and perform inspection of the system.

Clock Spring Installation Note

CAUTION:

- If the clock spring is not adjusted, the spring wire in the clock spring could over-wind and break when the steering wheel is turned. Always adjust the clock spring after installing it.
1. Adjust the clock spring after installing it. (See [CLOCK SPRING ADJUSTMENT](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Restraints

CLOCK SPRING ADJUSTMENT

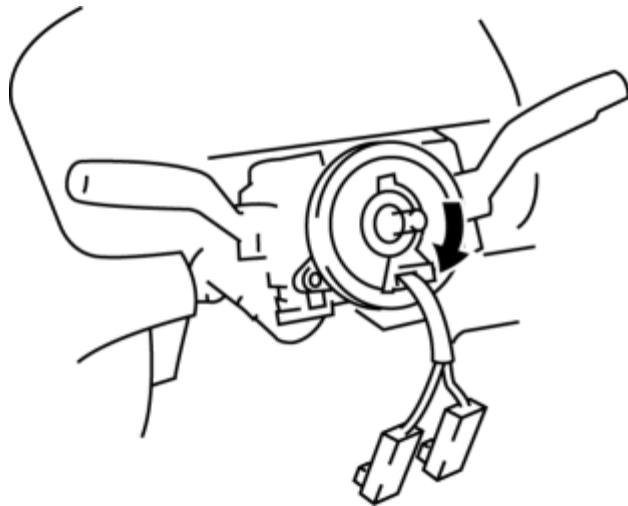
NOTE:

- The adjustment procedure is also specified on the caution label of the clock spring.

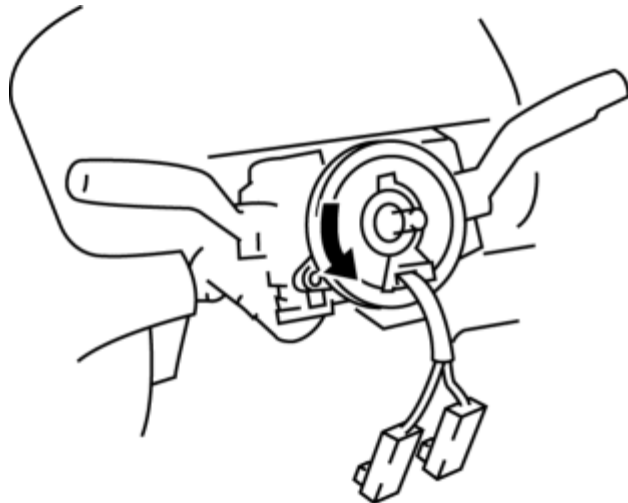
1. Set the front tires straight-ahead.

CAUTION:

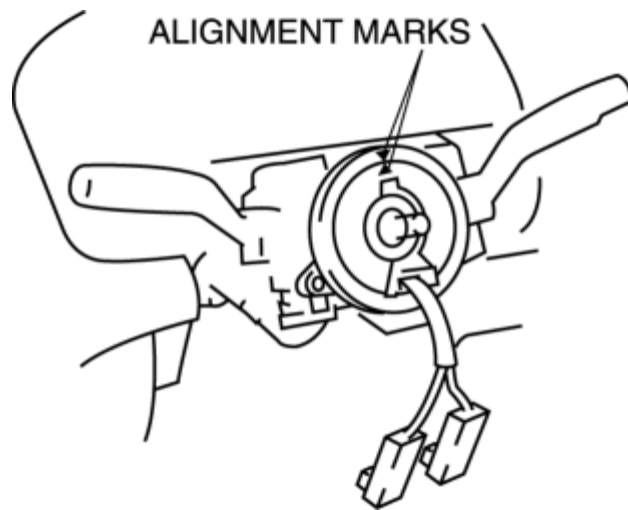
- The clock spring will break if over-wound. Do not forcibly turn the clock spring.
2. Turn the clock spring clockwise until it stops.



3. From the stopped position, turn the clock spring counterclockwise **2 3/4 turns**.



4. Align the marks.



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)


2011 - RX-8 - Restraints





















CLOCK SPRING INSPECTION

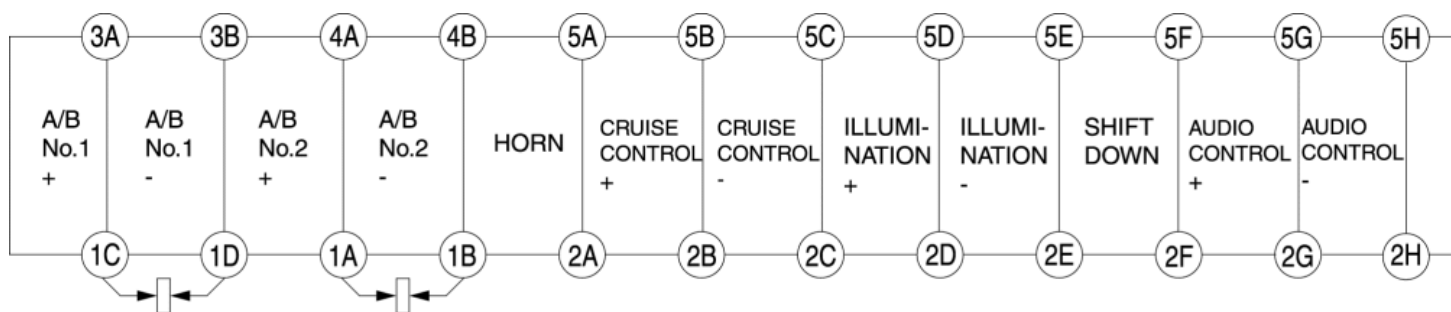
1. Remove the driver-side air bag module.
(See [DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION](#).)
2. Remove the steering wheel.
(See [STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION](#).)
3. Remove the clock spring. (See [CLOCK SPRING REMOVAL/INSTALLATION](#).)
4. Verify continuity as indicated in the table.
 - If not as indicated in the table, replace the clock spring.

NOTE:

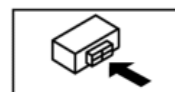
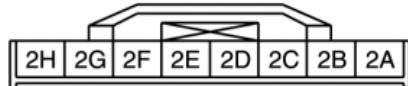
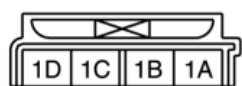
- When the vehicle-side connector for the clock spring is disconnected, terminals 1A, 1B, 1C and 1D are shorted to prevent unexpected operation (deployment) of the air bag module.

 : Continuity

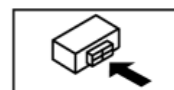
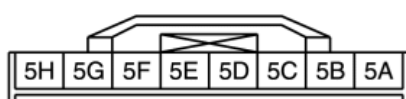
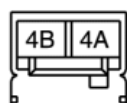
Test condition	Terminal																							
	1A	1B	1C	1D	2A	2B	2C	2D	2E	2F	2G	2H	3A	3B	4A	4B	5A	5B	5C	5D	5E	5F	5G	5H
Under any condition																								
																								
																								
																								
																								
																								
																								
																								



VEHICLE-SIDE CONNECTOR



AIR BAG MODULE-SIDE CONNECTOR



2011 - RX-8 - Restraints

AIR BAG SYSTEM SERVICE CAUTIONS

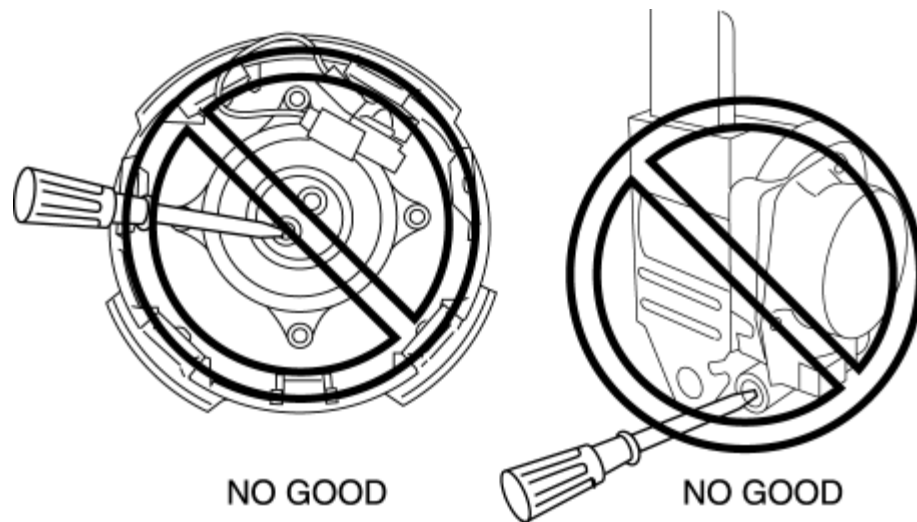
Air Bag System Component Disassembly

- Disassembling the air bag system components could cause it to not operate (deploy) normally. Never disassemble any air bag system components.



Air Bag Module, Pre-tensioner Seat Belt Handling

- Oil, grease, or water on the air bag modules may cause the air bags and pre-tensioner seat belts to fail to operate (deploy) in an accident. Never allow oil, grease, or water to get on the air bag modules or pre-tensioner seat belts.
- Inserting a screwdriver or similar object into the connector of an air bag module or a pre-tensioner seat belt may damage the connector and cause the air bag module or the pre-tensioner seat belt to operate (deploy) improperly, which may cause serious injury. Never insert any foreign objects into the air bag module or seat belt connectors.



Seat Weight Sensor Handling

- The seat weight sensor has a built-in strain gauge which may operate improperly if the sensor is dropped by itself or when installed to the seat. If it is dropped, replace the seat weight sensor with a new one.
- Oil, grease, or water on the seat weight sensor may cause the system to operate (deploy) improperly. Never allow oil, grease, or water to get on the seat weight sensor.
- Foreign material in the seat weight sensor components may cause the system to operate (deploy) improperly. Always make sure that no foreign material can get into the seat weight sensor.
- Disassembling the seat weight sensor, or tightening any of the nuts and bolts installed to the sensor body may cause it to operate (deploy) improperly. Never disassemble the seat weight sensor or tighten any of the nuts or bolts installed to the body of the sensor.

Air Bag Module, Pre-tensioner Seat Belt Reuse

- Even if an air bag module or a pre-tensioner seat belt does not operate (deploy) in a collision and does not have any external signs of damage, it may have been damaged internally, which may cause improper operation. Before reusing a live (undeployed) air bag module and the pre-tensioner seat belts, always use the on-board diagnostic to diagnose the air bag module and the pre-tensioner seat belts to verify that they have no malfunction.

Air Bag Wiring Harness Repair

- Incorrectly repairing an air bag wiring harness can accidentally operate (deploy) the air bag module and pre-tensioner seat belts. If a problem is found in the air bag wiring harness, always replace the wiring harness with a new one.



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

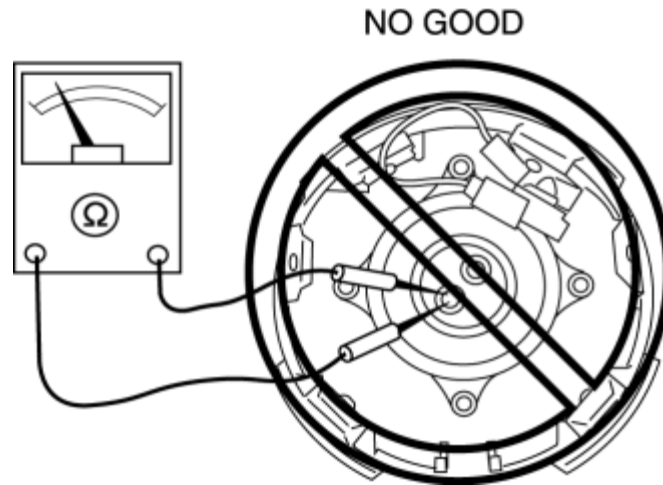
[Back to Top](#)

2011 - RX-8 - Restraints

AIR BAG SYSTEM SERVICE WARNINGS

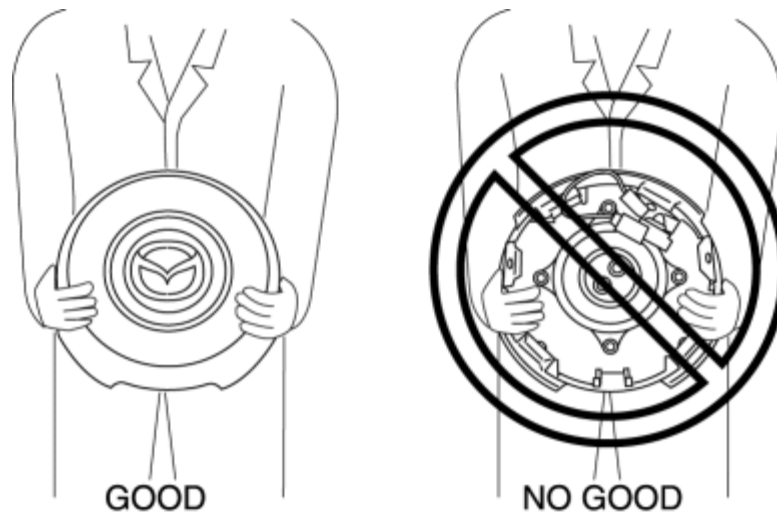
Air Bag Module Inspection

- Inspecting an air bag module using a tester can operate (deploy) the air bag module, which may cause serious injury. Do not use a tester to inspect an air bag module. Always use the on-board diagnostic function to diagnose the air bag module for malfunctions.

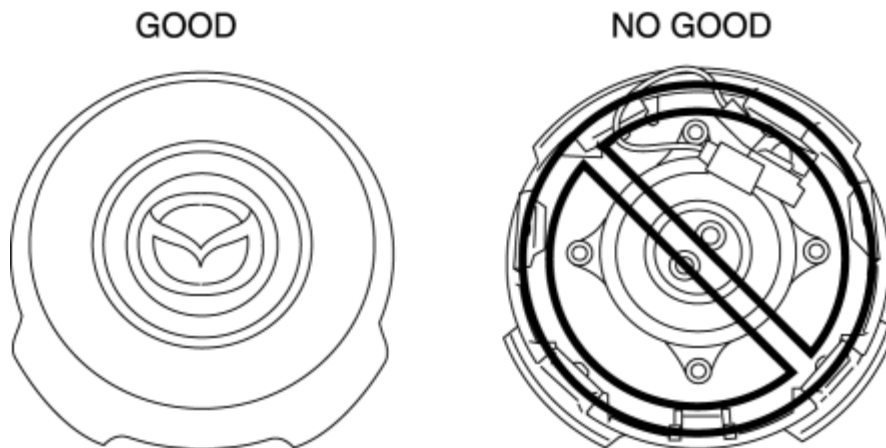


Air Bag Module Handling

- Before removing the air bag module or disconnecting the air bag module connector, always turn the ignition switch to the LOCK position, disconnect the negative battery cable, and then wait for 1 min or more to allow the backup power supply of the SAS control module to deplete its stored power.
- Handling a live (undeployed) air bag module that is pointed toward your body could result in serious injury if the air bag module were to accidentally operate (deploy). When carrying a live (undeployed) air bag module, point the deployment surface away from your body to lessen the chance of injury in case it operates (deploys).



- A live (undeployed) air bag module placed with its deployment surface to ground is dangerous. If the air bag module were to accidentally rate (deploy), it could cause serious injury. Always place a live (undeployed) air bag module with its deployment surface up.



Side Air Bag Module Handling

- When a side air bag module operates (deploys) due to a collision, the interior of the seat back (pad, frame, trim) may become damaged. If a side air bag does not operate (deploy) normally from a seat back that has been reused, a serious accident may result. After a side air bag has operated (deployed), always replace both the side air bag module and the seat back (pad, frame, trim) with new parts. After servicing, verify that the seat operates normally and that the wiring harness is not caught.

Seat Weight Sensor Handling

- The passenger-side seat and the seat weight sensor may become deformed or otherwise damaged due to operation (deployment) of the front or side air bag in an accident. This may cause the passenger sensing function to operate improperly and result in a serious accident. Always replace the passenger seat and seat weight sensor with new ones after the front or side air bags have

operated (deployed). After servicing, verify that the seat operates normally and that the wiring harness is not caught. If the collision is not hard enough to cause the front or side air bags to operate (deploy), inspect the seat weight sensor and replace it if there is any malfunction.

SAS Control Module Handling

- Removing the SAS control module or disconnecting the SAS control module connector with the ignition switch at the ON position can activate the sensor in the SAS control module and operate (deploy) the air bags and pre-tensioner seat belts, which may cause serious injury. Before removing the SAS control module or disconnecting the SAS control module connector, always turn the ignition switch to the LOCK position, disconnect the negative battery cable, and then wait for 1 min or more to allow the backup power supply of the SAS control module to deplete its stored power.
- Connecting the SAS control module connector with the SAS control module not securely fixed to the vehicle is dangerous. The sensor in the SAS control module could send an electrical signal to the air bag modules and pre-tensioner seat belts. This will operate (deploy) the air bags and pre-tensioner seat belts, which may result in serious injury. Therefore, before connecting the connector, securely fix the SAS control module to the vehicle.
- Because a sensor is built into the SAS control module, once the air bags and pre-tensioner seat belts have operated (deployed) due to a collision or other causes, the SAS control module must be replaced with a new one even if the used one does not have any visible external damage or deformation. The used SAS control module may have been damaged internally which may cause improper operation. If the SAS control module is reused, the air bags and pre-tensioner seat belts may not operate (deploy) normally, which could result in a serious accident. Always replace the SAS control module with a new one. The SAS control module cannot be bench-checked or self-checked.

Crash Zone Sensor Handling

- Removing the crash zone sensor or disconnecting the crash zone sensor connector with the ignition switch at the ON position can activate the crash zone sensor and operate (deploy) the air bags and pre-tensioner seat belts, which may cause serious injury. Before removing the crash zone sensor or disconnecting the crash zone sensor connector, always turn the ignition switch to the LOCK position, disconnect the negative battery cable, and then wait for 1 min or more to allow the backup power supply of the SAS control module to deplete its stored power.
- If the crash zone sensor is subjected to shock or the sensor is disassembled, the air bags and pre-tensioner seat belts may accidentally operate (deploy) and cause injury, or the system may fail to operate normally and cause a serious accident. Do not subject the crash zone sensor to shock or disassemble the sensor.
- Because a sensor is built into the crash zone sensor, once the air bags and pre-tensioner seat belts have operated (deployed) due to a collision or other

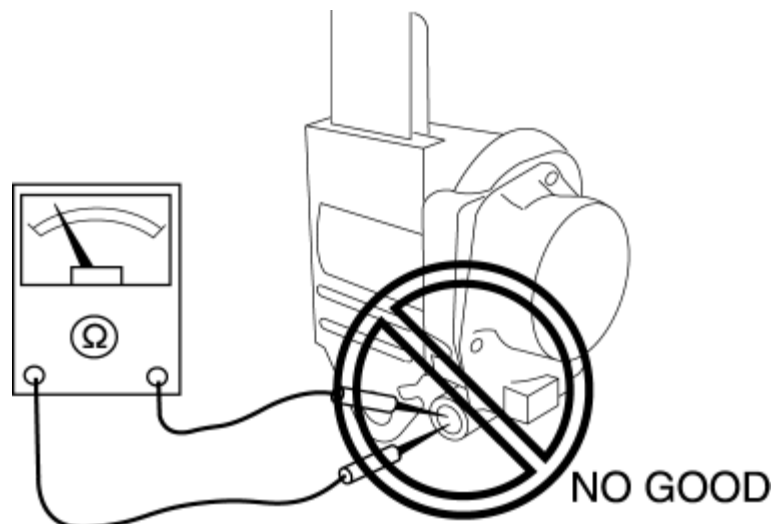
causes, the crash zone sensor must be replaced with a new one even if the used one does not have any visible external damage or deformation. If the crash zone sensor is reused, the air bags and pre-tensioner seat belts may not operate (deploy) normally, which could result in a serious accident. Always replace the crash zone sensor with a new one. The crash zone sensor cannot be bench-checked or self-checked.

Side Air Bag Sensor Handling

- Removing the side air bag sensor or disconnecting the side air bag sensor connector with the ignition switch at the ON position can activate the side air bag sensor and operate (deploy) the side air bag, which may cause serious injury. Before removing the side air bag sensor or disconnecting the side air bag sensor connector, always turn the ignition switch to the LOCK position, disconnect the negative battery cable, and then wait for 1 min or more to allow the backup power supply of the SAS control module to deplete its stored power.
- If the side air bag sensor is subjected to shock or the sensor is disassembled, the side air bag may accidentally operate (deploy) and cause injury, or the system may fail to operate normally and cause a serious accident. Do not subject the side air bag sensor to shock or disassemble the sensor.
- Because a sensor is built into the side air bag sensor, once the air bag has operated (deployed) due to a collision or other causes, the side air bag sensor must be replaced with a new one even if the used one does not have any visible external damage or deformation. If the side air bag sensor is reused, the side air bag may not operate (deploy) normally, which could result in a serious accident. Always replace the side air bag sensor with a new one. The side air bag sensor cannot be bench-checked or self-checked.

Pre-tensioner Seat Belt Inspection

- Inspecting a pre-tensioner seat belt using a tester can operate (deploy) the pre-tensioner seat belt, which may cause serious injury. Do not use a tester to inspect a pre-tensioner seat belt. Always use the on-board diagnostic function to diagnose the pre-tensioner seat belt for malfunctions.



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

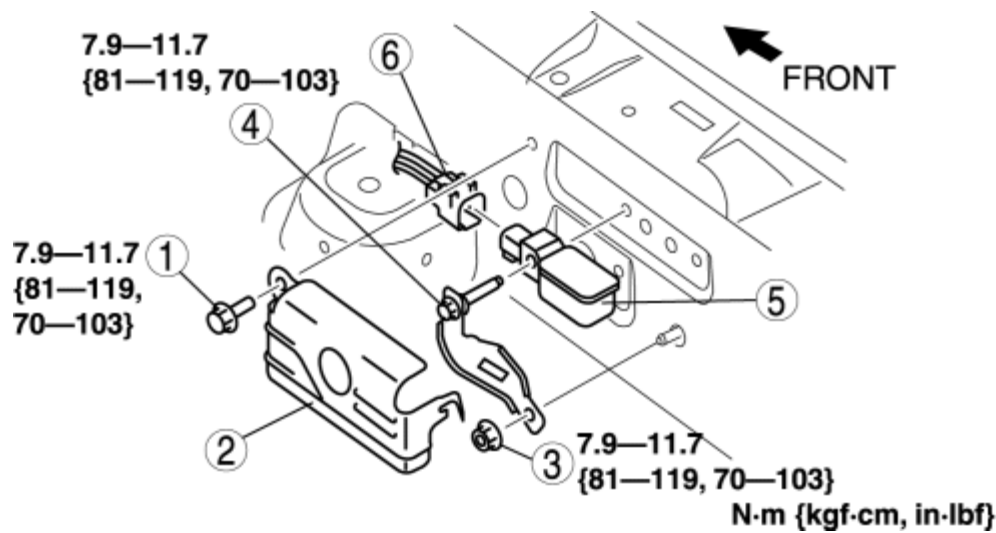
[Back to Top](#)

2011 - RX-8 - Restraints

SIDE AIR BAG SENSOR REMOVAL/INSTALLATION

WARNING:

- Handling the side air bag sensor improperly can accidentally operate (deploy) the air bag module, which may seriously injure you. Read the service warnings and cautions before handling the side air bag sensor. (See [AIR BAG SYSTEM SERVICE WARNINGS.](#)) (See [AIR BAG SYSTEM SERVICE CAUTIONS.](#))
1. Turn the ignition switch to the LOCK position.
 2. Disconnect the negative battery cable and wait for **1 min or more**.
 3. Remove the inner scuff plate. (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
 4. Remove the seat belt rail for the front seat. (See [FRONT SEAT BELT REMOVAL/INSTALLATION.](#))
 5. Partially peel back the floor covering.
 6. Remove in the order indicated in the table.



1	Bolt A
2	Cover

3	Nut
4	Bolt B
5	Side air bag sensor
6	Connector

7. Install in the reverse order of removal.

8. Turn the ignition switch to the ON position and hold for **5 s or more**.

CAUTION:

- When replacing the side air bag sensor, performing the following operations while turning the ignition switch to the ON position will cancel the sensor code over-write, which could cause the air bags to fail to operate (deploy).
 - The ignition switch is not held in the LOCK position for **5 s or more**.
 - The engine is started.
 - If the above operations are performed and the sensor code over-write is canceled, it will be necessary to replace the sensor again.
9. Verify that the air bag system warning light illuminates for **approx. 6 s** and goes out.
- If the air bag system warning light does not operate normally, refer to the on-board diagnostic system (air bag system) and perform inspection of the system.

[< Previous](#) [Next >](#)

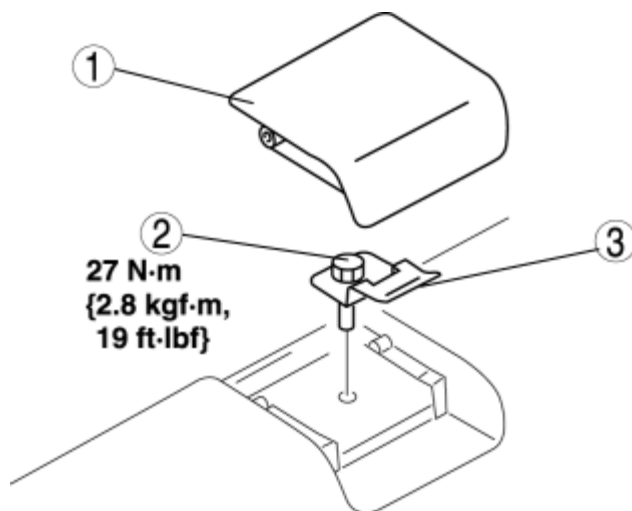
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Restraints

CHILD-RESTRAINT SEAT ANCHOR REMOVAL/INSTALLATION

1. Remove in the order indicated in the table.

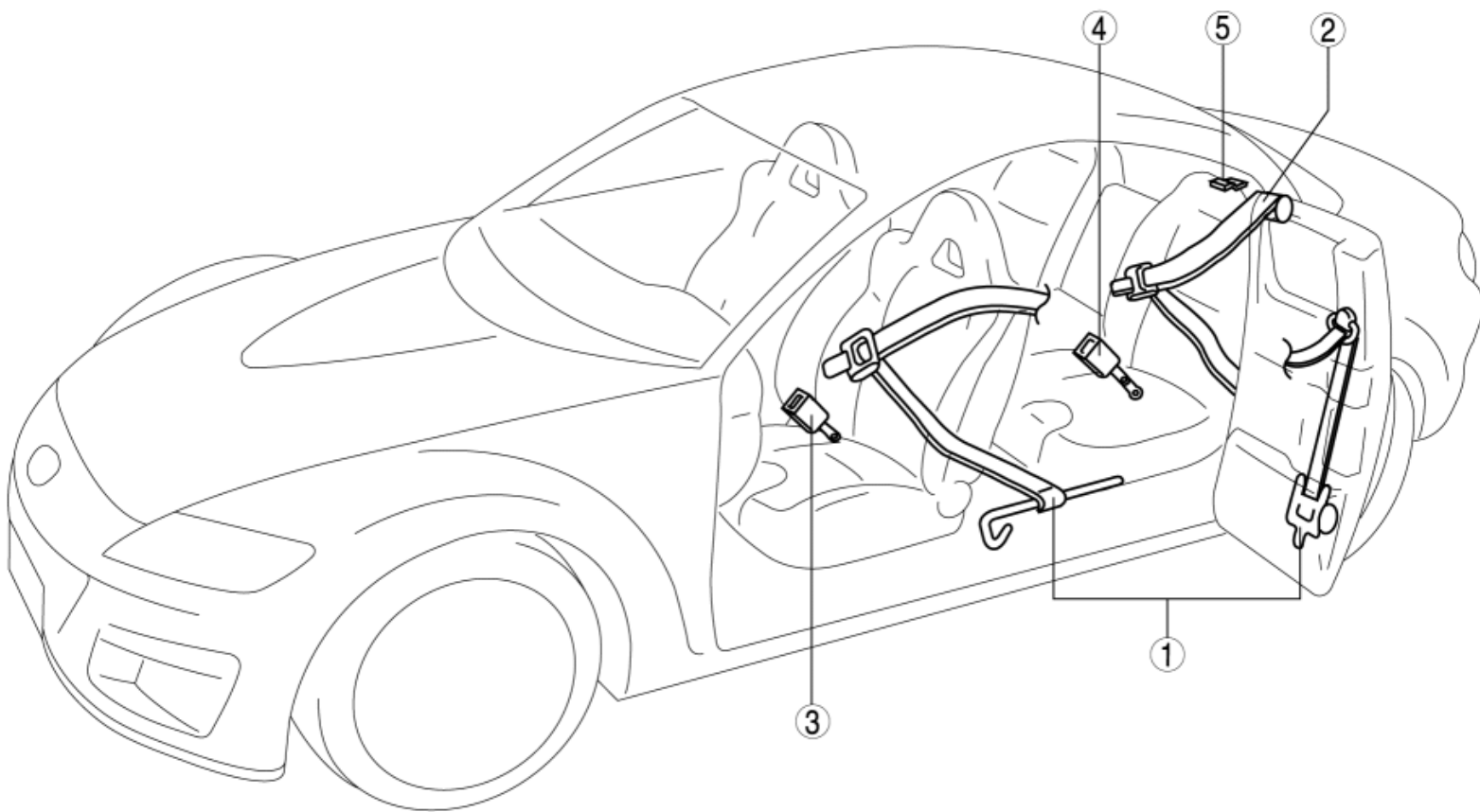


1	Cover
2	Bolt
3	Child restraint seat anchor

2. Install in the reverse order of removal.

2011 - RX-8 - Restraints

LOCATION INDEX



1 Front seat belt

(See [FRONT SEAT BELT REMOVAL/INSTALLATION.](#))

(See [LOCK RELEASE SOLENOID INSPECTION.](#))

(See [SEAT BELT INSPECTION.](#))

2 Rear seat belt

(See [REAR SEAT BELT REMOVAL/INSTALLATION.](#))

(See [SEAT BELT INSPECTION.](#))

3 Front buckle

(See [FRONT BUCKLE REMOVAL/INSTALLATION.](#))

(See [FRONT BUCKLE SWITCH INSPECTION.](#))

4Rear buckle

(See [REAR BUCKLE REMOVAL/INSTALLATION.](#))

5Child restraint seat anchor

(See [CHILD-RESTRAINT SEAT ANCHOR REMOVAL/INSTALLATION.](#))

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Restraints

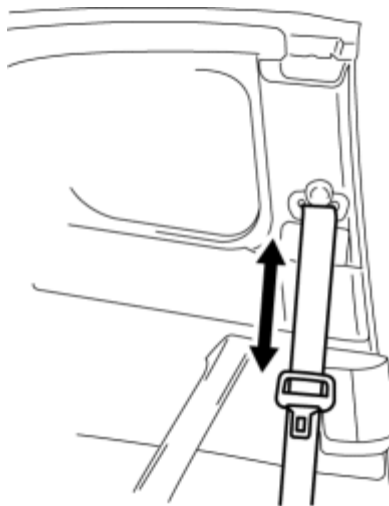
SEAT BELT INSPECTION

Belt

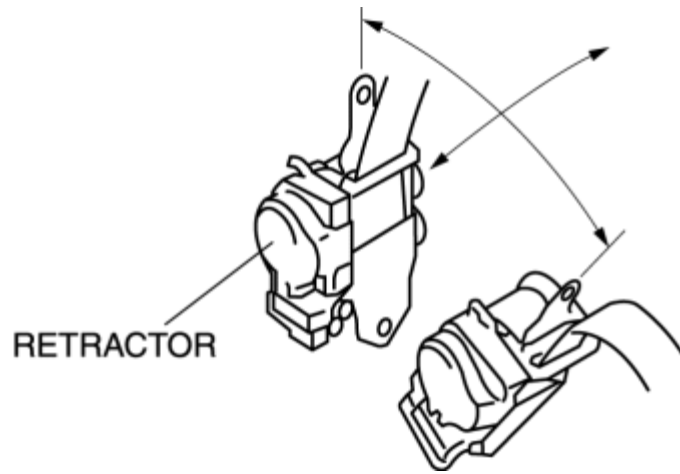
1. Verify that the belt is installed properly with no twisting or kinks.
2. Verify that there is no damage to the seat belt and no deformation of the metal fittings.
 - If there is any malfunction, replace the seat belt.

ELR

1. Verify that the belt can be pulled out smoothly, and that it retracts smoothly.



- If there is any malfunction, replace the seat belt.
2. Verify that the retractor locks when the belt is pulled quickly.
 - If there is any malfunction, replace the seat belt.
 3. Remove the retractor.
 4. While pulling the seat belt out, make sure that the seat belt does not lock when the retractor is tilted slowly **up to 15°** from the mounted position and locks when the retractor is tilted **40° or more**.



- If there is any malfunction, replace the seat belt.

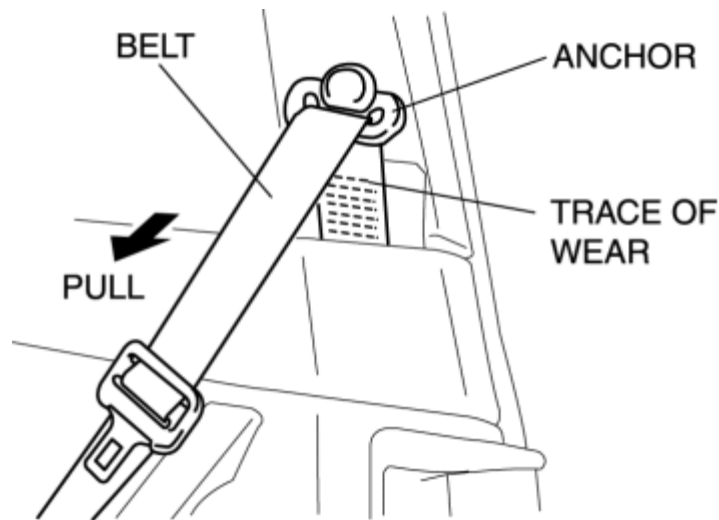
ALR

1. Pull the belt out fully to change the lock mode from ELR to ALR.
2. Verify that retractor makes a clicking sound as the belt slowly retracts. If no sound is heard, the lock mode has not changed to ALR. If necessary, repeat Step 1.
 - If there is any malfunction, replace the seat belt.
3. Verify that the retractor locks when pulled.
 - If there is any malfunction, replace the seat belt.
4. Verify that the lock mode changes to ELR when the belt is fully pulled out.
 - If there is any malfunction, replace the seat belt.

Load Limiter Retractor

WARNING:

- When the load limiter operates, the belt and anchor rub against each other strongly leaving wear tracks. If the seat belt is used in this state, the seat belt will not function as its full capability and there is the possibility of serious injury to passengers. Be sure to replace the seat belt once the load limiter operates.
1. If the vehicle has been subjected to a shock in an accident, pull the belt from the retractor and confirm that there are no wear tracks (the load limiter has not operated) by visually inspecting and feeling the belt.



- If there is any malfunction, replace the seat belt.

Seat Belt Lock Release

1. With the front seat belts unbuckled, close all the doors (door switch off).
 2. Open either one of the front doors, then press the door switch by hand (door switch off).
 3. When releasing the door switch (door switch on), confirm on both sides that the operation sound of the lock release solenoids is heard.
- If there is any malfunction, inspect the following parts:
 - Lock release solenoid (See [LOCK RELEASE SOLENOID INSPECTION](#).)
 - Door switch (See [DOOR SWITCH INSPECTION](#).)
 - Keyless control module (without advanced keyless entry and start system) (See [KEYLESS CONTROL MODULE INSPECTION \[WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM 1.\]](#))
 - Door lock control module (with advanced keyless entry and start system) (See [DOOR LOCK CONTROL MODULE INSPECTION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#).)
4. With the front seat belts unbuckled, open all the doors (door switch on).
 5. When either one of driver-side or passenger-side seat belts is buckled (front buckle switch on), confirm that the operation sound of the lock release solenoid is heard for the buckled seat belt (lock release solenoid off).

- If there is any malfunction, inspect the following parts:
 - Lock release solenoid (See [LOCK RELEASE SOLENOID INSPECTION](#).)

- Front buckle switch (See [FRONT BUCKLE SWITCH INSPECTION](#).)
- Keyless control module (without advanced keyless entry and start system) (See [KEYLESS CONTROL MODULE INSPECTION \[WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM 1.\]](#))
- Door lock control module (with advanced keyless entry and start system) (See [DOOR LOCK CONTROL MODULE INSPECTION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#).)

[< Previous](#) [Next >](#)

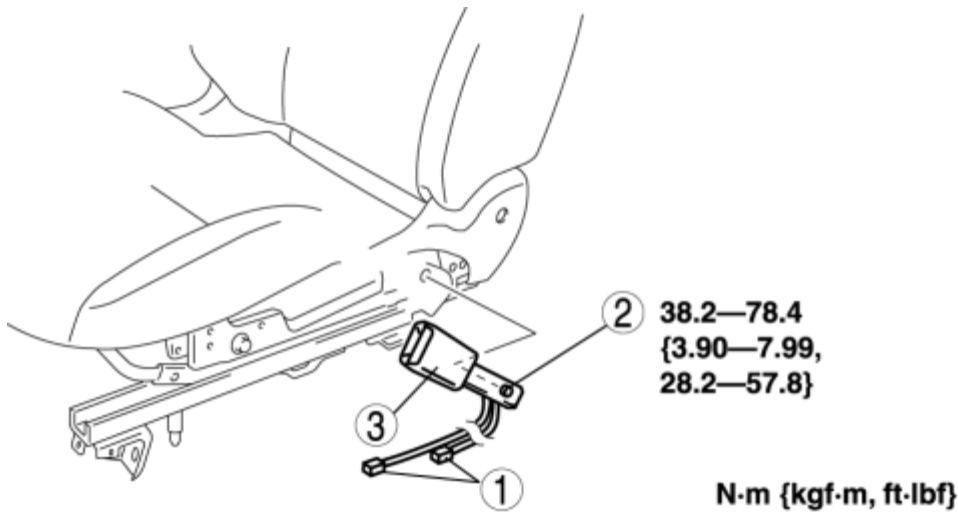
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Restraints

FRONT BUCKLE REMOVAL/INSTALLATION

- 1. Remove the front seat. (See [FRONT SEAT REMOVAL/INSTALLATION](#).)
- 2. Remove in the order indicated in the table.



1	Connector
2	Bolt
3	Front buckle

- 3. Install in the reverse order of removal.

2011 - RX-8 - Restraints

FRONT SEAT BELT REMOVAL/INSTALLATION

WARNING:

- Handling the front seat belt (pre-tensioner seat belt) improperly can accidentally deploy the pre-tensioner, which may seriously injure you. Read the service warnings and cautions before handling the front seat belt. (See [AIR BAG SYSTEM SERVICE WARNINGS](#).) (See [AIR BAG SYSTEM SERVICE CAUTIONS](#).)

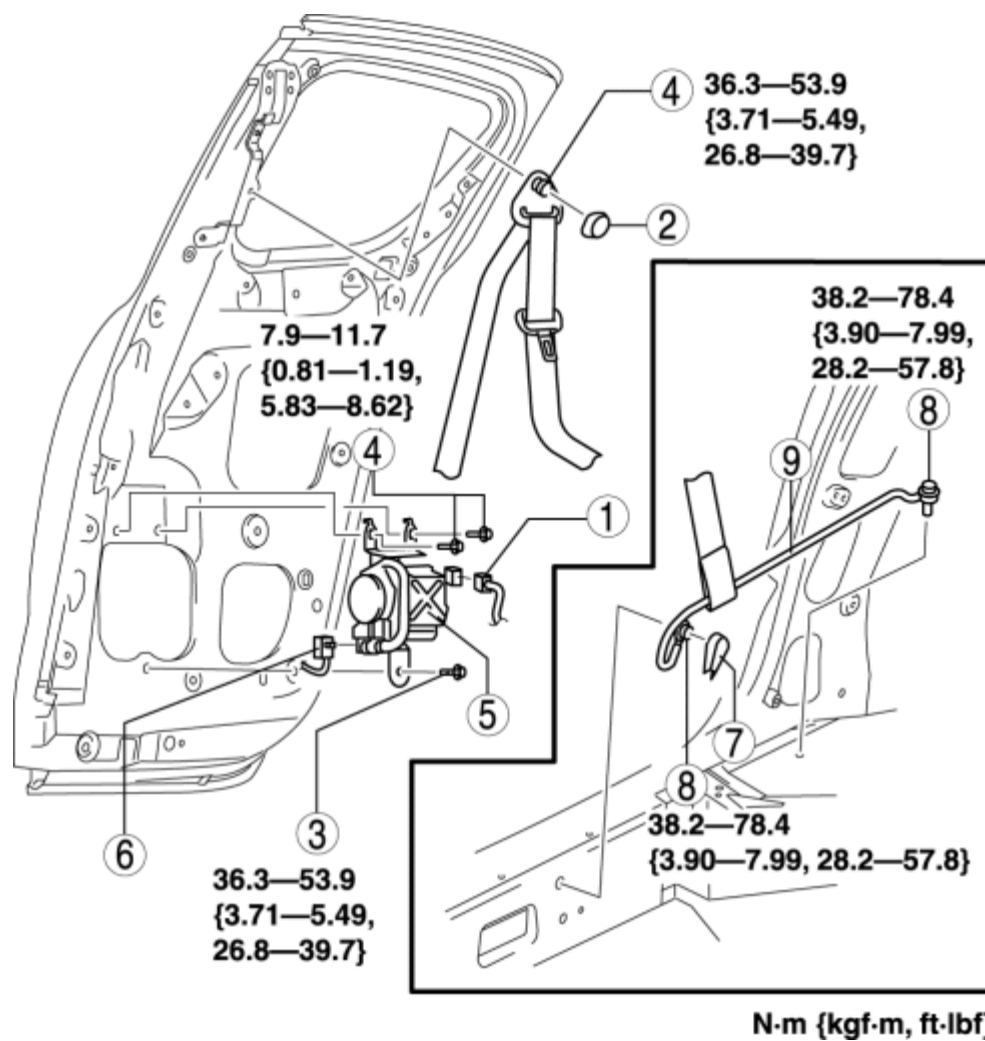
WARNING:

- The side air bag sensor is attached below the seat belt rail. When working around the seat belt rail, disconnect the negative battery cable or work carefully, avoiding excessive impact to the area below the seat belt rail.

CAUTION:

- The ELR (emergency locking retractor) has a spring that will unwind if the retractor cover is removed. The spring cannot be rewound by hand. If this occurs, the ELR will not work properly. Therefore, do not disassemble the retractor.

1. Turn the ignition switch to the LOCK position.
2. Disconnect the negative battery cable and wait for **1 min or more**.
3. Remove the rear door lower trim. (See [REAR DOOR LOWER TRIM REMOVAL/INSTALLATION](#).)
4. Remove the rear door upper trim. (See [REAR DOOR UPPER TRIM REMOVAL/INSTALLATION](#).)
5. Remove the rear seat cushion. (See [REAR SEAT REMOVAL/INSTALLATION](#).)
6. Remove in the order indicated in the table.



1	Lock release solenoid connector
2	Cover A
3	Bolt A
4	Bolt B
5	Front seat belt
6	Pre-tensioner seat belt connector
	(See Pre-tensioner Seat Belt Connector Removal Note.)
7	Cover B

8Bolt C
9Seat belt rail

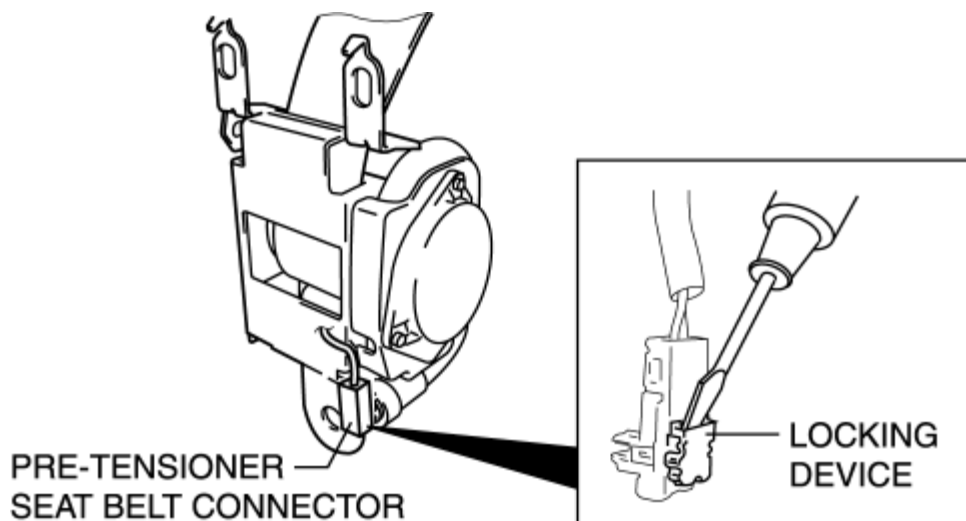
7. Install in the reverse order of removal.

8. Verify that the air bag system warning light illuminates for **approx. 6 s** and then goes out when the ignition switch is turned to the ON position.

- If the air bag system warning light does not operate, refer to the on-board diagnostic system and perform inspection of the system.

Pre-tensioner Seat Belt Connector Removal Note

1. Using a flathead screwdriver, lift the locking device carefully, however do not remove it.



2. Disconnect the pre-tensioner seat belt connector.

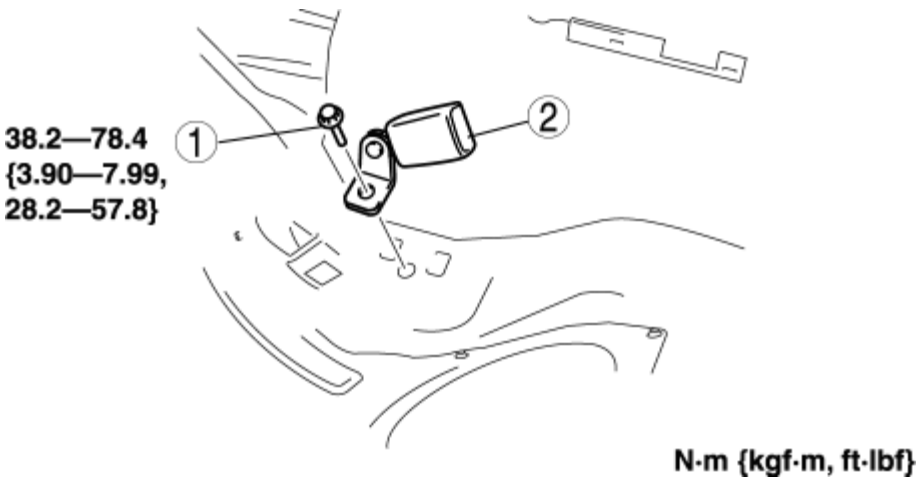
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Restraints

REAR BUCKLE REMOVAL/INSTALLATION

- 1. Remove the rear seat cushion. (See [REAR SEAT REMOVAL/INSTALLATION.](#))
- 2. Remove in the order indicated in the table.



1 Bolt
2 Rear buckle

- 3. Install in the reverse order of removal.

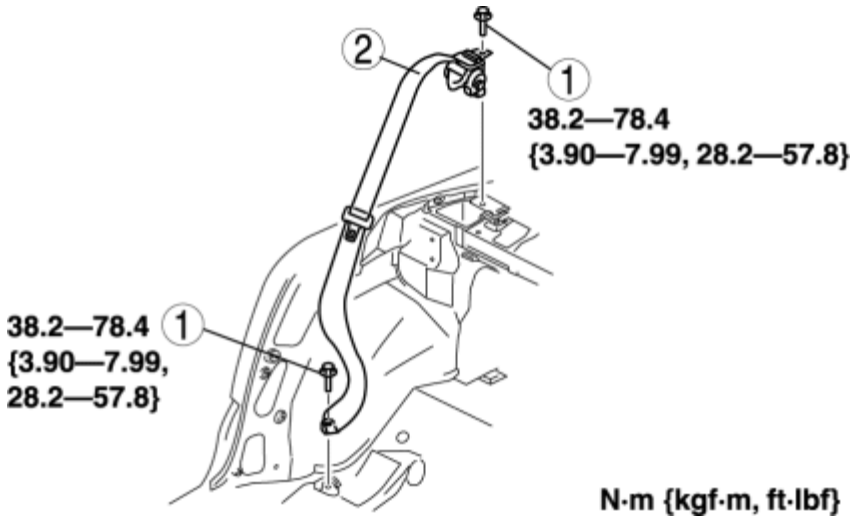
2011 - RX-8 - Restraints

REAR SEAT BELT REMOVAL/INSTALLATION

CAUTION:

- The ELR (emergency locking retractor) has a spring that will unwind if the retractor cover is removed. The spring cannot be rewound by hand. If this occurs, the ELR will not work properly. Therefore, do not disassemble the retractor.

1. Remove the rear seat. (See [REAR SEAT REMOVAL/INSTALLATION](#).)
2. Remove the front console. (See [CONSOLE REMOVAL/INSTALLATION](#).)
3. Remove the rear console. (See [CONSOLE REMOVAL/INSTALLATION](#).)
4. Remove the rear package trim. (See [REAR PACKAGE TRIM REMOVAL/INSTALLATION](#).)
5. Remove in the order indicated in the table.



1	Bolt
2	Rear seat belt

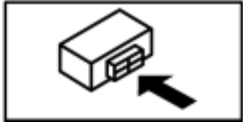
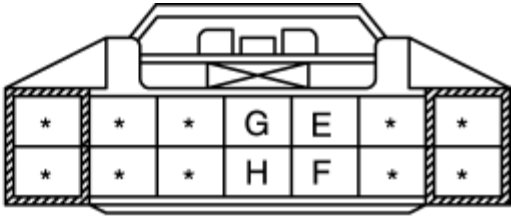
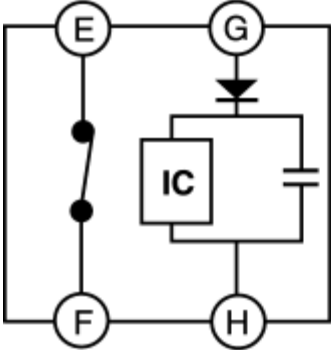
6. Install in the reverse order of removal.

2011 - RX-8 - Restraints

FRONT BUCKLE SWITCH INSPECTION

Driver-Side

- 1. Disconnect the negative battery cable.
- 2. Disconnect the buckle switch connector.
- 3. Verify continuity as indicated in the table.
 - If not as indicated in the table, replace the front buckle.

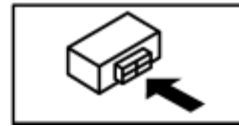
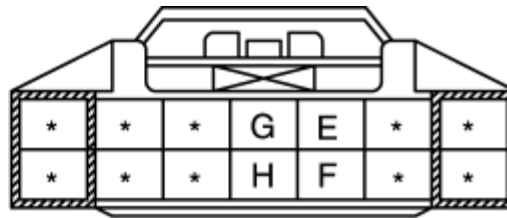
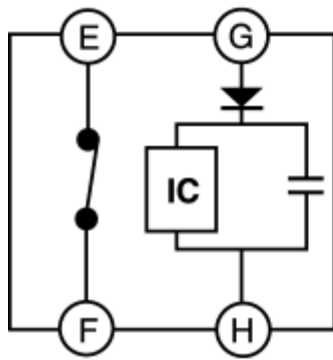


○ — ○ : Continuity

Seat belt	Terminal			
	E	F	G	H
Fastened			○ — ○	○ — ○
Unfastened	○ — ○	○ — ○	○ — ○	○ — ○

Passenger-Side

- 1. Disconnect the negative battery cable.
- 2. Disconnect the buckle switch connector.
- 3. Verify continuity as indicated in the table.
 - If not as indicated in the table, replace the front buckle.



○ — ○ : Continuity

Seat belt	Terminal			
	E	F	G	H
Fastened			○ — ○	
Unfastened	○ — ○		○ — ○	

[< Previous](#) [Next >](#)

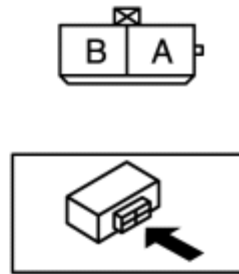
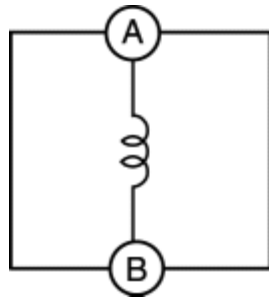
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Restraints

LOCK RELEASE SOLENOID INSPECTION

1. Disconnect the negative battery cable.
2. Remove the rear door lower trim. (See [REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.](#))
3. Disconnect the lock release solenoid connector.
4. Measure the resistance of the lock release solenoid individually.
 - If not within the specification, replace the front seat belt.



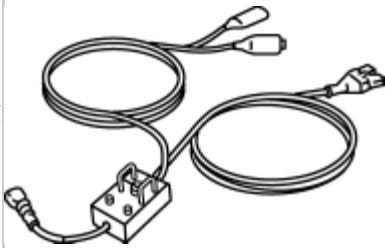
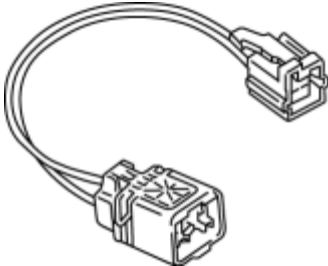


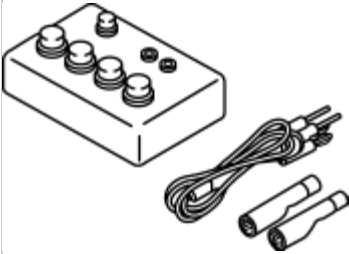
Standard

- 54—66 ohms

[< Previous](#)

2011 - RX-8 - Restraints

RESTRAINTS SST

49 H066 002 Deployment tool		49 D066 002 Adapter harness		49 L066 002 Adapter harness	
49 G066 003 Adapter harness		49 N088 0A0 Fuel and Thermometer checker		-	

[< Previous](#)

[Back to Top](#)

Workshop Manual - Body and Accessories

2011 - RX-8

On-Board Diagnostics

- [SYSTEM WIRING DIAGRAM \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DTC INSPECTION \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [CLEARING DTC \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DTC TABLE \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [PID/DATA MONITOR INSPECTION \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [PID/DATA MONITOR TABLE \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DTC B1093 \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DTC B112A \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DTC B1126 \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DTC B1127 \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DTC B1128 \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DTC B1129 \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DTC B1131 \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DTC B1132 \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DTC B1133 \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DTC B1134 \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DTC B1317/B1318 \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DTC B1342 \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DTC B2170 \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DTC B2477 \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DTC U0214 \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DTC U0236 \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DTC U2023 \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)

On-Board Diagnostics

- [FOREWORD \[IMMOBILIZER SYSTEM\]](#)
- [DTC INSPECTION \(IMMOBILIZER SYSTEM\) \[IMMOBILIZER SYSTEM\]](#)
- [CLEARING DTC \[IMMOBILIZER SYSTEM\]](#)
- [DTC TABLE \(IMMOBILIZER SYSTEM\) \[IMMOBILIZER SYSTEM\]](#)
- [PID/DATA MONITOR INSPECTION \[IMMOBILIZER SYSTEM\]](#)
- [PID/DATA MONITOR TABLE \[IMMOBILIZER SYSTEM\]](#)
- [SECURITY LIGHT: 11, DTC B1681/P1260 \[IMMOBILIZER SYSTEM\]](#)
- [SECURITY LIGHT: 12, DTC B2103/P1260 \[IMMOBILIZER SYSTEM\]](#)
- [SECURITY LIGHT: 13, DTC B1600/P1260 \[IMMOBILIZER SYSTEM\]](#)
- [SECURITY LIGHT: 14, DTC B1602/P1260 \[IMMOBILIZER SYSTEM\]](#)
- [SECURITY LIGHT: 13, DTC B2431/P1260 \[IMMOBILIZER SYSTEM\]](#)

- [SECURITY LIGHT: 15, DTC B1601/P1260 \[IMMOBILIZER SYSTEM\]](#)
- [SECURITY LIGHT: 16, DTC U2510/P1260, U1147/P1260 \[IMMOBILIZER SYSTEM\]](#)
- [SECURITY LIGHT: 21, DTC B1213/P1260 \[IMMOBILIZER SYSTEM\]](#)
- [SECURITY LIGHT: 22, DTC B2141/P1260 \[IMMOBILIZER SYSTEM\]](#)
- [SECURITY LIGHT: 23, DTC B2139/P1260 \[IMMOBILIZER SYSTEM\]](#)
- [DTC B1342 \(KEYLESS CONTROL MODULE\) \[IMMOBILIZER SYSTEM\]](#)

On-Board Diagnostics

- [FOREWORD \[MULTIPLEX COMMUNICATION SYSTEM\]](#)
- [DTC TABLE \[MULTIPLEX COMMUNICATION SYSTEM\]](#)
- [PID/DATA MONITOR INSPECTION \[MULTIPLEX COMMUNICATION SYSTEM\]](#)
- [PID/DATA MONITOR TABLE \[MULTIPLEX COMMUNICATION SYSTEM\]](#)
- [DETERMINING OPEN CIRCUIT LOCATION \(HS-CAN\) \[MULTIPLEX COMMUNICATION SYSTEM\]](#)
- [DETERMINING OPEN CIRCUIT LOCATION \(MS-CAN\) \[MULTIPLEX COMMUNICATION SYSTEM\]](#)
- [M-MDS AND VEHICLE NOT COMMUNICATING \[MULTIPLEX COMMUNICATION SYSTEM\]](#)
- [DTC U0073, U1900, U2516 \[MULTIPLEX COMMUNICATION SYSTEM\]](#)
- [DTC U2516, 16:Er12, DEVICE CODE:16 ERROR CODE:12, 26:Er81, DEVICE CODE:26 ERROR CODE:81 \[MULTIPLEX COMMUNICATION SYSTEM\]](#)

On-Board Diagnostics

- [DTC INSPECTION \[INSTRUMENT CLUSTER\]](#)
- [CLEARING DTC \[INSTRUMENT CLUSTER\]](#)
- [DTC TABLE \[INSTRUMENT CLUSTER\]](#)
- [PID/DATA MONITOR INSPECTION \[INSTRUMENT CLUSTER\]](#)
- [PID/DATA MONITOR TABLE \[INSTRUMENT CLUSTER\]](#)
- [DTC B1342 \[INSTRUMENT CLUSTER\]](#)
- [DTC B2477 \[INSTRUMENT CLUSTER\]](#)
- [DTC U2023 \[INSTRUMENT CLUSTER\]](#)
- [DTC U2064 \[INSTRUMENT CLUSTER\]](#)

On-Board Diagnostics

- [STARTING PROCEDURE FOR ON-BOARD DIAGNOSTIC TEST MODE \[AUDIO\]](#)
- [SUPPLIER IDENTIFICATION PROCEDURE \[AUDIO\]](#)
- [CLEARING DTC \[AUDIO\]](#)
- [DTC TABLE \[AUDIO\]](#)
- [DIAGNOSTIC ASSIST FUNCTION \[AUDIO\]](#)

On-Board Diagnostics

- [STARTING PROCEDURE FOR ON-BOARD DIAGNOSTIC TEST MODE \[CAR-NAVIGATION SYSTEM\]](#)
- [SUPPLIER IDENTIFICATION PROCEDURE \[CAR-NAVIGATION SYSTEM\]](#)
- [CLEARING DTC \[CAR-NAVIGATION SYSTEM\]](#)
- [DTC TABLE \[CAR-NAVIGATION SYSTEM\]](#)
- [DIAGNOSTIC ASSIST FUNCTION \[CAR-NAVIGATION SYSTEM\]](#)
- [STARTING PROCEDURE FOR DIAGNOSTIC MODE \[CAR-NAVIGATION SYSTEM\]](#)
- [DIAGNOSTIC CHECK \[CAR-NAVIGATION SYSTEM\]](#)
- [NAVIGATION CHECK \[CAR-NAVIGATION SYSTEM\]](#)

On-Board Diagnostics

- [STARTING PROCEDURE FOR ON-BOARD DIAGNOSTIC TEST MODE \[HANDS-FREE TELEPHONE \(HF/TEL\)\]](#)

SYSTEM]

- [CLEARING DTC \[HANDS-FREE TELEPHONE \(HF/TEL\) SYSTEM\]](#)
- [DTC TABLE \[HANDS-FREE TELEPHONE \(HF/TEL\) SYSTEM\]](#)
- [DIAGNOSTIC ASSIST FUNCTION \[HANDS-FREE TELEPHONE \(HF/TEL\) SYSTEM\]](#)

On-Board Diagnostics

- [DTC INSPECTION \[AUTO LIGHT/WIPER CONTROL MODULE\]](#)
- [CLEARING DTC \[AUTO LIGHT/WIPER CONTROL MODULE\]](#)
- [DTC TABLE \[AUTO LIGHT/WIPER CONTROL MODULE\]](#)
- [DTC B1014 \[AUTO LIGHT/WIPER CONTROL MODULE\]](#)
- [DTC B1317 \[AUTO LIGHT/WIPER CONTROL MODULE\]](#)
- [DTC B1318 \[AUTO LIGHT/WIPER CONTROL MODULE\]](#)
- [DTC B1342 \[AUTO LIGHT/WIPER CONTROL MODULE\]](#)
- [DTC U2030 \[AUTO LIGHT/WIPER CONTROL MODULE\]](#)

Symptom Troubleshooting

- [POWER WINDOW SYSTEM WIRING DIAGRAM \[POWER WINDOW SYSTEM \(WITH EXTERIOR OPEN/CLOSE FUNCTION\)\]](#)
- [FOREWORD \[POWER WINDOW SYSTEM \(WITH EXTERIOR OPEN/CLOSE FUNCTION\)\]](#)
- [SYMPTOM TROUBLESHOOTING CHART \[POWER WINDOW SYSTEM \(WITH EXTERIOR OPEN/CLOSE FUNCTION\)\]](#)
- [INTERMITTENT CONCERN TROUBLESHOOTING \[POWER WINDOW SYSTEM \(WITH EXTERIOR OPEN/CLOSE FUNCTION\)\]](#)
- [BASIC POWER WINDOW SYSTEM INSPECTION \[POWER WINDOW SYSTEM \(WITH EXTERIOR OPEN/CLOSE FUNCTION\)\]](#)
- [No.1 DOOR GLASS DOES NOT MOVE UP AND DOWN IN AUTOMATIC MODE \[POWER WINDOW SYSTEM \(WITH EXTERIOR OPEN/CLOSE FUNCTION\)\]](#)
- [No.2 DOOR GLASS DOES NOT REVERSE, EVEN WHEN ENCOUNTERING A FOREIGN OBJECT IN IT IS PATH \[POWER WINDOW SYSTEM \(WITH EXTERIOR OPEN/CLOSE FUNCTION\)\]](#)
- [No.3 DOOR GLASS REVERSES EVEN THOUGH THE GLASS DOES NOT ENCOUNTER A FOREIGN OBJECT WHILE IT IS MOVING UP IN AUTOMATIC MODE \[POWER WINDOW SYSTEM \(WITH EXTERIOR OPEN/CLOSE FUNCTION\)\]](#)
- [No.4 ABNORMAL NOISE WHILE THE DOOR GLASS IS OPENING OR CLOSING \[POWER WINDOW SYSTEM \(WITH EXTERIOR OPEN/CLOSE FUNCTION\)\]](#)

Symptom Troubleshooting

- [SYMPTOM TROUBLESHOOTING CHART \[EXTERIOR OPEN/CLOSE FUNCTION\]](#)
- [QUICK DIAGNOSTIC CHART \[EXTERIOR OPEN/CLOSE FUNCTION\]](#)
- [No.1 DOOR GLASS DOES NOT OPERATE EVEN THOUGH VARIOUS OPERATIONS ARE PERFORMED \[EXTERIOR OPEN/CLOSE FUNCTION\]](#)
- [No.2 DOOR GLASS DOES NOT OPERATE USING THE KEYLESS TRANSMITTER \[EXTERIOR OPEN/CLOSE FUNCTION\]](#)
- [No.3 DOOR GLASS DOES NOT OPERATE USING THE REQUEST SWITCH \[EXTERIOR OPEN/CLOSE FUNCTION\]](#)
- [No.4 SOME DOOR GLASS DO NOT OPERATE \[EXTERIOR OPEN/CLOSE FUNCTION\]](#)
- [No.5 DOOR GLASS STOPS BEFORE FULLY OPENING/CLOSING \[EXTERIOR OPEN/CLOSE FUNCTION\]](#)
- [No.6 DOOR GLASS REVERSES BEFORE IT FULLY OPENS \[EXTERIOR OPEN/CLOSE FUNCTION\]](#)
- [No.7 ALL DOOR GLASS OPERATE ACCIDENTALLY \[EXTERIOR OPEN/CLOSE FUNCTION\]](#)
- [No.8 PART OF DOOR GLASS OPERATES ACCIDENTALLY \[EXTERIOR OPEN/CLOSE FUNCTION\]](#)

Symptom Troubleshooting

- [SYMPTOM TROUBLESHOOTING CHART \[HEADLIGHT AUTO LEVELING SYSTEM\]](#)
- [No.1 AUTO LEVELING WARNING LIGHT ILLUMINATES WHEN THE IGNITION SWITCH TURNED TO ON POSITION \[HEADLIGHT AUTO LEVELING SYSTEM\]](#)
- [No.2 AUTO LEVELING SYSTEM DOES NOT ADJUST OPTICAL AXIS OF THE HEADLIGHTS FOR VEHICLE POSTURE \[HEADLIGHT AUTO LEVELING SYSTEM\]](#)

Symptom Troubleshooting

- [FOREWORD \[KEYLESS ENTRY SYSTEM\]](#)
- [SYMPTOM TROUBLESHOOTING INDEX \[KEYLESS ENTRY SYSTEM\]](#)
- [KEYLESS ENTRY SYSTEM WIRING DIAGRAM \[KEYLESS ENTRY SYSTEM\]](#)
- [KEYLESS ENTRY SYSTEM PRELIMINARY INSPECTION \[KEYLESS ENTRY SYSTEM\]](#)
- [KEYLESS ENTRY SYSTEM ON-BOARD DIAGNOSIS \[KEYLESS ENTRY SYSTEM\]](#)
- [NO.1 ONE OR MORE ON-BOARD DIAGNOSTIC FUNCTIONS INOPERATIVE \[KEYLESS ENTRY SYSTEM\]](#)
- [NO.2 ALL ON-BOARD DIAGNOSTIC FUNCTIONS INOPERATIVE \[KEYLESS ENTRY SYSTEM\]](#)
- [NO.3 TRANSMITTER ID CODE CANNOT BE REPROGRAMMED \[KEYLESS ENTRY SYSTEM\]](#)

Symptom Troubleshooting

- [SYMPTOM TROUBLESHOOTING INDEX \[INSTRUMENT CLUSTER\]](#)
- [QUICK DIAGNOSTIC CHART \[INSTRUMENT CLUSTER\]](#)
- [NO. 1 FUEL GAUGE NEEDLE POSITION INCORRECT \[INSTRUMENT CLUSTER\]](#)
- [NO. 2 ALL METERS AND GAUGES DO NOT OPERATE \[INSTRUMENT CLUSTER\]](#)
- [NO. 3 ABS WARNING LIGHT ILLUMINATES \[INSTRUMENT CLUSTER\]](#)
- [NO. 4 MIL ILLUMINATES \[INSTRUMENT CLUSTER\]](#)
- [NO. 5 BRAKE SYSTEM WARNING LIGHT ILLUMINATES \[INSTRUMENT CLUSTER\]](#)
- [NO. 6 INSTRUMENT CLUSTER ILLUMINATION DOES NOT ILLUMINATE \[INSTRUMENT CLUSTER\]](#)
- [NO. 7 SPEEDOMETER INDICATION IS DEFECTIVE \[INSTRUMENT CLUSTER\]](#)
- [NO. 8 TACHOMETER INDICATION IS DEFECTIVE \[INSTRUMENT CLUSTER\]](#)
- [NO. 9 WATER TEMPERATURE GAUGE INDICATION IS DEFECTIVE \[INSTRUMENT CLUSTER\]](#)

Symptom Troubleshooting

- [FOREWORD \[AUDIO\]](#)
- [CONFIRMATION STEP 1: AUDIO PANEL SWITCH CONFIRMATION \[AUDIO\]](#)
- [CONFIRMATION STEP 2: AUDIO CONTROL SWITCH CONFIRMATION \[AUDIO\]](#)
- [NO.1 AF NOISE OR POP NOISE AT ALL SOURCES \(RADIO, CD\) \[AUDIO\]](#)
- [NO.2 NO POWER ON THE ENTIRE AUDIO SYSTEM \[AUDIO\]](#)
- [NO.3 NO SOUND FROM ALL SPEAKERS \[AUDIO\]](#)
- [NO.4 NO SOUND FROM SOME SPEAKERS \[AUDIO\]](#)
- [NO.5 BROKEN SOUND OR POOR SOUND QUALITY \[AUDIO\]](#)
- [NO.6 SOUND BECOMES LOUDLY OR WEAKLY WHILE DRIVING THE VEHICLE \[AUDIO\]](#)
- [NO.7 ALC FUNCTION IS INOPERATIVE \[AUDIO\]](#)
- [NO.8 AudioPilot®2 FUNCTION IS INOPERATIVE \[AUDIO\]](#)
- [NO.9 AUDIO SYSTEM ILLUMINATION DOES NOT ILLUMINATE AT ALL \[AUDIO\]](#)
- [NO.10 LCD DOES NOT DISPLAY AT ALL \[AUDIO\]](#)

Symptom Troubleshooting

- [FOREWORD \[RADIO\]](#)
- [CONFIRMATION STEP 1: RECEPTION CONDITION SYMPTOM \(EXAMPLE\) \[RADIO\]](#)
- [CONFIRMATION STEP 2: ANTENNA SYSTEM SYMPTOM \(EXAMPLE\) \[RADIO\]](#)
- [CONFIRMATION STEP 3: ANTENNA SYSTEM SIMPLE INSPECTION \[RADIO\]](#)
- [NO.1 NO RADIO RECEPTION \(AM/FM\)/NO OR LOW VOLUME \[RADIO\]](#)
- [NO.2 NO RADIO RECEPTION \(SIRIUS SATELLITE RADIO\) \[RADIO\]](#)

- [NO.3 NOISE FROM RADIO \(AM ONLY\) \[RADIO\]](#)
- [NO.4 NOISE FROM RADIO \(FM ONLY\) \[RADIO\]](#)
- [NO.5 NOISE FROM RADIO \(SIRIUS SATELLITE RADIO ONLY\) \[RADIO\]](#)
- [NO.6 CANNOT TUNE \(SEEK DOES NOT STOP\) \[RADIO\]](#)
- [NO.7 CANNOT PRESET \(PRESET FUNCTION DOES NOT OPERATE\) \[RADIO\]](#)
- [NO.8 RECEPTION FREQUENCY OF RADIO SLIPS \[RADIO\]](#)
- [REFERENCE \[RADIO\]](#)

Symptom Troubleshooting

- [FOREWORD \[CD PLAYER/CHANGER\]](#)
- [NO.1 CD PLAYER/CHANGER DOES NOT LOAD THE CD OR EJECTS THE CD IMMEDIATELY \[CD PLAYER/CHANGER\]](#)
- [NO.2 CD PLAYER/CHANGER DOES NOT EJECT THE CD \[CD PLAYER/CHANGER\]](#)
- [NO.3 CD PLAYER/CHANGER DOES NOT PLAY THE CD/NO SOUND \[CD PLAYER/CHANGER\]](#)
- [NO.4 SOUND JUMPS \[CD PLAYER/CHANGER\]](#)
- [NO.5 CD PLAYER/CHANGER SCRATCHES ON THE CD \[CD PLAYER/CHANGER\]](#)
- [NO.6 DISC CHANGE IS INOPERATIVE \[CD PLAYER/CHANGER\]](#)
- [NO.7 CD PLAYER DOES NOT PLAY THE MP3-FORMATTED FILE \[CD PLAYER/CHANGER\]](#)
- [NO.8 MP3-FORMATTED FILE FOLDER SELECTION IS INOPERATIVE/TRACK SEARCH IS INOPERATIVE \[CD PLAYER/CHANGER\]](#)
- [NO.9 CD PLAYER DOES NOT INDICATE THE MP3 TITLE TEXT \[CD PLAYER/CHANGER\]](#)
- [NO.10 CD PLAYER DOES NOT PLAY THE AUDIO DATA \(CDDA\) \[CD PLAYER/CHANGER\]](#)
- [NO.11 TRACK CHANGE IS INOPERATIVE \[CD PLAYER/CHANGER\]](#)
- [AUDIO CD \[CD PLAYER/CHANGER\]](#)

Symptom Troubleshooting

- [FOREWORD \[CAR-NAVIGATION SYSTEM\]](#)
- [NO.1 CAR-NAVIGATION SYSTEM DOES NOT START OPERATION \(DISPLAY CHANGES TO BACK.\) \[CAR-NAVIGATION SYSTEM\]](#)
- [NO.2 SYSTEM DOES NOT CONTROL AUDIO BY AUDIO CONTROL SWITCH. \[CAR-NAVIGATION SYSTEM\]](#)
- [NO.3 SYSTEM DOES NOT LOAD MAP DISC. \[CAR-NAVIGATION SYSTEM\]](#)
- [NO.4 NO SOUND FROM AUDIO SYSTEM \[CAR-NAVIGATION SYSTEM\]](#)
- [NO.5 VEHICLE POSITION DEVIATES FROM THE ROUTE MAP \[CAR-NAVIGATION SYSTEM\]](#)
- [NO.6 NO VOICE NAVIGATION \[CAR-NAVIGATION SYSTEM\]](#)
- [NO.7 DISPLAY SCREEN DOES NOT CHANGE TO THE NIGHT MODE \(FRONT AND REAR COMBINATION LIGHTS OPERATE NORMALLY.\) \[CAR-NAVIGATION SYSTEM\]](#)
- [NO.8 SPEECH RECOGNITION DOES NOT START \[CAR-NAVIGATION SYSTEM\]](#)
- [REFERENCE INFORMATION \[CAR-NAVIGATION SYSTEM\]](#)

Symptom Troubleshooting

- [TROUBLESHOOTING INDEX \[IMMOBILIZER SYSTEM\]](#)
- [NO.1 SECURITY LIGHT DISPLAY IS NOT NORMAL \[IMMOBILIZER SYSTEM\]](#)

Symptom Troubleshooting

- [SYMPTOM TROUBLESHOOTING \[HANDS-FREE TELEPHONE \(HF/TEL\) SYSTEM\]](#)
- [No.1 HANDS-FREE TELEPHONE SYSTEM DOES NOT RECEIVE/TRANSMIT CALLS, DOES NOT CONNECT \[HANDS-FREE TELEPHONE \(HF/TEL\) SYSTEM\]](#)
- [No.2 CALLER'S VOICE VOLUME TOO LOW, OR NOISE INTERRUPTS CALL \[HANDS-FREE TELEPHONE \(HF/TEL\) SYSTEM\]](#)
- [No.3 ADDRESSEE'S VOICE VOLUME TOO LOW, OR NOISE INTERRUPTS CALL \[HANDS-FREE TELEPHONE \(HF/TEL\) SYSTEM\]](#)

Symptom Troubleshooting

- [FOREWORD \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [SYMPTOM TROUBLESHOOTING INDEX \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [KEYLESS ENTRY SYSTEM WIRING DIAGRAM \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [NO.1 DOOR CANNOT BE LOCKED/UNLOCKED BY TRANSMITTER \(CARD KEY\) \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [NO.2 BLINK KEYLESS INDICATOR LIGHT \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [NO.3 ADVANCED KEYLESS ENTRY FUNCTION INOPERATIVE \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [NO.4 ADVANCED KEYLESS START FUNCTION INOPERATIVE \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)

Body Panels

- [BODY PANELS LOCATION INDEX](#)
- [TRUNK LID REMOVAL/INSTALLATION](#)
- [TRUNK LID ADJUSTMENT](#)
- [STAY DAMPER DISPOSAL](#)
- [FUEL-FILLER LID REMOVAL/INSTALLATION](#)
- [FUEL-FILLER LID ADJUSTMENT](#)
- [HOOD REMOVAL/INSTALLATION](#)
- [HOOD ADJUSTMENT](#)
- [FRONT BUMPER REMOVAL/INSTALLATION](#)
- [FRONT BUMPER REINFORCEMENT REMOVAL/INSTALLATION](#)
- [FRONT BUMPER DISASSEMBLY/ASSEMBLY](#)
- [REAR BUMPER REMOVAL/INSTALLATION](#)
- [REAR BUMPER DISASSEMBLY/ASSEMBLY](#)
- [REAR BUMPER REINFORCEMENT REMOVAL/INSTALLATION](#)
- [FRONT FENDER PANEL REMOVAL/INSTALLATION](#)

Doors and Liftgate

- [DOORS LOCATION INDEX](#)
- [REAR DOOR REMOVAL/INSTALLATION](#)
- [FRONT DOOR REMOVAL/INSTALLATION](#)
- [DOOR ADJUSTMENT](#)
- [REAR DOOR ASSEMBLY/DISASSEMBLY](#)
- [FRONT DOOR UNIT REMOVAL/INSTALLATION](#)

Glass/Windows/Mirrors

- [GLASS/WINDOWS/MIRRORS LOCATION INDEX](#)
- [FRONT DOOR GLASS REMOVAL/INSTALLATION](#)
- [REAR DOOR GLASS REMOVAL/INSTALLATION](#)
- [POWER WINDOW REGULATOR REMOVAL/INSTALLATION](#)
- [POWER WINDOW MOTOR REMOVAL/INSTALLATION](#)
- [POWER WINDOW MOTOR INSPECTION](#)
- [POWER WINDOW MAIN SWITCH REMOVAL/INSTALLATION](#)
- [POWER WINDOW MAIN SWITCH INSPECTION](#)
- [POWER WINDOW SUBSWITCH REMOVAL/INSTALLATION](#)
- [POWER WINDOW SUBSWITCH INSPECTION](#)
- [POWER WINDOW INITIALIZATION PROCEDURE](#)
- [TWO-STEP DOWN FUNCTION OPERATIVE/NON-OPERATIVE SWITCHING PROCEDURE](#)

- [DOOR GLASS POSITION CHANGE PROCEDURE](#)
- [WINDSHIELD REMOVAL](#)
- [WINDSHIELD INSTALLATION](#)
- [REAR WINDOW GLASS REMOVAL](#)
- [REAR WINDOW GLASS INSTALLATION](#)
- [FILAMENT INSPECTION](#)
- [FILAMENT REPAIR](#)
- [POWER OUTER MIRROR SWITCH REMOVAL/INSTALLATION](#)
- [POWER OUTER MIRROR SWITCH INSPECTION](#)
- [POWER OUTER MIRROR REMOVAL/INSTALLATION](#)
- [POWER OUTER MIRROR DISASSEMBLY/ASSEMBLY](#)
- [POWER OUTER MIRROR INSPECTION](#)
- [REARVIEW MIRROR REMOVAL/INSTALLATION](#)
- [AUTO-DIMMING MIRROR INSPECTION](#)
- [BASE REMOVAL](#)
- [BASE INSTALLATION](#)

Seats

- [SEATS LOCATION INDEX](#)
- [FRONT SEAT REMOVAL/INSTALLATION](#)
- [FRONT SEAT BACK COMPONENT \[VEHICLES WITHOUT POWER SEAT SYSTEM\] REMOVAL/INSTALLATION](#)
- [FRONT SEAT BACK TRIM REMOVAL/INSTALLATION](#)
- [FRONT SEAT CUSHION TRIM REMOVAL/INSTALLATION](#)
- [FRONT SEAT SLIDE ADJUSTER REMOVAL/INSTALLATION](#)
- [FRONT SEAT SIDE COVER REMOVAL/INSTALLATION](#)
- [REAR SEAT REMOVAL/INSTALLATION](#)
- [REAR SEAT DISASSEMBLY/ASSEMBLY](#)
- [FRONT TILT MOTOR INSPECTION](#)
- [REAR TILT MOTOR INSPECTION](#)
- [SLIDE MOTOR INSPECTION](#)
- [RECLINER MOTOR INSPECTION](#)
- [LUMBAR SUPPORT MOTOR INSPECTION](#)
- [POWER SEAT SWITCH INSPECTION](#)
- [WALK-IN SWITCH REMOVAL/INSTALLATION](#)
- [WALK-IN SWITCH INSPECTION](#)
- [POSITION MEMORY CONTROL MODULE REMOVAL/INSTALLATION](#)
- [POSITION MEMORY SWITCH INSPECTION](#)
- [SEAT WARMER SWITCH REMOVAL/INSTALLATION](#)
- [SEAT WARMER SWITCH INSPECTION](#)
- [SEAT WARMER UNIT INSPECTION](#)

Security and Locks

- [SECURITY AND LOCKS LOCATION INDEX](#)
- [FRONT OUTER HANDLE REMOVAL/INSTALLATION](#)
- [FRONT INNER HANDLE REMOVAL/INSTALLATION](#)
- [DOOR LOCK SWITCH REMOVAL/INSTALLATION](#)
- [DOOR LOCK SWITCH INSPECTION](#)
- [HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION](#)
- [HOOD STRIKER REMOVAL/INSTALLATION](#)
- [HOOD LATCH SWITCH INSPECTION](#)
- [FUEL-FILLER LID OPENER REMOVAL/INSTALLATION](#)
- [FRONT DOOR KEY CYLINDER REMOVAL/INSTALLATION](#)
- [FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION](#)
- [FRONT DOOR LOCK ACTUATOR INSPECTION](#)

- [FRONT DOOR LOCK STRIKER REMOVAL/INSTALLATION](#)
- [REAR DOOR LOWER LATCH REMOVAL/INSTALLATION](#)
- [REAR DOOR UPPER LATCH SWITCH INSPECTION](#)
- [REAR DOOR UPPER LATCH REMOVAL/INSTALLATION](#)
- [REAR DOOR LOCK STRIKER REMOVAL/INSTALLATION](#)
- [REAR DOOR RELEASE HANDLE REMOVAL/INSTALLATION](#)
- [TRUNK LID LATCH AND OPENER REMOVAL/INSTALLATION](#)
- [TRUNK LID STRIKER REMOVAL/INSTALLATION](#)
- [TRUNK LID OPENER INSPECTION](#)
- [TRUNK LID OPENER SWITCH REMOVAL/INSTALLATION](#)
- [TRUNK KEY CYLINDER REMOVAL/INSTALLATION](#)
- [TRUNK LID OPENER SWITCH INSPECTION](#)
- [TRUNK KEY CYLINDER SWITCH INSPECTION](#)
- [KEYLESS CONTROL MODULE REMOVAL/INSTALLATION](#)
- [KEYLESS CONTROL MODULE INSPECTION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [KEYLESS CONTROL MODULE INSPECTION \[WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM \]](#)
- [KEYLESS CONTROL MODULE CONFIGURATION](#)
- [KEYLESS RECEIVER REMOVAL/INSTALLATION \[WITH KEYLESS ENTRY SYSTEM\]](#)
- [KEYLESS RECEIVER REMOVAL/INSTALLATION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [KEYLESS RECEIVER INSPECTION \[WITH KEYLESS ENTRY SYSTEM\]](#)
- [KEYLESS RECEIVER INSPECTION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [TRANSMITTER BATTERY REPLACEMENT \[WITH KEYLESS ENTRY SYSTEM\]](#)
- [TRANSMITTER ID CODE REGISTRATION \[WITH KEYLESS ENTRY SYSTEM\]](#)
- [IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING \[WITH KEYLESS ENTRY SYSTEM\]](#)
- [IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DOOR LOCK CONTROL MODULE REMOVAL/INSTALLATION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [DOOR LOCK CONTROL MODULE INSPECTION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [CARD KEY ID CODE REGISTRATION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [CLEARING CARD KEY \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [STEERING LOCK UNIT ID CODE REGISTRATION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [CUSTOMIZED FUNCTION SETTING PROCEDURE \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [KEYLESS ANTENNA REMOVAL/INSTALLATION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [KEYLESS BEEPER REMOVAL/INSTALLATION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [REQUEST SWITCH REMOVAL/INSTALLATION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [REQUEST SWITCH INSPECTION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [CARD KEY BATTERY REPLACEMENT \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [COIL ANTENNA REMOVAL/INSTALLATION](#)

Sunroof

- [SUNROOF LOCATION INDEX](#)
- [GLASS PANEL REMOVAL/INSTALLATION](#)
- [GLASS PANEL ADJUSTMENT](#)
- [SUNROOF UNIT REMOVAL/INSTALLATION](#)
- [SUNROOF UNIT DISASSEMBLY/ASSEMBLY](#)
- [FRONT DRAIN HOSE REMOVAL](#)
- [FRONT DRAIN HOSE INSTALLATION](#)
- [REAR DRAIN HOSE REMOVAL](#)
- [REAR DRAIN HOSE INSTALLATION](#)
- [SUNROOF MOTOR REMOVAL/INSTALLATION](#)
- [SUNROOF MOTOR INSPECTION](#)
- [SUNROOF SWITCH REMOVAL/INSTALLATION](#)

[SUNROOF SWITCH INSPECTION](#)

Exterior Trim

- [EXTERIOR TRIM LOCATION INDEX](#)
- [COWL GRILLE REMOVAL/INSTALLATION](#)
- [SIDE STEP MOLDING REMOVAL](#)
- [SIDE STEP MOLDING INSTALLATION](#)
- [EXTRACTOR CHAMBER REMOVAL/INSTALLATION](#)
- [FRONT BELTLINE MOLDING REMOVAL/INSTALLATION](#)
- [ROOF MOLDING REMOVAL](#)
- [ROOF MOLDING INSTALLATION](#)
- [FRONT MUDGUARD REMOVAL/INSTALLATION](#)
- [REAR SPOILER REMOVAL](#)
- [REAR SPOILER INSTALLATION](#)
- [AERODYNAMIC UNDER COVER REMOVAL/INSTALLATION](#)
- [FLOOR UNDER COVER REMOVAL/INSTALLATION](#)
- [SPLASH SHIELD REMOVAL/INSTALLATION](#)
- [REAR DEFLECTOR REMOVAL/INSTALLATION](#)
- [DOOR SASH FILM REMOVAL](#)
- [DOOR SASH FILM INSTALLATION](#)

Interior Trim

- [INTERIOR TRIM LOCATION INDEX](#)
- [DASHBOARD REMOVAL/INSTALLATION](#)
- [SPEAKER GRILLE REMOVAL/INSTALLATION](#)
- [CENTER PANEL REMOVAL/INSTALLATION](#)
- [DASHBOARD DISASSEMBLY/ASSEMBLY](#)
- [COLUMN COVER REMOVAL/INSTALLATION](#)
- [LOWER PANEL REMOVAL/INSTALLATION](#)
- [SIDE PANEL REMOVAL/INSTALLATION](#)
- [GLOVE COMPARTMENT REMOVAL/INSTALLATION](#)
- [VENTILATOR GRILLE REMOVAL/INSTALLATION](#)
- [KNEE BOLSTER REMOVAL/INSTALLATION](#)
- [DASHBOARD GARNISH REMOVAL/INSTALLATION](#)
- [CONSOLE REMOVAL/INSTALLATION](#)
- [CONSOLE DISASSEMBLY/ASSEMBLY](#)
- [A-PILLAR TRIM REMOVAL/INSTALLATION](#)
- [FRONT SIDE TRIM REMOVAL/INSTALLATION](#)
- [TIRE HOUSE TRIM REMOVAL/INSTALLATION](#)
- [REAR PACKAGE TRIM REMOVAL/INSTALLATION](#)
- [INNER SCUFF PLATE REMOVAL/INSTALLATION](#)
- [OUTER SCUFF PLATE REMOVAL/INSTALLATION](#)
- [ROOF SIDE TRIM REMOVAL/INSTALLATION](#)
- [REAR PILLAR TRIM REMOVAL/INSTALLATION](#)
- [INNER GARNISH REMOVAL/INSTALLATION](#)
- [REAR DOOR LOWER TRIM REMOVAL/INSTALLATION](#)
- [REAR DOOR UPPER TRIM REMOVAL/INSTALLATION](#)
- [TRUNK END TRIM REMOVAL/INSTALLATION](#)
- [TRUNK SIDE TRIM REMOVAL/INSTALLATION](#)
- [HEAD IMPACT PAD REMOVAL/INSTALLATION](#)
- [FRONT DOOR TRIM REMOVAL/INSTALLATION](#)
- [TRUNK MAT REMOVAL/INSTALLATION](#)
- [TRUNK LID TRIM REMOVAL/INSTALLATION](#)
- [ASSIST HANDLE REMOVAL/INSTALLATION](#)

- [SUNVISOR REMOVAL/INSTALLATION](#)
- [HEADLINER REMOVAL/INSTALLATION](#)
- [FLOOR COVERING REMOVAL/INSTALLATION](#)

Lighting Systems

- [LIGHTING SYSTEMS LOCATION INDEX](#)
- [DISCHARGE HEADLIGHT SERVICE WARNINGS](#)
- [FRONT COMBINATION LIGHT REMOVAL/INSTALLATION](#)
- [HEADLIGHT BULB REMOVAL/INSTALLATION](#)
- [HEADLIGHT AIMING](#)
- [DISCHARGE HEADLIGHT SYSTEM INSPECTION](#)
- [HEADLIGHT LEVELING ACTUATOR REMOVAL/INSTALLATION](#)
- [FRONT TURN LIGHT BULB REMOVAL/INSTALLATION](#)
- [FRONT FOG LIGHT REMOVAL/INSTALLATION](#)
- [FRONT FOG LIGHT AIMING](#)
- [FRONT FOG LIGHT BULB REMOVAL/INSTALLATION](#)
- [FRONT SIDE TURN LIGHT REMOVAL/INSTALLATION](#)
- [REAR COMBINATION LIGHT REMOVAL/INSTALLATION](#)
- [HIGH-MOUNT BRAKE LIGHT REMOVAL/INSTALLATION](#)
- [LICENSE PLATE LIGHT BULB REMOVAL/INSTALLATION](#)
- [LICENSE PLATE LIGHT REMOVAL/INSTALLATION](#)
- [FRONT AUTO LEVELING SENSOR REMOVAL/INSTALLATION](#)
- [FRONT AUTO LEVELING SENSOR INSPECTION](#)
- [REAR AUTO LEVELING SENSOR REMOVAL/INSTALLATION](#)
- [REAR AUTO LEVELING SENSOR INSPECTION](#)
- [AUTO LEVELING CONTROL MODULE REMOVAL/INSTALLATION](#)
- [BACK-UP LIGHT SWITCH REMOVAL/INSTALLATION](#)
- [BACK-UP LIGHT SWITCH INSPECTION](#)
- [COMBINATION SWITCH REMOVAL/INSTALLATION](#)
- [COMBINATION SWITCH DISASSEMBLY/ASSEMBLY](#)
- [LIGHT SWITCH REMOVAL/INSTALLATION](#)
- [LIGHT SWITCH INSPECTION](#)
- [FRONT FOG LIGHT SWITCH INSPECTION](#)
- [HAZARD WARNING SWITCH REMOVAL/INSTALLATION](#)
- [HAZARD WARNING SWITCH INSPECTION](#)
- [FLASHER CONTROL MODULE INSPECTION](#)
- [FLASHER CONTROL MODULE REMOVAL/INSTALLATION](#)
- [DRL AND AUTO LIGHT SYSTEM WIRING DIAGRAM](#)
- [AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION](#)
- [AUTO LIGHT/WIPER CONTROL MODULE INSPECTION](#)
- [AUTO LIGHT ILLUMINATION LEVEL SETTING](#)
- [MAP LIGHT REMOVAL/INSTALLATION](#)
- [MAP LIGHT INSPECTION](#)
- [INTERIOR LIGHT REMOVAL/INSTALLATION](#)
- [INTERIOR LIGHT INSPECTION](#)
- [TRUNK COMPARTMENT LIGHT SWITCH INSPECTION](#)
- [TRUNK COMPARTMENT LIGHT BULB REMOVAL/INSTALLATION](#)
- [COURTESY LIGHT BULB REMOVAL/INSTALLATION](#)
- [ASHTRAY ILLUMINATION BULB REMOVAL/INSTALLATION](#)
- [IGNITION KEY ILLUMINATION BULB REMOVAL/INSTALLATION](#)
- [GLOVE COMPARTMENT LIGHT BULB REMOVAL/INSTALLATION](#)
- [VANITY MIRROR ILLUMINATION BULB REMOVAL/INSTALLATION](#)
- [PANEL LIGHT CONTROL SWITCH REMOVAL/INSTALLATION](#)
- [PANEL LIGHT CONTROL SWITCH INSPECTION](#)
- [DOOR SWITCH REMOVAL/INSTALLATION](#)

[DOOR SWITCH INSPECTION](#)

Wiper/Washer System

- [WIPER/WASHER SYSTEM LOCATION INDEX](#)
- [WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION](#)
- [WINDSHIELD WIPER ARM AND BLADE ADJUSTMENT](#)
- [WINDSHIELD WIPER MOTOR REMOVAL/INSTALLATION](#)
- [WINDSHIELD WIPER MOTOR DISASSEMBLY/ASSEMBLY](#)
- [WINDSHIELD WIPER MOTOR INSPECTION](#)
- [WINDSHIELD WASHER TANK REMOVAL/INSTALLATION](#)
- [WINDSHIELD WASHER MOTOR REMOVAL/INSTALLATION](#)
- [WINDSHIELD WASHER MOTOR INSPECTION](#)
- [WINDSHIELD WASHER NOZZLE REMOVAL/INSTALLATION](#)
- [WINDSHIELD WASHER NOZZLE ADJUSTMENT](#)
- [WASHER FLUID-LEVEL SENSOR REMOVAL/INSTALLATION](#)
- [WINDSHIELD WASHER HOSE REMOVAL/INSTALLATION](#)
- [WINDSHIELD WASHER NOZZLE CLEANING](#)
- [WASHER FLUID-LEVEL SENSOR INSPECTION](#)
- [WINDSHIELD WIPER AND WASHER SWITCH REMOVAL/INSTALLATION](#)
- [WINDSHIELD WIPER AND WASHER SWITCH INSPECTION](#)
- [HEADLIGHT CLEANER MOTOR REMOVAL/INSTALLATION](#)
- [HEADLIGHT CLEANER MOTOR INSPECTION](#)
- [HEADLIGHT CLEANER ACTUATOR REMOVAL/INSTALLATION](#)
- [HEADLIGHT CLEANER NOZZLE REMOVAL](#)
- [HEADLIGHT CLEANER NOZZLE INSTALLATION](#)
- [HEADLIGHT CLEANER HOSE REMOVAL/INSTALLATION](#)
- [HEADLIGHT CLEANER RELAY REMOVAL/INSTALLATION](#)
- [HEADLIGHT CLEANER RELAY INSPECTION](#)
- [RAIN SENSOR REMOVAL/INSTALLATION](#)
- [RAIN SENSOR INITIALIZATION SETTING](#)

Entertainment System

- [ENTERTAINMENT LOCATION INDEX](#)
- [CENTER PANEL UNIT REMOVAL/INSTALLATION](#)
- [CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY](#)
- [AUDIO AMPLIFIER REMOVAL/INSTALLATION](#)
- [FRONT DOOR SPEAKER REMOVAL/INSTALLATION](#)
- [FRONT DOOR SPEAKER INSPECTION](#)
- [CENTER SPEAKER REMOVAL/INSTALLATION](#)
- [CENTER SPEAKER INSPECTION](#)
- [REAR SPEAKER REMOVAL/INSTALLATION](#)
- [REAR SPEAKER INSPECTION](#)
- [FRONT TWEETER REMOVAL/INSTALLATION](#)
- [FRONT TWEETER INSPECTION](#)
- [REAR TWEETER REMOVAL/INSTALLATION](#)
- [REAR TWEETER INSPECTION](#)
- [NOISE FILTER REMOVAL/INSTALLATION](#)
- [NOISE FILTER INSPECTION](#)
- [AUDIOPILOT MICROPHONE REMOVAL/INSTALLATION](#)
- [CONDENSER REMOVAL/INSTALLATION](#)
- [SIRIUS SATELLITE RADIO ANTENNA REMOVAL/INSTALLATION](#)
- [SIRIUS SATELLITE RADIO ANTENNA INSPECTION](#)
- [GLASS ANTENNA INSPECTION](#)
- [SIRIUS SATELLITE RADIO UNIT REMOVAL/INSTALLATION](#)

- [ANTENNA FEEDER LOCATION](#)
- [AM/FM ANTENNA FEEDER NO.1 INSTALLATION](#)
- [AM/FM ANTENNA FEEDER NO.1 INSPECTION](#)
- [AM/FM ANTENNA FEEDER NO.2 INSTALLATION](#)
- [AM/FM ANTENNA FEEDER NO.2 INSPECTION](#)
- [SIRIUS SATELLITE RADIO ANTENNA FEEDER INSTALLATION](#)
- [SIRIUS SATELLITE RADIO ANTENNA FEEDER INSPECTION](#)
- [GPS ANTENNA REMOVAL/INSTALLATION](#)
- [AUDIO CONTROL SWITCH REMOVAL/INSTALLATION](#)
- [AUDIO CONTROL SWITCH INSPECTION](#)
- [MICROPHONE REMOVAL/INSTALLATION](#)
- [HANDS-FREE TELEPHONE \(HF/TEL\) UNIT REMOVAL/INSTALLATION](#)
- [ACCESSORY SOCKET REMOVAL/INSTALLATION](#)
- [ACCESSORY SOCKET INSPECTION](#)
- [AUXILIARY JACK REMOVAL/INSTALLATION](#)
- [AUXILIARY JACK INSPECTION](#)
- [CIGARETTE LIGHTER REMOVAL/INSTALLATION](#)
- [CIGARETTE LIGHTER INSPECTION](#)

Power Systems

- [POWER SYSTEM LOCATION INDEX](#)
- [FUSE SERVICE CAUTIONS](#)
- [MAIN FUSE REMOVAL/INSTALLATION](#)
- [IGNITION SWITCH REMOVAL/INSTALLATION \[WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [IGNITION SWITCH INSPECTION \[WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [KEY REMINDER SWITCH REMOVAL/INSTALLATION \[WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [KEY REMINDER SWITCH INSPECTION \[WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [STEERING LOCK UNIT INSPECTION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#)
- [RELAY LOCATION](#)
- [RELAY INSPECTION](#)

Instrumentation/Driver Info.

- [INSTRUMENTATION/DRIVER INFO. LOCATION INDEX](#)
- [INSTRUMENT CLUSTER REMOVAL/INSTALLATION](#)
- [INSTRUMENT CLUSTER DISASSEMBLY/ASSEMBLY](#)
- [INSTRUMENT CLUSTER INSPECTION](#)
- [INSTRUMENT CLUSTER CONFIGURATION](#)
- [INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE](#)
- [INSTRUMENTATION/DRIVER INFO. PERSONALIZATION FEATURES SETTING PROCEDURE](#)
- [FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION](#)
- [FUEL GAUGE SENDER UNIT INSPECTION](#)
- [OIL PRESSURE SWITCH INSPECTION](#)
- [HORN REMOVAL/INSTALLATION](#)
- [OIL LEVEL SWITCH INSPECTION](#)
- [COOLANT LEVEL SWITCH INSPECTION](#)
- [INFORMATION DISPLAY REMOVAL/INSTALLATION](#)
- [INFORMATION DISPLAY INPUT/OUTPUT CHECK MODE](#)

Technical Data

- [BODY ELECTRICAL SYSTEM](#)

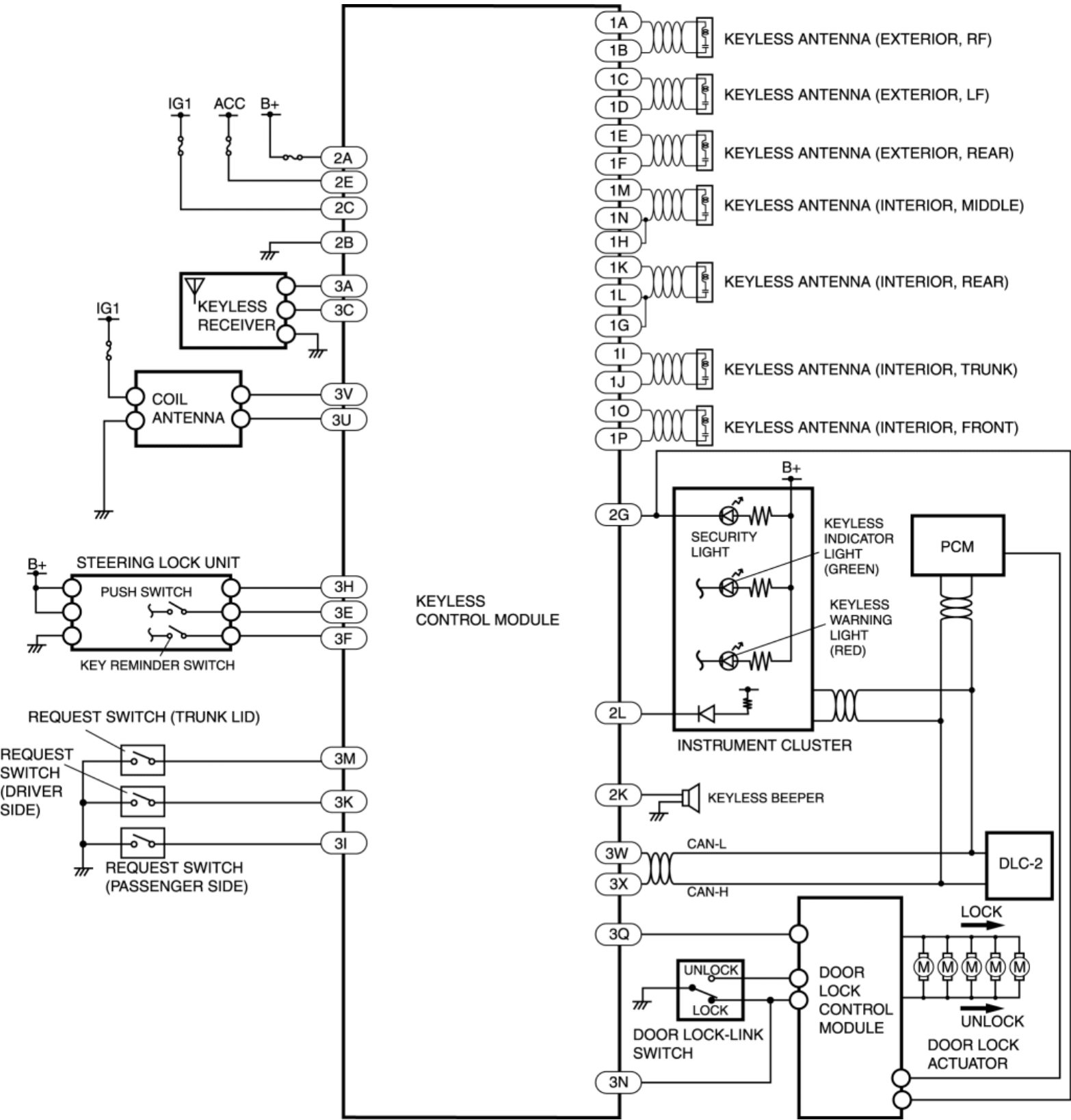
Maintenance/Service Tools

- [BODY AND ACCESSORIES SST](#)

[Next >](#)

2011 - RX-8 - Body and Accessories

SYSTEM WIRING DIAGRAM [ADVANCED KEYLESS ENTRY AND START SYSTEM]



[Next >](#)

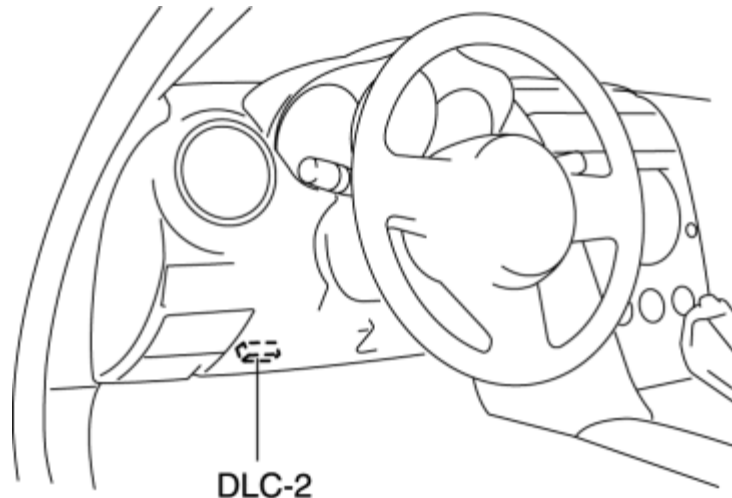
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

DTC INSPECTION [ADVANCED KEYLESS ENTRY AND START SYSTEM]

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "RKE".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "RKE".
 3. Select "Self Test".

3. Verify the DTC according to the directions on the screen.

- If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.

4. After completion of repairs, clear all DTCs stored in the keyless control module. (See [CLEARING DTC \[ADVANCED KEYLESS ENTRY AND START SYSTEM\].](#))

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

PID/DATA MONITOR TABLE [ADVANCED KEYLESS ENTRY AND START SYSTEM]

PID/data monitor table

PID name (definition)	Data contents	Unit/Operation	Terminal
DTC_CNT	Number of continuous DTCs	—	—
RPM	Engine speed	RPM	3W, 3X
VSS	Vehicle speed	KPH	3W, 3X
VPWR	Supply voltage	V	2A
NUMCARD	Number of programmed card keys	—	—
NUMKEY*	Number of programmed key ID numbers	—	—
DRSW_D	Door switch (driver's door)	CLOSE/OPEN	3Q
DRSW_ALL	Door switch (except driver's door)	CLOSE/OPEN	3Q
REQ_SW_D	Request switch (driver's door)	On/Off	3I
REQ_SW_P	Request switch (passenger's door)	On/Off	3K
REQ_SW_BK	Request switch (trunk lid)	On/Off	3M
LOCK_SW_D	Door lock-link switch (driver's side)	On/Off	3N
IMMOBI	Immobilizer system equipped or not	On* /Off	—

TR/LG_SW	Trunk compartment light switch	CLOSE/OPEN	
IG_KEY_IN	Key reminder switch	Key-In/Key-Out	3F
IG_SW_ST	Ignition switch (Push switch)	Pushed/Not Pushed	3E
BUZZER	Keyless beeper	On/Off	2K
SECURITY	Security light	On/Off	2G
PWR_IG1	Power supply (IG1)	On/Off	2C
PWR_ACC	Power supply (ACC)	On/Off	2E

*

Vehicles with immobilizer system

ACTIVE COMMAND MODE TABLE [ADVANCED KEYLESS SYSTEM]

Command name	Output part name	Unit/Operation	Terminal
BZR_OUT	Keyless beeper	On/Off	2K
BZR_INN	Interior buzzer (Instrument cluster)	On/Off	3W, 3X
LNP_RED	Keyless warning light (red)	On/Off	3W, 3X
LNP_GREEN	Keyless indicator light (green)	On/Off	3W, 3X
DR_LOCK	All doors lock	Off/Lock	3Q
DR_UNLOCK	All doors unlock	Off/Unlock	3Q

[< Previous](#) [Next >](#)

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

DTC TABLE [ADVANCED KEYLESS ENTRY AND START SYSTEM]

DTC No.	Description	Page
B1093	Steering lock unit communication error	(See DTC B1093 [ADVANCED KEYLESS ENTRY AND START SYSTEM])
B1126	Steering lock unit internal malfunction	(See DTC B1126 [ADVANCED KEYLESS ENTRY AND START SYSTEM])
B1127	Keyless antenna (Interior, trunk)	(See DTC B1127 [ADVANCED KEYLESS ENTRY AND START SYSTEM])
B1128	Keyless antenna (Interior, rear)	(See DTC B1128 [ADVANCED KEYLESS ENTRY AND START SYSTEM])
B1129	Keyless antenna (Interior, middle)	(See DTC B1129 [ADVANCED KEYLESS ENTRY AND START SYSTEM])
B112A	Keyless antenna (Interior, front)	(See DTC B112A [ADVANCED KEYLESS ENTRY AND START SYSTEM])
B1131	Keyless antenna (exterior, rear)	(See DTC B1131 [ADVANCED KEYLESS ENTRY AND START SYSTEM])
B1132	Keyless antenna (exterior, LF)	(See DTC B1132 [ADVANCED KEYLESS ENTRY AND START SYSTEM])
B1133	Keyless antenna (exterior, RF)	(See DTC B1133 [ADVANCED KEYLESS ENTRY AND START SYSTEM])
B1134	Unprogrammed card key	(See DTC B1134 [ADVANCED KEYLESS ENTRY AND START SYSTEM])

B1317	Keyless control module power supply voltage increases	(See DTC B1317/B1318 [ADVANCED KEYLESS ENTRY AND START SYSTEM])
B1318	Keyless control module power supply voltage decreases	
B1342	Keyless control module internal malfunction	(See DTC B1342 [ADVANCED KEYLESS ENTRY AND START SYSTEM])
B2170	Push switch (Steering lock unit)	(See DTC B2170 [ADVANCED KEYLESS ENTRY AND START SYSTEM])
B2477	Configuration error	(See DTC B2477 [ADVANCED KEYLESS ENTRY AND START SYSTEM])
U0073	Control module communication error	(See FOREWORD [MULTIPLEX COMMUNICATION SYSTEM] .)
U0100	Communication error to PCM	
U0214	Keyless receiver	(See DTC U0214 [ADVANCED KEYLESS ENTRY AND START SYSTEM])
U0323	Communication error to instrument cluster	(See FOREWORD [MULTIPLEX COMMUNICATION SYSTEM] .)
U0236	Steering lock unit communication system	(See DTC U0236 [ADVANCED KEYLESS ENTRY AND START SYSTEM])
U2023	Abnormal message from PCM	(See DTC U2023 [ADVANCED KEYLESS ENTRY AND START SYSTEM] .)

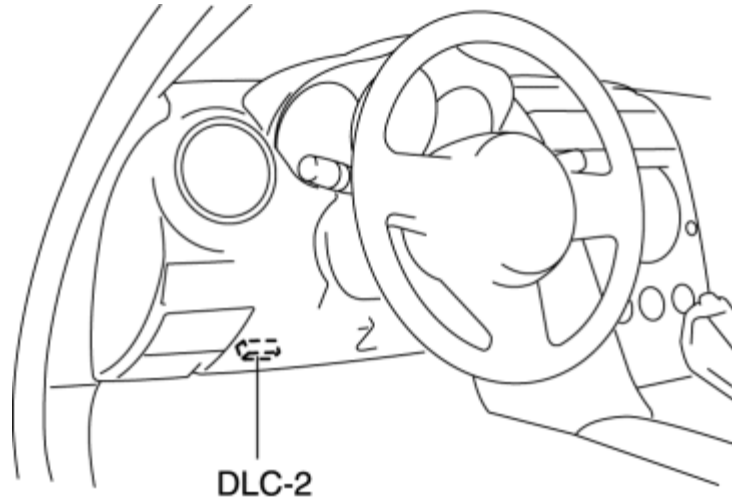
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

CLEARING DTC [ADVANCED KEYLESS ENTRY AND START SYSTEM]

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

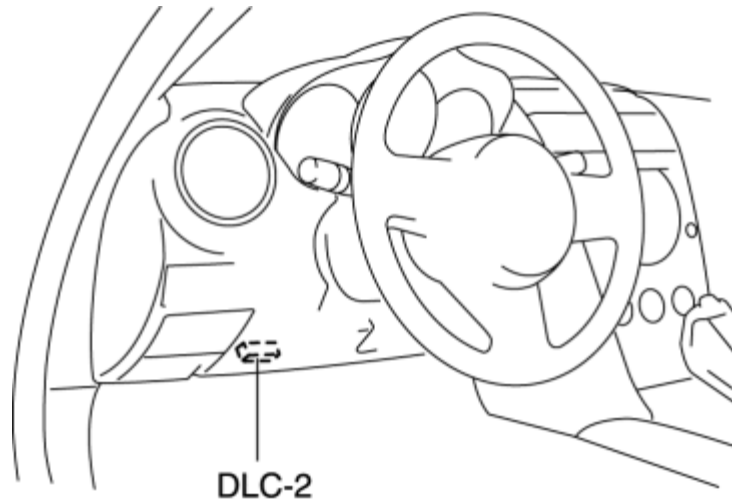
- When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "RKE".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "RKE".
 3. Select "Self Test".

3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Verify that no DTCs are displayed.

2011 - RX-8 - Body and Accessories

PID/DATA MONITOR INSPECTION [ADVANCED KEYLESS ENTRY AND START SYSTEM]

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "RKE".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "RKE".
 3. Select "DataLogger".

3. Select the applicable PID from the PID table.
4. Verify the PID data according to the directions on the screen.

NOTE:

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within

the specification, it is necessary to inspect the monitored value of input parts corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

DTC U2023 [ADVANCED KEYLESS ENTRY AND START SYSTEM]

DTC U2023	Abnormal message from PCM
DETECTION CONDITION	<ul style="list-style-type: none"> Correct data cannot be received from PCM
POSSIBLE CAUSE	<ul style="list-style-type: none"> PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT FOR PCM MALFUNCTION <ul style="list-style-type: none"> Turn the ignition switch to LOCK position. Using the M-MDS, perform the DTC inspection for the PCM. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) <ul style="list-style-type: none"> Are any DTCs detected? 	Yes Go to applicable DTC inspection. (See DTC TABLE [13B-MSP].)
		No Go to the next step.
2	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> Clear the DTCs from the memory. (See CLEARING CARD KEY [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].) <ul style="list-style-type: none"> Are the same DTCs present? 	Yes Repeat the inspection from Step 1. If the malfunction recurs, replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
		No Go to the next step.
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are any other DTCs output? 	Yes Go to the applicable DTC inspection. (See DTC INSPECTION [ADVANCED

		KEYLESS ENTRY AND START SYSTEM .)
		No DTC troubleshooting completed.


[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

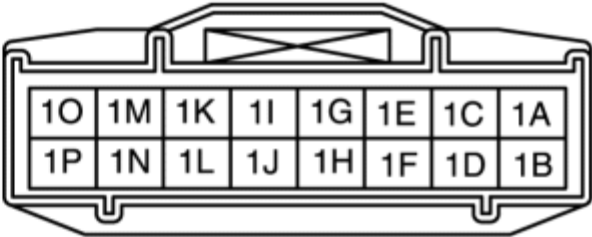
DTC B112A [ADVANCED KEYLESS ENTRY AND START SYSTEM]

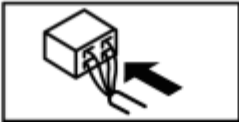
DTC B112A	Keyless antenna (interior, front)
DETECTION CONDITION	Keyless antenna dose not operated.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Open or short circuit in wiring harness between keyless control module and keyless antenna (interior, front)• Keyless antenna (interior, front) malfunction• Keyless control module malfunction

KEYLESS ANTENNA HARNESS
SIDE CONNECTOR



KEYLESS CONTROL MODULE HARNESS
SIDE CONNECTOR





Diagnostic procedure

STEP	INSPECTION	ACTION
1	<p>INSPECT COMMUNICATION CIRCUIT FOR CONTINUITY</p> <ul style="list-style-type: none">• Disconnect keyless control module connector and keyless antenna (interior, front) connector.	<p>Yes</p> <ul style="list-style-type: none">• Replace keyless antenna (interior, front). <p>(See KEYLESS ANTENNA REMOVAL/INSTALLATION)</p>

	<ul style="list-style-type: none"> Inspect the wiring harness between keyless antenna (interior, front) terminal A and keyless control module terminal 1O, and keyless antenna (interior, front) terminal B and keyless control module terminal 1P for the following: <ul style="list-style-type: none"> Short to ground Short to power supply Open circuit Is there continuity? 		[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] <ul style="list-style-type: none"> Go to next step.
		No	<ul style="list-style-type: none"> Repair the wiring harness between the keyless antenna (interior, front) and keyless control module. Go to next step.
2	INSPECT KEYLESS CONTROL MODULE <ul style="list-style-type: none"> Turn the ignition switch to the ON position. Is the DTC displayed? <ul style="list-style-type: none"> M-MDS: B112A 	Yes	Replace the keyless control module and perform the resetting procedure for the advanced keyless system when replacing the keyless control module. (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.) (See CARD KEY ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]) (See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]) (See KEYLESS CONTROL MODULE CONFIGURATION) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])
		No	DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

DTC B1342 [ADVANCED KEYLESS ENTRY AND START SYSTEM]

DTC B1342	Keyless control module internal malfunction
POSSIBLE CAUSE	<ul style="list-style-type: none"> Malfunction in the keyless control module internal circuit

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT KEYLESS CONTROL MODULE <ul style="list-style-type: none"> Turn the ignition switch to the ON position. Is the DTC displayed? <ul style="list-style-type: none"> M-MDS: B1342 	<p>Yes Replace the keyless control module and perform the resetting procedure for the advanced keyless system when replacing the keyless control module.</p> <p>(See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)</p> <p>(See CARD KEY ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])</p> <p>(See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])</p> <p>(See KEYLESS CONTROL MODULE CONFIGURATION)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])</p> <p>No DTC troubleshooting completed.</p>

2011 - RX-8 - Body and Accessories

DTC B1134 [ADVANCED KEYLESS ENTRY AND START SYSTEM]

DTC B1134	Unprogrammed card key
POSSIBLE CAUSE	<ul style="list-style-type: none"> Unprogrammed card key. Malfunction in the keyless control module internal circuit

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY NUMBER OF REGISTERED CARD KEYS <ul style="list-style-type: none"> Using the M-MDS, perform the PID/data monitor inspection and confirm the number of registered keys. (See PID/DATA MONITOR TABLE [ADVANCED KEYLESS ENTRY AND START SYSTEM].) Is card key registered? 	YesGo to the next step.
		No <ul style="list-style-type: none"> Using the M-MDS, register a card key if necessary. (See CARD KEY ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].) Go to the next step.
2	INSPECT KEYLESS CONTROL MODULE <ul style="list-style-type: none"> Turn the ignition switch to the ON position. Is the DTC displayed? <ul style="list-style-type: none"> M-MDS: B1134 	YesReplace the keyless control module and perform the resetting procedure for the advanced keyless system when replacing the keyless control module. (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION .) (See CARD KEY ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] .) (See STEERING LOCK UNIT ID CODE REGISTRATION)

		[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]) (See KEYLESS CONTROL MODULE CONFIGURATION) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])
		No DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

DTC B2477 [ADVANCED KEYLESS ENTRY AND START SYSTEM]

DTC B2477	Configuration error
DETECTION CONDITION	<ul style="list-style-type: none"> Keyless control module configuration has not been performed correctly.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Keyless control module malfunction Malfunction in the keyless control module internal circuit

Diagnostic procedure

STEP	INSPECTION	ACTION
1	PERFORM INSTRUMENT KEYLESS CONTROL MODULE CONFIGURATION <ul style="list-style-type: none"> Perform keyless control module configuration. Is B2477 displayed? 	Yes Replace the keyless control module and perform the resetting procedure for the advanced keyless system when replacing the keyless control module. (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.) (See CARD KEY ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]) (See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]) (See KEYLESS CONTROL MODULE CONFIGURATION) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])
		No Go to the next step.
2	VERIFY TROUBLESHOOTING OF DTC B2477 COMPLETED <ul style="list-style-type: none"> Clear the DTC from the memory. 	Yes Go to the applicable DTC inspection.
		No DTC troubleshooting completed.

- | | | | |
|--|---|--|--|
| | <ul style="list-style-type: none">• Is any DTC displayed? | | |
|--|---|--|--|

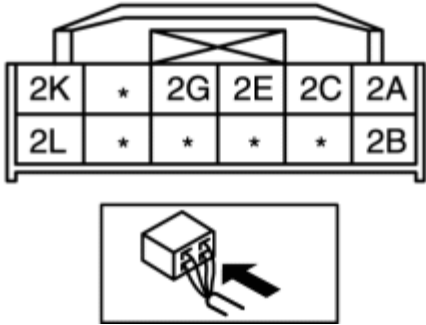
[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

DTC B1317/B1318 [ADVANCED KEYLESS ENTRY AND START SYSTEM]

DTC	B1317	Keyless control module power supply voltage increases (16.1 V or more)
	B1318	Keyless control module power supply voltage decreases (less than 9 V)
DETECTION CONDITION		<ul style="list-style-type: none">When the keyless control module power supply voltage is not within 9–16 V.
POSSIBLE CAUSE		<ul style="list-style-type: none">ROOM 15 A fuse malfunctionBattery malfunctionOpen or short circuit in wiring harness between battery and keyless control moduleKeyless control module malfunction
<div>KEYLESS CONTROL MODULE HARNESS SIDE CONNECTOR</div> <div></div>		

Diagnostic procedure

Step	Inspection	Action
1	INSPECT FUSE <ul style="list-style-type: none">Remove the ROOM 15 A fuse.	YesGo to the next step.

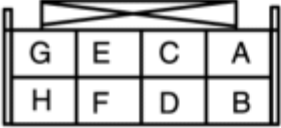
	<ul style="list-style-type: none"> Is the fuse normal? 	No	Replace the fuse.
2	INSPECT BATTERY <ul style="list-style-type: none"> Measure the battery positive voltage. Is the voltage 9 V—16 V? 	Yes	Go to the next step.
		No	The battery has a malfunction. Inspect the charge/discharge system.
3	INSPECT WIRING HARNESS BETWEEN BATTERY AND KEYLESS CONTROL MODULE <ul style="list-style-type: none"> Inspect the wiring harnesses between the battery and keyless control module connector terminal 2A for the following: <ul style="list-style-type: none"> Short to ground Short to power supply Open circuit Is the wiring harness normal? 	Yes	Replace the keyless control module and perform the resetting procedure for the advanced keyless system when replacing the keyless control module. (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.) (See CARD KEY ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]) (See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]) (See KEYLESS CONTROL MODULE CONFIGURATION) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])
		No	Repair the wiring harness between the battery and keyless control module.

2011 - RX-8 - Body and Accessories


DTC B2170 [ADVANCED KEYLESS ENTRY AND START SYSTEM]


DTC B2170	Push switch
DETECTION CONDITION	<ul style="list-style-type: none">• Detect the push switch OFF signal when ignition switch is ON position.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Open or short circuit in wiring harness between keyless control module and steering lock unit• Steering lock unit malfunction• Keyless control module malfunction

STEERING LOCK UNIT HARNESS SIDE CONNECTOR



KEYLESS CONTROL MODULE HARNESS SIDE CONNECTOR





Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT COMMUNICATION CIRCUIT FOR CONTINUITY <ul style="list-style-type: none">• Disconnect keyless control module connector and steering lock unit	Yes Replace the steering lock unit and perform the resetting procedure for the steering lock unit. (See STEERING WHEEL AND COLUMN

	<p>connector.</p> <ul style="list-style-type: none"> Inspect the wiring harness between the keyless control module connector terminal 3E and steering lock unit terminal A for the following: <ul style="list-style-type: none"> Short to ground Short to power supply Open circuit Is there continuity? 	<p>REMOVAL/INSTALLATION.)</p> <p>(See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])</p>
		<p>No Repair the wiring harness between the steering lock unit and keyless control module.</p>
2	<p>INSPECT KEYLESS CONTROL MODULE</p> <ul style="list-style-type: none"> Turn the ignition switch to the ON position. Is the DTC displayed? <ul style="list-style-type: none"> M-MDS: B2170 	<p>Yes Replace the keyless control module and perform the resetting procedure for the advanced keyless system when replacing the keyless control module.</p> <p>(See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)</p> <p>(See CARD KEY ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])</p> <p>(See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])</p> <p>(See KEYLESS CONTROL MODULE CONFIGURATION)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])</p>
		<p>No DTC troubleshooting completed.</p>

2011 - RX-8 - Body and Accessories

DTC B1126 [ADVANCED KEYLESS ENTRY AND START SYSTEM]

DTC B1126	Steering lock unit internal malfunction
DETECTION CONDITION	<ul style="list-style-type: none">• Detect the steering lock unit malfunction signal.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Steering lock unit malfunction

Diagnostic procedure

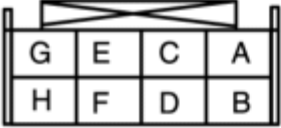
STEP	INSPECTION	ACTION
1	INSPECT STEERING LOCK UNIT <ul style="list-style-type: none">• Turn the ignition switch to the ON position.• Is the DTC displayed?<ul style="list-style-type: none">▪ M-MDS: B1126	Yes Replace the steering lock unit and perform the resetting procedure for the steering lock unit. (See STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION .) (See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])
		No DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

DTC U0236 [ADVANCED KEYLESS ENTRY AND START SYSTEM]


DTC U0236	Steering lock unit communication system
DETECTION CONDITION	<ul style="list-style-type: none">Steering lock unit communication error
POSSIBLE CAUSE	<ul style="list-style-type: none">Open or short circuit in wiring harness between keyless control module and steering lock unitSteering lock unit malfunctionKeyless control module malfunction

STEERING LOCK UNIT HARNESS SIDE CONNECTOR




G	E	C	A
H	F	D	B

KEYLESS CONTROL MODULE HARNESS SIDE CONNECTOR



3W	3U	*	3Q	*	3M	3K	3I	*	3E	3C	3A
3X	3V	*	*	3P	3N	*	*	3H	3F	*	*



Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT COMMUNICATION CIRCUIT FOR CONTINUITY <ul style="list-style-type: none">Disconnect keyless control module connector and steering	Yes	<ul style="list-style-type: none">Replace the steering lock unit and perform the resetting procedure for the steering lock unit.


	<p>lock unit connector.</p> <ul style="list-style-type: none"> Inspect the wiring harness between steering lock unit terminal G and keyless control module terminal 3H for the following: <ul style="list-style-type: none"> Short to ground Short to power supply Open circuit Is there continuity? 		<p>(See STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.)</p> <p>(See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])</p> <ul style="list-style-type: none"> Go to the next step.
		No	<ul style="list-style-type: none"> Repair the wiring harness between the steering lock unit and keyless control module. Go to next step.
2	<p>INSPECT KEYLESS CONTROL MODULE</p> <ul style="list-style-type: none"> Turn the ignition switch to the ON position. Is the DTC displayed? <ul style="list-style-type: none"> M-MDS: U0236 	Yes	<p>Replace the keyless control module and perform the resetting procedure for the advanced keyless system when replacing the keyless control module.</p> <p>(See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)</p> <p>(See CARD KEY ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])</p> <p>(See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])</p> <p>(See KEYLESS CONTROL MODULE CONFIGURATION)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])</p>
		No	DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

DTC B1093 [ADVANCED KEYLESS ENTRY AND START SYSTEM]


DTC B1093	Steering lock unit communication error
DETECTION CONDITION	<ul style="list-style-type: none">Unprogrammed steering lock unit.
POSSIBLE CAUSE	<ul style="list-style-type: none">Open or short circuit in wiring harness between keyless control module and steering lock unitSteering lock unit malfunctionKeyless control module malfunction

STEERING LOCK UNIT HARNESS SIDE CONNECTOR

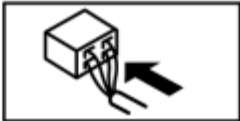


G	E	C	A
H	F	D	B

KEYLESS CONTROL MODULE HARNESS SIDE CONNECTOR



3W	3U	*	3Q	*	3M	3K	3I	*	3E	3C	3A
3X	3V	*	*	3P	3N	*	*	3H	3F	*	*



Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT COMMUNICATION CIRCUIT FOR CONTINUITY <ul style="list-style-type: none">Disconnect keyless control module connector and steering lock unit	Yes	<ul style="list-style-type: none">Perform the resetting procedure for the steering lock unit.

	<p>connector.</p> <ul style="list-style-type: none"> Inspect the wiring harness between keyless control module connector terminal 3H and steering lock unit connector terminal G for the following: <ul style="list-style-type: none"> Short to body ground Short to power supply Open circuit Is the wiring harness normal? 		<p>(See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])</p> <ul style="list-style-type: none"> Go to the next step.
		No	<ul style="list-style-type: none"> Repair the wiring harness between the steering lock unit and keyless control module. Go to next step.
2	<p>INSPECT STEERING LOCK UNIT</p> <ul style="list-style-type: none"> Turn the ignition switch to the ON position. Is the DTC displayed? <ul style="list-style-type: none"> M-MDS: B1093 	Yes	<ul style="list-style-type: none"> Replace the steering lock unit and perform the resetting procedure for the steering lock unit. <p>(See STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.)</p> <p>(See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])</p> <ul style="list-style-type: none"> Go to the next step.
		No	DTC troubleshooting completed.
3	<p>INSPECT KEYLESS CONTROL MODULE</p> <ul style="list-style-type: none"> Turn the ignition switch to the ON position. Is the DTC displayed? <ul style="list-style-type: none"> M-MDS: B1093 	Yes	<p>Replace the keyless control module and perform the resetting procedure for the advanced keyless system when replacing the keyless control module.</p> <p>(See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)</p> <p>(See CARD KEY ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])</p> <p>(See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])</p> <p>(See KEYLESS CONTROL MODULE CONFIGURATION)</p>

		(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])
		No DTC troubleshooting completed.

[< Previous](#) [Next >](#)

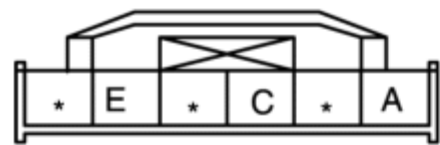
[Back to Top](#)

2011 - RX-8 - Body and Accessories

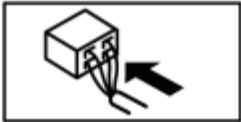
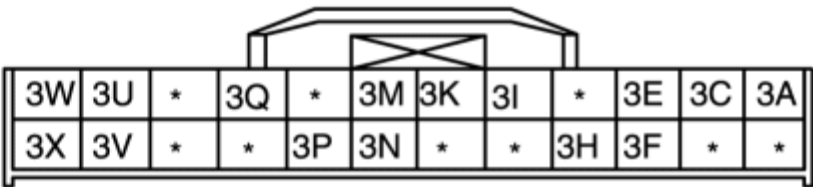
DTC U0214 [ADVANCED KEYLESS ENTRY AND START SYSTEM]

DTC U0214	Keyless receiver
DETECTION CONDITION	<ul style="list-style-type: none">When the keyless receiver power supply voltage is less than 7.5 V.
POSSIBLE CAUSE	<ul style="list-style-type: none">Keyless receiver malfunctionOpen or short circuit in wiring harness between keyless control module and keyless receiverKeyless control module malfunction

KEYLESS RECEIVER HARNESS SIDE CONNECTOR



KEYLESS CONTROL MODULE HARNESS SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT WIRING HARNESS BETWEEN KEYLESS RECEIVER AND GROUND <ul style="list-style-type: none">Disconnect keyless receiver connector.	Yes	Go to next step.
		No	<ul style="list-style-type: none">Repair the wiring

	<ul style="list-style-type: none"> Is there continuity between keyless receiver terminal E and ground? 		<p>harness between the keyless receiver and ground.</p> <ul style="list-style-type: none"> Go to next step.
2	INSPECT COMMUNICATION CIRCUIT FOR CONTINUITY <ul style="list-style-type: none"> Disconnect keyless control module connector. Inspect the wiring harness between keyless receiver terminal A and keyless control module terminal 3A, and keyless receiver terminal C and keyless control module terminal 3C for the following: <ul style="list-style-type: none"> Short to ground Short to power supply Open circuit Is there continuity? 	<p>Yes</p> <p>Go to next step.</p>	
		<p>No</p> <ul style="list-style-type: none"> Repair the wiring harness between the keyless receiver and keyless control module. Go to next step. 	
3	INSPECT KEYLESS RECEIVER POWER SUPPLY CIRCUIT <ul style="list-style-type: none"> Turn ignition switch to ON position. Measure voltage at terminal 3A of keyless control module connector. Is voltage more than 7.5 V? 	<p>Yes</p> <p>Replace keyless receiver.</p> <p>(See KEYLESS RECEIVER REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])</p>	
		<p>No</p> <p>Replace the keyless control module and perform the resetting procedure for the advanced keyless system when replacing the keyless control module.</p> <p>(See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)</p> <p>(See CARD KEY ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])</p> <p>(See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])</p> <p>(See KEYLESS CONTROL MODULE CONFIGURATION)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])</p>	

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.


[Back to Top](#)

2011 - RX-8 - Body and Accessories

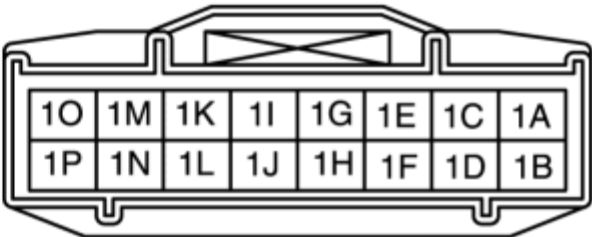
DTC B1133 [ADVANCED KEYLESS ENTRY AND START SYSTEM]

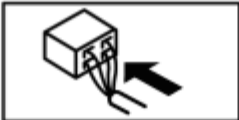
DTC B1133	Keyless antenna (exterior, RF)
DETECTION CONDITION	Keyless antenna dose not operated.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Open or short circuit in wiring harness between keyless control module and keyless antenna (exterior, RF)• Keyless antenna (exterior, RF) malfunction• Keyless control module malfunction

KEYLESS ANTENNA HARNESS
SIDE CONNECTOR



KEYLESS CONTROL MODULE HARNESS
SIDE CONNECTOR





Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT COMMUNICATION CIRCUIT FOR CONTINUITY <ul style="list-style-type: none">• Disconnect keyless control module connector and keyless antenna (exterior, RF) connector.	Yes	<ul style="list-style-type: none">• Replace keyless antenna (exterior, RF). <p>(See KEYLESS ANTENNA REMOVAL/INSTALLATION)</p>


	<ul style="list-style-type: none"> Inspect the wiring harness between keyless antenna (exterior, RF) terminal A and keyless control module terminal 1A, and keyless antenna (exterior, RF) terminal B and keyless control module terminal 1B for the following: <ul style="list-style-type: none"> Short to ground Short to power supply Open circuit Is there continuity? 		[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] <ul style="list-style-type: none"> Go to next step.
		No	<ul style="list-style-type: none"> Repair the wiring harness between the keyless antenna (exterior, RF) and keyless control module. Go to next step.
2	INSPECT KEYLESS CONTROL MODULE <ul style="list-style-type: none"> Turn the ignition switch to the ON position. Is the DTC displayed? <ul style="list-style-type: none"> M-MDS: B1133 	Yes	Replace the keyless control module and perform the resetting procedure for the advanced keyless system when replacing the keyless control module. (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION .) (See CARD KEY ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]) (See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]) (See KEYLESS CONTROL MODULE CONFIGURATION) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])
		No	DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

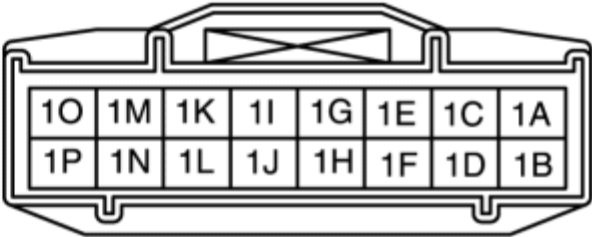
DTC B1132 [ADVANCED KEYLESS ENTRY AND START SYSTEM]

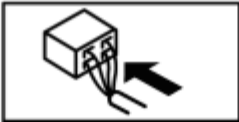
DTC B1132	Keyless antenna (exterior, LF)
DETECTION CONDITION	Keyless antenna dose not operated.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Open or short circuit in wiring harness between keyless control module and keyless antenna (exterior, LF)• Keyless antenna (exterior, LF) malfunction• Keyless control module malfunction

KEYLESS ANTENNA HARNESS
SIDE CONNECTOR



KEYLESS CONTROL MODULE HARNESS
SIDE CONNECTOR






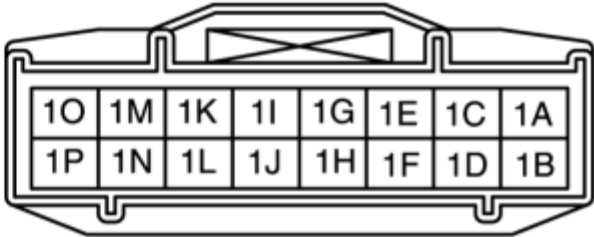
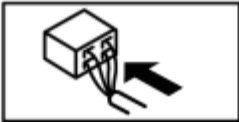
Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT COMMUNICATION CIRCUIT FOR CONTINUITY <ul style="list-style-type: none">• Disconnect keyless control module connector and keyless antenna (exterior, LF) connector.	Yes	<ul style="list-style-type: none">• Replace keyless antenna (exterior, LF). <p>(See KEYLESS ANTENNA REMOVAL/INSTALLATION)</p>

	<ul style="list-style-type: none"> Inspect the wiring harness between keyless antenna (exterior, LF) terminal A and keyless control module terminal 1C, and keyless antenna (exterior, LF) terminal B and keyless control module terminal 1D for the following: <ul style="list-style-type: none"> Short to ground Short to power supply Open circuit Is there continuity? 		[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] <ul style="list-style-type: none"> Go to next step.
		No	<ul style="list-style-type: none"> Repair the wiring harness between the keyless antenna (exterior, LF) and keyless control module. Go to next step.
2	INSPECT KEYLESS CONTROL MODULE <ul style="list-style-type: none"> Turn the ignition switch to the ON position. Is the DTC displayed? <ul style="list-style-type: none"> M-MDS: B1132 	Yes	Replace the keyless control module and perform the resetting procedure for the advanced keyless system when replacing the keyless control module. (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION .) (See CARD KEY ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]) (See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]) (See KEYLESS CONTROL MODULE CONFIGURATION) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])
		No	DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

DTC B1127 [ADVANCED KEYLESS ENTRY AND START SYSTEM]

DTC B1127	Keyless antenna (Interior, trunk)
DETECTION CONDITION	Keyless antenna dose not operated.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Open or short circuit in wiring harness between keyless control module and keyless antenna (Interior, trunk)• Keyless antenna (Interior, trunk) malfunction• Keyless control module malfunction
<div><div>KEYLESS ANTENNA HARNESS SIDE CONNECTOR</div><div></div></div> <div><div>KEYLESS CONTROL MODULE HARNESS SIDE CONNECTOR</div><div></div><div></div></div>	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<div>INSPECT COMMUNICATION CIRCUIT FOR CONTINUITY<ul style="list-style-type: none">• Disconnect keyless control module connector and keyless antenna (interior, trunk) connector.</div>	<div>Yes<ul style="list-style-type: none">• Replace keyless antenna (interior, trunk).<p>(See KEYLESS ANTENNA REMOVAL/INSTALLATION)</p></div>


	<ul style="list-style-type: none"> Inspect the wiring harness between keyless antenna (interior, trunk) terminal A and keyless control module terminal 1I, and keyless antenna (interior, trunk) terminal B and keyless control module terminal 1J for the following: <ul style="list-style-type: none"> Short to body ground Short to power supply Open circuit Is there continuity? 		[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] <ul style="list-style-type: none"> Go to next step.
		No	<ul style="list-style-type: none"> Repair the wiring harness between the keyless antenna (interior, trunk) and keyless control module. Go to next step.
2	INSPECT KEYLESS CONTROL MODULE <ul style="list-style-type: none"> Turn the ignition switch to the ON position. Is the DTC displayed? <ul style="list-style-type: none"> M-MDS: B1127 	Yes	Replace the keyless control module and perform the resetting procedure for the advanced keyless system when replacing the keyless control module. (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.) (See CARD KEY ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]) (See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]) (See KEYLESS CONTROL MODULE CONFIGURATION) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])
		No	DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

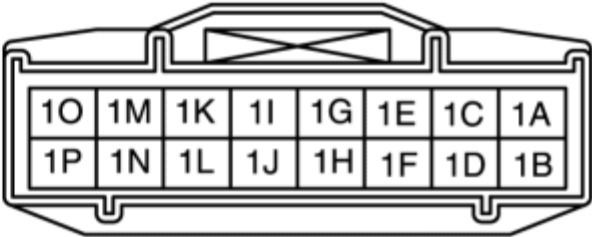
DTC B1128 [ADVANCED KEYLESS ENTRY AND START SYSTEM]

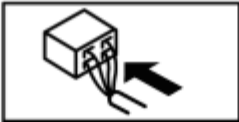
DTC B1128	Keyless antenna (interior, rear)
DETECTION CONDITION	Keyless antenna dose not operated.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Open or short circuit in wiring harness between keyless control module and keyless antenna (interior, rear)• Keyless antenna (interior, rear) malfunction• Keyless control module malfunction

KEYLESS ANTENNA HARNESS
SIDE CONNECTOR



KEYLESS CONTROL MODULE HARNESS
SIDE CONNECTOR





Diagnostic procedure

STEP	INSPECTION	ACTION
1	<div>INSPECT COMMUNICATION CIRCUIT FOR CONTINUITY<ul style="list-style-type: none">• Disconnect keyless control module connector and keyless antenna (interior, rear) connector.</div>	<div>Yes</div> <ul style="list-style-type: none">• Replace keyless antenna (interior, rear). <p>(See KEYLESS ANTENNA REMOVAL/INSTALLATION)</p>


	<ul style="list-style-type: none">Inspect the wiring harness between keyless antenna (interior, front) terminal A and keyless control module terminal 1K, and keyless antenna (interior, front) terminal B and keyless control module terminal 1L for the following:<ul style="list-style-type: none">Short to groundShort to power supplyOpen circuitIs there continuity?		[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] <ul style="list-style-type: none">Go to next step.
		No	<ul style="list-style-type: none">Repair the wiring harness between the keyless antenna (interior, rear) and keyless control module.Go to next step.
2	INSPECT KEYLESS CONTROL MODULE <ul style="list-style-type: none">Turn the ignition switch to the ON position.Is the DTC displayed?<ul style="list-style-type: none">M-MDS: B1128	Yes	Replace the keyless control module and perform the resetting procedure for the advanced keyless system when replacing the keyless control module. (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.) (See CARD KEY ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]) (See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]) (See KEYLESS CONTROL MODULE CONFIGURATION) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])
		No	DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

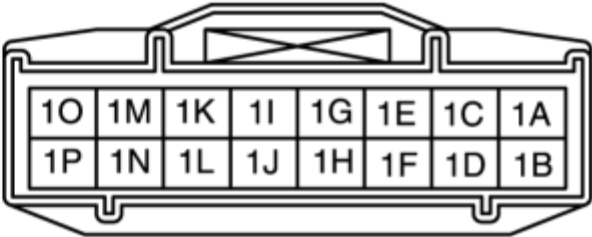
DTC B1131 [ADVANCED KEYLESS ENTRY AND START SYSTEM]

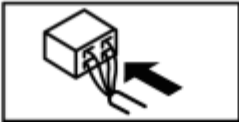
DTC B1131	Keyless antenna (exterior, rear)
DETECTION CONDITION	Keyless antenna dose not operated.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Open or short circuit in wiring harness between keyless control module and keyless antenna (exterior, rear)• Keyless antenna (exterior, rear) malfunction• Keyless control module malfunction

KEYLESS ANTENNA HARNESS
SIDE CONNECTOR



KEYLESS CONTROL MODULE HARNESS
SIDE CONNECTOR





Diagnostic procedure

STEP	INSPECTION		ACTION
1	INSPECT COMMUNICATION CIRCUIT FOR CONTINUITY <ul style="list-style-type: none">• Disconnect keyless control module connector and keyless antenna (exterior, rear) connector.	Yes	<ul style="list-style-type: none">• Replace keyless antenna (exterior, rear). <p>(See KEYLESS ANTENNA REMOVAL/INSTALLATION)</p>


	<ul style="list-style-type: none"> Inspect the wiring harness between keyless antenna (exterior, rear) terminal A and keyless control module terminal 1E, and keyless antenna (exterior, rear) terminal B and keyless control module terminal 1F for the following: <ul style="list-style-type: none"> Short to ground Short to power supply Open circuit Is there continuity? 		[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] <ul style="list-style-type: none"> Go to next step.
		No	<ul style="list-style-type: none"> Repair the wiring harness between the keyless antenna (exterior, rear) and keyless control module. Go to next step.
2	INSPECT KEYLESS CONTROL MODULE <ul style="list-style-type: none"> Turn the ignition switch to the ON position. Is the DTC displayed? <ul style="list-style-type: none"> M-MDS: B1131 	Yes	Replace the keyless control module and perform the resetting procedure for the advanced keyless system when replacing the keyless control module. (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.) (See CARD KEY ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]) (See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]) (See KEYLESS CONTROL MODULE CONFIGURATION) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])
		No	DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

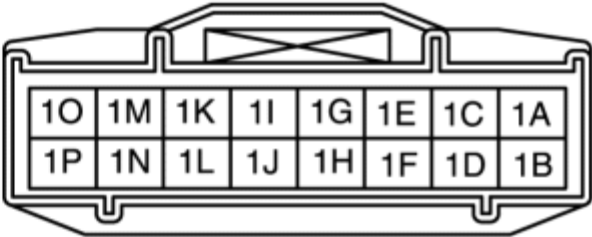
DTC B1129 [ADVANCED KEYLESS ENTRY AND START SYSTEM]

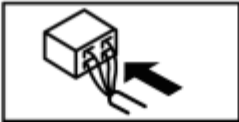
DTC B1129	Keyless antenna (interior, middle)
DETECTION CONDITION	Keyless antenna dose not operated.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Open or short circuit in wiring harness between keyless control module and keyless antenna (interior, middle)• Keyless antenna (interior, middle) malfunction• Keyless control module malfunction

KEYLESS ANTENNA HARNESS
SIDE CONNECTOR



KEYLESS CONTROL MODULE HARNESS
SIDE CONNECTOR





Diagnostic procedure

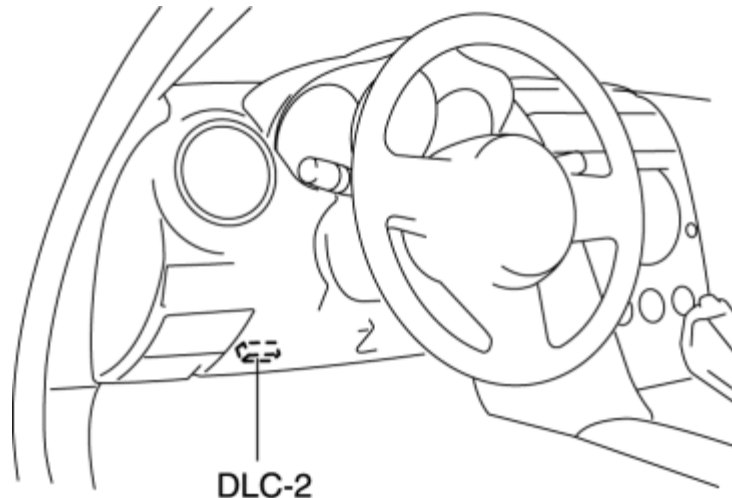
STEP	INSPECTION		ACTION
1	INSPECT COMMUNICATION CIRCUIT FOR CONTINUITY <ul style="list-style-type: none">• Disconnect keyless control module connector and keyless antenna (interior, middle) connector.	Yes	<ul style="list-style-type: none">• Replace keyless antenna (interior, front). <p>(See KEYLESS ANTENNA REMOVAL/INSTALLATION)</p>

	<ul style="list-style-type: none"> Inspect the wiring harness between keyless antenna (interior, front) terminal A and keyless control module terminal 1M, and keyless antenna (interior, front) terminal B and keyless control module terminal 1N for the following: <ul style="list-style-type: none"> Short to ground Short to power supply Open circuit Is there continuity? 		[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] <ul style="list-style-type: none"> Go to next step.
		No	<ul style="list-style-type: none"> Repair the wiring harness between the keyless antenna (interior, middle) and keyless control module. Go to next step.
2	INSPECT KEYLESS CONTROL MODULE <ul style="list-style-type: none"> Turn the ignition switch to the ON position. Is the DTC displayed? <ul style="list-style-type: none"> M-MDS: B1129 	Yes	Replace the keyless control module and perform the resetting procedure for the advanced keyless system when replacing the keyless control module. (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.) (See CARD KEY ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]) (See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]) (See KEYLESS CONTROL MODULE CONFIGURATION) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM])
		No	DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

CLEARING DTC [IMMOBILIZER SYSTEM]

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "RKE".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "RKE".
 3. Select "Self Test".

3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Turn the ignition switch to the LOCK position.
6. Turn the ignition switch to the ON position and wait for **5 s more**.
7. Perform DTC inspection. (See [DTC INSPECTION \(IMMOBILIZER SYSTEM\)](#) [\[IMMOBILIZER](#)

[SYSTEM\].\)](#)

8. Verify that no DTCs are displayed.

[< Previous](#) [Next >](#)

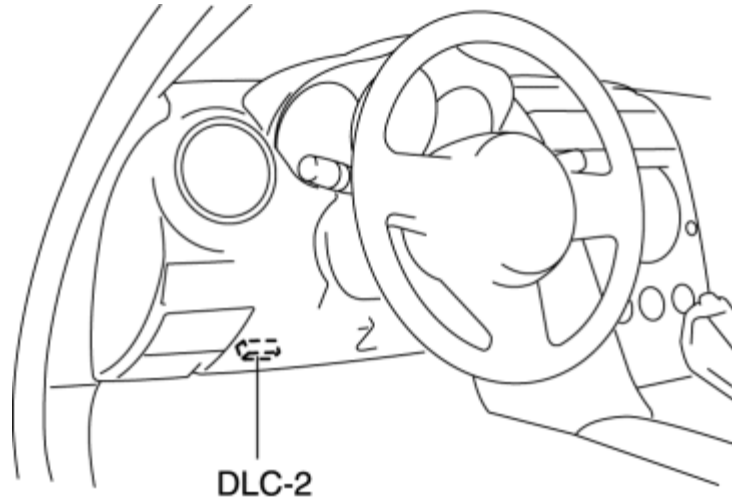
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

PID/DATA MONITOR INSPECTION [IMMOBILIZER SYSTEM]

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 - Select "DataLogger".
 - Select "Modules".
 - Select "RKE".
- When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "RKE".
 - Select "DataLogger".

3. Select the applicable PID from the PID table.
4. Verify the PID data according to the directions on the screen.

NOTE:

- The PID data screen function is used for monitoring the calculated value. Therefore, if the monitored value of the output parts is not within the specification, inspection of the monitored value of input parts corresponding to applicable output part control is necessary.

In addition, because the system does not display output part malfunction as abnormality in the monitored value, it is necessary to inspect the output part individually.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

FOREWORD [IMMOBILIZER SYSTEM]

- Malfunction diagnosis of the immobilizer system occurs automatically when the ignition switch is turned from the LOCK (ACC) to the ON (START) position.
- Results of the malfunction diagnosis can be verified from the DTCs. There are two methods of DTC verification: By the flashing pattern of the security light and by using the M-MDS.
- First, verify that the fuses are normal.
- The PID/data monitor function can be used to verify the number of key ID numbers registered for a single vehicle.

CAUTION:

- Always use the M-MDS to verify DTCs even if the security light displays a DTC. If the security light itself has a malfunction, it is possible that a DTC may not be properly displayed. There are certain DTCs which can only be verified using the M-MDS, not the security light.
- DTCs for the immobilizer system that are stored in the keyless control module and PCM are cleared when the ignition switch is turned from the ON to the LOCK (ACC) position.
- If DTCs are not displayed even though the engine does not start or stalls, perform the following symptom troubleshooting:
 - [NO.3 WILL NOT CRANK \[13B-MSP\]](#)
- DTCs may not be displayed due to a security light malfunction. Perform the following symptom troubleshooting:
 - [NO.1 SECURITY LIGHT DISPLAY IS NOT NORMAL \[IMMOBILIZER SYSTEM\]](#)
- The following conditions may cause poor signal communication between the key and vehicle, resulting in the engine not starting or a key registration error. Do not perform any work under the following conditions:
 - If any of the following items are touching or near the key head.
 - Spare keys
 - Keys for other vehicles equipped with an immobilizer system
 - Any metallic object
 - Any electronic device, or any credit or other cards with magnetic strips

EXAMPLES:



METAL RING LYING
ON KEY HEAD



METAL PART OF ANOTHER
KEY TOUCHING KEY HEAD



KEY IS CLOSE TO OR TOUCHING
ANOTHER IMMOBILIZER SYSTEM KEY



METAL OBJECT TOUCHING
KEY HEAD

NOTE:

- If two or more abnormalities are detected as a result of malfunction diagnosis, only the DTC with the lowest number of those detected will be displayed by the security light. However, multiple DTCs are stored at the same time.
- If two or more immobilizer system DTCs are verified, first repair the part indicated by the security light displayed DTC. After completely repairing one location, turn the ignition switch from the LOCK to the ON position and perform immobilizer system malfunction diagnosis.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

PID/DATA MONITOR TABLE [IMMOBILIZER SYSTEM]

PID name (definition)	Detection condition
CCNT_DD (Number of continuous DTCs)	<ul style="list-style-type: none">• DTCs are detected: 1—255• No DTCs are detected: 0
NUMKEYS (Number of key ID numbers registered in the keyless control module)	Number of key ID numbers registered: 0—8

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

DTC INSPECTION (IMMOBILIZER SYSTEM) [IMMOBILIZER SYSTEM]

Security Light

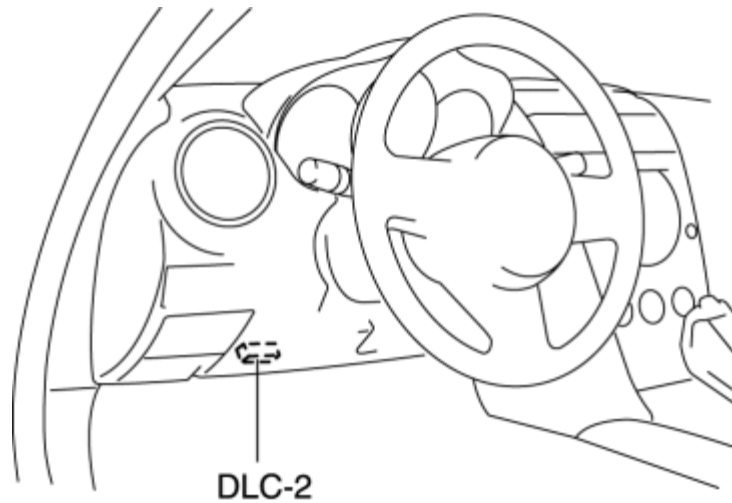
1. Turn the ignition switch to the ON position.
2. Verify the security light state.
 - If there is any malfunction:
 - After any malfunction is detected, the security light will function as follows **for approx. 1 min.**
 - DTC 16 and lower: Flashes
 - DTC 21 and higher: Illuminated
 - If there is no malfunction:
 - The security light illuminates **for approx. 3 s** and goes out.
3. When any malfunction has been detected, read DTCs via flashing patterns displayed after the security light flashes or is illuminated **for approx. 1 min.**
 - Perform troubleshooting according to the corresponding DTC inspection.

NOTE:

- A verified DTC is flashed 10 times repeatedly by the security light.
- If multiple DTCs are verified, the security light displays only the smallest DTC.

M-MDS

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 - Select "Self Test".
 - Select "Modules".
 - Select "RKE".
- When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "RKE".
 - Select "Self Test".

3. Verify the DTC according to the directions on the screen.

- If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.

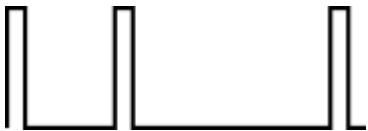




4. Disconnect the M-MDS.

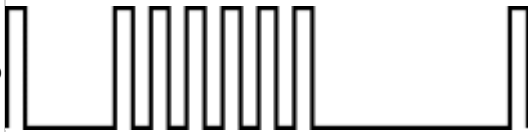



[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

DTC TABLE (IMMOBILIZER SYSTEM) [IMMOBILIZER SYSTEM]

DTC		M-MDS display [*]		Detection condition	Page
Security light flashing pattern		Keyless control module	PCM		
11		B1681	P1260	No detected communication with the coil antenna	SECURITY LIGHT: 11. DTC B1681/P1260 [IMMOBILIZER SYSTEM]
12		B2103	P1260	coil antenna malfunction	SECURITY LIGHT: 12. DTC B2103/P1260 [IMMOBILIZER SYSTEM]
13		B1600	P1260	The key ID number data cannot be read.	SECURITY LIGHT: 13. DTC B1600/P1260 [IMMOBILIZER SYSTEM]
		B2431	P1260	Key ID number registration error	SECURITY LIGHT: 13. DTC B2431/P1260 [IMMOBILIZER SYSTEM]
14		B1602	P1260	The keyless control module cannot read key ID number data normally.	SECURITY LIGHT: 14. DTC B1602/P1260 [IMMOBILIZER SYSTEM]
15		B1601	P1260	The keyless control module has detected unregistered key ID number.	SECURITY LIGHT: 15. DTC B1601/P1260 [IMMOBILIZER SYSTEM]

16		U2510	P1260	Communication error between the keyless control module and the PCM (no response)	SECURITY LIGHT: 16. DTC U2510/P1260. U1147/P1260 [IMMOBILIZER SYSTEM]
		U1147	P1260	Communication error between the keyless control module and the PCM (mismatched conditions)	
21		B1213	P1260	Only one key ID number is registered.	SECURITY LIGHT: 21. DTC B1213/P1260 [IMMOBILIZER SYSTEM]
22		B2141	P1260	Communication error between the keyless control module and the PCM (data transfer error)	SECURITY LIGHT: 22. DTC B2141/P1260 [IMMOBILIZER SYSTEM]
23		B2139	P1260	ID number data in the PCM and the keyless control module do not match.	SECURITY LIGHT: 23. DTC B2139/P1260 [IMMOBILIZER SYSTEM]
Not illuminated		B1342	-	Keyless control module malfunction	DTC B1342 (KEYLESS CONTROL MODULE) [IMMOBILIZER SYSTEM]

*

The letters at the beginning of each DTC are only displayed when using the M-MDS, and refer to the following: B= Body system, P= Powertrain system, U= Network communication system.

[< Previous](#) [Next >](#)

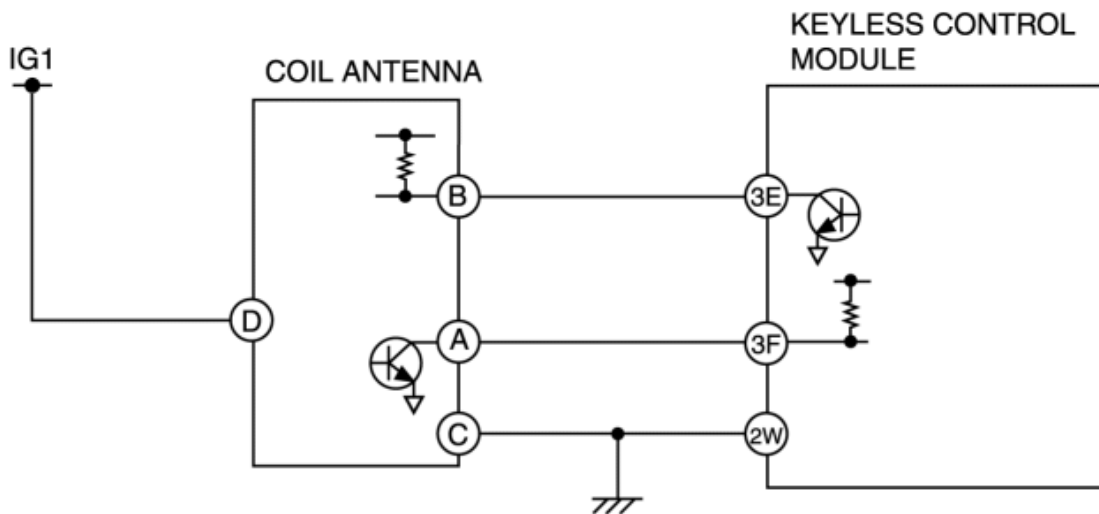
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

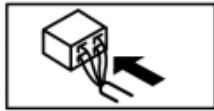
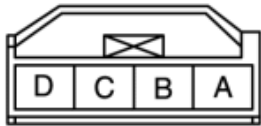
2011 - RX-8 - Body and Accessories

SECURITY LIGHT: 11, DTC B1681/P1260 [IMMOBILIZER SYSTEM]

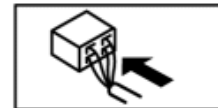
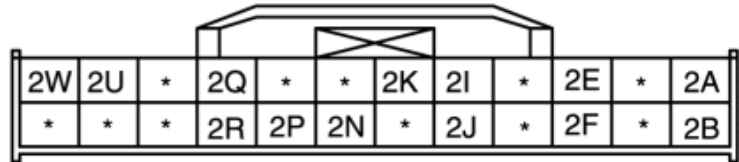
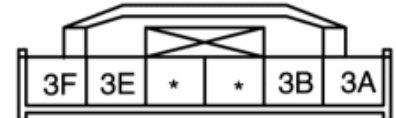
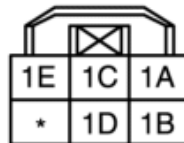
SECURITY LIGHT: 11	No detected communication with the coil antenna
DTC: B1681/P1260	
DETECTION CONDITION	<ul style="list-style-type: none">• No detected communication with the coil antenna
POSSIBLE CAUSE	<ul style="list-style-type: none">• The coil antenna is pulled out• Related wiring harnesses malfunction• Coil antenna malfunction• Keyless control module malfunction



COIL ANTENNA
HARNESS SIDE CONNECTOR



KEYLESS CONTROL MODULE
HARNESS SIDE CONNECTOR



Diagnostic Procedure

STEP	INSPECTION	ACTION
1	VERIFY COIL ANTENNA CORRECTLY INSTALLED <ul style="list-style-type: none"> Verify the installation condition of the coil antenna. Is the coil antenna correctly installed? (Is the connector pulled out?) 	YesGo to the next step.
		No Install the coil antenna correctly, then go to the next step. (See COIL ANTENNA REMOVAL/INSTALLATION .)
2	INSPECT COIL ANTENNA POWER SUPPLY <ul style="list-style-type: none"> Disconnect the coil antenna connector. Connect the negative battery cable. 	YesGo to the next step.
		No Repair or replace the wiring harness, then go to Step 8.

	<ul style="list-style-type: none"> • Turn the ignition switch to the ON position. • Measure the voltage at coil antenna connector terminal B. <ul style="list-style-type: none"> ▪ Is the voltage 8 V or more? 		
3	INSPECT WIRING HARNESS BETWEEN COIL ANTENNA AND GROUND <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the negative battery cable. • Measure the continuity of the wiring harness between coil antenna connector terminal C and ground. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness, then go to Step 8.
4	INSPECT COMMUNICATION CIRCUIT (INPUT) FOR CONTINUITY <ul style="list-style-type: none"> • Disconnect the keyless control module connector • Measure the continuity of the wiring harness between coil antenna connector terminal B and keyless control module connector terminal 3E. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness between the coil antenna and the keyless control module, then go to Step 8.
5	INSPECT COMMUNICATION CIRCUIT (OUTPUT) FOR CONTINUITY <ul style="list-style-type: none"> • Measure the continuity of the wiring harness between coil antenna connector terminal A and keyless control module connector terminal 3F. • Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness between the coil antenna and the keyless control module, then go to Step 8.
6	INSPECT COIL ANTENNA INPUT SIGNAL CIRCUIT <ul style="list-style-type: none"> • Connect the coil antenna connector. • Connect the negative battery cable. • Turn the ignition switch to the ON position. • Measure the voltage at coil antenna connector terminal B. <ul style="list-style-type: none"> ▪ Is the voltage 8 V or more? 	Yes	Go to the next step.
		No	Replacing the coil antenna. (See COIL ANTENNA REMOVAL/INSTALLATION.) Go to Step 8
7	INSPECT COMMUNICATION CIRCUIT (OUTPUT) FOR	Yes	Go to the next step.

	<p>CONTINUITY</p> <ul style="list-style-type: none"> • Measure the continuity of the wiring harness between coil antenna connector terminal A and ground. • Is there continuity? 	No	<ul style="list-style-type: none"> • Replacing the coil antenna. <p>(See COIL ANTENNA REMOVAL/INSTALLATION.)</p> <ul style="list-style-type: none"> • Go to the next step
8	<p>VERIFY AFTER REPAIR</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the negative battery cable. • Reconnect the disconnected connectors. • Connect the negative battery cable. • Clear DTCs using the M-MDS. <p>(See CLEARING DTC [IMMOBILIZER SYSTEM].)</p> <ul style="list-style-type: none"> • Verify DTCs using the M-MDS. <p>(See DTC INSPECTION (IMMOBILIZER SYSTEM) [IMMOBILIZER SYSTEM].)</p> <ul style="list-style-type: none"> • Are DTCs output again? <ul style="list-style-type: none"> ▪ Keyless control module: B1681 ▪ PCM: P1260 	Yes	<ul style="list-style-type: none"> • Replace the keyless control module and program the immobilizer system-related parts. <p>(See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM].)</p> <ul style="list-style-type: none"> • Go to the next step.
		No	Go to the next step.
9	<p>VERIFY THAT NO OTHER DTCs ARE PRESENT</p> <ul style="list-style-type: none"> • Verify if other DTCs are displayed. • Are any other DTCs output? 	Yes	Perform the corresponding DTC inspection.
		No	DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

SECURITY LIGHT: 12, DTC B2103/P1260 [IMMOBILIZER SYSTEM]

SECURITY LIGHT: 12	Coil malfunction
DTC: B2103/P1260	
DETECTION CONDITION	<ul style="list-style-type: none"> • Coil malfunction
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Poor connection of the coil connector • Coil malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	INSPECT CONNECTOR CONNECTION <ul style="list-style-type: none"> • Are the coil connector and the keyless control module connector securely connected? 	Yes Replace the coil. (See COIL ANTENNA REMOVAL/INSTALLATION .)
		No Connect the connector securely.

2011 - RX-8 - Body and Accessories

SECURITY LIGHT: 13, DTC B1600/P1260 [IMMOBILIZER SYSTEM]

SECURITY LIGHT: 13	The key ID number data cannot be read
DTC: B1600/P1260	
DETECTION CONDITION	<ul style="list-style-type: none">• The key ID number data cannot be read.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Any of the following items are touching or near the key head.<ul style="list-style-type: none">▪ Spare keys▪ Keys for other vehicles equipped with an immobilizer system▪ Any metallic object▪ Any electronic device, or any credit or other cards with magnetic strips• No transponder in the key• Transponder malfunction (Key ID number is not output)• Coil malfunction• Keyless control module malfunction

EXAMPLES:



METAL RING LYING ON KEY HEAD



METAL PART OF ANOTHER
KEY TOUCHING KEY HEAD



KEY IS CLOSE TO OR TOUCHING
ANOTHER IMMOBILIZER SYSTEM KEY



METAL OBJECT TOUCHING KEY HEAD

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	VERIFY DTC USING M-MDS <ul style="list-style-type: none"> Is B1600/P1260 displayed? 	Yes Go to Step 3.
		No Go to the next step.
2	VERIFY DTC USING M-MDS <ul style="list-style-type: none"> Is B2431/P1260 displayed? 	Yes SECURITY LIGHT: 13, M-MDS: B2431/P1260. (See SECURITY LIGHT: 13, DTC B2431/P1260 [IMMOBILIZER SYSTEM].)
		No Go to the next step.
3	VERIFY WHETHER KEY IS VALID OR NOT <ul style="list-style-type: none"> Are there any keys with which the engine can be started, other than the key that is a cause of the displayed DTC? 	Yes Go to Step 5.
		No Go to the next step.
4	VERIFY WHETHER MALFUNCTION IS IN KEY OR COIL <ul style="list-style-type: none"> Using the M-MDS, register an 	Yes Replace the coil, then go to Step 6. (See COIL ANTENNA REMOVAL/INSTALLATION.)

	<p>additional key.</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM].)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <ul style="list-style-type: none"> Using the registered key, turn the ignition switch to the ON position. Verify the DTC using the M-MDS. <ul style="list-style-type: none"> Is B1600/P1260 displayed again? 	No	<ul style="list-style-type: none"> Dispose of the malfunctioning key. Register a new key if necessary. <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM].)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p>
5	VERIFY WHETHER MALFUNCTION IS IN KEY OR COIL <ul style="list-style-type: none"> Using another valid key, turn the ignition switch to the ON position. Verify the DTC using the M-MDS. <ul style="list-style-type: none"> Is B1600/P1260 displayed again? 	Yes	<p>Replace the coil, then go to the next step.</p> <p>(See COIL ANTENNA REMOVAL/INSTALLATION.)</p>
		No	<ul style="list-style-type: none"> Dispose of the malfunctioning key. Register a new key if necessary. <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM].)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p>
6	INSPECT KEYLESS CONTROL MODULE <ul style="list-style-type: none"> Using the registered key, turn the ignition switch to the ON position. <ul style="list-style-type: none"> Is B1600/P1260 displayed again? 	Yes	<p>Replace the keyless control module and perform procedures for when replacing the keyless control module only.</p> <p>(See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM].)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p>
		No	<p>DTC troubleshooting completed.</p>

2011 - RX-8 - Body and Accessories

SECURITY LIGHT: 13, DTC B2431/P1260 [IMMOBILIZER SYSTEM]

SECURITY LIGHT: 13	Key ID number registration error
DTC: B2431/P1260	
DETECTION CONDITION	<ul style="list-style-type: none">• Key ID number registration error
POSSIBLE CAUSE	<ul style="list-style-type: none">• Any of the following items are touching or near the key head.• Errors during key ID number registration procedure<ul style="list-style-type: none">▪ Spare keys▪ Keys for other vehicles equipped with an immobilizer system▪ Any metallic object▪ Any electronic device, or any credit or other cards with magnetic strips• Keyless control module malfunction

EXAMPLES:



METAL RING LYING ON KEY HEAD



METAL PART OF ANOTHER
KEY TOUCHING KEY HEAD



METAL OBJECT TOUCHING KEY HEAD



KEY IS CLOSE TO OR TOUCHING
ANOTHER IMMOBILIZER SYSTEM KEY

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	VERIFY DTC USING M-MDS <ul style="list-style-type: none"> Is B2431/P1260 displayed? 	Yes	Go to Step 3.
		No	Go to the next step.
2	VERIFY DTC USING M-MDS <ul style="list-style-type: none"> Is B1600/P1260 displayed? 	Yes	SECURITY LIGHT: 13, M-MDS: B1600/P1260. (See SECURITY LIGHT: 13, DTC B1600/P1260 [IMMOBILIZER SYSTEM].)
		No	Go to the next step.
3	INSPECT KEYLESS CONTROL MODULE <ul style="list-style-type: none"> Using the M-MDS, clear the key ID number and re-register it. (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM].) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND 	Yes	Replace the keyless control module and perform procedures for when replacing the keyless control module only. (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM].) (See IMMOBILIZER SYSTEM-RELATED PARTS

<p>START SYSTEM].)</p> <p>NOTE:</p> <ul style="list-style-type: none">• Two or more keys must be registered to start the engine.• Using the registered key, turn the ignition switch to the ON position.• Verify the DTC using the M-MDS.<ul style="list-style-type: none">▪ Is B2431/P1260 displayed again?	<p>PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <p>No DTC troubleshooting completed.</p>
---	--

2011 - RX-8 - Body and Accessories

SECURITY LIGHT: 14, DTC B1602/P1260 [IMMOBILIZER SYSTEM]

SECURITY LIGHT: 14	The keyless control module cannot read key ID number data normally
DTC: B1602/P1260	
DETECTION CONDITION	<ul style="list-style-type: none">• The keyless control module cannot read key ID number data normally.
POSSIBLE CAUSE	<ul style="list-style-type: none">• Any of the following items are touching or near the key head.<ul style="list-style-type: none">▪ Spare keys▪ Keys for other vehicles equipped with an immobilizer system▪ Any metallic object▪ Any electronic device, or any credit or other cards with magnetic strips• Transponder (key) malfunction• Coil malfunction• Keyless control module malfunction

EXAMPLES:



METAL RING LYING ON KEY HEAD



METAL PART OF ANOTHER
KEY TOUCHING KEY HEAD



METAL OBJECT TOUCHING KEY HEAD



KEY IS CLOSE TO OR TOUCHING
ANOTHER IMMOBILIZER SYSTEM KEY

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	VERIFY WHETHER KEY IS VALID OR NOT <ul style="list-style-type: none"> Using another registered key, turn the ignition switch to the ON position. If there is not another registered key, register an additional key using the M-MDS and turn the ignition key to the ON position using the registered key. <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM].)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <ul style="list-style-type: none"> Is the DTC displayed again? <ul style="list-style-type: none"> SECURITY LIGHT: 14 M-MDS: B1602/P1260 	Yes Replace the coil, then go to the next step. (See COIL ANTENNA REMOVAL/INSTALLATION .)
		No <ul style="list-style-type: none"> Dispose of the malfunctioning key. Register a new key if necessary. <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM].)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p>
2	INSPECT KEYLESS CONTROL MODULE	Yes Replace the keyless control module and

	<ul style="list-style-type: none">• Using another registered key, turn the ignition switch to the ON position.• Is the DTC displayed again?<ul style="list-style-type: none">▪ SECURITY LIGHT: 14▪ M-MDS: B1602/P1260	<p>perform procedures for when replacing the keyless control module only.</p> <p>(See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM].)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <p>No DTC troubleshooting completed.</p>
--	---	---

2011 - RX-8 - Body and Accessories

SECURITY LIGHT: 15, DTC B1601/P1260 [IMMOBILIZER SYSTEM]

SECURITY LIGHT: 15	The keyless control module has detected unregistered key ID number.
DTC: B1601/P1260	
DETECTION CONDITION	<ul style="list-style-type: none"> The keyless control module has detected unregistered key ID number.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Attempt made to register a ninth key Unregistered key used Keyless control module malfunction No keys have been registered after replacing the keyless control module.

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	VERIFY NUMBER OF REGISTERED KEYS <ul style="list-style-type: none"> Using the M-MDS, perform the PID/data monitor inspection and confirm the number of registered keys. <p>(See PID/DATA MONITOR TABLE [IMMOBILIZER SYSTEM].)</p> <ul style="list-style-type: none"> Are one or more keys registered? 	Yes Go to the next step.
		No Go to Step 3.

2	VERIFY NUMBER OF REGISTERED KEYS <ul style="list-style-type: none"> Using the M-MDS, perform the PID/data monitor inspection and confirm the number of registered keys. <p>(See PID/DATA MONITOR TABLE [IMMOBILIZER SYSTEM].)</p> <ul style="list-style-type: none"> Are eight keys registered? 	<div>Yes</div> <div>Using the M-MDS, clear the key ID numbers as necessary, then go to the next step.</div> <div>No</div> <div>Go to the next step.</div>
3	INSPECT KEYLESS CONTROL MODULE <ul style="list-style-type: none"> Using the M-MDS, register the key ID number. <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM].)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <p>NOTE:</p> <ul style="list-style-type: none"> Two or more keys must be registered to start the engine. Using the registered key, turn the ignition switch to the ON position. Is the DTC displayed again? <ul style="list-style-type: none"> SECURITY LIGHT: 15 M-MDS: B1601/P1260 	<div>Yes</div> <div>Replace the keyless control module and perform procedures for when replacing the keyless control module only.</div> <div>(See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)</div> <div>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM].)</div> <div>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</div> <div>No</div> <div>DTC troubleshooting completed.</div>

2011 - RX-8 - Body and Accessories

SECURITY LIGHT: 16, DTC U2510/P1260, U1147/P1260 [IMMOBILIZER SYSTEM]

SECURITY LIGHT: 16	DTC: U2510/P1260	Communication error between the keyless control module and the PCM (no response)
	DTC: U1147/P1260	Communication error between the keyless control module and the PCM (mismatched conditions)
DETECTION CONDITION		<p>Keyless control module DTC: U2510</p> <ul style="list-style-type: none"> Communication error between the keyless control module and the PCM (no response) <p>Keyless control module DTC: U1147</p> <ul style="list-style-type: none"> Communication error between the keyless control module and the PCM (mismatched conditions)
POSSIBLE CAUSE		<ul style="list-style-type: none"> Keyless control module malfunction Malfunction in the wiring harness (CAN line) between the keyless control module and the PCM PCM malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	<p>VERIFY DTC USING M-MDS</p> <ul style="list-style-type: none"> Are either U1900 or U0073, or both, displayed, by either the 	<p>Yes Perform troubleshooting according to the corresponding DTC inspection.</p>

	keyless control module or the PCM, or both?	No	<p>Replace the keyless control module and perform procedures for when replacing the keyless control module only.</p> <p>(See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM].)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <p>Go to the next step.</p>
2	<p>VERIFY DTC</p> <ul style="list-style-type: none"> Using the registered key, turn the ignition switch to the ON position. Is the DTC displayed? <ul style="list-style-type: none"> SECURITY LIGHT: 16 M-MDS: U2510 or U1147/P1260 	Yes	<p>Replace the PCM and perform procedures for when replacing the PCM only.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM].)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p>
		No	DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

SECURITY LIGHT: 21, DTC B1213/P1260 [IMMOBILIZER SYSTEM]

SECURITY LIGHT: 21	Only one key ID number is registered.
DTC: B1213/P1260	
DETECTION CONDITION	<ul style="list-style-type: none"> Only one key is registered.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Only one registered key

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	VERIFY NUMBER OF REGISTERED KEYS <ul style="list-style-type: none"> Using the M-MDS, perform the PID/data monitor inspection and confirm the number of registered keys. (See PID/DATA MONITOR TABLE [IMMOBILIZER SYSTEM].) Are two or more keys registered? 	Yes Replace the keyless control module and perform procedures for when replacing the keyless control module only. (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION .) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM] .) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] .)
		No <ul style="list-style-type: none"> Using the M-MDS, clear the key ID number and register a new key if necessary. (See IMMOBILIZER SYSTEM-

			RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM]. (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].) • Go to the next step.
2	VERIFY DTC <ul style="list-style-type: none">Using the registered key, turn the ignition switch to the ON position.Is the DTC displayed again?<ul style="list-style-type: none">SECURITY LIGHT: 21M-MDS: B1213/P1260	Yes	Replace the keyless control module and perform procedures for when replacing the keyless control module only. (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM].) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

SECURITY LIGHT: 22, DTC B2141/P1260 [IMMOBILIZER SYSTEM]

SECURITY LIGHT: 22	Communication error between the keyless control module and the PCM (data transfer error)
DTC: B2141/P1260	
DETECTION CONDITION	<ul style="list-style-type: none"> Communication error between the keyless control module and the PCM (data transfer error)
POSSIBLE CAUSE	<ul style="list-style-type: none"> Keyless control module malfunction Malfunction in the wiring harness (CAN line) between the keyless control module and the PCM PCM malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	VERIFY DTC USING M-MDS <ul style="list-style-type: none"> Are either U1900 or U0073, or both displayed, by either the keyless control module or the PCM, or both? 	Yes	Perform troubleshooting according to the corresponding DTC inspection.
		No	Go to the next step.
2	VERIFY DTC <ul style="list-style-type: none"> Using the registered key, turn the ignition switch to the ON 	Yes	<ul style="list-style-type: none"> Perform procedures for when replacing the PCM only. (See IMMOBILIZER SYSTEM-

	position. <ul style="list-style-type: none"> Is the DTC displayed? <ul style="list-style-type: none"> SECURITY LIGHT: 22 M-MDS: B2141/P1260 		RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM]. (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].) <ul style="list-style-type: none"> Go to the next step.
		No DTC troubleshooting completed.	
3	EXAMINE KEYLESS CONTROL MODULE AND PCM <ul style="list-style-type: none"> Is the DTC displayed again? <ul style="list-style-type: none"> SECURITY LIGHT: 22 M-MDS: B2141/P1260 	Yes	<ul style="list-style-type: none"> Replace the keyless control module and perform procedures for when replacing the keyless control module only. (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM].) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].) Go to the next step.
		No DTC troubleshooting completed.	
4	EXAMINE PCM <ul style="list-style-type: none"> Is the DTC displayed again? <ul style="list-style-type: none"> SECURITY LIGHT: 22 M-MDS: B2141/P1260 	Yes	Replace the PCM and perform procedures for when replacing the PCM only. (See PCM REMOVAL/INSTALLATION [13B-MSP].) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM].) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)
		No DTC troubleshooting completed.	

2011 - RX-8 - Body and Accessories

SECURITY LIGHT: 23, DTC B2139/P1260 [IMMOBILIZER SYSTEM]

SECURITY LIGHT: 23	ID number data in the PCM and the keyless control module do not match
DTC: B2139/P1260	
DETECTION CONDITION	<ul style="list-style-type: none"> ID number data in the keyless control module and the PCM are different.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Keyless control module malfunction PCM malfunction Necessary procedures were not performed using the M-MDS after replacing the PCM.

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	VERIFY DTC USING M-MDS <ul style="list-style-type: none"> Are either U1900 or U0073, or both, displayed, by either the keyless control module or the PCM, or both. 	Yes	Perform troubleshooting according to the corresponding DTC inspection.
		No	Go to the next step.
2	<ul style="list-style-type: none"> Perform procedures for when replacing the PCM only. <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING)</p>	Yes	<ul style="list-style-type: none"> Replace the keyless control module and perform procedures for when replacing the keyless control module only.

	<p>[WITH KEYLESS ENTRY SYSTEM].)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <ul style="list-style-type: none"> Using the registered key, turn the ignition switch to the ON position. Is the DTC displayed? <ul style="list-style-type: none"> SECURITY LIGHT: 23 M-MDS: B2139/P1260 		<p>(See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM].)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <ul style="list-style-type: none"> Go to the next step.
		No DTC troubleshooting completed.	
3	<ul style="list-style-type: none"> Are any or all of the following DTCs displayed again? <ul style="list-style-type: none"> SECURITY LIGHT: 23 M-MDS: B2139/P1260 	Yes	<p>Replace the PCM and perform procedures for when replacing the PCM only.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM].)</p> <p>(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p>
		No DTC troubleshooting completed.	

2011 - RX-8 - Body and Accessories

DTC B1342 (KEYLESS CONTROL MODULE) [IMMOBILIZER SYSTEM]

DTC: B1342 (KEYLESS CONTROL MODULE)	Keyless control module malfunction
DETECTION CONDITION	<ul style="list-style-type: none"> • Keyless control module malfunction
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Keyless control module malfunction

DETECTION CONDITION

- Keyless control module malfunction

POSSIBLE CAUSE

- Keyless control module malfunction

Diagnostic Procedure

STEP	INSPECTION	ACTION
1	EXAMINE KEYLESS CONTROL MODULE <ul style="list-style-type: none"> • Is the DTC displayed? <ul style="list-style-type: none"> ▪ M-MDS: B1342 	Yes Replace the keyless control module and perform procedures for when replacing the keyless control module only. (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION .) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM] .)

		(See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)
		No DTC troubleshooting completed.

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

M-MDS AND VEHICLE NOT COMMUNICATING [MULTIPLEX COMMUNICATION SYSTEM]

CAUTION:

- Perform the following on-board diagnosis according to [FOREWORD \[MULTIPLEX COMMUNICATION SYSTEM\]](#) troubleshooting procedure.

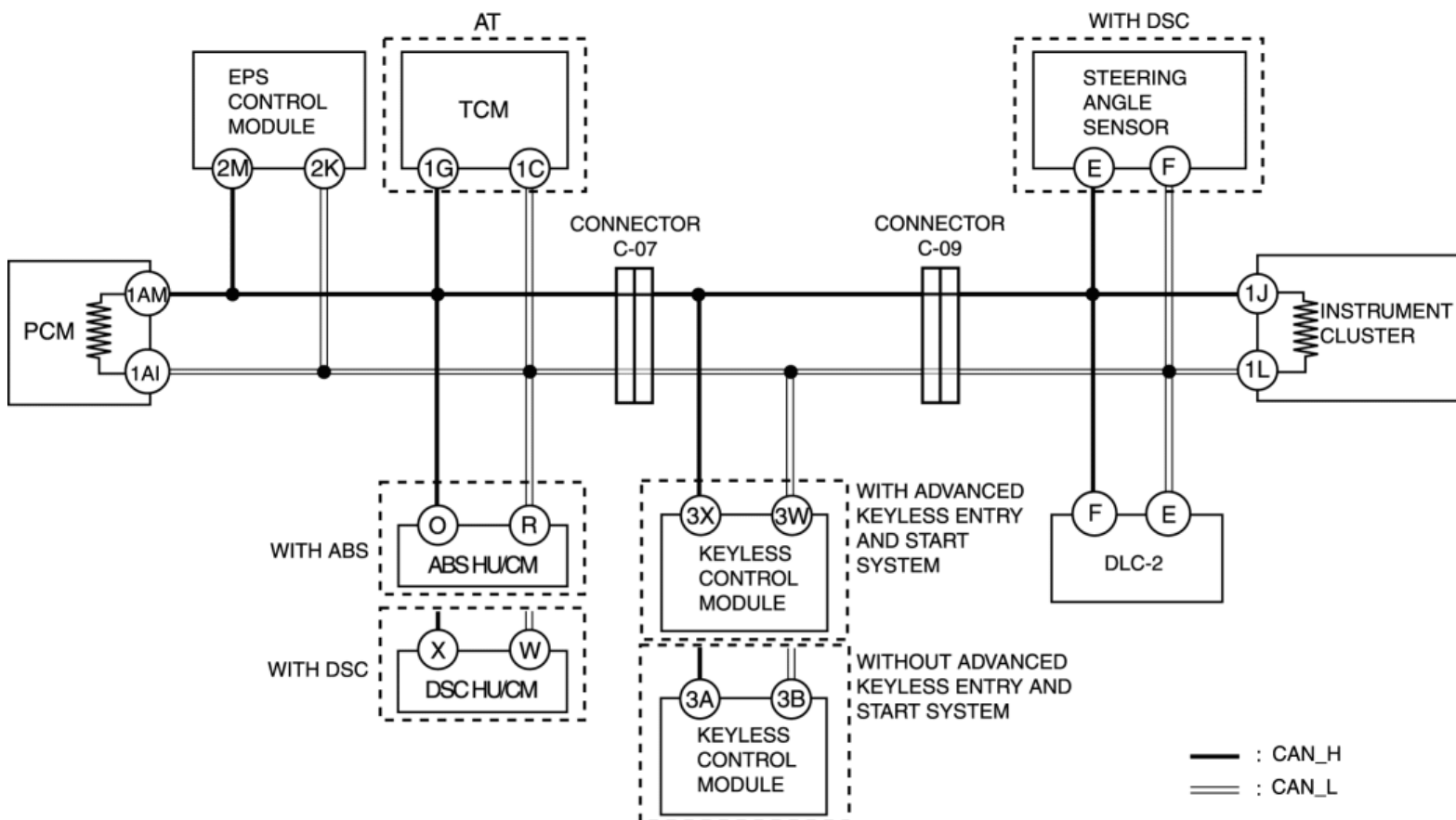
Detection Condition

- Possible causes of communication errors between the M-MDS and vehicle include communication circuit interruption due to an open circuit in the CAN communication wiring harness, or poor contact of connector terminals, or a BUS OFF condition due to a short circuit in the CAN communication wiring harness.

Possible Causes

- Open circuit in wiring harness between PCM and data link connector-2
- Improper insertion of PCM, connector C-07 or C-09 damage, deformation, corrosion, or disconnection of connector terminals
- Short circuit in wiring harness between CAN system-related module CAN_L and CAN_H lines
- Short circuit to power supply in wiring harness between CAN system-related module
- Short circuit to ground in wiring harness between CAN system-related module
- Short circuit to power supply in CAN-system related module internal CAN lines
- Short circuit to ground in CAN system-related module internal CAN lines
- Damage, deformation, corrosion, or disconnection of data link connector-2
- PCM power supply is not normal
- PCM ground is not normal
- PCM internal resistance is not normal
- CAN-system related module malfunction

Wiring Diagram



Diagnostic Procedure

CAUTION:

- When disconnecting the connector, verify that there is no looseness, damage, deformation, corrosion, or poor connection of the connector terminals.

Step	Inspection	Action
1	VERIFICATION BEFORE SERVICING <ul style="list-style-type: none"> Is there communication between the M-MDS and vehicle? 	Yes Go to the next step.
		No Go back to FOREWORD [MULTIPLEX COMMUNICATION SYSTEM]. (See FOREWORD [MULTIPLEX COMMUNICATION SYSTEM] .)
2	VERIFY THAT M-MDS AND DLC-2 ARE CONNECTED <ul style="list-style-type: none"> Verify the connection condition between the M-MDS and DLC-2. Are the connector terminals normal without damage, deformation, corrosion, or disconnection? 	Yes Go to the next step.
		No Correct the connection condition, then go to Step 12.
3	VERIFY PCM POWER SUPPLY CONDITION <ul style="list-style-type: none"> Refer to the PCM terminal voltage table and inspect the terminal voltage and fuse condition. (See PCM INSPECTION [13B-MSP].) Is the power supply condition normal? 	Yes Go to the next step.
		No Repair or replace the fuse or wiring harness, then go to Step 12.
	VERIFY PCM BODY GROUND CONDITION	

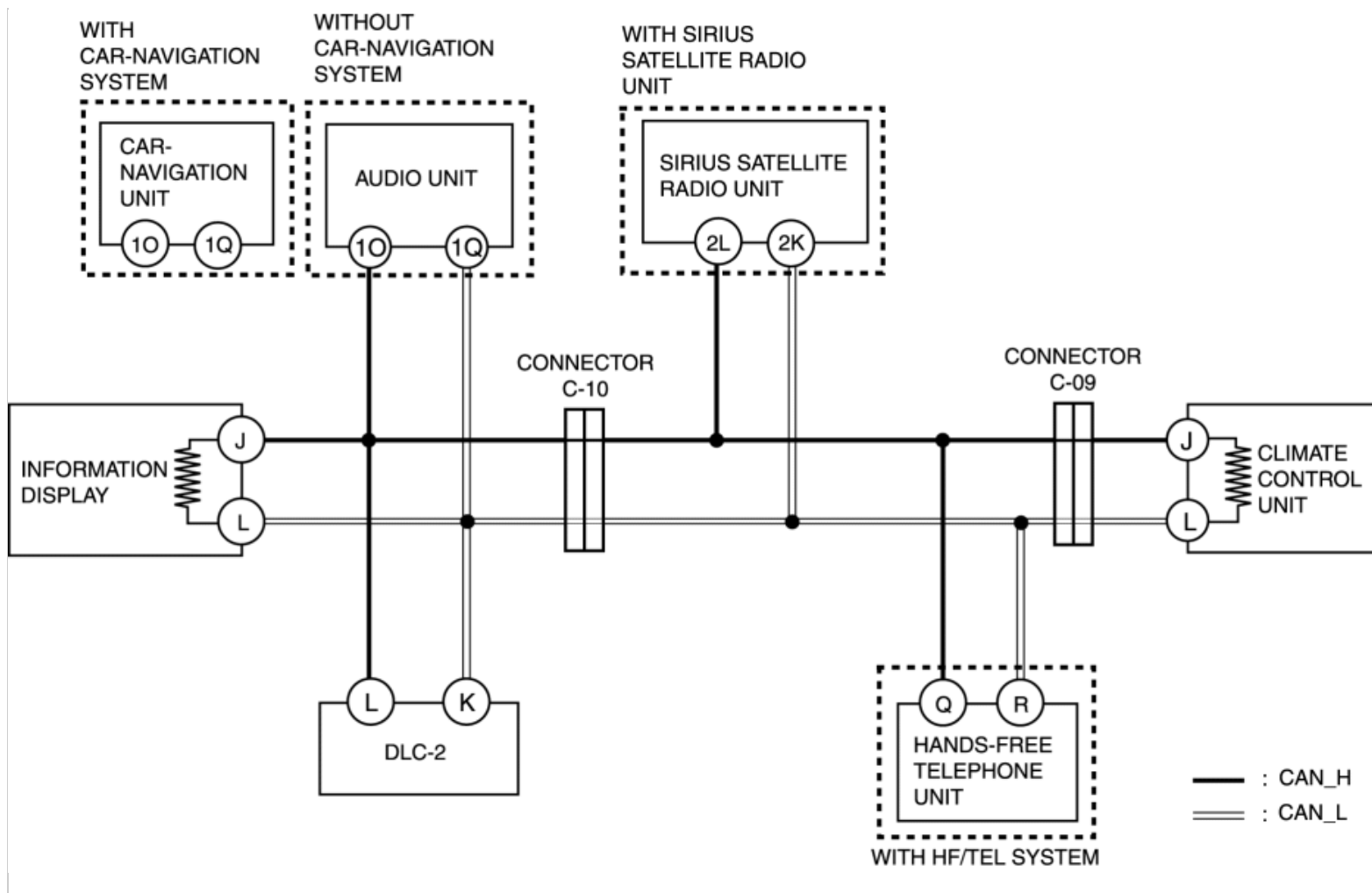
4	<ul style="list-style-type: none"> Inspect the PCM body ground wiring harness and ground point. Are the ground and ground point normal? 	Yes	Go to the next step.
5	INSPECT PCM CONNECTOR TERMINAL <ul style="list-style-type: none"> Disconnect the negative battery cable. Disconnect the PCM connector. Are the PCM connector terminal normal without damage, deformation, corrosion, or disconnection? 	Yes	Go to the next step.
6	INSPECT PCM <ul style="list-style-type: none"> Disconnect the PCM connector. Measure the resistance between the following PCM connector terminals: <ul style="list-style-type: none"> Between terminal 1AM and terminal 1AI (part side) Is the resistance 118-130 ohm? 	Yes	Go to the next step.
7	VERIFY THAT THERE IS NO OPEN CIRCUIT IN CAN COMMUNICATION WIRING HARNESS <p>CAUTION:</p> <ul style="list-style-type: none"> When inspecting the DLC-2, touch it with a paper clip or similar thin pin without directly inserting a tester into the terminals. Verify the continuity between the following terminals: <ul style="list-style-type: none"> Between DLC-2 terminal F and PCM terminal 1AM Between DLC-2 terminal F and PCM terminal 1AI Is there continuity? 	Yes	Go to the next step.
8	VERIFY THAT THERE IS NO SHORT CIRCUIT IN CAN COMMUNICATION WIRING HARNESS <p>CAUTION:</p> <ul style="list-style-type: none"> When inspecting the DLC-2, touch it with a paper clip or similar thin pin without directly inserting a tester into the terminals. Measure the resistance between the terminals. <ul style="list-style-type: none"> Between DLC-2 terminal F and DLC-2 terminal E Is the resistance 60 ohm or less? 	Yes	There is an open circuit in the CAN communication wiring harness. Repair or replace it, then go to Step 12.
9	VERIFY NO SHORT CIRCUIT TO GROUND IN CAN COMMUNICATION WIRING HARNESS <p>CAUTION:</p> <ul style="list-style-type: none"> When inspecting the DLC-2, touch it with a paper clip or similar thin pin without directly inserting a tester into the terminals. Verify the continuity between the following terminals: <ul style="list-style-type: none"> Between DLC-2 terminal F and ground Between DLC-2 terminal E and 	Yes	There is a short circuit to ground in the CAN communication wiring harness. Repair or replace it, then go to Step 12.
		No	Go to the next step.

	<p>ground</p> <ul style="list-style-type: none"> Between PCM terminal 1AM and ground Between PCM terminal 1AI and ground <ul style="list-style-type: none"> Is there continuity? 		
10	<p>VERIFY NO SHORT CIRCUIT TO POWER SUPPLY SYSTEM IN CAN COMMUNICATION WIRING HARNESS</p> <p>CAUTION:</p> <ul style="list-style-type: none"> When inspecting the DLC-2, touch it with a paper clip or similar thin pin without directly inserting a tester into the terminals. Verify the continuity between the following terminals: <ul style="list-style-type: none"> Between DLC-2 terminal F and DLC-2 terminal O Between DLC-2 terminal A and DLC-2 terminal O Between PCM terminal 1AM and PCM terminal 1AW Between PCM terminal 1AI and PCM terminal 1AW Is there continuity? 	<p>Yes There is a short circuit to the power supply system in the CAN communication wiring harness. Repair or replace it, then go to Step 12.</p> <p>No Go to the next step.</p>	
11	<p>INSPECT CAN-RELATED MODULES OTHER THAN PCM</p> <ul style="list-style-type: none"> Remove only one of the CAN-related modules other than those related to the PCM. Connect the negative battery cable. Connect the M-MDS to the DLC-2. Does the M-MDS recognize the vehicle? 	<p>Yes Replace the removed module.</p> <p>No Inspect all of the CAN-related modules other than those related to the PCM using the same procedure.</p> <p>After inspecting all of the modules, go to the next step.</p>	
12	<p>PERFORM VEHICLE IDENTIFICATION</p> <ul style="list-style-type: none"> Connect the M-MDS to the DLC-2. Does the M-MDS recognize the vehicle? 	<p>Yes DTC troubleshooting completed.</p> <p>No Replace the PCM.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p>	

2011 - RX-8 - Body and Accessories

DTC U2516, 16:Er12, DEVICE CODE:16 ERROR CODE:12, 26:Er81, DEVICE CODE:26 ERROR CODE:81 [MULTIPLEX COMMUNICATION SYSTEM]

DTC	U2516	Information display	CAN system communication error
	16:Er12	Audio unit	
	Device code:16 error code:12	Car-navigation unit	
	Device code:26 error code:81	Hands-free telephone unit (with Car-navigation system)	
	26:Er81	Hands-free telephone unit (without Car-navigation system)	
DETECTION CONDITION		WARNING: <ul style="list-style-type: none">Perform the following on-board diagnosis according to FOREWORD [MULTIPLEX COMMUNICATION SYSTEM] troubleshooting procedure.CAN system related harness malfunctionCAN system-related module malfunction	
POSSIBLE CAUSE		<ul style="list-style-type: none">Malfunction of connectors between information display, car-navigation unit or audio unit, SIRIUS satellite radio unit, hands-free telephone unit and climate control unitOpen or short circuit in wiring harnessInformation display malfunctionClimate control unit malfunctionCar-navigation unit or audio unit malfunctionSIRIUS satellite radio unit malfunctionHands-free telephone unit malfunction	



Diagnostic procedure

CAUTION:

- When disconnecting the connector, verify that there is no looseness, damage, deformation, corrosion, or poor connection of the connector terminals.

Step	Inspection	Action
1	VERIFICATION BEFORE SERVICING	Yes Determine the open circuit location referring to DETERMINING OPEN CIRCUIT LOCATION (MS-CAN) [MULTIPLEX COMMUNICATION SYSTEM] .
	<ul style="list-style-type: none"> Are any DTCs, except the following, displayed? <ul style="list-style-type: none"> U2516 16:Er12 Device code:16 error code:12 26:Er81 Device code:26 error code:81 	No Go to the next step.

2	INSPECTION OF CONTROL MODULE CONNECTOR OUTPUTTING DTCs <ul style="list-style-type: none"> Inspect the terminal condition of the control module connector outputting DTCs and the mid-connector. Are the connector terminals normal without damage, deformation, corrosion, or disconnection? 	Yes	Go to the next step.
		No	Repair or replace the connector, then go to Step 9.
3	INSPECTION OF POWER SUPPLY OF CONTROL MODULE OUTPUTTING DTCs <ul style="list-style-type: none"> Refer to the terminal voltage table of the control module outputting DTCs to inspect the terminal voltage and fuse condition. Is the power supply voltage normal? 	Yes	Go to the next step.
		No	Repair or replace the connector, then go to Step 9.
4	INSPECTION OF BODY GROUND CONDITION OF CONTROL MODULE OUTPUTTING DTCs <ul style="list-style-type: none"> Inspect the body ground wires and ground point of the control module outputting DTCs. Are the ground and ground point normal? 	Yes	Go to the next step.
		No	Repair or replace the connector, then go to Step 9.
5	CAN SYSTEM RELATED WIRING HARNESS INSPECTION <ul style="list-style-type: none"> CAN system related wiring harness inspection: <ul style="list-style-type: none"> Short to ground Short to power supply Short between twisted pair wiring harness Open circuit Is the wiring harness normal? 	Yes	Go to the next step.
		No	Repair or replace the connector, then go to Step 9.
6	INSPECT INFORMATION DISPLAY <ul style="list-style-type: none"> Disconnect the information display connector. Measure the resistance between the following information display connector terminals: 	Yes	Go to the next step.
		No	Replace the information display, then go to Step 9. (See INFORMATION DISPLAY REMOVAL/INSTALLATION.)

	<ul style="list-style-type: none"> Between terminal J and terminal L (part side) <ul style="list-style-type: none"> Is the resistance 118—130 ohm? 		
7	INSPECT CLIMATE CONTROL UNIT <ul style="list-style-type: none"> Disconnect the climate control unit connector. Measure the resistance between the following climate control unit connector terminals: <ul style="list-style-type: none"> Between terminal J and terminal L (part side) Is the resistance 118—130 ohm? 	YesGo to the next step.	
		No Replace the climate control unit, then go to Step 9. (See CLIMATE CONTROL UNIT REMOVAL/INSTALLATION [FULL-AUTO AIR CONDITIONER] .)	
8	CAN RELATED MODULE VERIFICATION <ul style="list-style-type: none"> Remove only one of the CAN-related modules. Clear DTCs using the M-MDS. Inspect the DTCs of all modules. Are DTCs U2516, 16:Er12, Device code:16 error code:12, 26:Er81, Device code:26 error code:81 displayed? 	YesReinstall the removed module, remove another module and perform the same inspection. Inspect all of the CAN-related modules using the same procedure. After inspecting all of the modules, go to the next step.	
		No Replace the removed module.	
9	AFTER REPAIR VERIFICATION <ul style="list-style-type: none"> Connect all of the modules. Clear DTCs. Inspect the DTCs. Are DTCs displayed? 	YesPerform the CAN system on-board diagnosis again according to the troubleshooting procedure (See FOREWORD [MULTIPLEX COMMUNICATION SYSTEM] .)	
		No DTC troubleshooting completed.	

2011 - RX-8 - Body and Accessories

DETERMINING OPEN CIRCUIT LOCATION (MS-CAN) [MULTIPLEX COMMUNICATION SYSTEM]

CAUTION:

- If the malfunctioning part is detected in the communication line, before disconnecting the related connector for inspection, press the connector in the connection direction to verify that there is no looseness or disconnection.
- When disconnecting the connector, verify that there is no damage, deformation, or corrosion of the connector terminals.

1. Verify DTCs of the modules related to the CAN system.

2. Apply the following items to the DTC output pattern and the malfunctioning location, and then verify the reference to the malfunctioning location.

- Communication error DTCs
- Display status of the air conditioner/audio control on the information display when the climate control unit, or either the audio unit or the car-navigation unit is operated.
- The operation condition of the SIRIUS satellite radio system and the hands-free telephone system.

NOTE:

- A hyphen (-) in the DTC output pattern cell indicates that the DTC may or may not be displayed depending on the malfunction detection conditions. If it is not displayed, the malfunctioning location can be determined by checking the crosses (×) and asterisks (*).

3. Inspect the possible cause and inspection item of the applicable malfunctioning part.

4. Perform the DTC inspection after the repair procedure.

- If any DTC is displayed, return to [FOREWORD \[MULTIPLEX COMMUNICATION SYSTEM\]](#).

DTC Output Pattern and Malfunctioning Location

Cross (×): Communication error DTC
Hyphen (-): Communication error DTC (may or may not be displayed)
Asterisk (*): No display or no operation

DTC display		DTC output pattern and malfunctioning location					
DTC output module	DTC	A	B	C	D	E	E
Information display	U0164 EATC	×			×	×	×
	U0184 ACU	×	×				
Audio unit	11:Er01		×	×	×		
Car-navigation unit	Device code 11/ Error code 01		×	×	×		
Information display display		Display pattern on information display					

None ACU ^{*1}	—	—				
None EATC ^{*2}	—			—	—	—
Audio control display	*	*				
Air conditioning control display	*			*	*	*
System operation	System operation pattern					
SIRIUS satellite radio system		*	*	*		
Hands-free telephone system		*		*	*	

*1

If “None ACU” is displayed on the information display, no DTC is displayed.

*2

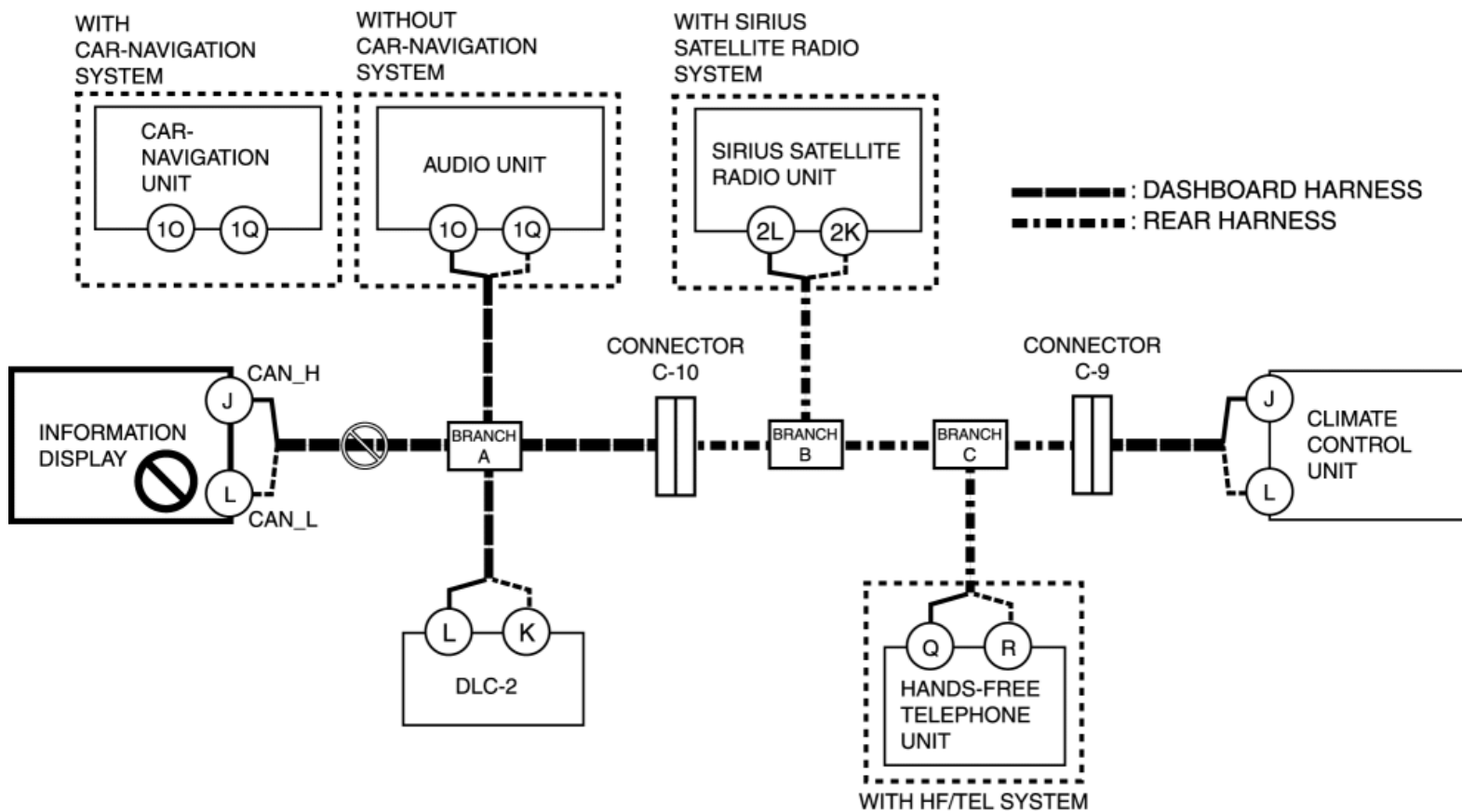
If “None EATC” is displayed on the information display, no DTC is displayed.

A

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between information display and branch A
- Information display malfunction

System wiring diagram



Inspection item

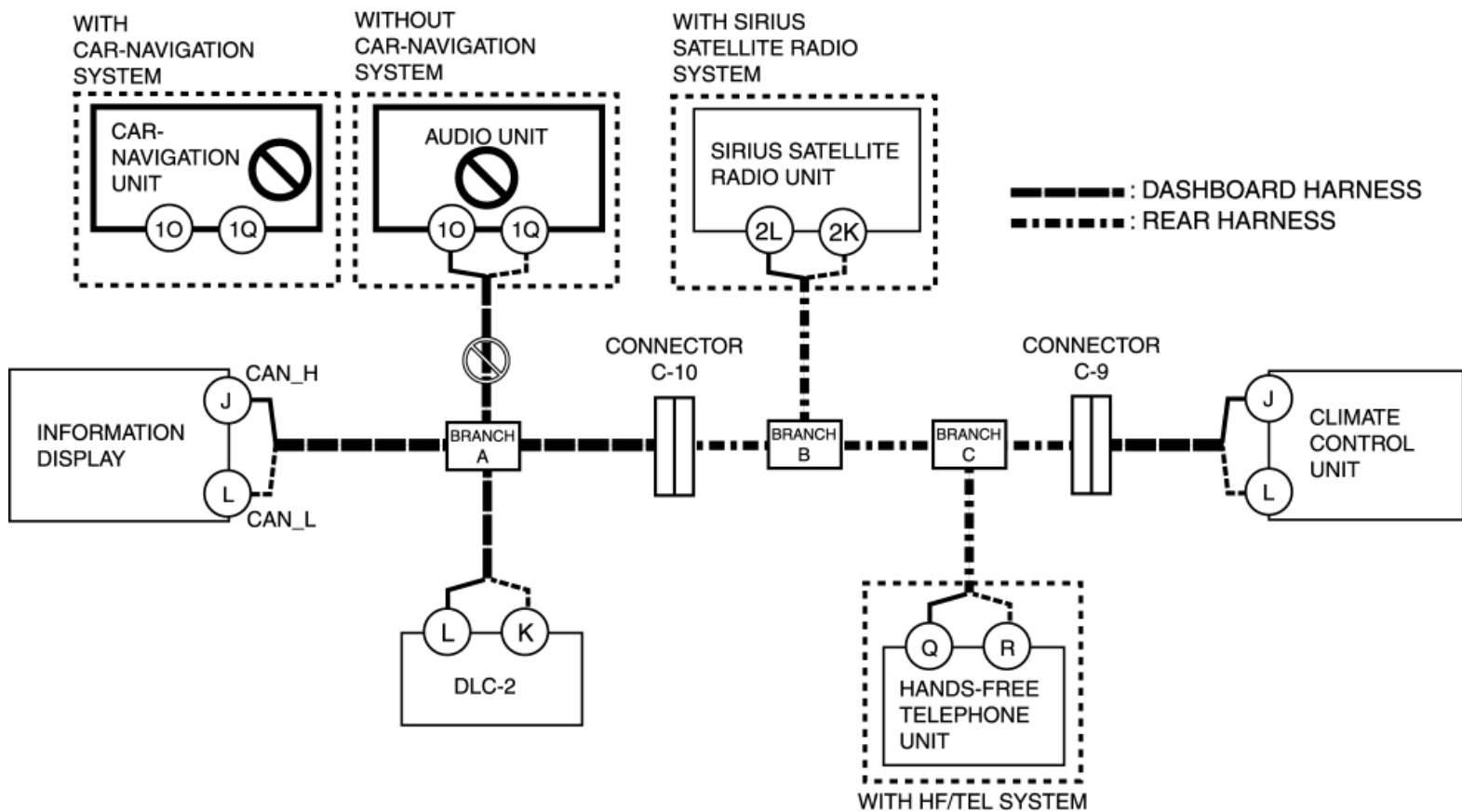
- Information display connector
- Wiring harness between information display terminal J and branch A
- Wiring harness between information display terminal L and branch A
- Information display

B

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between audio unit/car-navigation unit and branch A
- Audio unit/car-navigation unit malfunction

System wiring diagram



Inspection item

- Audio unit/car-navigation unit connector
- Wiring harness between audio unit/car-navigation unit terminal 1O and branch A
- Wiring harness between audio unit/car-navigation unit terminal 1Q and branch A
- Audio unit/car-navigation unit

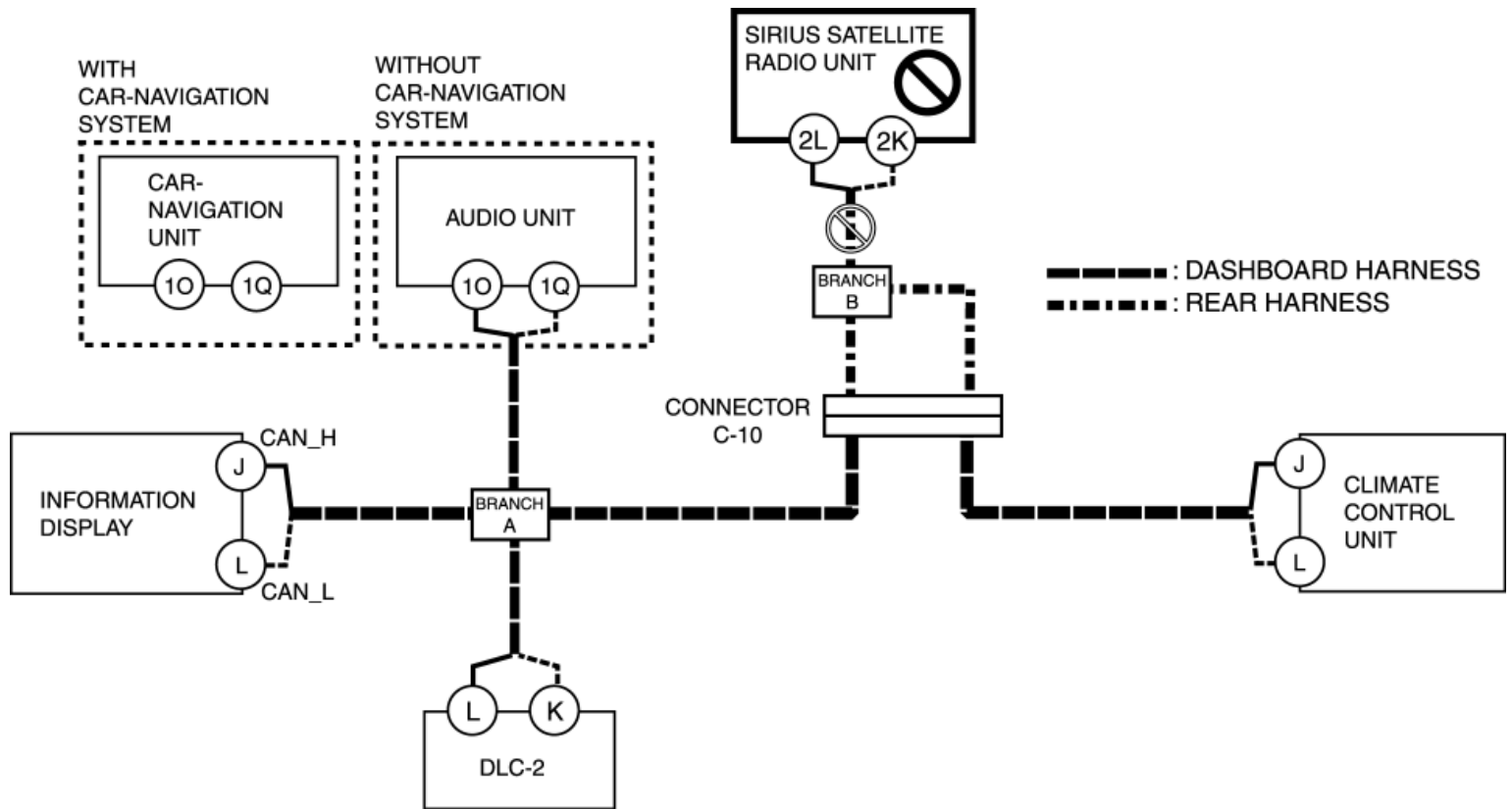
C

With SIRIUS satellite radio system

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between branch B and SIRIUS satellite radio unit
- SIRIUS satellite radio unit malfunction

System wiring diagram



Inspection item

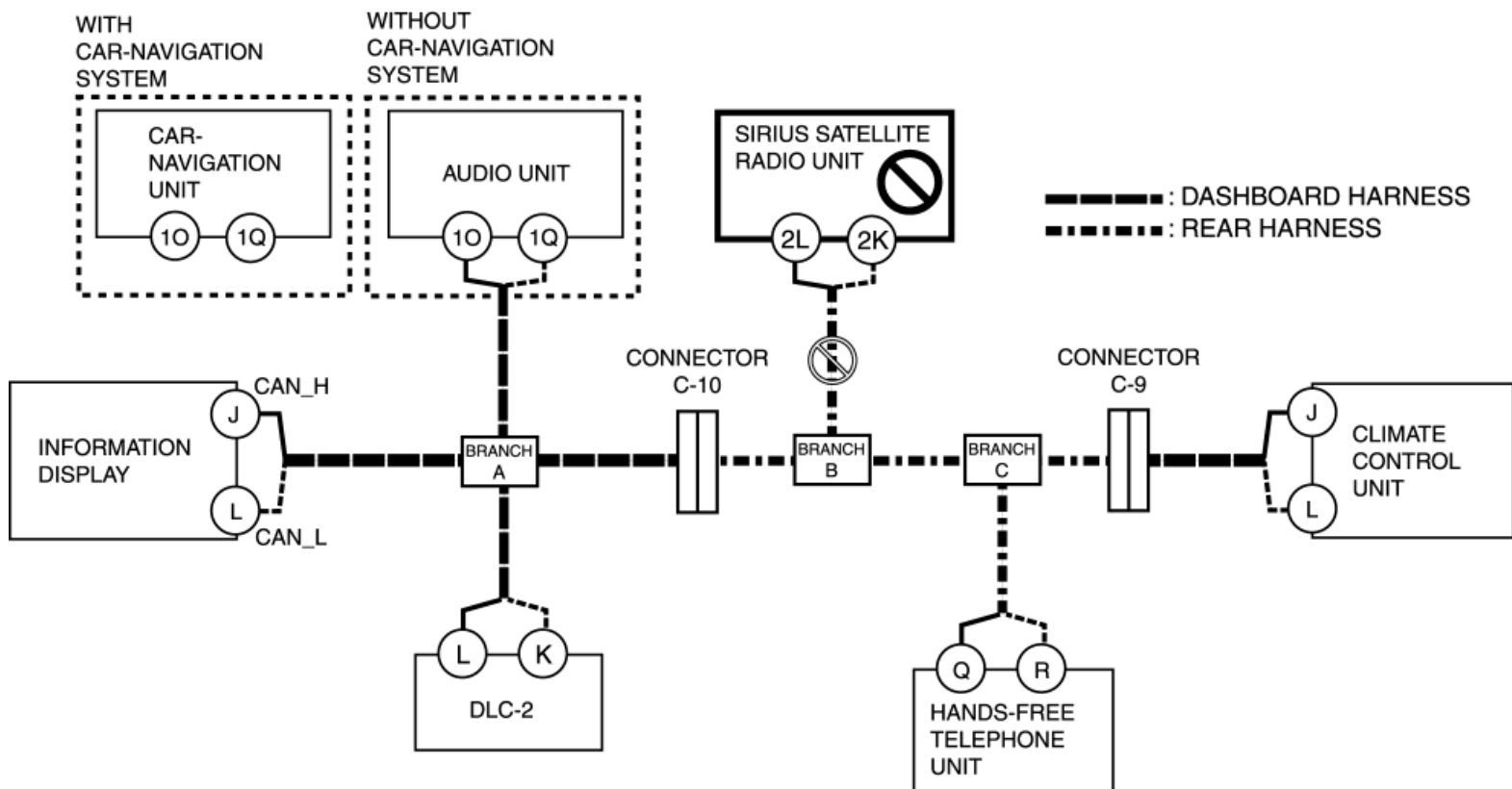
- SIRIUS satellite radio unit connector
- Wiring harness between branch B and SIRIUS satellite radio unit terminal 2L
- Wiring harness between branch B and SIRIUS satellite radio unit terminal 2K
- SIRIUS satellite radio unit

With SIRIUS satellite radio system and hands-free telephone system

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between branch B and SIRIUS satellite unit
- SIRIUS satellite radio unit malfunction

System wiring diagram



Inspection item

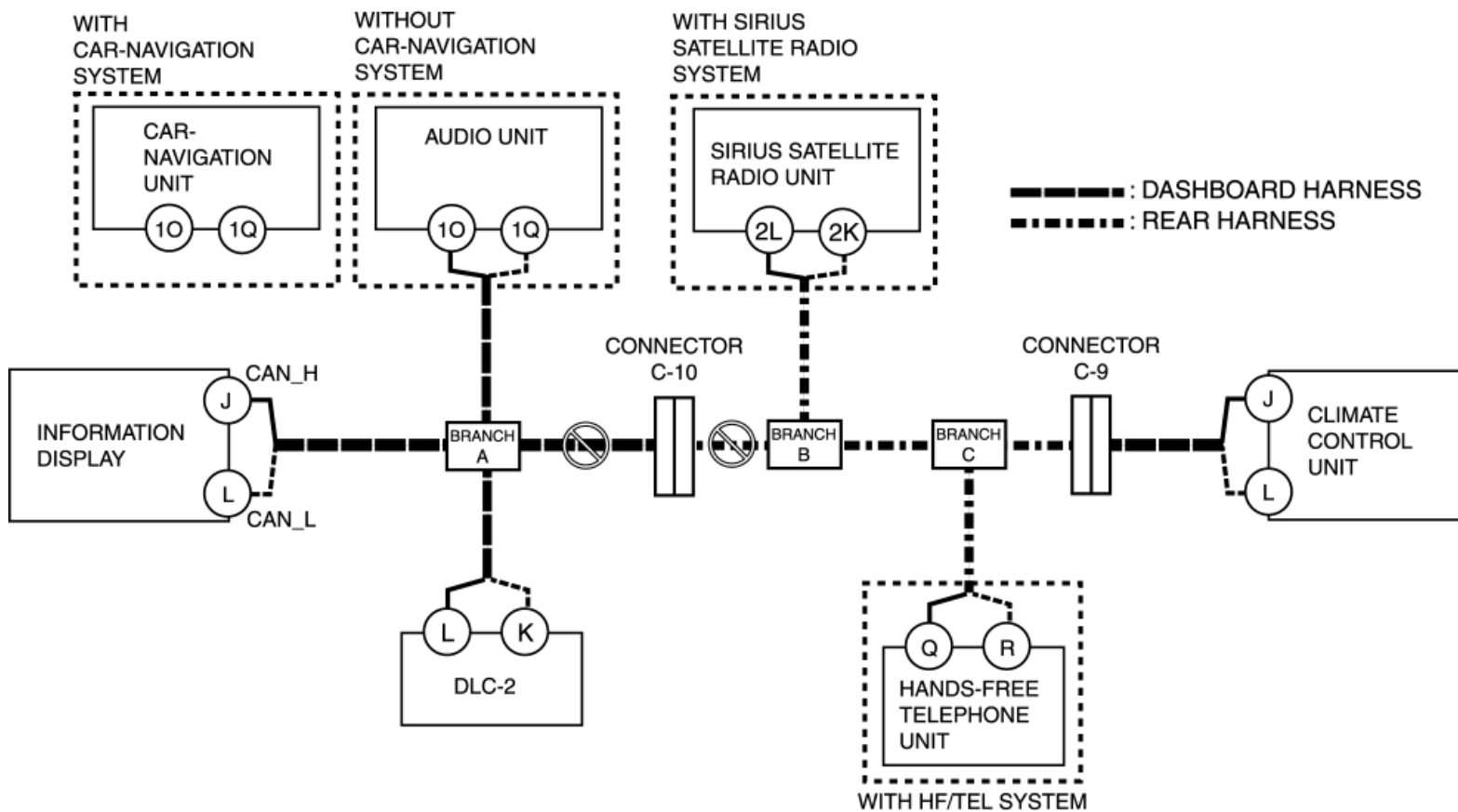
- SIRIUS satellite radio unit connector
- Wiring harness between branch B and SIRIUS satellite radio unit terminal 2L
- Wiring harness between branch B and SIRIUS satellite radio unit terminal 2K
- SIRIUS satellite radio unit

D

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between branch A and connector C-10
- Open circuit in wiring harness between connector C-10 and branch B
- Connector C-10 malfunction

System wiring diagram



Inspection item

- Connector C-10
- Wiring harness between branch A and connector C-10
- Wiring harness between connector C-10 and branch B

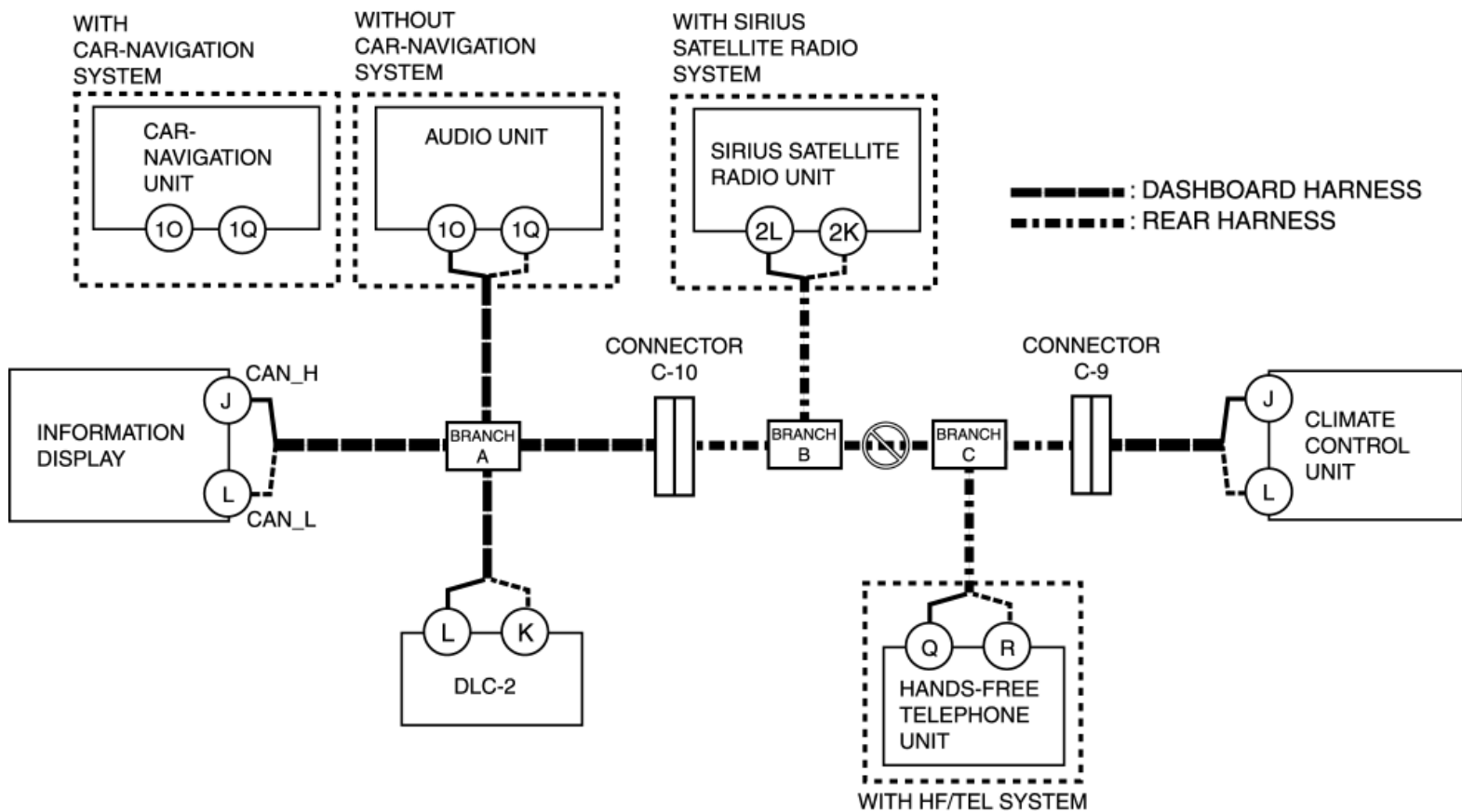
E

With SIRIUS satellite radio system and hands-free telephone system

Possible cause

- Open circuit in wiring harness between branch B and branch C

System wiring diagram



Inspection item

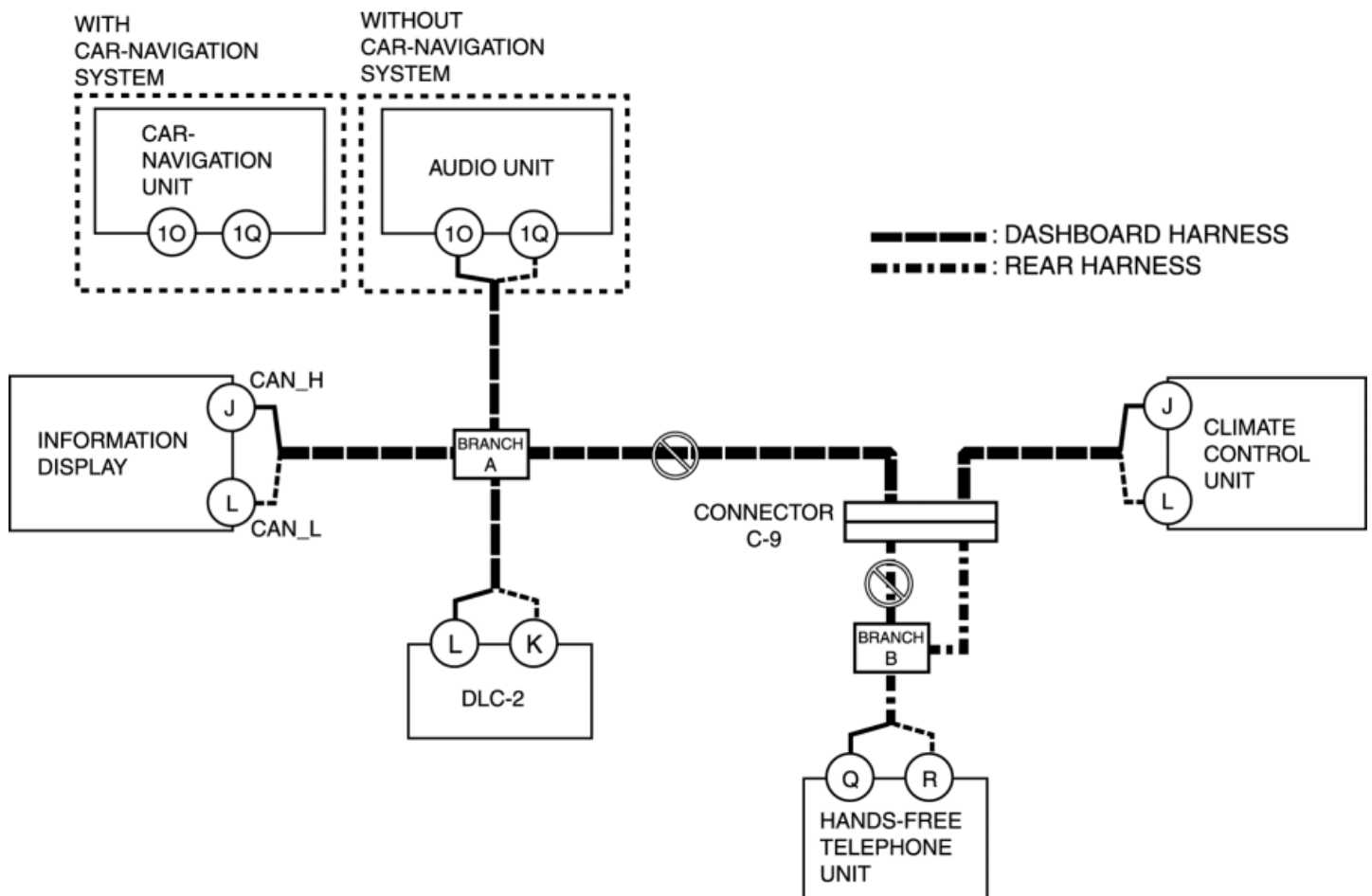
- Wiring harness between branch B and branch C

Without SIRIUS satellite radio system

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between branch A and connector C-9
- Open circuit in wiring harness between connector C-9 and branch B
- Connector C-9 malfunction

System wiring diagram



Inspection item

- Connector C-9
- Wiring harness between branch A and connector C-9
- Wiring harness between connector C-9 and branch B

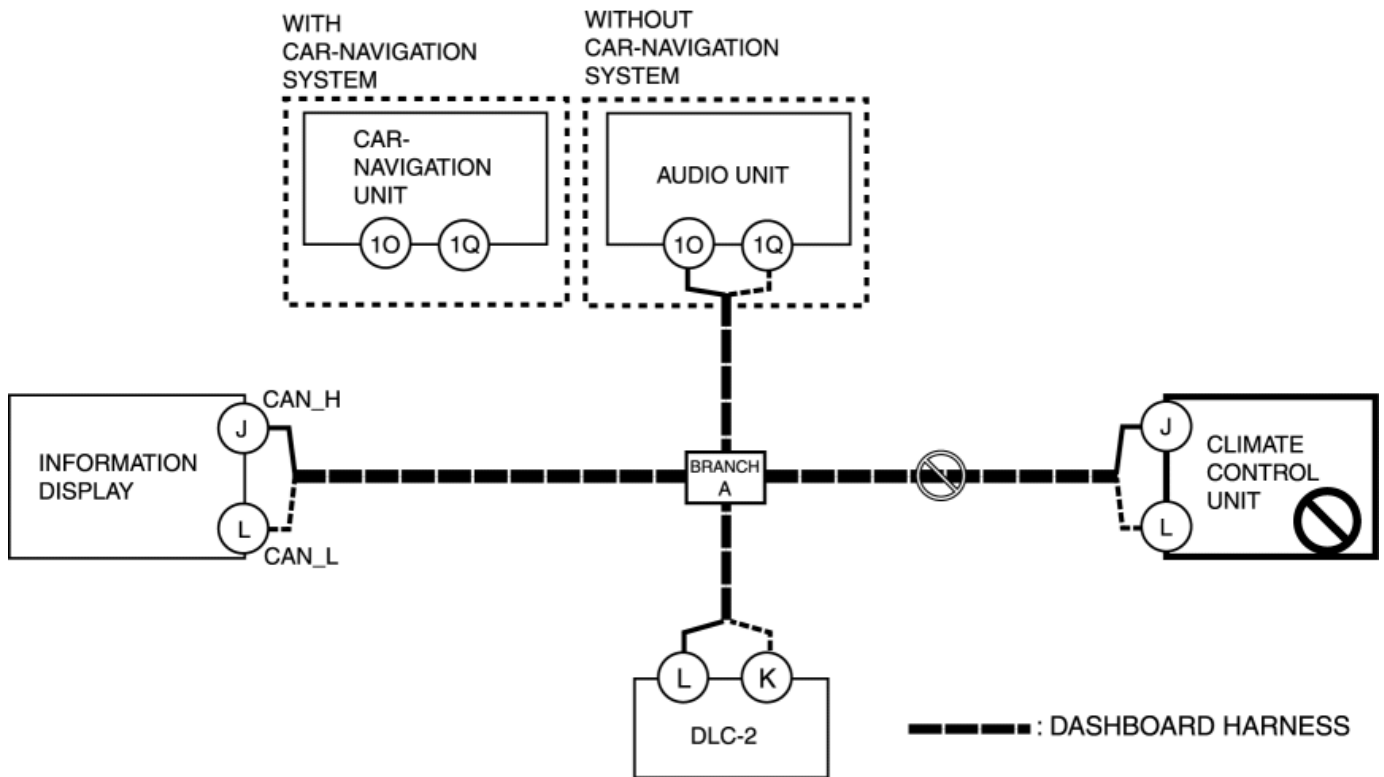
F

Without SIRIUS satellite radio system and hands-free telephone system

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between climate control unit and branch A
- Climate control unit malfunction

System wiring diagram



Inspection item

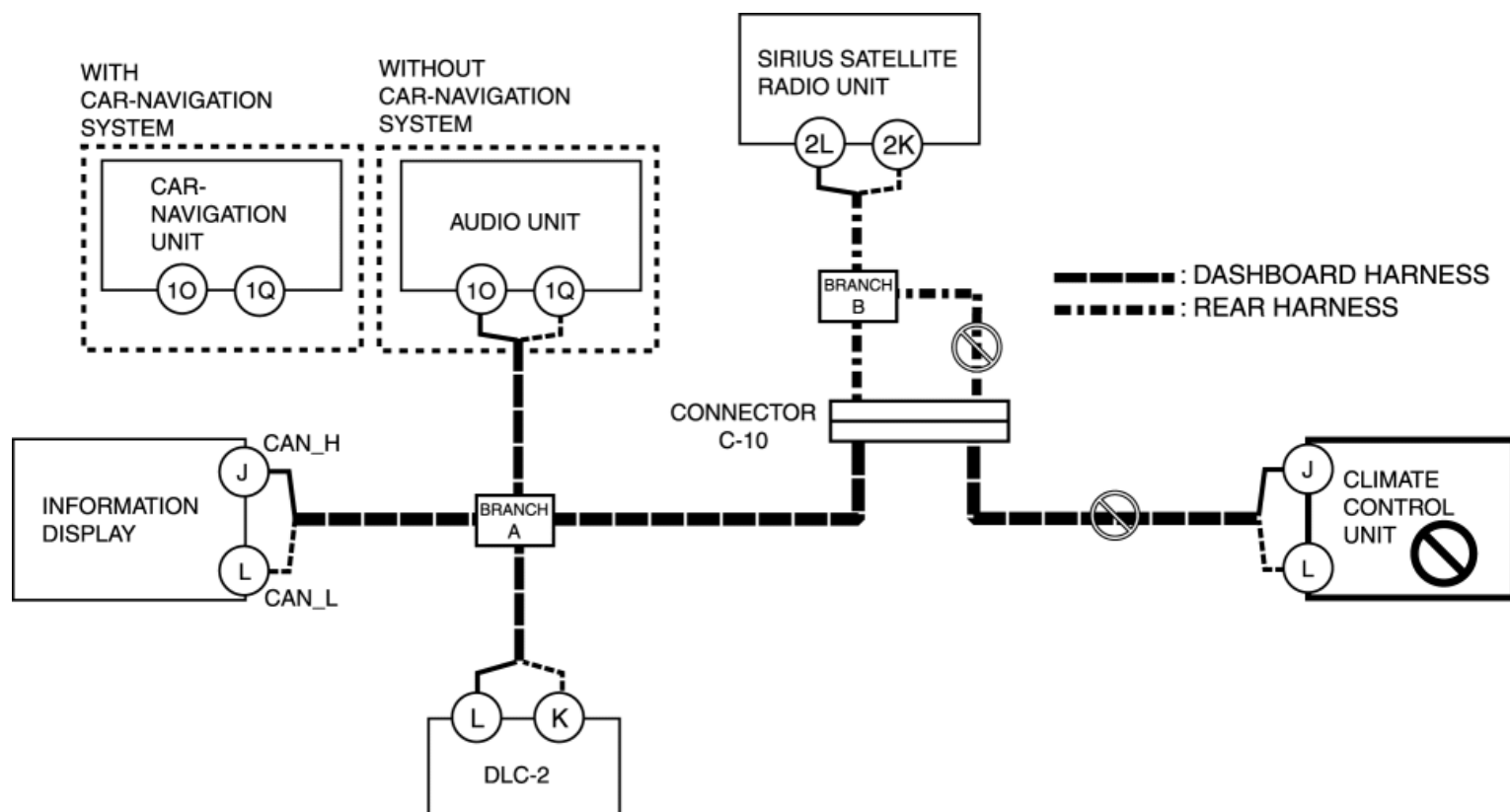
- Climate control unit connector
- Wiring harness between branch A and climate control unit terminal J
- Wiring harness between branch A and climate control unit terminal L
- Climate control unit

With SIRIUS satellite radio system

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between branch B and connector C-10
- Open circuit in wiring harness between connector C-10 and climate control unit
- Climate control unit malfunction

System wiring diagram



Inspection item

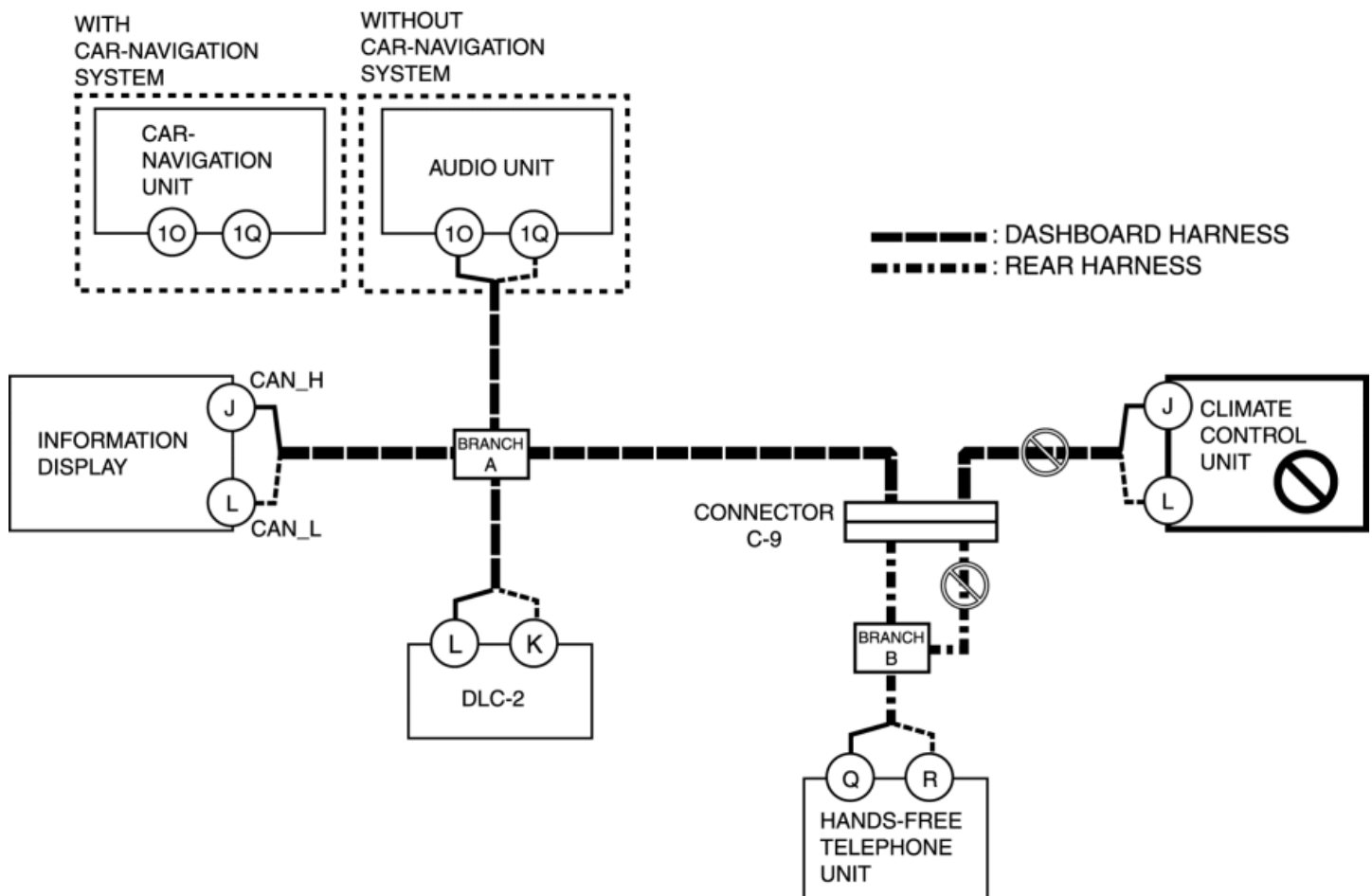
- Climate control unit connector
- Wiring harness between connector C-10 and branch B
- Wiring harness between connector C-10 and climate control unit terminal J
- Wiring harness between connector C-10 and climate control unit terminal L
- Climate control unit

With hands-free telephone system

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between connector C-9 and branch B
- Open circuit in wiring harness between climate control unit and connector C-9
- Climate control unit malfunction

System wiring diagram



Inspection item

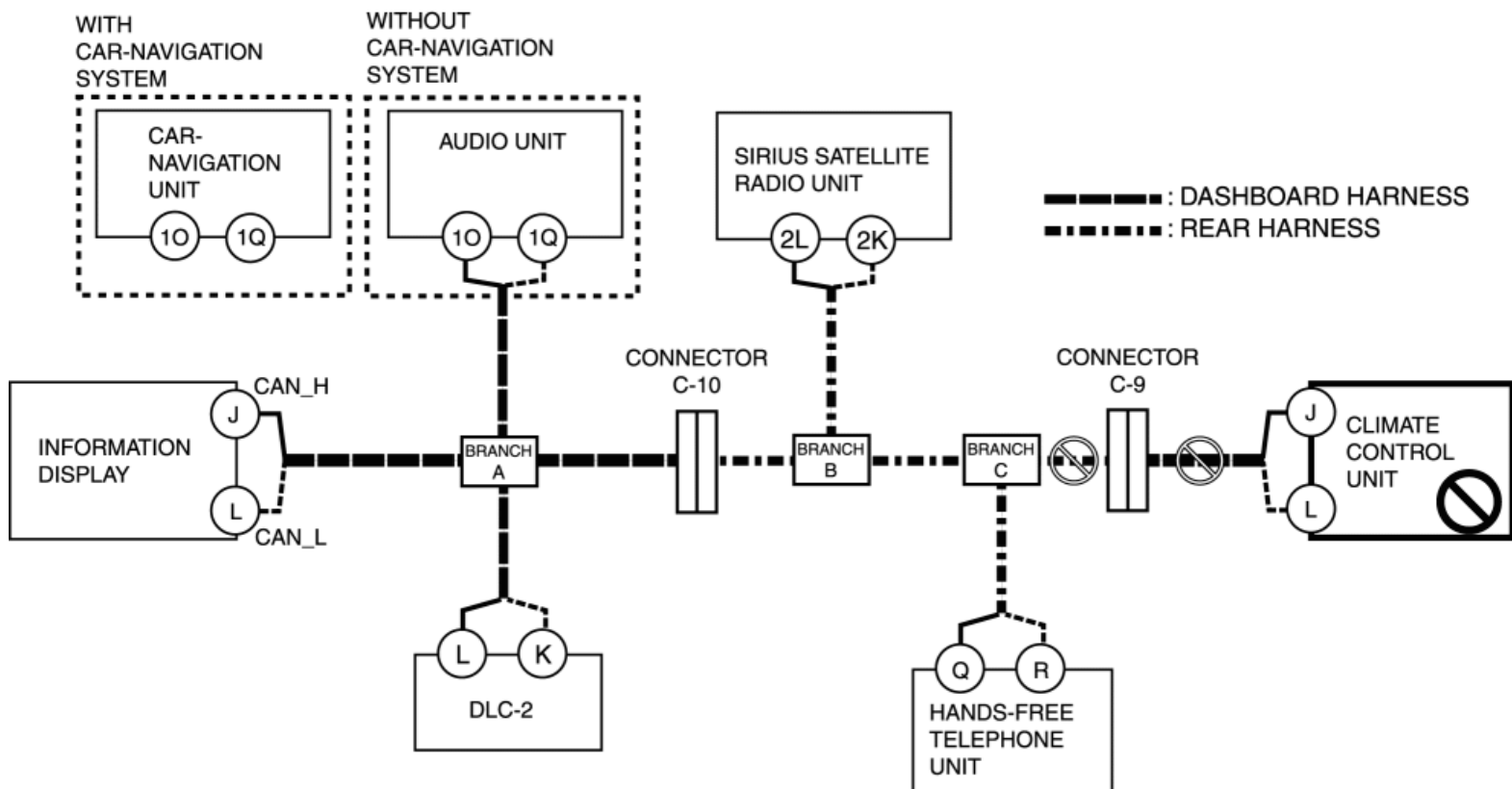
- Climate control unit connector
- Wiring harness between branch B and connector C-9
- Wiring harness between climate control unit terminal J and connector C-9
- Wiring harness between climate control unit terminal L and connector C-9
- Climate control unit

With SIRIUS satellite radio system and hands-free telephone system

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between branch C and connector C-9
- Open circuit in wiring harness between connector C-9 and climate control unit
- Climate control unit malfunction

System wiring diagram



Inspection item

- Climate control unit connector
- Wiring harness between branch C and connector C-9
- Wiring harness between climate control unit terminal J and connector C-9
- Wiring harness between climate control unit terminal L and connector C-9
- Climate control unit

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

DETERMINING OPEN CIRCUIT LOCATION (HS-CAN) [MULTIPLEX COMMUNICATION SYSTEM]

CAUTION:

- If the malfunctioning part is detected in the communication line, before disconnecting the related connector for inspection, press the connector in the connection direction to verify that there is no looseness or disconnection.
 - When disconnecting the connector, verify that there is no damage, deformation, or corrosion of the connector terminals.
1. Verify the CAN system-related module DTCs and the failed module on the M-MDS screen.
 2. Refer to "DTC Output Pattern and Malfunctioning Part" and find the area linked from the malfunctioning part.

NOTE:

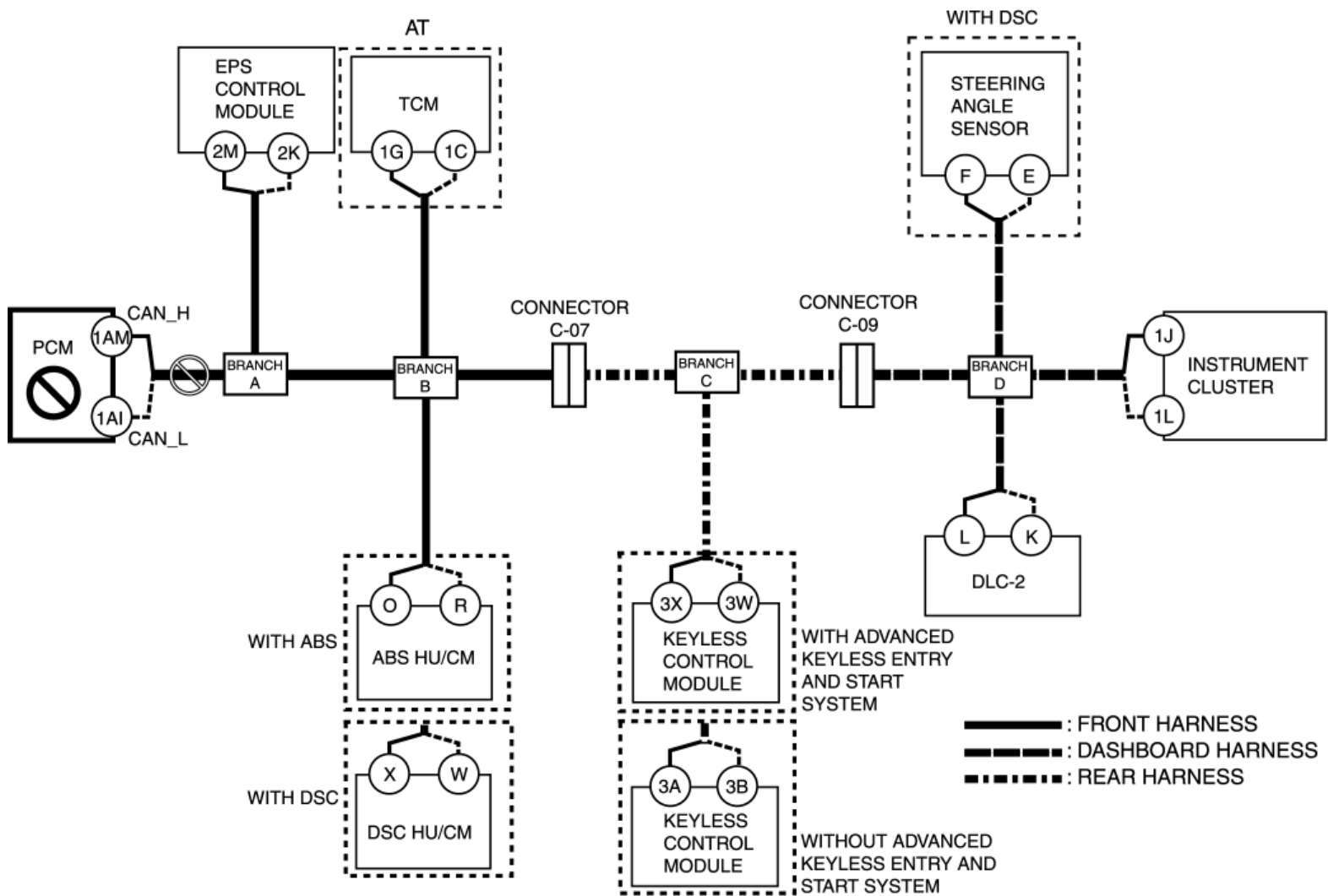
- A hyphen (-) in the DTC output pattern cell indicates that the DTC may be displayed depending on the malfunction detection conditions. If it is not displayed, the malfunctioning part can be determined by checking only the crosses (×).
 - If any of the following DTCs is displayed alone, perform the applicable DTC inspection. (See [DTC TABLE \[MULTIPLEX COMMUNICATION SYSTEM\]](#).)
 - Instrument cluster: U1900
 - EPS control module: U1900
 - DSC HU/CM: U1900
 - Keyless control module: U1147, U2510
 - Steering angle sensor: U1900
3. Inspect the possible cause and inspection item of the applicable malfunctioning part.
 4. Perform the DTC inspection after the repair procedure.
 - If any DTC is displayed, return to [FOREWORD \[MULTIPLEX COMMUNICATION SYSTEM\]](#).

DTC Output Pattern and Malfunctioning Part

Cross (×): Communication error-related DTC and malfunctioning moduleHyphen (-): Error signal-related DTC may be displayed

M-MDS display		DTC output pattern and malfunctioning part										
DTC output module	DTC	A	B	C	D	E	E	G	H	I	J	K
IC (Instrument cluster)	U1900	×	×	×	×	×	×	×	×	×		
	U2023	—				×	×	×		×		
PCM (PCM)	U0101				×							
	U0121					×	×					
	U0155											×
	U0167								×			

EPS (EPS control module)	U01900	×										
	U2023	—				×	×					
TCM ^{*3} (TCM)	U0100	×		×								
	U0121					×	×					
ABS (DSC HU/CM) ^{*2}	U0100	×		×								
	U0101				×							
	U0155											×
	U1900											
	U2023	—										
RKE (Keyless control module (without advanced keyless entry and start system))	U1147											
	U2510	×		×				×				
RKE (Keyless control module (with advanced keyless entry and start system))	U0100	×		×				×				
	U0323											×
	U2023	—				—	—	×				
	U2510	×		×				×				
SASM ^{*2} (Steering angle sensor)	U1900						×	×		×		
TPM ^{*2} (TPMS)	U0100	×		×				×		×		
	U2023	—				—	—					
M-MDS display module		"Fail" display pattern										
IC												×
PCM		×		×				×		×		
EPS			×	×				×		×		
TCM ^{*3}					×			×		×		
ABS ^{*1, *2}						×	×	×		×		
RKE									×	×		



Inspection item

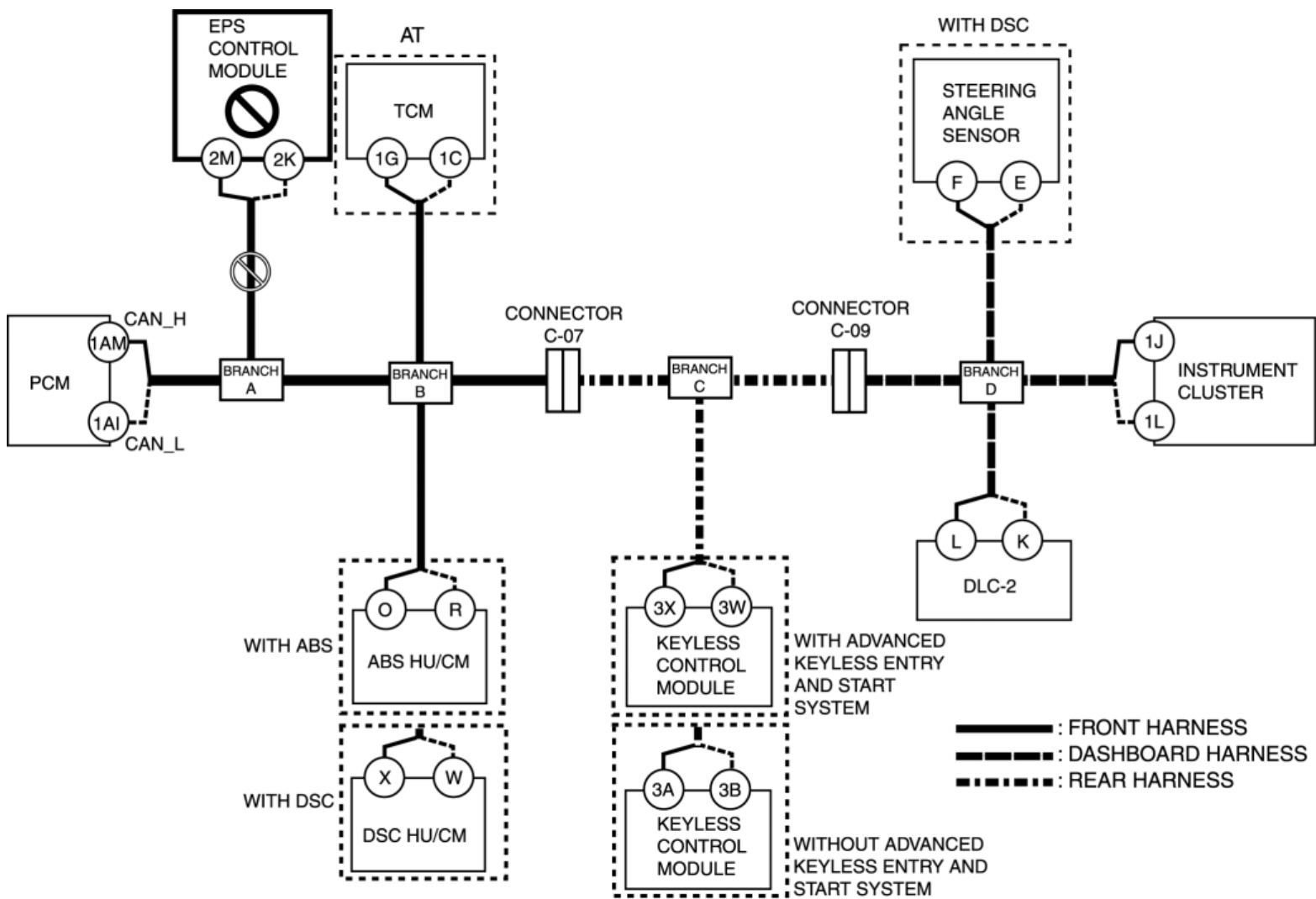
- PCM connector
- Wiring harness between PCM terminal 1AM and branch A
- Wiring harness between PCM terminal 1AI and branch A
- PCM

B

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between EPS control module and branch A
- EPS control module malfunction

System wiring diagram



Inspection item

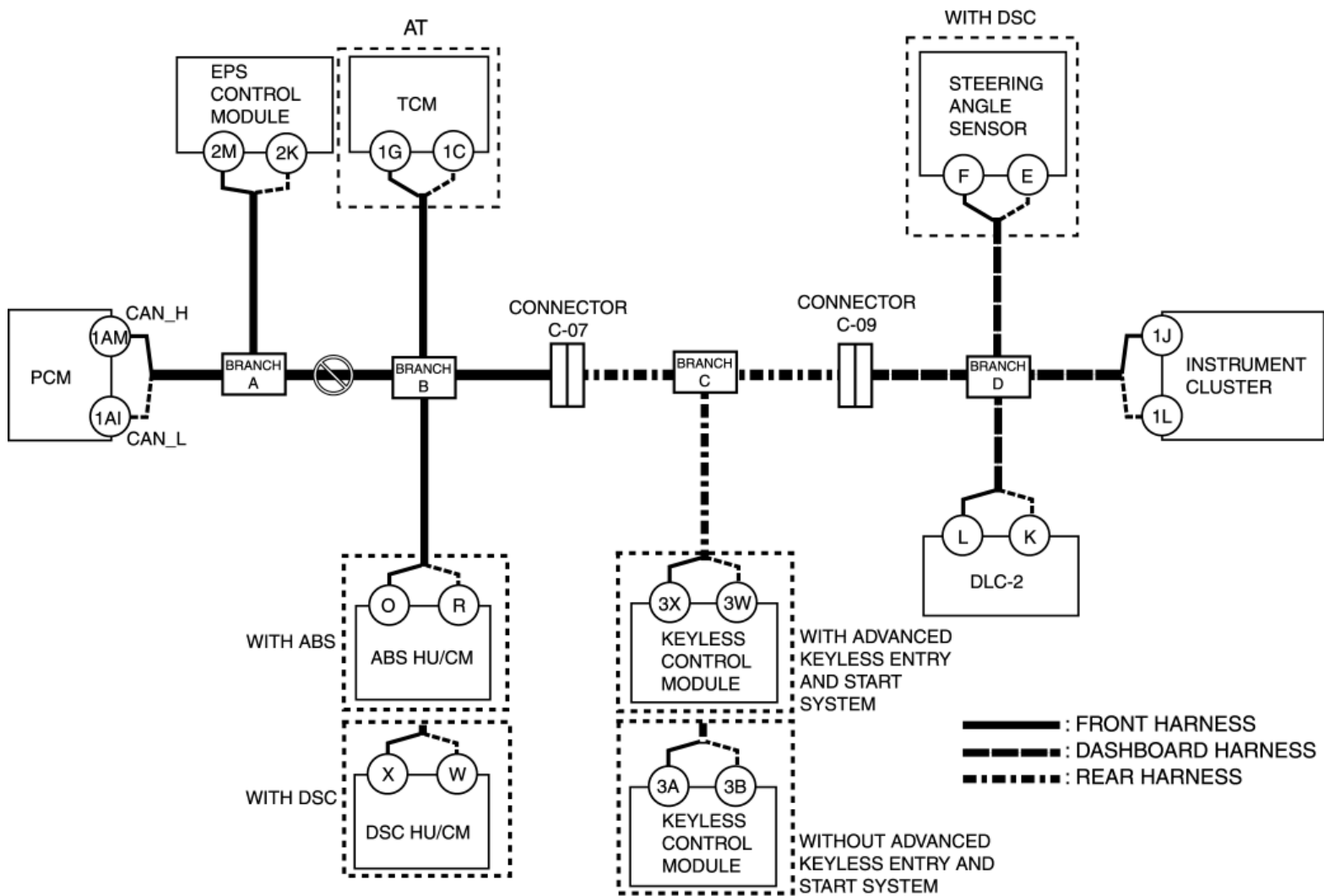
- EPS control module connector
- Wiring harness between EPS control module terminal 2M and branch A
- Wiring harness between EPS control module terminal 2K and branch A
- EPS control module

C

Possible cause

- Open circuit in wiring harness between branch A and branch B

System wiring diagram



Inspection item

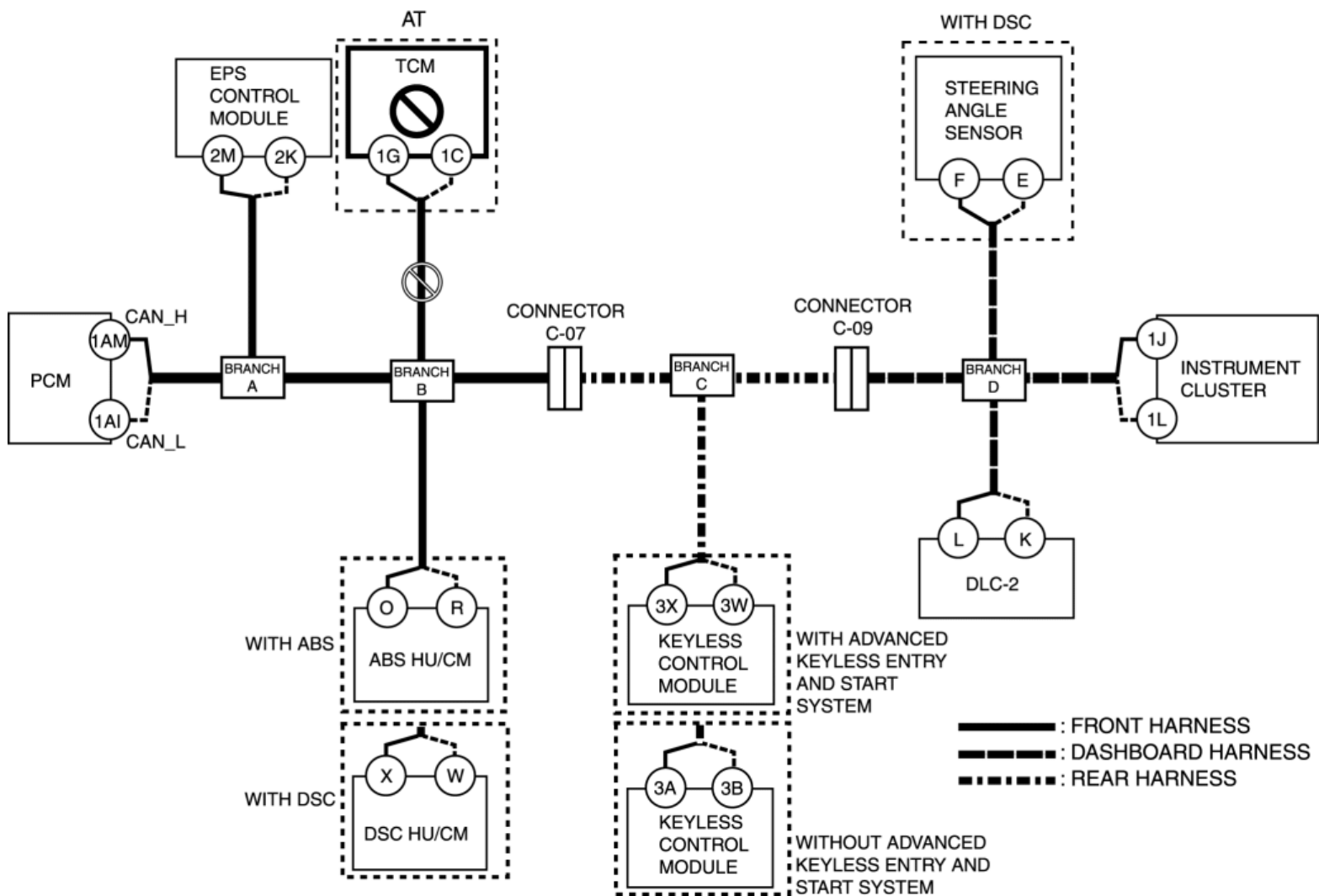
- Wiring harness between branch A and branch B

D

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between TCM and branch B
- TCM malfunction

System wiring diagram



Inspection item

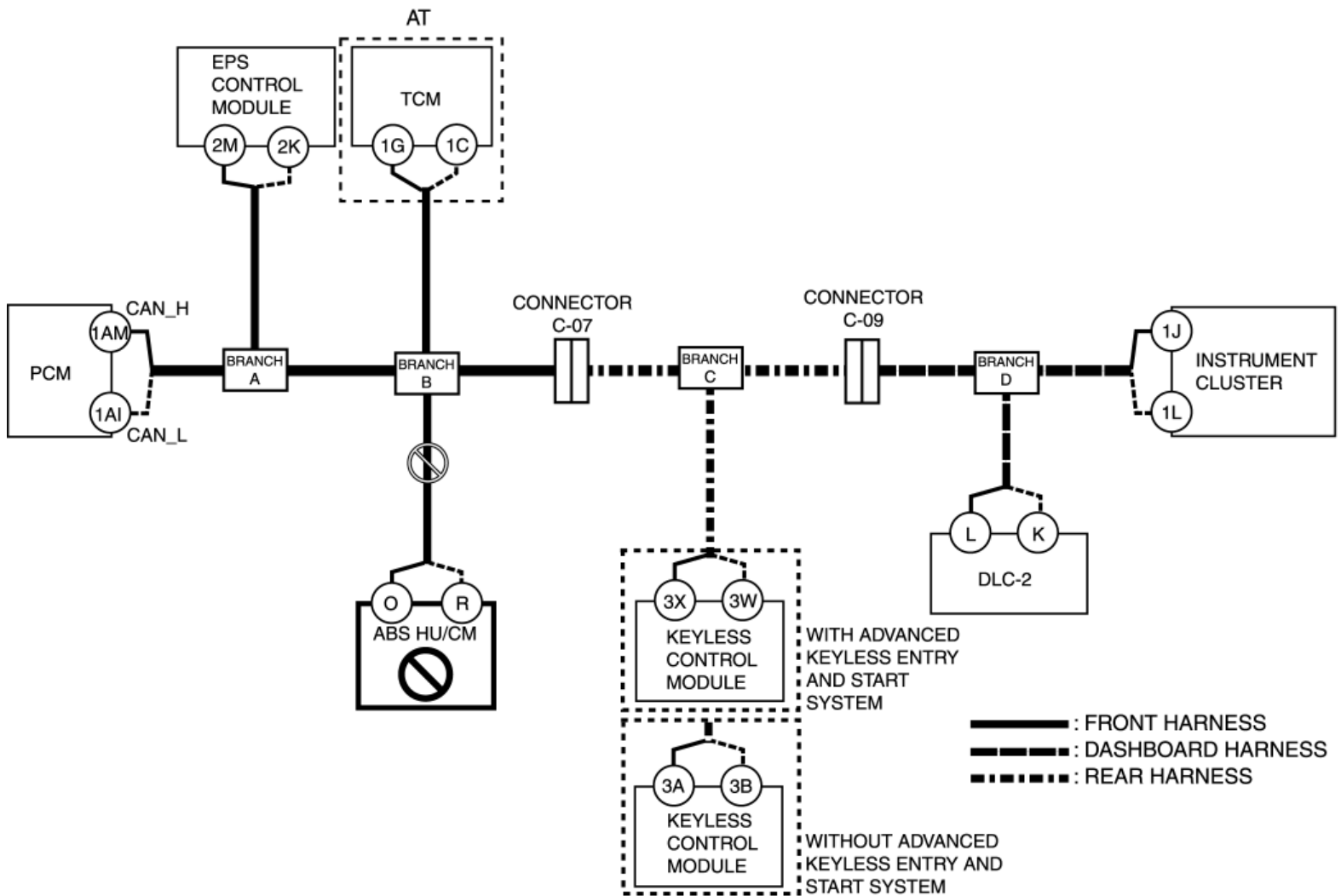
- TCM connector
- Wiring harness between TCM terminal 1G and branch B
- Wiring harness between TCM terminal 1C and branch B
- TCM

E

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between ABS HU/CM and branch B
- ABS HU/CM malfunction

System wiring diagram



Inspection item

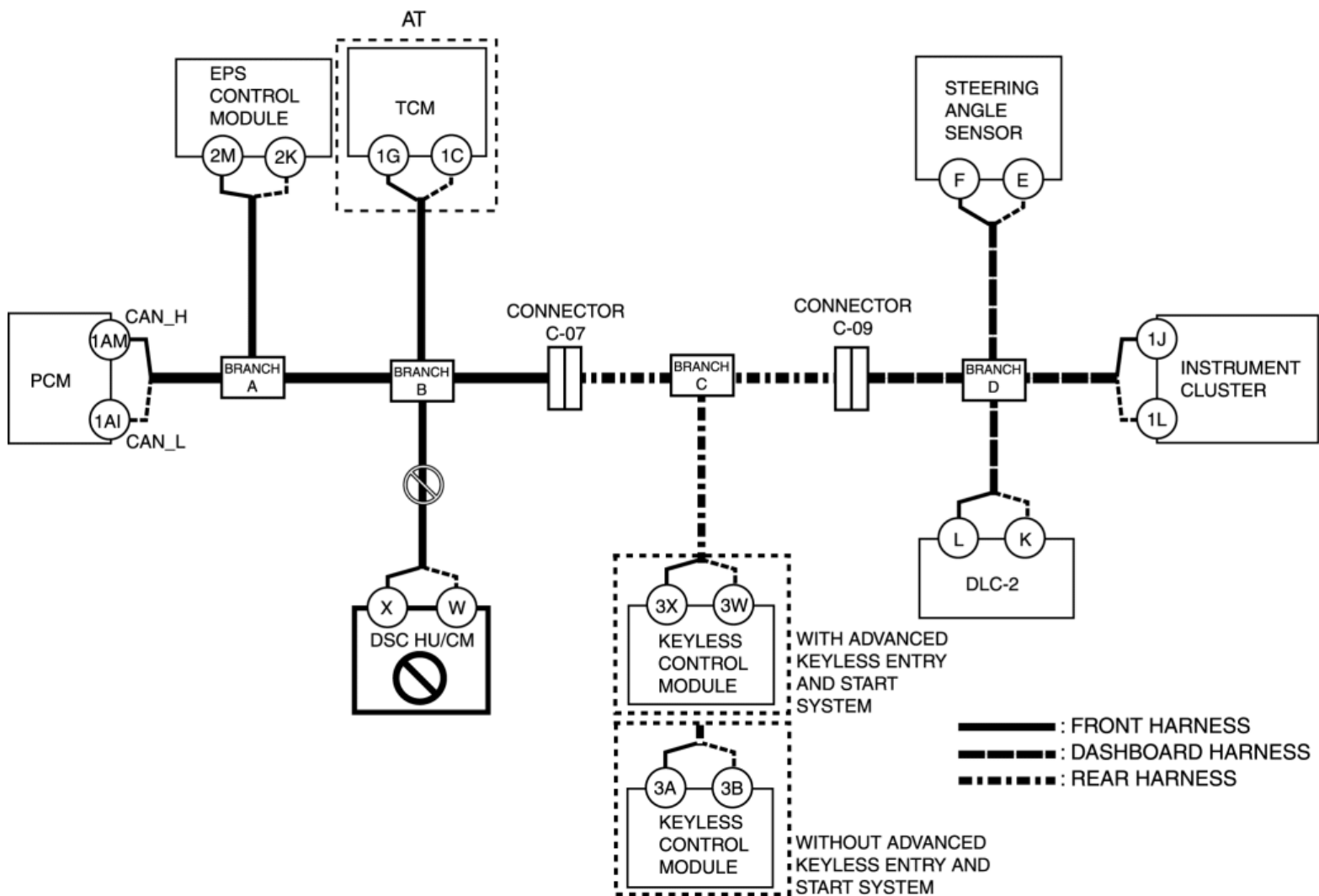
- ABS HU/CM connector
- Wiring harness between ABS HU/CM terminal O and branch B
- Wiring harness between ABS HU/CM terminal R and branch B
- ABS HU/CM

F

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness DSC HU/CM and branch B
- DSC HU/CM malfunction

System wiring diagram



Inspection item

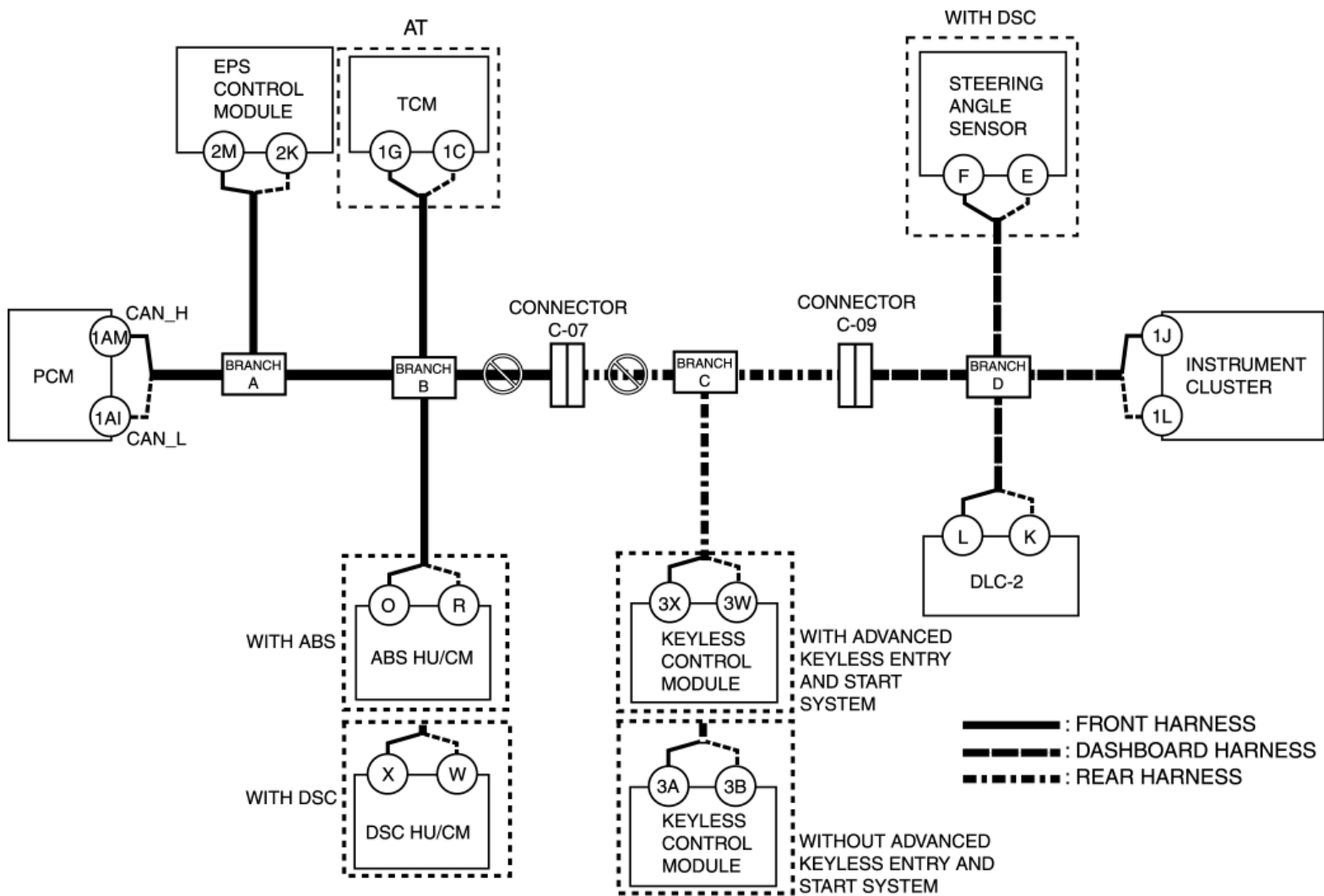
- DSC HU/CM connector
- Wiring harness between DSC HU/CM terminal X and branch B
- Wiring harness between DSC HU/CM terminal W and branch B
- DSC HU/CM

G

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between branch B and connector C-07
- Open circuit in wiring harness between connector C-07 and branch C
- Connector C-07 malfunction

System wiring diagram



Inspection item

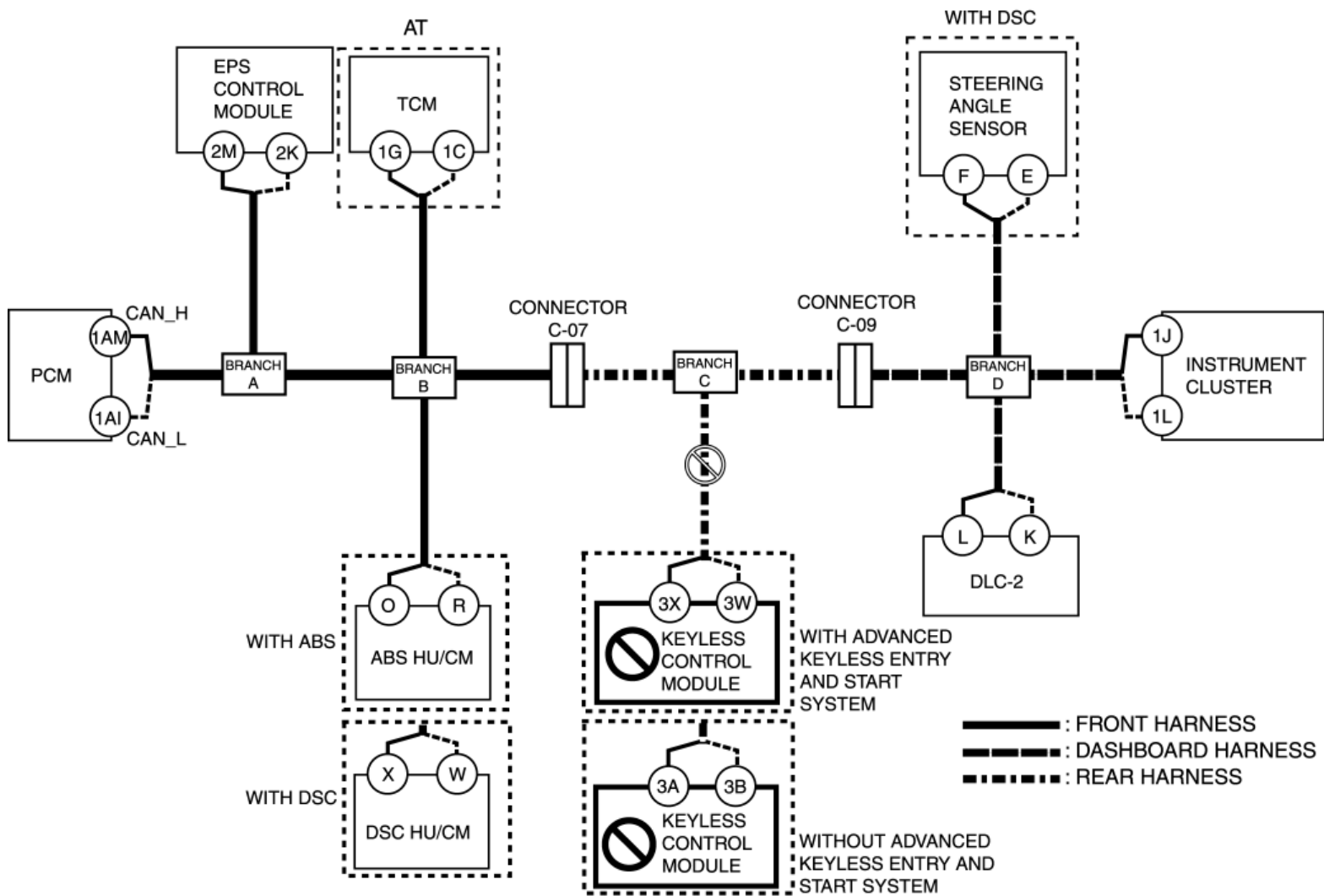
- Connector C-07
- Wiring harness between branch B and connector C-07
- Wiring harness between connector C-07 and branch C

H

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between keyless control module and branch C
- Keyless control module malfunction

System wiring diagram



Inspection item

With advanced keyless entry and start system

- Keyless control module connector
- Wiring harness between keyless control module terminal 3X and branch C
- Wiring harness between keyless control module terminal 3W and branch C
- Keyless control module

Without advanced keyless entry and start system

- Keyless control module connector
- Wiring harness between keyless control module terminal 3A and branch C
- Wiring harness between keyless control module terminal 3B and branch C
- Keyless control module

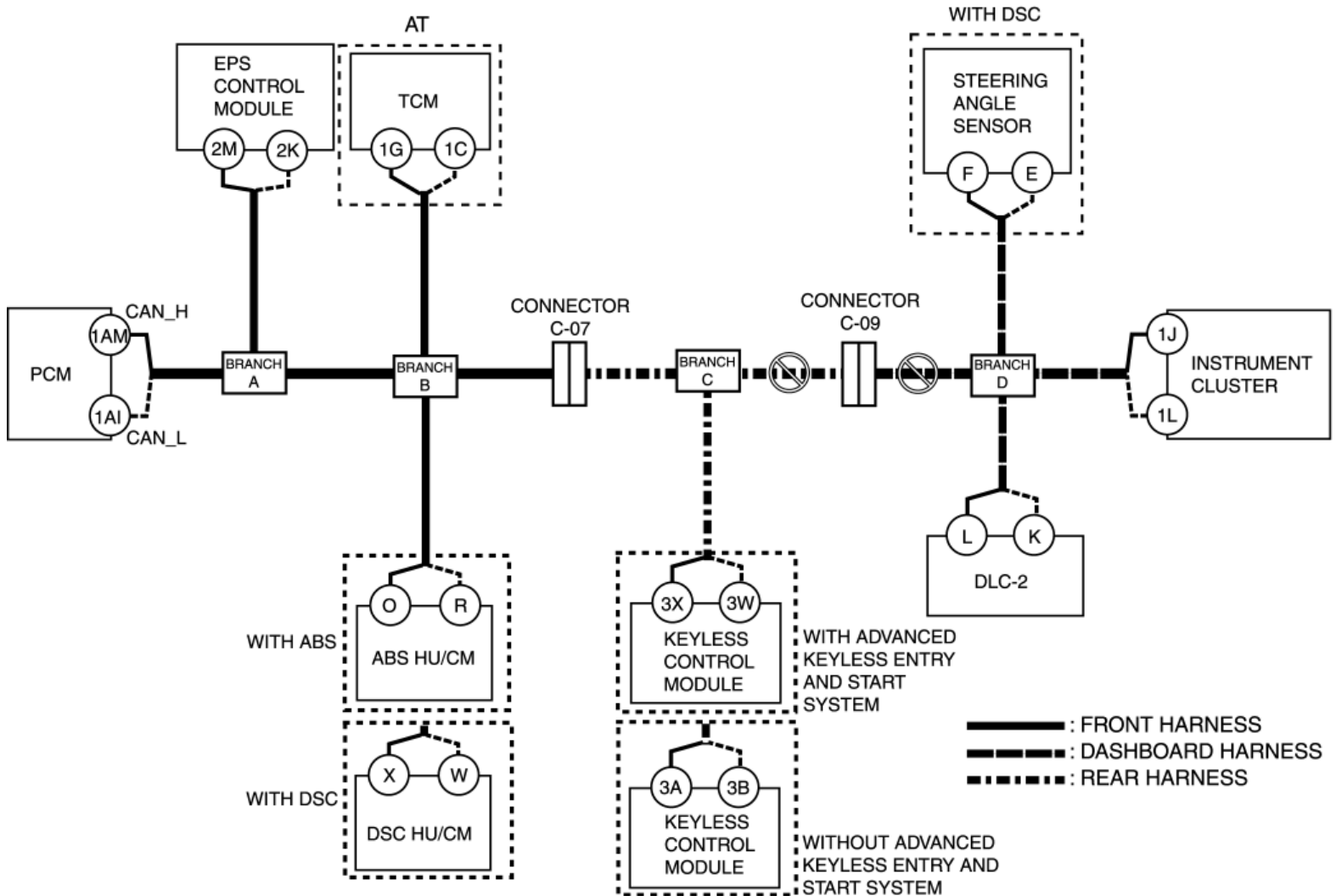
I

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion

- Open circuit in wiring harness between branch C and connector C-09
- Open circuit in wiring harness between connector C-09 and branch D
- Connector C-09 malfunction

System wiring diagram



Inspection item

- Connector C-09
- Wiring harness between branch C and connector C-09
- Wiring harness between connector C-09 and branch D

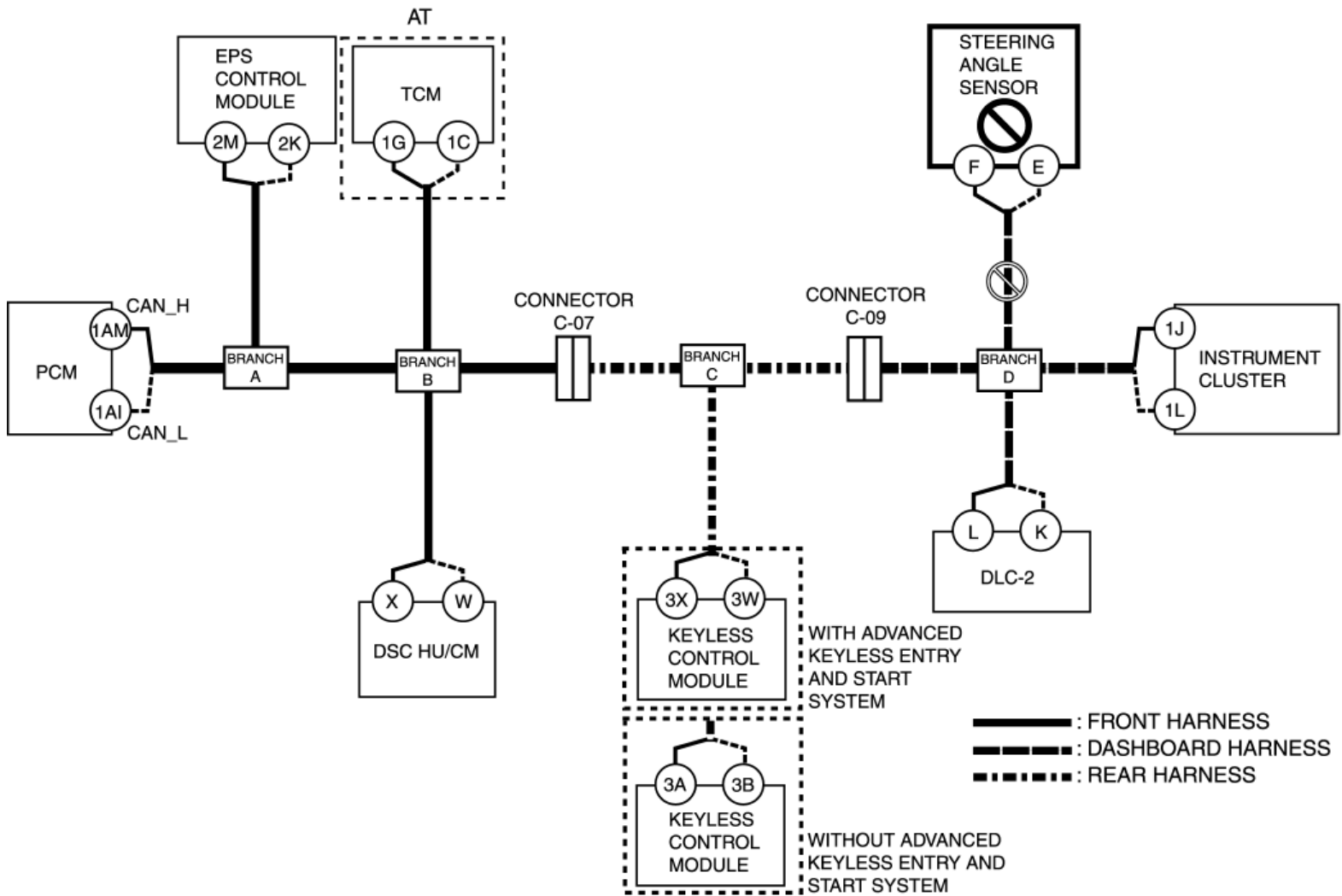
J

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between steering angle sensor and branch D

- Steering angle sensor malfunction

System wiring diagram



Inspection item

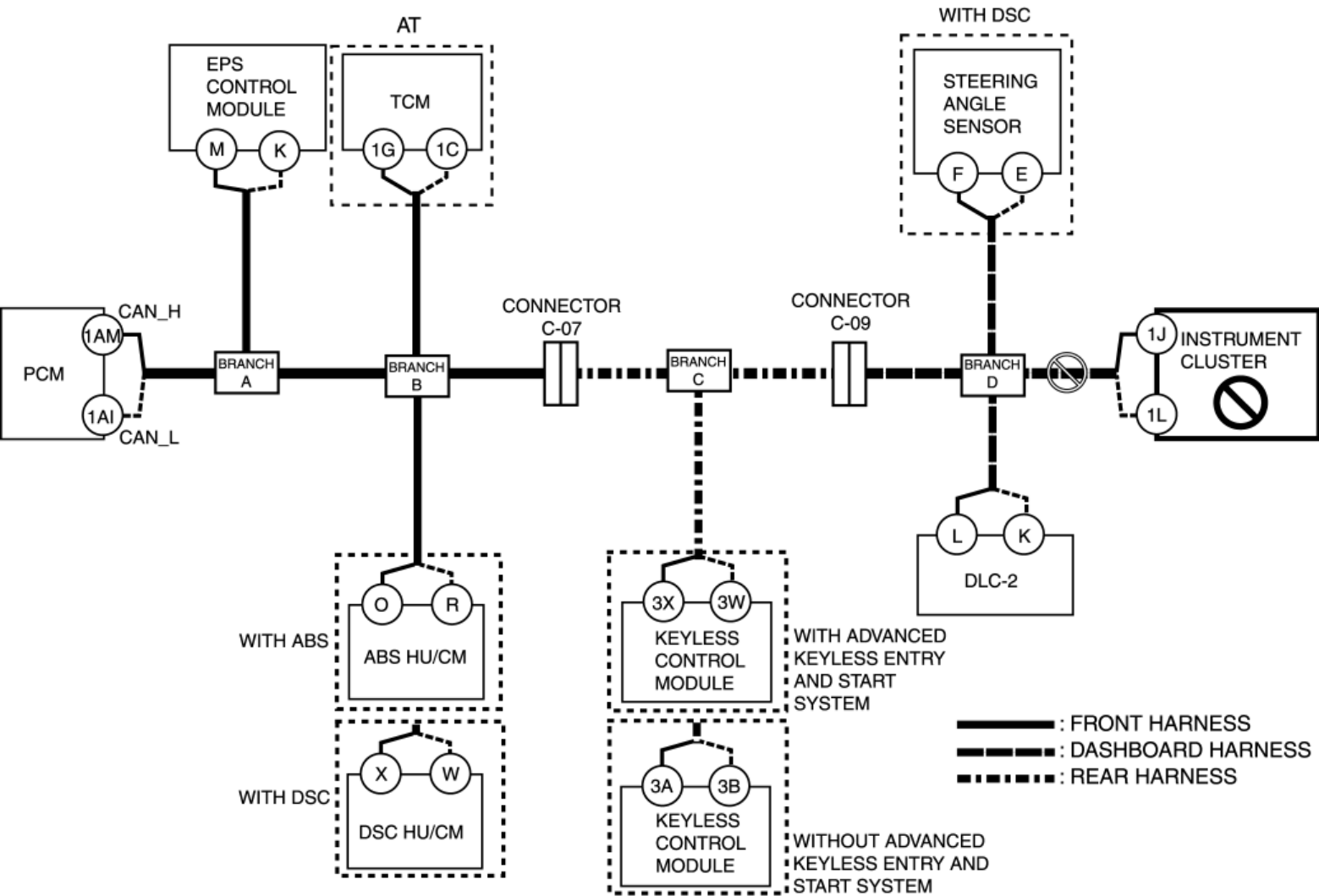
- Steering angle sensor connector
- Wiring harness between steering angle sensor terminal E and branch D
- Wiring harness between steering angle sensor terminal F and branch D
- Steering angle sensor

K

Possible cause

- Connector terminal disconnection, poor contact, damage, deformation, corrosion
- Open circuit in wiring harness between instrument cluster and branch D
- Instrument cluster malfunction

System wiring diagram



Inspection item

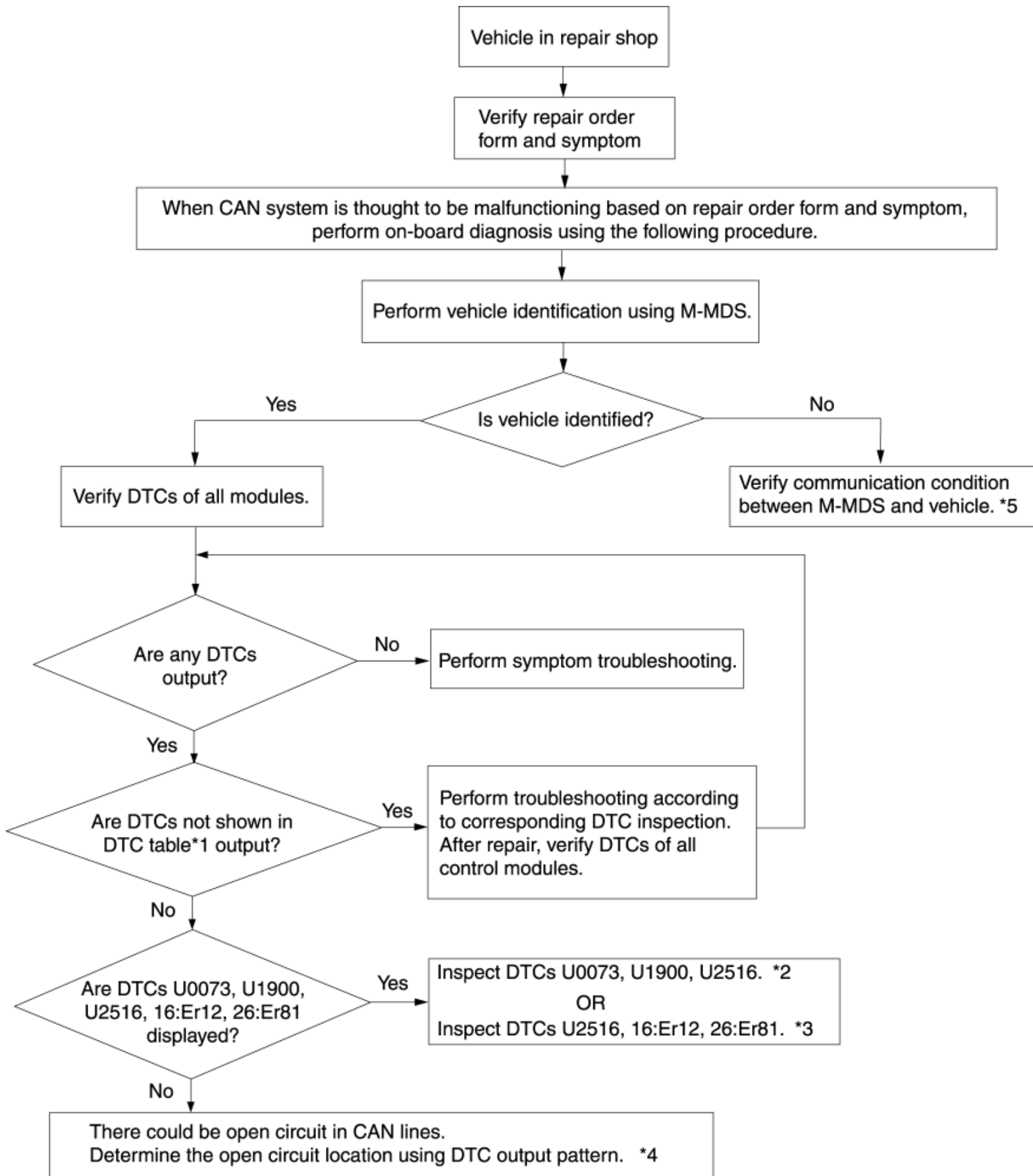
- Instrument cluster connector
- Wiring harness between instrument cluster terminal 1J and branch D
- Wiring harness between instrument cluster terminal 1L and branch D
- Instrument cluster

2011 - RX-8 - Body and Accessories

FOREWORD [MULTIPLEX COMMUNICATION SYSTEM]

- When the CAN system is thought to be malfunctioning based on the repair order form and the malfunctioning symptom, perform the CAN system on-board diagnosis.
- DTCs are also output due to a control module or sensor malfunction, or incorrect power supply. Verify the output DTCs and first inspect the DTCs not shown in [DTC TABLE \[MULTIPLEX COMMUNICATION SYSTEM\]](#).
- If there is an open circuit in the communication lines, it is possible that signal error DTCs may be output in addition to communication error DTCs. Perform [DETERMINING OPEN CIRCUIT LOCATION \(HS-CAN\) \[MULTIPLEX COMMUNICATION SYSTEM\]](#), [DETERMINING OPEN CIRCUIT LOCATION \(MS-CAN\) \[MULTIPLEX COMMUNICATION SYSTEM\]](#) if the communication error and signal error DTCs are output simultaneously.

Troubleshooting Procedure



*1

[DTC TABLE \[MULTIPLEX COMMUNICATION SYSTEM\]](#)

*2

[DTC U0073, U1900, U2516 \[MULTIPLEX COMMUNICATION SYSTEM\]](#)

*3

[DTC U2516, 16:Er12, DEVICE CODE:16 ERROR CODE:12, 26:Er81, DEVICE CODE:26 ERROR CODE:81 \[MULTIPLEX COMMUNICATION SYSTEM\]](#)

*4

[DETERMINING OPEN CIRCUIT LOCATION \(HS-CAN\) \[MULTIPLEX COMMUNICATION SYSTEM\] /](#)
[DETERMINING OPEN CIRCUIT LOCATION \(MS-CAN\) \[MULTIPLEX COMMUNICATION SYSTEM\]](#)

*5

[M-MDS AND VEHICLE NOT COMMUNICATING \[MULTIPLEX COMMUNICATION SYSTEM\]](#)

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

DTC TABLE [MULTIPLEX COMMUNICATION SYSTEM]

HS-CAN

DTC Output Unit	DTC	Malfunction location
Instrument cluster	U1900 ^{*1}	CAN system communication error
	U2023	Abnormal message from other module
	U2516 ^{*1}	CAN system communication error (HS-CAN)
TPMS (Instrument cluster)	U0073 ^{*1}	Module communication error (CAN bus)
	U0100	Communication error to PCM
	U2023	Abnormal message from other module
PCM	U0073 ^{*1}	Module communication error (CAN bus)
	U0101	Communication error to TCM
	U0121	ABS HU/CM (with ABS) or DSC HU/CM (with DSC) communication error
	U0155	Communication error to instrument cluster
	U0167	Communication error to keyless control module
ABS HU/CM (with ABS)	U1900	CAN system communication error
	U2516 ^{*1}	CAN system wiring harness open or short circuit

DSC HU/CM (with DSC)	U0073 ^{*1}	Module communication error (CAN bus)
	U0100	Communication error to PCM
	U0101	Communication error to TCM
	U0155	Communication error to instrument cluster
	U1900 ^{*1}	CAN system communication error
	U2023	Abnormal message from PCM
EPS control module	U0073 ^{*1}	Module communication error (CAN bus)
	U1900 ^{*1}	CAN system communication error
	U2023	Abnormal message from PCM
TCM	U0073 ^{*1}	CAN system communication error
	U0100	Communication error to PCM
	U0121	ABS HU/CM (with ABS) or DSC HU/CM (with DSC) communication error
Keyless control module (without advanced keyless entry and start system)	U0073 ^{*1}	Module communication error (CAN bus)
	U1147	Communication error to PCM
	U1900 ^{*1}	CAN system communication error
	U2510	Communication error to PCM
Keyless control module	U0073 ^{*1}	Module communication error (CAN bus)
	U0100	Communication error to PCM

(with advanced keyless entry and start system)	U0323	Communication error to instrument cluster
	U2023	Abnormal message from PCM
	U2510	Communication error to PCM
Steering angle sensor	U1900 ^{*1}	CAN system communication error
	U2516 ^{*1}	CAN system communication error (HS-CAN)

^{*1}

If only the target DTCs are displayed, perform the corresponding DTC inspection without determining the open circuit location.

MS-CAN

DTC Output Unit	DTC	Malfunction location
Information display	U0164 EATC	Communication error to climate control unit
	U0184 ACU	Communication error to audio unit
	U2516 ^{*1}	CAN system communication error
Audio unit	11:Er01	Communication error to SIRIUS satellite radio unit
	16:Er12 ^{*1}	CAN system communication error
Car-navigation unit	Device code 11/ Error code 01	Communication error to SIRIUS satellite radio unit
	Device code 16/ Error code 12 ^{*1}	CAN system communication error
Hands-free telephone unit (with audio unit)	26:Er81 ^{*1}	CAN system communication error

Hands-free telephone unit (with car-navigation unit)	Device code 26/ Error code 81 ^{*1}	CAN system communication error
--	--	--------------------------------

*1

If only the target DTCs are displayed, perform the corresponding DTC inspection without determining the open circuit location.

[< Previous](#) [Next >](#)

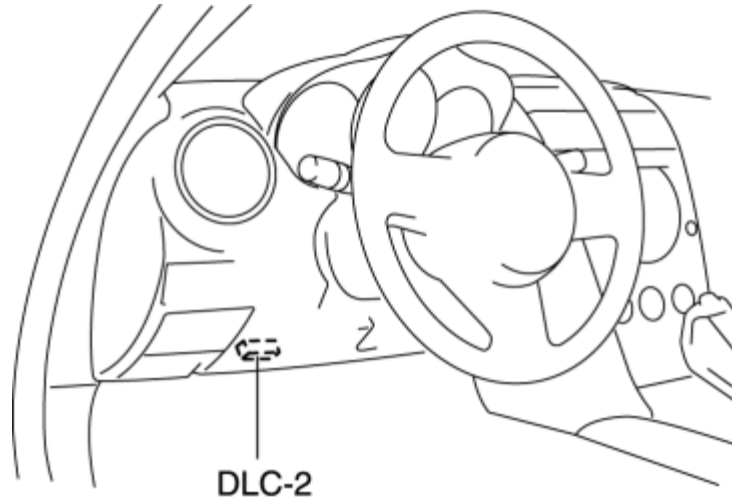
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

PID/DATA MONITOR INSPECTION [MULTIPLEX COMMUNICATION SYSTEM]

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "IC".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "IC".
 3. Select "DataLogger".

3. Select the applicable PID from the PID table.
4. Verify the PID data according to the directions on the screen.

NOTE:

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts

corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

PID/DATA MONITOR TABLE [MULTIPLEX COMMUNICATION SYSTEM]

PID name (definition)	Condition	Specification	PID monitor module	Terminal
ABS_MSG (Missing message from the ABS (DSC) HU/CM)	Present	Circuit in the ABS (DSC) HU/CM is normal.	Instrument cluster	<ul style="list-style-type: none"> • ABS HU/CM: O, R • DSC HU/CM: X, W • Instrument cluster: 1J, 1L
	Not Present	Circuit in the ABS (DSC) HU/CM is disable.		
EPS_MSG (Missing message from the EPS control module)	Present	Circuit in the EPS control module is normal		<ul style="list-style-type: none"> • EPS control module: M, K • Instrument cluster: 1J, 1L
	Not Present	Circuit in the EPS control module is disable		
PCM_MSG (Missing message from the PCM)	Present	Circuit in the PCM is normal.		<ul style="list-style-type: none"> • PCM: 1AM, 1AI • Instrument cluster: 1J, 1L
	Not Present	Circuit in the PCM is disable.		
RKE_MSG^{*1} (Missing message from the keyless control module)	Present	Circuit in the keyless control module is normal.		<ul style="list-style-type: none"> • Keyless control module: 3X, 3W • Instrument cluster: 1J,
	Not Present	Circuit in the keyless control module is disable.		

				1L
TCM_MSG ^{*2} (Missing message from the TCM)	Present	Circuit in the TCM is normal.		<ul style="list-style-type: none"> • TCM: 1G, 1C • Instrument cluster: 1J, 1L
	Not Present	Circuit in the TCM is disable.		
TPM_MSG ^{*3} (Missing message from the instrument cluster)	Present	Circuit in the instrument cluster is normal		<ul style="list-style-type: none"> • Instrument cluster: 1J, 1L
	Not Present	Circuit in the instrument cluster is disable		

*1 **With advanced keyless entry and start system**

*2 **AT**

*3 **With TPMS**

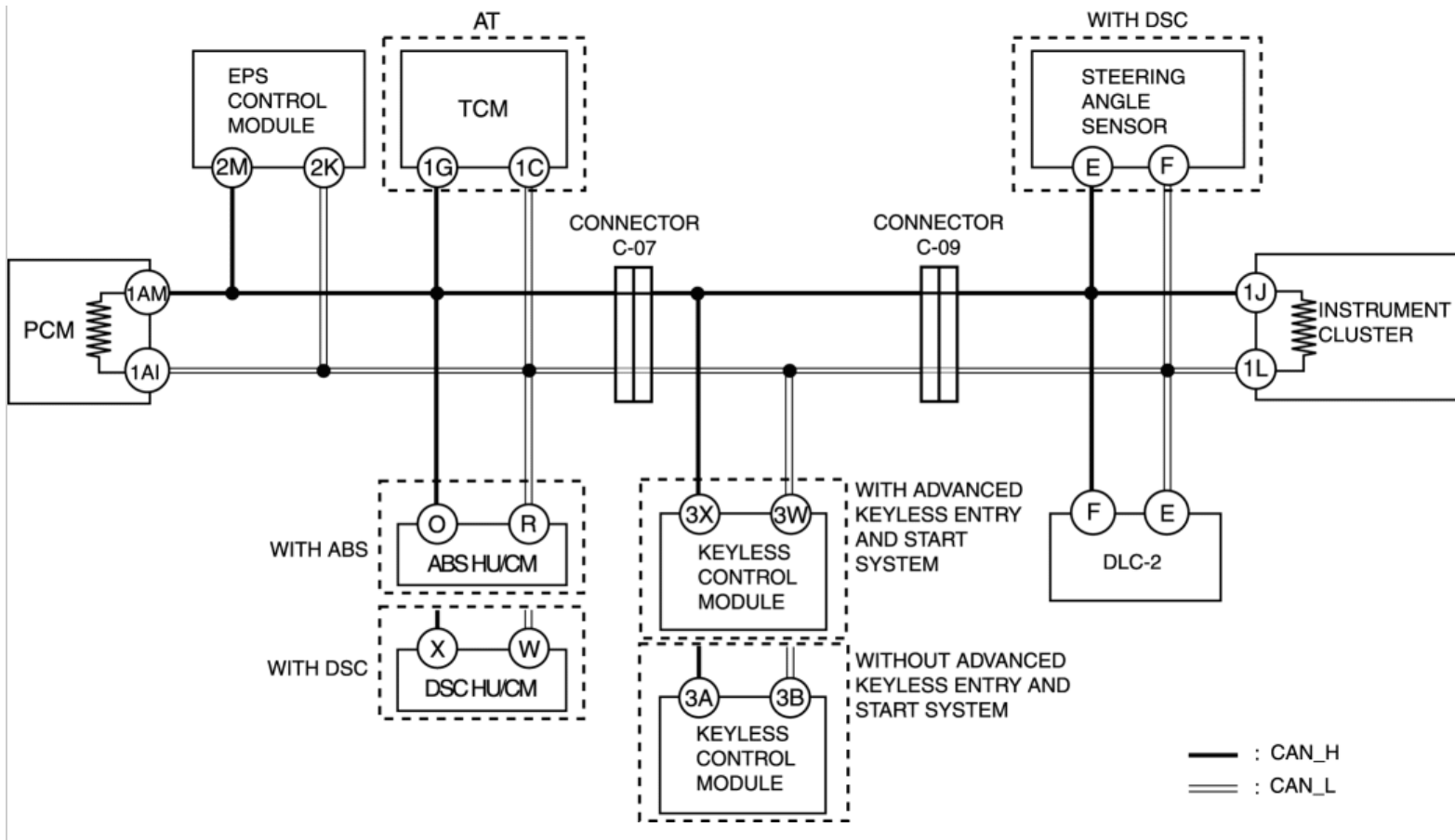
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

DTC U0073, U1900, U2516 [MULTIPLEX COMMUNICATION SYSTEM]

DTC	U0073	CAN system communication error
	U1900	CAN system communication error
	U2516	CAN system wiring harness open or short circuit
DETECTION CONDITION		<p>WARNING:</p> <ul style="list-style-type: none">• Perform the following on-board diagnosis according to FOREWORD [MULTIPLEX COMMUNICATION SYSTEM] troubleshooting procedure.• CAN system related harness malfunction• CAN system-related module malfunction
POSSIBLE CAUSE		<ul style="list-style-type: none">• Malfunction of connectors between PCM, TCM, ABS HU/CM, DSC HU/CM, EPS control module, keyless control module and instrument cluster• Open or short circuit in wiring harness• PCM malfunction• Instrument cluster malfunction• EPS control module malfunction• ABS HU/CM malfunction• DSC HU/CM malfunction• TCM malfunction• Keyless control module malfunction• Steering angle sensor malfunction



Diagnostic procedure

CAUTION:

- When disconnecting the connector, verify that there is no looseness, damage, deformation, corrosion, or poor connection of the connector terminals.

Step	Inspection	Action
1	VERIFICATION BEFORE SERVICING <ul style="list-style-type: none"> Are any DTCs, except the following, displayed? <ul style="list-style-type: none"> U0073 U1900 U2516 	Yes Determine the open circuit location referring to DETERMINING OPEN CIRCUIT LOCATION (HS-CAN) [MULTIPLEX COMMUNICATION SYSTEM] .
		No Go to the next step.
2	INSPECTION OF CONTROL MODULE CONNECTOR OUTPUTTING DTCs <ul style="list-style-type: none"> Inspect the terminal condition of the control module connector outputting DTCs and the mid-connector. Are the connector terminals normal without damage, deformation, corrosion, or disconnection? 	Yes Go to the next step.
		No Repair or replace the connector, then go to Step 9.
3	INSPECTION OF POWER SUPPLY OF CONTROL MODULE	Yes Go to the next step.

	<p>OUTPUTTING DTCs</p> <ul style="list-style-type: none"> Refer to the terminal voltage table of the control module outputting DTCs or use the PID/data monitoring function to inspect the terminal voltage and fuse condition. Is the power supply voltage normal? 		No Repair or replace the connector, then go to Step 9.
4	<p>INSPECTION OF BODY GROUND CONDITION OF CONTROL MODULE OUTPUTTING DTCs</p> <ul style="list-style-type: none"> Inspect the body ground wires and ground point of the control module outputting DTCs. Are the ground and ground point normal? 	Yes	Go to the next step.
		No	Repair or replace the connector, then go to Step 9.
5	<p>CAN SYSTEM RELATED WIRING HARNESS INSPECTION</p> <ul style="list-style-type: none"> CAN system related wiring harness inspection: <ul style="list-style-type: none"> Short to ground Short to power supply Short between twisted pair wiring harness Open circuit Is the wiring harness normal? 	Yes	Go to the next step.
		No	Repair or replace the connector, then go to Step 9.
6	<p>INSPECT PCM</p> <ul style="list-style-type: none"> Disconnect the PCM connector. Measure the resistance between the following PCM connector terminals: <ul style="list-style-type: none"> Between terminal 1AM and terminal 1AI (part side) Is the resistance 118—130 ohm? 	Yes	Go to the next step.
		No	Replace the PCM, then go to Step 9. (See PCM REMOVAL/INSTALLATION [13B-MSP].)
7	<p>INSPECT INSTRUMENT CLUSTER</p> <ul style="list-style-type: none"> Disconnect the instrument cluster connector. Measure the resistance between the following instrument cluster connector terminals: <ul style="list-style-type: none"> Between terminal 1J and terminal 1L (part side) Is the resistance 118—130 ohm? 	Yes	Go to the next step.
		No	Replace the instrument cluster, then go to Step 9. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
8	<p>CAN RELATED MODULE VERIFICATION</p> <ul style="list-style-type: none"> Remove only one of the CAN-related modules. Clear DTCs using the M-MDS. Inspect the DTCs of all modules using the M-MDS. Are DTCs U0073, U1900, U2516 displayed? 	Yes	Reinstall the removed module, remove another module and perform the same inspection. Inspect all of the CAN-related modules using the same procedure. After inspecting all of the modules, go to the next step.
		No	Replace the removed module.
9	<p>AFTER REPAIR VERIFICATION</p> <ul style="list-style-type: none"> Connect all of the modules. 	Yes	Perform the CAN system on-board diagnosis again according to the troubleshooting procedure (See FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)

	Clear DTCs using the M-MDS.		
	<ul style="list-style-type: none">• Inspect the DTCs using the M-MDS.• Are DTCs displayed?		No DTC troubleshooting completed.

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

PID/DATA MONITOR TABLE [INSTRUMENT CLUSTER]

Monitor item	Input-output signal/part name	Unit/State	Terminal
CCNT_HE	Number of continuous DTCs	—	—
ECT_GAUGE	Water temperature gauge	°C	1J, 1L
ODO COUNT	Odometer	m	
SPDOMETER	Speedometer	KPH	
TACH	Tachometer	RPM	
IC_FFD1_MLG	Travel distance (Freeze frame data 1)	m	
IC_FFD2_MLG	Travel distance (Freeze frame data 2)	m	
EPS_MSG	EPS control module—CAN transmission condition	Not_Present / Present	
ABS_MSG	ABS HU/CM or DSC HU/CM—CAN transmission condition	Not_Present / Present	
PCM_MSG	PCM—CAN transmission condition	Not_Present / Present	
TCM_MSG *1	TCM—CAN transmission condition	Not_Present / Present	
TPM_MSG *2	TPMS control module (Instrument cluster)—CAN transmission condition	Not_Present / Present	

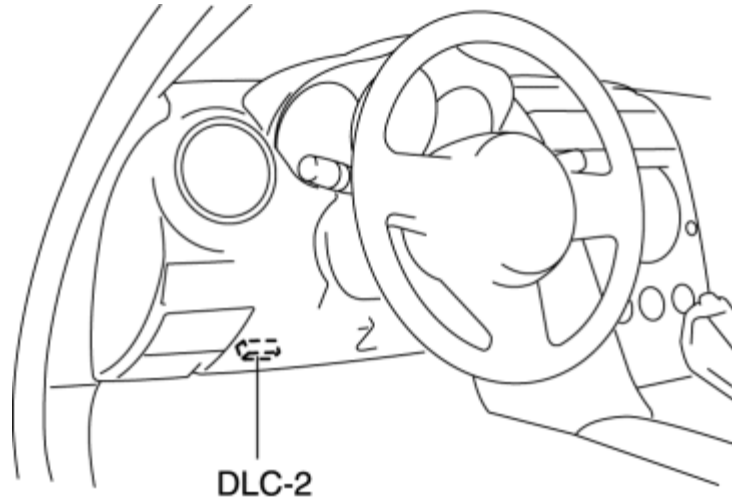
RKE_MSG ^{*3}	Keyless control module—CAN transmission condition	Not_Present / Present	
-----------------------	---	-----------------------	--

- *1
AT
- *2
With TPMS
- *3
With advanced keyless and start system

2011 - RX-8 - Body and Accessories

CLEARING DTC [INSTRUMENT CLUSTER]

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "IC".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "IC".
 3. Select "Self Test".

3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Switch the ignition to off.
6. Switch the ignition to ON and wait for 5 s more.
7. Perform DTC inspection. (See [DTC INSPECTION \[INSTRUMENT CLUSTER\]](#).)

8. Verify that no DTCs are displayed.

[< Previous](#) [Next >](#)

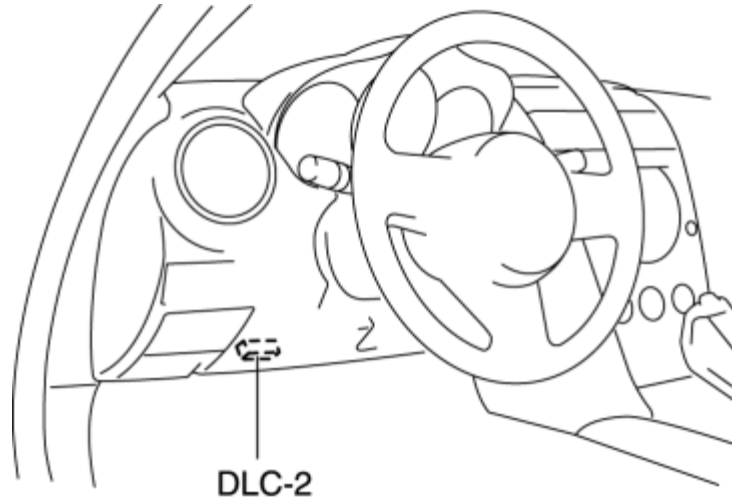
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

PID/DATA MONITOR INSPECTION [INSTRUMENT CLUSTER]

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "DataLogger".
 2. Select "Modules".
 3. Select "IC".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "IC".
 3. Select "DataLogger".

3. Select the applicable PID from the PID table.
4. Verify the PID data according to the directions on the screen.

NOTE:

- The PID data screen function is used for monitoring the calculated value of input/output signals in the module. Therefore, if the monitored value of the output parts is not within the specification, it is necessary to inspect the monitored value of input parts

corresponding to the applicable output part control. In addition, because the system does not display an output part malfunction as an abnormality in the monitored value, it is necessary to inspect the output parts individually.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

DTC U2023 [INSTRUMENT CLUSTER]

DTC U2023	Correct data cannot be received from other module
DETECTION CONDITION	<ul style="list-style-type: none"> • Correct data cannot be received from PCM • Correct data cannot be received from keyless control module
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM malfunction • Keyless control module malfunction • Instrument cluster malfunction

Diagnostic procedure

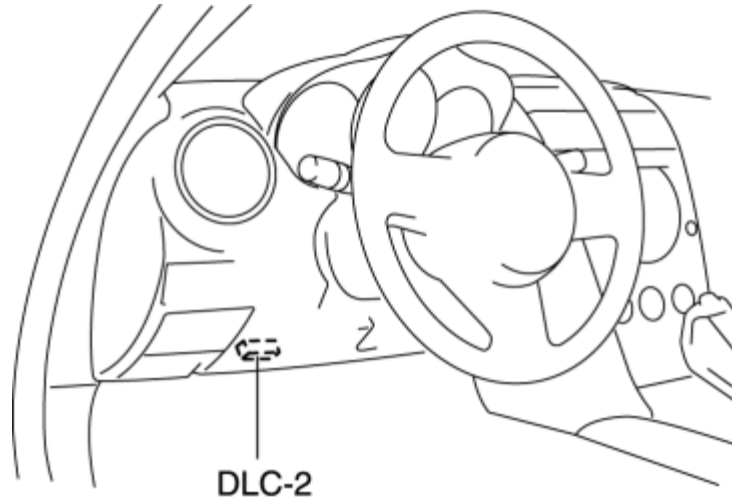
STEP	INSPECTION	ACTION
1	INSPECT FOR PCM AND KEYLESS CONTROL MODULE MALFUNCTION <ul style="list-style-type: none"> • Turn the ignition switch to LOCK position. • Using the M-MDS, perform the DTC inspection for the PCM and keyless control module. <p>(See ON-BOARD DIAGNOSTIC TEST [13B-MSP].)</p> <p>(See DTC INSPECTION [ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <ul style="list-style-type: none"> • Are any DTCs detected? 	Yes Go to applicable DTC inspection. (See DTC TABLE [13B-MSP].) (See DTC TABLE [ADVANCED KEYLESS ENTRY AND START SYSTEM].)
		No Go to the next step.
2	VERIFY THAT THE SAME DTC IS NOT PRESENT <ul style="list-style-type: none"> • Clear the DTCs from the memory. 	Yes Repeat the inspection from Step 1. If the malfunction recurs, replace the PCM or

	<p>(See CLEARING DTC [INSTRUMENT CLUSTER].)</p> <ul style="list-style-type: none">• Are the same DTCs present?	<p>keyless control module, then go to the next step.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p> <p>(See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)</p>
		No Go to the next step.
3	VERIFY THAT NO OTHER DTCS ARE PRESENT <ul style="list-style-type: none">• Are any other DTCs output?	<p>Yes Go to the applicable DTC inspection.</p> <p>(See DTC INSPECTION [INSTRUMENT CLUSTER].)</p>
		No DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

DTC INSPECTION [INSTRUMENT CLUSTER]

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 - Select "Self Test".
 - Select "Modules".
 - Select "IC".
- When using the PDS (Pocket PC)
 - Select "Module Tests".
 - Select "IC".
 - Select "Self Test".

3. Verify the DTC according to the directions on the screen.

- If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.

4. After completion of repairs, clear all DTCs stored in the instrument cluster.

2011 - RX-8 - Body and Accessories

DTC TABLE [INSTRUMENT CLUSTER]

DTC	Description	Page
B1342	Instrument cluster malfunction	(See DTC B1342 [INSTRUMENT CLUSTER].)
B2477	Configuration error	(See DTC B2477 [INSTRUMENT CLUSTER].)
U1900	Communication error	(See FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
U2023	Correct data cannot be received from other module	(See DTC U2023 [INSTRUMENT CLUSTER].)
U2064	Warning light illumination request signal from other modules	(See DTC U2064 [INSTRUMENT CLUSTER].)
U2516	CAN system communication error (HS-CAN)	(See FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)

2011 - RX-8 - Body and Accessories

DTC B1342 [INSTRUMENT CLUSTER]

DTC B1342	Instrument cluster malfunction
DETECTION CONDITION	<ul style="list-style-type: none">• Malfunction in the Instrument cluster internal circuit
POSSIBLE CAUSE	<ul style="list-style-type: none">• Instrument cluster malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT INSTRUMENT CLUSTER <ul style="list-style-type: none">• Clear DTC from memory.• Turn the ignition switch to the LOCK position.• Turn the ignition switch to the ON position.• Is B1342 displayed?	Yes Replace the instrument cluster. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

DTC B2477 [INSTRUMENT CLUSTER]

DTC B2477	Configuration error
DETECTION CONDITION	<ul style="list-style-type: none"> • Configuration error • Malfunction in the instrument cluster internal circuit
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Instrument cluster malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	PERFORM INSTRUMENT CLUSTER CONFIGURATION <ul style="list-style-type: none"> • Perform instrument cluster configuration. • Is B2477 displayed? 	Yes Replace the instrument cluster. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No Go to next step.
2	VERIFY TROUBLESHOOTING OF DTC B2477 COMPLETED <ul style="list-style-type: none"> • Clear DTC from memory. • Is B2477 displayed? 	Yes Go to applicable DTC inspection.
		No DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

DTC U2064 [INSTRUMENT CLUSTER]

DTC U2064	Warning light illumination request signal from other modules
DETECTION CONDITION	<ul style="list-style-type: none">• Receive warning light illumination request signal
POSSIBLE CAUSE	<ul style="list-style-type: none">• CAN-related module malfunction

CAUTION:

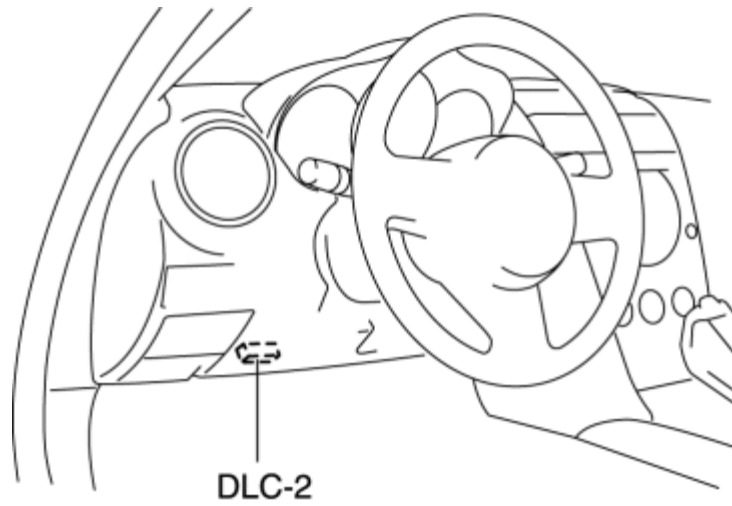
- DTC U2064 is registered to the instrument cluster by a request from other modules and does not indicate a malfunction in the instrument cluster itself.
- DTC U2064 may not be cleared during engine starting even if DTC clearing is done using the M-MDS. When clearing DTC U2064, execute with the ignition switch in the ON position (Engine off).

Diagnostic Procedure

1. Verify the freeze frame data according to the following procedure:
 - a. Connect the M-MDS to DLC-2.

NOTE:

- Freeze frame data of the instrument cluster can be displayed by the IDS (laptop PC)



b. After the vehicle is identified, select the following items from the initial screen of the M-MDS.

- Select "Electrical".
- Select "IC Service Functions".

2. Determine which unit is thought to be malfunctioning based on the freeze frame data.

NOTE:

- If several warning light illumination requests are received, they will be recorded in one freeze frame data.

Freeze frame data		Warning light illumination request unit					
		PCMT	TCM	ABS HU/CM	DSC HU/CM	EPS control module	Keyless control module
Illuminated warning light	Generator warning light	×	—	—	—	—	—
	MIL	×	—	—	—	—	—
	Oil level warning light	×	—	—	—	—	—
	Coolant level warning light	×	—	—	—	—	—
	ABS warning light	—	—	×	—	—	—

	Brake system warning light	—	—	×	×	—	—
	AT warning light	—	×	—	—	—	—
	EPS warning light	—	—	—	—	×	—
	Keyless warning light	—	—	—	—	—	×
Meter, gauge control status	Speedometer	—	—	—	—	—	—
	Tachometer	—	—	—	—	—	—
	Water temperature gauge	—	—	—	—	—	—

3. Inspect the malfunctioning part.

- Repair or replace if necessary.

4. Clear the DTC from the memory.

5. Turn the ignition switch to LOCK position then ON position.

6. Verify that the DTC U2064 is displayed using the M-MDS.

- If DTC U2064 is displayed, go back to Step 1.

[< Previous](#) [Next >](#)

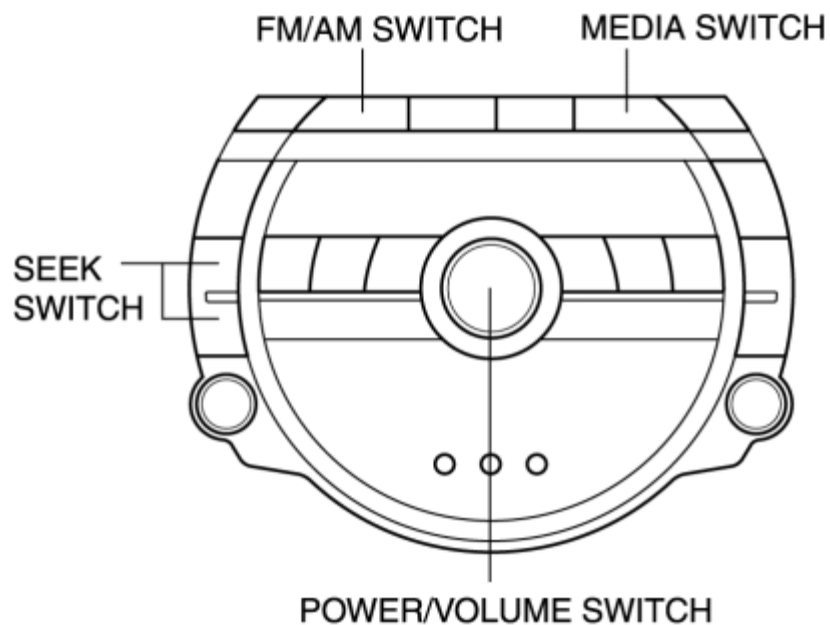
[Back to Top](#)

2011 - RX-8 - Body and Accessories

STARTING PROCEDURE FOR ON-BOARD DIAGNOSTIC TEST MODE [AUDIO]

NOTE:

- All DTCs displayed in the on-board diagnostic test mode should be entered in the Audio Repair Order Form.
1. Turn the ignition switch to the ACC or ON position.
 2. Turn the audio unit power to OFF.
 3. While pressing the POWER/VOLUME switch, simultaneously press the FM/AM switch and the MEDIA switch for **2 s or more**.



NOTE:

- If several DTCs are in the memory, they can be displayed using the SEEK switch.
4. To stop the on-board diagnostic test mode, turn the ignition switch to the LOCK position.

2011 - RX-8 - Body and Accessories

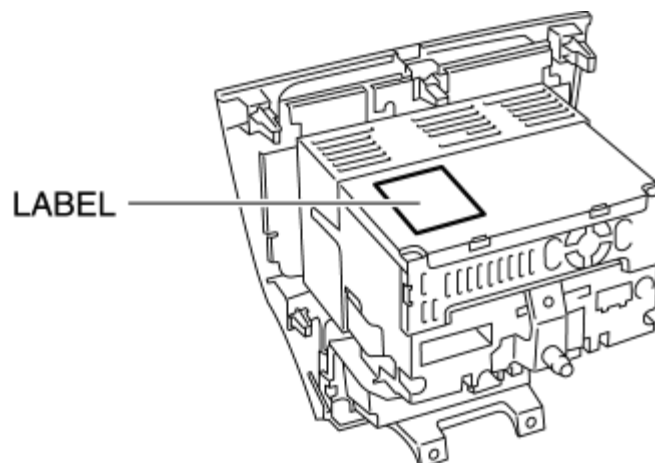
SUPPLIER IDENTIFICATION PROCEDURE [AUDIO]

NOTE:

- The supplier can vary with the module. When asking the supplier (service center) for repair or replacement, identify the supplier and fill in the Audio Repair Order Form with the following procedures.

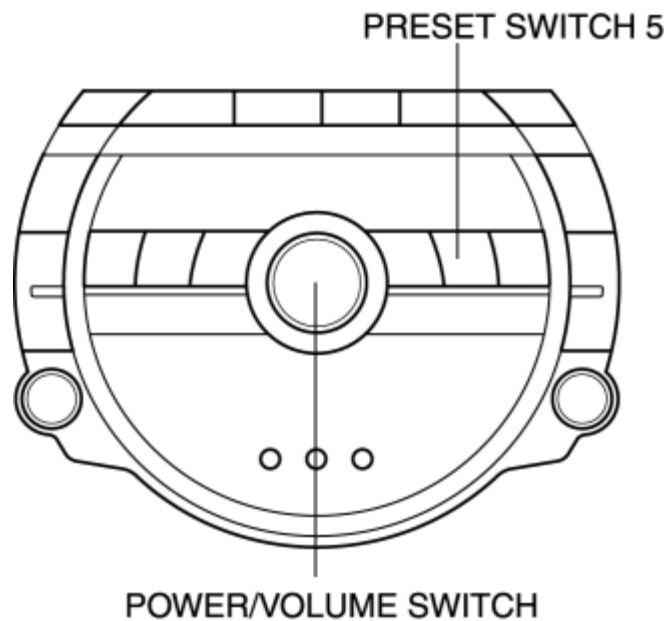
Identification Using the Label or Inscribed Lettering

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Shift lever knob (MT) (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#).)
 - b. Shift knob (AT) (See [SELECTOR LEVER REMOVAL/INSTALLATION](#).)
 - c. Upper panel (See [CONSOLE REMOVAL/INSTALLATION](#).)
 - d. Ashtray panel (See [CONSOLE REMOVAL/INSTALLATION](#).)
 - e. Lower panel (See [LOWER PANEL REMOVAL/INSTALLATION](#).)
 - f. Knee bolster (See [KNEE BOLSTER REMOVAL/INSTALLATION](#).)
 - g. Center panel unit (See [CENTER PANEL UNIT REMOVAL/INSTALLATION](#).)
3. Verify the supplier by referring to the label attached to each unit.



Verify Using the Diagnostic Assist Function

- 1. Turn the ignition switch to the ACC or ON position.
- 2. Turn the audio unit power ON.
- 3. While pressing the POWER/VOLUME switch, simultaneously press the Preset switch 5 for **approx. 3 s or more**.



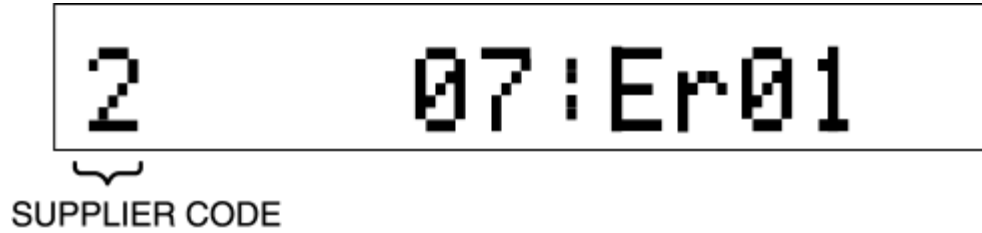
- 4. Identify the supplier code by referring to the information display.



Supplier code	Supplier name
01	SANYO Automeida
02	Panasonic
03	Clarion
04	Pioneer

NOTE:

- The supplier code can also be identified from the DTC displays screen.



5. Cancel the diagnostic assist function by either turning OFF the audio unit power or by ignition to the switched OFF

[< Previous](#) [Next >](#)

[Back to Top](#)

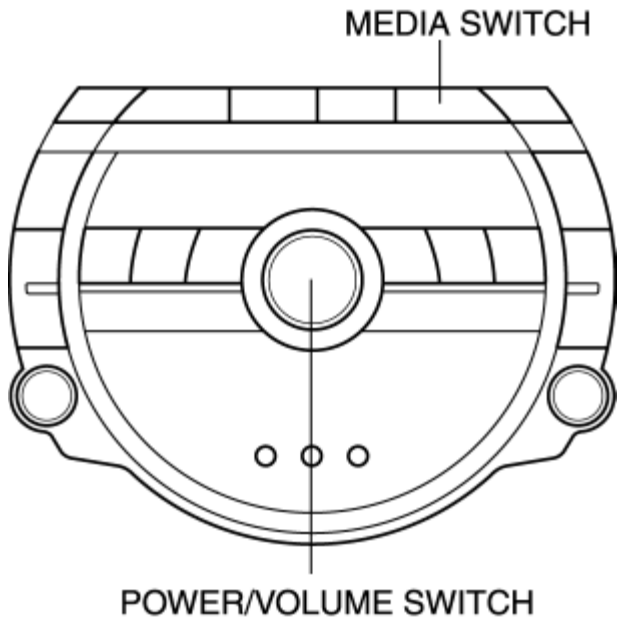
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

DIAGNOSTIC ASSIST FUNCTION [AUDIO]

Switch Inspection

1. With the audio power ON, press the POWER/VOLUME switch and simultaneously press the MEDIA switch for **approx. 1 s.**



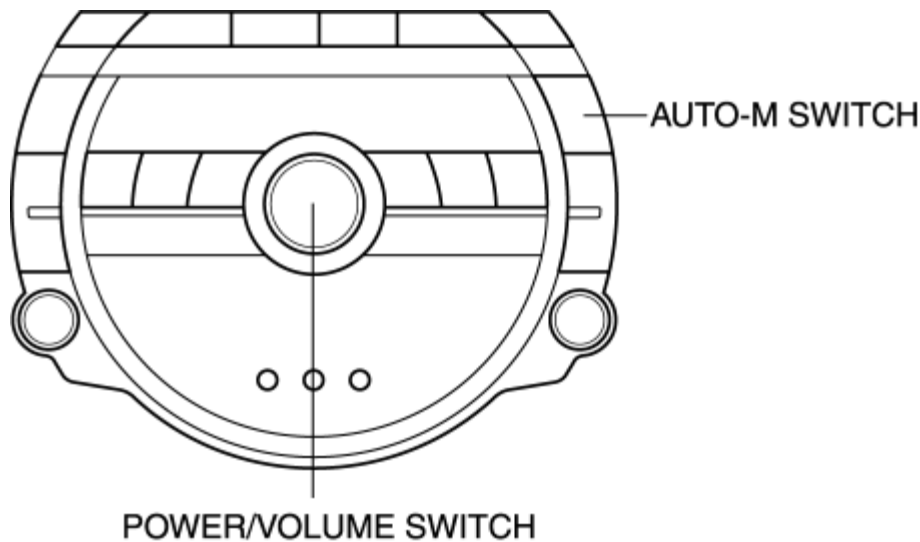
2. Inspect according to the following table:

INSPECTION	INFORMATION DISPLAY	ACTION	
<ul style="list-style-type: none">• Launch the switch inspection mode.• Operate all of the switches (press).• Does the buzzer sound?	—	Yes	The switch is normal.
		No	Remove the audio unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY)

3. Turn the audio OFF or the ignition switch to the LOCK position to stop the diagnostic assist function.

Speaker Inspection

1. With the audio power ON, press the POWER/VOLUME switch and simultaneously press the AUTO-M switch for **approx. 1 s.**



2. Inspect according to the following table:

INSPECTION	INFORMATION DISPLAY	ACTION
<ul style="list-style-type: none">Launch the speaker inspection mode.Does each speaker output sound in the following order?: Without Bose® 1. Front door speaker and front tweeter (LH) 2. Front door speaker and		Yes The speakers and the wiring harness between the audio unit and speakers are normal.
		<ul style="list-style-type: none">If no sound is produced from all of the speakers. (See NO.3 NO SOUND FROM ALL SPEAKERS [AUDIO].)If no sound is produced from some of the speakers. (See NO.4 NO SOUND FROM SOME SPEAKERS)

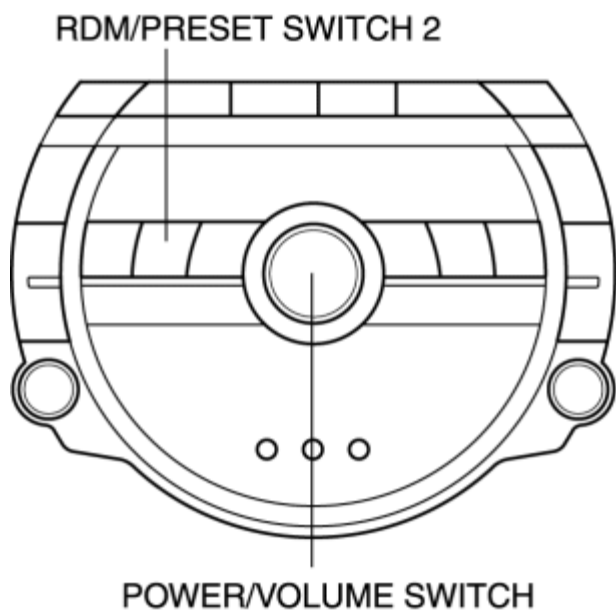
front tweeter (RH)			[AUDIO].)
3. Rear speaker (RH)			
4. Rear speaker (LH)			
With Bose®	—		
1. Front door speaker and front tweeter (LH)		No	
2. Center speaker			
3. Front door speaker and front tweeter (RH)			
4. Rear speaker and rear tweeter (RH)			
5. Rear speaker and rear tweeter (LH)			

3. Turn the audio OFF or the ignition switch to the LOCK position to stop the diagnostic assist function.

Radio Reception Condition Inspection

1. Turn the audio unit power to ON.

2. Tune in the radio.
3. While pressing the POWER/VOLUME switch, simultaneously press the RDM/PRESET switch 2 for **approx. 1 s**.



4. Inspect according to the following table:

CAUTION:

- Even if the system is normal, radio reception may be difficult depending on where the system is inspected (indoors/outdoors, or conditions at the location). Before inspecting the system, verify that radio reception is adequate.
- When inspecting, select a frequency band (radio station) with the best reception.

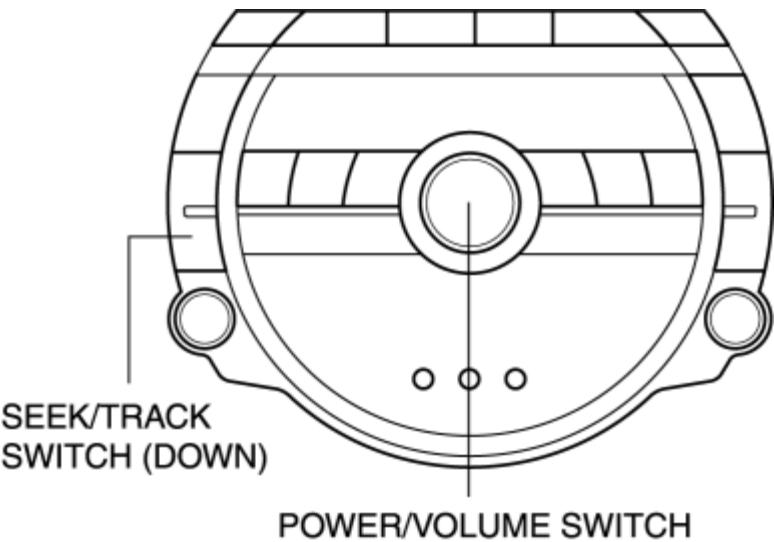
INSPECTION	INFORMATION DISPLAY	ACTION
Start the radio reception condition inspection mode.	LEV-9 ↔ LEV5	Antenna, glass antenna, antenna feeder and audio unit are normal.
	LEV-4 ↔ LEV3	Change frequencies and re-perform the inspection.
	LEV-2 ↔ LEV0	<ul style="list-style-type: none"> • Inspect the antenna, glass antenna and antenna feeder. • If either the antenna or the antenna feeder is not normal, replace the malfunctioning part.

		<ul style="list-style-type: none"> If the antenna and antenna feeder are normal, replace the audio unit.
--	--	---

5. Turn the audio OFF or the ignition switch to the LOCK position to stop the diagnostic assist function.

Audio Amplifier Specification Inspection

1. With the audio power ON, press the POWER/VOLUME switch and simultaneously press the SEEK/TRACK switch (down) for **approx. 1 s.**



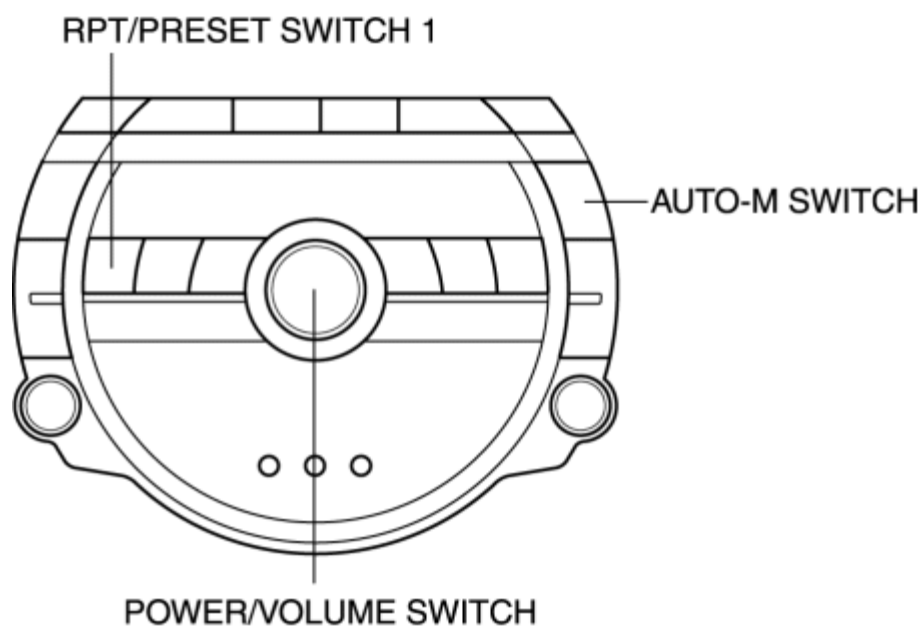
2. Inspect according to the following table:

INSPECTION	INFORMATION DISPLAY	ACTION	
<ul style="list-style-type: none"> Launch audio amplifier specification inspection mode. Verify the audio amplifier specification. Dose the audio amplifier specification correspond. 	Without Bose®	Yes	System is okay.
		No	Replace the audio unit.
	With Bose®		(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)
			(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)

3. Turn the audio OFF or the ignition switch to the LOCK position to stop the diagnostic assist function.

Audio Amplifier (With Bose®) Identify Inspection

1. With the audio power ON, press the POWER/VOLUME switch and simultaneously press the RPT/PRESET switch 1 and AUTO-M switch for **approx. 3 s.**

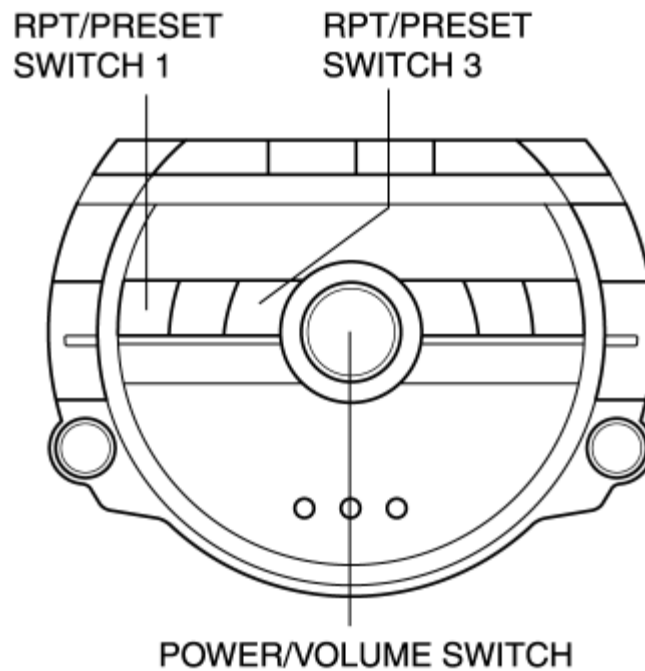


2. Inspect according to the following table:

INSPECTION	—	ACTION	
<ul style="list-style-type: none">Launch audio amplifier (With Bose®) identify inspection mode.Dose the audio amplifier specification correspond.	<p>With normal seat</p> <ul style="list-style-type: none">The rear speaker sounds. <p>With leather seat</p> <ul style="list-style-type: none">The front door speaker sounds.	Yes	Audio amplifier is okay.
		No	Replace the audio amplifier. (See AUDIO AMPLIFIER REMOVAL/INSTALLATION.)

3. Turn the audio OFF or the ignition switch to the LOCK position to stop the diagnostic assist function.

1. Turn the audio unit power to ON.
2. Tune in the SIRIUS satellite radio.
3. While pressing the POWER/VOLUME switch, simultaneously press the PRESET switch 1 and the PRESET switch 3 for **3 s or more**.



4. Verify the SIRIUS satellite radio software version.



5. Turn the audio OFF or the ignition switch to the LOCK position to stop the diagnostic assist function.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

DTC TABLE [AUDIO]

Screen display		
DTC (When starting on-board diagnostic test function)	Detection condition	Possible cause/inspection
03: Er01	CD player cannot implement insert and eject commands.	CD player malfunction
03: Er02	Cannot change tracks.	CD player malfunction
03: Er07	CD reading error.	<ul style="list-style-type: none"> Defective CD (scratches or dirt) CD player malfunction
03: Er10	CD player does not operate.	<ul style="list-style-type: none"> Malfunction of connectors between audio unit and CD player CD player malfunction
06: Er01	CD changer (upper module) cannot implement insert, eject, and disc change commands.	<ul style="list-style-type: none"> Defective CD (curved, broken or foreign material stuck/attached, etc.) CD changer (upper module) malfunction
06: Er02	Cannot change tracks.	<ul style="list-style-type: none"> Defective CD (curved, broken or foreign material stuck/attached, etc.) CD changer (upper

		module) malfunction
06: Er07	CD reading error.	<ul style="list-style-type: none"> Defective CD (curved, broken or foreign material stuck/attached, etc.) CD changer malfunction
06: Er10	CD changer does not operate.	<ul style="list-style-type: none"> Malfunction of connectors between audio unit and CD changer CD changer malfunction
09: Er20	Audio system does not operate.	Voltage at audio unit is low.
09: Er21	Broken sound/No sound	<ul style="list-style-type: none"> Audio unit internal malfunction or audio unit protection function operates Speaker or speaker circuit malfunction
09: Er22	No radio reception	Inspect the radio operation according to vehicle condition.
11: Er01	SSI bus communication error	<ul style="list-style-type: none"> Poor connection of the connectors SIRIUS satellite radio antenna feeder malfunction SIRIUS satellite radio antenna malfunction SIRIUS satellite radio unit malfunction Audio unit malfunction
11: Er03	Poor connection of antenna	<ul style="list-style-type: none"> Poor connection of the connectors SIRIUS satellite radio antenna feeder malfunction SIRIUS satellite radio antenna malfunction

		<ul style="list-style-type: none"> • SIRIUS satellite radio unit malfunction
16: Er12	—	CAN system communication error (See FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
21: Er19	Audio system communication error	Center panel malfunction
22: Er01	MP3 applicable CD changer cannot implement insert, eject, and disc change commands.	<ul style="list-style-type: none"> • Defective CD (curved, broken or foreign material stuck/attached, etc.) • MP3 applicable CD changer malfunction
22: Er02	Cannot change tracks.	<ul style="list-style-type: none"> • Defective CD (curved, broken or foreign material stuck/attached, etc.) • MP3 applicable CD changer malfunction
22: Er07	CD reading error.	<ul style="list-style-type: none"> • Defective CD (curved, broken or foreign material stuck/attached, etc.) • MP3 applicable CD changer malfunction
22: Er10	MP3 applicable CD changer does not operate.	<ul style="list-style-type: none"> • Malfunction of connectors between audio unit and MP3 applicable CD changer • MP3 applicable CD changer malfunction
no Err	No DTCs stored	No DTCs stored

2011 - RX-8 - Body and Accessories

CLEARING DTC [AUDIO]

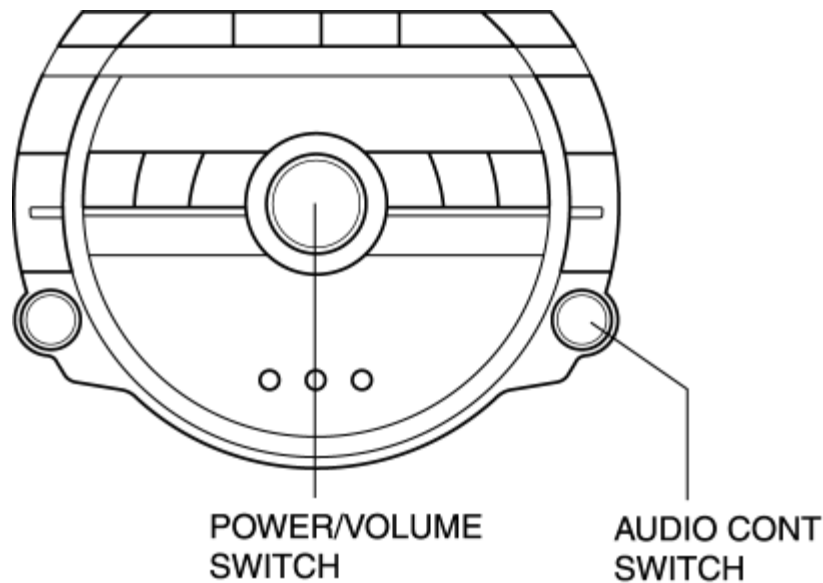
CAUTION:

- Before clearing the memory, be sure to enter all of the DTCs displayed in the on-board diagnostic test mode in the Audio Repair Order Form.

1. Start the on-board diagnostic test mode.

(See [STARTING PROCEDURE FOR ON-BOARD DIAGNOSTIC TEST MODE \[AUDIO\]](#).)

2. While pressing the POWER/VOLUME switch, simultaneously press the AUDIO CONT switch for **2 s or more**.



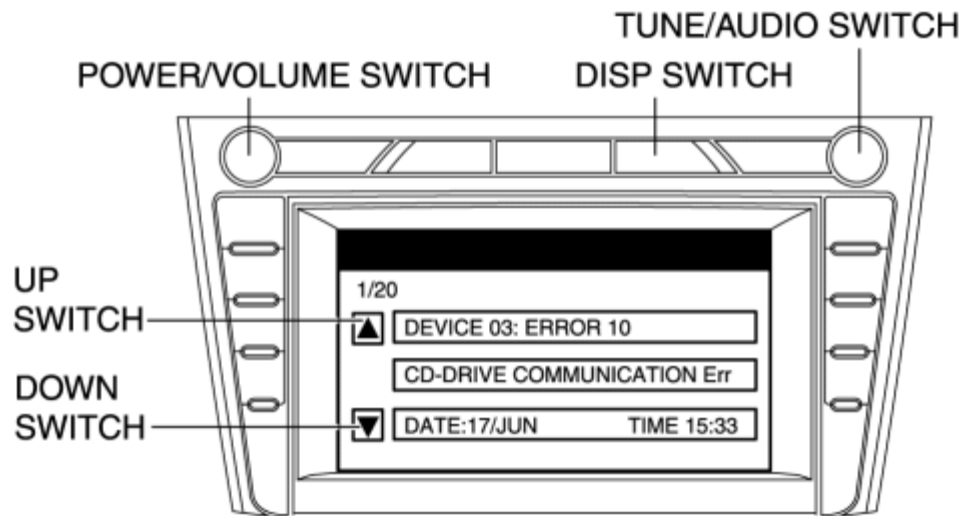
3. To stop the on-board diagnostic test mode, turn the ignition switch to the LOCK position.

2011 - RX-8 - Body and Accessories

STARTING PROCEDURE FOR ON-BOARD DIAGNOSTIC TEST MODE [CAR-NAVIGATION SYSTEM]

NOTE:

- All DTCs displayed in the on-board diagnostic test mode should be entered in the Audio Repair Order Form.
1. Turn ignition switch to ACC or ON position.
 2. Turn the audio power to OFF.
 3. While pressing the POWER/VOLUME switch, simultaneously press the TUNE/AUDIO switch and the DISP switch for **1 s or more**.



NOTE:

- If several DTCs are in the memory, they can be displayed using the UP/DOWN switch.
4. To stop the on-board diagnostic test mode, turn the ignition switch to the LOCK position.

2011 - RX-8 - Body and Accessories

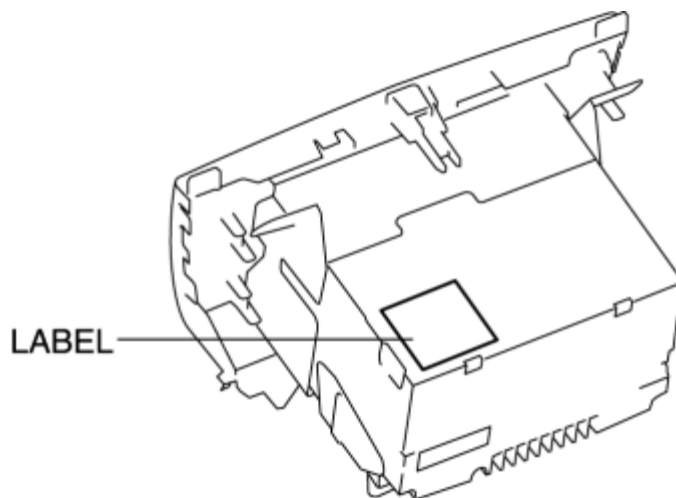
SUPPLIER IDENTIFICATION PROCEDURE [CAR-NAVIGATION SYSTEM]

NOTE:

- The supplier can vary with the module. When asking the supplier (service center) for repair or replacement, identify the supplier and fill in the Audio Repair Order Form with the following procedures.

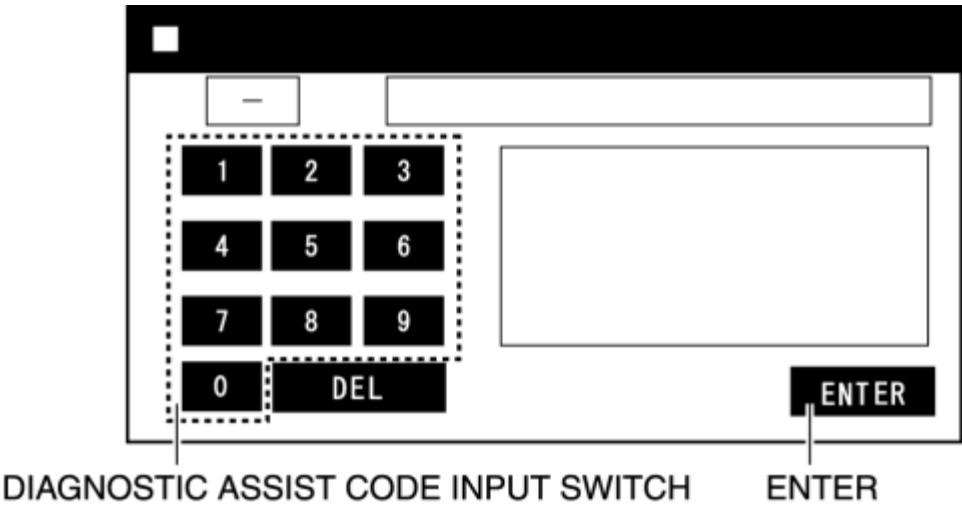
Identification Using the Label or Inscribed Lettering

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Shift lever knob (MT) (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#).)
 - b. Shift knob (AT) (See [SELECTOR LEVER REMOVAL/INSTALLATION](#).)
 - c. Upper panel (See [CONSOLE REMOVAL/INSTALLATION](#).)
 - d. Ashtray panel (See [CONSOLE REMOVAL/INSTALLATION](#).)
 - e. Lower panel (See [LOWER PANEL REMOVAL/INSTALLATION](#).)
 - f. Knee bolster (See [KNEE BOLSTER REMOVAL/INSTALLATION](#).)
3. Verify the supplier by referring to the label attached to each unit.

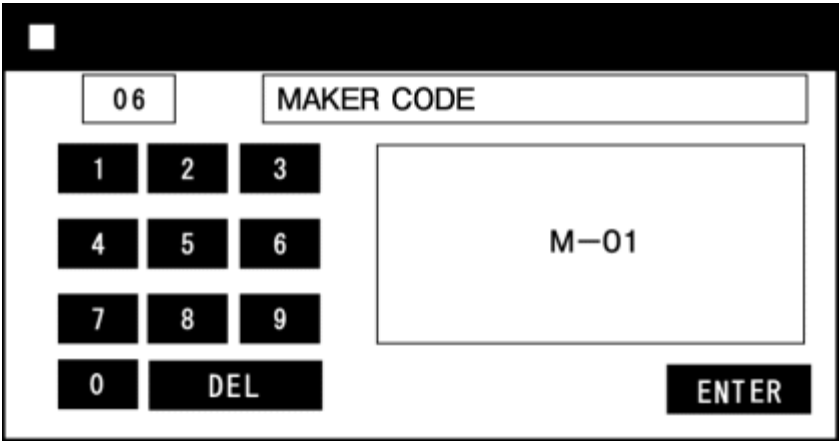


Verify Using the Diagnostic Assist Function

- 1. Launch the diagnostic assist function. (See [DIAGNOSTIC ASSIST FUNCTION \[CAR-NAVIGATION SYSTEM\]](#).)
- 2. Press the “Diagnostic assist code input switch”, and input the diagnostic assist code “06”.



- 3. Select “ENTER”.
- 4. Identify the supplier code by referring to the display.



Supplier code	Supplier name
1	SANYO Automedia
2	Panasonic
3	Clarion
4	Pioneer

5	VISTEON
---	---------

5. Press the POWER/VOLUME switch to return to the diagnostic assist code input screen.
6. Press the POWER/VOLUME switch to release the diagnostic assist function.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

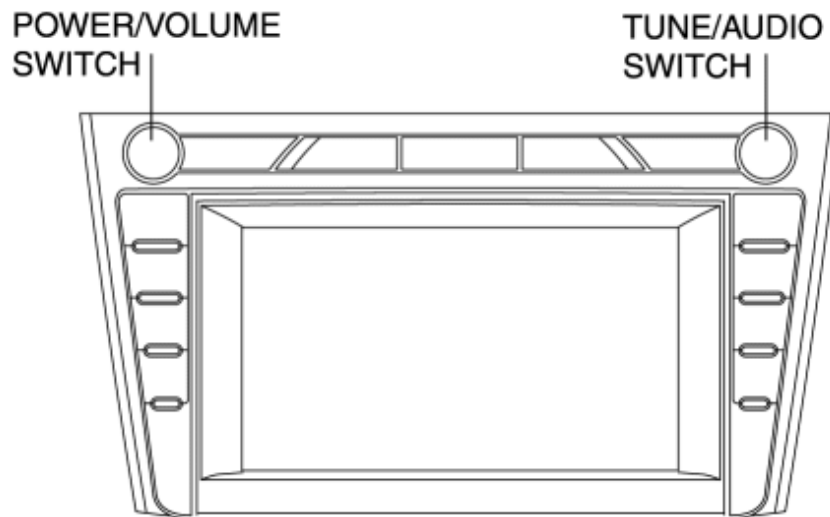
[Back to Top](#)

2011 - RX-8 - Body and Accessories

DIAGNOSTIC ASSIST FUNCTION [CAR-NAVIGATION SYSTEM]

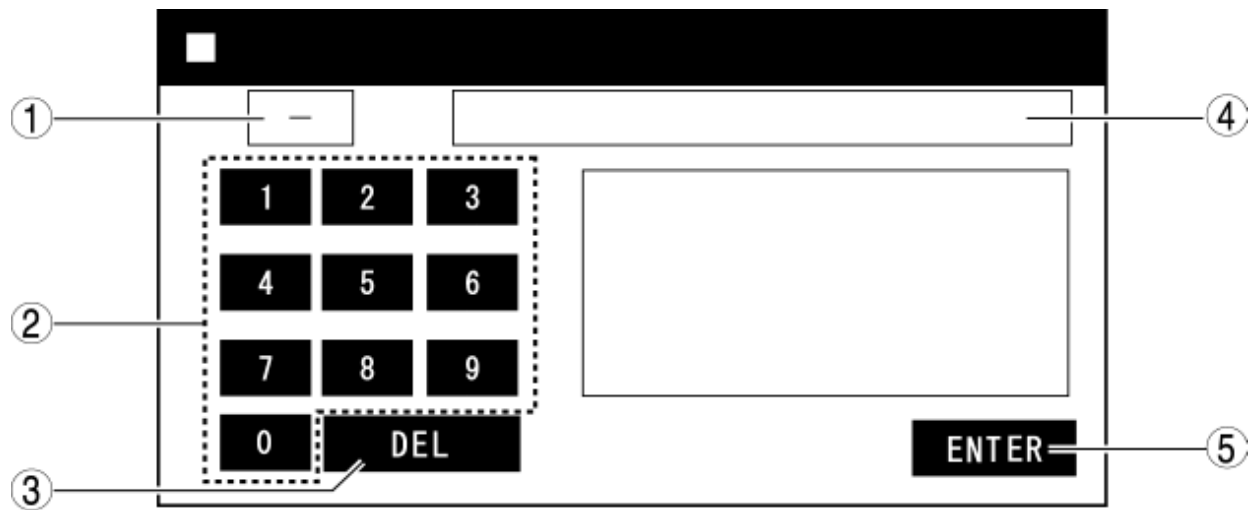
Starting Procedure

1. Turn ignition switch to ACC or ON position.
2. Turn the audio power to ON.
3. While pressing the POWER/VOLUME switch, simultaneously press the TUNE/AUDIO switch for **1 s or more**.



4. Press the "Diagnostic assist code input switch", and input the diagnostic assist code.
5. Select "ENTER".

Diagnostic assist code input screen



No.	Name	Content/function
1	Diagnostic assist code	Display the diagnostic assist code.
2	Diagnostic assist code input switch	Input the diagnostic assist code.
3	DEL	Clear the diagnostic assist code.
4	Diagnostic content	Display the diagnostic content.
5	ENTER	Go to the diagnostic assist function.

6. Press the POWER/VOLUME switch to return to the diagnostic assist code input screen.

7. Press the POWER/VOLUME switch to release the diagnostic assist function.

Diagnostic assist code table

No.	Content/function
01	Diagnostic assist code "01" display inspection
02	Diagnostic assist code "02" switch inspection

03	Diagnostic assist code "03" speaker inspection
04	Diagnostic assist code "04" radio reception condition inspection
05	Diagnostic assist code "05" antenna control output condition inspection
06	Diagnostic assist code "06" supplier identification
07	Diagnostic assist code "07" audio amplifier specification inspection
08	Diagnostic assist code "08" display open/close inspection
09	Diagnostic assist code "09" radio SEEK inspection
10	Diagnostic assist code "10" software version verification
11	Diagnostic assist code "11" DVD/CD drive inspection

Diagnostic assist code "01" display inspection

1. Press the "Diagnostic assist code input switch", and input the diagnostic assist code "01".
2. Select "ENTER".

Inspection	Display	Action	
<ul style="list-style-type: none"> • Launch the display inspection mode. • Verify the display. 	Red→Green→Blue→White→Black→Color bar→Grey bar→Position adjustment screen	The display displays normally.	The display is normal.
		The display does not display normally.	Replace the car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)

3. Press the POWER/VOLUME switch to return to the diagnostic assist code input screen.

4. Press the POWER/VOLUME switch to release the diagnostic assist function.

Diagnostic assist code "02" switch inspection

1. Press the "Diagnostic assist code input switch", and input the diagnostic assist code "02".
2. Select "ENTER".

Inspection	Display	Action
<ul style="list-style-type: none">• Launch the switch inspection mode.• Operate all of the switches (press).• Does the buzzer sound?	—	YesThe switch is normal.
		NoReplace the car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)

3. Press the POWER/VOLUME switch to return to the diagnostic assist code input screen.

4. Press the POWER/VOLUME switch to release the diagnostic assist function.

Diagnostic assist code "03" speaker inspection

1. Press the "Diagnostic assist code input switch", and input the diagnostic assist code "03".
2. Select "ENTER".

Inspection	Display	Action
<ul style="list-style-type: none">• Launch the speaker inspection mode.• Does each speaker output sound in the following order?:<ol style="list-style-type: none">1. Front door speaker and front tweeter (LH)		YesThe speakers and the wiring harness between the car-navigation unit and speakers are normal.
		<ul style="list-style-type: none">• If no sound is produced from all of the speakers. (See NO.3 NO SOUND FROM ALL SPEAKERS [AUDIO].)• If no sound is produced from some of the speakers.

<div>2. Center speaker</div> <div>3. Front door speaker and front tweeter (RH)</div> <div>4. Rear speaker and rear tweeter (RH)</div> <div>5. Rear speaker and rear tweeter (LH)</div>	<div>—</div>	<div>No</div>	<div>(See NO.4 NO SOUND FROM SOME SPEAKERS [AUDIO].)</div>
--	--------------	---------------	--

3. Press the POWER/VOLUME switch to return to the diagnostic assist code input screen.
4. Press the POWER/VOLUME switch to release the diagnostic assist function.

Diagnostic assist code “04” radio reception condition inspection

1. Launch the diagnostic assist function with the radio power on and the radio receiving broadcasts. (See [Starting Procedure.](#))
2. Press the “Diagnostic assist code input switch”, and input the diagnostic assist code “04”.
3. Select “ENTER”.
4. Inspect according to the following table:

CAUTION:

- Even if the system is normal, radio reception may be difficult depending on where the system is inspected (indoors/outdoors, or conditions at the location). Before inspecting the system, verify that radio reception is adequate.
- When performing the inspection, select the best area for receiving radio frequencies.

	Display (AM	
--	-------------	--

Inspection	522 kHz reception)	Action
Start the radio reception condition inspection mode.	LEV-10 522 ↔ LEV 5 522	Glass antenna, antenna feeder and car-navigation unit are normal.
	LEV-4 522 ↔ LEV 3 522	Change frequencies and re-perform the inspection.
	LEV-2 522 ↔ LEV 0 522	<ul style="list-style-type: none"> • Inspect the glass antenna, antenna feeder. • If either the glass antenna or the antenna feeder is not normal, replace the malfunctioning part. • If the glass antenna, antenna feeder are normal, replace the car-navigation unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</p>

5. Press the POWER/VOLUME switch to return to the diagnostic assist code input screen.

6. Press the POWER/VOLUME switch to release the diagnostic assist function.

Diagnostic assist code "05" antenna control output condition inspection

1. Launch the diagnostic assist function with the radio power on and the radio receiving broadcasts. (See [Starting Procedure.](#))

2. Press the "Diagnostic assist code input switch", and input the diagnostic assist code "05".

3. Select "ENTER".

4. Inspect according to the following table:

CAUTION:

- Even if the system is normal, radio reception may be difficult depending on where the system is inspected (indoors/outdoors, or conditions at the location). Before inspecting the system, verify that radio reception is adequate.
- When performing the inspection, select the best area for receiving radio frequencies.

Inspection	Display	Action	
Start antenna control condition inspection mode.	ANT-ON	Sound quality good.	System is okay.
		Sound quality poor.	(See NO.1 NO RADIO RECEPTION (AM/FM)/NO OR LOW VOLUME [RADIO].)
	ANT-OFF	Replace the car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)	

5. Press the POWER/VOLUME switch to return to the diagnostic assist code input screen.

6. Press the POWER/VOLUME switch to release the diagnostic assist function.

Diagnostic assist code "06" supplier identification

1. Refer to the supplier identification procedure. (See [SUPPLIER IDENTIFICATION PROCEDURE \[CAR-NAVIGATION SYSTEM\].](#))

Diagnostic assist code "07" audio amplifier specification inspection

1. Press the "Diagnostic assist code input switch", and input the diagnostic assist code "07".

2. Select "ENTER".

Inspection	Display	Action	
<ul style="list-style-type: none"> Launch the audio amplifier specification inspection mode. Verify the audio amplifier specification. Does the audio amplifier specification correspond? 	Without Bose® <ul style="list-style-type: none"> N 	Yes	System is okay.
		No	Replace the car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.)
	With Bose® <ul style="list-style-type: none"> L 		(See CENTER PANEL UNIT

3. Press the POWER/VOLUME switch to return to the diagnostic assist code input screen.
4. Press the POWER/VOLUME switch to release the diagnostic assist function.

Diagnostic assist code "08" display open/close inspection

1. Press the "Diagnostic assist code input switch", and input the diagnostic assist code "08".
2. Select "ENTER".

Inspection	Display	Action
<ul style="list-style-type: none"> Launch the audio display open/close inspection mode. Does the display open/close in the following order? 1. close→open→close 	—	YesSystem is okay.
		Replace the car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.)
		No (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)

3. Press the POWER/VOLUME switch to return to the diagnostic assist code input screen.
4. Press the POWER/VOLUME switch to release the diagnostic assist function.

Diagnostic assist code "09" radio SEEK inspection

1. Launch the diagnostic assist function with the radio power on and the radio receiving broadcasts. (See [Starting Procedure.](#))
2. Press the "Diagnostic assist code input switch", and input the diagnostic assist code "09".
3. Select "ENTER".

Inspection	Display	Action
<ul style="list-style-type: none"> Launch the radio SEEK inspection mode. 		YesSystem is okay.
		<ul style="list-style-type: none"> Inspect the glass antenna, antenna feeder. If either the glass antenna

<ul style="list-style-type: none"> • Verify the SEEK inspection to the directions on the screen. • Is the inspection result normal? 	—ch RECEIVED	No	<p>or the antenna feeder is not normal, replace the malfunctioning part.</p> <ul style="list-style-type: none"> • If the glass antenna, antenna feeder are normal, replace the car-navigation unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</p>
---	-----------------	----	--

4. Press the POWER/VOLUME switch to return to the diagnostic assist code input screen.

5. Press the POWER/VOLUME switch to release the diagnostic assist function.

Diagnostic assist code “10” software version verification

1. Press the “Diagnostic assist code input switch”, and input the diagnostic assist code “10”.

2. Select “ENTER”.

3. Verify the software version.

Inspection	Display	Action
<ul style="list-style-type: none"> • Launch the software version verification mode. • Verify the software version. 	Display the software version.	—

4. Press the POWER/VOLUME switch to return to the diagnostic assist code input screen.

5. Press the POWER/VOLUME switch to release the diagnostic assist function.

Diagnostic assist code “11” DVD/CD drive inspection

1. Press the “Diagnostic assist code input switch”, and input the diagnostic assist code “11”.

2. Select “ENTER”.

Inspection	Display	Action
------------	---------	--------

<ul style="list-style-type: none"> • Launch the DVD/CD drive inspection mode. • Insert the DVD or CD. • Is the inspection result normal? 	USER DISC DEFECT	Yes	System is okay.
	CD-DRIVE MALFUNCTION	No	Replace the car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)

3. Press the POWER/VOLUME switch to return to the diagnostic assist code input screen.

4. Press the POWER/VOLUME switch to release the diagnostic assist function.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

DTC TABLE [CAR-NAVIGATION SYSTEM]

Screen display		Malfunction description	Inferred cause/verified content	Reference
Device code	Error code			
	20	Car-navigation does not function	Battery voltage malfunction	(See NO.1 CAR-NAVIGATION SYSTEM DOES NOT START OPERATION (DISPLAY CHANGES TO BACK.) [CAR-NAVIGATION SYSTEM].)
	21	Audio unclear or no audio from radio and CD	<ul style="list-style-type: none"> Verify the symptoms described by the customer (such as occurrence frequency and mode). Short to ground in the wiring harness between the car-navigation unit and speakers Car-navigation unit malfunction 	(See NO.5 BROKEN SOUND OR POOR SOUND QUALITY [AUDIO].)
			<ul style="list-style-type: none"> Verify the sometimes described by the customer (such as time 	(See NO.1 NO RADIO RECEPTION (AM/FM)/NO OR LOW VOLUME [RADIO].)

09	22	Radio not receiving signal	<p>and place of occurrence, and radio frequency).</p> <ul style="list-style-type: none"> Car-navigation unit malfunction 	
	23	Car-navigation unit does not operate.	Car-navigation unit voltage malfunction	(See NO.1 CAR-NAVIGATION SYSTEM DOES NOT START OPERATION (DISPLAY CHANGES TO BACK.) [CAR-NAVIGATION SYSTEM].)
	24	Audio unclear or no audio from radio and CD	<ul style="list-style-type: none"> Verify the symptoms described by the customer (such as occurrence frequency and mode). Short to ground in the wiring harness between the car-navigation unit and speakers Car-navigation unit malfunction 	(See NO.5 BROKEN SOUND OR POOR SOUND QUALITY [AUDIO].)
11	01	SSI bus communication error	<ul style="list-style-type: none"> Poor connection of the connectors SIRIUS satellite radio unit malfunction Car-navigation unit malfunction 	(See NO.2 NO RADIO RECEPTION (SIRIUS SATELLITE RADIO) [RADIO].)
	03	Poor connection of antenna	Poor connection of antenna connector	(See NO.2 NO RADIO RECEPTION (SIRIUS SATELLITE RADIO) [RADIO].)

16	12	<ul style="list-style-type: none"> • ALC function does not operate. (without Bose®) • AUDIOPILOT function does not operate. (with Bose®) 	CAN system communication error	<p>(See FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)</p>
21	19	Panel switch does not operate.	<ul style="list-style-type: none"> • Panel switch malfunction • Car-navigation unit malfunction 	<ul style="list-style-type: none"> • Inspect the switch. <p>(See DIAGNOSTIC ASSIST FUNCTION [CAR-NAVIGATION SYSTEM].)</p> <ul style="list-style-type: none"> • Car-navigation unit malfunction
22	01	MP3 applicable CD changer cannot implement insert, eject, and disc change commands.	<ul style="list-style-type: none"> • Defective CD (curved, broken or foreign material stuck/attached, etc.) • Car-navigation unit malfunction 	(See NO.1 CD PLAYER/CHANGER DOES NOT LOAD THE CD OR EJECTS THE CD IMMEDIATELY [CD PLAYER/CHANGER].)
	02	Cannot change tracks or disc.	<ul style="list-style-type: none"> • Defective CD (curved, broken or foreign material stuck/attached, etc.) • Car-navigation unit malfunction 	<p>(See NO.6 DISC CHANGE IS INOPERATIVE [CD PLAYER/CHANGER].)</p> <p>(See NO.11 TRACK CHANGE IS INOPERATIVE [CD PLAYER/CHANGER].)</p>
			<ul style="list-style-type: none"> • CD incompatible 	(See NO.3 CD PLAYER/CHANGER DOES NOT PLAY THE CD/NO

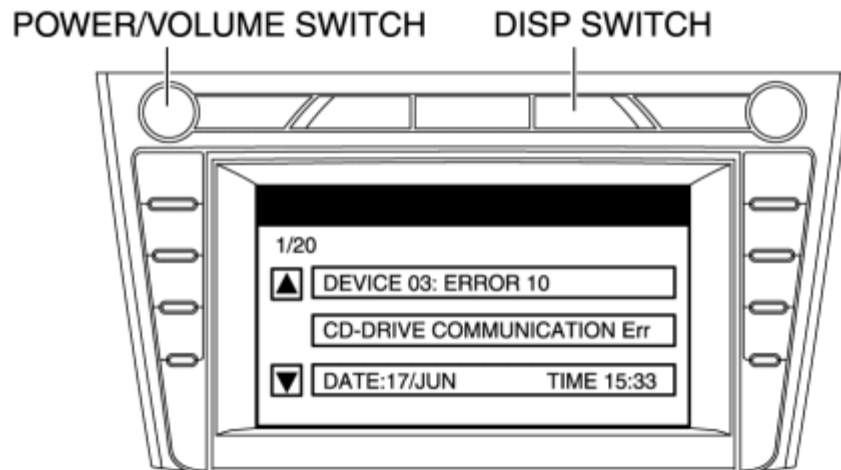
	07	CD cannot playback (cannot operate)	(CD used by customer) <ul style="list-style-type: none"> • Recurs no matter the type of CD (no non-compatible CD) 	SOUND [CD PLAYER/CHANGER].)
	10	MP3 applicable CD changer (Car-navigation unit) does not operate.	<ul style="list-style-type: none"> • Malfunction of connectors between car-navigation unit and MP3 applicable CD changer drive. • Car-navigation unit malfunction 	(See NO.2 NO POWER ON THE ENTIRE AUDIO SYSTEM [AUDIO].)
25	32	Switch does not operate.	Communication error between car navigation function and audio function	<ul style="list-style-type: none"> • Inspect the switch. (See DIAGNOSTIC ASSIST FUNCTION [CAR-NAVIGATION SYSTEM].) <ul style="list-style-type: none"> • Car-navigation unit malfunction
No Error		—	DTC is not recorded.	—

2011 - RX-8 - Body and Accessories

CLEARING DTC [CAR-NAVIGATION SYSTEM]

CAUTION:

- Before clearing the memory, be sure to enter all of the DTCs displayed in the on-board diagnostic test mode in the Audio Repair Order Form.
1. Launch the on-board diagnostic test mode. (See [STARTING PROCEDURE FOR ON-BOARD DIAGNOSTIC TEST MODE \[CAR-NAVIGATION SYSTEM\]](#).)
 2. While pressing the POWER/VOLUME switch, simultaneously press the DISP switch for **1 s or more**.

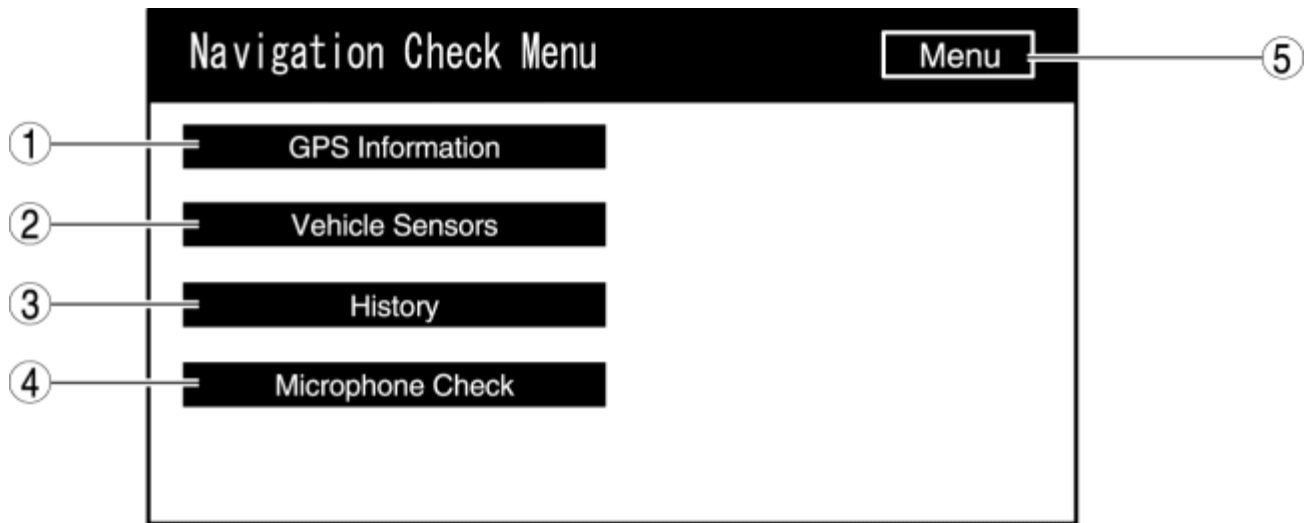


3. To stop the on-board diagnostic test mode, turn the ignition switch to the LOCK position.

2011 - RX-8 - Body and Accessories

NAVIGATION CHECK [CAR-NAVIGATION SYSTEM]

Inspection item list



No.	Name	Content/function
1	GPS Information	Display the GPS information.
2	Vehicle Sensors	Display the vehicle sensors.
3	History	Display the history.
4	Microphone Check	Verify the microphone condition.
5	Menu	Return to the Diagnosis Menu.

GPS Information

1. Turn ignition switch to ACC or ON position.

2. Launch the diagnostic mode. (See [STARTING PROCEDURE FOR DIAGNOSTIC MODE \[CAR-NAVIGATION SYSTEM\]](#).)

3. Select "Navigation Check".

4. Select "GPS Information".

5. Verify the GPS information.

NOTE:

- The GPS reception signal is updated every 1 s.

The screenshot shows a GPS information screen. At the top right is a 'Navi Menu' button (5). The main display is a table of satellite data (1) with columns: No, EIV / Azm, LVL, and STS. There are two columns of data. Below the table, the 'Measurement' status is shown as '3D' (2). The 'Date(GMT)' is '98/05/27 09:46:00' (3). The current position is shown as 'N 39° 59.8' W 137° 00.12'' (4). A bracket on the right side of the table indicates the data is updated every 1 second (6).

No	EIV / Azm	LVL	STS	No	EIV / Azm	LVL	STS
3	73°/0 21°	12	P	5	80°/2 79°	12	P
8	52°/1 83°	58	P	9	27°/1 21°	58	-
10	32°/2 19°	39	P	13	19°/3 30°	39	-
10	49°/0 97°	20	T	18	22°/3 00°	20	-
20	61°/0 45°	39	T	21	40°/0 45°	39	T
23	72°/2 78°	57	P	24	17°/3 50°	57	-

Measurement : 3D Date(GMT) 98/05/27 09:46:00
 Status : N 39° 59.8' W 137° 00.12'

No.	Name	Content/function
1	Satellite information	Display "No (satellite number)", "elevation angle", "azimuth", "signal level" for the satellite.
2	Positioning condition	Display any one of the following: <ul style="list-style-type: none"> [2D]: During two-dimensional positioning [3D]: During three-dimensional positioning [NG]: When positioning data is unavailable [error]: During reception error occurrence [—]: Other than the above
3	Position	Display the latitude and longitude of the current position.
4	GPS reception condition	Display any one of the following:

		<ul style="list-style-type: none">• [P]: If the applicable satellite is being used in the vehicle's current position.• [T]: If receiving but not being used in the vehicle's current position• [—]: If reception is not possible from applicable satellite
5	Navi Menu	Return to the Navigation Check Menu.
6	Day and time	Display the day/time information

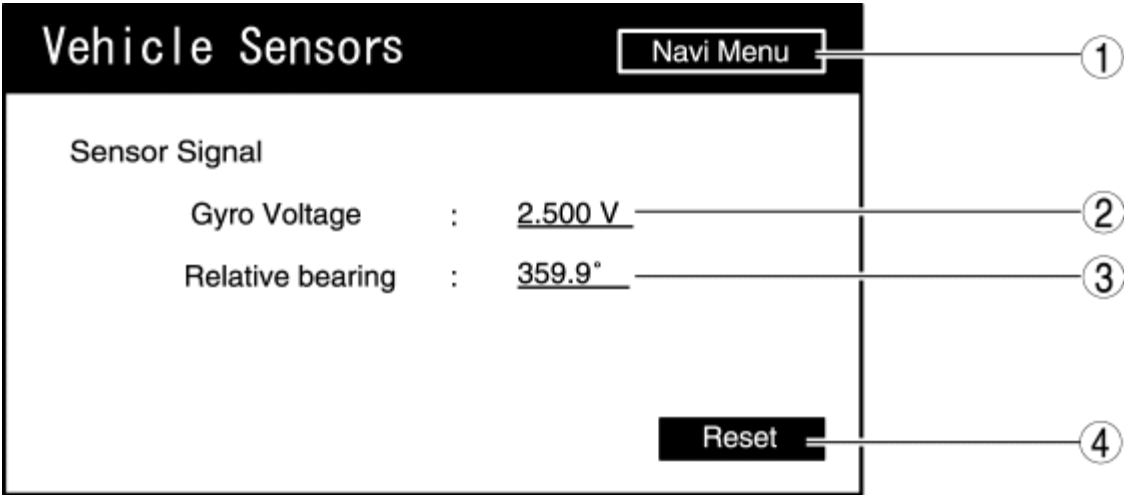
6. To stop the on-board diagnostic mode, turn the ignition switch to the LOCK position.

Vehicle Sensors

- 1. Turn ignition switch to ACC or ON position.
- 2. Launch the diagnostic mode. (See [STARTING PROCEDURE FOR DIAGNOSTIC MODE \[CAR-NAVIGATION SYSTEM\]](#).)
- 3. Select "Navigation Check".
- 4. Select "Vehicle Sensors".
- 5. Verify the sensor output condition of the sensor being input to the car navigation unit.

NOTE:

- The vehicle signal is updated every 1s.



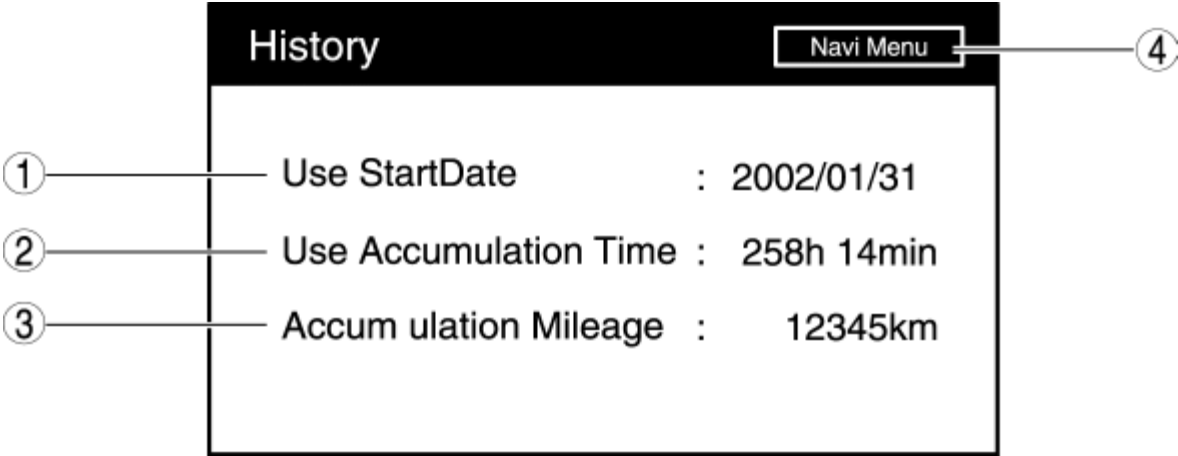
No.	Name	Content/function
-----	------	------------------

1	Navi Menu	Return to the Navigation Check Menu.
2	Gyro Voltage	Display the gyro sensor voltage
3	Relative bearing	Display the gyro sensor relative bearing
4	Reset	Reset the following display items, and the display content to 0. <ul style="list-style-type: none">• Gyro sensor voltage• Gyro sensor relative bearing

6. To stop the on-board diagnostic mode, turn the ignition switch to the LOCK position.

History

1. Turn ignition switch to ACC or ON position.
2. Launch the diagnostic mode. (See [STARTING PROCEDURE FOR DIAGNOSTIC MODE \[CAR-NAVIGATION SYSTEM\]](#).)
3. Select "Navigation Check".
4. Select "History".
5. Verify the displayed content.



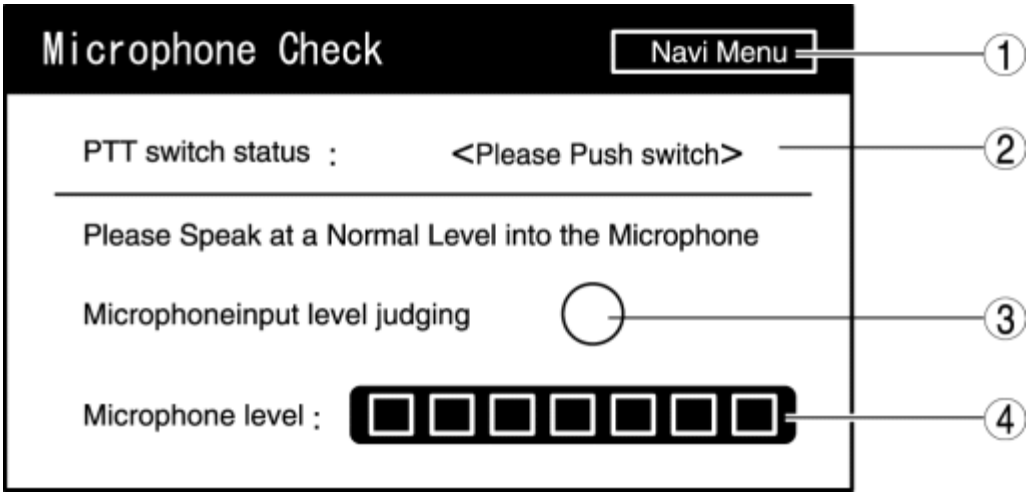
No.	Name	Content/function
1	Use Start Date	Display the date for the start of use.

2	Use Accumulation Time	Display the accumulated use time.
3	Accumulation Mileage	Display the accumulated travel distance.
4	Navi Menu	Return to the Navigation Check Menu.

6. To stop the on-board diagnostic mode, turn the ignition switch to the LOCK position.

Microphone Check

1. Turn ignition switch to ACC or ON position.
2. Launch the diagnostic mode. (See [STARTING PROCEDURE FOR DIAGNOSTIC MODE \[CAR-NAVIGATION SYSTEM\]](#).)
3. Select “Navigation Check”.
4. Select “Microphone Check”.
5. Verify the microphone input condition.



No.	Name	Content/function
1	Navi Menu	Return to the Navigation Check Menu.
2	Voice recognition/hands-free switch status	Display the voice recognition/hands-free switch condition.
3	Microphone inspection results indicator	Display the microphone inspection results

4	Microphone input level gauge
---	------------------------------

Display the volume at 8 levels.

6. To stop the on-board diagnostic mode, turn the ignition switch to the LOCK position.

[< Previous](#) [Next >](#)

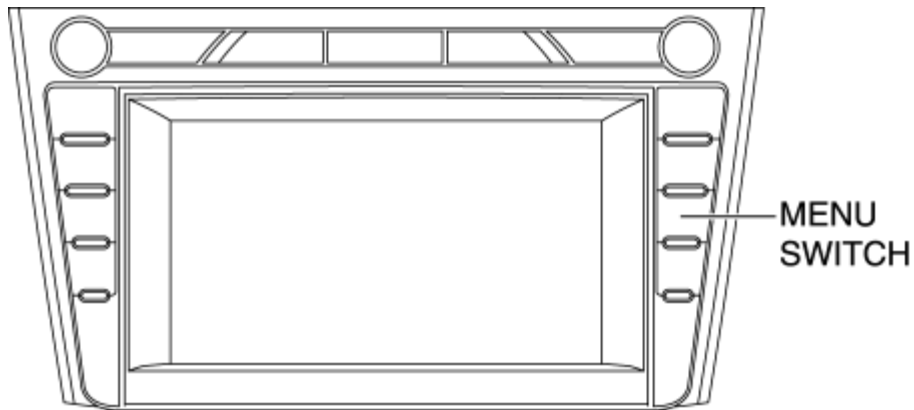
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

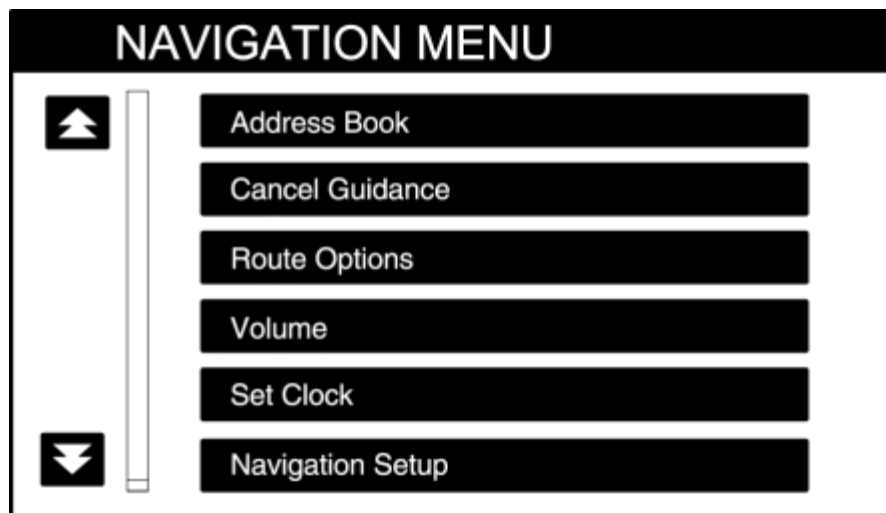
2011 - RX-8 - Body and Accessories

STARTING PROCEDURE FOR DIAGNOSTIC MODE [CAR-NAVIGATION SYSTEM]

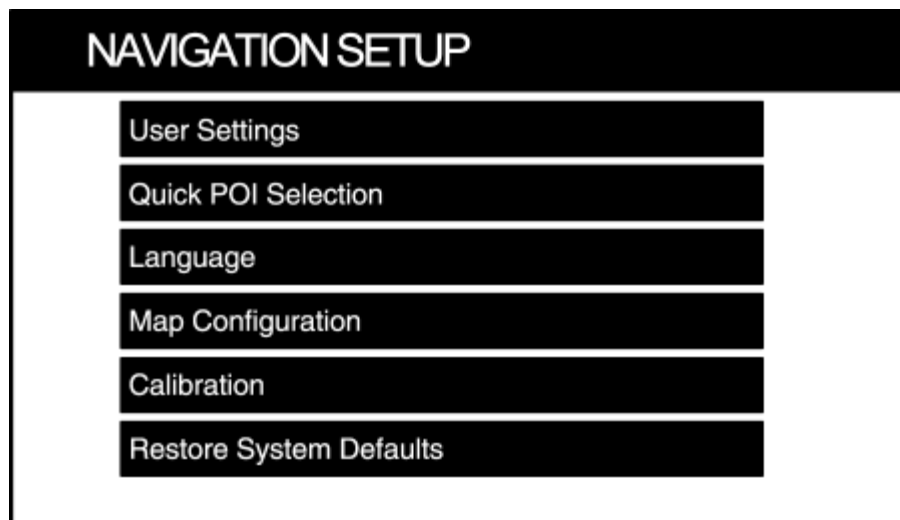
1. Turn ignition switch to ACC or ON position.
2. Press the MENU switch (panel switch).



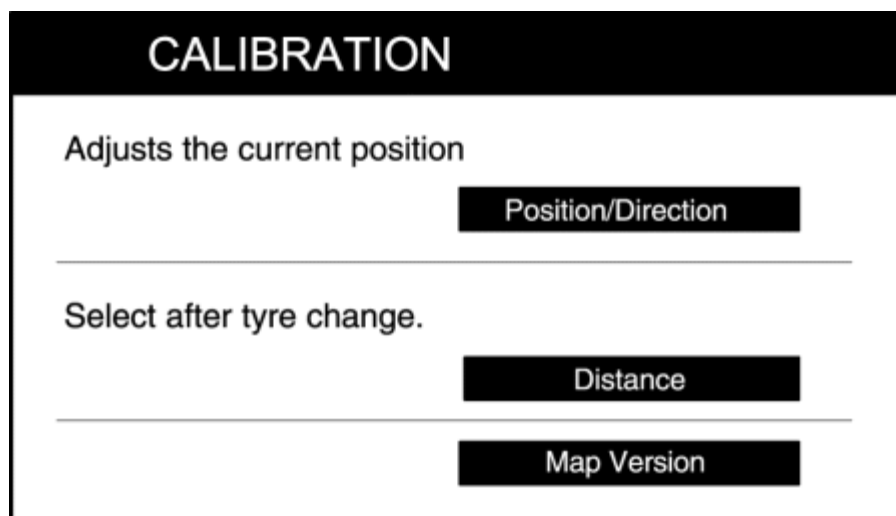
3. Select "Navigation Setup".



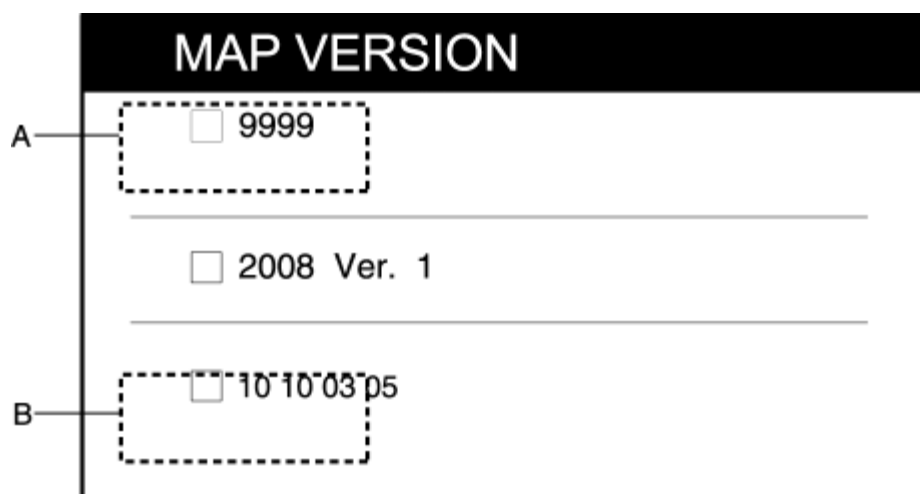
4. Select "Calibration".



5. Select "Map Version".



6. Press the A portion of the MAP VERSION screen two times.



7. Press the B portion of the MAP VERSION screen two times.

8. Select "Menu".

Diagnosis Check				Menu
PKB	ON	TNS	ON	
REV	OFF	GPS Antenna	OK	
Microphone	NCON	Traffic System	TMC	
SPEED	Kph	150		
	mph	100		

9. Select the items to be inspected from the diagnosis menu. (See [DIAGNOSTIC CHECK \[CAR-NAVIGATION SYSTEM\]](#).)

10. To stop the on-board diagnostic mode, turn the ignition switch to the LOCK position.

[< Previous](#) [Next >](#)

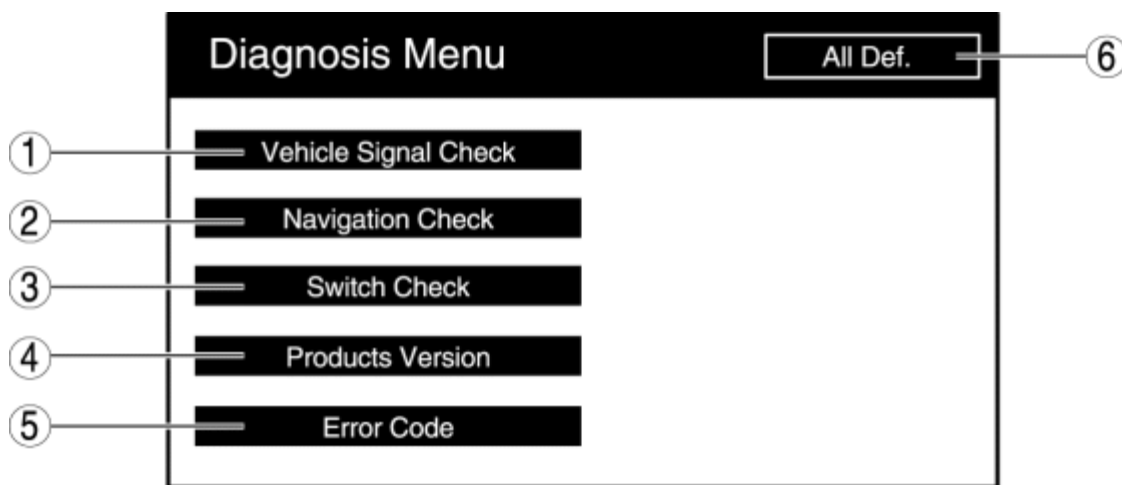
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

DIAGNOSTIC CHECK [CAR-NAVIGATION SYSTEM]

Inspection item list

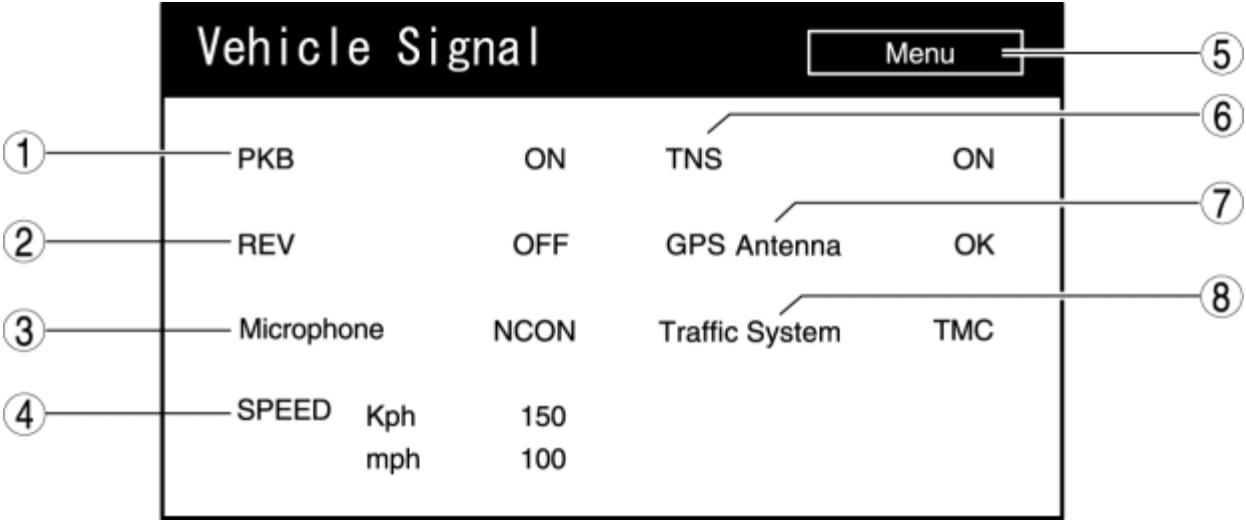


No.	Name	Content/function
1	Vehicle Signal Check	Perform the vehicle signal check.
2	Navigation Check	Go to the Navigation Check Menu. (See NAVIGATION CHECK [CAR-NAVIGATION SYSTEM] .)
3	Switch Check	Perform the remote control switch inspection.
4	Products Version	Verify the products version.
5	Error Code	CAUTION: <ul style="list-style-type: none"> This item does not operate because it is a manufacturer exclusive item.
6	All Def.	CAUTION:

This item does not operate because it is a manufacturer exclusive item.

Vehicle Signal Check

- 1. Turn ignition switch to ACC or ON position.
- 2. Launch the diagnostic mode. (See [STARTING PROCEDURE FOR DIAGNOSTIC MODE \[CAR-NAVIGATION SYSTEM\]](#).)
- 3. Select “Vehicle Signal Check”.
- 4. Verify the condition of the vehicle signal input to the display.



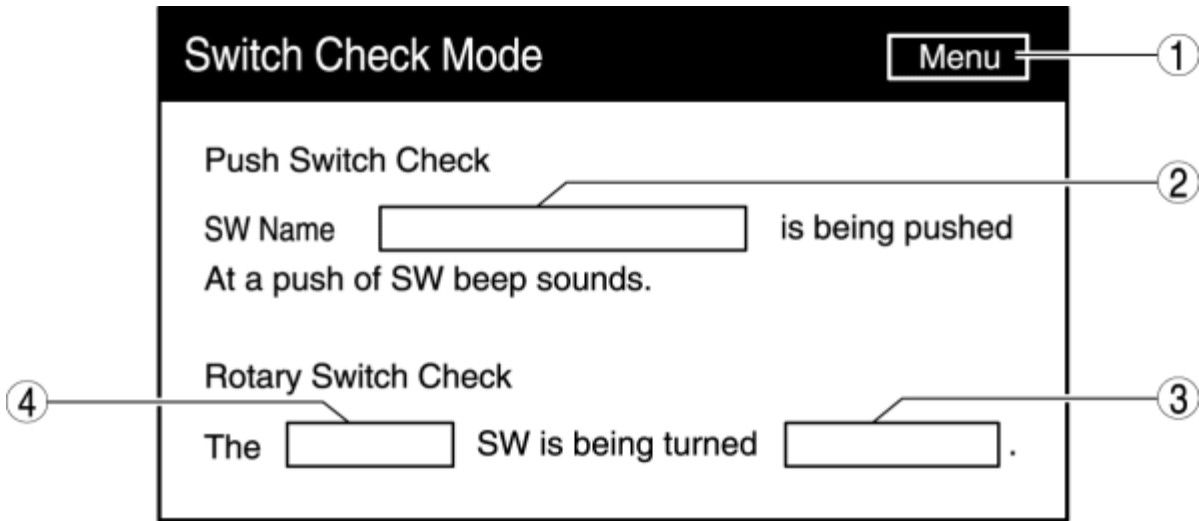
No.	Name	Content/function
1	PKB	Display the PKB signal condition.
2	REV	Display the REV signal condition.
3	Microphone	Verify the microphone condition.
4	SPEED	Display the vehicle speed.
5	Menu	Return to the Diagnosis Menu.
6	TNS	Display the TNS signal condition.

7	GPS Antenna	Display the GPS Antenna condition.
8	Traffic System	Display the Traffic System condition.

5. To stop the on-board diagnostic mode, turn the ignition switch to the LOCK position.

Switch Check

1. Turn ignition switch to ACC or ON position.
2. Launch the diagnostic mode. (See [STARTING PROCEDURE FOR DIAGNOSTIC MODE \[CAR-NAVIGATION SYSTEM\]](#).)
3. Select “Switch Check”.
4. Operate the panel switches and verify that they operate correctly.

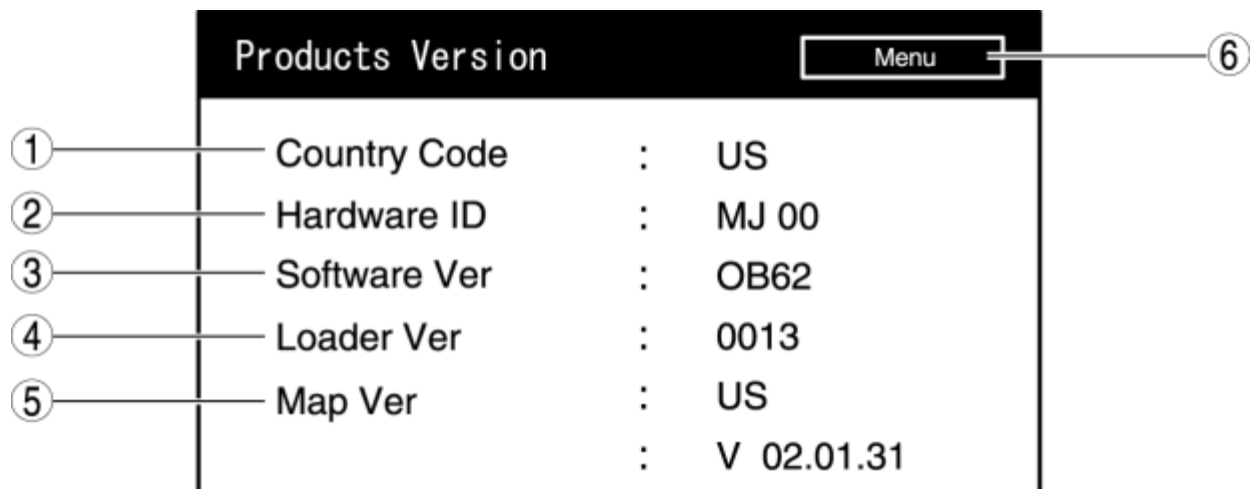


No.	Name	Content/function
1	Menu	Return to the Diagnosis Menu.
2	Name of press-type switch	The name of the operated press-type switch is displayed.
3	Turn direction of switch	The operation condition (Left/Right) is displayed.
4	Name of dial-type switch	The name of the operated dial-type switch is displayed.

5. To stop the on-board diagnostic mode, turn the ignition switch to the LOCK position.

Products Version

1. Turn ignition switch to ACC or ON position.
2. Launch the diagnostic mode. (See [STARTING PROCEDURE FOR DIAGNOSTIC MODE \[CAR-NAVIGATION SYSTEM\]](#).)
3. Select "Products Version".
4. Verify each version.



No.	Name	Content/function
1	Country Code	Display the country code.
2	Hardware ID	Display the hardware ID.
3	Software Ver	Display the software version.
4	Leader Ver	Display the leader version.
5	Map Ver	Display the map version.
6	Menu	Return to the Diagnosis Menu.

5. To stop the on-board diagnostic mode, turn the ignition switch to the LOCK position.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

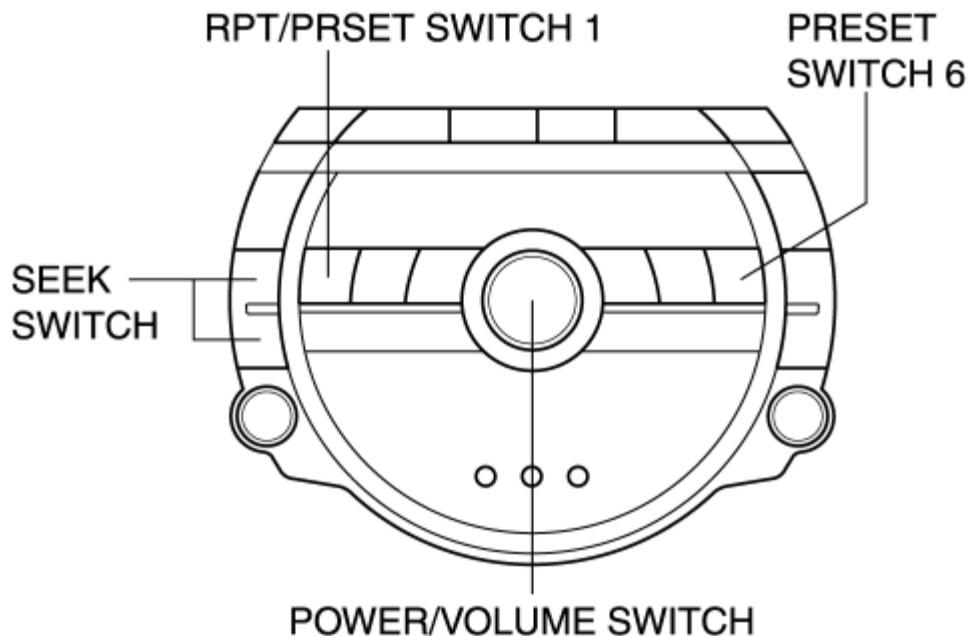
STARTING PROCEDURE FOR ON-BOARD DIAGNOSTIC TEST MODE [HANDS-FREE TELEPHONE (HF/TEL) SYSTEM]

NOTE:

- All DTCs displayed in the on-board diagnostic test mode should be entered in the Audio Repair Order Form

With Audio Unit

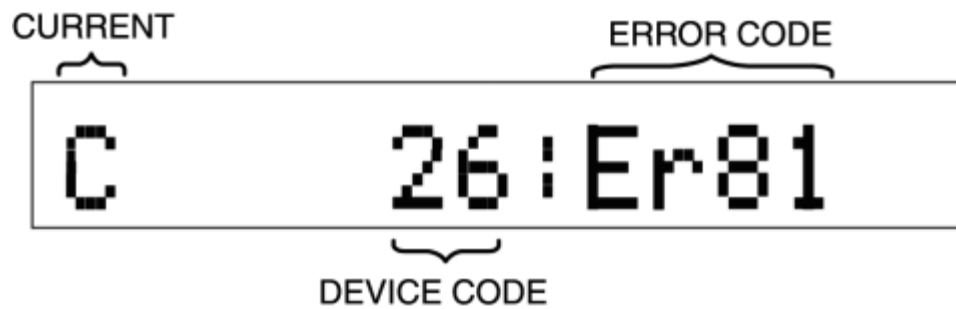
1. Turn the ignition switch to the ACC or ON position.
2. Turn the audio power to OFF.
3. While pressing the POWER/VOLUME switch, simultaneously press the RPT/PRESET switch 1 and the PRESET switch 6 for **3 s or more**.



NOTE:

- If several DTCs are in the memory, they can be displayed using the SEEK switch.

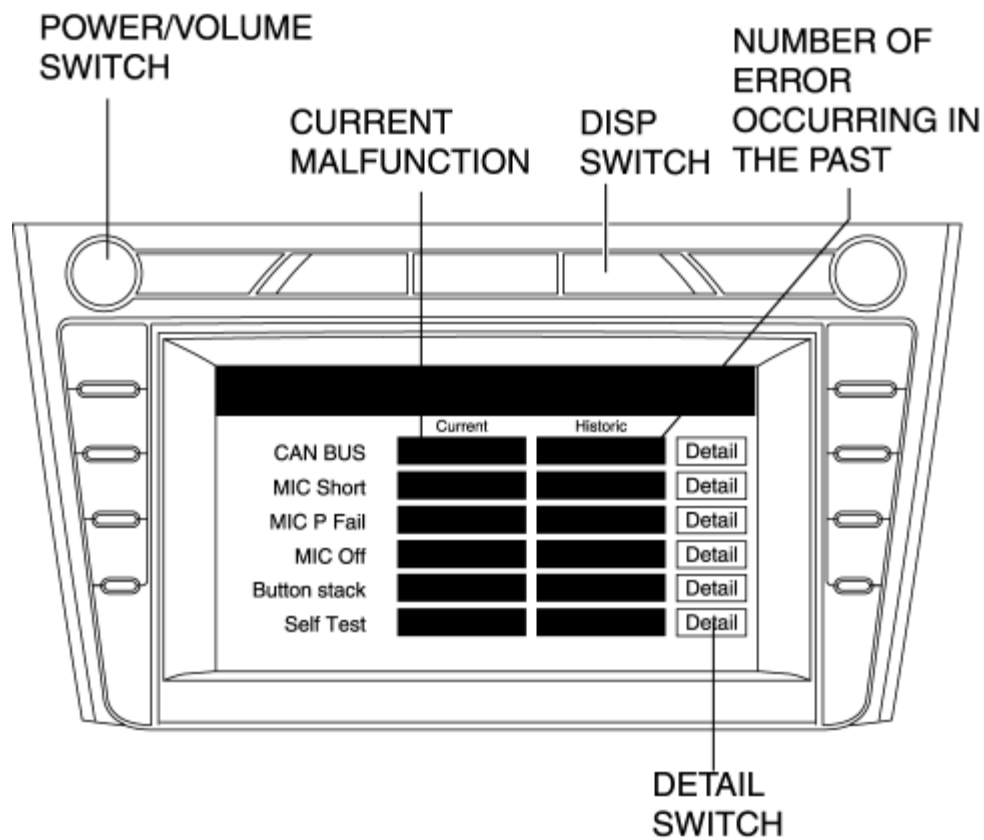
Current malfunction



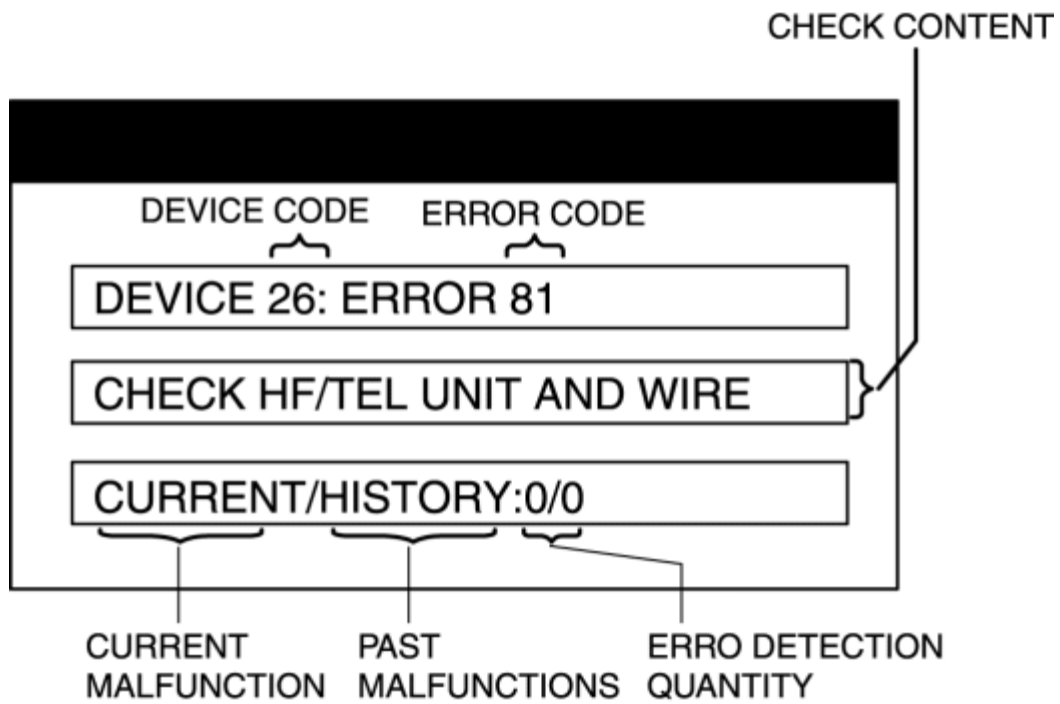
4. To stop the on-board diagnostic test mode, turn the ignition switch to the LOCK position.

With Car-navigation Unit

1. Turn the ignition switch to the ACC or ON position.
2. Turn the audio power to OFF.
3. While pressing the POWER/VOLUME switch, simultaneously press the DISP switch for **1 s or more**.



4. Press the Detail switch.



5. To stop the on-board diagnostic test mode, switch the ignition to the LOCK position.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

DTC TABLE [HANDS-FREE TELEPHONE (HF/TEL) SYSTEM]

Screen display		Audio unit	Malfunction description	Inferred cause/verified content	Reference
Car-navigation unit					
Device code	Error code				
26	81	26: Er81	HF/TEL function does not operate.	CAN system communication error	(See FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
	82	26: Er82	Sound from microphone not heard	Short to power supply in wiring harness between microphone (Input signal) and HF/TEL unit	(See SYMPTOM TROUBLESHOOTING [HANDS-FREE TELEPHONE (HF/TEL) SYSTEM].)
	83	26: Er83	Sound from microphone not heard	Short to GND/power supply in microphone power supply circuit	(See SYMPTOM TROUBLESHOOTING [HANDS-FREE TELEPHONE (HF/TEL) SYSTEM].)
	84	26: Er84	Call transmission and receiving is impossible	Any of the following is detected: <ul style="list-style-type: none">• The microphone power supply circuit is not connected.• Open circuit in the microphone input circuit• Microphone input circuit short to body ground	(See SYMPTOM TROUBLESHOOTING [HANDS-FREE TELEPHONE (HF/TEL) SYSTEM].)
					<ul style="list-style-type: none">• Poor contact in the

	85	26: Er85	Call transmission and receiving is impossible	<p>hands-free telephone switch or hands-free telephone unit (HF/TEL unit) connector</p> <ul style="list-style-type: none"> Voice recognition/hands-free switch malfunction 	(See SYMPTOM TROUBLESHOOTING [HANDS-FREE TELEPHONE (HF/TEL) SYSTEM] .)
	86	26: Er86	HF/TEL function does not operate.	HF/TEL unit malfunction	<p>Replace the HF/TEL unit.</p> <p>(See HANDS-FREE TELEPHONE (HF/TEL) UNIT REMOVAL/INSTALLATION.)</p>
No Error	no Err	—	DTC is not recorded.		—

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

CLEARING DTC [HANDS-FREE TELEPHONE (HF/TEL) SYSTEM]

CAUTION:

- Before clearing the memory, be sure to enter all of the DTCs displayed in the on-board diagnostic test mode in the Audio Repair Order Form.

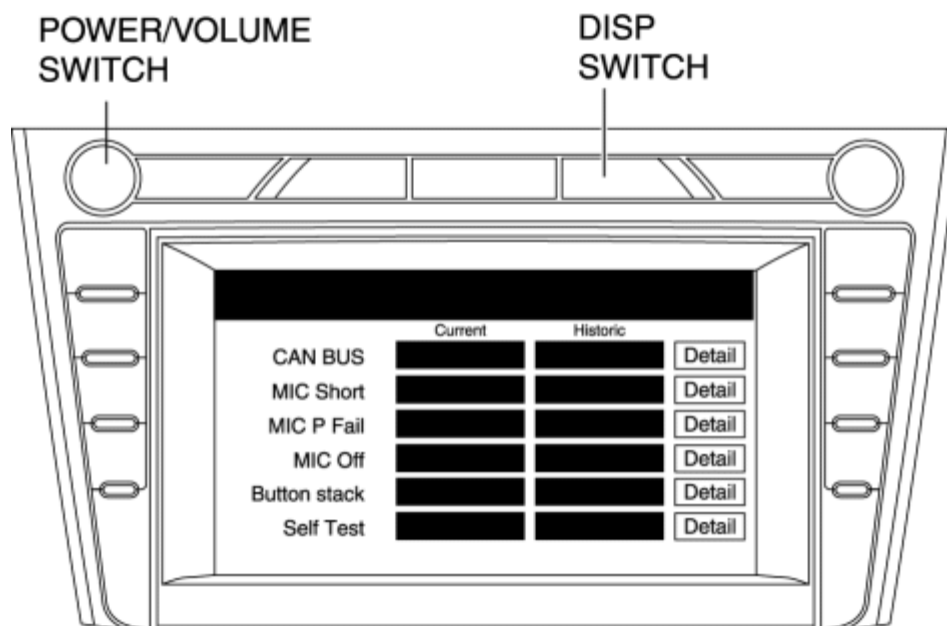
With Audio Unit

NOTE:

- Because the audio unit only displays the currently occurring DTC, it is not necessary to clear DTCs.

With Car-navigation Unit

1. Launch the on-board diagnostic test mode. (See [STARTING PROCEDURE FOR ON-BOARD DIAGNOSTIC TEST MODE \[HANDS-FREE TELEPHONE \(HF/TEL\) SYSTEM\]](#).)
2. While pressing the POWER/VOLUME switch, simultaneously press the DISP switch for **2 s or more**.



3. To stop the on-board diagnostic test mode, turn the ignition switch to the LOCK position.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

DIAGNOSTIC ASSIST FUNCTION [HANDS-FREE TELEPHONE (HF/TEL) SYSTEM]

With Audio Unit

Starting procedure

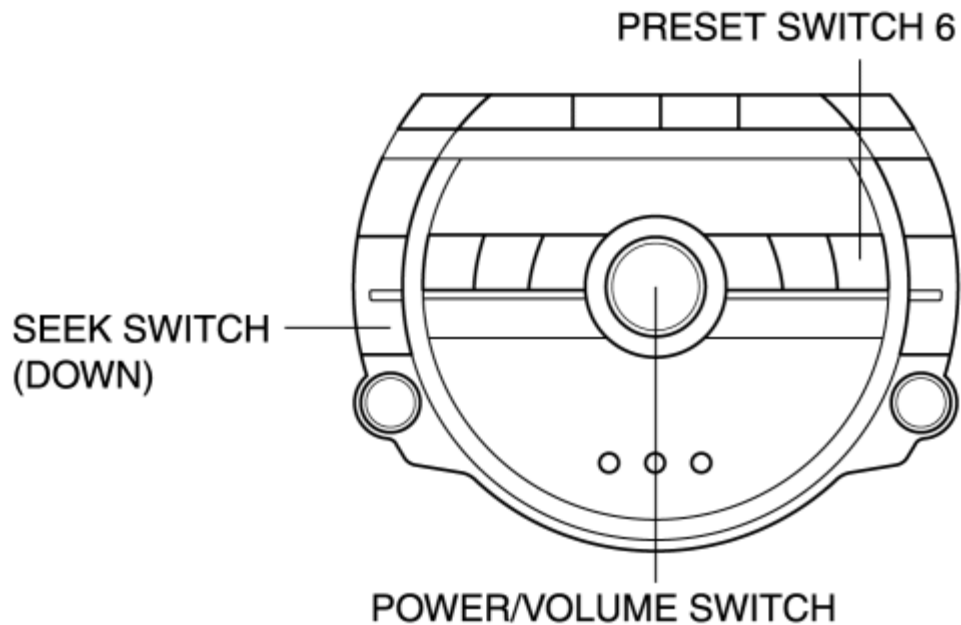
1. Launch the on-board diagnostic test mode. (See [STARTING PROCEDURE FOR ON-BOARD DIAGNOSTIC TEST MODE \[HANDS-FREE TELEPHONE \(HF/TEL\) SYSTEM\]](#).)
2. To stop the on-board diagnostic test mode, turn the ignition switch to the LOCK position.

Diagnostic assist code table

Content/function
Software version verification
Connection condition verification
Password Reset

Software version verification

1. Turn the ignition switch to the ACC or ON position.
2. Turn the audio power to OFF.
3. While pressing the POWER/VOLUME switch, simultaneously press the PRESET switch 6 and the SEEK switch (down) for **3 s or more**.



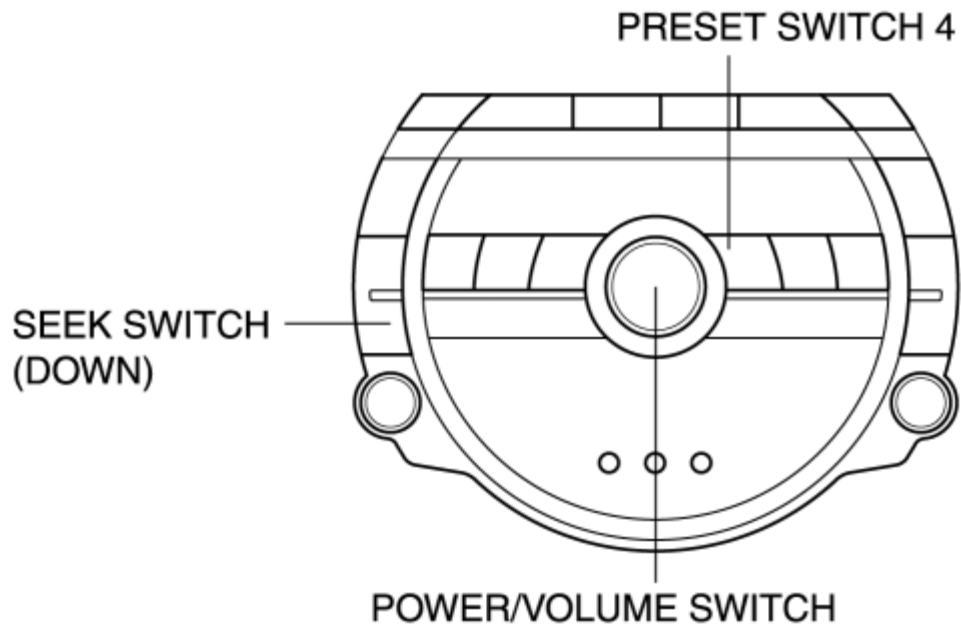
4. Verify the software version.



5. To stop the on-board diagnostic test mode, to the LOCK position.

Connection condition verification

1. Turn the ignition switch to the ACC or ON position.
2. Turn the audio power to OFF.
3. While pressing the POWER/VOLUME switch, simultaneously press the PRESET switch 4 and the SEEK switch (down) for **3 s or more**.



4. Verify the connected unit

WITHOUT Bose®

AUDIO only

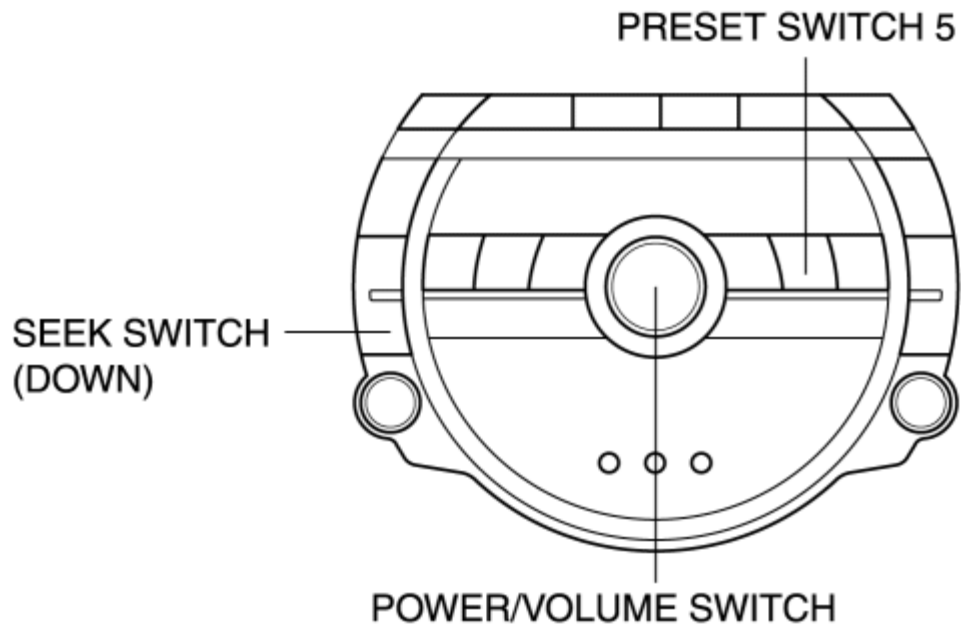
WITH Bose®

AUDIO & AMP

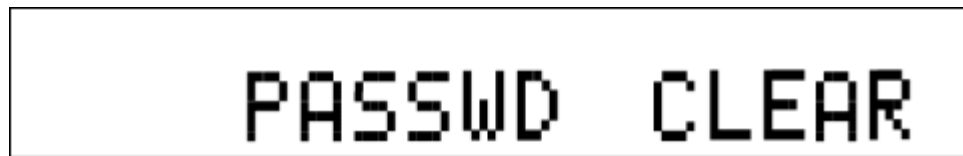
5. To stop the on-board diagnostic test mode, turn the ignition switch to the LOCK position.

Password Reset

1. Turn the ignition switch to the ACC or ON position.
2. Turn the audio power to OFF.
3. While pressing the POWER/VOLUME switch, simultaneously press the PRESET switch 5 and the SEEK switch (down) for **3 s or more**.



4. Verify that "PASSWD CLEAR" is displayed in the information display.

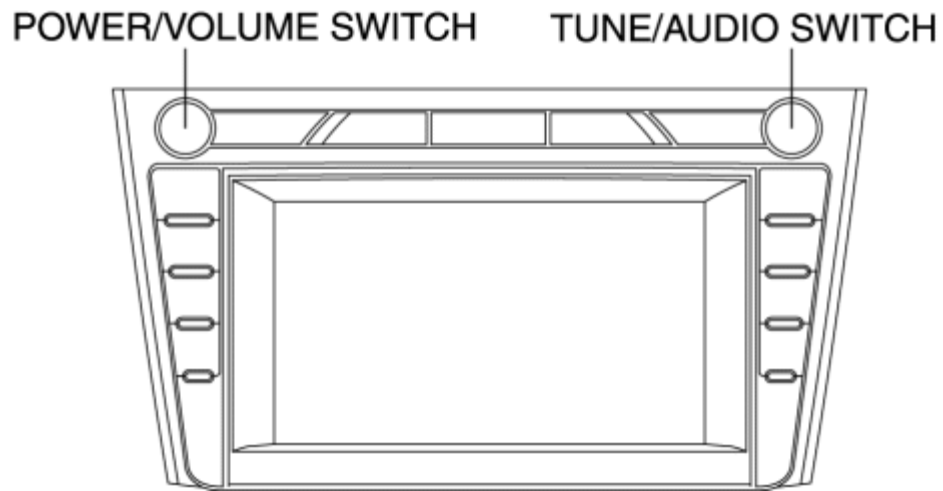


5. To stop the on-board diagnostic test mode, turn the ignition switch to the LOCK position.

With Car-navigation Unit

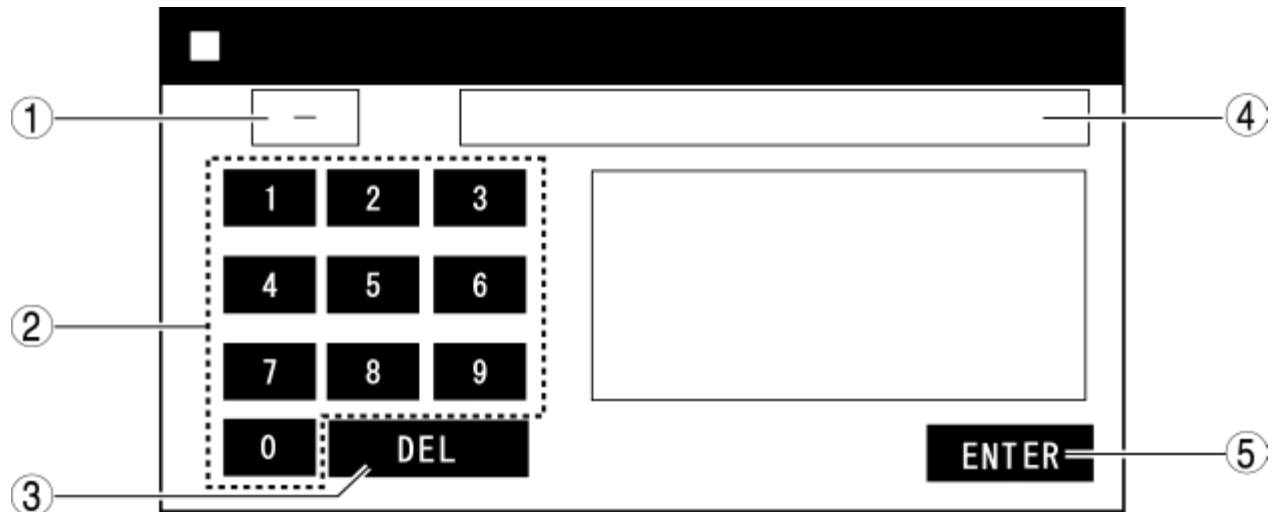
Starting procedure

1. Turn ignition switch to ACC or ON position.
2. Turn the audio power to ON.
3. While pressing the POWER/VOLUME switch, simultaneously press the TUNE/AUDIO switch for **1 s or more**.



4. Press the "Diagnostic assist code input switch", and input the diagnostic assist code.
5. Select "ENTER".

Diagnostic assist code input screen



No.	Name	Content/function
1	Diagnostic assist code	Display the diagnostic assist code.
2	Diagnostic assist code input switch	Input the diagnostic assist code.
3	DEL	Diagnostic assist code clear
4	Diagnostic content	Display the diagnostic content.
5	ENTER	Go to the diagnostic assist function.

6. Press the POWER/VOLUME switch to return to the diagnostic assist code input screen.
7. Press the POWER/VOLUME switch to release the diagnostic assist function.

Diagnostic assist code table

No.	Content/function
37	Diagnostic assist code "37" Connection condition verification
38	Diagnostic assist code "38" Software version verification
39	Diagnostic assist code "39" Password reset

Diagnostic assist code "37" Connection condition verification

1. Press the "Diagnostic assist code input switch", and input the diagnostic assist code "37".
2. Select "ENTER".

Inspection	Display	Measures
<ul style="list-style-type: none"> Launch the connection condition verification mode. Verify the connection condition. 	AVN CONNECT	The HF/TEL unit connection condition is normal.
	AVN CON ERR	Verify the HF/TEL unit connection condition. (See HANDS-FREE TELEPHONE (HF/TEL) UNIT REMOVAL/INSTALLATION.)

3. Press the POWER/VOLUME switch to return to the diagnostic assist code input screen.
4. Press the POWER/VOLUME switch to release the diagnostic assist function.

Diagnostic assist code "38" Software version verification

1. Press the "Diagnostic assist code input switch", and input the diagnostic assist code "38".
2. Select "ENTER".

Inspection	Display	Measures
<ul style="list-style-type: none">• Launch the software version verification mode.• Software version verification.	Display the software version.	—

3. Press the POWER/VOLUME switch to return to the diagnostic assist code input screen.
4. Press the POWER/VOLUME switch to release the diagnostic assist function.

Diagnostic assist code "39" Password reset

1. Press the "Diagnostic assist code input switch", and input the diagnostic assist code "39".
2. Select "ENTER".

Inspection	Display	Measures
<ul style="list-style-type: none">• Launch the password reset mode.	PASSWD CLEAR	—

3. Press the POWER/VOLUME switch to return to the diagnostic assist code input screen.
4. Press the POWER/VOLUME switch to release the diagnostic assist function.

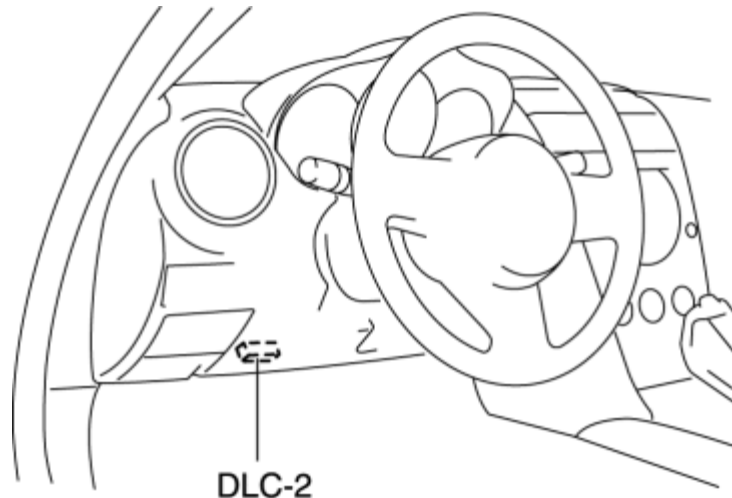
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

CLEARING DTC [AUTO LIGHT/WIPER CONTROL MODULE]

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "LCM".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "LCM".
 3. Select "Self Test".

3. Verify the DTC according to the directions on the screen.
4. Press the clear button on the DTC screen to clear the DTC.
5. Turn the ignition switch to the LOCK position.
6. Turn the ignition switch to the ON position and wait for **5 s or more**.
7. Perform DTC inspection. (See [DTC INSPECTION \[AUTO LIGHT/WIPER CONTROL MODULE\]](#).)

8. Verify that no DTCs are displayed.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

DTC B1014 [AUTO LIGHT/WIPER CONTROL MODULE]

DTC B1014	Rain sensor error
DETECTION CONDITION	Rain sensor internal malfunction
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Rain sensor malfunction • Auto light/wiper control module malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	PERFORM DTC INSPECTION <ul style="list-style-type: none"> • Clear DTCs using the M-MDS. (See CLEARING DTC [AUTO LIGHT/WIPER CONTROL MODULE].) • Perform the auto light/wiper control module DTC inspection using the M-MDS. (See DTC INSPECTION [AUTO LIGHT/WIPER CONTROL MODULE].) • Is DTC B1014 displayed? 	Yes Replace the rain sensor, then go to the next step. (See RAIN SENSOR REMOVAL/INSTALLATION .)
		No Go to the next step.
2	VERIFY DTC <ul style="list-style-type: none"> • Clear DTCs using the M-MDS. (See CLEARING DTC [AUTO LIGHT/WIPER CONTROL MODULE].) • Perform the auto light/wiper control module DTC inspection using the M-MDS. 	Yes Replace the auto light/wiper control module, then go to the next step. (See AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION .)
		No Go to the next step.

	(See DTC INSPECTION [AUTO LIGHT/WIPER CONTROL MODULE].) <ul style="list-style-type: none">Is DTC B1014 displayed?		
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none">Are there other DTCs output?	Yes	Perform the corresponding DTC inspection. (See DTC TABLE [AUTO LIGHT/WIPER CONTROL MODULE].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

DTC B1317 [AUTO LIGHT/WIPER CONTROL MODULE]

DTC B1317	Battery voltage high
DETECTION CONDITION	Input voltage from the battery is excessively high
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Battery malfunction • Generator malfunction • Auto light/wiper control module malfunction

Diagnostic procedure

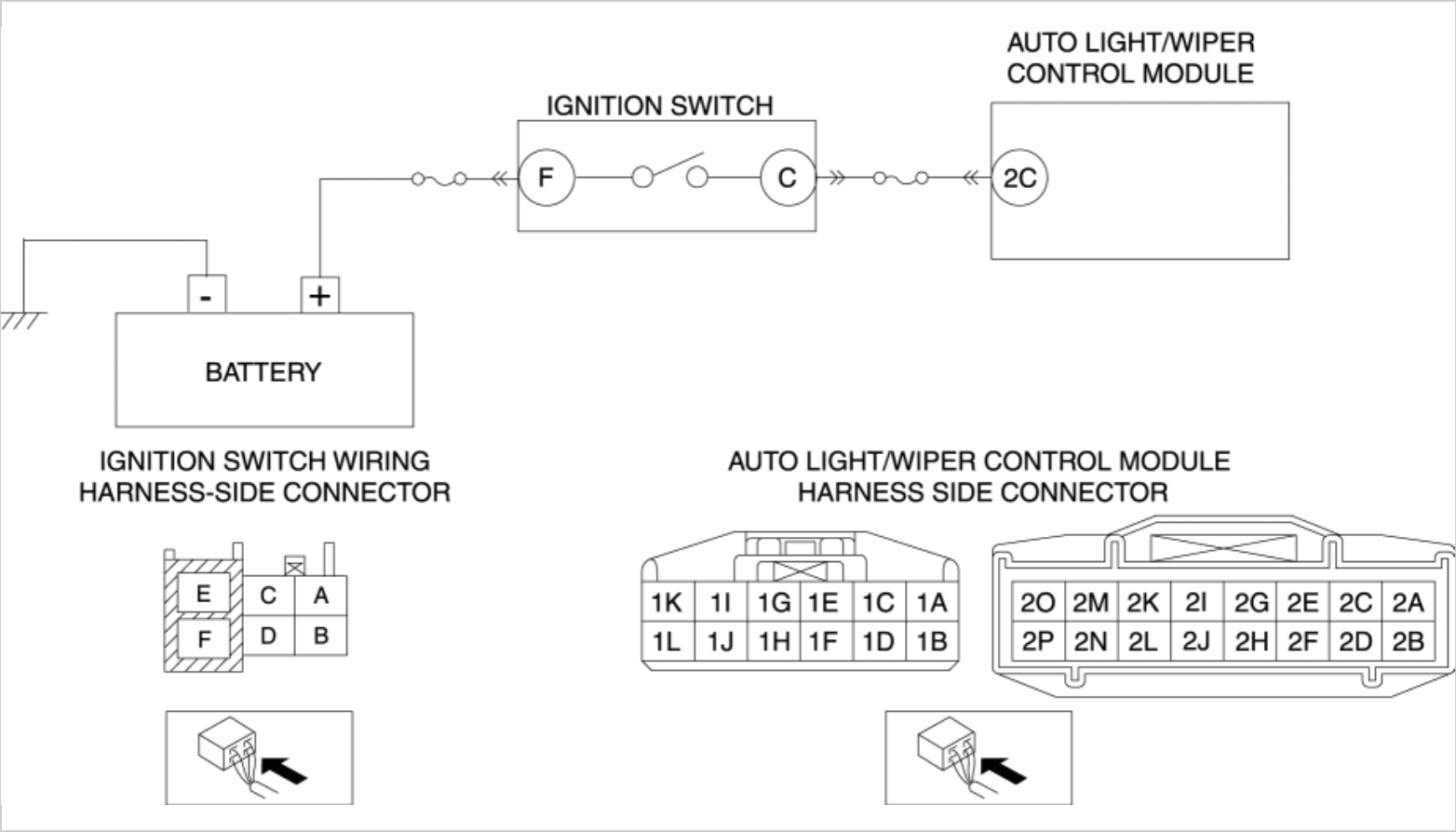
STEP	INSPECTION	ACTION
1	INSPECT PCM <ul style="list-style-type: none"> • Inspect the PCM DTCs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) 	Yes Go to the applicable DTC inspection. (See DTC TABLE [13B-MSP].) After completing a separate DTC inspection, go to the next step.
	<ul style="list-style-type: none"> • Is the DTC displayed? 	No Go to the next step.
2	VERIFY DTC <ul style="list-style-type: none"> • Clear DTCs using the M-MDS. (See CLEARING DTC [AUTO LIGHT/WIPER CONTROL MODULE].) 	Yes Replace the auto light/wiper control module, then go to the next step. (See AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION.)
	<ul style="list-style-type: none"> • Perform the auto light/wiper control module DTC inspection using the M-MDS. (See DTC INSPECTION [AUTO LIGHT/WIPER CONTROL MODULE].) 	No Go to the next step.

	<ul style="list-style-type: none">Is DTC B1317 displayed?		
3	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none">Are there other DTCs output?	Yes	Perform the corresponding DTC inspection. (See DTC TABLE [AUTO LIGHT/WIPER CONTROL MODULE] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

DTC B1318 [AUTO LIGHT/WIPER CONTROL MODULE]

DTC B1318	Battery voltage low
DETECTION CONDITION	Input voltage from the battery is excessively low
POSSIBLE CAUSE	<ul style="list-style-type: none">• Battery malfunction• METER 10 A fuse• Auto light/wiper control module connector malfunction• Short to GND in wiring harness between auto light/wiper control module terminal 2C and battery• Open circuit in wiring harness between auto light/wiper control module terminal 2C and battery• Auto light/wiper control module malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	BATTERY INSPECTION <ul style="list-style-type: none"> Disconnect the battery cables. Refer to the battery inspection and inspect the battery. (See BATTERY INSPECTION [13B-MSP].) Is the battery normal? 	Yes Go to the next step.
		No Replace or charge the battery. (See BATTERY REMOVAL/INSTALLATION [13B-MSP].) (See BATTERY RECHARGING [13B-MSP].) Go to the Step 6.
2	FUSE INSPECTION <ul style="list-style-type: none"> Remove the METER 10 A fuse. Is the fuse normal? 	Yes Go to the next step.
		No Replace the fuse. After replacement, go to Step 6.
3	INSPECT AUTO LIGHT/WIPER CONTROL MODULE CONNECTOR <ul style="list-style-type: none"> Disconnect the auto light/wiper control module connector. Inspect the auto light/wiper control module connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	Yes Repair or replace the terminal, then go to Step 6.
		No Go to the next step.
4	INSPECT AUTO LIGHT/WIPER CONTROL MODULE POWER SUPPLY CIRCUIT FOR SHORT TO GND <ul style="list-style-type: none"> Inspect for continuity between auto light/wiper control module terminal 2C (wiring harness-side) and body GND. Is there continuity? 	Yes Repair or replace the wiring harness for a possible short to GND, then go to the Step 6.
		No Go to the next step.
5	INSPECT AUTO LIGHT/WIPER CONTROL MODULE POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> Install the METER 10 A fuse. Inspect for continuity between following terminals: <ul style="list-style-type: none"> Auto light/wiper control module terminal 2C and ignition switch terminal C. Ignition switch terminal F and battery positive terminal. Is there continuity? 	Yes Go to the next step.
		No Repair/replace the wiring harness. After repair procedure, go to the next step.
6	VERIFY DTC <ul style="list-style-type: none"> Reconnect the disconnected connectors and the negative battery cable. Clear DTCs using the M-MDS. (See CLEARING DTC [AUTO LIGHT/WIPER CONTROL MODULE].) 	Yes Replace the auto light/wiper control module, then go to the next step. (See AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION.)
		No Go to the next step.

	<ul style="list-style-type: none">• Perform the auto light/wiper control module DTC inspection using the M-MDS. <p>(See DTC INSPECTION [AUTO LIGHT/WIPER CONTROL MODULE].)</p> <ul style="list-style-type: none">• Is DTC B1318 displayed?		
7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none">• Are there other DTCs output?	Yes	Perform the corresponding DTC inspection. (See DTC TABLE [AUTO LIGHT/WIPER CONTROL MODULE].)
		No	DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

DTC U2030 [AUTO LIGHT/WIPER CONTROL MODULE]

DTC U2030	Rain sensor communication fault
DETECTION CONDITION	Communication error to rain sensor
POSSIBLE CAUSE	<ul style="list-style-type: none">• Rain sensor connector malfunction• Auto light/wiper control module connector malfunction• Open circuit in wiring harness between auto light/wiper control module terminal 2E and rain sensor terminal C• Short to GND in wiring harness between auto light/wiper control module terminal 2E and rain sensor terminal C• Short to power supply in wiring harness between auto light/wiper control module terminal 2E and rain sensor terminal C• Rain sensor malfunction• Auto light/wiper control module malfunction

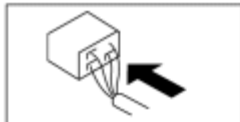
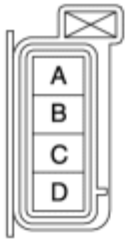
RAIN SENSOR



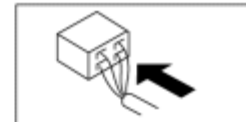
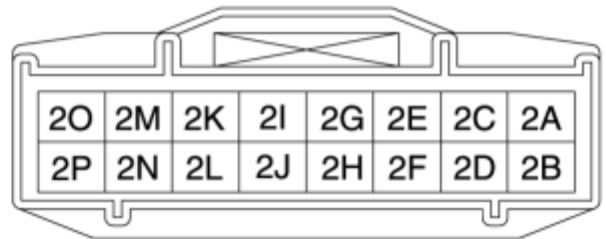
AUTO LIGHT/WIPER CONTROL MODULE



RAIN SENSOR WIRING HARNESS-SIDE CONNECTOR



AUTO LIGHT/WIPER CONTROL MODULE HARNESS SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT RAIN SENSOR CONNECTOR <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the negative battery cable. Disconnect the rain sensor connector. Inspect the rain sensor connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion). Is there any malfunction? 	<div>Yes</div> <div>Repair or replace the terminal, then go to Step 6.</div> <div>No</div> <div>Go to the next step.</div>
2	INSPECT AUTO LIGHT/WIPER CONTROL MODULE CONNECTOR <ul style="list-style-type: none"> Disconnect the auto light/wiper control module connector. Inspect the auto light/wiper control module connector terminal for poor connection (such 	<div>Yes</div> <div>Repair or replace the terminal, then go to Step 6.</div> <div>No</div> <div>Go to the next step.</div>

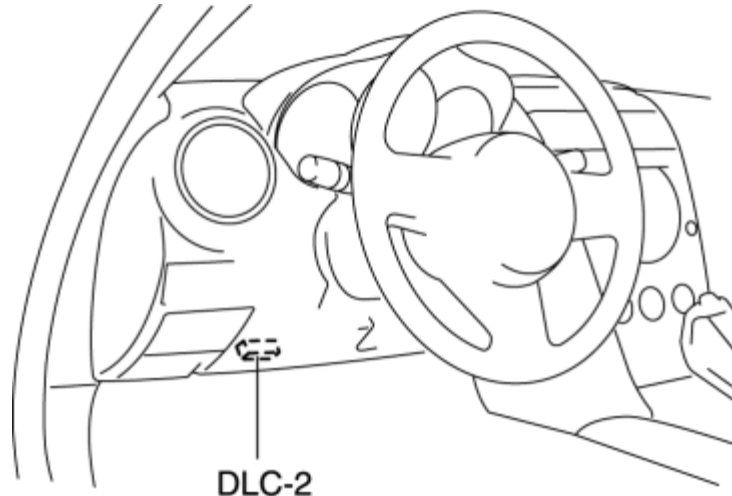
	<p>as damaged/pulled-out pins, and corrosion).</p> <ul style="list-style-type: none"> Is there any malfunction? 		
3	<p>INSPECT RAIN SENSOR CIRCUIT FOR OPEN CIRCUIT</p> <ul style="list-style-type: none"> Inspect for continuity between auto light/wiper control module terminal 2E (wiring harness-side) and rain sensor terminal C (wiring harness-side). Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 6.
4	<p>INSPECT RAIN SENSOR SIGNAL CIRCUIT FOR SHORT TO GND</p> <ul style="list-style-type: none"> Inspect for continuity between auto light/wiper control module terminal 2E (wiring harness-side) and body GND. Is there continuity? 	Yes	Repair or replace the wiring harness for a possible short to GND, then go to Step 6.
		No	Go to the next step.
5	<p>INSPECT RAIN SENSOR SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY</p> <ul style="list-style-type: none"> Connect the negative battery cable. Turn the ignition switch to the ON position (Engine off). Measure the voltage at auto light/wiper control module terminal 2E (wiring harness-side). Can the voltage be measured? 	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to the next step.
		No	<p>Replace the Rain sensor, then go to the next step.</p> <p>(See RAIN SENSOR REMOVAL/INSTALLATION.)</p>
6	<p>VERIFY DTC</p> <ul style="list-style-type: none"> Turn the ignition switch off. Disconnect the negative battery cable. Reconnect the disconnected connectors. Connect the negative battery cable. Clear DTCs using the M-MDS. <p>(See CLEARING DTC [AUTO LIGHT/WIPER CONTROL MODULE].)</p> <ul style="list-style-type: none"> Perform the auto light/wiper control module DTC inspection using the M-MDS. <p>(See DTC INSPECTION [AUTO LIGHT/WIPER CONTROL MODULE].)</p> <ul style="list-style-type: none"> Is DTC U2030 displayed? 	Yes	<p>Replace the auto light/wiper control module, then go to the next step.</p> <p>(See AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION.)</p>
		No	Go to the next step.

7	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none">• Are there other DTCs output?	Yes	Perform the corresponding DTC inspection. (See DTC TABLE [AUTO LIGHT/WIPER CONTROL MODULE] .)
		No	DTC troubleshooting completed.

2011 - RX-8 - Body and Accessories

DTC INSPECTION [AUTO LIGHT/WIPER CONTROL MODULE]

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "Self Test".
 2. Select "Modules".
 3. Select "LCM".
- When using the PDS (Pocket PC)
 1. Select "Module Tests".
 2. Select "LCM".
 3. Select "Self Test".

3. Verify the DTC according to the directions on the screen.

- If any DTCs are displayed, perform troubleshooting according to the corresponding DTC inspection.

4. After completion of repairs, clear all DTCs stored in the auto light/wiper control module. (See [CLEARING DTC \[AUTO LIGHT/WIPER CONTROL MODULE\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

DTC TABLE [AUTO LIGHT/WIPER CONTROL MODULE]

DTC No.	Description	Detection condition	Page
B1014	Rain sensor error	Rain sensor internal malfunction	(See DTC B1014 [AUTO LIGHT/WIPER CONTROL MODULE].)
B1317	Battery voltage high	Input voltage from the battery is excessively high	(See DTC B1317 [AUTO LIGHT/WIPER CONTROL MODULE].)
B1318	Battery voltage low	Input voltage from the battery is excessively low	(See DTC B1318 [AUTO LIGHT/WIPER CONTROL MODULE].)
B1342	ECU is faulted	Auto light/wiper control module microcomputer malfunction	(See DTC B1342 [AUTO LIGHT/WIPER CONTROL MODULE].)
U2030	Rain sensor communication fault	Communication error to rain sensor	(See DTC U2030 [AUTO LIGHT/WIPER CONTROL MODULE].)

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

DTC B1342 [AUTO LIGHT/WIPER CONTROL MODULE]

DTC B1342	ECU is faulted
DETECTION CONDITION	Auto light/wiper control module microcomputer malfunction
POSSIBLE CAUSE	<ul style="list-style-type: none"> Auto light/wiper control module microcomputer malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	PERFORM DTC INSPECTION <ul style="list-style-type: none"> Clear DTCs using the M-MDS. (See CLEARING DTC [AUTO LIGHT/WIPER CONTROL MODULE].) Perform the auto light/wiper control module DTC inspection using the M-MDS. (See DTC INSPECTION [AUTO LIGHT/WIPER CONTROL MODULE].) Is DTC B1342 displayed? 	Yes Replace the auto light/wiper control module, then go to the next step. (See AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION.)
		No Go to the next step.
2	VERIFY THAT NO OTHER DTCs ARE PRESENT <ul style="list-style-type: none"> Are there other DTCs output? 	Yes Perform the corresponding DTC inspection. (See DTC TABLE [AUTO LIGHT/WIPER CONTROL MODULE].)
		No DTC troubleshooting completed.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

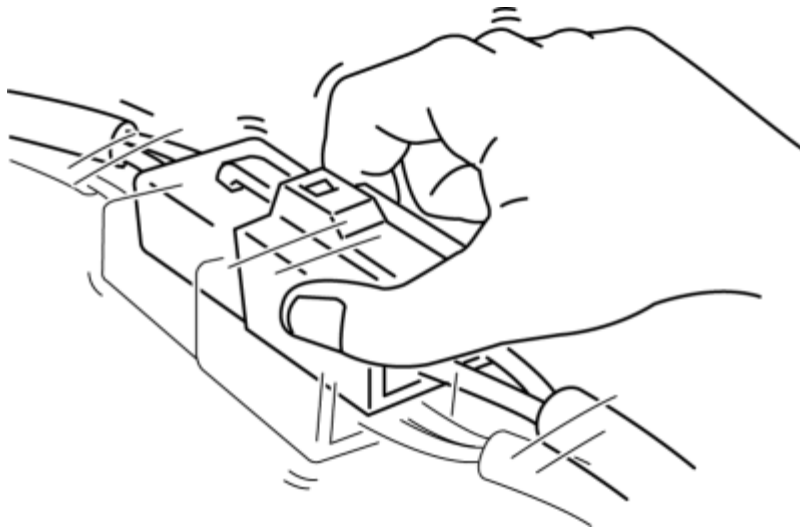
INTERMITTENT CONCERN TROUBLESHOOTING [POWER WINDOW SYSTEM (WITH EXTERIOR OPEN/CLOSE FUNCTION)]

Vibration Method

- If a malfunction occurs or becomes worse while driving on a rough road or when the engine is vibrating, perform following the steps:

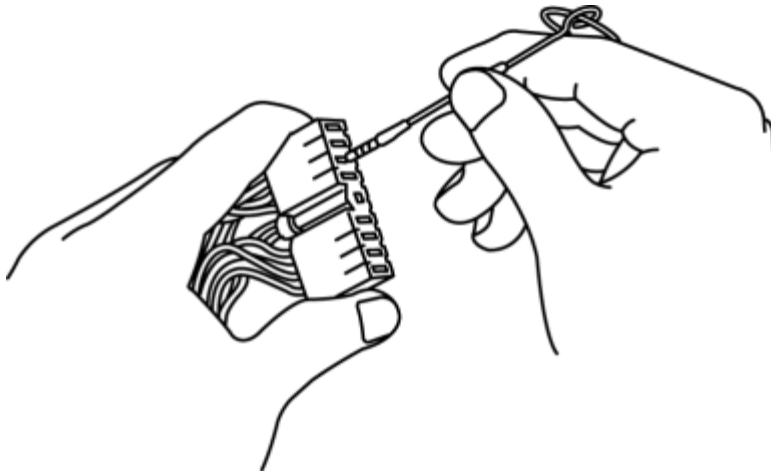
NOTE:

- There are several reasons why vehicle or engine vibration could cause an electrical malfunction. Some of the things to inspect for:
 - Connectors not fully seated.
 - Wiring harnesses not having full play.
 - Wires laying across brackets or moving parts.
 - Wires routed too close to hot parts.
- An improperly routed, improperly clamped, or loose wiring harness can cause wiring to become pinched between parts.
- The connector joints, points of vibration, and places where wiring harnesses pass through the firewall, body panels are the major areas to be inspected.
- Inspect for DTCs or malfunctions by slightly shaking wiring harnesses and connectors that are suspected of causing the malfunction.



Connector Terminal Check Method

1. Inspect the connection condition of each female terminal.
2. Insert the male terminal into the female terminal to inspect for looseness.



[< Previous](#) [Next >](#)

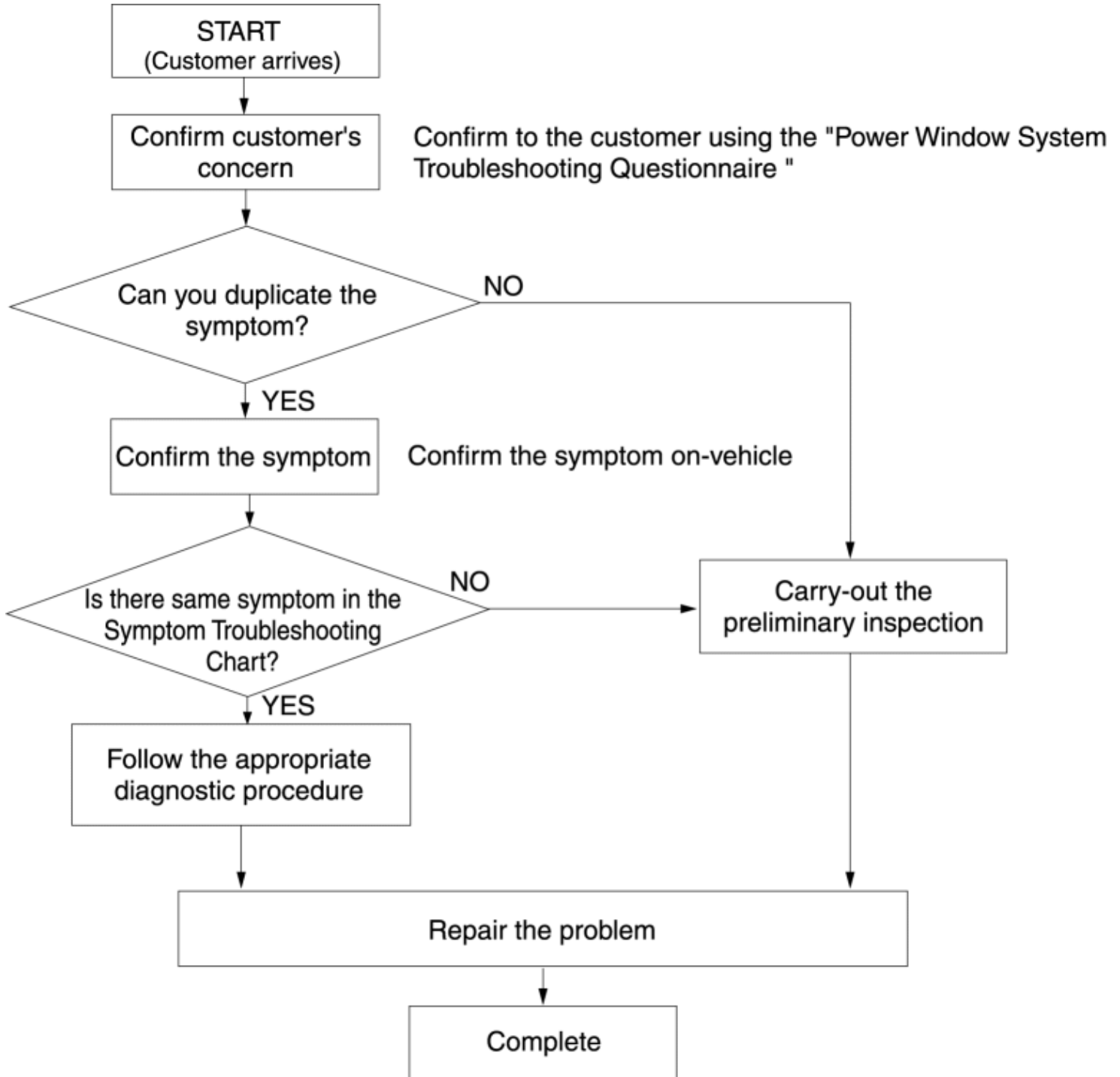
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

FOREWORD [POWER WINDOW SYSTEM (WITH EXTERIOR OPEN/CLOSE FUNCTION)]

Troubleshooting Procedure



- Always perform basic power window system inspection before troubleshooting.
- Troubleshooting procedures provide information unique to malfunctions of the automatic window return function.

CAUTION:

- If any of the following conditions continues indefinitely, the power window motor will heat up causing the protection circuit (integrated in power window motor) to operate. If this occurs, the operation of the power window motor protection circuit temporarily disables the power windows.
 - Continuous up and down operation of the power window.
 - Continuously pulling up the power window switch while the window glass is fully closed.
 - Continuously pressing the power window switch while the window glass fully opened.
- A malfunction in the power window system will be determined and the system will shift to malfunction mode if the power windows are operated up or down using the power window switch while the power window protection circuit is operating.
- While the power window system is in malfunction mode, but they do not operate using the auto open/close function.
- The power window system reverts to normal operation after performing the Power Window Initialization Procedure.

NOTE:

- Initial setting must be performed for the switch of each seat.
- If the following operations have been performed, initial setting is reset, and auto up/down and two-step down operation are disabled. Therefore, performing initial setting is necessary.
 - Negative battery cable disconnected or power window system power supply fuse removed. (perform initial setting for each door glasses.)
 - Power window switch connector disconnected. (perform initial setting for the switch connected with the connector)

Power Window Initialization Procedure

1. Turn the ignition switch to the ON position.
2. Press the power window switch and fully open the suspect door glass.
3. Pull up the power window main switch/sub switch to the manual-up position to fully close the suspect door glass, and keep holding the switch up at the position for **approx.2 s**.

2011 - RX-8 - Body and Accessories

SYMPTOM TROUBLESHOOTING CHART [POWER WINDOW SYSTEM (WITH EXTERIOR OPEN/CLOSE FUNCTION)]

No.	TROUBLESHOOTING ITEM	PAGE
1	Door glass does not move up and down in automatic mode	(See No.1 DOOR GLASS DOES NOT MOVE UP AND DOWN IN AUTOMATIC MODE [POWER WINDOW SYSTEM (WITH EXTERIOR OPEN/CLOSE FUNCTION)] .)
2	Door glass does not reverse, even when encountering a foreign object in its path.	(See No.2 DOOR GLASS DOES NOT REVERSE, EVEN WHEN ENCOUNTERING A FOREIGN OBJECT IN IT IS PATH [POWER WINDOW SYSTEM (WITH EXTERIOR OPEN/CLOSE FUNCTION)] .)
3	Door glass does not reverse, even when encountering a foreign object in its path.	(See No.3 DOOR GLASS REVERSES EVEN THOUGH THE GLASS DOES NOT ENCOUNTER A FOREIGN OBJECT WHILE IT IS MOVING UP IN AUTOMATIC MODE [POWER WINDOW SYSTEM (WITH EXTERIOR OPEN/CLOSE FUNCTION)] .)
4	Abnormal noise during the power window operation	(See No.4 ABNORMAL NOISE WHILE THE DOOR GLASS IS OPENING OR CLOSING [POWER WINDOW SYSTEM (WITH EXTERIOR OPEN/CLOSE FUNCTION)] .)

2011 - RX-8 - Body and Accessories

No.1 DOOR GLASS DOES NOT MOVE UP AND DOWN IN AUTOMATIC MODE [POWER WINDOW SYSTEM (WITH EXTERIOR OPEN/CLOSE FUNCTION)]

NOTE:

- Perform the following inspection for the power window system component parts of windows where the door glass cannot be operated automatically.

1	Door glass does not move up and down in automatic mode
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Power window system in fail-safe function (Power window motor heat protection circuit is operating) • No power supply to power window main switch • Power window main switch malfunction (power window control unit malfunction, auto switch malfunction) • Power window motor malfunction (Sensor inside motor malfunction) • Malfunction in wiring harness between power window motor (sensor) and power window main switch

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position for 3 min. • Turn the ignition switch to ON position. • Initialize the power window system. • Operate the auto open/close function. • Dose the power window 	<p>YesSystem is normal.</p> <p>The power window system auto open/close function dose not operate temporarily for any of the following reasons:</p> <ul style="list-style-type: none"> • The power window switch is operated while the power window motor protection circuit (integrated in power window motor) is operating. • The power window main switch

	operate properly?		power supply is cut off by disconnection of the negative battery cable or removing the fuse.
		No	Go to the next step.
2	<ul style="list-style-type: none"> Turn the ignition switch to ON position. Inspect the two-step down operation. <p>(See BASIC POWER WINDOW SYSTEM INSPECTION [POWER WINDOW SYSTEM (WITH EXTERIOR OPEN/CLOSE FUNCTION)].)</p> <ul style="list-style-type: none"> Does the two-step down function operate properly? 	Yes	Replace the power window main switch. (See POWER WINDOW MAIN SWITCH REMOVAL/INSTALLATION .)
		No	Go to the next step.
3	<ul style="list-style-type: none"> Does the sensor built into the power window motor send pulse signals while the power window motor is operating? Inspect the voltage at the following power window motor terminals: <ul style="list-style-type: none"> B (sensor 1 signal) A (sensor 2 signal) Is the voltage approx.12 V? 	Yes	Go to the next step.
		No	Replace the power window motor. (See POWER WINDOW MOTOR INSPECTION .)
4	<ul style="list-style-type: none"> Does the sensor built into the power window motor send pulse signals while the power window motor is operating? Inspect the voltage at the following power window main switch terminals: <ul style="list-style-type: none"> O (sensor 1 signal) P (sensor 2 signal) 	Yes	Replace the power main switch. (See POWER WINDOW MAIN SWITCH REMOVAL/INSTALLATION .)
		No	Inspect for an open or short circuit in wiring between the power window motor (sensor) and the power window main switch. Inspect the connection of the power window motor and power window main switch connectors. (damaged/pulled-out pins, corrosion)

- | | | |
|--|--|--|
| | <ul style="list-style-type: none">• Is the voltage approx.12 V? | |
|--|--|--|

Repair or replace necessary.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

No.2 DOOR GLASS DOES NOT REVERSE, EVEN WHEN ENCOUNTERING A FOREIGN OBJECT IN IT IS PATH [POWER WINDOW SYSTEM (WITH EXTERIOR OPEN/CLOSE FUNCTION)]

NOTE:

- Perform the following inspection for the power window system component parts of the windows where the door glass does not reverse, even when encountering a foreign object in its path.

2	Door glass does not reverse, even when encountering a foreign object in its path.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Automatic window return range did not reset after battery disconnection: Step 2

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY CUSTOMER COMPLAINT <ul style="list-style-type: none"> • Did the customer complain that the door glass did not reverse when near complete closed position? 	Yes <ul style="list-style-type: none"> • The system is normal. • Explain to the customer that automatic window return power window system does not operate when near complete closed position.
		No Go to the next step.
2	RESET REVERSE AREA STORED IN DOOR GLASS MOTOR <ul style="list-style-type: none"> • Perform the power window system initial setting procedure. • Did malfunction disappear? 	Yes <ul style="list-style-type: none"> • Troubleshooting completed. • Explain to the customer that misadjustment of automatic window return range was the problem.
		No Replace the power window switch.

- | | | | |
|--|--|--|--|
| | | | <ul style="list-style-type: none">• Verify auto-up/down operation and if the automatic function does not operate, go to Step 1 of NO. 1 DOOR GLASS DOES NOT MOVE UP AND DOWN IN AUTOMATIC MODE.• If the automatic function operates, replace the power window switch. |
|--|--|--|--|

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

BASIC POWER WINDOW SYSTEM INSPECTION [POWER WINDOW SYSTEM (WITH EXTERIOR OPEN/CLOSE FUNCTION)]

Manual Mode Function Inspection

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Turn the ignition switch to the ON position. 	YesGo to the next step.
	<ul style="list-style-type: none"> Turn the power-cut switch to UNLOCK. Does each door glass move up and down in manual mode using the power window subswitch? 	No <ul style="list-style-type: none"> Inspect the following items: <ul style="list-style-type: none"> Power window main switch (power-cut switch system malfunction) Power window subswitch power supply fuses Power window subswitch ground wiring harness Power window switch power supply wiring harnesses Wiring harness between power window subswitch and power window motor Power window subswitch Power window

			<p>motor</p> <ul style="list-style-type: none"> Repair or replace the malfunctioning part, then go to the next step.
2	<ul style="list-style-type: none"> Does the driver-side door glass move up and down in manual mode using the power window main switch? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> Inspect the following items: <ul style="list-style-type: none"> Power window main switch power supply fuses Power window main switch ground wiring harness Power window main switch power supply wiring harnesses Wiring harness between power window main switch and power window motor Power window main switch Repair or replace the malfunctioning part, then go to the next step.
3	<ul style="list-style-type: none"> Does each other door glass other than the driver-side door glass move up and down in manual mode using the power window main switch? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> Perform the power window initialization procedure for any door glass that does not move up and down, and reinspect. (See POWER WINDOW INITIALIZATION PROCEDURE.) If it does not move up and down upon reinspection, inspect the following: <ul style="list-style-type: none"> Wiring harness between power window main switch and subswitch

			<ul style="list-style-type: none"> Repair or replace the malfunctioning part, then go to the next step.
4	<ul style="list-style-type: none"> Turn the power-cut switch to LOCK. Push/pull the power window main switch (switches for all windows in manual mode). Does only driver-side front door glass move up and down? 	Yes	<ul style="list-style-type: none"> Manual mode function is normal. Go to the automatic mode function inspection.
		No	Replace the power window main switch, then go to the automatic mode function inspection (power-cut switch system malfunction).

Automatic Mode Function Inspection

NOTE:

- Perform the following inspection for the power window main switch and the power window subswitches for each window.

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> Turn the ignition switch to the ON position. Operate the power window switch in automatic mode. Does the door glass move up and down in automatic mode? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> Door glass does not move up and down in automatic mode: <ul style="list-style-type: none"> Go to Step 1 of NO. 1 DOOR GLASS DOES NOT MOVE UP AND DOWN IN AUTOMATIC MODE. Door glass moves up and down in automatic mode, but door glass reverses: <ul style="list-style-type: none"> Go to Step 1 of NO. 3 DOOR GLASS REVERSES EVEN THOUGH THE GLASS DOES NOT ENCOUNTER A FOREIGN OBJECT WHILE IT IS MOVING UP IN AUTOMATIC MODE.
2	<ul style="list-style-type: none"> Gently pull the power window switch while the 	Yes	Go to the next step.

	door glass is moving down in automatic mode. <ul style="list-style-type: none"> Does the glass stop? 	No	Replace the power window switch, then go to the automatic door glass return function inspection.
3	<ul style="list-style-type: none"> Gently press the power window switch while the door glass is moving up in automatic mode. Does the glass stop? 	Yes	<ul style="list-style-type: none"> Automatic mode function is normal. Go to the automatic door glass return function inspection.
		No	Replace the power window switch, then go to the automatic door glass return function inspection.

Automatic Door Glass Return Function Inspection

NOTE:

- Perform the following inspection for the power window main switch and the power window subswitches for each window.
- With the switch held at auto-up, the door glass does not automatically reverse even when a foreign object is encountered.

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> Turn the ignition switch to the ON position. Lower the door glass completely. Use the power window switch to close the door glass in automatic mode. Does the door glass automatically reverse even though the glass does not encounter a foreign object while it is moving up in automatic mode? 	Yes	Go to Step 1 of NO. 3 DOOR GLASS REVERSES EVEN THOUGH THE GLASS DOES NOT ENCOUNTER A FOREIGN OBJECT WHILE IT IS MOVING UP IN AUTOMATIC MODE.
		No	Go to the next step.
2	<ul style="list-style-type: none"> Lower the door glass completely. Take a hammer and hold it against the inside of the top of the 	Yes	<ul style="list-style-type: none"> Automatic door glass return function inspection is normal. Go to the IG OFF timer

	<p>window frame so that the door glass will hit its handle when it is closed.</p> <ul style="list-style-type: none"> • Raise the door glass using automatic mode. • When the door glass hits the hammer handle, does it immediately reverse and move down to approx.200 mm {7.87 in} from the completely closed position? 		function inspection.
		No	Go to Step 1 of NO. 2 DOOR GLASS DOES NOT REVERSE, EVEN WHEN ENCOUNTERING A FOREIGN OBJECT IN ITS PATH.

IG OFF Timer Function Inspection

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> • Close all doors. • Turn the ignition switch to the ON position. • In automatic mode, push down the power window main switch for the driver-side front door glass. The door glass should move down within approx. 43 s after ignition switch off. • In manual mode (finger continuously depressing the power window main switch), the door glass should move down within approx. 43 s after ignition switch off. • Does the driver-side front door glass move down? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Perform the driver-side power window initialization procedure, and reinspect.(See POWER WINDOW INITIALIZATION PROCEDURE.) • If it does not move up and down upon reinspection, inspect the following: <ul style="list-style-type: none"> ▪ Wiring harness for the door open/close signal system ▪ Latch switch • Repair or replace the malfunctioning part, and reinspect. <ul style="list-style-type: none"> ▪ If operation is not

			normal, replace the power window main switch, and then go to the next step.
2	<ul style="list-style-type: none"> • Turn the ignition switch to the ON position. • In automatic mode, pull up the power window main switch for the driver-side front door glass. The door glass does not move up within approx. 43 s after ignition switch off. • Verify that driver-side front door glass does not operate. • Does the driver-side front door glass move up? 	Yes	<ul style="list-style-type: none"> • Perform the driver-side power window initialization procedure, and reinspect. (See POWER WINDOW INITIALIZATION PROCEDURE.) <ul style="list-style-type: none"> ▪ If operation is not normal, replace the power window main switch, then go to the next step.
		No	Go to the next step.
3	<ul style="list-style-type: none"> • Turn the ignition switch to the ON position. • Lower the driver-side front door glass completely. • Take a hammer and hold it against the inside of the top of the door glass frame so that the door glass will hit its handle when it is closing. • Raise the door glass using manual mode. • When the door glass hits the hammer handle, does it immediately reverse and move down to approx. 200 mm {7.87 in} from the completely closed position? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Perform the driver-side power window initialization procedure, and reinspect. (See POWER WINDOW INITIALIZATION PROCEDURE.) <ul style="list-style-type: none"> ▪ If operation is not normal, replace the power window main switch, then go to the next step.

4	<ul style="list-style-type: none"> • Open any door. • Turn the ignition switch to the ON position. • Push/pull the power window main switch for the door glass within approx. 43 s after ignition switch off. • Verify that the door glass does not move up or down. • Does the door glass move up or down? 	Yes	<ul style="list-style-type: none"> • Inspect the door switch and related wiring harness. • If above parts are normal, replace the power window main switch, then go to the next step. • If the above parts have any malfunction, repair or replace the malfunction part, then go to the next step.
		No	Go to the next step.
5	<ul style="list-style-type: none"> • Close all doors. • Turn the ignition switch to the ON position. • Push/pull the power window main switch for door glass after approx. 60 s after ignition switch off. • Verify that the door glass does not move up or down. • Does the door glass move up or down? 	Yes	<ul style="list-style-type: none"> • Perform the driver-side power window initialization procedure, and reinspect. (See POWER WINDOW INITIALIZATION PROCEDURE.) <ul style="list-style-type: none"> ▪ If operation is not normal, replace the power window main switch, then go to the two-step down function inspection.
		No	<ul style="list-style-type: none"> • The IG OFF timer function is normal. • Go to the two-step down function inspection.

Two-step Down Function Inspection

- Before inspecting the two-step down function, make sure that the two-step down function is turned on (if the two-step down function is turned off, the power window close not stop once.).

- The distance the door glass opens can be changed using the two-step down function (**approx. 20—100 mm {0.79—3.93 in}**).
- The two-step down function can be made inoperative. (The function is operative at the initial setting.)
- The two-step down function does not function during IG OFF timer.

NOTE:

- Perform the following inspection for the power window main switch and the power window subswitches for each window.

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> • Turn the ignition switch to the ON position. • Turn on the two-step down function, if it is turned off. • Raise door glass completely. • When the door glass is lowered using manual mode, does it move down to approx. 30 mm {1.2 in} from the completely closed position and stop for 1 s? (This inspection cannot be performed during IG OFF timer function operation.) 	Yes	<ul style="list-style-type: none"> • Two-step down function is normal. • Reinspect malfunction symptoms.
		No	<ul style="list-style-type: none"> • Perform the power window initial setting procedure and verify auto-up/down operation. (See POWER WINDOW INITIALIZATION PROCEDURE.) <ul style="list-style-type: none"> ▪ If the automatic function does not operate, go to Automatic Door Glass Return Function Inspection. ▪ If the automatic function operates but the two-step down function does not, replace the power window

			switch.
--	--	--	---------

[< Previous](#) [Next >](#)

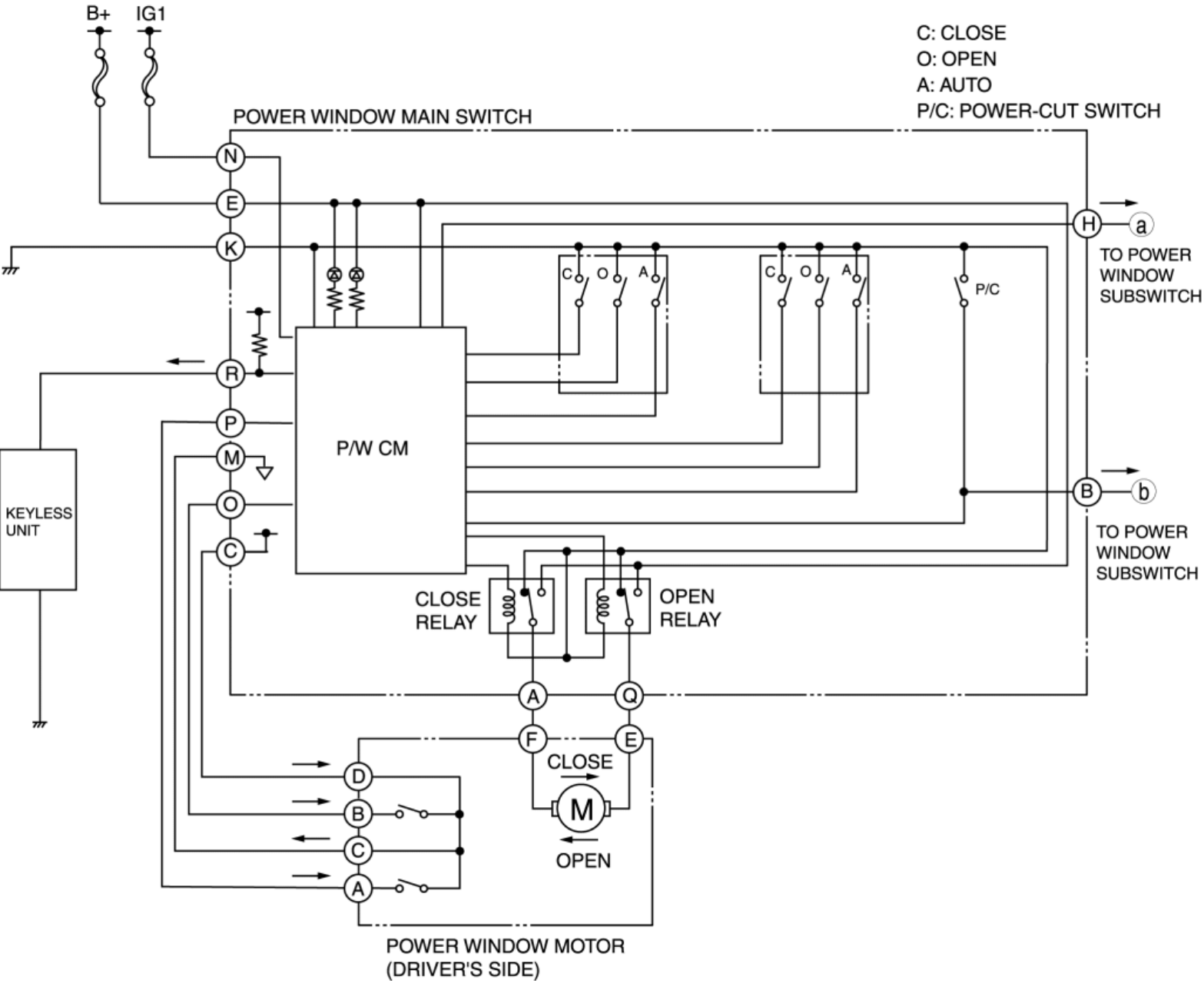
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

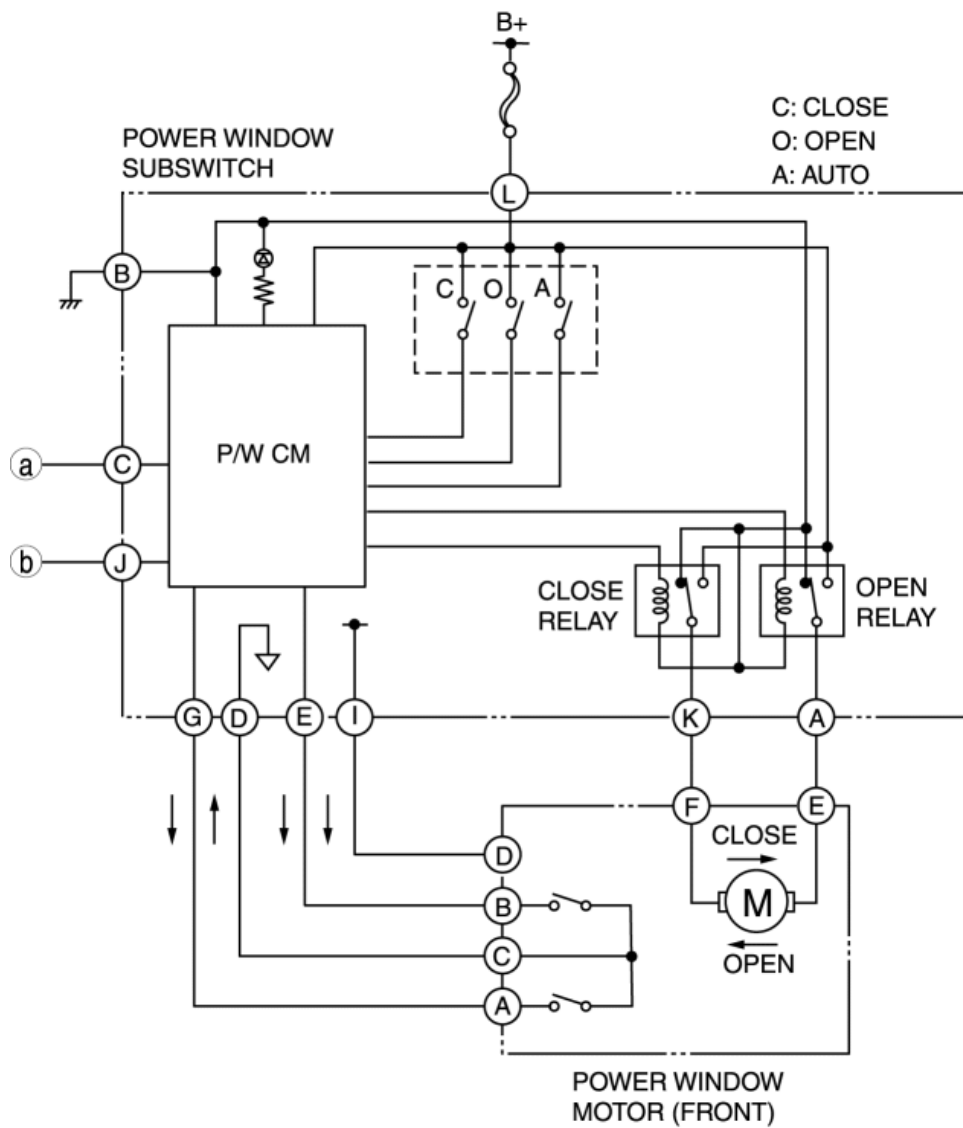
2011 - RX-8 - Body and Accessories

POWER WINDOW SYSTEM WIRING DIAGRAM [POWER WINDOW SYSTEM (WITH EXTERIOR OPEN/CLOSE FUNCTION)]

Power Window Main Switch



Power Window Subswitch



2011 - RX-8 - Body and Accessories

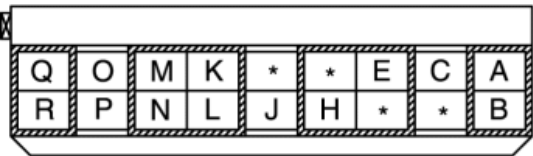
No.3 DOOR GLASS REVERSES EVEN THOUGH THE GLASS DOES NOT ENCOUNTER A FOREIGN OBJECT WHILE IT IS MOVING UP IN AUTOMATIC MODE [POWER WINDOW SYSTEM (WITH EXTERIOR OPEN/CLOSE FUNCTION)]

NOTE:

- Perform the following inspection for the power window system component parts of windows where the door glass reverses even though the glass does not encounter a foreign object while it is moving up in automatic mode.

3	Door glass reverses even though the glass does not encounter a foreign object while it is moving up in automatic mode.
POSSIBLE CAUSE	<div><ul style="list-style-type: none">• Extreme change in the sliding resistance of the glass while the door glass is closing.<ul style="list-style-type: none">▪ Improper installation of the acrylic door visor.▪ Power window motor malfunction▪ Object caught between the glass run channel and the door glass.▪ Insufficient tightening of the door glass to the carrier plate.▪ Glass run channel malfunction.▪ Glass guide related malfunction.</div> <div><p>NOTE:</p><ul style="list-style-type: none">• The auto-reverse pinch protection function is a mechanism that automatically reverses (opens) the door glass while it is closing when the power window main switch detects the signal from the power window motor indicating that an object is obstructing the door glass movement.• The auto-reverse pinch protection function may operate if the sliding resistance of the door glass increases causing the closing speed to decrease.• If the door glass closing speed has changed, concentrate the inspection on the following locations: (Slip occurrence)<ul style="list-style-type: none">▪ If the door glass is slipping forward, inspect the front side of the glass guide or glass run channel.▪ If the door glass is slipping rearward, inspect the rear side of the glass guide or glass run channel.</div>

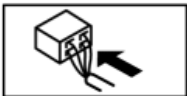
POWER WINDOW MAIN SWITCH
WIRING HARNESS-SIDE CONNECTOR



POWER WINDOW SUBSWITCH
WIRING HARNESS-SIDE CONNECTOR



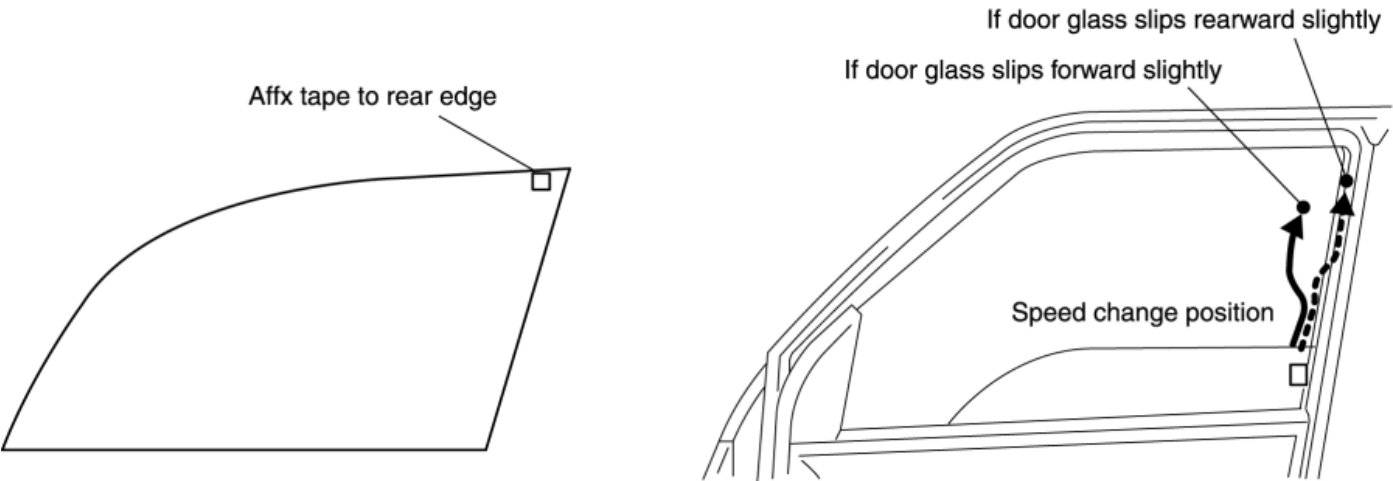
POWER WINDOW MOTOR
WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT MALFUNCTION SYMPTOM <ul style="list-style-type: none"> Does the malfunction symptom occur only under the following special conditions?: <ul style="list-style-type: none"> Driving over railroad tracks Driving on bumpy roads. Opening/closing the door. 	Yes The system is normal (Explain to the customer that this does not indicate a malfunction because the system is designed to reverse the door glass while it is closing if it receives vibration when the vehicle is crossing railroad tracks, driving on a bumpy road, or when the door is opened/closed.)
		No Go to the next step.
2	INSPECT ACRYLIC DOOR VISOR INSTALLATION CONDITION <ul style="list-style-type: none"> Is the acrylic door visor normal? 	Yes Go to the next step.
		No Install the side visor properly, then go to the next step.
3	INSPECT DOOR GLASS CLOSING SPEED <ul style="list-style-type: none"> Affix tape to the rear edge of the door glass as shown in the figure for placing marks (to facilitate seeing the door glass movement) Start the engine and idle it (to ensure a stabilized operational voltage). Does the door glass hesitate only once while its closing? 	Yes Mark the point where the door glass closing speed changed, then go to Step 5.
		No Go to the next step.
4	REINSPECT DOOR GLASS CLOSING SPEED <ul style="list-style-type: none"> Does the door glass hesitate periodically (5-6 times) while it is closing? 	Yes Replace the power window motor, then go to Step 8 (See POWER WINDOW MOTOR REMOVAL/INSTALLATION .)
		No Go to Step 8.
5	INSPECT GLASS RUN CHANNEL AND DOOR GLASS SLIDING SURFACE <ul style="list-style-type: none"> Is there an object caught between the glass run channel and the door glass, or is there roughness on the sliding surface (rubber surface)? 	Yes Object is caught between glass run channel and door glass: <ul style="list-style-type: none"> Remove the object. Roughness on the sliding surface (rubber surface): <ul style="list-style-type: none"> Replace the glass run channel. After performing one of the above actions, reinspect. If the malfunction is not corrected, go to Step 3.
		No Go to the next step.
6	INSPECT TIGHTENING OF	Yes Go to the next step.

	DOOR GLASS TO CARRIER PLATE <ul style="list-style-type: none"> Is it normal? 	No After tightening correctly, reinspect. If the malfunction is not corrected, go to Step 3.
7	INSPECT CONDITION OF GLASS RUN CHANNEL AND DOOR GLASS <ul style="list-style-type: none"> Is it normal? 	Yes Go to the next step. No Assemble the glass run channel and door glass securely, and reinspect. If the malfunction is not corrected, go to Step 3.
8	INSPECT DOOR GLASS CLOSING SPEED <ul style="list-style-type: none"> Does the door glass hesitate at any location? 	Yes Repeat the inspection from Step 3. No Troubleshooting completed.



2011 - RX-8 - Body and Accessories

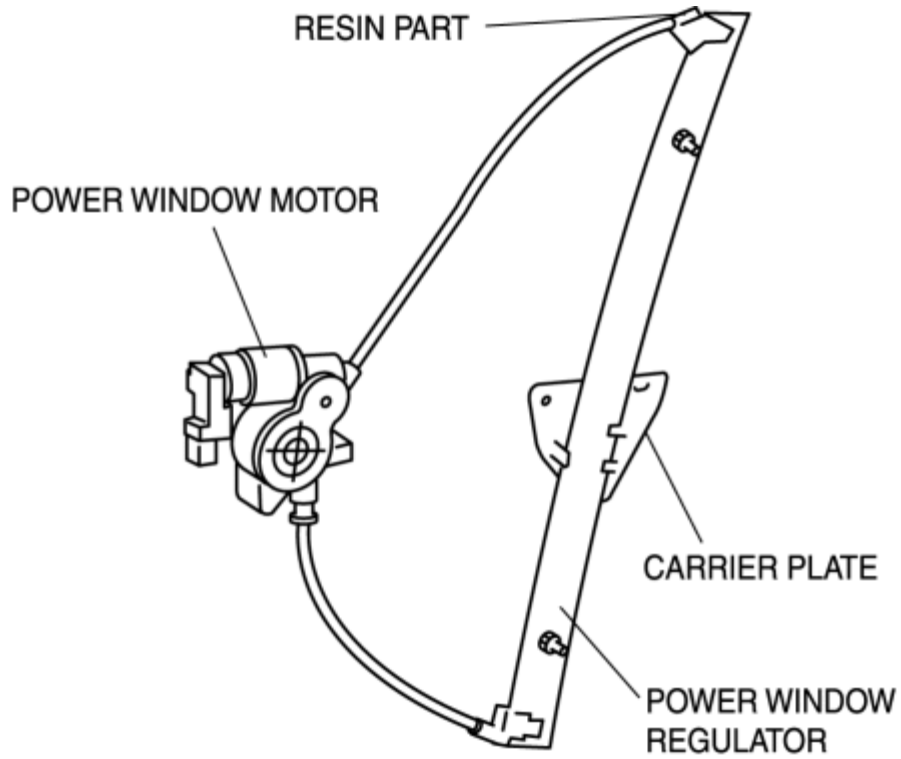
No.4 ABNORMAL NOISE WHILE THE DOOR GLASS IS OPENING OR CLOSING [POWER WINDOW SYSTEM (WITH EXTERIOR OPEN/CLOSE FUNCTION)]

4	Abnormal noise while the door glass is opening or closing
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Installation screw is loose between the door glass and carrier plate. • Deformity in the power window regulator plastic part due to use. <ul style="list-style-type: none"> ▪ Scratching, wear marks to the power window regulator resin part due to twisting of the cable. ▪ Gear deformity in the power window motor.
	NOTE: <ul style="list-style-type: none"> • Identify the location of the noise using a stethoscope or similar device.

Diagnostic procedure

Noise type	Time of occurrence	Possible cause	Location of noise	Action
Clanking noise	Door glass begins to move	Insufficiently tightened installation screw between the door glass and carrier plate.	Between door glass lower edge and carrier plate.	Securely tighten the installation screw.
Groaning noise (Sound increases due to use)	While door glass is operating	Vibration caused by wear on the resin part from cable twisting due to use of the power window regulator. NOTE: <ul style="list-style-type: none"> • Noise does not occur if a roller is equipped to power window regulator resin part. 	Power window regulator	Replace the power window regulator (See POWER WINDOW REGULATOR REMOVAL/INSTALLATION.)

Whining noise		Gear inside power window motor is deformed due to use.	Gear in power window motor	Replace the power window motor
Clicking noise (Periodic noise)				(See POWER WINDOW MOTOR REMOVAL/INSTALLATION.)



[< Previous](#) [Next >](#)

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

SYMPTOM TROUBLESHOOTING CHART [EXTERIOR OPEN/CLOSE FUNCTION]

No.	TROUBLESHOOTING ITEM
1	No.1 DOOR GLASS DOES NOT OPERATE EVEN THOUGH VARIOUS OPERATIONS ARE PERFORMED [EXTERIOR OPEN/CLOSE FUNCTION]
2	No.2 DOOR GLASS DOES NOT OPERATE USING THE KEYLESS TRANSMITTER [EXTERIOR OPEN/CLOSE FUNCTION]
3	No.3 DOOR GLASS DOES NOT OPERATE USING THE REQUEST SWITCH [EXTERIOR OPEN/CLOSE FUNCTION]
4	No.4 SOME DOOR GLASS DO NOT OPERATE [EXTERIOR OPEN/CLOSE FUNCTION]
5	No.5 DOOR GLASS STOPS BEFORE FULLY OPENING/CLOSING [EXTERIOR OPEN/CLOSE FUNCTION]
6	No.6 DOOR GLASS REVERSES BEFORE IT FULLY OPENS [EXTERIOR OPEN/CLOSE FUNCTION]
7	No.7 ALL DOOR GLASS OPERATE ACCIDENTALLY [EXTERIOR OPEN/CLOSE FUNCTION]
8	No.8 PART OF DOOR GLASS OPERATES ACCIDENTALLY [EXTERIOR OPEN/CLOSE FUNCTION]

[< Previous](#) [Next >](#)

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

QUICK DIAGNOSTIC CHART [EXTERIOR OPEN/CLOSE FUNCTION]

X: Applied

<div> <div>Possible factor</div> <div>Troubleshooting item</div> </div>	1	2	3	4	5	6	7	8
	Door glass does not operate even though various operations are performed	Door glass does not operate using the keyless transmitter	Door glass does not operate using the request switch	Some door glass do not operate	Door glass stops before fully opening/closing	Door glass reverses before it fully opens	All door glasses operate accidentally	Part of door glass operates accidentally
Power window main switch malfunction	X				X		X	
Power window subswitch malfunction				X	X		X	X
Power window motor malfunction	X			X	X	X		
Battery malfunction (low voltage)	X			X	X	X		
Power window system initial setting error	X			X	X			
Open circuit in wiring harness between power window main switch and door lock control module (Advanced keyless system)	X							
Open circuit in wiring harness between power window main switch and keyless control module (Keyless entry system)	X							
Door lock control module malfunction (Advanced keyless entry system)	X	X	X		X			
Keyless control module malfunction (Keyless entry system)	X	X	X		X			
Any door or trunk lid/liftgate is open.		X	X					
Key is inserted in steering lock.		X	X					
Open circuit in wiring harness between request switch and keyless control module.			X				X	
Start knob is in a position other than LOCK position.			X					
Open circuit in wiring harness between power window main switch and power window subswitch				X			X	
Improper installation of door glass					X	X		
Keyless entry system signal reception error (outside operation area, radio signal interference)					X			
Transmitter malfunction							X	
Request switch malfunction							X	
Power window main switch malfunction							X	
Power window subswitch malfunction							X	X

NOTE:

- The exterior open/close function does not operate when the following conditions are met.
 - Any door or trunk lid is open.
 - The key is inserted in the steering lock.

- The start knob is not in the LOCK position.
- The auto-open/close function (the exterior open/close function) does not operate if the power window initialization procedure has been reset.
- Depending on the temperature and battery conditions, the window may reverse on rare occasions.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

No.2 DOOR GLASS DOES NOT OPERATE USING THE KEYLESS TRANSMITTER [EXTERIOR OPEN/CLOSE FUNCTION]

2	DOOR GLASS DOES NOT OPERATE USING THE KEYLESS TRANSMITTER
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Door lock control module malfunction (Advanced keyless entry system) • Keyless control module malfunction (keyless entry system) • Any door or trunk lid is open • Key is inserted in steering lock

Diagnostic Procedure

Step	Inspection	Action
1	<ul style="list-style-type: none"> • Inspect the door lock/unlock operation using the transmitter. • Does it operate normally? 	<p>Yes Inspect the following parts, and repair or replace.</p> <p>(Advanced keyless system)</p> <ul style="list-style-type: none"> • Door lock control module <p>(See DOOR LOCK CONTROL MODULE INSPECTION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <p>(keyless entry system)</p> <ul style="list-style-type: none"> • keyless control module <p>(See KEYLESS CONTROL MODULE INSPECTION [WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <p>No Go to the next step.</p>

2	<ul style="list-style-type: none"> Inspect the open/close condition of the doors and the trunk lid. Is the reason why they do not lock because a door or the trunk lid is open? 	Yes	System is normal (Does not operate when a door or the trunk lid is open).
		No	Go to the next step.
3	<ul style="list-style-type: none"> Verify whether the key is in the steering lock. Is the reason why they do not lock/unlock because the key is inserted in the steering lock? 	Yes	System is normal (Does not operate when the key is inserted in the steering wheel lock)
		No	Go to the next step.
4	<ul style="list-style-type: none"> When the lock/unlock operation does not operate for reasons other than the above Steps 2 and 3. 	Yes	Inspect the following parts, and repair or replace. (Advanced keyless system) <ul style="list-style-type: none"> Door lock control module (See DOOR LOCK CONTROL MODULE INSPECTION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] .) (keyless entry system) <ul style="list-style-type: none"> keyless control module (See KEYLESS CONTROL MODULE INSPECTION [WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM] .)
		No	Reinspect for malfunction recurrence. If the malfunction is not corrected, repeat the procedure from Step 1.

2011 - RX-8 - Body and Accessories

No.3 DOOR GLASS DOES NOT OPERATE USING THE REQUEST SWITCH [EXTERIOR OPEN/CLOSE FUNCTION]

3	Door glass does not operate using the request switch
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Door lock control module malfunction • Open circuit in wiring harness between request switch and keyless control module. • Any door or trunk lid is open. • Key is inserted in steering lock. • Start knob is in a position other than LOCK position.

Diagnostic Procedure

Step	Inspection	Action
1	<ul style="list-style-type: none"> • Verify the door lock/unlock operation by operating the request switch. • Does it operate normally? 	<p>Yes Inspect the following parts, and repair or replace.</p> <p>(Advanced keyless system)</p> <ul style="list-style-type: none"> • Door lock control module <p>(See DOOR LOCK CONTROL MODULE INSPECTION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <p>(Keyless control system)</p> <ul style="list-style-type: none"> • Keyless control module <p>(See KEYLESS CONTROL MODULE INSPECTION [WITHOUT ADVANCED KEYLESS ENTRY AND START</p>

			SYSTEM 1.)
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Verify the open/close condition of the doors and the trunk lid. • Is the reason why they do not lock/unlock because a door or the trunk lid is open? 	Yes	The system is normal (When any door or the trunk lid is open, the system does not operate).
		No	Go to the next step.
3	<ul style="list-style-type: none"> • Verify the start knob position, or if the key is in the steering lock. • Is the reason why the door lock/unlock does not operate because the start knob is in a position other than LOCK, or the key is inserted? 	Yes	The system is normal (When the start knob is in a position other than LOCK, or the key is inserted in the steering lock, the system does not operate).
		No	Go to the next step.
4	<ul style="list-style-type: none"> • The door lock/unlock does not operate for reasons other than Steps 2 and 3 above. 	Yes	<p>Inspect the following parts, and repair or replace.</p> <p>(Advanced keyless system)</p> <ul style="list-style-type: none"> • Door lock control module <p>(See DOOR LOCK CONTROL MODULE INSPECTION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <p>(Keyless control system)</p> <ul style="list-style-type: none"> • Keyless control module <p>(See KEYLESS CONTROL MODULE INSPECTION [WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM 1.].)</p> <ul style="list-style-type: none"> • Wiring harness between the request switch and the keyless control module. • Wiring harness between the keyless control module and door lock control module.
		No	Reinspect for malfunction recurrence.If the malfunction is not corrected, repeat the procedure from Step 1.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

No.4 SOME DOOR GLASS DO NOT OPERATE [EXTERIOR OPEN/CLOSE FUNCTION]

4	Some door glass do not operate
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Power window subswitch malfunction • Power window motor malfunction • Battery malfunction (low voltage) • Open circuit in wiring harness between power window main switch and power window subswitch • Power window initialization procedure error

Diagnostic Procedure

Step	Inspection	Action
1	<ul style="list-style-type: none"> • Inspect the door glass operation by operating the power window subswitch. • Does it operate normally? 	Yes Go to the next step.
		No Inspect the following parts, and repair or replace. <ul style="list-style-type: none"> • Power window subswitch (See POWER WINDOW SUBSWITCH INSPECTION.) • Power window motor (See POWER WINDOW MOTOR INSPECTION.) • Battery (Low voltage)
2	<ul style="list-style-type: none"> • Inspect the door glass operation by operating the power window subswitch. 	Yes Inspect the wiring harness between the power window main switch and the power window subswitch.

	Does it operate in auto?		If there is any malfunction, repair or replace the applicable part.
		No	Perform the power window initialization procedure. (See POWER WINDOW INITIALIZATION PROCEDURE.)

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

No.5 DOOR GLASS STOPS BEFORE FULLY OPENING/CLOSING [EXTERIOR OPEN/CLOSE FUNCTION]

5	DOOR GLASS STOPS BEFORE FULLY OPENING/CLOSING
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Power window main switch malfunction • Power window subswitch malfunction • Power window motor malfunction • Battery malfunction (Low voltage) • Door glass improper installation • Power window initialization procedure error • Door lock control module malfunction (Advanced keyless entry system) • Keyless control module malfunction (Keyless entry system) • Keyless entry system signal reception error (outside operation area, radio signal interference)

Diagnostic Procedure

Step	Inspection	Action
1	<ul style="list-style-type: none"> • Operate the door glass in auto/manual by operating the power window main switch/power window subswitch. • Does the door glass stop before fully opening/closing using either operation? 	<p>Yes Inspect the following parts, and repair or replace.</p> <ul style="list-style-type: none"> • Power window main switch (See POWER WINDOW MAIN SWITCH INSPECTION.) • Power window subswitch (See POWER WINDOW SUBSWITCH INSPECTION.)

			<ul style="list-style-type: none"> Power window motor (See POWER WINDOW MOTOR INSPECTION.) Battery (Low voltage) Door glass (Installation condition)
		No	Go to the next step.
2	<ul style="list-style-type: none"> Inspect the operation of the door glass by repeating Step 1 above. Does the door glass stop before fully opening/closing while in auto operation? 	Yes	Perform the power window initialization procedure. (See POWER WINDOW INITIALIZATION PROCEDURE.)
		No	Go to the next step.
3	<ul style="list-style-type: none"> Open the door glass by operating the transmitter. Does the door glass stop before fully opening? 	Yes	Inspect the following parts, and repair or replace. (Advanced keyless system) <ul style="list-style-type: none"> Door lock control module (See DOOR LOCK CONTROL MODULE INSPECTION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].) (Keyless entry system) <ul style="list-style-type: none"> keyless control module (See KEYLESS CONTROL MODULE INSPECTION [WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM].)
		No	Go to the next step.
4	<ul style="list-style-type: none"> Close the door glass by operating the transmitter. Does the door glass stop before fully closing? 	Yes	Inspect the following parts, and repair or replace. (Advanced keyless system) <ul style="list-style-type: none"> Door lock control module (Vehicle with advanced keyless system) (See DOOR LOCK CONTROL

		MODULE INSPECTION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].) (Keyless entry system) <ul style="list-style-type: none">• keyless control module (See KEYLESS CONTROL MODULE INSPECTION [WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM].))• Keyless entry system signal reception error (outside operation area, radio signal interference)
		No Reinspect for malfunction recurrence.If the malfunction is not corrected, repeat the procedure from Step 1.

2011 - RX-8 - Body and Accessories

No.6 DOOR GLASS REVERSES BEFORE IT FULLY OPENS [EXTERIOR OPEN/CLOSE FUNCTION]

6	Door glass reverses before it fully opens
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Malfunction in power window motor • Malfunction in battery • Improper installation of door glass

Diagnostic procedure

Step	INSPECTION		ACTION
1	<ul style="list-style-type: none"> • By operating a power window main switch / power window subswitch, operate the door glass. • Does the door glass mis-reverse? 	Yes	Inspect the power window motor and repair or replace it. (See POWER WINDOW MOTOR INSPECTION.)
		No	Inspect the following parts and repair or replace them. <ul style="list-style-type: none"> • Power window motor (See POWER WINDOW MOTOR INSPECTION.) • Battery (brownout) • Door glass (improper installation) NOTE: <ul style="list-style-type: none"> • Depending on the temperature, battery, and voltage condition, the door glass may mis-reverse.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

No.7 ALL DOOR GLASS OPERATE ACCIDENTALLY [EXTERIOR OPEN/CLOSE FUNCTION]

7	All door glasses operate accidentally
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Transmitter malfunction • Request switch malfunction • Open or short circuit in wiring harness between request switch (each door) and keyless control module. • Power window main switch malfunction • Power window subswitch malfunction • Open or short circuit in wiring harness between power window main switch and power window subswitch

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Inspect if malfunction is in operating by transmitter 	Yes	Inspect the transmitter.
		No	<p>With keyless entry system</p> <ul style="list-style-type: none"> • Go to Step 3. <p>With advanced keyless system</p> <ul style="list-style-type: none"> • Go to the next step.
2	<ul style="list-style-type: none"> • Inspect if malfunction is in operating by request switch 	Yes	<p>Inspect the following parts and repair or replace.</p> <ul style="list-style-type: none"> • Request switch <p>(See REQUEST SWITCH INSPECTION)</p>

			<p>[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <ul style="list-style-type: none"> • Wiring harness between request switch and keyless control module • Wiring harness between keyless control module and door lock control module
		No	Go to the next step.
3	<ul style="list-style-type: none"> • Inspect if malfunction is in operating power window main switch 	Yes	<p>Inspect power window main switch</p> <p>(See POWER WINDOW MAIN SWITCH INSPECTION.)</p>
		No	Go to the next step.
4	<ul style="list-style-type: none"> • Inspect if malfunction is in without operating Step1to 3 	Yes	<p>Inspect the following parts and repair or replace</p> <ul style="list-style-type: none"> • Power window subswitch <p>(See POWER WINDOW SUBSWITCH INSPECTION.)</p> <ul style="list-style-type: none"> • Request switch—keyless control module (with advanced keyless system)—door lock control module • Wiring harness between power window subswitch and power window main switch
		No	Reinspect for malfunction recurrence.If the malfunction is not corrected, repeat the procedure from Step 1.

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

No.8 PART OF DOOR GLASS OPERATES ACCIDENTALLY [EXTERIOR OPEN/CLOSE FUNCTION]

8	Part of door glass operates accidentally
POSSIBLE CAUSE	<ul style="list-style-type: none">• Power window subswitch malfunction

Diagnostic procedure

ACTION
Inspect the power window subswitch of the door glass and repair or replace (See POWER WINDOW SUBSWITCH INSPECTION .)

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

No.1 DOOR GLASS DOES NOT OPERATE EVEN THOUGH VARIOUS OPERATIONS ARE PERFORMED [EXTERIOR OPEN/CLOSE FUNCTION]

1	Door glass does not operate even though various operations are performed
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Power window main switch malfunction • Power window motor malfunction • Battery malfunction (low voltage) • Power window initialization procedure error • Open circuit in wiring harness between power window main switch and door lock control module (Advanced keyless entry system) • Open circuit in wiring harness between power window main switch and keyless control module (keyless entry system)

Diagnostic Procedure

Step	Inspection	Action
1	<ul style="list-style-type: none"> • Inspect the operation of the door glass by operating the power window main switch. • Is the manual operation normal? 	<p>Yes Go to the next step.</p> <p>No Inspect the following parts, and repair or replace.</p> <ul style="list-style-type: none"> • Power window main switch (See POWER WINDOW MAIN SWITCH INSPECTION.) • Power window motor (See POWER WINDOW MOTOR INSPECTION.) • Battery (Low voltage)
2	<ul style="list-style-type: none"> • Inspect the operation of 	<p>Yes Go to the next step.</p>

	<p>the door glass by operating the power window main switch.</p> <ul style="list-style-type: none"> Does the door glass operate in auto? 	No	<p>Perform the power window initialization procedure.</p> <p>(See POWER WINDOW INITIALIZATION PROCEDURE.)</p>
3	<ul style="list-style-type: none"> Does the door lock/unlock normally? 	Yes	<p>(Advanced keyless system)</p> <ul style="list-style-type: none"> Inspect the wiring harness between the power window main switch and the door lock control module . If there is any malfunction, repair or replace the applicable part. <p>(keyless entry system)</p> <ul style="list-style-type: none"> Inspect the wiring harness between the power window main switch and the keyless control module.
		No	<p>(Advanced keyless system)</p> <ul style="list-style-type: none"> Replace the door lock control module <p>(See DOOR LOCK CONTROL MODULE INSPECTION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <p>(keyless entry system)</p> <ul style="list-style-type: none"> Replace the keyless control module <p>(See KEYLESS CONTROL MODULE INSPECTION [WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM 1.].)</p>

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

SYMPTOM TROUBLESHOOTING CHART [HEADLIGHT AUTO LEVELING SYSTEM]

No.	SYMPTOM	DESCRIPTION
1	Auto leveling warning light illuminates when the ignition switch turned to ON position	—
2	Auto leveling does not adjust optical axis of the headlights for vehicle posture	Auto leveling does not adjust optical axis of the headlights for cargo and passenger weight conditions

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

No.2 AUTO LEVELING SYSTEM DOES NOT ADJUST OPTICAL AXIS OF THE HEADLIGHTS FOR VEHICLE POSTURE [HEADLIGHT AUTO LEVELING SYSTEM]

2	Auto leveling does not adjust optical axis of the headlights for vehicle posture
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Headlight leveling actuator malfunction • Auto leveling control module malfunction • Auto leveling sensor malfunction • Improper installation of auto leveling sensor • Open or short to GND circuit in wiring harness between auto leveling control module terminal R and ABS HU/CM terminal V (with ABS) • Open or short to GND circuit in wiring harness between auto leveling control module terminal R and DSC HU/CM terminal T (with DSC)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY AUTO LEVELING WARNING LIGHT ILLUMINATEION <ul style="list-style-type: none"> • Turn the ignition switch to ON position. • Verify that the auto leveling warning light condition. • Does the auto leveling warning light illuminate from turning the ignition switch to ON 3 seconds after? 	Yes Perform the symptom "No.1 Auto leveling warning light illuminates when the ignition switch turned to ON position" troubleshooting procedure.
		No Go to the next step.
2	INSPECT IF MALFUNCTION IS IN AUTO LEVELING SENSOR OR	Yes Go to Step 5.

	<p>ELSEWHERE</p> <ul style="list-style-type: none">Is the malfunction appears both side?	No	Go to the next step.
3	<p>INSPECT IF MALFUNCTION IS IN WIRING HARNESS BETWEEN AUTO LEVELING CONTROL MODULE AND HEADLIGHT LEVELING ACTUATOR</p> <ul style="list-style-type: none">Inspect for open or short circuit in wiring harness at auto leveling function does not operate. <p>Right-side:</p> <ul style="list-style-type: none">Auto leveling control module terminal J—right-side headlight leveling actuator terminal FAuto leveling control module terminal I—right-side headlight leveling actuator terminal HAuto leveling control module terminal I—right-side headlight leveling actuator terminal G <p>Left-side:</p> <ul style="list-style-type: none">Auto leveling control module terminal J—left-side headlight leveling actuator terminal FAuto leveling control module terminal I—left-side headlight leveling actuator terminal HAuto leveling control module terminal K—left-side headlight leveling actuator terminal G <ul style="list-style-type: none">Is open or short circuit detected?	Yes	Repair or replace for open or short circuit.
		No	Go to the next step.

4	<p>INSPECT IF MALFUNCTION IS IN HEADLIGHT LEVELING ACTUATOR OR ELSEWHERE</p> <ul style="list-style-type: none">• Replace the suspected side head light module. <p>(See HEADLIGHT LEVELING ACTUATOR REMOVAL/INSTALLATION.)</p> <ul style="list-style-type: none">• Does the auto leveling adjust optical axis of the headlights for vehicle posture?	<table><tr><td>Yes</td><td>Troubleshooting completed. (Malfunction is in headlight leveling actuator.)</td></tr><tr><td>No</td><td>Replace the auto leveling control module. (See AUTO LEVELING CONTROL MODULE REMOVAL/INSTALLATION.)</td></tr></table>	Yes	Troubleshooting completed. (Malfunction is in headlight leveling actuator.)	No	Replace the auto leveling control module. (See AUTO LEVELING CONTROL MODULE REMOVAL/INSTALLATION.)
Yes	Troubleshooting completed. (Malfunction is in headlight leveling actuator.)					
No	Replace the auto leveling control module. (See AUTO LEVELING CONTROL MODULE REMOVAL/INSTALLATION.)					
5	<p>INSPECT IF MALFUNCTION IS IN WIRING HARNESS BETWEEN AUTO LEVELING CONTROL MODULE AND HEADLIGHT LEVELING ACTUATOR</p> <ul style="list-style-type: none">• Inspect for open or short circuit in wiring harness at auto leveling function does not operate. <p>Right-side:</p> <ul style="list-style-type: none">▪ Auto leveling control module terminal J—right-side headlight leveling actuator terminal F▪ Auto leveling control module terminal I—right-side headlight leveling actuator terminal H <p>Left-side:</p> <ul style="list-style-type: none">▪ Auto leveling control module terminal J—left-side headlight leveling actuator terminal F▪ Auto leveling control module terminal I—left-side headlight leveling actuator terminal H <ul style="list-style-type: none">• Is open or short circuit detected?	<table><tr><td>Yes</td><td>Repair or replace for open or short circuit.</td></tr><tr><td>No</td><td>Go to the next step.</td></tr></table>	Yes	Repair or replace for open or short circuit.	No	Go to the next step.
Yes	Repair or replace for open or short circuit.					
No	Go to the next step.					

6	<p>INSPECT FRONT AND REAR AUTO LEVELING SENSOR INSTALLATION</p> <ul style="list-style-type: none"> • Inspect front and rear auto leveling sensor installation (bent or damaged of bracket, or dislocated link). • Are front and rear auto leveling sensor installed properly? 	<p>Yes Go to the next step.</p> <p>No Repair or replace malfunctioning part, or install properly.</p>
7	<p>INSPECT FRONT AUTO LEVELING SENSOR</p> <ul style="list-style-type: none"> • Inspect the front auto leveling sensor. (See FRONT AUTO LEVELING SENSOR INSPECTION.) • Is the front auto leveling sensor normal? 	<p>Yes Go to the next step.</p> <p>No Replace the front auto leveling sensor. (See FRONT AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)</p>
8	<p>INSPECT REAR AUTO LEVELING SENSOR</p> <ul style="list-style-type: none"> • Inspect the rear auto leveling sensor. (See REAR AUTO LEVELING SENSOR INSPECTION.) • Is the rear auto leveling sensor normal? 	<p>Yes Go to the next step.</p> <p>No Replace the rear auto leveling sensor. (See REAR AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)</p>
9	<p>INSPECT IF MALFUNCTION IS IN VEHICLE SPEED SIGNAL LINE OR ELSEWHERE</p> <ul style="list-style-type: none"> • Turn the ignition to OFF. • Disconnect the instrument cluster and auto leveling control module connectors. • Verify that the continuity for following: <ul style="list-style-type: none"> ▪ Auto leveling control module terminal R—GND (normal condition: not continuity) ▪ Auto leveling control module terminal R—ABS HU/CM terminal V (normal 	<p>Yes Replace the auto leveling control module. (See AUTO LEVELING CONTROL MODULE REMOVAL/INSTALLATION.)</p> <p>No Repair or replace for open or short circuit.</p>

	<p>condition: continuity) (with ABS)</p> <ul style="list-style-type: none">▪ Auto leveling control module terminal R— DSC HU/CM terminal T (normal condition: continuity) (with DSC) <ul style="list-style-type: none">• Are there continuity normal?	
--	---	--

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

No.1 AUTO LEVELING WARNING LIGHT ILLUMINATES WHEN THE IGNITION SWITCH TURNED TO ON POSITION [HEADLIGHT AUTO LEVELING SYSTEM]

1	Auto leveling warning light illuminates when the ignition switch turned to ON position
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Headlight auto leveling function related electrical part malfunction <ul style="list-style-type: none"> ▪ Auto leveling sensor related part malfunction <ul style="list-style-type: none"> • Auto leveling control module power supply voltage excessive low • Auto leveling sensor signal voltage excessive high or low • Front auto leveling sensor malfunction • Rear auto leveling sensor malfunction ▪ Malfunction in headlight levering actuator (left or right) integrated in front combination light. <ul style="list-style-type: none"> • Malfunction in wiring harness between auto levering control unit and headlight levering actuator. • Headlight actuator (left or right) malfunction ▪ Auto leveling control module malfunction ▪ Auto leveling control module power supply voltage is excessive high ▪ Vehicle speed signal malfunction. <ul style="list-style-type: none"> • ABS HU/CM malfunction (with ABS) • Open circuit between ABS HU/CM terminal V and auto leveling control module terminal R (with ABS) • DSC HU/CM malfunction (with DSC)

	<ul style="list-style-type: none"> • Open circuit between DSC HU/CM terminal T and auto leveling control module terminal R (with DSC) • Auto leveling warning light control circuit malfunction <ul style="list-style-type: none"> ▪ Instrument cluster malfunction ▪ Short to GND between instrument cluster terminal 2J and auto leveling control module terminal V
--	--

Diagnostic procedure

STEP	INSPECTION		ACTION
1	VERIFY THAT THE FRONT AND REAR AUTO LEVELING SENSOR INSTALLATION <ul style="list-style-type: none"> • Verify that the front and rear auto leveling sensor installation. • Is there any bend, damage or dislocated link at the bracket? 	Yes	Repair or replace malfunctioning part.
		No	Go to the next step.
2	INSPECT AUTO LEVELING CONTROL MODULE POWER SUPPLY VOLTAGE <ul style="list-style-type: none"> • Turn the ignition switch to ON position. • Measure the voltage between auto leveling control module terminals H and GND. • Is the voltage B+? 	Yes	Go to the next step.
		No	Repair or replace for open circuit between the auto leveling control module terminal H and the ignition switch.
3	INSPECT AUTO LEVELING CONTROL MODULE GND CIRCUIT FOR OPEN <ul style="list-style-type: none"> • Turn the ignition switch to OFF. • Disconnect the auto leveling control module connector. • Verify that continuity between auto leveling control module terminal F and GND. • Is there continuity? 	Yes	Connect the auto leveling control module connector, then go to Step 5.
		No	Go to the next step.
4	INSPECT GND POINT <ul style="list-style-type: none"> • Verify that the GND point for auto leveling 	Yes	Retighten the GND point.

	<p>control module.</p> <ul style="list-style-type: none"> Is there loose or poor connection at GND point? 	No	Repair or replace for open circuit between auto leveling control module terminal F and GND.
5	<p>INSPECT IF MALFUNCTION IS IN FRONT AUTO LEVELING SENSOR OR ELSEWHERE</p> <ul style="list-style-type: none"> Turn the ignition switch to ON position. Turn the headlight to ON. Measure voltage between front auto leveling control module terminal G and GND. Is the voltage 0.25—4.75 V? 	Yes	Go to the next step.
		No	Go to Step 9.
6	<p>INSPECT IF MALFUNCTION IS IN REAR AUTO LEVELING SENSOR OR ELSEWHERE</p> <ul style="list-style-type: none"> Turn the ignition switch to ON position. Turn the headlight to ON. Measure voltage between rear auto leveling control module terminal E and GND. Is the voltage 0.25—4.75 V? 	Yes	Go to Step 11.
		No	Go to the next step.
7	<p>INSPECT REAR AUTO LEVELING SENSOR SIGNAL CIRCUIT</p> <ul style="list-style-type: none"> Inspect the wiring harness between auto leveling control module terminal I and rear auto leveling sensor terminal C. Is there open or short circuit detected? 	Yes	Repair or replace for open or short circuit.
		No	Go to the next step.
8	<p>INSPECT REAR AUTO LEVELING SENSOR</p> <ul style="list-style-type: none"> Inspect the rear auto leveling sensor. (See REAR AUTO LEVELING SENSOR INSPECTION.) Is the rear auto leveling sensor normal? 	Yes	<p>Repair or replace for open circuit at following.</p> <ul style="list-style-type: none"> Between auto leveling control module terminal M and rear auto leveling sensor terminal A Between auto leveling control module terminal D and rear auto leveling sensor terminal D

		No	Replace the rear auto leveling sensor. (See REAR AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
9	INSPECT IF MALFUNCTION IS IN REAR AUTO LEVELING SENSOR POWER OR GND CIRCUIT OR ELSEWHERE <ul style="list-style-type: none"> • Turn the ignition switch to ON position. • Turn the headlight to ON. • Measure voltage between auto leveling control module terminal E and GND. • Is the voltage 0.25—4.75 V? 	Yes	Go to the next step.
		No	Repair or replace for open circuit at following. <ul style="list-style-type: none"> • Between auto leveling control module terminal M and front auto leveling sensor terminal A • Between auto leveling control module terminal M and rear auto leveling sensor terminal A • Between auto leveling control module terminal D and front auto leveling sensor terminal C • Between auto leveling control module terminal D and rear auto leveling sensor terminal D
10	INSPECT FRONT AUTO LEVELING SENSOR SIGNAL CIRCUIT <ul style="list-style-type: none"> • Inspect the wiring harness between auto leveling control module terminal G and front auto leveling sensor terminal B. • Is there open or short circuit detected? 	Yes	Repair or replace for open or short circuit.
		No	Inspect the front auto leveling sensor. (See FRONT AUTO LEVELING SENSOR INSPECTION.) If not normal, replace the front auto leveling sensor. (See FRONT AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
11	INSPECT IF MALFUNCTION IS IN AUTO LEVELING WARNING LIGHT CONTROL CIRCUIT OR ELSEWHERE	Yes	Repair or replace for short to GND.

	<ul style="list-style-type: none">• Turn the ignition switch to OFF.• Disconnect the auto leveling control module and instrument cluster connectors.• Verify continuity between auto leveling control module terminal V and GND.• Is there continuity?	No	Go to the next step.
12	INSPECT IF THE MALFUNCTION IS IN INSTRUMENT CLUSTER <ul style="list-style-type: none">• Turn the ignition switch to OFF.• Connect the instrument cluster connector (with auto leveling control module connector disconnected).• Short to GND at auto leveling control module terminal V using the jumper wire.• Turn the ignition switch to ON position.• Does the auto leveling warning light illuminate?	Yes	Go to the next step.
		No	Replace the instrument cluster. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
13	INSPECT WIRING HARNESS BETWEEN AUTO LEVELING CONTROL MODULE AND HEADLIGHT LEVELING ACTUATOR Verify if there is an open or short circuit in the following wiring harnesses and connectors. Right side <ul style="list-style-type: none">• auto leveling control module terminal J and headlight leveling actuator (right) terminal F• auto leveling control module terminal L and headlight leveling actuator (right) terminal H• auto leveling control module terminal I and headlight leveling actuator (right) terminal G Left side <ul style="list-style-type: none">• auto leveling control module terminal J and headlight leveling actuator (left) terminal F• auto leveling control module terminal L	Yes	Repair the open or short circuit or replace the wiring harness.
		No	Go to the next step.

	<p>and headlight leveling actuator (left) terminal H</p> <ul style="list-style-type: none"> • auto leveling control module terminal K and headlight leveling actuator (left) terminal G • Is there any open or short circuit in the wiring harness? 		
14	<p>DETERMINE IF MALFUNCTION CAUSE IS HEADLIGHT LEVELING ACTUATOR</p> <ul style="list-style-type: none"> • Prepare and install a front combination light (left or right) which has a headlight leveling actuator that operates normally. • After installing the left or right front combination light, does the auto leveling warning light turn off? 	<p>Yes</p> <p>Replace the front combination light on the side which the auto leveling warning light turned off.</p>	
		<p>No</p> <p>Go to the next step.</p>	
15	<p>VERIFY THE WIRING HARNESS FOR CONTINUITY BETWEEN THE ABS HU/CM OR DSC HU/CM AND THE AUTO LEVELING CONTROL MODULE</p> <ul style="list-style-type: none"> • Verify that continuity between ABS HU/CM terminal V and auto leveling control module terminal R. (with ABS) • Verify that continuity between DSC HU/CM terminal T and auto leveling control module terminal R. (with DSC) • Is there continuity? 	<p>Yes</p> <p>Replace the auto leveling control module.</p> <p>(See AUTO LEVELING CONTROL MODULE REMOVAL/INSTALLATION.)</p>	
		<p>No</p> <p>Repair or replace for short to power supply.</p>	

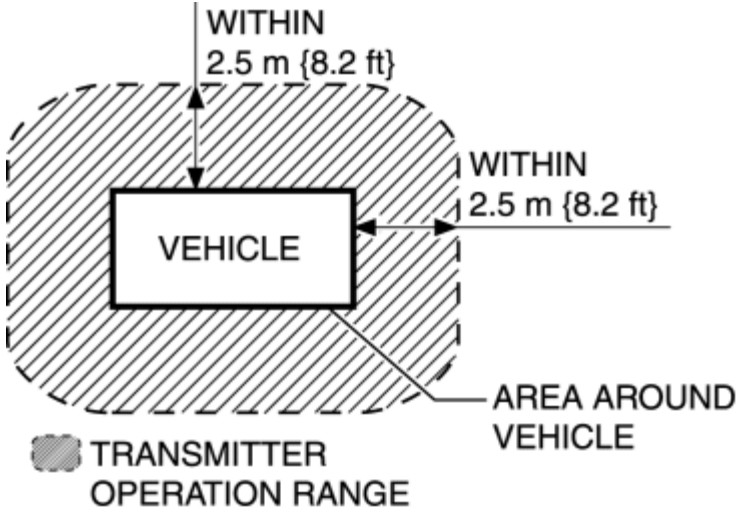
2011 - RX-8 - Body and Accessories

KEYLESS ENTRY SYSTEM PRELIMINARY INSPECTION [KEYLESS ENTRY SYSTEM]

- Perform the following preliminary inspection before troubleshooting.

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Is an after-market system installed? 	Yes	Perform troubleshooting according to after-market keyless entry system manual.
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Did the customer activate the keyless entry system with the key inserted into the steering lock? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Explain to the customer that the system does not work with the key inserted into the steering lock. • Go to the next step.
3	<ul style="list-style-type: none"> • The transmitter operation indicator light (LED) illuminates when any operation using the transmitter is performed. 	Yes	Go to Step 8.
		No	Go to the next step.
4	<ul style="list-style-type: none"> • Visually inspect the transmitter battery for the following: (See TRANSMITTER BATTERY REPLACEMENT [WITH KEYLESS ENTRY SYSTEM].) ▪ Battery direction (polarity) 	Yes	<p>Battery insertion direction, battery type problem:</p> <ul style="list-style-type: none"> • Properly install the battery or replace the battery with a specified one (CR1620), then go to the next step.

	<p>Battery type (CR1620)</p> <ul style="list-style-type: none"> ▪ Corrosion, soiling, deformation of battery terminals (plus/minus terminals) ▪ Contact malfunction between the battery terminal and battery when battery is inserted <p>• Is there any malfunction?</p>		<p>Battery terminal malfunction:</p> <ul style="list-style-type: none"> • Clean corrosion and soiling or repair the terminal, then go to the next step.
		No	Go to Step 8.
5	<ul style="list-style-type: none"> • Does the keyless entry system operate properly? 	Yes	Go to Step 9.
		No	Go to the next step.
6	<p>NOTE:</p> <ul style="list-style-type: none"> • Use a new monitor battery (normal battery) or one from another vehicle which operates normally. • Replace the battery in all the transmitters with a monitor-use battery (normal battery). <p>(See TRANSMITTER BATTERY REPLACEMENT [WITH KEYLESS ENTRY SYSTEM].)</p> <ul style="list-style-type: none"> • For each transmitter, verify that the transmitter operation indicator light (LED) illuminates when a button is operated. • Does operation indicator light (LED) for each transmitter operate? 	Yes	Go to the next step.
		No	If the operation indicator light (LED) does not illuminate, replace the transmitter, then go to Step 11.
7	<p>NOTE:</p> <ul style="list-style-type: none"> • Inspect for all transmitters. • Inspect while the batteries for all of the transmitters are replaced with monitor-use batteries (normal battery). • Verify the operation of keyless entry system using all of the transmitters. • Does the keyless entry system operate normally? 	Yes	Replace the battery, then go to Step 11.
			(See TRANSMITTER BATTERY REPLACEMENT [WITH KEYLESS ENTRY SYSTEM] .)
		No	Go to the next step.

8	<ul style="list-style-type: none">Did the customer activate the transmitter within operative area (Within 2.5 m {8.2 ft} from area around vehicle)?	Yes	Go to the next step.
		No	<p>The system is normal.</p> <p>Explain to the customer that the system does not work without the system operative area.</p>
9	<ul style="list-style-type: none">Did the customer use the keyless entry system in particular area, such as being near TV towers, power plants, power lines, or factories?	Yes	<p>Attempt to lock/unlock the doors with the transmitter in a non-interference area.</p> <p>If system operates:</p> <ul style="list-style-type: none">Area of operation is suspect. Explain effect of outside interference on the transmitter to the customer. <p>If system does not operate:</p> <ul style="list-style-type: none">Go to the next step.
10	<ul style="list-style-type: none">Are any of the following after-market electrical parts on the vehicle?<ul style="list-style-type: none">Cellular phoneRadio-wave equipmentRemote engine starterTV, etc.	Yes	<p>Disconnect the after-market electrical part connectors and attempt to lock/unlock the doors with the transmitter.</p> <p>If system operates:</p> <ul style="list-style-type: none">The after-market electrical parts are interfering with the keyless entry system. <p>If system does not operate:</p>

			<ul style="list-style-type: none"> Go to the next step.
		No	Go to the next step.
11	<ul style="list-style-type: none"> Perform the on-board diagnostic function. <p>(See KEYLESS ENTRY SYSTEM ON-BOARD DIAGNOSIS [KEYLESS ENTRY SYSTEM].)</p> <ul style="list-style-type: none"> Does the on-board diagnostic function work? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> Go to Step 1 of NO. 1 ONE OR MORE ON-BOARD DIAGNOSTIC FUNCTIONS INOPERATIVE. Go to Step 1 of NO. 2 ALL ON-BOARD DIAGNOSTIC FUNCTIONS INOPERATIVE.
12	<ul style="list-style-type: none"> Attempt to reprogram the transmitter ID code. Can the transmitter ID code be reprogrammed? 	Yes	The system is normal.
		No	Go to Step 1 of troubleshooting NO. 3 TRANSMITTER ID CODE CANNOT BE REPROGRAMMED.

[< Previous](#) [Next >](#)

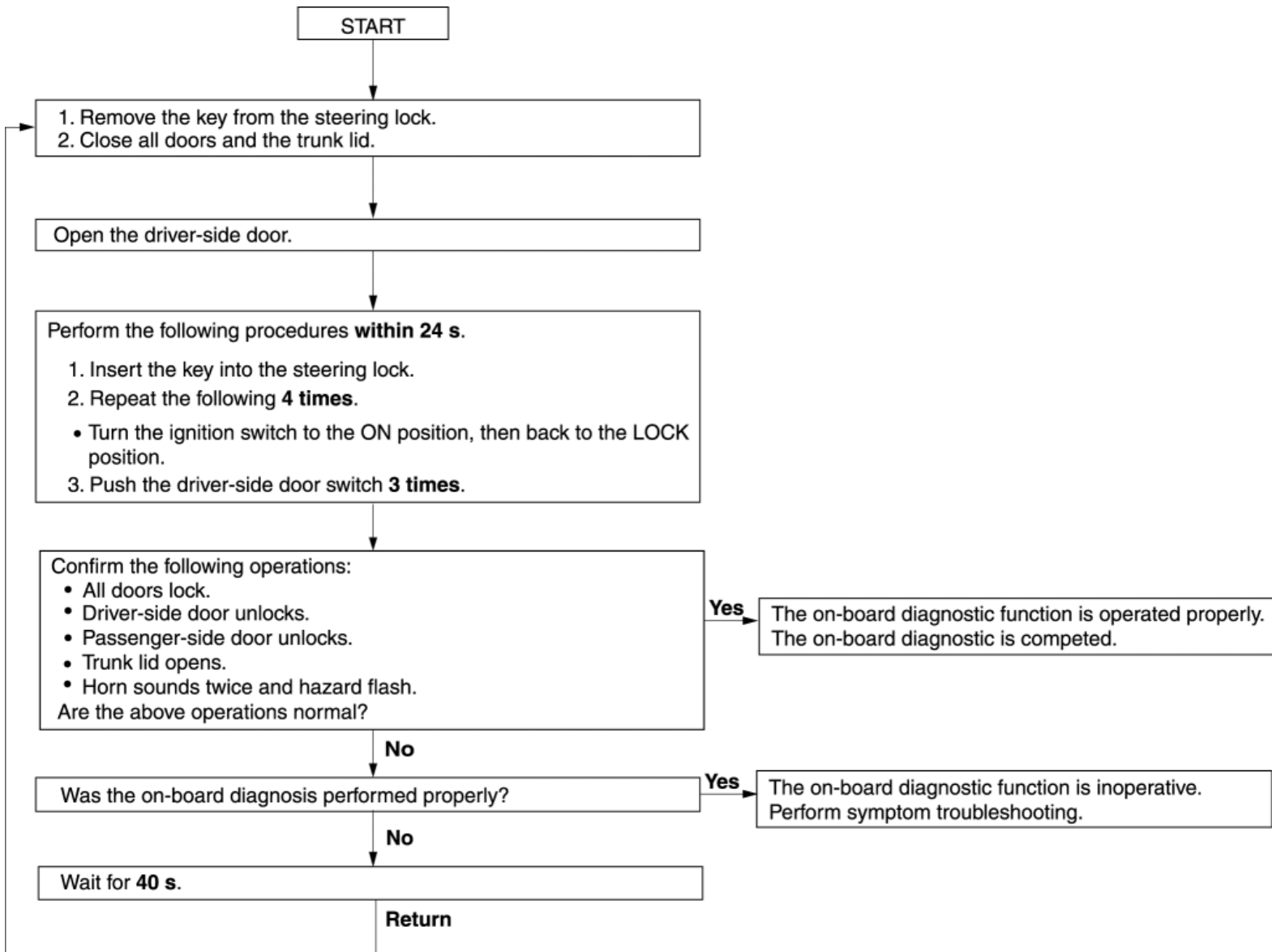
[Back to Top](#)

2011 - RX-8 - Body and Accessories

KEYLESS ENTRY SYSTEM ON-BOARD DIAGNOSIS [KEYLESS ENTRY SYSTEM]

NOTE:

- When the trunk lid opener cancel switch is at the ON position, the trunk lid does not unlock even when the trunk lid button is pressed. Verify that the trunk lid opener cancel switch is at the OFF position when performing the on-board diagnostic test.
- The trunk lid opener cancel switch is located in the glove compartment.



2011 - RX-8 - Body and Accessories

SYMPTOM TROUBLESHOOTING INDEX [KEYLESS ENTRY SYSTEM]

No.	Troubleshooting item	Description
1	One or more on-board diagnostic functions inoperative	<ul style="list-style-type: none">• Malfunction in trunk lid opener system, hazard warning light system, or door lock linkage system
2	All on-board diagnostic functions inoperative	<ul style="list-style-type: none">• Malfunction in keyless control module power supply circuit, door switch circuit, trunk lid compartment light circuit, or keyless control module ground circuit
3	Transmitter ID code cannot be reprogrammed	<ul style="list-style-type: none">• Malfunction in keyless control module circuit

2011 - RX-8 - Body and Accessories

NO.1 ONE OR MORE ON-BOARD DIAGNOSTIC FUNCTIONS INOPERATIVE [KEYLESS ENTRY SYSTEM]

- When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, verify that the connectors, terminals and wiring harnesses are connected correctly and undamaged.

1	One or more on-board diagnostic functions inoperative
DESCRIPTION	<ul style="list-style-type: none">• Malfunction in trunk lid opener system, hazard warning light system, or door lock linkage system
POSSIBLE CAUSE	<ul style="list-style-type: none">• Malfunction in trunk lid opener system<ul style="list-style-type: none">▪ Trunk lid opener relay circuit malfunction▪ Keyless control module malfunction• Malfunction in hazard warning light system<ul style="list-style-type: none">▪ Hazard warning light circuit▪ Keyless control module malfunction▪ Malfunction in wiring harness between keyless control module and hazard warning lights▪ Malfunction in wiring harness between keyless control module and flasher control module• Malfunction in door lock linkage• Malfunction in keyless control module door lock/unlock signal circuit<ul style="list-style-type: none">▪ Keyless control module malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	INSPECT HAZARD WARNING LIGHT AND TRUNK LID OPENER OPERATION DURING ON-BOARD DIAGNOSIS <ul style="list-style-type: none"> Do all of the following items work during on-board diagnostic function operation? <ul style="list-style-type: none"> Hazard warning lights flash. Trunk lid opens. 	Yes	Go to Step 8.
		No	Go to the next step.
2	INSPECT HAZARD WARNING LIGHT OPERATION DURING ON-BOARD DIAGNOSIS <ul style="list-style-type: none"> Do the hazard warning lights flash during on-board diagnostic function operation? 	Yes	Go to Step 5.
		No	Go to the next step.
3	INSPECT HAZARD WARNING LIGHT CIRCUIT <ul style="list-style-type: none"> Do the hazard warning lights flash when hazard warning switch is on? 	Yes	Go to the next step.
		No	Inspect the hazard warning light circuit.
*4	INSPECT IF MALFUNCTION IS IN WIRING HARNESS (BETWEEN KEYLESS CONTROL MODULE AND FLASHER CONTROL MODULE) OR KEYLESS CONTROL MODULE <ul style="list-style-type: none"> Measure the voltage at keyless control module connector terminal 21 during on-board diagnostic function operation. <ul style="list-style-type: none"> When hazard warning lights flashed: Alternates between B+ and below 1.0 V Is the voltage as above? 	Yes	Reinspect the malfunction symptoms, then repeat from Step 1 if malfunction recurs.
		No	<ul style="list-style-type: none"> Inspect the wiring harness between the keyless control module and flasher control module. <ul style="list-style-type: none"> If the wiring harness is normal, replace the keyless control module and reprogram the transmitter ID code, then go to Step 11.

			If the wiring harness is malfunctioning, repair the wiring harness, then go to Step 11.
5	CHECK TRUNK LID OPERATION DURING ON-BOARD DIAGNOSIS <ul style="list-style-type: none"> Does the trunk lid open during on-board diagnostic function operation? 	Yes	Go to Step 8.
		No	Go to the next step.
6	INSPECT TRUNK LID OPENER SYSTEM <ul style="list-style-type: none"> Does the trunk lid open by the trunk lid opener switch? 	Yes	Go to the next step.
		No	Inspect the trunk lid opener system.
*7	INSPECT IF MALFUNCTION IS IN TRUNK LID OPENER RELAY CIRCUIT OR KEYLESS CONTROL MODULE <ul style="list-style-type: none"> Disconnect the keyless control module connector. Measure the voltage at keyless control module connector terminal 2E. Is the voltage approx. 12 V? 	Yes	Replace the keyless control module and the reprogram transmitter ID code, then go to Step 11.
		No	Inspect the trunk lid opener relay circuit.
8	VERIFY THAT ALL DOORS LOCK AND UNLOCK DURING ON-BOARD DIAGNOSIS <ul style="list-style-type: none"> Do all doors unlock and lock during on-board diagnostic function operation? 	Yes	Reinspect the malfunction symptoms, then repeat from Step 1 if the malfunction recurs.
		No	Go to the next step.
9	INSPECT DOOR LOCK LINKAGE <ul style="list-style-type: none"> Operate the door lock knob and verify the door locks and unlocks manually. Does every door lock system work? 	Yes	Go to the next step.
		No	Inspect the door lock linkage.
*10	INSPECT IF MALFUNCTION IS IN DOOR LOCK ACTUATOR, KEYLESS CONTROL MODULE GROUND CIRCUIT OR ELSEWHERE	Yes	Reinspect the malfunction symptoms, then repeat from Step 1 if the malfunction recurs.

	<ul style="list-style-type: none"> Measure the voltage at keyless control module connector terminals 1C, 1D and 1F. <ul style="list-style-type: none"> All doors locked: Cycles 1.0 V or less →B+→1.0 V or less (terminal 1D) All doors unlocked: Cycles B+→1.0 V or less→B+ (terminal 1C) All doors super locked: 1.0 V or less→B+→1.0 V or less (terminal 1F) Is the voltage as above? 	No	<ul style="list-style-type: none"> Inspect the keyless control module the connector. Inspect the wiring harness between the keyless control module and door lock actuator. <ul style="list-style-type: none"> If the above parts are normal, go to the next step. If any of above parts are malfunctioning, repair the malfunctioning part.
11	REINSPECT MALFUNCTION SYMPTOM AFTER REPAIR <ul style="list-style-type: none"> Does the keyless entry system operate properly? 	Yes	Troubleshooting completed. Explain repairs to customer.
		No	Reinspect the malfunction symptoms, then repeat from Step 1 if malfunction recurs.

2011 - RX-8 - Body and Accessories

NO.2 ALL ON-BOARD DIAGNOSTIC FUNCTIONS INOPERATIVE [KEYLESS ENTRY SYSTEM]

- When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, verify that the connectors, terminals and wiring harnesses are connected correctly and undamaged.
- The door switches include the rear door upper latch switches and rear door lower latch switches.

2	All on-board diagnostic functions inoperative
DESCRIPTION	<ul style="list-style-type: none"> • Malfunction in keyless control module power supply circuit, door switch circuit, trunk lid compartment light circuit, keyless control module ground circuit.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Malfunction in IG1 or B+ signal circuit of keyless control module <ul style="list-style-type: none"> ▪ Keyless control module power supply fuse malfunction ▪ Malfunction in wiring harness between keyless control module power supply fuses and keyless control module • Malfunction in door open/closed signal circuit of keyless control module <ul style="list-style-type: none"> ▪ Door switch system malfunction ▪ Keyless control module malfunction ▪ Malfunction in wiring harness between keyless control module and door switch • Malfunction in trunk lid open signal circuit of keyless control module <ul style="list-style-type: none"> ▪ Trunk lid compartment light switch system malfunction ▪ Keyless control module malfunction ▪ Malfunction in wiring harness between keyless control module and trunk lid compartment light switch • Malfunction in keyless control module GND signal circuit

- Malfunction in wiring harness between keyless control module and ground

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT KEYLESS CONTROL MODULE POWER SUPPLY FUSES <ul style="list-style-type: none"> • Are the keyless control module power supply fuses normal? 	Yes Go to the next step.
		No Inspect for a short to ground in circuit of blown fuse. Repair or replace if necessary. Install an appropriate amperage fuse.
2	INSPECT DOOR SWITCH INSTALLATION <ul style="list-style-type: none"> • Are the door switches installed securely? 	Yes Go to the next step.
		No Install the door switches securely, then go back to Step 5 of KEYLESS ENTRY SYSTEM PRELIMINARY INSPECTION.
*3	INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN FUSE BLOCK AND KEYLESS CONTROL MODULE) OR ELSEWHERE <ul style="list-style-type: none"> • Turn the ignition switch to the ON position. • Measure the voltage at the following keyless control module terminals: <ul style="list-style-type: none"> ▪ IG1 signal (terminal 2B) ▪ B+ signal (terminal 2A) • Is the voltage B+? 	Yes Go to the next step.
		No Repair the wiring harness between the fuse block and keyless control module, then go to Step 8.
*4	INSPECT IF MALFUNCTION IS IN WIRING HARNESS (SHORT TO B+ BETWEEN FUSE BLOCK AND KEYLESS CONTROL MODULE, OR BETWEEN KEYLESS CONTROL MODULE AND GROUND) OR ELSEWHERE <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the keyless control module connector. • Measure the voltage at the following keyless 	Yes Repair the malfunctioning wiring harness, then go to Step 8.
		No Go to the next step.

	<p>control module connector terminal:</p> <ul style="list-style-type: none"> ▪ IG1 signal (terminal 2B) <ul style="list-style-type: none"> • Is the voltage B+? 		
*5	<p>INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN KEYLESS CONTROL MODULE AND GROUND) OR ELSEWHERE</p> <ul style="list-style-type: none"> • Is there continuity between keyless control module connector terminal 2W and ground? 	Yes	Go to the next step.
		No	Repair the wiring harness between the keyless control module and ground, then go to Step 8.
6	<p>INSPECT FOR CHECK CODE 04 IN INSTRUMENT CLUSTER</p> <ul style="list-style-type: none"> • Inspect the door switch using the instrument cluster input/output check mode. (See INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE.) • Is DTC 04 displayed? 	Yes	Go to the next step.
		No	Repair the door switch system using the DTC 04 inspection procedure, then go to Step 8.
7	<p>INSPECT KEYLESS CONTROL MODULE OR WIRING HARNESS (BETWEEN KEYLESS CONTROL MODULE AND DOOR SWITCHES, TRUNK LID COMPARTMENT LIGHT SWITCH FOR CONTINUITY)</p> <ul style="list-style-type: none"> • Open the driver-side door. • Is there continuity between keyless control module connector terminal 2K, 2G and ground? 	Yes	Replace the keyless control module and reprogram the keyless control module ID code, then go to the next step.
		No	Repair the wiring harness between the keyless control module, door switches, and trunk lid compartment light switch, then go to the next step.
8	<p>REINSPECT MALFUNCTION SYMPTOM AFTER REPAIR</p> <ul style="list-style-type: none"> • Does the keyless entry system operate properly? 	Yes	Troubleshooting completed. Explain repairs to the customer.
		No	Reinspect the malfunction symptoms, then repeat from Step 1 if the malfunction recurs.

2011 - RX-8 - Body and Accessories

NO.3 TRANSMITTER ID CODE CANNOT BE REPROGRAMMED [KEYLESS ENTRY SYSTEM]

3	Transmitter ID code cannot be reprogrammed
DESCRIPTION	<ul style="list-style-type: none"> • Malfunction in keyless control module circuit
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Malfunction in keyless control module related part <ul style="list-style-type: none"> ▪ Keyless control module malfunction ▪ Keyless control module power supply fuse malfunction ▪ Malfunction in wiring harness between keyless control module and ground ▪ Malfunction in wiring harness between keyless control module power supply fuses and keyless control module

Diagnostic procedure

STEP	INSPECTION	ACTION
1	INSPECT KEYLESS CONTROL MODULE POWER SUPPLY FUSES <ul style="list-style-type: none"> • Are the keyless control module power supply fuses normal? 	Yes Go to the next step.
		No Inspect for a short to ground in circuit of blown fuse. Repair or replace if necessary. Install an appropriate amperage fuse.
2	INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN FUSE BLOCK AND KEYLESS CONTROL MODULE) OR ELSEWHERE <ul style="list-style-type: none"> • Turn the ignition switch to the ON position. • Measure the voltage at the following keyless 	Yes Go to the next step.
		No Repair the wiring harness between the fuse block and keyless control module, then go to Step 5.

	<p>control module terminals:</p> <ul style="list-style-type: none"> ▪ IG1 signal (terminal 2B) ▪ B+ signal (terminal 2A) <ul style="list-style-type: none"> • Is the voltage B+? 		
3	<p>INSPECT IF MALFUNCTION IS IN WIRING HARNESS (SHORT TO B+ BETWEEN FUSE BLOCK AND KEYLESS CONTROL MODULE, OR BETWEEN KEYLESS CONTROL MODULE AND GROUND) OR ELSEWHERE</p> <ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the keyless control module connector. • Measure the voltage at the following keyless control module connector terminal: <ul style="list-style-type: none"> ▪ IG1 signal (terminal 2B) • Is the voltage B+? 	Yes	Repair the malfunctioning wiring harness, then go to Step 5.
		No	Go to the next step.
4	<p>INSPECT IF MALFUNCTION IS IN WIRING HARNESS (NO CONTINUITY BETWEEN KEYLESS CONTROL MODULE AND GROUND) OR ELSEWHERE</p> <ul style="list-style-type: none"> • Is there continuity between keyless control module connector terminal 2W and ground? 	Yes	Replace the keyless control module, then go to the next step.
		No	Repair the wiring harness between the keyless control module and ground, then go to the next step.
5	<p>REINSPECT MALFUNCTION SYMPTOM AFTER REPAIR</p> <ul style="list-style-type: none"> • Does the keyless entry system operate properly? 	Yes	Troubleshooting completed. Explain repairs to the customer.
		No	Reinspect the malfunction symptoms, then repeat from Step 1 if the malfunction recurs.

The diagram illustrates the electrical architecture of a keyless entry system. It features a central **KEYLESS CONTROL MODULE** and a **KEYLESS RECEIVER**. Power is supplied from the battery (**B+**) to the control module, which also receives input from the **IG1** (ignition) line. The system includes various input switches such as the **INSTRUMENT CLUSTER**, **DOOR SWITCH (LH)**, **DOOR SWITCH (RH)**, **REAR DOOR UPPER LATCH SWITCH**, **REAR DOOR LOWER LATCH SWITCH**, **KEY REMINDER SWITCH**, **DOOR LOCK SWITCH (DRIVER'S SIDE)**, **DOOR LOCK SWITCH (PASSENGER'S SIDE)**, **DOOR KEY CYLINDER SWITCH**, and **DOOR LOCK-LINK SWITCH (DRIVER'S SIDE)**. The control module manages the **HORN RELAY** and **HORN**, and is connected to the **FLASHER CONTROL MODULE** and **HAZARD WARNING SWITCH**. It also controls the **FRONT DOOR LOCK ACTUATOR DRIVER'S SIDE** and **PASSENGER'S SIDE** through **UNLOCK** and **LOCK** signals. The **KEYLESS RECEIVER** is connected to the control module and manages the **TRUNK LID OPENER RELAY**, **TRUNK LID OPENER CANCEL SWITCH**, **TRUNK LID OPENER SWITCH**, and the **TRUNK LID OPENER** motor. The diagram uses standard electrical symbols for switches, relays, actuators, and motors, and shows the flow of power from the battery (**B+**) through the control module and receiver to the various actuators.

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

FOREWORD [KEYLESS ENTRY SYSTEM]

- The keyless entry system is controlled by the keyless control module.
- "All locks" includes the trunk lid.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

SYMPTOM TROUBLESHOOTING INDEX [INSTRUMENT CLUSTER]

No.	Troubleshooting item	Page
1	Fuel gauge needle position incorrect	NO. 1 FUEL GAUGE NEEDLE POSITION INCORRECT [INSTRUMENT CLUSTER]
2	All meters and gauges do not operate	NO. 2 ALL METERS AND GAUGES DO NOT OPERATE [INSTRUMENT CLUSTER]
3	ABS warning light illuminates	NO. 3 ABS WARNING LIGHT ILLUMINATES [INSTRUMENT CLUSTER]
4	MIL illuminates	NO. 4 MIL ILLUMINATES [INSTRUMENT CLUSTER]
5	Brake system warning light illuminates	NO. 5 BRAKE SYSTEM WARNING LIGHT ILLUMINATES [INSTRUMENT CLUSTER]
6	Instrument cluster illumination does not illuminate	NO. 6 INSTRUMENT CLUSTER ILLUMINATION DOES NOT ILLUMINATE [INSTRUMENT CLUSTER]
7	Speedometer indication is defective	NO. 7 SPEEDOMETER INDICATION IS DEFECTIVE [INSTRUMENT CLUSTER]
8	Tachometer indication is defective	NO. 8 TACHOMETER INDICATION IS DEFECTIVE [INSTRUMENT CLUSTER]
9	Water temperature gauge indication is defective	NO. 9 WATER TEMPERATURE GAUGE INDICATION IS DEFECTIVE [INSTRUMENT CLUSTER]

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

QUICK DIAGNOSTIC CHART [INSTRUMENT CLUSTER]

No.	Troubleshooting Item	Possible factor																							
		Poor connection of fuel gauge sender unit connector, terminal damage	Poor connection of instrument cluster connector, terminal damage	Fuel gauge sender unit	Instrument cluster	Fuel gauge sender unit is improperly installed	Open or short circuit in wiring harness between instrument cluster and GND	Open or short circuit in wiring harness between instrument cluster and fuel gauge sender unit	Open or short circuit in power supply (IG1) wiring harness	Open or short circuit in GND wiring harness	Poor connection of ABS HU/CM or DSC HU/CM connector, terminal damage	ABS HU/CM or DSC HU/CM	Short circuit in wiring harness between CAN-L, CAN-H and GND	Open circuit in CAN wiring harness (CAN-L, CAN-H)	CAN wiring harness (CAN-L, CAN-H) short each other	Poor connection of PCM connector, terminal damage	PCM	Short to GND in brake fluid level sensor circuit	Brake fluid level sensor	Short to GND in parking brake switch circuit	Parking brake switch	Fuse malfunction (METER, ILLUMI)	Improper brake switch signal input to PCM		
1	Fuel gauge needle position incorrect	X	X	X	X	X	X	X																	
2	All meters and gauges do not operate		X		X				X	X													X		
3	ABS warning light illuminates		X		X						X	X	X	X	X										
4	MIL illuminates		X		X								X	X	X	X	X								
5	Brake system warning light illuminates		X		X						X	X	X	X	X			X	X	X	X		X		
6	Instrument cluster illumination does not illuminate		X		X																	X			
7	Speedometer indication is defective		X		X						X	X	X	X	X	X	X								
8	Tachometer indication is defective		X		X								X	X	X	X	X								
9	Water temperature gauge indication is defective		X		X								X	X	X	X	X								

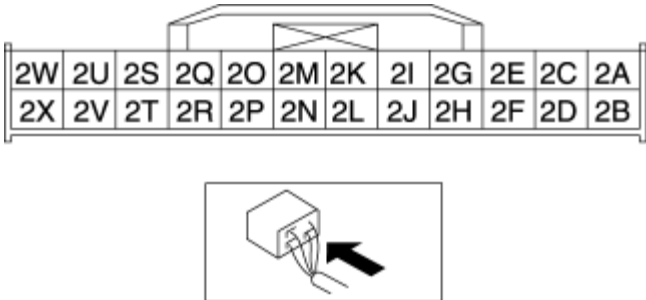
2011 - RX-8 - Body and Accessories

NO. 1 FUEL GAUGE NEEDLE POSITION INCORRECT [INSTRUMENT CLUSTER]

1	Fuel gauge needle position incorrect
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Instrument cluster malfunction • Connector or pin malfunction • Fuel gauge sender unit malfunction • Fuel gauge sender unit is improperly installed • Open or short circuit in wiring harness between instrument cluster and GND • Open or short circuit in wiring harness between instrument cluster and fuel gauge sender unit

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Turn the ignition switch to the ON position. • Verify that the fuel gauge needle does not move after ignition switch is turned off, or the display does not indicate F even though fuel tank is full. • Is the fuel gauge normal? 	Yes Troubleshooting completed.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Start the instrument cluster input/output check mode. • Select the check code 22. • Display value is 7—370? 	Yes Go to the next step.
		No Go to Step 4.
3	<ul style="list-style-type: none"> • Perform the check code 23 inspection. 	Yes Replace the instrument cluster.

	<ul style="list-style-type: none">Is there any malfunction?	No	Go to the next step.
4	<ul style="list-style-type: none">Perform the check code 22 inspection.Is there any malfunction?	Yes	Go to the next step.
		No	Go to Step 6.
5	<ul style="list-style-type: none">Turn the ignition switch off.Inspect the instrument cluster connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion).Are the terminals normal?	Yes	Replace the instrument cluster.
		No	Repair or replace the terminal.
6	<ul style="list-style-type: none">Turn the ignition switch to LOCK position.Remove the instrument cluster.Disconnect the instrument cluster connector.Inspect for continuity between the following wiring harnesses.<ul style="list-style-type: none">2R terminal—GND2P terminal—GNDIs there continuity? <div></div>	Yes	Repair or replace the wiring harness between the instrument cluster and GND.
		No	Go to the next step.
7	<ul style="list-style-type: none">Turn the ignition switch off.Inspect the fuel gauge sender unit connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion).Are the terminals normal?	Yes	Go to the next step.
		No	Repair or replace the terminal.
8	<ul style="list-style-type: none">Turn the ignition switch to LOCK position.	Yes	Go to the next step.

	<p>Inspect for continuity following the wiring harness between instrument cluster and fuel gauge sender unit.</p> <ul style="list-style-type: none"> ▪ 2R terminal—fuel gauge sender unit (main) B terminal ▪ 2T terminal—fuel gauge sender unit (main) A terminal/(sub) B terminal ▪ 2P terminal—fuel gauge sender unit (sub) A terminal <ul style="list-style-type: none"> • Is there continuity? 	No	Repair or replace the wiring harness between the instrument cluster and the fuel gauge sender unit.
9	<ul style="list-style-type: none"> • Turn the ignition switch off. • Is the fuel gauge sender unit installed properly? 	Yes	Inspect the fuel gauge sender unit.
		No	Reinstall the fuel gauge sender unit.

[< Previous](#) [Next >](#)

[Back to Top](#)

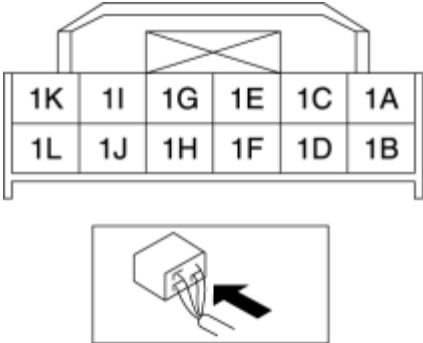
2011 - RX-8 - Body and Accessories

NO. 2 ALL METERS AND GAUGES DO NOT OPERATE [INSTRUMENT CLUSTER]

2	All meters and gauges do not operate
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Fuse malfunction • Open or short circuit in power supply (IG1) wiring harness • Open or short circuit in GND wiring harness • Instrument cluster malfunction • Connector or pin malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Turn the ignition switch to the ON position. • Inspect the following: <ul style="list-style-type: none"> ▪ Does the odometer/tripmeter illuminate? ▪ Does the fuel gauge operate? ▪ Does the MIL turn on? 	Yes Troubleshooting completed.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Inspect the METER fuse. • Is the fuse normal? 	Yes Go to the next step.
		No Replace the fuse. <ul style="list-style-type: none"> • If the fuse is melted, inspect the wiring harness for a

			short to ground. Repair or replace the wiring harness, then replace the fuse.
3	<ul style="list-style-type: none">• Turn the ignition switch to LOCK position.• Remove the instrument cluster.• Disconnect the instrument cluster connector.• Inspect the voltage between instrument cluster wiring harness-side connector terminal 1G and terminal 1E.• Turn the ignition switch to the ON position.• Is the voltage B+?	Yes	Go to the next step.
		No	Inspect the suspect wiring harness, then repair or replace.
4	<ul style="list-style-type: none">• Turn the ignition switch off.• Inspect the instrument cluster connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion).• Are the terminals normal?	Yes	Replace the instrument cluster.
		No	Repair or replace the terminal.

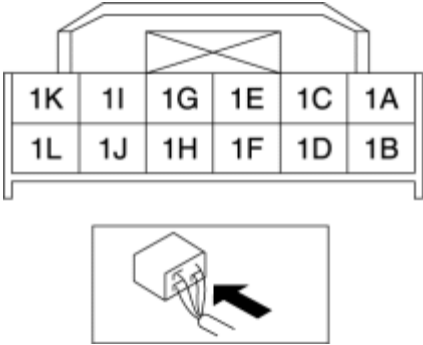
2011 - RX-8 - Body and Accessories

NO. 3 ABS WARNING LIGHT ILLUMINATES [INSTRUMENT CLUSTER]

3	ABS warning light illuminates
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Short circuit in wiring harness between CAN-L, CAN-H and GND • ABS HU/CM or DSC HU/CM malfunction • Instrument cluster malfunction • DTC is stored in ABS HU/CM or DSC HU/CM • Connector or pin malfunction • Open circuit in CAN wiring harness (CAN-L, CAN-H) • CAN wiring harness (CAN-L, CAN-H) short each other

Diagnostic procedure

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> • Start the engine. • Does the ABS warning light turn off? 	Yes	Troubleshooting completed.
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Are there a number of warning lights illuminated? 	Yes	Go to Step 5.
		No	Go to the next step.
3	<ul style="list-style-type: none"> • Disconnect the negative battery cable. • Measure the resistance between the DLC-2 terminals F and E. • Is the resistance below 60 ohms? 	Yes	Go to the next step.
		No	Go to Step 6.

4	<ul style="list-style-type: none"> Inspect DLC-2 terminals F and E for followings: <ul style="list-style-type: none"> Short circuit between terminals F and E Short to power supply Short to GND Is there any malfunction? 	Yes	Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No	Replace the instrument cluster.
5	<ul style="list-style-type: none"> Connect the M-MDS to DLC-2. Retrieve the on-demand and continuous memory DTC from ABS HU/CM or DSC HU/CM. Is there any DTC displayed? 	Yes	Perform the appropriate DTC troubleshooting procedure. (See ON-BOARD DIAGNOSIS [ABS].) (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	Go to the next step.
6	<ul style="list-style-type: none"> Turn the ignition switch off. Inspect the instrument cluster connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion). Are the terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the terminal.
7	<ul style="list-style-type: none"> Disconnect the negative battery cable. Measure the resistance between the instrument cluster connector terminals 1J and 1L. Is the resistance 114—126 ohms? 	Yes	Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No	Replace the instrument cluster.

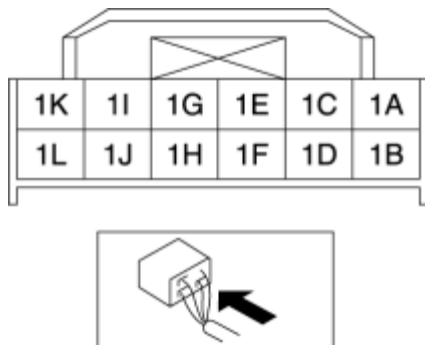
2011 - RX-8 - Body and Accessories

NO. 4 MIL ILLUMINATES [INSTRUMENT CLUSTER]

4	MIL illuminates
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM malfunction • Short circuit in wiring harness between CAN-L, CAN-H and GND • Instrument cluster malfunction • DTC is stored in PCM. • Connector or pin malfunction • Open circuit in CAN wiring harness (CAN-L, CAN-H) • CAN wiring harness (CAN-L, CAN-H) short each other

Diagnostic procedure

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> • Start the engine. • Does the MIL turn off? 	Yes	Troubleshooting completed.
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Are there a number of warning lights illuminated? 	Yes	Go to Step 6.
		No	Go to the next step.
3	<ul style="list-style-type: none"> • Start the instrument cluster input/output check mode. • Does the MIL turn off with a check code other than 26? 	Yes	Inspect the PCM.
		No	Replace the instrument cluster.

4	<ul style="list-style-type: none">• Disconnect the negative battery cable.• Measure the resistance between the DLC-2 terminals F and E.• Is the resistance below 60 ohms?	Yes	Go to the next step.
		No	Go to Step 7.
5	<ul style="list-style-type: none">• Inspect DLC-2 terminals F and E for followings:<ul style="list-style-type: none">▪ Short circuit between terminals F and E▪ Short to power supply▪ Short to GND• Is there any malfunction?	Yes	Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No	Replace the instrument cluster.
6	<ul style="list-style-type: none">• Connect the M-MDS to DLC-2.• Perform KOEO and KOER self-test and retrieve continuous memory DTC for PCM.• Is there any DTC displayed?	Yes	Perform the appropriate DTC troubleshooting procedure. (See DTC TABLE [13B-MSP] .)
		No	Go to the next step.
7	<ul style="list-style-type: none">• Turn the ignition switch off.• Inspect the instrument cluster connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion).• Are the terminals normal?	Yes	Go to the next step.
		No	Repair or replace the terminal.
8	<ul style="list-style-type: none">• Disconnect the negative battery cable.• Measure the resistance between the instrument cluster connector terminals 1J and 1L.• Is the resistance 114—126 ohms? <div></div>	Yes	Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No	Replace the instrument cluster.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

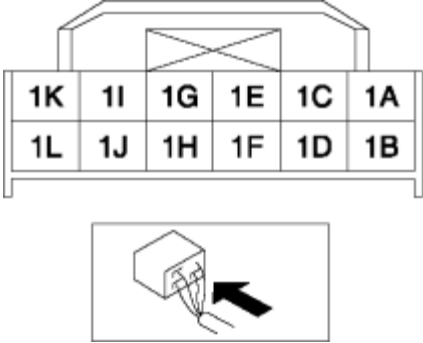
NO. 5 BRAKE SYSTEM WARNING LIGHT ILLUMINATES [INSTRUMENT CLUSTER]

5	Brake system warning light illuminates
POSSIBLE CAUSE	<ul style="list-style-type: none"> • ABS HU/CM or DSC HU/CM malfunction • Brake fluid level sensor malfunction • Parking brake switch malfunction • Instrument cluster malfunction • Short circuit in wiring harness between CAN-L, CAN-H and GND • Connector or pin malfunction • Open circuit in CAN wiring harness (CAN-L, CAN-H) • CAN wiring harness (CAN-L, CAN-H) short each other • Improper brake switch signal input to PCM (PCM stores DTC P0571 and/or P0703.)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Start the engine. • Release the parking brake. • Does the brake system warning light turn off? 	Yes Troubleshooting completed.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Retrieve the PCM DTC using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [13B-MSP].) • Is the DTC P0571 and/or P0703 present? 	Yes Go to applicable DTC inspection. (See DTC P0571 [13B-MSP].) (See DTC P0703 [13B-MSP].)

		No	Go to the next step.
3	<ul style="list-style-type: none"> Are there a number of warning lights illuminated? 	Yes	Go to Step 6.
		No	Go to the next step.
4	<ul style="list-style-type: none"> Does the brake fluid need replenishment? 	Yes	Add brake fluid.
		No	Go to the next step.
5	<ul style="list-style-type: none"> Disconnect the negative battery cable. Measure the resistance between the DLC-2 terminals F and E. Is the resistance below 60 ohms? 	Yes	Go to the next step.
		No	Go to Step 7.
6	<ul style="list-style-type: none"> Inspect DLC-2 terminals F and E for followings: <ul style="list-style-type: none"> Short circuit between terminals F and E Short to power supply Short to GND Is there any malfunction? 	Yes	Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No	Replace the instrument cluster.
7	<ul style="list-style-type: none"> Connect the M-MDS to DLC-2. Retrieve the on-demand and continuous memory DTC from ABS HU/CM or DSC HU/CM. Is there any DTC displayed? 	Yes	Perform the appropriate DTC troubleshooting procedure. (See ON-BOARD DIAGNOSIS [ABS].) (See ON-BOARD DIAGNOSIS [DYNAMIC STABILITY CONTROL (DSC)].)
		No	Go to the next step
8	<ul style="list-style-type: none"> Turn the ignition switch off. Inspect the instrument cluster connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion). Are the terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the terminal.

9	<ul style="list-style-type: none">• Disconnect the negative battery cable.• Measure the resistance between the instrument cluster connector terminals 1J and 1L.• Is the resistance 114—126 ohms?	Yes Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No Replace the instrument cluster.

2011 - RX-8 - Body and Accessories

NO. 6 INSTRUMENT CLUSTER ILLUMINATION DOES NOT ILLUMINATE [INSTRUMENT CLUSTER]

6	Instrument cluster illumination does not illuminate
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Instrument cluster malfunction • Fuse malfunction • Connector or pin malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Turn the ignition switch to the ON position. • Does the instrument cluster illumination turn on? 	Yes	Troubleshooting completed.
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Does the non-illumination include the entire instrument cluster? 	Yes	Go to the next step.
		No	Replace the instrument cluster.
3	<ul style="list-style-type: none"> • Inspect the ROOM and METER fuse. • Are the fuses normal? 	Yes	Go to the next step.
		No	Replace the fuse. <ul style="list-style-type: none"> • If the fuse is melted, inspect the wiring harness for short to ground. Repair or replace the wiring harness, then replace the fuse.

4	<ul style="list-style-type: none">• Turn the ignition switch off.• Inspect the instrument cluster connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion).• Are the terminals normal?	Yes	Replace the instrument cluster.
		No	Repair or replace the terminal.

2011 - RX-8 - Body and Accessories

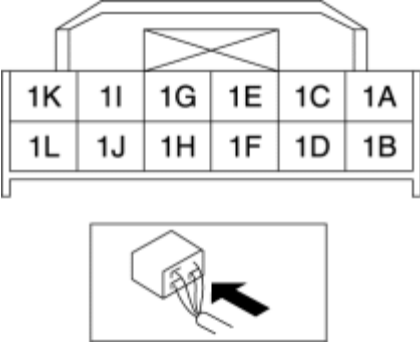
NO. 7 SPEEDOMETER INDICATION IS DEFECTIVE [INSTRUMENT CLUSTER]

7	Speedometer indication is defective
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Instrument cluster malfunction • Short circuit in wiring harness between CAN-L, CAN-H and GND • Open circuit in CAN wiring harness (CAN-L, CAN-H) • CAN wiring harness (CAN-L, CAN-H) short each other • ABS HU/CM or DSC HU/CM malfunction • PCM malfunction • Connector or pin malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Start the engine, and drive the vehicle. <ul style="list-style-type: none"> ▪ Does the speedometer move smoothly? ▪ Does the speedometer indicate correct speed? 	Yes Troubleshooting completed.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Does the tachometer, the water temperature gauge, operate normally? 	Yes Go to the next step.
		No Go to Step 5.
3	<ul style="list-style-type: none"> • Start the instrument cluster input/output check mode. • Inspect the speedometer using the check code 	Yes Go to the next step.
		No Replace the instrument cluster.

	12.		
	<ul style="list-style-type: none"> Is the speedometer normal? 		
4	<ul style="list-style-type: none"> Connect the M-MDS to DLC-2. Access VSS PID of PCM. Monitor the VSS PID while driving. Does the VSS PID indicate appropriate value? 	Yes	Inspect the CAN system wiring harness and connectors for followings. <ul style="list-style-type: none"> PCM terminal 1AM and instrument cluster terminal 1J PCM terminal 1AI and instrument cluster terminal 1L
		No	Inspect the ABS HU/CM, DSC HU/CM or connectors.
5	<ul style="list-style-type: none"> Start the engine. Does the ABS warning light turn off? 	Yes	Inspect the PCM or connectors.
		No	Replace the instrument cluster.
6	<ul style="list-style-type: none"> Disconnect the negative battery cable. Measure the resistance between the DLC-2 terminals F and E. Is the resistance below 60 ohms? 	Yes	Go to the next step.
		No	Go to Step 8.
7	<ul style="list-style-type: none"> Inspect DLC-2 terminals F and E for followings: <ul style="list-style-type: none"> Short circuit between terminals F and E Short to power supply Short to GND Is there any malfunction? 	Yes	Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No	Replace the instrument cluster.
8	<ul style="list-style-type: none"> Turn the ignition switch off. Inspect the instrument cluster connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion). 	Yes	Go to the next step.
		No	Repair or replace the terminal.

	<ul style="list-style-type: none">• Are the terminals normal?		
9	<ul style="list-style-type: none">• Disconnect the negative battery cable.• Measure the resistance between the instrument cluster connector terminals 1J and 1L.• Is the resistance 114—126 ohms?	Yes	Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No	Replace the instrument cluster.

2011 - RX-8 - Body and Accessories

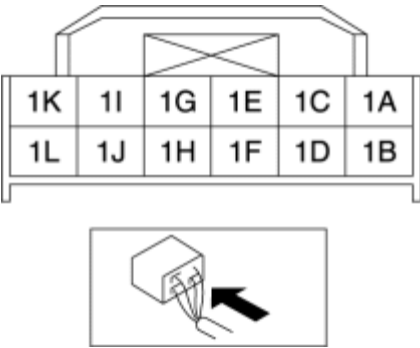
NO. 8 TACHOMETER INDICATION IS DEFECTIVE [INSTRUMENT CLUSTER]

8	Tachometer indication is defective
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM malfunction • Instrument cluster malfunction • Short circuit in wiring harness between CAN-L, CAN-H and GND • Open circuit in CAN wiring harness (CAN-L, CAN-H) • CAN wiring harness (CAN-L, CAN-H) short each other • Connector or pin malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Start the engine. <ul style="list-style-type: none"> ▪ Does the tachometer needle move smoothly? ▪ Does the tachometer needle indicate correct engine speed? 	Yes Troubleshooting completed.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Does the speedometer, the water temperature gauge, operate normally? 	Yes Go to the next step.
		No Go to Step 5.
3	<ul style="list-style-type: none"> • Start the instrument cluster input/output check mode. • Inspect the tachometer using the check code 13. • Is the tachometer normal? 	Yes Inspect the PCM or connectors.
		No Replace the instrument cluster.

4	<ul style="list-style-type: none"> • Connect the M-MDS DLC-2. • Access RPM PID of PCM. • Monitor the RPM PID while driving. • Does the RPM PID indicate appropriate value? 	Yes	<p>Inspect the CAN system wiring harness and connectors for followings.</p> <ul style="list-style-type: none"> • PCM terminal 1AM and instrument cluster terminal 1J • PCM terminal 1AI and instrument cluster terminal 1L
		No	Inspect the eccentric shaft position sensor or connectors.
5	<ul style="list-style-type: none"> • Start the engine. • Does the ABS warning light turn off? 	Yes	Inspect the PCM or connectors.
		No	Replace the instrument cluster.
6	<ul style="list-style-type: none"> • Disconnect the negative battery cable. • Measure the resistance between the DLC-2 terminals F and E. • Is the resistance below 60 ohms? 	Yes	Go to the next step.
		No	Go to Step 8.
7	<ul style="list-style-type: none"> • Inspect DLC-2 terminals F and E for followings: <ul style="list-style-type: none"> ▪ Short circuit between terminals F and E ▪ Short to power supply ▪ Short to GND • Is there any malfunction? 	Yes	<p>Inspect the wiring harness and CAN system-related module.</p> <p>Repair or replace the malfunctioning part.</p>
		No	Replace the instrument cluster.
8	<ul style="list-style-type: none"> • Turn the ignition switch off. • Inspect the instrument cluster connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion). • Are the terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the terminal.

9	<ul style="list-style-type: none">• Disconnect the negative battery cable.• Measure the resistance between the instrument cluster connector terminals 1J and 1L.• Is the resistance 114—126 ohms?	Yes	Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No	Replace the instrument cluster.

2011 - RX-8 - Body and Accessories

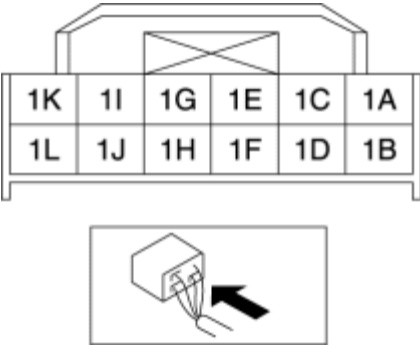
NO. 9 WATER TEMPERATURE GAUGE INDICATION IS DEFECTIVE [INSTRUMENT CLUSTER]

9	Water temperature gauge indication is defective
POSSIBLE CAUSE	<ul style="list-style-type: none"> • PCM malfunction • Instrument cluster malfunction • Short circuit in wiring harness between CAN-L, CAN-H and GND • Open circuit in CAN wiring harness (CAN-L, CAN-H) • CAN wiring harness (CAN-L, CAN-H) short each other • Connector or pin malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Start the engine. • Does the water temperature gauge needle move to medium range gradually and stay there? 	Yes Troubleshooting completed.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Does the speedometer, the tachometer, operate normally? 	Yes Go to the next step.
		No Go to Step 5.
3	<ul style="list-style-type: none"> • Start the instrument cluster input/output check mode. • Inspect the water temperature gauge using the check code 25. • Is the water temperature gauge normal? 	Yes Inspect the PCM or connectors.
		No Replace the instrument cluster.

4	<ul style="list-style-type: none"> • Connect the M-MDS to DLC-2. • Access ECT PID of PCM. • Monitor the ECT PID while driving. • Does the ECT PID indicate appropriate value? 	Yes	Inspect the CAN system wiring harness and connectors followings. <ul style="list-style-type: none"> • PCM terminal 1AM and instrument cluster terminal 1J • PCM terminal 1AI and instrument cluster terminal 1L
		No	Inspect the ECT sensor or connectors.
5	<ul style="list-style-type: none"> • Start the engine. • Does the ABS warning light turn off? 	Yes	Inspect the PCM or connectors.
		No	Replace the instrument cluster.
6	<ul style="list-style-type: none"> • Disconnect the negative battery cable. • Measure the resistance between the DLC-2 terminals F and E. • Is the resistance below 60 ohms? 	Yes	Go to the next step.
		No	Go to Step 8.
7	<ul style="list-style-type: none"> • Inspect DLC-2 terminals F and E for followings: <ul style="list-style-type: none"> ▪ Short circuit between terminals F and E ▪ Short to power supply ▪ Short to GND • Is there any malfunction? 	Yes	Inspect the wiring harness and CAN system-related module. Repair or replace the malfunctioning part.
		No	Replace the instrument cluster.
8	<ul style="list-style-type: none"> • Turn the ignition switch off. • Inspect the instrument cluster connector terminals for poor connection (such as damaged/pulled-out pins, and corrosion). • Are the terminals normal? 	Yes	Go to the next step.
		No	Repair or replace the terminal.
9	<ul style="list-style-type: none"> • Disconnect the negative battery cable. 	Yes	Inspect the wiring harness and

	<ul style="list-style-type: none">• Measure the resistance between the instrument cluster connector terminals 1J and 1L.• Is the resistance 114—126 ohms?	CAN system-related module. Repair or replace the malfunctioning part.
		No Replace the instrument cluster.

2011 - RX-8 - Body and Accessories

CONFIRMATION STEP 1: AUDIO PANEL SWITCH CONFIRMATION [AUDIO]

- Make sure the customer complain and identify either the center panel malfunction or audio unit malfunction.

How to activate audio center switch confirmation mode

1. Turn the audio unit power to ON.
2. While pressing the POWER/VOLUME switch, simultaneously press the MEDIA switch for **approx.1s.**
3. The center panel switch confirmation mode is now activated.

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> • Press each switch on the center panel. • Does buzzer sound when pressing each switch? 	Yes	Make sure the customer complain and then go to the appropriate symptom troubleshooting procedure.
		No	Go to the next step.
2	<ul style="list-style-type: none"> • Disassemble and reassemble the center panel and audio unit. • Activate the center panel switch confirmation mode. • Does the buzzer sound when pressing each switch? 	Yes	Go to the next step.
		No	Replace the center panel. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)
3	<ul style="list-style-type: none"> • Does the audio system operate properly? 	Yes	The system is normal.
		No	Make sure the customer complain and then go to the appropriate symptom troubleshooting procedure.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

CONFIRMATION STEP 2: AUDIO CONTROL SWITCH CONFIRMATION [AUDIO]

- Make sure the customer complain and identify either the audio control switch malfunction or audio unit malfunction.

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Is the symptom related to either the audio control switch or the audio panel operation? 	Yes	Make sure the customer complain and then go to the appropriate symptom troubleshooting procedure.
		No	<p>The symptom is related to the audio panel operation:</p> <ul style="list-style-type: none"> • Follow the "Confirmation Step 1". <p>The symptom is related to the audio control switch operation:</p> <ul style="list-style-type: none"> • Go to the next step.
2	<ul style="list-style-type: none"> • Disconnect the audio unit connector (24-pin). • Inspect both the audio unit and wiring harness-side connectors for poor connection. (such as damaged/pulled-out pins, corrosion). <ul style="list-style-type: none"> ▪ Terminal 1N (audio control switch1) ▪ Terminal 1P (audio control switch2) • Are all the pins normal? 	Yes	Go to the next step.
		No	<p>If the audio unit side connector is wrong:</p> <ul style="list-style-type: none"> • Replace the audio unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</p> <p>If the wiring harness-side connector is wrong:</p>

			<ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
3	<ul style="list-style-type: none"> Inspect the continuity between the audio unit wiring harness-side connector terminal 1N and 1P while operating the audio control switch. Does the resistance change? 	Yes	Make sure the customer complain and then go to the appropriate symptom troubleshooting procedure.
		No	Go to the next step.
4	<ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Remove the audio control switch. Inspect the continuity between the audio unit wiring harness-side connector (24-pin) terminal and the audio control switch wiring harness-side connector (8-pin) terminal. <ul style="list-style-type: none"> Terminal 1N (24-pin) — Terminal G (8-pin) Terminal 1P (24-pin) — Terminal H (8-pin) Is there continuity? 	Yes	Replace the audio control switch. (See AUDIO CONTROL SWITCH REMOVAL/INSTALLATION.)
		No	Repair or replace the wiring harness.

2011 - RX-8 - Body and Accessories

NO.2 NO POWER ON THE ENTIRE AUDIO SYSTEM [AUDIO]

2	No power on the entire audio system
Possible DTC	09:Er20
Possible DTC	<ul style="list-style-type: none"> Burnt fuse (B+) Burnt fuse (ACC) Open or short circuit in power supply (B+) wiring harness Open or short circuit in power supply (ACC) wiring harness Poor connection of audio unit connector, terminal damage Poor connection of car-navigation unit connector, terminal damage Audio unit malfunction Car-navigation unit malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect the following fuses: <ul style="list-style-type: none"> ROOM 15 A ACC 7.5 A Are the fuses normal? 	YesGo to the next step.
		No Replace with the appropriate standard fuse. <ul style="list-style-type: none"> If the fuse is melted, inspect the wiring harness for short to ground. Repair or replace the wiring harness, then replace the fuse.
2	<ul style="list-style-type: none"> Remove the audio unit. 	YesGo to the next step.

	<ul style="list-style-type: none"> Inspect the connection of the audio unit/car-navigation unit connector (24-pin). Disconnect the audio unit/car-navigation unit connector and inspect both the audio unit/car-navigation unit and wiring harness-side connectors for poor connection. (such as damaged/pulled-out pins, corrosion). <ul style="list-style-type: none"> Terminal 1B (B+) Terminal 1R (ACC) Terminal 1W (GND) Are all the pins normal? 	No	<p>If poor connection of audio unit connector:</p> <ul style="list-style-type: none"> Securely connect the audio unit connector. <p>If the audio unit side connector is wrong:</p> <ul style="list-style-type: none"> Replace the audio unit/car-navigation unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</p> <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
3	<ul style="list-style-type: none"> Connect the audio unit connector. Inspect the voltage for the power supply line (B+, ACC). <p>Specification:</p> <ul style="list-style-type: none"> Ignition switch ON: 11.5 V or more Idle: 12.5 V or more Is the voltage normal? 	Yes	Go to the next step.
		No	<p>Inspect and repair or replace the suspect wiring harness.</p> <p>Charge the battery, if necessary.</p>
4	<ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Remove the audio unit connector (24-pin). Inspect the continuity between the audio unit wiring harness-side connector terminal 1W and the ground. Is there continuity? 	Yes	<p>Replace the audio unit/car-navigation unit.</p> <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</p>
		No	Repair or replace the wiring harness.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

NO.3 NO SOUND FROM ALL SPEAKERS [AUDIO]

Vehicles Without Bose®

3	No sound from all speakers
Possible DTC	03:Er07, 03:Er10, 06:Er07, 06:Er10, 09:Er20, 09:Er21, 22:Er07, 22:Er10
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Short circuit in wiring harness between audio unit and speaker • Short circuit in wiring harness between car-navigation unit and speaker • Short circuit inside speaker • Speaker malfunction (e.g., any foreign material, broken) • Audio unit malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Press AUDIO CONT switch more than 2 seconds. • Play the CD or Radio. • Adjust the volume between "10" and "15". • Is there any sound? 	Yes The system is normal.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. 	Yes Repair or replace the suspect wiring harnesses or speaker unit.

- Remove the audio unit.
- Disconnect the audio connector (24-pin).
- Inspect the continuity between the audio unit wiring harness-side connector terminal and ground:

For front speaker

- Terminal 1A (LH+) — GND
- Terminal 1C (LH-) — GND
- Terminal 1D (RH+) — GND
- Terminal 1F (RH-) — GND

For rear speaker

- Terminal 1S (LH+) — GND
- Terminal 1U (LH-) — GND
- Terminal 1V (RH+) — GND
- Terminal 1X (RH-) — GND

- Is there continuity?

NOTE:

- If there is a short circuit between the speaker harness or speaker lead wire and ground, the protector circuit inside the audio unit operates to cut the sound.

No Go to the next step.

3	<ul style="list-style-type: none"> Remove the speaker. Disconnect the speaker connector (2-pin). Inspect the continuity between the speaker wiring harness-side connector (2-pin) terminal and ground: <ul style="list-style-type: none"> For each speaker <ul style="list-style-type: none"> Terminal A — GND Terminal B — GND Is there the continuity? 	Yes	Replace the speaker. (See FRONT DOOR SPEAKER REMOVAL/INSTALLATION.) (See REAR SPEAKER REMOVAL/INSTALLATION.)
		No	Replace the audio unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)

Vehicles With Bose®

3	No sound from all speakers
Possible DTC	06:Er07, 06:Er10, 09:Er20, 09:Er21, 10:Er07,10:Er10, 22:Er07, 22:Er10
POSSIBLE CAUSE	<ul style="list-style-type: none"> Open or short circuit in wiring harness between audio amplifier and speaker Short circuit inside speaker Speaker malfunction (e.g., any foreign material, broken) Audio amplifier malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Press AUDIO CONT switch more than 2 seconds. 	<div>Yes</div> <div>The system is normal.</div>

	<ul style="list-style-type: none"> • Play the CD or radio. • Adjust the volume between "10" and "15". • Is there the sound? 	No	Go to the next step.
2	<ul style="list-style-type: none"> • Measure the voltage at the audio amplifier terminal A. (vehicle harness-side) • Is the voltage B+? 	Yes	Go to Step 4.
		No	Repair or replace wiring harness between the audio amplifier and fuse. Go to the next step.
3	<ul style="list-style-type: none"> • Is there any sound? 	Yes	The system is normal.
		No	Go to the next step.
4	<ul style="list-style-type: none"> • Turn the ignition switch to LOCK position. • Disconnect the audio amplifier connector (8-pin, 16-pin). • Inspect continuity between the following terminals of the audio amplifier connector and speaker connector. <p style="margin-left: 40px;">For front speaker (LH)</p> <ul style="list-style-type: none"> ▪ Terminal 2B (16-pin)—Terminal A ▪ Terminal 2D (16-pin)—Terminal B <p style="margin-left: 40px;">For front tweeter (LH)</p> <ul style="list-style-type: none"> ▪ Terminal 2K (16-pin)—Terminal A ▪ Terminal 2I (16-pin)—Terminal B <p style="margin-left: 40px;">For front speaker (RH)</p> <ul style="list-style-type: none"> ▪ Terminal 2O (16-pin)—Terminal A 	Yes	Go to the next step.
		No	Repair or replace the related wiring harnesses.

	<ul style="list-style-type: none"> Terminal 2M (16-pin)—Terminal B <p>For front tweeter (RH)</p> <ul style="list-style-type: none"> Terminal 2G (16-pin)—Terminal A Terminal 2E (16-pin)—Terminal B <p>For rear speaker/tweeter (LH)</p> <ul style="list-style-type: none"> Terminal 1C (8-pin)—Terminal A (speaker)/terminal A (tweeter) Terminal 1D (8-pin)—Terminal B (speaker)/terminal B (tweeter) <p>For rear speaker/tweeter (RH)</p> <ul style="list-style-type: none"> Terminal 1E (8-pin)—Terminal A (speaker)/terminal A (tweeter) Terminal 1F (8-pin)—Terminal B (speaker)/terminal B (tweeter) <p>For center speaker</p> <ul style="list-style-type: none"> Terminal 1G (8-pin)—Terminal A Terminal 1H (8-pin)—Terminal B <ul style="list-style-type: none"> Is there continuity? 	
5	<ul style="list-style-type: none"> Turn the ignition switch to LOCK position Disconnect the audio amplifier connector (8-pin, 16-pin). 	<p>YesRepair or replace the related wiring harnesses or speaker unit.</p> <p>NOTE:</p>

- Inspect the continuity between the audio amplifier connector and ground:

For front speaker

- Terminal 2D (16-pin, LH OUT+)—GND
- Terminal 2B (16-pin, LH OUT-)—GND
- Terminal 2M (16-pin, RH OUT+)—GND
- Terminal 2O (16-pin, RH OUT-)—GND

For front tweeter

- Terminal 2I (16-pin, LH OUT+)—GND
- Terminal 2K (16-pin, LH OUT-)—GND
- Terminal 2E (16-pin, RH OUT+)—GND
- Terminal 2G (16-pin, RH OUT-)—GND

For rear speaker/tweeter

- Terminal 1D (8-pin, LH OUT+)—GND
- Terminal 1C (8-pin, LH OUT-)—GND
- Terminal 1F (8-pin, RH OUT+)—GND

If there is a short circuit between the speaker harnesses or speaker lead wire and ground, the protector circuit inside the audio unit or car-navigation unit operates to cut the sound.

No Go to the next step.

	<ul style="list-style-type: none"> ▪ Terminal 1E (8-pin, RH OUT-)—GND <p>For center speaker</p> <ul style="list-style-type: none"> ▪ Terminal 1H (8-pin, CENTER OUT+)—GND ▪ Terminal 1G (8-pin, CENTER OUT-)—GND <ul style="list-style-type: none"> • Is there continuity? 		
6	<ul style="list-style-type: none"> • Turn the ignition switch to LOCK position. • Disconnect the audio amplifier connector (24-pin) and audio unit or car-navigation unit connector (24-pin). • Inspect the continuity between the audio amplifier terminal IL (24-pin, vehicle harness-side) and audio unit or car-navigation unit terminal J (24-pin, vehicle harness-side). • Is there continuity? 	Yes	Replace the audio amplifier. (See AUDIO AMPLIFIER REMOVAL/INSTALLATION.)
		No	Repair or replace the wiring harness between the audio amplifier and audio unit. Then go to the next step.
7	<ul style="list-style-type: none"> • Is there any sound? 	Yes	The system is normal.
		No	Replace the audio amplifier. (See AUDIO AMPLIFIER REMOVAL/INSTALLATION.)

2011 - RX-8 - Body and Accessories

NO.5 BROKEN SOUND OR POOR SOUND QUALITY [AUDIO]

5	Broken sound or poor sound quality
Possible DTC	09:Er21
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Audio unit malfunction • Car-navigation unit malfunction • Audio amplifier malfunction (Bose®) • Improper speaker installation • Vibration of door trim and/or package trim • Speaker malfunction (e.g., any foreign material, damage)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Are there a broken sound or poor sound quality from all speakers? 	Yes Go to the next step.
		No Go to Step 5.
2	<ul style="list-style-type: none"> • Inspect the sound while adjusting the sound volume. • Is there a broken sound or poor sound quality between "15" and "20"? 	Yes Go to the next step.
		No The system is normal.
3	<ul style="list-style-type: none"> • Inspect the 	Yes Go to the next step.

	<p>BASS/TREB.</p> <ul style="list-style-type: none">Is there a poor sound quality at “-3 — +3” of “BASS/TREB”? <p>NOTE:</p> <ul style="list-style-type: none">When press the AUDIO CONT switch for a few seconds, BASS/TREB is set at “0”.		No	If there is a broken sound at “+6 — -6” of BASS/TREB with the maximum volume, the system is normal.
4	<ul style="list-style-type: none">Attempt to duplicate the symptom on the other vehicle.Is the sound better than the customer’s vehicle?	Yes	<p>Without BOSE®:</p> <ul style="list-style-type: none">Replace the audio unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</p> <p>With BOSE®:</p> <ul style="list-style-type: none">If noise occurs from the speaker of a specific channel, or the volume is minimized and the noise occurs:<ul style="list-style-type: none">Replace the audio amplifier.<p>(See AUDIO AMPLIFIER REMOVAL/INSTALLATION.)</p>If the noise occurs from the speaker of two or more channels or the volume is minimized and the noise does not occurs.<ul style="list-style-type: none">Replace the audio unit.<p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)</p><p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</p>	
			No	The system is normal.
5	<ul style="list-style-type: none">Identify the speaker with a broken sound by adjusting BAL/FADE.	Yes	Go to the next step.	
		No	Install the speaker properly.	

	<ul style="list-style-type: none"> Is the speaker installed properly? 		
6	<ul style="list-style-type: none"> Remove the speaker. 	Yes	Repair or replace the suspect speaker.
	<ul style="list-style-type: none"> Is there any foreign material or damage on the speaker? 	No	Go to the next step.
7	<ul style="list-style-type: none"> Inspect the sound again. 	Yes	Go to the next step.
	<ul style="list-style-type: none"> Is there broken sound? 	No	Inspect the vibration from the door trim and/or package trim. Repair or replace the suspect trim as necessary.
8	<ul style="list-style-type: none"> Replace with a speaker known to be good. (e.g., swap right and left speakers) Does the broken sound appear at the same location? 	Yes	<p>Without BOSE®:</p> <ul style="list-style-type: none"> Replace the audio unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.) <p>With BOSE®:</p> <ul style="list-style-type: none"> If noise occurs from the speaker of a specific channel, or the volume is minimized and the noise occurs: <ul style="list-style-type: none"> Replace the audio amplifier. (See AUDIO AMPLIFIER REMOVAL/INSTALLATION.) If the noise occurs from the speaker of two or more channels or the volume is minimized and the noise does not occurs. <ul style="list-style-type: none"> Replace the audio unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)
		No	<p>Replace the speaker. (See FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)</p>

		(See REAR SPEAKER REMOVAL/INSTALLATION.)
		(See CENTER SPEAKER REMOVAL/INSTALLATION.)

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

NO.7 ALC FUNCTION IS INOPERATIVE [AUDIO]

7	ALC function is inoperative
Possible DTC	—
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Open or short circuit in vehicle speed signal wiring harness (e. g., instrument cluster) • CAN signal wiring harness malfunction • Audio unit malfunction <p>NOTE:</p> <ul style="list-style-type: none"> • Inspect the ALC function while driving the vehicle playing the CD, etc.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Turn the ALC function to ON. • Inspect the ALC function operation when driving the vehicle at ALC level 3. • Does the ALC system operate properly? 	Yes The system is normal. Explains the ALC function to the customer.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Inspect the connection of the audio unit connector (24-pin, vehicle speed signal). • Inspect both the audio unit and wiring harness-side connector terminal I (24-pin) for poor connection (such as damaged/pulled-out pins, corrosion). • Are all the pins normal? 	Yes Go to the appropriate DTC inspection. Repair or replace the pins and/or the connector.
		No Replace the audio unit.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

FOREWORD [AUDIO]

NOTE:

- Record all radio programs set by the customer prior to the repairs. Set all radio programs and adjust the time after the repairs.

Troubleshooting Index

No.	Symptom	Possible DTC
1	AF noise or POP noise at all sources (Radio, CD)	09:Er20, 09:Er21
2	No power on the entire audio system	09:Er20
3	No sound from all speakers	03:Er07, 03:Er10, 06:Er07, 06:Er10, 09:Er20, 09:Er21, 22:Er07, 22:Er10
4	No sound from some speakers	—
5	Broken sound or poor sound quality	09:Er21
6	Sound becomes loudly or weakly while driving the vehicle	—
7	ALC function is inoperative	—
8	AudioPilot® 2 function is inoperative	—
9	Audio system illumination does not illuminate at all.	09:Er20, 21:Er19
10	LCD does not display at all.	09:Er20, 21:Er19

Quick Diagnostic Chart (Entire Audio System)

X: Applicable										
Troubleshooting item										
1	2	3	4	5	6	7	8	9	10	
sources (Radio, CD)	system			s	akers	akly while driving the vehicle		operative	is not illumination at all	

Possible factor	AF noise or POP noise at all speakers	No power to the entire audio system	No sound from all speakers	No sound from some speakers	Broken sound from some speakers	Sound becomes loudly or weak	ALC function is inoperative	AudioPilot [®] 2 function is inoperative	Audio system illumination does not display	LCD does not display at all
Low vehicle battery voltage	X									
Jammed radio signals from after market equipment	X									
Speaker malfunction (e. g., foreign material penetration, damage)	X		X	X	X					
Improper speaker installation	X				X					
Poor connection of audio unit connector, terminal damage	X	X		X					X	
Antenna malfunction (e.g., poor ground)	X									
Audio unit malfunction	X	X	X	X	X	X	X		X	X
Audio amplifier malfunction (with Bose [®])	X		X	X	X	X		X		
Open or short circuit in wiring harness between audio amplifier and ground (with Bose [®])	X									
Burnt fuse (B+)		X								
Burnt fuse (ACC)		X								
Open or short circuit in power supply (B+) wiring harness		X								
Open or short circuit in power supply (ACC) wiring harness		X								
Short circuit in wiring harness between audio unit and speaker (without Bose [®])			X	X						
Open circuit in wiring harness between audio unit and speaker (without Bose [®])				X						
Open or short circuit in wiring harness between audio amplifier and speaker (with Bose [®])			X	X						
Open or short circuit in wiring harness between audio amplifier and audio unit (with Bose [®])			X	X						
Poor connection of audio amplifier connector, terminal damage (with Bose [®])	X		X	X				X		
Short circuit inside speaker			X	X						
Door trim and/or package trim vibration					X					
Open or short circuit in vehicle speed signal wiring harness (e.g., instrument cluster)							X			
Burnt fuse (TNS signal)									X	
Open or short circuit in TNS signal wiring harness									X	
Center panel malfunction									X	
Open or short circuit in Mic unit signal wiring harness								X		
Open or short circuit in AudioPilot [®] 2 signal wiring harness								X		
Information display malfunction										X
Poor connection of car-navigation unit connector, terminal damage	X	X	X							
Car-navigation unit malfunction	X	X			X				X	
Short circuit in wiring harness between car-navigation unit and speaker	X		X							
Open or short circuit in wiring harness between audio amplifier and car-navigation unit				X						
Open or short circuit in vehicle speed signal harness								X		

2011 - RX-8 - Body and Accessories

NO.1 AF NOISE OR POP NOISE AT ALL SOURCES (RADIO, CD) [AUDIO]

1	AF noise or POP noise at all sources (Radio, CD)
Possible DTC	09:Er20, 09:Er21
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Low vehicle battery voltage. • Jammed radio signals from after market equipment. • Speaker malfunction (e.g., any foreign material, broken) • Improper speaker installation • Poor connection of audio unit connector, terminal damage • Poor connection of car-navigation unit connector, terminal damage • Poor connection of audio amplifier connector, terminal damage • Antenna malfunction (e.g., poor ground) • Audio unit malfunction • Car-navigation unit malfunction • Audio amplifier malfunction (with Bose®) <p>NOTE:</p> <ul style="list-style-type: none"> • So-called AF noise is a snapping type noise that generally occurs during ON/OFF switching operations of electrical equipment other than the audio unit/car-navigation unit, or a continual rasping noise that occurs when electrical equipment is operated. This is caused by noise interference in the power supply wiring, signal wiring, speaker cable or audio unit/car-navigation unit. Therefore noise can be heard regardless of radio wave conditions or the audio volume position. The noise will start after one click from the minimum position of the volume button but normally does not change even when volume is turned to a higher position. • So-called POP noise is snapping or popping type noise that occurs during ON/OFF switching operation of the audio unit/car-navigation unit, or when switching from radio to CD. Even a normal audio unit/car-navigation unit sometimes emits a little

noise depending on the conditions.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none">Inspect the vehicle battery voltage.Is the vehicle battery voltage normal? <p>Specification:</p> <ul style="list-style-type: none">Ignition switch ON: 11.5 V or moreIdle: 12.5 V or more	YesGo to the next step.
		No Charge the battery, then go to the next step.
2	<ul style="list-style-type: none">Turn the audio unit/car-navigation unit power to ON.Is there any noise?	YesGo to the next step.
		No The system is normal. Explain to the customer that the vehicle battery voltage was low.
3	<ul style="list-style-type: none">Is any of the following after-market equipment installed? (Inspect especially near the antenna.)<ul style="list-style-type: none">▪ Radar▪ Remote engine starter▪ Anti-theft device▪ Other	YesGo to the next step.
		No Go to Step 5.
4	<ul style="list-style-type: none">Remove the after-market equipment.Turn the audio unit power to ON.Is there any noise?	YesGo to the next step.
		No The system is normal. The after-market electrical devices might make a noise.
5	<ul style="list-style-type: none">Is there the noise from	YesGo to Step 7.

	all the speakers?		No Go to the next step.
6	<ul style="list-style-type: none"> Inspect the suspect speaker. Is the speaker normal? 	Yes	Go to the next step.
		No	<p>If there is any foreign material to the speaker:</p> <ul style="list-style-type: none"> Remove the foreign material from the speaker. <p>If the speaker is malfunctioning:</p> <ul style="list-style-type: none"> Replace the speaker. <p>If the speaker is not installed properly:</p> <ul style="list-style-type: none"> Install the speaker properly.
7	<ul style="list-style-type: none"> Attempt to duplicate the symptom on the other vehicle. Is the noise better than the customers vehicle? 	Yes	Go to the next step.
		No	<p>The system is normal. Explain the noise generation mechanism to the customer.</p> <p>NOTE:</p> <ul style="list-style-type: none"> The noise may be heard depends on the operating speed of the audio power and/or mode switch.
8	<ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Remove the audio unit/car-navigation unit. Inspect the connection of the audio unit connector (24-pin) (for sound signal line). Is the connector connected securely? 	Yes	Go to the next step.
		No	<p>If poor connection of audio unit connector:</p> <ul style="list-style-type: none"> Security connect the audio connector. <p>If the audio unit side connector is wrong:</p> <ul style="list-style-type: none"> Replace the audio unit/car-navigation unit. <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> Repair or replace the pins and/or the connector. <p>After treating either the above-mentioned, then go to the next step.</p>
9	<ul style="list-style-type: none"> Is there any noise? 	Yes	Go to the next step.

		No	The system is normal.
10	<ul style="list-style-type: none"> Inspect the ground condition of the antenna. 	Yes	Replace the audio unit/car-navigation unit. Go to the next step.
	<ul style="list-style-type: none"> Is the ground condition normal? 	No	Repair or replace the ground. Go to the next step.
11	<ul style="list-style-type: none"> Is there any noise? 	Yes	<p>Without BOSE®:</p> <ul style="list-style-type: none"> Replace the audio unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.) <p>With BOSE®::</p> <ul style="list-style-type: none"> If noise occurs from the speaker of a specific channel, or the volume is minimized and the noise occurs: <ul style="list-style-type: none"> Replace the audio amplifier. (See AUDIO AMPLIFIER REMOVAL/INSTALLATION.) If the noise occurs from the speaker of two or more channels or the volume is minimized and the noise does not occurs: <ul style="list-style-type: none"> Replace the audio unit/car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)
		No	The system is normal.

2011 - RX-8 - Body and Accessories

NO.4 NO SOUND FROM SOME SPEAKERS [AUDIO]

Vehicles Without Bose®

4	No sound from some speaker
Possible DTC	—
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Open or short circuit in wiring harness between audio unit and speaker • Short circuit inside speaker • Speaker malfunction (e.g., any foreign material, broken) • Audio unit malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> • Turn the audio unit power to ON. • Press AUDIO CONT switch more than one second (BAL/FAD cancel mode). • Press the POWER/VOLUME switch and simultaneously press down the AUTO-M switch for approx. 2 seconds. <p>NOTE:</p> <ul style="list-style-type: none"> • The sound speaker now 	Yes	<p>If no sound from some speaker:</p> <ul style="list-style-type: none"> • Go to the next step. <p>If no sound at all:</p> <ul style="list-style-type: none"> • Go to the troubleshooting of “No.3 No sound from all speakers”.
		No	The troubleshooting is completed.

	<p>changes in the order of left— front speaker, right — front speaker, right — rear speaker and left — rear speaker.</p> <ul style="list-style-type: none"> Is there any speaker with no sound? 		
2	<ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the audio unit connector (24-pin). Inspect the continuity between the audio unit wiring harness-side connector (24-pin) terminal and ground. Is there the continuity? 	Yes	<p>Repair or replace the suspect wiring harness or speaker unit.</p> <p>NOTE:</p> <ul style="list-style-type: none"> If there is a short circuit between the speaker harness or speaker lead wire and ground, the protector circuit inside the audio unit operates to cut the sound.
		No	Go to the next step.
3	<ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Remove the audio unit. Disconnect the audio unit connector (24-pin). Inspect the continuity between the audio unit wiring harness-side connector terminal and ground: <p>For front speaker</p> <ul style="list-style-type: none"> Terminal 1A (LH+)—GND Terminal 1C (LH-)—GND Terminal 1D (RH+)—GND Terminal 1F (RH-)—GND 	Yes	<p>Repair or replace the suspect wiring harness or speaker unit.</p>
		No	<p>Go to the next Step.</p> <p>NOTE:</p> <ul style="list-style-type: none"> If there is a short circuit between the speaker harness or speaker lead wire and ground, the protector circuit inside the audio unit or car-navigation unit operates to cut the sound.

	<p>For rear speaker</p> <ul style="list-style-type: none"> ▪ Terminal 1S (LH+)—GND ▪ Terminal 1U (LH-)—GND ▪ Terminal 1V (RH+)—GND ▪ Terminal 1X (RH-)—GND <ul style="list-style-type: none"> • Is there continuity? 		
4	<ul style="list-style-type: none"> • Disconnect the speaker connector (2-pin) and inspect the resistance of speaker. • Inspect the continuity between the audio unit wiring harness-side connector terminal and speaker wiring harness-side connector: <p>Audio unit—front speaker</p> <ul style="list-style-type: none"> ▪ Terminal 1A (LH+)—terminal B ▪ Terminal 1C (LH-)—terminal A ▪ Terminal 1D (RH+)—terminal B ▪ Terminal 1F (RH-)—terminal A <p>Audio unit—rear speaker</p> <ul style="list-style-type: none"> ▪ Terminal 1S (LH+)—terminal B ▪ Terminal 1U (LH-)— 	Yes	Go to the next step.
		No	Repair or replace the suspect wiring harness or speaker unit.

	<p>terminal A</p> <ul style="list-style-type: none"> Terminal 1V (RH+)— terminal B Terminal 1X (RH-)— terminal A <ul style="list-style-type: none"> Is there continuity? 		
5	<ul style="list-style-type: none"> Inspect the suspect speaker. Is the speaker normal? <p>NOTE:</p> <ul style="list-style-type: none"> If the speaker lead wire contacts either ground or vehicle frame, replace the speaker. 	Yes	Replace the audio unit.
		No	<p>Replace the speaker.</p> <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</p>

Vehicles With Bose®

4	No sound from certain speaker
Possible DTC	—
POSSIBLE CAUSE	<ul style="list-style-type: none"> Poor connection of audio unit connector, terminal damage Poor connection of audio amplifier connector Open or short circuit in wiring harness between audio amplifier and audio unit Open or short circuit in wiring harness between audio amplifier and car-navigation unit Open or short circuit in wiring harness between audio amplifier and speaker Short circuit inside speaker Speaker malfunction (e.g., foreign material, broken) Audio amplifier malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Turn the audio unit on. Press AUDIO CONT switch 1 second (BAL/FED cancel mode). Press the POWER/VOLUME switch and simultaneously press down the AUTO-M switch for approx. 2 seconds. <p>NOTE:</p> <ul style="list-style-type: none"> The speaker from which the sound is not emitted is specified using by that the speaker voice changes. Is there any speaker with no sound? 	<p>Yes</p> <p>If no sound from some speakers:</p> <ul style="list-style-type: none"> Go to the next step. <p>If not sound at all:</p> <ul style="list-style-type: none"> Go to the troubleshooting of "No.3 No sound from all speakers".
		<p>No</p> <p>The troubleshooting completed. (The system is normal.)</p>
2	<ul style="list-style-type: none"> Does the same speaker have no sound if changing the sound source? (Radio, CD) 	<p>Yes</p> <p>Go to the next step.</p>
		<p>No</p> <p>Replace the audio unit.</p> <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</p> <p>NOTE:</p> <ul style="list-style-type: none"> If a different speaker has no sound now, the audio unit is malfunctioning.
3	<ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect the connection of the audio unit or car-navigation unit connector (24-pin). (for sound signal line) Is the connector connected securely? 	<p>Yes</p> <p>Go to the next step.</p>
		<p>No</p> <p>Connect the audio unit or car-navigation unit connector (24-pin) securely.</p>
4	<ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. 	<p>Yes</p> <p>Go to the next step.</p>

	<ul style="list-style-type: none">Remove the audio unit.Disconnect the audio unit connector (24-pin).Inspect the continuity between the audio unit or car-navigation unit wiring harness-side connector and ground. <p>For front speaker</p> <ul style="list-style-type: none">Terminal 1A (LH+) —GNDTerminal 1C (LH-) —GNDTerminal 1D (RH+) —GNDTerminal 1F (RH-) —GND <p>For rear speaker</p> <ul style="list-style-type: none">Terminal 1S (LH+) —GNDTerminal 1U (LH-) —GNDTerminal 1V (RH+) —GNDTerminal 1X (RH-) —GND <ul style="list-style-type: none">Is there continuity?	No	Go to Step 6.
5	<ul style="list-style-type: none">Inspect the continuity between the following terminals of the audio amplifier wiring harness-side connector (24-pin) and the audio unit wiring harness-side connector (24-pin). <p>For front speaker (audio amplifier - audio unit or car-navigation unit)</p> <ul style="list-style-type: none">Terminal A (LH+) — Terminal 1D	Yes	Go to the next step.
		No	Repair or replace the related wiring harnesses between the audio amplifier and the audio unit or car-navigation unit. Then go to the next step.

	<ul style="list-style-type: none"> Terminal C (LH-)—Terminal 1C Terminal D (RH+)—Terminal 1F Terminal F (RH-)—Terminal 1E <p>For rear speaker (audio amplifier - audio unit or car-navigation unit)</p> <ul style="list-style-type: none"> Terminal S (LH+)—Terminal 1H Terminal U (LH-)—Terminal 1G Terminal V (RH+)—Terminal 1J Terminal X (RH-)—Terminal 1I <ul style="list-style-type: none"> Is there continuity? 		
6	<ul style="list-style-type: none"> Inspect the connection of the audio amplifier connector (24-pin, 8-pin). 	Yes	Go to the next step.
	<ul style="list-style-type: none"> Is the connector connected securely? 	No	Connect the audio amplifier (24-pin, 8-pin) securely.
7	<ul style="list-style-type: none"> Turn the ignition switch to LOCK position. 	Yes	Go to the next step.
	<ul style="list-style-type: none"> Disconnect the audio amplifier connector (8-pin, 16-pin). Inspect continuity between the following terminals of the audio amplifier connector and speaker connector. <p>For front speaker (LH)</p> <ul style="list-style-type: none"> Terminal 2B (16-pin)—Terminal A Terminal 2D (16-pin)—Terminal B 	No	Repair or replace the repair related wiring harnesses.

**For front tweeter
(LH)**

- Terminal 2K (16-pin)—Terminal A
- Terminal 2I (16-pin)—Terminal B

**For front
speaker (RH)**

- Terminal 2O (16-pin)—Terminal A
- Terminal 2M (16-pin)—Terminal B

**For front tweeter
(RH)**

- Terminal 2G (16-pin)—Terminal A
- Terminal 2E (16-pin)—Terminal B

**For rear
speaker/tweeter
(LH)**

- Terminal 1C (8-pin)
—Terminal A
(speaker)/terminal
A (tweeter)
- Terminal 1D (8-pin)
—Terminal B
(speaker)/terminal
B (tweeter)

**For rear
speaker/tweeter
(RH)**

- Terminal 1E (8-pin)
—Terminal A
(speaker)/terminal
A (tweeter)
- Terminal 1F (8-pin)
—Terminal B
(speaker)/terminal
B (tweeter)

**For center
speaker**

	<ul style="list-style-type: none">▪ Terminal 1G (8-pin)—Terminal A▪ Terminal 1H (8-pin)—Terminal B <ul style="list-style-type: none">• Is there continuity?		
8	<ul style="list-style-type: none">• Turn the ignition switch to LOCK position• Disconnect the audio amplifier connector (8-pin, 16-pin).• Inspect the continuity between the audio amplifier connector and ground: For front speaker<ul style="list-style-type: none">▪ Terminal 2D (16-pin, LH OUT+)—GND▪ Terminal 2B (16-pin, LH OUT-)—GND▪ Terminal 2M (16-pin, RH OUT+)—GND▪ Terminal 2O (16-pin, RH OUT-) —GNDFor front tweeter<ul style="list-style-type: none">▪ Terminal 2I (16-pin, LH OUT+)—GND▪ Terminal 2K (16-pin, LH OUT-)—GND▪ Terminal 2E (16-pin, RH OUT+)—GND▪ Terminal 2G (16-pin, RH OUT-)—GNDFor rear speaker/tweeter	Yes Repair or replace the related wiring harness or speaker unit. (See FRONT DOOR SPEAKER REMOVAL/INSTALLATION.) (See REAR SPEAKER REMOVAL/INSTALLATION.) (See CENTER SPEAKER REMOVAL/INSTALLATION.) NOTE: <ul style="list-style-type: none">• If there is a short circuit between the speaker harness or speaker lead wire and ground, the protector circuit inside the audio unit operates to cut the sound.	No Go to the next step.

	<ul style="list-style-type: none"> Terminal 1D (8-pin, LH OUT+)—GND Terminal 1C (8-pin, LH OUT-)—GND Terminal 1F (8-pin, RH OUT+)—GND Terminal 1E (8-pin, RH OUT-)—GND <p>For center speaker</p> <ul style="list-style-type: none"> Terminal 1H (8-pin, CENTER OUT+)—GND Terminal 1G (8-pin, CENTER OUT-)—GND <ul style="list-style-type: none"> Is there continuity? 		
9	<ul style="list-style-type: none"> Inspect the suspect speaker. Is the resistance normal? <p>NOTE:</p> <ul style="list-style-type: none"> If the speaker lead wire contacts to either ground or vehicle frame, replace the speaker. 	<p>Yes Replace the audio amplifier.</p> <p>(See AUDIO AMPLIFIER REMOVAL/INSTALLATION.)</p>	
		<p>No Replace the speaker.</p> <p>(See FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)</p> <p>(See REAR SPEAKER REMOVAL/INSTALLATION.)</p> <p>(See CENTER SPEAKER REMOVAL/INSTALLATION.)</p>	

2011 - RX-8 - Body and Accessories

NO.9 AUDIO SYSTEM ILLUMINATION DOES NOT ILLUMINATE AT ALL [AUDIO]

9	Audio system illumination does not illuminate at all
Possible DTC	09:Er20, 21:Er19
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Burnt fuse (TNS signal) • Open or short circuit in TNS signal wiring harness • Poor connection of audio unit connector, terminal damage • Audio unit malfunction • Car-navigation unit malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Are all illumination on the audio unit turned OFF? 	YesGo to the next step.
		No Replace the center panel.
2	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect the fuse (ILLUMI). • Is the fuse normal? 	YesGo to Step 4.
		No Go to the next step.
3	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the audio unit connector (24-pin) and inspect the continuity between the audio unit/car- 	YesRepair or replace the short circuit in the suspect wiring harness. After repair the harness, replace with the appropriate standard fuse.

	<p>navigation unit wiring harness-side connector terminal E (TNS) and the ground.</p> <ul style="list-style-type: none"> Is there continuity? 	No	Go to the next step.
4	<ul style="list-style-type: none"> Inspect the connection of the audio unit/car-navigation unit connector (24-pin). Inspect both the audio unit and wiring harness-side connector terminal E for poor connection (such as damaged/pulled-out pins, corrosion). Are all the pins normal? 	Yes	Go to the next step.
		No	<p>If poor connection of audio unit/car-navigation unit connector:</p> <ul style="list-style-type: none"> Securely connect the audio unit connector. <p>If the audio unit side connector is wrong:</p> <ul style="list-style-type: none"> Replace the audio unit/car-navigation unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</p> <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
5	<ul style="list-style-type: none"> Connect the audio unit connector (24-pin). Turn the ignition switch to the ACC position. Inspect the voltage at the audio unit/car-navigation unit connector terminal E (TNS). Is the voltage B+ when the light switch is turned to the TNS position? 	Yes	<p>Replace the audio unit/car-navigation unit.</p> <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</p>
		No	Repair or replace the suspect wiring harness (TNS signal).

2011 - RX-8 - Body and Accessories

NO.10 LCD DOES NOT DISPLAY AT ALL [AUDIO]

10	LCD does not display at all
Possible DTC	09:Er20, 16:Er12
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Center panel unit malfunction • Information display malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Inspect the information display. (See INFORMATION DISPLAY INPUT/OUTPUT CHECK MODE.) • Does the LCD display properly? 	Yes Go to the next step.
		No Replace the information display.
2	<ul style="list-style-type: none"> • Press either CLC or SET/INFO switch on the information display. • Does the beep sound? 	Yes <ul style="list-style-type: none"> • Replace the audio unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)
		No Replace both audio unit and information display. (CAN communication malfunction)

2011 - RX-8 - Body and Accessories

NO.6 SOUND BECOMES LOUDLY OR WEAKLY WHILE DRIVING THE VEHICLE [AUDIO]

6	Sound becomes loudly or weakly while driving the vehicle
Possible DTC	—
POSSIBLE CAUSE	<p>NOTE:</p> <ul style="list-style-type: none"> • Audio unit malfunction (without Bose®) • Audio amplifier malfunction (with Bose®) • Inspect the ALC function (without Bose®) or AudioPilot® 2 function (with Bose®) while driving the vehicle with playing the CD, etc.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Does the ALC (without Bose®)/AudioPilot® 2 function (with Bose®) turn on? 	Yes Go to the next step.
		<p>No</p> <p>Without Bose®:</p> <ul style="list-style-type: none"> • Replace the audio unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</p> <p>With Bose®:</p> <ul style="list-style-type: none"> • Replace the audio amplifier.

			(See AUDIO AMPLIFIER REMOVAL/INSTALLATION .)
2	<ul style="list-style-type: none"> • Turn off the ALC (without Bose®)/AudioPilot® 2 function (with Bose®). • Does the sound change while driving the vehicle? 	Yes	<p>Without Bose®:</p> <ul style="list-style-type: none"> • Replace the audio unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</p> <p>With Bose®:</p> <ul style="list-style-type: none"> • Replace the audio amplifier. <p>(See AUDIO AMPLIFIER REMOVAL/INSTALLATION.)</p>
		No	<p>The system is normal.</p> <p>Explains the ALC (without Bose®)/AudioPilot® 2 function (with Bose®) to the customer.</p>

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

NO.8 AudioPilot®2 FUNCTION IS INOPERATIVE [AUDIO]

8	AudioPilot® 2 function is inoperative
Possible DTC	—
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Open or short circuit in AudioPilot® 2 signal wiring harness • Open or short circuit in AudioPilot® 2 microphone signal wiring harness • Audio amplifier malfunction • Open or short circuit in vehicle speed signal harness <p>NOTE:</p> <ul style="list-style-type: none"> • Inspect the AudioPilot® 2 function while driving the vehicle and playing a CD

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Turn the AudioPilot® 2 function on. • Inspect the AudioPilot® 2 function operation while driving the vehicle. • Does the AudioPilot® 2 system operation properly? 	Yes The system is normal. Explain the AudioPilot® 2 function to the customer.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Inspect the connection of the audio unit connector (16-pin, AudioPilot® 2 signal). • Inspect both the audio unit and wiring harness-side connector terminal 2B(16-pin) for a poor connection (such as damaged/pulled-out pins corrosion). 	Yes Repair or replace the pins and/or the connector.
		No Go to the next step.

	<ul style="list-style-type: none"> Are all the pins normal? 		
3	<ul style="list-style-type: none"> Inspect the connection of the AudioPilot® 2 microphone connector (2-pin). Inspect the AudioPilot® 2 microphone wiring harness-side connector terminal A and B (2-pin) for poor connection (such as damaged/pulled-out pins, corrosion). Are all pins normal? 	Yes	Repair or replace the pins and/or the connector.
		No	Go to the next step.
4	<ul style="list-style-type: none"> Inspect continuity between the following terminals of the audio amplifier connector and body ground <ul style="list-style-type: none"> Terminal 1O (AudioPilot® 2 microphone+) Terminal 1P (AudioPilot® 2 microphone-) Terminal 1B (vehicle speed signal) Is there continuity? 	Yes	Repair or replace short to ground.
		No	Go to the next step.
5	<ul style="list-style-type: none"> Inspect continuity between the following terminals of the audio amplifier connector and AudioPilot® 2 microphone / instrument cluster connector. <ul style="list-style-type: none"> Terminal 1O—AudioPilot® 2 microphone Terminal B (AudioPilot® 2 microphone+) Terminal 1P—AudioPilot® 2 microphone Terminal A (AudioPilot® 2 microphone-) Terminal 1B—DSC Terminal T / ABS Terminal V (vehicle speed signal) Is there continuity? 	Yes	Go to the next step.
		No	Repair or replace for open circuit.
6	<ul style="list-style-type: none"> Inspect the connection of the audio amplifier connector (16-pin, AudioPilot® 2 microphone signal). Inspect both the audio amplifier and wiring harness-side connector terminals 1O and 1P (16-pin) for poor connection (such as damaged/pulled-out pins, corrosion). Are all the pins normal? 	Yes	Repair or replace the pins and/or the connector.
		No	Replace the audio amplifier. (See AUDIO AMPLIFIER REMOVAL/INSTALLATION .)

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

FOREWORD [RADIO]

NOTE:

- In case location, time, and broadcasting station etc. can be specified through interview to customer, possibility that signal environment causes problem is high.
- Perform confirmation of symptom and evaluation under conditions that customer reported (location, time, broadcasting station etc.). If not possible, perform it under equivalent conditions.
- Before inspection or repair, record the broadcasting stations that customer preset and reset them accordingly after the inspection or repair. Adjust the clock too.

Troubleshooting Index

No.	Symptom	Possible DTC
1	No radio reception (AM/FM)/No or low volume	09:Er20, 09:Er22
2	No radio reception (SIRIUS satellite radio)	11:Er01, 11:Er03
3	Noise from radio (AM only)	09:Er22
4	Noise from radio (FM only)	09:Er22
5	Noise from radio (SIRIUS satellite radio only)	11:Er01, 11:Er03
6	Cannot tune (SEEK does not stop)	09:Er20, 09:Er22
7	Cannot preset (preset function does not operate)	21:Er19
8	Reception frequency of radio slips	09:Er22

Quick Diagnostic Chart (Radio)

X: Applicable

Possible factor	Troubleshooting item							
	1	2	3	4	5	6	7	8
	No radio reception (AM/FM)/No or low volume	No radio reception (SIRIUS satellite radio)	Noise from radio (AM only)	Noise from radio (FM only)	Noise from radio (SIRIUS satellite radio only)	Cannot tune (SEEK does not stop)	Cannot preset (preset function does not operate)	Reception frequency of radio slips
Jamming from aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc)	X	X	X	X	X			
Audio unit/car navigation unit	X	X	X	X		X	X	X
Antenna plug poor connection	X	X	X	X	X	X		
Antenna feeder	X	X	X	X	X	X		
Electronic jamming from outside, or inferior condition of broadcasting station radio wave	X	X	X	X	X	X		X
Noise from electrical system on vehicle (e.g.fuel pump)			X	X	X			
Battery		X	X	X	X			
Charging system			X	X	X			
Antenna installation loosened		X	X	X	X			
Center panel (without car-navigation system)		X				X	X	
SIRIUS satellite radio unit		X			X			
Open or short circuit in wiring harness between SIRIUS satellite radio unit and audio unit/car-navigation unit		X						
Communication error between SIRIUS satellite radio unit and audio unit/car-navigation unit		X						

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

CONFIRMATION STEP 1: RECEPTION CONDITION SYMPTOM (EXAMPLE) [RADIO]

Symptom	Antenna signal condition	Source
Only a buzzing sound from the speakers	<ul style="list-style-type: none"> • There is no broadcasting wave. • Signals from antenna to audio unit/car-navigation unit are not transmitted. 	<ul style="list-style-type: none"> • Electric noise caused by the operation of internal circuit from audio unit/car-navigation unit itself • Atmosphere noise
A buzzing or crunching sound and normal sound produced at the same time from the speakers	<ul style="list-style-type: none"> • Though signals are transmitted from antenna to audio unit/car-navigation unit, electric noise from other sources is larger. 	<ul style="list-style-type: none"> • Electrical noise caused by operation of electrical component on vehicle • Electrical noise from high tension wire, transformer substation (factory), electrical feeder line (street car), or motorcycle.
A thumping sound and normal sound produced at the same time from the speakers (FM only)	<ul style="list-style-type: none"> • Noise occurs due to radio wave environment at specific places (e.g. in valleys between buildings). Noise varies when own vehicle or surrounding vehicles moves. (FM only) 	<ul style="list-style-type: none"> • Interference between direct and reflected waves of FM signals causes noise (Multipass noise).

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

CONFIRMATION STEP 2: ANTENNA SYSTEM SYMPTOM (EXAMPLE) [RADIO]

Possible cause	AM reception condition	FM reception condition	SIRIUS satellite radio reception
<ul style="list-style-type: none"> Antenna feeder axis, open circuit Antenna feeder plug not attached 	NG: No reception	YES: Reception possible. (Sensitivity decreases, but reception is possible under strong electric field.)	NG: No reception
<ul style="list-style-type: none"> Antenna feeder axis (+) to ground (-), open circuit 	NG: No reception	NG: No reception	NG: No reception
<ul style="list-style-type: none"> Antenna feeder and antenna, poor ground 	YES: Reception possible (Noise may occur)	YES: Reception possible (Sensitivity decreases, but reception is possible under strong electric field.)	YES: Reception possible (Noise may occur)
<ul style="list-style-type: none"> Antenna feeder, jack and plug poor connection 	NG: No reception (Depending on connection conditions)	YES: Reception possible (Depending on connection conditions)	NG: No reception (Depending on connection conditions)

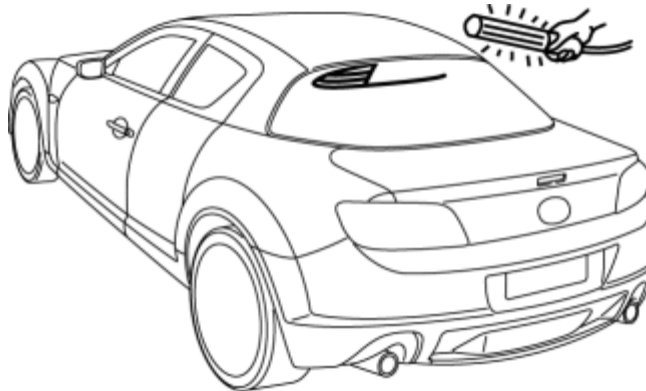
2011 - RX-8 - Body and Accessories

CONFIRMATION STEP 3: ANTENNA SYSTEM SIMPLE INSPECTION [RADIO]

- Because the antenna system is equipped with a capacitor, the continuity cannot be checked. Therefore proceed the following simple inspection.
 - Turn the AM radio on.
 - Tune to the frequency that there is no broadcast and you will hear a buzzing sound.
 - Turn a work light on and shake it around the antenna rod (around 10—20 mm)

NOTE:

- Use a fluorescent light type for the inspection. Accurate diagnostic cannot be done with a different type of light.



- If a whirring sound from the speaker synchronized to the work light movement is confirmed, the antenna system is normal.

2011 - RX-8 - Body and Accessories

NO.1 NO RADIO RECEPTION (AM/FM)/NO OR LOW VOLUME [RADIO]

1	No radio reception (AM/FM)/no or low volume/Possible DTC: 09:Er20, 09:Er22
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Low vehicle battery voltage • Electronic jamming from outside, or inferior condition of broadcasting station radio wave • Jamming from aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc.) • Antenna plug poor connection • Antenna feeder malfunction • Audio unit/car-navigation unit malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	• Turn the audio unit/car-navigation unit power to ON.	Yes Go to Step 3.
	• Is the LCD indicated correctly?	No Go to the next step.
2	• Measure voltage at B+ and ACC terminals.	Yes Go to the next step.
	• Is voltage okay? Specification • With ignition switch ON: 11.5 V or more • At idling: 12.5 V or more	No Follow diagnostic procedure for symptom No. 2 (AUDIO).
3	• Set volume to 10 to 15.	Yes Go to the next step.

	<ul style="list-style-type: none"> Is buzzing sound or voice confirmed? 	No	Follow diagnostic procedure for symptom No. 3 (AUDIO) or No. 4 (AUDIO).
4	<ul style="list-style-type: none"> Tune to local broadcasting station and check reception condition. Is reception okay? 	Yes	Go to the next step.
		No	Go to Step 6.
5	<ul style="list-style-type: none"> Push PRESET switches and check preset conditions. Has preset been stored? 	Yes	The system is normal.
		No	Preset broadcasting stations.
6	<ul style="list-style-type: none"> Is aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc.) installed? <p>NOTE:</p> <ul style="list-style-type: none"> TV antenna located closely to audio antenna can be cause of noise. Relocate TV antenna. 	Yes	Go to the next step.
		No	Go to Step 8.
7	<ul style="list-style-type: none"> Remove aftermarket electronic equipment. Turn audio unit/car-navigation unit ON and check reception condition. Is reception improved? 	Yes	The system is normal. (Explain to customers that aftermarket electronic equipment is cause of noise)
		No	Go to the next step.
8	<ul style="list-style-type: none"> Refer to confirmation step 3, and inspect antenna system. Is a whirring sound present? 	Yes	Replace audio unit/car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)
		No	Go to the next step.
9	<ul style="list-style-type: none"> Inspect antenna plug connection condition. Is connection okay? 	Yes	Go to the next step.
		No	Insert antenna plug securely.

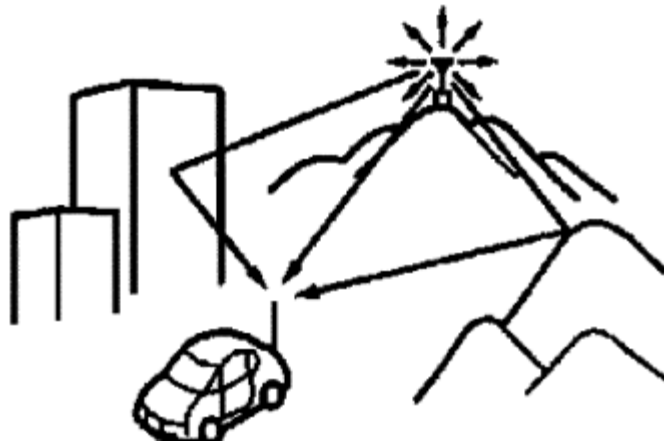
10	<ul style="list-style-type: none"> • Turn ignition switch to LOCK position. • Measure continuity between antenna feeder axis and ground. • Is there any continuity? 		<p>Yes Replace antenna feeder.</p> <p>No Go to the next step.</p>
11	<ul style="list-style-type: none"> • Compare reception with other audio unit/car-navigation unit on same model (model/unit) under same problem conditions. • Is reception equivalent between customer's unit and compared unit? <p>NOTE:</p> <ul style="list-style-type: none"> • Due to following differences, you may feel difference in reception efficiency. <p style="padding-left: 40px;">(Vehicle side factor)</p> <ul style="list-style-type: none"> ▪ Antenna installation location, height, feeder wiring routing, optional electrical equipment <p style="padding-left: 40px;">(Audio unit/car-navigation unit factor)</p> <ul style="list-style-type: none"> ▪ Volume concern type: It decreases change of volume when signals become weak. (Noise is easy to be conspicuous) ▪ Noise decrease type: It decreases volume when signals become weak, so that noise is not conspicuous. 		<p>Yes The system is normal.</p> <p>(It is caused by electronic jamming from outside, or inferior broadcasting station signal condition.)</p> <p>No Replace audio unit/car-navigation unit.</p> <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</p>

2011 - RX-8 - Body and Accessories

REFERENCE [RADIO]

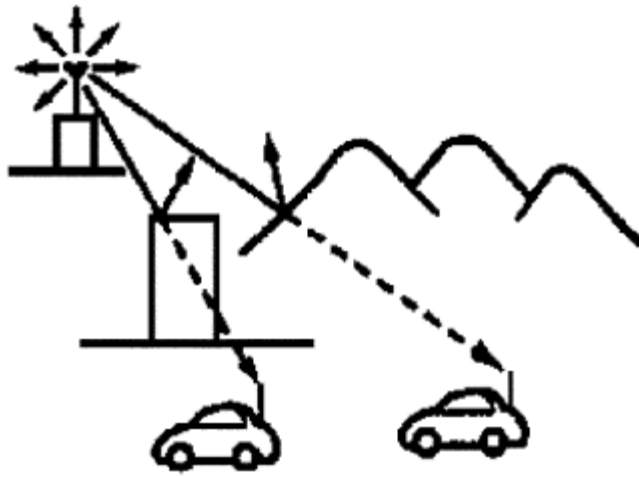
1. Multipath Noise

- Signals from an FM transmitter are a high frequency and similar to beams of light because they do not bend around corners, but they do reflect. Since FM signals can be reflected by obstructions, it is possible to receive both the direct signal and the reflected signal at the same time. This causes a slight delay in reception and may be heard as a broken sound or a distortion.



2. Flutter/Skip Noise

- Signals become weak in valleys between mountains, tall building, and other obstacles. When the vehicle passes through such an area, the reception conditions may change suddenly, resulting in annoying noise.



3. Stereo and Monaural Receptions

- As signals become weak, noise may appear more in stereo reception. Comparing to stereo reception, noise in monaural receptions is relatively less striking.

Measures in Audio System

Separation control

- Utilizing the characteristic of monaural reception that noise is relatively less striking than stereo reception, the audio system automatically changes the reception from stereo to monaural and lessens annoying noise when signals become weak or a multipath phenomenon occurs.

High tone control

- When signals become weak or a multipath phenomenon occurs, the audio system restrains volume level in high frequency band and lessens annoying noise.

Effect Setting of Separation Control and High Tone Control

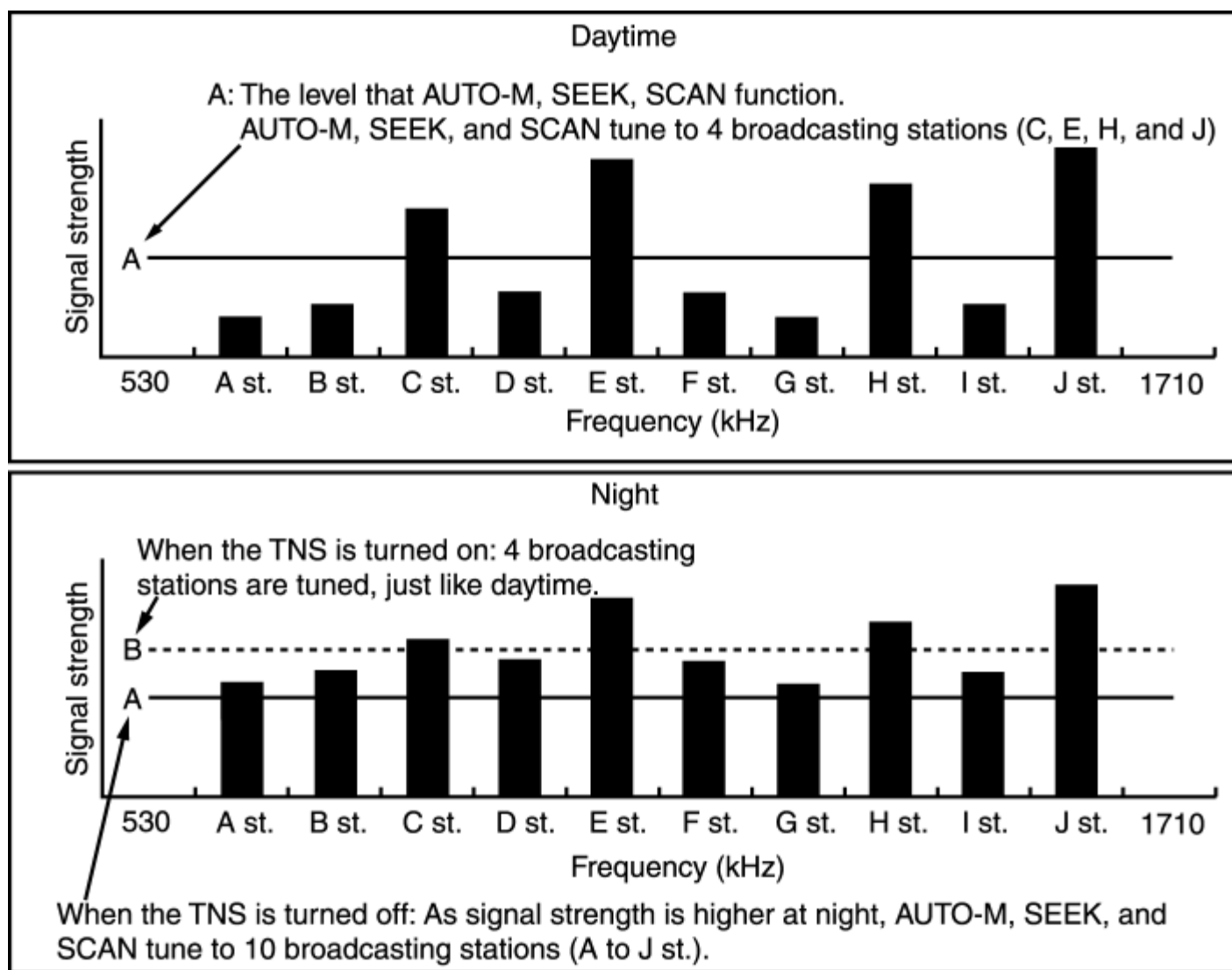
- The separation and high tone controls influence sound quality, Therefore they are specifically tuned for individual model. (Comparison of characteristic must be done on the same models)

High tone setting ➡ Less effective range ➡ Noise is conspicuous

Noise restraint setting ➡ Wider effective range ➡ Noise is less conspicuous

Remarks

- Signals tend to reach longer distances at night. It is conspicuous in AM signals, several audio functions may stop due to foreign broadcasting station or noise. Though the audio system restrains sensitivity of SEEK and SCAN functions at night, the audio system may select other than desired broadcasting station when signals are considerably strong. This function is linked to the parking light. When the parking light or headlight is turned on, SEEK and SCAN may not function for weak signals.



2011 - RX-8 - Body and Accessories

NO.2 NO RADIO RECEPTION (SIRIUS SATELLITE RADIO) [RADIO]

2	No radio reception (SIRIUS satellite radio) /Possible DTC: 11:Er01, 11:Er03
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Low battery voltage • Electronic jamming from outside, or inferior condition of broadcasting station radio wave • Jamming from aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc.) • Antenna plug poor connection • Antenna feeder malfunction • SIRIUS satellite radio unit malfunction • Open or short circuit in wiring harness between SIRIUS satellite radio unit and audio unit/car-navigation unit • Communication error between SIRIUS satellite radio unit and audio unit/car-navigation unit • Audio unit/car-navigation unit malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	• Verify that the AM radio and FM radio reception conditions.	YesGo to the next step.
	• Are AM radio and FM radio reception normally?	No Perform symptom "No.1 no radio reception (AM/FM)/no or low volume" troubleshooting procedure.
2	• Is aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc.) installed?	YesGo to the next step.

	<p>NOTE:</p> <ul style="list-style-type: none"> TV antenna located closely to audio antenna can be cause of noise. Relocate TV antenna. 	No	Go to Step 4.
3	<ul style="list-style-type: none"> Remove aftermarket electronic equipment. Turn audio unit/car-navigation unit ON and check reception condition. Is reception improved? 	Yes	<p>The system is normal.</p> <p>(Explain to customers that aftermarket electronic equipment is cause of noise)</p>
		No	Go to the next step.
4	<ul style="list-style-type: none"> Inspect SIRIUS satellite radio antenna plug connection condition. Is connection okay? 	Yes	Go to the next step.
		No	Insert antenna plug securely.
5	<ul style="list-style-type: none"> Turn ignition switch to LOCK position. Measure continuity between SIRIUS satellite radio antenna feeder axis and ground. Is there any continuity? 	Yes	Replace the SIRIUS satellite radio antenna feeder.
		No	Go to the next step.
6	<ul style="list-style-type: none"> Inspect the SIRIUS satellite radio antenna feeder. <p>(See SIRIUS SATELLITE RADIO ANTENNA FEEDER INSPECTION.)</p> <ul style="list-style-type: none"> Is the SIRIUS satellite radio antenna feeder normal? 	Yes	Go to the next step.
		No	<p>Replace the SIRIUS satellite radio antenna feeder.</p> <p>(See SIRIUS SATELLITE RADIO ANTENNA FEEDER INSTALLATION.)</p>
7	<ul style="list-style-type: none"> Inspect the SIRIUS satellite radio antenna. <p>(See SIRIUS SATELLITE RADIO ANTENNA FEEDER INSPECTION.)</p> <ul style="list-style-type: none"> Is the SIRIUS satellite radio antenna normal? 	Yes	Go to the next step.
		No	<p>Replace the SIRIUS satellite radio antenna.</p> <p>(See SIRIUS SATELLITE RADIO ANTENNA REMOVAL/INSTALLATION.)</p>
8	<ul style="list-style-type: none"> Inspect the following wiring harness for open or short circuit. <p>Without car-navigation</p>	Yes	Repair or replace malfunctioning part.
		No	Go to the next step.

system:

- Between SIRIUS satellite radio unit harness side connector terminal 2L and audio unit terminal 1O
- Between SIRIUS satellite radio unit harness side connector terminal 2K and audio unit terminal 1Q
- Between SIRIUS satellite radio unit harness side connector terminal 2O and audio unit terminal 2O
- Between SIRIUS satellite radio unit harness side connector terminal 2P and audio unit terminal 2P
- Between SIRIUS satellite radio unit harness side connector terminal 2C and audio unit terminal 2C
- Between SIRIUS satellite radio unit harness side connector terminal 2E and audio unit terminal 2E
- Between SIRIUS satellite radio unit harness side connector terminal 2G and audio unit terminal 2G
- Between SIRIUS satellite radio unit harness side connector terminal 2A and audio unit terminal 2A

With car-navigation system:

- Between SIRIUS satellite radio unit harness side connector terminal 2L and car-navigation unit terminal 1O
- Between SIRIUS satellite radio unit harness side connector terminal 2K and car-navigation unit terminal 1Q

	<p>Between SIRIUS satellite radio unit harness side connector terminal 2O and car-navigation unit terminal 2O</p> <ul style="list-style-type: none"> Between SIRIUS satellite radio unit harness side connector terminal 2P and car-navigation unit terminal 2P Between SIRIUS satellite radio unit harness side connector terminal 2C and car-navigation unit terminal 2C Between SIRIUS satellite radio unit harness side connector terminal 2E and car-navigation unit terminal 2E Between SIRIUS satellite radio unit harness side connector terminal 2G and car-navigation unit terminal 2G Between SIRIUS satellite radio unit harness side connector terminal 2A and car-navigation unit terminal 2A <ul style="list-style-type: none"> Is there any open or short circuit detected? 		
9	<ul style="list-style-type: none"> Install all removed parts. Compare reception with other audio unit/car-navigation unit on same model (model/unit) under same problem conditions. Is reception equivalent between customer's unit and compared unit? <p>NOTE:</p> <ul style="list-style-type: none"> Due to following differences, you may feel difference in reception efficiency. <p>(Vehicle side factor)</p>	Yes	<p>The system is normal.</p> <p>(It is caused by electronic jamming from outside, or inferior broadcasting station signal condition.)</p>
		No	<p>Replace audio unit/car-navigation unit.</p> <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</p>

- | | | |
|--|---|--|
| | <ul style="list-style-type: none">■ Antenna installation location, height, feeder wiring routing, optional electrical equipment | |
|--|---|--|

(Audio unit/car-navigation unit factor)

- | | | |
|--|---|--|
| | <ul style="list-style-type: none">■ Volume concern type: It decreases change of volume when signals become weak. (Noise is easy to be conspicuous)■ Volume concern type: It decreases change of volume when signals become weak. (Noise is easy to be conspicuous) | |
|--|---|--|

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

NO.3 NOISE FROM RADIO (AM ONLY) [RADIO]

3	Noise from radio (AM only)/Possible DTC: 09:Er22
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Antenna rod not installed • Jamming from aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc.) • Battery malfunction • Noise from electrical system on vehicle (e.g. fuel pump) • Charging system malfunction • Electronic jamming from outside, or inferior condition of broadcasting station radio wave • Antenna plug poor connection • Antenna feeder malfunction • Antenna installation loosened • Audio unit /car-navigation unit malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Tune to local broadcasting station and check reception condition. 	Yes Tune to correct frequency of broadcasting station. If not preset, preset it.
	<ul style="list-style-type: none"> • Is reception okay? 	No Go to the next step.
2	<ul style="list-style-type: none"> • Is aftermarket electronic equipment (two-way radio, navigation system, mobile 	Yes Go to the next step.

	<p>phone, etc.) installed?</p> <p>NOTE:</p> <ul style="list-style-type: none">TV antenna located closely to audio antenna can be cause of noise. Relocate TV antenna.	No	Go to Step 4.
3	<ul style="list-style-type: none">Remove aftermarket electronic equipment.Turn audio unit/car-navigation unit ON and check reception condition.Is reception improved?	Yes	The system is normal. (Explain to customers that aftermarket electronic equipment is cause of noise)
		No	Go to the next step.
4	<ul style="list-style-type: none">Measure battery voltage.Is battery voltage okay? <p>Specification:</p> <ul style="list-style-type: none">With ignition switch ON: 11.5 V or moreAt idling: 12.5 V or more <p>NOTE:</p> <ul style="list-style-type: none">Inspect that battery cables are connected to terminals securely.	Yes	Go to the next step.
		No	Charge battery. Inspect charging system, and repair or replace if necessary.
5	<ul style="list-style-type: none">Is noise occurring only when vehicle electrical system (e.g. fuel pump) operates? <p>NOTE:</p> <ul style="list-style-type: none">Identify subject electrical component by disconnecting fuse, turning switch ON & OFF, or disconnecting & connecting connector.It will be easy when simulation function on M-MDS is used.	Yes	Go to the next step.
		No	Go to Step 7.
6	<ul style="list-style-type: none">Inspect power supply, ground condition, and noise prevention capacitor for	Yes	Go to the next step.

	<p>electrical component.</p> <ul style="list-style-type: none">• Is noise present after inspection? <p>NOTE:</p> <ul style="list-style-type: none">• Inspect following:<ul style="list-style-type: none">▪ Power supply to electrical component for voltage drop (compare with battery voltage)▪ Resistance between ground of electrical component and body. (Should be close to 0 ohm)▪ Installation condition of noise prevention capacitor for fuel pump etc.	No	Troubleshooting completed.
			<p>NOTE:</p> <ul style="list-style-type: none">• The audio unit/car-navigation unit supplies 12 V battery power to the antenna amplifier for the AM radio reception in the radio mode. The audio unit/car-navigation unit cannot receive the AM signals without the 12 V battery power to the antenna amplifier. If the AM signals become strong, the audio/unit car-navigation unit may receive the signal with noises.
7	<ul style="list-style-type: none">• Inspect antenna plug connection condition.	Yes	Go to the next step.
	<ul style="list-style-type: none">• Is connection okay?	No	Insert antenna plug securely.
8	<ul style="list-style-type: none">• Turn ignition switch to LOCK position.	Yes	Replace antenna feeder.
	<ul style="list-style-type: none">• Measure continuity between antenna feeder axis and ground.• Is there any continuity?	No	Go to the next step.
9	Compare reception with other audio unit/car-navigation unit on same model (model/unit) under same problem conditions.	Yes	The system is normal (It is caused by electronic jamming from outside, or inferior broadcasting station signal condition).

- Is reception equivalent between customer's unit and compared unit?

NOTE:

- Due to following differences, you may feel difference in reception efficiency.

(Vehicle side factor)

- Antenna installation location, height, feeder wiring routing, optional electrical equipment

(Audio unit/car-navigation unit factor)

- Volume concern type: It decreases change of volume when signals become weak. (Noise is easy to be conspicuous)
- Noise decrease type: It decreases volume when signals become weak, so that noise is not conspicuous.

No Go to the next step.

10

- Retighten ground fixation for antenna installation part and

Yes Replace audio unit/car-navigation unit.

	antenna amplifier. • Is noise present, after retightening?	(See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)
		No Troubleshooting completed.

2011 - RX-8 - Body and Accessories

NO.4 NOISE FROM RADIO (FM ONLY) [RADIO]

4	Noise from radio (FM only)/Possible DTC: 09:Er22
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Antenna rod not installed • Jamming from aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc.) • Battery malfunction • Noise from electrical system on vehicle (e.g. fuel pump) • Charging system malfunction • Electronic jamming from outside, or inferior condition of broadcasting station radio wave • Antenna plug poor connection • Antenna feeder malfunction • Antenna installation loosened • Audio unit/car-navigation unit malfunction <p>NOTE:</p> <ul style="list-style-type: none"> • FM broadcast has feature “sound quality is good” and “resistant to noise”, but FM broadcast has particular noises. Though audio unit/car-navigation unit is designed to reduce noise, there are times noise occurs due to conditions.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Tune to local broadcasting station and check reception condition. • Is reception okay? 	<p>Yes Tune to correct frequency of broadcasting station.</p> <p>If not preset, preset it.</p>

		No	Go to the next step.
2	<ul style="list-style-type: none"> Is aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc.) installed? 	Yes	Go to the next step.
		No	Go to Step 4.
3	<ul style="list-style-type: none"> Remove aftermarket electronic equipment. Turn audio unit/car-navigation unit ON and check reception condition. Is reception improved? 	Yes	The system is normal. (Explain to customers that aftermarket electronic equipment is cause of noise)
		No	Go to the next step.
4	<ul style="list-style-type: none"> Measure battery voltage. Is battery voltage okay? <p>Specification:</p> <ul style="list-style-type: none"> With ignition switch ON: 11.5 V or more At idling: 12.5 V or more <p>NOTE:</p> <ul style="list-style-type: none"> Inspect that battery cables are connected to terminals securely. 	Yes	Go to the next step.
		No	Charge battery. Inspect charging system, and repair or replace if necessary.
5	<ul style="list-style-type: none"> Is noise occurring only when vehicle electrical system (e.g. fuel pump) operates? <p>NOTE:</p> <ul style="list-style-type: none"> Identify subject electrical component by disconnecting fuse, turning switch ON & OFF, or disconnecting & connecting connector. It will be easy when simulation function on M-MDS is used. 	Yes	Go to the next step.
		No	Go to Step 7.
6	<ul style="list-style-type: none"> Inspect power supply, ground condition, and noise prevention capacitor for electrical component. Is noise present after inspection? <p>NOTE:</p>	Yes	Go to the next step.
		No	Troubleshooting completed.

	<ul style="list-style-type: none"> Inspect following: <ul style="list-style-type: none"> Power supply to electrical component for voltage drop (compare with battery voltage) Resistance between ground of electrical component and body. (Should be close to 0 ohm) Installation condition of noise prevention capacitor for fuel pump etc. 		
7	<ul style="list-style-type: none"> Inspect antenna plug connection condition. Is connection okay? 	Yes	Go to the next step.
		No	Insert antenna plug securely.
8	<ul style="list-style-type: none"> Turn ignition switch to LOCK position. Measure continuity between antenna feeder axis and ground. Is there any continuity? 	Yes	Replace antenna feeder.
		No	Go to the next step.
9	<ul style="list-style-type: none"> Compare reception with other audio unit/car-navigation unit on same model (model/unit) under same problem conditions. Is reception equivalent between customer's unit and compared unit? 	Yes	The system is normal (It is caused by electronic jamming from outside, or inferior broadcasting station signal condition).
		No	Go to the next step.
10	<ul style="list-style-type: none"> Retighten ground fixation for antenna installation part and antenna amplifier. Is noise present, after retightening? <p>NOTE:</p> <ul style="list-style-type: none"> When antenna is not grounded perfectly, FM particular noise is likely to be conspicuous. 	Yes	Replace audio unit/car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)
		No	Troubleshooting completed.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

NO.5 NOISE FROM RADIO (SIRIUS SATELLITE RADIO ONLY) [RADIO]

5	Noise from radio (SIRIUS satellite audio only)/Possible DTC:11:Er01, 11:Er03
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Jamming from aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc.) • Battery malfunction • Noise from electrical system on vehicle (e.g. fuel pump) • Charging system malfunction • Electronic jamming from outside, or inferior condition of broadcasting station radio wave • Antenna plug poor connection • Antenna feeder malfunction • Antenna installation loosened • SIRIUS satellite radio unit malfunction • Audio unit/car-navigation unit malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Is aftermarket electronic equipment (two-way radio, navigation system, mobile phone, etc.) installed? <p>NOTE:</p> <ul style="list-style-type: none"> • TV antenna located closely to audio antenna can be cause of noise. Relocate TV antenna. 	Yes Go to the next step.
		No Go to Step 3.

2	<ul style="list-style-type: none"> • Remove aftermarket electronic equipment. • Turn audio unit/car-navigation unit ON and check reception condition. • Is reception improved? 	<p>Yes The system is normal.</p> <p>(Explain to customers that aftermarket electronic equipment is cause of noise)</p>
		<p>No Go to the next step.</p>
3	<ul style="list-style-type: none"> • Measure the voltage at battery. • Is the battery voltage okay? <p>Specification:</p> <ul style="list-style-type: none"> • Ignition switch ON: 11.5 V or more • Idle: 12.5 V or more <p>NOTE:</p> <ul style="list-style-type: none"> • Inspect that battery cables are connected to terminals securely. 	<p>Yes Go to the next step.</p> <p>No Charge battery.</p> <p>Inspect charging system, and repair or replace if necessary.</p>
4	<ul style="list-style-type: none"> • Is noise occurring only when vehicle electrical system (e.g. fuel pump) operates? <p>NOTE:</p> <ul style="list-style-type: none"> • Identify subject electrical component by disconnecting fuse, turning switch ON & OFF, or disconnecting & connecting connector. • It will be easy when simulation function on M-MDS is used. 	<p>Yes Go to the next step.</p> <p>No Go to Step 6.</p>
5	<ul style="list-style-type: none"> • Inspect power supply, ground condition, and noise prevention capacitor for electrical component. • Is noise present after inspection? <p>NOTE:</p> <ul style="list-style-type: none"> • Inspect following: <ul style="list-style-type: none"> ▪ Power supply to electrical component 	<p>Yes Go to the next step.</p> <p>No Troubleshooting completed.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • The SIRIUS satellite radio is supplied 12 V battery power for the AM radio reception in the radio mode. The

	<p>for voltage drop (compare with battery voltage)</p> <ul style="list-style-type: none"> Resistance between ground of electrical component and body. (Should be close to 0 ohm) Installation condition of noise prevention capacitor for fuel pump etc. 		<p>audio unit/car-navigation unit cannot receive the AM signals without the 12 V battery power to the antenna amplifier. If the SIRIUS satellite radio signals become strong, the audio unit/car-navigation unit may receive the signal with noises.</p>
6	<ul style="list-style-type: none"> Inspect SIRIUS satellite radio antenna plug connection condition. Is connection okay? 	Yes	Go to the next step.
		No	Insert antenna plug securely.
7	<ul style="list-style-type: none"> Inspect the SIRIUS satellite radio antenna. (See SIRIUS SATELLITE RADIO ANTENNA INSPECTION.) Is the SIRIUS satellite radio antenna normal 	Yes	Go to the next step.
		No	<p>Replace the SIRIUS satellite radio antenna.</p> <p>(See SIRIUS SATELLITE RADIO ANTENNA REMOVAL/INSTALLATION.)</p>
8	<ul style="list-style-type: none"> Turn ignition switch to LOCK position. Measure continuity between SIRIUS satellite radio antenna feeder axis and ground. Is there any continuity? 	Yes	<p>Replace the SIRIUS satellite radio antenna feeder.</p> <p>(See SIRIUS SATELLITE RADIO ANTENNA FEEDER INSTALLATION.)</p>
		No	Go to the next step.
9	<ul style="list-style-type: none"> Inspect the SIRIUS satellite radio antenna feeder. <p>(See SIRIUS SATELLITE RADIO ANTENNA</p>	Yes	Go to the next step.
		No	Replace the SIRIUS satellite radio

	<p>FEEDER INSPECTION.)</p> <ul style="list-style-type: none">Is the SIRIUS satellite radio antenna feeder normal?	<p>antenna feeder.</p> <p>(See SIRIUS SATELLITE RADIO ANTENNA FEEDER INSTALLATION.)</p>
10	<ul style="list-style-type: none">Compare reception with other audio unit/car-navigation unit on same model (model/unit) under same problem conditions.Is reception equivalent between customer's unit and compared unit? <p>NOTE:</p> <ul style="list-style-type: none">Due to following differences, you may feel difference in reception efficiency. <p>(Vehicle side factor)</p> <ul style="list-style-type: none">Antenna installation location, height, feeder wiring routing, optional electrical equipment <p>(Audio unit/car-navigation unit factor)</p> <ul style="list-style-type: none">Volume concern type: It decreases change of volume when signals become weak. (Noise is easy to be conspicuous)Volume concern type: It decreases change of	<p>Yes The system is normal.</p> <p>(It is caused by electronic jamming from outside, or inferior broadcasting station signal condition.)</p>
		<p>No Go to the next step.</p>

	volume when signals become weak. (Noise is easy to be conspicuous)		
11	<ul style="list-style-type: none"> • Retighten ground fixation for antenna installation part and antenna feeder. • Is noise present, after retightening? 	Yes	Replace the SIRIUS satellite radio unit. (See SIRIUS SATELLITE RADIO UNIT REMOVAL/INSTALLATION.)
		No	Troubleshooting completed.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

NO.6 CANNOT TUNE (SEEK DOES NOT STOP) [RADIO]

4	Cannot tune (seek does not stop)/Possible DTC: 09:Er20, 09:Er22
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Center panel malfunction (without car-navigation system) • Electronic jamming from outside, or inferior condition of broadcasting station radio wave • Antenna plug poor connection • Antenna feeder malfunction • Audio unit/car-navigation unit malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Inspect if feel of SEEK switch is normal when switch is pushed and released. • Is it okay? 	YesGo to the next step.
		No Perform confirmation step 1: audio panel switch confirmation. Replace center panel (without car-navigation system) or car-navigation unit if necessary.
2	<ul style="list-style-type: none"> • Inspect indication of LCD. • Is frequency indication increased or decreased when SEEK 	YesGo to the next step.
		No Perform confirmation step 1: audio panel switch confirmation. Replace center panel (without car-navigation system) or car-navigation unit if necessary.

	switch is pushed?		
3	<ul style="list-style-type: none"> Manually tune to local broadcasting station and check reception condition. Is reception okay? 	Yes	Go to Step 6.
		No	Go to the next step.
4	<ul style="list-style-type: none"> Inspect antenna plug connection condition. Is connection okay? 	Yes	Go to the next step.
		No	Insert antenna plug securely.
5	<ul style="list-style-type: none"> Turn ignition switch to LOCK position. Measure continuity between antenna feeder axis and ground. Is there any continuity? 	Yes	Replace antenna feeder.
		No	Go to the next step.
6	<ul style="list-style-type: none"> Check if number of broadcasting stations changes depending on time and place. Does it change? 	Yes	<p>The system is normal. (Explain to customer that SEEK sometimes does not stop depending on signal reception condition.)</p> <p>NOTE:</p> <ul style="list-style-type: none"> Signals tend to reach longer distances in the night. It is conspicuous in AM signals, several audio functions may stop due to foreign broadcasting station or noise. Though the audio system restrains sensitivity of SEEK and SCAN functions in the night, the audio system may select other than desired broadcasting station when signals are considerably strong. This function is linked to the parking light. When the parking light or headlight is turned on,

			SEEK and SCAN may not function for weak signals.
		No	Replace audio unit/car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)

2011 - RX-8 - Body and Accessories

NO.7 CANNOT PRESET (PRESET FUNCTION DOES NOT OPERATE) [RADIO]

7	Cannot preset (preset function does not operate)/Possible DTC: 21:Er19
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Audio unit/car-navigation unit malfunction • Center panel (without car-navigation system) malfunction

Diagnostic procedure

STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none"> • Tune to desired station and push channel preset button 1 for about 2 seconds to store it. • Repeat above for other stations using PRESET switch 2 to 5. • Push channel preset switch 1 to 6 one by one. • Are stored stations present? 	Yes	Go to the next step.
		No	Go to Step 3. (without car-navigation system) Replace the car-navigation unit. (with car-navigation system) (See CENTER PANEL UNIT REMOVAL/INSTALLATION.)
2	<ul style="list-style-type: none"> • Turn ignition switch to LOCK and then to ACC. • Check if preset stations are stored by pushing preset switches. • Are stations stored? 	Yes	The system is normal. (Explain preset procedure to customer using Owner's Manual)
		No	Replace audio unit/car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)
3	<ul style="list-style-type: none"> • Remove center panel from audio unit, and reinstall center panel to audio unit. 	Yes	Replace audio unit/car-navigation unit.

<ul style="list-style-type: none">• Turn the audio unit power to ON.• Press the POWER/VOLUME switch and simultaneously press the MEDIA switch for approx. 1 S.• Push all switches and check if buzzer sounds.• Is all switches okay?	(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)
	(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)
	No Replace center panel (without car-navigation system).
	(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)
	(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)

2011 - RX-8 - Body and Accessories

NO.8 RECEPTION FREQUENCY OF RADIO SLIPS [RADIO]

8	Reception frequency of radio slip/Possible DTC: 09:Er22
POSSIBLE CAUSE	<ul style="list-style-type: none"> Electronic jamming from outside, or inferior condition of broadcasting station radio wave Audio unit/car-navigation unit malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Push SEEK switch and check if desired broadcasting station is tuned. Is it okay? 	Yes Go to Step 3.
		No Go to the next step.
2	<ul style="list-style-type: none"> Check if other broadcasting station is received at certain place when indication of reception frequency stays. Is other station received? <p>NOTE:</p> <ul style="list-style-type: none"> When you receive weak signal from one broadcasting station and come close to broadcasting antenna which emits strong signal, broadcasting with strong signal is sometimes received. 	Yes Go to the next step.
		No Replace audio unit/car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)
3	<ul style="list-style-type: none"> Compare reception with other audio unit/car-navigation unit on same model (model/unit) under same problem conditions. Is reception equivalent between customer's unit and compared unit? 	Yes Troubleshooting completed (Audio unit is normal).
		No Replace audio unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.)

		(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)
--	--	--

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

FOREWORD [CD PLAYER/CHANGER]

Troubleshooting Index

No.	Items	Symptom	Possible DTC
1	CD player/changer	CD player/changer does not load the CD or ejects the CD immediately	03:Er01, 03:Er10, 06:Er01, 06:Er10, 22:Er01, 22:Er10 Device code 25/error code 32
2		CD player/changer does not eject the CD	03:Er01, 06:Er01, 22:Er01
3		CD player/changer does not play the CD/No sound	03:Er07, 03:Er10, 06:Er07, 22:Er07 Device code 25/error code 32
4		Sound jumps	03:Er02, 06:Er02, 22:Er02
5		CD player/changer scratches on the CD	03:Er02, 06:Er02, 22:Er02
6	CD changer	Disc changer is inoperative	06:Er01, 06:Er10, 22:Er01, 22:Er10
7	MP3 applicable CD player	CD player does not play the MP3-formatted file	22:Er07
8		MP3-formatted file folder selection is inoperative/Track search is inoperative	22:Er02
9		CD player does not indicate the MP3 title text	22:Er02
10		CD player does not play the audio data (CDDA)	22:Er02
11	CD player/changer	Track change is inoperative	03:Er02, 06:Er02, 22:Er02 Device code 25/error code 32

X: Applicable

<div> <div>Troubleshooting Item</div> <div>Possible factor</div> </div>	CD player/changer					CD player	MP3 applicable CD player				CD player/changer
	1	2	3	4	5	6	7	8	9	10	11
	CD player/changer dose not load the CD or ejects the CD immediately	CD player/changer dose not eject the CD	CD player/changer dose not play the CD/No sound	Sound jumps	CD player/changer scratches on the CD	Disc change is inoperative	CD player dose not play the MP3-formatted file	MP3-formatted file folder selection is inoperative/Track search is inoperative	CD player dose not indicate the MP3 title text	CD player dose not play the audio data (CODA)	Track change is inoperative
CD is inserted upside down	X		X								
Audio unit is malfunctioning	X	X	X	X	X	X					X
Defective CD (egg., cracked, badly bent, rough edges, scratch, dirty CD, condensation)	X	X	X	X							X
Non-conventional discs (e.g., 8 cm (3 in) CD, 8 cm (3 in) disc adapter, heart-shaped disc, octagonal disc)	X	X	X								X
Poor connection of audio unit connector or terminal (e.g., damaged, bent, pull-out pin, corrosion)	X	X									
Improper center panel installation		X				X					
Improper CD cover installation		X									
Improper audio unit installation (e.g., rattle, loose)				X							
Inadequate tire pressure				X							
Deformed disc is used (e.g., out of specification (thickness), bent disc)	X	X			X						
Multiple CDs are inserted into the CD player at the same time		X			X						
Center panel is malfunctioning						X					X
CD-R/RW written format is out of specification							X			X	
MP3 and other format data are in the CD-R/RW							X				
File extension for MP3-formatted file is incorrect (Correct: ".mp3", Incorrect: e.g., RIFF)							X				
Defective CD-R/RW (e.g., dirty, scratch)							X	X	X	X	
CD-R/RW (MP3 files are all written to RIFF format)							X				
Conflict of ID tag version for CD-R/RW								X	X		
Improper folder and/or music title in CD-R/RW								X			
The number of characters of folder/music file name in CD-R/RW exceeds the maximum number of characters								X	X		
Improper encode in CD-R/RW								X	X		
MP3 applicable CD player is malfunctioning							X	X	X	X	X
No title input in CD-R/RW									X		
Input title text by 2-bytes characters									X		
Data other than the audio data is in CD-R/RW										X	

2011 - RX-8 - Body and Accessories

NO.3 CD PLAYER/CHANGER DOES NOT PLAY THE CD/NO SOUND [CD PLAYER/CHANGER]

3	<p>CD player/changer does not play the CD/No sound</p> <p>Possible DTC:03:Er07, 03:Er10, 06:Er07, 22:Er07,device code 25/error code 32</p>
	<p>Troubleshooting hints</p> <ul style="list-style-type: none"> • CD is inserted upside down • Defective CD (e.g., cracked, badly bent, rough edges, scratch, dirty CD, condensation) • Non-conventional discs (e.g., 8 cm (3 in) CD, 8 cm (3 in) disc adapter, heart-shaped disc, octagonal disc) • Audio units is malfunctioning

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Turn the radio ON and inspect that there is a sound. • Is there a sound? <p>NOTE:</p> <ul style="list-style-type: none"> • Check for the volume dial position. 	YesGo to the next step.
		No Go to the symptom troubleshooting No.3 (Audio system).
2	<ul style="list-style-type: none"> • Was CD inserted properly, label-side up? 	YesGo to the next step.
		No Explain to the customer that CD should be inserted into the slot, label-side up.

3	<p>Replace the CD known to be good.</p> <ul style="list-style-type: none"> Does the CD player/changer load the CD? 	Yes	Go to the next step.
		No	<p>Replace the audio unit.</p> <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION).</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).</p>
4	<ul style="list-style-type: none"> Visually inspect the CD. <ul style="list-style-type: none"> Is there any dirt, scratch or deformation on the CD? Is the CD a non-conventional disc? Is there a CD in MP3 recording? 	Yes	Explain to the customer that the defective CD or non-conventional disc cannot be use.
		No	Replace the audio unit.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

NO.4 SOUND JUMPS [CD PLAYER/CHANGER]

4	<p>Sound jumps</p> <p>Possible DTC:03:Er02, 06:Er02, 10:Er02, 22:Er02</p>
<p>Troubleshooting hints</p> <ul style="list-style-type: none"> • Defective CD (e.g., cracked, badly bent, rough edges, scratch, dirty CD, condensation) • Improper audio unit installation (e.g., rattle, loose) • Inadequate tire pressure • Audio unit malfunction <p>NOTE:</p> <ul style="list-style-type: none"> • The CD may be malfunctioning if the sound jumps on the certain CD only. Inspect the CD player/changer operation using the CD known to be good. 	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Does the sound jump when the vehicle is stopped? 	YesGo to Step 6.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Drive the vehicle. • Does the sound jump when driving over uneven surfaces? 	YesGo to the next step.
		No Go to Step 6.
3	<ul style="list-style-type: none"> • Is the audio unit installed securely? 	YesGo to the next step.
		No Install the audio unit securely.

4	<ul style="list-style-type: none"> • Inspect the tire pressure. • Is the tire pressure normal? 	Yes	Replace the audio unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION). (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).
		No	Go to the next step.
5	<ul style="list-style-type: none"> • Adjust the tire pressure within specification. • Does the sound jump when driving the vehicle? 	Yes	Replace the audio unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION). (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).
		No	Audio system is normal. Explain repairs to the customers.
6	<ul style="list-style-type: none"> • Replace the CD known to be good. • Does the sound jump when driving the vehicle? 	Yes	Replace the audio unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION). (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).
		No	Audio system is normal. Explain to the customer that the CD is malfunctioning.

2011 - RX-8 - Body and Accessories

NO.5 CD PLAYER/CHANGER SCRATCHES ON THE CD [CD PLAYER/CHANGER]

5	<p>CD player/changer scratches on the CD</p> <p>Possible DTC:03:Er02, 06:Er02, 22:Er02</p>
<p>Troubleshooting hints</p> <ul style="list-style-type: none"> • Deformed disc is used (e.g., out of specification (thickness), bent disc) • Multiple CDs are inserted into the CD player at the same time • Audio unit is malfunctioning 	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Were the multiple CDs inserted into the CD player at the same time? 	Yes Explain to the customer to insert a CD one by one.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Visually inspect the CD. • Is the CD a deformed disc (e.g., out of specification (thickness), bent disc)? 	Yes Audio system is normal. Explain to the customer that the CD is malfunctioning.
		No Replace the audio unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION). (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).

2011 - RX-8 - Body and Accessories

NO.6 DISC CHANGE IS INOPERATIVE [CD PLAYER/CHANGER]

6	Disc change is inoperative Possible DTC:06:Er01, 06:Er10, 22:Er01, 22:Er10
<p>Troubleshooting hints</p> <ul style="list-style-type: none"> • Improper center panel installation • Audio unit is malfunctioning • Center panel is malfunctioning 	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Inspect the CD changer operation. • Does the CD changer operate properly? 	Yes	Go to the next step.
		No	Go to the symptom troubleshooting "No.3 CD player/changer does not play the CD/No sound".
2	<ul style="list-style-type: none"> • Inspect the followings: <ul style="list-style-type: none"> ▪ Is the display shown properly when operating the disc change button? ▪ Does the radio band selection operate properly? 	Yes	Replace the audio unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION). (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).
		No	Go to the next step.
3	<ul style="list-style-type: none"> • Inspect the center panel 	Yes	Install the center panel securely and properly.

	installation.		
		No	Go to the "No.1 Audio panel switch inspection" in this section. Replace the center panel as necessary.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

NO.7 CD PLAYER DOES NOT PLAY THE MP3-FORMATTED FILE [CD PLAYER/CHANGER]

7	CD player does not play the MP3-formatted file Possible DTC 22:Er07
<p>Troubleshooting hints</p> <ul style="list-style-type: none"> • CD-R/RW written format is out of specification • MP3 and other format data are in the CD-R/RW • File extension for MP3-formatted file is incorrect (Correct. ".mp3", incorrect: e.g., RIFF) • Defective CD-R/RW (e.g. dirty CD, scratch) • MP3 applicable CD player malfunction <p>NOTE:</p> <ul style="list-style-type: none"> • The free-software for the MP3-formatted file in the field may cause the deterioration of sound quality, noise, or defective play, so that the CD player won't play the customer made MP-3-formatted file. • The CD player may not play the CD-R/RW properly due to the disc condition. • If there are MP-3-formatted file and other file in the same disc, the CD player may not play the disc. • If there are MP-3-formatted file and audio data in the same disc, the CD player loads and plays the first session of the data only. 	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Inspect the written format of the recorded data on the 	Yes Go to the next step.

	<p>CD-R/RW.</p> <ul style="list-style-type: none"> Is the written format correct? 	No	Write the CD-R/RW with the correct specification.
2	<ul style="list-style-type: none"> Inspect the recorded data in the CD-R/RW. Is there MP3 and other format data in the CD-R/RW. 	Yes	<p>Replace with the CD-R/RW known to be good (MP3-formatted file data only), then inspect the CD player operation.</p> <p>If the CD player plays the MP3-formatted file:</p> <ul style="list-style-type: none"> Audio system is normal. Explain to the customer that the CD player does not operate properly if the MP3 and other format data are in the CD-R/RW. <p>If the CD player does not play the MP3-formatted file:</p> <ul style="list-style-type: none"> Replace the audio unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION).</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).</p>
		No	Go to the next step.
3	<ul style="list-style-type: none"> Inspect the CD-R/RW written format. Is the written format within the specification (".mp3" is the correct file extension)? 	Yes	<p>Replace with the CD-R/RW using the ".mp3" file extension, then inspect the CD player operation.</p> <p>If the CD player plays the MP3-formatted file:</p> <ul style="list-style-type: none"> Audio system is normal. Explain to the customer that the CD player does not operate properly if the correct file extension is not used. <p>If the CD player does not play the MP3-formatted file:</p> <ul style="list-style-type: none"> Replace the audio unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION).</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).</p>
		No	Go to the next step.

4	<ul style="list-style-type: none"> • Visually inspect the CD-R/RW. • Is there any dirt or scratch on the CD-R/RW? 	Yes	Clean the disc or replace with the CD-R/RW known to be good.
		No	Replace the audio unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION). (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

NO.8 MP3-FORMATTED FILE FOLDER SELECTION IS INOPERATIVE/TRACK SEARCH IS INOPERATIVE [CD PLAYER/CHANGER]

8	MP3-formatted file folder selection is inoperative/Track search is inoperative Possible DTC: 22:Er02
Troubleshooting hints <ul style="list-style-type: none">• Defective CD-R/RW (e.g. dirty CD, scratch)• Conflict of ID tag version for CD-R/RW• Improper folder and/or music title in CD-R/RW• The number of characters of folder/audio file name in CD-R/RW exceeds the maximum number of characters• Improper encode in CD-R/RW• MP3 applicable CD player malfunction	

NOTE:

- ID3 is a tagging format for MP3-formatted file. ID3 allows metadata (e.g., title, artist, track number, etc.) to be added to the MP3-formatted file.
- There are two versions in the ID tag.
 - ID3v1: This is the most widespread standard tag formats and most software is compatible with this version. There is a limitation on the maximum number of characters for the text data.
 - ID3v2: There are a variety of version in V2, but there is no interchangeability among the versions.

Limitation on the maximum number of characters for the text data (ID3v1)

Item	Maximum number of characters	Description

Title	30	Music title
Artist	30	Artist name
Album	30	Album title
Year	4	Album produced year/CD wholesale year
Genre	—	Music category selection
Comment	30	Free comment
Track	3	Track number

Diagnostic procedure

STEP	INSPECTION		ACTION	
1	<ul style="list-style-type: none">• Visually inspect the CD-R/RW.• Is there any dirt or scratch on the CD/R/RW?	Yes	Clean the disc or replace with the CD-R/RW known to be good.	
		No	Go to the next step.	
2	<ul style="list-style-type: none">• Inspect the ID tag version.• Is ID tag correct?	Yes	Go to the next step.	
		No	Write the CD-R/RW with the correct ID tag version.	
3	<ul style="list-style-type: none">• Inspect folder and audio file name.• Are all file name input correctly?	Yes	Go to the next step.	
		No	Use the CD-R/RW that a folder and audio file name is input correctly.	
4	<ul style="list-style-type: none">• Inspect the encode for the folder and audio file name in the CD-R/RW.• Is the encode correct?	Yes	Go to the next step.	
		No	Use the correct encode.	
NOTE: <ul style="list-style-type: none">• Unreadable characters may be displayed if incorrect encode is				

	used.		
5	<ul style="list-style-type: none">• Inspect the number of characters for the folder and audio file name.• Is the number of characters within the maximum number of characters?	Yes	Replace the audio unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION). (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).
		No	Input the folder and audio file name within the maximum number of characters.

2011 - RX-8 - Body and Accessories

NO.9 CD PLAYER DOES NOT INDICATE THE MP3 TITLE TEXT [CD PLAYER/CHANGER]

9	CD player does not indicate the MP3 title text Possible DTC 22:Er02
<p>Troubleshooting hints</p> <ul style="list-style-type: none"> • Defective CD-R/RW (e.g. dirty CD, scratch) • Conflict of ID tag version for CD-R/RW • The number of characters of folder/audio file name in CD-R/RW exceeds the maximum number of characters • Improper encode in CD-R/RW • MP3 applicable CD player malfunction • No title input in CD-R/RW • Input title text by 2-bytes characters 	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Visually inspect the CD-R/RW. • Is there any dirt or scratch on the CD-R/RW? 	Yes Clean the disc or replace with the CD-R/RW known to be good.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Inspect the display the LCD. • Is the CD (other than MP3 compatible) displayed on the LCD? 	Yes Go to the next step.
		No Go to the symptom troubleshooting No.9 (Entire audio system).

3	<ul style="list-style-type: none"> Inspect the ID tag version. Is the ID tag correct? 	Yes	Go to the next step.
		No	Write the CD-R/RW with the correct ID tag version.
4	<ul style="list-style-type: none"> Is the title text input into the CD-R/RW? 	Yes	Go to the next step.
		No	Input the title text. NOTE: <ul style="list-style-type: none"> Do not input the title text by two-bytes character.
5	<ul style="list-style-type: none"> Inspect the encode for the folder and audio file name in the CD-R/RW. Is the encode correct? 	Yes	Go to the next step.
		No	Use the correct encode.
6	<ul style="list-style-type: none"> Inspect the number of characters for the folder and audio file name. Is the number of characters within the maximum number of characters? 	Yes	Replace the audio unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION). (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).
		No	Input the folder and audio file name within the maximum number of characters.

2011 - RX-8 - Body and Accessories

NO.10 CD PLAYER DOES NOT PLAY THE AUDIO DATA (CDDA) [CD PLAYER/CHANGER]

10	<p>CD player does not play the audio data (CDDA)</p> <p>Possible DTC: 22:Er02</p>
<p>Troubleshooting hints</p> <ul style="list-style-type: none"> • CD-R/RW written format is out of specification • Defective CD-R/RW (e.g., dirty CD, scratch) • MP3 applicable CD player malfunction • Data other than the audio data is in CD-R/RW <p>NOTE:</p> <ul style="list-style-type: none"> • The CD player may not play the CD-R/RW properly due to the disc condition. • If there are MP-3-formatted file and audio data in the same disc, the CD player loads and plays the first session of the data only. 	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Replace with the audio-CD known to be good. • Does the CD player play the audio-CD properly? 	YesGo to the next step.
		No Replace the audio unit.
2	<ul style="list-style-type: none"> • Inspect the 	YesGo to the next step.

	<p>written format of the recorded data on the CD-R/RW.</p> <ul style="list-style-type: none"> Is the written format correct? 		<p>No Write the CD-R/RW with the correct specification.</p>
3	<ul style="list-style-type: none"> Inspect the recorded data in the CD-R/RW. Is any data other than the audio data recorded in the CD-R/RW? 	<p>Yes Replace with the CD-R/RW known to be good (record audio data only), then inspect the CD player operation.</p> <p>If the CD-R/RW plays:</p> <ul style="list-style-type: none"> Audio system is normal. Explain to the customer that the CD player does not operate properly if the audio data and other data are recorded in the CD-R/RW. <p>If the CD-R/RW does not play:</p> <ul style="list-style-type: none"> Replace the audio unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION).</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).</p>	
		<p>No Go to the next step.</p>	
4	<ul style="list-style-type: none"> Visually inspect the CD-R/RW. Is there any dirt or scratch on the CD-R/RW? 	<p>Yes Clean the disc or replace with the CD-R/RW known to be good.</p>	
		<p>No Replace the audio unit.</p> <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION).</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).</p>	

2011 - RX-8 - Body and Accessories

NO.11 TRACK CHANGE IS INOPERATIVE [CD PLAYER/CHANGER]

11	<p>Track change is inoperative</p> <p>Possible DTC:03:Er02, 06:Er02, 22:Er02,device code 25/error code 32</p>
<p>Troubleshooting hints</p> <ul style="list-style-type: none"> • Audio unit is malfunctioning • Defective CD (e.g., cracked, badly bent, rough edges, scratch, dirty CD, condensation) • Non-conventional discs (e.g., 8 cm (3 in) CD, 8 cm (3 in) disc adapter, heart-shaped disc, octagonal disc) • Center panel is malfunctioning • MP3 applicable CD player malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Replace the CD known to be good. • Does the CD player change the track? 	Yes Explain to the customer that the defective CD or non-conventional disc cannot be used.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Inspect the center panel installation. • Does the CD player change the track number on the display when pressing the track up or down button? 	Yes Replace the audio unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION). (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).
		No Go to the "No.1 Audio panel switch

		inspection" in this section. Replace the center panel as necessary.
--	--	---

[< Previous](#) [Next >](#)

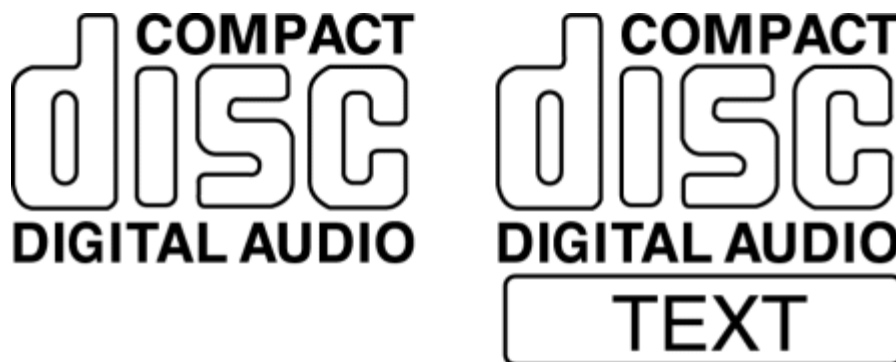
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

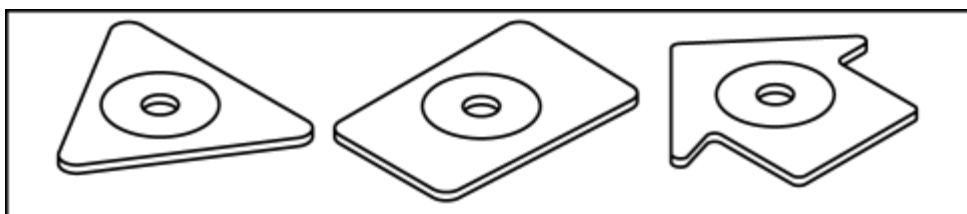
AUDIO CD [CD PLAYER/CHANGER]

- The CD player/changer has been designed to play CDs bearing the identification logo, COMPACT DISC DIGITAL AUDIO, as shown. No other discs can be played on the CD player/changer other than MP3 applicable one.



- The CD player/changer may not play the following CD:
 - Defective CD (e.g., cracked, badly bent, rough edges, scratch, dirty CD condensation)
 - 8 cm (3 in) CDs accessories (e.g., 8 cm (3 in) disc adapter, sticker, label)
 - Nonstandard CD (e.g., Diameter/thickness is out of specification)
 - Specification: 119.7—120.3 mm (4.668—4.692 in) of diameter, 1.2+0.3 or -0.1 mm (0.047+0.012 or 0.004 in) of thickness
- Do not use non-conventional discs. The CD player/changer could be damaged.

Examples:



- Although the same physical size as the compact disc, SACD uses a different kind of digital audio signal, Direct Stream Digital.
- The CD player/changer may not play the CD-R/RW properly due to the disc condition (excluding the MP3).

MP3-Formatted File

Outline of CD-R and CD-RW

- Definition
 - CD-R: The CD-R is a non-rewritable version. Once a section of a CD-R is written, it cannot be erased or rewritten.
 - CD-RW: The CD-RW is a re-writable version of CD-ROM and can be written the data an unlimited number of times.
 - Since a reflected laser beam amount of the CD-R/RW is less than the reflected laser beam amount of the conventional CD media, the CD player/changer may not play the CD-R/RW or have the sound jumped.
 - Since the recording quality of the CD-R/RW vary widely, some CD-R/RW may not be played.

Recording method

- There are two methods for recording.
- Classification by recorder
 - Record the audio data in the audio-CD by audio recorder
 - The price of the audio recorder and original audio-CD includes the copyright fee.
 - Recorded the audio data in the conventional data-CD by the personal computer
 - The data-CD is cheaper than the audio-CD. But, there is a CD with the low quality.
- Classification by audio data uncompression/compression
 - Uncompressed audio data
 - The CD-R/RW player can play the uncompressed audio data.
 - Compressed audio data
 - It is possible to record the large quantity of music in a disc. The sound quality varies depends on the audio data compression format. The compressed audio data can be played on the applicable player only.
 - Type of compression format:
 - MP3: MPEG Audio Layer 3 — Mazda genie MP3 applicable CD player is available.
 - WMA: Windows Media Audio

- ATRAG: Adaptive TRansform Acoustic Coding

MP3

- The following condition should be met in order to record the MP3-formatted data on the MP3 applicable CD player:

Media	Applicable to the CD-R/RW
Logical format	ISO 9660 level 1&2 / Joliet / Romeo
Number of directly	8 directly
Number of files	Maximum 255 as a total number of file and folder Maximum 155 for folder
ID3 TAG	Applicable to Ver1.1, 2.3 and 2.4
File extension	MP3
Packet writing	Not applicable
Bit rate	8 kbps—320 kbps/VBR
Sampling rate	11.025 kHz—48 kHz

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

NO.1 CD PLAYER/CHANGER DOES NOT LOAD THE CD OR EJECTS THE CD IMMEDIATELY [CD PLAYER/CHANGER]

1	<p>CD player/changer does not load the CD or ejects the CD immediately</p> <p>Possible DTC: 03:Er01, 03:Er10, 06:Er01, 06:Er10, 22:Er01, 22:Er10, device code 25/error code 32</p>
<p>Troubleshooting hints</p> <ul style="list-style-type: none"> • CD is inserted upside down • Defective CD (e.g., cracked, badly bent, rough edges, scratch, dirty CD, condensation) • Non-conventional discs (e.g., 8 cm (3 in) CD, 8 cm (3 in) disc adapter, heart-shaped disc, octagonal disc) • Deformed disc is used (e.g., out of specification (thickness), bent disc) • Poor connection of audio unit connector or terminal (e.g., damaged, bent, pulled-out pin, corrosion) • Audio unit malfunction 	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Is CD inserted properly, label-side up? 	Yes Go to the next step.
		No Explain to the customer that CD should be inserted into the slot, label-side up.
2	<ul style="list-style-type: none"> • Replace with a CD known to be good. • Does the CD player/changer load the CD? 	Yes Go to the next step.
		No Replace the audio unit. (See CENTER PANEL UNIT)

			REMOVAL/INSTALLATION). (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).
3	Visually inspect the CD. <ul style="list-style-type: none"> Is there any dirt, scratch or deformation on the CD? Is the CD a non-conventional disc? 	Yes	Explain to the customer that the defective CD or non-conventional disc cannot be use.
		No	Go to the next step.
4	<ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Inspect the connection of the audio unit connector (24-pin). Inspect both audio unit connector and wiring harness-side connector for poor connection. (such as damaged/bent/pulled-out pins, corrosion) All the pins and connector normal? 	Yes	Replace the audio unit.
		No	<p>If the audio unit connector/pin is wrong:</p> <ul style="list-style-type: none"> Replace the audio unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION).</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).</p> <p>If the wiring harness-side connector/pin is wrong:</p> <ul style="list-style-type: none"> Repair or replace the pins and/or the connector.

2011 - RX-8 - Body and Accessories

NO.2 CD PLAYER/CHANGER DOES NOT EJECT THE CD [CD PLAYER/CHANGER]

2	<p>CD player/changer does not eject the CD</p> <p>Possible DTC:03:Er01, 06:Er01, 22:Er01,device code 25/error code 32</p>
	<p>Troubleshooting hints</p> <ul style="list-style-type: none"> • Defective CD. (e.g., cracked, badly bent, rough edges, scratch, dirty CD, condensation) • Non-conventional discs (e.g., 8 cm (3 in) CD, 8 cm (3 in) disc adapter, heart-shaped disc, octagonal disc) • Deformed disc is used (e.g., out of specification (thickness), bent disc). • Multiple CDs are inserted into the CD player at the same time • Poor connection of audio unit connector or terminal (e.g., damaged, bent, pulled-out pin, corrosion) • Improper CD cover installation • Improper center panel installation • Audio unit malfunction <p>NOTE:</p> <ul style="list-style-type: none"> • The CD may be malfunctioning if the CD player/changer does not eject the certain CD only. Inspect the CD player/changer operation using the CD known to be good.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Inspect the operation of the audio system other than CD player/changer (e.g. Radio). • Does other audio system operate? 	YesGo to Step 3.
		No Go to the next step.

2	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect the connection of the audio unit connector (24-pin). • Inspect both audio unit connector and wiring harness-side connector for poor connection. (such as damaged/bent/pulled-out pins, corrosion) • All the pins and connector normal? 	Yes	Go to the next step.
		No	<p>If the audio unit connector/pin is wrong:</p> <ul style="list-style-type: none"> • Replace the audio unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION).</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).</p> <p>If the wiring harness-side connector/pin is wrong:</p> <ul style="list-style-type: none"> • Repair or replace the pins and/or the connector.
3	<ul style="list-style-type: none"> • Eject the CD. • Is the CD ejected from the CD player/changer? 	Yes	Go to the next step.
		No	Inspect the center panel and CD cover installation. Securely install the center panel and/or CD cover as necessary.
4	<ul style="list-style-type: none"> • Insert the CD into the CD player/changer. • Does the CD insert into the CD player/changer smoothly? 	Yes	<p>Replace the audio unit.</p> <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION).</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).</p>
		No	Install the center panel and/or CD cover properly, then go to the next step.
5	<ul style="list-style-type: none"> • Is the CD ejected from the CD player/changer? 	Yes	<p>Troubleshooting completed.</p> <p>Explain repairs to the customers.</p>
		No	<p>Replace the audio unit.</p> <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION).</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).</p>

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

NO.5 VEHICLE POSITION DEVIATES FROM THE ROUTE MAP [CAR-NAVIGATION SYSTEM]

5	Vehicle position deviates from the route map.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Jammed radio signals from after market equipment (radar, remote engine starter, anti-theft device etc.) • Poor connection of GPS antenna connector, terminal damage • GPS antenna malfunction • Open or short circuit in feeder line between GPS antenna feeder and car-navigation unit. • Open or short circuit in harness (vehicle speed signal related). • Car-navigation unit malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Is any of the following after-market equipment installed? (Inspect especially near the GPS antenna.) <ul style="list-style-type: none"> ▪ Radar ▪ Remote engine starter ▪ Anti-theft device ▪ Other 	YesGo to the next step.
		No Go to Step 3.
2	<ul style="list-style-type: none"> • Remove the after-market equipment. <p>CAUTION:</p>	<p>YesSystem is normal.</p> <p>The after-market electrical device might be</p>

	<ul style="list-style-type: none"> • The procedure requires an assistant. • Drive the vehicle without any obstacles. • Does the vehicle indicator follow the steering wheel direction? 	interrupting to GPS reception.	
		No	Go to the next step.
3	<ul style="list-style-type: none"> • Position the vehicle without any obstacles and receive GPS for 5 min. at idle. • Does "GPS" show up on interruption of the left-side of the display screen 	Yes	Go to the next step.
		No	Go to Step 8.
4	CAUTION: <ul style="list-style-type: none"> • The procedure requires an assistant. • Start diagnostic function and indicate "Vehicle Signal" check screen. (See DIAGNOSTIC CHECK [CAR-NAVIGATION SYSTEM].) • Drive the vehicle. • Check the "SPEED" on the diagnosis screen. • Does the "SPEED" change according to the vehicle speed? NOTE: <ul style="list-style-type: none"> • If the engine started after diagnostic function activated, the diagnostic function is reset. 	Yes	Go to the next step.
		No	Go to Step 5.
5	CAUTION: <ul style="list-style-type: none"> • The procedure requires an assistant. • Drive the vehicle and turn the steering wheel to the left or right. • Does the vehicle indicator follow the steering direction? 	Yes	The system is normal.
			NOTE: <ul style="list-style-type: none"> • The vehicle indicator might be out of position in the following areas: <ul style="list-style-type: none"> ■ Parallel road, high-level road, loop

			road, tower type parking, high-rise building s lot.
		No	Replace the car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION). (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).
6	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect the connection of car-navigation unit connector (24-pin). • Is the connector securely connected? 	Yes	Go to the next step.
		No	Securely connect the car-navigation unit connector.
7	<ul style="list-style-type: none"> • Disconnect the car-navigation unit connector (24-pin). • Inspect both car-navigation unit connector and wiring harness-side connector terminal I for poor connection (such as damaged/pulled out pins, corrosion). • Is the pin normal? 	Yes	Inspect for vehicle speed signal circuit (between instrument cluster and car-navigation unit) Repair or replace if necessary.
		No	<p>If the car-navigation unit connector is wrong:</p> <ul style="list-style-type: none"> • Replace the car-navigation unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION). (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).</p> <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> • Repair or replace the pins and/or the connector.
8	<ul style="list-style-type: none"> • Start diagnostic function and indicate "Vehicle Signal" check screen. 	Yes	Go to Step 5.

	<p>(See DIAGNOSTIC CHECK [CAR-NAVIGATION SYSTEM].)</p> <ul style="list-style-type: none">• Drive the vehicle.• Check the “GPS Antenna” on the diagnosis screen.• Is the “OK” indicated? <p>NOTE:</p> <ul style="list-style-type: none">• If the engine started after diagnostic function activated, the diagnostic function is reset.	No	Go to the next step.
9	<ul style="list-style-type: none">• Turn the ignition switch to the LOCK position.• Inspect the connection of the car-navigation unit connector (3-pin) and GPS antenna connector.• Is the connector securely connected?	Yes	Go to the next step.
		No	Securely connect the suspect connector.
10	<ul style="list-style-type: none">• Disconnect the GPS antenna and car-navigation unit connector for poor connection (such as damaged/pulled out pins, corrosion).• Are all pins normal?	Yes	Go to the next step.
		No	<p>If the car-navigation unit connector is wrong:</p> <ul style="list-style-type: none">• Replace the car-navigation unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION).</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).</p> <p>If the GPS antenna connector is wrong:</p> <ul style="list-style-type: none">• Replace the GPS antenna. <p>(See GPS ANTENNA REMOVAL/INSTALLATION.)</p> <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none">• Repair or replace the pins and/or the connector.

11	<ul style="list-style-type: none"> • Replace the GPS antenna. • Does the vehicle position deviate from route map continuously? 	<div> <div>Yes</div> <div> Replace the car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION). (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY). </div> </div> <div> <div>No</div> <div> Troubleshooting completed. (GPS antenna malfunction) </div> </div>
----	--	--

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

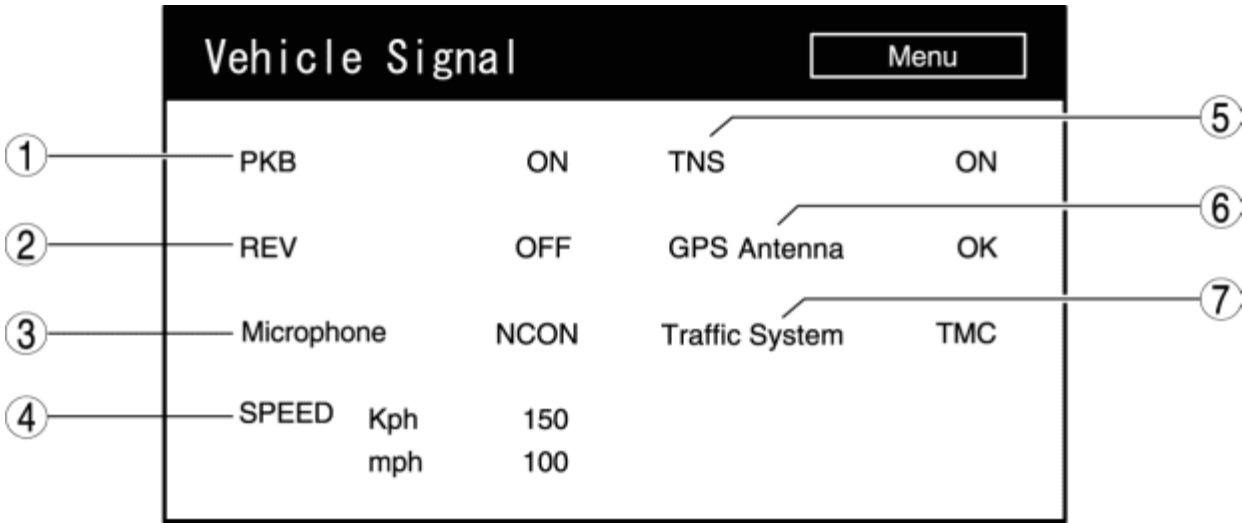
REFERENCE INFORMATION [CAR-NAVIGATION SYSTEM]

Starting Procedure For Diagnostic Function

1. Turn the ignition switch to the on position.
2. Press the MENU switch.
3. Select "Navigation Set Up".
4. Select "Calibration".
5. Select "Map Version".
6. Press upper left of screen 2 times, then press lower left of it 2 times.
7. Press "Menu" button of "Diagnosis Check" screen.
8. Perform following procedures according to the purpose of the check item.

If inspect vehicle condition signals:

- Select "Vehicle Signal".



No.	Display item	Description

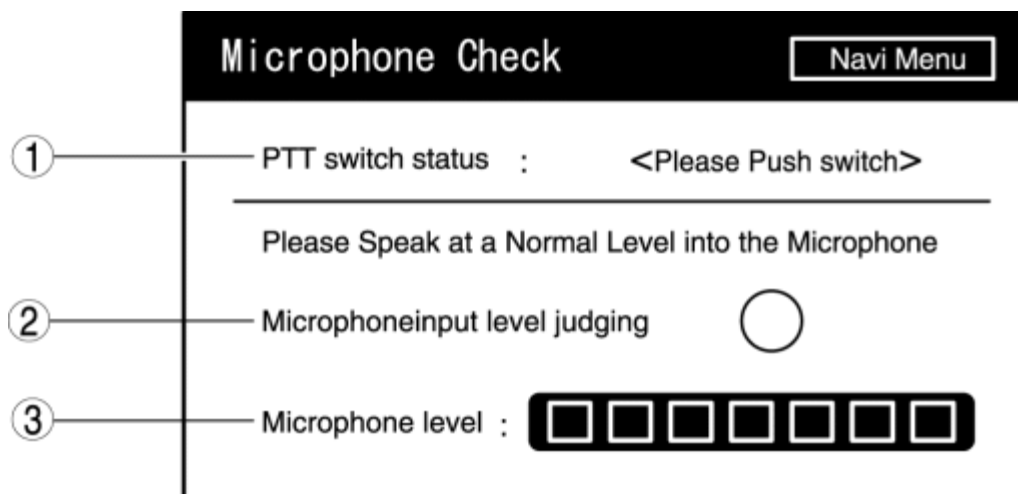
1	PKB	<p>Indicate parking brake signal.</p> <ul style="list-style-type: none"> • ON: Parking brake applied. • OFF: Parking brake released.
2	REV	<p>Indicate Reverse signal state.</p> <ul style="list-style-type: none"> • ON: Reverse • OFF: Others
3	Microphone*	<p>Indicate the connection state of a microphone.</p> <ul style="list-style-type: none"> • OK: Connect • NCON: Disconnect
4	SPEED*	Indicate the present vehicle speed by kph/mph (a maximum of 3 digits)
5	TNS*	<p>Indicate TNS signal state.</p> <ul style="list-style-type: none"> • ON: Turn TNS ON • OFF: Turn TNS OFF
6	GPS Antenna*	<p>Indicate the connection state of a GPS antenna.</p> <ul style="list-style-type: none"> • OK: Connect • NCON: Disconnect
7	Traffic System	<p>Indicate the RDS-TMC system availability on the vehicle.</p> <ul style="list-style-type: none"> • TMC: Equip • NONE: Not equip

*

It is used for symptom troubleshooting. (Troubleshooting index No.4, No.5, No.7 and No.8)

If inspect microphone related signals:

1. Select "Navigation Check Menu".
2. Select "Microphone Check".



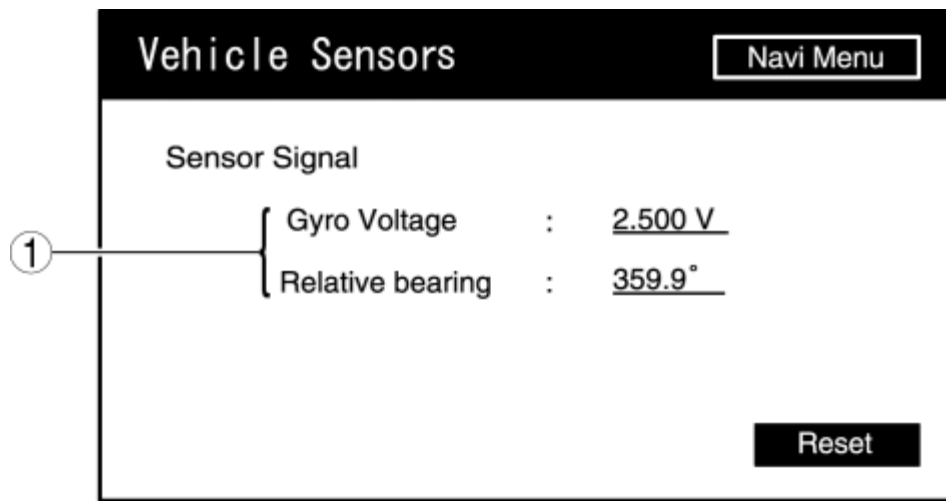
No.	Display item	Description
1	PPT switch status	<p>indicate the state of a VOICE button.</p> <p><OK>: Press the button (Keep the state of until the screen is changed.)</p> <p><Please Push switch>: Other than above condition.</p>
2	Microphone input level judging*	<p>Indicate the test result.</p> <p>Green indicator: The sound is inputted from the microphone property.</p> <p>Gray indicator: The sound is inputted from the microphone improperly.</p>
3	Microphone level	Indicate the input level of microphone by bar graph.

*

It is used for symptom troubleshooting. (Troubleshooting index No.8)

If inspect gyro sensor signals:

1. Select "Navigation Check Menu".
2. Select "Vehicle Sensors".



No.	Display item	Description
1	GYRO	Indicate following gyro sensor signal. <ul style="list-style-type: none">• Gyro sensor signal voltage• Relative bearing value

*

It is used for symptom troubleshooting. (Troubleshooting index No.5)

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

NO.3 SYSTEM DOES NOT LOAD MAP DISC. [CAR-NAVIGATION SYSTEM]

3	System does not load map disc.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Moisture inside of car-navigation unit • Non-designate disc is installed • Map disc malfunction • Car-navigation unit malfunction <p>NOTE:</p> <ul style="list-style-type: none"> • If dewdrops are formed inside of the car-navigation unit, the display screen shows the "The disc installed is not map DVD" message. Remove the map disc, ventilate or remove moisture from the passenger compartment, and then leave it for approx. 1h. The dewdrops will be removed and the car-navigation unit will operate normally. • In case of a dirty/damaged map disc or car-navigation unit malfunction, the display screen will show the "Please insert a map DVD" message after the ignition switch is turned to the ACC position. • If a non-designated disc is inserted, the display screen shows the "The disc installed is not a map DVD" message.

Diagnostic procedure

STEP	INSPECTION	ACTION
1	• Eject the map disc.	Yes Go to the next step.
	• Is the map okay?	No Insert a designated disc, then go to the next step.
2	• Eject the map disc then insert the map disc again.	Yes Troubleshooting completed.

	<ul style="list-style-type: none"> Does the system load the map disc? 	No	Go to the next step.
3	<ul style="list-style-type: none"> Eject the map disc and clean the surface of map disc with a soft cloth. Insert the map disc again. Does the "MAP DVD-Read Error." error message show up on the screen? 	Yes	Troubleshooting completed.
		No	Replace the car-navigation unit and map disc at the same time. (consult distributor) (See CENTER PANEL UNIT REMOVAL/INSTALLATION). (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

NO.8 SPEECH RECOGNITION DOES NOT START [CAR-NAVIGATION SYSTEM]

8	Speech recognition does not start.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Microphone malfunction • Poor connection of car-navigation unit connector, terminal damage • Open or short circuit in wiring harness between microphone and car-navigation unit. • Car-navigation unit malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Turn the ignition switch to the ACC position. • Start the car-navigation. • Display the map screen. • Press the voice recognition/hands-free switch (at audio control switch). • Is the speech recognition icon displayed on the screen upper left? 	Yes Go to the next step.
		No Go to Step 4.
2	<ul style="list-style-type: none"> • Start diagnostic function and indicate "Microphone Check" screen. <p>(See DIAGNOSTIC CHECK [CAR-NAVIGATION SYSTEM].)</p> <ul style="list-style-type: none"> • Speak greatly toward a microphone. • Inspect the "Microphone input level judging". 	<p>Yes The system is normal.</p> <p>CAUTION:</p> <ul style="list-style-type: none"> • Sound may not be recognized by the influence of the following. <ul style="list-style-type: none"> ▪ Speaker's

	<ul style="list-style-type: none"> Is a judging "OK" (green display)? 		<p>utterance method</p> <ul style="list-style-type: none"> Road noise Other noises
		No	Replace the microphone, then go to the next step.
3	<ul style="list-style-type: none"> Does the fault phenomenon improve? 	Yes	Troubleshooting is completed.
		No	Replace the car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION). (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).
4	<ul style="list-style-type: none"> Start diagnostic function and indicate "Vehicle Signal" check screen. (See DIAGNOSTIC CHECK [CAR-NAVIGATION SYSTEM].) Inspect the display of "Microphone" in vehicle signal screen. Is it display "OK"? 	Yes	Go to the next step.
		No	Go to Step 6.
5	<ul style="list-style-type: none"> Turn on the audio function (RADIO or CD). Press the voice recognition/hands-free switch (at audio control switch). Does it mute? 	Yes	Replace the car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION). (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).
		No	Audio control switch related part malfunction. Go to the audio system troubleshooting.
6	<ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Remove the microphone. 	Yes	Go to the next step.
		No	Securely connect the microphone connector.

	<ul style="list-style-type: none"> Inspect the connection of the microphone connector (6-pin). Is the connector securely connected? 		
7	<ul style="list-style-type: none"> Disconnect the microphone connector (6-pin). Inspect both microphone connector and wiring harness-side connector for poor connection (such as damaged/pulled out pins, corrosion). Are all the pins normal? 	Yes	Go to the next step.
		No	<p>If the microphone connector is wrong:</p> <ul style="list-style-type: none"> Replace the car-navigation unit. <p>(See MICROPHONE REMOVAL/INSTALLATION.)</p> <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
8	<ul style="list-style-type: none"> Remove the car-navigation unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</p> <ul style="list-style-type: none"> Inspect the connection of the car-navigation unit connector (6-pin). Is the connector securely connected? 	Yes	Go to the next step.
		No	Securely connect the car-navigation unit connector.
9	<ul style="list-style-type: none"> Disconnect the car-navigation unit connector (6-pin). Inspect both car-navigation unit connector and wiring harness-side connector for poor connection (such as damaged/pulled out pins, corrosion). Are all pins normal? 	Yes	Go to the next step.
		No	<p>If the car-navigation unit connector is wrong:</p> <ul style="list-style-type: none"> Replace the car-navigation unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</p> <p>If the wiring harness-side connector is</p>

			wrong: <ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
10	<ul style="list-style-type: none"> Inspect the following wiring harness between the microphone and HF/TEL unit. <ul style="list-style-type: none"> Terminal A (6-pin, MIC+) — Terminal B (24-pin, MIC IN+) Terminal B (6-pin, MIC-) — Terminal D (24-pin, MIC IN-) Terminal C (6-pin, MIC +B) — Terminal U (24-pin, MIC +B) Terminal D (6-pin, GND) — Terminal F (24-pin, MIC_SHIELD) Terminal E (6-pin, MIC SENSE) — Terminal J (24-pin, MIC SENSE) Is there open or short circuit? 	Yes	Repair or replace suspected wiring harness.
		No	Go to the next step.
11	<ul style="list-style-type: none"> Inspect the following wiring harness between the HF/TEL unit and car-navigation unit. <ul style="list-style-type: none"> Terminal A (24-pin, MIC OUT+) — Terminal 3A (6-pin, MIC+) Terminal C (24-pin, MIC OUT-) — Terminal 3B (6-pin, MIC-) Terminal U (24-pin, MIC +B) — Terminal 3C (6-pin, MIC +B) Terminal E (24-pin, MIC OUT SHIELD) — Terminal 3D (6-pin, GND) 	Yes	Repair or replace suspected wiring harness.
		No	Replace the car-navigation unit. (See MICROPHONE REMOVAL/INSTALLATION.) Then go to the next step.

	<ul style="list-style-type: none"> Terminal J (24-pin, MIC SENSE) — Terminal 3E (6-pin, MIC SENSE) <ul style="list-style-type: none"> Is there open or short circuit? 		
12	<ul style="list-style-type: none"> Does the fault phenomenon improve? 	Yes	Troubleshooting is completed.
		No	Replace the car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION). (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

FOREWORD [CAR-NAVIGATION SYSTEM]

Troubleshooting Index

No.	Malfunction symptom
1	(See NO.1 CAR-NAVIGATION SYSTEM DOES NOT START OPERATION (DISPLAY CHANGES TO BACK.) [CAR-NAVIGATION SYSTEM].)
2	(See NO.2 SYSTEM DOES NOT CONTROL AUDIO BY AUDIO CONTROL SWITCH. [CAR-NAVIGATION SYSTEM].)
3	(See NO.3 SYSTEM DOES NOT LOAD MAP DISC. [CAR-NAVIGATION SYSTEM].)
4	(See NO.4 NO SOUND FROM AUDIO SYSTEM [CAR-NAVIGATION SYSTEM].)
5	(See NO.5 VEHICLE POSITION DEVIATES FROM THE ROUTE MAP [CAR-NAVIGATION SYSTEM].)
6	(See NO.6 NO VOICE NAVIGATION [CAR-NAVIGATION SYSTEM].)
7	(See NO.7 DISPLAY SCREEN DOES NOT CHANGE TO THE NIGHT MODE (FRONT AND REAR COMBINATION LIGHTS OPERATE NORMALLY.) [CAR-NAVIGATION SYSTEM].)
8	(See NO.8 SPEECH RECOGNITION DOES NOT START [CAR-NAVIGATION SYSTEM].)

Quick diagnostic chart

	1	2	3	4	5	6	7	8
	ar-navigation system does not art operation.	rstem does not control audio by idio control switch.	rstem does not load map disc.	o sound from audio system	hicle position deviates from e route map.	o voice navigation.	splay screen does not change to	eech recognition does not start.

	C _{st}	S _{au}	S _z	N _z	V _{thr}	N _z	D _i	S _t
Open or short circuit in car-navigation unit (power supply (B+ and/or ACC))wiring harness	X							
Open or short circuit in car-navigation unit (GND) wiring harness	X							
Melt or damaged power supply (B+, ACC) related fuse.	X							
Car-navigation unit malfunction	X	X	X	X	X	X	X	X
Poor connection of car-navigation unit connector, terminal damage	X	X		X		X	X	X
Audio control switch malfunction.		X					X	
Open or short circuit in wiring harness between audio control switch and car-navigation unit		X						
Map disc malfunction			X					
Moisture inside of car-navigation unit			X					
Non-designated disc inserted			X	X				
Speaker or tweeter malfunction				X				
Audio amplifier malfunction				X		X		
Poor connection of audio amplifier connector, terminal damage				X		X		
Open circuit wiring harness between car-navigation unit and amplifier				X		X		
Open circuit wiring harness between audio amplifier and each speaker/tweeter				X		X		
Microphone unit malfunction				X				X
Poor connection of microphone unit connector, terminal damage				X				
Open circuit, poor or loose connector, of connector in wiring harness between microphone unit and car-navigation unit through the HF/TEL unit.				X				X
Jammed radio signals from after market equipment (radar, remote engine starter, anti-theft device etc.)					X			
Open or short circuit in harness (vehicle speed signal related).					X			
Poor connection of GPS antenna connector, terminal damage					X			
GPS antenna malfunction					X			
Open or short circuit in feeder line between GPS antenna feeder and car-navigation unit.					X			
Improper adjustment of the NAVI voice volume						X		
Poor connection of driver-side front door speaker connector, terminal damage						X		
Front door speaker malfunction						X		
Open or short circuit in driver-side front door speaker wiring harness						X		
Improper setting of NAVI map indication							X	
Open or short circuit in TNS signal wiring harness (TNS signal related)							X	

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

NO.7 DISPLAY SCREEN DOES NOT CHANGE TO THE NIGHT MODE (FRONT AND REAR COMBINATION LIGHTS OPERATE NORMALLY.) [CAR-NAVIGATION SYSTEM]

7	Display screen does not change to the night mode. (Front and rear combination lights operate normally.)
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Improper setting of car-navigation map indication • Poor connection of the car-navigation unit connector, terminal damage • Open or short circuit in TNS signal wiring harness (TNS signal related) • Car-navigation unit malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Turn the ignition switch to the ON position. • Does the display screen change to the night mode when the light switch is turned to the TNS position, and the dimmer cancel switch is turned to OFF? 	Yes The system is normal.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Press the "MENU" switch. • Select "Navigation Set Up". • Select "User Setting". • Inspect "MAP Mode". • Is the "MAP mode" set to "Auto"? 	Yes Go to the next step.
		No System is normal. Set the "MAP Mode" to "Auto".

3	<ul style="list-style-type: none"> Start diagnostic function and indicate "Vehicle Signal" check screen. (See DIAGNOSTIC CHECK [CAR-NAVIGATION SYSTEM].) Turn the light switch to TNS position. Inspect the "TNS" on the diagnosis check screen. Dose the "TNS" indicate ON? 	<div> <div>Yes</div> <div>Replace the car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</div> </div> <div> <div>No</div> <div>Go to the next step.</div> </div>
4	<ul style="list-style-type: none"> Turn the ignition switch to the LOCK position. Disconnect the car-navigation unit connector (24-pin). Inspect both the car-navigation unit and wiring harness-side connector terminal 1E for poor connection (such as damaged/pulled-out pins, corrosion). Are all the pins normal? 	<div> <div>Yes</div> <div>Go to the next step.</div> </div> <div> <div>No</div> <div> <p>If the car-navigation unit connector is wrong:</p> <ul style="list-style-type: none"> Replace the car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.) <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> Repair or replace the pins and/or the connector. </div> </div>
5	<ul style="list-style-type: none"> Car-navigation unit connector (24-pin) disconnected. Measure the voltage of car-navigation unit harness-side connector (24-pin) terminal 1E (TNS signal). Is voltage B+ when the light switch is turned to the TNS position? 	<div> <div>Yes</div> <div>Replace the car-navigation unit, then go to the next step. (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</div> </div> <div> <div>No</div> <div>Inspect the TNS signal circuit. Repair or replace if necessary. Then go to the next step.</div> </div>
6	<ul style="list-style-type: none"> Does system work properly? 	<div> <div>Yes</div> <div>Troubleshooting is completed.</div> </div>

	No Replace the car-navigation unit.
--	-------------------------------------

(See [CENTER PANEL UNIT
REMOVAL/INSTALLATION](#)).

(See [CENTER PANEL UNIT
DISASSEMBLY/ASSEMBLY](#)).

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

NO.1 CAR-NAVIGATION SYSTEM DOES NOT START OPERATION (DISPLAY CHANGES TO BACK.) [CAR-NAVIGATION SYSTEM]

1	Car-navigation system does not start operation. (Display screen changes to black.)
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Melt or damaged power supply (B+, ACC) related fuse. • Poor connection of car-navigation unit connector, terminal damage • Open or short circuit in car-navigation unit (power supply (B+)) wiring harness • Open or short circuit in car-navigation unit (power supply (ACC)) wiring harness • Open or short circuit in car-navigation unit (GND) wiring harness • Car-navigation unit malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	• Turn the ignition switch to the ACC position.	Yes Go to Step 6.
	• Does the car-navigation system start and display map on screen?	No Go to the next step.
2	• Switch the ignition to off.	Yes Go to the next step.
	• Inspect following fuses. <ul style="list-style-type: none"> ▪ ROOM 15 A ▪ ACC 7.5 	No If the fuse is melted, inspect the wiring harness for short to ground. Repair or replace the wiring harness, then replace the fuse. Replace with the appropriate standard fuse.

	<p>A</p> <ul style="list-style-type: none"> Are fuses normal? 		
3	<ul style="list-style-type: none"> Inspect the connection of the car-navigation unit connectors (24-pin). Are the car-navigation unit connectors connected securely? 	Yes	Go to the next step.
		No	Securely connect the car-navigation unit.
4	<ul style="list-style-type: none"> Disconnect the car-navigation unit connectors (24-pin). Map screen is displayed. Are all the pins normal? 	Yes	Go to the next step.
		No	<p>If the car-navigation unit connector is wrong:</p> <ul style="list-style-type: none"> Replace the car-navigation unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</p> <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
5	<ul style="list-style-type: none"> Turn the ignition switch to the ACC position. Measure the following car-navigation unit connector (24-pin) terminals. <ul style="list-style-type: none"> Terminal 1B (+B): B+ Terminal 1R (ACC): B+ Terminal 1W (GND): below 1.0V 	Yes	Go to the next step.
		No	Repair or replace malfunctioning wiring harness.

	<ul style="list-style-type: none">• Are voltages normally?		
6	<ul style="list-style-type: none">• Turn the ignition switch to the ON position.• Does the car-navigation system start and display map on screen?	Yes	The system is normal.
		No	Replace the car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION .) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).

2011 - RX-8 - Body and Accessories

NO.2 SYSTEM DOES NOT CONTROL AUDIO BY AUDIO CONTROL SWITCH. [CAR-NAVIGATION SYSTEM]

2	System does not control Audio by Audio control switch.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Poor connection of car-navigation unit connector, terminal damage • Open or short circuit in wiring harness between and car-navigation unit. • Audio control switch malfunction. • Car-navigation unit malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Turn the ignition switch to the ACC position. • Start audio system using the audio control switch. • Control the audio using the audio control switch. • Is the audio system controlled normally? 	YesThe system is normal.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Inspect the connection of the car-navigation unit connectors (24-pin). • Is the car-navigation unit connector connected securely? 	YesGo to the next step.
		No Securely connect the car-navigation unit connector.
3	<ul style="list-style-type: none"> • Disconnect the car-navigation unit connector (24-pin). 	YesGo to the next step.

	<ul style="list-style-type: none"> Inspect both car-navigation unit connector and wiring harness-side connector terminals 1N and 1P for poor connection (such as damaged/pulled-out pins, corrosion). Are all the pins normal? 	No	<p>If the car-navigation unit connector is wrong:</p> <ul style="list-style-type: none"> Replace the car-navigation unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION).</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).</p> <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
4	<ul style="list-style-type: none"> Car-navigation unit connector (24-pin) disconnected. Measure the resistance between terminal 1N and 1P at car-navigation unit harness-side connector (24-pin) while the audio control switch (Voice recognition/hands-free switch, Mode switch, Volume adjustment switch or mute switch, Automatic band selector switch) is selected. Is the resistance within the specified? <p style="text-align: center;">Specification</p> <ul style="list-style-type: none"> 50 ohms — 5 kilo-ohms (Resistance is changing according to audio switch pressed position.) 	Yes	Go to the next step.
		No	<p>Inspect and repair the following:</p> <ul style="list-style-type: none"> Audio control switch. <p>(See AUDIO CONTROL SWITCH INSPECTION).</p> <ul style="list-style-type: none"> Wiring harness between car-navigation unit and audio control switch for open or short circuit).
5	<ul style="list-style-type: none"> Verify that the continuity between terminal 1N and 1P (24-pin) at car-navigation unit harness-side connector while the audio control switch (HF/TEL) is pressed. Is there continuity? 	Yes	Troubleshooting completed. (The system is normal.)
		No	<p>Inspect and repair the following:</p> <ul style="list-style-type: none"> audio control switch <p>(See AUDIO CONTROL SWITCH INSPECTION).</p> <ul style="list-style-type: none"> Wiring harness between car-navigation unit and

			audio control switch for open or short circuit).
--	--	--	--

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

NO.4 NO SOUND FROM AUDIO SYSTEM [CAR-NAVIGATION SYSTEM]

4	No sound from audio system
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Poor connection of audio amplifier connector, terminal damage • Poor connection of car-navigation unit connector, terminal damage • Open circuit in wiring harness between car-navigation unit and audio amplifier • Open circuit in wiring harness between audio amplifier and each speaker/tweeter • Speaker or tweeter malfunction • Audio amplifier malfunction • Car-navigation unit malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Turn the Ignition switch to ACC position. 	Yes The system is normal.
	<ul style="list-style-type: none"> • Start audio system using the audio control switch • Adjust volume 30 using the audio control switch. • Is there sound from all speaker/tweeter? 	No Go to the next step.

2	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Inspect the connection of audio amplifier connector. • Is the connector securely connected? 	Yes	Go to the next step.
		No	Securely connect the audio amplifier.
3	<ul style="list-style-type: none"> • Disconnect the audio amplifier connector. • Inspect both audio amplifier connector and wiring harness-side connector for poor connection (such as damaged/pulled out pins, corrosion). • Are all the pins normal? 	Yes	Go to the next step.
		No	<p>If the audio amplifier connector is wrong:</p> <ul style="list-style-type: none"> • Replace the audio amplifier. <p>(See AUDIO AMPLIFIER REMOVAL/INSTALLATION.)</p> <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> • Repair or replace the pins and/or the connector.
4	<ul style="list-style-type: none"> • Inspect the connection of car-navigation unit connector (24-pin). • Is the connector securely connected? 	Yes	Go to the next step.
		No	Securely connect the car-navigation unit.
5	<ul style="list-style-type: none"> • Disconnect the car-navigation unit connector (24-pin). • Inspect both car-navigation unit connector and wiring harness-side connector for poor connection (such as damaged/pulled out pins, corrosion). • Are all the pins normal? 	Yes	Go to the next step.
		No	<p>If the car-navigation unit connector is wrong:</p> <ul style="list-style-type: none"> • Replace the car-navigation unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION.)</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)</p> <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> • Repair or replace the pins and/or the connector.

6	<ul style="list-style-type: none"> • Car-navigation unit and audio amplifier connectors disconnected. • Inspect the following wiring harness between the car-navigation unit (24-pin) and audio amplifier. <ul style="list-style-type: none"> ▪ Terminal 1A (24-pin) — audio amplifier terminal 3D (FL+) ▪ Terminal 1C (24-pin) — audio amplifier terminal 3C (FL-) ▪ Terminal 1D (24-pin) — audio amplifier terminal 3F (FR+) ▪ Terminal 1F (24-pin) — audio amplifier terminal 3E (FR-) ▪ Terminal 1S (24-pin) — audio amplifier terminal 3H (RL+) ▪ Terminal 1U (24-pin) — audio amplifier terminal 3G (RL-) ▪ Terminal 1V (24-pin) — audio amplifier terminal 3J (RR+) ▪ Terminal 1X (24-pin) — audio amplifier terminal 3I (RR+) • Is there open or short circuit? 	Yes	Repair or replace suspected wiring harness.
7	<ul style="list-style-type: none"> • Disconnect the all speaker and tweeter connectors. • Inspect both each speaker/tweeter and wiring harness-side connector for poor connection (such as damaged/pulled out pins, corrosion.) • Are all the pins normal? 	Yes	Go to the next step.
		No	<p>If the speaker or tweeter connector is wrong:</p> <ul style="list-style-type: none"> • Replace the suspect part. <p>(See FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)</p> <p>(See REAR SPEAKER REMOVAL/INSTALLATION.)</p>

		<p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none">• Repair or replace the pins and/or the connector.
8	<ul style="list-style-type: none">• Audio amplifier and all speaker and tweeter connectors disconnected.• Inspect the following wiring harness between the audio amplifier and each speaker/tweeter.<ul style="list-style-type: none">▪ Terminal 2D — front door speaker (left-side) terminal B (2-pin) (FL+)▪ Terminal 2B — front door speaker (left-side) terminal A (2-pin) (FL-)▪ Terminal 2I — front door tweeter (left-side) terminal B (2-pin) (FL+)▪ Terminal 2K — front door tweeter (left-side) terminal A (2-pin) (FL-)▪ Terminal 2M — front door speaker (right-side) terminal B (2-pin) (FR+)▪ Terminal 2O — front door speaker (right - side) terminal A (2-pin) (FR-)▪ Terminal 2E — front door tweeter (right - side) terminal B (2-pin) (FR+)▪ Terminal 2G — front door tweeter (right - side) terminal A (2-pin) (FR-)▪ Terminal 3D — rear speaker/tweeter	YesRepair or replace suspected wiring harness.
		NoGo to the next step.

	<p>(left-side) terminal B (2-pin) (RL+)</p> <ul style="list-style-type: none"> Terminal 3L — rear speaker/tweeter (left-side) terminal A (2-pin) (RL-) Terminal 3F — rear speaker/tweeter (right-side) terminal B (2-pin) (RR+) Terminal 3E — rear speaker/tweeter (right-side) terminal A (2-pin) (RR-) Terminal 3H — center speaker terminal B (2-pin) (IP CENTER+) Terminal 3G — center speaker terminal A (2-pin) (IP CENTER-) <ul style="list-style-type: none"> Is there open or short circuit? 		
9	<ul style="list-style-type: none"> Inspect each speaker/tweeter. (See FRONT DOOR SPEAKER INSPECTION.) (See REAR SPEAKER INSPECTION). Are all speakers normal? 	Yes	Go to the next step.
		No	Replace the malfunctioning speaker/tweeter. (See FRONT DOOR SPEAKER REMOVAL/INSTALLATION .) (See REAR SPEAKER REMOVAL/INSTALLATION .)
10	<ul style="list-style-type: none"> Replace the audio amplifier. (See AUDIO AMPLIFIER REMOVAL/INSTALLATION.) Does the sound from audio system? 	Yes	Troubleshooting completed. (Audio amplifier malfunction.)
		No	Replace the car-navigation unit. (See CENTER PANEL UNIT REMOVAL/INSTALLATION .) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY .)

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

NO.6 NO VOICE NAVIGATION [CAR-NAVIGATION SYSTEM]

6	No voice navigation.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Improper adjustment of the navigation voice volume • Poor connection of front door speaker connector, terminal damage • Front door speaker malfunction • Poor connection of car-navigation unit connector, terminal damage • Open or short circuit in wiring harness between car-navigation unit and front door speaker through audio amplifier. • Poor connection of audio amplifier connector, terminal damage • Audio amplifier malfunction • Car-navigation unit malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Is the voice navigation mute? 	Yes Turn on the voice navigation.
		No Go to the next step.
2	<ul style="list-style-type: none"> • Turn the audio power switch (CD, radio) to ON. • Does front door speaker work? 	Yes Go to Step 6.
		No Go to the next step.
3	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Remove the front door speaker. 	Yes Go to the next step.
		No Securely connect the front door speaker

	(See FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)		connector.
4	<ul style="list-style-type: none">• Disconnect the front door speaker connector (2-pin).• Inspect both the front door speaker and wiring harness-side connector for poor connection (such as damaged/pulled out pins, corrosion).• Are all the pins normal?	Yes	Go to the next step.
		No	<p>If the front door speaker connector is wrong:</p> <ul style="list-style-type: none">• Replace the front door speaker. <p>(See FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)</p> <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none">• Repair or replace the pins and/or the connector.
5	<ul style="list-style-type: none">• Inspect the front door speakers. <p>(See FRONT DOOR SPEAKER INSPECTION.)</p> <ul style="list-style-type: none">• Are they normal?	Yes	Go to the next step.
		No	Replace the front door speaker. (See FRONT DOOR SPEAKER REMOVAL/INSTALLATION.)
6	<ul style="list-style-type: none">• Inspect the connection of car-navigation unit connector (24-pin).• Is the connector securely connected?	Yes	Go to the next step.
		No	Securely connect the car-navigation unit connector.
7	<ul style="list-style-type: none">• Disconnect the car-navigation unit connector (24-pin).• Inspect both the car-navigation unit and wiring harness-side connector terminal for poor connection (such as damaged/pulled out pins, corrosion).• Are all pins normal?	Yes	<p>Bose® system equipped model:</p> <ul style="list-style-type: none">• Go to Step 9. <p>Bose® system not equipped model:</p> <ul style="list-style-type: none">• Go to the next step.
		No	<p>If the car-navigation unit connector is wrong:</p>

			<ul style="list-style-type: none"> Replace the car-navigation unit. <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION).</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).</p> <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
8	<ul style="list-style-type: none"> Inspect the connection of audio amplifier connector. Is the connector securely connected? 	Yes	Go to the next step.
		No	Securely connect the audio amplifier connector.
9	<ul style="list-style-type: none"> Disconnect the audio amplifier connector. Inspect both the audio amplifier and wiring harness-side connector terminal 1C, 1D, 1E, 1F, 3C, 3D, 3E, and 3F for poor connection (such as damaged/pulled out pins, corrosion). Are all pins normal? 	Yes	Go to the next step.
		No	<p>If the audio amplifier connector is wrong:</p> <ul style="list-style-type: none"> Replace the audio amplifier. <p>(See AUDIO AMPLIFIER REMOVAL/INSTALLATION.)</p> <p>If the wiring harness-side connector is wrong:</p> <ul style="list-style-type: none"> Repair or replace the pins and/or the connector.
10	<ul style="list-style-type: none"> Inspect there continuity between following car-navigation unit and audio amplifier at harness-side connector. <ul style="list-style-type: none"> Car-navigation unit terminal 1A (24-pin, Fr SP LH+) and audio amplifier terminal 3D (FL IN +) Car-navigation unit terminal 1C (24-pin, 	Yes	<p>Inspect for short circuit in wiring harness.</p> <ul style="list-style-type: none"> If there is a short circuit, repair or replace the suspect wiring harness. If the wiring harness is okay, go to Step 12.
		No	Repair or replace wiring harness.

	<p>Fr SP LH-) and audio amplifier terminal 3C (FL IN -)</p> <ul style="list-style-type: none"> ▪ Car-navigation unit terminal 1D (24-pin, Fr SP RH+) and audio amplifier terminal 3F (FR IN +) ▪ Car-navigation unit terminal 1F (24-pin, Fr SP RH-) and audio amplifier terminal 3E (FR IN -) <ul style="list-style-type: none"> • Is there continuity? 		
11	<ul style="list-style-type: none"> • Inspect there continuity between following audio amplifier and front door speaker at harness-side connector. <ul style="list-style-type: none"> ▪ Audio amplifier terminal 2D (FRONT DOOR L SP +) and left-side front door speaker terminal B (+) ▪ Audio amplifier terminal 2B (FRONT DOOR L SP -) and left-side front door speaker terminal A (-) ▪ Audio amplifier terminal 2O (FRONT DOOR R SP +) and right-side front door speaker terminal B (+) ▪ Audio amplifier terminal 2M (FRONT DOOR R SP -) and right-side front door speaker terminal A (-) • Is there continuity? 	Yes	<p>Inspect for short circuit in wiring harness.</p> <ul style="list-style-type: none"> • If there is a short circuit, repair or replace the suspect wiring harness. • If the wiring harness is okay, go to the next step.
		No	<p>Repair or replace wiring harness.</p>
12	<ul style="list-style-type: none"> • Replace the audio amplifier. 	Yes	<p>Troubleshooting is completed.</p>

	<p>(See AUDIO AMPLIFIER REMOVAL/INSTALLATION.)</p> <ul style="list-style-type: none">• Does the voice navigation operation properly?	<p>No Replace the car-navigation unit.</p> <p>(See CENTER PANEL UNIT REMOVAL/INSTALLATION).</p> <p>(See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY).</p>
--	--	--

[< Previous](#) [Next >](#)

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

TROUBLESHOOTING INDEX [IMMOBILIZER SYSTEM]

No.	TROUBLESHOOTING ITEM	DESCRIPTION
1	The security light display is not normal.	<ul style="list-style-type: none">• The security light does not flash or the flashing interval is abnormal while the ignition switch is at the LOCK position.• The security light remains illuminated while the ignition switch is at the LOCK position.• The security light does not illuminate when the ignition switch is turned to the ON position.• The security light remains illuminated 2 min or more after the ignition switch is turned to the ON position

[< Previous](#) [Next >](#)

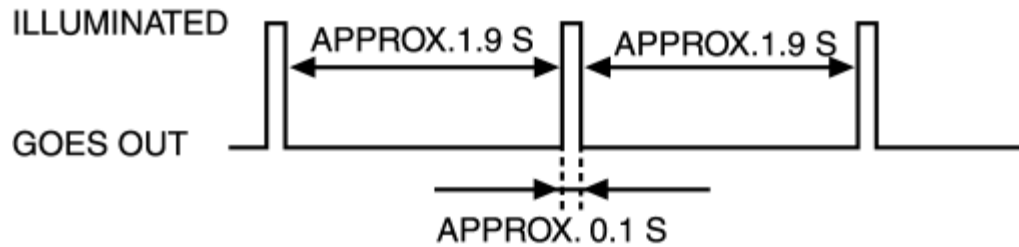
[Back to Top](#)

2011 - RX-8 - Body and Accessories

NO.1 SECURITY LIGHT DISPLAY IS NOT NORMAL [IMMOBILIZER SYSTEM]

1	The security light display is not normal.
DESCRIPTION	<ul style="list-style-type: none"> • The security light does not flash or the flashing interval is abnormal while the ignition switch is at the LOCK position. • The security light remains illuminated while the ignition switch is at the LOCK position. • The security light does not illuminate when the ignition switch is turned to the ON position. • The security light remains illuminated 2 min or more after the ignition switch is turned to the ON position
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Keyless control module malfunction (with advanced keyless control system) • Keyless control module malfunction (without advanced keyless control system) • Instrument cluster malfunction • Open or short circuit in the wiring harness between the instrument cluster and keyless control module (without advanced keyless control system)/keyless control module (with advanced keyless control system) <p>NOTE:</p> <ul style="list-style-type: none"> • If the security light remains illuminated for approx. 1 min after the ignition switch is turned to the ON position and then displays a DTC, perform immobilizer system malfunction diagnosis according to that DTC. (See DTC TABLE (IMMOBILIZER SYSTEM) [IMMOBILIZER SYSTEM].) • While performing immobilizer system security access using the M-MDS, the security light does not illuminate even if the ignition switch is turned to the ON position. Verify the illumination condition of the security light by disconnecting the DLC-2 to release security access.

**NOTE: SECURITY LIGHT FLASHING SEQUENCE
WHEN IGNITION SWITCH IS TURNED TO LOCK POSITION
(IMMOBILIZER SYSTEM IS NORMAL)**



NOTE:

- Normal operation of the security light is as follows. The light starts flashing every 2 s when the ignition switch is turned from ON to ACC position and the immobilizer system is armed. The light stops flashing when the ignition switch is turned to the ON position with the correct ignition key. At this time, the immobilizer system is disarmed and the security light illuminates for about 3 s and then goes out.

Diagnostic Procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Turn the ignition switch to the ON position. • Do other warning lights in the instrument cluster illuminate normally? 	Yes	Go to the next step.
		No	Inspect the instrument cluster. (See INSTRUMENT CLUSTER INSPECTION.)
2	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the negative battery cable. • Disconnect the instrument cluster connector (24-pin). • Connect the negative battery cable. • Does the security light illuminate? 	Yes	Replace the instrument cluster. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	<ul style="list-style-type: none"> • Disconnect the negative battery cable. • Ground instrument cluster terminal 2F using a jumper wire. • Connect the negative battery cable. • Does the security light illuminate? 	Yes	Go to the next step.
		No	Replace the instrument cluster. (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)

4	<ul style="list-style-type: none"> • Disconnect the negative battery cable. • Disconnect the instrument cluster connector. • Connect the keyless control module (without advanced keyless control system)/keyless control module (with advanced keyless control system) connector. • Connect the negative battery cable. • Turn the ignition switch to the ON position. • Does the security light illuminate? 	Yes Replace the keyless control module (without advanced keyless control system)/keyless control module (with advanced keyless control system). (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)	No Repair the wiring harness.
---	---	--	-------------------------------

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

SYMPTOM TROUBLESHOOTING [HANDS-FREE TELEPHONE (HF/TEL) SYSTEM]

Troubleshooting Index

No.	Items	Possible DTC
1	Hands free telephone system does not receive/transmit calls, does not connect	26:Er81, 26:Er82, 26:Er83, 26:Er84, 26:Er85, 26:Er86 Device code 26/error code 81, 82, 83, 84, 85, 86
2	Caller's voice volume too low, or noise interrupts call	26:Er81 Device code 26/error code 81
3	Addressee's voice volume too low, or noise interrupts call	26:Er81 Device code 26/error code 81

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

No.1 HANDS-FREE TELEPHONE SYSTEM DOES NOT RECEIVE/TRANSMIT CALLS, DOES NOT CONNECT [HANDS-FREE TELEPHONE (HF/TEL) SYSTEM]

1	Hands-free telephone system does not receive/transmit calls, does not connect
Possible DTC	26:Er81, 26:Er82, 26:Er83, 26:Er84, 26:Er85, 26:Er86, Device code 26/error code 81, 82, 83, 84, 85, 86
Possible cause	<ul style="list-style-type: none"> • Problem in cellular phone <ul style="list-style-type: none"> ▪ Cellular phone does not set up to HF/TEL system ▪ Cellular phone does not operate (low battery voltage, power off) ▪ Cellular phone is outside of the signal transmission area ▪ Bluetooth does not operate ▪ A cellular phone other than a Hands-free telephone system-enabled models is used. • Malfunction in HF/TEL switch related parts <ul style="list-style-type: none"> ▪ Open or short circuit in the wiring harness between the HF/TEL switch and audio unit (without car-navigation system) ▪ Open or short circuit in the wiring harness between the HF/TEL switch and car-navigation unit (with car-navigation system) ▪ CAN communication error between the audio unit and HF/TEL unit (without car-navigation system) ▪ CAN communication error between the car-navigation unit and HF/TEL unit (with car-navigation system) ▪ HF/TEL switch malfunction ▪ Poor connection in the connector • Malfunction in microphone related parts <ul style="list-style-type: none"> ▪ Open or short circuit in the wiring harness between the microphone and HF/TEL unit ▪ Microphone malfunction ▪ Poor connection in the connector • Malfunction in audio system <ul style="list-style-type: none"> ▪ Open or short circuit in the wiring harness between the HF/TEL unit and the

speaker through the audio unit/car-navigation unit

- Poor connection in the connector
- HF/TEL unit does not respond
 - HF/TEL unit malfunction
 - Open or short circuit in the wiring harness between the HF/TEL unit and the audio unit (without car-navigation system)
 - Open or short circuit in the wiring harness between the HF/TEL unit and the car-navigation unit (with car-navigation system)
 - Open or short circuit in the wiring harness of the HF/TEL unit power supply or ground circuit
 - Poor connection in the connector

Diagnostic procedure

- When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that the connectors, terminals and wiring harness are connected correctly and undamaged.

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> • Verify if the customer's cellular phone is a Hands-free telephone system-enabled model by referring to following URL. <ul style="list-style-type: none"> ▪ http://www.mazdausa.com/MusaWeb/displayPage.action?pageParameter=bluetoothHandsFreeSystem • Is the customer's cellular phone a Hands-free telephone system-enabled model? 	YesGo to the next step.
		No Explain to the customer that the customer's cellular phone is not a Hands-free telephone system-enabled model.
2	<ul style="list-style-type: none"> • Verify that the cellular phone is communicating with the HF/TEL unit. • Does the cellular phone connect to the HF/TEL unit via Bluetooth when the Hands-free telephone system is activated? 	YesGo to the next step.
		No Go to step 5.
3	<ul style="list-style-type: none"> • Inspect the cellular phone condition while the hands free phone does not operate. • Can the following conditions be verified? <ul style="list-style-type: none"> ▪ Low battery voltage ▪ Power is off ▪ Out of signal transmission area 	YesEnter a cellular phone signal transmission area and reinspect the HF/TEL system operation.
		No Go to the next step.
4	<ul style="list-style-type: none"> • Does the cellular phone set up to the HF/TEL unit? 	YesSet up the cellular phone to the HF/TEL unit.

		No	Go to the next step.
5	<ul style="list-style-type: none"> Is the audio system sound output normal? 	Yes	Go to the next step.
		No	Perform the audio system troubleshooting procedure.
6	<ul style="list-style-type: none"> Perform the audio system on-board diagnostic. Are the following DTC displayed? <ul style="list-style-type: none"> 26:Er82 26:Er83 26:Er84 	Yes	Go to the next step.
		No	Go to Step 6.
7*	<ul style="list-style-type: none"> Inspect for open or short circuits in the following wiring harnesses and connectors, and inspect the connector connections. <ul style="list-style-type: none"> Between microphone terminal A and HF/TEL unit terminal B Between microphone terminal B and HF/TEL unit terminal D Between microphone terminal C and HF/TEL unit terminal U Between microphone terminal E and HF/TEL unit terminal J Are the harnesses and connector connections normal? 	Yes	Replace the microphone. (See MICROPHONE REMOVAL/INSTALLATION .)
		No	Repair or replace malfunctioning parts.
8	<ul style="list-style-type: none"> Perform the audio system on-board diagnostic. Is 26:Er81 displayed? 	Yes	Inspect and repair the audio system CAN communication.
		No	Go to the next step.
9	<ul style="list-style-type: none"> Inspect the HF/TEL switch. Is the HF/TEL switch normal? (See AUDIO CONTROL SWITCH INSPECTION .)	Yes	Go to the next step.
		No	Replace the audio control switch. (See AUDIO CONTROL SWITCH REMOVAL/INSTALLATION .)
10*	<ul style="list-style-type: none"> Inspect for open or short circuits in the following wiring harnesses and connectors, and inspect the connector connections. <ul style="list-style-type: none"> Between audio control switch terminal G and audio unit (24-pin) terminal 1N (without car-navigation system) Between audio control switch terminal G and car-navigation unit (24-pin) terminal 1N (with car-navigation system) 	Yes	Go to the next step.
		No	Repair or replace malfunctioning parts.

	<ul style="list-style-type: none"> • Are the harnesses and connector connections normal? 		
11	<ul style="list-style-type: none"> • Call the hands free cell phone using another cellular phone. • Do the same symptoms appear? 	Yes	Replace the HF/TEL unit. (See HANDS-FREE TELEPHONE (HF/TEL) UNIT REMOVAL/INSTALLATION.)
		No	The cellular phone Bluetooth system is malfunctioning.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

No.2 CALLER'S VOICE VOLUME TOO LOW, OR NOISE INTERRUPTS CALL [HANDS-FREE TELEPHONE (HF/TEL) SYSTEM]

2	Caller's voice volume too low, or noise interrupts call
Possible DTC	26:Er81 Device code 26/error code 81
Possible cause	<ul style="list-style-type: none"> • Problem in the cellular phone <ul style="list-style-type: none"> ▪ Vehicle is in a place where signal transmission is weak ▪ Bluetooth does not operate ▪ A cellular phone other than a Hands-free telephone system-enabled models is used. • Malfunction in the microphone related parts <ul style="list-style-type: none"> ▪ Open or short circuit in the wiring harness between the microphone and the HF/TEL unit ▪ Microphone malfunction ▪ Poor connection in the connector • Malfunction in the mute switch (without car-navigation system) <ul style="list-style-type: none"> ▪ Mute switch malfunction ▪ Open or short circuit in the wiring harness between the mute switch and the audio unit ▪ Poor connection in the connector • Malfunction in the voice switch (with car-navigation system) <ul style="list-style-type: none"> ▪ Voice switch malfunction ▪ Open or short circuit in the wiring harness between the voice switch and the audio unit ▪ Poor connection in the connector • HF/TEL unit does not receive the vehicle speed signal <ul style="list-style-type: none"> ▪ CAN communication error • Malfunction in the audio system <ul style="list-style-type: none"> ▪ Audio steering switch (+) and/or related circuit malfunction

- Influence due to vehicle driving conditions
 - Noise while driving is loud (engine, tire noise, blower fan noise)
 - Windows and/or sunroof are open
- HF/TEL unit malfunction

Diagnostic procedure

- When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that the connectors, terminals and wiring harness are connected correctly and undamaged.

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none"> • Verify if the customer's cellular phone is a Hands-free telephone system-enabled model by referring to following URL. <ul style="list-style-type: none"> ▪ http://www.mazdausa.com/MusaWeb/displayPage.action?pageParameter=bluetoothHandsFreeSystem • Is the customer's cellular phone a Hands-free telephone system-enabled model? 	Yes	Go to the next step.
		No	Explain to the customer that the customer's cellular phone is not a Hands-free telephone system-enabled model.
2*	<ul style="list-style-type: none"> • Can the audio volume be controlled using audio control switch? 	Yes	Go to the next step.
		No	Inspect and repair the audio control switch and related wiring harness.
3	<ul style="list-style-type: none"> • Does the symptom appear under following conditions? <ul style="list-style-type: none"> ▪ Windows and/or sunroof are open ▪ Noise while driving is loud (engine, tire noise, blower fan noise) 	Yes	The system is normal. (Influence due to vehicle driving conditions)
		No	Go to the next step.
4	<ul style="list-style-type: none"> • Perform the audio system on-board diagnostic. • Is 26:Er81 displayed? 	Yes	Inspect and repair the audio system CAN communication.
		No	Go to the next step.
5*	<ul style="list-style-type: none"> • Inspect for open or short circuits in the following wiring harnesses and connectors, and inspect the connector connections. <ul style="list-style-type: none"> ▪ Between microphone terminal A and HF/TEL unit terminal B ▪ Between microphone terminal B and HF/TEL unit terminal D 	Yes	Go to the next step.
		No	Repair or replace malfunctioning parts.

	<ul style="list-style-type: none"> Between microphone terminal C and HF/TEL unit terminal U Between microphone terminal D and HF/TEL unit terminal F (shield wire) Between microphone terminal E and HF/TEL unit terminal J <ul style="list-style-type: none"> Are the harnesses and connector connections normal? 		
6	<ul style="list-style-type: none"> Inspect the following switches. (See AUDIO CONTROL SWITCH INSPECTION.) VOICE switch (with car-navigation system) MUTE switch (without car-navigation system) <ul style="list-style-type: none"> Are the switches normal? 	Yes	Go to the next step.
		No	Replace the audio control switch. (See AUDIO CONTROL SWITCH REMOVAL/INSTALLATION .)
7*	<ul style="list-style-type: none"> Inspect for open or short circuits in the following wiring harnesses and connectors, and inspect the connector connections. Between audio control switch terminal G and audio unit (24-pin) terminal 1N (without car-navigation system) Between audio control switch terminal G and car-navigation unit (24-pin) terminal 1N (with car-navigation system) <ul style="list-style-type: none"> Are the harnesses and connector connections normal? 	Yes	Go to the next step.
		No	Repair or replace malfunctioning parts.
8	<ul style="list-style-type: none"> Make a call with the cellular phone without using HF/TEL system. Does the same symptom appear? 	Yes	Cellular phone related problem.
		No	Go to the next step.
9	<ul style="list-style-type: none"> Call the hands-free cell phone using another cellular phone. Does the same symptom appear? 	Yes	Go to the next step.
		No	The cellular phone Bluetooth system is malfunctioning.
10	<ul style="list-style-type: none"> Replace the microphone. (See MICROPHONE REMOVAL/INSTALLATION.) Does the same symptom appear? 	Yes	Replace the HF/TEL unit. (See HANDS-FREE TELEPHONE (HF/TEL) UNIT REMOVAL/INSTALLATION .)
		No	Troubleshooting is completed. (The microphone is malfunctioning.)

2011 - RX-8 - Body and Accessories

No.3 ADDRESSEE'S VOICE VOLUME TOO LOW, OR NOISE INTERRUPTS CALL [HANDS-FREE TELEPHONE (HF/TEL) SYSTEM]

3	Addressee's voice volume too low, or noise interrupts call
Possible DTC	26:Er81 Device code 26/error code 81
Possible cause	<ul style="list-style-type: none"> Problem in the cellular phone <ul style="list-style-type: none"> Vehicle is in a place where signal transmission is weak Bluetooth does not operate A cellular phone other than a Hands-free telephone system-enabled models is used. Malfunction in the audio system <ul style="list-style-type: none"> Open or short circuit in the wiring harness between the HF/TEL unit and the speaker through the audio unit/car-navigation unit Audio control switch (+) and/or related circuit malfunction Poor connection in the connector HF/TEL unit does not receive the vehicle speed signal <ul style="list-style-type: none"> CAN communication error HF/TEL unit malfunction

Diagnostic procedure

- When performing an asterisked (*) troubleshooting inspection, slightly shake the wiring harness and connectors while performing the inspection to discover whether poor contact points are the cause of any intermittent malfunction. If there is a problem, verify that the connectors, terminals and wiring harness are connected correctly and undamaged.

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none"> Verify if the customer's cellular phone is a Hands-free telephone system-enabled model by referring to following URL. <ul style="list-style-type: none"> http://www.mazdausa.com/MusaWeb/displayPage.action?pageParameter=bluetoothHandsFreeSystem 	YesGo to the next step.
		No Explain to the customer that the customer's cellular phone

	<ul style="list-style-type: none"> Is the customer's cellular phone a Hands-free telephone system-enabled model? 		is not a Hands-free telephone system-enabled model.
2	<ul style="list-style-type: none"> Verify the volume setting of the Hands-free telephone system. Is the volume set at a low level or zero? 	Yes	<ul style="list-style-type: none"> Verify if the malfunction symptom is eliminated after the volume is set to a higher level. If the malfunction is not resolved, go to the next step. If the malfunction is resolved, explain to the customer that the malfunction occurred due to an inappropriate volume setting.
		No	Go to the next step.
3	<ul style="list-style-type: none"> Is the audio system sound output normal? 	Yes	Go to the next step.
		No	Perform the audio system troubleshooting procedure.
4	<ul style="list-style-type: none"> Can the audio volume be controlled using audio control switch? 	Yes	Go to the next step.
		No	Inspect and repair the audio control switch and related wiring harness.
5	<ul style="list-style-type: none"> Perform the audio system on-board diagnostic. Is 26:Er81 displayed? 	Yes	Inspect and repair the audio system CAN communication.
		No	Go to the next step.
6*	<ul style="list-style-type: none"> Inspect for open or short circuits in the following wiring harnesses and connectors, and inspect the connector connections. <ul style="list-style-type: none"> Between HF/TEL unit (24-pin) terminal G and audio unit (16-pin) terminal 2B Between HF/TEL unit (16-pin) terminal H and audio unit (24-pin) terminal 2J 	Yes	Go to the next step.
		No	Repair or replace malfunctioning parts.

	<ul style="list-style-type: none"> Between HF/TEL unit (16-pin) terminal L and shield wire 		
	<ul style="list-style-type: none"> Are the harnesses and connector connections normal? 		
7	<ul style="list-style-type: none"> Make a call with the cellular phone without using HF/TEL system. Does the same symptom appear? 	Yes	Cellular phone related problem.
		No	Go to the next step.
8	<ul style="list-style-type: none"> Call the hands-free cell phone using another cellular phone. Does the same symptom appear? 	Yes	Replace the HF/TEL unit. (See HANDS-FREE TELEPHONE (HF/TEL) UNIT REMOVAL/INSTALLATION.)
		No	The cellular phone Bluetooth system is malfunctioning.

[< Previous](#) [Next >](#)

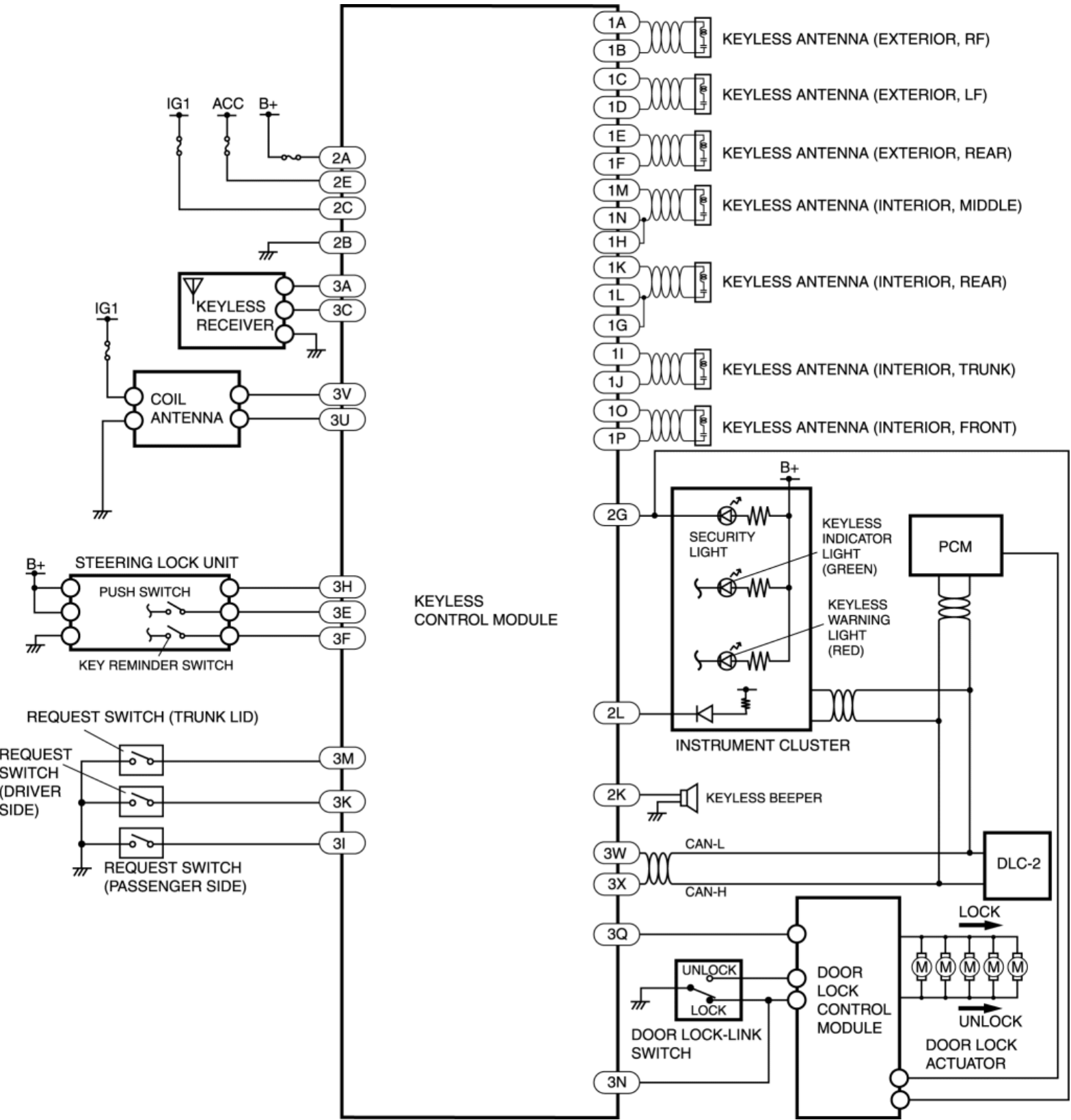
2011 - RX-8 - Body and Accessories

SYMPTOM TROUBLESHOOTING INDEX [ADVANCED KEYLESS ENTRY AND START SYSTEM]

No.	Troubleshooting item	Page
1	Door cannot be locked/unlocked by transmitter (card key)	See NO.1 DOOR CANNOT BE LOCKED/UNLOCKED BY TRANSMITTER (CARD KEY) [ADVANCED KEYLESS ENTRY AND START SYSTEM]
2	Blink keyless indicator light	See NO.2 BLINK KEYLESS INDICATOR LIGHT [ADVANCED KEYLESS ENTRY AND START SYSTEM]
3	Advanced keyless entry function inoperative	See NO.3 ADVANCED KEYLESS ENTRY FUNCTION INOPERATIVE [ADVANCED KEYLESS ENTRY AND START SYSTEM]
4	Advanced keyless start function inoperative	See NO.4 ADVANCED KEYLESS START FUNCTION INOPERATIVE [ADVANCED KEYLESS ENTRY AND START SYSTEM]

2011 - RX-8 - Body and Accessories

KEYLESS ENTRY SYSTEM WIRING DIAGRAM [ADVANCED KEYLESS ENTRY AND START SYSTEM]

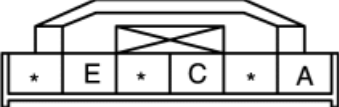


2011 - RX-8 - Body and Accessories


NO.1 DOOR CANNOT BE LOCKED/UNLOCKED BY TRANSMITTER (CARD KEY) [ADVANCED KEYLESS ENTRY AND START SYSTEM]

1	Door cannot be locked/unlocked by transmitter (card key)
POSSIBLE CAUSE	<ul style="list-style-type: none">• Malfunction in transmitter (card key) battery or transmitter (card key)• Malfunction in keyless control module• Malfunction in keyless receiver• Wrong usage• The after-market electrical parts are interfering with the keyless entry system• Malfunction in door lock timer unit• Open or short circuit in wiring harness between keyless control module and door lock timer unit

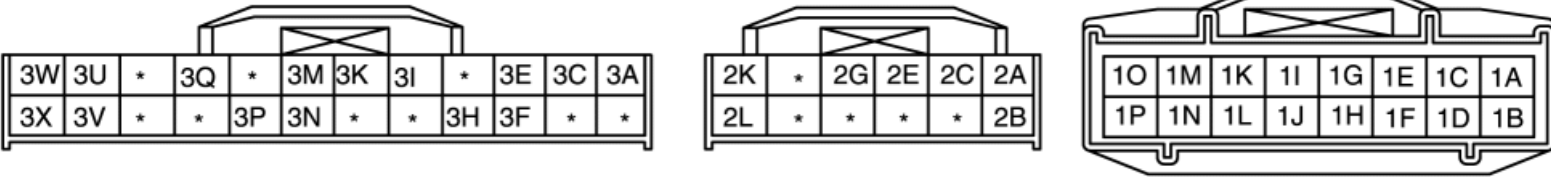
KEYLESS RECEIVER
WIRING HARNESS-SIDE CONNECTOR




DOOR LOCK CONTROL MODULE
HARNESS SIDE CONNECTOR



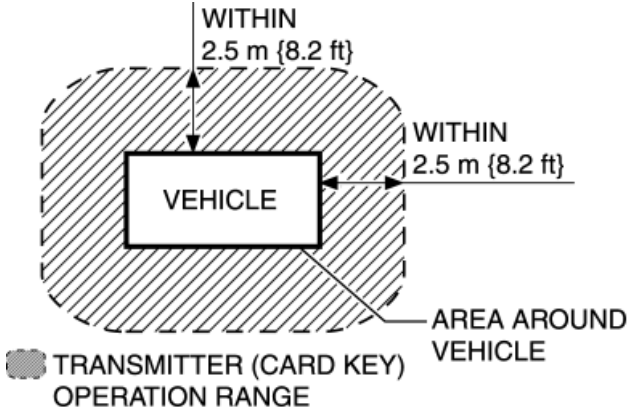
KEYLESS CONTROL MODULE WIRING HARNESS SIDE CONNECTOR





Diagnostic procedure

STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none">• Attempt to lock/unlock the door with the transmitter (card key).• Does the operation indicator light (LED) illuminate?	YesGo to the next step.
		No Go to Step 7.

2	<ul style="list-style-type: none"> Did the customer activate the transmitter (card key) within operative area (Within 2.5 m {8.2 ft} from area around vehicle)? 	YesGo to the next step.
		No The system is normal. Explain to the customer that the system does not work without the system operative area.
3	<ul style="list-style-type: none"> Did the customer use the keyless entry system in particular area, such as being near TV towers, power plants, power lines, or factories? 	YesThe system is normal. Area of operation is subject. Explain effect of outside interference on the transmitter (card key) to the customer.
		No Go to the next step.
4	<ul style="list-style-type: none"> Did the customer activate the keyless entry system with the key inserted into the steering lock? 	YesThe system is normal. Explain to the customer that the system does not work with the key inserted into the steering lock.
		No Go to the next step.
5	<ul style="list-style-type: none"> Are any of the following after-market electrical parts on the vehicle? <ul style="list-style-type: none"> Cellular phone Radio-wave equipment Remote engine starter TV Other 	YesGo to the next step.
		No Go to Step 7.
6	<ul style="list-style-type: none"> Disconnect the after-market electrical parts connectors and attempt to lock/unlock the doors with the transmitter (card key). Does the keyless entry system work? 	YesThe system is normal. The after-market electrical parts are interfering with the keyless entry system.
		No Go to the next step.
7	<ul style="list-style-type: none"> Is there repair record of the customer's keyless entry system? 	YesGo to the next step.
		No Go to Step 10.
8	<ul style="list-style-type: none"> Does the malfunction occur after the repair? 	YesGo to the next step.

		No	Go to Step 10.
9	<ul style="list-style-type: none"> Is the malfunction corrected when the ID numbers for all the customer's transmitters (card key) are updated? <p>(See CARD KEY ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p>	Yes	System is normal. (Explain to the customer that the malfunction occurred because all the transmitter (card key) ID numbers were not updated even though the body control module or a transmitter (card key) was replaced in the previous servicing.)
		No	Go to the next step.
10	<ul style="list-style-type: none"> Visually inspect the transmitter (card key) battery for the following: <p>(See CARD KEY BATTERY REPLACEMENT [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <ul style="list-style-type: none"> Battery insertion direction (correct polarity) Battery type (CR2025) Corrosion, soiling, deformation of battery terminals (plus/minus terminals) Contact malfunction between the battery terminal and battery when battery is inserted <ul style="list-style-type: none"> Is there any malfunction? 	Yes	<p>Battery insertion direction, battery type problem:</p> <ul style="list-style-type: none"> Properly install the battery or replace the battery with a specified one (CR2025), then go to the next step. <p>Malfunction with the battery terminals:</p> <ul style="list-style-type: none"> Clean corrosion and soiling or repair the terminal, then go to the next step.
		No	Go to the step 12.
11	<ul style="list-style-type: none"> Does the keyless entry system operate properly? 	Yes	Troubleshooting completed.
		No	Go to the next step.
12	<p>NOTE:</p> <ul style="list-style-type: none"> Use a new monitor battery (normal battery) or one from another vehicle which operates normally. Replace the battery in all the transmitters (card key) with a monitor-use battery (normal battery). <p>(See CARD KEY BATTERY REPLACEMENT [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <ul style="list-style-type: none"> For each transmitter (card key), verify that the transmitter (card key) operation indicator light (LED) illuminates when a button is operated. Does operation indicator light (LED) for each transmitter (card key) operate? 	Yes	Go to the next step.
		No	If the operation indicator light (LED) does not illuminate, replace the transmitter, then go to the Step 27.
13	<p>NOTE:</p> <ul style="list-style-type: none"> Inspect for all transmitters (card key). Inspect while the batteries for all of the transmitters (card key) are replaced with 	Yes	<p>Replace the transmitter (card key) battery, and then go to Step 27.</p> <p>(See CARD KEY BATTERY REPLACEMENT [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p>

	<p>monitor-use batteries (normal battery).</p> <ul style="list-style-type: none"> • Verify the operation of keyless entry system using all of the transmitters (card key). • Does the keyless entry system operate properly? 	No	Go to the next step.
14	<ul style="list-style-type: none"> • Inspect for the keyless receiver installation. • Is the bracket securely installed on the keyless receiver? 	Yes	Go to the next step.
		No	Install the bracket securely, and then go to the next step.
15	<ul style="list-style-type: none"> • Inspect the ground wire on the keyless receiver bracket. • Is the ground wire tighten on the bracket? 	Yes	Go to the next step.
		No	Tighten the ground wire, then go to the next step.
16	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Measure the voltage at keyless receiver terminal A? • Is the voltage B+? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect and repair the wiring harness between the keyless control module and the keyless receiver as necessary. • Then go to Step 27.
17	<ul style="list-style-type: none"> • Measure the voltage at keyless receiver terminal E? • Is the voltage 0 V? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect and repair the wiring harness between the ground wire and the keyless receiver as necessary. • Re-tighten the ground wire as necessary. • Then go to Step 27.
18	<ul style="list-style-type: none"> • Disconnect the keyless receiver connector (6-pin) and keyless control module connector (52-pin). • Is there continuity between the following terminals? <ul style="list-style-type: none"> ▪ Keyless receiver connector terminal A—keyless control module connector terminal 3A ▪ Keyless receiver connector terminal C—keyless control module connector terminal 3C ▪ Keyless receiver connector terminal E—GND 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect and repair the wiring harness between the keyless control module and the keyless receiver, then go to Step 27.
19	<ul style="list-style-type: none"> • Measure the signal wave pattern of keyless control module terminal 3C using an oscilloscope while the transmitter (card key) is operated with the auxiliary key removed from the ignition key cylinder. 	Yes	Go to the next step.
		No	Replace the keyless receiver, and then go to Step 27.

	<ul style="list-style-type: none"> Does the wave pattern change when the transmitter (card key) is operated? <p>NOTE:</p> <ul style="list-style-type: none"> Perform the oscilloscope setting using 0.5 V/DIV (Y), 100 ms/DIV (X), DC range. 		
20	<ul style="list-style-type: none"> Measure the voltage at the keyless control module terminals 2A, 2C and 2E. <ul style="list-style-type: none"> Terminal 2C: IG1 voltage Terminal 2A: B+ Terminal 2E: ACC voltage Is the voltage as above? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> Inspect for fuse. Inspect and repair the wiring harness between the keyless control module and the fuse block as necessary. Then go to Step 27.
21	<ul style="list-style-type: none"> Measure the voltage at keyless control module terminal 2B? Is the voltage 0 V? 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> Inspect and repair the wiring harness between the ground wire and the keyless control module as necessary. Re-tighten the ground wire as necessary. Then go to Step 27.
22	<ul style="list-style-type: none"> Measure the voltage at the keyless control module terminals 3F. <ul style="list-style-type: none"> Turn the keyless switch ON: B+ Turn the keyless switch OFF: 1.0 V or less Is the voltage as above? 	Yes	Go to the next step.
			<ul style="list-style-type: none"> Inspect for key reminder switch. Inspect and repair the wiring harness between the steering lock unit (key reminder switch) and the keyless control module. Then go to step 27.
23	<ul style="list-style-type: none"> Disconnect keyless control module and door lock timer unit. Is there continuity between keyless control module terminal 3Q and door lock timer unit terminal 2P? 	Yes	<p>Inspect for short circuit in wiring harness.</p> <p>If there is a short circuit, repair or replace suspected wiring harness.</p> <p>If the wiring harness is okay, go to the next step.</p>
		No	Repair or replace wiring harness for open circuit, then go to Step 27.
24	<ul style="list-style-type: none"> Measure voltage at the door lock timer unit terminal 1A, 2A and 2B. <ul style="list-style-type: none"> Terminal 1A, 2A: B+ Terminal 2B: IG1 voltage Is the voltage as above? 	Yes	Go to the next step.
		No	<p>Inspect for fuse.</p> <p>Inspect and repair the wiring harness between the fuse block and door lock timer unit as necessary.</p> <p>Then go to Step 27.</p>
25	<ul style="list-style-type: none"> Measure the voltage at door lock timer unit terminal 1E and 2W. 	Yes	Go to the next step.

	<ul style="list-style-type: none"> Is the voltage 0 V? 	No	<p>Inspect and repair the wiring harness between the ground wire and the door lock timer unit as necessary.</p> <p>Re-tighten the ground wire as necessary.</p> <p>Then go to Step 27.</p>
26	<ul style="list-style-type: none"> Measure the voltage at the door lock timer unit terminals 1C, 1D and 1F while operating the transmitter. <ul style="list-style-type: none"> Terminal 1D: 1.0 V or less→B+→1.0 V or less (Normal lock) Terminal 1C: 1.0 V or less→B+→1.0 V or less (Normal unlock) Terminal 1F: 1.0 V or less→B+→1.0 V or less (2 stage unlock) Is the voltage as above? 	Yes	Replace the door lock timer unit, then go to the next step.
		No	<ul style="list-style-type: none"> Inspect the door lock timer unit connector. Inspect and repair the wiring harness between the door lock timer unit and door lock actuator. <ul style="list-style-type: none"> If the harness is normal, go to the next step. If the harness is malfunctioning, repair the wiring harness. Then go to the next step.
27	<ul style="list-style-type: none"> Does the keyless entry system operate properly? 	Yes	Troubleshooting completed. Explain repairs to the customers
		No	Re-inspect the malfunction symptoms, then repeat form Step 1 if malfunction recurs.

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

NO.2 BLINK KEYLESS INDICATOR LIGHT [ADVANCED KEYLESS ENTRY AND START SYSTEM]

2	Blink keyless indicator light
POSSIBLE CAUSE	<ul style="list-style-type: none">• Low transmitter (card key) battery voltage.

Diagnostic procedure

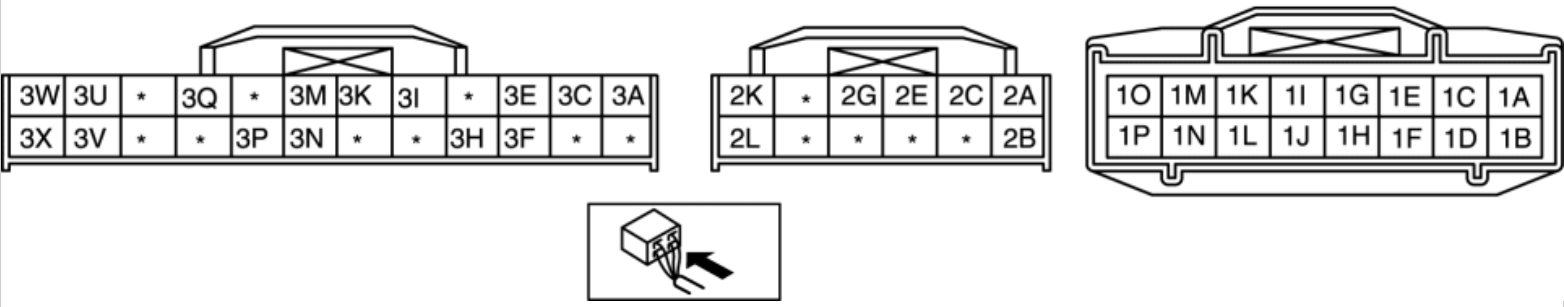
STEP	INSPECTION		ACTION
1	<ul style="list-style-type: none">• Close all doors.• Turn the ignition switch from ON to off.• Does the keyless indicator light flash (green)?	Yes	Replace wit new transmitter (card key) battery.
		No	Troubleshooting completed.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

NO.3 ADVANCED KEYLESS ENTRY FUNCTION INOPERATIVE [ADVANCED KEYLESS ENTRY AND START SYSTEM]

3	Advanced keyless entry function inoperative
POSSIBLE CAUSE	<ul style="list-style-type: none">Malfunction in the transmitter (card key).Malfunction in the keyless control module.Malfunction in the keyless receiver.Malfunction in the keyless antenna.Wrong usage.
<div>KEYLESS CONTROL MODULE WIRING HARNESS SIDE CONNECTOR</div> <div></div>	

Diagnostic procedure

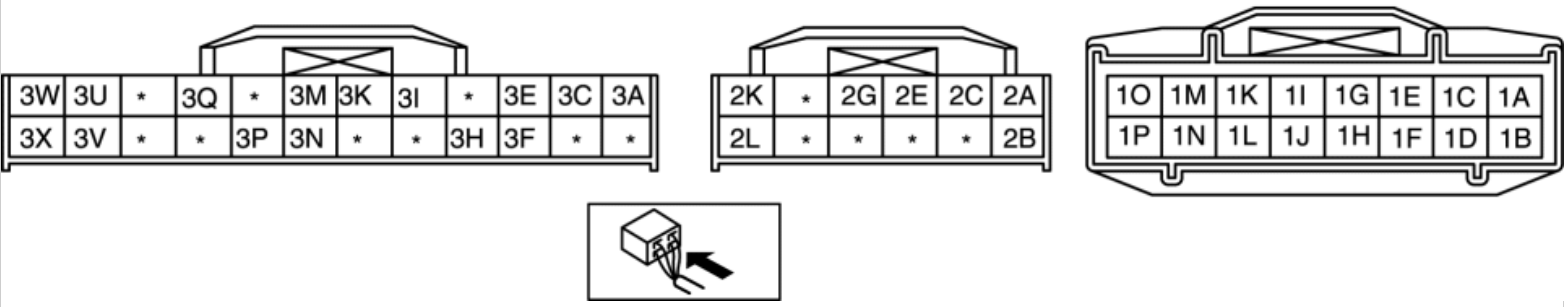
STEP	INSPECTION	ACTION
1	<ul style="list-style-type: none">Retrieve the advanced keyless system DTC using the M-MDS.Are there DTC displayed?	YesPerform the applicable DTC diagnostic procedures.
		NoGo to the next step.
2	<ul style="list-style-type: none">Did the customer attempt to operate each front doors and trunk lid using the request switch?	YesGo to the next step.
		NoInspect the advanced keyless system operations using the request switch. If the advanced keyless system is inoperative, then go to the next step.
3	<ul style="list-style-type: none">Prepare the followings:<ul style="list-style-type: none">Make sure that there is no transmitter (card key) inside the passenger compartment.	YesThe system is normal. Explain the advanced keyless system operation.
		NoGo to the next step.

	<p>Close all doors including trunk lid.</p> <ul style="list-style-type: none"> ■ Remove the key from the steering lock. ■ Make sure that start knob is to the LOCK position. (Do not Press the knob) ■ Make sure that the transmitter (card key) is within the advanced keyless system operative area (within 80 cm {2.6 ft} from front door) <ul style="list-style-type: none"> • Does the advanced keyless system operate properly? 		
4	<ul style="list-style-type: none"> • Does the operation indicator light (LED) on the transmitter (card key) illuminate when any operation using the transmitter (card key) is performed? 	<p>YesGo to the next step.</p> <p>No Perform the procedure for symptom troubleshooting NO.1 [DOOR CANNOT BE LOCKED/UNLOCKED BY TRANSMITTER (CARD KEY) [ADVANCED KEYLESS AND START SYSTEM]</p> <p>(See NO.1 DOOR CANNOT BE LOCKED/UNLOCKED BY TRANSMITTER (CARD KEY) [ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p>	
5	<ul style="list-style-type: none"> • Measure the voltage at the keyless control module terminals 3I, 3K and 3M while operating the request switch. <ul style="list-style-type: none"> ■ Operate driver's side front door request switch (3I): 5.0 V→1.0 V or less ■ Operate passenger's side front door request switch (3K): 5.0 V→1.0 V or less ■ Operate trunk lid request switch (3M): 5.0 V→1.0 V or less • Is the voltage as above? 	<p>YesGo to the next step.</p> <p>No Inspect and repair the applicable wiring harness as necessary, then go to Step 9.</p>	
6	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the negative battery cable. • Disconnect the keyless receiver connector and keyless control module connector. • Inspect the wiring harness between the following terminals for an open or short circuit. <ul style="list-style-type: none"> ■ Keyless receiver connector terminal A—keyless control module connector terminal 3A ■ Keyless receiver connector terminal C—keyless control module connector terminal 3C ■ Keyless receiver connector terminal E—GND 	<p>YesGo to the next step.</p> <p>No Repair or replace the wiring harness between the keyless receiver connector and keyless control module connector, then go to the next step.</p>	

	<ul style="list-style-type: none"> Is the wiring harness normal? 		
7	<ul style="list-style-type: none"> Measure the signal wave pattern for keyless control module terminal 3C using an oscilloscope when any of the request switches and the trunk lid opener switch are operated. Does the wave pattern change when the request switch is operated? <p>NOTE:</p> <ul style="list-style-type: none"> Perform the oscilloscope setting using 0.5 V/DIV (Y), 100 ms/DIV (X), DC range. 	Yes	Go to the next step.
		No	Replace the keyless receiver, and then go to next step.
8	<ul style="list-style-type: none"> Measure the signal wave pattern for keyless control module terminal 3Q using an oscilloscope when any of the request switches are operated. Does the wave pattern change when the request switch is operated? <p>NOTE:</p> <ul style="list-style-type: none"> Perform the oscilloscope setting using 0.5 V/DIV (Y), 100 ms/DIV (X), DC range. 	Yes	Inspect and repair the wiring harness between the door lock timer unit and the keyless control module, then go to the next step.
		No	Inspect the keyless control module. If the keyless control module is malfunctioning, replace the module. Then go to the next step.
9	<ul style="list-style-type: none"> Does the keyless entry system operate properly? 	Yes	Troubleshooting completed. Explain repairs to the customers
		No	Re-inspect the malfunction symptoms, then repeat form Step 1 if malfunction recurs.

2011 - RX-8 - Body and Accessories

NO.4 ADVANCED KEYLESS START FUNCTION INOPERATIVE [ADVANCED KEYLESS ENTRY AND START SYSTEM]

4	Advanced keyless start function inoperative
POSSIBLE CAUSE	<ul style="list-style-type: none">Malfunction in the transmitter (card key).Malfunction in the keyless control module.Malfunction in the keyless receiver.Malfunction in the keyless antenna.Malfunction in the PCM.
<div>KEYLESS CONTROL MODULE WIRING HARNESS SIDE CONNECTOR</div> <div></div>	

Diagnostic procedure

STEP	INSPECTION	ACTION	
1	<ul style="list-style-type: none">Retrieve the advanced keyless system DTC using the M-MDS.Are there DTC displayed?	Yes	Perform the applicable DTC diagnostic procedures.
		No	Go to the next step.
2	<ul style="list-style-type: none">Attempt to start the engine using the key.Does engine start?	Yes	Go to the next step.
		No	Go to symptom troubleshooting flow No.3 in 01-03 section.
3	<ul style="list-style-type: none">Bring the transmitter (card key) inside the passenger compartment.Measure the voltage at the keyless control module terminal 3E (push switch) while pushing the start knob.Is the voltage B+?	Yes	Go to the next step.
		No	<ul style="list-style-type: none">Inspect the wiring harness between the steering lock unit and keyless control.<ul style="list-style-type: none">If the harness is normal, replace the steering lock unit.

			<ul style="list-style-type: none"> ▪ If the harness is malfunctioning, repair the wiring harness. • Then go to Step 9.
4	<ul style="list-style-type: none"> • Does the operation indicator light (LED) on the transmitter (card key) illuminate when any operation using the transmitter (card key) is performed? 	Yes	Go to the next step.
		No	Perform the procedure for symptom troubleshooting NO.1 DOOR CANNOT BE LOCKED/UNLOCKED BY TRANSMITTER (CARD KEY) [ADVANCED KEYLESS AND START SYSTEM] (See NO.1 DOOR CANNOT BE LOCKED/UNLOCKED BY TRANSMITTER (CARD KEY) [ADVANCED KEYLESS ENTRY AND START SYSTEM].)
5	<ul style="list-style-type: none"> • Turn the ignition switch to the LOCK position. • Disconnect the negative battery cable. • Disconnect the keyless receiver connector and keyless control module connector. • Inspect the wiring harness between the following terminals for an open or short circuit. <ul style="list-style-type: none"> ▪ Keyless receiver connector terminal A—keyless control module connector terminal 3A ▪ Keyless receiver connector terminal C—keyless control module connector terminal 3C ▪ Keyless receiver connector terminal E—GND • Is the wiring harness normal? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness between the keyless receiver connector and keyless control module connector, then go to the next step.
6	<ul style="list-style-type: none"> • Measure the signal wave pattern for keyless control module terminal 3C when the start knob is pressed. • Does the signal wave pattern change when the start knob is pressed? <p>NOTE:</p> <ul style="list-style-type: none"> • Perform the oscilloscope setting using 0.5 V/DIV (Y), 100 ms/DIV (X), DC range. 	Yes	Go to the next step.
		No	Replace the keyless receiver, and then go to next step.
7	<ul style="list-style-type: none"> • Does the keyless indicator light turn ON when pressing the start knob? 	Yes	Go to Step 9.
		No	Go to the next step.
8	<ul style="list-style-type: none"> • Measure the signal wave pattern for keyless control module terminal 3H when the start knob is pressed. 	Yes	Go to the next step.
		No	<ul style="list-style-type: none"> • Inspect the wiring harness between the

	<p>Does the signal wave pattern change when the start knob is pressed?</p> <p>NOTE:</p> <ul style="list-style-type: none"> Perform the oscilloscope setting using 0.5 V/DIV (Y), 100 ms/DIV (X), DC range. 		<p>steering lock unit and the keyless control module.</p> <ul style="list-style-type: none"> If the harness is normal, replace the keyless control module. If the harness is malfunctioning, repair the wiring harness. <ul style="list-style-type: none"> Then go to the next step.
9	<ul style="list-style-type: none"> Start the engine using start knob. Does advanced engine start function operate properly? 	Yes	Troubleshooting completed. Explain repairs to the customers
		No	Re-inspect the malfunction symptoms, then repeat form Step 1 if malfunction recurs.

[< Previous](#) [Next >](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

FOREWORD [ADVANCED KEYLESS ENTRY AND START SYSTEM]

- The advanced keyless system is controlled by the keyless control module.
- "All locks" includes the trunk lid.

[< Previous](#) [Next >](#)

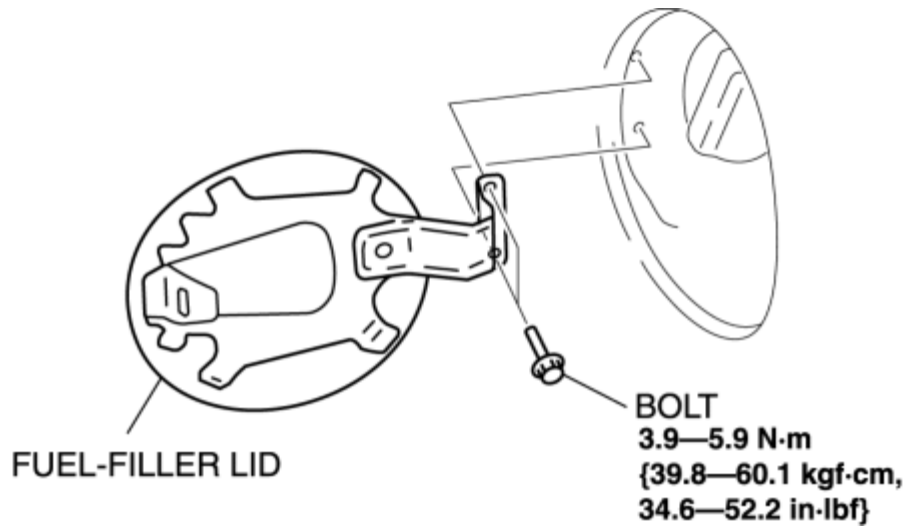
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

FUEL-FILLER LID REMOVAL/INSTALLATION

1. Remove the bolts.

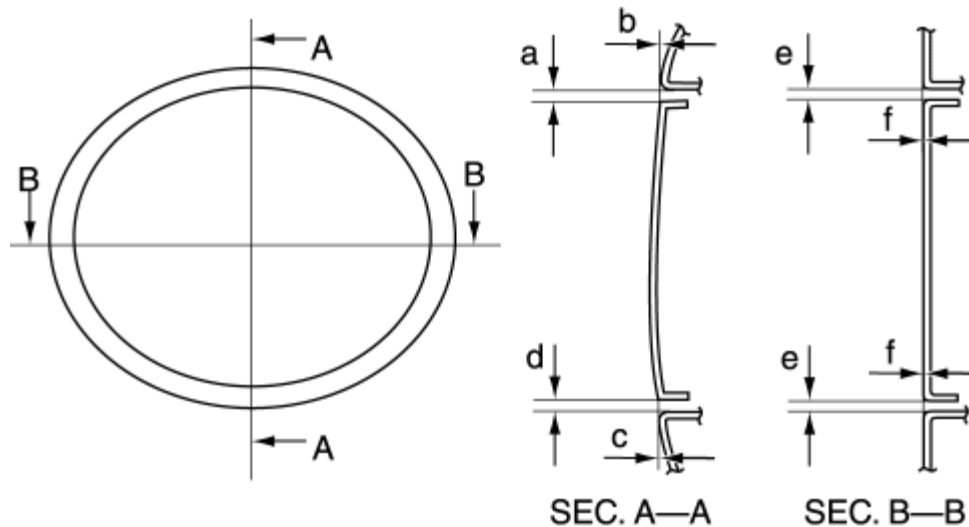


2. Remove the fuel-filler lid.
3. Install in the reverse order of removal.
4. Adjust the fuel-filler lid. (See [FUEL-FILLER LID ADJUSTMENT](#).)

2011 - RX-8 - Body and Accessories

FUEL-FILLER LID ADJUSTMENT

1. Measure the gap and height difference between the fuel-filler lid and the body.
2. Loosen the fuel-filler lid installation bolts, and adjust the fuel-filler lid.



Standard clearance

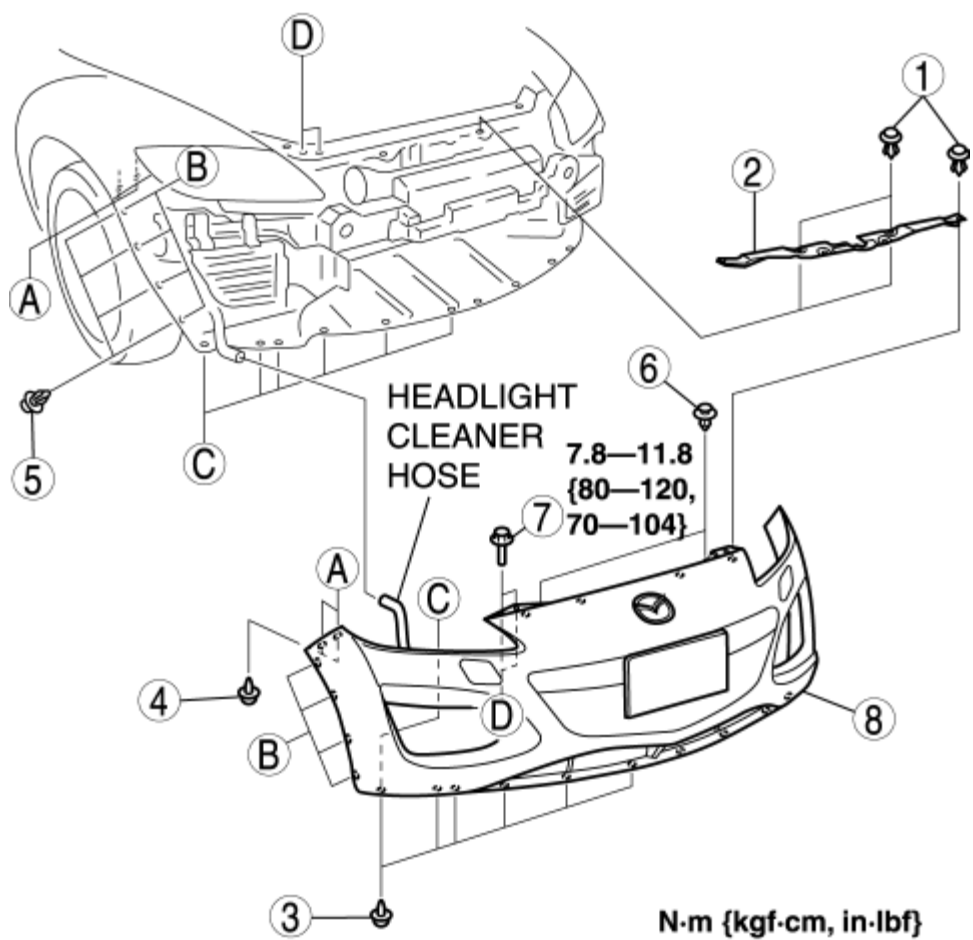
- a: 1.7—3.7 mm {0.07—0.14 in}
- b: -0.5—1.5 mm {-0.01—0.05 in}
- c: -1.0—1.0 mm {-0.03—0.03 in}
- d: 1.8—3.8 mm {0.08—0.14 in}
- e: 1.7—3.7 mm {0.07—0.14 in}
- f: -0.8—1.2 mm {-0.03—0.04 in}

3. Tighten the bolts. (See [FUEL-FILLER LID REMOVAL/INSTALLATION](#).)

2011 - RX-8 - Body and Accessories

FRONT BUMPER REMOVAL/INSTALLATION

- 1. Disconnect the negative battery cable.
- 2. Remove in the order indicated in the table.



1	Fastener A
2	Seal plate
3	Screw A
4	Screw B

5	Fastener B
6	Fastener C
7	Bolt
8	Front bumper (See Front Bumper Removal Note.) (See Front Bumper Installation Note.)

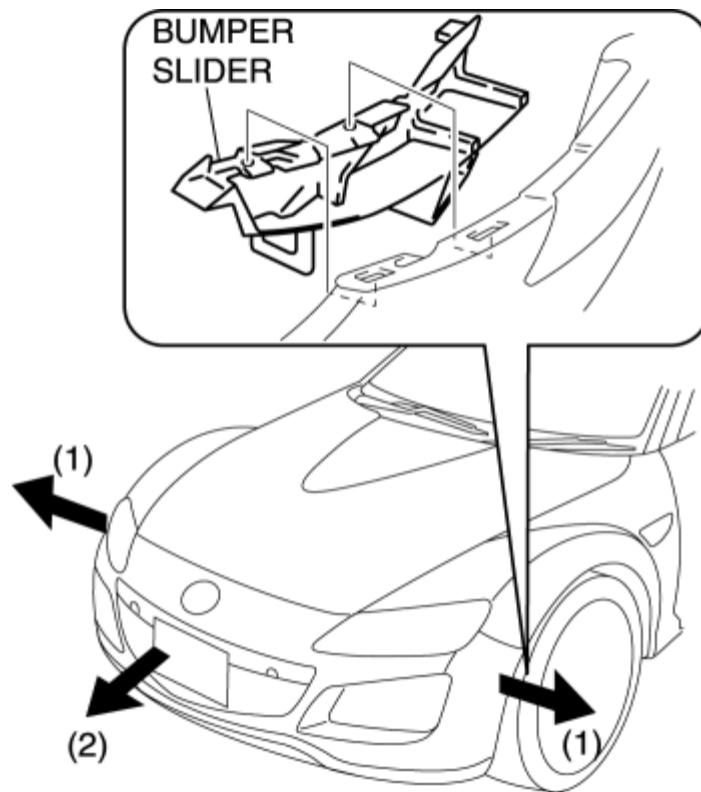
3. Disconnect the front fog light connector. (Vehicles with the front fog light) (See [FRONT FOG LIGHT REMOVAL/INSTALLATION.](#))
4. Disconnect the headlight cleaner hose (Vehicles with the headlight cleaner) (See [HEADLIGHT CLEANER HOSE REMOVAL/INSTALLATION.](#))
5. Install in the reverse order of removal.
6. Adjust the front fog light aiming for vehicles with the front fog lights. (See [FRONT FOG LIGHT AIMING.](#))

Front Bumper Removal Note

1. Pull the front bumper ends (wheel arch) outward to detach from the bumper slider.

CAUTION:

- When detaching the front bumper from the bumper slider, the front bumper could fall and be damaged. Secure the front bumper so that it does not fall.



2. Remove the front bumper from the body.

Front Bumper Installation Note

1. Spread the front bumper ends apart.
2. Attach the front bumper to the body.
3. Press the front bumper connecting area into the body to engage with the bumper slider.

[< Previous](#) [Next >](#)

[Back to Top](#)

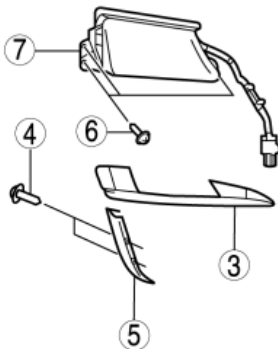
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

FRONT BUMPER DISASSEMBLY/ASSEMBLY

Small Type

1. To disassemble the front bumper, remove the following parts:
 - a. Front fog lights (Vehicles with the front fog lights) (See [FRONT FOG LIGHT REMOVAL/INSTALLATION.](#))
 - b. Headlight cleaner hose (Vehicles with the headlight cleaner) (See [HEADLIGHT CLEANER HOSE REMOVAL/INSTALLATION.](#))
 - c. Headlight cleaner nozzles (Vehicles with the headlight cleaner) (See [HEADLIGHT CLEANER NOZZLE REMOVAL.](#)) (See [HEADLIGHT CLEANER NOZZLE INSTALLATION.](#))
 - d. Headlight cleaner actuator (Vehicles with the headlight cleaner) (See [HEADLIGHT CLEANER ACTUATOR REMOVAL/INSTALLATION.](#))
2. Disassemble in the order indicated in the table.
3. Assemble in the reverse order of disassembly.



N·m {kgf·cm, in·lbf}

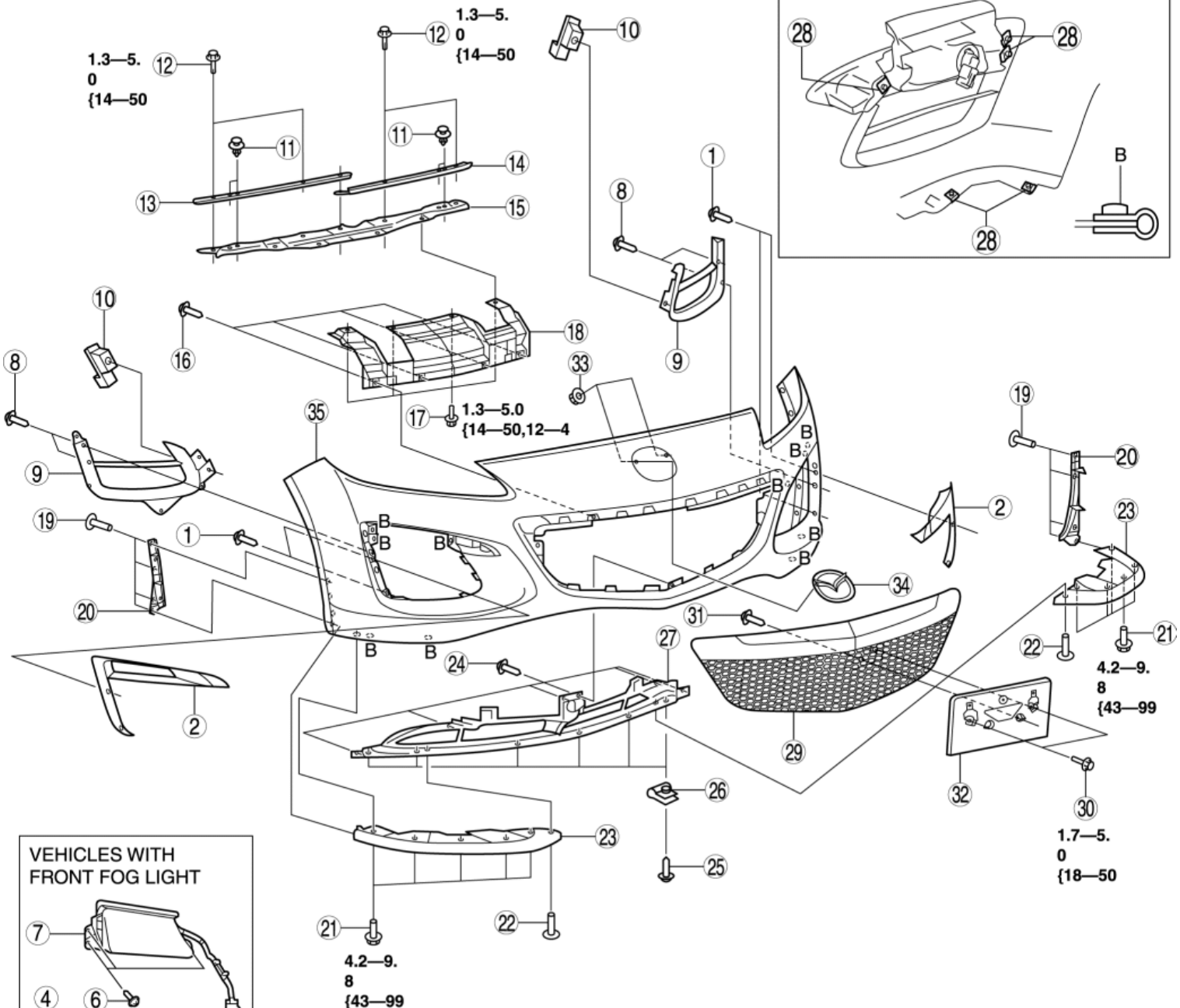
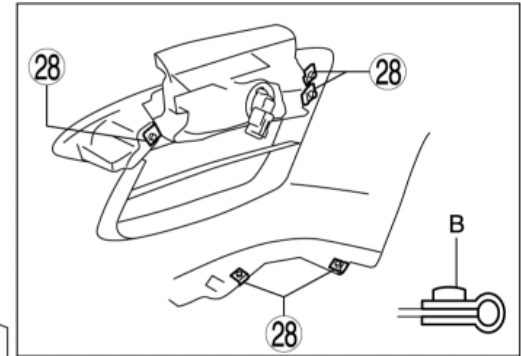
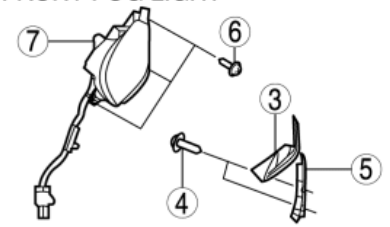
1	Screw A
2	Front fog light hole cover (Vehicles without front fog lights)
3	Front fog light cover (Vehicles with front fog lights)
4	Screw B
5	Front fog light cover (Vehicles with front fog lights)
6	Screw C
7	Front fog light (Vehicles with front fog lights)
8	Screw D
9	Front fog light hole cover
10	Connector cover (Vehicles without front fog lights)
11	Screw E
12	Front fog light hole cover (Vehicles without oil cooler)
13	Fastener
14	Bolt A
15	Set plate (RH)
16	Set plate (LH)
17	Front bumper retainer
18	Screw F
19	Bolt B
20	Front bumper retainer
21	Screw G
22	Screw H
23	Clip nut A
24	Airdam skirt
25	Clip nut B
26	Front bumper mesh

27	Bolt C
28	Screw I
29	License plate holder
30	Nut
31	Mascot
32	Front bumper fascia

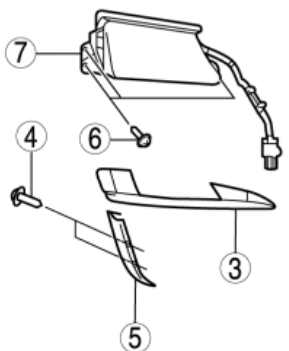
Large Type

1. To disassemble the front bumper, remove the following parts:
 - a. Front fog lights (Vehicles with the front fog lights) (See [FRONT FOG LIGHT REMOVAL/INSTALLATION.](#))
 - b. Headlight cleaner hose (Vehicles with the headlight cleaner) (See [HEADLIGHT CLEANER HOSE REMOVAL/INSTALLATION.](#))
 - c. Headlight cleaner nozzles (Vehicles with the headlight cleaner) (See [HEADLIGHT CLEANER NOZZLE REMOVAL.](#))
(See [HEADLIGHT CLEANER NOZZLE INSTALLATION.](#))
 - d. Headlight cleaner actuator (Vehicles with the headlight cleaner) (See [HEADLIGHT CLEANER ACTUATOR REMOVAL/INSTALLATION.](#))
2. Disassemble in the order indicated in the table.
3. Assemble in the reverse order of disassembly.

VEHICLES WITH
FRONT FOG LIGHT



VEHICLES WITH
FRONT FOG LIGHT



N·m {kgf·cm, in·lbf}

1	Screw A
2	Front fog light hole cover (Vehicles without front fog lights)
3	Front fog light cover (Vehicles with front fog lights)
4	Screw B
5	Front fog light cover (Vehicles with front fog lights)
6	Screw C
7	Front fog light (Vehicles with front fog lights)
8	Screw D
9	Front fog light hole cover
10	Connector cover (Vehicles without front fog lights)
11	Fastener
12	Bolt A
13	Set plate (RH)
14	Set plate (LH)
15	Front bumper retainer
16	Screw E
17	Bolt B
18	Front bumper retainer
19	Rivet A
20	Front bumper fascia
21	Bolt C
22	Rivet B
23	Airdam skirt
24	Screw F
25	Screw G
26	Clip nut A
27	Airdam skirt

28	Clip nut B
29	Front bumper mesh
30	Bolt D
31	Screw H
32	License plate holder
33	Nut
34	Mascot
35	Front bumper fascia

[< Previous](#) [Next >](#)

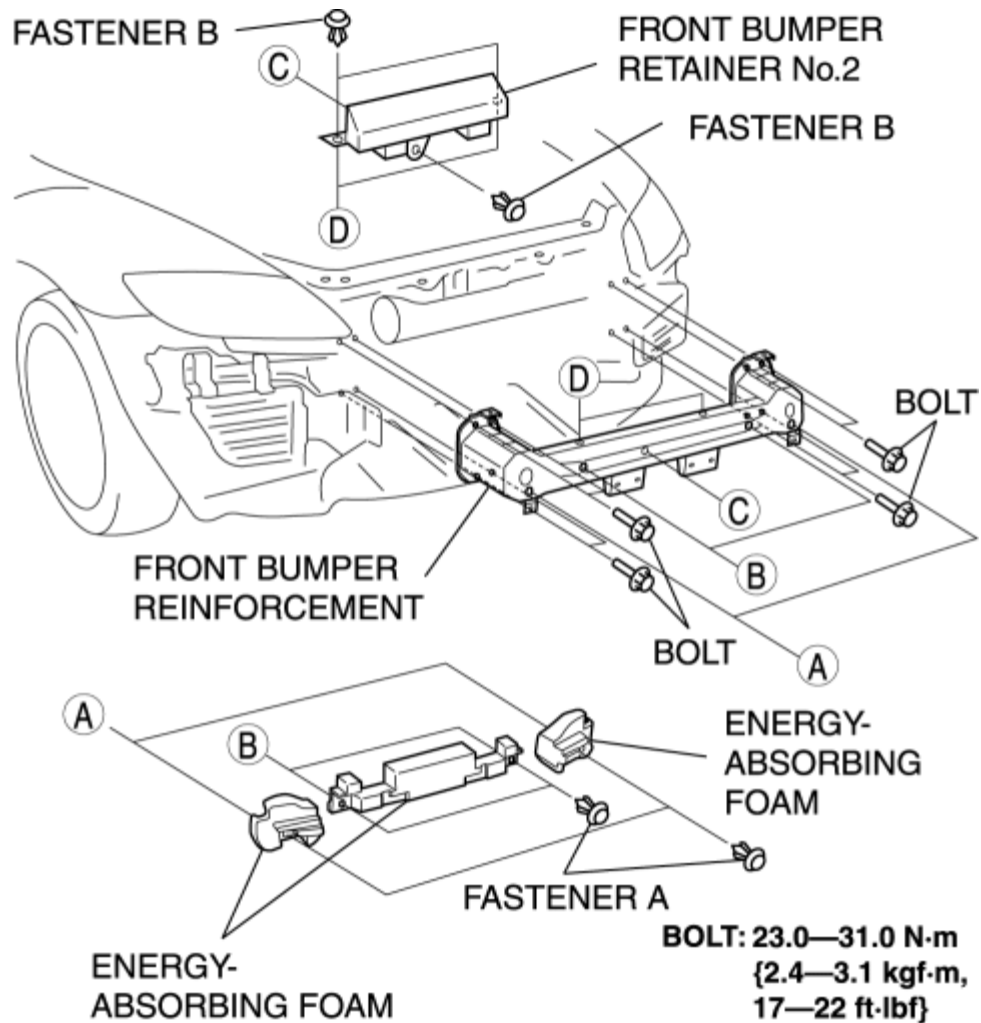
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

FRONT BUMPER REINFORCEMENT REMOVAL/INSTALLATION

1. Remove the front bumper. (See [FRONT BUMPER REMOVAL/INSTALLATION](#).)
2. Remove fasteners A, then remove the energy-absorbing foam.

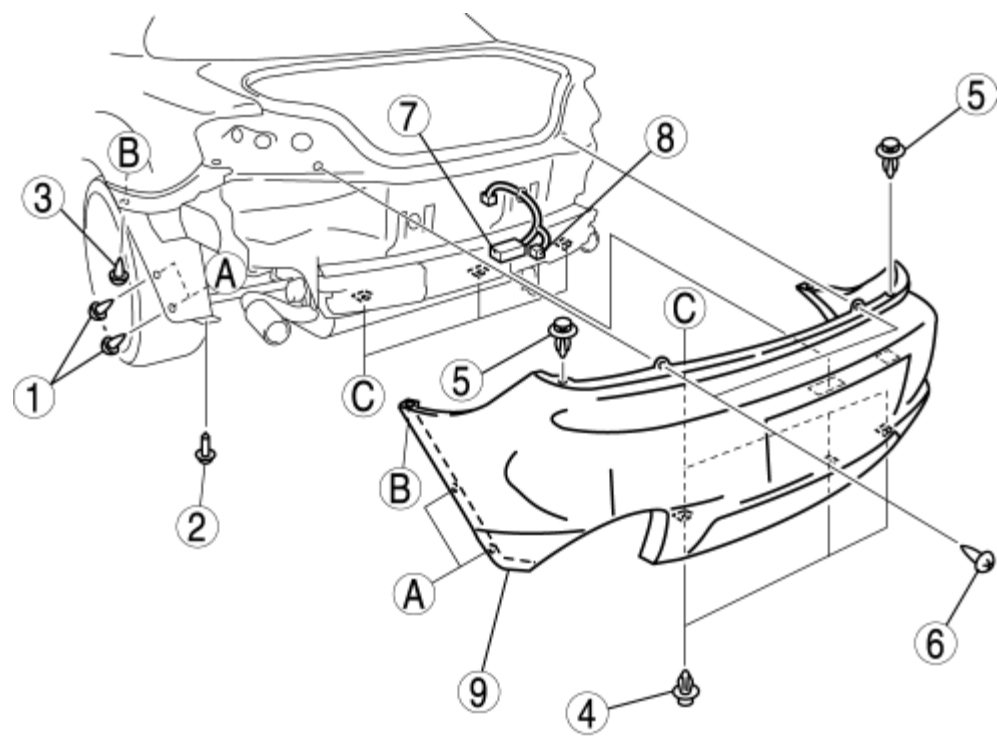


3. Remove fasteners B, then remove front bumper retainer No.2.
4. Remove the bolts, then remove the front bumper reinforcement.
5. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

REAR BUMPER REMOVAL/INSTALLATION

- 1. Disconnect the negative battery cable.
- 2. Remove the trunk end trim. (See [TRUNK END TRIM REMOVAL/INSTALLATION.](#))
- 3. Remove the trunk side trim. (See [TRUNK SIDE TRIM REMOVAL/INSTALLATION.](#))
- 4. Remove the rear combination lights. (See [REAR COMBINATION LIGHT REMOVAL/INSTALLATION.](#))
- 5. Remove the rear splash shield. (See [SPLASH SHIELD REMOVAL/INSTALLATION.](#))
- 6. Remove in the order indicated in the table.



1	Screw A
2	Screw B
3	Screw C

4Fastener A

5Fastener B

6Screw D

7License plate light

(See [LICENSE PLATE LIGHT REMOVAL/INSTALLATION](#).)

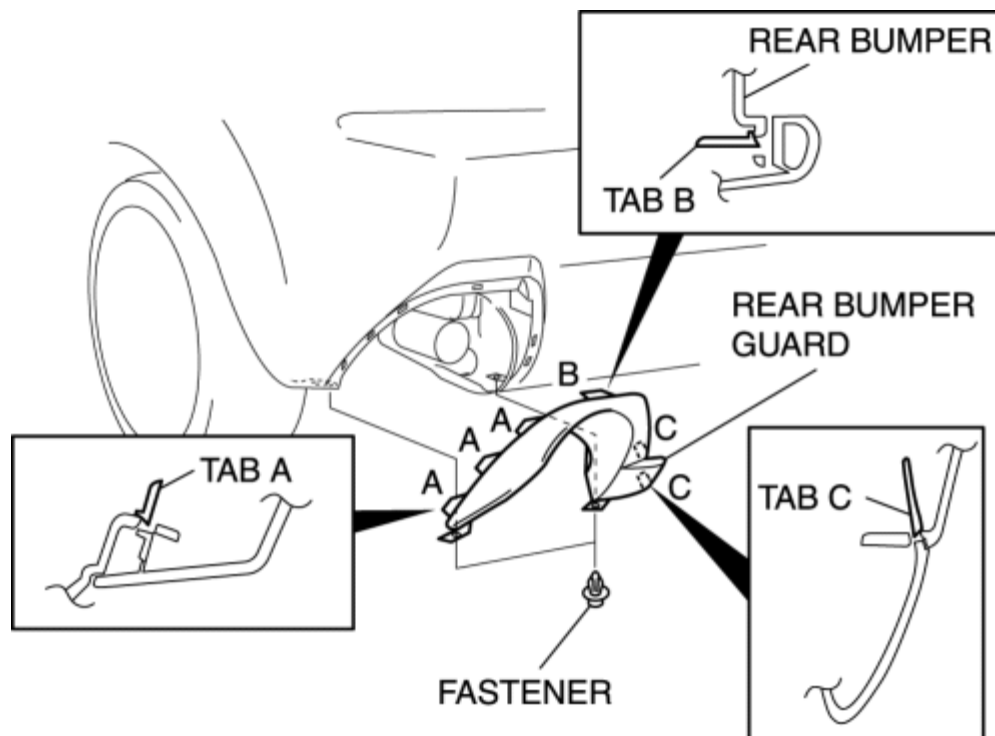
8Request switch connector (Vehicles with the advanced keyless system) (See [REQUEST SWITCH REMOVAL/INSTALLATION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#) .)

9Rear bumper

(See[Rear Bumper Removal Note](#).)

(See[Rear bumper Installation Note](#).)

7. Pull the rear bumper guard outward, detach tabs A, B,C,and then remove the rear bumper guard.



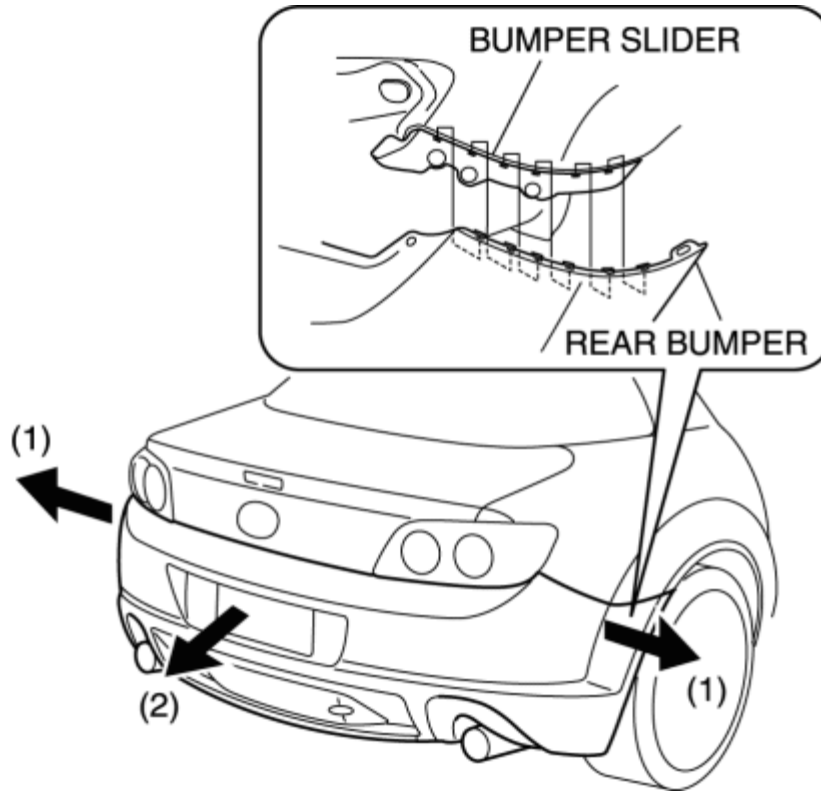
8. Install in the reverse order of removal.

Rear Bumper Removal Note

1. Pull the rear bumper ends (wheel arch) outward to detach from the bumper slider.

CAUTION:

- When detaching the rear bumper from the bumper slider, the rear bumper could fall and be damaged. Secure the rear bumper so that it does not fall.



Rear bumper Installation Note

1. Spread the rear bumper ends (wheel arches) apart.
2. Attach the rear bumper to the body.
3. Press the rear bumper connecting area into the body to engage with the bumper slider.

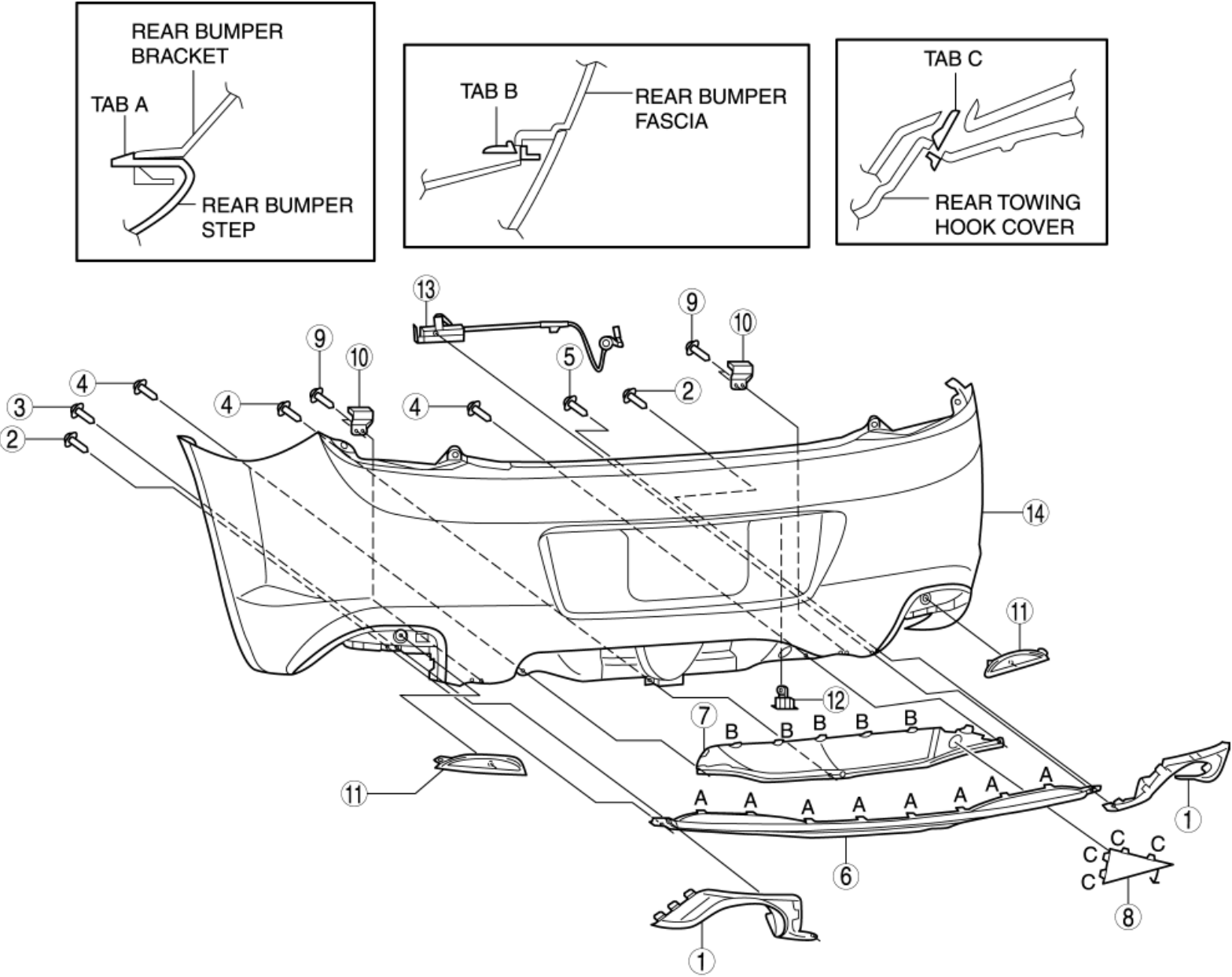
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

REAR BUMPER DISASSEMBLY/ASSEMBLY

- 1. Disassemble in the order indicated in the table.
- 2. Assemble in the reverse order of disassembly.

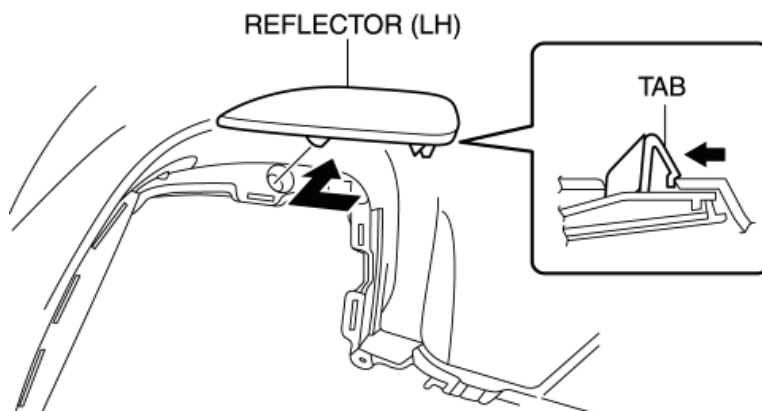


1	Rear bumper guard (See REAR BUMPER REMOVAL/INSTALLATION.)
2	Screw A

3	Screw B
4	Screw C
5	Screw D
6	Rear bumper step
7	Rear bumper bracket
8	Towing hook cover
9	Screw E
10	Rear bumper stay
11	Rear reflector (See Reflector Removal Note .)
12	License plate light (See LICENSE PLATE LIGHT REMOVAL/INSTALLATION .)
13	Request switch (Vehicles with the advanced keyless system) (See REQUEST SWITCH REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] .)
14	Rear bumper fascia

Reflector Removal Note

1. Pull off the reflector from the rear bumper in the direction shown by the arrow.

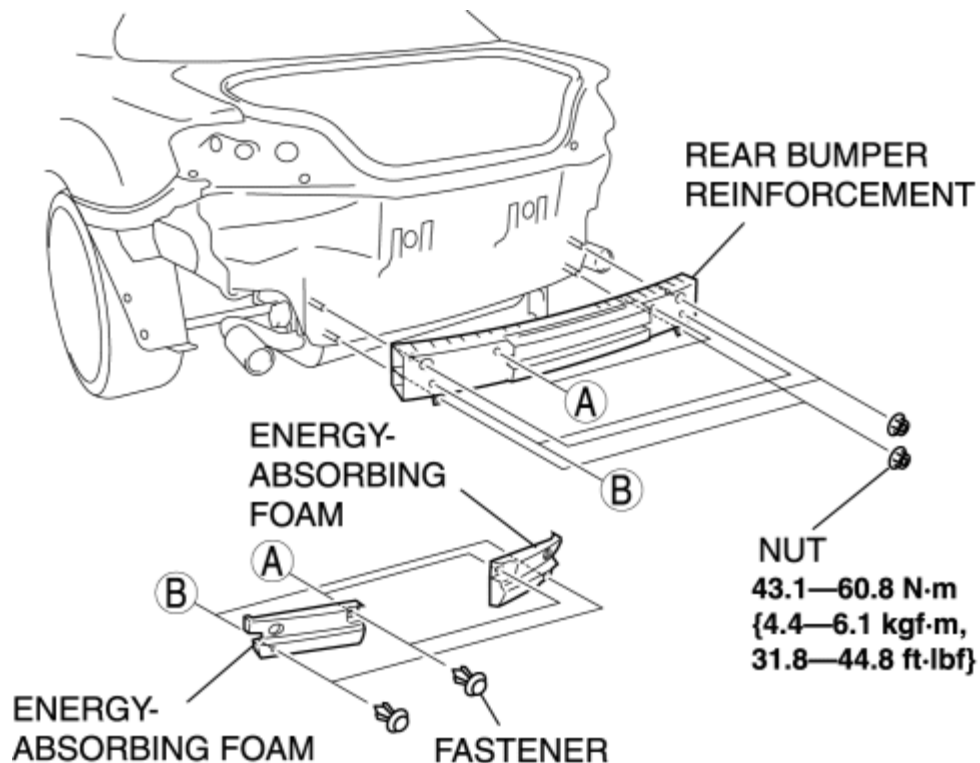


[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

REAR BUMPER REINFORCEMENT REMOVAL/INSTALLATION

1. Remove the following parts:
 - a. Trunk end trim (See [TRUNK END TRIM REMOVAL/INSTALLATION.](#))
 - b. Trunk side trim (See [TRUNK SIDE TRIM REMOVAL/INSTALLATION.](#))
 - c. Rear combination lights (See [REAR COMBINATION LIGHT REMOVAL/INSTALLATION.](#))
 - d. Rear splash shield (See [SPLASH SHIELD REMOVAL/INSTALLATION.](#))
 - e. Rear bumper (See [REAR BUMPER REMOVAL/INSTALLATION.](#))
2. Remove the fasteners, then remove the energy-absorbing foam.

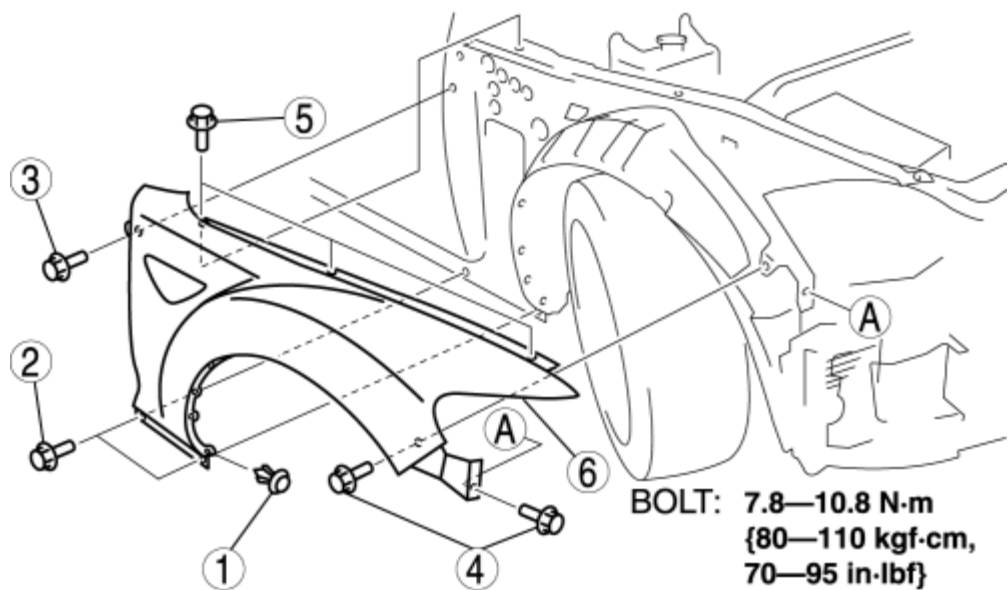


3. Remove the nuts, then remove the rear bumper reinforcement.
4. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

FRONT FENDER PANEL REMOVAL/INSTALLATION

- 1. Disconnect the negative battery cable.
- 2. Remove the front side turn light. (See [FRONT SIDE TURN LIGHT REMOVAL/INSTALLATION.](#))
- 3. Remove the front bumper. (See [FRONT BUMPER REMOVAL/INSTALLATION.](#))
- 4. Remove the front combination lights. (See [FRONT COMBINATION LIGHT REMOVAL/INSTALLATION.](#))
- 5. Remove the side step molding. (See [SIDE STEP MOLDING REMOVAL.](#)) (See [SIDE STEP MOLDING INSTALLATION.](#))
- 6. Set the front mudguard out of way. (See [FRONT MUDGUARD REMOVAL/INSTALLATION.](#))
- 7. Remove in the order indicated in the table.



1	Fastener
2	Bolt A
3	Bolt B

4	Bolt C
5	Bolt D
6	Front fender panel

8. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

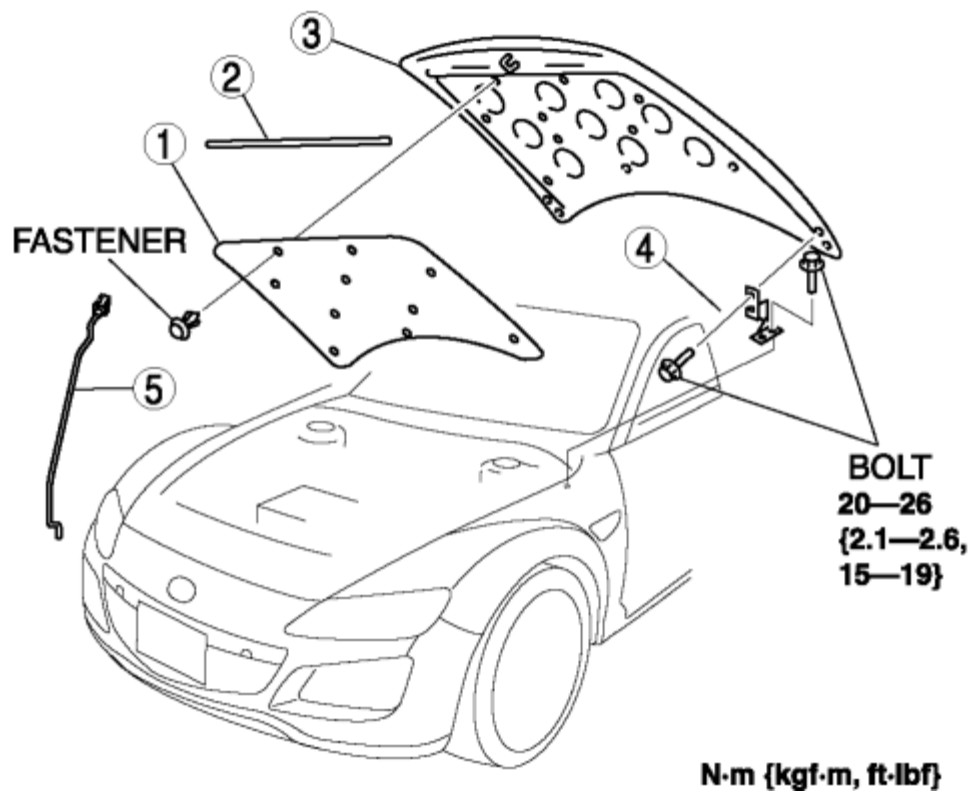
[Back to Top](#)

2011 - RX-8 - Body and Accessories

HOOD REMOVAL/INSTALLATION

WARNING:

- Removing the hood without proper support can be dangerous. The hood may fall and injure you. Always perform the following procedure with at least another person.
1. Disconnect the negative battery cable.
 2. To remove the hood hinge, remove the following parts:
 - a. Front side marker lights (See [FRONT SIDE TURN LIGHT REMOVAL/INSTALLATION.](#))
 - b. Front bumper (See [FRONT BUMPER REMOVAL/INSTALLATION.](#))
 - c. Front combination lights (See [FRONT COMBINATION LIGHT REMOVAL/INSTALLATION.](#))
 - d. Side step molding (See [SIDE STEP MOLDING REMOVAL.](#)) (See [SIDE STEP MOLDING INSTALLATION.](#))
 - e. Front fender panel (See [FRONT FENDER PANEL REMOVAL/INSTALLATION.](#))
 3. Remove in the order indicated in the table.



1	Hood insulator
2	Shroud seal weatherstrip
3	Hood
4	Hood hinge
5	Hood stay

4. Install in the reverse order of removal.
5. Adjust the front combination light aiming. (See [HEADLIGHT AIMING.](#))
6. Adjust the front fog light aiming. (See [FRONT FOG LIGHT AIMING.](#))
7. Adjust the hood. (See [HOOD ADJUSTMENT.](#))

[< Previous](#) [Next >](#)

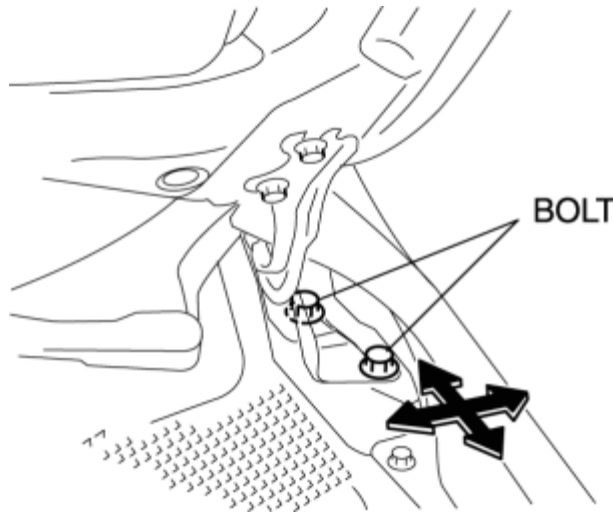
[Back to Top](#)

2011 - RX-8 - Body and Accessories

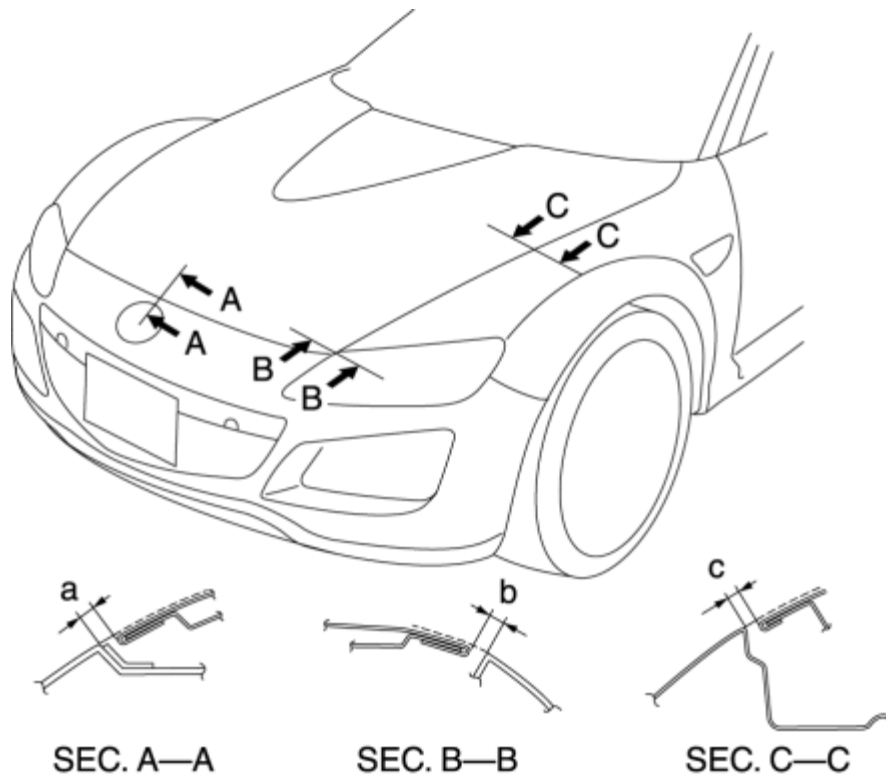
HOOD ADJUSTMENT

Gap Adjustment

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Front bumper (See [FRONT BUMPER REMOVAL/INSTALLATION.](#))
 - b. Front combination lights (See [FRONT COMBINATION LIGHT REMOVAL/INSTALLATION.](#))
 - c. Side step molding (See [SIDE STEP MOLDING REMOVAL.](#)) (See [SIDE STEP MOLDING INSTALLATION.](#))
 - d. Front fender panel (See [FRONT FENDER PANEL REMOVAL/INSTALLATION.](#))
3. Loosen the hood hinge installation bolts and adjust the hood.



4. Tighten the bolts. (see [HOOD REMOVAL/INSTALLATION](#))
5. Verify that the gap between the hood and the body is within the specification.

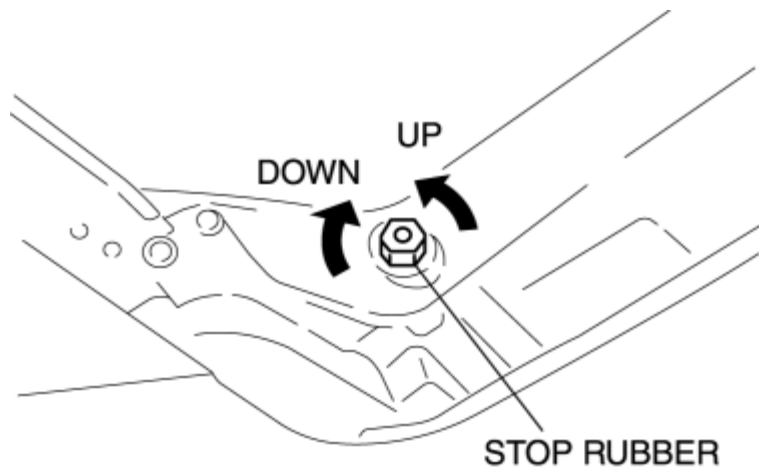


Standard clearance

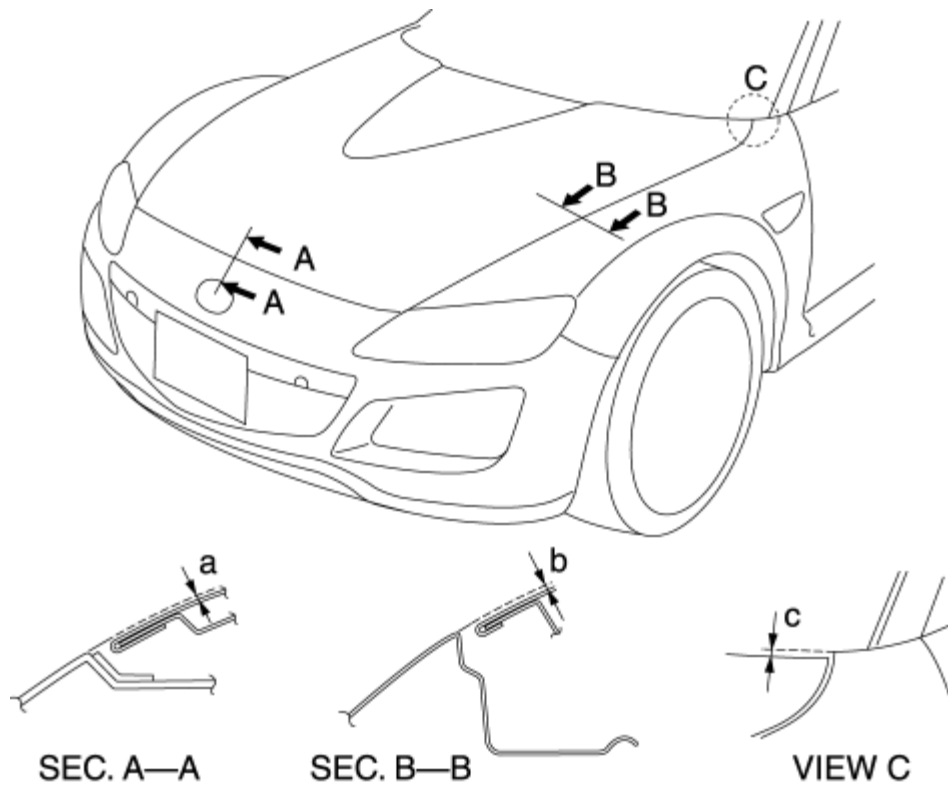
- a: 3.5—6.5 mm {0.14—0.25 in}
- b: 3.0—6.0 mm {0.12—0.23 in}
- c: 2.5—4.5 mm {0.10—0.17 in}

Height Difference Adjustment

1. Turn the stop rubber to adjust the height of the hood.



2. Verify that the height difference between the hood and the body is within the specification.



Standard clearance

- a: $-1.8-1.2$ mm $\{-0.07-0.04$ in}
- b: $-1.0-1.0$ mm $\{-0.03-0.03$ in}
- c: $-1.5-1.5$ mm $\{-0.05-0.05$ in}

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

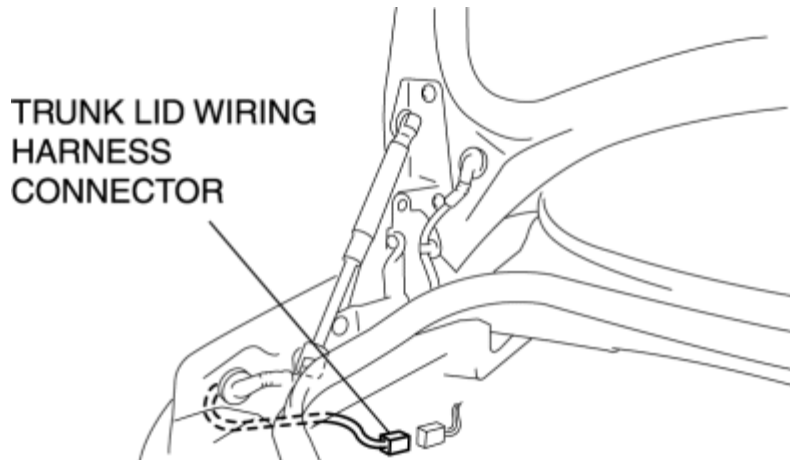
2011 - RX-8 - Body and Accessories

TRUNK LID REMOVAL/INSTALLATION

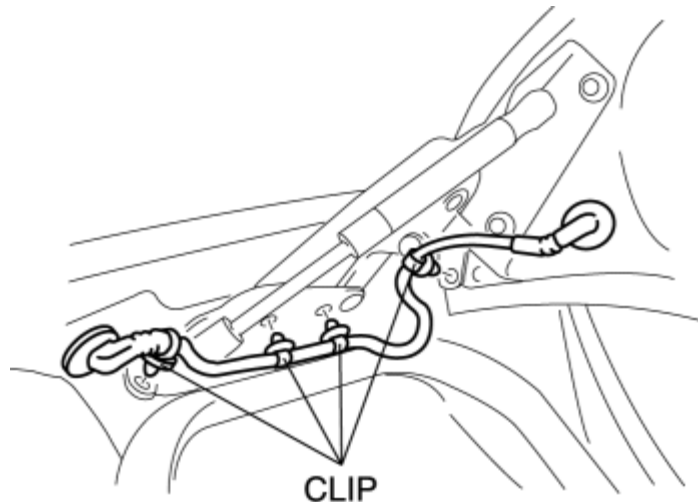
WARNING:

- Removing the stay damper without supporting the trunk lid can be dangerous. The trunk lid may fall and injure you. Be sure to open the trunk lid completely and support it securely before removing the stay damper.

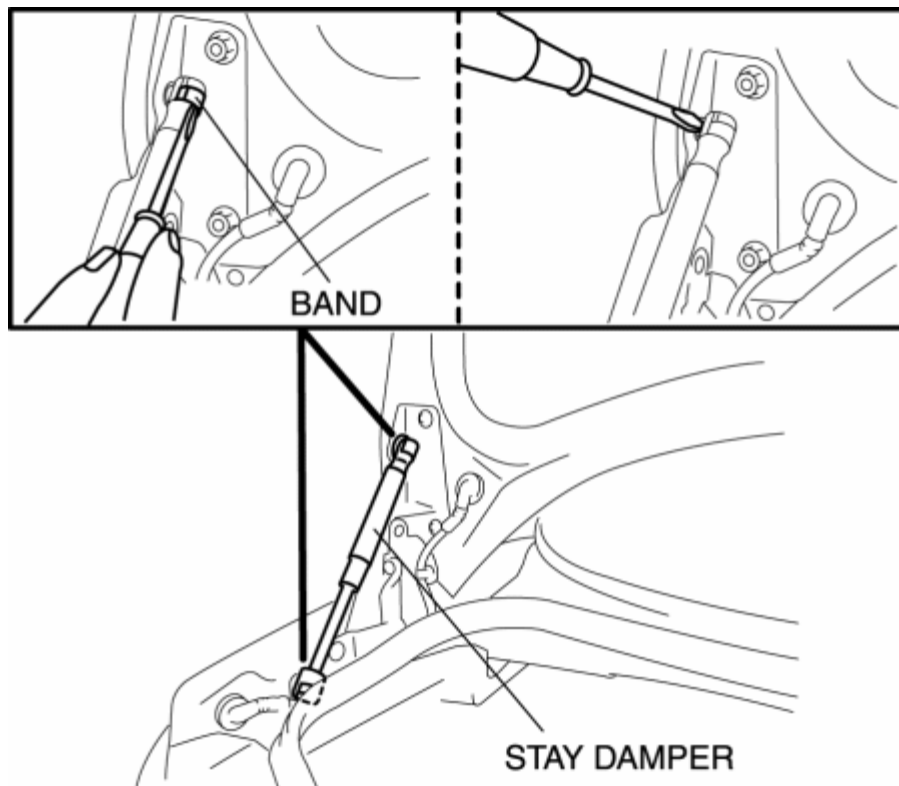
1. Disconnect the negative battery cable.
2. Disconnect the trunk lid wiring harness connector, then take the trunk lid harness out from the vehicle.



3. Remove the clips that secure the trunk lid wiring harness.

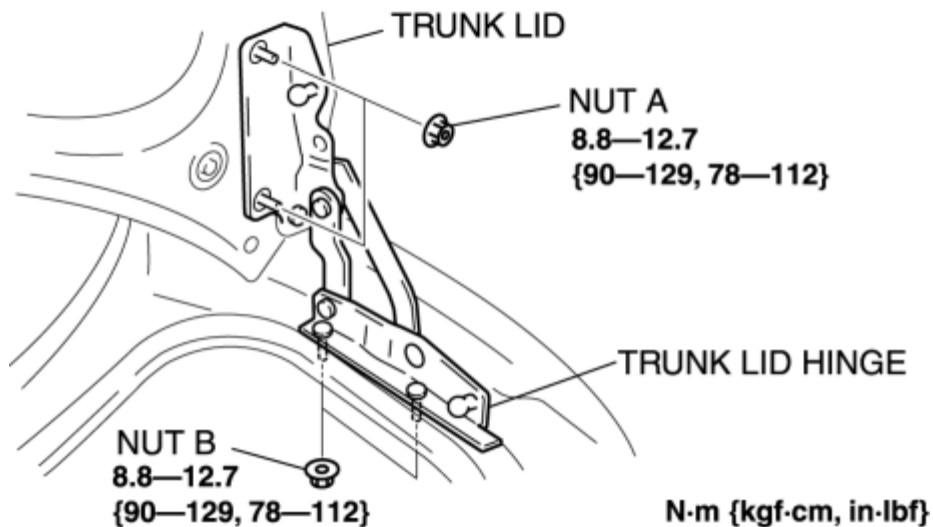


4. Pry off the stay damper band using a flathead screwdriver.



5. Pry out the connecting part of the stay damper and the hinge with a flathead screwdriver to disconnect them, then remove the stay damper.

6. Remove nuts A, then remove the trunk lid.



7. Remove nuts B, then remove the trunk lid hinge.

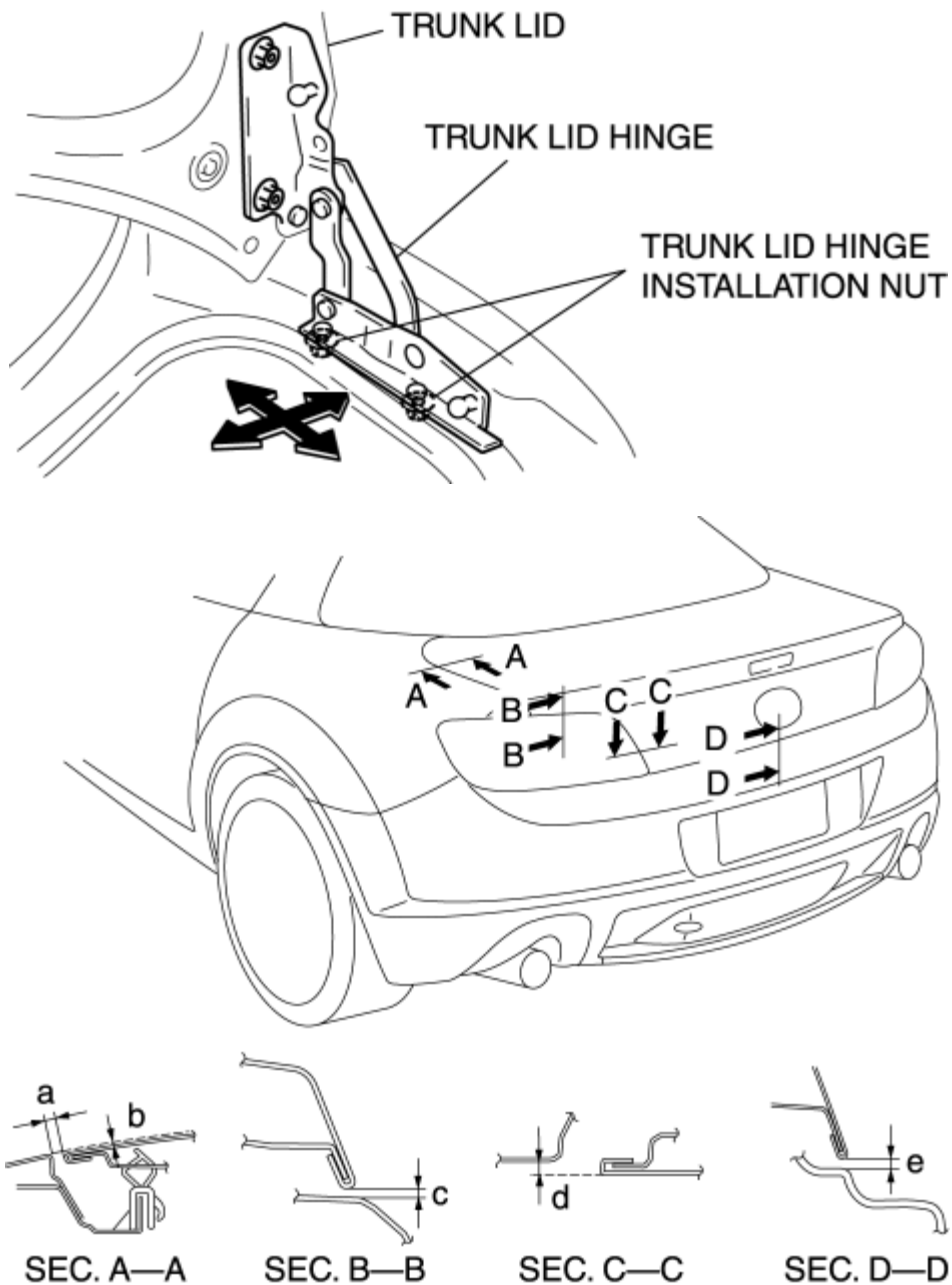
8. Install in the reverse order of removal.

9. Adjust the trunk lid. (See [TRUNK LID ADJUSTMENT](#))

2011 - RX-8 - Body and Accessories

TRUNK LID ADJUSTMENT

1. Measure the gap and height difference between the trunk lid and the body.
2. Loosen the trunk lid hinge installation nuts or the trunk lid lock striker installation screws, and adjust the trunk lid.



Standard clearance

- a: 2.5—4.5 mm {0.10—0.17 in}
- b: -1.0—1.0 mm {-0.03—0.03 in}
- c: 3.5—6.5 mm {0.14—0.25 in}
- d: 4.2—8.2 mm {0.17—0.32 in}
- e: 4.0—8.0 mm {0.16—0.31 in}

3. Tighten the nuts or screws. (see [TRUNK LID REMOVAL/INSTALLATION](#))

[< Previous](#) [Next >](#)

[Back to Top](#)

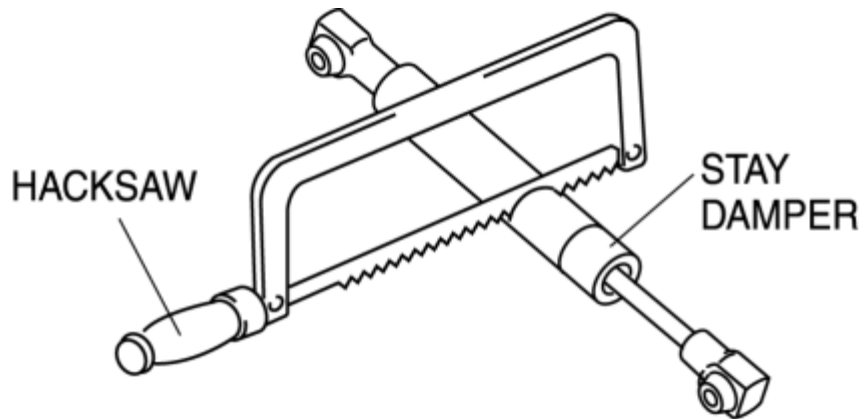
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

STAY DAMPER DISPOSAL

NOTE:

- The gas in the stay damper is colorless, odorless, and non-toxic.
1. Wear protective eye wear.
 2. Lay the stay damper flat.

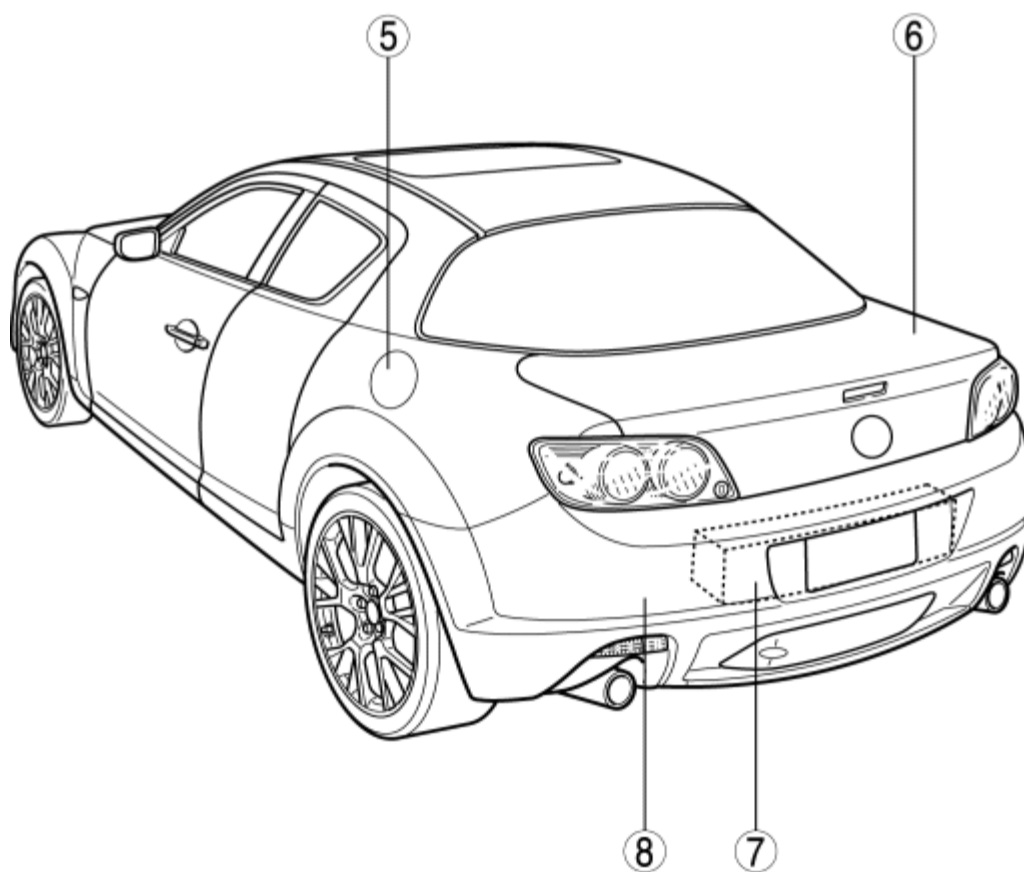
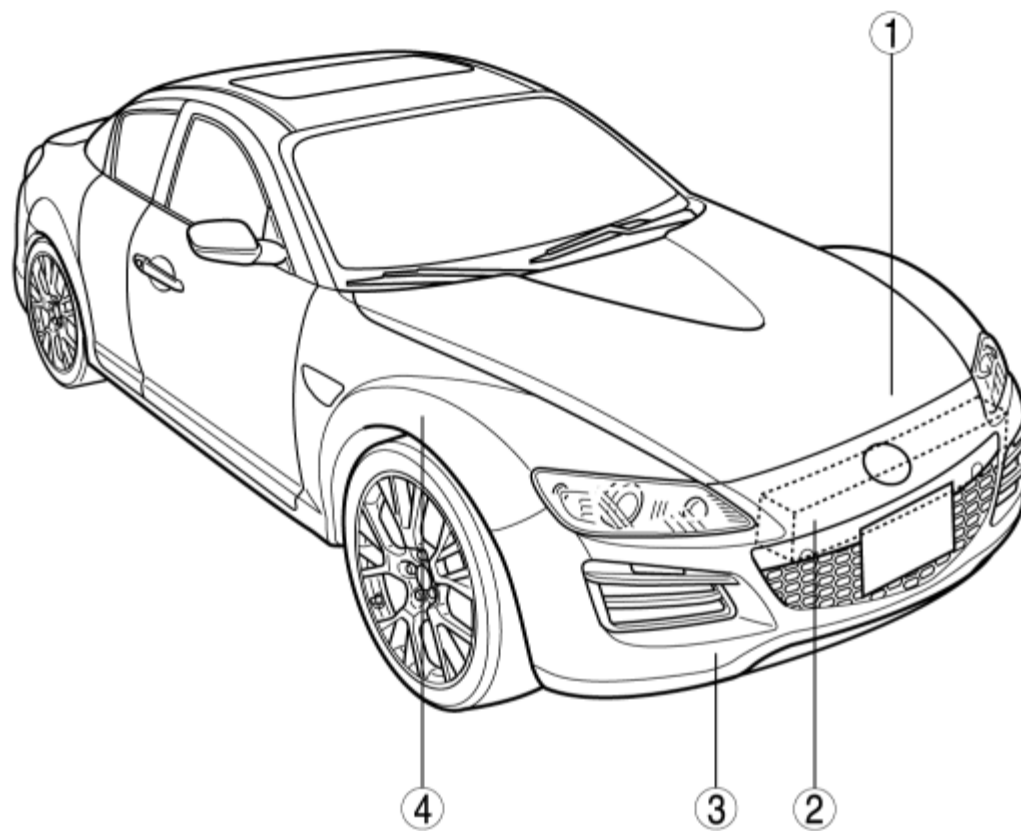


3. Saw **2—3 mm {0.08—0.11 in}** into the stay damper using a hacksaw, and allow the gas to escape from the stay damper.
4. Verify that the gas has escaped from the stay damper.
5. Discard the stay damper.

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

BODY PANELS LOCATION INDEX



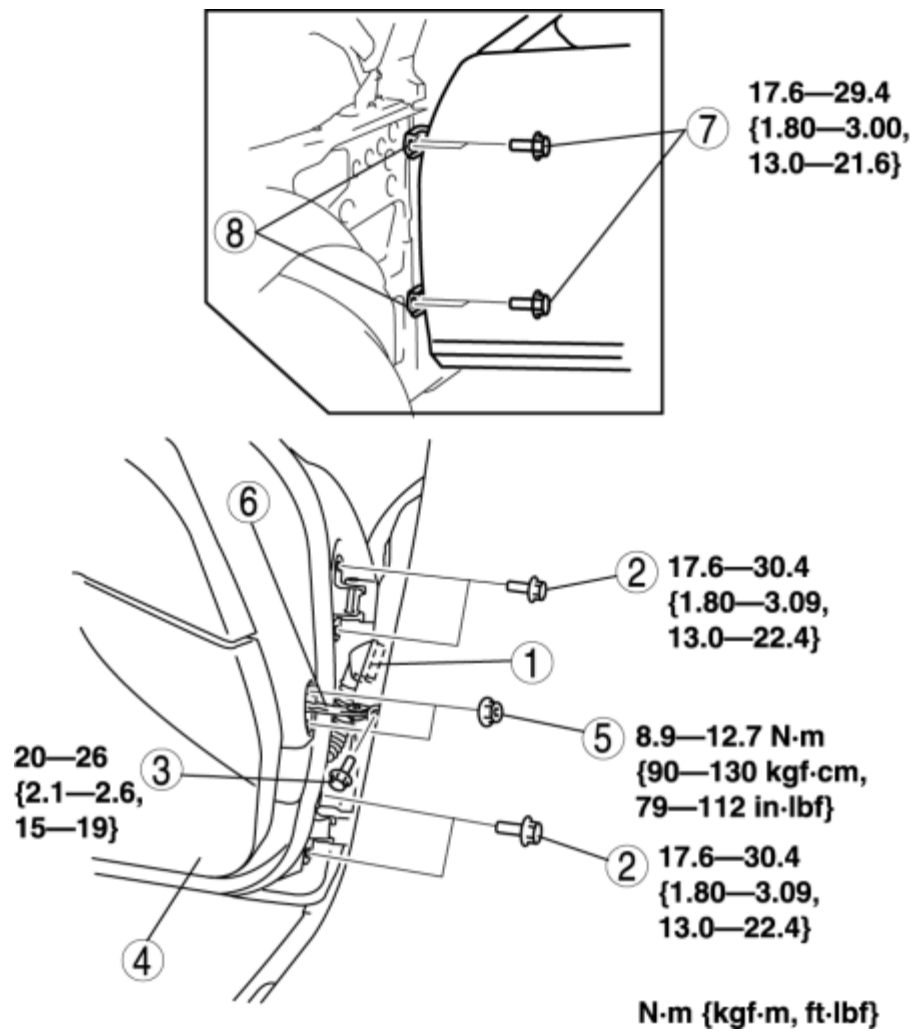
1	(See HOOD REMOVAL/INSTALLATION.) (See HOOD ADJUSTMENT.)
2	Front bumper reinforcement (See FRONT BUMPER REINFORCEMENT REMOVAL/INSTALLATION.)
3	Front bumper (See FRONT BUMPER REMOVAL/INSTALLATION.) (See FRONT BUMPER DISASSEMBLY/ASSEMBLY.)
4	Front fender panel (See FRONT FENDER PANEL REMOVAL/INSTALLATION.)
5	Fuel-filler lid (See FUEL-FILLER LID REMOVAL/INSTALLATION.) (See FUEL-FILLER LID ADJUSTMENT.)
6	Trunk lid (See TRUNK LID REMOVAL/INSTALLATION.) (See TRUNK LID ADJUSTMENT.)
7	Rear bumper reinforcement (See REAR BUMPER REINFORCEMENT REMOVAL/INSTALLATION.)
8	Rear bumper (See REAR BUMPER REMOVAL/INSTALLATION.)

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

FRONT DOOR REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. To remove the checker, remove the following parts:
 - a. Inner garnish (See [INNER GARNISH REMOVAL/INSTALLATION.](#))
 - b. Front door trim (See [FRONT DOOR TRIM REMOVAL/INSTALLATION.](#))
 - c. Front door speaker (See [FRONT DOOR SPEAKER REMOVAL/INSTALLATION.](#))
3. To remove the front door hinge, remove the following parts:
 - a. Front bumper (See [FRONT BUMPER REMOVAL/INSTALLATION.](#))
 - b. Front fender panel (See [FRONT FENDER PANEL REMOVAL/INSTALLATION.](#))
4. Remove in the order indicated in the table.



1 Connector

(See [Connector Removal Note.](#))

2 Bolt A

3 Bolt B

4 Front door

5 Nut

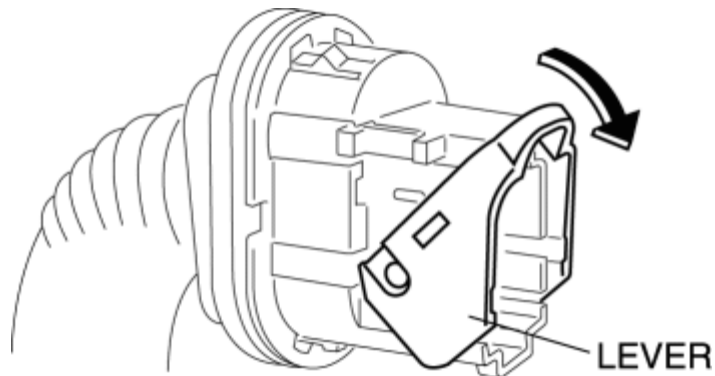
6 Checker

7 Bolt C

5. Install in the reverse order of removal.
6. Adjust the front door. (See [DOOR ADJUSTMENT](#).)

Connector Removal Note

1. Pull the rubber boot outward.
2. Pull down the lever in the direction indicated by the arrow and disconnect the connector.

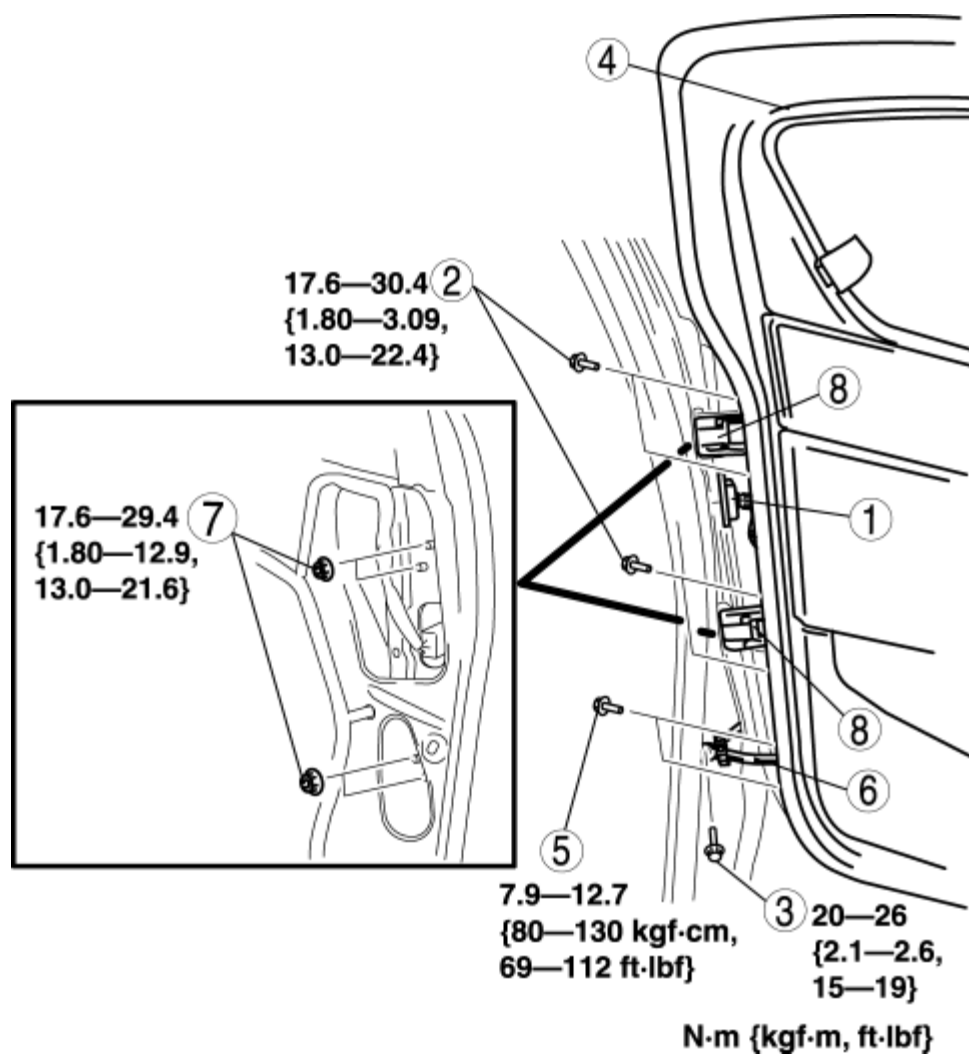


[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

REAR DOOR REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the rear seat cushion. (See [REAR SEAT REMOVAL/INSTALLATION.](#))
3. Remove the seat belt rail. (See [FRONT SEAT BELT REMOVAL/INSTALLATION.](#))
4. To remove the checker, remove the following parts:
 - a. Rear door lower trim (See [REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.](#))
5. To remove the rear door hinge, remove the following parts:
 - a. Rear seat cushion (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - b. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
6. Remove in the order indicated in the table.



1	Connector
2	Bolt A
3	Bolt B
4	Rear door
5	Bolt C
6	Checker
7	Nut
8	Rear door hinge

7. Install in the reverse order of removal.
8. Adjust the rear door. (See [DOOR ADJUSTMENT](#).)

[< Previous](#) [Next >](#)

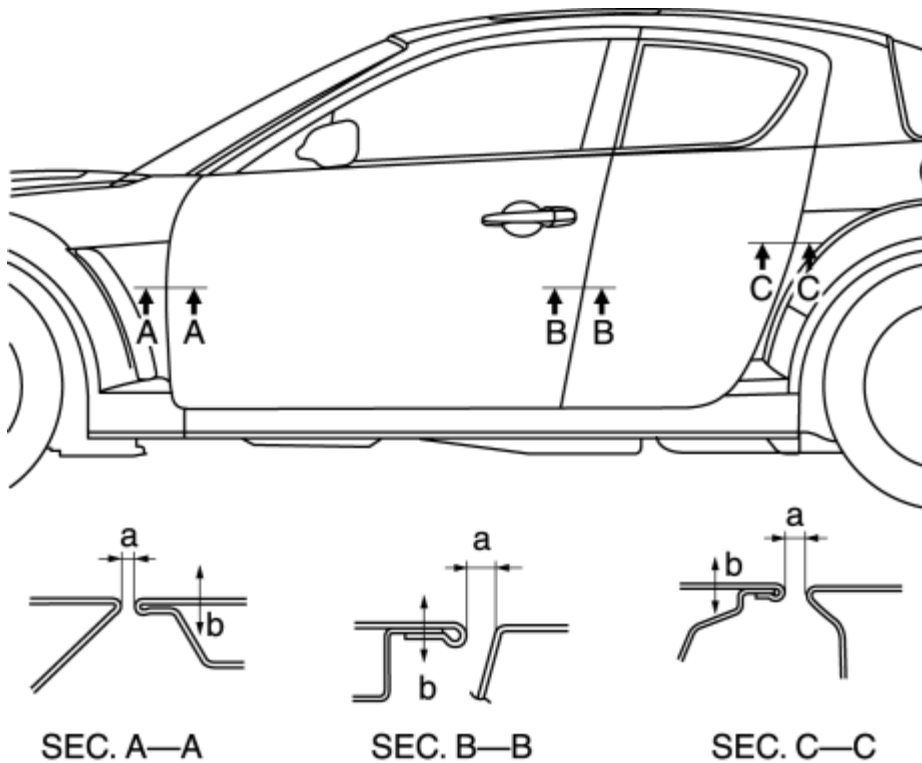
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

DOOR ADJUSTMENT

1. Measure the gap and height difference between the front or rear door and the body.
2. Loosen the door hinge installation bolts or the door lock striker installation screws, and adjust the door.



Standard clearance

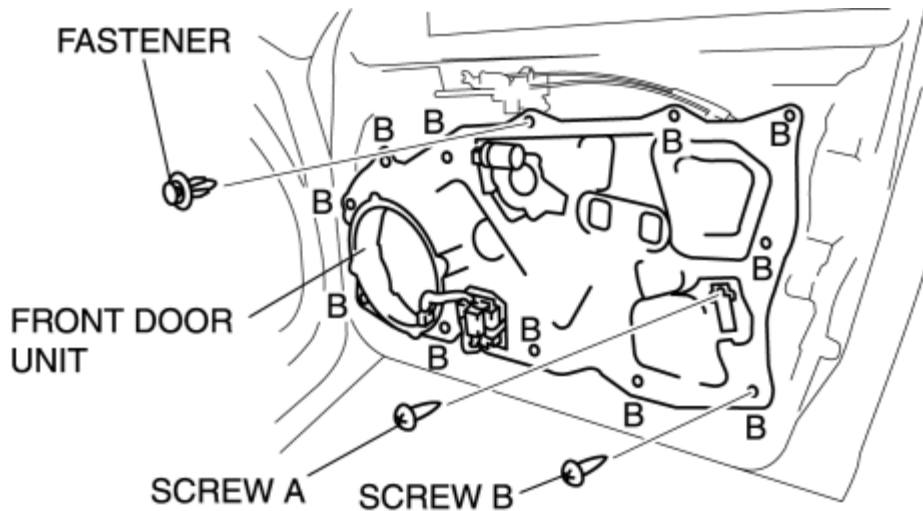
- a: 3.0—5.0 mm {0.12—0.20 in}
- b: -1.0—1.0 mm {-0.03—0.04 in}

3. Tighten the bolts or screws.

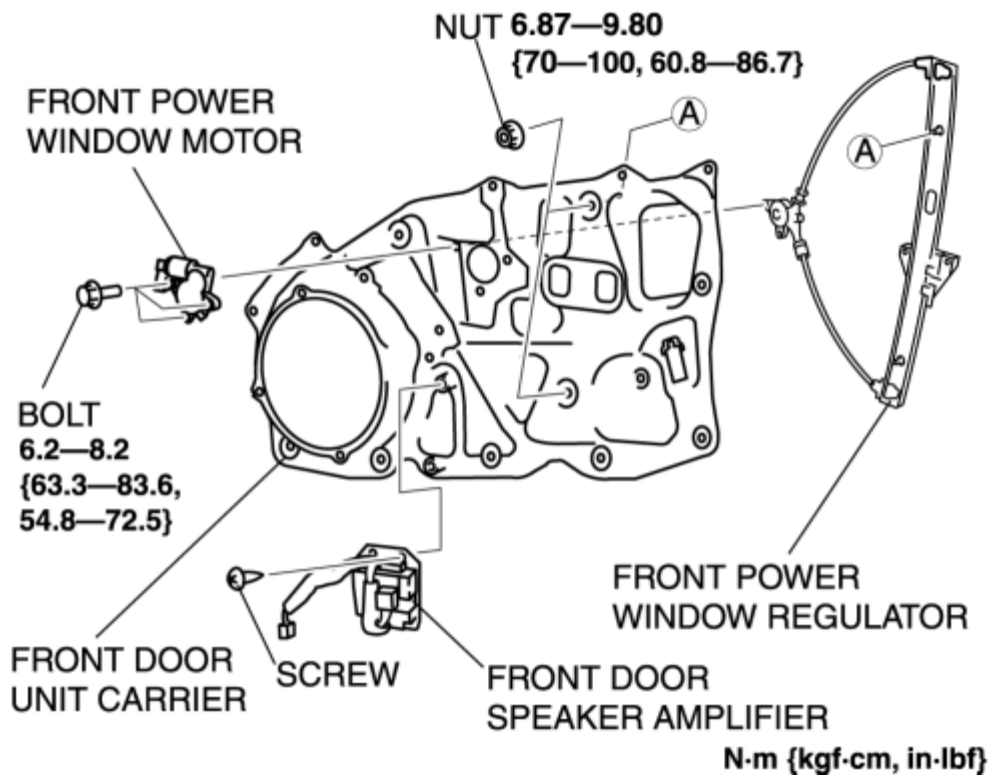
2011 - RX-8 - Body and Accessories

FRONT DOOR UNIT REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Inner garnish (See [INNER GARNISH REMOVAL/INSTALLATION](#).)
 - b. Front door trim (See [FRONT DOOR TRIM REMOVAL/INSTALLATION](#).)
 - c. Front door glass (See [FRONT DOOR GLASS REMOVAL/INSTALLATION](#).)
 - d. Front door speaker (See [FRONT DOOR SPEAKER REMOVAL/INSTALLATION](#).)
3. Disconnect the door lock actuator connector.
4. Remove the front door wiring harness from the front door unit.
5. Remove screw A.



6. Remove screws B and the fastener.
7. Remove the front door unit.
8. Remove the following parts:



- Front power window motor
- Front power window regulator
- Front door speaker amplifier

9. Install in the reverse order of removal.

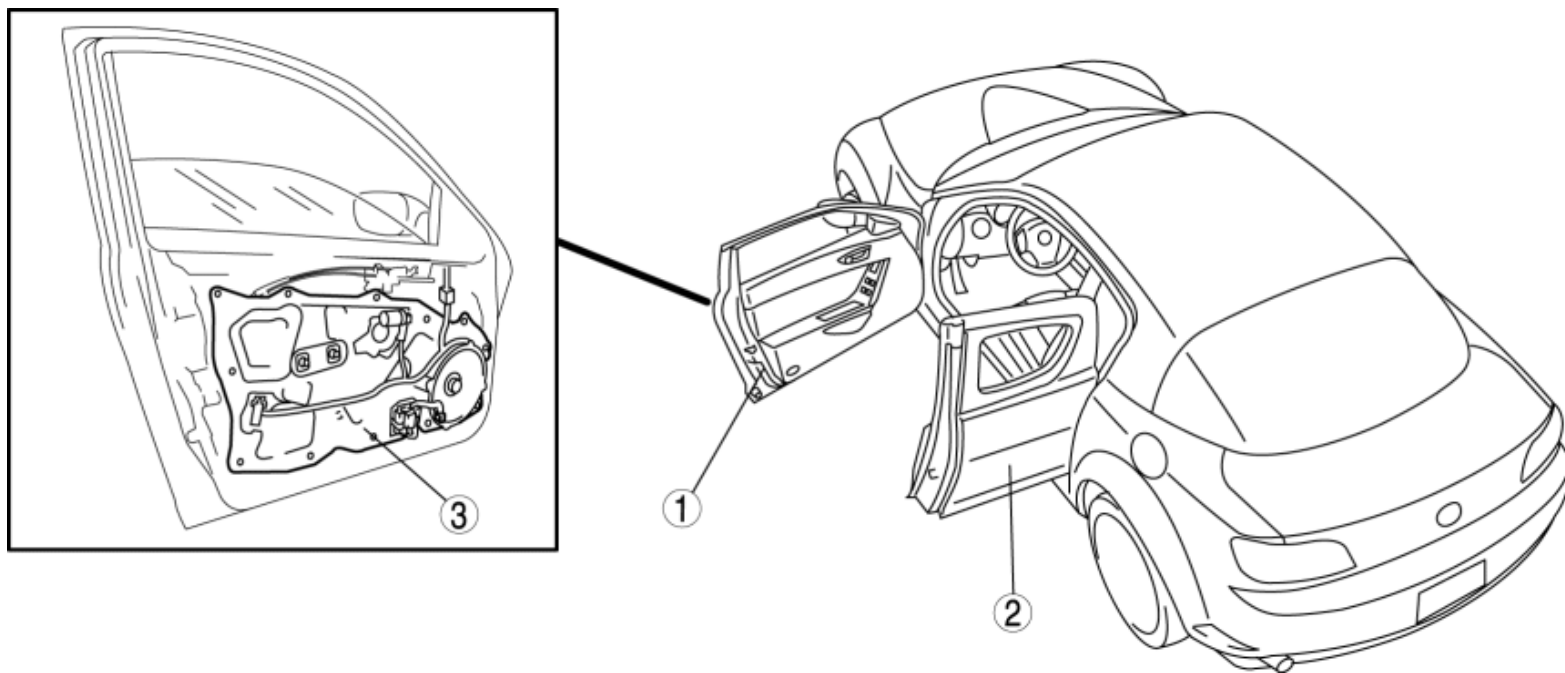
[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

DOORS LOCATION INDEX



1 Front door

(See [FRONT DOOR REMOVAL/INSTALLATION.](#))

(See [DOOR ADJUSTMENT.](#))

2 Rear door

(See [REAR DOOR REMOVAL/INSTALLATION.](#))

(See [REAR DOOR ASSEMBLY/DISASSEMBLY.](#))

(See [DOOR ADJUSTMENT.](#))

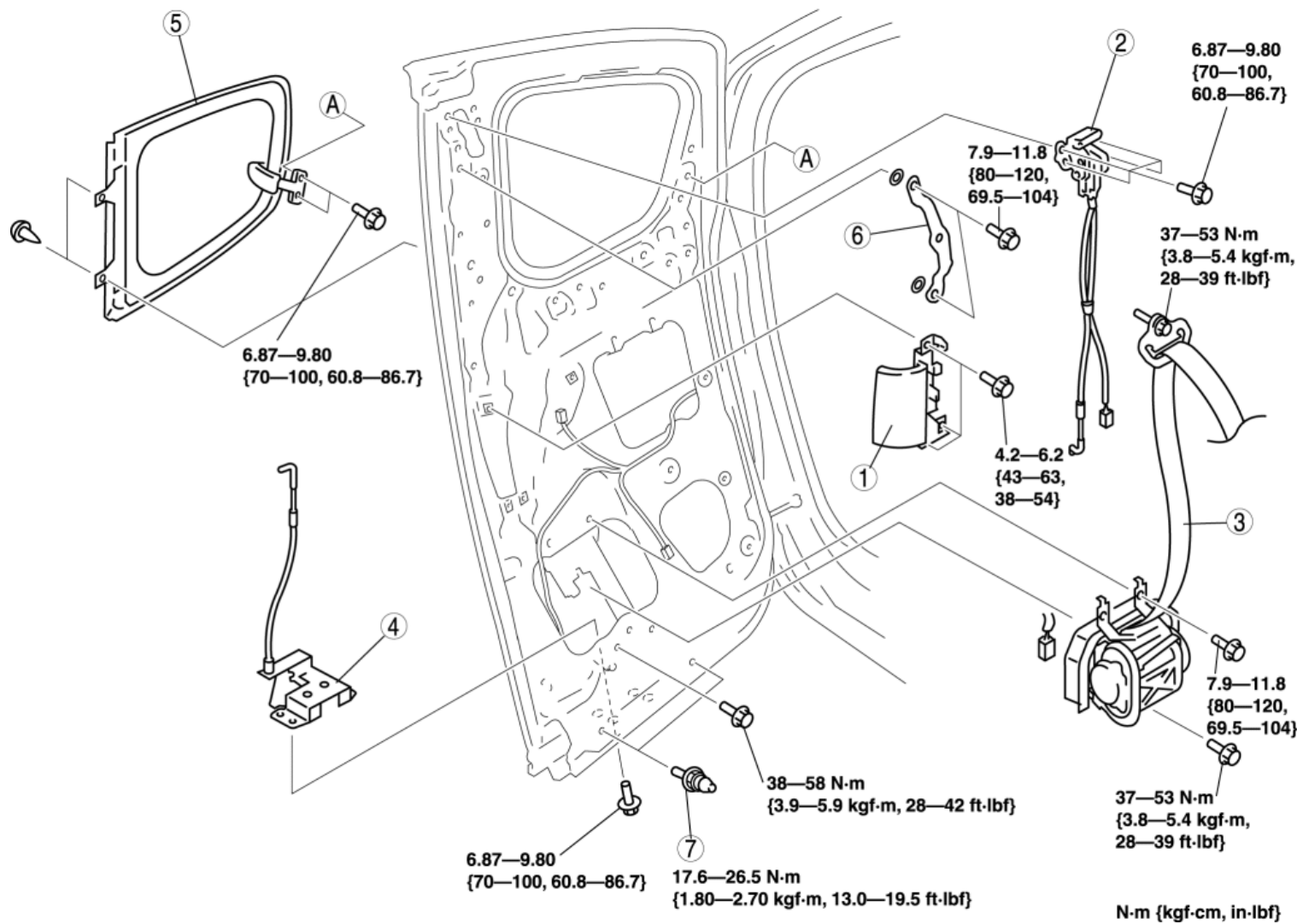
3 Front door unit

(See [FRONT DOOR UNIT REMOVAL/INSTALLATION.](#))

2011 - RX-8 - Body and Accessories

REAR DOOR ASSEMBLY/DISASSEMBLY

- 1. Disassemble in the order indicated in the table.
- 2. Assemble in the reverse order of disassembly.



1	Rear door release handle
2	Rear door upper latch
3	Front seat belt retractor
4	Rear door lower latch
5	Rear door glass

6	Bracket
7	Catch pin

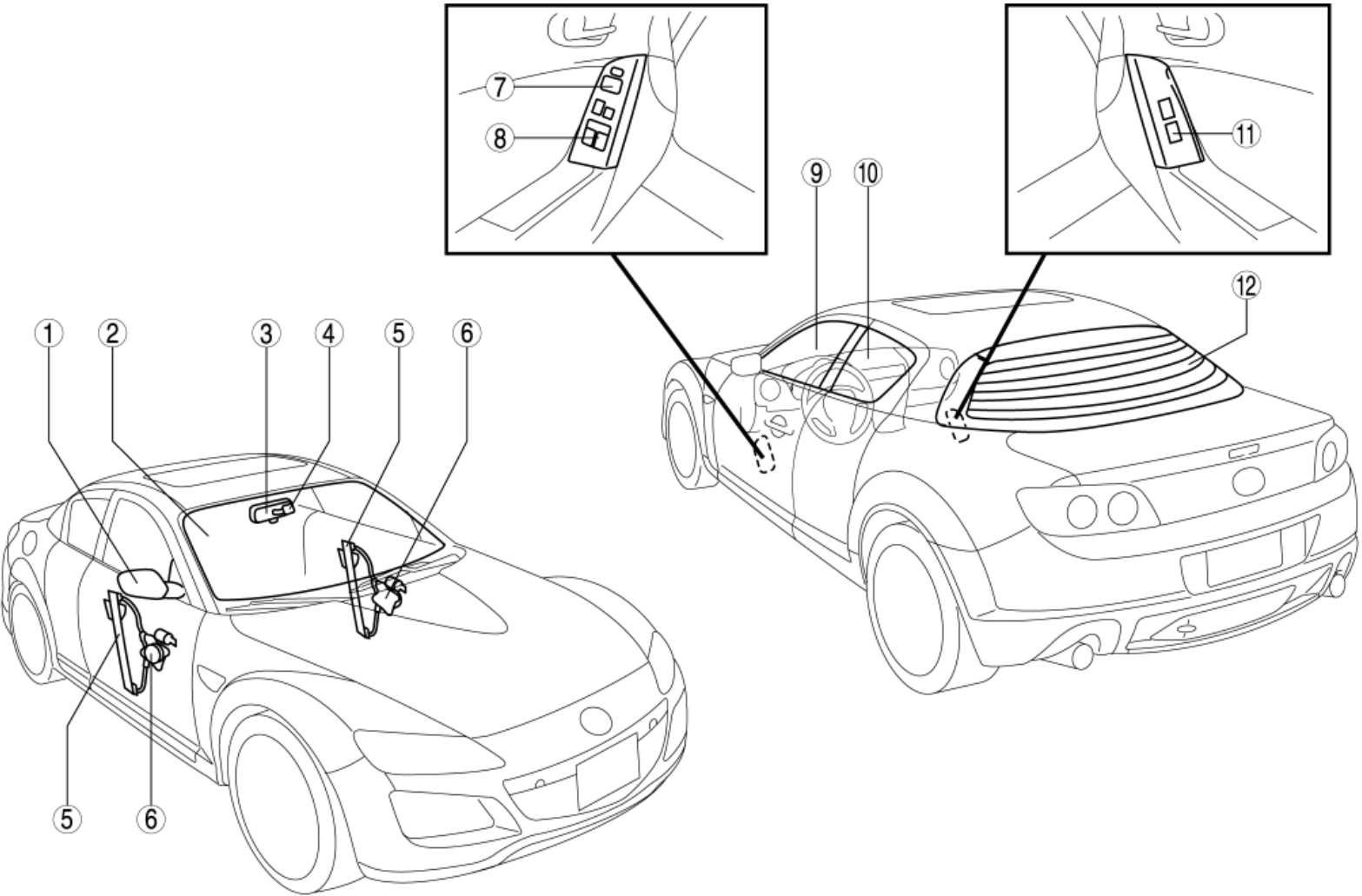
[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

GLASS/WINDOWS/MIRRORS LOCATION INDEX



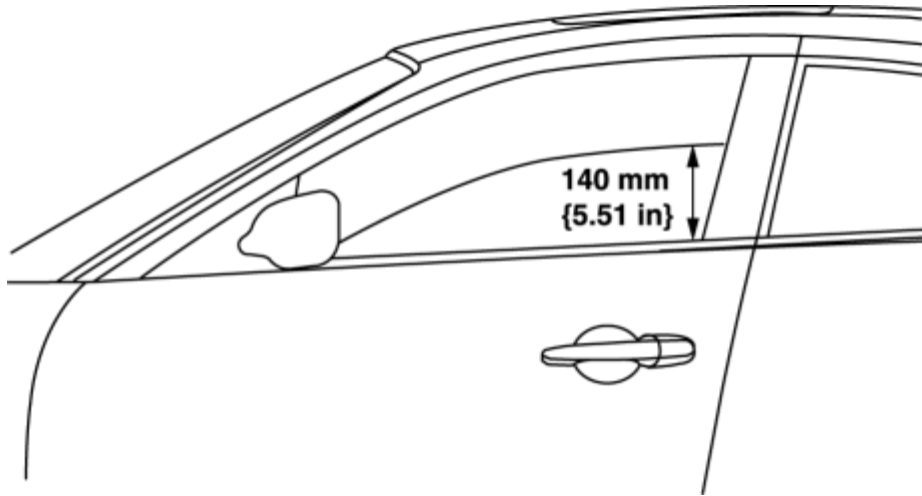
1	Power outer mirror (See POWER OUTER MIRROR REMOVAL/INSTALLATION.) (See POWER OUTER MIRROR DISASSEMBLY/ASSEMBLY.) (See POWER OUTER MIRROR INSPECTION.)
2	Windshield (See WINDSHIELD REMOVAL.) (See WINDSHIELD INSTALLATION.)
3	Rearview mirror (See REARVIEW MIRROR REMOVAL/INSTALLATION.)

4	Base (See BASE REMOVAL.) (See BASE INSTALLATION.)
5	Power window regulator (See POWER WINDOW REGULATOR REMOVAL/INSTALLATION.)
6	Power window motor (See POWER WINDOW MOTOR REMOVAL/INSTALLATION.) (See POWER WINDOW MOTOR INSPECTION.)
7	Power outer mirror switch (See POWER OUTER MIRROR SWITCH REMOVAL/INSTALLATION.) (See POWER OUTER MIRROR SWITCH INSPECTION.)
8	Power window main switch (See POWER WINDOW MAIN SWITCH REMOVAL/INSTALLATION.) (See POWER WINDOW MAIN SWITCH INSPECTION.)
9	Front door glass (See FRONT DOOR GLASS REMOVAL/INSTALLATION.)
10	Rear door glass (See REAR DOOR GLASS REMOVAL/INSTALLATION.)
11	Power window subswitch (See POWER WINDOW SUBSWITCH REMOVAL/INSTALLATION.) (See POWER WINDOW SUBSWITCH INSPECTION.)
12	Rear window glass (See REAR WINDOW GLASS REMOVAL.) (See REAR WINDOW GLASS INSTALLATION.) (See FILAMENT INSPECTION.) (See FILAMENT REPAIR)

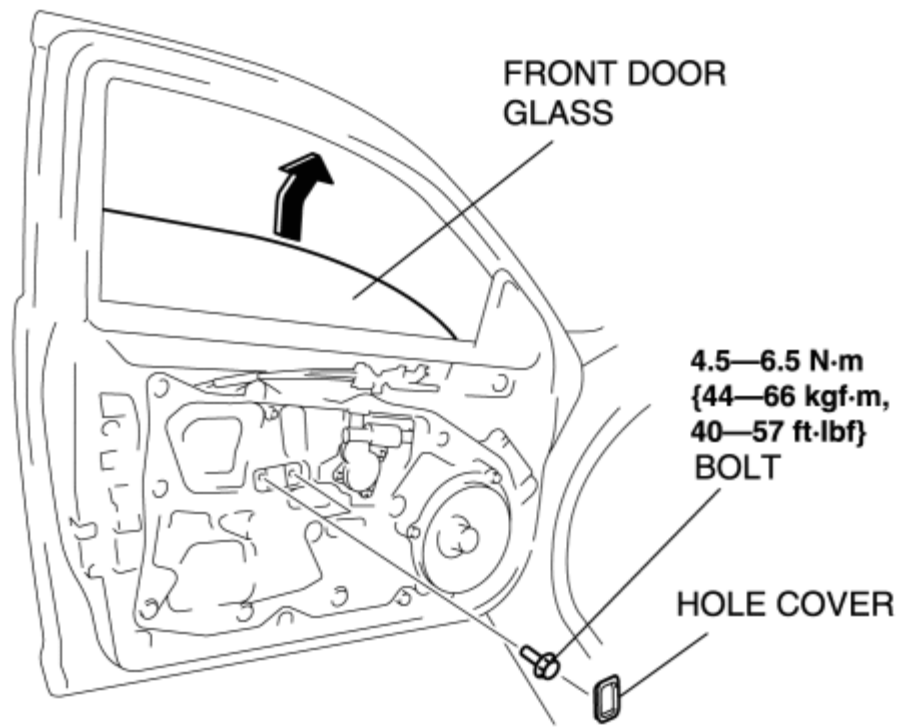
2011 - RX-8 - Body and Accessories

FRONT DOOR GLASS REMOVAL/INSTALLATION

1. Position the front door glass so that the distance between the top of the front door glass and top of the front beltline molding is **140 mm {5.51 in}**.



2. Disconnect the negative battery cable.
3. Remove the inner garnish. (See [INNER GARNISH REMOVAL/INSTALLATION](#).)
4. Remove the front door trim. (See [FRONT DOOR TRIM REMOVAL/INSTALLATION](#).)
5. Remove the front door speaker. (See [FRONT DOOR SPEAKER REMOVAL/INSTALLATION](#).)
6. Remove the hole cover.
7. Remove the bolts.



CAUTION:

- If you remove the bolt without supporting the front door glass, the front door glass may fall off and get damaged. Be sure to hold the front door glass by inserting your hand into the mounting hole for the front door speaker when removing the bolt.

8. Lift the front door glass up, then remove it while tilting it in the direction of the arrow.
9. Install in the reverse order of removal.

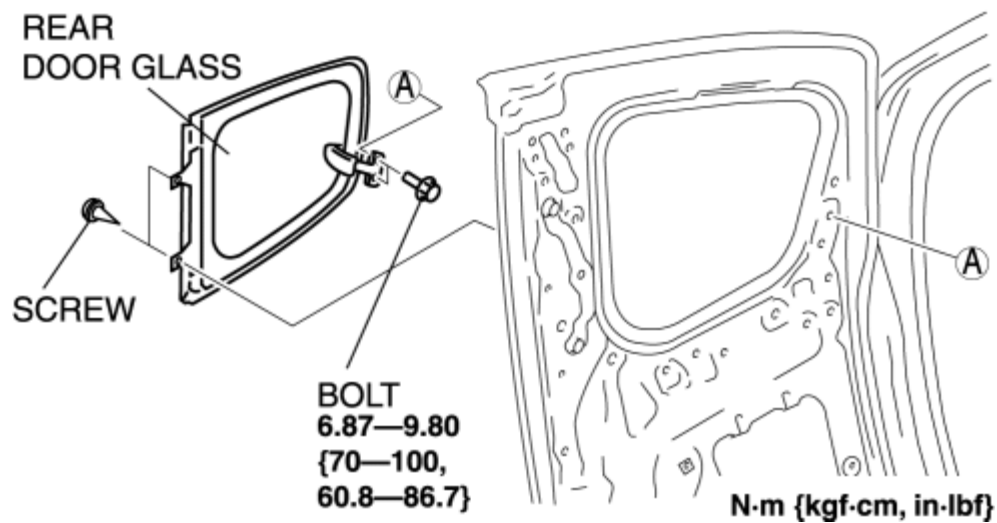
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

REAR DOOR GLASS REMOVAL/INSTALLATION

1. Remove the rear door lower trim. (See [REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.](#))
2. Remove the rear door upper trim. (See [REAR DOOR UPPER TRIM REMOVAL/INSTALLATION.](#))
3. Pull up the rear door weatherstrip and remove the screw.



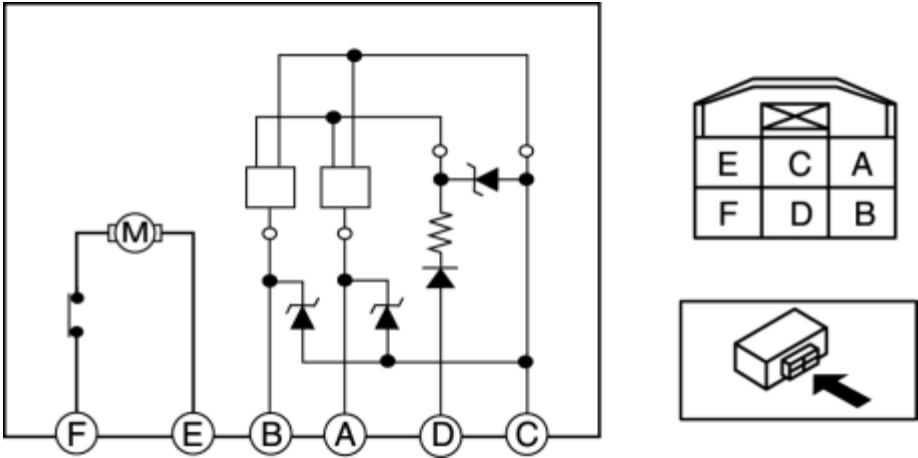
4. Remove the bolts.
5. Remove the rear door glass.
6. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

POWER WINDOW MOTOR INSPECTION

Driver Side

1. Apply battery positive voltage and connect the ground to power window motor terminals E and F, and then inspect the power window motor operation.



- If the power window motor does not operate as indicated in the table, replace it.

Operation	Terminal	
	F	E
Open	Ground	B+
Close	B+	Ground

2. Connect the battery positive voltage to power window motor terminal D and connect terminal C to ground.

3. Operate the power window motor and measure the voltage at terminals A and B.

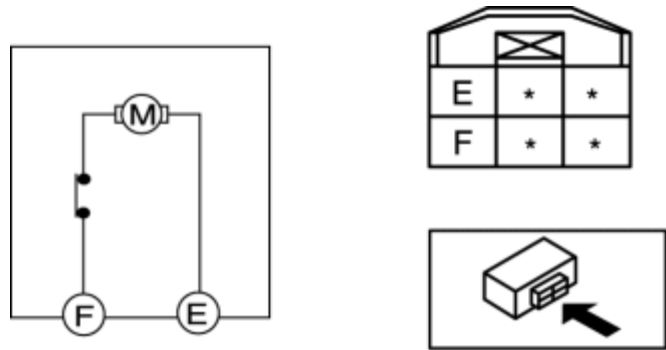
- If there is any malfunction, replace the power window motor.

Voltage

- Pulse: max. 5 V/min. 0 V

Passenger Side

1. Apply battery positive voltage to the power window motor terminals, and inspect the power window operation.



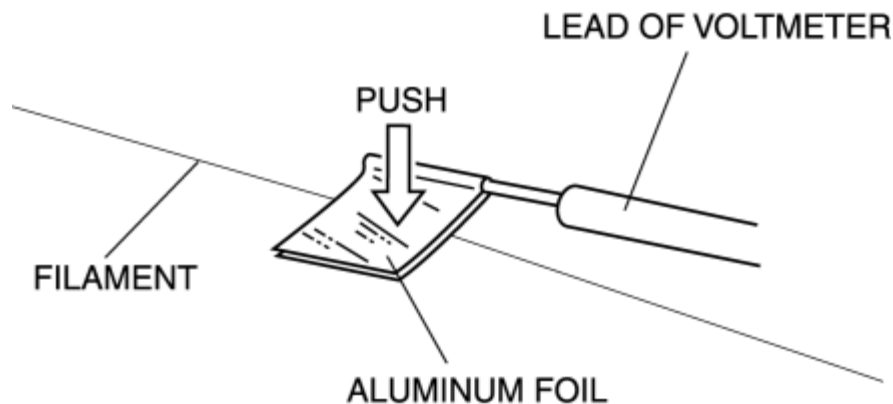
- If the power window motor does not operate as indicated in the table, replace it.

Operation	Terminal	
	F	E
Open	Ground	B+
Close	B+	Ground

2011 - RX-8 - Body and Accessories

FILAMENT INSPECTION

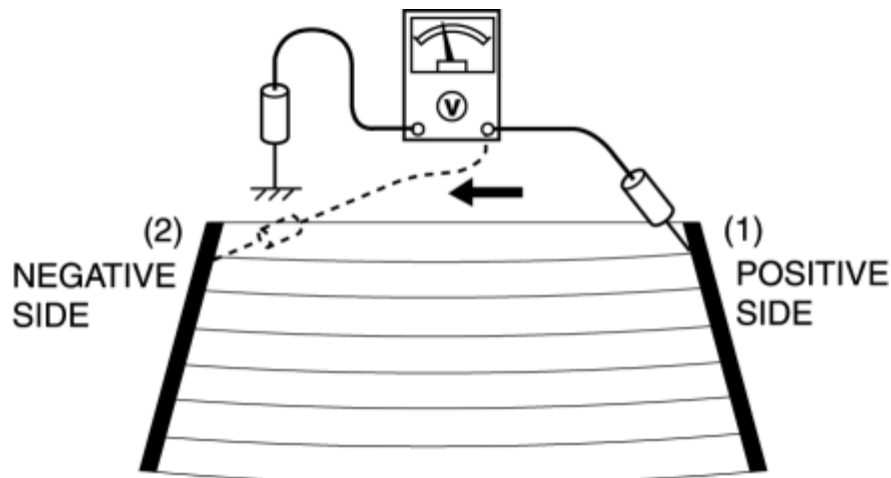
1. Turn the ignition switch to the ON position.
2. Turn the rear window defroster switch on.



CAUTION:

- Directly touching the rear window defroster filament with the lead of the voltmeter could damage it. Wrap aluminum foil around the end of the lead and test the filament by touching it with the foil.

3. Connect the positive lead of the tester to the positive side of each filament and the negative lead to ground.
4. Gradually slide the positive lead from the positive side to the negative side and verify that the voltage decreases accordingly.



- If the voltage changes rapidly, the filament has a malfunction. Repair the filament.

Measured part	Voltage (Reference)
(1) to (2)	Approx. 12 V to 0 V

[< Previous](#) [Next >](#)

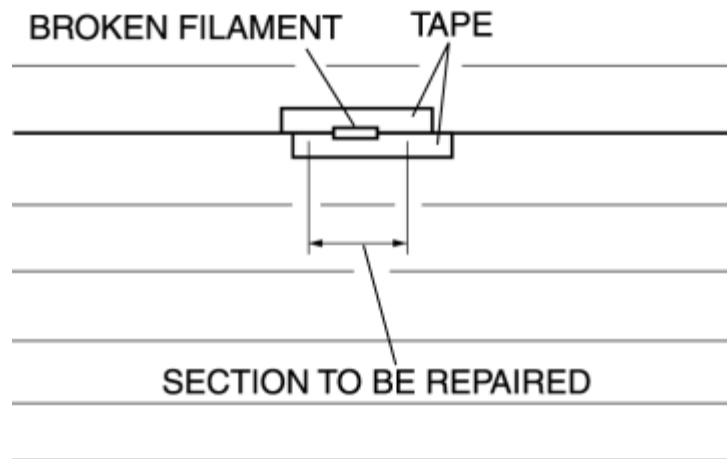
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

FILAMENT REPAIR

1. Clean the filament using isopropyl alcohol.
2. Attach tape to both sides of the filament.



3. Using a small brush or marking pen, apply silver paint.
4. After **2—3 min**, carefully remove the tape without damaging the applied area.

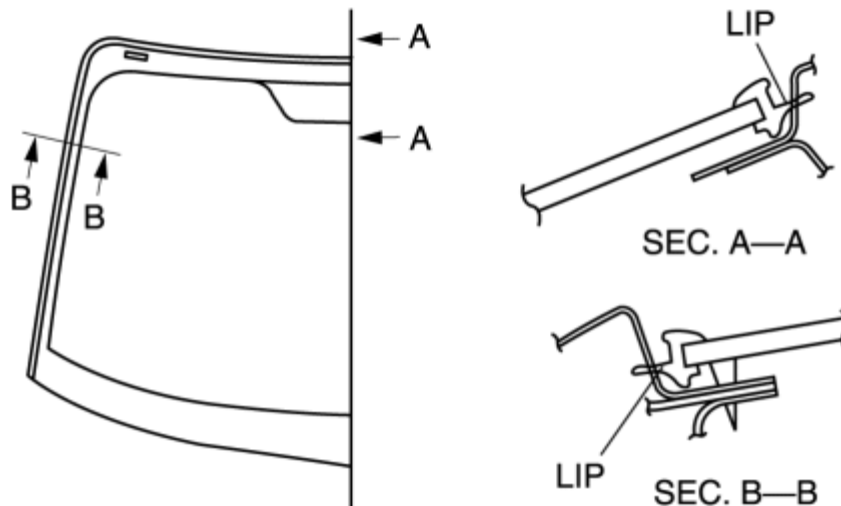
CAUTION:

- Do not operate the rear window defroster until the paint is completely dry. It may be cause other malfunctions if it is used before paint is dry.
5. Dry the repaired part using the following procedure.
 - When the room temperature is **25 °C {77 °F}**, leave as it is for **24 h**.
 - When a hot air blower is used, dry with the temperature of **150 °C {302 °F}** for **30 min**.

2011 - RX-8 - Body and Accessories

WINDSHIELD REMOVAL

1. Remove the following parts:
 - a. Windshield wiper arm and blade (See [WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.](#))
 - b. Cowl grille (See [COWL GRILLE REMOVAL/INSTALLATION.](#))
 - c. Rearview mirror (See [REARVIEW MIRROR REMOVAL/INSTALLATION.](#))
 - d. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - e. Sunvisor (See [SUNVISOR REMOVAL/INSTALLATION.](#))
 - f. Map light (See [MAP LIGHT REMOVAL/INSTALLATION.](#))
2. Set the headliner out of the way.
3. Apply protective tape along the edge of the body.
4. Apply protective tape to the dashboard to protect it from damage.
5. Cut the windshield molding lip using a razor.



WARNING:

- Using a razor with bare hands can cause injury. Always wear gloves when using a razor.

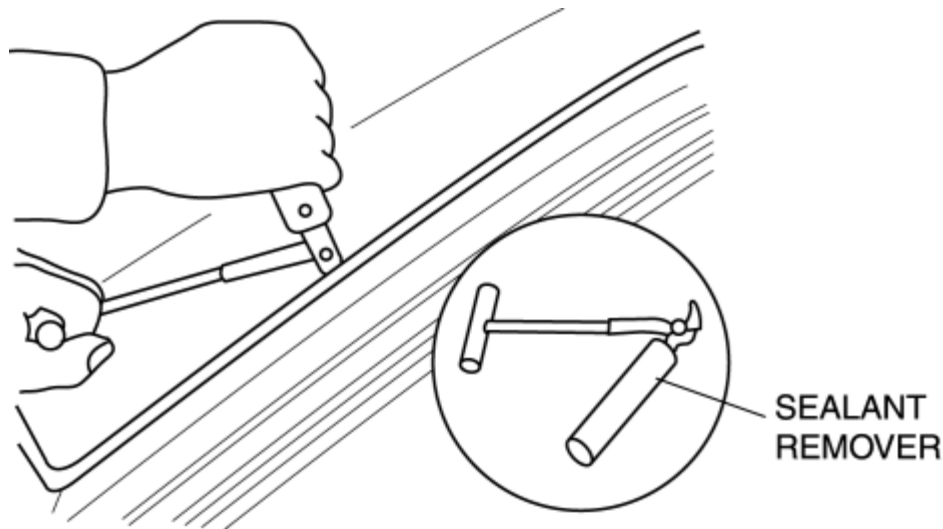
NOTE:

- The windshield molding is a replacement part.

Not Reusing Windshield

NOTE:

- For the areas of the sealant that are difficult to cut, use the piano wire and follow the procedure under "Reusing Windshield".
1. Remove the base. (See [BASE REMOVAL](#).)
 2. Cut out the sealant all around the glass using a sealant remover.

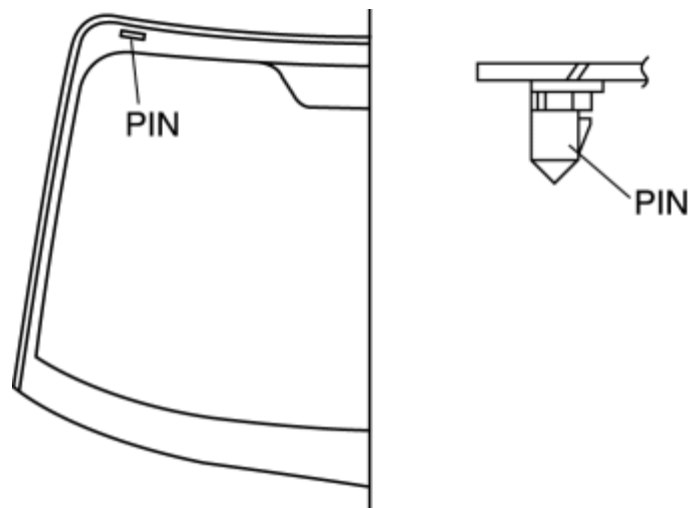


3. Remove the sealant by pulling it off.
4. Remove the windshield.

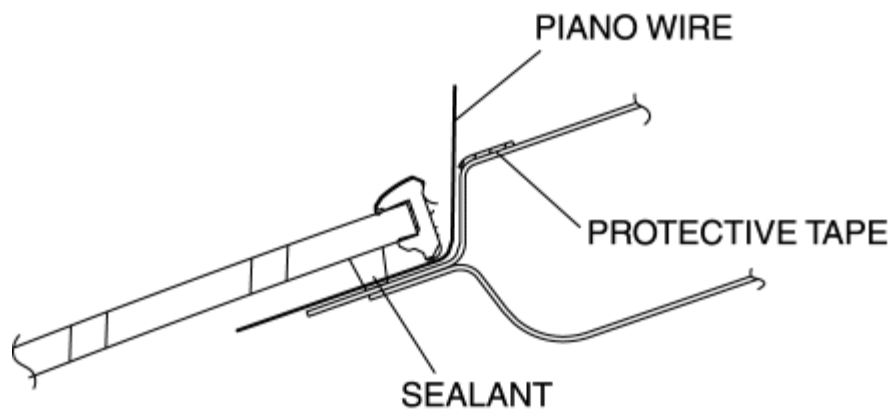
Reusing Windshield

NOTE:

- Before removing the windshield from the body, mark the position of the windshield by affixing tape to the windshield and body panel.
1. Make a hole through the sealant from the inside of the vehicle using an awl, avoiding the pins.



2. Pass the piano wire, cut to sufficient length, through the hole.



WARNING:

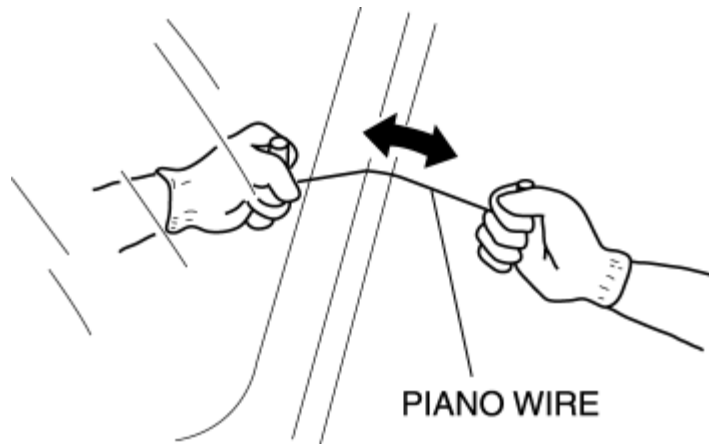
- Using the piano wire with bare hands can cause injury. Always wear gloves when using the piano wire.

3. Wind each end of the piano wire around a bar.

NOTE:

- Use a long sawing action to spread the work over the whole length of the piano wire to prevent it from breaking due to localized heating.

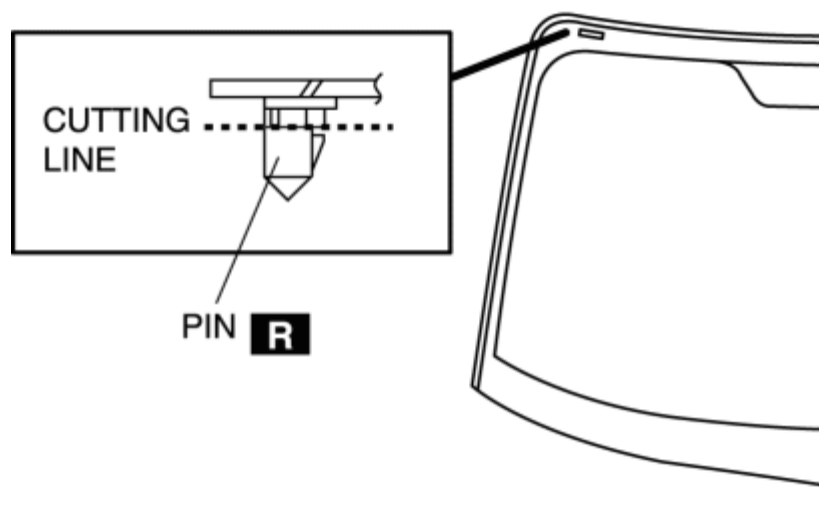
4. Fix one end of the piano wire, and while pulling the other end, cut the sealant around the windshield.



NOTE:

- As the upper part of the pin adheres to the sealant, cut it using the piano wire.

5. Cut the pins out.



6. Remove the windshield.

7. Mark the seating positions of the pins and remove the pins from the windshield.

8. Remove the windshield molding from the windshield.

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

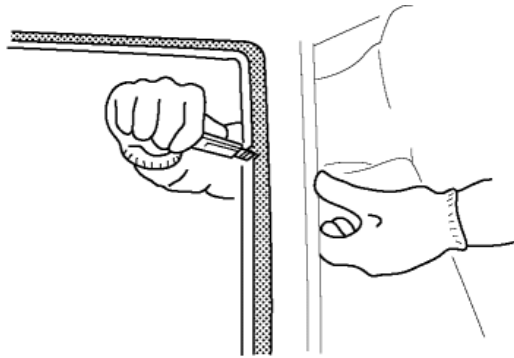
WINDSHIELD INSTALLATION

WARNING:

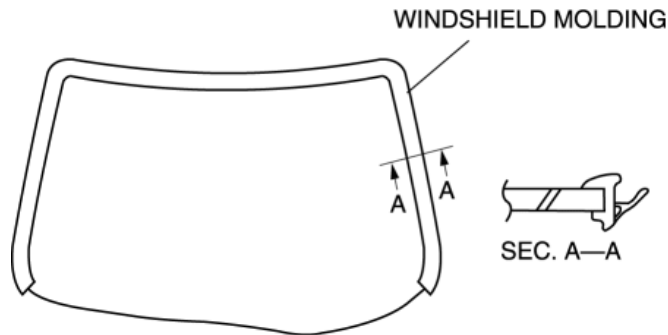
- Using a razor with bare hands can cause injury. Always wear gloves when using a razor.

CAUTION:

- Proper installation of the windshield may be difficult if sealant is cracked or the glass is pushed out by air pressure when a door is opened/closed with all the window glass closed. Leave all the windows open until the windshield is installed completely.
1. Cut away the old sealant using a razor so that a **1—2 mm {0.04—0.07 in}** thickness of sealant remains along the perimeter of the frame.



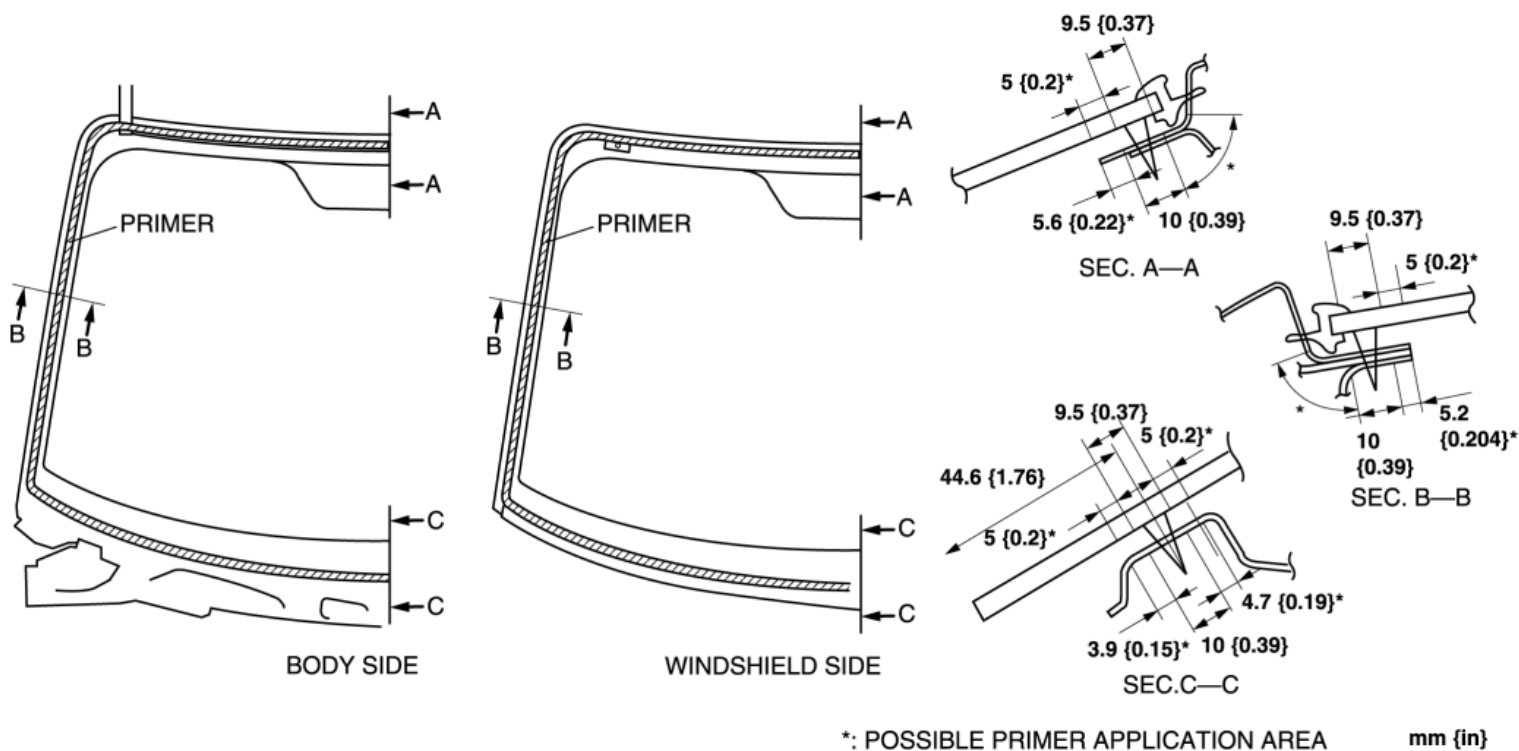
2. If the sealant has come off completely in any one place, apply some primer after degreasing, and allow it to dry for **approx. 30 min.** Then apply a **2 mm {0.08 in}** thickness of sealant.
3. Clean and degrease an **approx. 50 mm {2.0 in}** wide strip along the perimeter of the windshield and the bonding area on the body.
4. If installing a reused windshield, perform the following procedure:
 - a. Attach the pins to the seating positions where marked during removal.
 - b. Install the windshield molding.



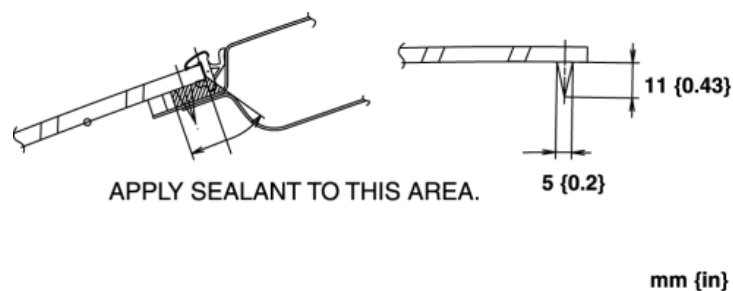
5. Use only glass primer on the glass, and body primer on the body and the molding, then allow it to dry for **approx. 30 min.**

CAUTION:

- Keep the area free of dirt, water and grease, and do not touch the surface. Otherwise, the primer may not properly bond to the surface of the glass and body, causing leaks to occur.

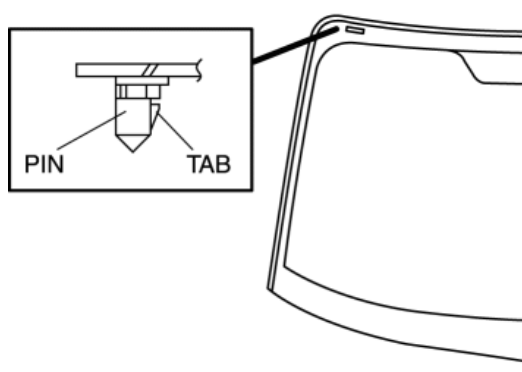


6. Apply sealant to the glass surface as shown in the figure.

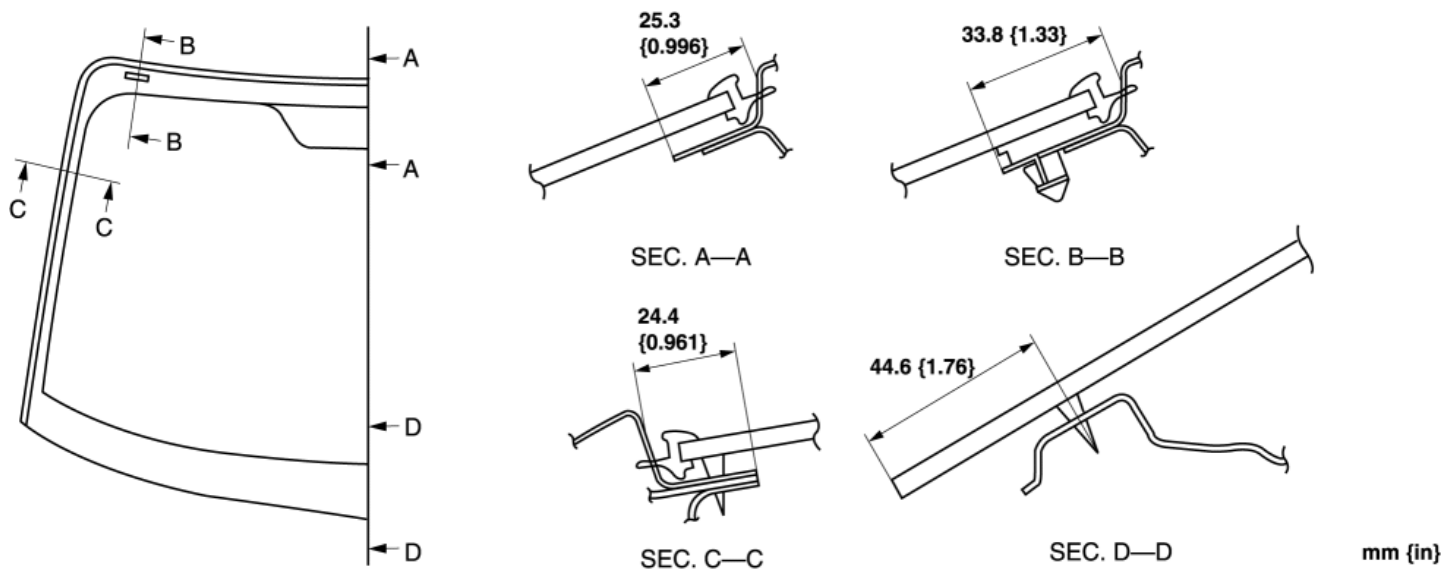


7. Insert the positioning pins to the body, then install the windshield.

8. Press the windshield pins to engage the tabs to the body.



9. Press completely along the perimeter of the glass so that the measurement of the molding lip gap is within specification.



10. Install the following parts:

- a. Map light (See [MAP LIGHT REMOVAL/INSTALLATION](#).)
- b. Sunvisor (See [SUNVISOR REMOVAL/INSTALLATION](#).)
- c. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION](#).)
- d. Rearview mirror (See [REARVIEW MIRROR REMOVAL/INSTALLATION](#).)
- e. Cowl grille (See [COWL GRILLE REMOVAL/INSTALLATION](#).)
- f. Windshield wiper arm and blade (See [WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION](#).)

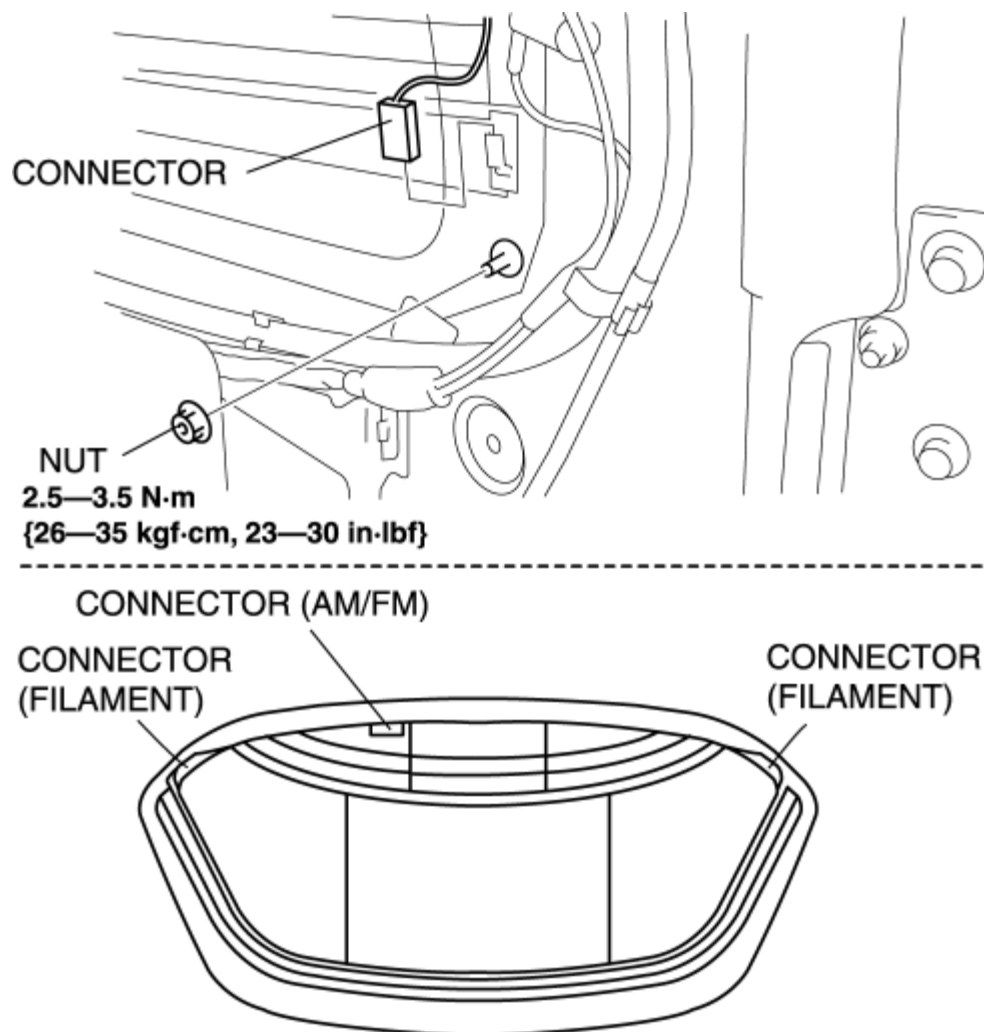
11. Allow the sealant to harden completely. Sealant hardening time: 24 h

[< Previous](#) [Next >](#)

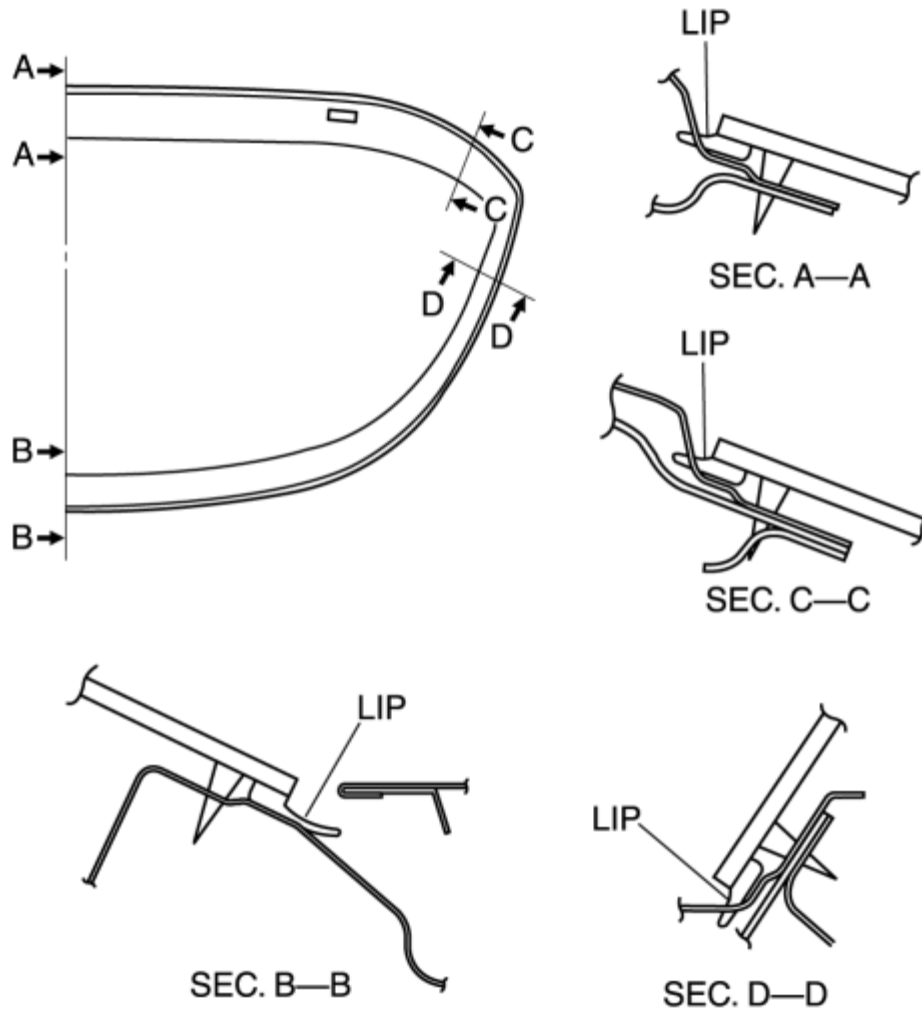
2011 - RX-8 - Body and Accessories

REAR WINDOW GLASS REMOVAL

1. Remove the following parts:
 - a. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - b. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
 - c. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
 - d. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - e. Rear package trim (See [REAR PACKAGE TRIM REMOVAL/INSTALLATION.](#))
2. Remove the nut.



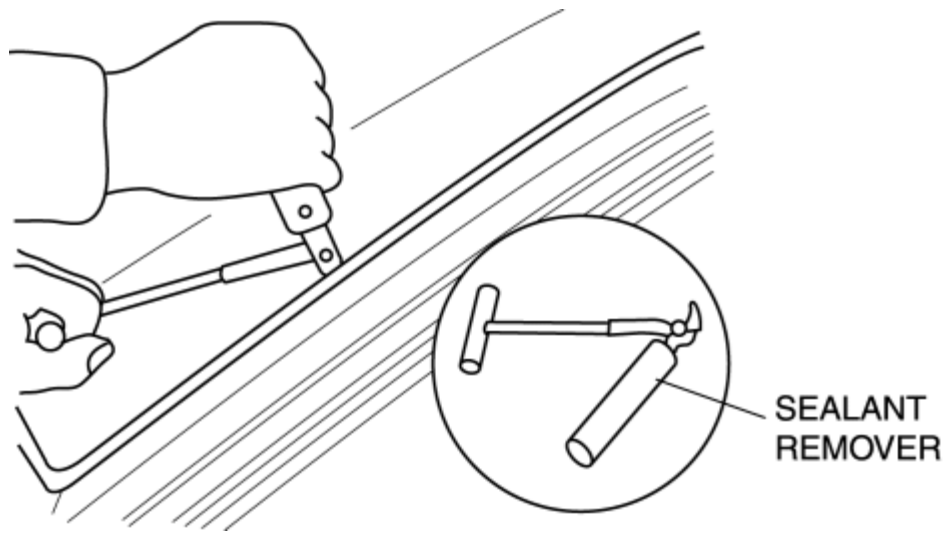
3. Disconnect the AM/FM antenna and the filament connectors.
4. Apply protective tape along the edge of the body.
5. Cut the rear window molding lip using a razor.



Not Reusing Rear Window Glass

NOTE:

- For the areas of the sealant that are difficult to cut, use the piano wire and follow the procedure under "Reusing Rear Window Glass".
1. Cut out the sealant all around the glass using a sealant remover.

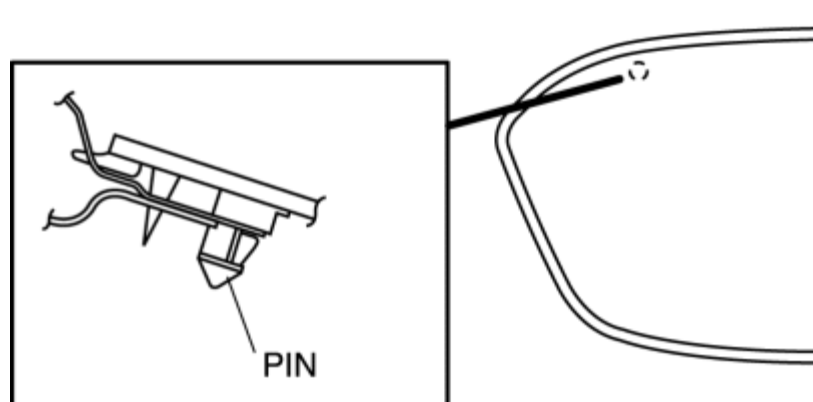


2. Remove the sealant by pulling it off.
3. Remove the rear window glass.

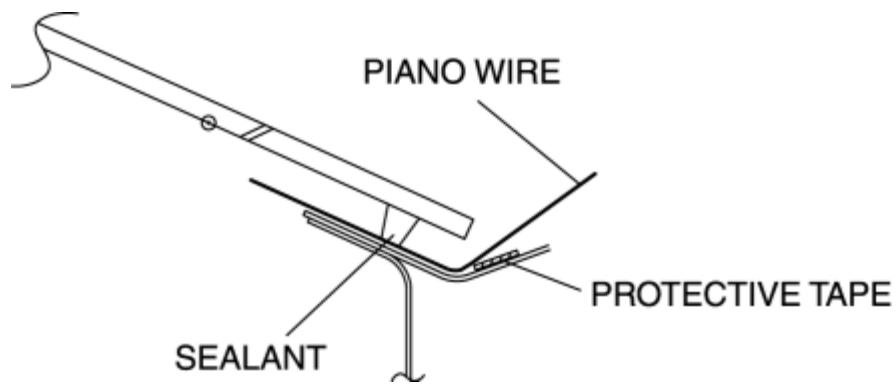
Reusing Rear Window Glass

NOTE:

- Before removing the rear window glass from the body, mark the position of the glass by affixing tape to the glass and body panel.
1. Make a hole through the sealant from the inside of the vehicle using an awl, avoiding the pins.



2. Pass the piano wire, cut to sufficient length, through the hole.



WARNING:

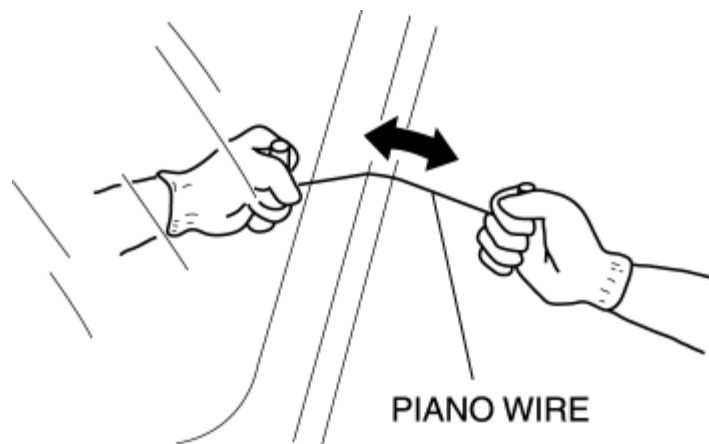
- Using the piano wire with bare hands can cause injury. Always wear gloves when using the piano wire.

3. Wind each end of the piano wire around a bar.

NOTE:

- Use a long sawing action to spread the work over the whole length of the piano wire to prevent it from breaking due to localized heating.

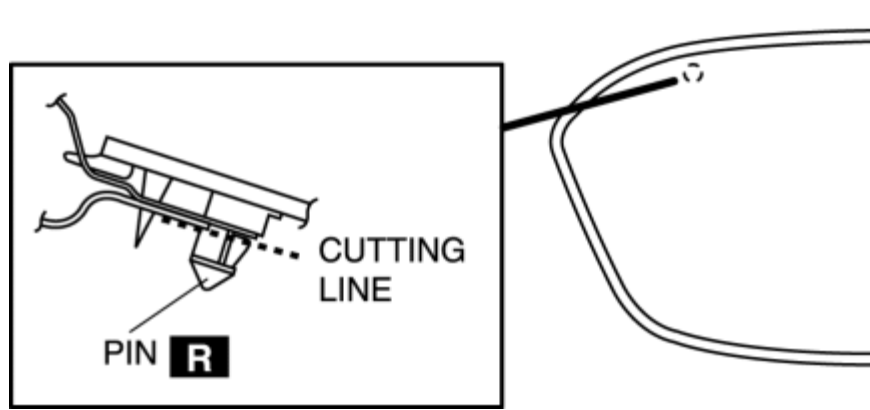
4. Fix one end of the piano wire, and while pulling the other end, cut the sealant around the rear window glass.



NOTE:

- As the upper part of the pin adheres to the sealant, cut it using the piano wire.

5. Cut the pins out.



6. Remove the rear window glass.
7. Mark the seating positions of the pins and remove the pins from the rear window glass.
8. Remove the rear window molding from the rear window glass.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

REAR WINDOW GLASS INSTALLATION

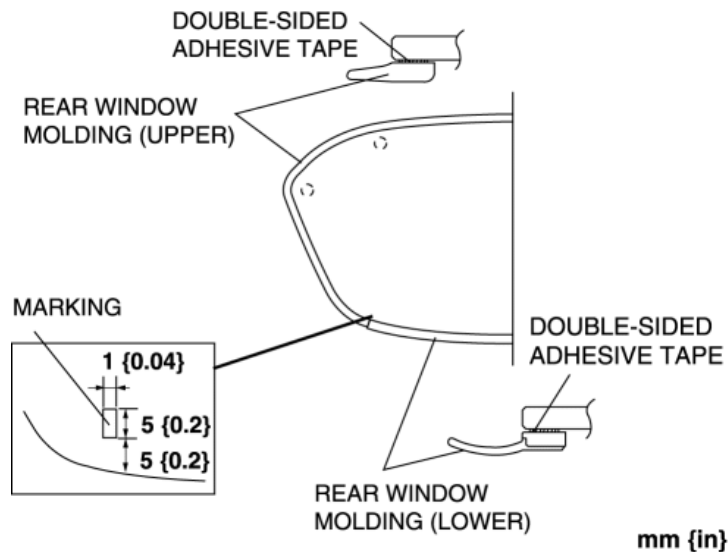
CAUTION:

- Opening and closing a door with all the windows fully closed changes the air pressure inside the vehicle, which might cause cracks in the sealant and prevent the normal installation of rear window glasses. Be sure to keep the door windows open until the installation work of rear window glasses is over.

1. Cut away the old sealant using a razor so that a **1—2 mm {0.04—0.07 in}** thickness of sealant remains along the perimeter of the frame.

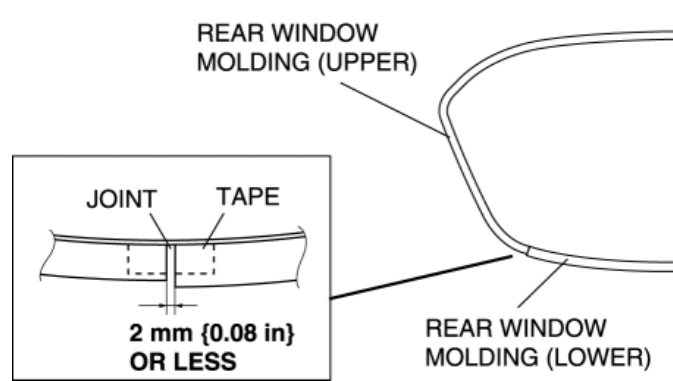
WARNING:

- Using a razor with bare hands can cause injury. Always wear gloves when using a razor.
2. If the sealant has come off completely in any one place, apply some primer after degreasing, and allow it to dry for **approx. 30 min.** Then apply a **2 mm {0.08 in}** thickness of sealant.
3. Clean and degrease the perimeter **approx. 50 mm {2.0 in}** from the glass end and the bonding area on the body.
4. If installing a reused rear window glass, perform the following procedure:
- Clean and degrease the rear window molding installation area of the rear window glass.
 - Apply the glass primer to the rear window molding installation area of the rear window glass.
 - Remove the remaining double-sided adhesive tape from the rear window molding, and install the rear window molding (upper) to the rear window glass while aligning the molding with the center of the marking on the glass.



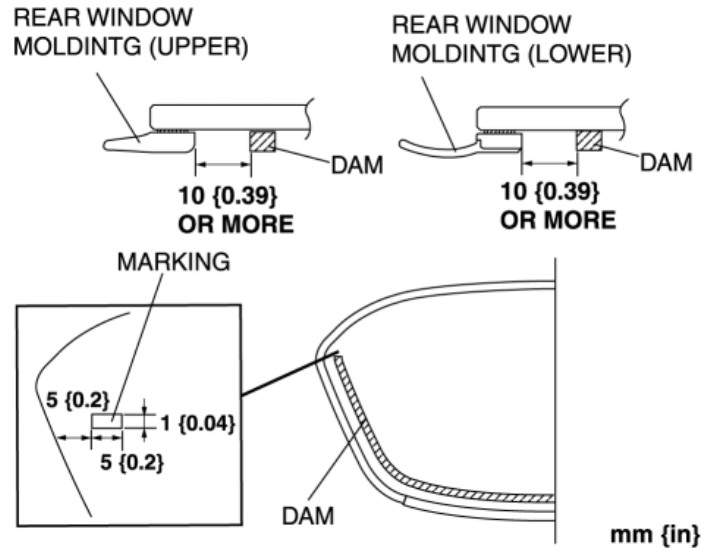
NOTE:

- Double-sided adhesive tape has been affixed to the new rear window molding.
- Install the rear window molding (lower).
 - Apply the glass primer to the inside of the rear window molding at the joint between the upper and lower parts.



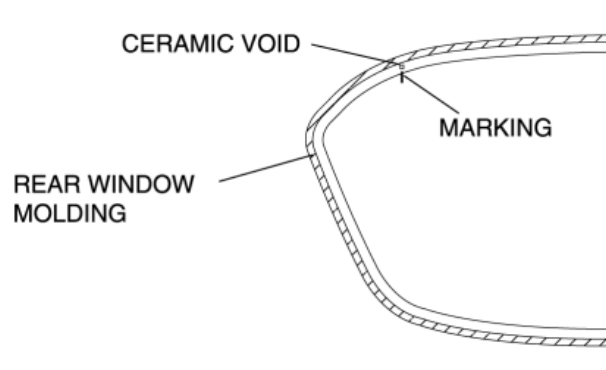
f. Affix the tape to the inside of the rear window molding at the joint.

g. Install the dam by aligning its end with the center of the marking on the glass as shown in the figure.



h. Attach the pins to the seating positions where marked during removal.

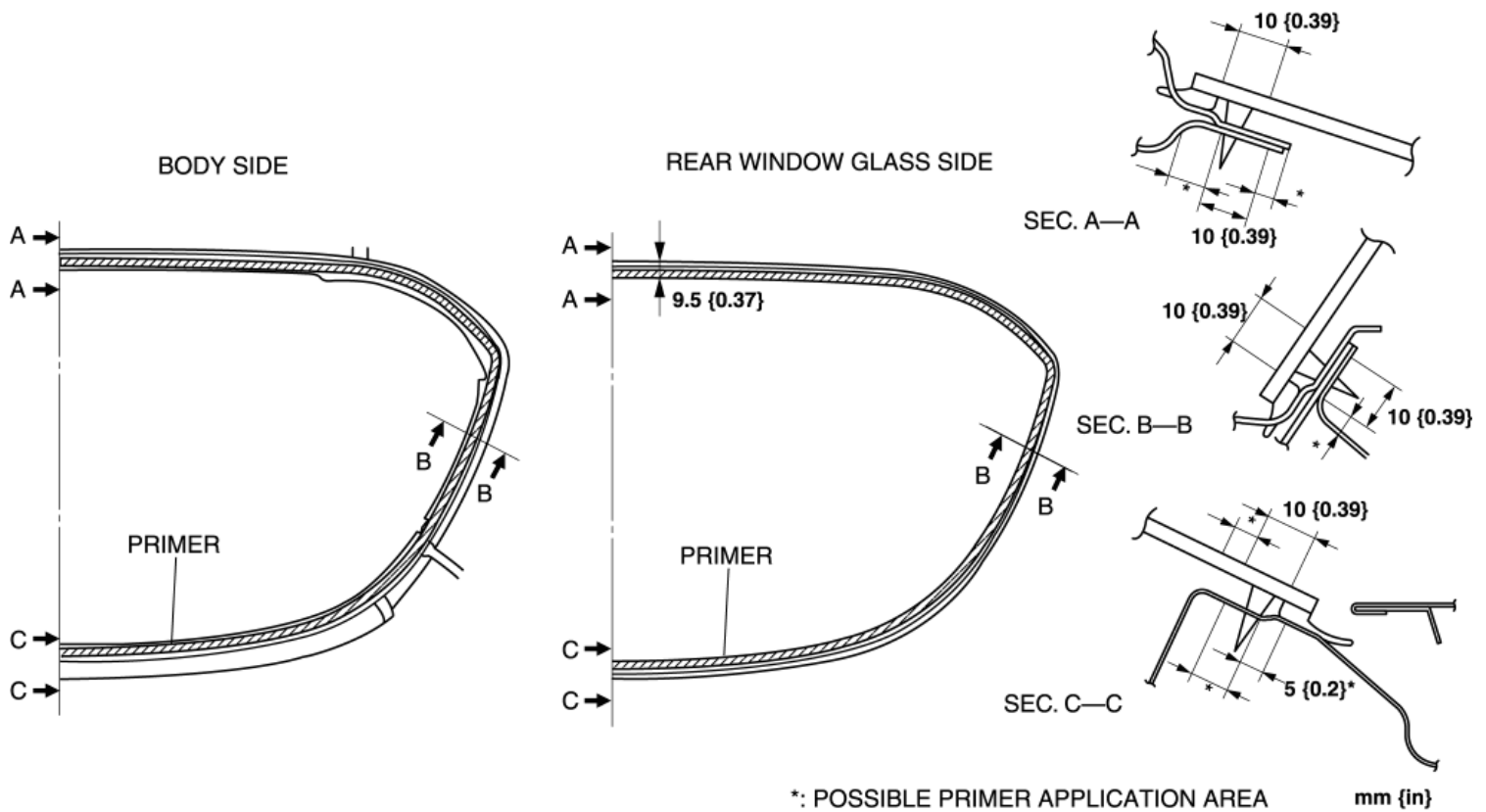
5. Place a mark at the point on the rear window glass indicated in the figure.



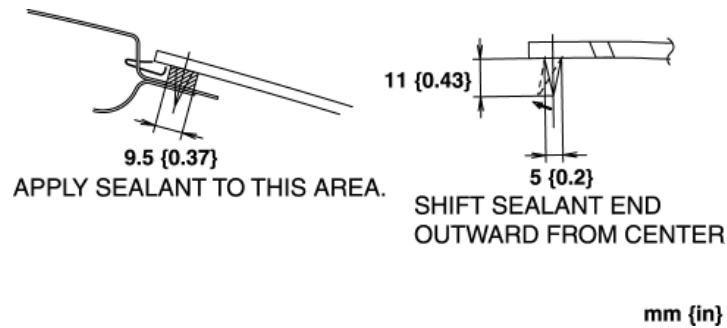
6. Use only glass primer on the rear window glass, and body primer on the rear window molding as shown in the figure. Allow it to dry for **approx. 30 min.**

CAUTION:

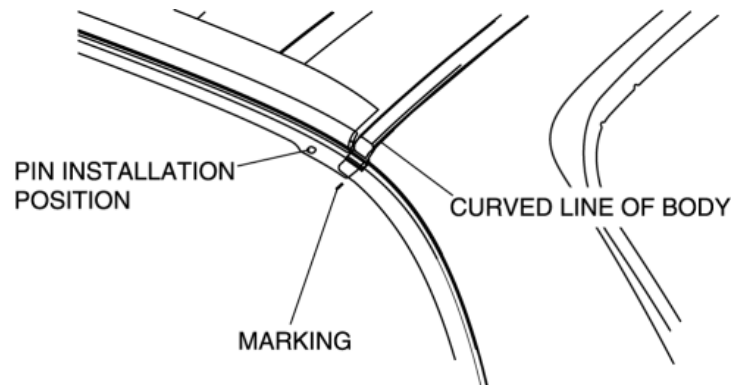
- Keep the area free of dirt, water and grease, and do not touch the surface. Otherwise, the primer may not properly bond to the surface of the glass and body, causing leaks to occur.



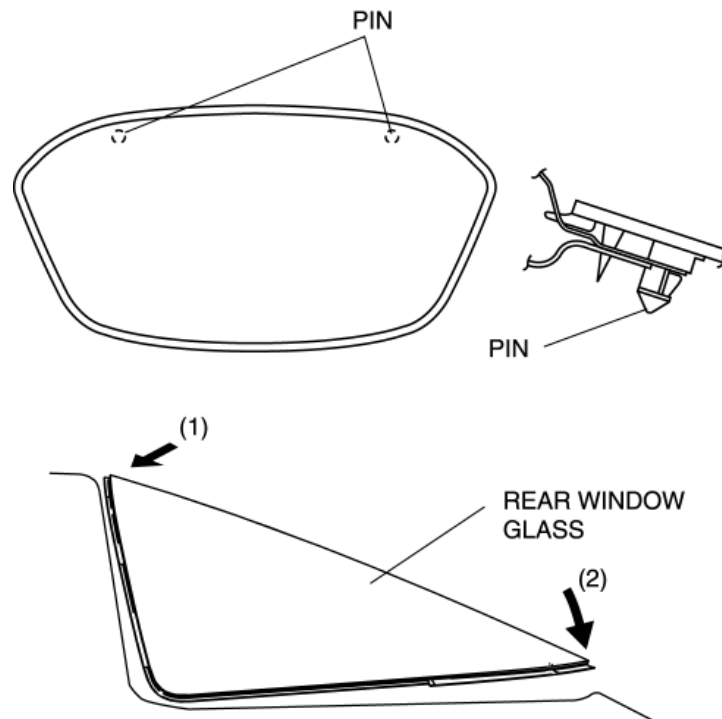
7. Apply sealant to the glass surface as shown in the figure.



8. Position the marking on the rear window glass and the curved line of the body (roof molding) left and right so that they are aligned.



9. Insert the pin into the body (1), and lower the rear part (2).



NOTE:

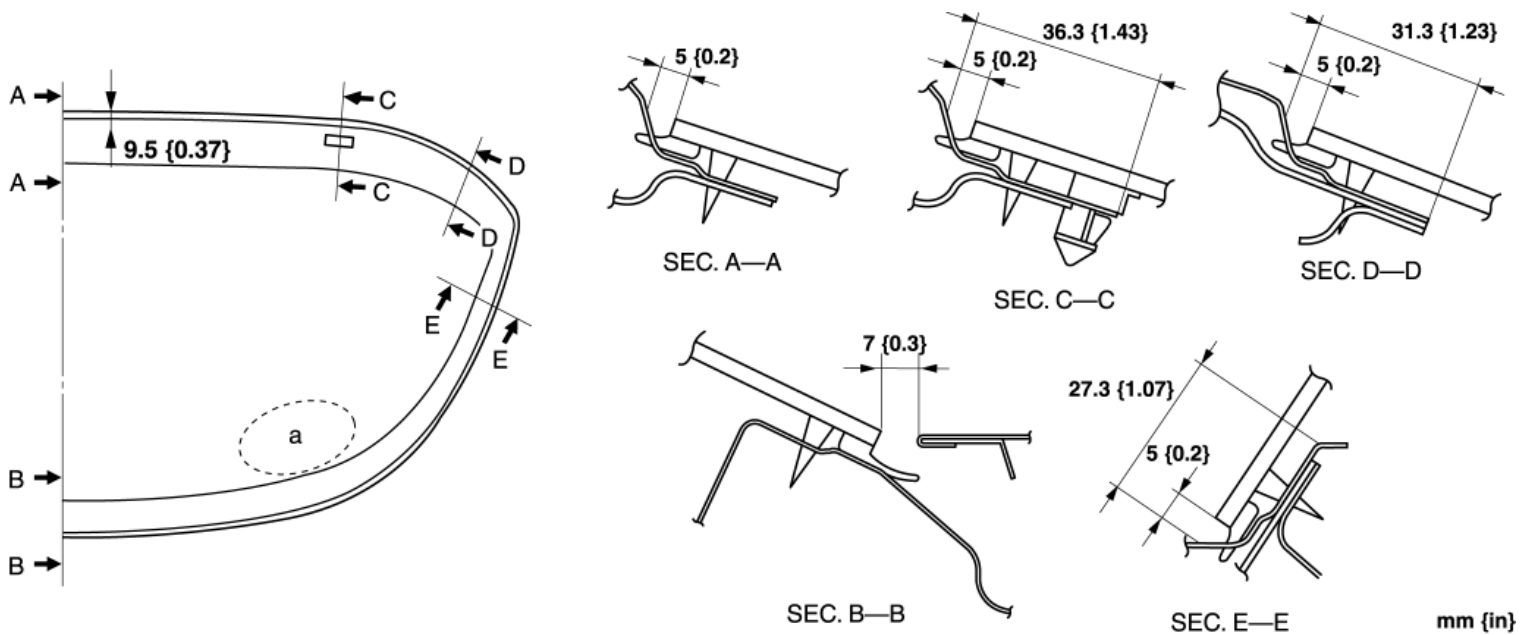
- If the rear window glass is tilted while inserting the pin into the body, the sealant will rub against the body flange, causing damage to the sealant. Do not tilt the rear window glass to the left or right while working.

10. Press the pins and engage the tabs to the body.

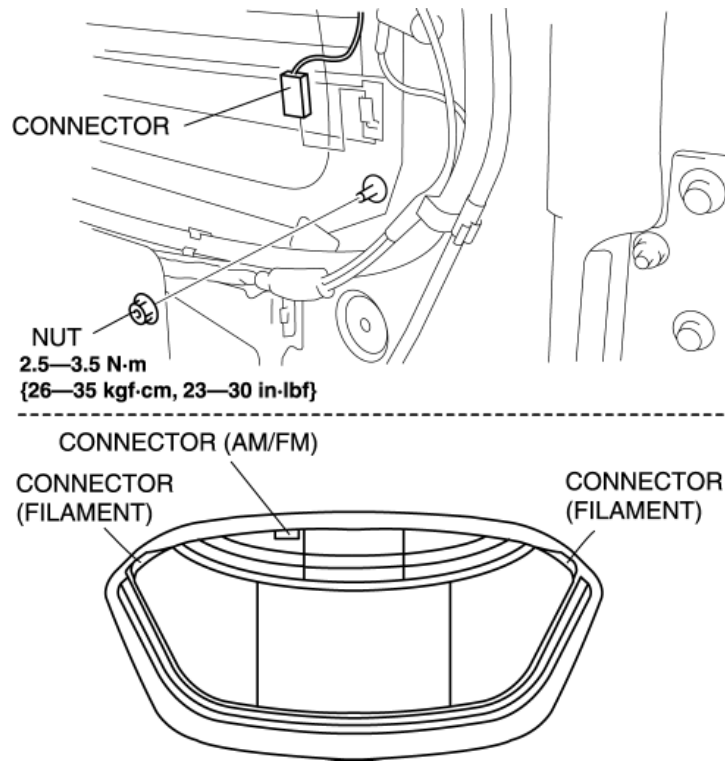
11. Press the rear window glass at (a) shown in the figure from the rear of the vehicle so that the measurement of the rear window molding lip gap is within specification.

CAUTION:

- If any sealant adheres to the AM/FM antenna and/or filament, be sure to wipe it off.



12. Install the nut.



13. Connect the AM/FM antenna and the filament connectors.

14. Install the following parts:

- a. Rear package trim (See [REAR PACKAGE TRIM REMOVAL/INSTALLATION.](#))
- b. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
- c. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
- d. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))

15. Allow the sealant to harden completely. Sealant hardening time: 24 h

16. Apply soapy water to the rear window molding side and blow air from the interior, then verify that there are no bubbles or air leakage.

- If there are any bubbles or air leakage, repair the damaged part of the sealant and verify it again.

[< Previous](#) [Next >](#)

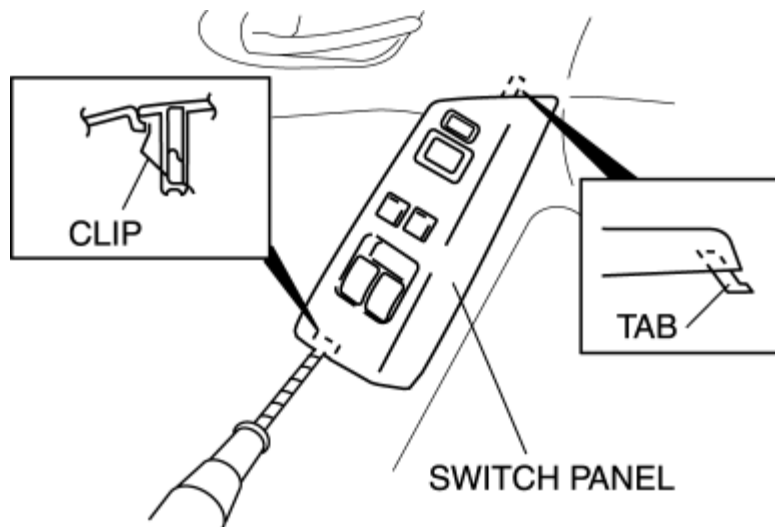
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

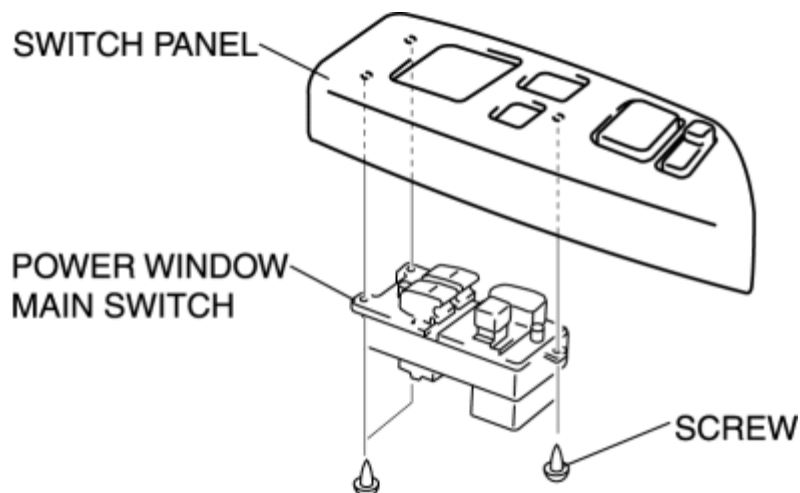
2011 - RX-8 - Body and Accessories

POWER WINDOW MAIN SWITCH REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Using a flathead screwdriver wrapped with protective tape, pry up the rear of the switch panel and detach the clip .



3. Remove the switch panel from the front door trim keeping the tab from catching.
4. Disconnect the power window main switch connector and the power mirror switch connector.
5. Remove the screws, then remove the power window main switch.



6. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

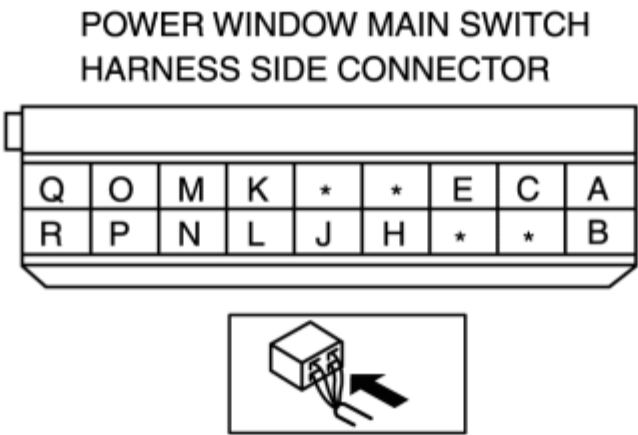
2011 - RX-8 - Body and Accessories

POWER WINDOW MAIN SWITCH INSPECTION

Driver's side

1. Measure the voltage at each terminal (except terminals K and M).
 - If the voltage is not as specified in the terminal voltage table, inspect the parts under Inspection item (s) and related wiring harnesses.
2. Connect the negative battery cable.
3. Inspect the power window main switch connector for continuity at terminals K and M.
4. If the system does not work normally even though the inspection items or related wiring harnesses do not have any malfunction,replace the power window main switch.

Terminal Voltage Table (Reference)



Terminal	Signal name	Connected to	Measured condition	Voltage (V)/Continuity	Inspection item (s)
A	Close output	Power window	While door glass is opening	1.0 or less	Power window motor

		motor	While door glass is closing	B+	
B	Power cut	Power window subswitch	<ul style="list-style-type: none"> Ignition switch at ON Power cut switch at off 	0.25	<ul style="list-style-type: none"> Related wiring harness Power window subswitch
			Ignition switch at ACC or LOCK	1.0 or less	
			Power cut switch at on	1.0 or less	
C	Power supply	Power window motor	Ignition switch at ON	B+	Power window motor
E	Power supply	P/W 30 A fuse	Under any condition	B+	P/W 30 A fuse
H	Serial 1	Power window sub switch	<ul style="list-style-type: none"> Because this terminal is for communication, good/no good judgment by terminal voltage is not possible. Inspect the wiring harness between power window main switch terminal H and power window subswitch terminal B for the following: <ul style="list-style-type: none"> Short to ground Open circuit 		Power window subswitch
K	GND	Body ground	Under any condition: Inspect for continuity to ground	Continuity detected	GND
M	GND	Power window motor	Under any condition: Inspect for continuity to ground	Continuity detected	Power window motor
N	IG2	Ignition relay	Ignition switch at ON	B+	Ignition relay
			Ignition switch at ACC or LOCK	1.0 or less	
O	Pulse	Power window	Door glass moving	Approx. 6	Power window motor

	1	motor	Door glass stopped	0 or B+	
P	Pulse 2	Power window motor	Door glass moving	Approx. 6	Power window motor
			Door glass stopped	1.0 or less	
Q	Open output	Power window motor	While door glass is opening	B+	Power window motor
			While door glass is closing	1.0 or less	
R	Perial 2	Keyless control module	<ul style="list-style-type: none"> Because this terminal is for communication, good/no good judgment by terminal voltage is not possible. <p>Vehicles without advanced keyless system</p> <ul style="list-style-type: none"> Inspect the wiring harness between power window main switch terminal R and keyless control module terminal 2T for the following: <ul style="list-style-type: none"> Short to ground Open circuit <p>Vehicles with advanced keyless system</p> <ul style="list-style-type: none"> Inspect the wiring harness between power window main switch terminal R and keyless control module terminal 2P for the following: <ul style="list-style-type: none"> Short to ground Open circuit 		Keyless control module

5. Turn the ignition switch to ON position, and verify the LED illuminates.

- If there is any malfunction, replace the power window main switch.

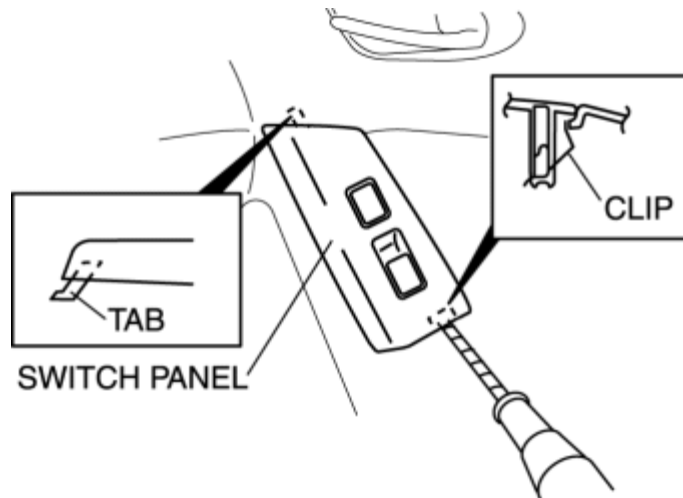
[< Previous](#) [Next >](#)

[Back to Top](#)

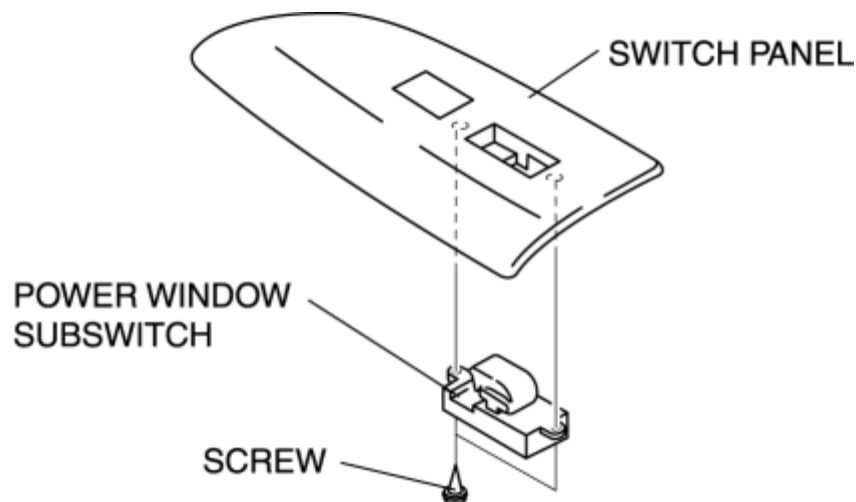
2011 - RX-8 - Body and Accessories

POWER WINDOW SUBSWITCH REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Using a flathead screwdriver wrapped with protective tape, pry up the rear of the switch panel and detach the clip.



3. Remove the switch panel from the front door trim keeping the tab from catching.
4. Disconnect the power window subswitch connector.
5. Remove the screws, then remove the power window subswitch.



6. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

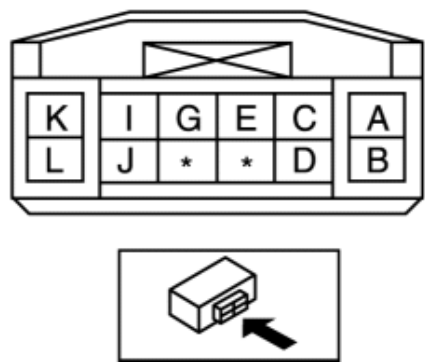
POWER WINDOW SUBSWITCH INSPECTION

1. Measure the voltage at each terminal is as indicated in the Terminal Voltage Tables.
- If the voltage is not as specified in the terminal voltage table, inspect the parts under "Inspection item (s)".

If the system does not work properly even though the parts or related wiring harnesses do not have any malfunction, replace the power window sub switch.

Terminal Voltage Table(Reference)

POWER WINDOW SUB SWITCH
HARNESS SIDE CONNECTOR



Terminal	Signal name	Connected to	Measured condition	Voltage (V)/Continuity	Inspection item (s)
A	Open output	Power window motor	While door glass is opening	1.0 or less	Power window motor
			While door glass is closing	B+	
B	GND	Body ground	Under any condition: Inspect for continuity to ground	Continuity detected	GND
			<div><div></div><div>Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.</div></div>		

C	Serial	Power window main switch	<ul style="list-style-type: none"> Inspect the wiring harness between power window subswitch terminal C and power window main switch terminal H for the following: <ul style="list-style-type: none"> Short to ground Open circuit 		Power window main switch
D	GND	Power window motor	Under any condition: Inspect for continuity to ground	Continuity detected	Power window motor
E	Pulse 1	Power window motor	Door glass moving	Approx. 6	Power window motor
			Door glass stopped	0 or B+	
G	Pulse 2	Power window motor	Door glass moving	Approx. 6	Power window motor
			Door glass stopped	0 or B+	
I	Power supply	Power window motor	Ignition switch at ON	B+	Power window motor
J	Power cut	Power window main switch	<ul style="list-style-type: none"> Ignition switch at ON Power cut switch at off 	0.25	<ul style="list-style-type: none"> Related wiring harness Power window subswitch
			Ignition switch at ACC or LOCK	1.0 or less	
			Power cut switch at on	1.0 or less	
K	Close output	Power window motor	Door glass moving	Approx. 6	Power window motor
			Door glass stopped	1.0 or less	
L	Power supply	P/W 30 A fuse	Under any condition	B+	P/W 30 A fuse

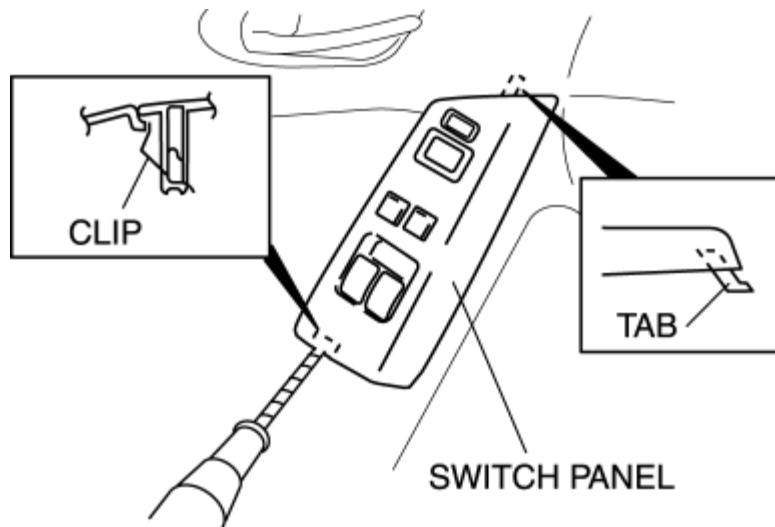
2. Turn the ignition switch to ON position, and verify the LED illuminates.

- If not as specified, replace the power window subswitch.

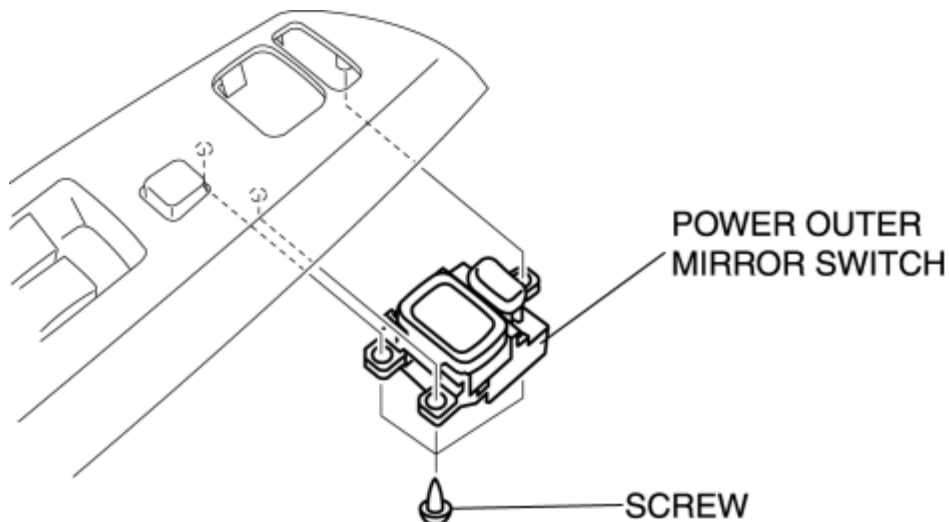
2011 - RX-8 - Body and Accessories

POWER OUTER MIRROR SWITCH REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Disengage clips using a tape-wrapped flathead screwdriver.



3. Remove the switch panel from the front door trim keeping the tab from catching.
4. Disconnect the power window main switch connector and power outer mirror switch connector.
5. Remove the screws and the power outer mirror switch.



6. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

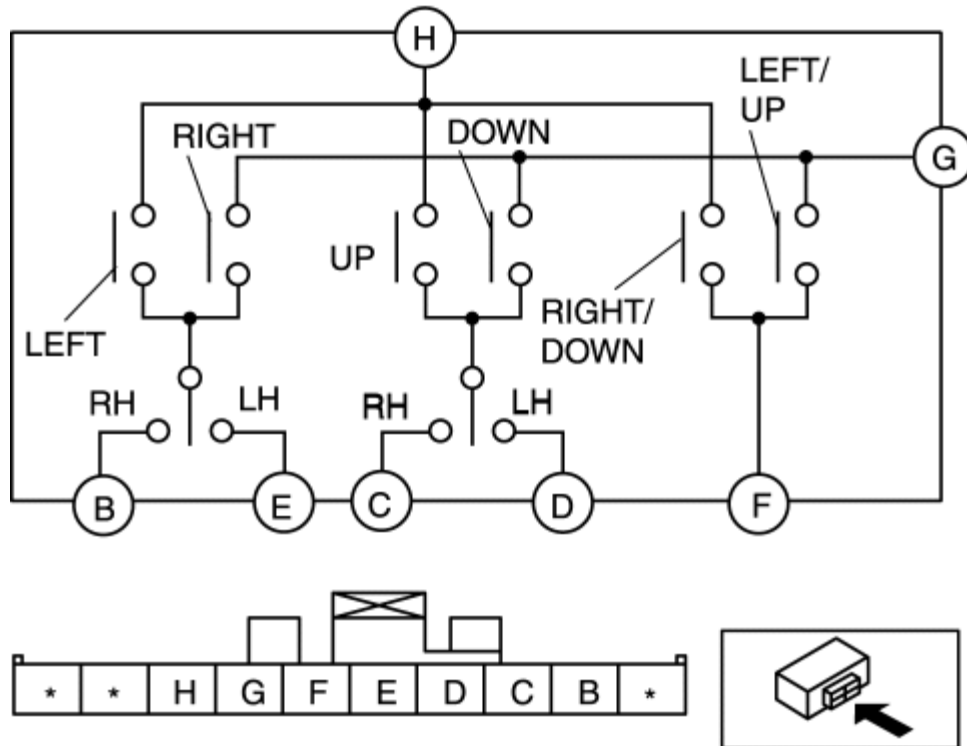
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

POWER OUTER MIRROR SWITCH INSPECTION

1. Inspect for continuity between the power outer mirror switch terminals using an ohmmeter.



- If not as specified, replace the power outer mirror switch.

○ — ○ : Continuity

Operation		D	C	E	B	H	G	F
LH	Up	○ —				○ —	○ —	○
	Down	○ —				○ —	○ —	○
	Left			○ —		○ —	○ —	○
	Right			○ —		○ —	○ —	○
RH	Up		○ —			○ —	○ —	○
	Down		○ —			○ —	○ —	○
	Left				○ —	○ —	○ —	○
	Right				○ —	○ —	○ —	○

[< Previous](#) [Next >](#)

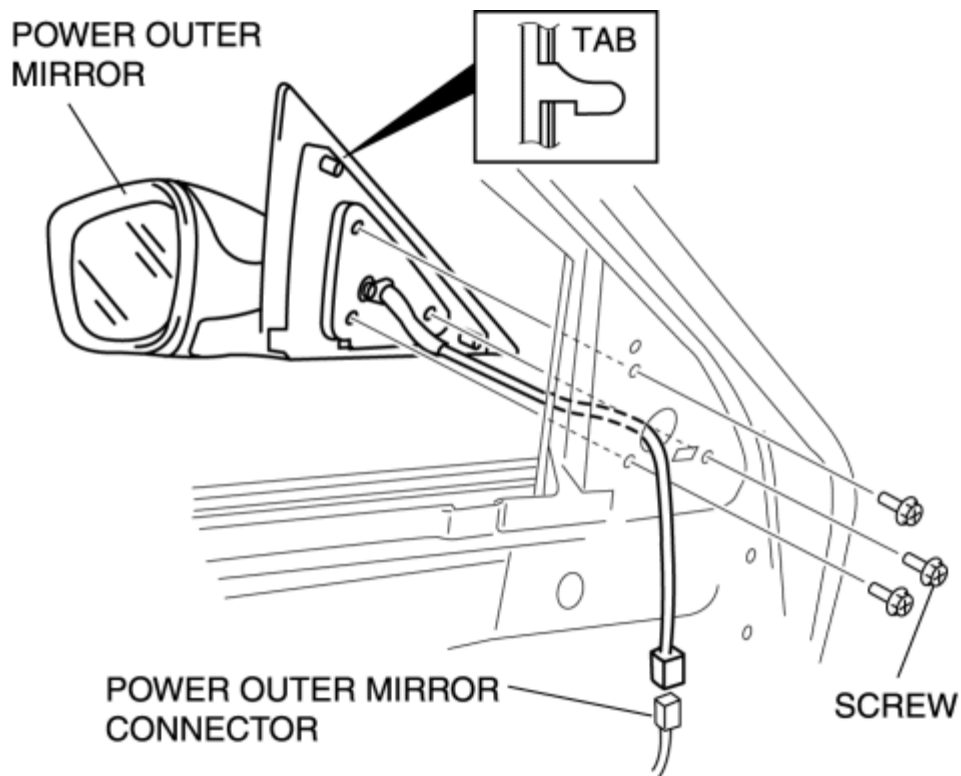
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

POWER OUTER MIRROR REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the inner garnish. (See [INNER GARNISH REMOVAL/INSTALLATION](#).)
3. Remove the front door trim. (See [FRONT DOOR TRIM REMOVAL/INSTALLATION](#).)
4. Disconnect the power outer mirror connector.

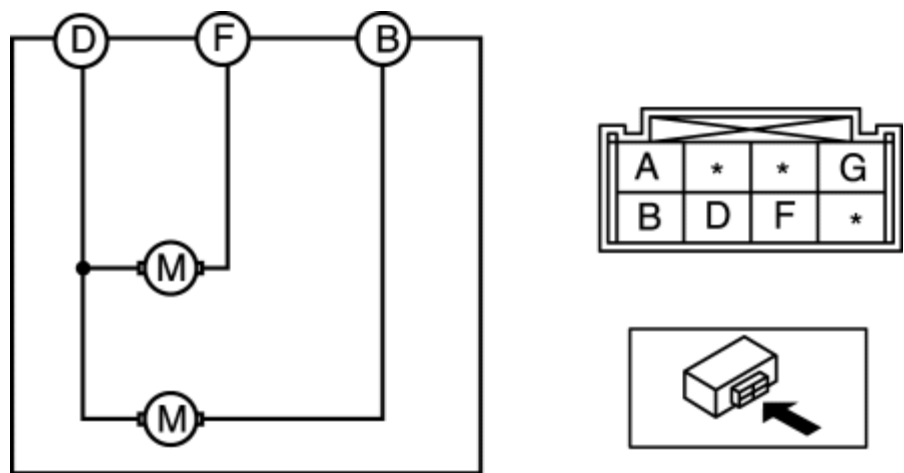


5. Remove the screws.
6. Push the power outer mirror against the vehicle and detach the tab while lifting the mirror up to remove.
7. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

POWER OUTER MIRROR INSPECTION

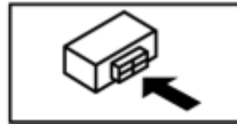
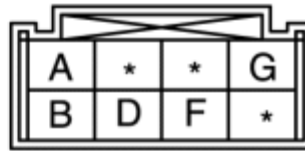
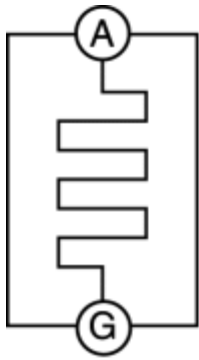
1. Apply battery positive voltage and connect the ground to the corresponding power outer mirror terminals, and then inspect the operation of the power outer mirror.



- If not as specified, replace the power outer mirror.

Operation	Terminal	
	B+	GND
Up	B	D
Down	D	B
Left	F	D
Right	D	F

2. Inspect for continuity between the power outer mirror heater terminals.



- If not as specified, replace the power outer mirror.

○—○ : Continuity

Operation	Terminal	
	A	G
Heater	○—○	○—○

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

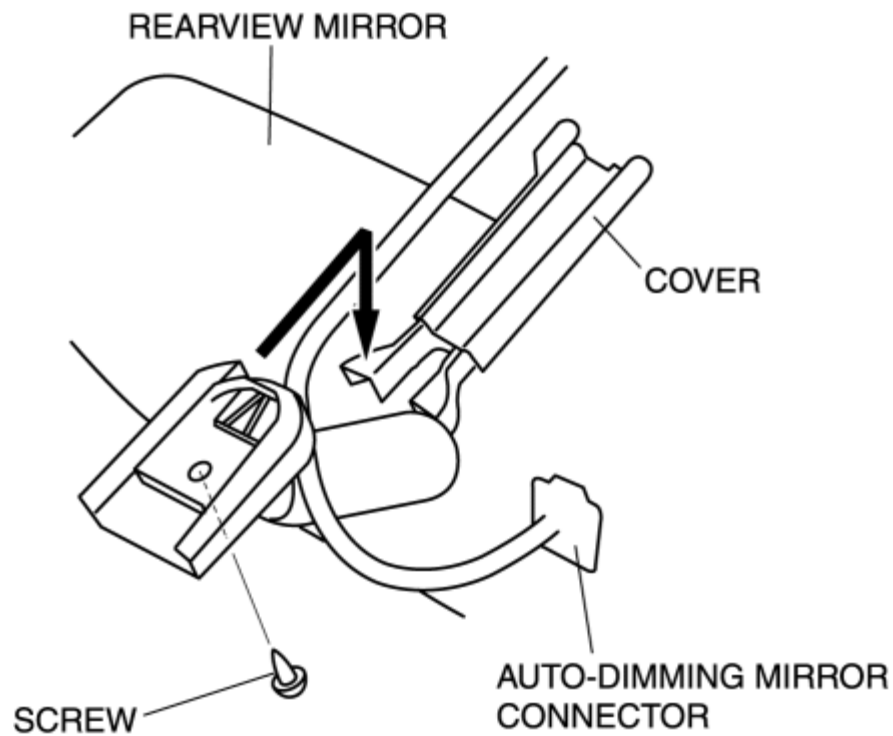
[Back to Top](#)

2011 - RX-8 - Body and Accessories

REARVIEW MIRROR REMOVAL/INSTALLATION

Auto-dimming Mirror

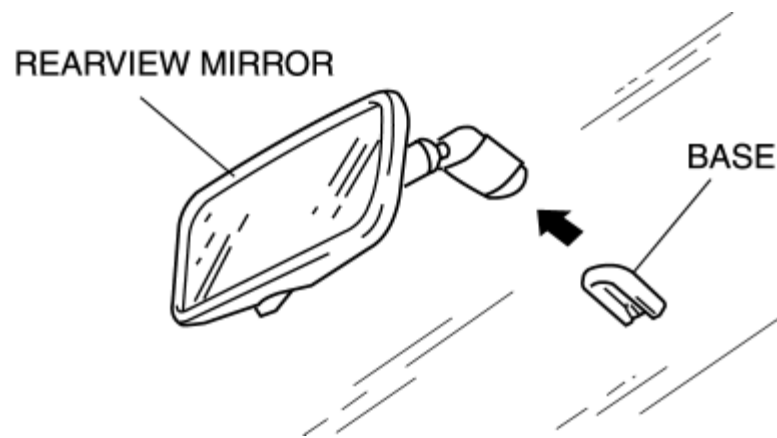
1. Disconnect the negative battery cable.
2. Remove the cover.



3. Disconnect the auto-dimming mirror connector.
4. Remove the screw.
5. Remove the rearview mirror.
6. Install in the reverse order of removal.

Normal Type

1. Pull the rearview mirror in the direction indicated by the arrow.



2. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

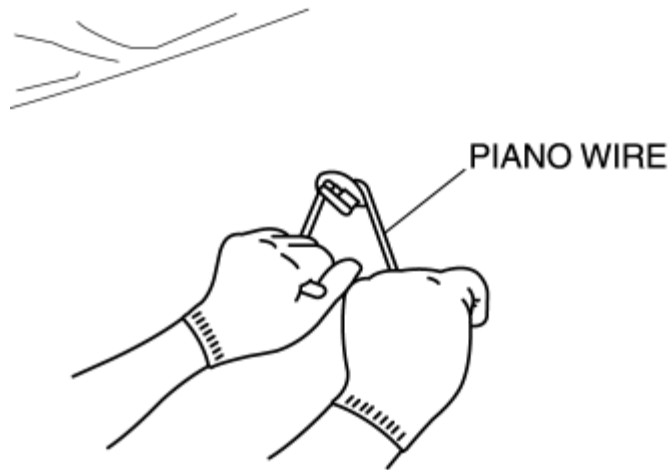
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

BASE REMOVAL

1. Remove the rearview mirror.
2. Wind each end of a wire around a bar.



WARNING:

- Using the piano wire with bare hands can cause injury. Always wear gloves when using the piano wire.

NOTE:

- Use a long sawing action to spread the work over the whole length of the piano wire to prevent it from breaking.

3. Saw through the sealant to remove the base.

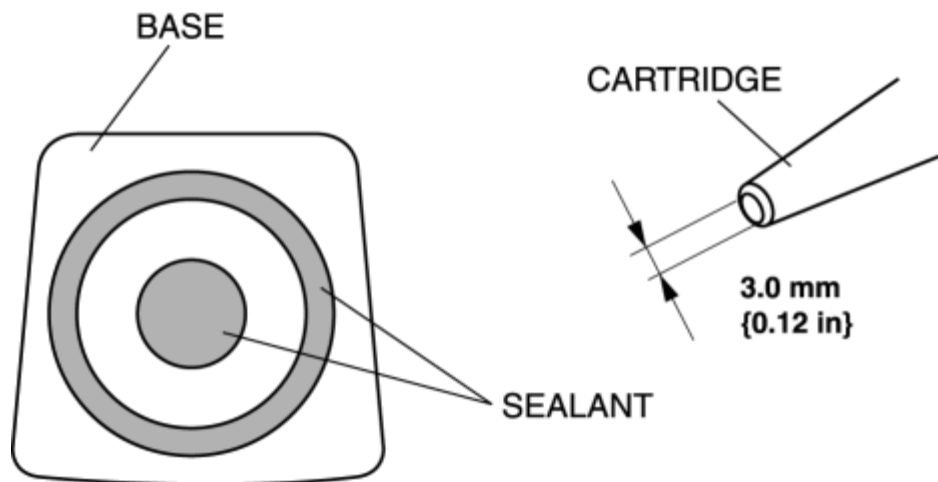
2011 - RX-8 - Body and Accessories

BASE INSTALLATION

1. Cut away all of the original sealant using a razor.
2. Clean and degrease the ceramic coating on the glass and the base.
3. Apply primer to the bonding area of the glass and the base.

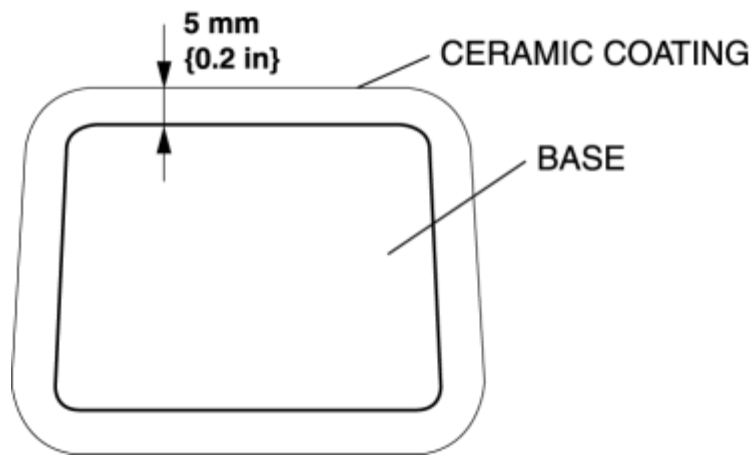
CAUTION:

- Keep the area free of dirt and grease, and do not touch the surface. Otherwise, the primer may not properly bond to the surface of the glass.
4. Apply a **3.0 mm {0.12 in}** layer of sealant to the base.



NOTE:

- Use only glass primer on the glass, and body primer on the base. Allow the primer to dry for **approx. 30 min.**
5. Center the base in the ceramic coating and press it onto the glass.



6. Use isopropyl alcohol to remove any excess repair sealant. **Hardening time of sealant**

Temperature	Surface hardening time	Time required until vehicle can be put into service
5 °C {41 °F}	Approx. 1.5 h	Approx. 12 h
20 °C {68 °F}	Approx. 1 h	Approx. 4 h
35 °C {95 °F}	Approx. 10 min.	Approx. 2 h

7. Install the rearview mirror.

[< Previous](#) [Next >](#)

[Back to Top](#)

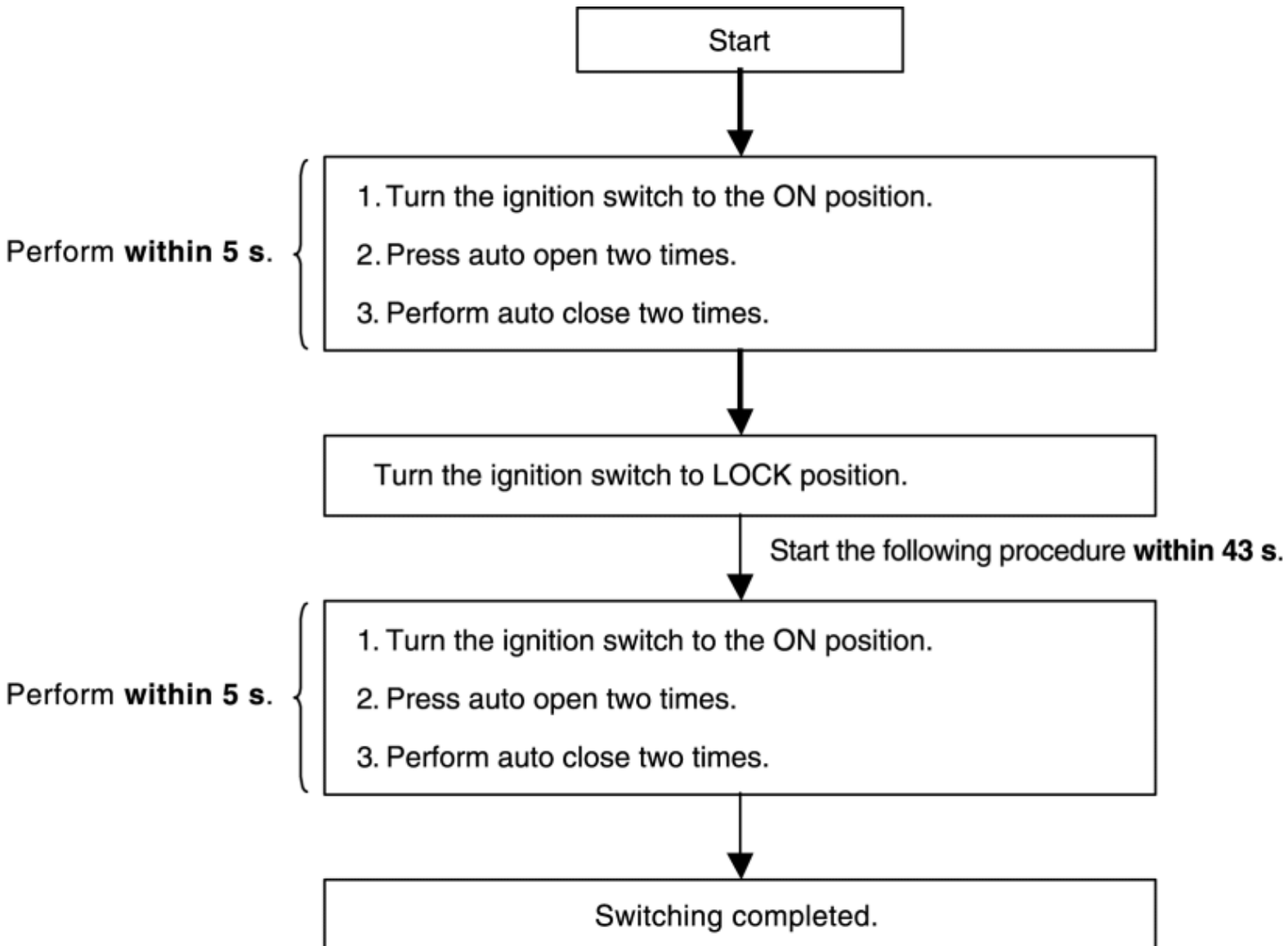
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

TWO-STEP DOWN FUNCTION OPERATIVE/NON-OPERATIVE SWITCHING PROCEDURE

NOTE:

- By following the procedure below, the two-step down function is switched to non-operative when it is operative, and to operative when it is non-operative.

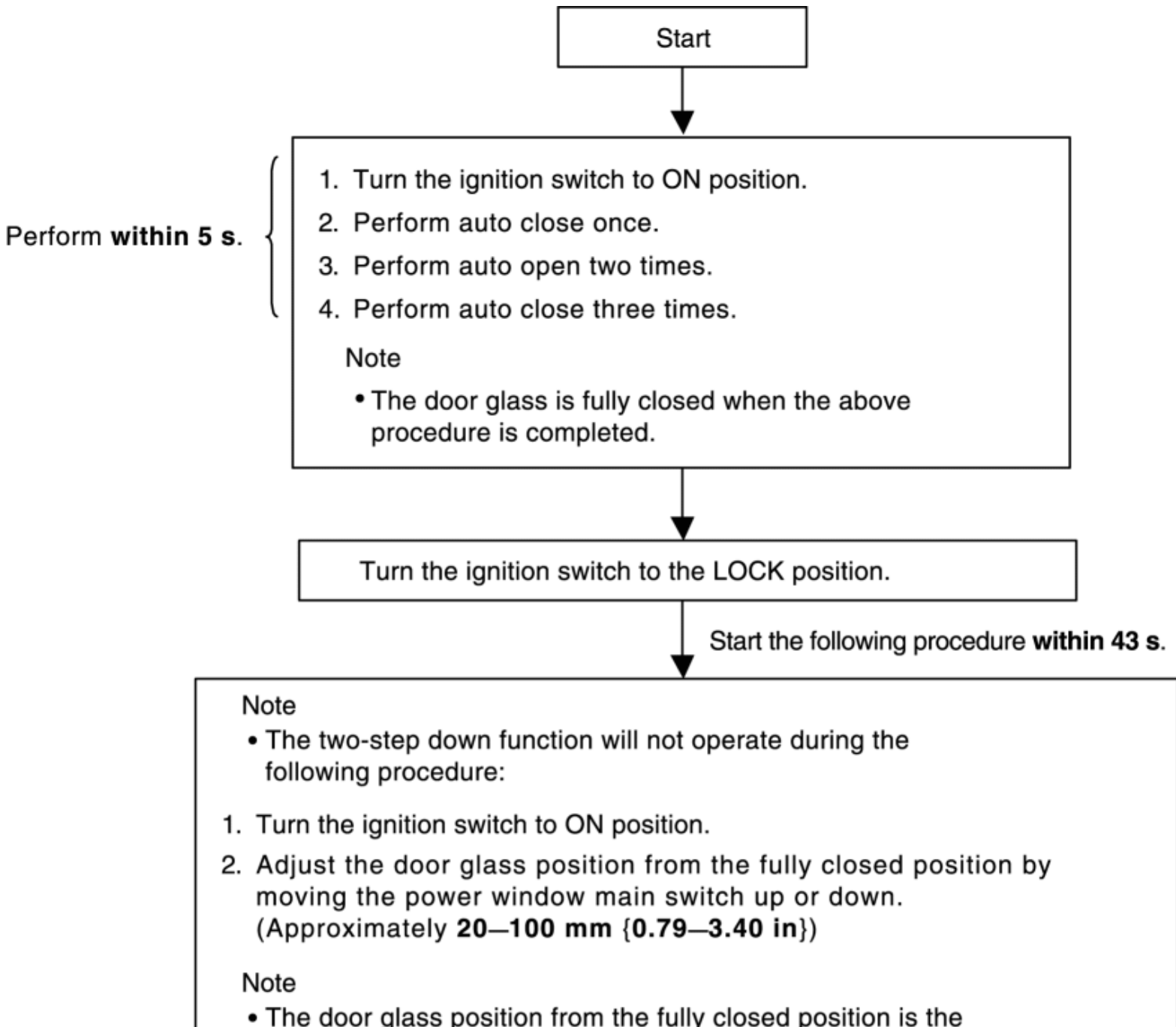


2011 - RX-8 - Body and Accessories

DOOR GLASS POSITION CHANGE PROCEDURE

NOTE:

- After performing the following procedure, verify that the two-step down function operates normally and the door glass position has changed. If the two-step down function does not operate or the door glass position has not changed, the procedure was not performed properly. Repeat the procedure from the beginning.



change in distance.

- The change in distance is approximately **20 mm {0.79 in}** when the door glass is opened less than **20 mm {0.79 in}**, and approximately **100 mm {3.40 in}** when the door glass is opened more than **100 mm {3.40 in}**.

3. Turn the ignition switch to LOCK position.

Start the following procedure **within 43 s**.

Perform **within 5 s**.

1. Turn the ignition switch to the ON position.
2. Perform auto close once.
3. Perform auto open two times.
4. Perform auto close three times.

Door glass position change completed.

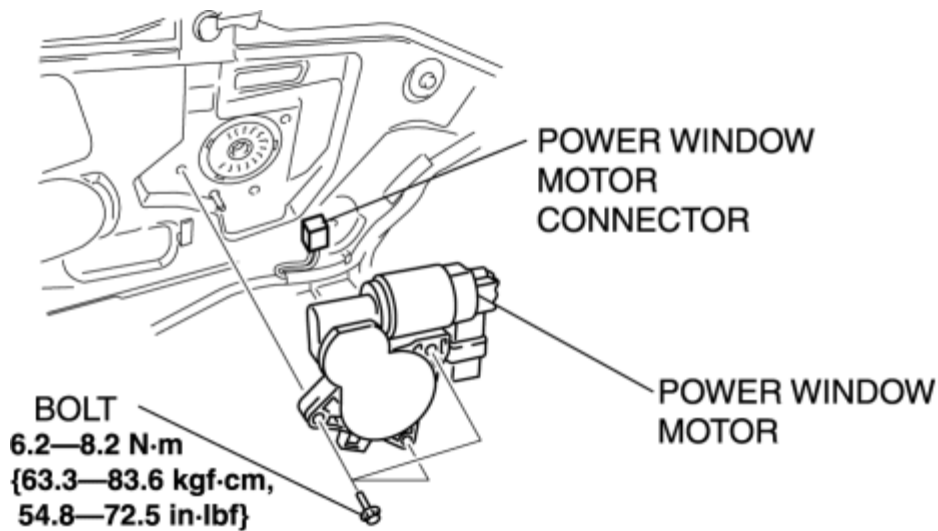
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

POWER WINDOW MOTOR REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the inner garnish. (See [INNER GARNISH REMOVAL/INSTALLATION](#).)
3. Remove the front door trim. (See [FRONT DOOR TRIM REMOVAL/INSTALLATION](#).)
4. Remove the bolts.



5. Remove the power window motor from the power window regulator drum.
6. Disconnect the power window motor connector.
7. Install in the reverse order of removal.

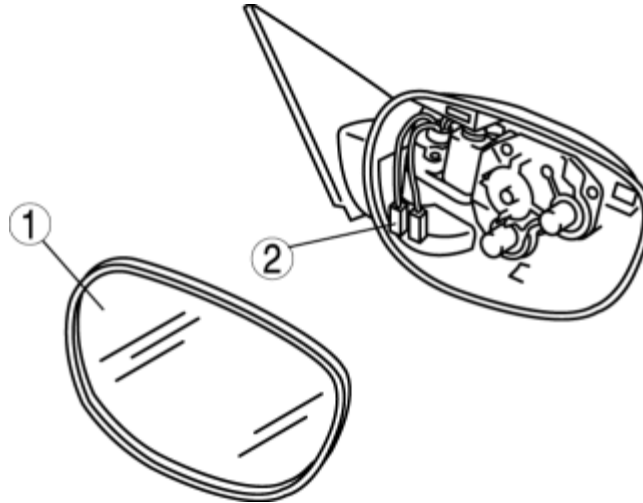
NOTE:

- When installing the power window motor to the power window regulator drum, the drum housing tab may come off the door unit. If this happens, remove the door speaker, insert your hand in the speaker installation hole, connect the drum housing tabs, and while supporting the drum housing, install the power window motor to the drum.

2011 - RX-8 - Body and Accessories

POWER OUTER MIRROR DISASSEMBLY/ASSEMBLY

1. Disassemble in the order indicated in the table.

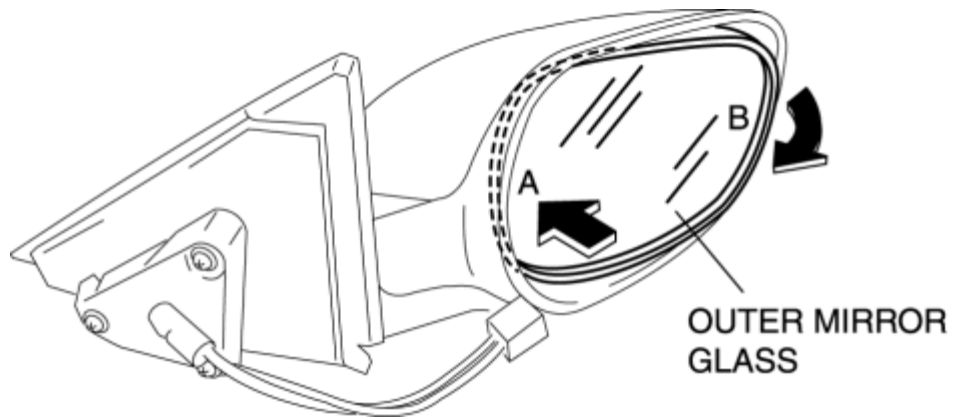


1	Outer mirror glass (See Outer Mirror Glass Disassembly Note) (See Outer Mirror Glass Assembly Note)
2	Connector (vehicles with heated outer mirrors)

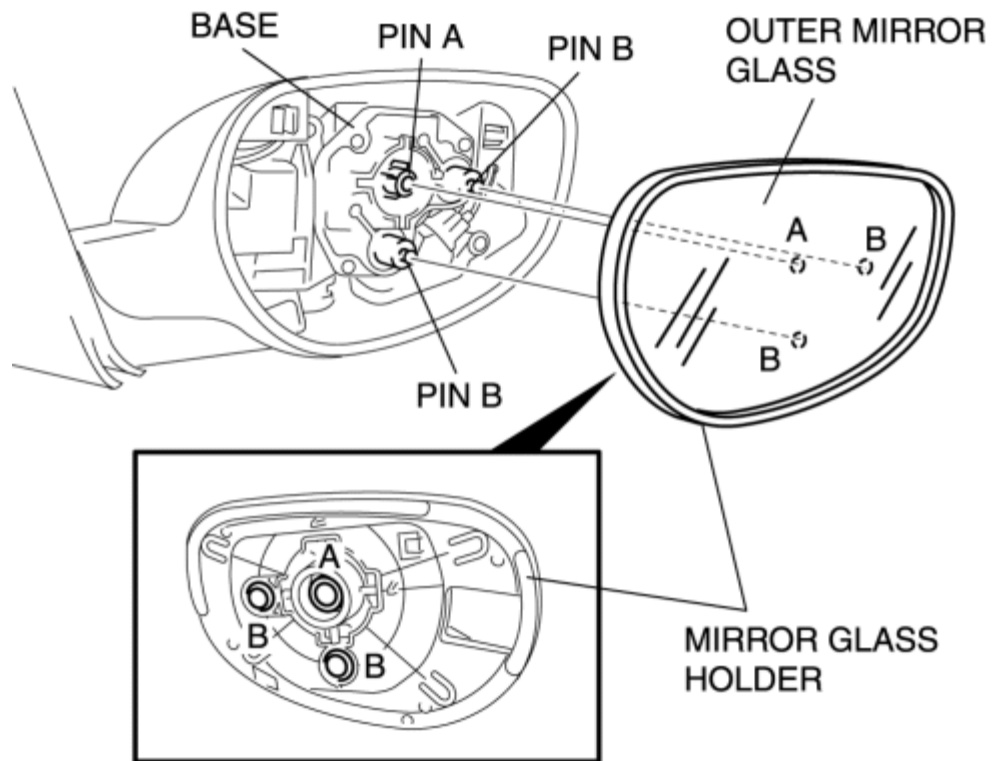
2. Assemble in the reverse order of disassembly.

Outer Mirror Glass Disassembly Note

1. Press area A of the mirror glass so that area B moves outward.



2. Detach pin A while lifting up the inside of the mirror glass holder.

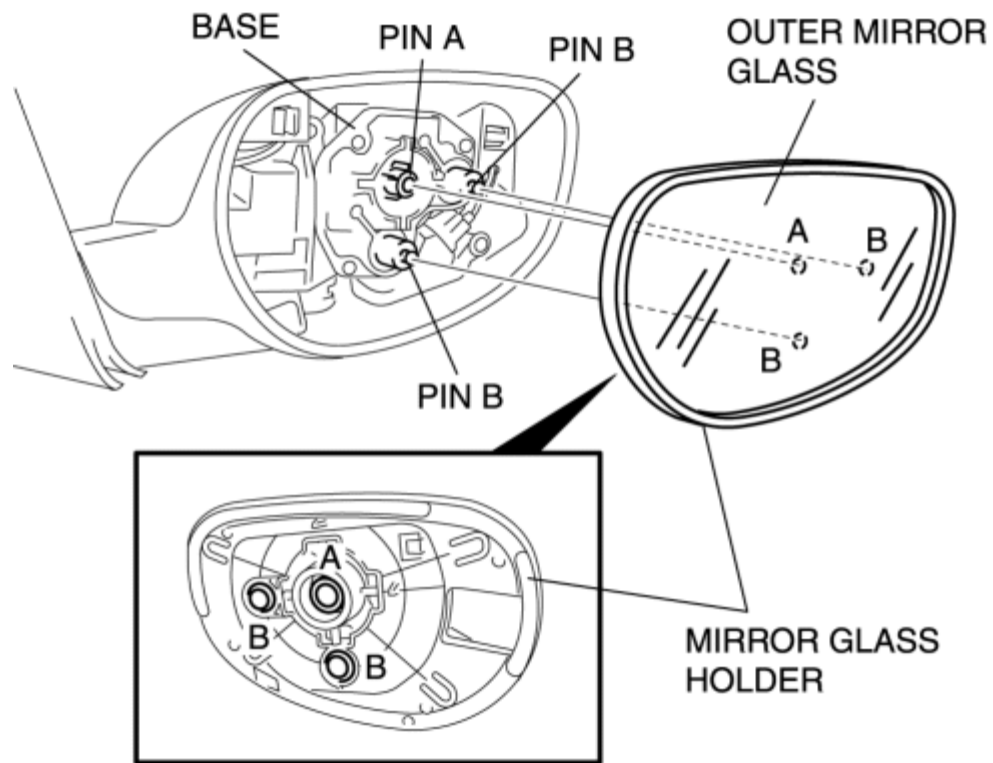


3. Pull out the mirror glass holder and detach pins B.

4. Remove the mirror glass holder and the mirror glass as a single unit.

Outer Mirror Glass Assembly Note

1. Press area A of the mirror glass into the base to attach pin A.



2. Press areas B of the mirror glass into the base to attach pins B.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

POWER WINDOW INITIALIZATION PROCEDURE

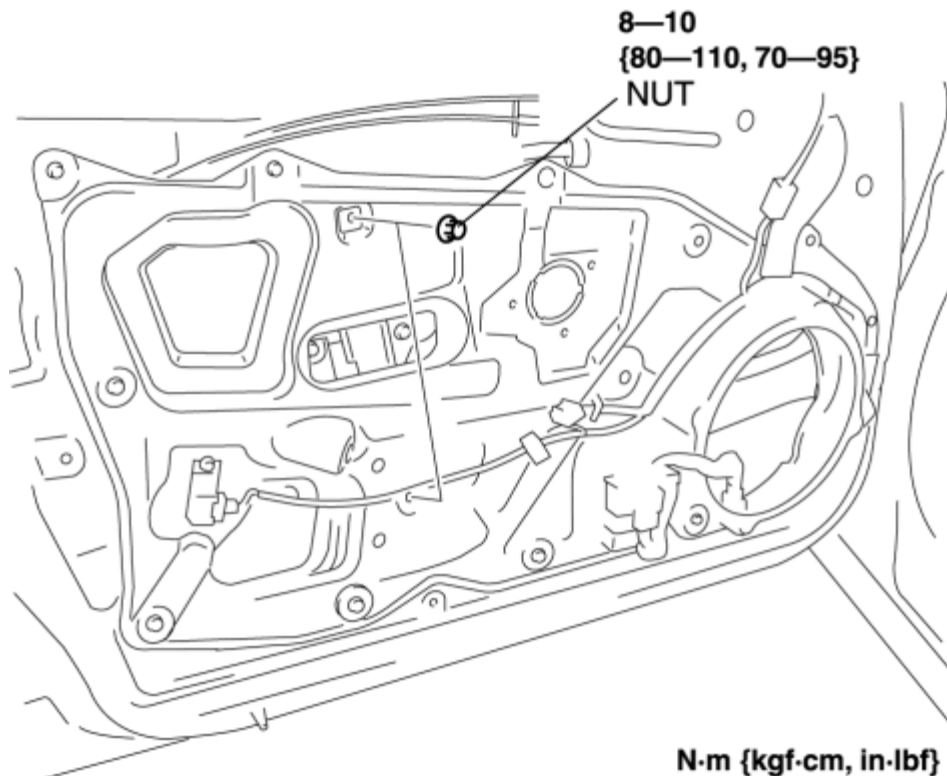
NOTE:

- Initial setting must be performed for the switch of each window drive-side and passenger-side.
 - If the following operations have been performed, initial setting is reset, and auto up/down and two-step down operation are disabled. Therefore, performing initial setting is necessary.
 - Negative battery cable disconnected or power window system power supply fuse removed. (perform initial setting for the switches of all seats.)
 - Power window switch connector disconnected. (Perform initial setting for the switch connected with the connector.)
 - Prolonged open/close operation of the power window main or sub switches causes the circuit breaker to activate and automatic operation is disabled.
1. Turn the ignition switch to the ON position.
 2. Press the switch of each window and fully open the door glass.
 3. Pull the switch of each window to the manual-up position to fully close the door glass, and keep holding the switch up at the position for **approx. 2 s**.

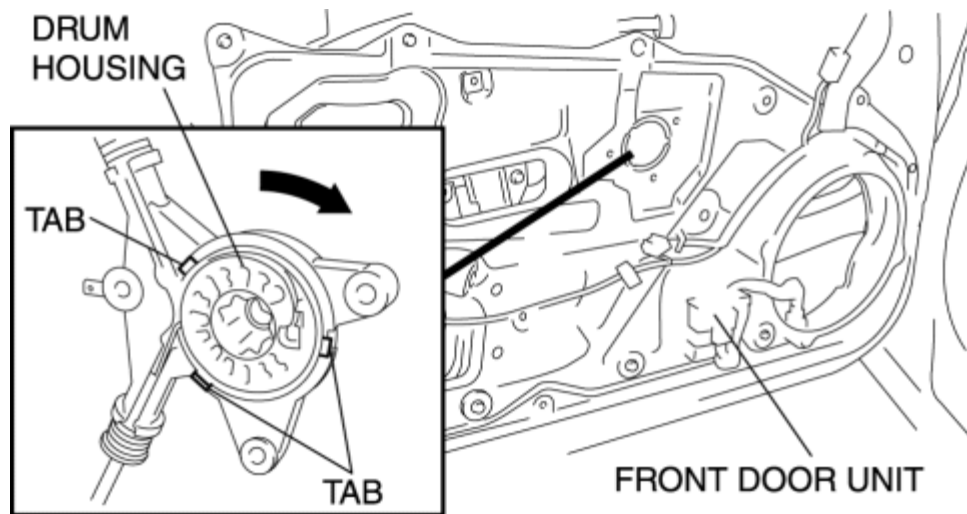
2011 - RX-8 - Body and Accessories

POWER WINDOW REGULATOR REMOVAL/INSTALLATION

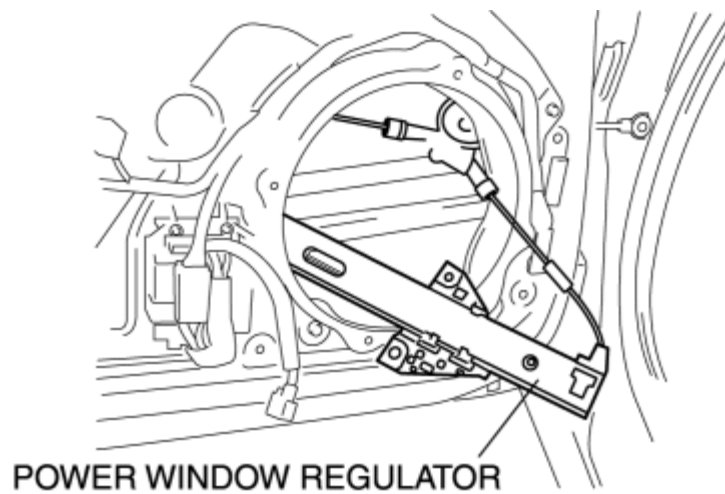
1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Inner garnish (See [INNER GARNISH REMOVAL/INSTALLATION](#).)
 - b. Front door trim (See [FRONT DOOR TRIM REMOVAL/INSTALLATION](#).)
 - c. Front door speaker (See [FRONT DOOR SPEAKER REMOVAL/INSTALLATION](#).)
 - d. Front door glass (See [FRONT DOOR GLASS REMOVAL/INSTALLATION](#).)
 - e. Power window motor (See [POWER WINDOW MOTOR REMOVAL/INSTALLATION](#).)
3. Remove the nuts.



4. Insert hand through the front speaker installation hole, rotate the drum housing in the direction shown in the figure and remove the drum housing from the door unit connection tabs.



5. Remove the power window regulator from the speaker installation hole.



6. Install in the reverse order of removal.

CAUTION:

- Make sure the cable does not unspool from the drum housing when installing.

[< Previous](#) [Next >](#)

[Back to Top](#)

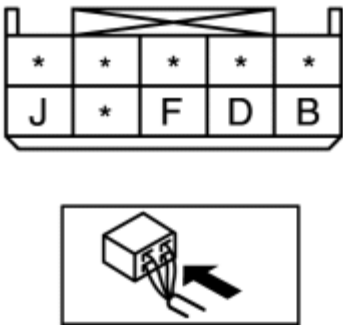
2011 - RX-8 - Body and Accessories

AUTO-DIMMING MIRROR INSPECTION

1. Measure the voltage at each terminal (other than terminal F).
- If the voltage is not as specified in the Terminal Voltage Table (Reference), inspect the parts under "Inspection item(s)" and related wiring harnesses.
2. Disconnect the negative battery cable.
3. Inspect the auto-dimming mirror connector for continuity at terminal F.
4. If the system does not work properly even though the inspection items or related wiring harnesses do not have any malfunction, replace the auto-dimming mirror.

Terminal Voltage Table (Reference)

AUTO-DIMMING MIRROR
HARNESS-SIDE CONNECTOR



Terminal	Signal name	Connected to	Measured condition	Voltage (V)/Continuity	Inspection item(s)
B	Power supply	Ignition switch	Ignition switch at ON	B+	<div>• Related wiring harnesses</div>
			R range	B+	<div>• Back-up light</div>

D	R range signal	Back-up light switch/TR switch	Other than R range	1.0 or less	switch/TR switch <ul style="list-style-type: none"> Related wiring harnesses
F	GND	Body ground	Under any condition: Inspect for continuity to ground.	Continuity detected	<ul style="list-style-type: none"> GND
J	Power supply	ROOM 15 A fuse	Under any condition	B+	<ul style="list-style-type: none"> ROOM 15 A fuse Related wiring harnesses

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

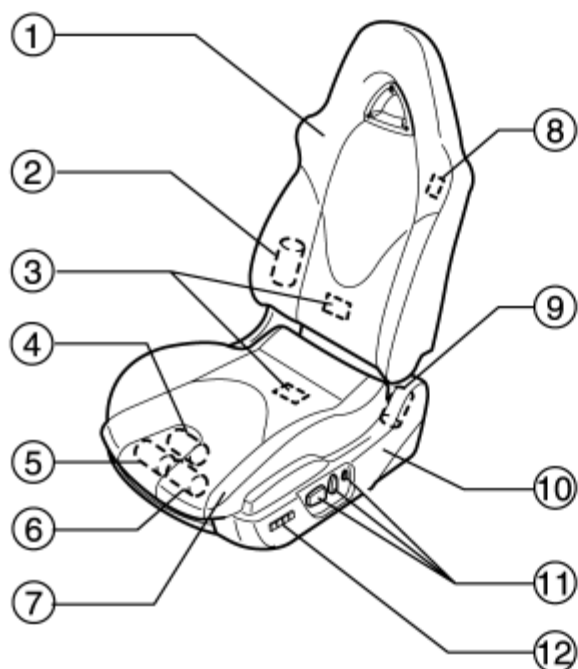
[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

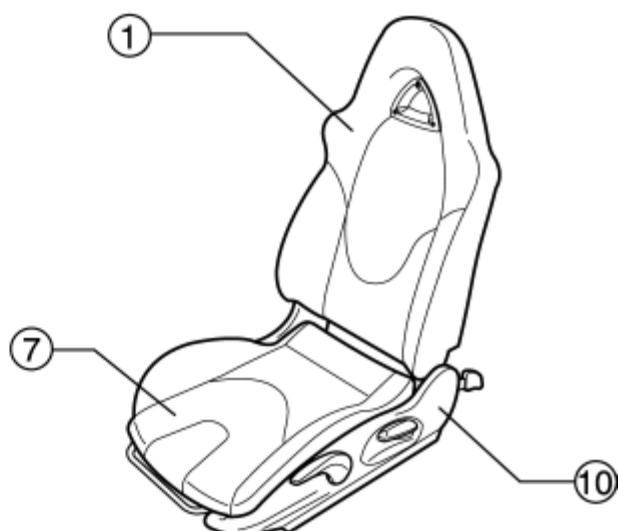
SEATS LOCATION INDEX

FRONT SEAT

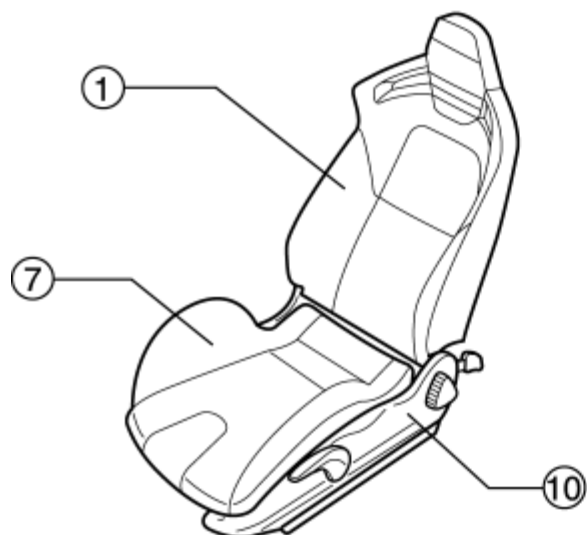
STANDARD TYPE POWER SEAT



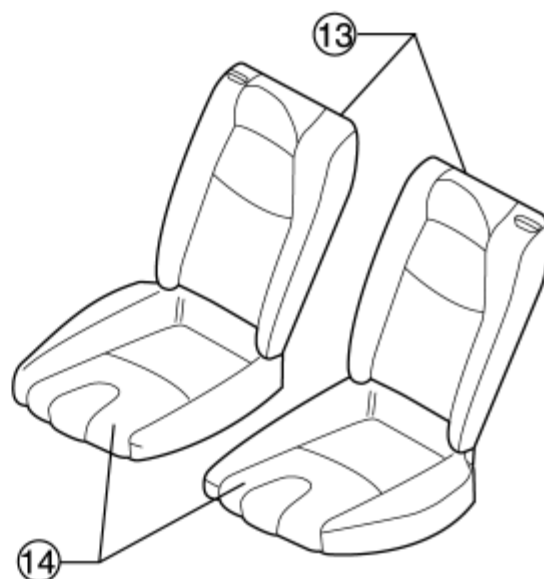
STANDARD TYPE MANUAL SEAT



SPORTS TYPE MANUAL SEAT



REAR SEAT



1

- Front seat
- (See [FRONT SEAT REMOVAL/INSTALLATION.](#))

2	Lumbar support motor (See LUMBAR SUPPORT MOTOR INSPECTION.)
3	Seat warmer unit (See SEAT WARMER UNIT INSPECTION.)
4	Slide motor (See SLIDE MOTOR INSPECTION.)
5	Rear tilt motor (See REAR TILT MOTOR INSPECTION.)
6	Front tilt motor (See FRONT TILT MOTOR INSPECTION.)
7	Front seat cushion trim (See FRONT SEAT CUSHION TRIM REMOVAL/INSTALLATION.)
8	Walk-in switch (See WALK-IN SWITCH REMOVAL/INSTALLATION.) (See WALK-IN SWITCH INSPECTION.)
9	Recliner motor (See RECLINER MOTOR INSPECTION.)
10	Front seat side cover (See FRONT SEAT SIDE COVER REMOVAL/INSTALLATION.)
11	Power seat switch (See POWER SEAT SWITCH INSPECTION.)
12	Position memory control module (See POSITION MEMORY CONTROL MODULE REMOVAL/INSTALLATION.)
13	Rear seat back

	(See REAR SEAT REMOVAL/INSTALLATION.) (See REAR SEAT DISASSEMBLY/ASSEMBLY.)
14Rear seat cushion	(See REAR SEAT REMOVAL/INSTALLATION.) (See REAR SEAT DISASSEMBLY/ASSEMBLY.)

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

FRONT SEAT REMOVAL/INSTALLATION

WARNING:

- Handling a front seat (with built-in side air bag) improperly can accidentally operate (deploy) the air bag, which may seriously injure you. Read the service warnings before handling a front seat (with built-in side air bag). (See [AIR BAG SYSTEM SERVICE WARNINGS](#).)

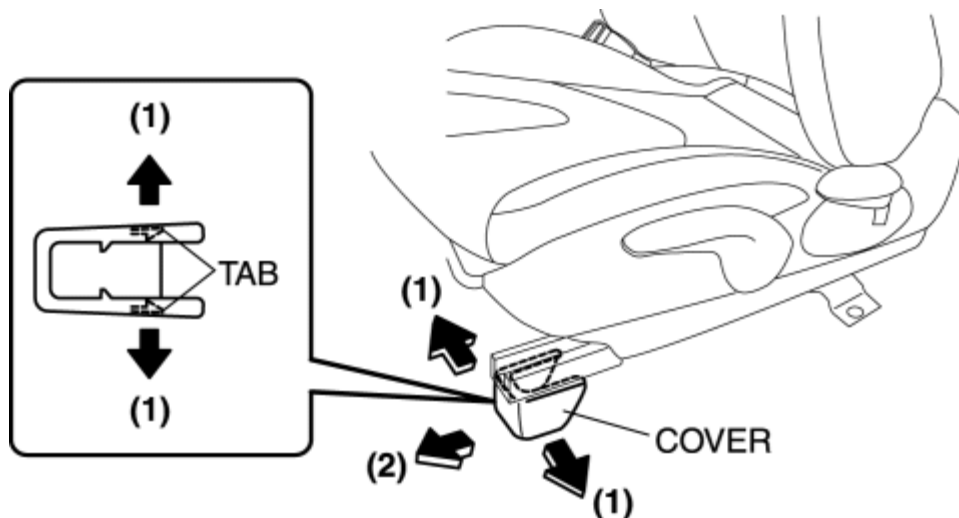
CAUTION:

- After removing a front seat, do not operate the slider lever. If the slider lever is operated, the left and right slide positions will deviate, and the slide adjuster may be damaged after the front seat is installed.
- Verify that there are no malfunctions in the sliding mechanism after installing a front seat.
- When performing the procedure with a front seat removed from the vehicle, perform the procedure on a clean rag so as not to damage or soil the seat.

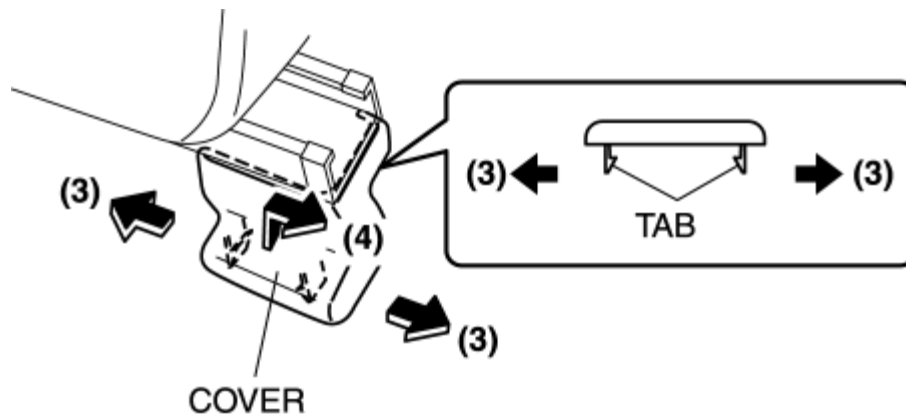
NOTE:

- Reclining the front seat rest forward makes it easier to get the front seat in and out of the vehicle.

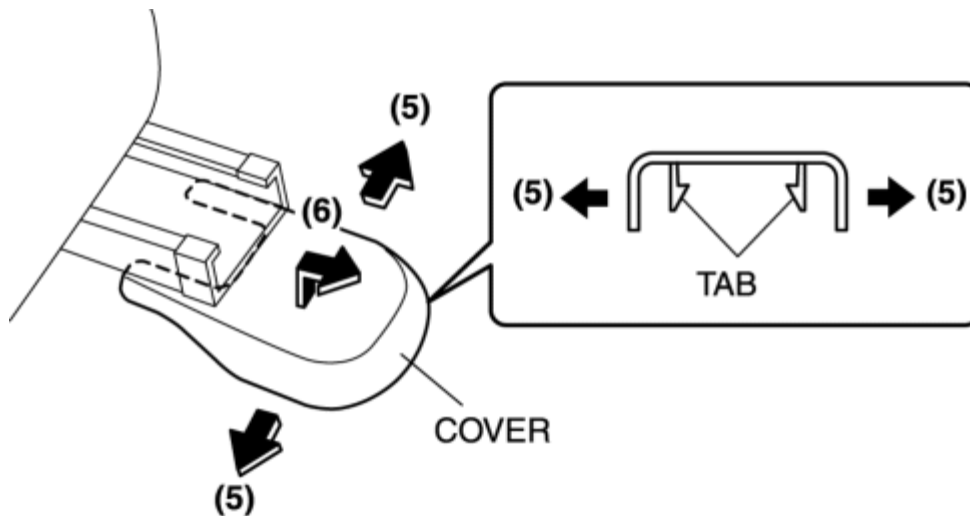
1. Turn the ignition switch to LOCK position.
2. Disconnect the negative battery cable and wait **1 min or more**.
3. Using a fastener remover, widen the cover in the direction of arrow (1) shown in the figure to release the tabs, then raise the cover in the direction of arrow (2).



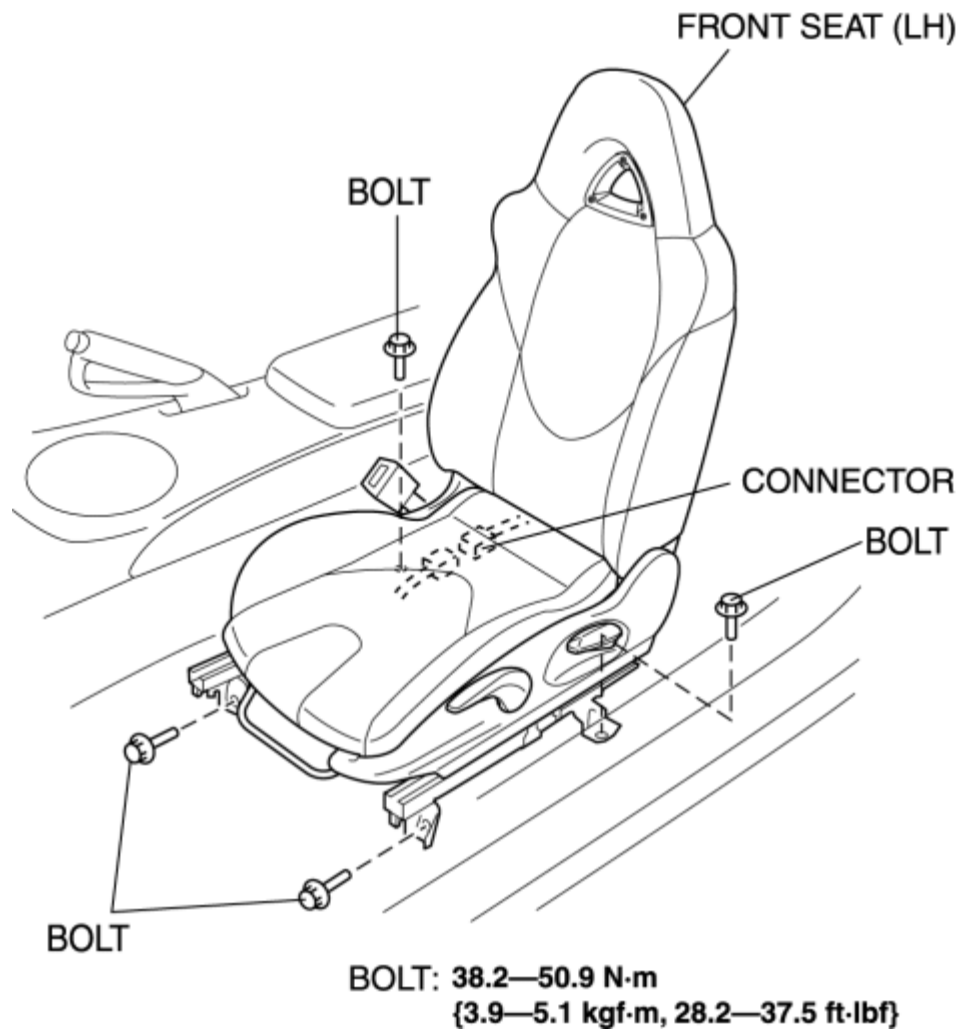
4. Using a fastener remover, widen the cover in the direction of arrow (3) shown in the figure to release the tabs, then pull the cover in the direction of arrow (4).



5. Pull the cover in the direction of arrow (5), widen the cover in the direction of arrow (6) shown in the figure to release the tabs.



6. Disconnect the connector.



7. Remove the bolts, then remove the front seat.

8. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

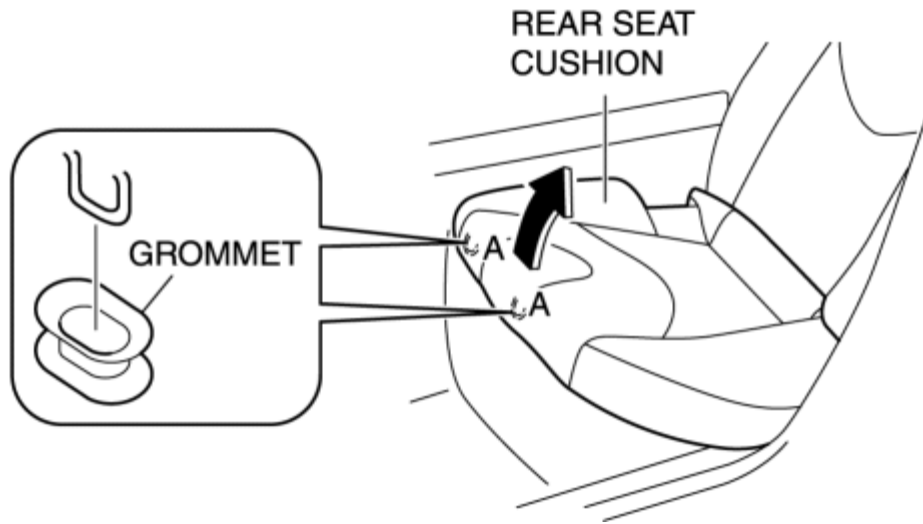
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

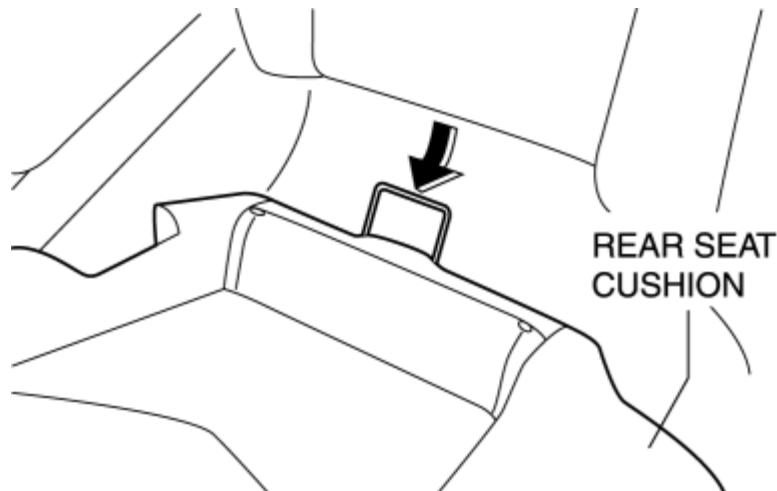
2011 - RX-8 - Body and Accessories

REAR SEAT REMOVAL/INSTALLATION

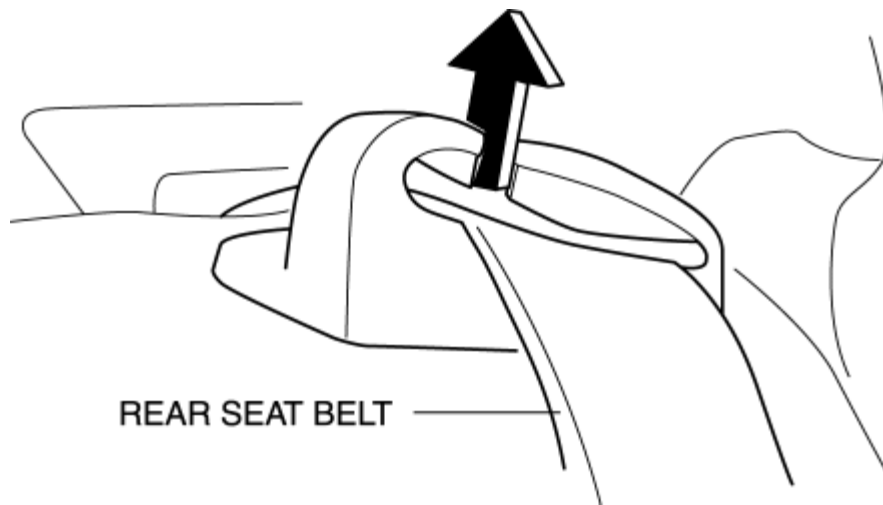
1. Remove the hooks in the A area and lift up the rear seat cushion.



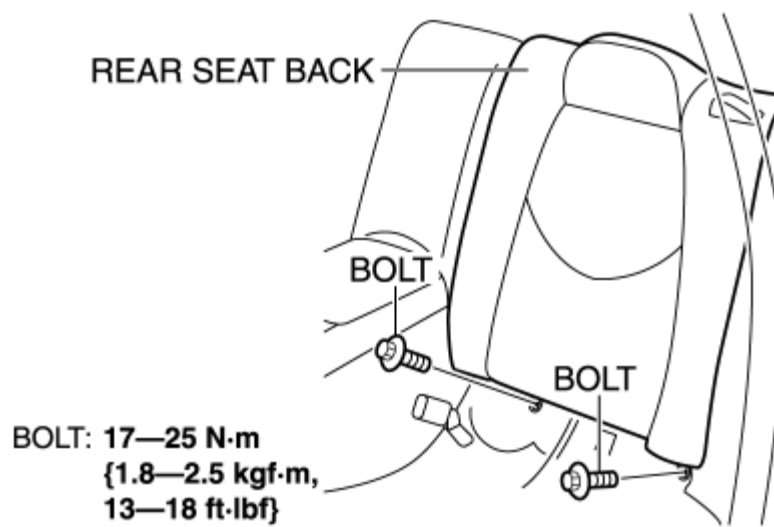
2. Pull out the rear seat cushion from the rear seat back.



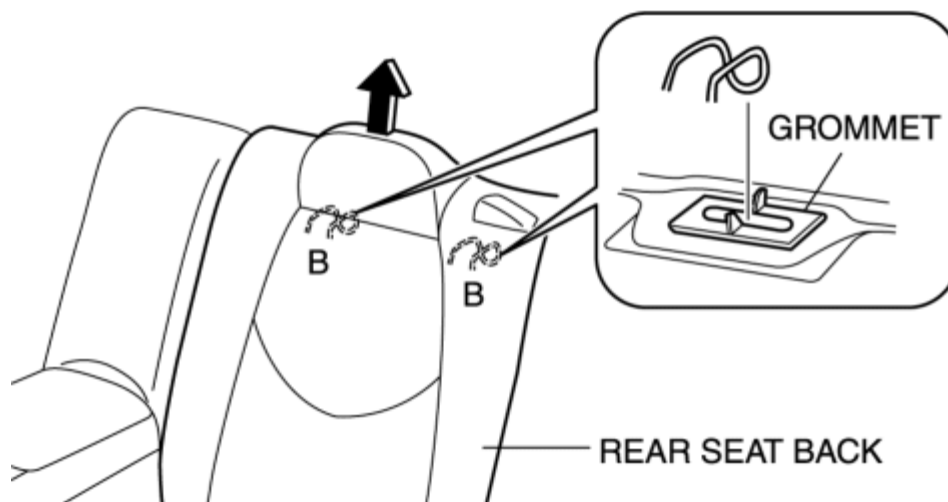
3. Remove the rear seat belt.



4. Remove the bolts.



5. Lift up the rear seat back to remove the hooks in the B area from the grommet.

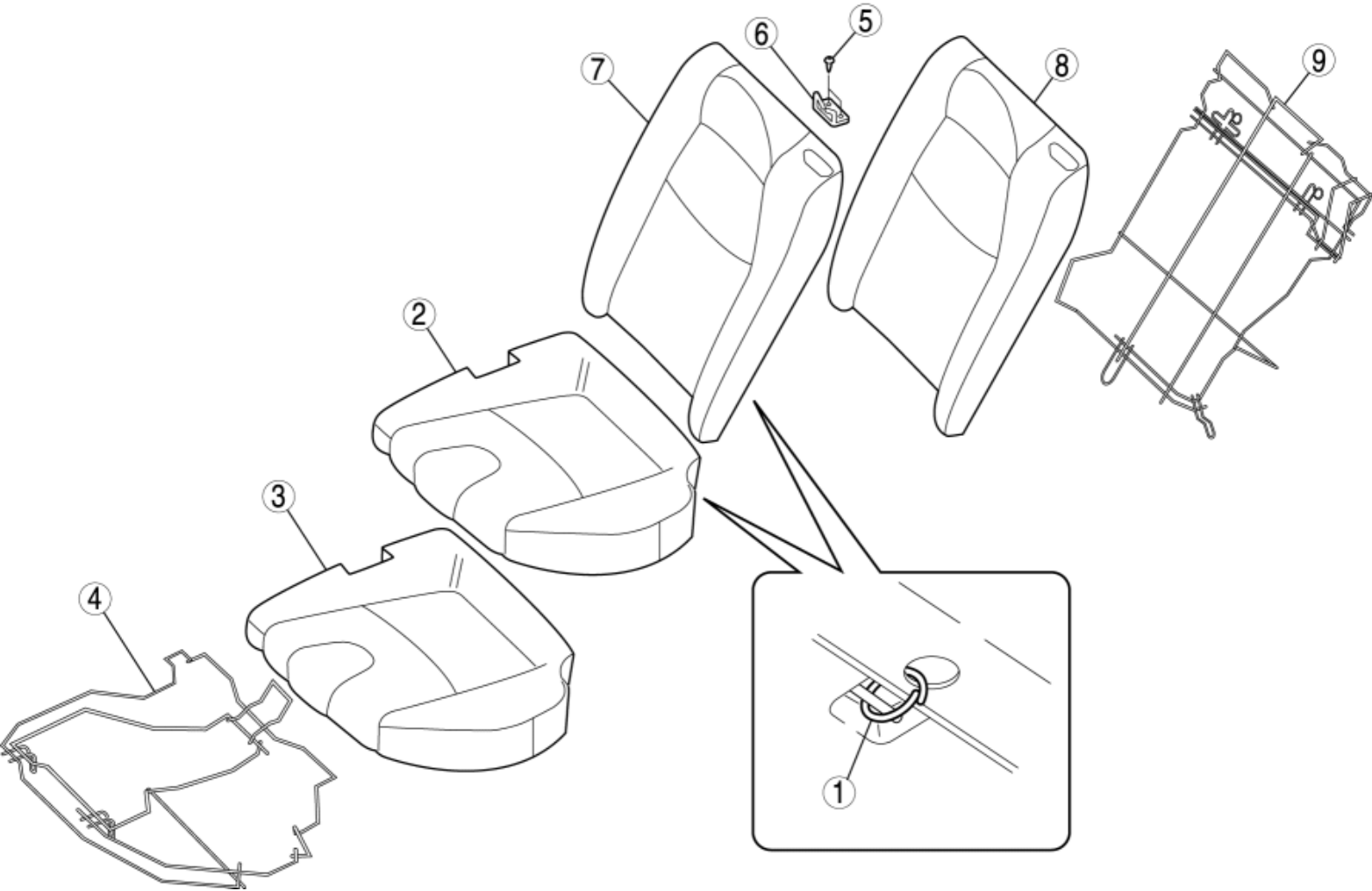


6. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

REAR SEAT DISASSEMBLY/ASSEMBLY

- 1. Disassemble in the order indicated in the table.
- 2. Assemble in the reverse order of disassembly.



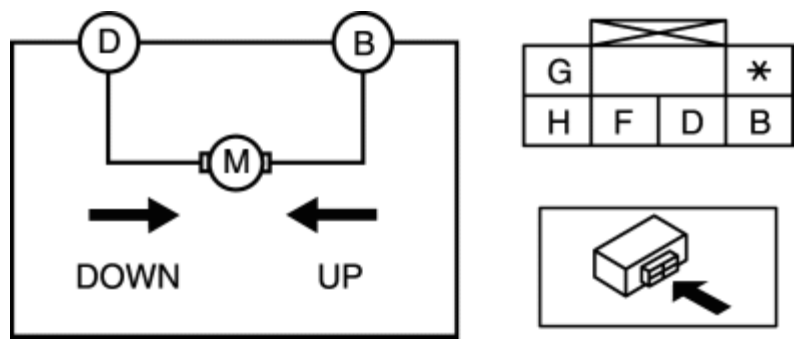
1	Rings C
2	Seat cushion trim
3	Seat cushion pad
4	Seat cushion frame

5	Screw
6	Belt guide
7	Seat back trim
8	Seat back pad
9	Seat back frame

2011 - RX-8 - Body and Accessories

FRONT TILT MOTOR INSPECTION

1. Connect battery positive voltage to front tilt motor terminal B or D, then verify that the front tilt motor operate as shown in the table.



- If the front tilt motor does not operate as indicated in the table, replace the front tilt motor.

Motor operation	Connection	
	B+	GND
Up	B	D
Down	D	B

REAR TILT MOTOR INSPECTION

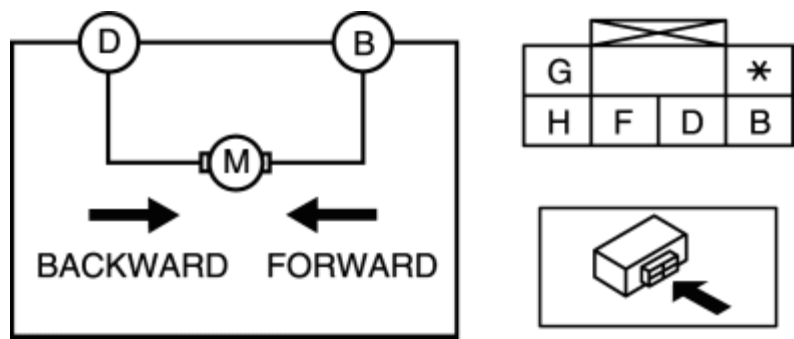
- If the rear tilt motor does not operate as indicated in the table, replace the rear tilt motor.

Motor operation	Connection	
	B+	GND
Up	B	D
Down	D	B

2011 - RX-8 - Body and Accessories

SLIDE MOTOR INSPECTION

1. Connect battery positive voltage to slide motor terminal B or D, then verify that the slide motor operate as shown in the table.



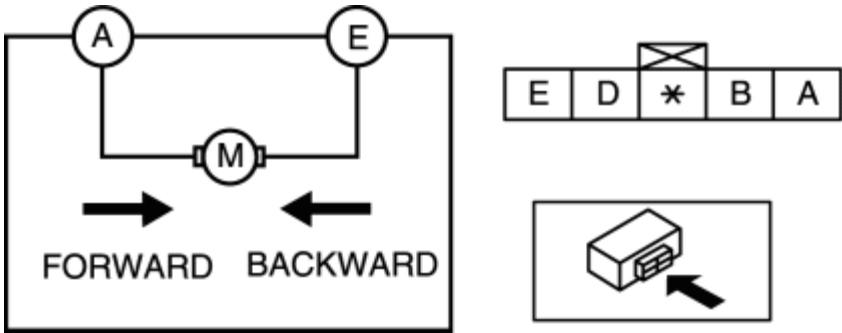
- If the slide motor does not operate as indicated in the table, replace the slide motor.

Motor operation	Connection	
	B+	GND
Forward	B	D
Backward	D	B

2011 - RX-8 - Body and Accessories

RECLINER MOTOR INSPECTION

1. Connect battery positive voltage to recliner motor terminal A or E, then verify that the recliner motor operate as shown in the table.



- If the recliner motor does not operate as indicated in the table, replace the recliner motor.

Motor operation	Connection	
	B+	GND
Forward	A	E
Backward	E	A

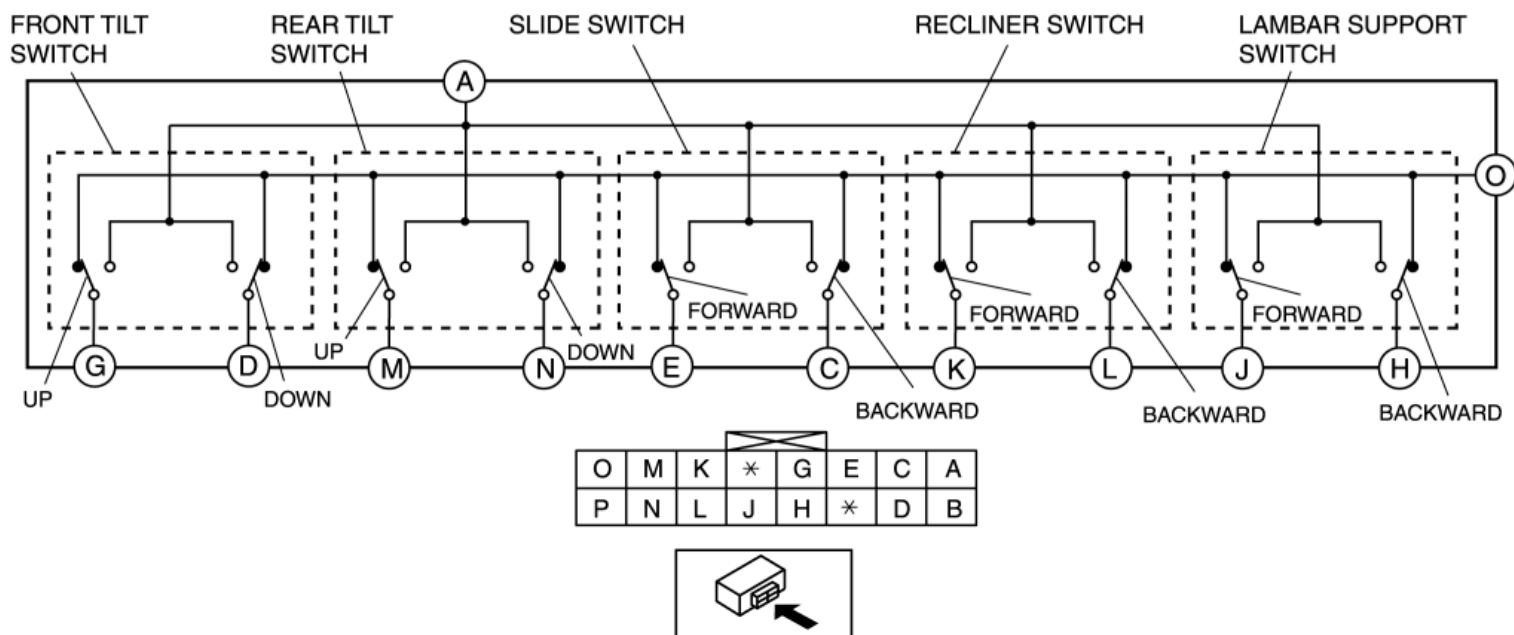
2011 - RX-8 - Body and Accessories

POWER SEAT SWITCH INSPECTION

1. Disconnect the power seat switch connector.
2. Verify that the continuity between the power seat switch terminals is as indicated in the table.
 - If not as indicated in the table, replace the power seat switch.

$\bigcirc - \bigcirc$: Continuity

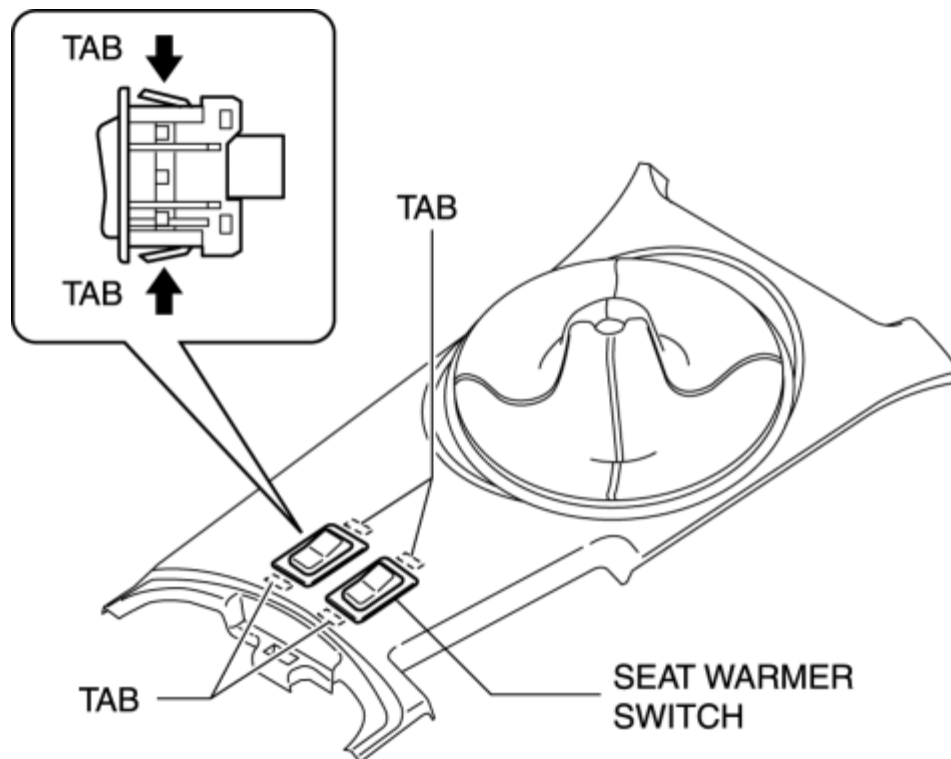
Switch position		Terminal													
		A	B	C	D	E	G	H	J	K	L	M	N	O	P
Front tilt	UP	○			○		○							○	
	OFF				○		○							○	
	DOWN	○			○		○							○	
Rear tilt	UP	○									○		○	○	
	OFF										○	○	○	○	
	DOWN	○										○	○	○	
Slide	FORWARD	○		○		○								○	
	OFF			○		○								○	
	BACKWARD	○		○		○								○	
Recliner	FORWARD	○							○		○			○	
	OFF								○	○				○	
	BACKWARD	○								○				○	
Lambar support	FORWARD	○						○						○	
	OFF							○	○					○	
	BACKWARD	○						○		○				○	



2011 - RX-8 - Body and Accessories

SEAT WARMER SWITCH REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the shift lever knob (MT). (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#).)
3. Remove the rear console. (See [CONSOLE REMOVAL/INSTALLATION](#).)
4. Remove the upper panel. (See [CONSOLE REMOVAL/INSTALLATION](#).)
5. Squeeze the tabs of seat warmer switch and pull it outward to remove it.

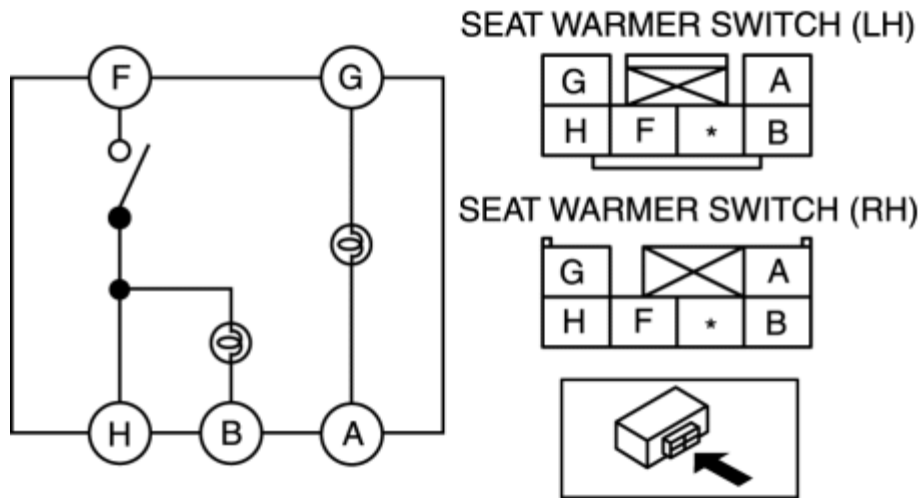


6. Remove the seat warmer switch.
7. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

SEAT WARMER SWITCH INSPECTION

1. Verify that the continuity between the seat warmer switch terminals is as indicated in the table.



- If not as indicated in the table, replace the seat warmer switch.

○—○ : Bulb ○—○ : Continuity

Switch position	Terminal				
	A	B	F	G	H
ON		○—○	○—○	○—○	○
OFF	○—○	○—○	○—○	○—○	

2. Connect the battery terminal to the G terminal of the seat heater switch and connect the ground (earth terminal) to the A terminal. Then make sure the indicators illuminate normally.

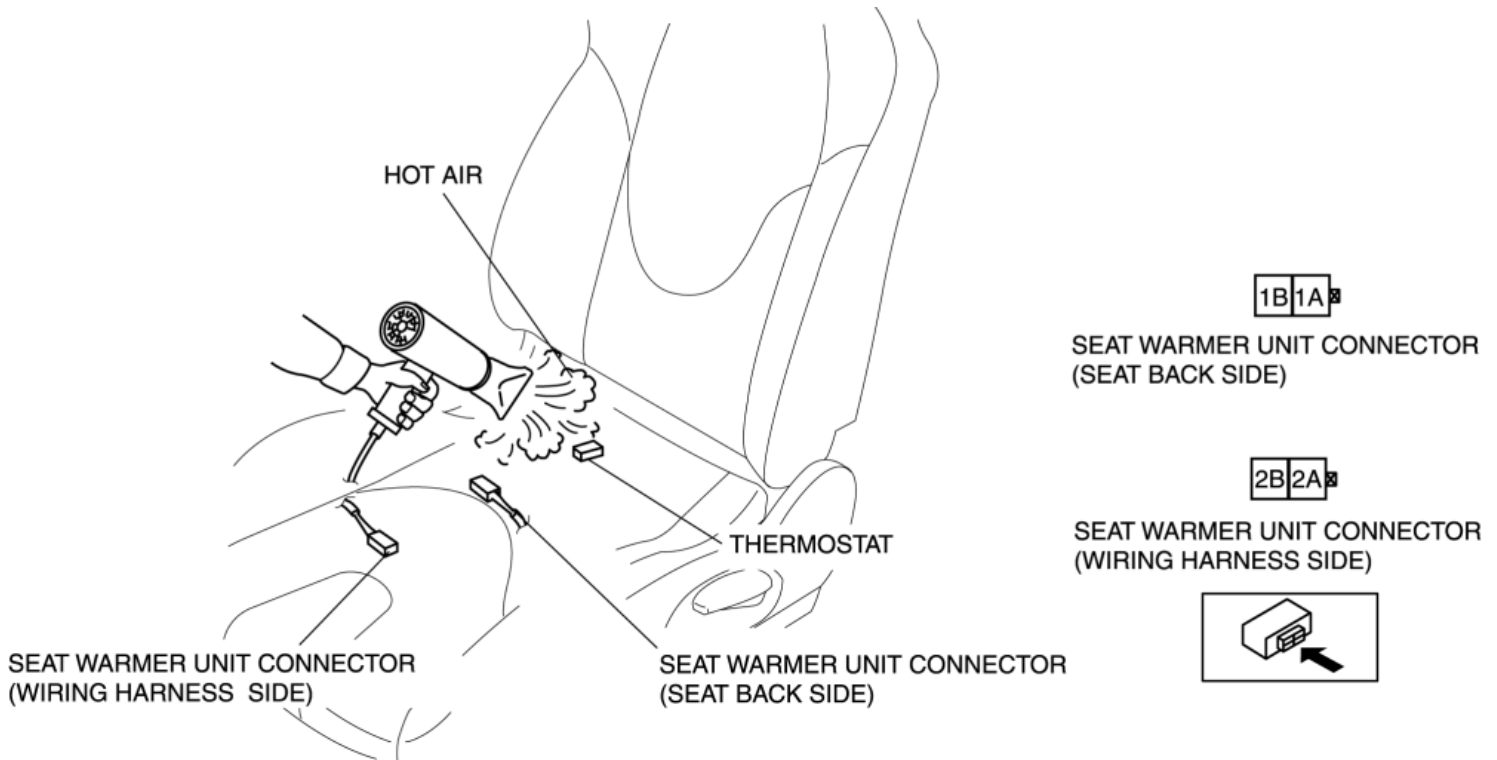
- If malfunction, replace the seat warmer switch.

2011 - RX-8 - Body and Accessories

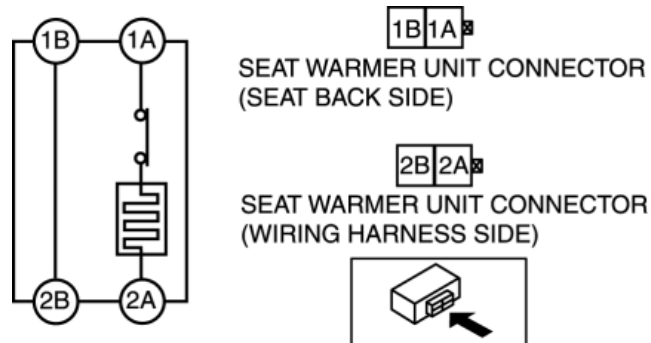
SEAT WARMER UNIT INSPECTION

Seat Cushion

1. Remove the front seat. (See [FRONT SEAT REMOVAL/INSTALLATION](#).)
2. Remove the front seat side cover. (See [FRONT SEAT SIDE COVER REMOVAL/INSTALLATION](#).)
3. Remove the seat cushion trim. (See [FRONT SEAT CUSHION TRIM REMOVAL/INSTALLATION](#).)
4. Verify that the continuity between the seat warmer unit connector terminals on the wiring harness and seat back is as indicated in the table while warming the thermostat for the seat warmer unit on the upper part of the seat cushion using a hot air blower.



5. Measure the temperature of the thermostat by using a thermometer.

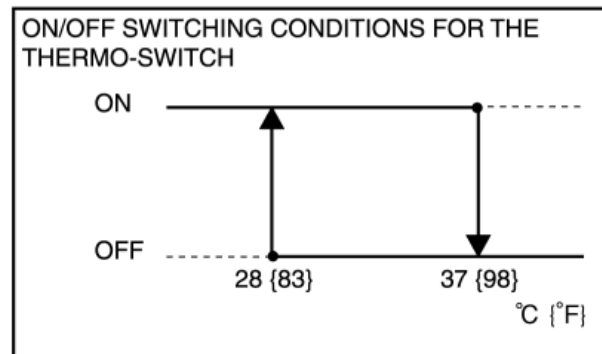


- Replace the seat heater unit if conduction cannot be confirmed as indicated by the diagram. (See [FRONT SEAT CUSHION TRIM REMOVAL/INSTALLATION](#).)

○—○ : Continuity

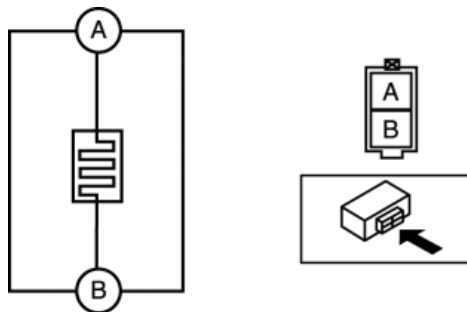
Test condition	Terminal			
	1A	1B	2A	2B
*THERMO-SWITCH ON	○	—	○	
*THERMO-SWITCH OFF				
UNDER ANY CONDITION		○	—	○

*THE THERMO-SWITCH SWITCHES ON/OFF ACCORDING TO THE SURROUNDING TEMPAERATURE. ON/OFF SWITCHING CONDITIONS FOR THE THERMO-SWITCH ARE AS SHOWN IN THE FOLLOWING FIGURE.



Seat Back

1. Remove the front seat. (See [FRONT SEAT REMOVAL/INSTALLATION](#).)
2. Remove the seat back trim. (See [FRONT SEAT BACK TRIM REMOVAL/INSTALLATION](#).)
3. Verify that the continuity between terminals A and B is as indicated in the table.



- If not as indicated in the table, replace the seat back pad.

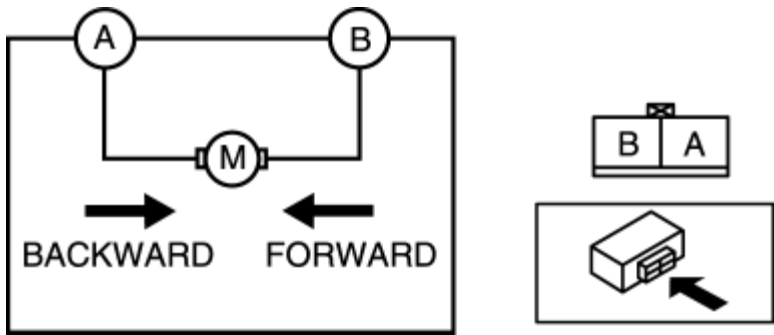
○—○ : Continuity

Test condition	Terminal	
	A	B
Under any condition	○	—○

2011 - RX-8 - Body and Accessories

LUMBAR SUPPORT MOTOR INSPECTION

1. Connect battery positive voltage to lumbar support motor terminal A or B, then verify that the lumbar support motor operate as shown in the table.



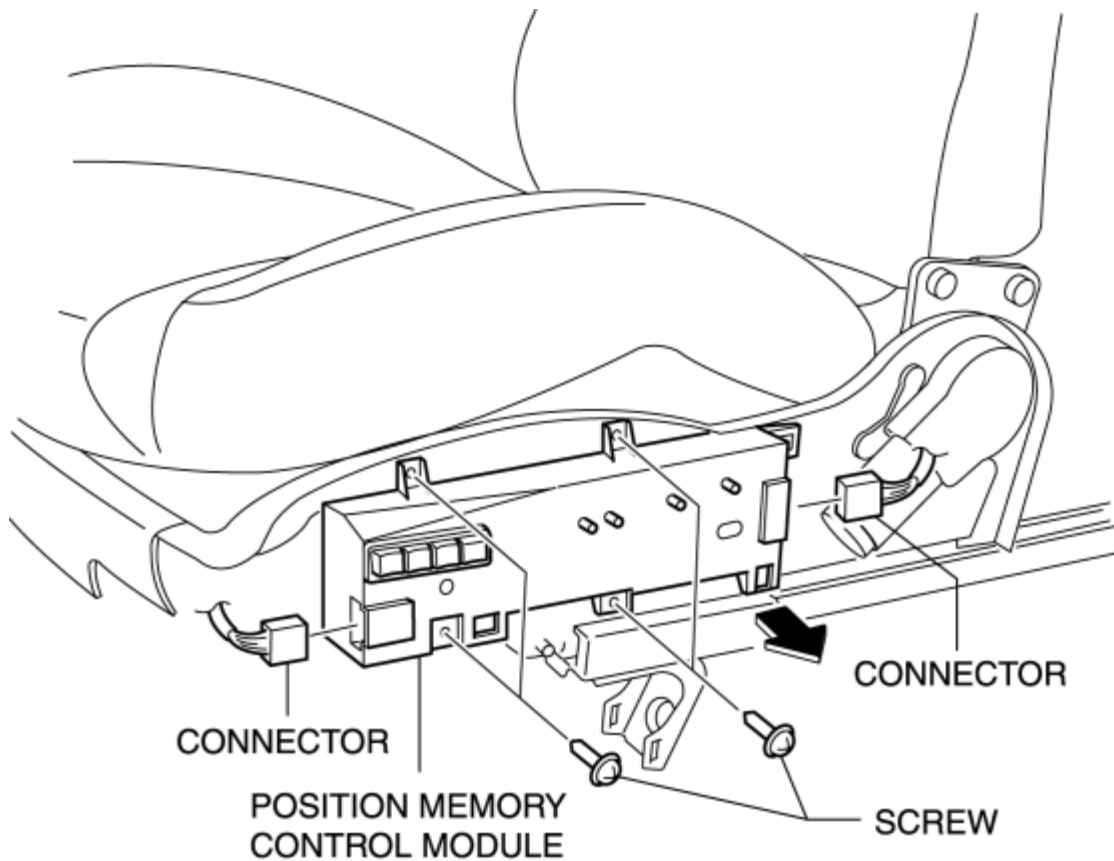
- If the lumbar support motor does not operate as indicated in the table, replace the lumbar support motor.

Motor operation	Connection	
	B+	GND
Forward	B	A
Backward	A	B

2011 - RX-8 - Body and Accessories

POSITION MEMORY CONTROL MODULE REMOVAL/INSTALLATION

1. Operate the power seat switch and move the seat cushion forward and upward.
2. Turn the ignition switch to the LOCK position.
3. Disconnect the negative battery cable and wait **1 min or more**.
4. Remove the driver-side front seat. (See [FRONT SEAT REMOVAL/INSTALLATION](#).)
5. Remove the connector.

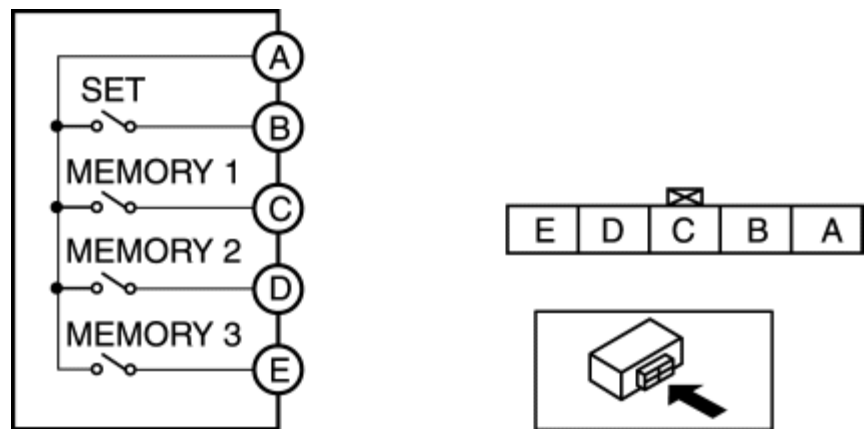


6. Remove the screw.
7. Remove the position memory control module.
8. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

POSITION MEMORY SWITCH INSPECTION

- 1. Disconnect the position memory switch connector.
- 2. Inspect for continuity between the position memory switch connector terminals.



- If not as specified, replace the position memory switch.

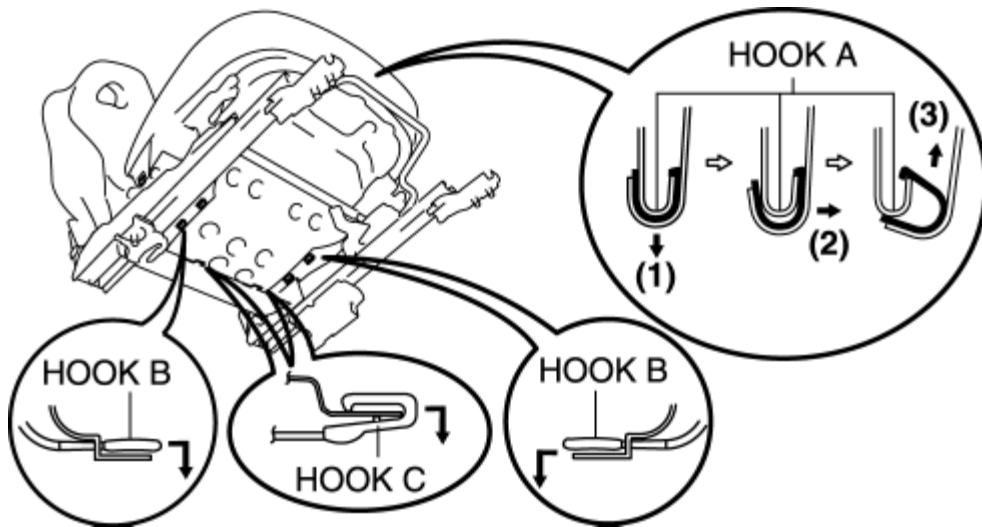
○ — ○ : Continuity

Switch position	Terminal				
	A	B	C	D	E
Set switch on	○ — ○				
Memory switch 1 on	○ — ○				
Memory switch 2 on	○ — ○				
Memory switch 3 on	○ — ○				
Off					

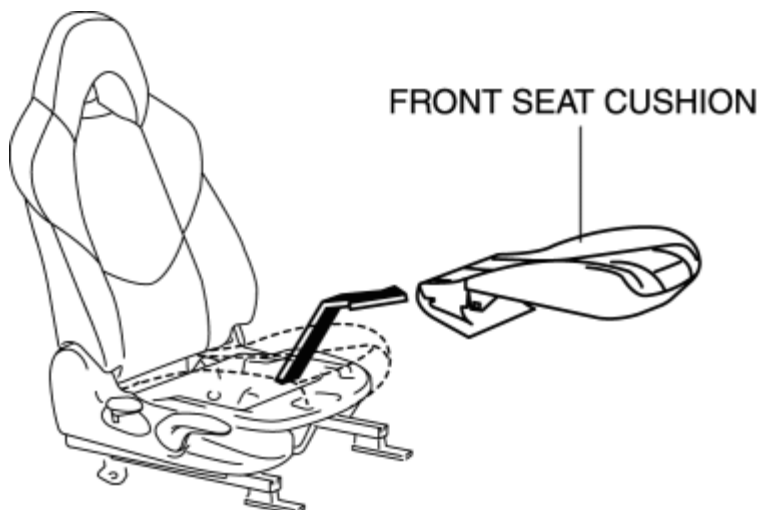
2011 - RX-8 - Body and Accessories

FRONT SEAT CUSHION TRIM REMOVAL/INSTALLATION

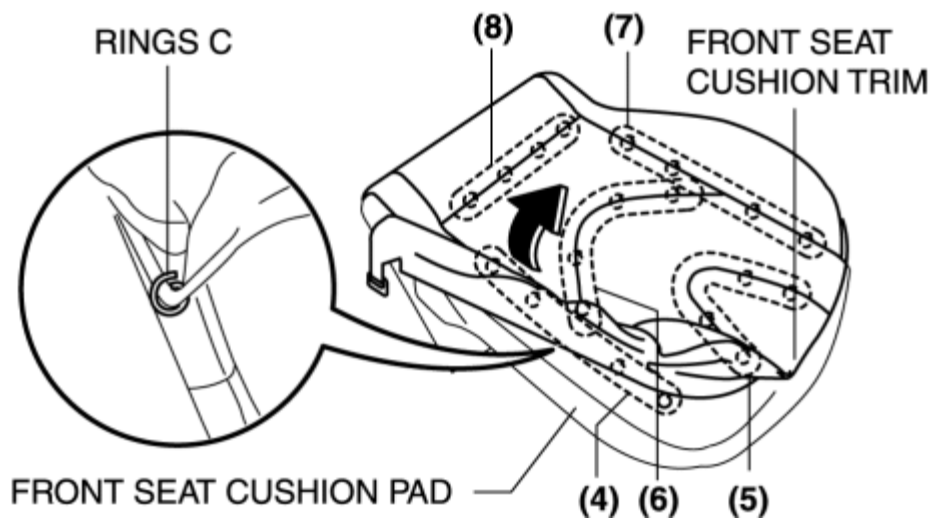
1. Turn the ignition switch to LOCK position.
2. Disconnect the negative battery cable and wait **1 min or more**.
3. Remove the front seat. (See [FRONT SEAT REMOVAL/INSTALLATION](#).)
4. Remove the side cover. (See [FRONT SEAT SIDE COVER REMOVAL/INSTALLATION](#).)
5. Detach hook A by sliding it in the order of (1), (2), and (3) as shown in the figure.



6. Detach hook B and C in the direction of the arrow shown in the figure.
7. Remove the seat cushion trim and the seat cushion pad from the seat frame as a single unit.



8. Remove rings C in the order of (4), (5), (6), (7) and (8) as shown in the figure, then remove the seat cushion trim from the seat cushion pad in the direction of the arrow shown in the figure.



9. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

FRONT SEAT BACK TRIM REMOVAL/INSTALLATION

WARNING:

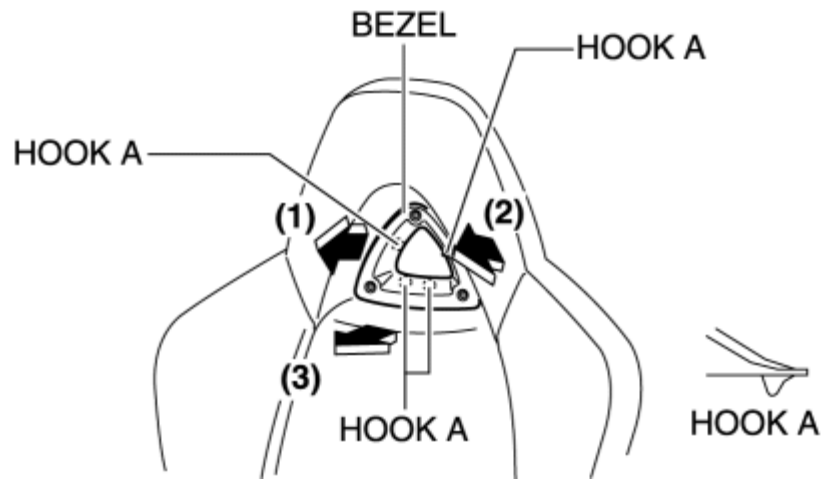
- Handling a front seat improperly can accidentally operate (deploy) the air bag, which may seriously injure you. Read the service warnings before handling a front seat. (See [AIR BAG SYSTEM SERVICE WARNINGS](#).)

CAUTION:

- After removing a front seat, do not operate the slider lever. If the slider lever is operated, the left and right slide positions will deviate, and the slide adjuster may be damaged after the front seat is installed.
- Verify that there are no malfunctions in the sliding mechanism after installing a front seat.
- When performing the procedure with a front seat removed from the vehicle, perform the procedure on a clean rag so as not to damage or soil the seat.

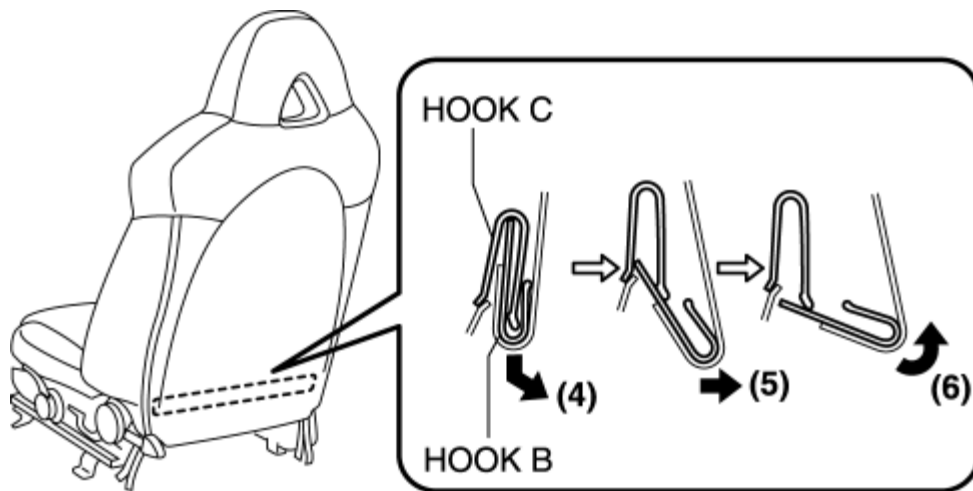
Removal

1. Turn the ignition switch to LOCK position.
2. Disconnect the negative battery cable and wait **1 min or more**.
3. Remove the front seat. (See [FRONT SEAT REMOVAL/INSTALLATION](#).)
4. Remove the walk-in switch. (Vehicles with power seat) (See [WALK-IN SWITCH REMOVAL/INSTALLATION](#).)
5. Pull the bezel in the order of (1), (2), (3) shown in the figure to remove the hooks A.

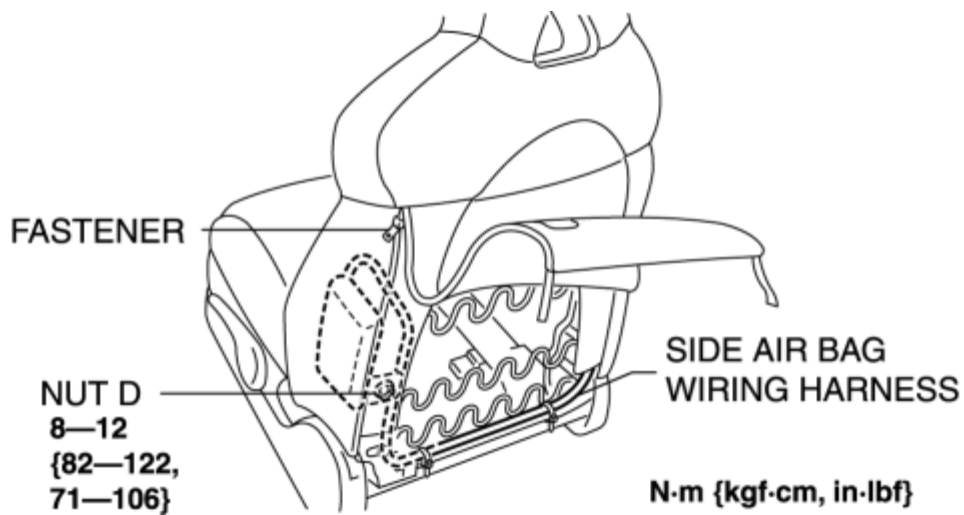


6. Remove the bezel.

7. Slide hook B in the order of (4), (5), (6) shown in the figure to detach it from hook C.

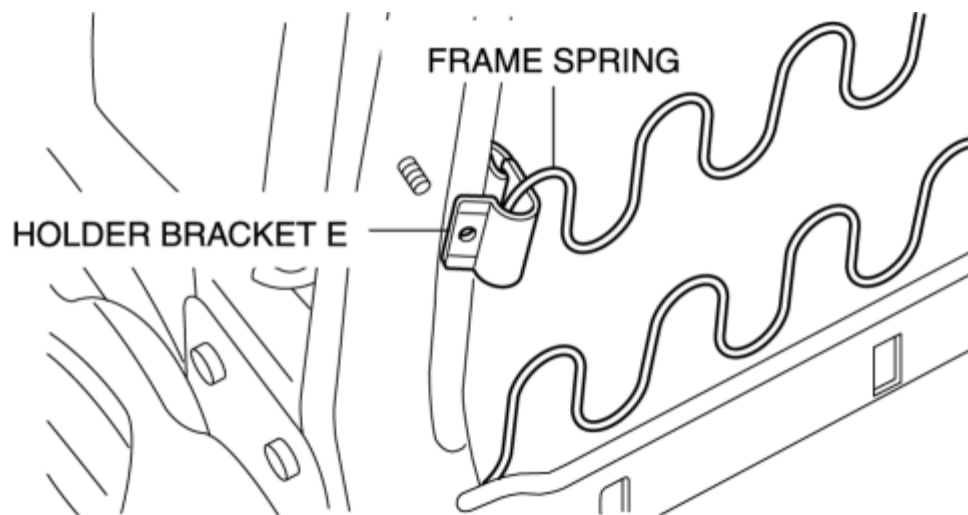


8. Open the fastener.

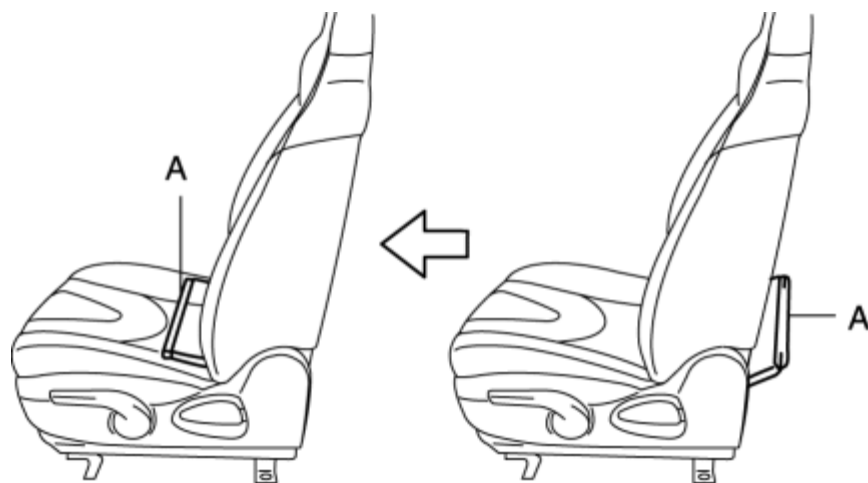


9. Remove the nut D.

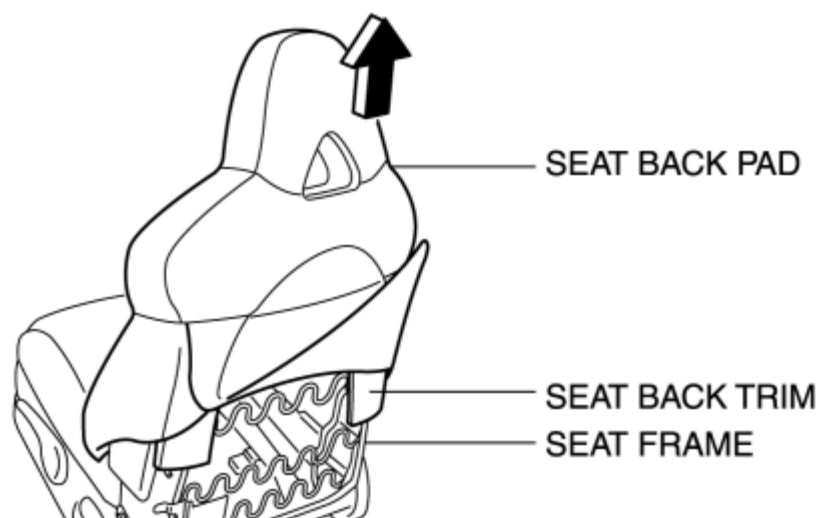
10. Press in the holder bracket E to the seat back pad being careful not to catch the frame spring.



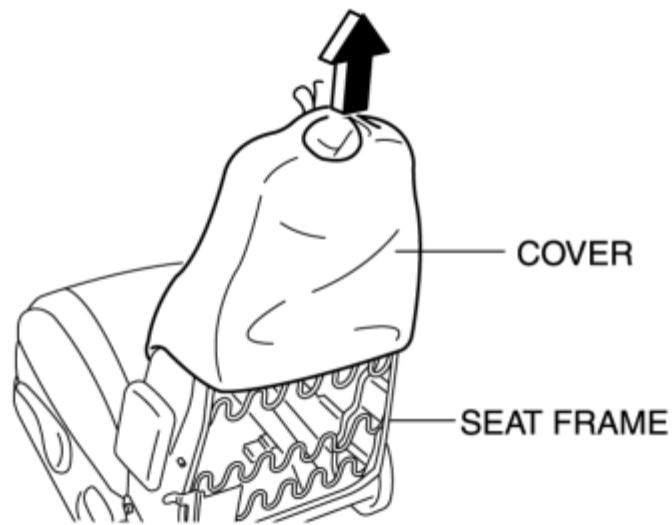
11. Pull out part A shown in the figure to the front.



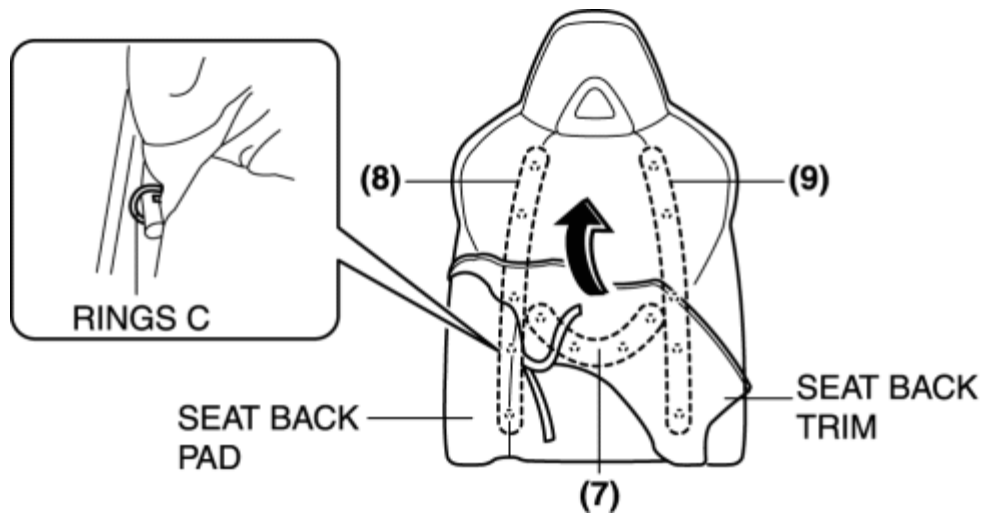
12. Remove the seat back trim and the seat back pad as a single unit from the seat frame by pulling them in the direction of the arrow.



13. Remove the cover.

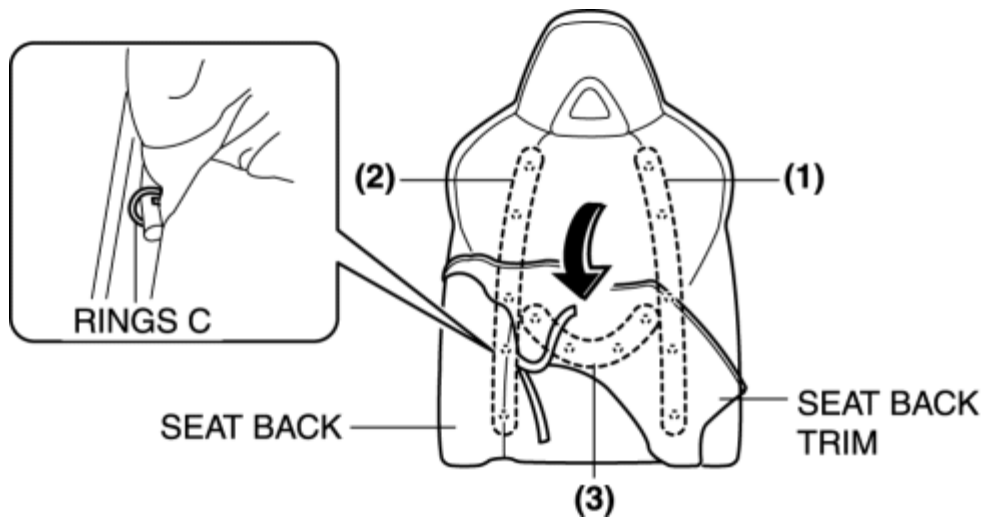


14. Partially peel back the seat back trim from the seat back pad, remove rings C in the order of (7), (8), (9) shown in the figure, then remove the seat back trim.

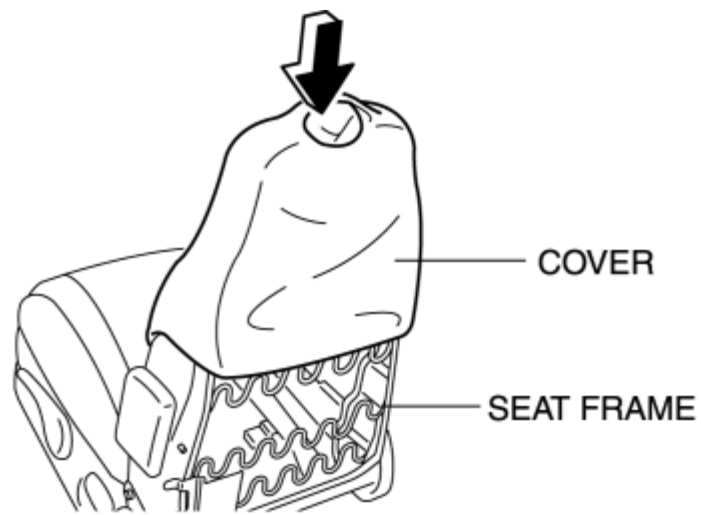


Installation

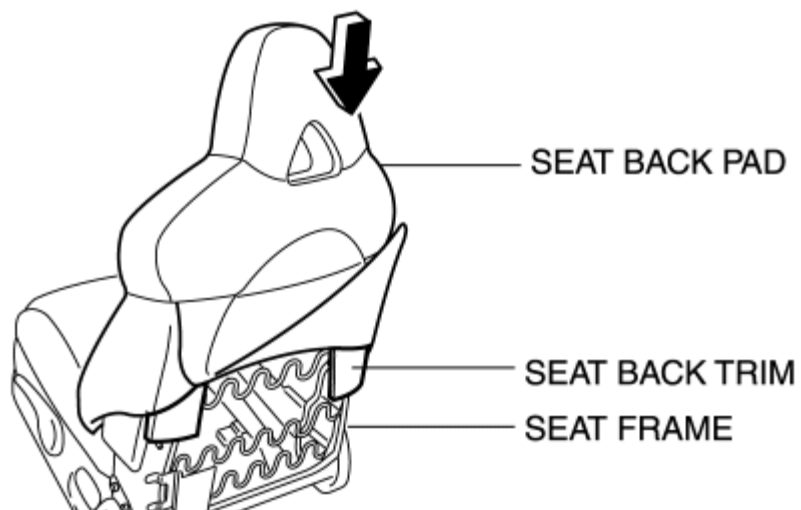
1. Install the seat back trim to the front seat back pad, install the rings C in the order of (1), (2), (3) shown in the figure, then install the seat back trim.



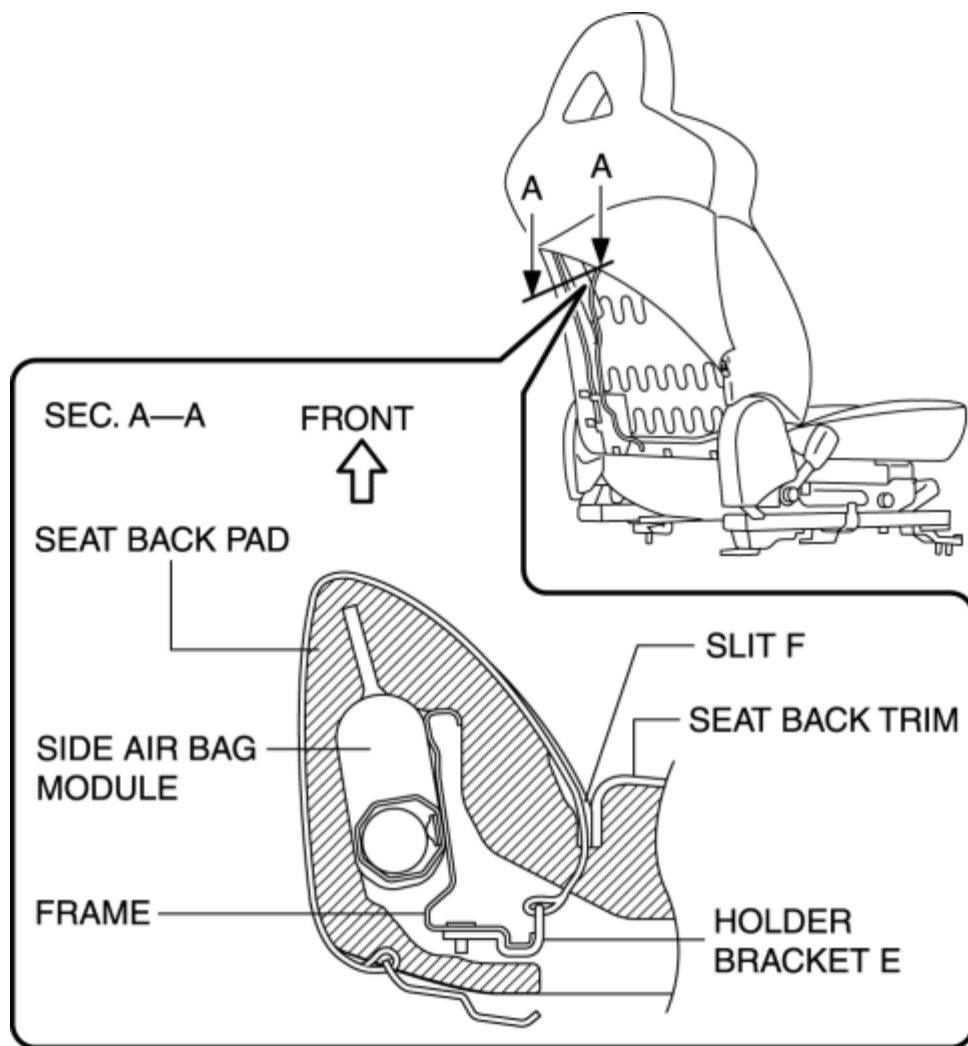
2. Install the cover.



3. Install the seat back trim and the seat back pad as a single unit from the seat frame by pushing them in the direction of the arrow.

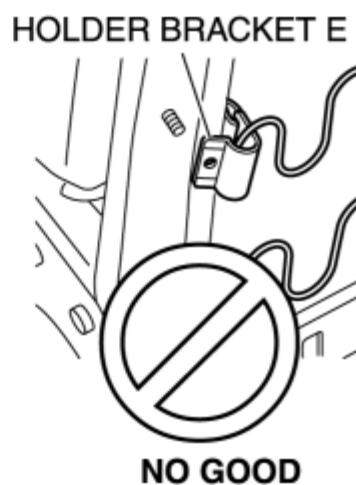
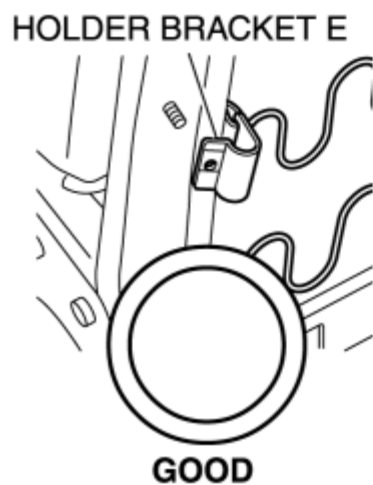


4. Pass holder bracket E through slit F of the seat back pad.

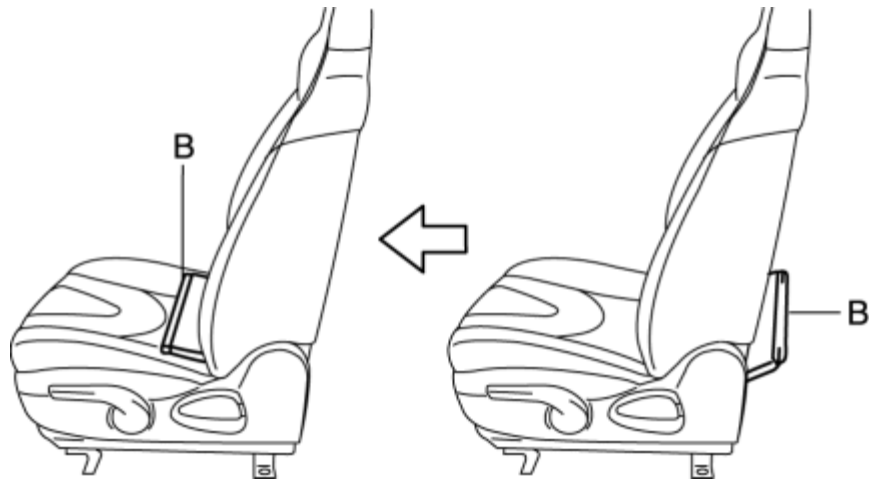


CAUTION:

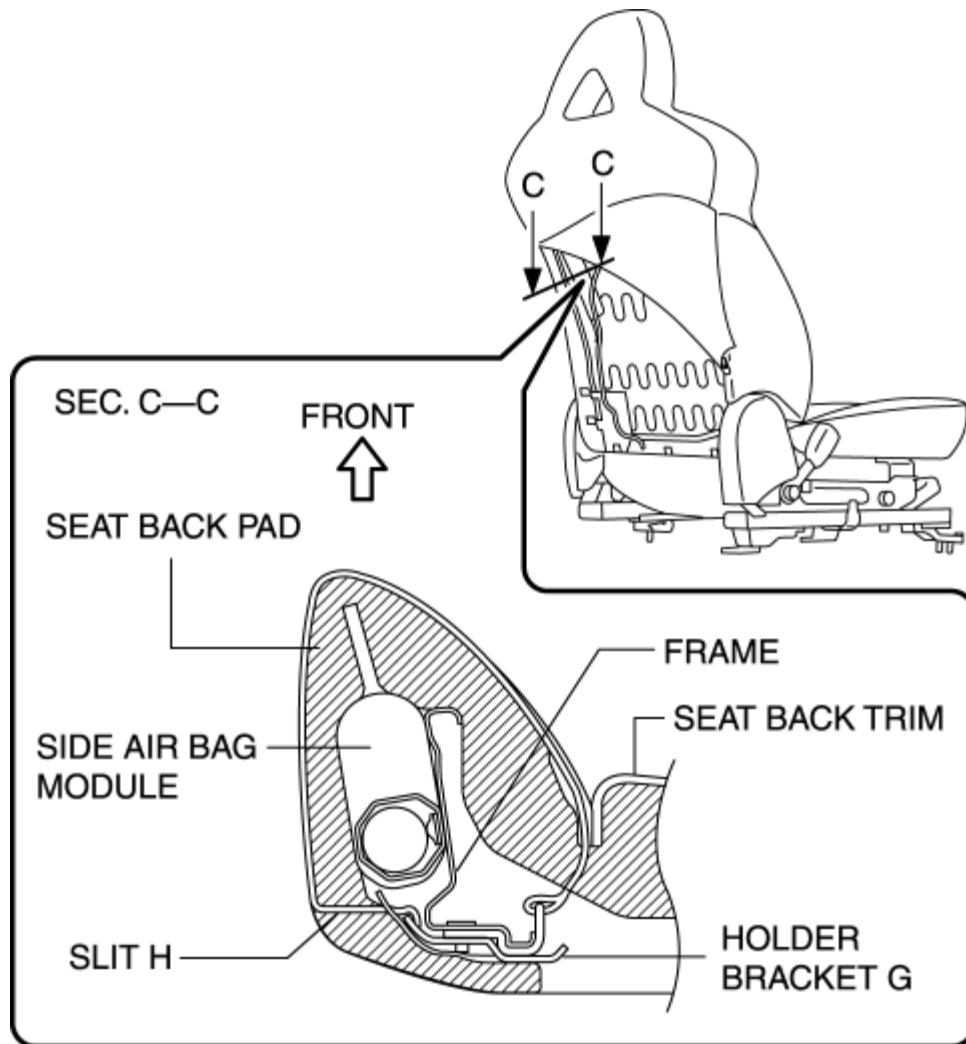
- Set the holder bracket E with the sleeve not caught in the seat frame spring.



5. Push the part B shown in the figure to the rear.



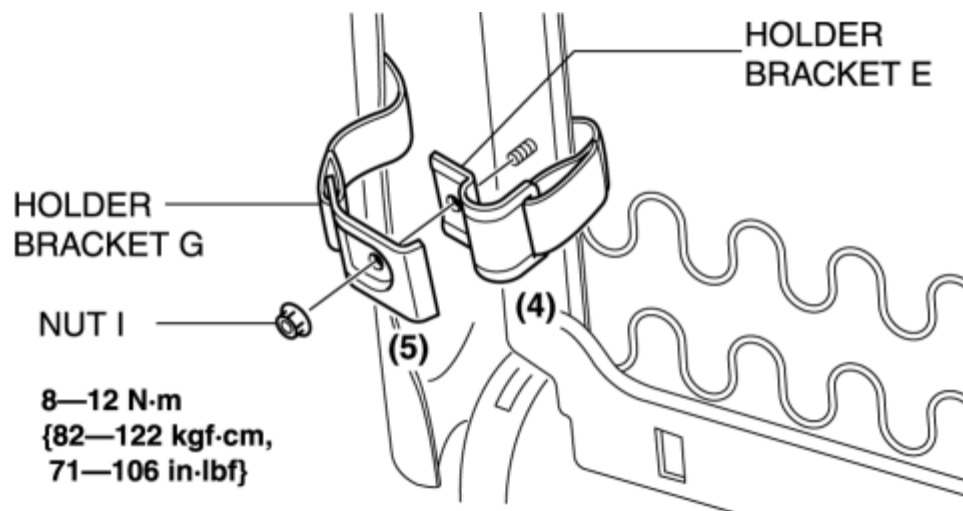
6. Pass holder bracket G through slit H of the seat back pad.



CAUTION:

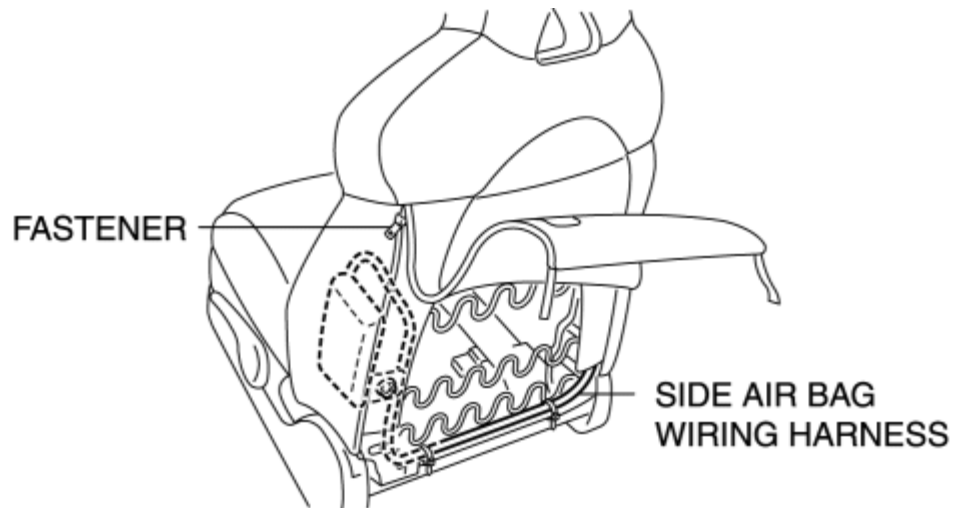
- Install it without twisting the sleeve.

7. Assemble the holder bracket E, G to the frame in the order of (4), (5) shown in the figure.

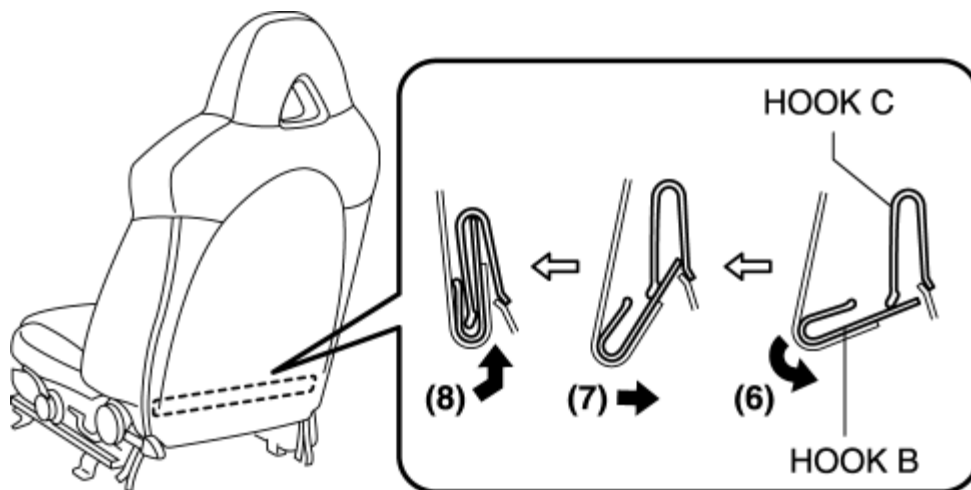


8. Install the nut I.

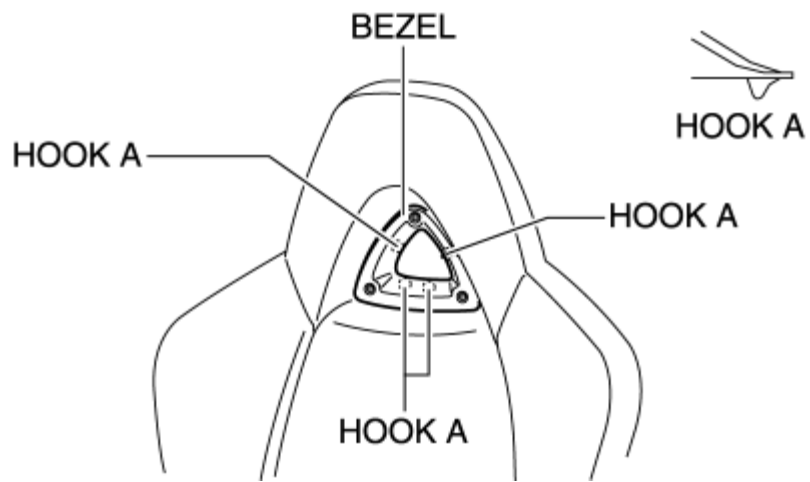
9. Shut the fastener.



10. Slide hook B in the order of (6), (7), (8) shown in the figure to install it to hook C



11. Push the bezel and install the hooks A.



12. Install the bezel.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

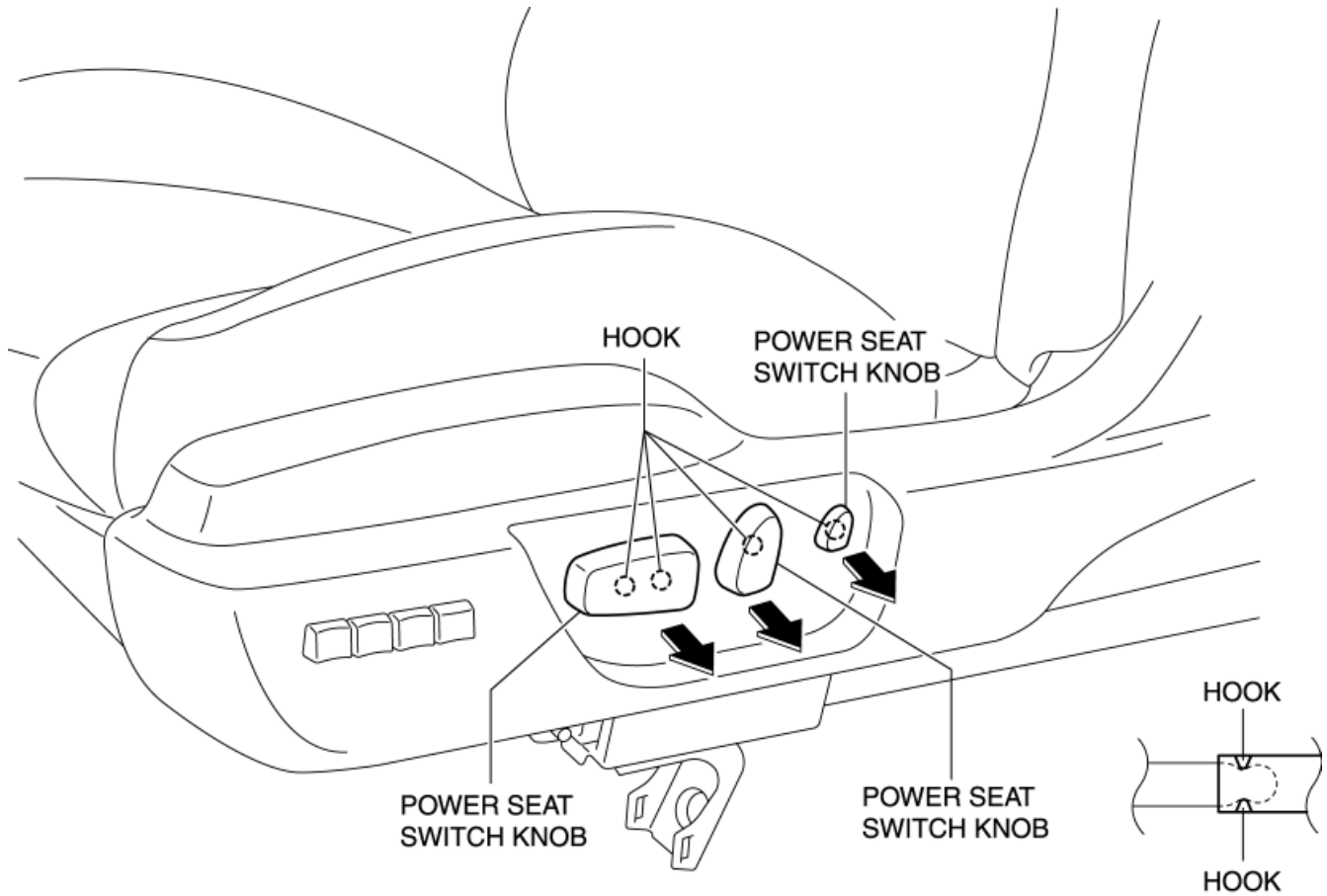
[Back to Top](#)

2011 - RX-8 - Body and Accessories

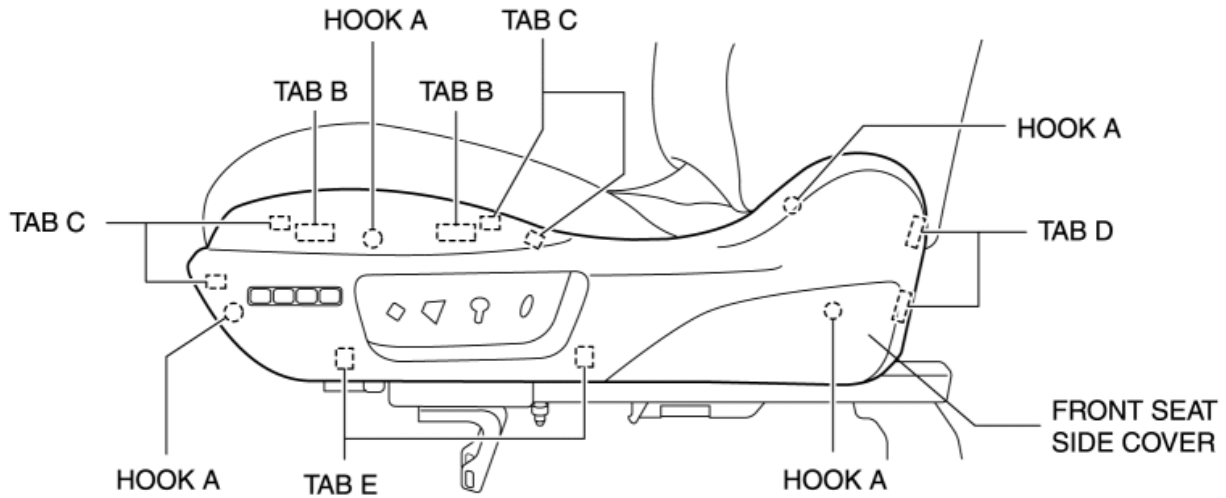
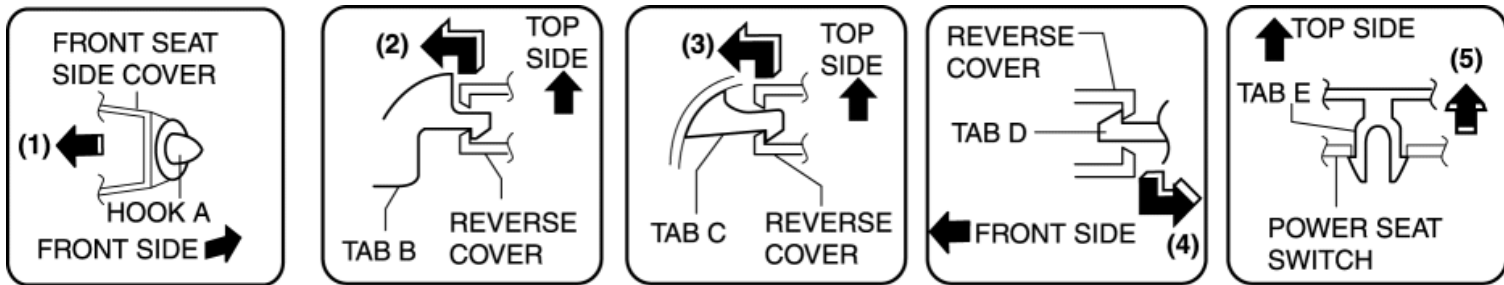
FRONT SEAT SIDE COVER REMOVAL/INSTALLATION

Vehicles With Power Seat System

1. Disconnect the negative battery cable.
2. Pull the power seat switch knobs in the direction of arrow, while remove the hook.

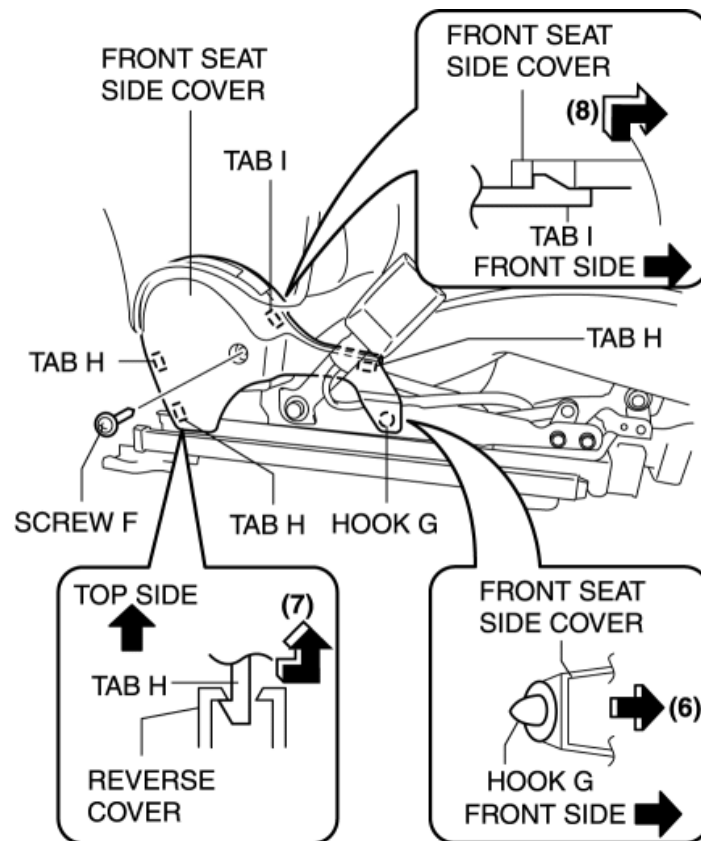


3. Pull the side cover in the order of (1), (2), (3), (4), (5) shown in the figure to disengage the hook and tab.



4. Remove the screw F.

5. Pull the side cover in the order of (6), (7), (8) shown in the figure to disengage the hook G, tab H and I.

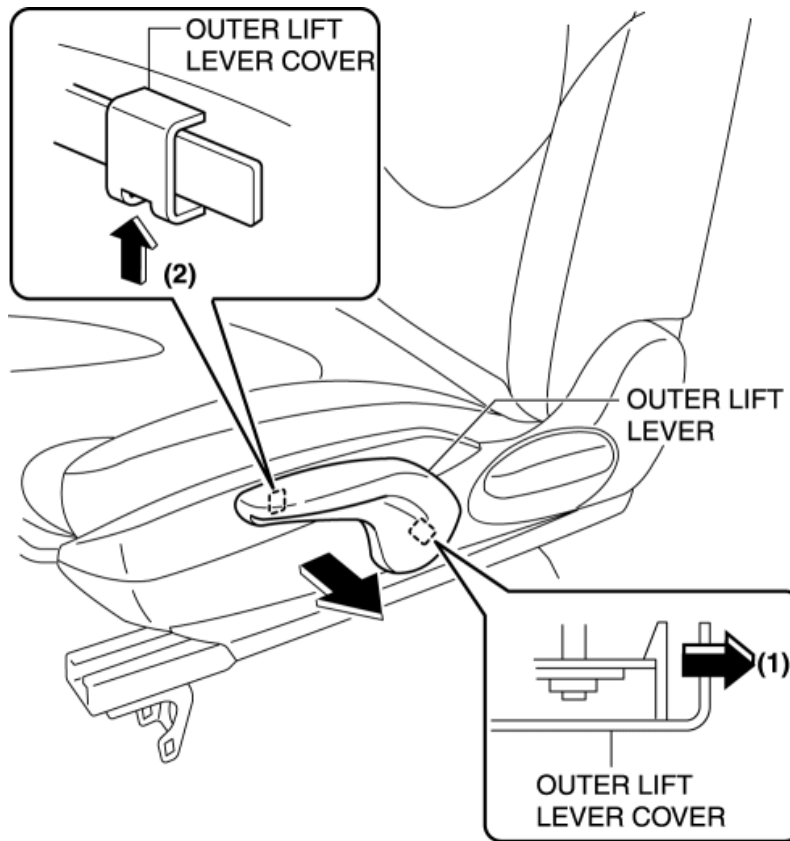


6. Remove the front seat side cover.

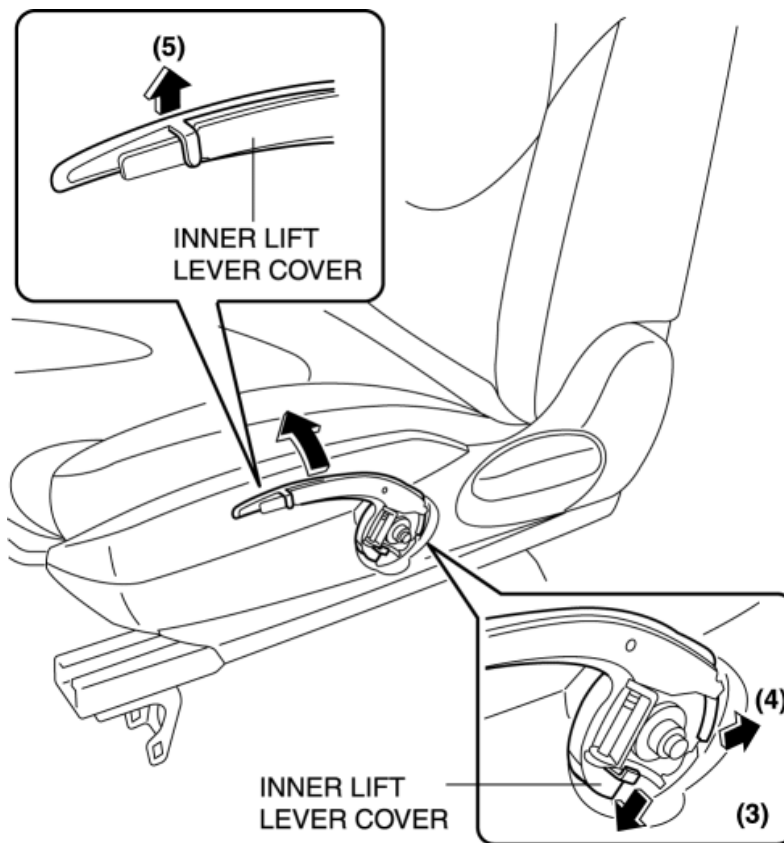
7. Install in the reverse order of removal.

Vehicles Without Power Seat System

1. Operate the outer lift lever in the direction of arrow (1) shown in the figure. (Driver's seat)



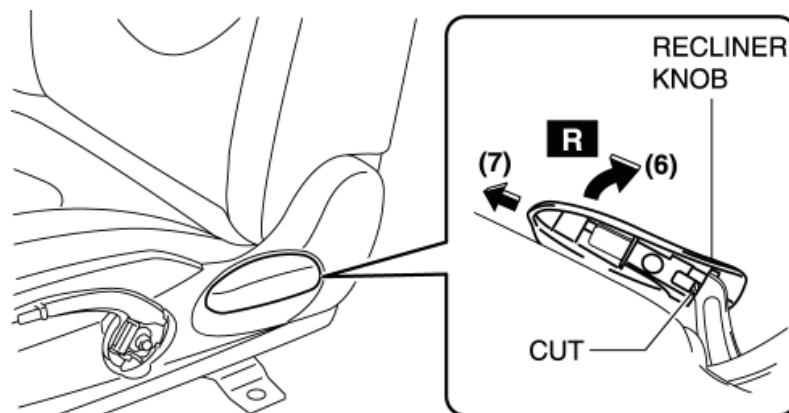
2. Insert a fastener remover from the position of arrow (2) shown in the figure, and remove the outer lift lever cover by disengaging the tab. (Driver's seat)
3. Open the tab in the directions of the arrows (3) and (4) to pull out the inner lift lever cover in the direction of the arrow (5) as shown in the diagram.



4. Perform removal operation following the procedure below.

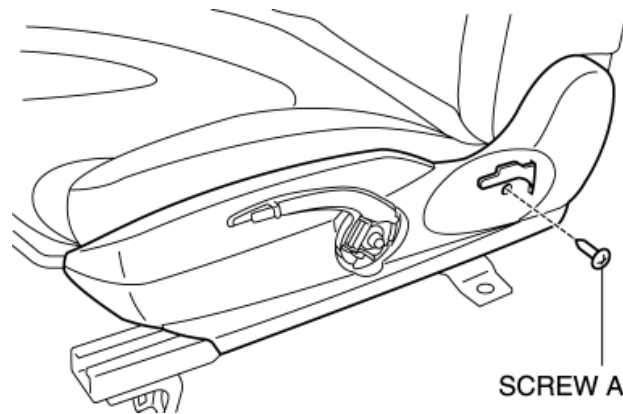
Standard Type

- After operating the recliner knob in the upward direction (6), cut the area indicated in the figure, then remove the recliner knob in the direction of arrow (7).

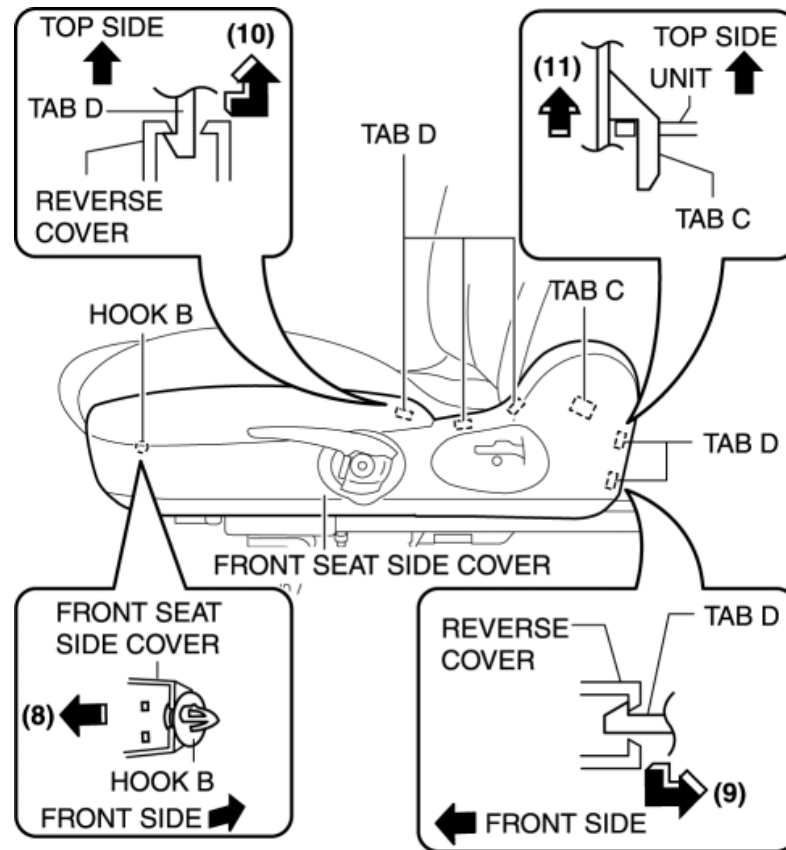


CAUTION:

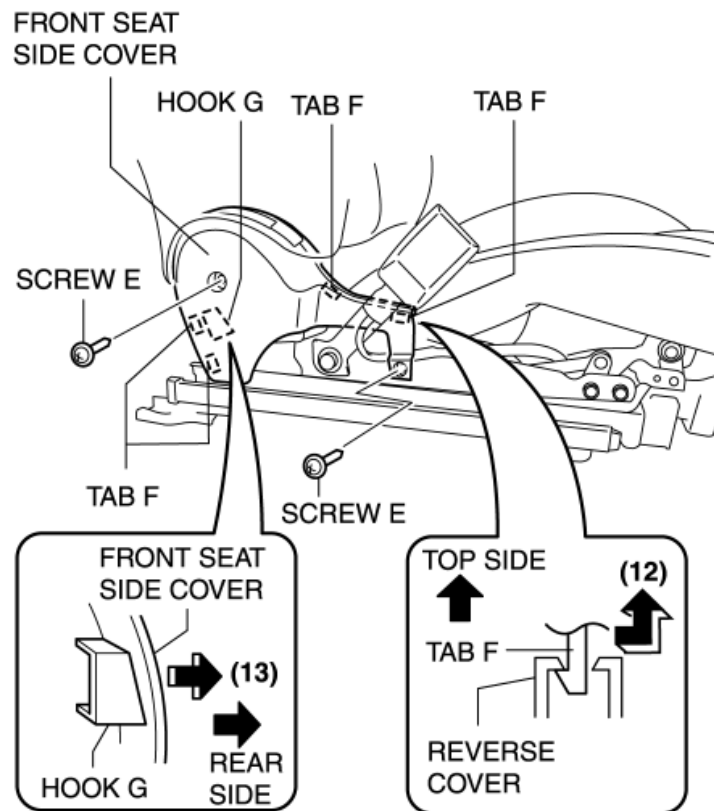
- The seat back folds forward when the recliner knob is operated. Be careful when operating the recliner knob.
- Remove the screw A.



- Pull the side cover in the order of (8), (9), (10), (11) shown in the figure to disengage the hook B, tab C and D.

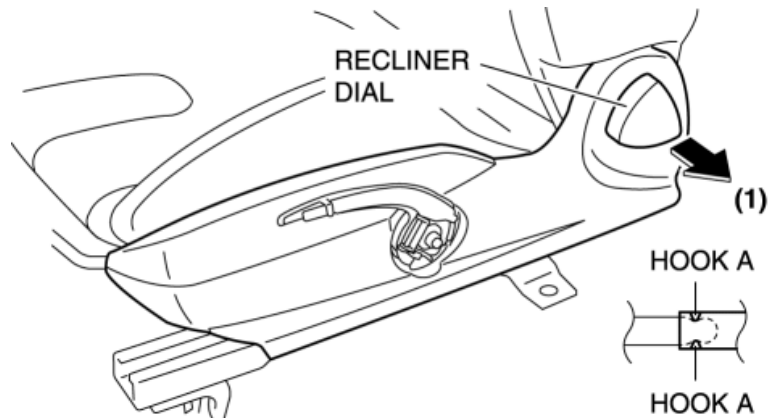


- Remove the screw E.
- Pull the side cover in the order of (12), (13) shown in the figure to disengage the tab F and hook G.

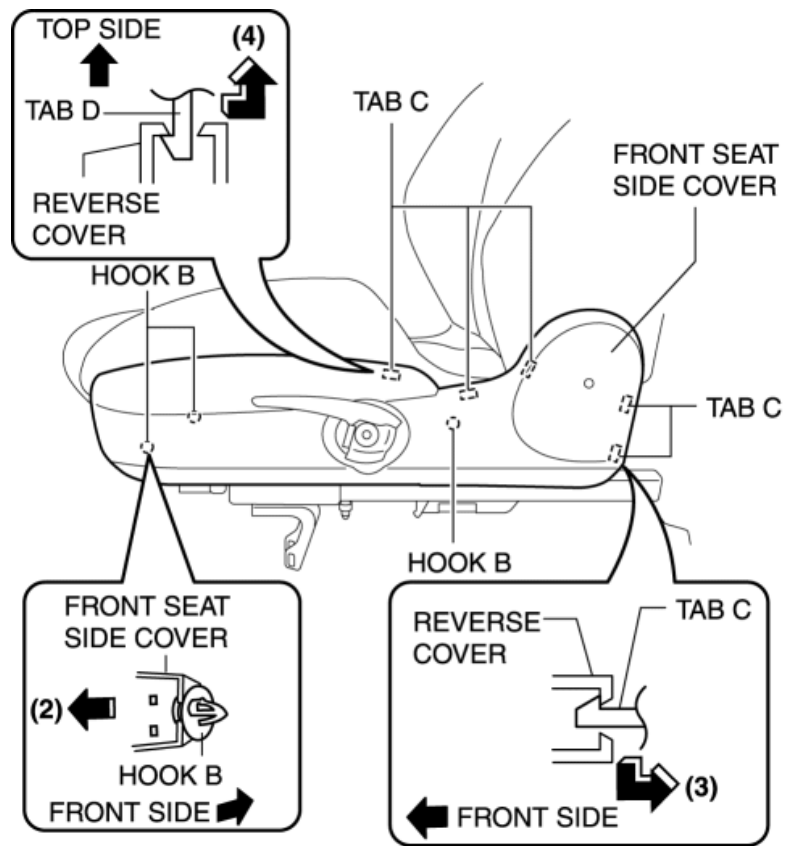


Sports Type

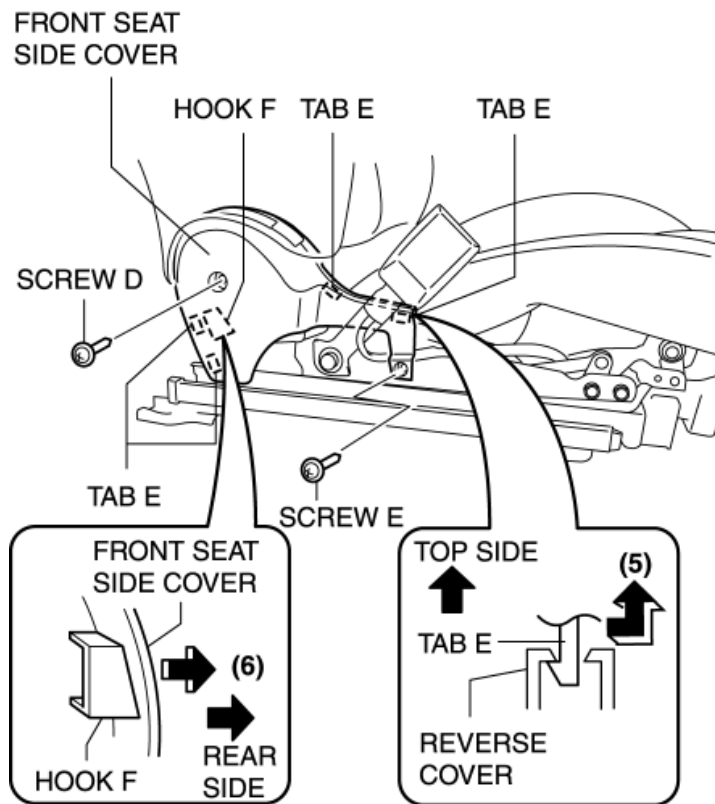
- Uninstall the recliner dial in the direction of the arrow (1).



- Pull the side cover in the order of (2), (3), (4) shown in the figure to disengage the hook B and tab C.



- Remove the screw D.
- Pull the side cover in the order of (5), (6) shown in the figure to disengage the tab E and hook F.



5. Remove the front seat side cover.
6. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

FRONT SEAT BACK COMPONENT [VEHICLES WITHOUT POWER SEAT SYSTEM] REMOVAL/INSTALLATION

WARNING:

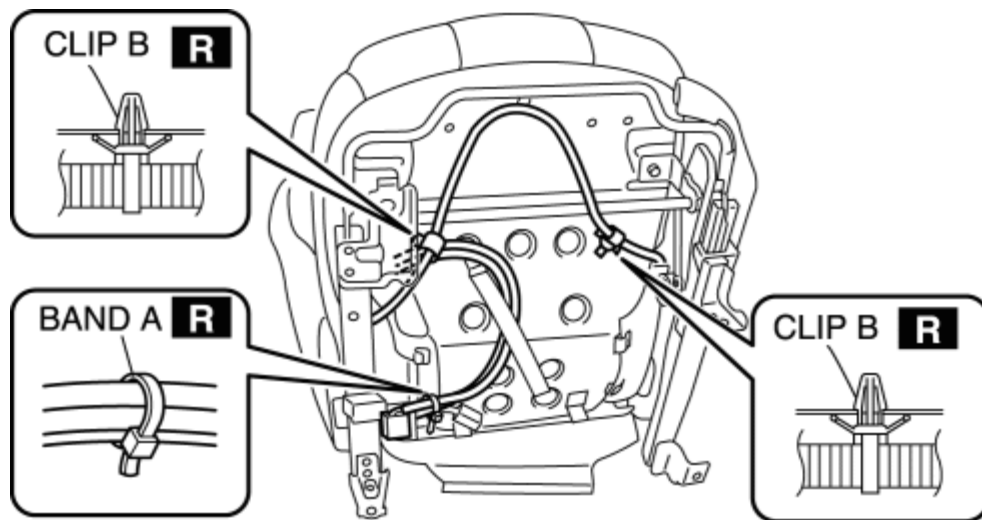
- Handling a front seat (with built-in side air bag) improperly can accidentally operate (deploy) the air bag, which may seriously injure you. Read the service warnings before handling a front seat (with built-in side air bag). (See [AIR BAG SYSTEM SERVICE WARNINGS](#).)

CAUTION:

- After removing a front seat, do not operate the slider lever. If the slider lever is operated, the left and right slide positions will deviate, and the slide adjuster may be damaged after the front seat is installed.
- Verify that there are no malfunctions in the sliding mechanism after installing a front seat.
- When performing the procedure with a front seat removed from the vehicle, perform the procedure on a clean rag so as not to damage or soil the seat.

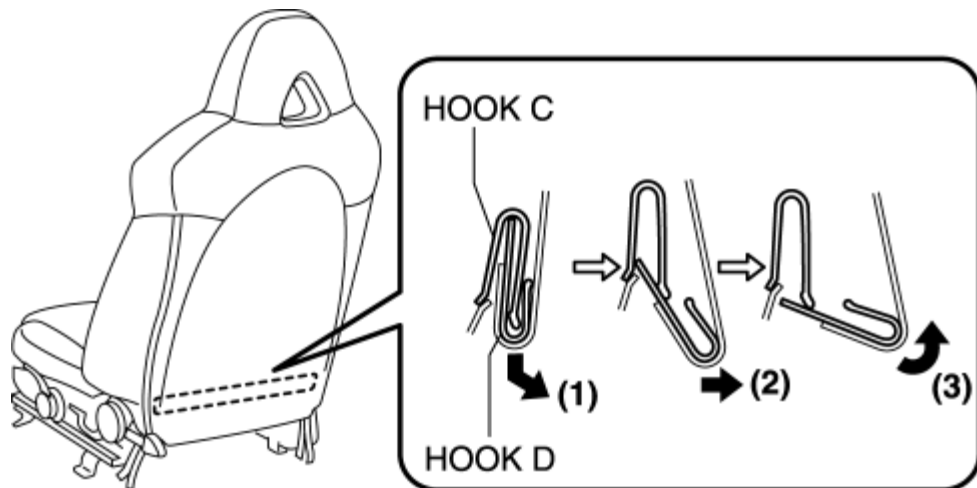
Removal

1. Turn the ignition switch to LOCK position.
2. Disconnect the negative battery cable and wait **1 min or more**.
3. Remove the front seat. (See [FRONT SEAT REMOVAL/INSTALLATION](#).)
4. Remove the front seat side cover. (See [FRONT SEAT SIDE COVER REMOVAL/INSTALLATION](#).)
5. Cut the band A securing the harness.

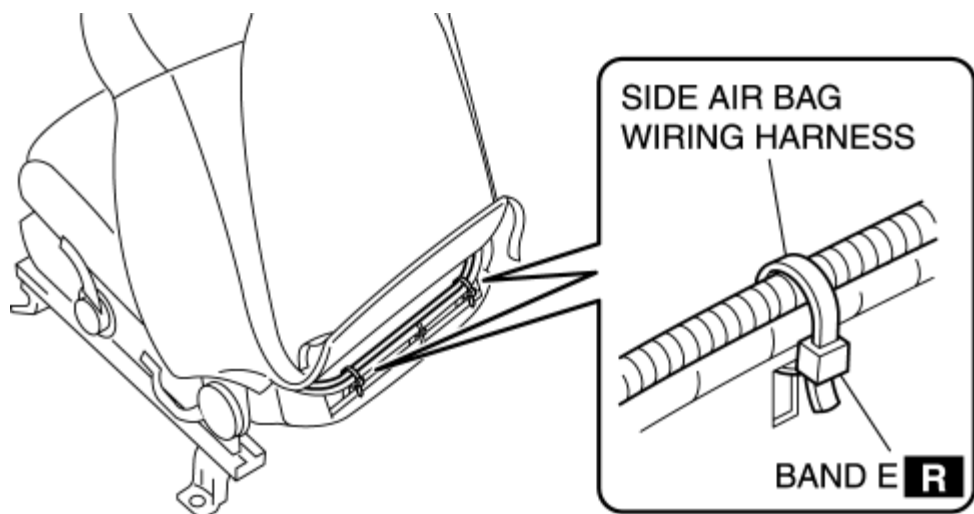


6. Remove the clip B.

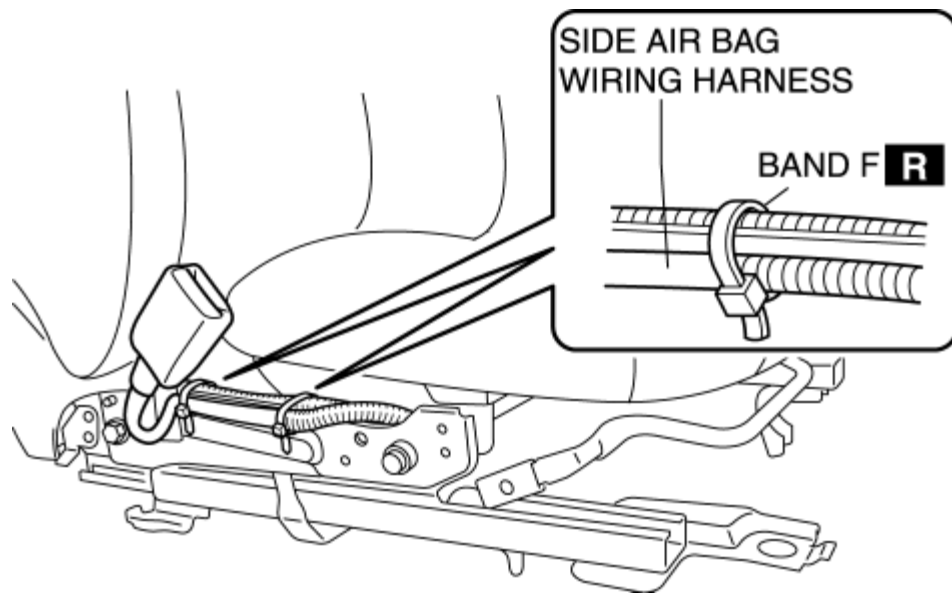
7. Slide hook C in the order of (1), (2), (3) shown in the figure to detach it from hook D.



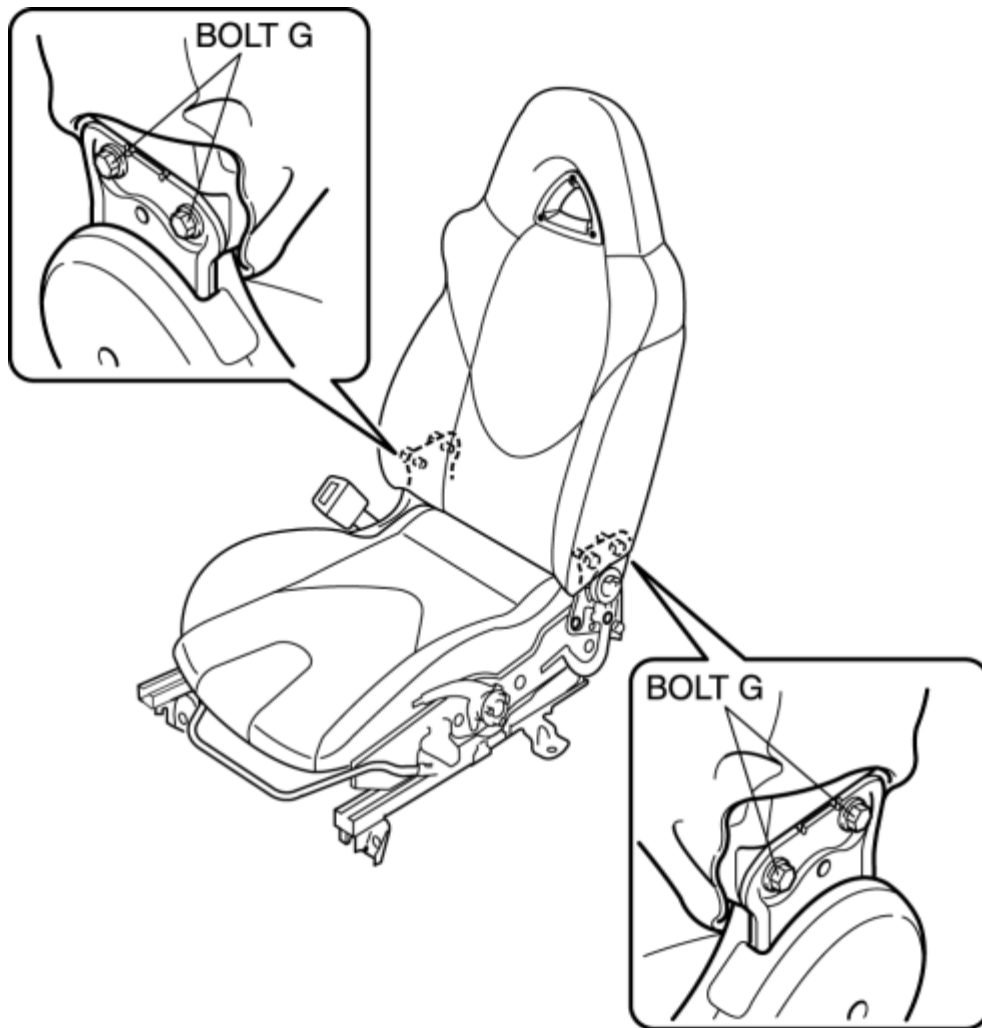
8. Cut the band E securing the side air bag wiring harness.



9. Cut the band F securing the side air bag wiring harness.

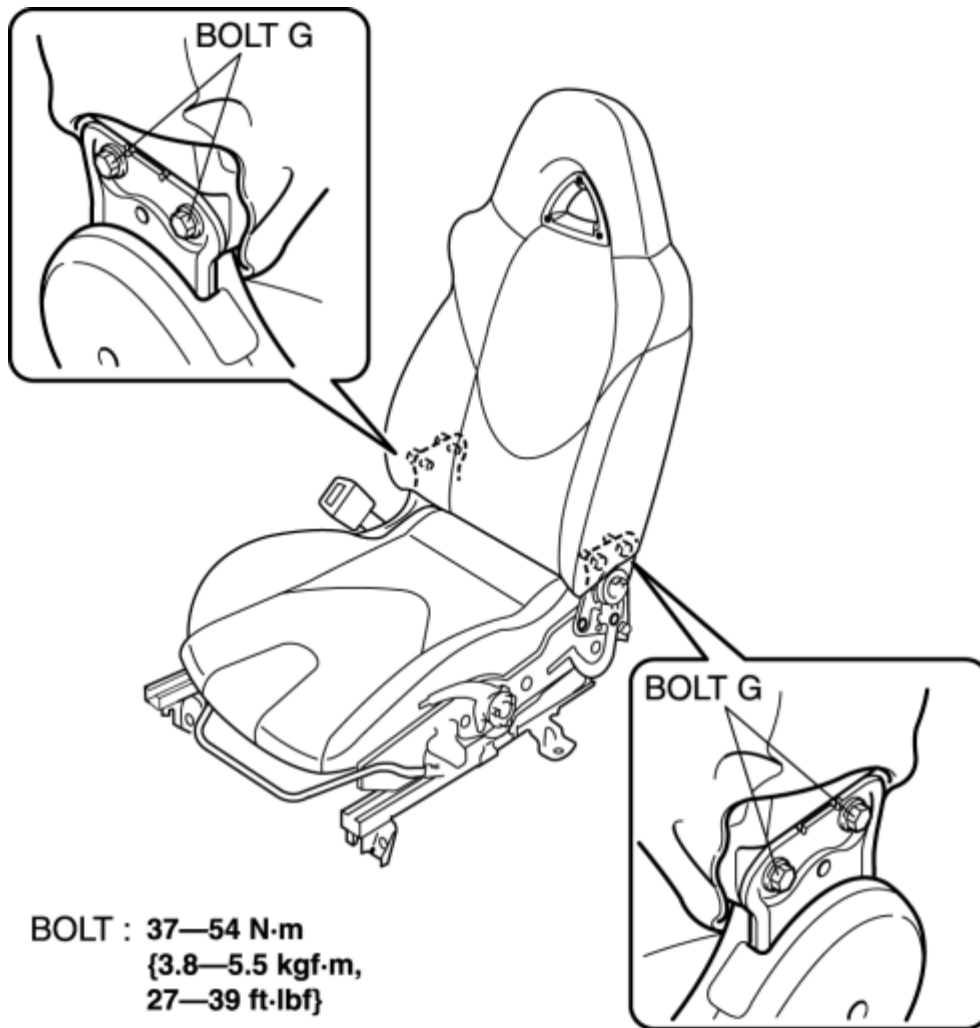


10. Remove the bolts G, then remove the front seat back component.

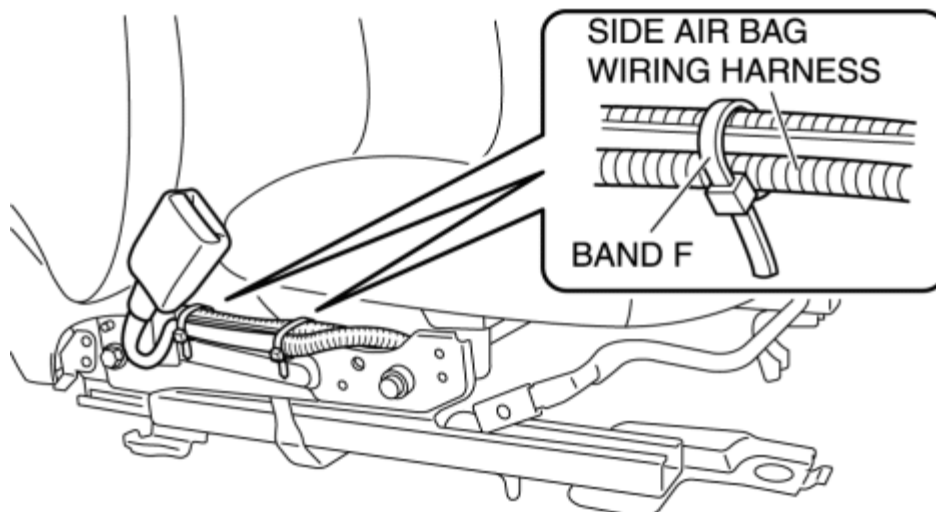


Installation

1. Install the bolts G, then install the front seat back component.

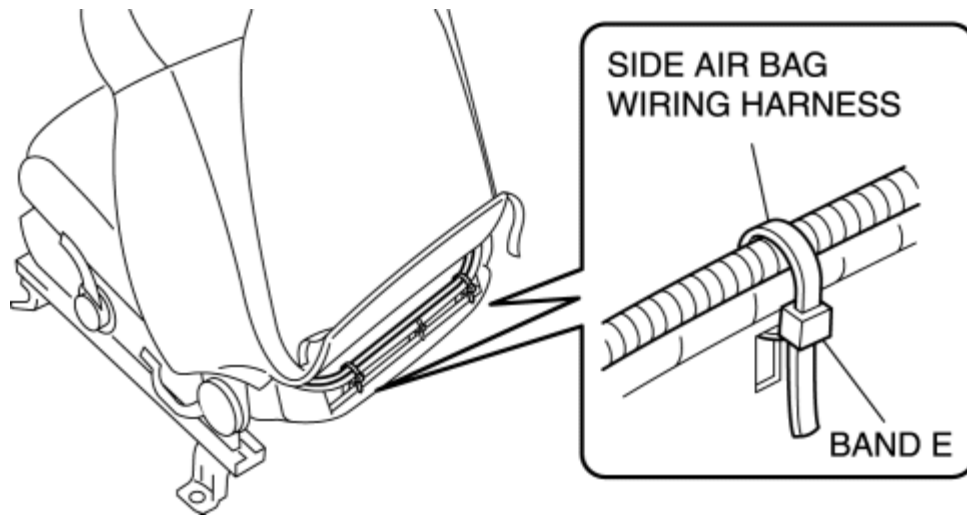


2. Install the band F, while tighten the side air bag wiring harness.



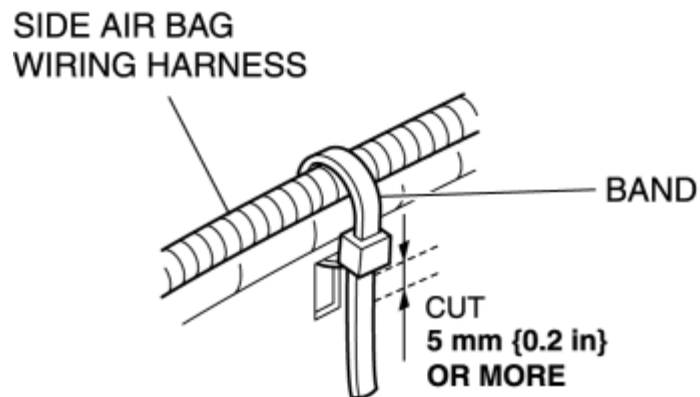
NOTE:

- Install the band with the end pointed to the Bottom.
3. Install the band E, while tighten the side air bag wiring harness.

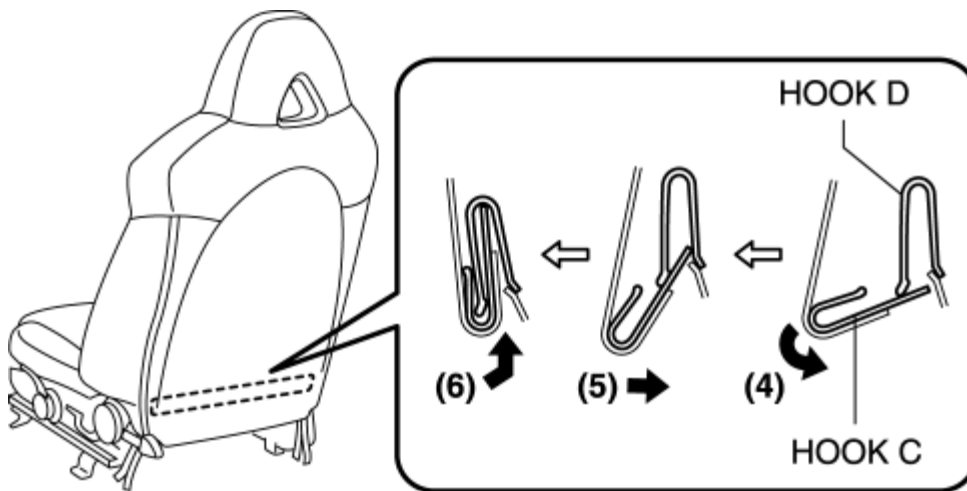


NOTE:

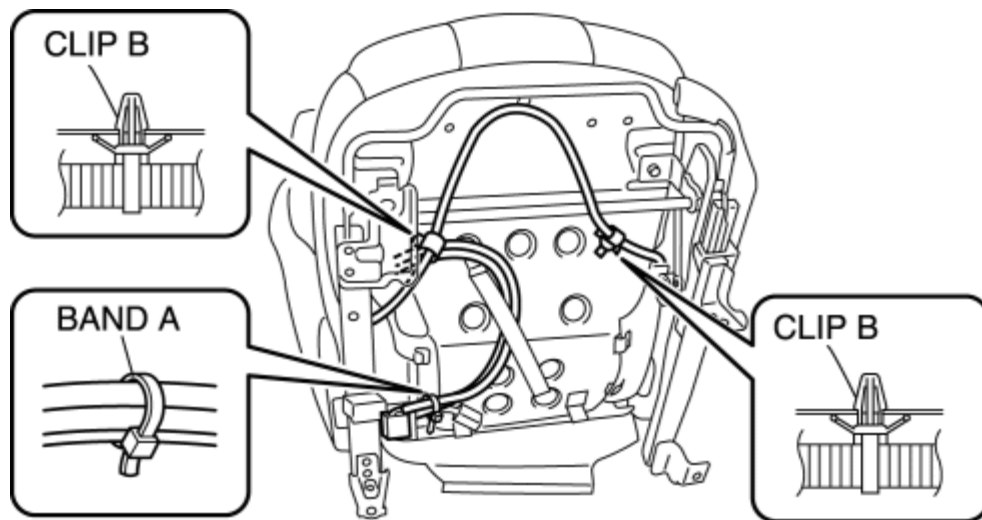
- Install the band with the end pointed to the Bottom.
4. Cut off the end of the band at the position shown in the figure.



5. Slide hook C in the order of (4), (5), (6) shown in the figure to install it to hook D.



6. Install the clip B.



7. Install the band A, while tighten the harness.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

FRONT SEAT SLIDE ADJUSTER REMOVAL/INSTALLATION

WARNING:

- Handling a front seat (with built-in side air bag) improperly can accidentally operate (deploy) the air bag, which may seriously injure you. Read the service warnings before handling a front seat (with built-in side air bag). (See [AIR BAG SYSTEM SERVICE WARNINGS](#))

CAUTION:

- After removing a front seat, do not operate the slider lever. If the slider lever is operated, the left and right slide positions will deviate, and the slide adjuster may be damaged after the front seat is installed.
- Verify that there are no malfunctions in the sliding mechanism after installing a front seat.
- When performing the procedure with a front seat removed from the vehicle, perform the procedure on a clean rag so as not to damage or soil the seat.
- If any of the following work is performed, perform the seat weight sensor calibration using the M-MDS. (See [SEAT WEIGHT SENSOR CALIBRATION](#))
 - Replacement with a new seat weight sensor
 - Replacement with a new seat weight sensor control module
 - Replacement with new passenger-side seat par
 - Disassembly of the passenger-side seat
- If any of the following work is performed, perform the seat weight sensor inspection using the M-MDS. (See [SEAT WEIGHT SENSOR INSPECTION](#))
 - Removal of the passenger-side seat
 - Loosening and retightening of passenger-side seat fixing bolts

1. Turn the ignition switch to LOCK position.

2. Disconnect the negative battery cable and wait 1 min or more.

3. Remove the following parts:

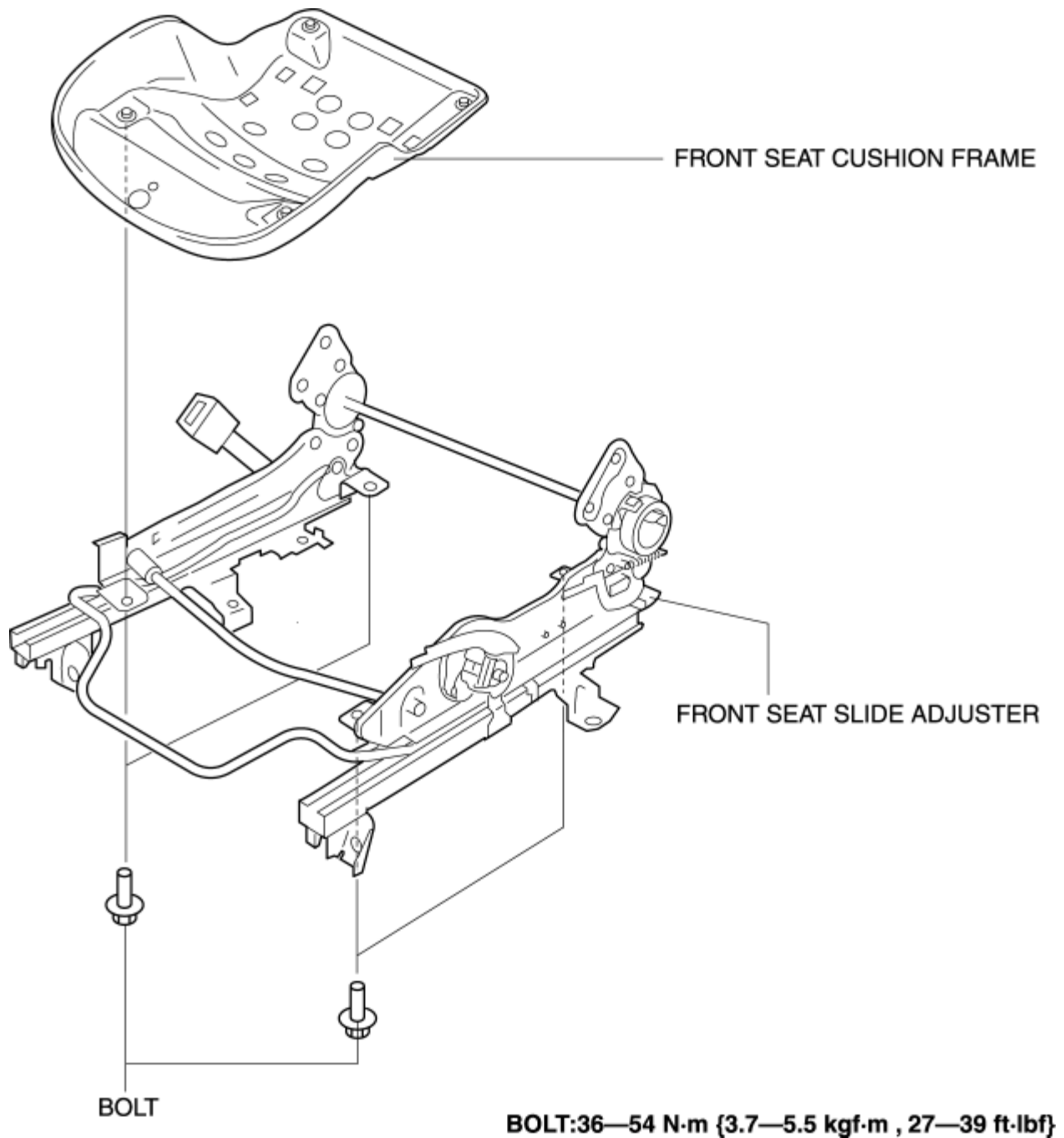
a. Front seat (See [FRONT SEAT REMOVAL/INSTALLATION](#).)

b. Front seat side cover (See [FRONT SEAT SIDE COVER REMOVAL/INSTALLATION](#).)

c. Position memory control module (Vehicles with power seat system) (See [POSITION MEMORY CONTROL MODULE REMOVAL/INSTALLATION](#).)

d. Front seat back component (See [FRONT SEAT BACK COMPONENT \[VEHICLES WITHOUT POWER SEAT SYSTEM\] REMOVAL/INSTALLATION](#).)

4. Remove the bolts.



5. Remove the front seat slide adjuster.

6. Install in the reverse order of removal.

7. Perform the weight sensor initialization procedure. (See [SEAT WEIGHT SENSOR CALIBRATION](#))

[< Previous](#) [Next >](#)

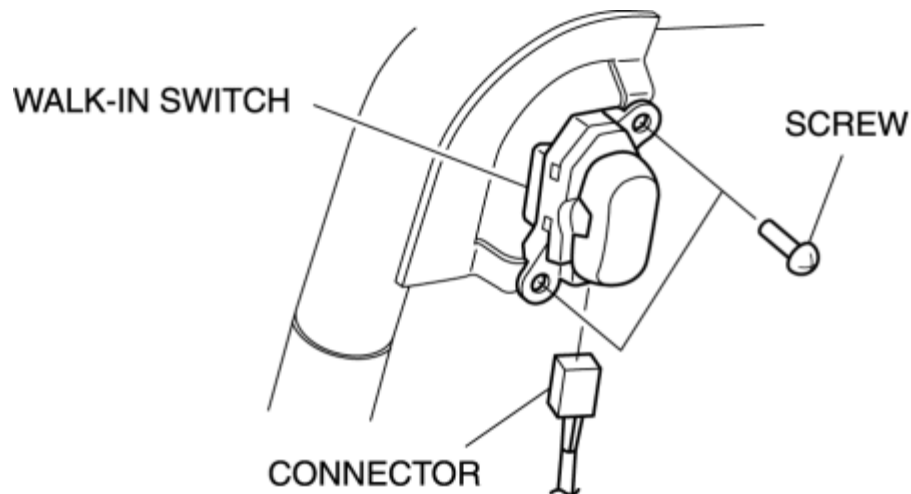
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

WALK-IN SWITCH REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the front seat. (See [FRONT SEAT REMOVAL/INSTALLATION.](#))
3. Remove the front seat back trim. (See [FRONT SEAT BACK TRIM REMOVAL/INSTALLATION.](#))
4. Remove the connector.

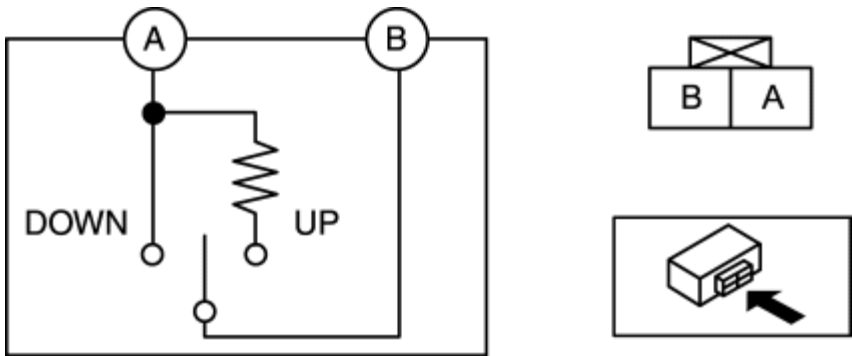


5. Remove the screw.
6. Remove the walk-in switch.
7. Install in the reverse order of removal.


2011 - RX-8 - Body and Accessories

WALK-IN SWITCH INSPECTION

1. Connect battery positive voltage to recliner motor terminal A or B, then verify that the walk-in switch operate as shown in the table.



- If the walk in switch does not operate as indicated in the table, replace the recliner motor.

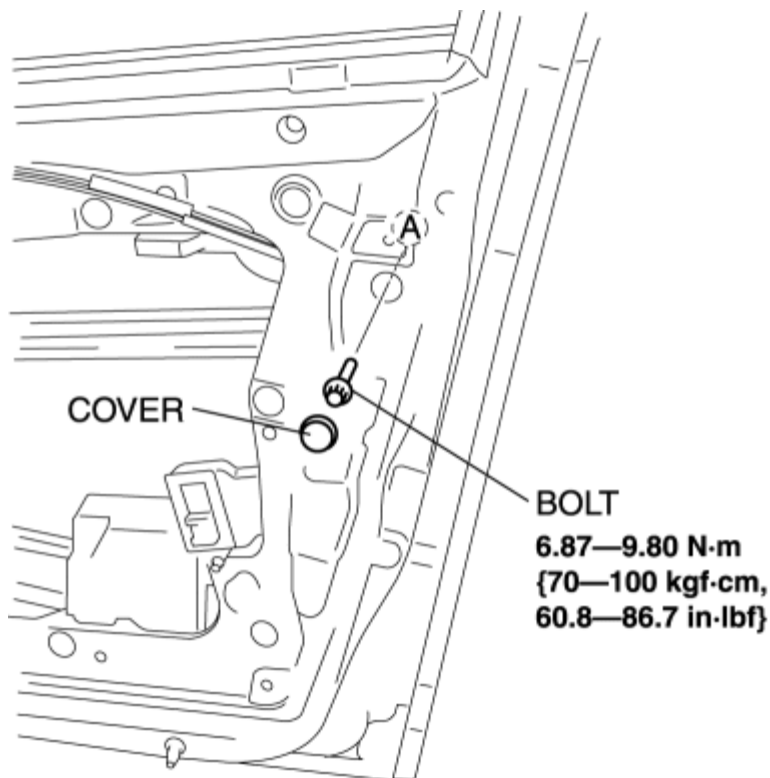
○ — ○ : Continuity
○ —  — ○ : Resistance

Switch position		
	A	B
DOWN	○ — ○	
OFF		
UP	○ —  — ○	

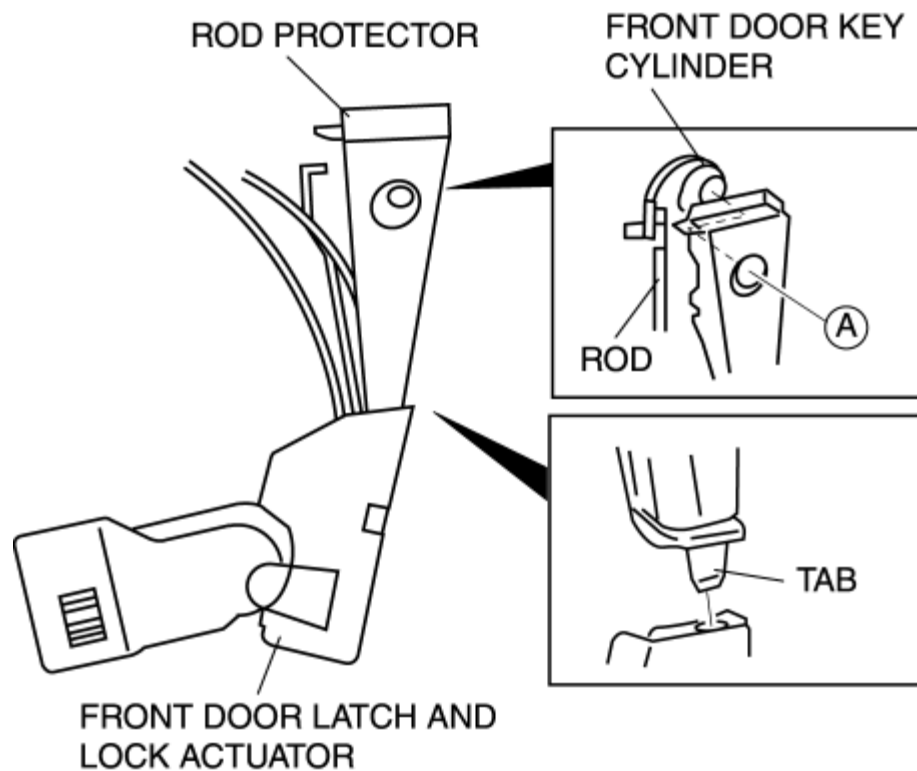
2011 - RX-8 - Body and Accessories

FRONT DOOR KEY CYLINDER REMOVAL/INSTALLATION

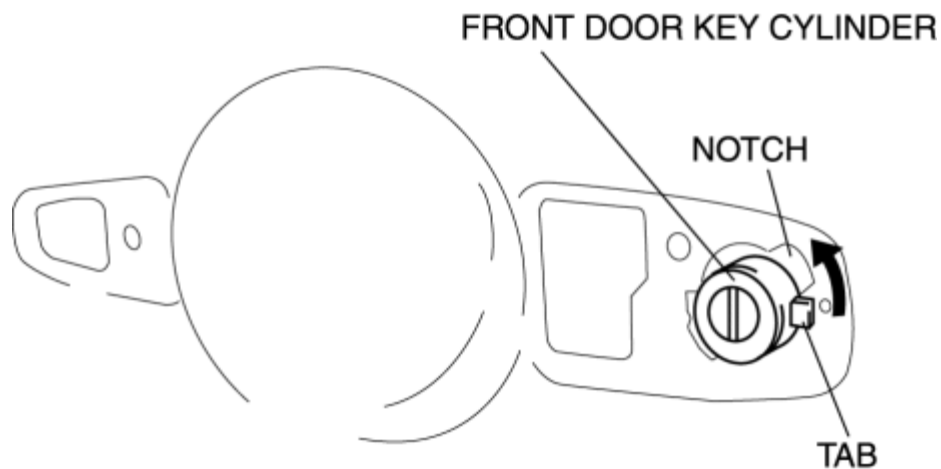
1. Remove the following parts:
 - a. Inner garnish (See [INNER GARNISH REMOVAL/INSTALLATION.](#))
 - b. Front door trim (See [FRONT DOOR TRIM REMOVAL/INSTALLATION.](#))
 - c. Front door glass (See [FRONT DOOR GLASS REMOVAL/INSTALLATION.](#))
 - d. Front door speaker (See [FRONT DOOR SPEAKER REMOVAL/INSTALLATION.](#))
 - e. Front door unit (See [FRONT DOOR UNIT REMOVAL/INSTALLATION.](#))
2. Remove the cover, then remove the bolt.



3. Pull out the protector tab from the latch and remove the protector.



4. Detach the front door key cylinder rod.
5. Remove the front outer handle. (See [FRONT OUTER HANDLE REMOVAL/INSTALLATION.](#))
6. Turn the front door key cylinder so that the tab is aligned with the notch.



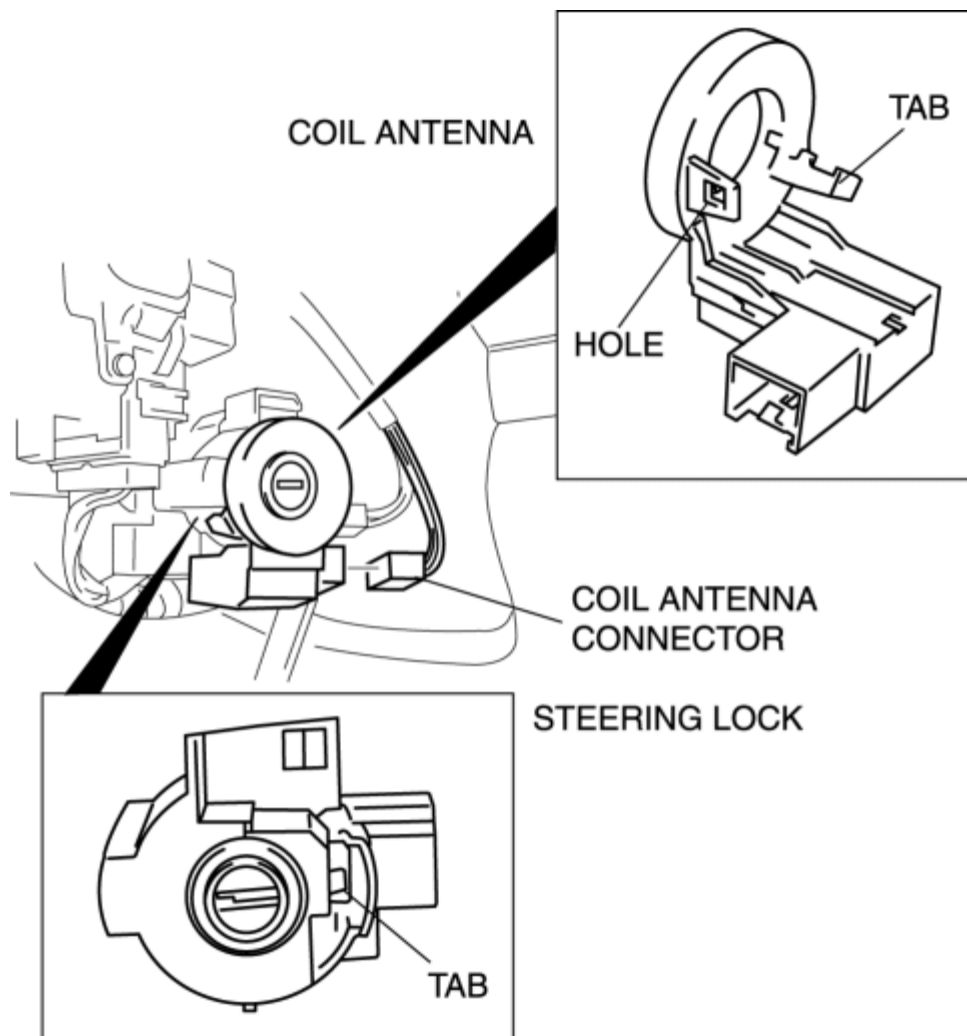
7. Remove the front door key cylinder by pulling it out from the front door.
8. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

COIL ANTENNA REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the column cover. (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
3. Disconnect the coil antenna connector.



4. Detach the steering lock tab from hole on the coil antenna.
5. Detach the coil antenna tab from the steering lock and remove the coil antenna.
6. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH KEYLESS ENTRY SYSTEM]

Foreword

- When replacing immobilizer system-related parts or programming an additional key, program the immobilizer system-related parts so that the system operates normally. For immobilizer system-related parts programming, select the programming procedures according to the service. (See [Selection of Procedure for Immobilizer System-Related Parts Programming.](#))

CAUTION:

- If any metallic or magnetic object is near the key, communication between the key and the vehicle may be obstructed, resulting in a failure to program the immobilizer system-related parts. Remove any metallic or magnetic objects, such as key holders, from the key when programming immobilizer system-related parts.
- If any of the following devices are inside the vehicle, programming of immobilizer system-related parts may fail. Do not bring any of the following devices or similar products inside the vehicle when programming immobilizer system-related parts.
 - M-MDS
 - Personal computer
 - Devices that can send/receive radio waves
- If the engine is started during immobilizer system-related parts programming, the programming mode cancels. Therefore, do not start the engine unless indicated in the procedure. Repeat the procedure from the beginning if the engine is started during the immobilizer system-related parts programming.

NOTE:

- The "Valid key" referred to in this manual indicates the key that can start the engine.
- Two or more key ID numbers must be programmed for the engine to start.
- A maximum of eight key ID numbers can be programmed for one vehicle.
- The number of programmed key ID numbers can be verified using the M-MDS.
- Do not select any screen menu other than the ones indicated in the procedure during M-MDS operation.

Selection of Procedure for Immobilizer System-Related Parts Programming

1. Verify that the room fuse is equipped.
2. Select the applicable programming procedure from the service content of the immobilizer system-related parts.

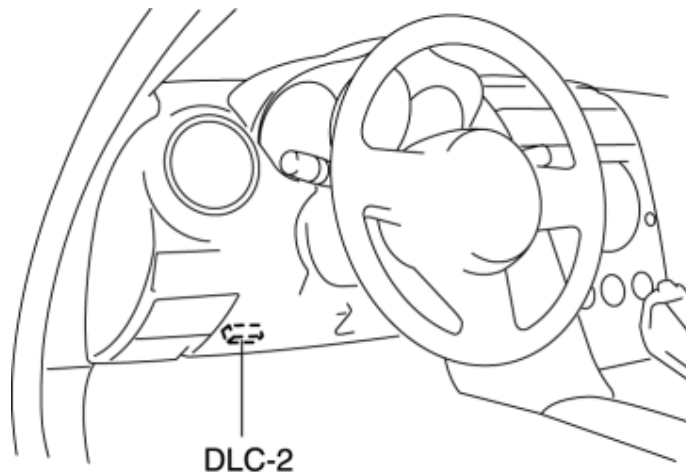
Immobilizer System-Related Parts Service and Programming Procedure Table

No.	Service		Programming procedure
1	Additional key programming	Have two or more valid keys	(See No.1 Additional Key Programming Procedure (Using Two Valid Keys).)
2		Have one valid key or none	(See No. 2 Additional Key Programming Procedure (Using the M-MDS).)
3	Additional key programming procedure setting	Disable programming using valid keys	(See No.3 Additional Key Programming Procedure Changing.)
		Enable programming using valid keys	
4	Programming due to PCM replacement		(See No.4 Programming Procedure Due to PCM Replacement.)
5	Programming due to keyless control module replacement		(See No.5 Programming Procedure Due to Keyless Control Module Replacement.)
6	Programming due to simultaneous replacement of immobilizer system-related parts <ul style="list-style-type: none"> • PCM • Keyless control module 		(See No.6 Programming Procedure Due to Simultaneous Replacement of Immobilizer System-related Parts (PCM and Keyless Control Module).)
7	Programming due to coil antenna replacement		Programming of immobilizer system-related parts is not necessary

M-MDS Connecting Procedure

NOTE:

- Do not place the M-MDS in the vehicle while programming the immobilizer system.
1. Fully lower the door glass.
 2. Connect the M-MDS to the DLC-2.



3. Place the M-MDS outside the vehicle.

CAUTION:

- Cover the vehicle body with a clean rag so as not to damage the vehicle body with the cable.

No.1 Additional Key Programming Procedure (Using Two Valid Keys)




Conditions

- Have two or more valid keys.

NOTE:

- If a key ID number cannot be programmed and DTC 15 is displayed, the maximum number of programmed keys may have been reached. Verify the number of programmed keys using the M-MDS.
- If eight keys have already been programmed and it is necessary to program other keys, the previously programmed key ID numbers must first be cleared.
- If "Customer spare key programming disable" is selected, perform additional key programming using the M-MDS. (See [No. 2 Additional Key Programming Procedure \(Using the M-MDS\).](#))

Procedure

VALID KEY	 KEY 1  KEY 2
KEY FOR RESISTRATION	 KEY 3

Step	Procedure	Action after procedure
1	LAUNCH PROGRAMMING MODE <ul style="list-style-type: none"> • Turn the ignition switch to the ON position using key 1. • After verifying that the security light illuminates for approx. 3 s and turns off, turn the ignition switch to the LOCK position within approx. 4 s using key 1. • Remove key 1. • Turn the ignition switch to the ON position using key 2. • After verifying that the security light illuminates for approx. 3 s and turns off, turn the ignition switch to the LOCK position within approx. 4 s using key 2. • Remove key 2. 	Go to the next step.
2	PERFORM ADDITIONAL KEY PROGRAMMING <ul style="list-style-type: none"> • Turn the ignition switch to the ON position using key 3. • Verify that the security light illuminates for approx. 3 s, and then turns off. • Remove key 3. • Are there other keys to be programmed? 	<div>Go back Yes to Step 1.</div> <div>Go to the No next step.</div>
3	VERIFY KEY PROGRAMMING IS CORRECT <ul style="list-style-type: none"> • Verify that the engine can start and run for approx. 5 s or more using all the programmed keys. <p>NOTE:</p>	Procedure is completed

- When verifying that the engine starts, wait at least **approx. 5 s or more** before starting the engine using the next key.

No. 2 Additional Key Programming Procedure (Using the M-MDS)

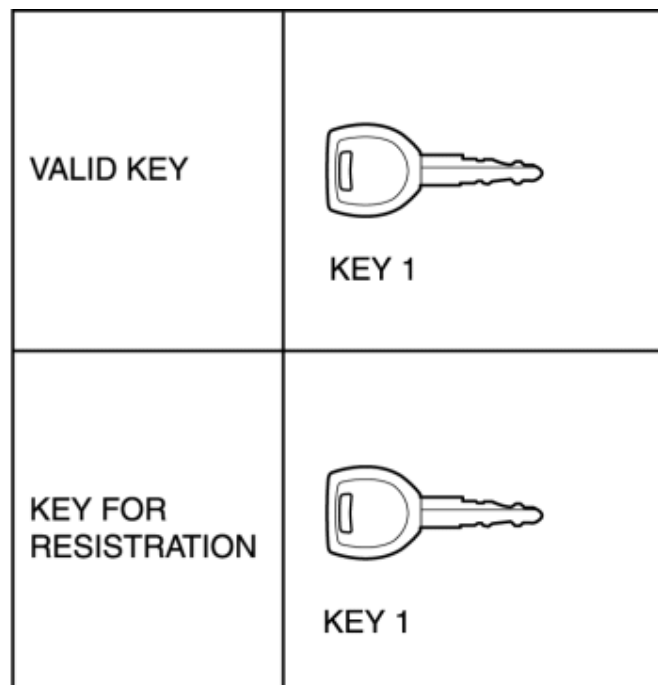
Conditions

- There is only one valid key, or none.

NOTE:

- If a key ID number cannot be programmed and DTC 15 is displayed, the maximum number of programmed keys may have been reached. Verify the number of programmed keys using the M-MDS.
- If eight keys have already been programmed and it is necessary to program other keys, the previously programmed key ID numbers must first be cleared.

Procedure



Step	Procedure	Action after procedure
1	PERFORM ADDITIONAL KEY PROGRAMMING <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. (See M-MDS Connecting Procedure) • Turn the ignition switch to the ON position using key 1. 	Change the key and repeat Step 1. NOTE: <ul style="list-style-type: none"> • Additional key programming can be performed using the

NOTE:

- Although the security light starts flashing and DTC 15 is displayed after **approx. 1 min**, this does not indicate an improper procedure. Continue to perform the procedure as indicated.
- After vehicle identification, select the following from the M-MDS initial screen.
 - Using an IDS (laptop PC)
 - Select the "Body"
 - Select the "Security"
 - Select the "PATS function"
 - Select the "Program Additional Ignition Key"
 - Using a PDS (Pocket PC):
 - Select the "All Tests and Calibrations"
 - Select the "PATS Functions"
 - Select the "Program Additional Ignition Key"
- Perform the security access according to the directions on the M-MDS screen.

NOTE:

- After executing the above menu, "This operation is successful" is displayed. This indicates that the programming of the key currently in the ignition switch ON position has been completed.

procedure in No.1
Additional Key
Programming Procedure
(Using Two Valid Keys).

No Go to the next step.

	<p>After verifying that the PATS function menu is displayed again on the M-MDS screen, turn the ignition switch to the LOCK position.</p> <ul style="list-style-type: none"> • Remove key 1. • Are there other keys to be programmed? 	
2	<p>CLOSE THE M-MDS</p> <ul style="list-style-type: none"> • After verifying that the PATS function menu is displayed again on the M-MDS screen, select "Finish (this menu)". • Turn the ignition switch to the LOCK position. 	Go to the next step.
3	<p>VERIFY KEY PROGRAMMING IS CORRECT</p> <p>Verify that the engine can be started with the programmed key.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • When verifying that the engine starts, wait at least approx. 5 s or more before starting the engine using the next key. 	Procedure is completed

No.3 Additional Key Programming Procedure Changing

NOTE:

- This procedure is performed for disabling the No.1 Additional Key Programming Procedure (Using Two Valid Keys).
- The setting is "Customer spare key programming enable" when the vehicle is new or the keyless control module is replaced with a new one.

Procedure

Step	Procedure	Action after procedure
1	<p>CHANGE CUSTOMER SPARE KEY PROGRAMMING PROCEDURE</p> <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. <p>(See M-MDS Connecting Procedure.)</p> <ul style="list-style-type: none"> • Turn the ignition switch to the ON position using a key (The key can be either the valid key or an unprogrammed key). 	

NOTE:

- If an unprogrammed key is used, the security light starts flashing and DTC 15 is displayed after **approx. 1 min.** However, this does not indicate an improper procedure. Continue to perform the procedure as indicated.
- After vehicle identification, select the following from the M-MDS initial screen.
 - Using an IDS (laptop PC)
 - Select the "Body"
 - Select the "Security"
 - Select the "PATS function"
 - Using a PDS (Pocket PC):
 - Select the "All Tests and Calibrations"
 - Select the "PATS Functions"
- Select either of the following from the M-MDS menu to change the additional key programming procedure.
 - When "Customer Spare Key Programming Enable" is selected: The additional key programming procedure using valid keys is enabled.
 - When "Customer Spare Key Programming Disable" is selected: The additional key programming procedure using valid keys is disabled.
- Perform the security access according to the directions on the M-MDS screen.
- After verifying that the PATS function menu is displayed again on the M-MDS screen, select "Finish (this menu)".
- Turn the ignition switch to the LOCK position.

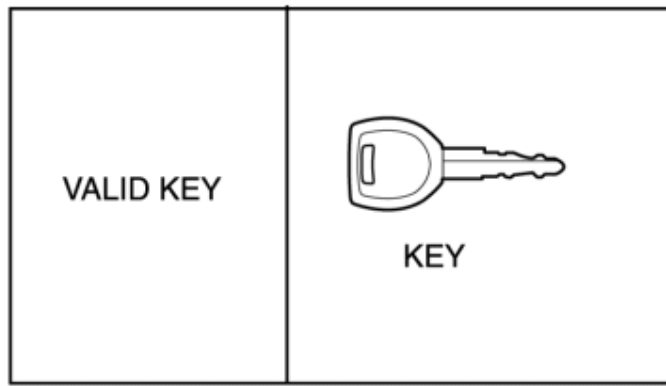
Procedure
is
completed

No.4 Programming Procedure Due to PCM Replacement

Conditions

- Have two or more valid keys.

Procedure



Step	Procedure	Action after procedure
1	REPLACE PCM Refer to PCM REMOVAL/INSTALLATION to perform PCM replacement. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	Go to the next step.
2	PERFORM PARAMETER RESET <ul style="list-style-type: none"> Connect the M-MDS to the DLC-2. (See M-MDS Connecting Procedure.) Turn the ignition switch to the ON position using a valid key. <p>NOTE:</p> <ul style="list-style-type: none"> Although the security light remains illuminated and DTC 23 is displayed after approx. 1 min, continue to perform the procedure as indicated. Verify that the keyless warning light illuminates for approx. 3 s, and then turns off. After vehicle identification, select the following from the M-MDS initial screen. <ul style="list-style-type: none"> Using an IDS (laptop PC): <ul style="list-style-type: none"> Select the "Body" Select the "Security" Select the "PATS function" Select the "Parameter Reset" Using a PDS (pocket PC): <ul style="list-style-type: none"> Select the "All Tests and 	Go to the next step.

	<p>Calibrations"</p> <ul style="list-style-type: none"> ■ Select the "PATS Functions" ■ Select the "Parameter Reset" <ul style="list-style-type: none"> • Perform the security access according to the directions on the M-MDS screen. • Select the replaced parts "PCM" according to the directions on the M-MDS screen. <p>CAUTION:</p> <ul style="list-style-type: none"> • At this time, do not select the other parts from the M-MDS menu. • After verifying that the PATS function menu is displayed again on the M-MDS screen, select "Finish (this menu)". • Turn the ignition switch to the LOCK position. • Turn the ignition switch to the ON position. • Verify that the security light illuminates for approx. 3 s, and then turns off. • Turn the ignition switch to the LOCK position. 		
3	<p>VERIFY PROGRAMMING IS PERFORMED CORRECTLY</p> <ul style="list-style-type: none"> • Verify that the engine can be started with all the keys. • Can the engine be started? 	Yes	Procedure is completed
		No	Perform the corresponding DTC inspection to repair the malfunctioning part.

No.5 Programming Procedure Due to Keyless Control Module Replacement

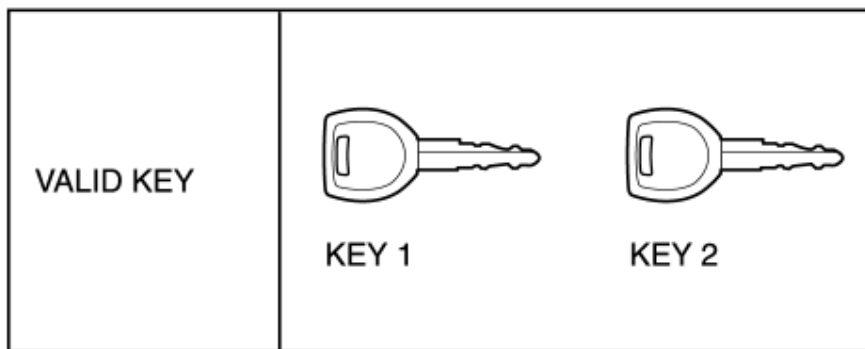
NOTE:

- Since two or more keys need to be programmed to start the engine, program two or more keys after the replacement.

Conditions

- Have two or more keys to be programmed after the replacement.

Procedure



Step	Procedure	Action after procedure
1	REPLACE KEYLESS CONTROL MODULE Refer to KEYLESS CONTROL MODULE REMOVAL/INSTALLATION to perform keyless control module replacement. (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)	Go to the next step.
2	PERFORM PARAMETER RESET <ul style="list-style-type: none"> Connect the M-MDS to the DLC-2. (See M-MDS Connecting Procedure.) Turn the ignition switch to the ON position using a valid key. NOTE: <ul style="list-style-type: none"> Although the security light remains illuminated and DTC 15 is displayed after approx. 1 min, continue to perform the procedure as indicated. Verify that the keyless warning light illuminates for approx. 3 s, and then turns off. After vehicle identification, select the following from the M-MDS initial screen. <ul style="list-style-type: none"> Using an IDS (laptop PC): <ul style="list-style-type: none"> Select the "Body" Select the "Security" Select the "PATS function" Select the "Parameter Reset" Using a PDS (pocket PC): <ul style="list-style-type: none"> Select the "All Tests and 	Go to the next step.

	<p>Calibrations"</p> <ul style="list-style-type: none">▪ Select the "PATS Functions"▪ Select the "Parameter Reset" <ul style="list-style-type: none">• Perform the security access according to the directions on the M-MDS screen.• Select the replaced parts "RKE" according to the directions on the M-MDS screen. <p>CAUTION:</p> <ul style="list-style-type: none">• At this time, do not select the other parts from the M-MDS menu.• Verify that the PATS function menu is displayed again on the M-MDS screen.					
3	<p>CLEAR IGNITION KEY ID NUMBERS</p> <ul style="list-style-type: none">• Select "Ignition Key Code Erase and Program" from the M-MDS screen menu.• Clear the ignition key ID number according to the directions on the M-MDS.	Go to the next step.				
4	<p>PERFORM IGNITION KEY ID NUMBER PROGRAMMING</p> <ul style="list-style-type: none">• Program two keys according to the directions on the M-MDS.• After verifying that the PATS function menu is displayed again on the M-MDS screen, select "Finish (this menu)".• Turn the ignition switch to the LOCK position.• Turn the ignition switch to the ON position.• Verify that the security light illuminates for approx. 3 s, and then turns off.• Turn the ignition switch to the LOCK position.• Disconnect the M-MDS from the DLC-2.	Go to the next step.				
5	<p>VERIFY PROGRAMMING IS PERFORMED CORRECTLY</p> <ul style="list-style-type: none">• Verify that the engine can be started with all the keys.• Can the engine be started?	<table><tr><td>Yes</td><td>Procedure is completed</td></tr><tr><td>No</td><td>Perform the corresponding DTC inspection to repair the malfunctioning part.</td></tr></table>	Yes	Procedure is completed	No	Perform the corresponding DTC inspection to repair the malfunctioning part.
Yes	Procedure is completed					
No	Perform the corresponding DTC inspection to repair the malfunctioning part.					

Parts (PCM and Keyless Control Module)

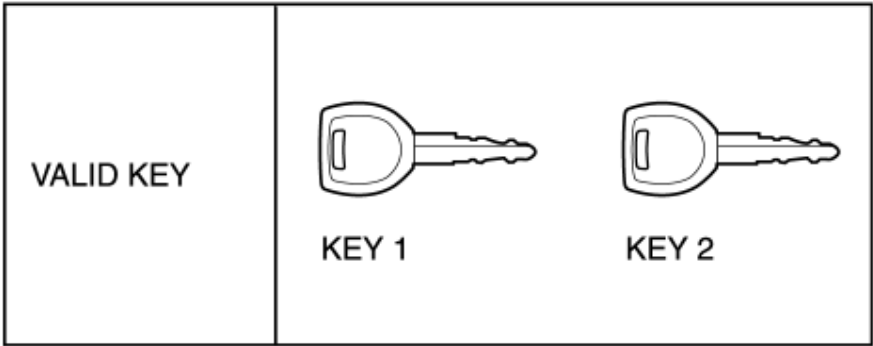
NOTE:

- Since two or more keys need to be programmed to start the engine, program two or more keys after the replacement.

Conditions

- Have two or more keys to be programmed after the replacement.

Procedure



Step	Procedure	Action after procedure
1	REPLACE KEYLESS CONTROL MODULE. Refer to KEYLESS CONTROL MODULE REMOVAL/INSTALLATION to perform keyless control module replacement. (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION.)	Go to the next step.
2	REPLACE PCM Refer to PCM REMOVAL/INSTALLATION to perform PCM replacement. (See PCM REMOVAL/INSTALLATION [13B-MSP].)	Go to the next step.
3	PERFORM PARAMETER RESET <ul style="list-style-type: none">• Connect the M-MDS to the DLC-2. (See M-MDS Connecting Procedure.)• Turn the ignition switch to the ON position using a valid key. NOTE: <ul style="list-style-type: none">• Although the security light remains illuminated and DTC 15 is displayed after approx. 1 min, continue to perform the procedure as indicated.	

	<ul style="list-style-type: none">• Verify that the keyless warning light illuminates for approx. 3 s, and then turns off.• After vehicle identification, select the following from the M-MDS initial screen.<ul style="list-style-type: none">▪ Using an IDS (laptop PC):<ul style="list-style-type: none">▪ Select the "Body"▪ Select the "Security"▪ Select the "PATS function"▪ Select the "Parameter Reset"▪ Using a PDS (pocket PC):<ul style="list-style-type: none">▪ Select the "All Tests and Calibrations"▪ Select the "PATS Functions"▪ Select the "Parameter Reset"• Perform the security access according to the directions on the M-MDS screen.• Select the replaced parts according to the directions on the M-MDS screen.<ul style="list-style-type: none">▪ If the keyless control module is replaced: Select "RKE".▪ If the PCM is replaced: Select "PCM". <p>CAUTION:</p> <ul style="list-style-type: none">• At this time, do not select the other parts from the M-MDS menu.• Verify that the PATS function menu is displayed again on the M-MDS screen.	Go to the next step.
4	<p>CLEAR IGNITION KEY ID NUMBERS</p> <ul style="list-style-type: none">• Select "Ignition Key Code Erase and Program" from the M-MDS screen menu.• Clear the ignition key ID number according to the directions on the M-MDS.	Go to the next step.
5	<p>PERFORM IGNITION KEY ID NUMBER PROGRAMMING</p> <ul style="list-style-type: none">• Program two keys according to the directions on the M-MDS.	

	<ul style="list-style-type: none">• After verifying that the PATS function menu is displayed again on the M-MDS screen, select "Finish (this menu)".• Turn the ignition switch to the LOCK position.• Turn the ignition switch to the ON position.• Verify that the security light illuminates for approx. 3 s, and then turns off.• Turn the ignition switch to the LOCK position.• Disconnect the M-MDS from the DLC-2.	Go to the next step.	
6	VERIFY PROGRAMMING IS PERFORMED CORRECTLY <ul style="list-style-type: none">• Verify that the engine can be started with all the keys.• Can the engine be started?	Yes	Procedure is completed
		No	Perform the corresponding DTC inspection to repair the malfunctioning part.

2011 - RX-8 - Body and Accessories

IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]

Foreword

- When replacing immobilizer system-related parts or programming an additional key, program the immobilizer system-related parts so that the system operates normally. For immobilizer system-related parts programming, select the programming procedures according to the service. (See [Selection of Procedure for Immobilizer System-Related Parts Programming](#).)

CAUTION:

- The engine cannot be started if any step or procedure for each service operation is skipped. Perform all procedures in the order of the steps.
- If any metallic or magnetic object is near the key, communication between the key and the vehicle may be obstructed, resulting in a failure to program the immobilizer system-related parts. Remove any metallic or magnetic objects, such as key holders, from the key when programming immobilizer system-related parts.
- If any of the following devices are inside the vehicle, programming of immobilizer system-related parts may fail. Do not bring any of the following devices or similar products inside the vehicle when programming immobilizer system-related parts.
 - card key
 - M-MDS
 - Personal computer
 - Devices that can send/receive radio waves
- If the engine is started during immobilizer system-related parts programming, the programming mode cancels. Therefore, do not start the engine unless indicated in the procedure. Repeat the procedure from the beginning if the engine is started during the immobilizer system-related parts programming.
- If an card key is near the vehicle during immobilizer system-related parts programming, it may be programmed mistakenly. Keep card keys 1 m away from the vehicle unless indicated in the procedure.

NOTE:

- The "Valid key" or "Valid card key" referred to in this manual indicates the key that can start the engine.
- Two or more key ID numbers must be programmed for the engine to start.
- A maximum of eight key ID numbers can be programmed for one vehicle.
- The number of programmed key ID numbers can be verified using the M-MDS.
- Do not select any screen menu other than the ones indicated in the procedure during M-MDS operation.

Selection of Procedure for Immobilizer System-Related Parts Programming

- Verify that the room fuse is equipped.
- Select the applicable programming procedure from the service content of the immobilizer system-related parts.

Immobilizer System-Related Parts Service and Programming Procedure Table

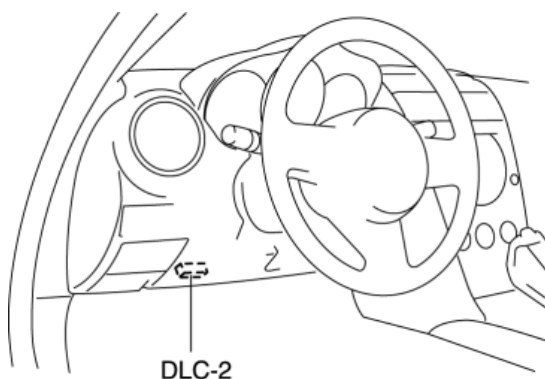
No.	Service		Programming procedure
1	Additional key	Have two or more valid keys	(See No.1 Additional Key Programming Procedure (Using Two Valid Keys) .)

2	programming	Have one valid key or valid card key	(See No. 2 Additional Key Programming Procedure (Using the M-MDS).)
3	Additional key programming procedure setting	Disable programming using valid keys Enable programming using valid keys	(See No.3 Additional Key Programming Procedure Changing.)
4	Programming due to PCM replacement		(See No.4 Programming Procedure Due to PCM Replacement.)
5	Programming due to steering lock unit replacement		(See No.5 Programming Procedure Due to Steering Lock Unit Replacement.)
6	Programming due to keyless control module replacement		(See No.6 Programming Procedure Due to Keyless Control Module Replacement.)
7	Programming due to simultaneous replacement of immobilizer system-related parts <ul style="list-style-type: none"> • PCM • Keyless control module • Steering lock unit 		(See No.7 Programming Procedure Due to Simultaneous Replacement of Immobilizer System-related Parts (PCM, Keyless Control Module, and Steering Lock Unit).)
8	Programming due to coil antenna replacement	Programming of immobilizer system-related parts is not necessary	
9	Programming after keyless receiver replacement	Programming of immobilizer system-related parts is not necessary	

M-MDS Connecting Procedure

NOTE:

- Do not place the M-MDS in the vehicle while programming the immobilizer system.
1. Fully lower the door glass.
 2. Connect the M-MDS to the DLC-2.



3. Place the M-MDS outside the vehicle.

CAUTION:

- Cover the vehicle body with a clean rag so as not to damage the vehicle body with the cable.

No.1 Additional Key Programming Procedure (Using Two Valid Keys)

CAUTION:

- The engine cannot be started if any step or procedure is skipped. Perform all procedures in the order of the steps.

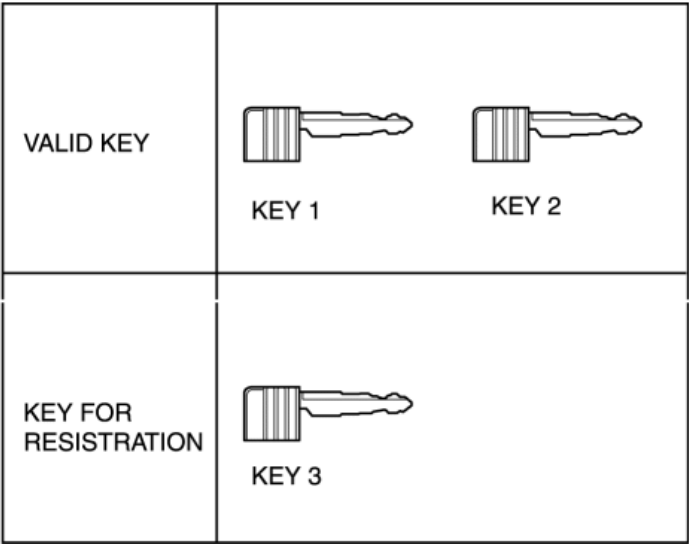
Conditions

- Have two or more valid keys.

NOTE:

- If a key ID number cannot be programmed and DTC 15 is displayed, the maximum number of programmed keys may have been reached. Verify the number of programmed keys using the M-MDS.
- If eight keys have already been programmed and it is necessary to program other keys, the previously programmed key ID numbers must first be cleared.
- If “Customer spare key programming disable” is selected, perform additional key programming using the M-MDS. (See [No. 2 Additional Key Programming Procedure \(Using the M-MDS\).](#))

Procedure



Step	Procedure	Action after procedure
1	START ENGINE <ul style="list-style-type: none">• Start the engine using key 1.• Verify that the security light illuminates for approx. 3 s, and then turns off.• Turn the ignition switch to the LOCK position.	Go to the next step.
2	LAUNCH PROGRAMMING MODE <ul style="list-style-type: none">• Turn the ignition switch to the ON position using key 1.• After verifying that the security light illuminates for approx. 3 s and turns off, turn the ignition switch to the LOCK position within approx. 4 s using key 1.• Remove key 1.• Turn the ignition switch to the ON position using key 2.• After verifying that the security light illuminates for approx. 3 s and turns off, turn the ignition switch to the LOCK position within approx. 4 s using key 2.• Remove key 2.	Go to the next step.

3	PERFORM ADDITIONAL KEY PROGRAMMING <ul style="list-style-type: none"> • Turn the ignition switch to the ON position using key 3. • Verify that the security light illuminates for approx. 3 s, and then turns off. • Remove key 3. • Are there other keys to be programmed? 	<div>Yes</div> <div>Go back to Step 2.</div>
4	VERIFY KEY PROGRAMMED CORRECTLY <ul style="list-style-type: none"> • Verify that the engine can start and run for approx. 5 s or more using all the programmed keys. NOTE: <ul style="list-style-type: none"> • When verifying that the engine starts, wait at least approx. 5 s or more before starting the engine using the next key. 	<div>No</div> <div>Go to the next step.</div>
		Procedure is completed

No. 2 Additional Key Programming Procedure (Using the M-MDS)

CAUTION:

- The engine cannot be started if any step or procedure is skipped. Perform all procedures in the order of the steps.

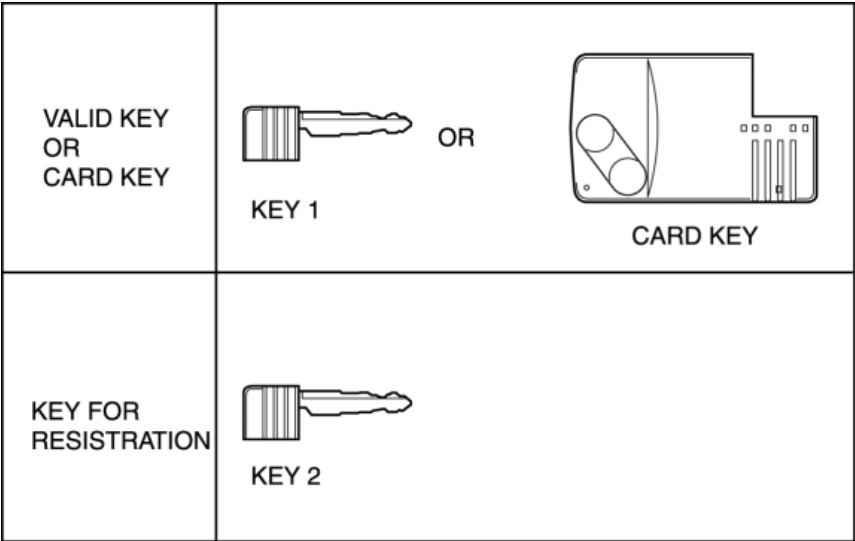
Conditions

- There is only one valid key. Or, there is an card key which can start the engine.

NOTE:

- If a key ID number cannot be programmed and DTC 15 is displayed, the maximum number of programmed keys may have been reached. Verify the number of programmed keys using the M-MDS.
- If eight keys have already been programmed and it is necessary to program other keys, the previously programmed key ID numbers must first be cleared.

Procedure



Step	Procedure	Action after procedure
1	START ENGINE <ul style="list-style-type: none"> • Start the engine using the key 1 or the card key. CAUTION:	

	<ul style="list-style-type: none"> When starting the engine with key 1, key programming may not be performed correctly if the card key is inside the vehicle. Do not place the card key in the vehicle when starting the engine with key 1. When starting the engine with the card key, remove the card key from the vehicle after the engine is started. <ul style="list-style-type: none"> Verify that the security light illuminates for approx. 3 s, and then turns off. Turn the ignition switch to the LOCK position. 	Go to the next step.
2	<p>PERFORM ADDITIONAL KEY PROGRAMMING</p> <ul style="list-style-type: none"> Connect the M-MDS to the DLC-2. (See M-MDS Connecting Procedure.) Turn the ignition switch to the ON position using key 2. <p>NOTE:</p> <ul style="list-style-type: none"> Although the security light starts flashing and DTC 15 is displayed after approx. 1 min, this does not indicate an improper procedure. Continue to perform the procedure as indicated. After vehicle identification, select the following from the M-MDS initial screen. <ul style="list-style-type: none"> Using an IDS (laptop PC) <ul style="list-style-type: none"> Select the "Body" Select the "Security" Select the "PATS function" Select the "Program Additional Ignition Key" Using a PDS (Pocket PC): <ul style="list-style-type: none"> Select the "All Tests and Calibrations" Select the "PATS Functions" Select the "Program Additional Ignition Key" Perform the security access according to the directions on the M-MDS screen. <p>NOTE:</p> <ul style="list-style-type: none"> After executing the above menu, "The operation is successful" is displayed. This indicates that the programming of the key currently in the ignition switch ON position has been completed. After verifying that the PATS function menu is displayed again on the M-MDS screen, turn the ignition switch to the LOCK position. Remove key 2. Are there other keys to be programmed? 	<p>Change the key and repeat Step 2.</p> <p>NOTE:</p> <ul style="list-style-type: none"> Additional key programming can be performed using the procedure in No.1 Additional Key Programming Procedure (Using Two Valid Keys). <p>Yes</p> <p>No Go to the next step.</p>
3	<p>CLOSE THE M-MDS</p> <ul style="list-style-type: none"> After verifying that the PATS function menu is displayed again on the M-MDS screen, select "Finish (this menu)". Turn the ignition switch to the LOCK position. 	Go to the next step.

4	VERIFY KEY PROGRAMMED CORRECTLY Verify that the engine can be started with the programmed key. NOTE: <ul style="list-style-type: none"> When verifying that the engine starts, wait at least approx. 5 s or more before starting the engine using the next key. 	Procedure is completed
---	---	------------------------

No.3 Additional Key Programming Procedure Changing

NOTE:

- This procedure is performed for disabling the No.1 Additional Key Programming Procedure (Using Two Valid Keys).
- The setting is "Customer spare key programming enable" when the vehicle is new or the keyless control module is replaced with a new one.

Procedure

Step	Procedure	Action after procedure
1	CHANGE CUSTOMER SPARE KEY PROGRAMMING PROCEDURE <ul style="list-style-type: none"> Connect the M-MDS to the DLC-2. (See M-MDS Connecting Procedure.) Turn the ignition switch to the ON position using a key (The key can be either the valid key or an unprogrammed key). NOTE: <ul style="list-style-type: none"> If an unprogrammed key is used, the security light starts flashing and DTC 15 is displayed after approx. 1 min. However, this does not indicate an improper procedure. Continue to perform the procedure as indicated. After vehicle identification, select the following from the M-MDS initial screen. <ul style="list-style-type: none"> Using an IDS (laptop PC) <ul style="list-style-type: none"> Select the "Body" Select the "Security" Select the "PATS function" Using a PDS (Pocket PC): <ul style="list-style-type: none"> Select the "All Tests and Calibrations" Select the "PATS Functions" Select either of the following from the M-MDS menu to change the additional key programming procedure. <ul style="list-style-type: none"> When "Customer Spare Key Programming Enable" is selected: The additional key programming procedure using valid keys is enabled. When "Customer Spare Key Programming Disable" is selected: The additional key programming procedure using valid keys is disabled. Perform the security access according to the directions on the M-MDS screen. After verifying that the PATS function menu is displayed again on the M-MDS screen, select "Finish (this menu)". Turn the ignition switch to the LOCK position. 	Procedure is completed

No.4 Programming Procedure Due to PCM Replacement

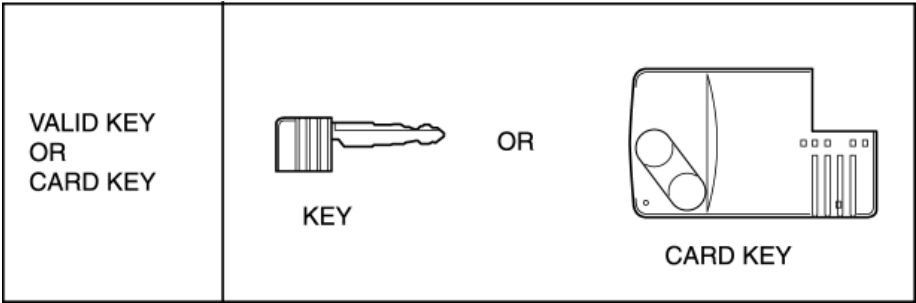
CAUTION:

- The engine cannot be started if any step or procedure is skipped. Perform all procedures in the order of the steps.

Conditions

- Prepare a valid key or an card key that can start the engine.

Procedure



Step	Procedure	Action after procedure
1	<p>REPLACE THE PCM</p> <p>Refer to PCM REMOVAL/INSTALLATION to perform PCM replacement and configuration.</p> <p>(See PCM REMOVAL/INSTALLATION [13B-MSP].)</p>	Go to the next step.
2	<p>PERFORM PARAMETER RESET</p> <ul style="list-style-type: none">• Connect the M-MDS to the DLC-2. <p>(See M-MDS Connecting Procedure.)</p> <ul style="list-style-type: none">• Turn the ignition switch to the ON position using the valid key or the valid card key. <p>NOTE:</p> <ul style="list-style-type: none">• Although the security light remains illuminated and DTC 23 is displayed after approx. 1 min, continue to perform the procedure as indicated.• Verify that the keyless warning light illuminates for approx 3 s, and then turns off.• After vehicle identification, select the following from the M-MDS initial screen.<ul style="list-style-type: none">■ Using an IDS (laptop PC):<ul style="list-style-type: none">■ Select the “Body”■ Select the “Security”■ Select the “PATS function”■ Select the “Parameter Reset”■ Using a PDS (pocket PC):<ul style="list-style-type: none">■ Select the “All Tests and Calibrations”■ Select the “PATS Functions”	Go to the next step.

	<ul style="list-style-type: none">■ Select the "Parameter Reset" <ul style="list-style-type: none">• Perform the security access according to the directions on the M-MDS screen.• Select the replaced parts (PCM) according to the directions on the M-MDS screen. <p>CAUTION:</p> <ul style="list-style-type: none">• At this time, do not select the other parts from the M-MDS menu.• After verifying that the PATS function menu is displayed again on the M-MDS screen, select "Finish (this menu)".• Turn the ignition switch to the LOCK position.• Turn the ignition switch to the ON position.• Verify that the security light illuminates for approx. 3 s, and then turns off.• Turn the ignition switch to the LOCK position.					
3	<p>VERIFY PROGRAMMING IS PERFORMED CORRECTLY</p> <ul style="list-style-type: none">• Verify that the engine can be started with all the keys.• Can the engine be started?	<table><tr><td>Yes</td><td>Procedure is completed</td></tr><tr><td>No</td><td>Perform the corresponding DTC inspection to repair the malfunctioning part.</td></tr></table>	Yes	Procedure is completed	No	Perform the corresponding DTC inspection to repair the malfunctioning part.
Yes	Procedure is completed					
No	Perform the corresponding DTC inspection to repair the malfunctioning part.					

No.5 Programming Procedure Due to Steering Lock Unit Replacement

CAUTION:

- The engine cannot be started if any step or procedure is skipped. Perform all procedures in the order of the steps.

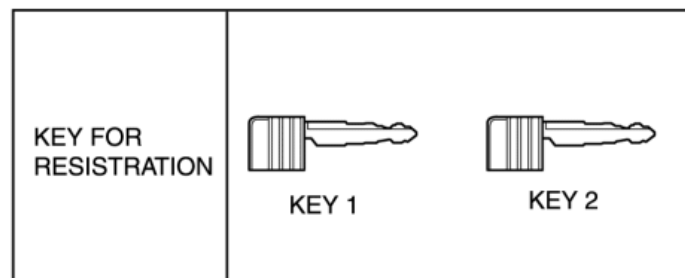
NOTE:

- Since two or more keys need to be programmed to start the engine, program two or more keys after the replacement.

Conditions

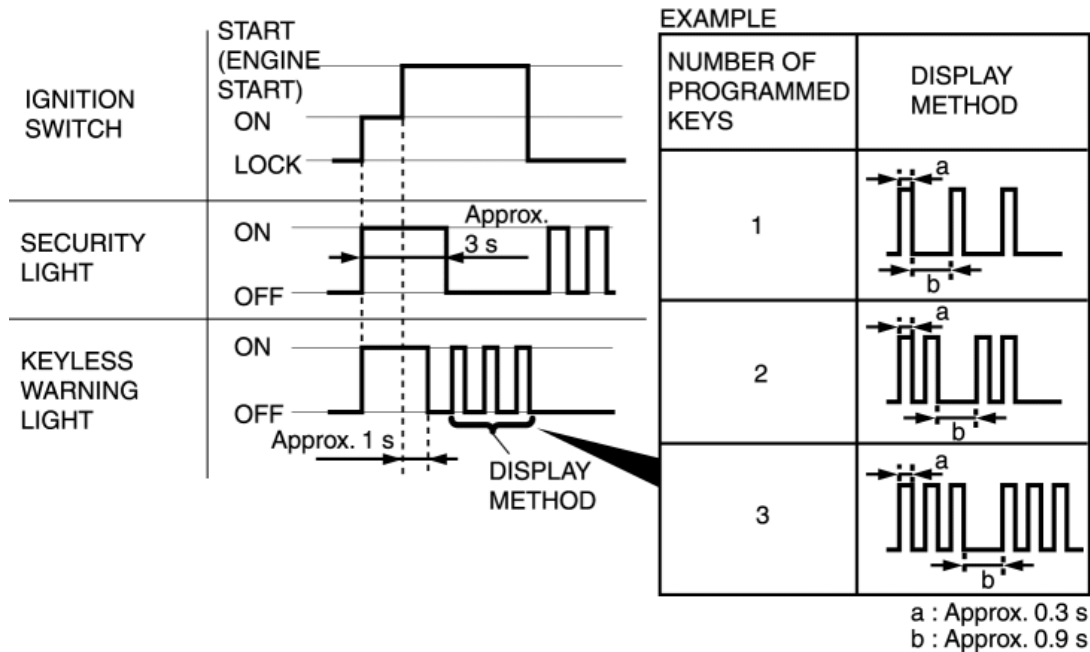
- Have two or more keys to be programmed after the replacement.

Procedure



Step	Procedure	Action after procedure
1	<p>REPLACE STEERING LOCK UNIT</p> <p>Replace the steering lock unit.</p> <p>(See STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.)</p>	Go to the next step.

2	<p>CLEAR IGNITION KEY ID NUMBERS</p> <ul style="list-style-type: none"> • Connect the M-MDS to the DLC-2. <p>(See M-MDS Connecting Procedure.)</p> <ul style="list-style-type: none"> • Turn the ignition switch to the ON position using key 1. <p>NOTE:</p> <ul style="list-style-type: none"> • Although the security light starts flashing and DTC 15 is displayed after approx. 1 min, this does not indicate an improper procedure. Continue to perform the procedure as indicated. <ul style="list-style-type: none"> • After vehicle identification, select the following from the M-MDS initial screen. <ul style="list-style-type: none"> ▪ Using an IDS (laptop PC): <ul style="list-style-type: none"> ▪ Select the "Body" ▪ Select the "Security" ▪ Select the "PATS function" ▪ "Ignition Key Code Erase and Program" ▪ Using a PDS (pocket PC): <ul style="list-style-type: none"> ▪ Select the "All Tests and Calibrations" ▪ Select the "PATS Functions" ▪ "Ignition Key Code Erase and Program" • Perform the security access according to the directions on the M-MDS screen. 	Go to the next step.
3	<p>PERFORM IGNITION KEY ID NUMBER PROGRAMMING</p> <ul style="list-style-type: none"> • Program two keys according to the directions on the M-MDS. • Verify that the PATS function menu is displayed again on the M-MDS screen. 	Go to the next step.
4	<p>PERFORM Steering Lock Unit Programming</p> <ul style="list-style-type: none"> • Select "Steering Lock Unit Programming" from the M-MDS screen menu. • Complete the Steering Lock Unit Programming according to the directions on the M-MDS. <p>(See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].)</p> <ul style="list-style-type: none"> • After verifying that the PATS function menu is displayed again on the M-MDS screen, select "Finish (this menu)". • Turn the ignition switch to the LOCK position. • Disconnect the M-MDS from the DLC-2. • Remove the programmed card key from the vehicle. 	Go to the next step.
5	<p>VERIFY KEY 1 PROGRAMMING PERFORMED CORRECTLY</p> <ul style="list-style-type: none"> • Start the engine using key 1. • Verify that the security light and keyless warning light operate as shown in the following figure. • Turn the ignition switch to the LOCK position and remove key 1. 	Go to the next step.

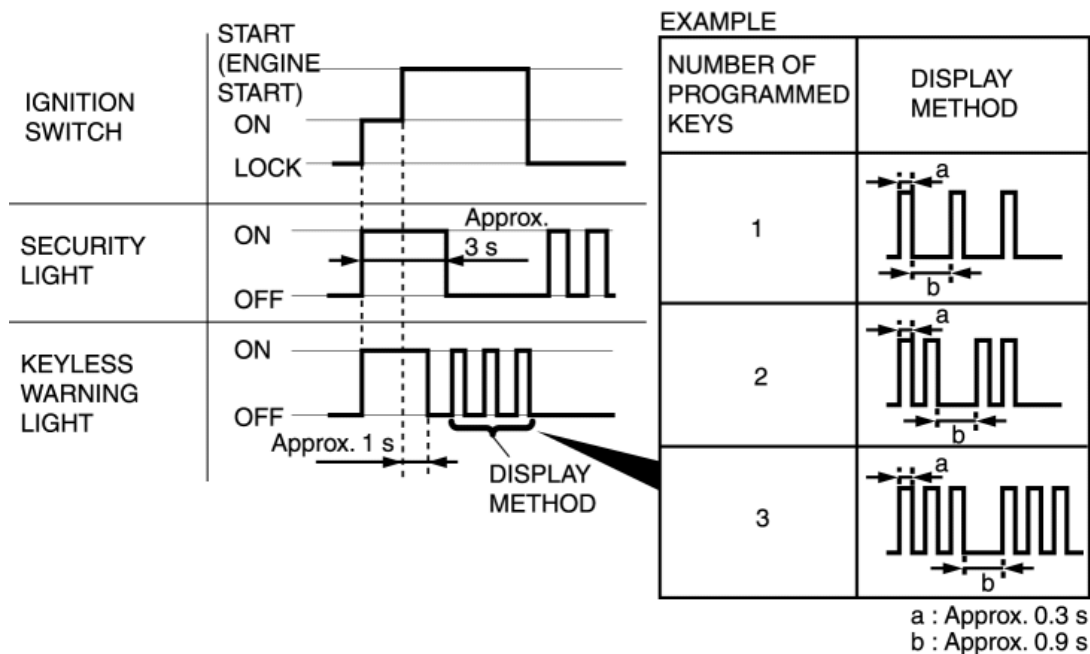


VERIFY KEY 2 PROGRAMMING PERFORMED CORRECTLY

6

- Start the engine using key 2.
- Verify that the security light and keyless warning light operate as shown in the following figure.
- Turn the ignition switch to the LOCK position and remove key 2.
- Are there other keys to be programmed?

Repeat Step 6 using
Yes each programmed
key.



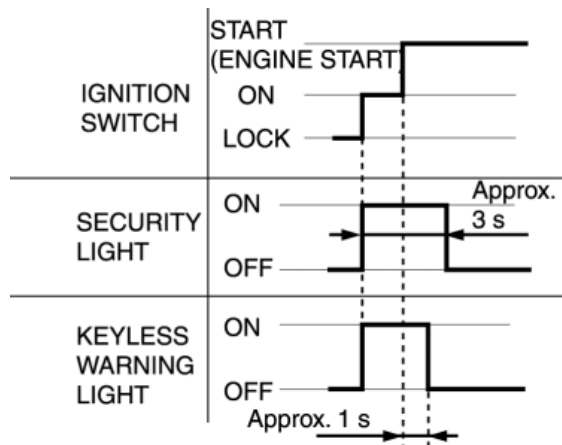
No Go to the next step.

VERIFY CARD KEY PROGRAMMING PERFORMED CORRECTLY

7

- Bring the programmed card key into the vehicle.
- Close all doors.
- Remove the key from the key cylinder and place it on the front passenger's seat.
- Start the engine using the card key.
- Verify that the security light and keyless warning light operate as shown in the following figure.
- After verifying that the keyless warning light turns off, turn the ignition switch to the LOCK

position.



Procedure is completed

No.6 Programming Procedure Due to Keyless Control Module Replacement

CAUTION:

- The engine cannot be started if any step or procedure is skipped. Perform all procedures in the order of the steps.

NOTE:

- Before beginning the procedure, verify that the customer has turned in all of the card keys and keys for the vehicle.
- The engine cannot be started unless an card key and two or more keys are programmed after the replacement.

Conditions

- Have two or more keys to be programmed after the replacement.
- Have one or more card keys to be programmed after the replacement.

Procedure

KEY FOR RESISTRATION	<p>KEY 1 KEY 2</p>
CARD KEY FOR RESISTRATION	<p>CARD KEY</p>

Step	Procedure	Action after procedure
1	REPLACE KEYLESS CONTROL MODULE	Go to the next step.

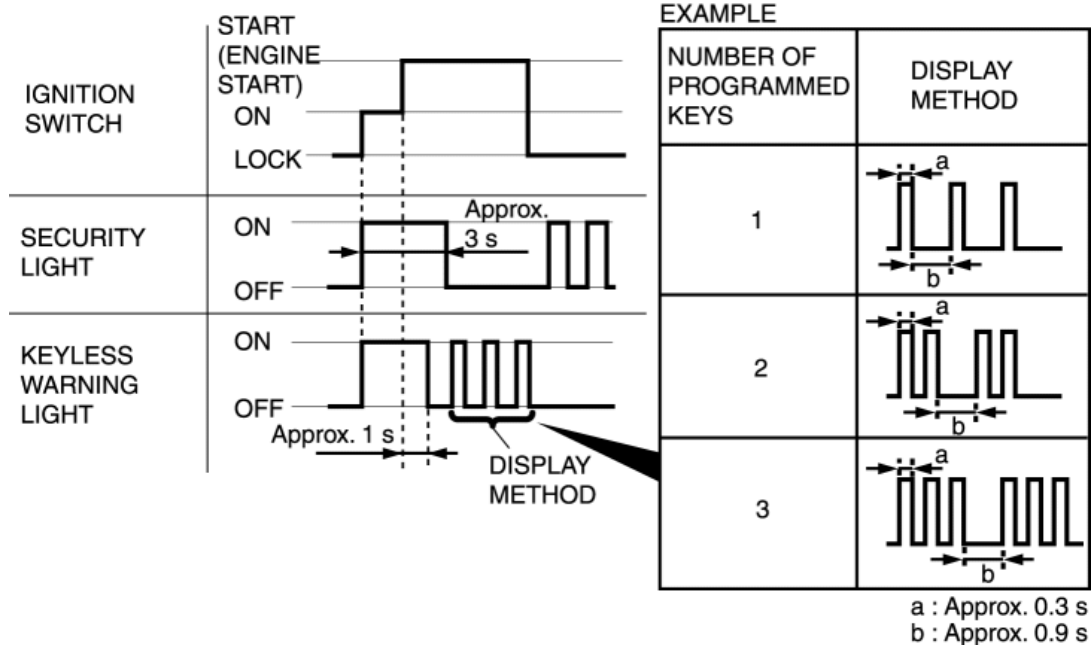
	Replace the keyless control module. (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION .)	
2	<p>PERFORM PARAMETER RESET</p> <ul style="list-style-type: none"> Connect the M-MDS to the DLC-2. (See M-MDS Connecting Procedure.) Turn the ignition switch to the ON position using key 1. <p>NOTE:</p> <ul style="list-style-type: none"> Although the security light starts flashing and DTC 15 is displayed after approx. 1 min, this does not indicate an improper procedure. Continue to perform the procedure as indicated. After vehicle identification, select the following from the M-MDS initial screen. <ul style="list-style-type: none"> Using an IDS (laptop PC): <ul style="list-style-type: none"> Select the "Body" Select the "Security" Select the "PATS function" Select the "Parameter Reset" Using a PDS (pocket PC): <ul style="list-style-type: none"> Select the "All Tests and Calibrations" Select the "PATS Functions" Select the "Parameter Reset" Perform the security access according to the directions on the M-MDS screen. Select the replaced part "RKE" according to the directions on the M-MDS. <p>CAUTION:</p> <ul style="list-style-type: none"> At this time, do not select the other parts from the M-MDS menu. 	Go to the next step.
3	<p>CLEAR IGNITION KEY ID NUMBERS</p> <ul style="list-style-type: none"> Select "Ignition Key Code Erase and Program" from the M-MDS screen menu. Clear the ignition key ID number according to the directions on the M-MDS. 	Go to the next step.
4	<p>PERFORM IGNITION KEY ID NUMBER PROGRAMMING</p> <ul style="list-style-type: none"> Program two keys according to the directions on the M-MDS. Verify that the PATS function menu is displayed again on the M-MDS screen. 	Go to the next step.
5	<p>PERFORM CARD KEY PROGRAMMING</p> <ul style="list-style-type: none"> Select "Program Additional card key" from the M-MDS screen menu. Program the card key according to the directions on the M-MDS. Verify that the PATS function menu is displayed again on the M-MDS screen. 	Go to the next step.
6	<p>PERFORM STEERING LOCK UNIT PRogramming</p> <ul style="list-style-type: none"> Select "Steering Lock Unit Programming" from the M-MDS screen menu. Complete the Steering Lock Unit Programming according to the directions on the M-MDS. (See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM].) After verifying that the PATS function menu is displayed again on the M-MDS screen, select "Finish (this menu)". Turn the ignition switch to the LOCK position. 	Go to the next step.

Disconnect the M-MDS from the DLC-2.

- Remove the programmed card key from the vehicle.

VERIFY KEY 1 PROGRAMMING PERFORMED CORRECTLY

- Start the engine using key 1.
- Verify that the security light and keyless warning light operate as shown in the following figure.
- Turn the ignition switch to the LOCK position and remove key 1.

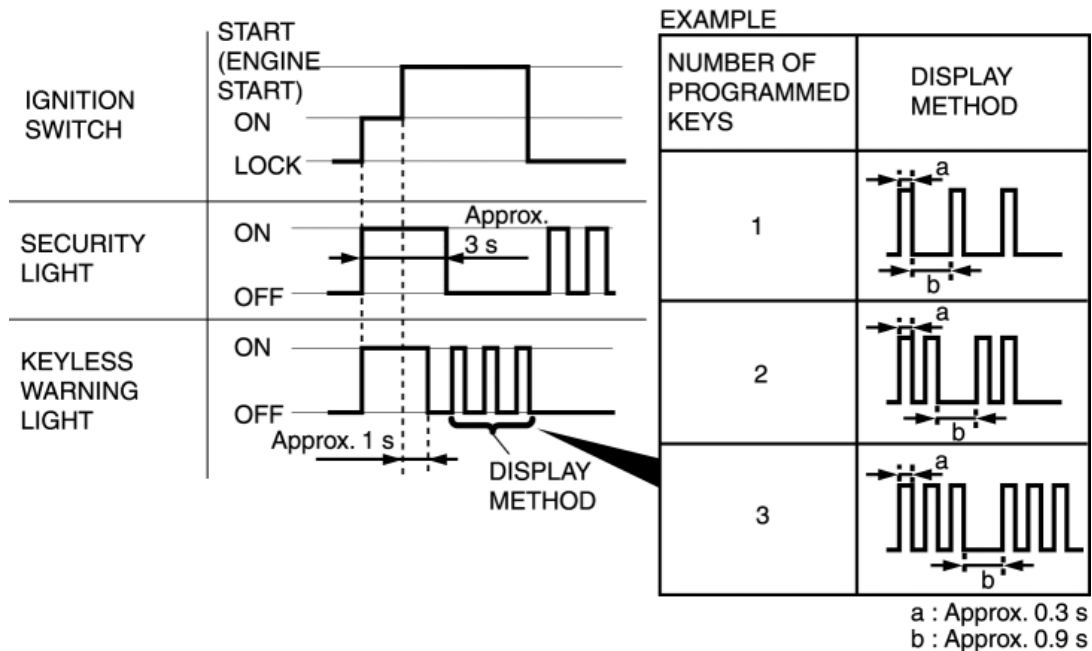


Go to the next step.

VERIFY KEY 2 PROGRAMMING PERFORMED CORRECTLY

- Start the engine using key 2.
- Verify that the security light and keyless warning light operate as shown in the following figure.
- Turn the ignition switch to the LOCK position and remove key 2.
- Are there other keys to be programmed?

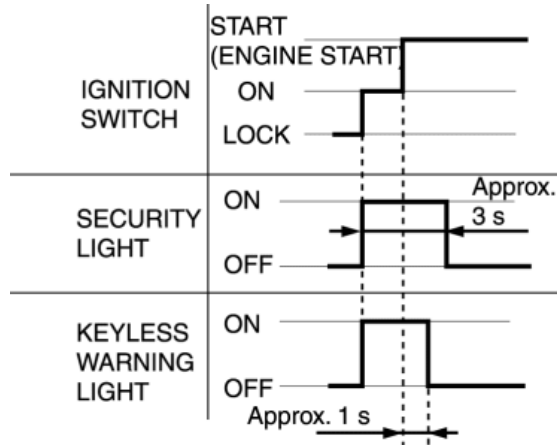
Repeat Step 8 using
Yes each programmed
key.



No Go to the next step.

VERIFY CARD KEY PROGRAMMING PERFORMED CORRECTLY

- Bring the programmed card key into the vehicle.
- Close all doors.
- Remove the key from the key cylinder and place it on the front passenger's seat.
- Start the engine using the card key.
- Verify that the security light and keyless warning light operate as shown in the following figure.
- Turn the ignition switch to the LOCK position.



Procedure is completed

No.7 Programming Procedure Due to Simultaneous Replacement of Immobilizer System-related Parts (PCM, Keyless Control Module, and Steering Lock Unit)**CAUTION:**

- The engine cannot be started if any step or procedure is skipped. Perform all procedures in the order of the steps.
- The menu and execution sequence of the M-MDS vary depending on the type of replaced unit and parts. Perform the procedures referring to the following table.

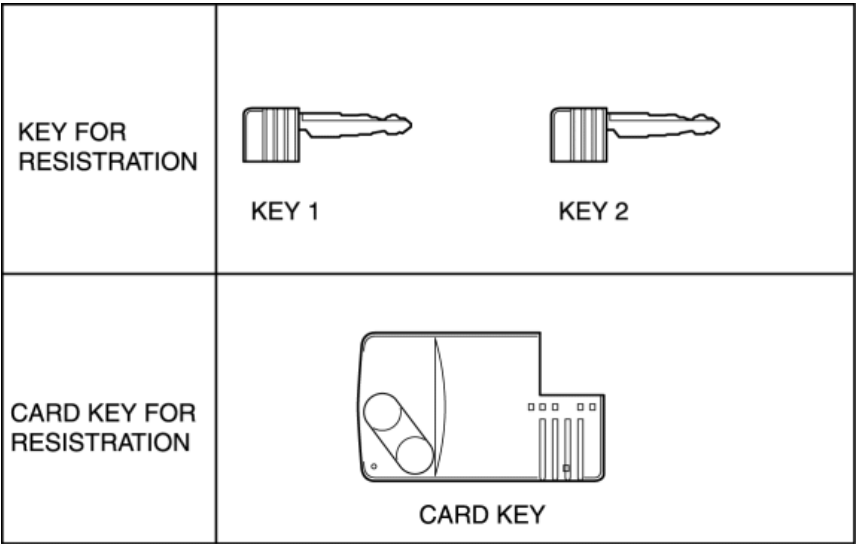
M-MDS menu

- (1): Parameter Reset
- (2): Ignition Key Code Erase and Program
- (3): Program Additional card key
- (4): Steering Lock Unit Programming

Replacement part	M-MDS execution menu/sequence	Conditions
Keyless control module and PCM	(1)→(2)→(3)→(4)	<ul style="list-style-type: none"> • Have two or more keys to be programmed after the replacement. • Have one or more card keys to be programmed after the replacement.
Keyless control module and steering lock unit ^{*1}		
Keyless control module, PCM, and steering lock unit ^{*1}		
PCM and steering lock unit ^{*1}	(1)→(2)→(4)	Have two or more keys to be programmed after the replacement.

*1 Because the steering lock unit is integrated with the ignition key cylinder, the key must also be replaced when replacing the steering lock unit.

Procedure



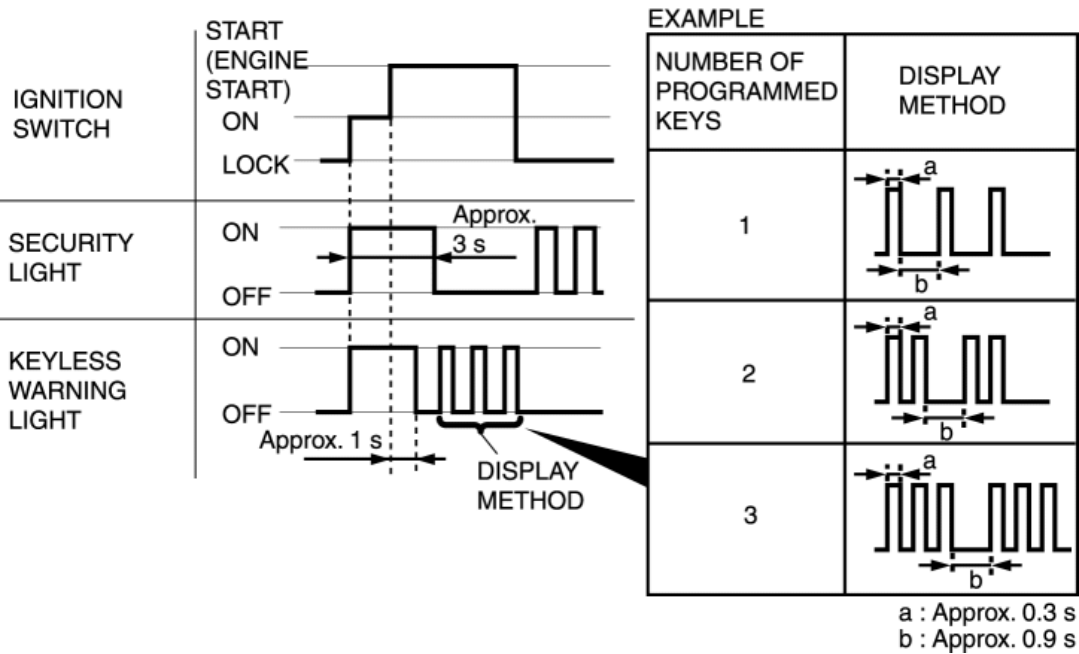
Step	Procedure	Action after procedure
1	REPLACE UNITS OR PARTS Replace the unit or parts.	Go to the next step.
2	PERFORM PARAMETER RESET <ul style="list-style-type: none">• Connect the M-MDS to the DLC-2. (See M-MDS Connecting Procedure.)• Turn the ignition switch to the ON position using key 1. NOTE: <ul style="list-style-type: none">• Although the security light flashes or illuminates and DTC 15 or 23 is displayed after approx. 1 min, continue to perform the procedure.• After vehicle identification, select the following from the M-MDS initial screen.<ul style="list-style-type: none">■ Using an IDS (laptop PC):<ul style="list-style-type: none">■ Select the "Body"■ Select the "Security"■ Select the "PATS function"■ Select the "Parameter Reset"■ Using a PDS (pocket PC):<ul style="list-style-type: none">■ Select the "All Tests and Calibrations"■ Select the "PATS Functions"■ Select the "Parameter Reset"• Perform the security access according to the directions on the M-MDS screen.• Select the replaced parts according to the directions on the M-MDS screen.	Go to the next step.

- If the PCM is replaced: Select “PCM”.
- If the keyless control module is replaced: Select “RKE”.

CAUTION:

- At this time, do not select the other parts from the M-MDS menu.

3	CLEAR IGNITION KEY ID NUMBERS <ul style="list-style-type: none"> • Select “Ignition Key Code Erase and Program” from the M-MDS screen menu. • Clear the ignition key ID number according to the directions on the M-MDS. 	Go to the next step.
4	PERFORM IGNITION KEY ID NUMBER PROGRAMMING <ul style="list-style-type: none"> • Program two keys according to the directions on the M-MDS. • Verify that the PATS function menu is displayed again on the M-MDS screen. 	Go to the next step.
5	PERFORM CARD KEY PROGRAMMING <ul style="list-style-type: none"> • Select “Program Additional card key” from the M-MDS screen menu. • Program the card key according to the directions on the M-MDS. • Verify that the PATS function menu is displayed again on the M-MDS screen. 	Go to the next step.
6	PERFORM STEERING LOCK UNIT PROGRAMMING <ul style="list-style-type: none"> • Select “Steering Lock Unit Programming” from the M-MDS screen menu. • Complete the Steering Lock Unit Programming according to the directions on the M-MDS. (See STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.) • After verifying that the PATS function menu is displayed again on the M-MDS screen, select “Finish (this menu)”. • Turn the ignition switch to the LOCK position. • Disconnect the M-MDS from the DLC-2. • Remove the programmed card key from the vehicle. 	Go to the next step.
7	VERIFY KEY 1 PROGRAMMING PERFORMED CORRECTLY <ul style="list-style-type: none"> • Start the engine using key 1. • Verify that the security light and keyless warning light operate as shown in the following figure. • Turn the ignition switch to the LOCK position and remove key 1. 	Go to the next step.

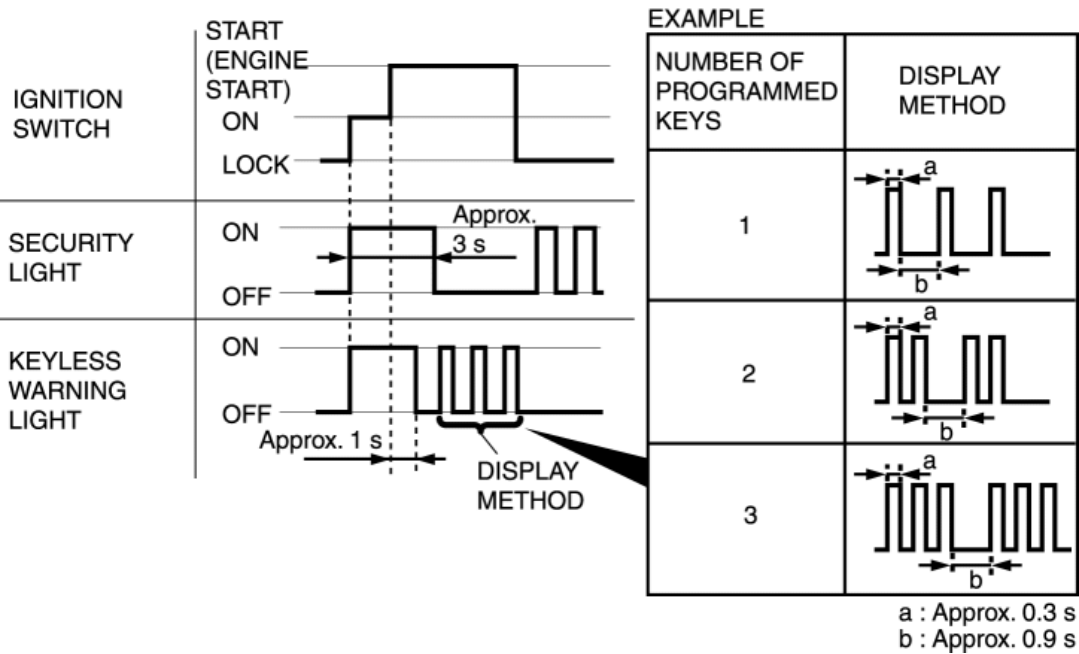


8 VERIFY KEY 2 PROGRAMMING PERFORMED CORRECTLY

- Start the engine using key 2.
- Verify that the security light and keyless warning light operate as shown in the following figure.
- Turn the ignition switch to the LOCK position and remove key 2.
- Are there other keys to be programmed?

Yes Repeat Step 8 using each programmed key.

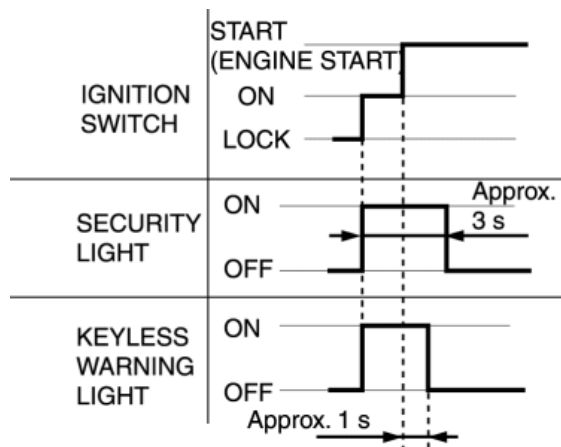
No Go to the next step.



9 VERIFY CARD KEY PROGRAMMING PERFORMED CORRECTLY

- Bring the programmed card key into the vehicle.
- Close all doors.
- Remove the key from the key cylinder and place it on the front passenger's seat.
- Start the engine using the card key.
- Verify that the security light and keyless warning light operate as shown in the following figure.

- Turn the ignition switch to the LOCK position.



Procedure is completed

[< Previous](#) [Next >](#)

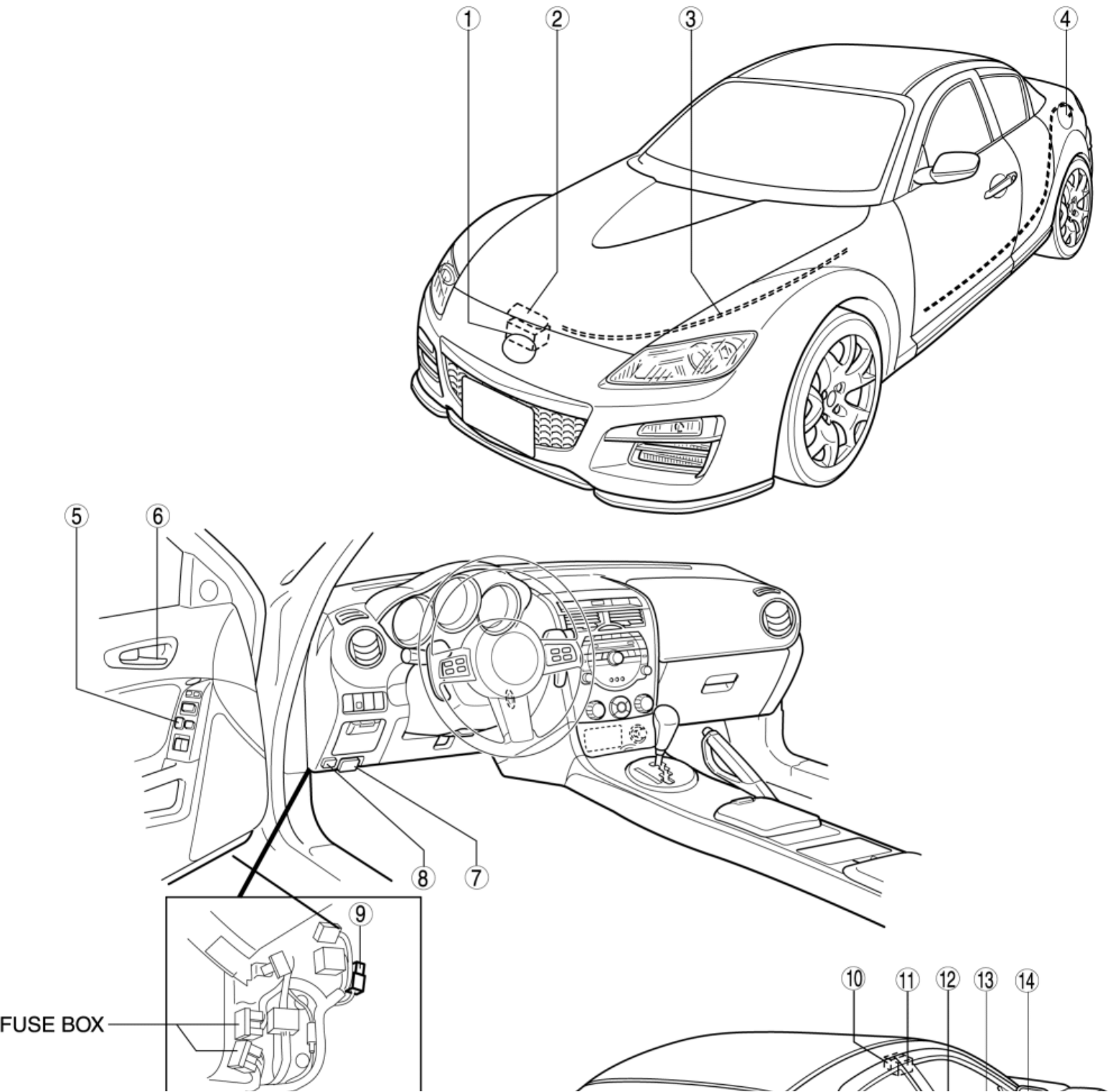
© 2010 Mazda North American Operations, U.S.A.

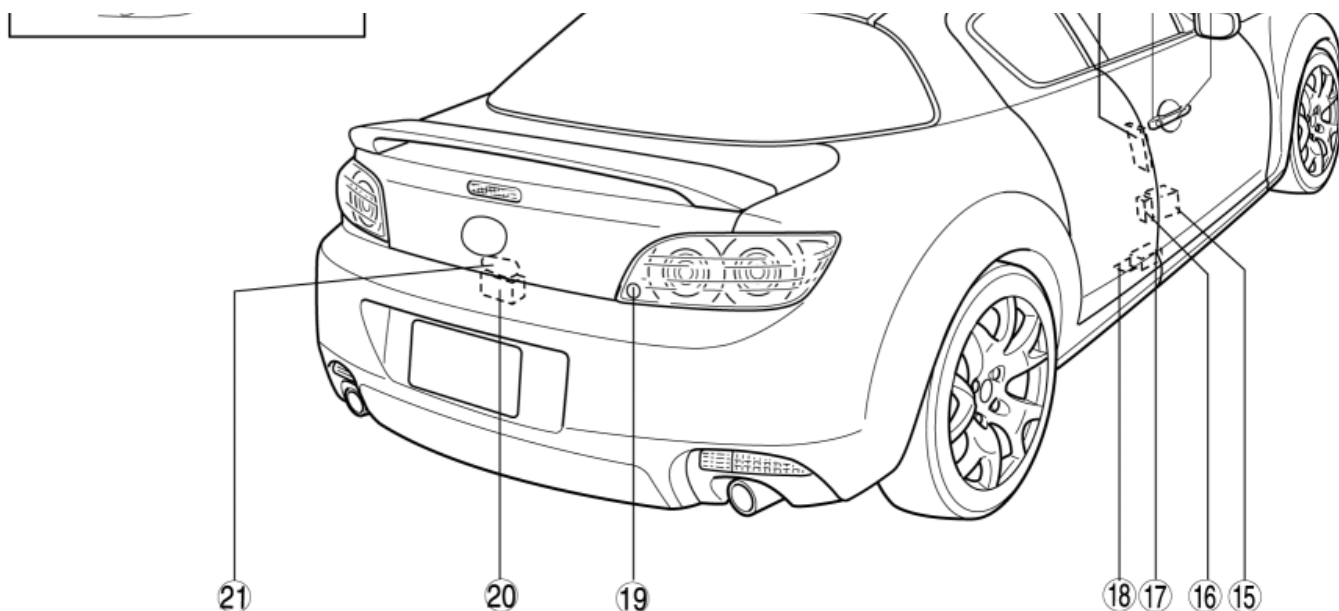
[Back to Top](#)

2011 - RX-8 - Body and Accessories

SECURITY AND LOCKS LOCATION INDEX

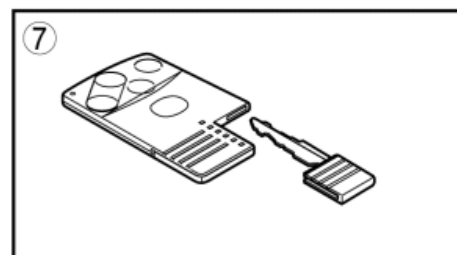
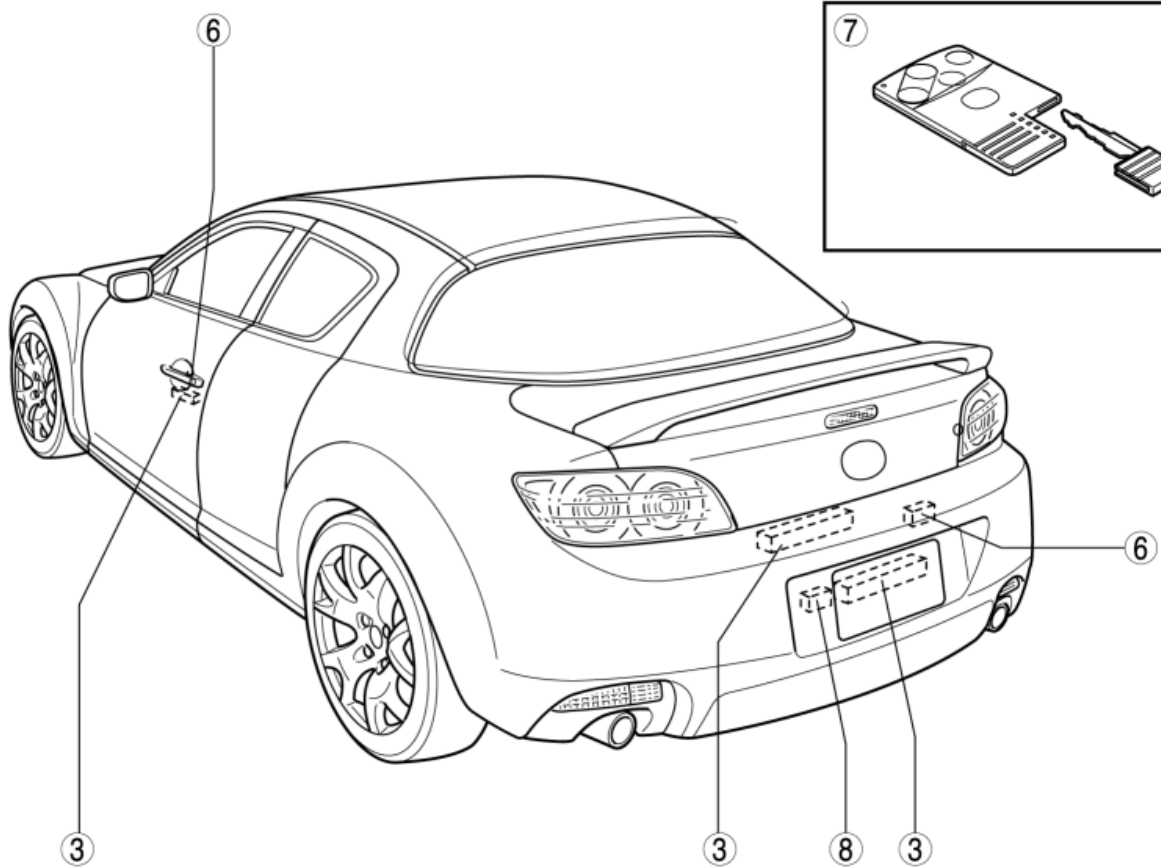
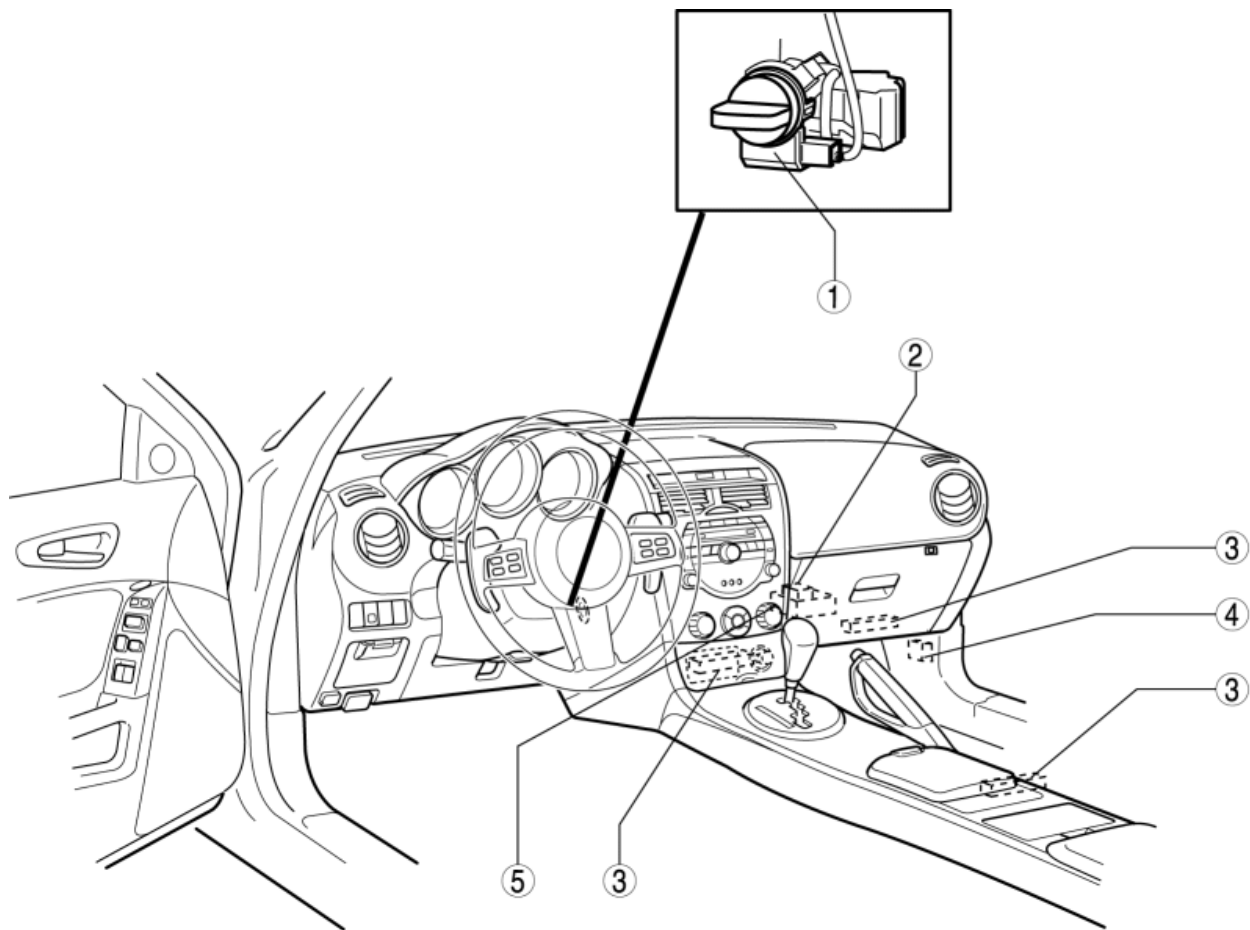
Locks and Openers





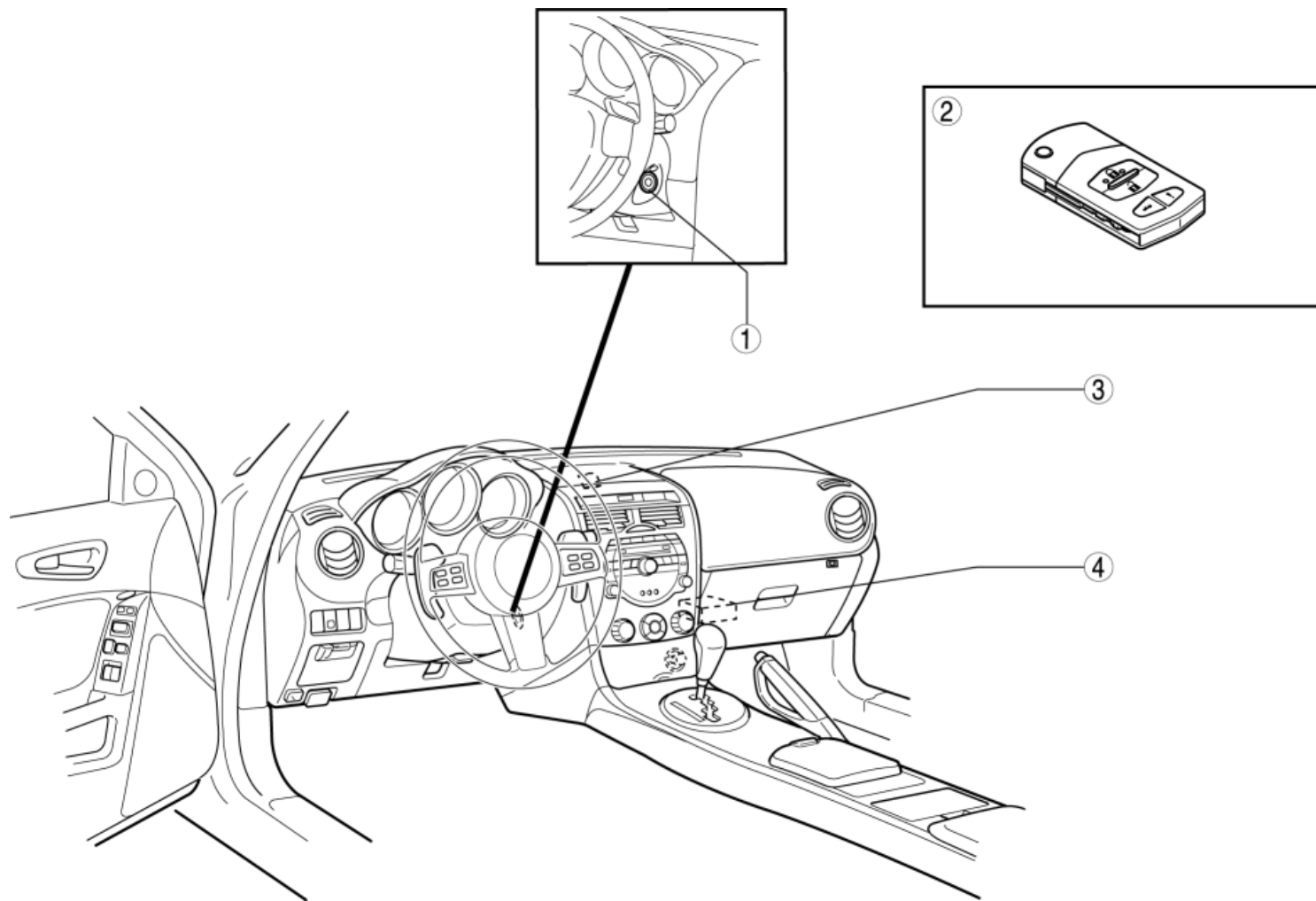
1	Hood latch (See HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.) (See HOOD LATCH SWITCH INSPECTION.)
2	Hood striker (See HOOD STRIKER REMOVAL/INSTALLATION.)
3	Hood release lever (See HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
4	Fuel-filler lid opener cable (See FUEL-FILLER LID OPENER REMOVAL/INSTALLATION.)
5	Door lock switch (See DOOR LOCK SWITCH REMOVAL/INSTALLATION.) (See DOOR LOCK SWITCH INSPECTION.)
6	Front inner handle (See FRONT INNER HANDLE REMOVAL/INSTALLATION.)
7	Hood release lever (See HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION.)
8	Trunk lid opener switch (See TRUNK LID OPENER SWITCH REMOVAL/INSTALLATION.) (See TRUNK LID OPENER SWITCH INSPECTION.)
9	Trunk lid opener relay

	(See RELAY INSPECTION.)
10	Rear door lock striker (upper) (See REAR DOOR LOCK STRIKER REMOVAL/INSTALLATION.)
11	Rear door upper latch (See REAR DOOR UPPER LATCH REMOVAL/INSTALLATION.) (See REAR DOOR UPPER LATCH SWITCH INSPECTION.)
12	Rear door release handle (See REAR DOOR RELEASE HANDLE REMOVAL/INSTALLATION.)
13	Front door key cylinder (See FRONT DOOR KEY CYLINDER REMOVAL/INSTALLATION.)
14	Front outer handle (See FRONT OUTER HANDLE REMOVAL/INSTALLATION.)
15	Front door latch and lock actuator (See FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION.) (See FRONT DOOR LOCK ACTUATOR INSPECTION.)
16	Front door lock striker (See FRONT DOOR KEY CYLINDER REMOVAL/INSTALLATION.)
17	Rear door lower latch (See REAR DOOR LOWER LATCH REMOVAL/INSTALLATION.)
18	Rear door lock striker (lower) (See REAR DOOR LOCK STRIKER REMOVAL/INSTALLATION.)
19	Trunk key cylinder (See TRUNK KEY CYLINDER REMOVAL/INSTALLATION.) (See TRUNK KEY CYLINDER SWITCH INSPECTION.)
20	Trunk lid latch and opener (See TRUNK LID LATCH AND OPENER REMOVAL/INSTALLATION.) (See TRUNK LID OPENER INSPECTION.)
21	Trunk lid striker (See TRUNK LID STRIKER REMOVAL/INSTALLATION.)



1	Coil antenna (See COIL ANTENNA REMOVAL/INSTALLATION .)
2	Keyless receiver (See KEYLESS RECEIVER REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] .) (See KEYLESS RECEIVER INSPECTION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] .)
3	Keyless antenna (See KEYLESS ANTENNA REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] .)
4	Keyless control module (See KEYLESS CONTROL MODULE REMOVAL/INSTALLATION .) (See KEYLESS CONTROL MODULE INSPECTION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] .) (See CUSTOMIZED FUNCTION SETTING PROCEDURE [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] .) (See STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] .) (See IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] .)
5	Door lock control module (See DOOR LOCK CONTROL MODULE REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] .) (See DOOR LOCK CONTROL MODULE INSPECTION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] .)
6	Request switch (See REQUEST SWITCH REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] .) (See REQUEST SWITCH INSPECTION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] .)
7	Card key (See CARD KEY ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] .) (See CLEARING CARD KEY [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] .) (See CARD KEY BATTERY REPLACEMENT [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] .)
8	Keyless beeper (See KEYLESS BEEPER REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM] .)

Keyless Entry System and Immobilizer System [Keyless entry System]



1 Coil antenna

(See [COIL ANTENNA REMOVAL/INSTALLATION](#).)

2 Transmitter

(See [TRANSMITTER BATTERY REPLACEMENT \[WITH KEYLESS ENTRY SYSTEM\]](#).)

(See [TRANSMITTER ID CODE REGISTRATION \[WITH KEYLESS ENTRY SYSTEM\]](#).)

3 Keyless receiver

(See [KEYLESS RECEIVER REMOVAL/INSTALLATION \[WITH KEYLESS ENTRY SYSTEM\]](#).)

(See [KEYLESS RECEIVER INSPECTION \[WITH KEYLESS ENTRY SYSTEM\]](#).)

4 Keyless control module

(See [KEYLESS CONTROL MODULE REMOVAL/INSTALLATION](#).)

(See [KEYLESS CONTROL MODULE INSPECTION \[WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#).)

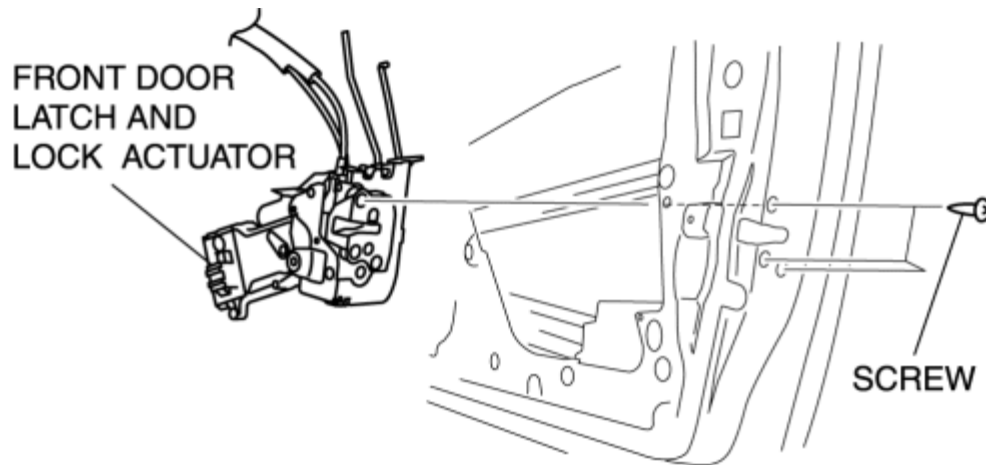
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

FRONT DOOR LATCH AND LOCK ACTUATOR REMOVAL/INSTALLATION

1. Remove the following parts:
 - a. Inner garnish (See [INNER GARNISH REMOVAL/INSTALLATION.](#))
 - b. Front door trim (See [FRONT DOOR TRIM REMOVAL/INSTALLATION.](#))
 - c. Front door glass (See [FRONT DOOR GLASS REMOVAL/INSTALLATION.](#))
 - d. Front door speaker (See [FRONT DOOR SPEAKER REMOVAL/INSTALLATION.](#))
 - e. Front door unit (See [FRONT DOOR UNIT REMOVAL/INSTALLATION.](#))
2. Detach the cables from the inner handle and the door lock knob.
3. Detach the rods from the key cylinder and the front outer handle.
4. Remove the screws, then remove the front door latch and lock actuator.



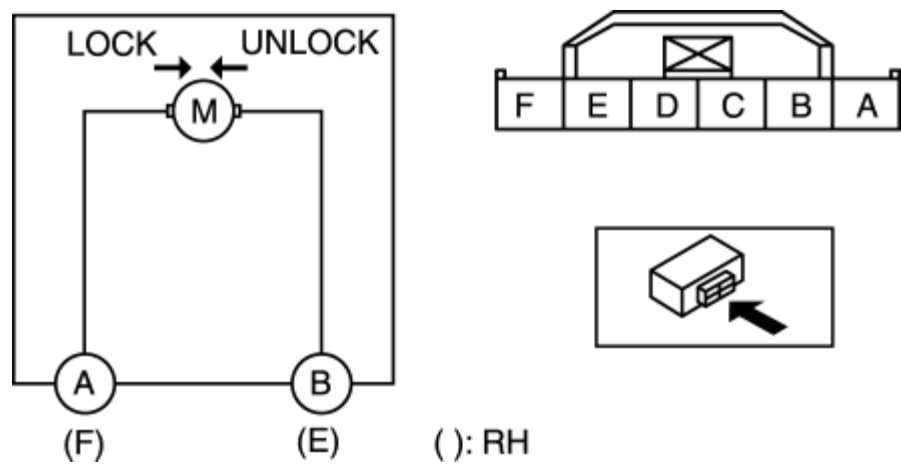
5. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

FRONT DOOR LOCK ACTUATOR INSPECTION

Door Lock Actuator

- 1. Disconnect the front door lock actuator connector.
- 2. Apply battery positive voltage and connect the ground to the corresponding front door lock actuator terminals and inspect the front door lock actuator operation.



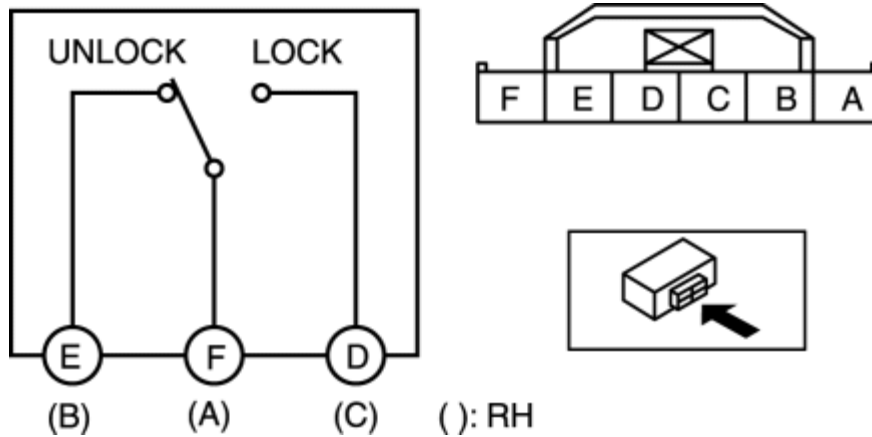
- If not as specified, replace the front door lock actuator.

Actuator operation	Connection	
	B+	GND
Lock	A (F)	B (E)
Unlock	B (E)	A (F)

()
RH

Door Lock-link Switch

1. Disconnect the front door lock actuator connector.
2. Inspect for continuity between the door lock-link switch terminals.



- If not as specified, replace the front door lock actuator.

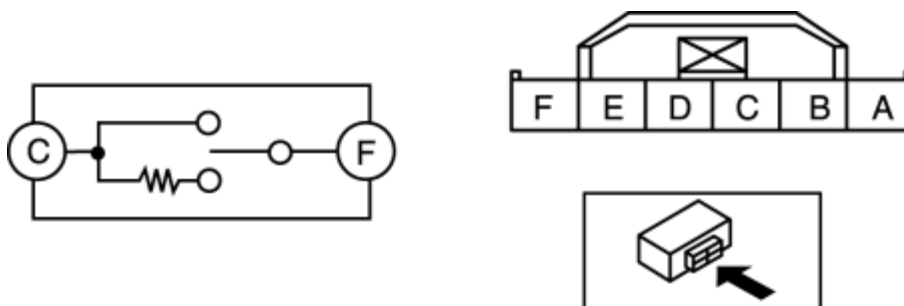
○—○ : Continuity

Lock knob position	Terminal		
	E (B)	F (A)	D (C)
Lock		○—○	○—○
Unlock	○—○	○—○	


(): RH


Door Key Cylinder Switch

1. Disconnect the front door lock actuator connector.
2. Inspect for continuity between the door lock-link switch terminals.



- If not as specified, replace the front door lock actuator.

○—○ : Continuity ○○ : Resistance

Key cylinder position	Terminal	
	C	F
Neutral		
Lock	○—  —○	○ R
Unlock	○—	○

R: 950—1050 w

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

DOOR LOCK SWITCH REMOVAL/INSTALLATION

LH

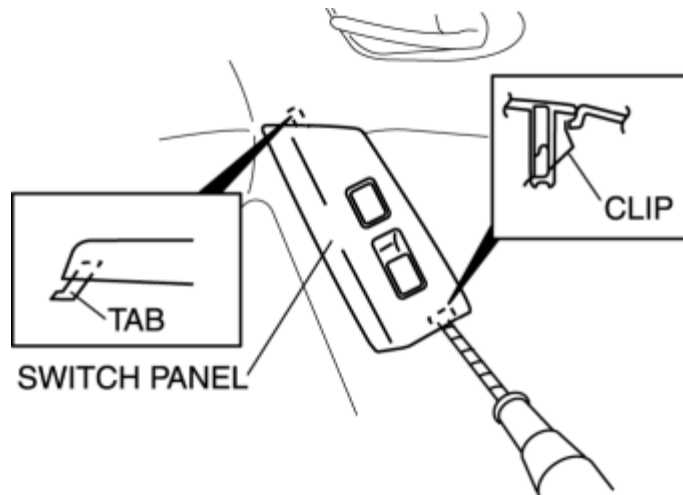
1. Remove the power window main switch. (See [POWER WINDOW MAIN SWITCH REMOVAL/INSTALLATION](#).)

NOTE:

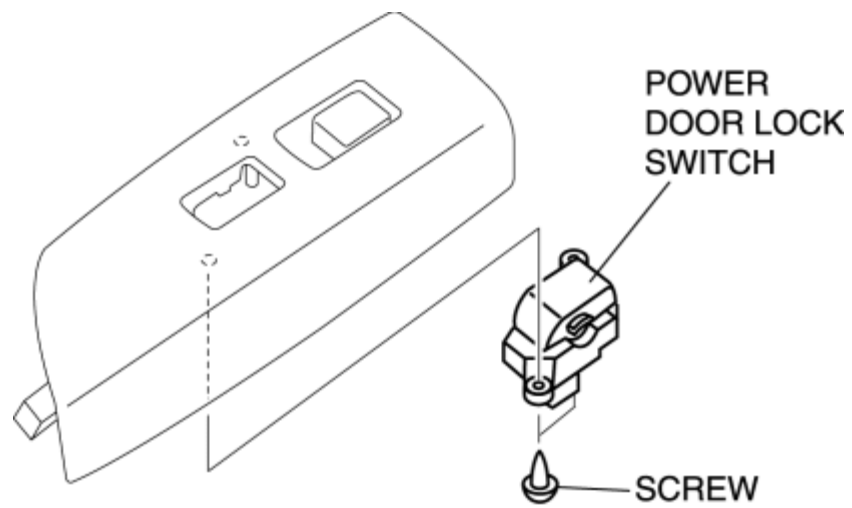
- The power door lock switch and the power window main switch are integrated.
2. Install in the reverse order of removal.

RH

1. Disconnect the negative battery cable.
2. Using a flathead screwdriver wrapped with protective tape, pry up the rear of the switch panel and detach the clip.



3. Remove the switch panel from the front door trim keeping the tab from catching.
4. Disconnect the power door lock switch connector and the power window subswitch connector.
5. Remove the screws, then remove the power door lock switch.



6. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

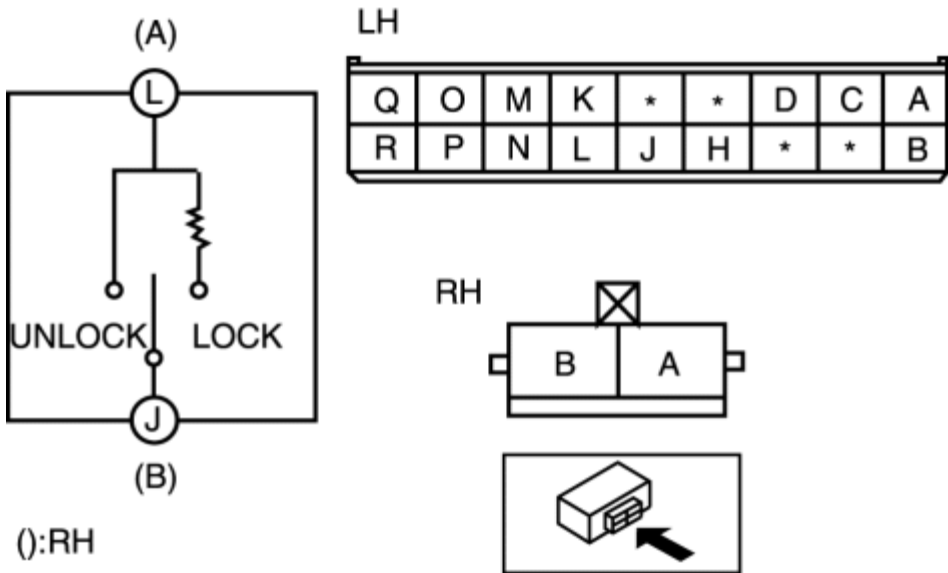
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

DOOR LOCK SWITCH INSPECTION

- 1. Inspect for continuity between the door lock switch terminals.



- If not as specified, replace the door lock switch.

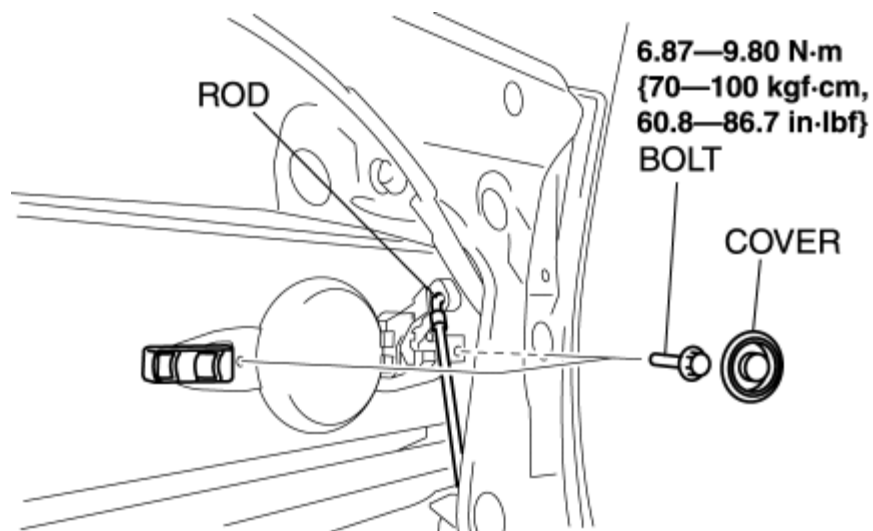
	○ — ○ :Continuity ○ — — ○ :Resistance	
Position	Terminal	
	L(A)	J(B)
LOCK	○ — — ○	○ R
UNLOCK	○ — ○	○

():RH R:940—1060 ohms

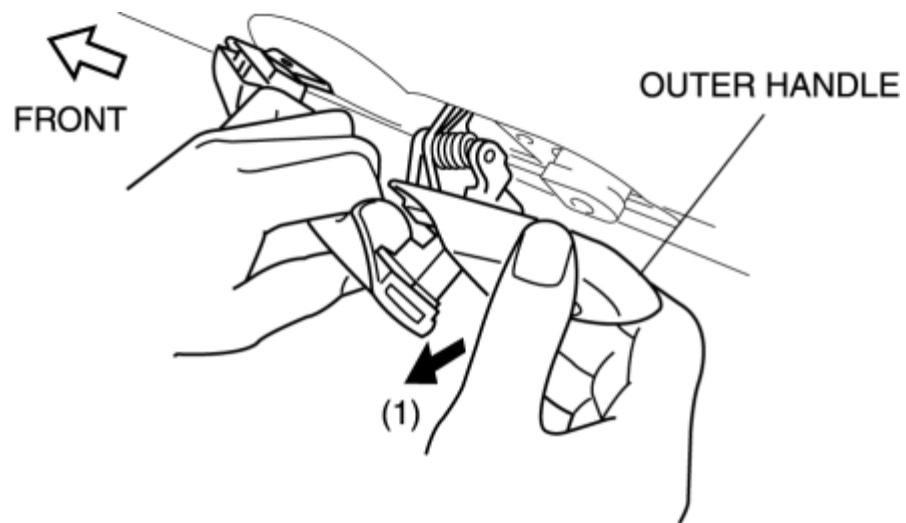
2011 - RX-8 - Body and Accessories

FRONT OUTER HANDLE REMOVAL/INSTALLATION

1. Remove the following parts:
 - a. Inner garnish (See [INNER GARNISH REMOVAL/INSTALLATION.](#))
 - b. Front door trim (See [FRONT DOOR TRIM REMOVAL/INSTALLATION.](#))
 - c. Front door glass (See [FRONT DOOR GLASS REMOVAL/INSTALLATION.](#))
 - d. Front door speaker (See [FRONT DOOR SPEAKER REMOVAL/INSTALLATION.](#))
 - e. Front door unit (See [FRONT DOOR UNIT REMOVAL/INSTALLATION.](#))
2. Detach the rod from the outer handle.



3. Remove the cover.
4. Remove the bolts.
5. Secure the rear part of the front outer handle and, with the front outer handle lever pulled outward (1), remove the rear part of the front outer handle from the front door.



6. Pull out the front part of the front outer handle from the front door.
7. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

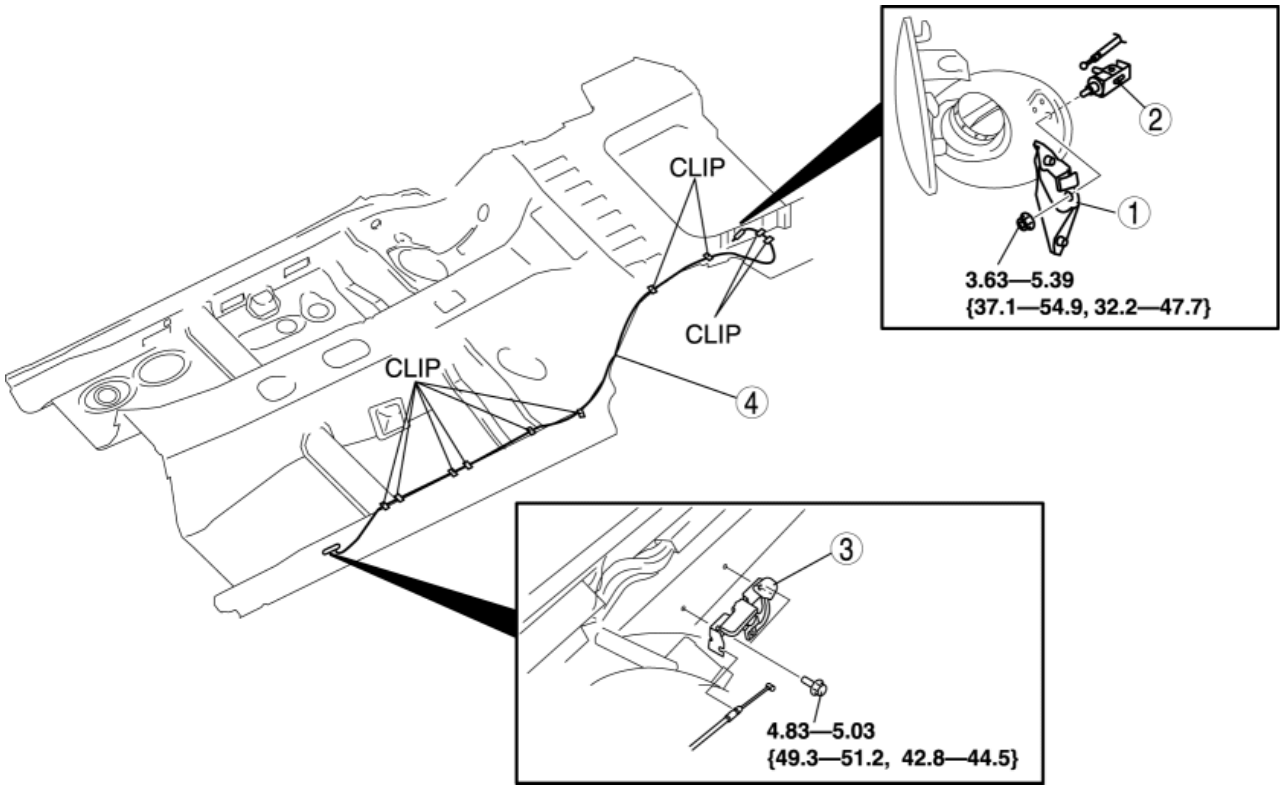
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

FUEL-FILLER LID OPENER REMOVAL/INSTALLATION

1. To remove the fuel-filler lid opener, remove the trunk side trim (LH). (See [TRUNK SIDE TRIM REMOVAL/INSTALLATION](#).)
2. When removing the fuel-filler lid opener lever, perform the following procedure:
 - a. Remove the inner scuff plate (driver's side). (See [INNER SCUFF PLATE REMOVAL/INSTALLATION](#).)
 - b. Remove the front side trim (driver's side). (See [FRONT SIDE TRIM REMOVAL/INSTALLATION](#).)
 - c. Remove the fasteners and the wiring harness clips, and then partially peel back the floor covering so that the fuel-filler lid opener lever can be removed.
3. When removing the fuel-filler lid opener cable, perform the following procedure:
 - a. Partially peel back the trunk mat.
 - b. Remove the rear seat (driver's side). (See [REAR SEAT REMOVAL/INSTALLATION](#).)
 - c. Remove the tire house trim (driver's side). (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION](#).)
 - d. Partially peel back the floor covering so that the fuel-filler lid opener cable can be removed.
4. Remove in the order indicated in the table.



N·m {kgf·cm, in·lbf}

1	Stopper bracket
2	Fuel-filler lid opener
3	Fuel-filler lid opener lever

4	Fuel-filler lid opener cable
---	------------------------------

5. Install in the reverse order of removal.

6. Adjust the fuel-filler lid. (See [FUEL-FILLER LID ADJUSTMENT](#).)

[< Previous](#) [Next >](#)

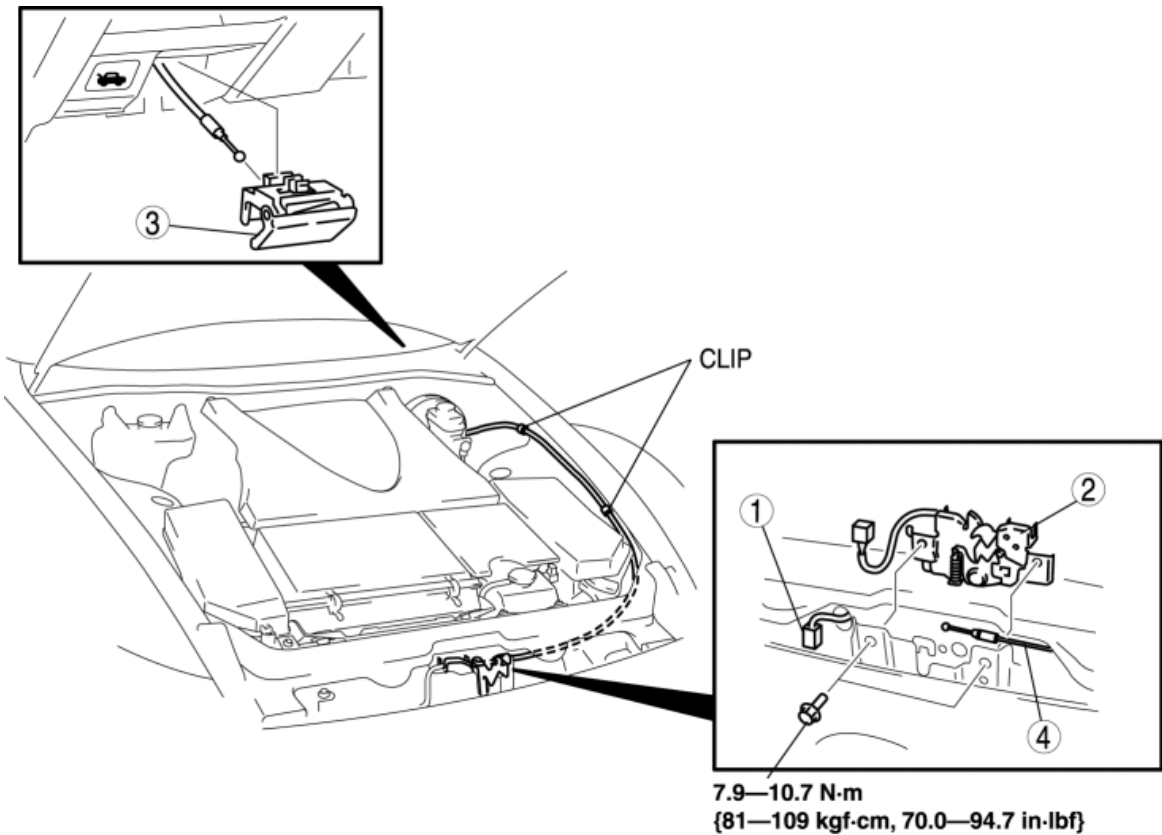
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION

- 1. To remove the hood latch, remove the seal plate. (See [FRONT BUMPER REMOVAL/INSTALLATION](#).)
- 2. Remove in the order indicated in the table.



1	Connector
2	Hood latch
3	Hood release lever (See Hood release lever .)
4	Hood release cable

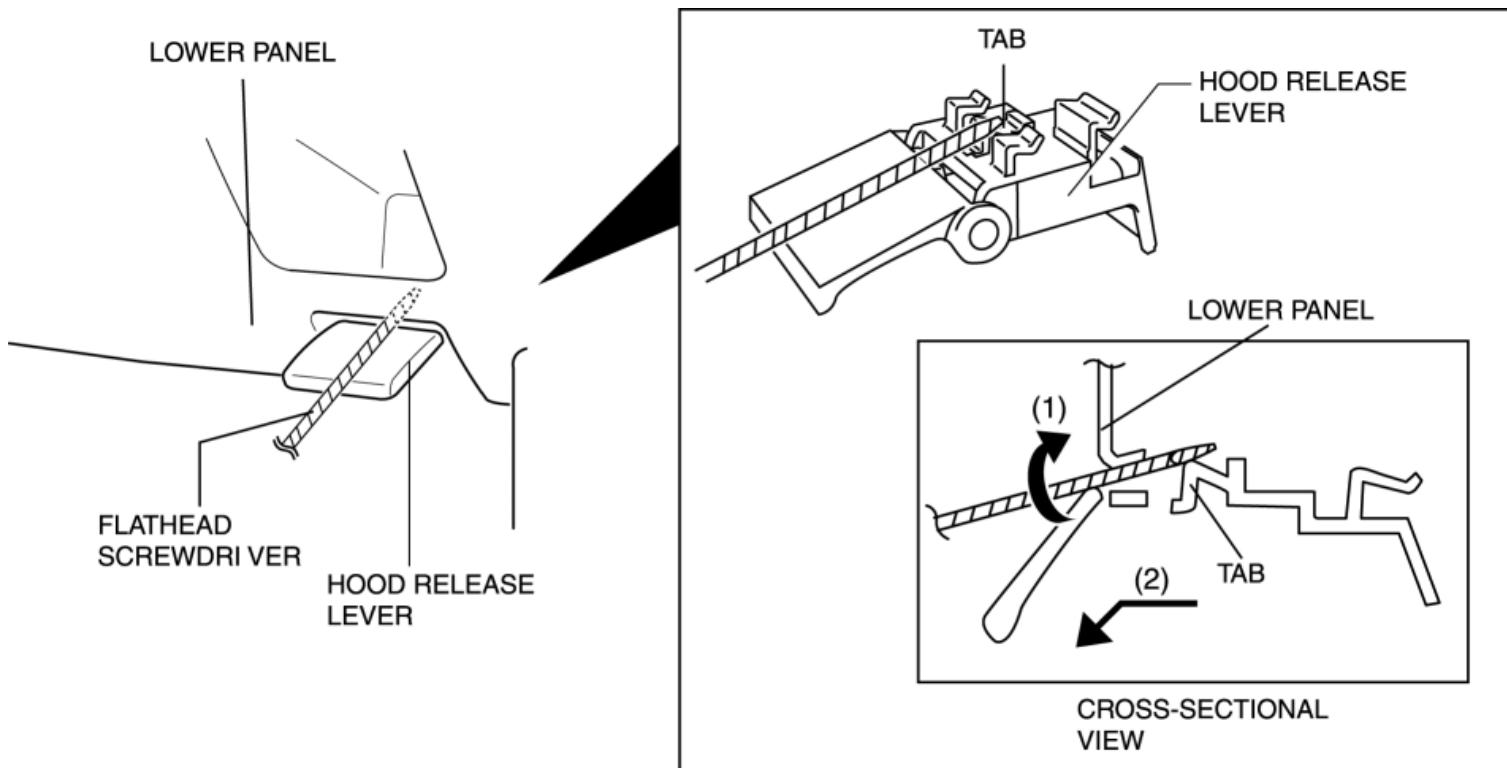
- 3. Install in the reverse order of removal.
- 4. Adjust the hood. (See [HOOD ADJUSTMENT](#).)

Hood release lever

1. Pull the hood release lever.



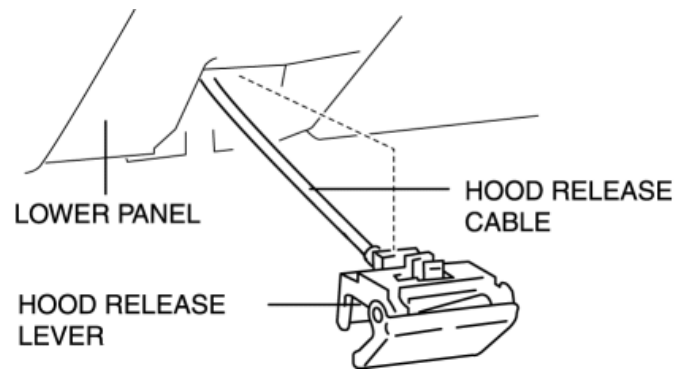
2. While maintaining the condition in procedure 1, insert a tape-wrapped flathead screwdriver as shown in the figure, press the ends of the tabs with the screwdriver in the direction of the arrows (1), pull the hood release lever in the direction of arrow (2), and then disconnect the lower panel.



CAUTION:

- Remove the hood release lever while being careful not to damage the hood release cable with the flathead screwdriver.

3. Pull the latch release lever outward, remove it from the lower panel, and then disconnect the hood release cable.



4. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

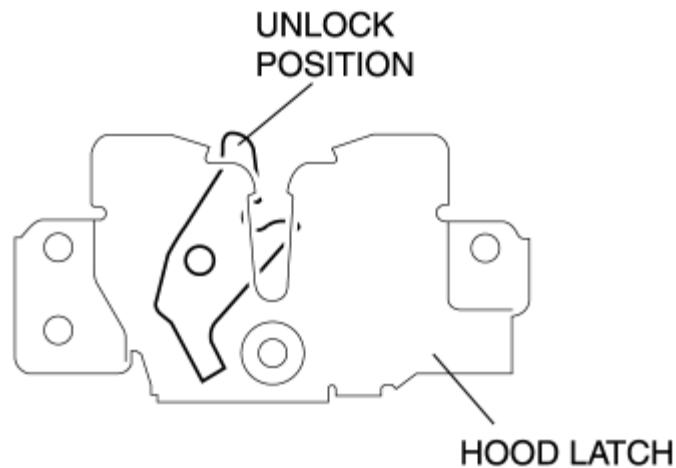
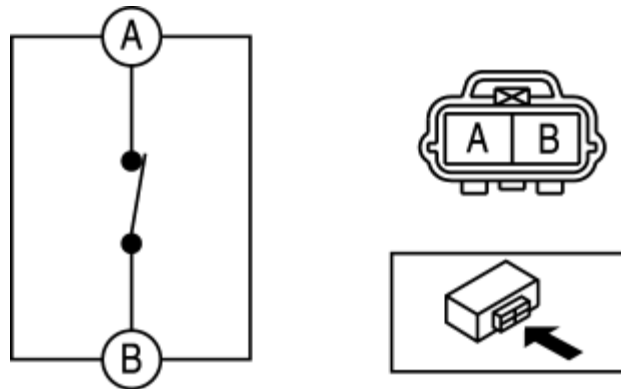
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

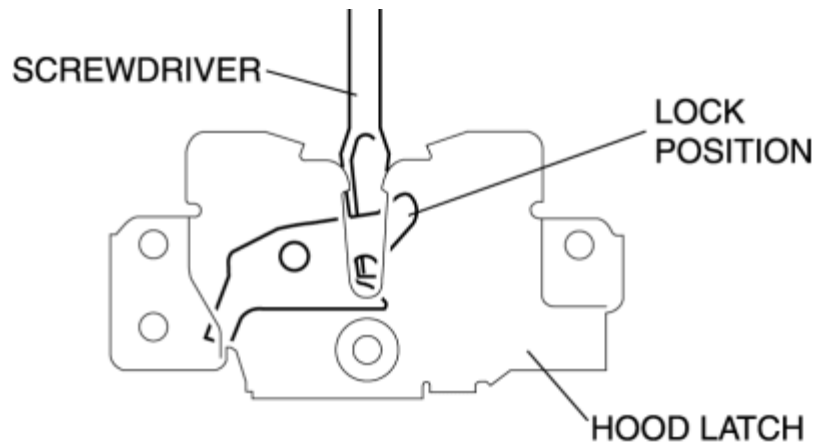
2011 - RX-8 - Body and Accessories

HOOD LATCH SWITCH INSPECTION

1. Open the hood.
2. Disconnect the negative battery cable.
3. Disconnect the hood latch switch connector.
4. Inspect for continuity between the hood latch switch terminals A and B.



- If there is no continuity, replace the hood latch switch.
5. Lock the hood latch using a flathead screwdriver or equivalent as shown.



6. Inspect for continuity between the hood latch switch terminals A and B

- If there is continuity, replace the hood latch.

CAUTION:

- After the inspection, unlock the hood latch. If closing the hood with the hood latch locked, the hood latch and/or hood striker may be broken.

[< Previous](#) [Next >](#)

[Back to Top](#)

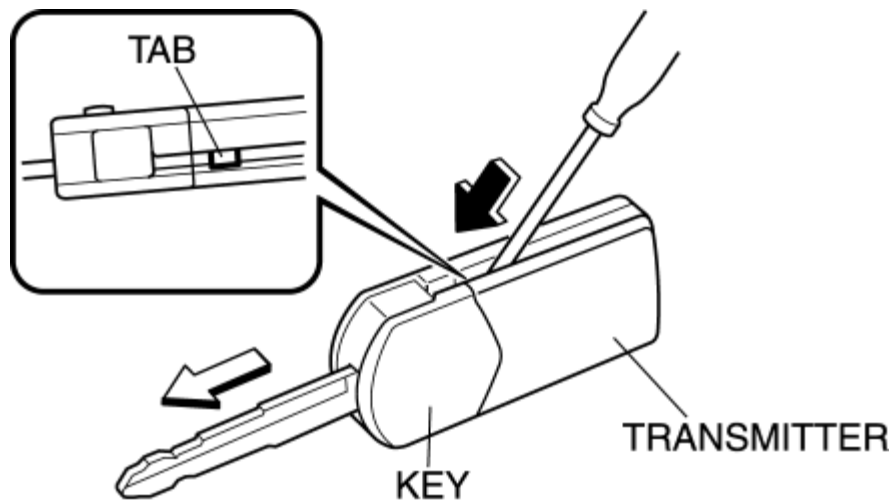
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

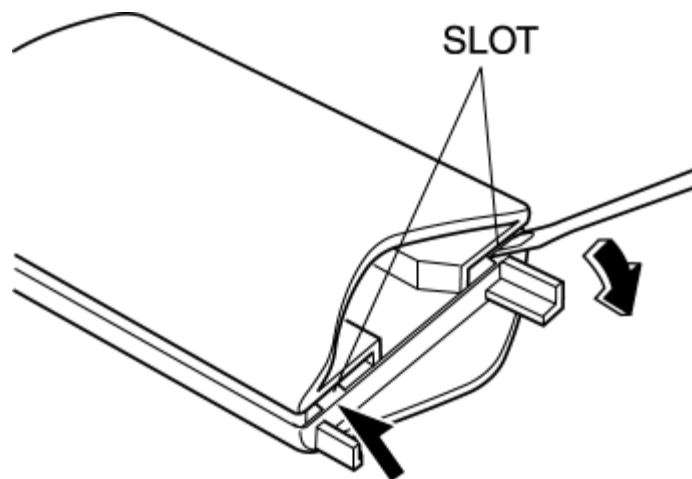
TRANSMITTER BATTERY REPLACEMENT [WITH KEYLESS ENTRY SYSTEM]

Retractable Key Type

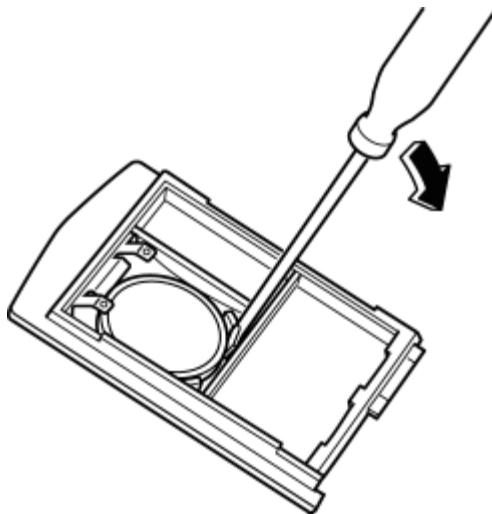
1. Insert a small screwdriver into the slot and push the tab to remove the key from the transmitter.



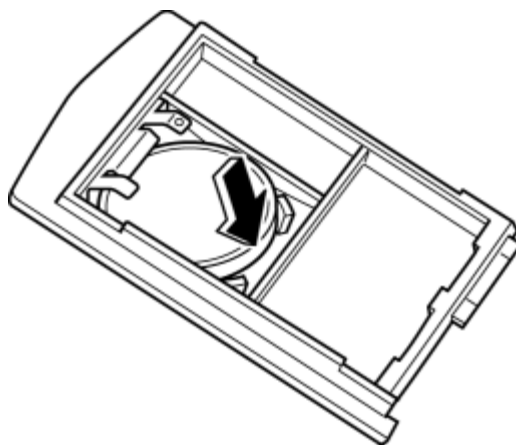
2. Insert a small screwdriver into the slot and gently pry open the transmitter.



3. Remove the battery.



4. Put in the new battery (CR1620) with the positive pole (+) facing down.



5. Align the front and back covers and snap the transmitter shut.

Battery specification

- Lithium CR1620 × 1

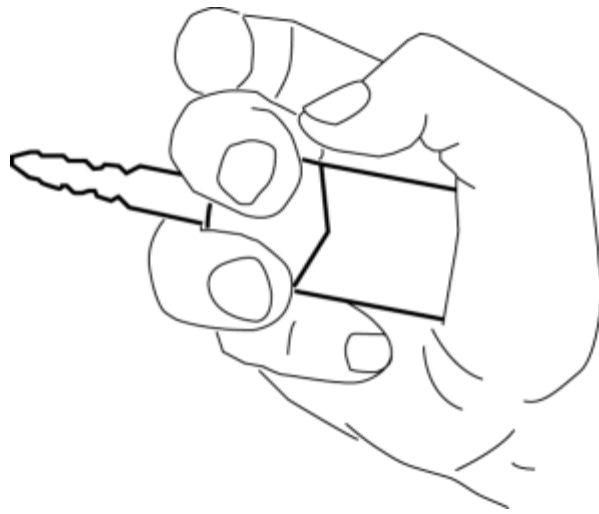
NOTE:

- The batteries will last about **2 years** when used **10 times** a day.

6. Install the key to the transmitter.

NOTE:

- When attaching the key to the transmitter, squeeze them together until a click sound is heard.
- If the key is not securely attached it will separate from the transmitter.



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

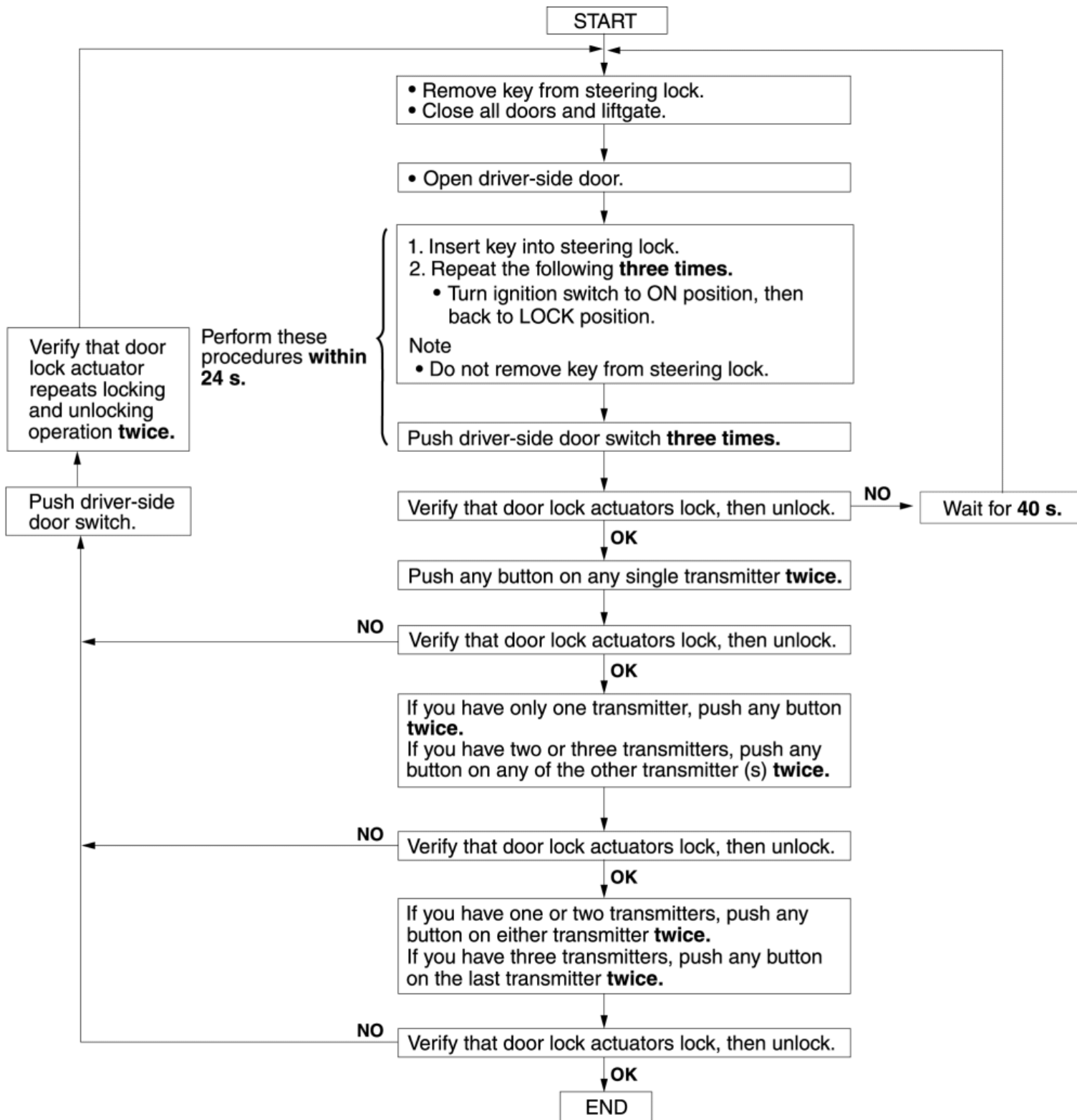
[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

TRANSMITTER ID CODE REGISTRATION [WITH KEYLESS ENTRY SYSTEM]

NOTE:

- When programming the ID code into a keyless control module, verify that other transmitters are not being operated in the vicinity.
- After ID code programming, remove the key from the steering lock and verify that all doors lock/unlock normally using the transmitter.

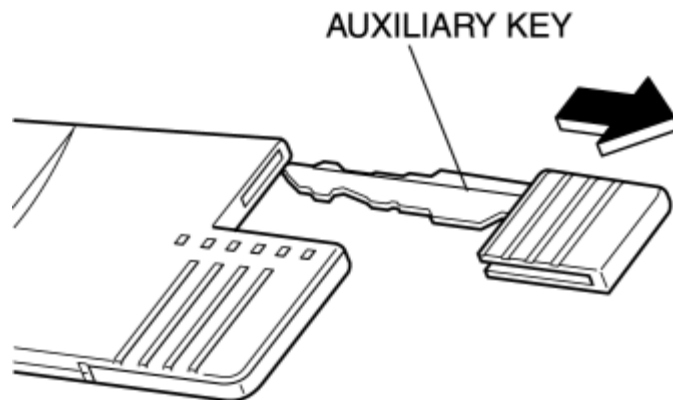


2011 - RX-8 - Body and Accessories

CARD KEY BATTERY REPLACEMENT [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]

Card Key Type

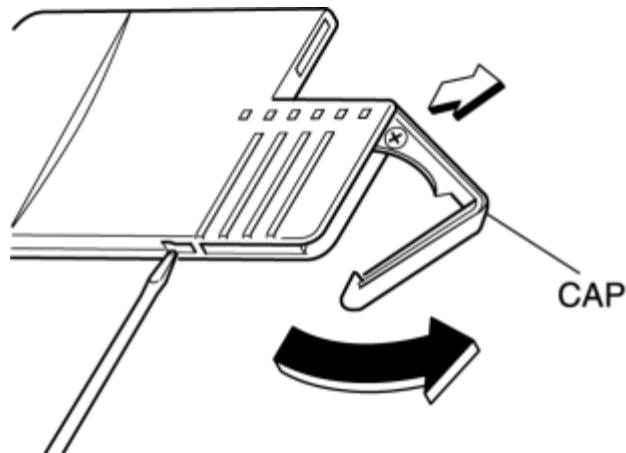
1. Pull out the auxiliary key.



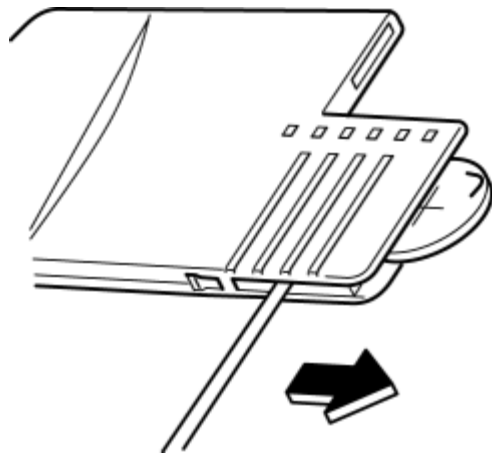
2. Replace the cap using a flathead screwdriver, then rotate and remove the cap.

CAUTION:

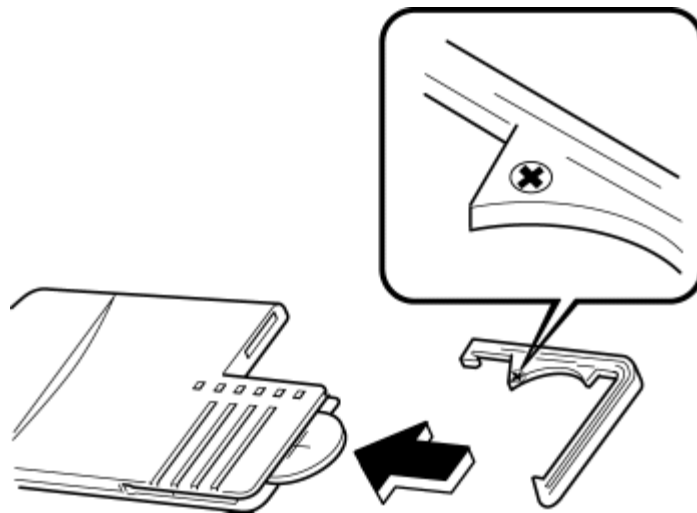
- Do not turn the cap excessively. The cap may be damaged.



3. Insert a flathead screwdriver into the crack and press the battery out.



4. Insert the new battery (CR2025) with the positive pole (+) facing the (+) mark on the cap.



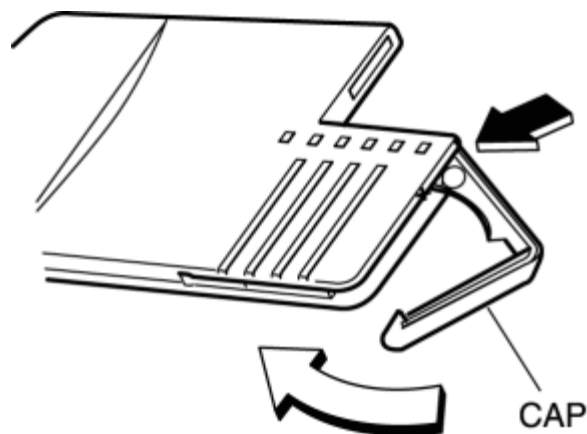
Battery specification

- Lithium CR2025 × 1

NOTE:

- The batteries will last about **1 years** when used **10 times** a day.

5. Rotate and close the cap.



6. Reinsert the auxiliary key.

[< Previous](#) [Next >](#)

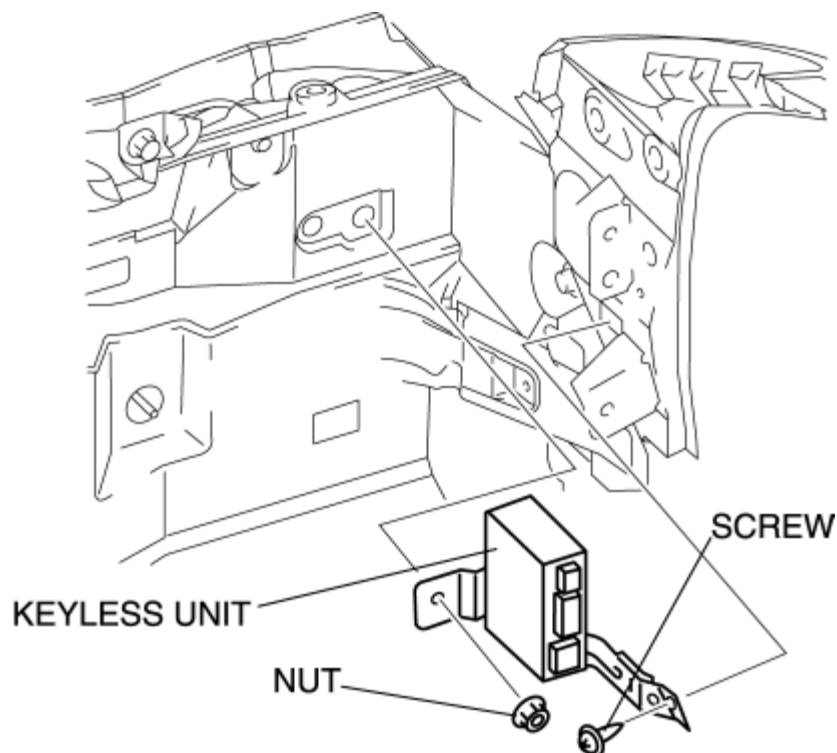
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

KEYLESS CONTROL MODULE REMOVAL/INSTALLATION

1. When replacing the keyless control module, perform the following procedure:
 - Keyless Control Module Configuration
(See [KEYLESS CONTROL MODULE CONFIGURATION](#).)
 - Immobilizer System-related Parts Programming[with advanced keyless system]
(See [IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#).)
 - Immobilizer system-related parts programming[with keyless entry system]
(See [IMMOBILIZER SYSTEM-RELATED PARTS PROGRAMMING \[WITH KEYLESS ENTRY SYSTEM\]](#).)
2. Disconnect the negative battery cable.
3. Remove the front side trim. (See [FRONT SIDE TRIM REMOVAL/INSTALLATION](#).)
4. Remove the nut and screw.



5. Remove the connector clip installed to the bracket by shifting the keyless control module

downward.

6. Disconnect the keyless control module connector.

7. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

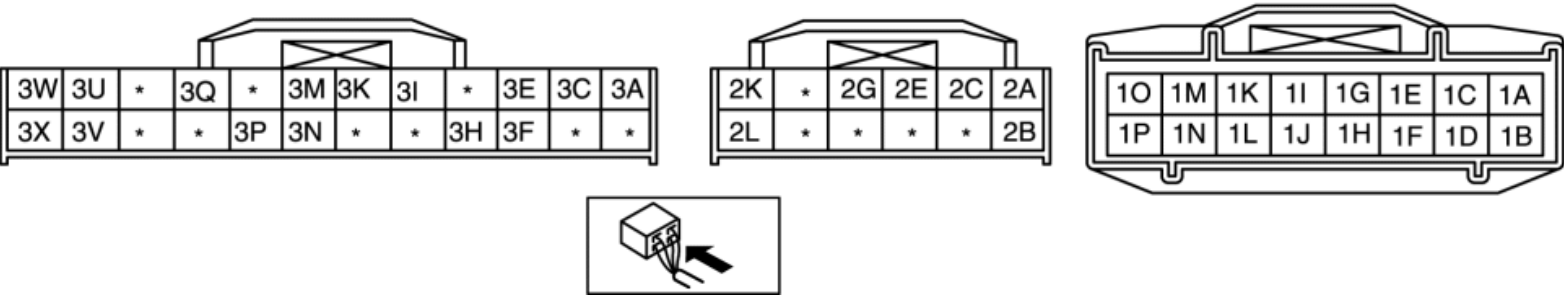
2011 - RX-8 - Body and Accessories

KEYLESS CONTROL MODULE INSPECTION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]

1. Measure the voltage or inspect for continuity according to the Terminal Voltage Table (Reference).
- If the voltage is not as specified in the Terminal Voltage Table (Reference), inspect the parts under "Inspection item(s)" and related wiring harnesses.
2. If the system does not work properly even though the inspection items or related wiring harnesses do not have any malfunction, perform symptom troubleshooting [KEYLESS ENTRY SYSTEM].

Terminal Voltage Table (Reference)

KEYLESS CONTROL MODULE WIRING HARNESS SIDE CONNECTOR



Terminal	Signal name	Connected to	Measured condition	Voltage (V)/Continuity	Inspection item(s)
1A	Keyless antenna (exterior, RF) (+)	Keyless antenna (exterior, RF)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
1B	Keyless antenna (exterior, RF) (-)	Keyless antenna (exterior, RF)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
1C	Keyless antenna (exterior, LF)(+)	Keyless antenna (exterior, LF)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
1D	Keyless antenna (exterior, LF)(-)	Keyless antenna (exterior, LF)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
1E	Keyless antenna (exterior, rear)(+)	Keyless antenna (exterior, rear)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
1F	Keyless antenna (exterior, rear)(-)	Keyless antenna (exterior, rear)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
			Under any condition: Inspect for		

1G	GND	Body ground	continuity to ground.	1.0 or less	GND
1H	GND	Body ground	Under any condition: Inspect for continuity to ground.	1.0 or less	GND
1I	Keyless antenna (trunk lid)(+)	Keyless antenna (trunk lid)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
1J	Keyless antenna (trunk lid)(-)	Keyless antenna (trunk lid)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
1K	Keyless antenna (interior, rear)(+)	Keyless antenna (interior, rear)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
1L	Keyless antenna (interior, rear)(-)	Keyless antenna (interior, rear)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
1M	Keyless antenna (interior, middle)(+)	Keyless antenna (interior, middle)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
1N	Keyless antenna (interior, middle)(-)	Keyless antenna (interior, middle)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
1O	Keyless antenna (interior, front)(+)	Keyless antenna (interior, front)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
1P	Keyless antenna (interior, front)(-)	Keyless antenna (interior, front)	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
2A	Power supply	ROOM 15 A fuse	Under any condition	B+	<ul style="list-style-type: none"> ROOM 15 A fuse Battery
2B	GND	Body ground	Under any condition: Inspect for continuity to ground.	1.0 or less	GND
2C	IG1	ENGINE 10 A fuse	Ignition switch is at ON position	B+	ENGINE 10 A fuse
			Ignition switch is at LOCK or ACC position	1.0 or less	
2E	ACC	METER 10 A fuse	Ignition switch is at ACC position	B+	METER 10 A fuse
			Ignition switch is at LOCK or ON position	1.0 or less	
2G	Security light	Instrument cluster	Ignition switch off (security light off)	1.0 or less → B+ → 1.0 or less	Instrument cluster
			Within approx. 3 s after ignition switch is turned to ON position (security light	5.5 or less	

			illuminates)		
2K	Keyless beeper output	Keyless beeper	Keyless beeper operated	B+	Keyless beeper
			Other	1.0 or less	
2L	Communication (instrument cluster)	Instrument cluster	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
3A	Power supply (keyless receiver)	Keyless receiver	Under any condition	B+	Keyless receiver
3C	Communication (keyless receiver)	Keyless receiver	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
3E	Start knob (push switch)	Steering lock unit	Start knob is Pushed	B+	Steering lock unit
			Other	1.0 or less	
3F	Key reminder switch	Steering lock unit	Key reminder switch is ON	B+	Steering lock unit
			Other	1.0 or less	
3H	Communication (steering lock unit)	Steering lock unit	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
3I	Request switch input (passenger-side)	Request switch (passenger-side)	Passenger-side request switch is ON: Inspect for continuity to ground.	5.0	Request switch (passenger-side)
			Passenger-side request switch is OFF: Inspect for continuity to ground.	1.0 or less	
3K	Request switch input (driver-side)	Request switch (driver-side)	Driver-side request switch is ON: Inspect for continuity to ground.	5.0	Request switch (driver-side)
			Driver-side request switch is OFF: Inspect for continuity to ground.	1.0 or less	
3M	Request switch input (trunk lid)	Request switch (trunk lid)	Trunk lid request switch is ON: Inspect for continuity to ground.	5.0	Request switch (trunk lid)
			Trunk lid request switch is OFF: Inspect for continuity to ground.	1.0 or less	
3N	Lock signal input	Door lock-link switch	Driver-side door is locked: Inspect for continuity to ground.	1.0 or less	Door lock-link switch
			Driver-side door is unlocked: Inspect for continuity to ground.	5.0	
		<ul style="list-style-type: none">Trunk lid	Trunk lid opener switch is ON: Inspect for continuity to ground.	5.0	<ul style="list-style-type: none">Trunk lid

3P	Trunk lid opener signal input	opener switch • Trunk lid opener cancel switch	Trunk lid opener switch is OFF: Inspect for continuity to ground.	1.0 or less	opener switch • Trunk lid opener cancel switch
3Q	Communication (door lock control module)	Door lock control module	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
3U	Tx-SKE	Coil antenna	Ignition switch is at ON position	B+	Coil antenna
			Ignition switch is at LOCK or ACC position	1.0 or less	
3V	Rx-SKE	Coil antenna	Ignition switch is at ON position	5.0	Coil antenna
			Ignition switch is at LOCK or ACC position	1.0 or less	
3W	HS-CAN+	PCM	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
3X	HS-CAN-	PCM	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		

[< Previous](#) [Next >](#)

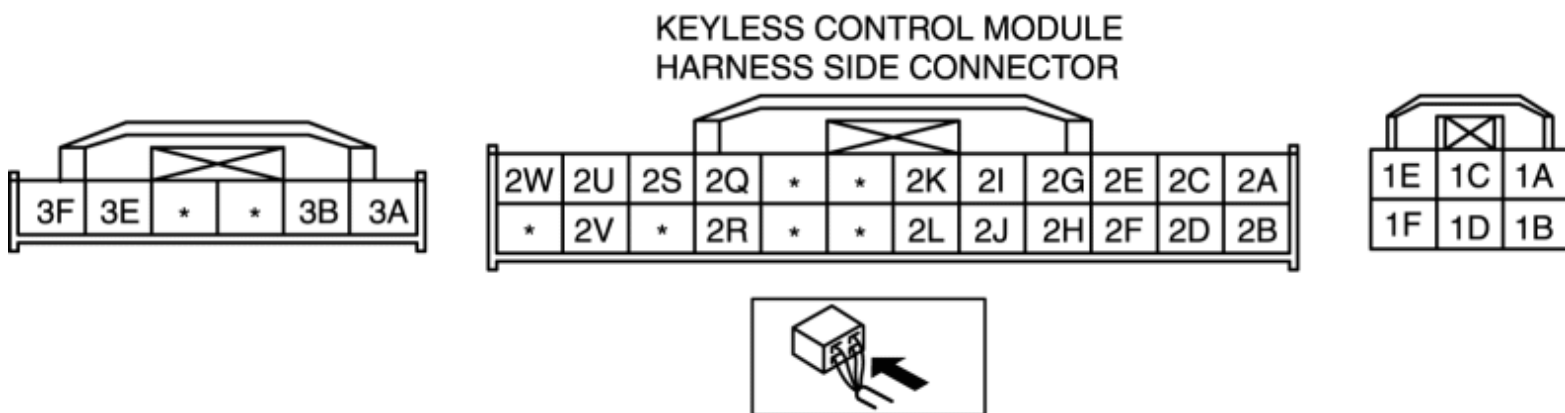
[Back to Top](#)

2011 - RX-8 - Body and Accessories

KEYLESS CONTROL MODULE INSPECTION [WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM]

1. Measure the voltage or inspect for continuity according to the Terminal Voltage Table (Reference).
 - If the voltage is not as specified in the Terminal Voltage Table (Reference), inspect the parts under "Inspection item(s)".
2. If the system does not work properly even though the parts or related wiring harnesses do not have any malfunction, perform symptom troubleshooting.

Terminal Voltage Table (Reference)



Terminal	Signal name	Connected to	Measurement condition	Voltage (V)/Continuity	Inspection item(s)
1A	Power supply	D.LOCK 30 A fuse	Under any condition	B+	<ul style="list-style-type: none"> • D.LOCK 30 A fuse • Battery • Inspect related harness.
			Within 5 min		<ul style="list-style-type: none"> • ROOM 15 A

1B	Interior light control	<ul style="list-style-type: none"> • Map light • Interior light • Courtesy light 	after any door is opened.	1.0 or less	fuse <ul style="list-style-type: none"> • Map light • Interior light • Courtesy light • Door switch • Rear door upper latch • Inspect related harness.
			5 min or more after any door is opened.	B+	
			All doors are closed.	B+	
1C	Unlock output	Driver-side door lock actuator	While driver-side door lock actuator is unlocking.	1.0 or less → B+ → 1.0 or less	<ul style="list-style-type: none"> • Driver-side door lock actuator • D.LOCK 15 A fuse
			Other	1.0 or less	
1D	Lock output	Door lock actuator	While lock actuator is locking.	1.0 or less → B+ → 1.0 or less	<ul style="list-style-type: none"> • Front door lock actuator • D.LOCK 15 A fuse
			Other	1.0 or less	
1E	GND	Body ground	Under any condition: Inspect for continuity to ground.	1.0 or less	GND
1F	Unlock output	Passenger-side door lock actuator	While passenger-side lock actuator is unlocking. (Transmitter UNLOCK button is pressed twice within 5 s.)	1.0 or less → B+ → 1.0 or less	<ul style="list-style-type: none"> • Passenger-side door lock actuator • D.LOCK 15 A fuse
			Other	1.0 or less	
2A	Power supply	ROOM 15 A fuse	Under any condition	B+	ROOM 15 A fuse

2B	IG1	METER 10 A fuse	Ignition switch at ON	B+	<ul style="list-style-type: none"> METER 10 A fuse Inspect related harness.
			Ignition switch at LOCK or ACC	1.0 or less	
2C	Horn on/off	Horn relay	Other	B+	<ul style="list-style-type: none"> Horn relay Inspect related harness.
			Transmitter LOCK button is pressed twice within 5 s.	B+ → 1.2 or less → B+	
2D	Hood open/closed	Hood latch switch	Hood is open.	5	<ul style="list-style-type: none"> Hood latch switch Inspect related harness.
			Hood is closed.	1.0 or less	
2E	Trunk lid unlock	Trunk lid opener relay	Transmitter trunk lid button is pressed.	B+ → 1.2 or less → B+	<ul style="list-style-type: none"> Trunk lid opener relay Trunk lid opener cancel switch Inspect related harness.
			Other	B+	
2F	Key reminder switch	Key reminder switch	Key is in steering lock. (key reminder switch on)	B+	<ul style="list-style-type: none"> Key reminder switch Inspect related harness.
			Other	1.0 or less	
2G	Trunk compartment light switch on/off	Trunk compartment light switch	Trunk lid is open.	1.0 or less	<ul style="list-style-type: none"> Trunk compartment light switch Trunk compartment light Inspect related
			Trunk lid is closed.	B+	

					harness.
2L	Unlock input (Passenger-door lock-link switch)	Passenger-door lock-link switch	Passenger-door is locked.	5	Passenger-door lock-link switch
			Passenger-door is unlocked.	1.0 or less	
2I	Hazard	Flasher control module	Transmitter LOCK button is pressed.	B+ → 1.0 or less → B+	<ul style="list-style-type: none"> Flasher control module Inspect related harness.
			Transmitter UNLOCK button is pressed.	B+ → 1.0 or less → B+ → 1.0 or less → B+	
			Theft-deterrent system alarm: Active	1.0 or less	
2J	Security light	Instrument cluster	Security light off	B+	<ul style="list-style-type: none"> Instrument cluster Inspect related harness.
			Within approx. 3 s after ignition switch is turned to ON position (security light illuminates)	5.5 or less	
2K	Door open/closed	Door switch	Any door is open. (Door switch on)	2.0 or less	<ul style="list-style-type: none"> Instrument cluster Door switch Rear door upper latch Inspect related harness.
			All doors are closed. (Door switch off)	B+	
2Q	Lock input (Driver-side door lock-link switch)	Driver-side door lock-link switch	Driver-side door is locked.	1.0 or less	Driver-side door lock-link switch
			Driver-side door	5	

			is unlocked.		
2R	Unlock input (Driver-side door lock-link switch)	Driver-side door lock-link switch	Driver-side door is locked.	5	Driver-side door lock-link switch
			Driver-side door is unlocked.	1.0 or less	
2S	Lock/unlock input (Driver-side door key cylinder switch)	Driver-side door key cylinder switch	Driver-side door key cylinder is locked.	Approx. 2.5	<ul style="list-style-type: none">• Driver-door key cylinder switch• Inspect related harness.
			Driver-side door key cylinder is unlocked.	1.0 or less	
			Other	5	
2U	Lock release power supply	Buckle switch	Within 60 min after any door is opened	B+	<ul style="list-style-type: none">• Instrument cluster• Door switch• Rear door upper latch• Front buckle switch• Inspect related harness.
2W	GND	Body ground	Under any condition: Inspect for continuity to ground.	1.0 or less	GND
2V	Lock/unlock input (Door lock switch)	Door lock switch	Door lock switch is locked.	Approx. 2.5	<ul style="list-style-type: none">• Door lock switch• Inspect related harness.
			Door lock switch is unlocked.	1.0 or less	
			Other	5	

3A	HS-CAN+	PCM	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
3B	HS-CAN-	PCM	Terminal used for communication therefore determination based on terminal voltage inspection not possible.		
3E	Tx	Coil antenna	Ignition switch at ON	8 or more	<ul style="list-style-type: none"> • Coil antenna • Inspect related harness.
			Ignition switch at LOCK or ACC	1.0 or less	
3F	Rx	Coil antenna	Ignition switch at ON	8 or more	<ul style="list-style-type: none"> • Coil antenna • Inspect related harness.
			Ignition switch at LOCK or ACC	1.0 or less	

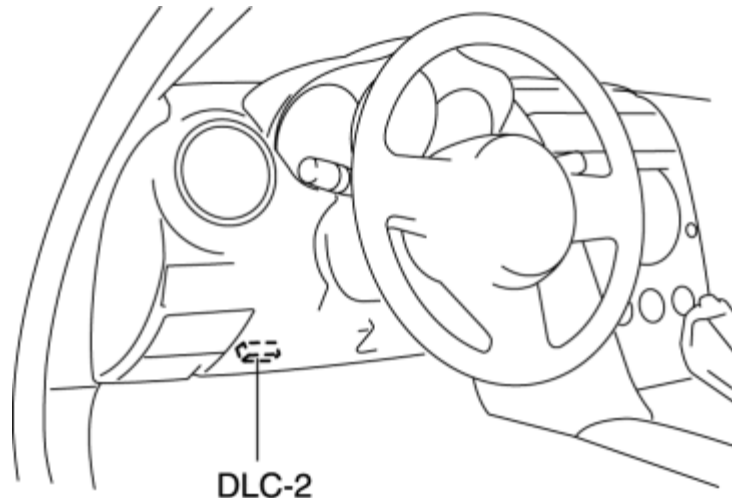
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

KEYLESS CONTROL MODULE CONFIGURATION

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 1. Select "Module Programming".
- When using the PDS (Pocket PC)
 1. Select "Programming".
 2. Select "Module Programming".

3. Then, select items from the screen menu in the following order.

1. Select "Programmable Module Installation".
2. Select "RKE".

4. Perform the configuration according to the directions on the screen.

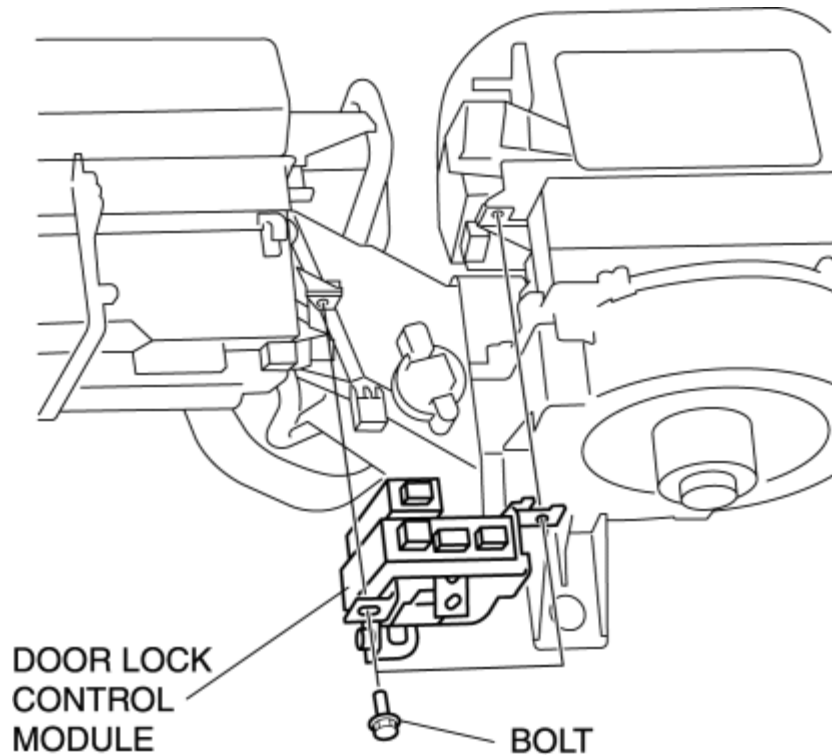
5. Retrieve DTCs by the M-MDS, then verify that there is no DTC present.

- If a DTC (s) is detected, perform the applicable DTC inspection. (See [DTC TABLE \[ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#).)

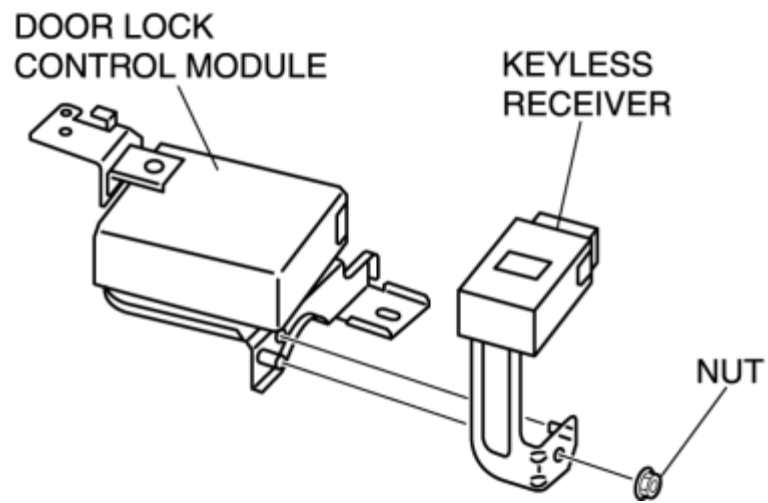
2011 - RX-8 - Body and Accessories

DOOR LOCK CONTROL MODULE REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]

1. Disconnect the negative battery cable.
2. Remove the glove compartment. (See [GLOVE COMPARTMENT REMOVAL/INSTALLATION](#).)
3. Remove the bolts.



4. Remove the connector clip installed to the bracket by shifting the door lock control module downward.
5. Disconnect the keyless unit connector.
6. Remove the nut, then remove the keyless receiver form the door lock control module.



7. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

[Back to Top](#)

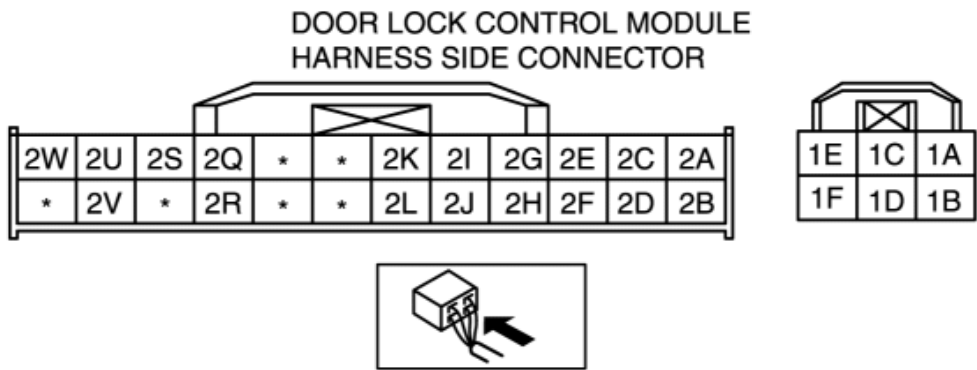
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

DOOR LOCK CONTROL MODULE INSPECTION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]

1. Measure the voltage or inspect for continuity according to the Terminal Voltage Table (Reference).
- If the voltage is not as specified in the Terminal Voltage Table (Reference), inspect the parts under "Inspection item(s)".
2. If the system does not work properly even though the parts or related wiring harnesses do not have any malfunction, perform symptom troubleshooting.

Terminal Voltage Table (Reference)



Terminal	Signal name	Connected to	Measurement condition	Voltage (V)/Continuity	Inspection item(s)
1A	Power supply	D.LOCK 30 A fuse	Under any condition	B+	<div><div>• D.LOCK 30 A fuse</div><div>• Battery</div><div>• Inspect related harness.</div></div>
			<div>Within 5 min after any door is opened.</div>	1.0 or less	<div><div>• ROOM 15 A fuse</div><div>• Map light</div><div>• Interior light</div><div>• Courtesy</div></div>
		<div>• Map light</div>	<div>5 min or more after any door is opened.</div>	B+	

1B	Interior light control	<ul style="list-style-type: none"> Interior light Courtesy light 	All doors are closed.	B+	light <ul style="list-style-type: none"> Door switch Rear door upper latch Inspect related harness.
1C	Unlock output	Driver-side door lock actuator	While driver-side door lock actuator is unlocking.	1.0 or less → B+ → 1.0 or less	<ul style="list-style-type: none"> Driver-side door lock actuator D.LOCK 15 A fuse
			Other	1.0 or less	
1D	Lock output	Door lock actuator	While lock actuator is locking.	1.0 or less → B+ → 1.0 or less	<ul style="list-style-type: none"> Front door lock actuator D.LOCK 15 A fuse
			Other	1.0 or less	
1E	GND	Body ground	Under any condition: Inspect for continuity to ground.	Continuity detected	GND
1F	Unlock output	Passenger-side door lock actuator	While passenger-side lock actuator is unlocking. (Transmitter UNLOCK button is pressed twice within 5 s.)	1.0 or less → B+ → 1.0 or less	<ul style="list-style-type: none"> Passenger-side door lock actuator D.LOCK 15 A fuse
			Other	1.0 or less	
2A	Power supply	ROOM 15 A fuse	Under any condition	B+	ROOM 15 A fuse
2B	IG1	Ignition relay	Ignition switch at ON	B+	<ul style="list-style-type: none"> Ignition relay D.LOCK 15 A fuse Inspect related harness.
			Ignition switch at LOCK or ACC	1.0 or less	
2C	Horn on/off	Horn relay	Other	B+	<ul style="list-style-type: none"> Horn relay Inspect related harness.
			Transmitter LOCK button is pressed twice within 5 s.	B+ → 1.2 or less → B+	

2D	Hood open/closed	Hood latch switch	Hood is open.	5	<ul style="list-style-type: none"> Hood latch switch Inspect related harness.
			Hood is closed.	1.0 or less	
2E	Trunk lid unlock	Trunk lid opener relay	Transmitter trunk lid button is pressed.	B+ → 1.2 or less → B+	<ul style="list-style-type: none"> Trunk lid opener relay Trunk lid opener cancel switch Inspect related harness.
			Other	B+	
2F	Key reminder switch	Key reminder switch	Key is in steering lock. (key reminder switch on)	B+	<ul style="list-style-type: none"> Key reminder switch Inspect related harness.
			Other	1.0 or less	
2G	Trunk compartment light switch on/off	Trunk compartment light switch	Trunk lid is open.	1.0 or less	<ul style="list-style-type: none"> Trunk compartment light switch Trunk compartment light Inspect related harness.
			Trunk lid is closed.	B+	
2I	Hazard	Flasher control module	Transmitter LOCK button is pressed.	B+ → 1.0 or less → B+	<ul style="list-style-type: none"> Flasher control module Inspect related harness.
			Transmitter UNLOCK button is pressed.	B+ → 1.0 or less → B+ → 1.0 or less → B+	
			Theft-deterrent system alarm: Active	1.0 or less	
2J	Security light	Instrument cluster	Security light off	B+	<ul style="list-style-type: none"> Instrument cluster Inspect related harness.
			Within approx. 3 s after ignition switch is turned to ON position (security light illuminates)	5.5 or less	

2K	Door open/closed	Door switch	Any door is open. (Door switch on)	2.0 or less	<ul style="list-style-type: none"> • Instrument cluster • Door switch • Rear door upper latch • Inspect related harness.
			All doors are closed. (Door switch off)	B+	
2L	Unlock input (Passenger-door lock-link switch)	Passenger-door lock-link switch	Passenger-door is locked.	5	Passenger-door lock-link switch)
			Passenger-door is unlocked.	1.0 or less	
2N	Door open/closed	Door switch (driver-side)	Driver-side door is open. (Door switch on)	2.0 or less	<ul style="list-style-type: none"> • Instrument cluster • Door switch • Inspect related harness.
			Driver-side door is closed. (Door switch off)	B+	
2P	Communication (keyless control module)	Keyless control module	Under any condition: Inspect for continuity to Keyless control module.	Continuity detected	Keyless control module
2Q	Lock input (Driver-side door lock-link switch)	Driver-side door lock-link switch	Driver-side door is locked.	1.0 or less	Driver-side door lock-link switch
			Driver-side door is unlocked.	5	
2R	Unlock input (Driver-side door lock-link switch)	Driver-side door lock-link switch	Driver-side door is locked.	5	Driver-side door lock-link switch
			Driver-side door is unlocked.	1.0 or less	
2S	Lock/unlock input (Driver-side door key cylinder switch)	Driver-side door key cylinder switch	Driver-side door key cylinder is locked.	Approx. 2.5	<ul style="list-style-type: none"> • Driver-door key cylinder switch • Inspect related harness.
			Driver-side door key cylinder is unlocked.	1.0 or less	
			Other	5	
					<ul style="list-style-type: none"> • Instrument cluster

2U	Lock release power supply	Buckle switch	Within 60 min after any door is opened	B+	<ul style="list-style-type: none">• Door switch• Rear door upper latch• Front buckle switch• Inspect related harness.
2W	GND	Body ground	Under any condition: Inspect for continuity to ground.	Continuity detected	GND
2V	Lock/unlock input (Door lock switch)	Door lock switch	Door lock switch is locked.	Approx. 2.5	<ul style="list-style-type: none">• Door lock switch• Inspect related harness.
			Door lock switch is unlocked.	1.0 or less	
			Other	5	

2011 - RX-8 - Body and Accessories

CARD KEY ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]

CAUTION:

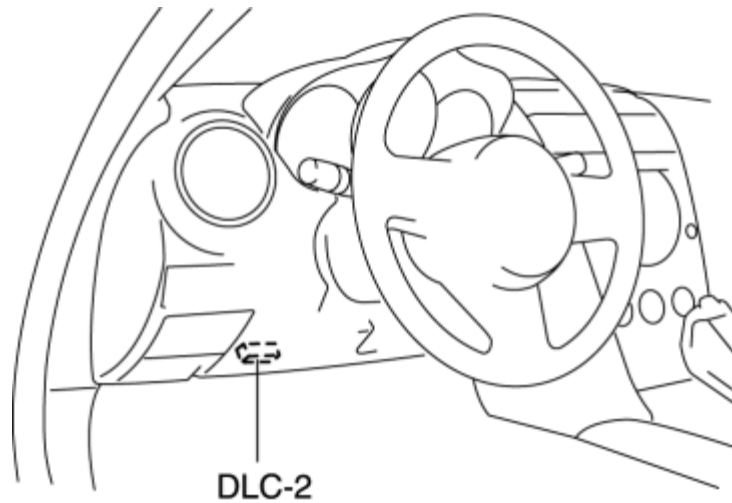
- Do not place the following devices in the vehicle while programming, otherwise programming cannot be performed.
 - M-MDS
 - Personal computer
 - Device that can send/receive radio waves
- Verify that the other transmitter is not being operated around the servicing area during card key programming.

NOTE:

- Use the M-MDS and start programming if the condition corresponds to the following:
 - One or No Programmed Card Keys
 - Keyless control module is replaced
- If six card keys are already programmed, the programming mode does not activate. If programming is needed, use the M-MDS to erase the unnecessary card key programming.

Using M-MDS

1. Fully lower the driver-side door glass.
2. Connect the M-MDS to DLC-2.



3. Set the M-MDS outside the vehicle with its cable passing through the door glass opening.

CAUTION:

- Cover the vehicle body with a clean rag so as not to damage the vehicle body with the cable.

4. After the vehicle is identified, select the following items from the initial screen of the M-MDS.

- When using the IDS (laptop PC)
 - Select "Body".
 - Select "Security".
 - Select "PATS Functions".
- When using the PDS (Pocket PC)
 - Select "All Tests and Calibrations".
 - Select "PATS Functions".

5. Then, select an item from the screen menu.

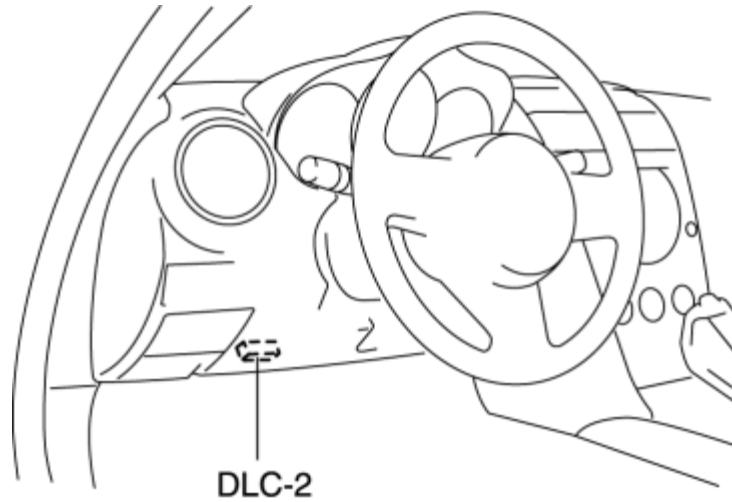
- Select the "Program Additional card key"

6. Perform the security access according to the directions on the M-MDS screen.

2011 - RX-8 - Body and Accessories

CLEARING CARD KEY [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]

1. Fully lower the driver-side door glass.
2. Connect the M-MDS to the DLC-2.



3. Pull out the M-MDS cable from the door glass opening and set the M-MDS outside the vehicle.

CAUTION:

- Protect the cable and body contact area with a clean rag, otherwise they could be damaged.
4. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 - When using the IDS (laptop PC)
 - Select "Body".
 - Select "Security".
 - Select "PATs Functions".
 - When using the PDS (Pocket PC)
 - Select "All Tests and Calibrations".
 - Select "PATs Functions".
 5. Then, select items from the screen menu in the following order.
 - Card Key Code Erase and Program

6. Perform the security access according to the directions on the M-MDS screen.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

STEERING LOCK UNIT ID CODE REGISTRATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]

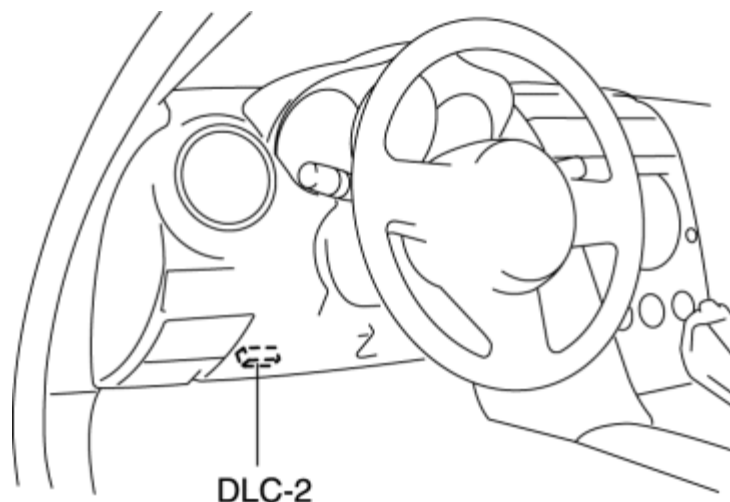
CAUTION:

- Do not place the following devices in the vehicle while programming, otherwise programming cannot be performed:
 - M-MDS
 - Personal computer
 - Devices that can send/receive radio waves

NOTE:

- The steering lock unit and steering lock component are a single unit. Therefore, replace the steering lock component when replacing steering lock unit. (See [STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION](#))
- For this procedure, a programmed card key is necessary. If there is no programmed card key, perform the steering lock unit programming after the card key programming.

1. Bring the programmed advanced key into the vehicle.
2. Fully lower the driver-side door glass.
3. Connect the M-MDS to the DLC-2.



4. Pull out the M-MDS cable from the door glass opening and set the M-MDS outside the vehicle.

CAUTION:

- Cover the vehicle body with a clean rag so as not to damage the vehicle body with the cable.

5. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 - Select "Body"
 - Select "Security"
 - Select "PATs Functions"
- When using the PDS (Pocket PC)
 - Select "All Tests and Calibrations"
 - Select "PATs Functions"

6. Then, select items from the screen menu in the following order.

- Select "Steering Lock Unit Programming"

7. Perform the security access according to the directions on the M-MDS screen.

[< Previous](#) [Next >](#)

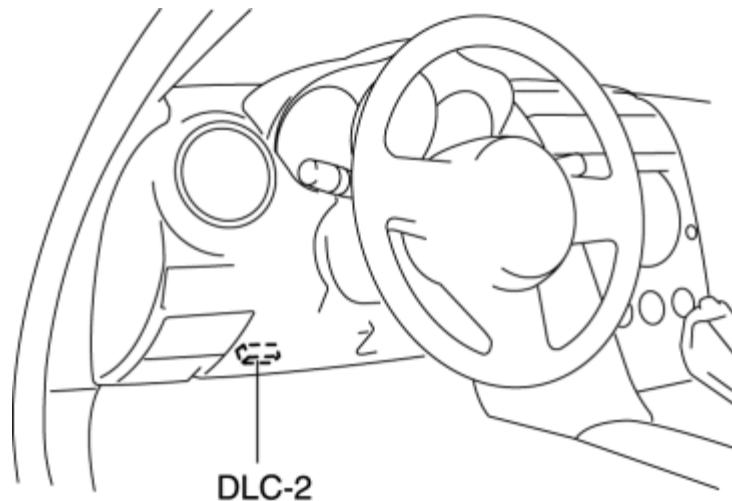
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

CUSTOMIZED FUNCTION SETTING PROCEDURE [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]

1. Connect the M-MDS to DLC-2.



2. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 - When using the IDS (laptop PC)
 - Select "Module Programming".
 - When using the PDS (Pocket PC)
 - Select "Programming".
 - Select "Module Programming".
3. Then, select items from the screen menu in the following order.
 - Select "Programmable Parameters".
 - Select "RKE".
4. Select an item name, and then select option.

Items

- "Answer Back Buzzer"
- "Automatic Locks"
- "Card Key Battery Low Warning"

[< Previous](#) [Next >](#)

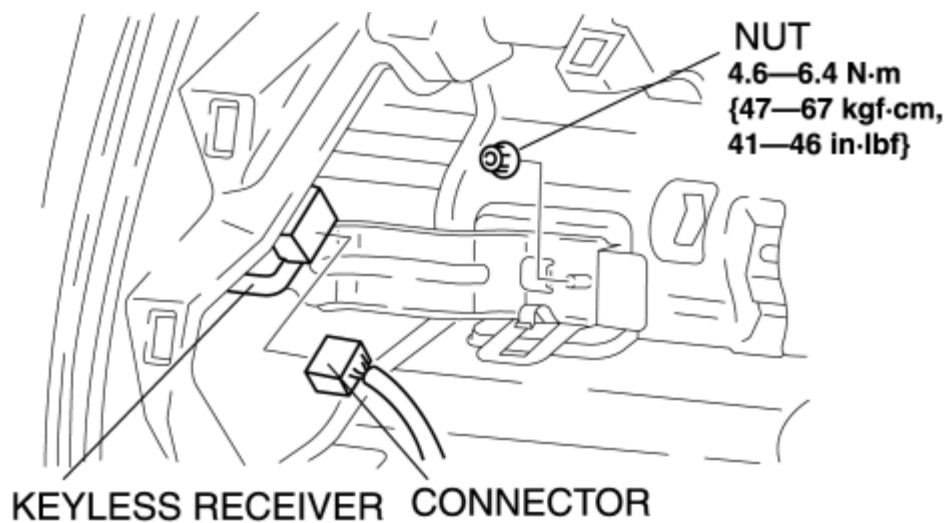
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

KEYLESS RECEIVER REMOVAL/INSTALLATION [WITH KEYLESS ENTRY SYSTEM]

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Speaker grille (See [SPEAKER GRILLE REMOVAL/INSTALLATION.](#))
 - b. Center speaker (See [CENTER SPEAKER REMOVAL/INSTALLATION.](#))
 - c. Center panel unit (See [CENTER PANEL UNIT REMOVAL/INSTALLATION.](#))
 - d. Center panel (See [CENTER PANEL REMOVAL/INSTALLATION.](#))
3. Remove the nuts.



4. Disconnect the keyless receiver connector.
5. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

KEYLESS RECEIVER REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]

1. (See [DOOR LOCK CONTROL MODULE REMOVAL/INSTALLATION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#).)

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

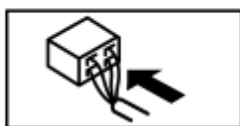
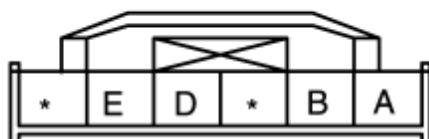
2011 - RX-8 - Body and Accessories

KEYLESS RECEIVER INSPECTION [WITH KEYLESS ENTRY SYSTEM]

1. Measure the voltage at each terminal.
 - If the voltage is not as specified in the Terminal Voltage Table (Reference), inspect the parts under "Inspection item (s)".
2. If the system does not work properly even though the parts or related wiring harnesses do not have any malfunction, perform symptom troubleshooting.

Terminal Voltage Table (Reference)

KEYLESS RECEIVER
WIRING HARNESS-SIDE CONNECTOR



Terminal	Signal name	Connected to	Measured condition	Voltage (V)/Continuity	Inspection item(s)
A	Power supply	<ul style="list-style-type: none"> ROOM 15 A fuse 	Under any condition	B+	<ul style="list-style-type: none"> ROOM 15 A fuse
		<ul style="list-style-type: none"> Keyless 	<ul style="list-style-type: none"> Any transmitter button is operated without key in steering lock (key reminder) 	5→1.0 or less	<ul style="list-style-type: none"> Transmitter Keyless control

B	IG1	control module	switch off).		module
			<ul style="list-style-type: none"> Key is in steering lock (key reminder switch on). 	5	
D	Data	<ul style="list-style-type: none"> Keyless control module 	<ul style="list-style-type: none"> Any transmitter button is operated without key in steering lock (key reminder switch off). 	1.0 or less → changes positively	<ul style="list-style-type: none"> Transmitter Keyless control module Inspect related harness
			<ul style="list-style-type: none"> Key is in steering lock (key reminder switch on). 	1.0 or less	
E	GND	Body ground	Under any condition: Inspect for continuity to ground.	1.0 or less	GND

[< Previous](#) [Next >](#)

[Back to Top](#)

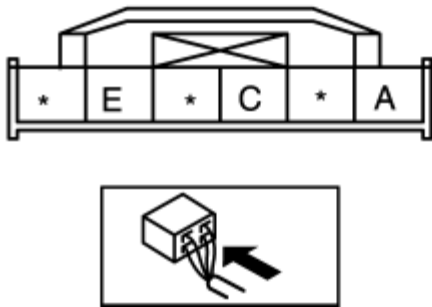
2011 - RX-8 - Body and Accessories

KEYLESS RECEIVER INSPECTION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]

1. Measure the voltage or inspect for continuity according to the Terminal Voltage Table (Reference).
 - If the voltage is not as specified in the Terminal Voltage Table (Reference), inspect the parts under "Inspection item(s)" and related wiring harnesses.
2. If the system does not work properly even though the inspection items or related wiring harnesses do not have any malfunction, perform symptom troubleshooting [KEYLESS ENTRY SYSTEM].

Terminal Voltage Table (Reference)

KEYLESS RECEIVER
WIRING HARNESS-SIDE CONNECTOR



Terminal	Signal name	Connected to	Measured condition	Voltage (V)/Continuity	Inspection item(s)
A	Power supply	<ul style="list-style-type: none">• Keyless control module	Under any condition	B+	<ul style="list-style-type: none">• Keyless control module• Related wiring harnesses
		<ul style="list-style-type: none">• Keyless	<ul style="list-style-type: none">• Terminal used for communication therefore		

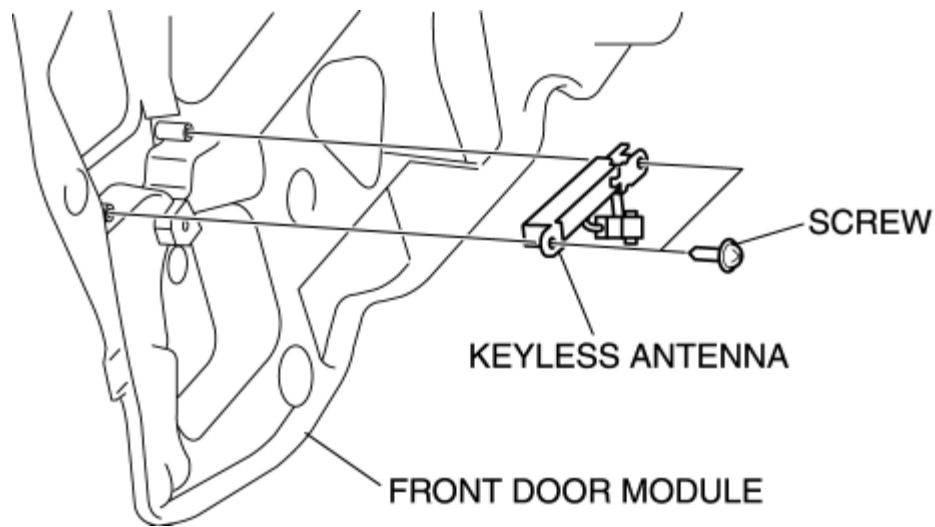
C	Data	control module	determination based on terminal voltage inspection not possible.		
E	GND	Body ground	Under any condition: Inspect for continuity to ground.	1.0 or less	GND

2011 - RX-8 - Body and Accessories

KEYLESS ANTENNA REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]

Driver-side/passenger-side Door

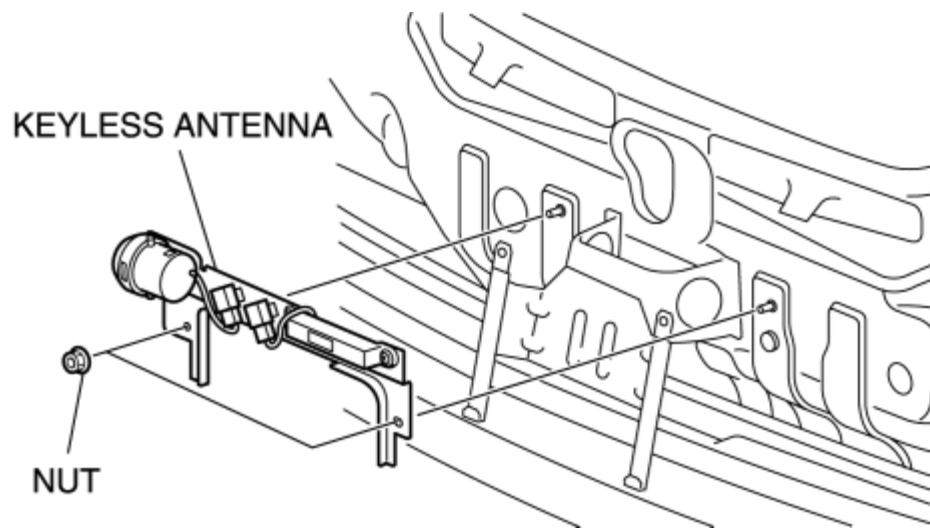
1. Disconnect the negative battery cable.
2. Remove the door trim. (See [FRONT DOOR TRIM REMOVAL/INSTALLATION](#).)
3. Remove the screws.
4. Disconnect the connector, then remove the keyless antenna.



5. Install in the reverse order of removal.

Exterior, Rear

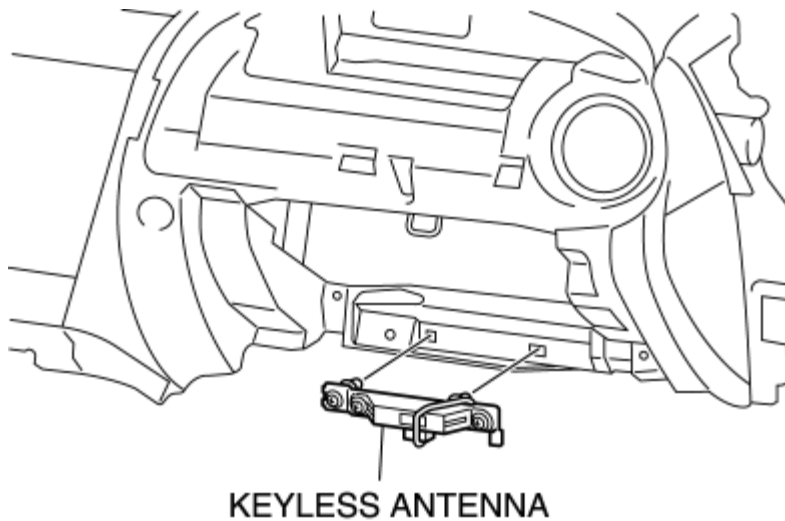
1. Disconnect the negative battery cable.
2. Remove the rear bumper. (See [REAR BUMPER REMOVAL/INSTALLATION](#).)
3. Remove the nuts.
4. Disconnect the connector, then remove the keyless antenna.



5. Install in the reverse order of removal.

Interior, Front

1. Disconnect the negative battery cable.
2. Remove the glove compartment. (See [GLOVE COMPARTMENT REMOVAL/INSTALLATION](#).)
3. Disconnect the connector, then remove the screws.
4. Remove the keyless antenna.

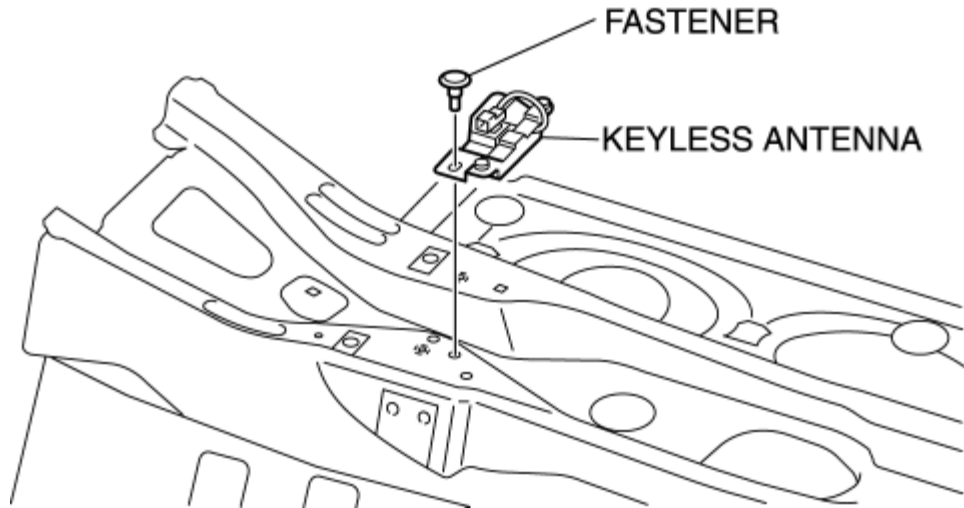


5. Install in the reverse order of removal.

Interior, Middle

1. Disconnect the negative battery cable.
2. Remove the console. (See [CONSOLE REMOVAL/INSTALLATION](#).)

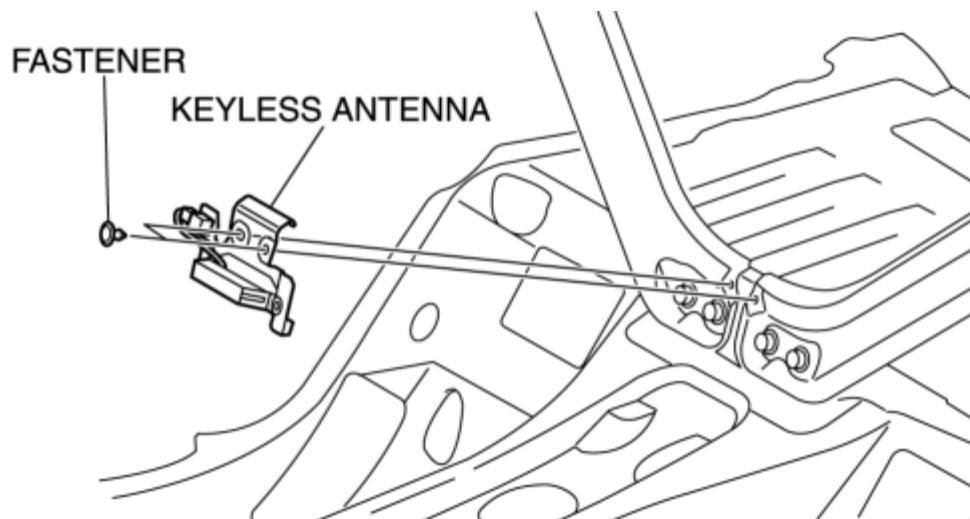
3. Remove the clips.
4. Disconnect the connector, then remove the keyless antenna.



5. Install in the reverse order of removal.

Interior, Rear

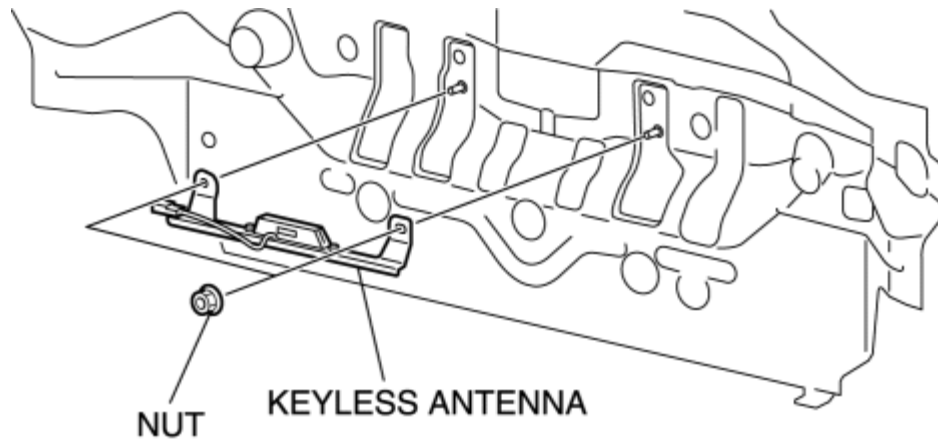
1. Disconnect the negative battery cable.
2. Remove the console. (See [CONSOLE REMOVAL/INSTALLATION](#).)
3. Remove the fastener.
4. Disconnect the connector, then remove the keyless antenna.



5. Install in the reverse order of removal.

Interior, trunk

1. Disconnect the negative battery cable.
2. Remove the trunk end trim. (See [TRUNK END TRIM REMOVAL/INSTALLATION](#).)
3. Remove the nuts.
4. Disconnect the connector, then remove the keyless antenna.



5. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

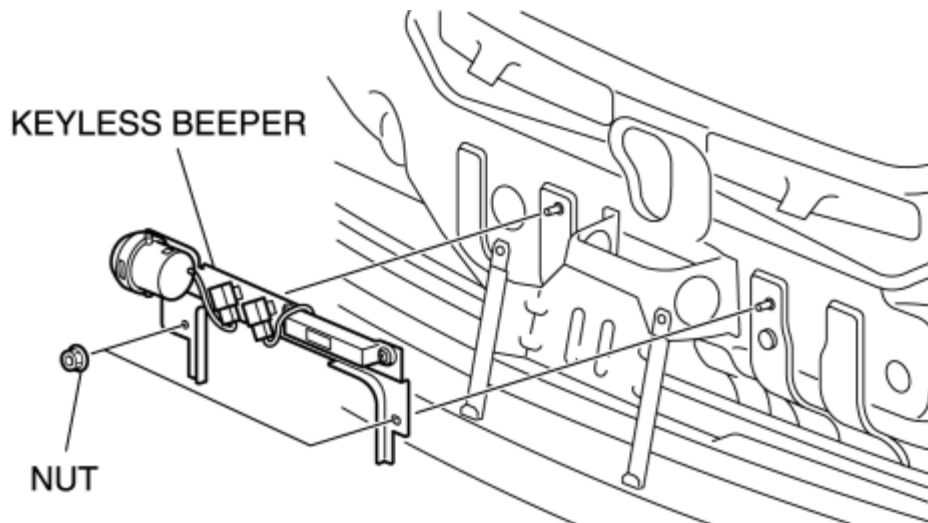
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

KEYLESS BEEPER REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]

1. Disconnect the negative battery cable.
2. Remove the rear bumper. (See [REAR BUMPER REMOVAL/INSTALLATION](#).)
3. Remove the nuts.
4. Disconnect the connector, then remove the keyless antenna.



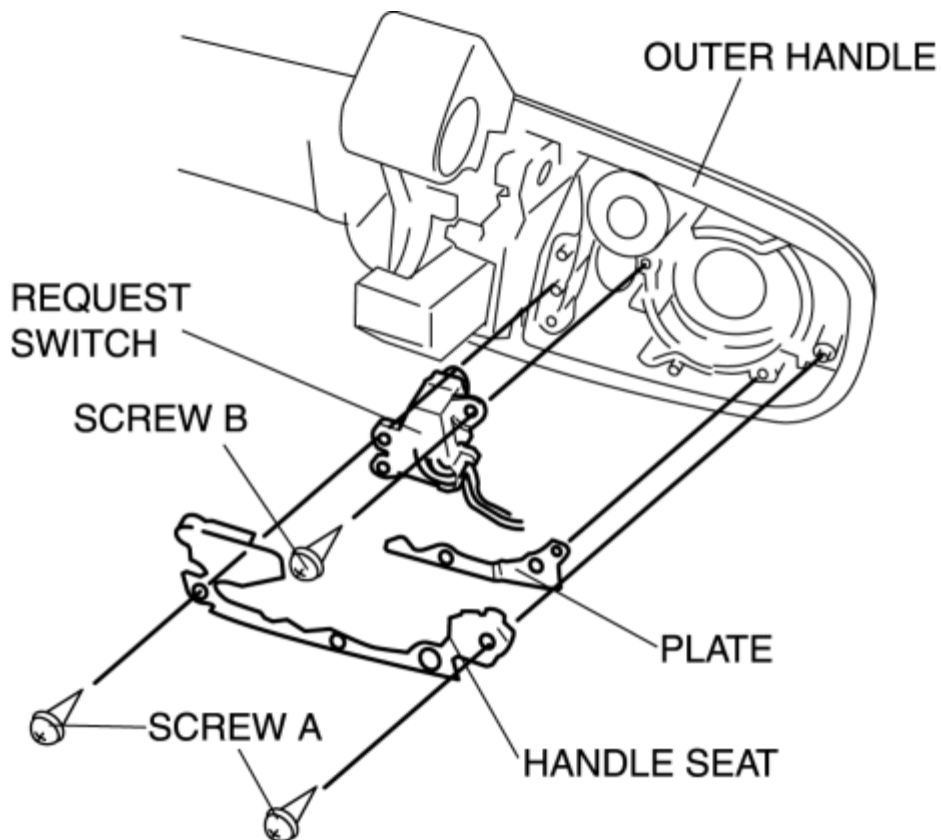
5. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

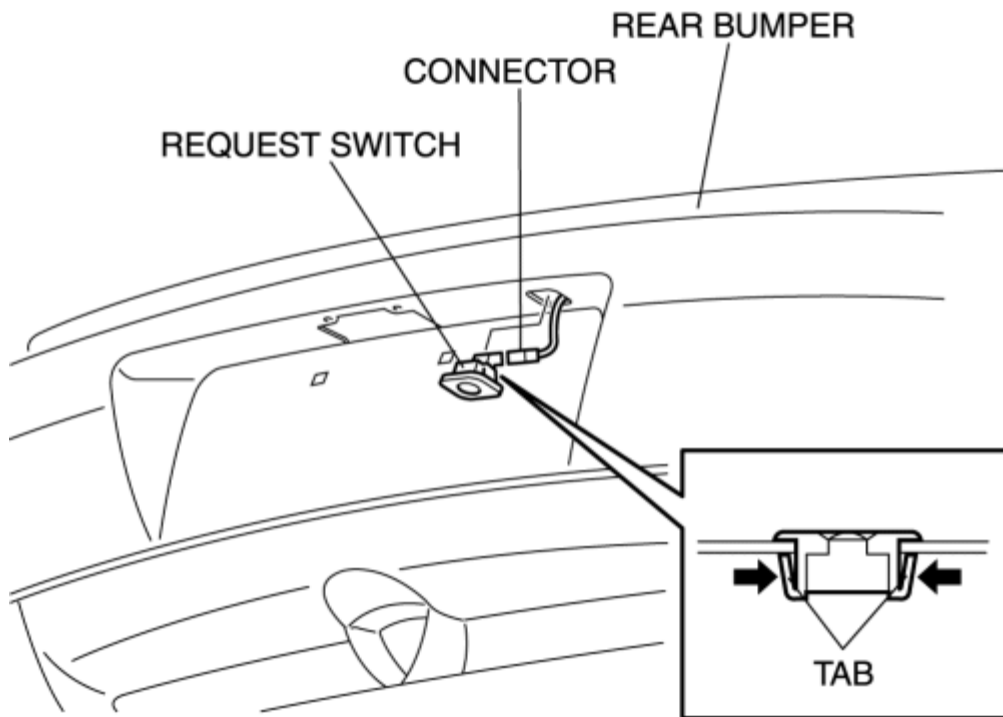
REQUEST SWITCH REMOVAL/INSTALLATION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]

Driver-side/passenger-side

1. Disconnect the negative battery cable.
2. Remove the front door trim. (See [FRONT DOOR TRIM REMOVAL/INSTALLATION.](#))
3. Remove the front outer handle. (See [FRONT OUTER HANDLE REMOVAL/INSTALLATION.](#))
4. Remove the screws A, then remove the handle seat and plate.
5. Remove screw B, then remove the request switch.



1. Disconnect the negative battery cable.
2. Remove the rear bumper. (See [REAR BUMPER REMOVAL/INSTALLATION](#).)
3. Detach the request switch from the rear bumper.
4. Install in the reverse order of removal.



[< Previous](#) [Next >](#)

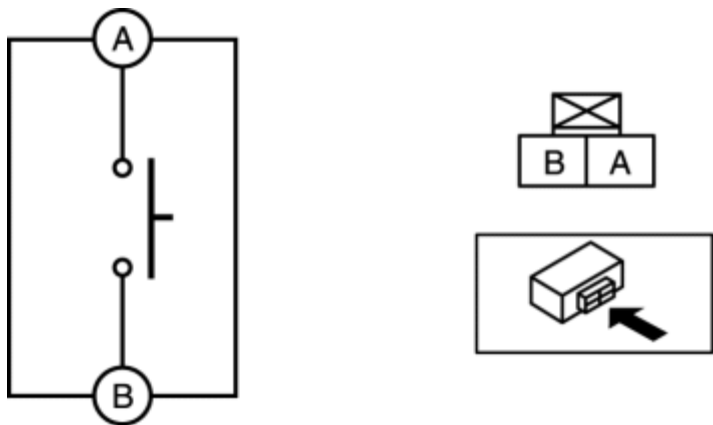
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

REQUEST SWITCH INSPECTION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]

1. Inspect for continuity between request switch terminals A and B.



- If not as specified, replace the request switch.

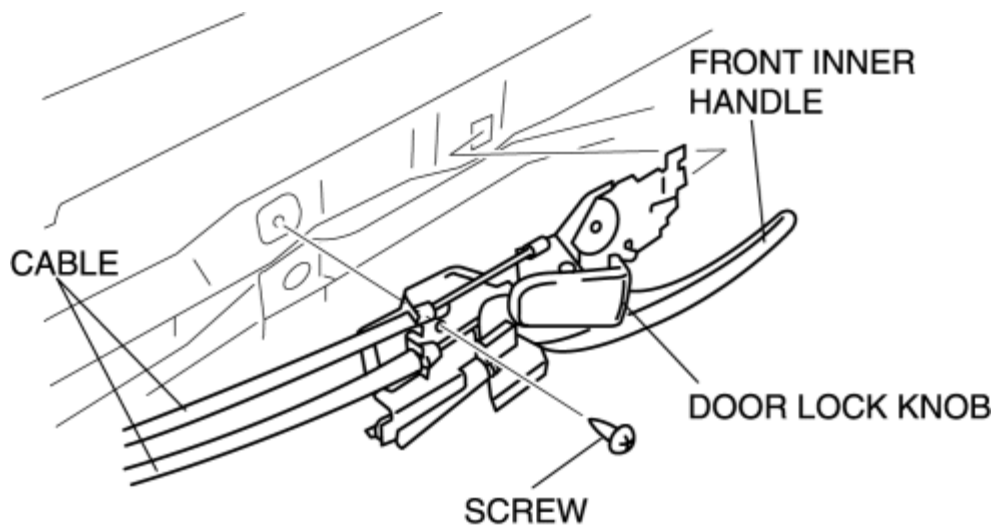
○—○ : Continuity

Switch position	Terminal	
	A	B
Push (ON)	○—○	○—○
Not push (OFF)		

2011 - RX-8 - Body and Accessories

FRONT INNER HANDLE REMOVAL/INSTALLATION

1. Remove the inner garnish. (See [INNER GARNISH REMOVAL/INSTALLATION](#).)
2. Remove the front door trim. (See [FRONT DOOR TRIM REMOVAL/INSTALLATION](#).)
3. Remove the screws, then remove the front inner handle.

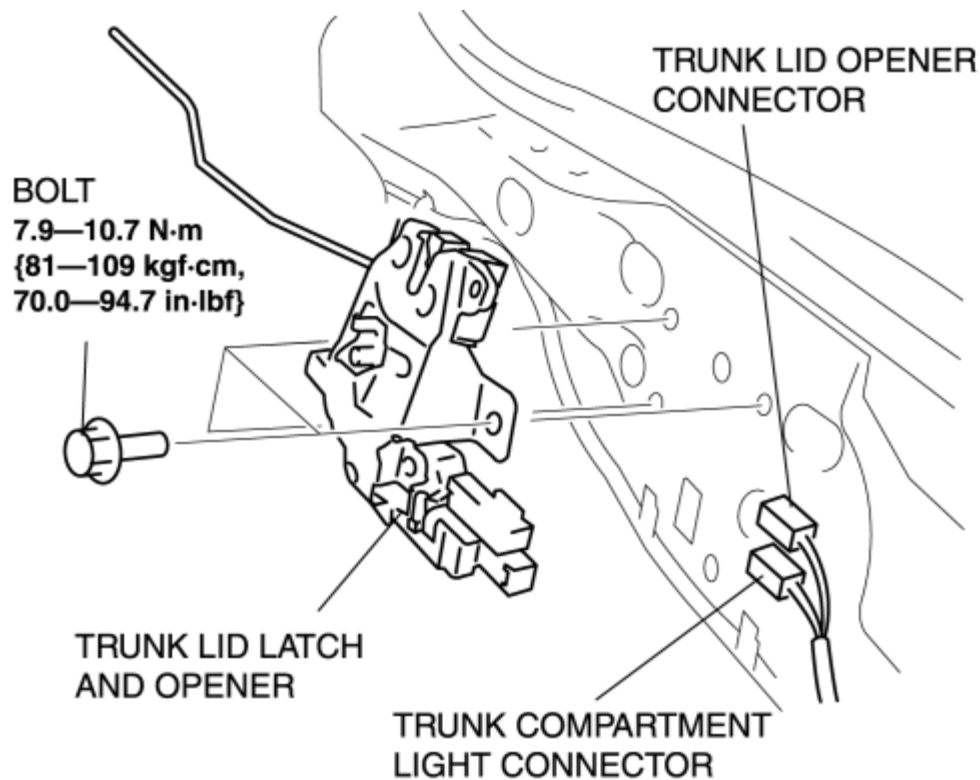


4. Detach the cables from the front inner handle and door lock knob.
5. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

TRUNK LID LATCH AND OPENER REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the trunk end trim. (See [TRUNK END TRIM REMOVAL/INSTALLATION](#).)
3. Detach the rod.
4. Disconnect the trunk lid opener connector and the trunk compartment light connector.

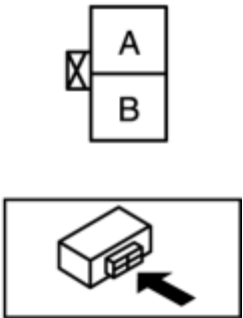
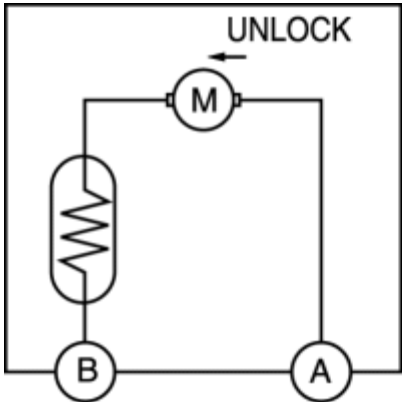


5. Remove the bolts, then remove the trunk lid latch and opener.
6. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

TRUNK LID OPENER INSPECTION

1. Apply battery positive voltage and connect the ground to the corresponding the trunk lid opener terminals, and inspect the trunk lid opener operation.



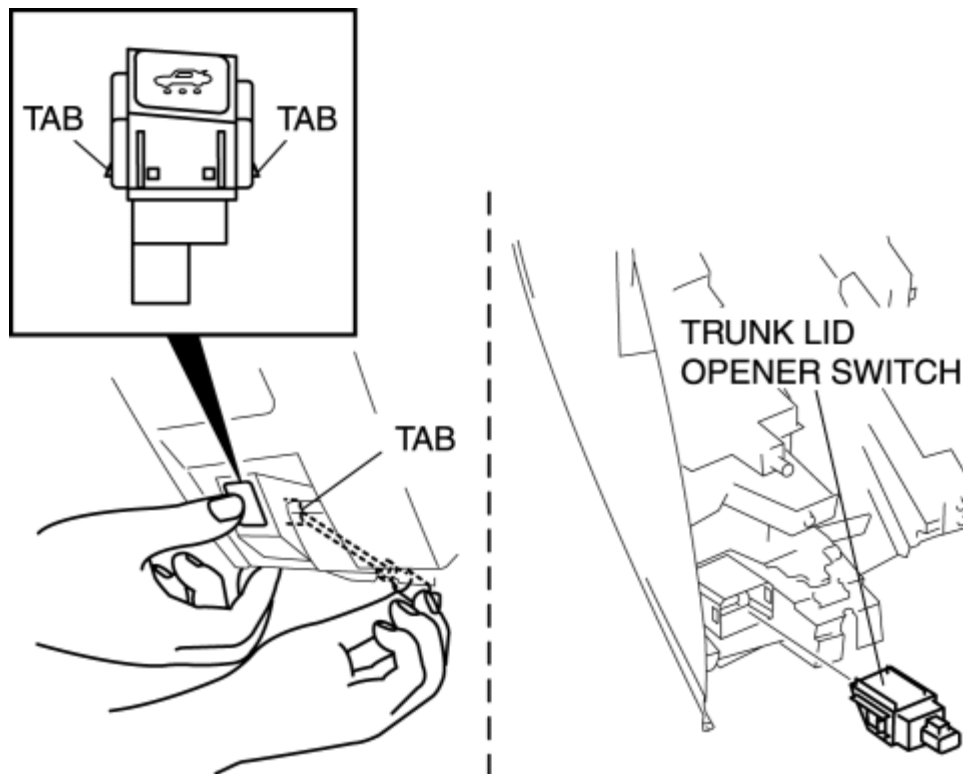
- If the trunk lid opener does not operate as indicated in the table, replace the trunk lid latch and opener.

Operation	Terminal	
	A	B
Unlocks	B+	Ground

2011 - RX-8 - Body and Accessories

TRUNK LID OPENER SWITCH REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Using a small flathead screwdriver, detach the tabs of the trunk lid opener switch from the dashboard.

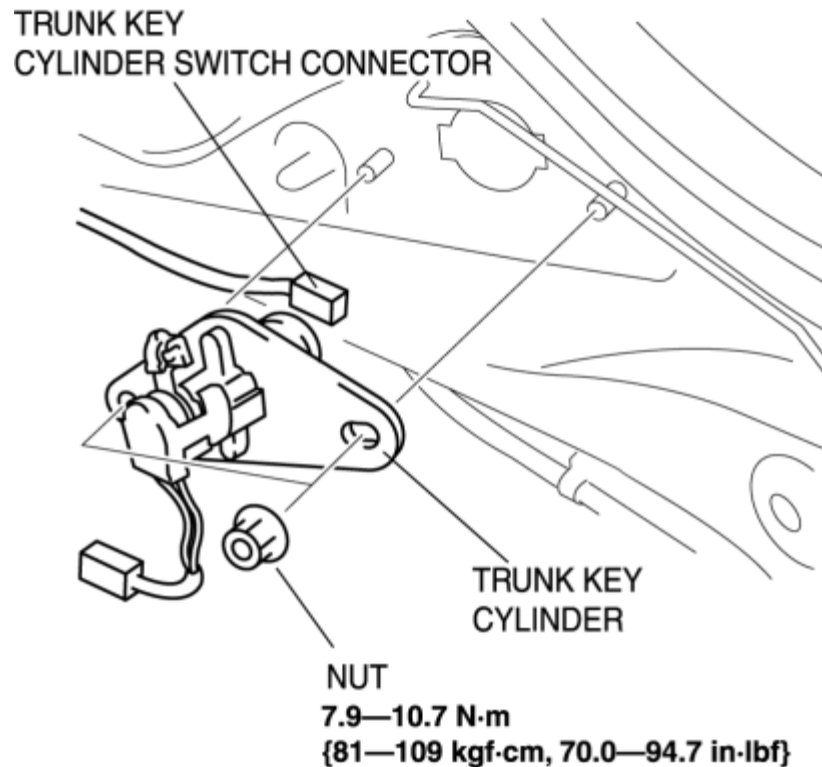


3. Push the trunk lid opener switch into the dashboard and remove.
4. Disconnect the trunk lid opener switch connector.
5. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

TRUNK KEY CYLINDER REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the trunk end trim. (See [TRUNK END TRIM REMOVAL/INSTALLATION](#).)
3. Detach the rod.
4. Remove the nuts, then remove the trunk key cylinder.

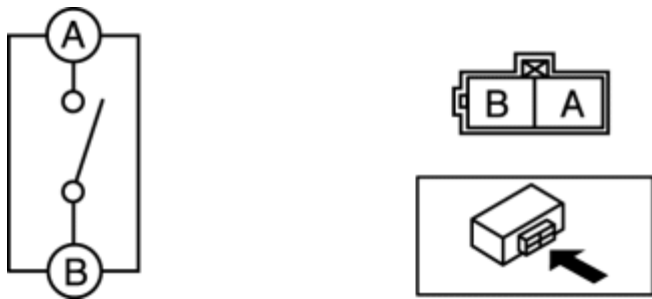


5. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

TRUNK KEY CYLINDER SWITCH INSPECTION

- 1. Remove the trunk key cylinder switch.
- 2. Inspect for continuity between the trunk key cylinder switch terminals.



- If not as specified, replace the trunk key cylinder.

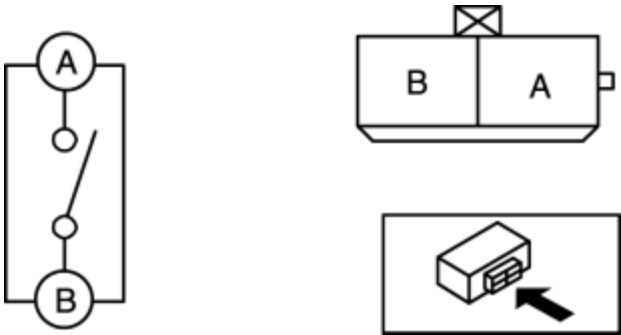
○ — ○ : Continuity

Operation	Terminal	
	A	B
On	○ —	— ○
Off		

2011 - RX-8 - Body and Accessories

TRUNK LID OPENER SWITCH INSPECTION

- 1. Remove the trunk lid open switch.
- 2. Inspect for continuity between the trunk lid open switch terminals.



- If not as specified, replace the trunk lid open switch.

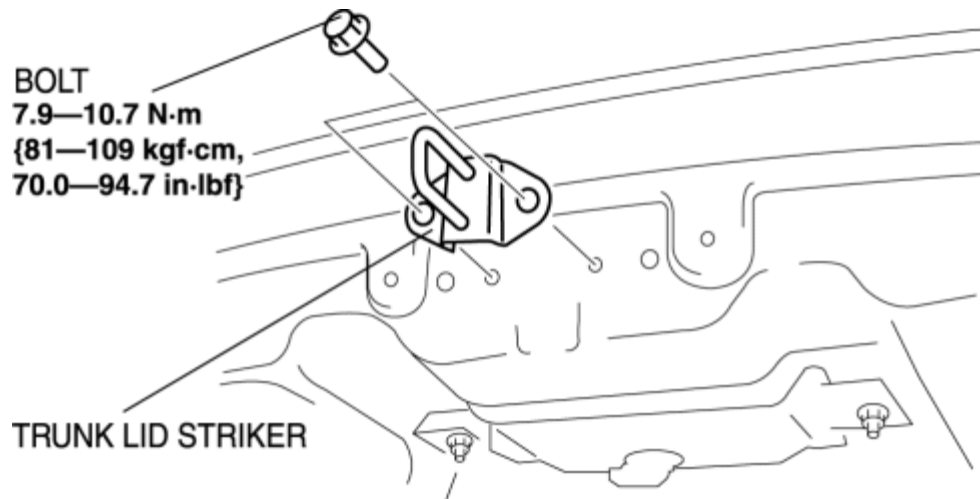
○ — ○ : Continuity

Operation	Terminal	
	A	B
On	○ —	— ○

2011 - RX-8 - Body and Accessories

TRUNK LID STRIKER REMOVAL/INSTALLATION

1. Remove the trunk end trim. (See [TRUNK END TRIM REMOVAL/INSTALLATION](#).)
2. Remove the bolts, then remove the trunk lid striker.

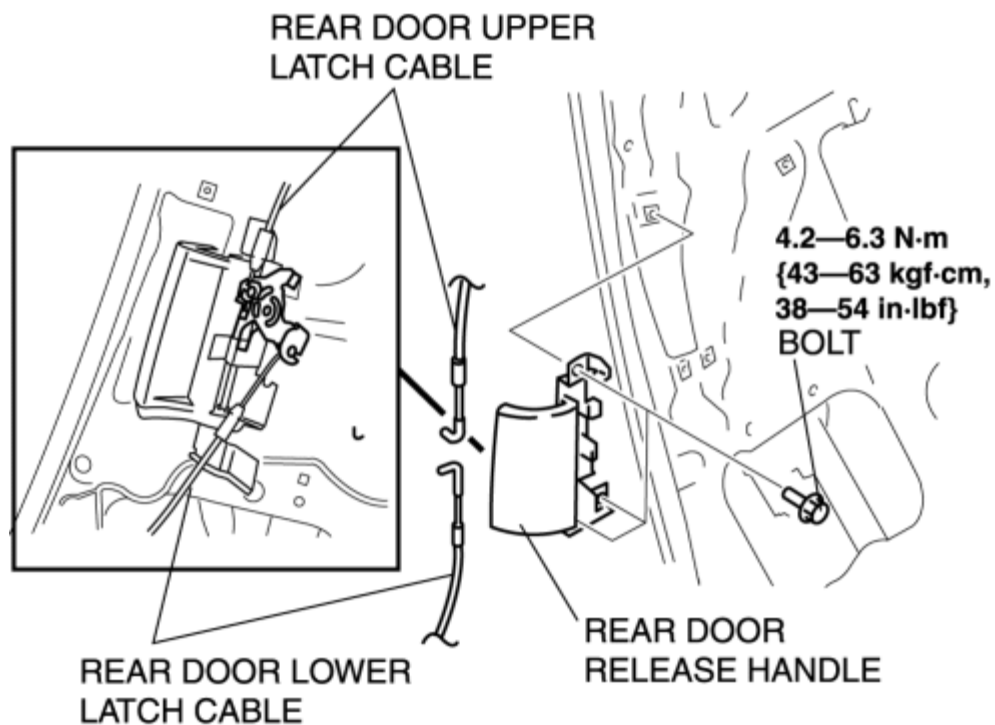


3. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

REAR DOOR RELEASE HANDLE REMOVAL/INSTALLATION

1. Remove the rear door lower trim. (See [REAR DOOR LOWER TRIM REMOVAL/INSTALLATION](#).)
2. Remove the rear door upper trim. (See [REAR DOOR UPPER TRIM REMOVAL/INSTALLATION](#).)
3. Remove the bolts, then remove the rear door release handle.

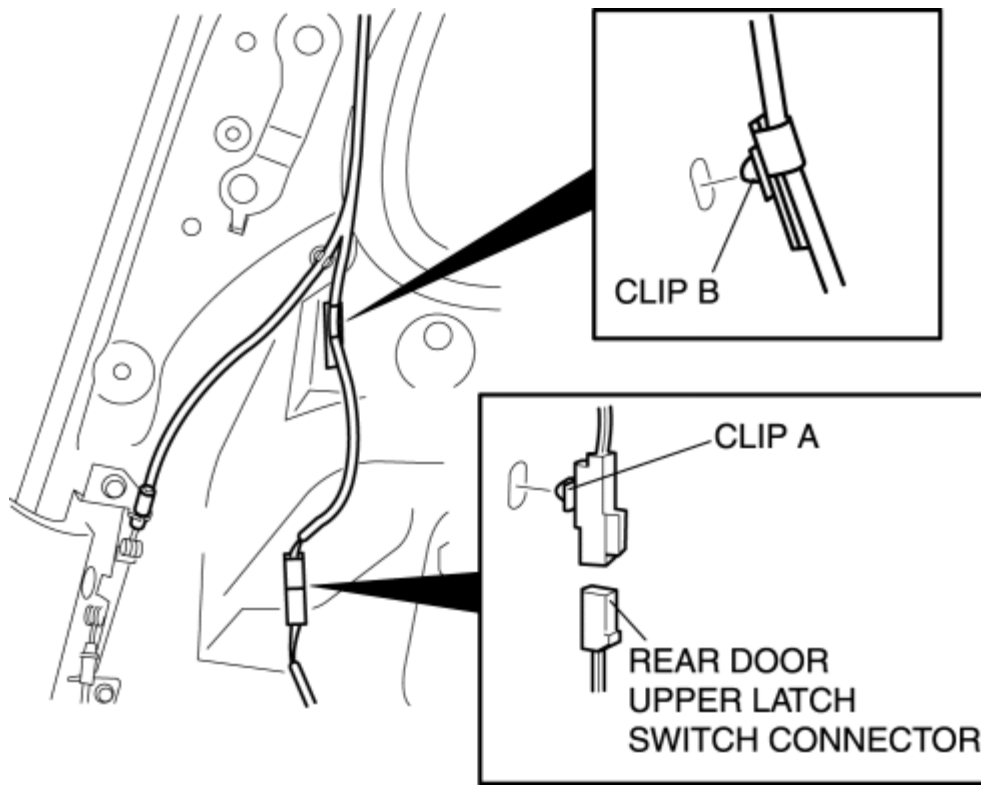


4. Detach the rear door upper and lower latch cables.
5. Install in the reverse order of removal.

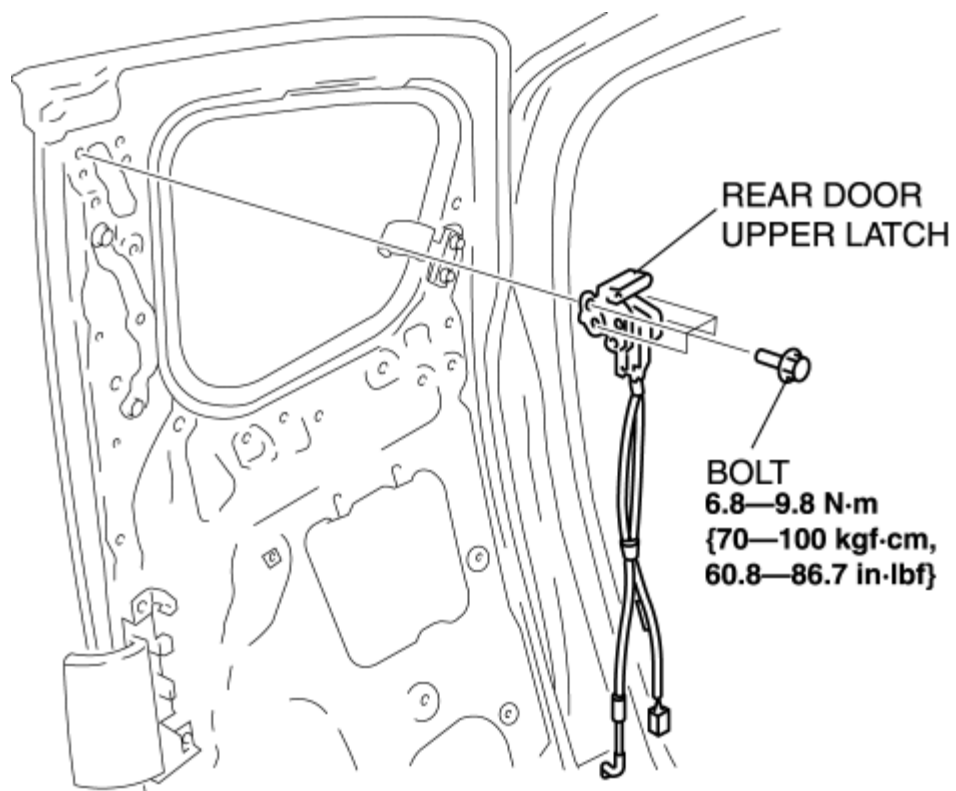
2011 - RX-8 - Body and Accessories

REAR DOOR UPPER LATCH REMOVAL/INSTALLATION

1. Remove the rear door lower trim. (See [REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.](#))
2. Remove the rear door upper trim. (See [REAR DOOR UPPER TRIM REMOVAL/INSTALLATION.](#))
3. Remove clips A and B, and disconnect the rear door upper latch switch connector.



4. Remove the rear door upper latch cable from the release handle.
5. Remove the bolts, then remove the rear door upper latch.



6. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

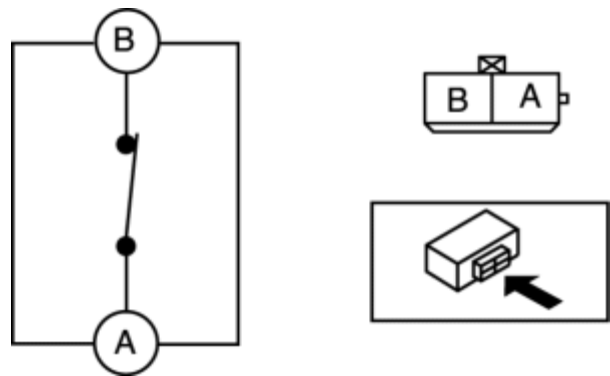
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

REAR DOOR UPPER LATCH SWITCH INSPECTION

1. Verify that the continuity is as indicated in the table.



- If not as indicated in the table, replace the rear door upper latch.

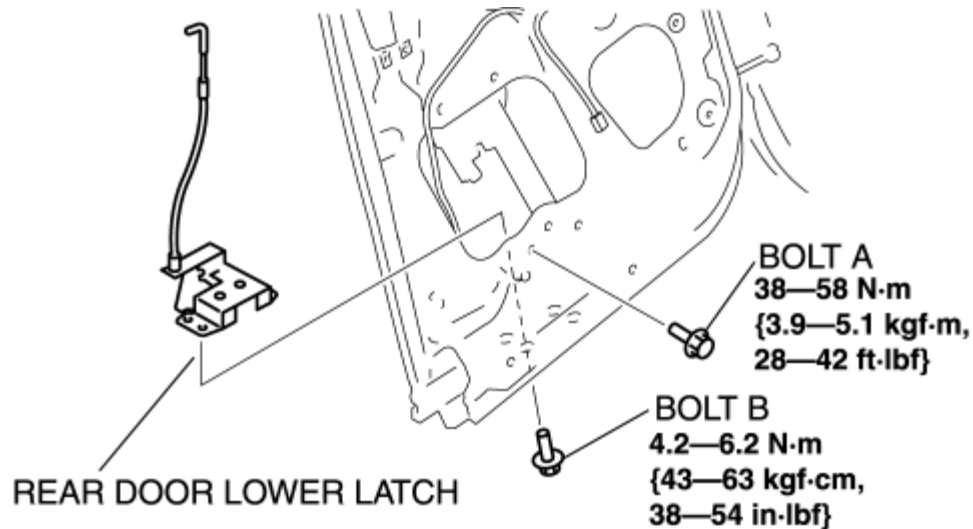
○ — ○ :Continuity

Switch position	Terminal	
	A	B
on (Rear door is open)	○ —	— ○
off (Rear door is closed)		

2011 - RX-8 - Body and Accessories

REAR DOOR LOWER LATCH REMOVAL/INSTALLATION

1. Remove the rear door lower trim. (See [REAR DOOR LOWER TRIM REMOVAL/INSTALLATION](#).)
2. Remove the rear door upper trim. (See [REAR DOOR UPPER TRIM REMOVAL/INSTALLATION](#).)
3. Remove the front seat belt retractor. (See [FRONT SEAT BELT REMOVAL/INSTALLATION](#).)
4. Remove the rear door release handle. (See [REAR DOOR RELEASE HANDLE REMOVAL/INSTALLATION](#).)
5. Remove bolt A.



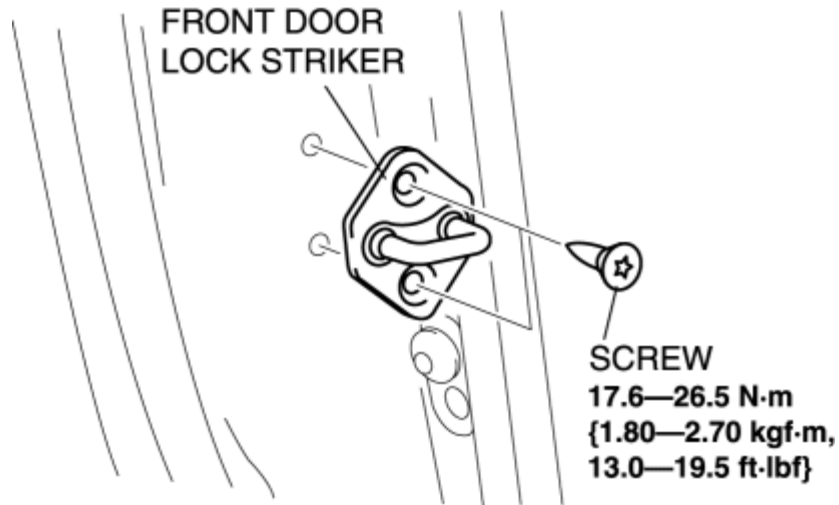
6. Remove bolts B, then remove the rear door lower latch.
7. Install in the reverse order of removal.
8. Adjust the door. (See [DOOR ADJUSTMENT](#).)

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

FRONT DOOR LOCK STRIKER REMOVAL/INSTALLATION

1. Remove the screws, and then remove the front door lock striker.



2. Install in the reverse order of removal.
3. Adjust the door. (See [DOOR ADJUSTMENT](#).)

[< Previous](#) [Next >](#)

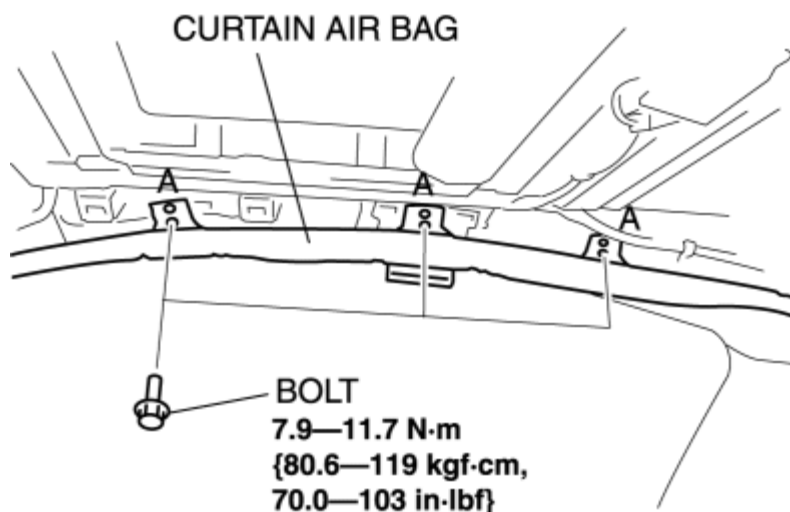
[Back to Top](#)

2011 - RX-8 - Body and Accessories

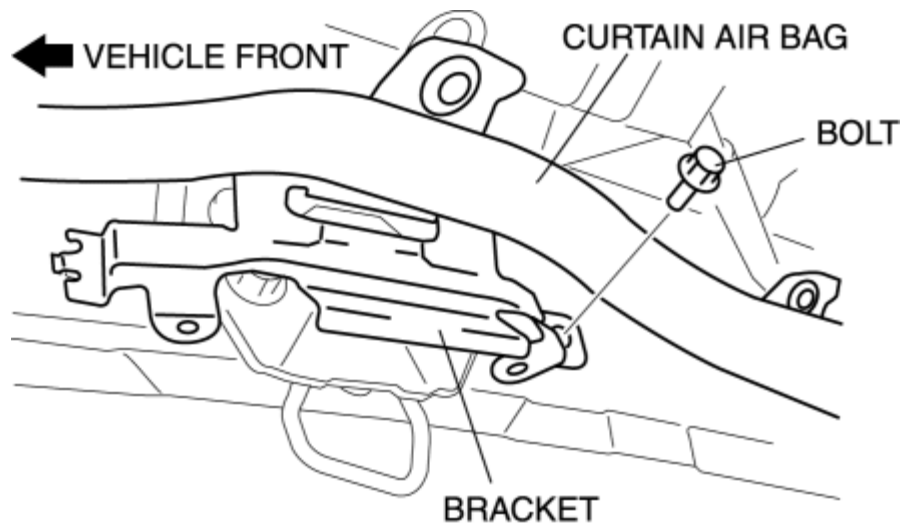
REAR DOOR LOCK STRIKER REMOVAL/INSTALLATION

Upper

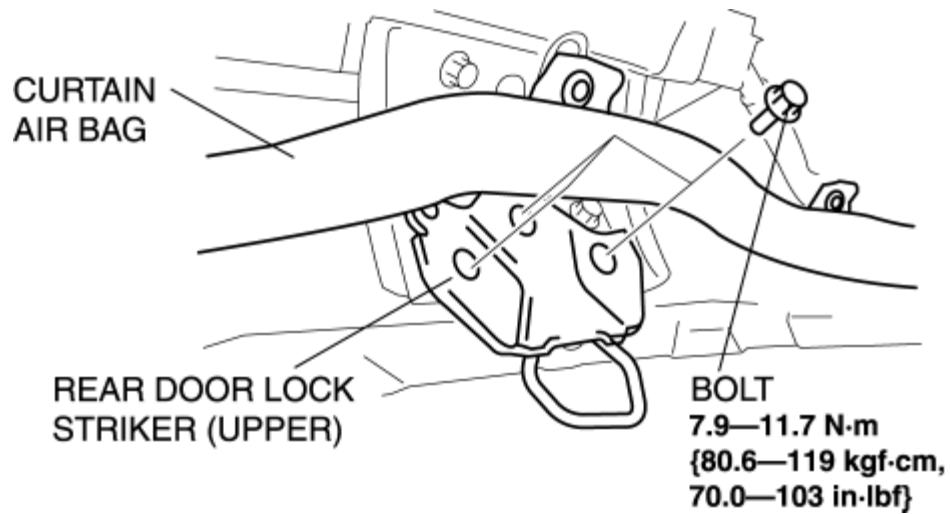
1. Remove the following parts:
 - a. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - b. Sunvisor (See [SUNVISOR REMOVAL/INSTALLATION.](#))
 - c. Assist handle (See [ASSIST HANDLE REMOVAL/INSTALLATION.](#))
 - d. Roof side trim (See [ROOF SIDE TRIM REMOVAL/INSTALLATION.](#))
 - e. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
 - f. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - g. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
 - h. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - i. Interior light (See [INTERIOR LIGHT REMOVAL/INSTALLATION.](#))
 - j. Map light (See [MAP LIGHT REMOVAL/INSTALLATION.](#))
 - k. Headliner (See [HEADLINER REMOVAL/INSTALLATION.](#))
2. Remove the bolts A from the curtain air bag module.



3. Remove the bolt, then remove the bracket.



4. Remove the bolts, then remove the rear door lock striker (upper).



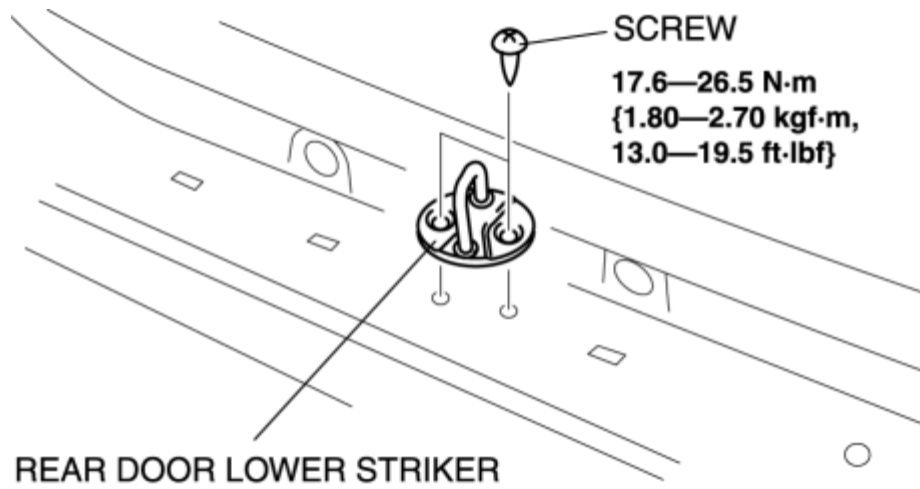
5. Install in the reverse order of removal.

6. Adjust the door. (See [DOOR ADJUSTMENT](#).)

Lower

1. Remove the outer scuff plate. (See [OUTER SCUFF PLATE REMOVAL/INSTALLATION](#).)

2. Remove the screws, then remove the rear door lock striker (lower).



3. Install in the reverse order of removal.
4. Adjust the door. (See [DOOR ADJUSTMENT](#).)

[< Previous](#) [Next >](#)

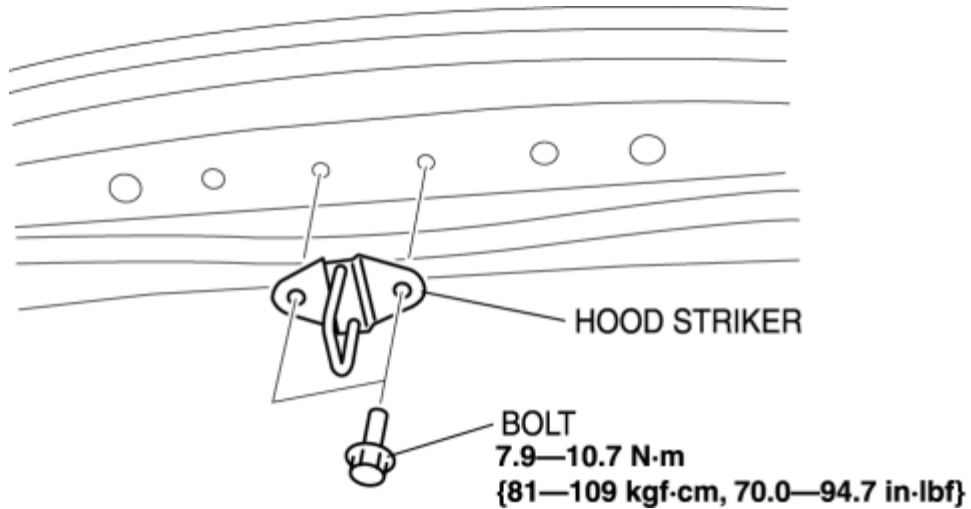
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

HOOD STRIKER REMOVAL/INSTALLATION

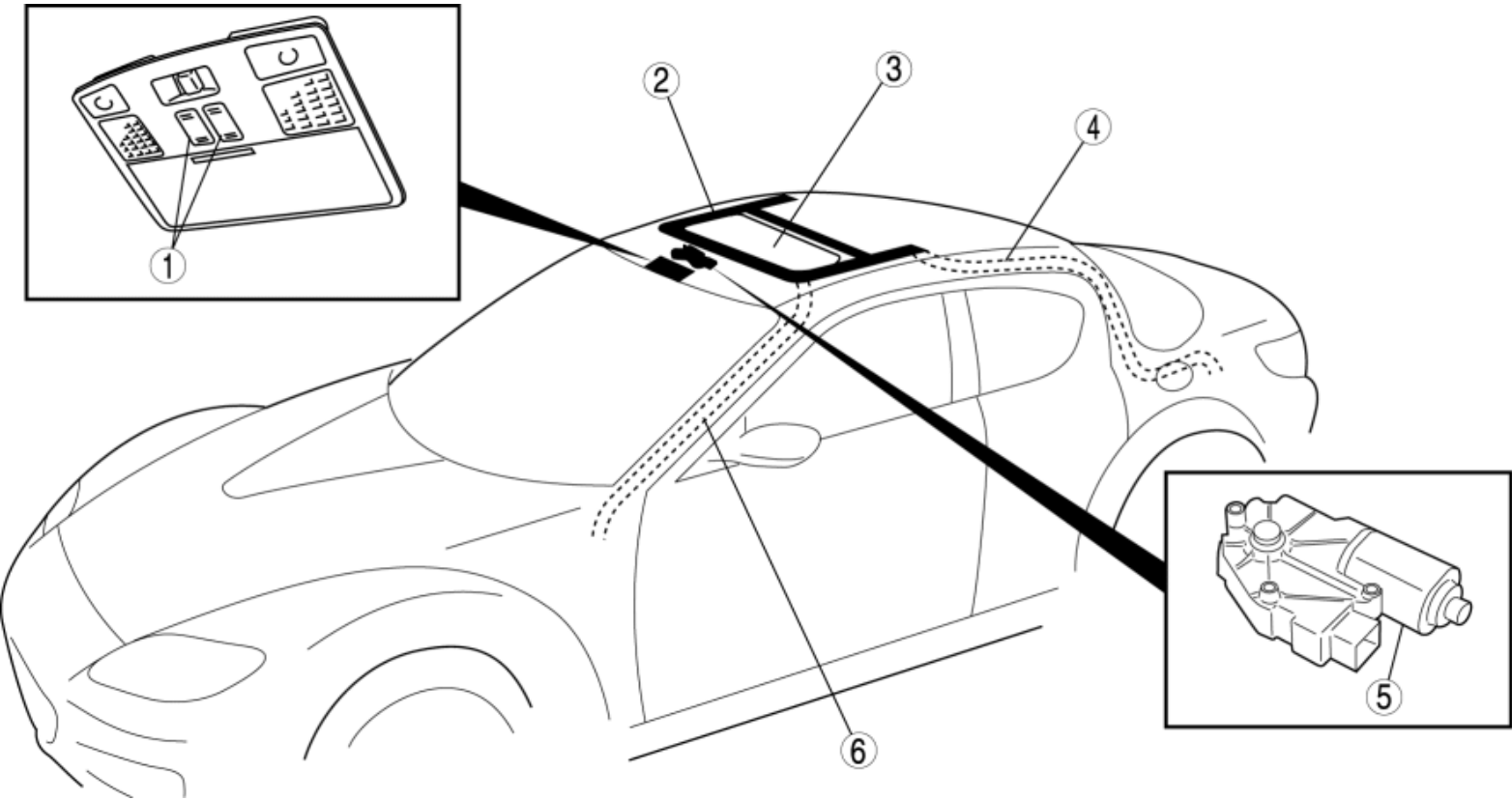
1. Remove the bolt, then remove the hood striker.



2. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

SUNROOF LOCATION INDEX



Sunroof switch
1 (See SUNROOF SWITCH REMOVAL/INSTALLATION.) (See SUNROOF SWITCH INSPECTION.)
Sunroof unit
2 (See SUNROOF UNIT REMOVAL/INSTALLATION.) (See SUNROOF UNIT DISASSEMBLY/ASSEMBLY.)
Glass panel
3 (See GLASS PANEL REMOVAL/INSTALLATION.) (See GLASS PANEL ADJUSTMENT.)
Rear drain hose

4 (See [REAR DRAIN HOSE REMOVAL.](#))

(See [REAR DRAIN HOSE INSTALLATION.](#))

Sunroof motor

5 (See [SUNROOF MOTOR REMOVAL/INSTALLATION.](#))

(See [SUNROOF MOTOR INSPECTION.](#))

Front drain hose

6 (See [FRONT DRAIN HOSE REMOVAL.](#))

(See [FRONT DRAIN HOSE INSTALLATION.](#))

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

SUNROOF SWITCH REMOVAL/INSTALLATION

NOTE:

- The sunroof switch and the map light are a single unit.
1. Disconnect the negative battery cable.
 2. Remove the map light from the headliner. (See [MAP LIGHT REMOVAL/INSTALLATION](#).)
 3. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

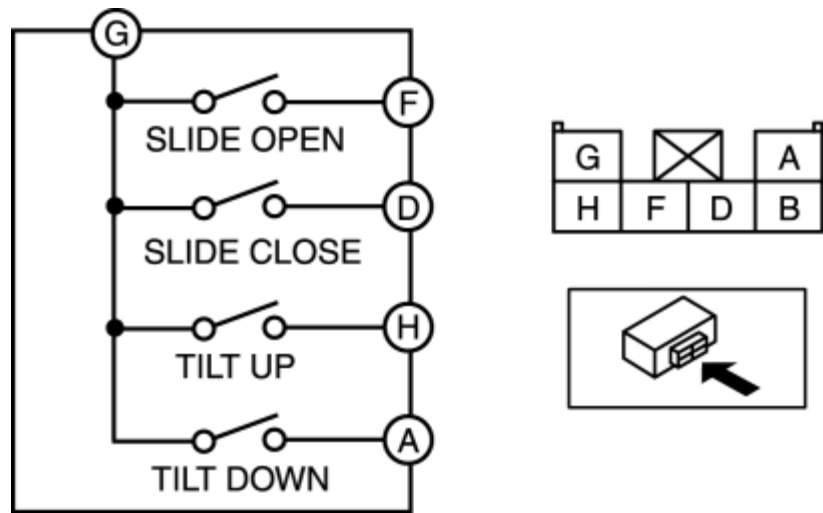
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

SUNROOF SWITCH INSPECTION

1. Verify that the continuity between the sunroof switch is as indicated in the table.



- If not as indicated in the table, replace the sunroof switch.

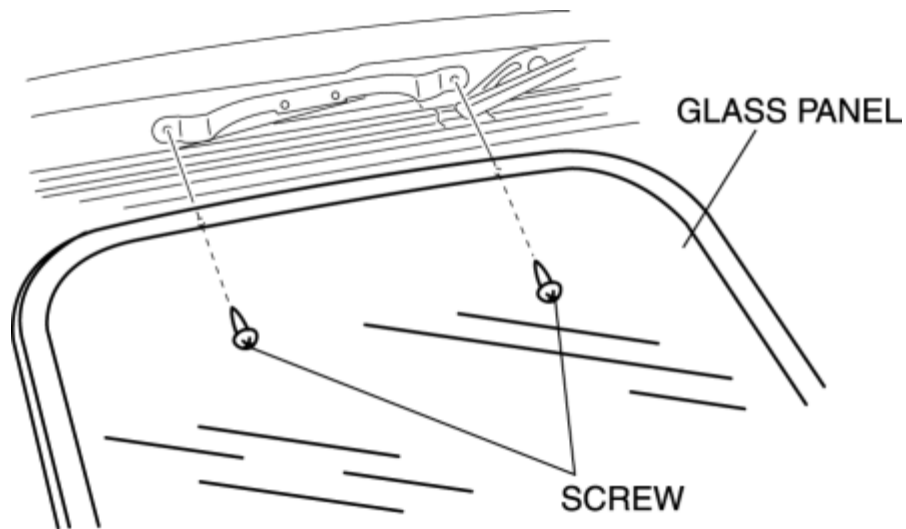
○ — ○ : Continuity

Switch position	Terminal				
	A	D	F	H	G
Slide open			○ — ○		
Slide close		○ — ○			
Tilt up				○ — ○	
Tilt down	○ — ○				
OFF					

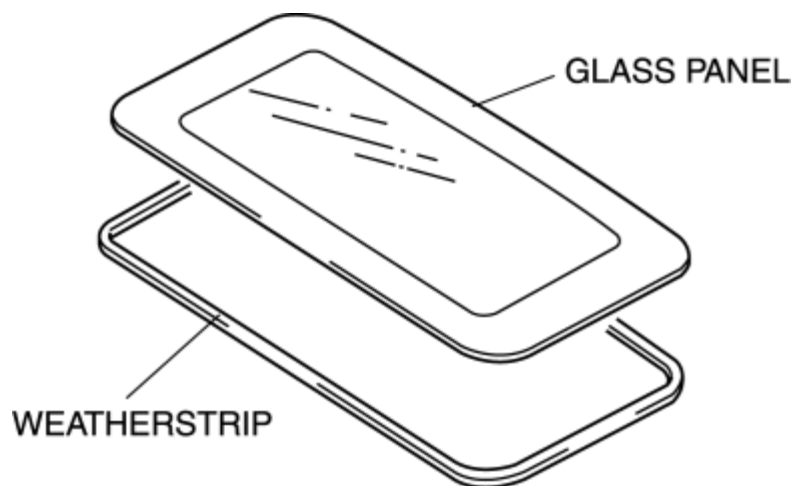
2011 - RX-8 - Body and Accessories

GLASS PANEL REMOVAL/INSTALLATION

1. Fully close the glass panel.
2. Fully open the sunshade.
3. Remove the screws, then remove the glass panel.



4. Remove the weatherstrip from the glass panel.

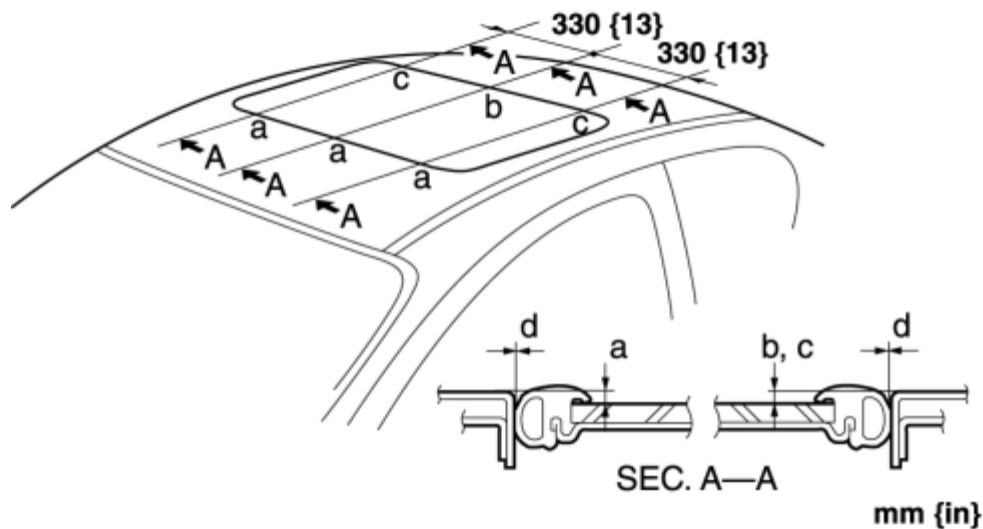


5. Install in the reverse order of removal.
6. Adjust the glass panel. (See [GLASS PANEL ADJUSTMENT](#).)

2011 - RX-8 - Body and Accessories

GLASS PANEL ADJUSTMENT

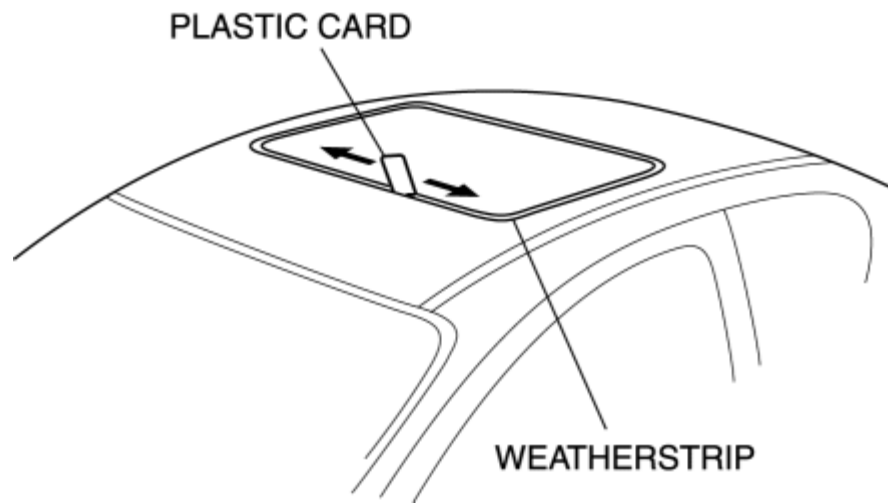
1. Fully close the glass panel.
2. Measure the gap and height difference between the glass panel and the body.
3. Loosen the glass panel installation screws and move the glass panel to adjust.



Standard clearance

- a: 0.2—2.2 mm {0.008—0.086 in}
- b: 0.2—2.2 mm {0.008—0.086 in}
- c: 0.25—2.25 mm {0.01—0.09 in}
- d: 0 mm {0 in}

4. Tighten the screws.
5. Insert any available thin plastic card between the weatherstrip and the body, and verify that they are sealed. (There is resistance when the plastic card is moved.)



- If they are not sealed, perform Steps 3—4 and adjust again.

[< Previous](#) [Next >](#)

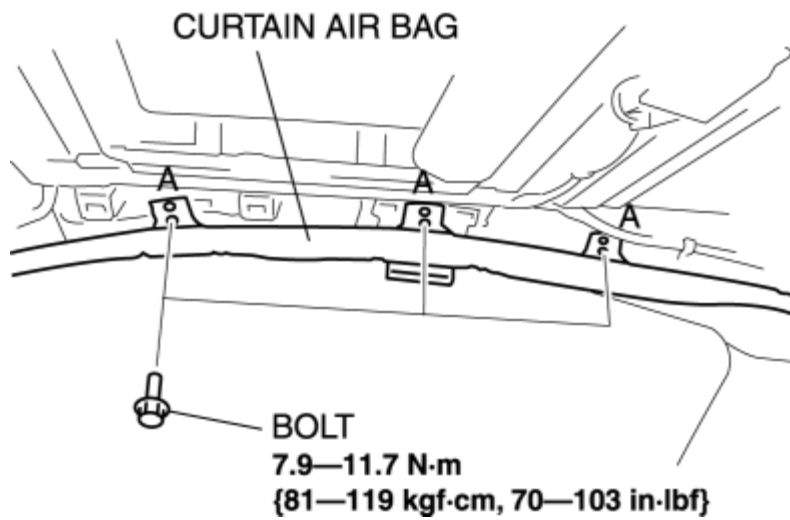
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

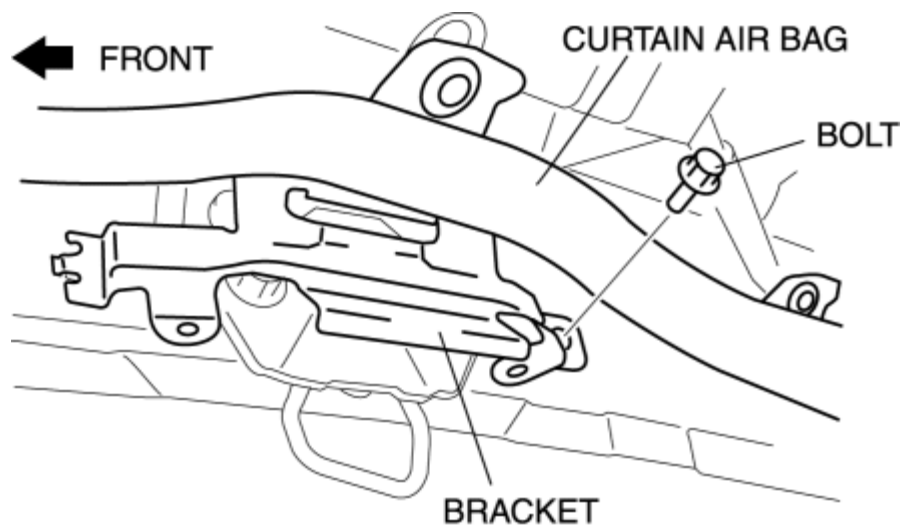
2011 - RX-8 - Body and Accessories

SUNROOF UNIT REMOVAL/INSTALLATION

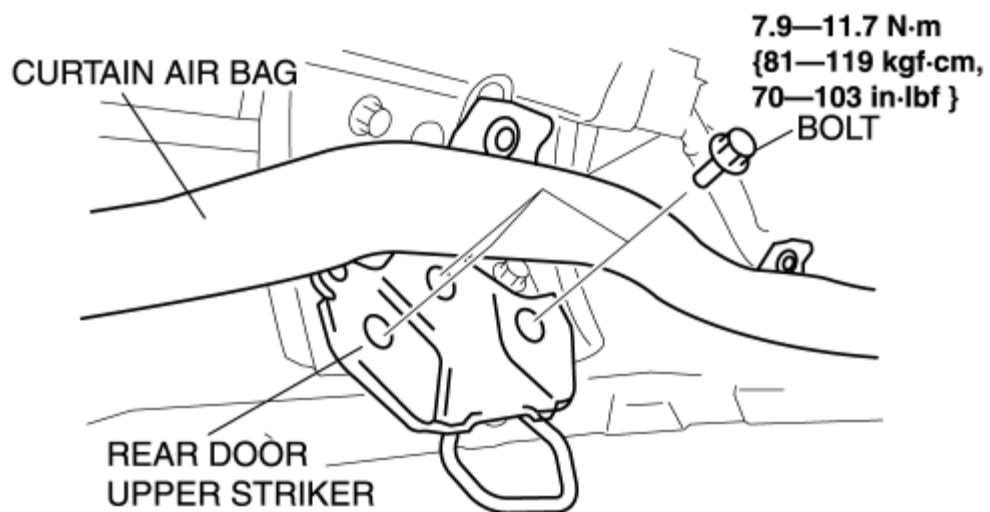
1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Roof side trim (See [ROOF SIDE TRIM REMOVAL/INSTALLATION.](#))
 - b. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - c. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - d. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
 - e. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
 - f. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - g. Map light (See [MAP LIGHT REMOVAL/INSTALLATION.](#))
 - h. Interior light (See [INTERIOR LIGHT REMOVAL/INSTALLATION.](#))
 - i. Sunvisor (See [SUNVISOR REMOVAL/INSTALLATION.](#))
 - j. Assist handle (See [ASSIST HANDLE REMOVAL/INSTALLATION.](#))
 - k. Headliner (See [HEADLINER REMOVAL/INSTALLATION.](#))
 - l. Head impact pad (See [HEAD IMPACT PAD REMOVAL/INSTALLATION.](#))
 - m. Glass panel (See [GLASS PANEL REMOVAL/INSTALLATION.](#))
3. Disconnect the front and rear drain hoses from the sunroof frame.
4. Remove the bolts from curtain air bag module points A.



5. Remove the bolt, then remove the bracket.

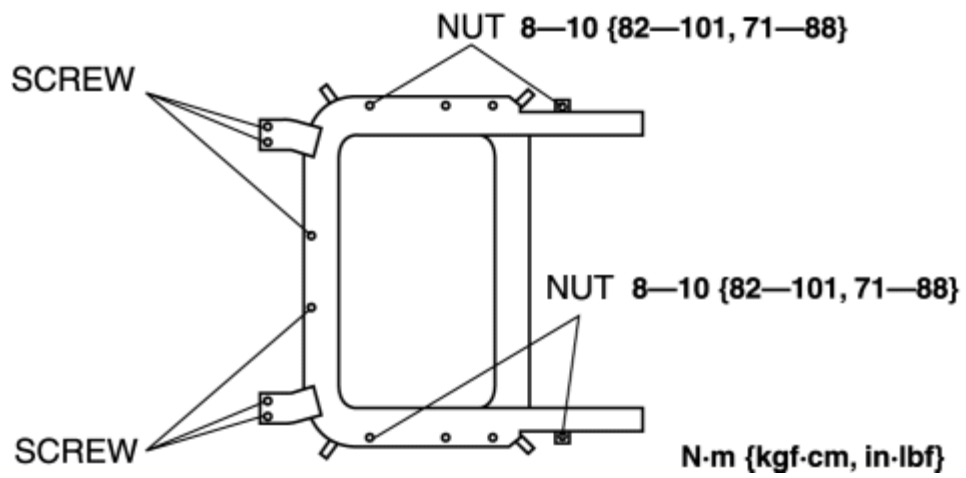


6. Remove the rear door striker (upper).



7. Remove the rear set bracket.

8. Remove the nuts and screws, then remove the sunroof unit.



9. Install in the reverse order of removal.

10. Adjust the glass panel. (See [GLASS PANEL ADJUSTMENT](#).)

[< Previous](#) [Next >](#)

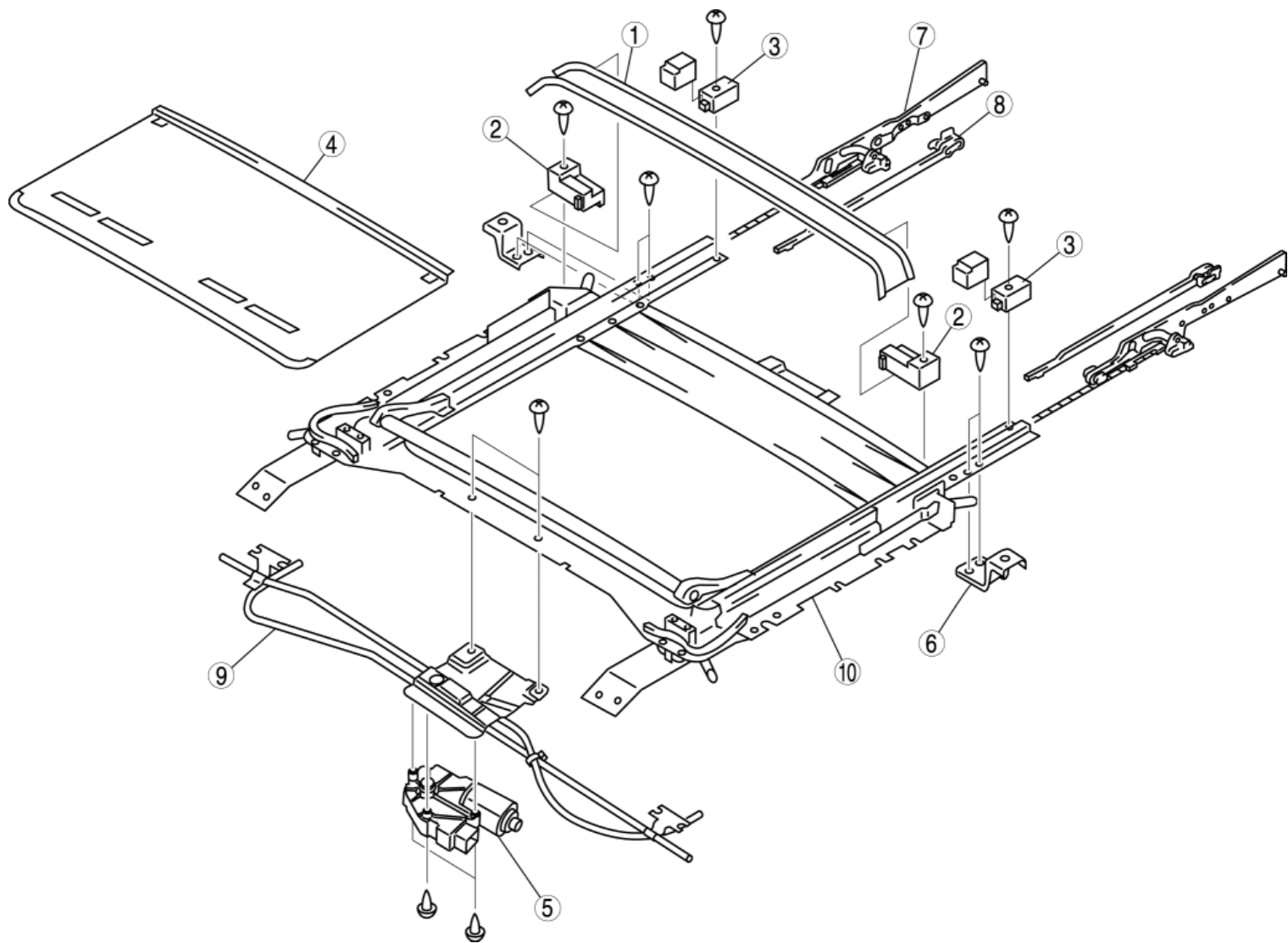
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

SUNROOF UNIT DISASSEMBLY/ASSEMBLY

- 1. Remove the glass panel. (See [GLASS PANEL REMOVAL/INSTALLATION](#).)
- 2. Disassemble in the order indicated in the table.
- 3. Assemble in the reverse order of disassembly.



1	Drip rail
2	Drip guide
3	Rear stopper
4	Sunshade

5	Sunroof motor (See Sunroof Motor Assembly Note.)
6	Set plate
7	Guide
8	Decoration link
9	Drive unit
10	Frame

Sunroof Motor Assembly Note

NOTE:

- If the guide is removed, initial position setting of the sunroof motor will be required. After installing the sunroof unit, perform initial position setting using the following procedure.

1. Press the CLOSE switch to fully close the glass panel.

2. When the glass panel reaches the fully closed position, temporarily release the CLOSE switch and press it again **for approx. 13 s** continuously. Continue pressing the switch until the glass panel automatically stops at the fully closed position after reaching the mechanical lock position.

3. When the glass panel stops at the fully closed position, temporarily release the CLOSE switch, then press it again within 5 s and hold.

NOTE:

- Press the CLOSE switch continuously until the glass panel opens to the fully open position, returns to the fully closed position and then stops.

4. Release the CLOSE switch when the glass panel stops at the fully closed position.

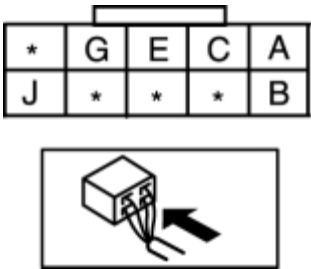
[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

SUNROOF MOTOR INSPECTION

1. Measure the voltage at each terminal (other than terminal G).
- If not as specified, inspect the parts listed under "Inspection item" and the related wiring harnesses.
2. Disconnect the negative battery cable.
3. Verify that continuity at terminal G is as indicated in the Terminal Voltage Table (Reference).
4. If the parts and wiring harnesses are okay but the system still does not work properly, replace the sunroof relay.

Terminal voltage list (Reference)



Terminal	Signal	Connected to	Test condition	Voltage (V)/Continuity	Inspection item
A	Slide open	Sunroof switch	Sunroof is fully opening.	B+	Sunroof switch (See SUNROOF SWITCH INSPECTION.)
			Other	0	
B	Slide close /tilt down	Sunroof switch	Sunroof is closing/tilting down.	B+	Sunroof switch (See SUNROOF SWITCH INSPECTION.)
			Other		
			Sunroof is tilting up.	B+	Sunroof switch

C	Tilt up	Sunroof switch			
			Other	0	(See SUNROOF SWITCH INSPECTION.)
E	IG1	A/C 7.5 A fuse	Turn the ignition switch to the ON position.	B+	A/C 7.5 A fuse
G	GND	GND	Under any condition: Check for continuity to ground.	Continuity	GND
J	Power supply	DOOR LOCK 30 A fuse	Under any condition	B+	DOOR LOCK 30 A fuse

[< Previous](#) [Next >](#)

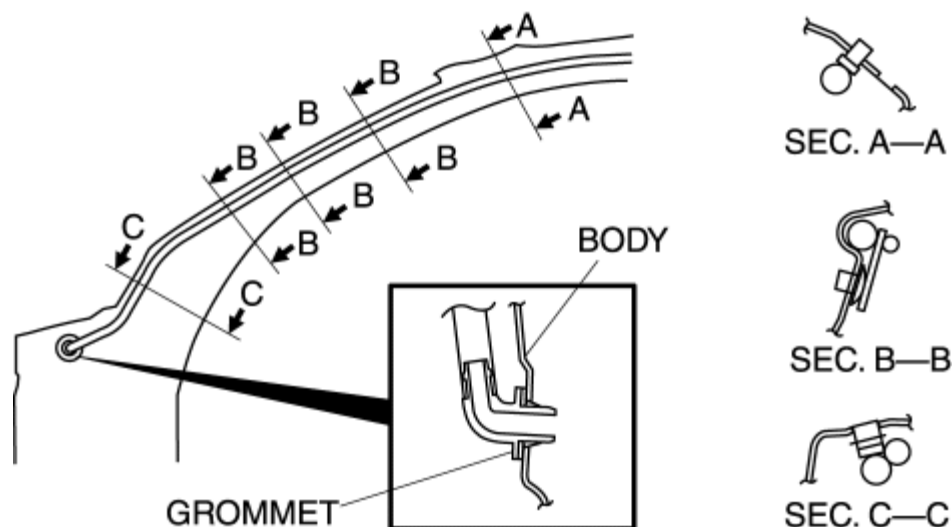
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

FRONT DRAIN HOSE REMOVAL

1. Remove the following parts:
 - a. Roof side trim (See [ROOF SIDE TRIM REMOVAL/INSTALLATION.](#))
 - b. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - c. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - d. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
 - e. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
 - f. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - g. Map light (See [MAP LIGHT REMOVAL/INSTALLATION.](#))
 - h. Interior light (See [INTERIOR LIGHT REMOVAL/INSTALLATION.](#))
 - i. Sunvisor (See [SUNVISOR REMOVAL/INSTALLATION.](#))
 - j. Assist handle (See [ASSIST HANDLE REMOVAL/INSTALLATION.](#))
 - k. Headliner (See [HEADLINER REMOVAL/INSTALLATION.](#))
2. Disconnect the front drain hose from the sunroof frame.
3. Remove the front drain hose from the clips.



4. Pull the front drain hose into the vehicle interior and remove the front drain hose.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

FRONT DRAIN HOSE INSTALLATION

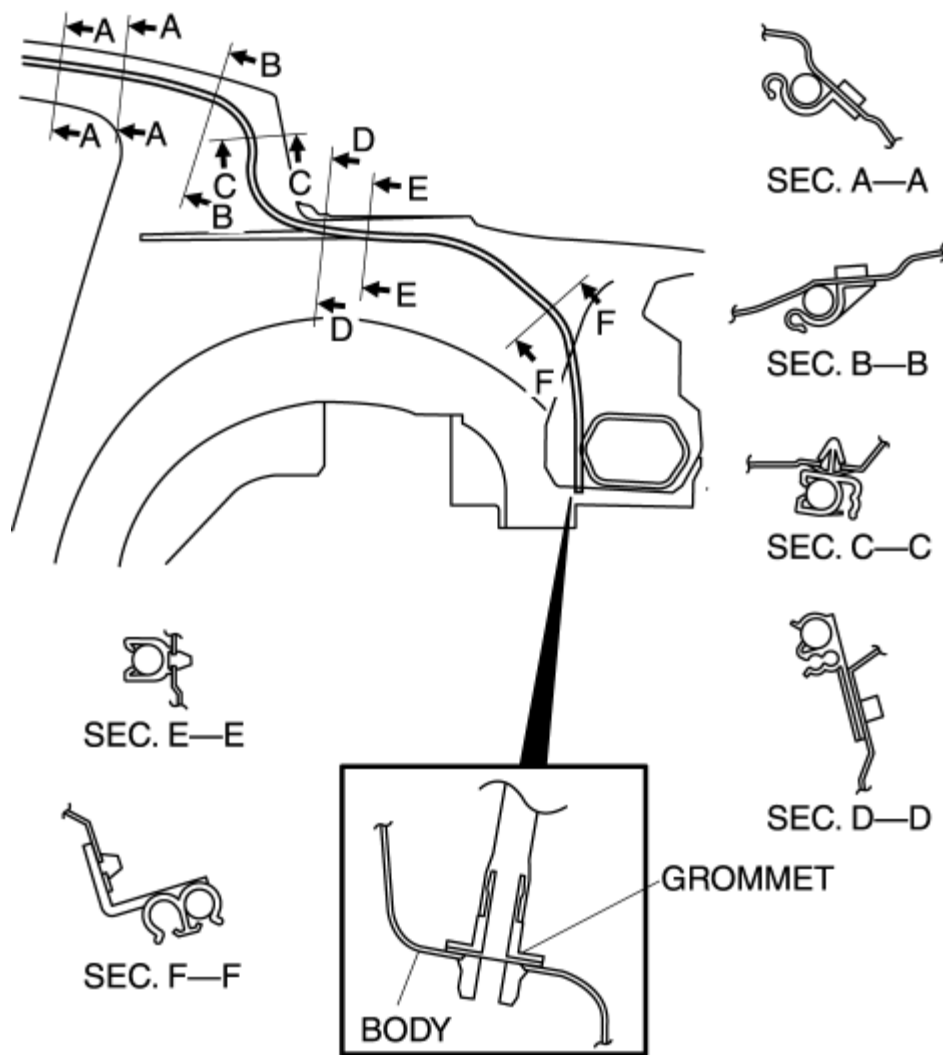
CAUTION:

- If the front drain hose is pinched or bent at any point, the water in the hose may not drain and could leak inside the vehicle. During and after installation of the trims and headliner, always make sure there is no interference with the front drain hose. Correct any abnormality if found.
1. Apply soapy water to the part of the sunroof frame where the front drain hose is inserted.
 2. Insert the front drain hose end into the sunroof frame.
 3. Install the front drain hose to the clips parallel to the pillar and free of looseness.
 4. Insert the front drain hose grommet into the hole of the inner hinge pillar.
 5. Install the following parts:
 - a. Headliner (See [HEADLINER REMOVAL/INSTALLATION.](#))
 - b. Assist handle (See [ASSIST HANDLE REMOVAL/INSTALLATION.](#))
 - c. Sunvisor (See [SUNVISOR REMOVAL/INSTALLATION.](#))
 - d. Interior light (See [INTERIOR LIGHT REMOVAL/INSTALLATION.](#))
 - e. Map light (See [MAP LIGHT REMOVAL/INSTALLATION.](#))
 - f. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - g. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
 - h. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
 - i. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - j. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - k. Roof side trim (See [ROOF SIDE TRIM REMOVAL/INSTALLATION.](#))

2011 - RX-8 - Body and Accessories

REAR DRAIN HOSE REMOVAL

1. Remove the following parts:
 - a. Roof side trim (See [ROOF SIDE TRIM REMOVAL/INSTALLATION.](#))
 - b. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - c. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - d. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
 - e. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
 - f. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - g. Map light (See [MAP LIGHT REMOVAL/INSTALLATION.](#))
 - h. Interior light (See [INTERIOR LIGHT REMOVAL/INSTALLATION.](#))
 - i. Sunvisor (See [SUNVISOR REMOVAL/INSTALLATION.](#))
 - j. Assist handle (See [ASSIST HANDLE REMOVAL/INSTALLATION.](#))
 - k. Headliner (See [HEADLINER REMOVAL/INSTALLATION.](#))
 - l. Trunk end trim (See [TRUNK END TRIM REMOVAL/INSTALLATION.](#))
 - m. Trunk side trim (See [TRUNK SIDE TRIM REMOVAL/INSTALLATION.](#))
2. Remove the sunroof frame from the rear drain hose.
3. Remove the rear drain hose from the clips.



4. Pull the rear drain hose into the vehicle interior and remove the rear drain hose.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

REAR DRAIN HOSE INSTALLATION

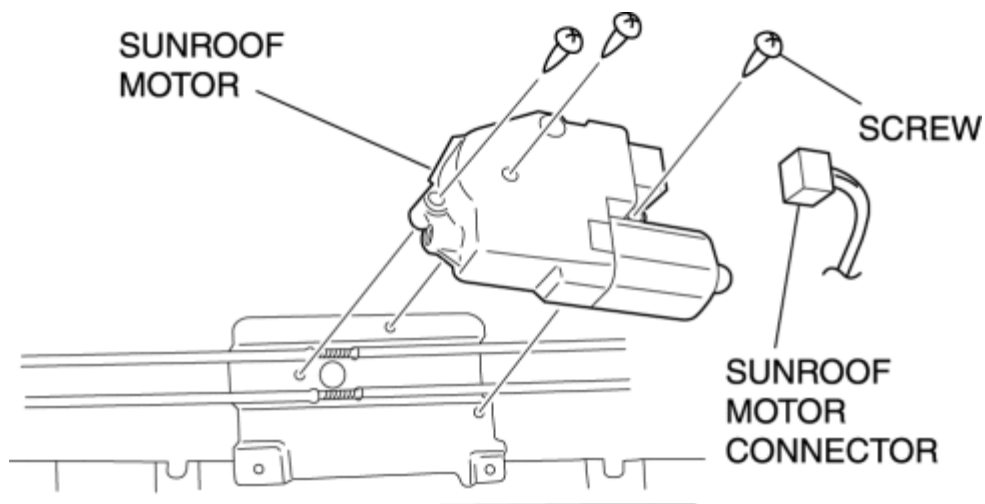
CAUTION:

- If the rear drain hose is pinched or bent at any point, the water in the hose may not drain and could leak inside the vehicle. During and after installation of the trims and headliner, always make sure there is no interference with the rear drain hose. Correct any abnormality if found.
1. Apply soapy water to the part of the sunroof frame where the rear drain hose is inserted.
 2. Insert the rear drain hose end into the sunroof frame.
 3. Install the rear drain hose to the clips parallel to the pillar and free of looseness.
 4. Insert the rear drain hose grommet into the hole of the inner rear pillar.
 5. Install the following parts:
 - a. Trunk side trim (See [TRUNK SIDE TRIM REMOVAL/INSTALLATION.](#))
 - b. Trunk end trim (See [TRUNK END TRIM REMOVAL/INSTALLATION.](#))
 - c. Headliner (See [HEADLINER REMOVAL/INSTALLATION.](#))
 - d. Assist handle (See [ASSIST HANDLE REMOVAL/INSTALLATION.](#))
 - e. Sunvisor (See [SUNVISOR REMOVAL/INSTALLATION.](#))
 - f. Interior light (See [INTERIOR LIGHT REMOVAL/INSTALLATION.](#))
 - g. Map light (See [MAP LIGHT REMOVAL/INSTALLATION.](#))
 - h. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - i. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
 - j. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
 - k. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - l. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - m. Roof side trim (See [ROOF SIDE TRIM REMOVAL/INSTALLATION.](#))

2011 - RX-8 - Body and Accessories

SUNROOF MOTOR REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Roof side trim (See [ROOF SIDE TRIM REMOVAL/INSTALLATION.](#))
 - b. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - c. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - d. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
 - e. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
 - f. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - g. Map light (See [MAP LIGHT REMOVAL/INSTALLATION.](#))
 - h. Interior light (See [INTERIOR LIGHT REMOVAL/INSTALLATION.](#))
 - i. Sunvisor (See [SUNVISOR REMOVAL/INSTALLATION.](#))
 - j. Assist handle (See [ASSIST HANDLE REMOVAL/INSTALLATION.](#))
 - k. Headliner (See [HEADLINER REMOVAL/INSTALLATION.](#))
3. Disconnect the sunroof motor connector.



4. Remove the screws, then remove the sunroof motor.

5. Install in the reverse order of removal.

NOTE:

- If the glass panel or the sunroof motor is moved with the sunroof motor removed, initial position setting of the sunroof motor will be required. Perform initial position setting referring to the Sunroof Motor Assembly Note. (See [SUNROOF UNIT DISASSEMBLY/ASSEMBLY](#).)

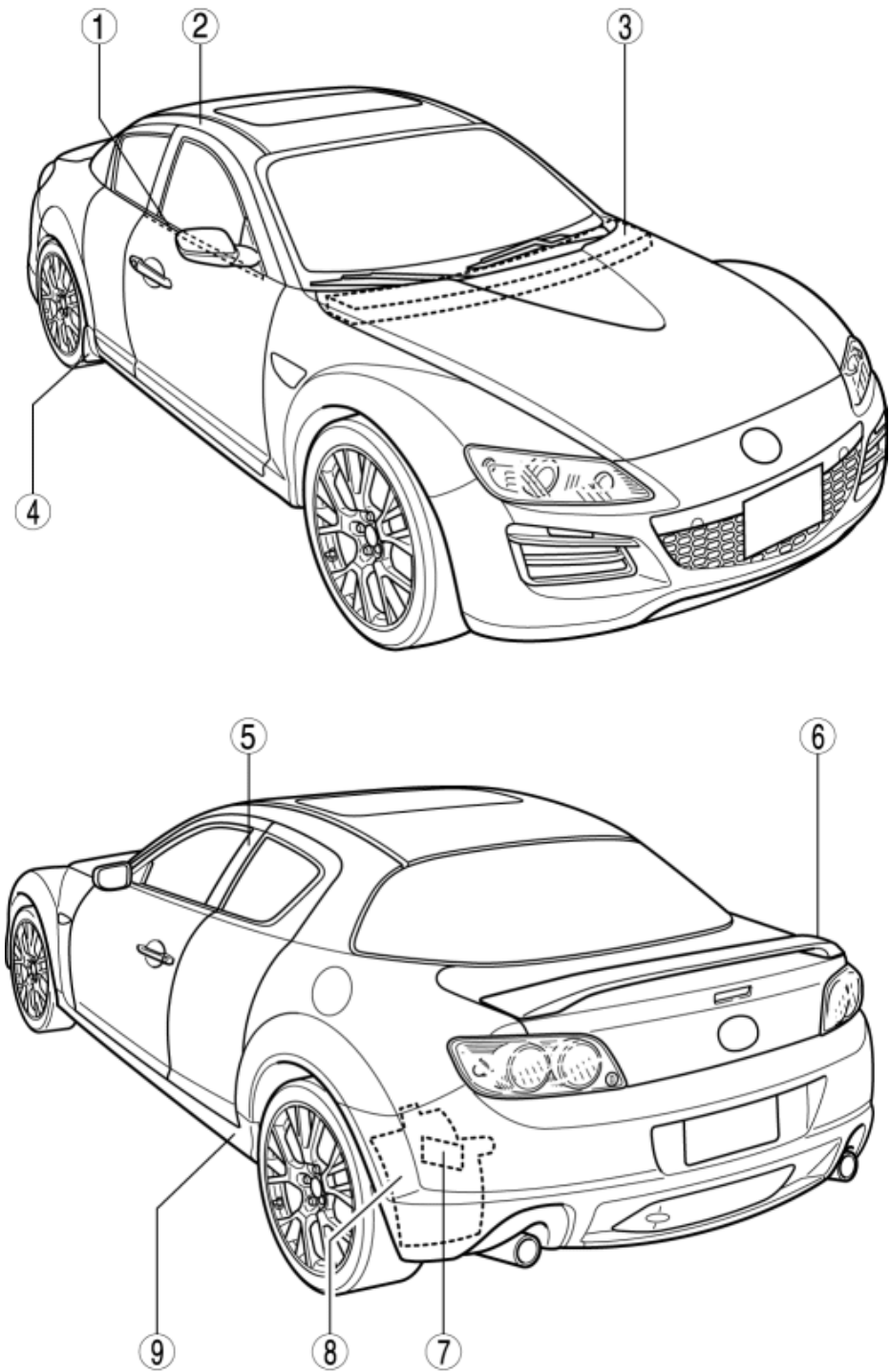
[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

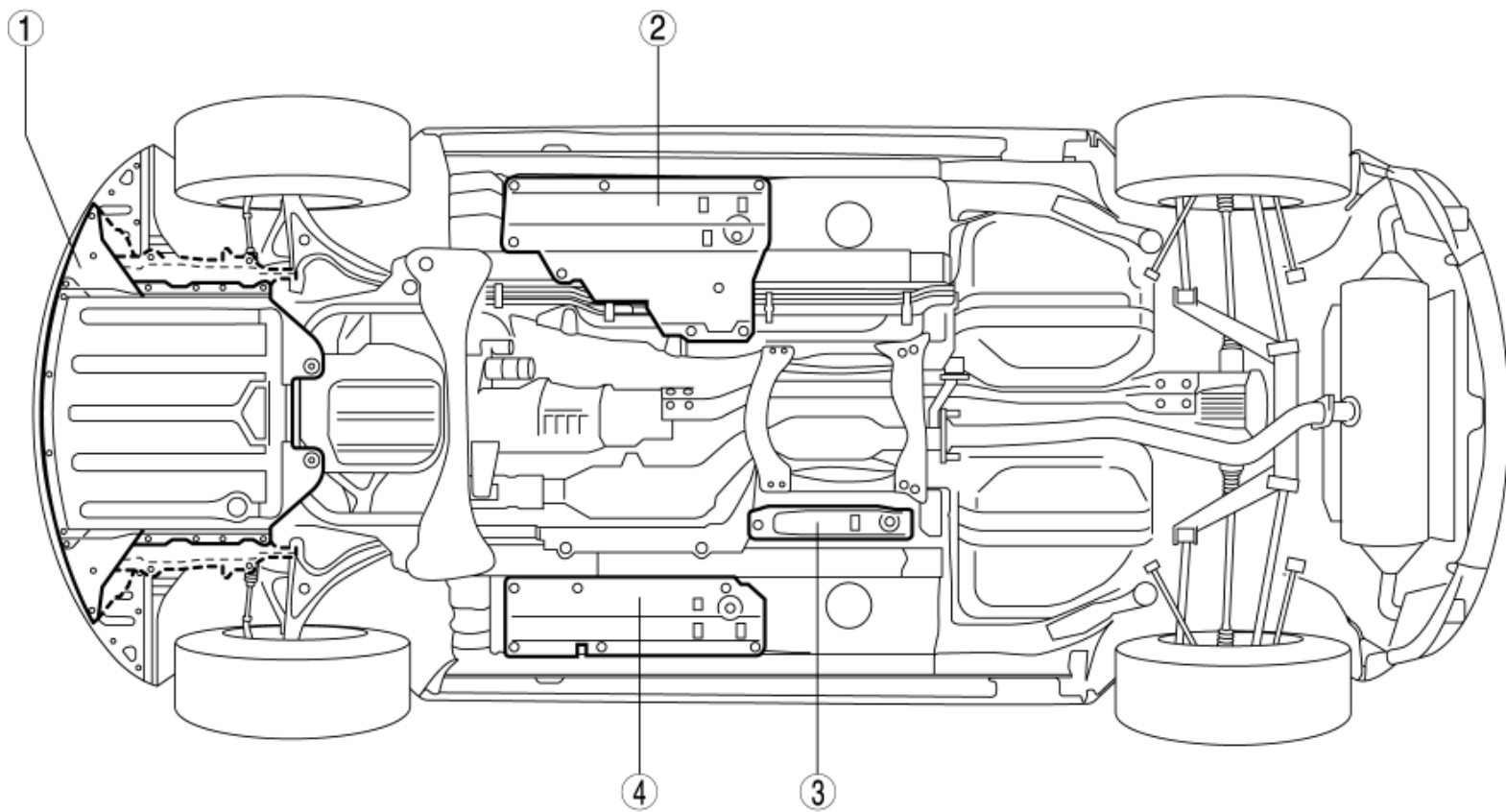
2011 - RX-8 - Body and Accessories

EXTERIOR TRIM LOCATION INDEX



Front beltline molding

1	(See FRONT BELTLINE MOLDING REMOVAL/INSTALLATION.)
	Roof molding
2	(See ROOF MOLDING REMOVAL.) (See ROOF MOLDING INSTALLATION.)
	Cowl grille
3	(See COWL GRILLE REMOVAL/INSTALLATION.)
	Rear deflector
4	(See REAR DEFLECTOR REMOVAL/INSTALLATION.)
	Door sash film
5	(See DOOR SASH FILM REMOVAL.) (See DOOR SASH FILM INSTALLATION.)
	Rear spoiler
6	(See REAR SPOILER REMOVAL.) (See REAR SPOILER INSTALLATION.)
	Extractor chamber
7	(See EXTRACTOR CHAMBER REMOVAL/INSTALLATION.)
	Splash shield
8	(See SPLASH SHIELD REMOVAL/INSTALLATION.)
	Side step molding
9	(See SIDE STEP MOLDING REMOVAL.) (See SIDE STEP MOLDING INSTALLATION.)



1	Aerodynamic under cover (See AERODYNAMIC UNDER COVER REMOVAL/INSTALLATION.)
2	Floor under cover No.2 (See FLOOR UNDER COVER REMOVAL/INSTALLATION.)
3	Floor under cover No.3 (See FLOOR UNDER COVER REMOVAL/INSTALLATION.)
4	Floor under cover No.1 (See FLOOR UNDER COVER REMOVAL/INSTALLATION.)

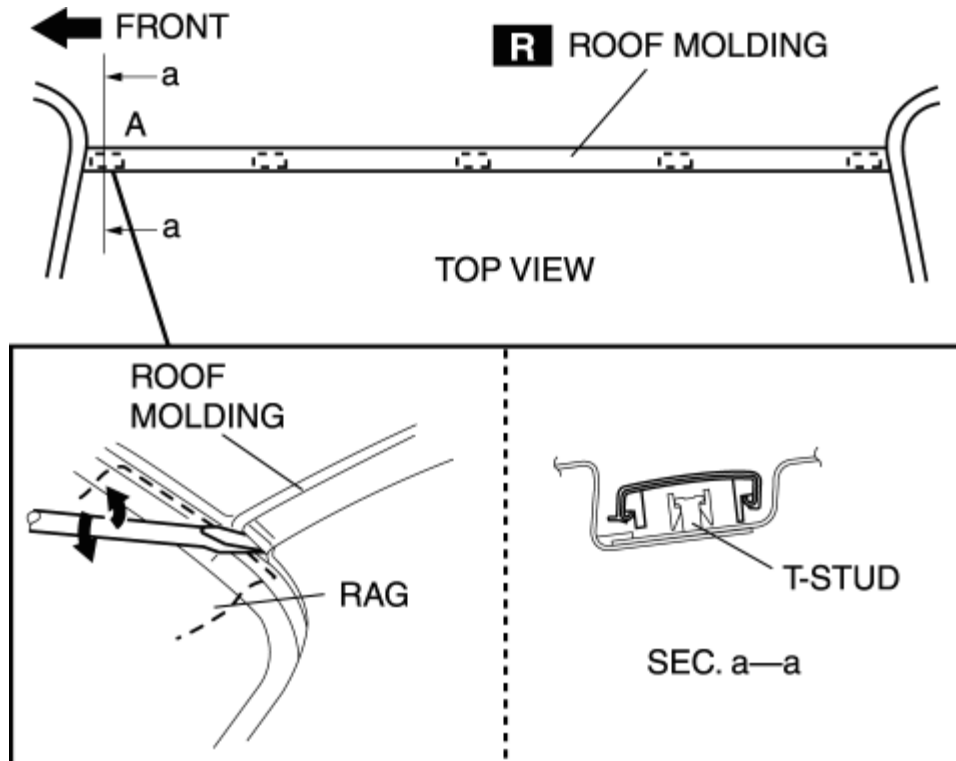
[< Previous](#) [Next >](#)

[Back to Top](#)

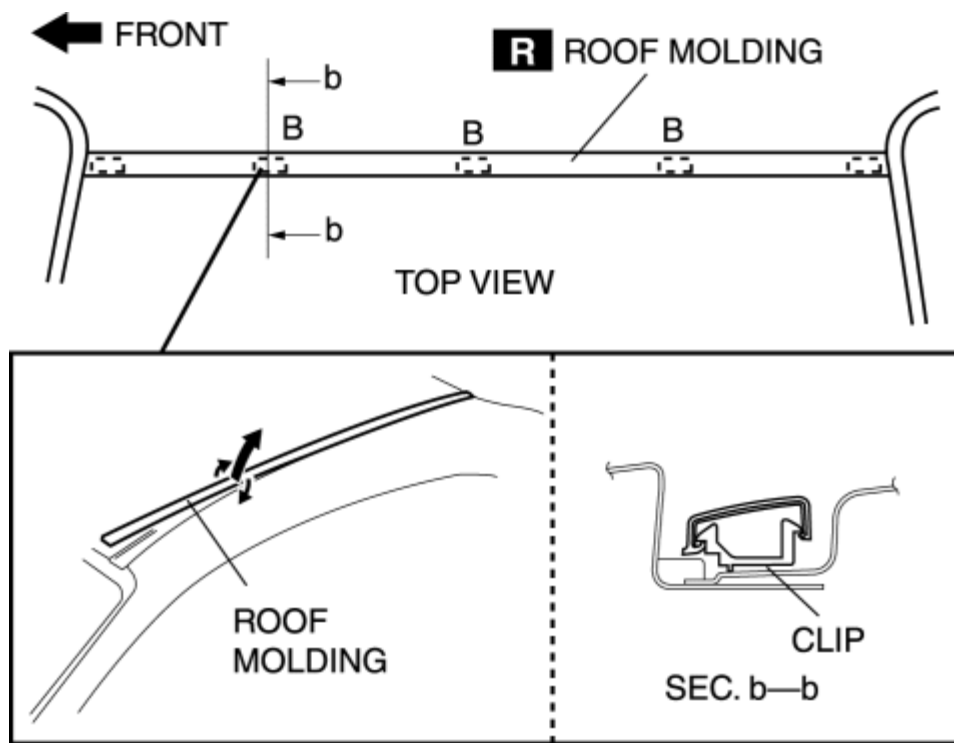
2011 - RX-8 - Body and Accessories

ROOF MOLDING REMOVAL

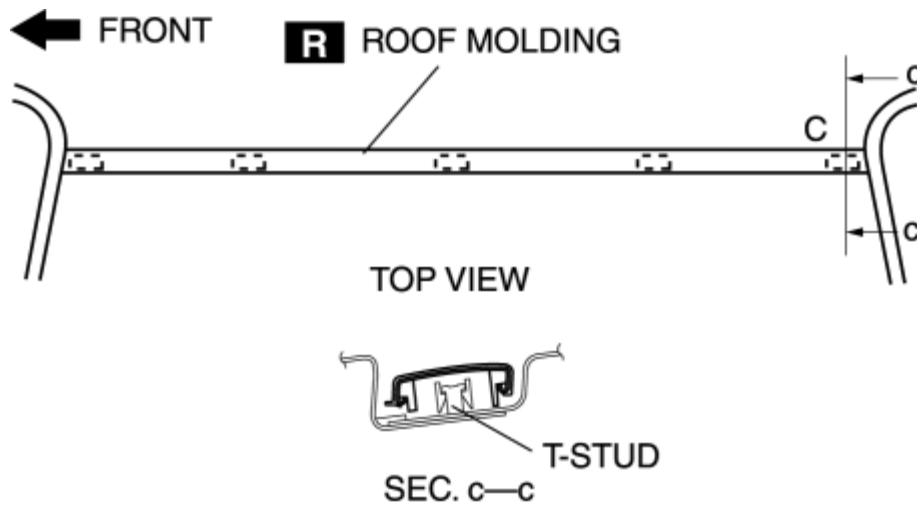
1. Remove the roof molding from the T-stud in the A area by using a flat blade screwdriver as shown in the diagram.



2. Pull up the roof molding to disconnect from the clip in the B area as shown in the diagram.



3. Remove the roof molding from the T-stud at section C.



4. Remove the roof molding.

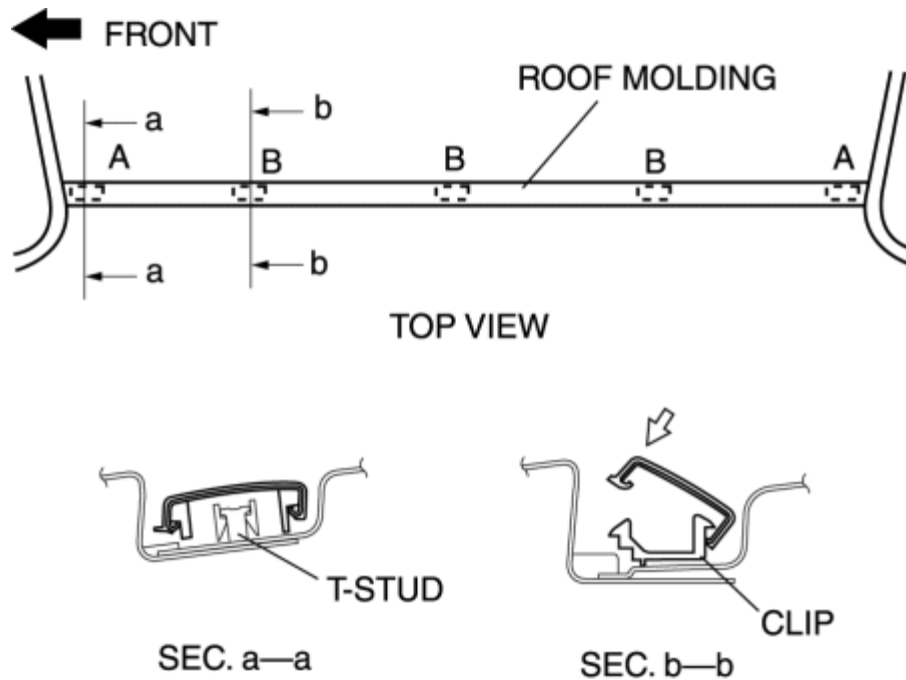
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

ROOF MOLDING INSTALLATION

1. Attach the roof molding to the T-stud at section A.

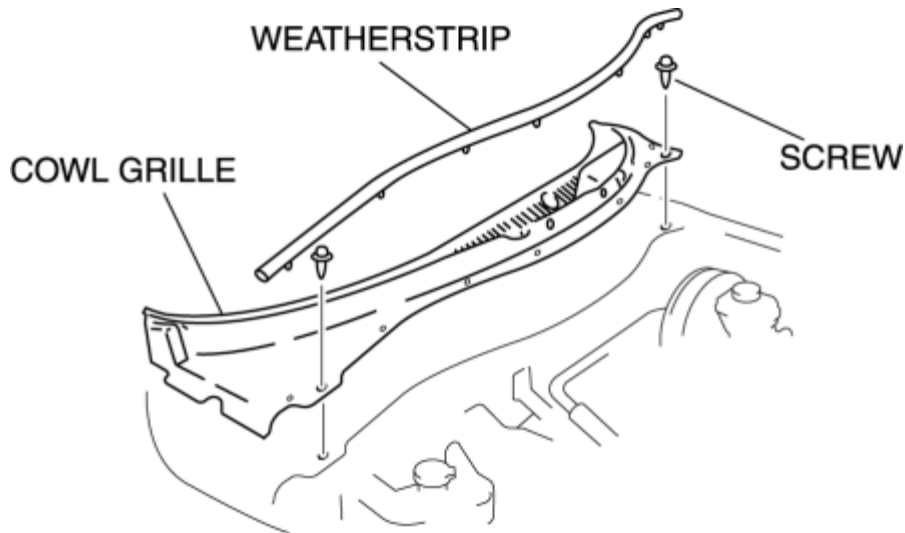


2. Hook the roof molding to clips B and press it in to attach.
3. Attach the roof molding to the T-stud at the rear portion of section A.

2011 - RX-8 - Body and Accessories

COWL GRILLE REMOVAL/INSTALLATION

1. Remove the windshield wiper arm and blade. (See [WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION](#).)
2. Disconnect the windshield washer hose. (See [WINDSHIELD WASHER HOSE REMOVAL/INSTALLATION](#).)
3. Remove the screws.

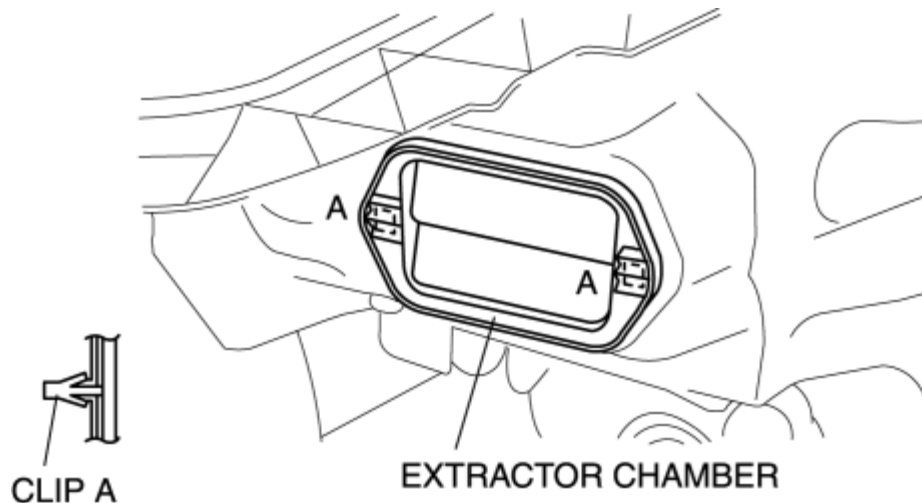


4. Remove the weatherstrip.
5. Remove the cowl grille.
6. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

EXTRACTOR CHAMBER REMOVAL/INSTALLATION

1. Remove the following parts:
 - a. Trunk end trim (See [TRUNK END TRIM REMOVAL/INSTALLATION.](#))
 - b. Trunk side trim (See [TRUNK SIDE TRIM REMOVAL/INSTALLATION.](#))
 - c. Rear combination light (See [REAR COMBINATION LIGHT REMOVAL/INSTALLATION.](#))
 - d. Rear splash shield (See [SPLASH SHIELD REMOVAL/INSTALLATION.](#))
 - e. Rear bumper (See [REAR BUMPER REMOVAL/INSTALLATION.](#))
2. Detach clips A by squeezing them from inside the vehicle, and remove the extractor chamber from the body.



3. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

REAR SPOILER REMOVAL

Small Type

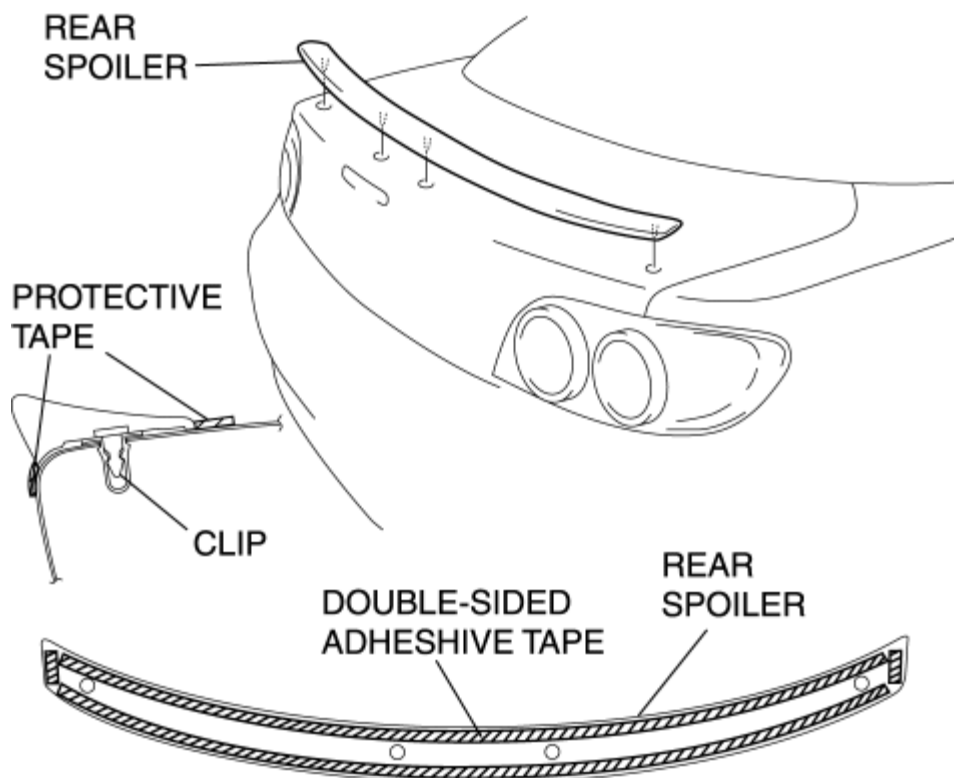
1. While cutting the double-sided adhesive tape using a flathead screwdriver or a razor, separate the rear spoiler from the trunk lid.

WARNING:

- Using a razor with bare hands can cause injury. Always wear gloves when using a razor.

CAUTION:

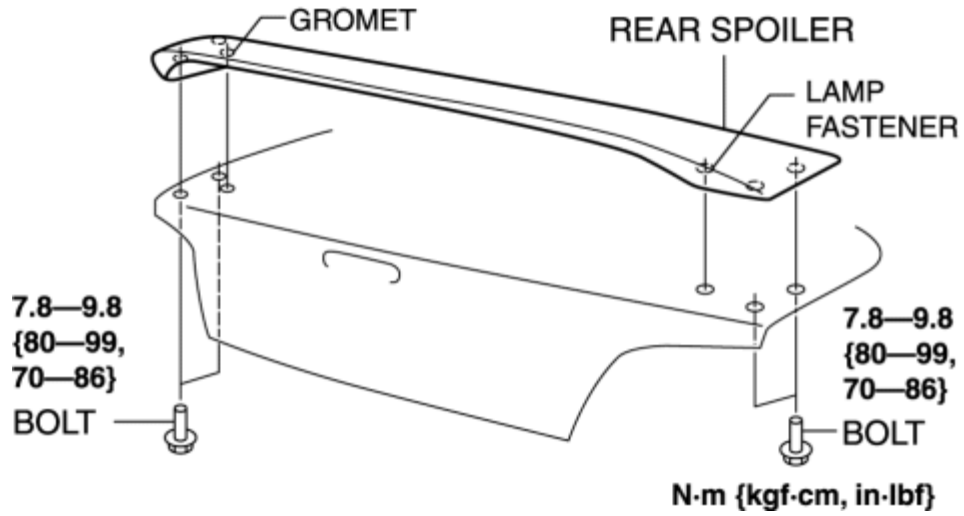
- Do not scratches or damage the body paint when cut the double-sided adhesive tape with a razor.
- Affix protective tape to the trunk lid to prevent scratches or damage.



2. Detach the clips and remove the rear spoiler.

Large Type

1. Remove the bolts.



2. Remove the rear spoiler.

[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

REAR SPOILER INSTALLATION

Small Type

NOTE:

- Double-sided adhesive tape has already been attached to the new rear spoiler.

WARNING:

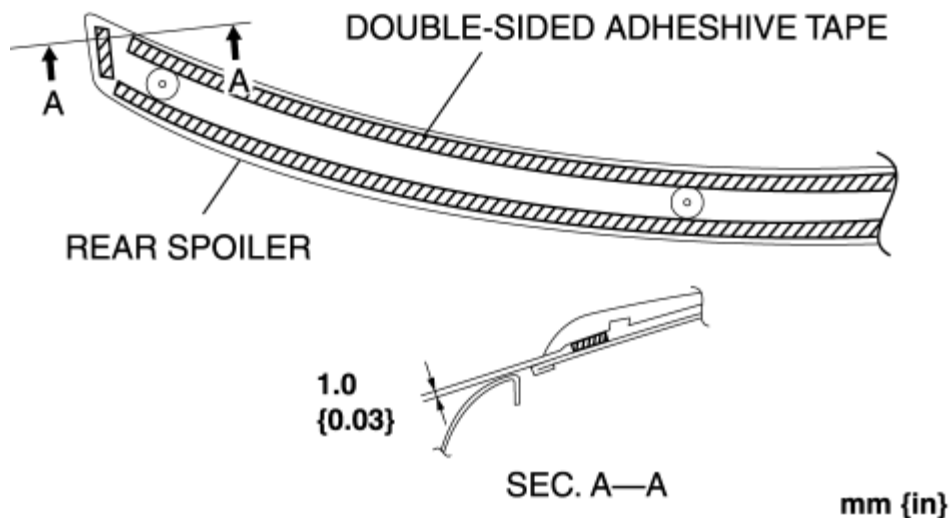
- Using a razor with bare hands can cause injury. Always wear gloves when using a razor.

1. When installing a new rear spoiler, follow the procedure below:

- a. Remove the adhesive remaining on the body using razor.
- b. Remove any grease or dirt from the adhesion surface of the body.

2. When reusing the rear spoiler, follow the procedure below:

- a. Remove the adhesive remaining on the rear spoiler and the body using a razor.
- b. Remove any grease or dirt from the adhesion surface of the rear spoiler and the body.
- c. Apply primer to the bonding area of the rear spoiler.
- d. Attach double-sided adhesive tape to the rear spoiler as shown.

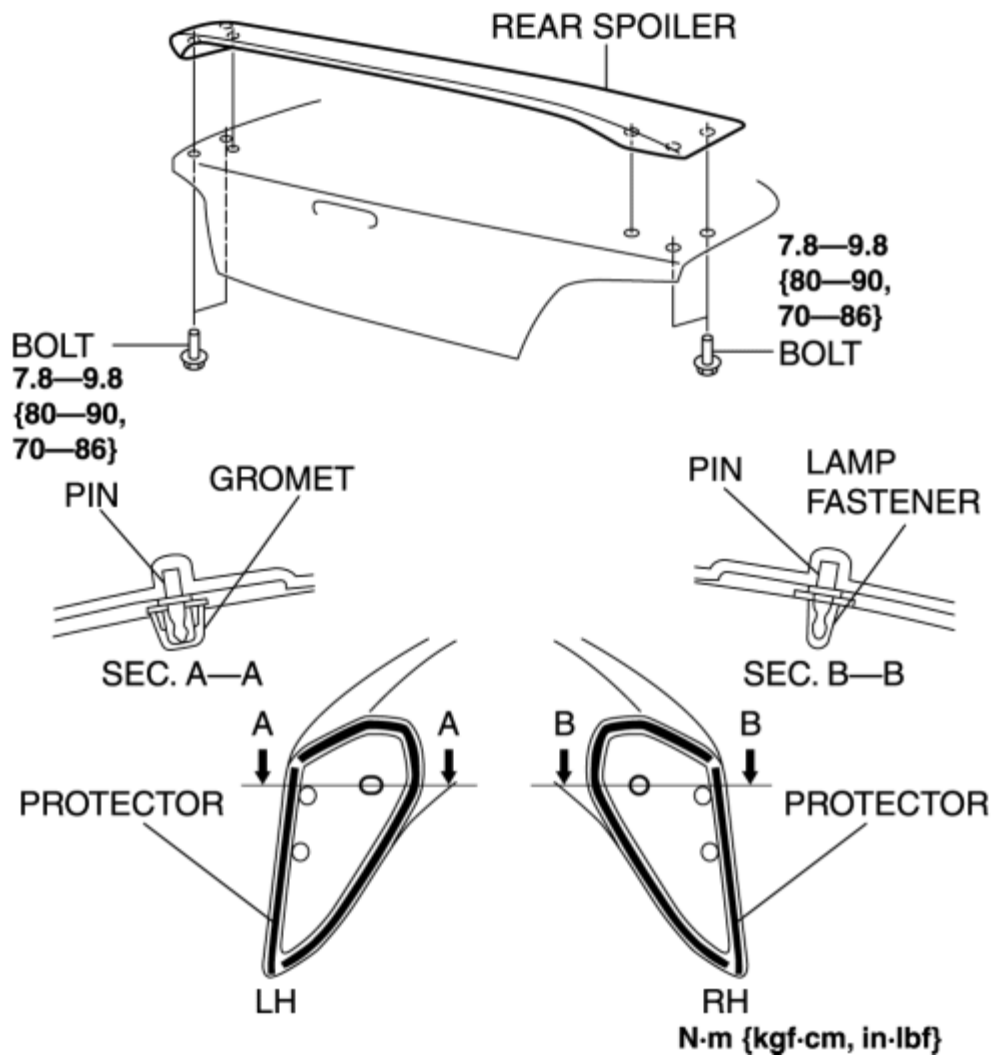


3. Peel off the backing of the double-sided adhesive tape.
4. Attach the clips and install the rear spoiler to the trunk lid.

Large Type

NOTE:

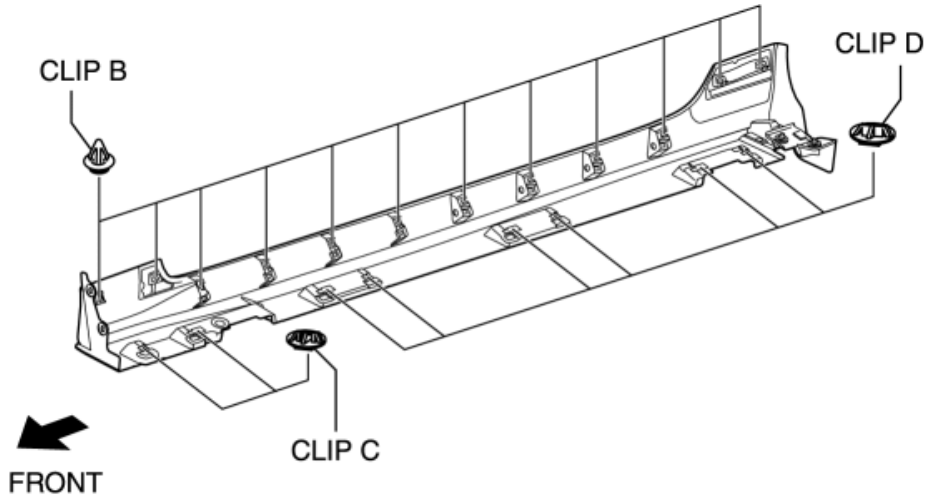
- Clean the attaching surface of the trunk lid and remove grease.
1. Install the fastener to the trunk lid.
 2. Install the grommet to the trunk lid.
 3. Insert the fastener and the grommet into the pin.
 4. Install the bolts.



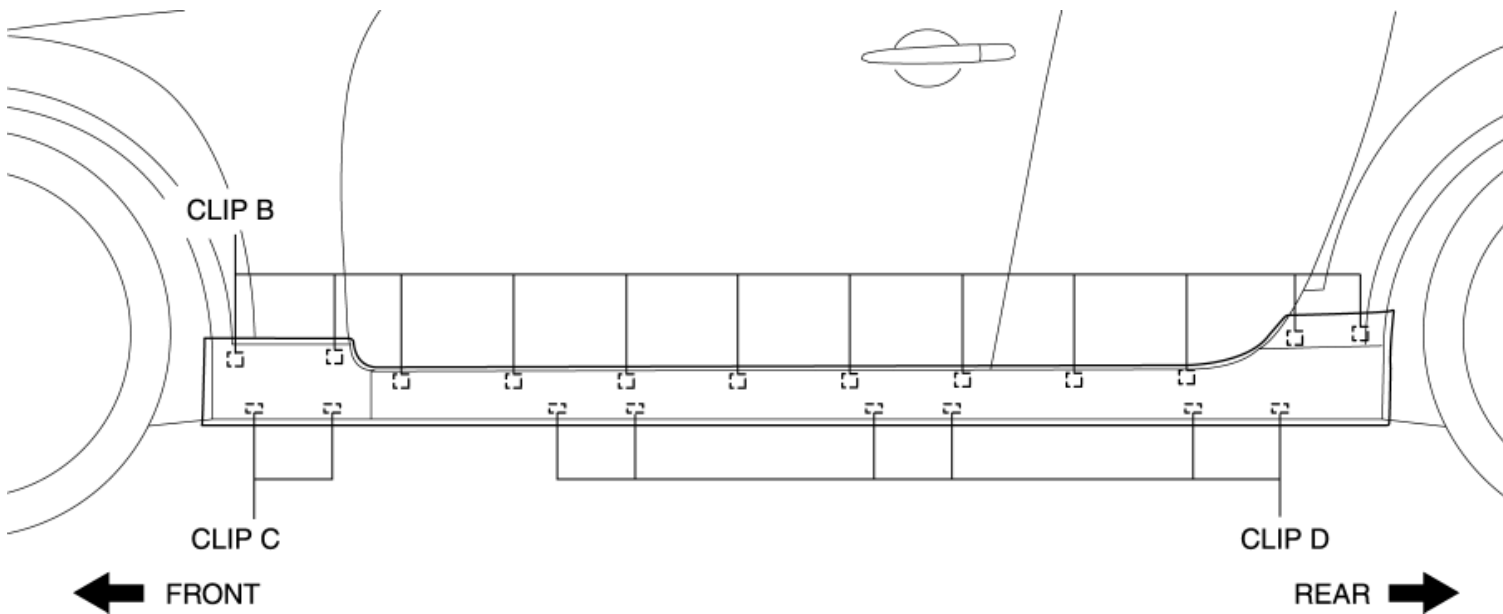
2011 - RX-8 - Body and Accessories

SIDE STEP MOLDING INSTALLATION

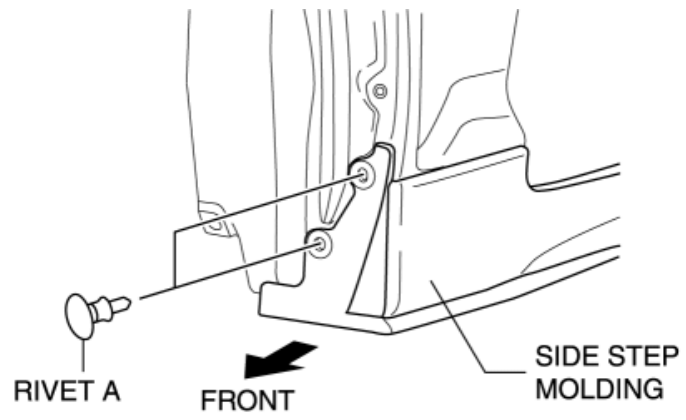
1. Attach new clip B,C and D to the side step molding



2. Install the side step molding by pinning down the clip B,C and D.



3. Install the rivet A.



[< Previous](#) [Next >](#)

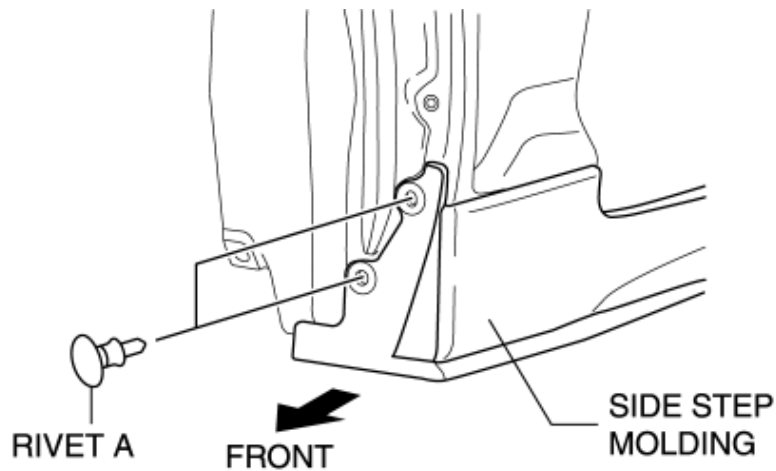
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

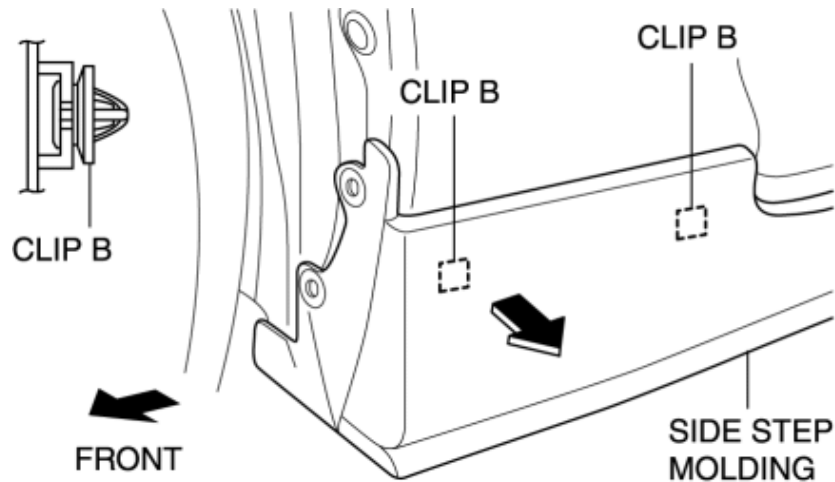
2011 - RX-8 - Body and Accessories

SIDE STEP MOLDING REMOVAL

1. Remove the rivets A.



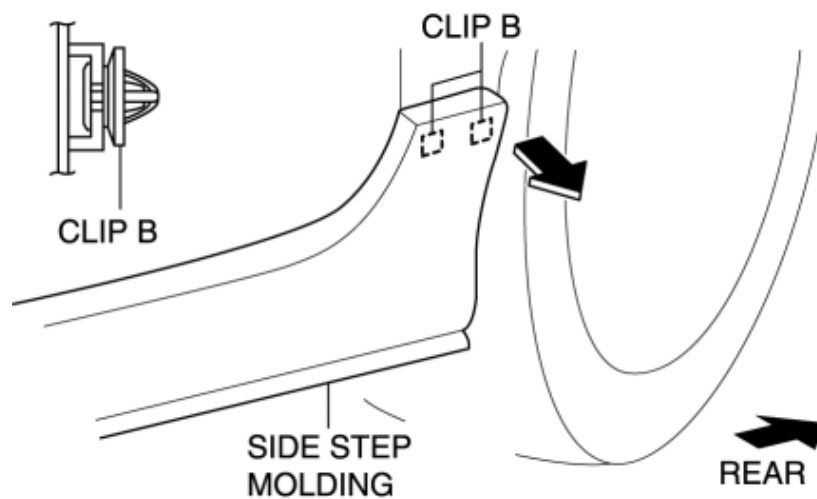
2. Remove the clip B in the direction of the arrow with using a fastener remover.



NOTE:

- Keep the removed clip B half-placed for the later process.

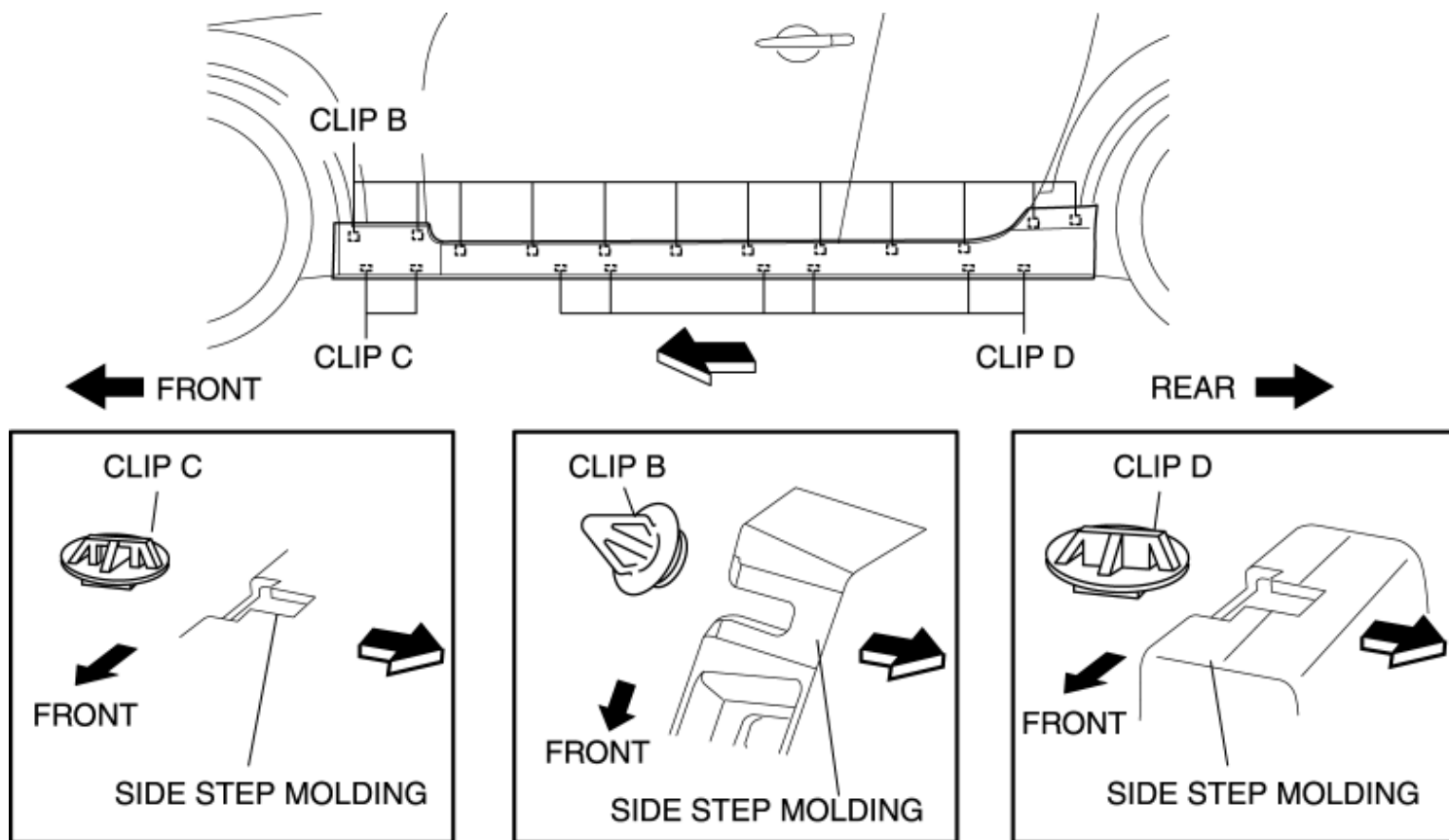
3. Remove the clip B in the direction of the arrow with using a fastener remover.



NOTE:

- Keep the removed clip B half-placed for the later process.

4. Slide the side step molding in the direction of the arrow and remove it from the clip B,C and D.



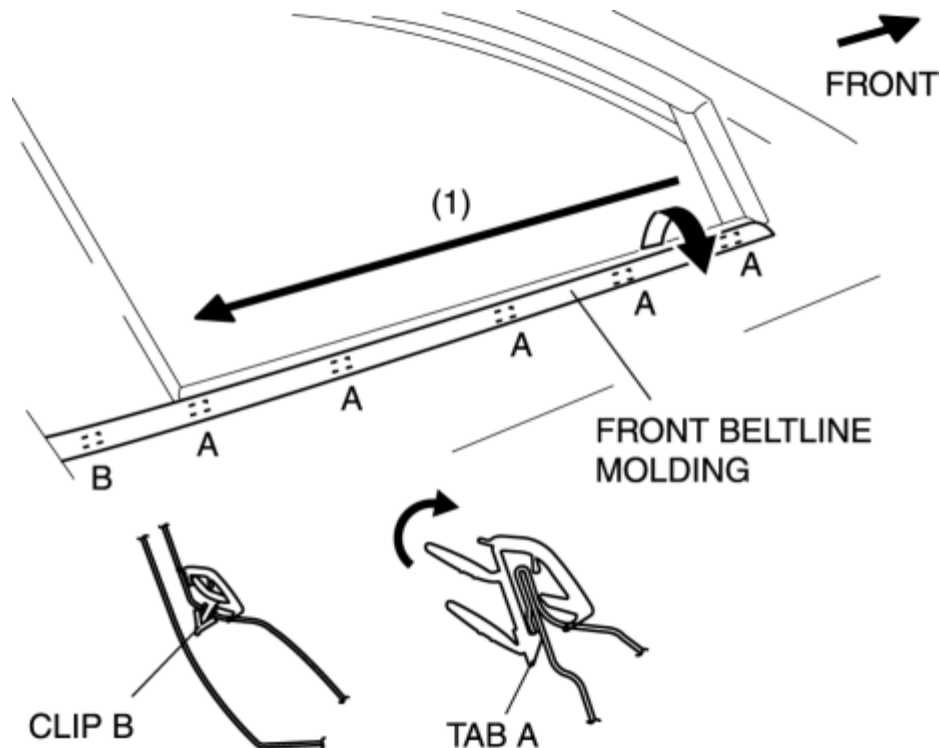
5. After removing the side step molding, remove the clip B,C and D from the body with using a fastener remover.

6. Remove the side step molding.

2011 - RX-8 - Body and Accessories

FRONT BELTLINE MOLDING REMOVAL/INSTALLATION

1. Remove the inner garnish. (See [INNER GARNISH REMOVAL/INSTALLATION](#).)
2. Loosen the power outer mirror installation screws and move the mirror to access the front end of the front beltline molding. (See [POWER OUTER MIRROR REMOVAL/INSTALLATION](#).)
3. While partially peeling back the front beltline molding, detach tabs A along the direction (1) shown in the figure.

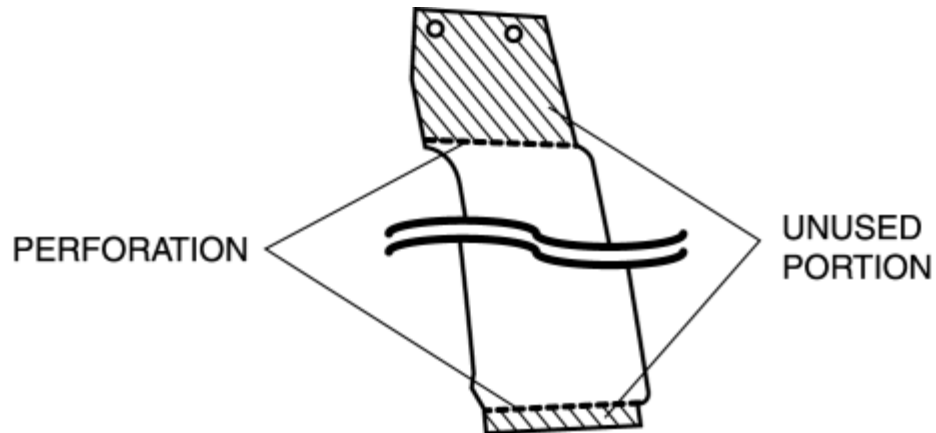


4. Remove clip B and front beltline molding.
5. Install in the reverse order of removal.

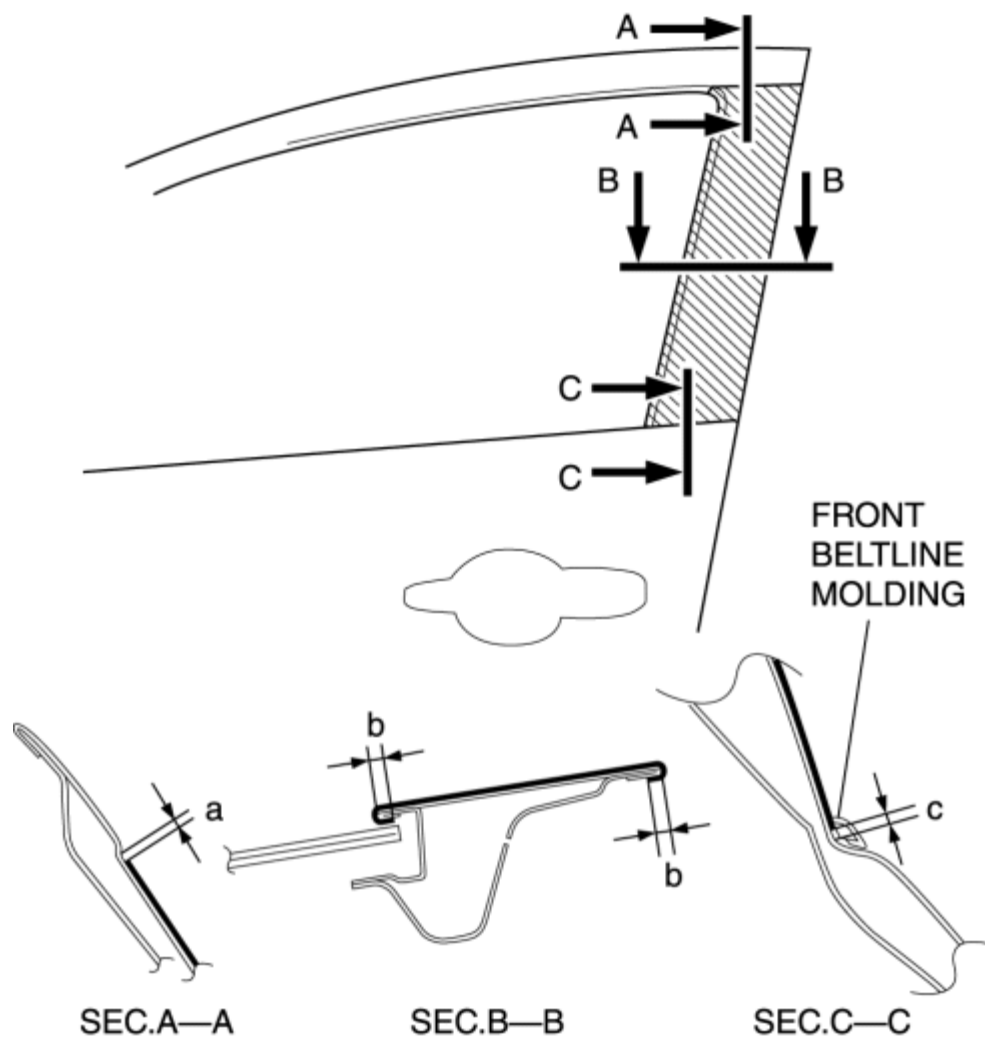
2011 - RX-8 - Body and Accessories

DOOR SASH FILM INSTALLATION

1. Remove any grease or dirt from the affixing surface of the door.
2. Cut away the unused portion along the dotted lines.



3. Peel off the backing paper and attach the door sash film onto the door as shown in the figure.



Standard clearance

- a: 0—1.0 mm {0—0.03 in}
- b: 3.0—5.0 mm {0.12—0.19 in}
- c: 3.0 mm {0.19 in} or less

4. Peel off the transparent protective film on the door sash film.

5. Install the front beltline molding. (See [FRONT BELTLINE MOLDING REMOVAL/INSTALLATION](#).)

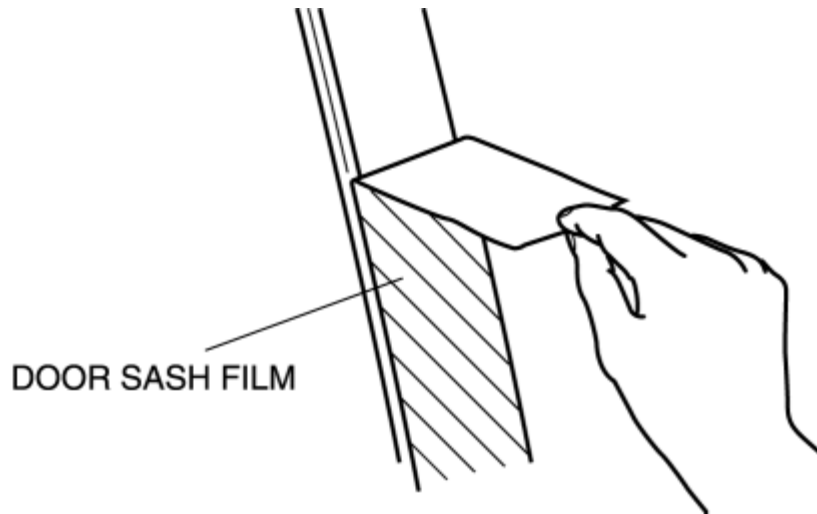
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

DOOR SASH FILM REMOVAL

1. Partially peel back the glass run channel.
2. Remove the front beltline molding. (See [FRONT BELTLINE MOLDING REMOVAL/INSTALLATION](#).)
3. Warm up the door sash film using a hot air blower.
4. Peel off the door sash film by pulling outward from one end.



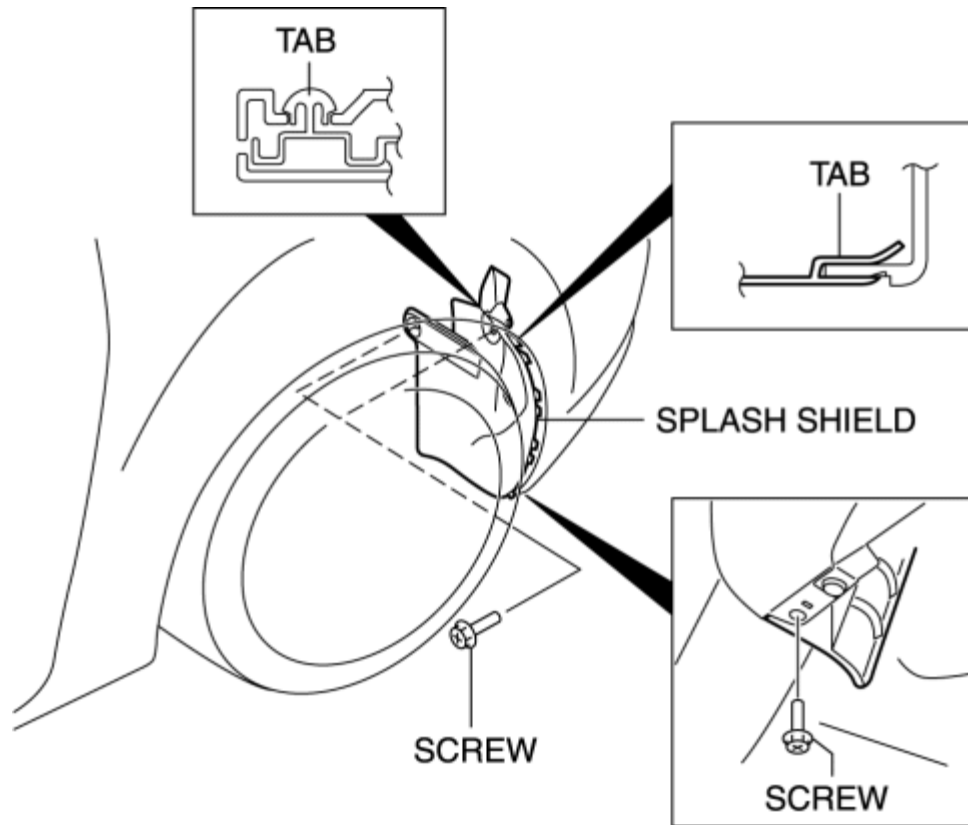
NOTE:

- Be sure to remove the door sash film slowly, because it can easily tear.

2011 - RX-8 - Body and Accessories

SPLASH SHIELD REMOVAL/INSTALLATION

1. Remove the screws.
2. Pull out the splash shield to uninstall it.

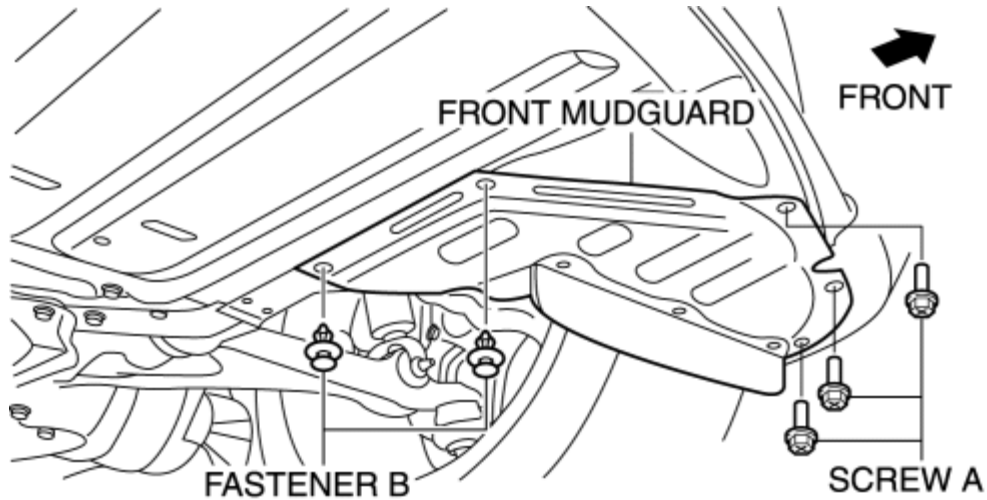


3. Install in the reverse order of removal.

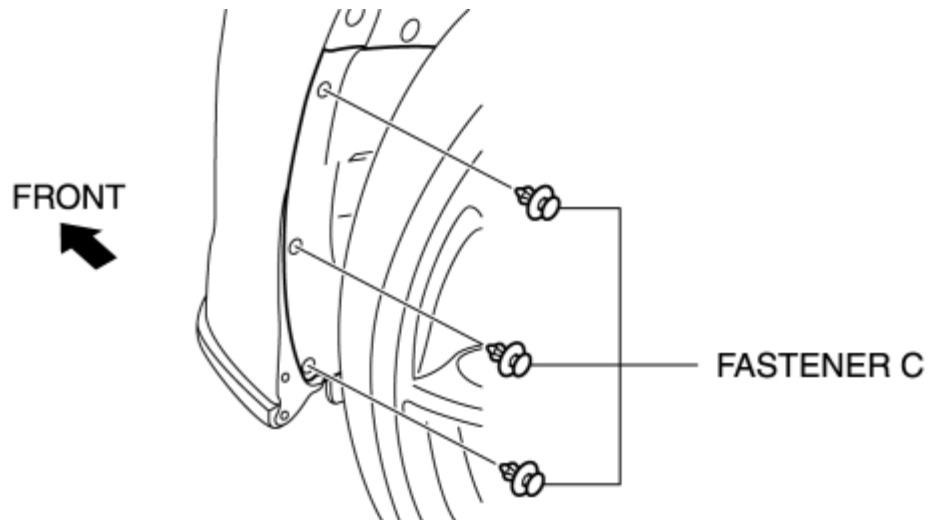
2011 - RX-8 - Body and Accessories

FRONT MUDGUARD REMOVAL/INSTALLATION

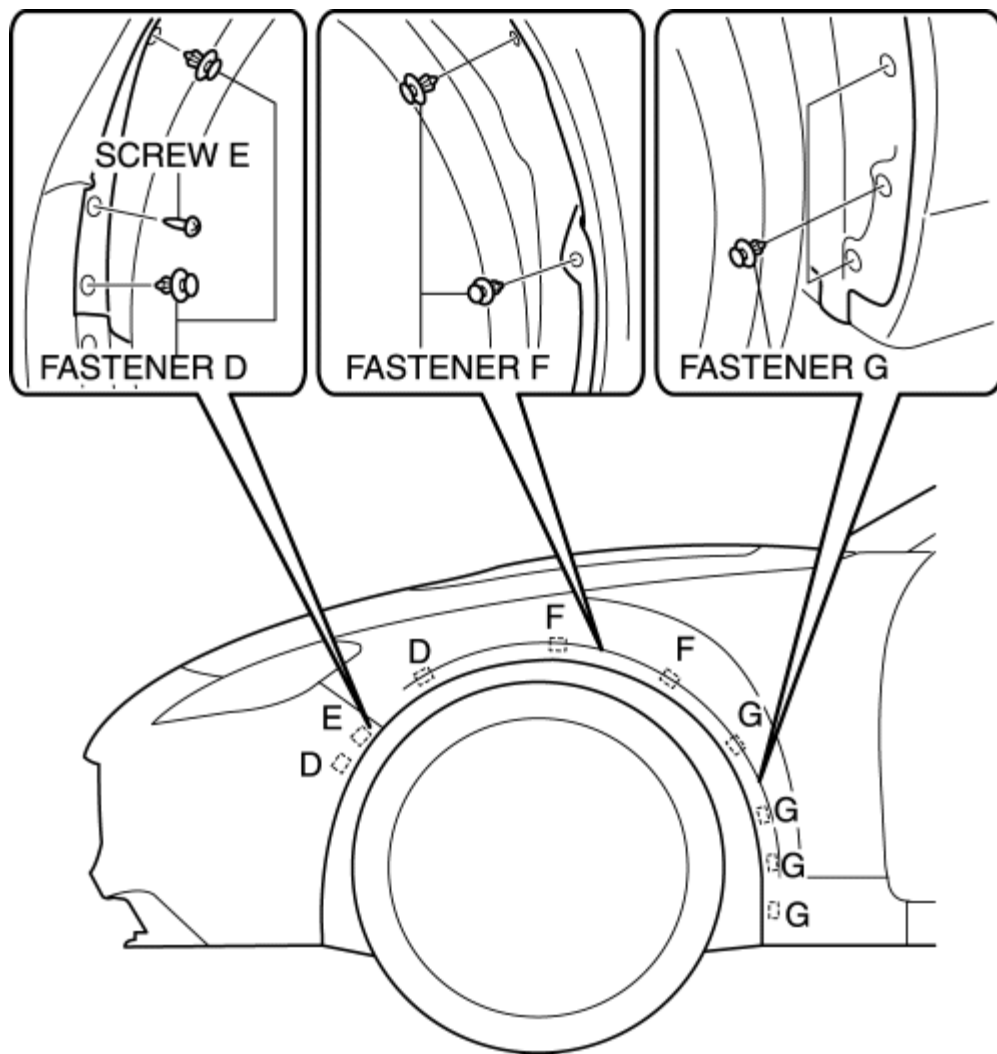
1. Remove the screws A and fasteners B.



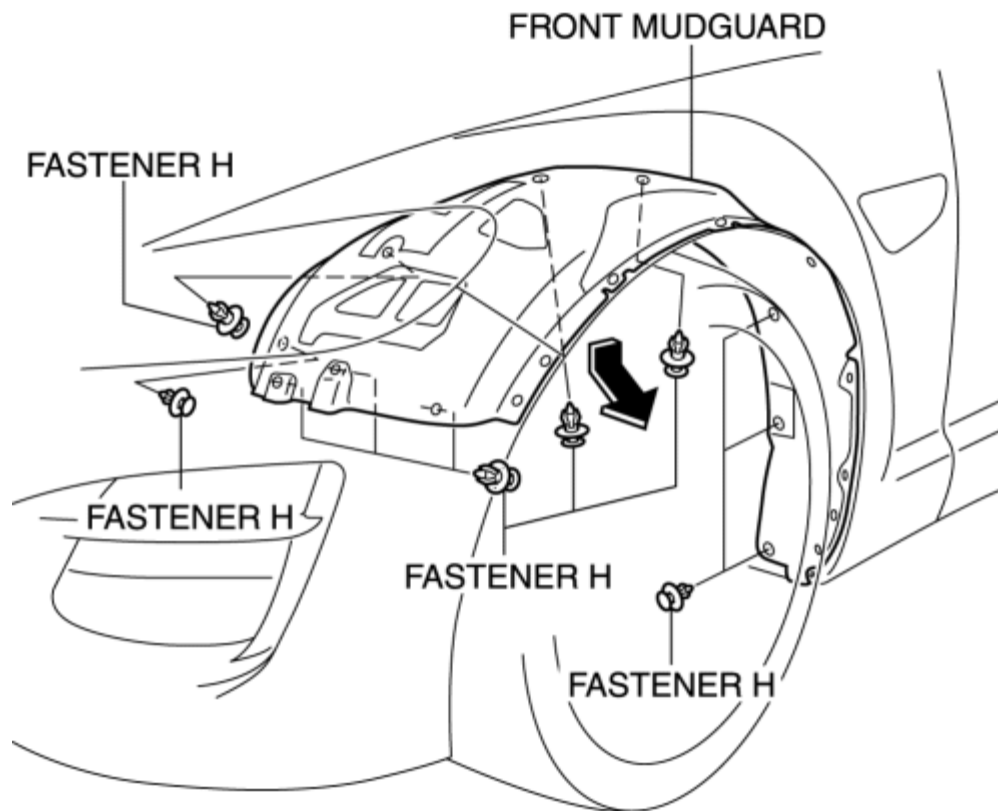
2. Remove fasteners C.



3. Remove fasteners D, F, G and screw E.



4. Remove the fasteners H to uninstall the front mud guard in the direction of the arrow.



5. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

[Back to Top](#)

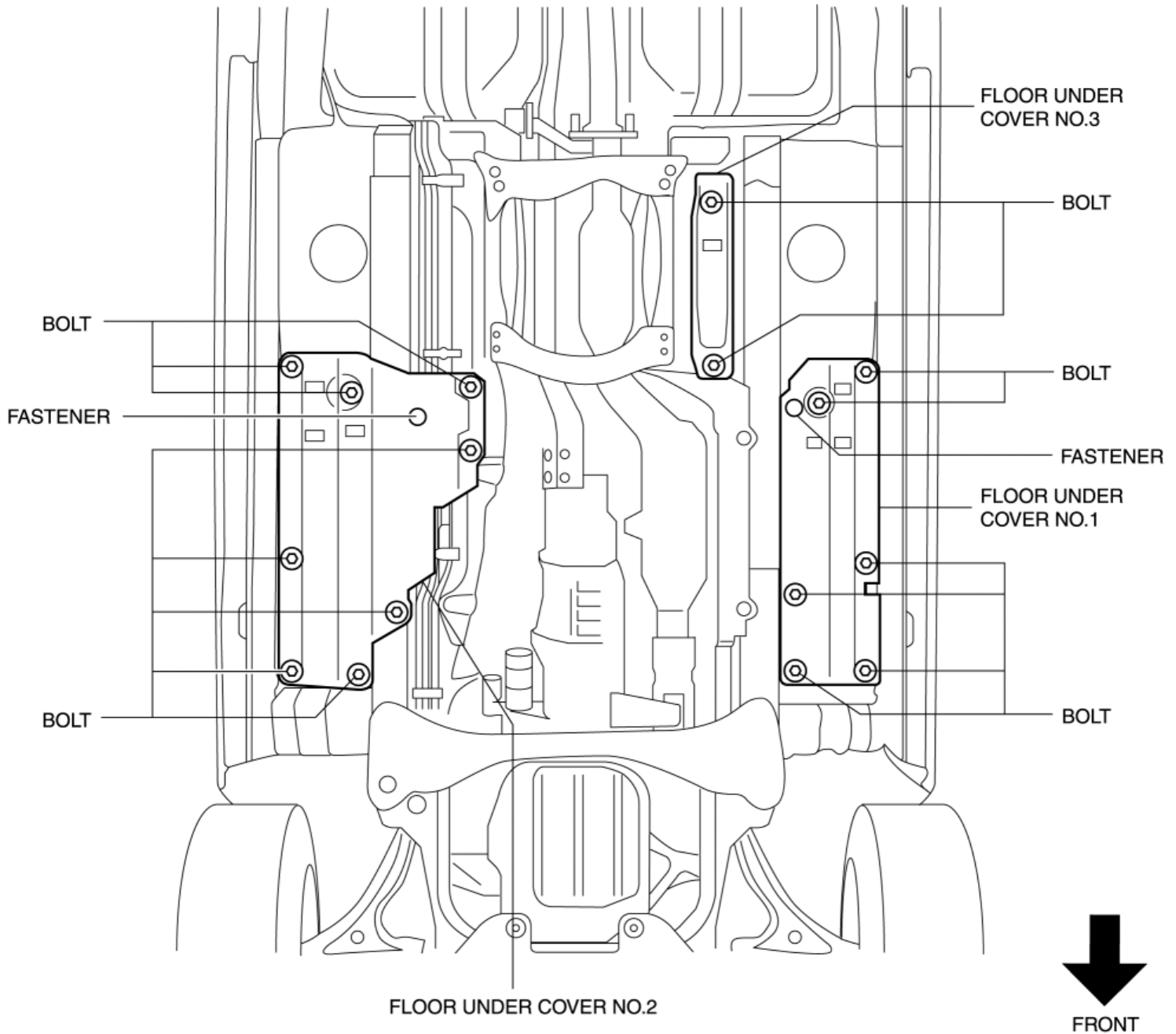
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

FLOOR UNDER COVER REMOVAL/INSTALLATION

1. Remove the bolts and fasteners.

BOLT : 6.9—9.8 N·m {71—99 kgf·cm, 62—86 in·lbf}



2. Remove the floor under covers of each.

CAUTION:

- Be careful not to damage the floor under cover during removal.

3. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

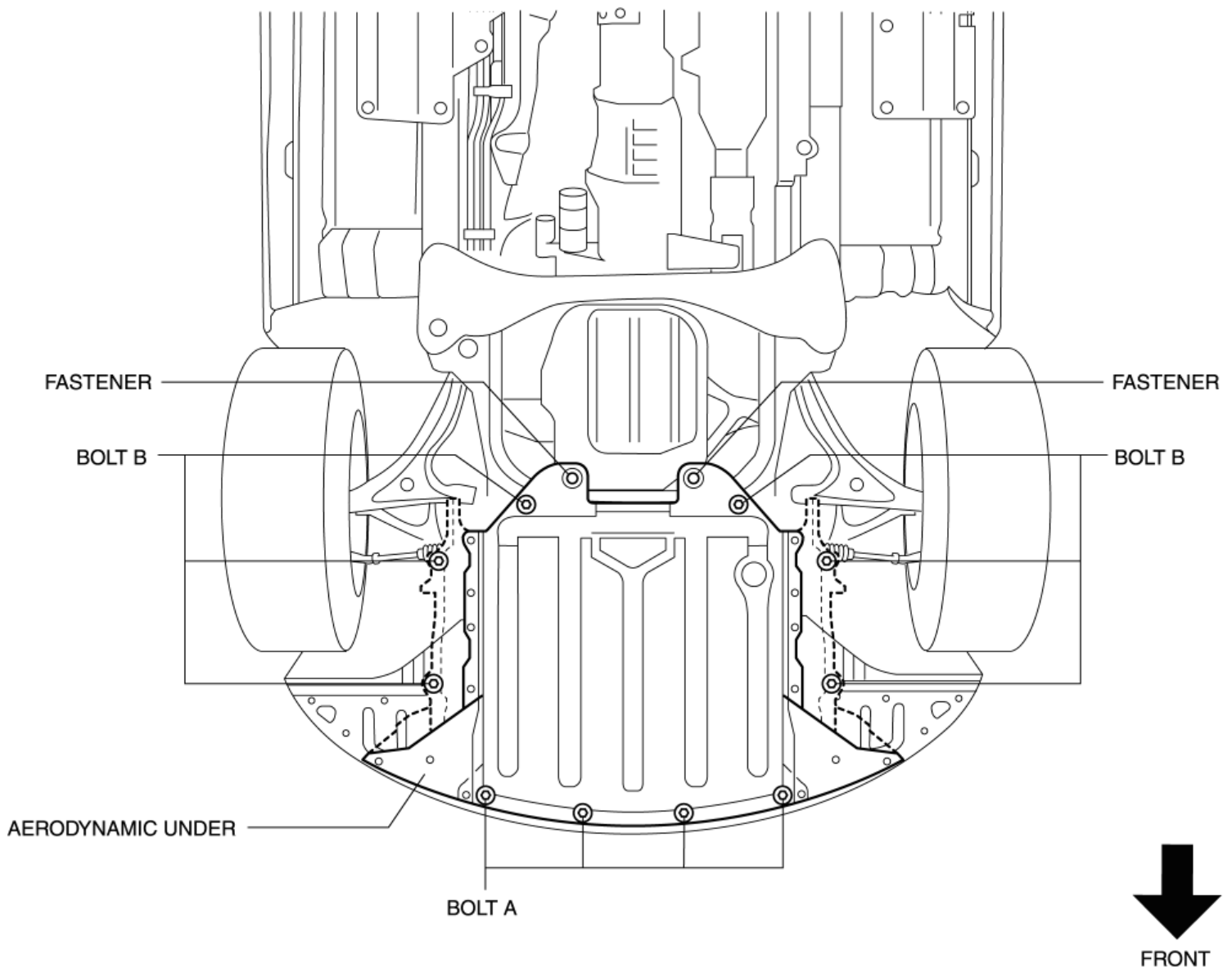
2011 - RX-8 - Body and Accessories

AERODYNAMIC UNDER COVER REMOVAL/INSTALLATION

1. Remove the front mudguard. (See [FRONT MUDGUARD REMOVAL/INSTALLATION](#).)
2. Remove the bolts A, B and fasteners.

BOLT A : 1.0—1.5 N·m {11—15 kgf·cm, 8.9—13 in·lbf}

BOLT B : 3.9—7.8 N·m {40—79 kgf·cm, 35—69 in·lbf}



3. Uninstall the aerodynamic under cover with keeping it from coming in contact with the front mudguard.

CAUTION:

- Be careful not to damage the aerodynamic under cover during removal.
4. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

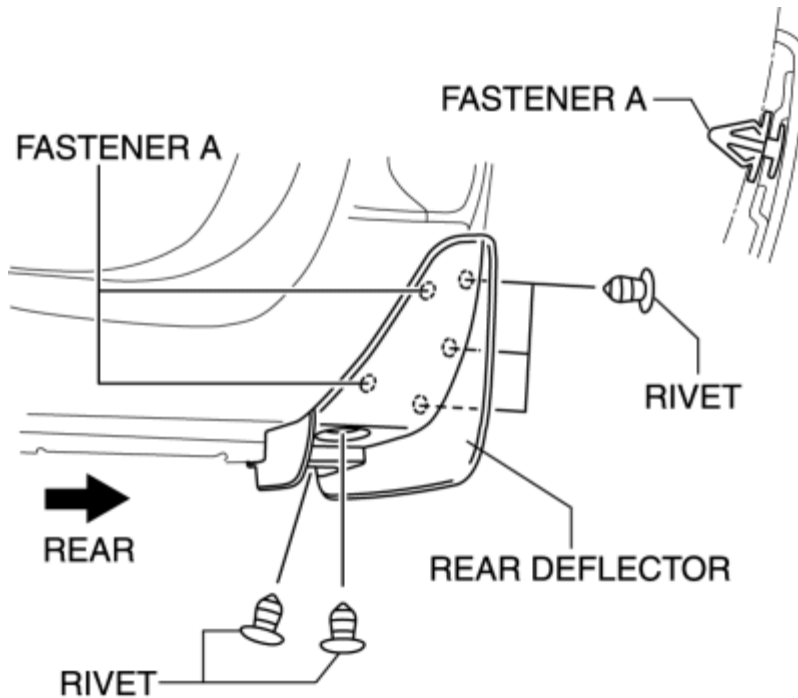
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

REAR DEFLECTOR REMOVAL/INSTALLATION

1. Remove the rivets.
2. Remove the fasteners A.



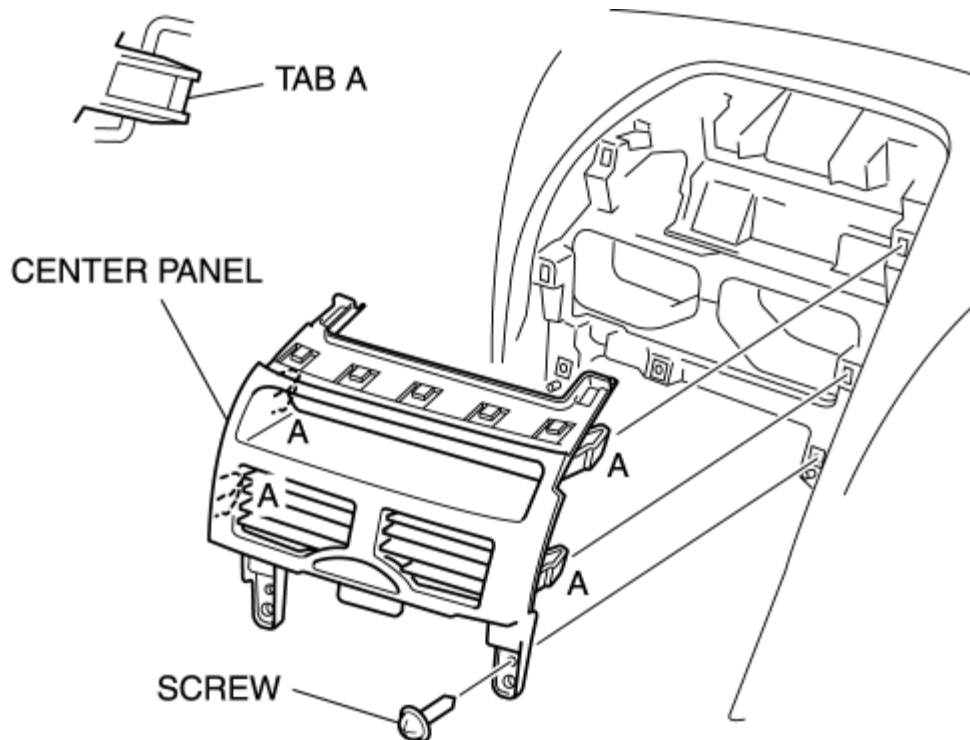
3. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

CENTER PANEL REMOVAL/INSTALLATION

NOTE:

- For vehicles with the audio unit, refer to the CENTER PANEL UNIT REMOVAL/INSTALLATION. (See [CENTER PANEL UNIT REMOVAL/INSTALLATION](#))
1. Disconnect the negative battery cable.
 2. Remove the speaker grille. (See [SPEAKER GRILLE REMOVAL/INSTALLATION](#).)
 3. Remove the shift lever knob. (MT) (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#).)
 4. Remove the console panel. (See [CONSOLE REMOVAL/INSTALLATION](#).)
 5. Remove the ashtray. (See [CONSOLE REMOVAL/INSTALLATION](#).)
 6. Remove the lower panel. (See [LOWER PANEL REMOVAL/INSTALLATION](#).)
 7. Remove the screw.



8. Disconnect the hazard warning switch connector.
9. Install in the reverse order of removal.

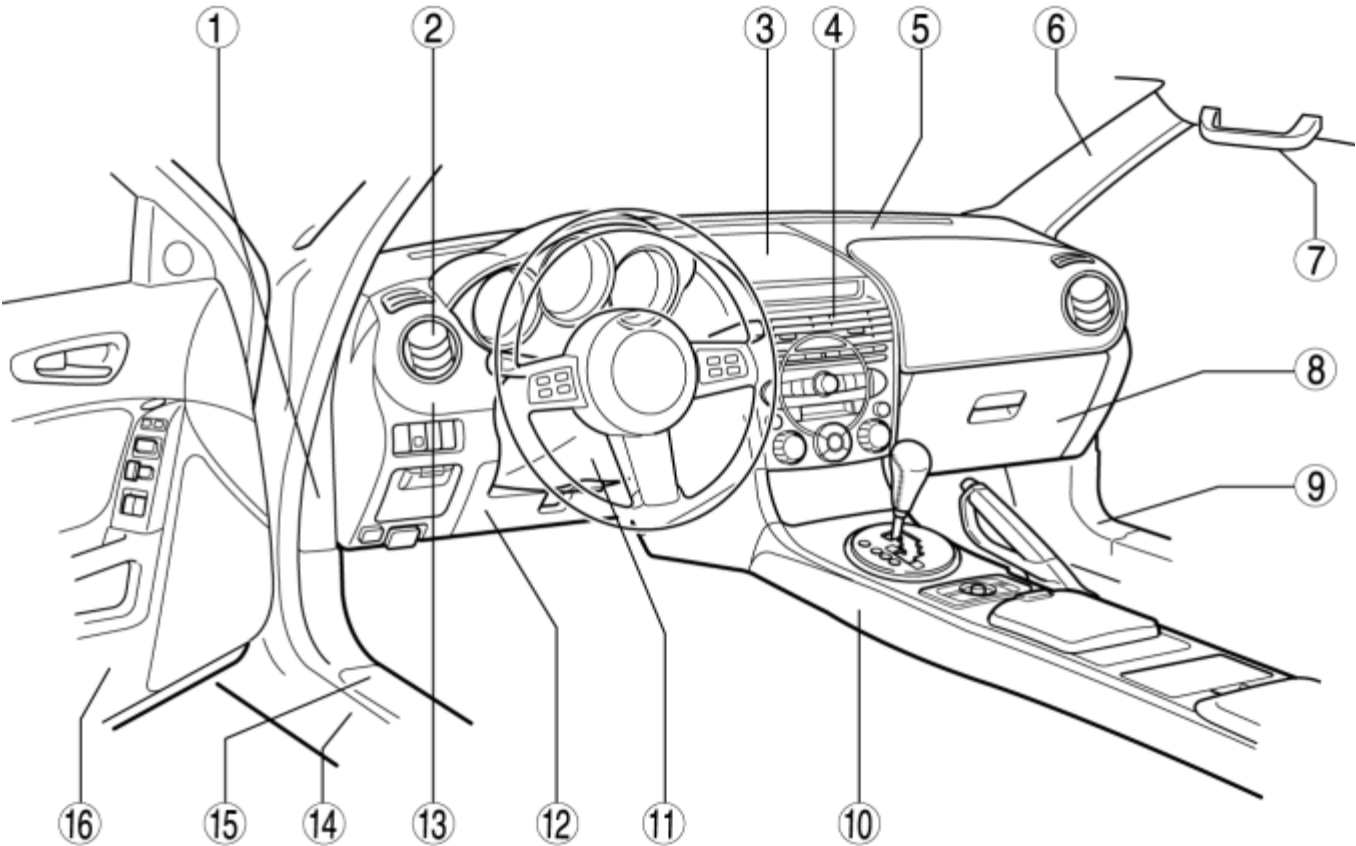
[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

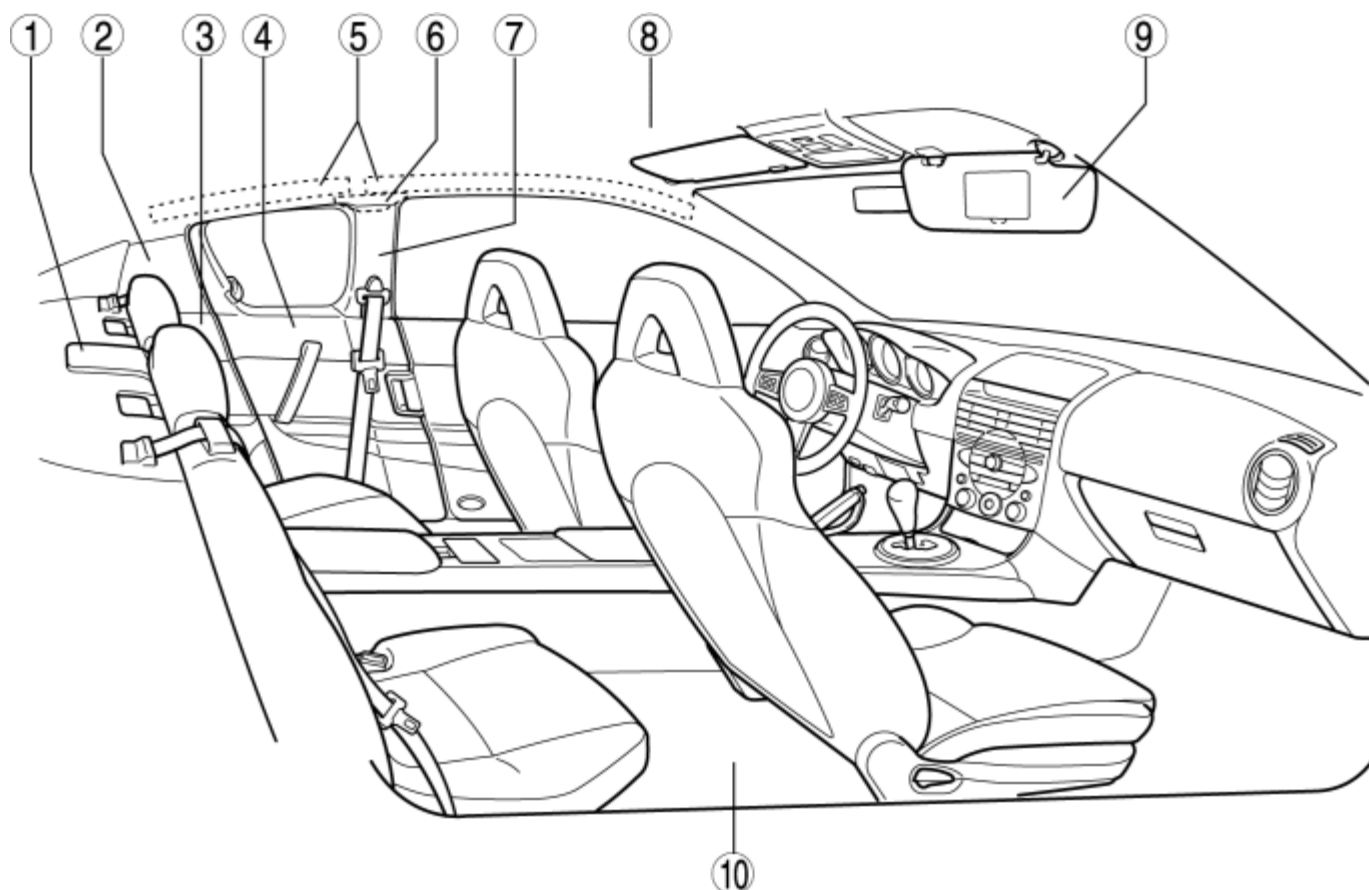
INTERIOR TRIM LOCATION INDEX



1	Side panel (See SIDE PANEL REMOVAL/INSTALLATION.)
2	Ventilator grille (See VENTILATOR GRILLE REMOVAL/INSTALLATION.)
3	Speaker grille (See SPEAKER GRILLE REMOVAL/INSTALLATION.)
4	Center panel

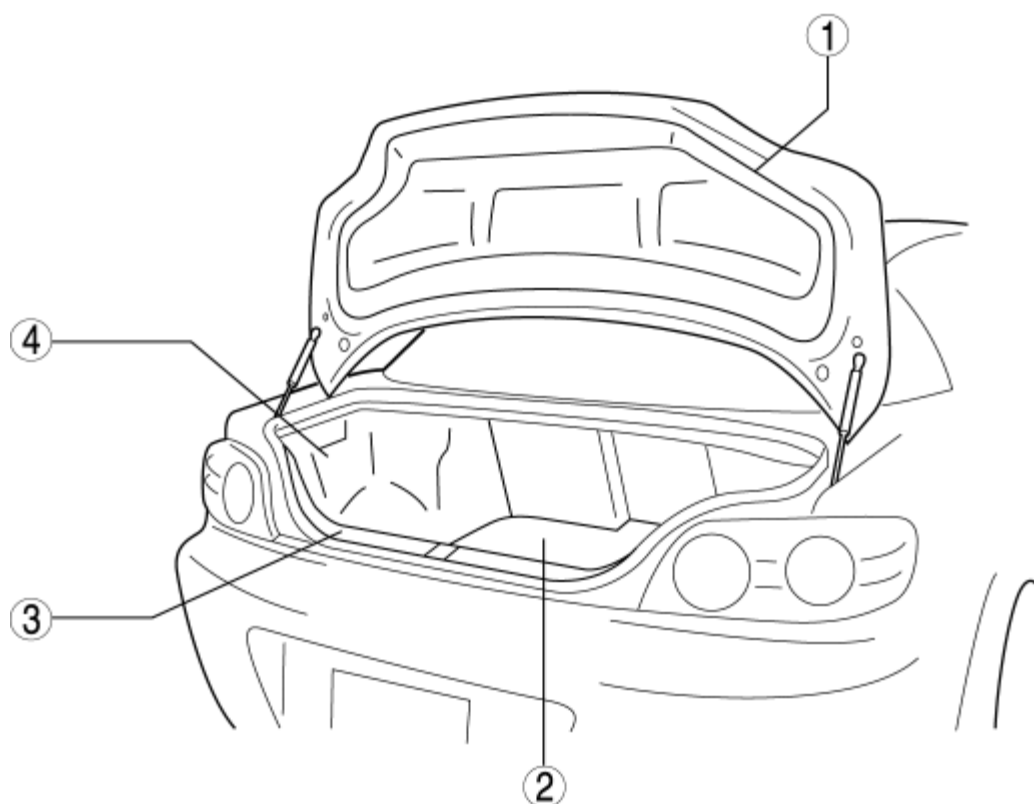
	(See CENTER PANEL REMOVAL/INSTALLATION.)
5	Dashboard (See DASHBOARD REMOVAL/INSTALLATION.) (See DASHBOARD DISASSEMBLY/ASSEMBLY.)
6	A-pillar trim (See A-PILLAR TRIM REMOVAL/INSTALLATION.)
7	Assist handle (See ASSIST HANDLE REMOVAL/INSTALLATION.)
8	Glove compartment (See GLOVE COMPARTMENT REMOVAL/INSTALLATION.)
9	Front side trim (See FRONT SIDE TRIM REMOVAL/INSTALLATION.)
10	Console (See CONSOLE REMOVAL/INSTALLATION.) (See CONSOLE DISASSEMBLY/ASSEMBLY.)
11	Column cover (See COLUMN COVER REMOVAL/INSTALLATION.)
12	Lower panel (See LOWER PANEL REMOVAL/INSTALLATION.)
13	Dashboard garnish (See DASHBOARD GARNISH REMOVAL/INSTALLATION.)
14	Outer scuff plate (See OUTER SCUFF PLATE REMOVAL/INSTALLATION.)
	Inner scuff plate

15	(See INNER SCUFF PLATE REMOVAL/INSTALLATION.)
16	Front door trim (See FRONT DOOR TRIM REMOVAL/INSTALLATION.)



1	Rear package trim (See REAR PACKAGE TRIM REMOVAL/INSTALLATION.)
2	Rear pillar trim (See REAR PILLAR TRIM REMOVAL/INSTALLATION.)
3	Tire house trim (See TIRE HOUSE TRIM REMOVAL/INSTALLATION.)
4	Rear door lower trim

	(See REAR DOOR LOWER TRIM REMOVAL/INSTALLATION.)
5	Head impact pad (See HEAD IMPACT PAD REMOVAL/INSTALLATION.)
6	Roof side trim (See ROOF SIDE TRIM REMOVAL/INSTALLATION.)
7	Rear door upper trim (See REAR DOOR UPPER TRIM REMOVAL/INSTALLATION.)
8	Headliner (See HEADLINER REMOVAL/INSTALLATION.)
9	Sunvisor (See SUNVISOR REMOVAL/INSTALLATION.)
10	Floor covering (See FLOOR COVERING REMOVAL/INSTALLATION.)



1	Trunk lid trim (See TRUNK LID TRIM REMOVAL/INSTALLATION.)
2	Trunk mat (See TRUNK MAT REMOVAL/INSTALLATION.)
3	Trunk end trim (See TRUNK END TRIM REMOVAL/INSTALLATION.)
4	Trunk side trim (See TRUNK SIDE TRIM REMOVAL/INSTALLATION.)

[< Previous](#) [Next >](#)

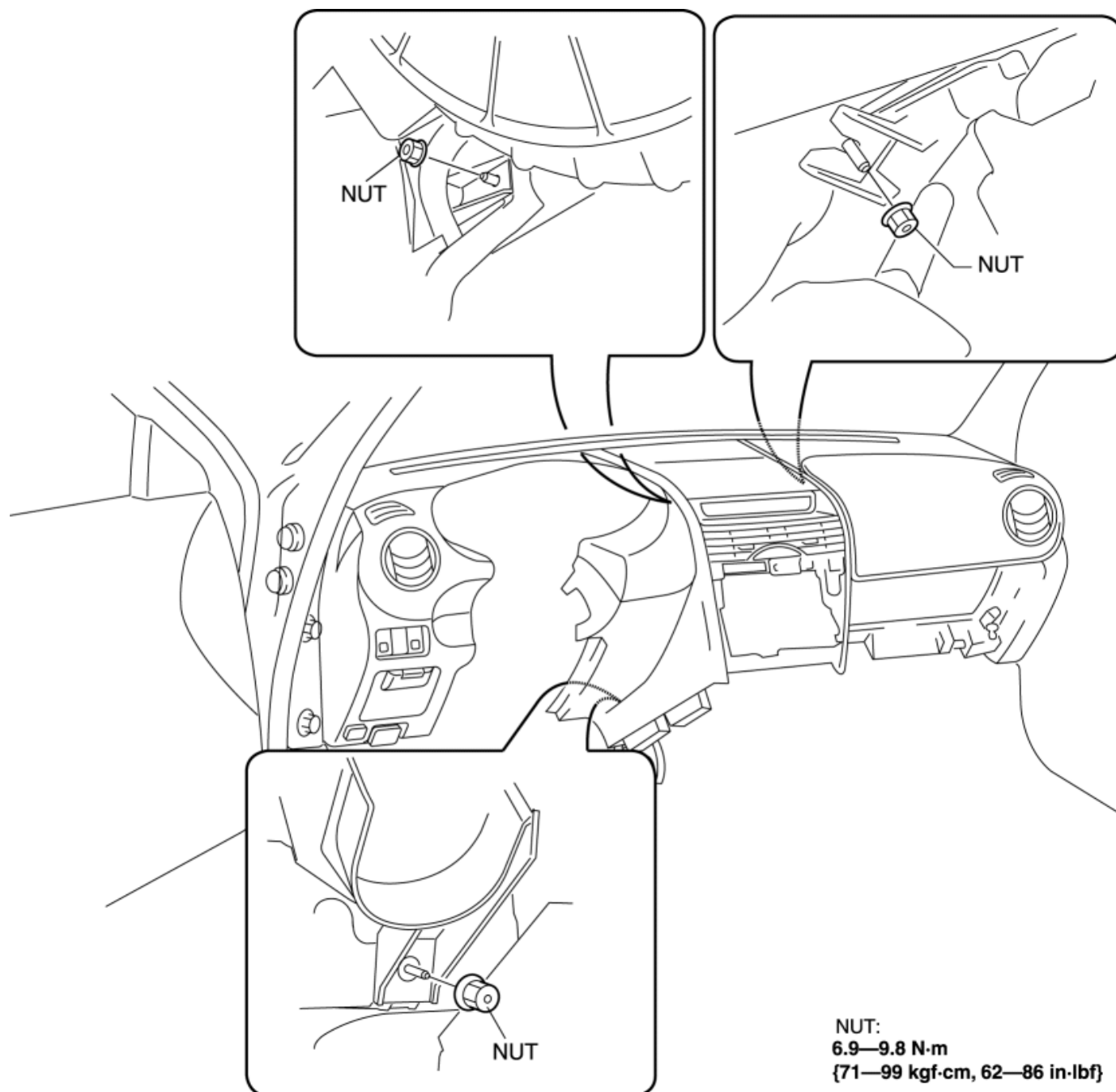
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

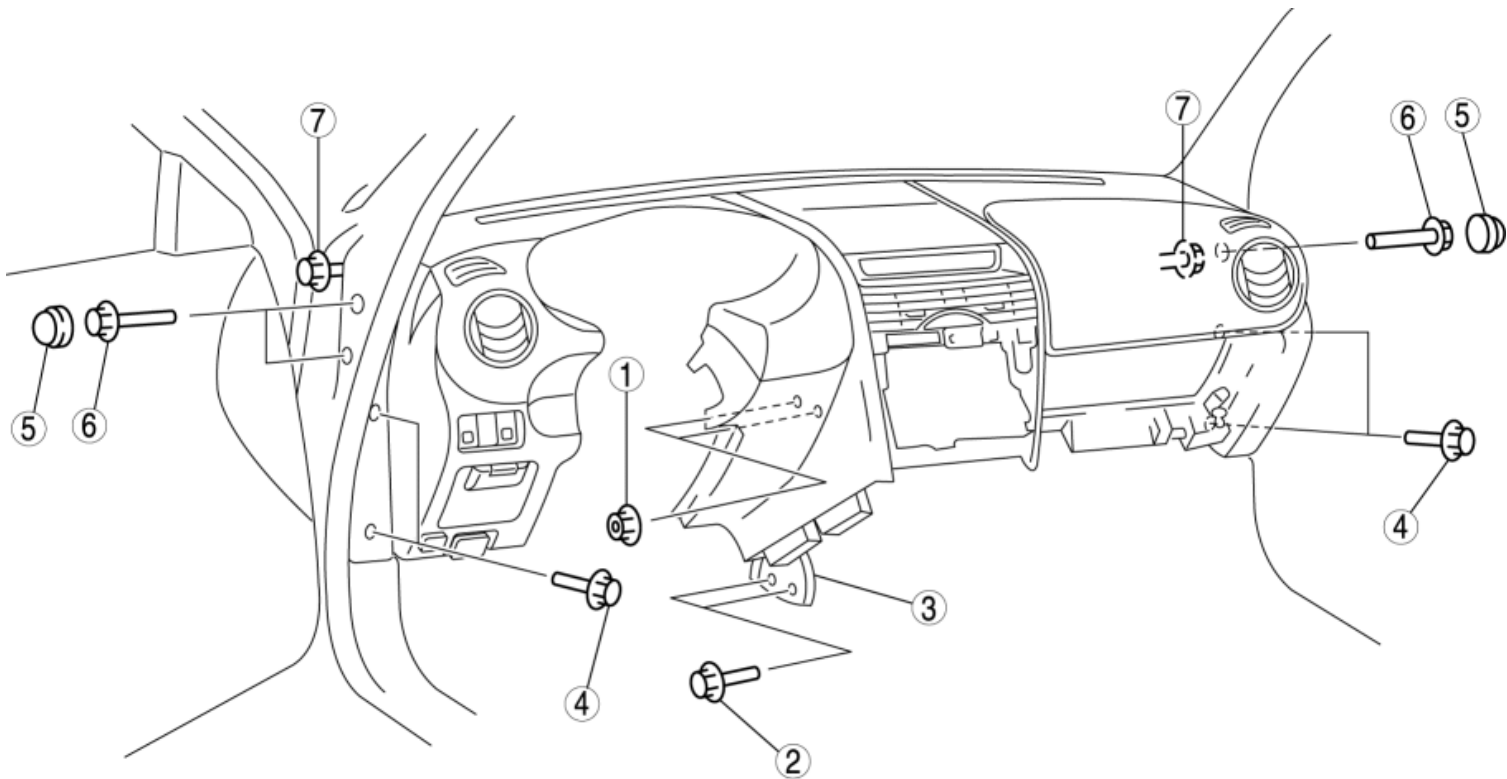
2011 - RX-8 - Body and Accessories

DASHBOARD REMOVAL/INSTALLATION

1. Disconnect the negative battery cable and wait the one minute.
2. Remove the following parts:
 - a. Console (See [CONSOLE REMOVAL/INSTALLATION](#).)
 - b. Glove compartment (See [GLOVE COMPARTMENT REMOVAL/INSTALLATION](#).)
 - c. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION](#).)
 - d. Front side trim (See [FRONT SIDE TRIM REMOVAL/INSTALLATION](#).)
 - e. Side panels (See [SIDE PANEL REMOVAL/INSTALLATION](#).)
 - f. Hood release lever (See [HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION](#).)
 - g. Lower panel (See [LOWER PANEL REMOVAL/INSTALLATION](#).)
 - h. Knee bolster (See [KNEE BOLSTER REMOVAL/INSTALLATION](#).)
 - i. Column cover (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
 - j. Center panel unit (See [CENTER PANEL UNIT REMOVAL/INSTALLATION](#).)
 - k. Steering shaft installation nuts (See [STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION](#).)
 - l. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION](#).)
 - m. TCM (AT) (See [TCM REMOVAL/INSTALLATION \[SJ6A-EL\]](#).)
 - n. A/C amplifier (See [A/C AMPLIFIER REMOVAL/INSTALLATION \[FULL-AUTO AIR CONDITIONER\]](#).) (See [A/C AMPLIFIER REMOVAL/INSTALLATION \[MANUAL AIR CONDITIONER\]](#).)
 - o. Auto light/wiper control module (See [AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION](#).)
 - p. Door lock timer unit (See [DOOR LOCK CONTROL MODULE REMOVAL/INSTALLATION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#).)
3. Remove the nuts.



4. Remove in the order indicated in the table.



BOLT:
15.7—22.5 N·m
{1.61—2.29 kgf·m, 11.6—16.5 ft·lbf}

1	Nut
2	Bolt A
3	Bracket
4	Bolt B
5	Cap
6	Bolt C
7	Bolt D (See Dashboard Removal Note.)

WARNING:

- Removing the dashboard without supporting it can be dangerous. The dashboard may fall and injure you. Always perform the following procedure with at least another person.

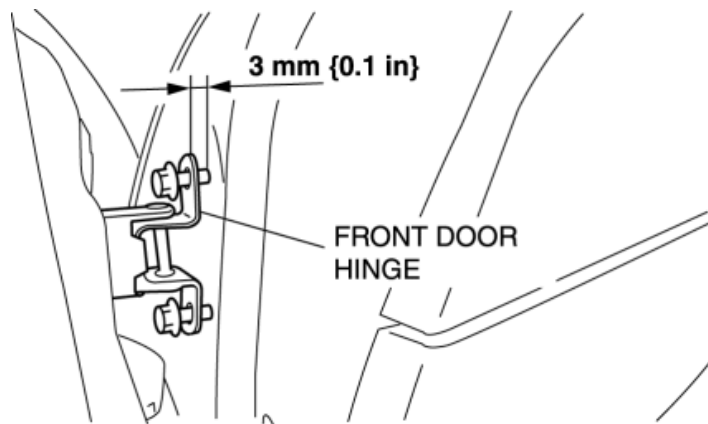
5. Remove the dashboard.
6. Take the dashboard off from the front driver-side door opening.
7. Install in the reverse order of removal.

Dashboard Removal Note

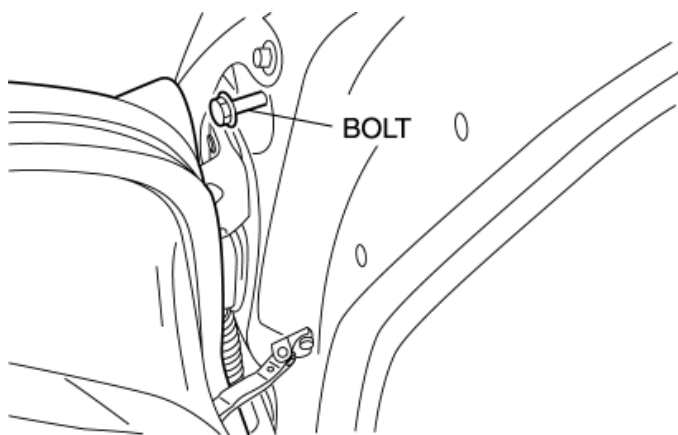
1. Loosen the front door hinge installation bolts. (See [FRONT DOOR REMOVAL/INSTALLATION](#).)

CAUTION:

- Do not pull out the bolt completely. Otherwise, the front door may fall off and the lower hinge may get deformed and damaged.



2. Half-open the door and pull out the bolt at both ends of the dashboard so that the bolt will not interfere with the door.

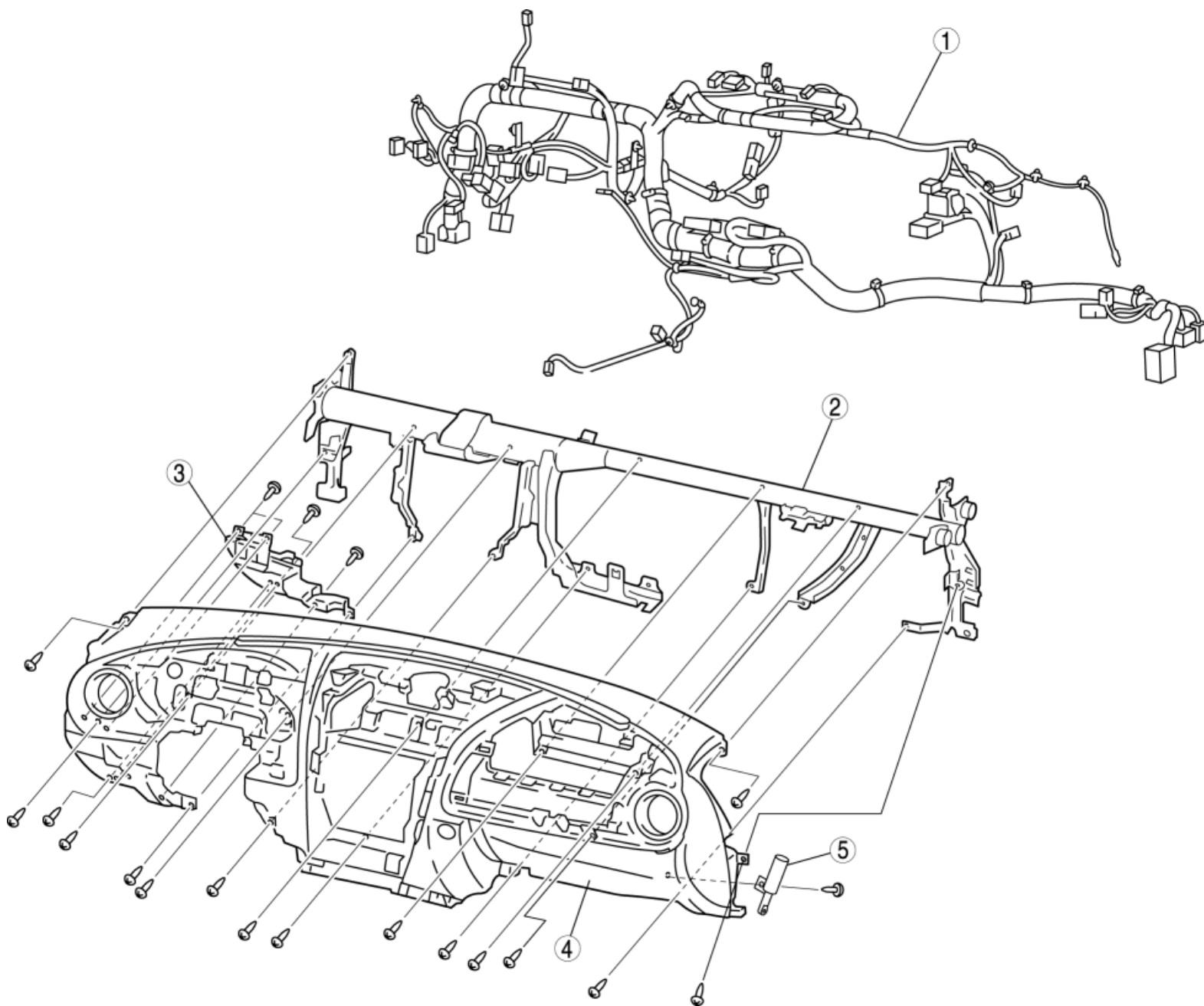


[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

DASHBOARD DISASSEMBLY/ASSEMBLY

1. Remove the following parts:
 - a. Instrument cluster (See [INSTRUMENT CLUSTER REMOVAL/INSTALLATION.](#))
 - b. Passenger-side air bag module (See [PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.](#))
 - c. Blower unit (See [BLOWER UNIT REMOVAL/INSTALLATION.](#))
 - d. Speaker grill (See [SPEAKER GRILLE REMOVAL/INSTALLATION.](#))
 - e. Center speaker (See [CENTER SPEAKER REMOVAL/INSTALLATION.](#))
 - f. GPS antenna (Vehicles with car-navigation system) (See [GPS ANTENNA REMOVAL/INSTALLATION.](#))
 - g. Dashboard garnish (See [DASHBOARD GARNISH REMOVAL/INSTALLATION.](#))
 - h. Driver-side demister grille. (See [VENTILATOR GRILLE REMOVAL/INSTALLATION.](#))
 - i. Passenger-side demister grille. (See [VENTILATOR GRILLE REMOVAL/INSTALLATION.](#))
 - j. Center panel (See [CENTER PANEL REMOVAL/INSTALLATION.](#))
 - k. Center ventilator grille (See [VENTILATOR GRILLE REMOVAL/INSTALLATION.](#))
 - l. Information display (See [INFORMATION DISPLAY REMOVAL/INSTALLATION.](#))
2. Disassemble in the order indicated in the table.
3. Assemble in the reverse order of disassembly.

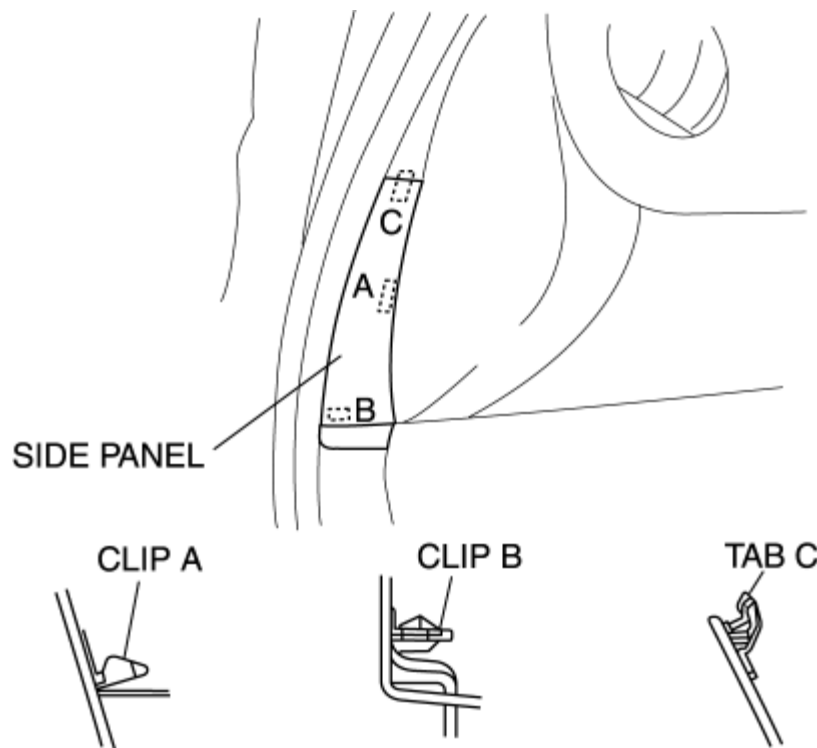


1	Dashboard wiring harness
2	Dashboard member
3	Panel
4	Dashboard
5	Glove compartment damper

2011 - RX-8 - Body and Accessories

SIDE PANEL REMOVAL/INSTALLATION

1. Remove the inner scuff plate. (See [INNER SCUFF PLATE REMOVAL/INSTALLATION](#).)
2. Remove the front side trim. (See [FRONT SIDE TRIM REMOVAL/INSTALLATION](#).)
3. Detach clips A and B, using a flathead screwdriver wrapped with protective tape.

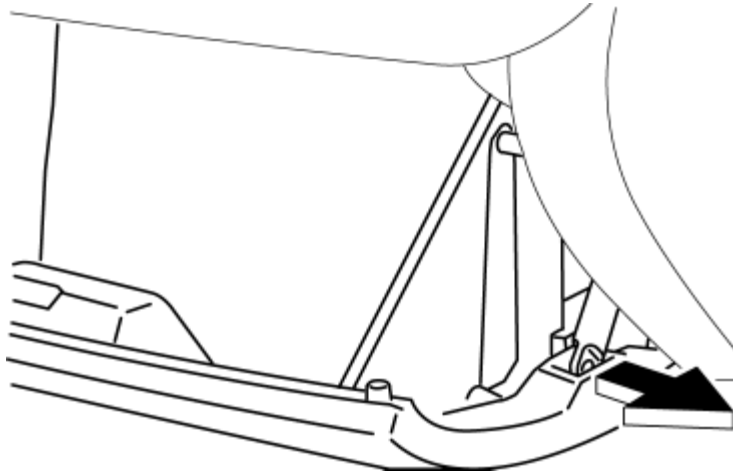


4. Pull the side panel outward and detach tab C from the dashboard, then remove the side panel.
5. Install in the reverse order of removal.

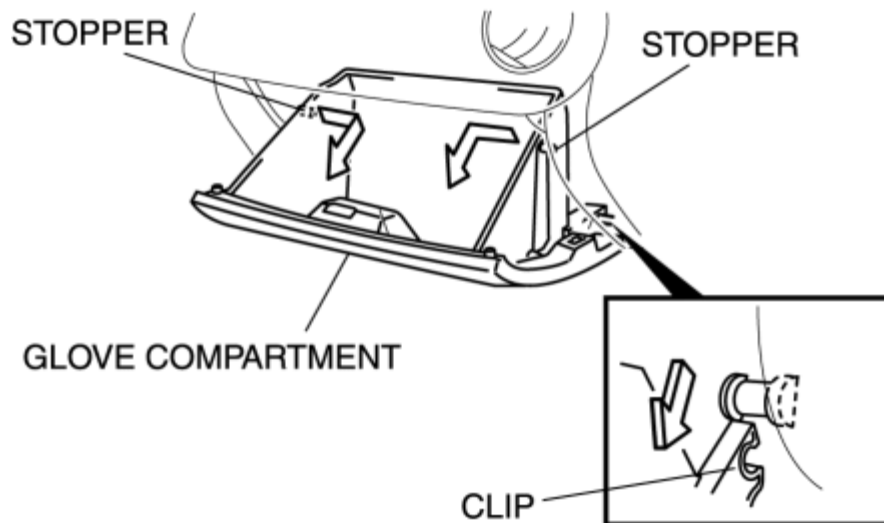
2011 - RX-8 - Body and Accessories

GLOVE COMPARTMENT REMOVAL/INSTALLATION

1. Pull the stay damper in the direction shown in the figure, and detach the connecting part between the glove compartment and the stay damper.



2. Press the stopper in and remove it.

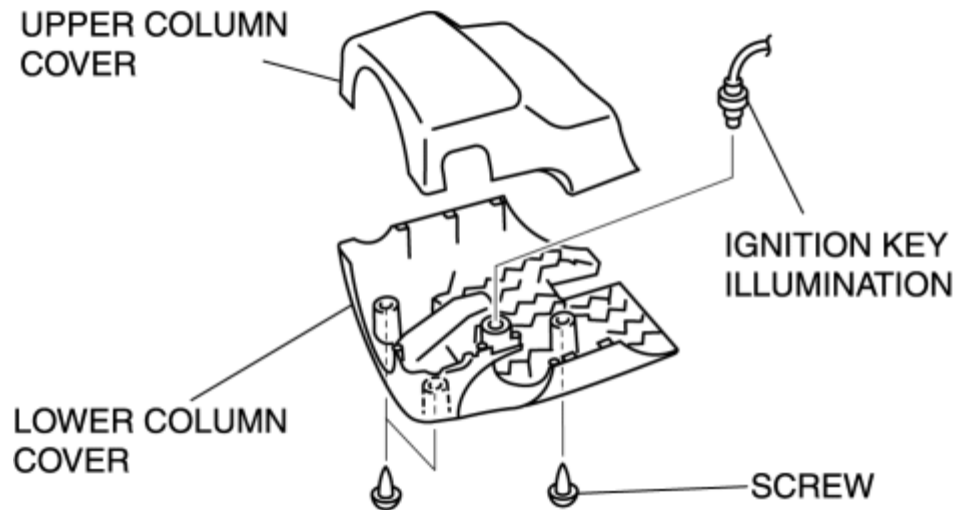


3. Lower the glove compartment.
4. Detach the clips from the dashboard and remove the glove compartment.
5. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

COLUMN COVER REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the upper column cover.

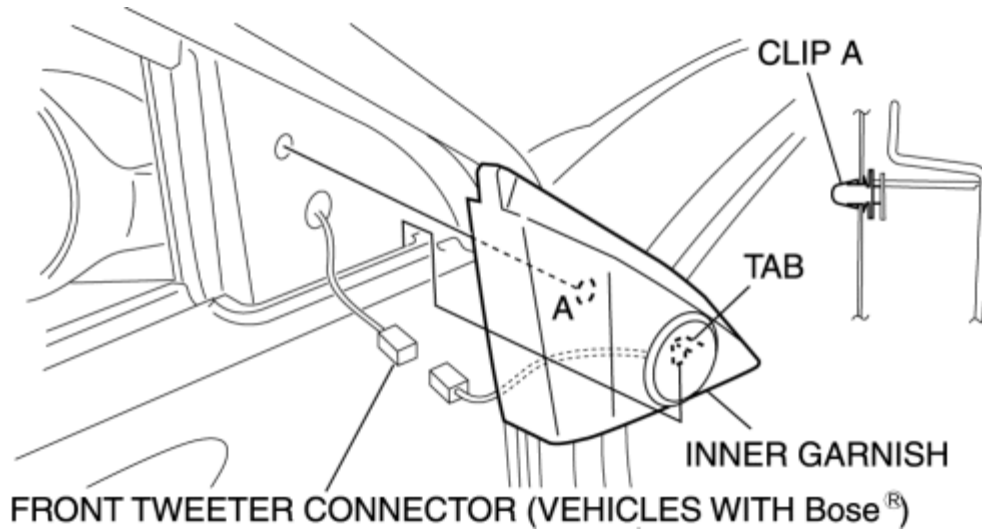


3. Remove the ignition key illumination. (Vehicles with keyless entry system) (See [IGNITION KEY ILLUMINATION BULB REMOVAL/INSTALLATION](#).)
4. Remove the screws.
5. Remove the lower column cover.
6. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

INNER GARNISH REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Pull the inner garnish outward and detach clip A.

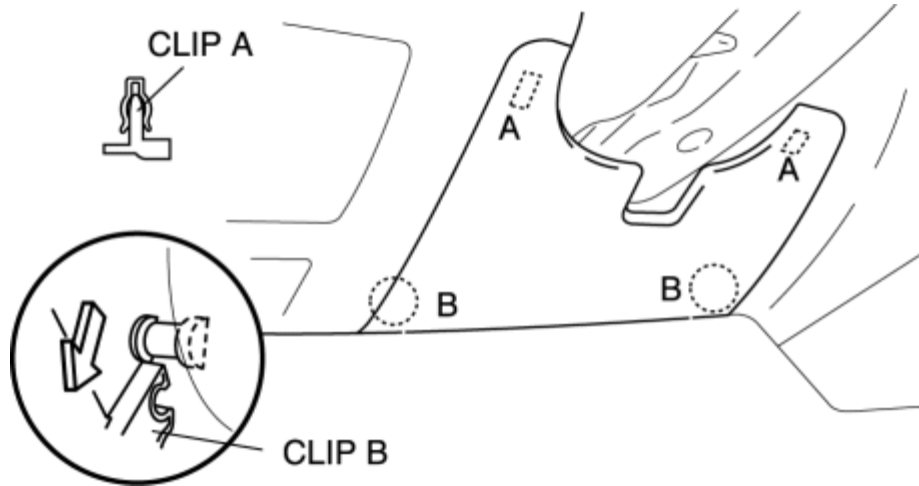


3. Detach the tab.
4. Disconnect the front tweeter connector. (vehicles with Bose®)
5. Remove the inner garnish.
6. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

LOWER PANEL REMOVAL/INSTALLATION

1. Pull the upper part of the lower panel, and detach clips A.

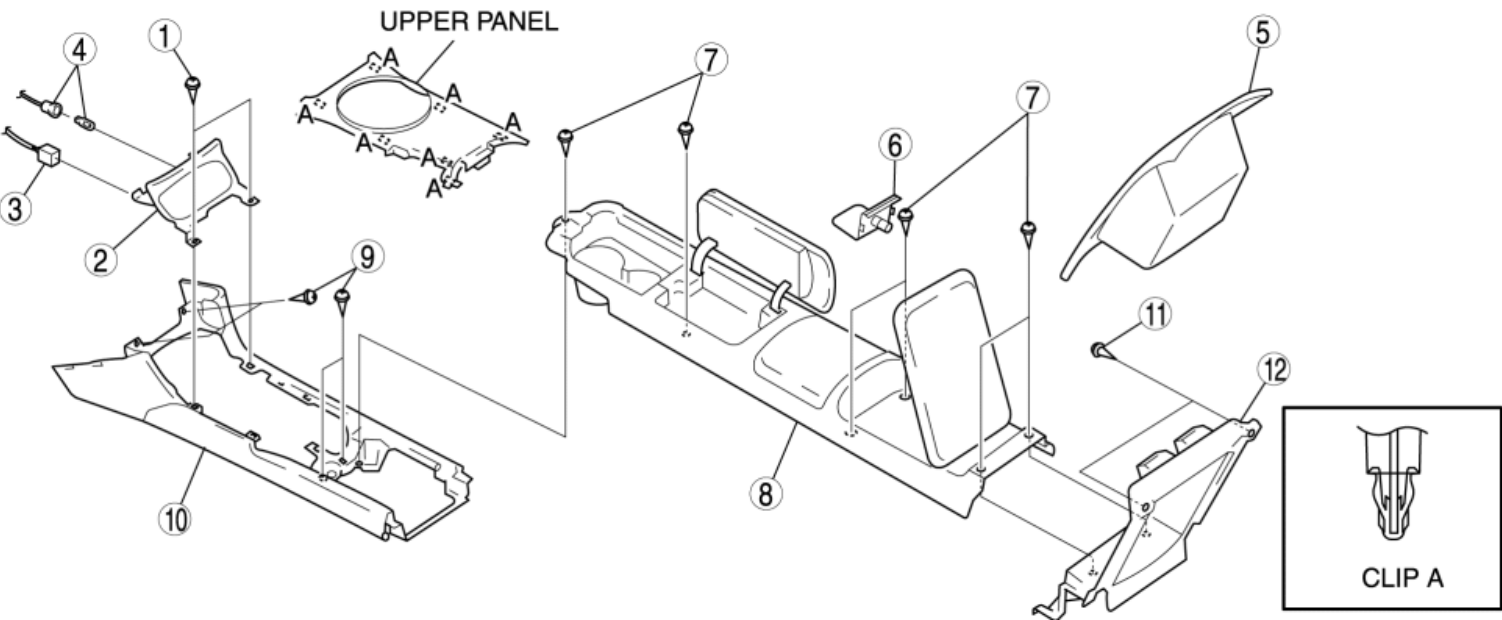


2. Detach clips B from the dashboard and remove the lower panel.
3. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

CONSOLE REMOVAL/INSTALLATION

- 1. Disconnect the negative battery cable.
- 2. Remove the rear seat. (See [REAR SEAT REMOVAL/INSTALLATION](#).)
- 3. Remove the rear package trim. (See [REAR PACKAGE TRIM REMOVAL/INSTALLATION](#).)
- 4. Detach clips A and remove the upper panel.
- 5. Disassemble in the order indicated in the table.



1	Screw A
2	Ashtray panel(See Ashtray Panel Removal Note)
3	Cigarette lighter connector
4	Ashtray illumination(See ASHTRAY ILLUMINATION BULB REMOVAL/INSTALLATION)
5	Storage compartment
6	Hole cover
7	Screw B
8	Rear console
9	Screw C

10	Front console
11	Screw D
12	Under cover

6. Install in the reverse order of removal.

Ashtray Panel Removal Note

1. Remove the ashtray panel using a flathead screwdriver wrapped with protective tape.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

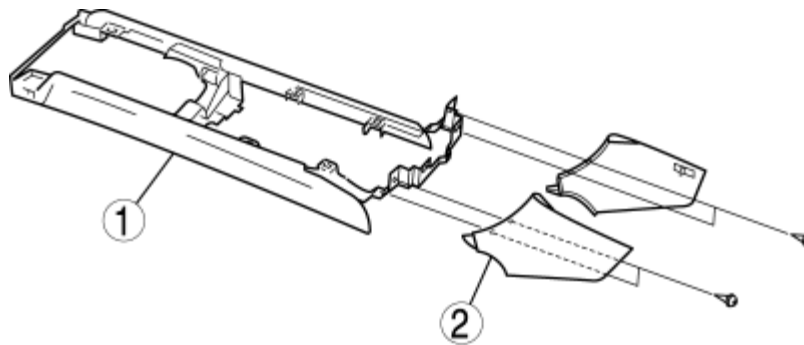
[Back to Top](#)

2011 - RX-8 - Body and Accessories

CONSOLE DISASSEMBLY/ASSEMBLY

Front Console

1. Disassemble in the order indicated in the table.

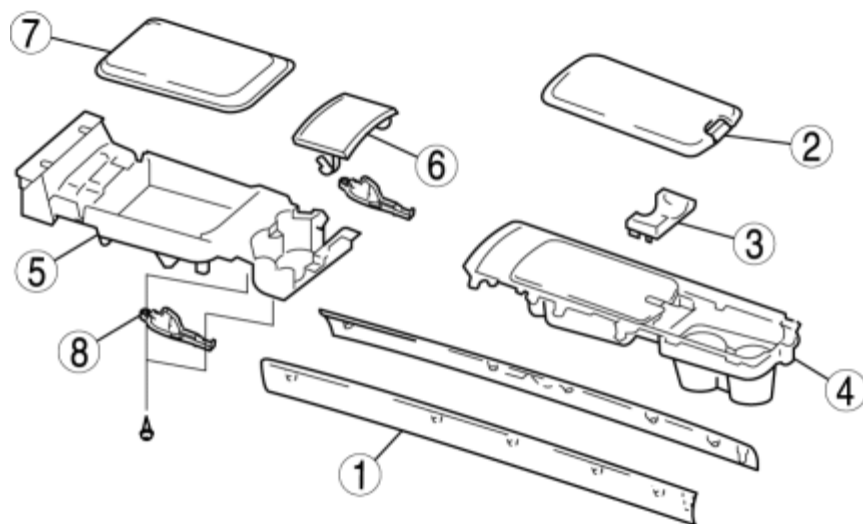


1	Front console
2	Side wall

2. Assemble in the reverse order of disassembly.

Rear Console

1. Disassemble in the order indicated in the table.



1	Rear console
2	Glove compartment lid
3	Console panel
4	Front console box
5	Rear console box
6	Console cover
7	Outer console lid
8	Bracket

2. Assemble in the reverse order of disassembly.

[< Previous](#) [Next >](#)

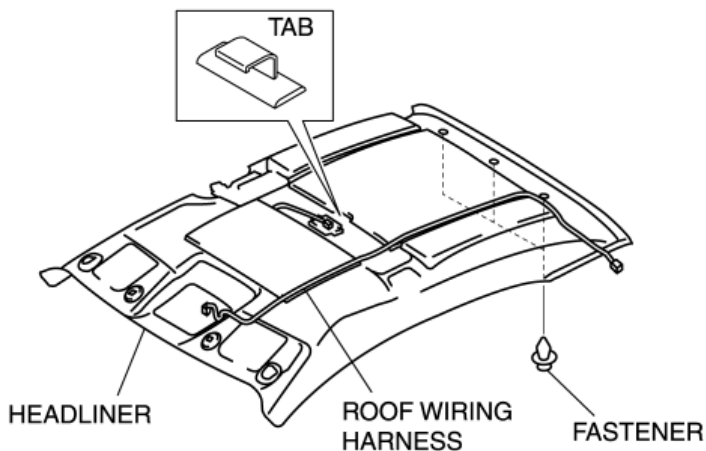
[Back to Top](#)

2011 - RX-8 - Body and Accessories

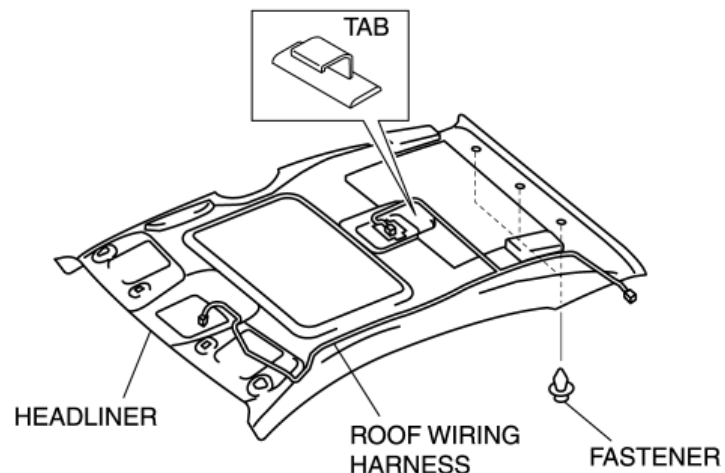
HEADLINER REMOVAL/INSTALLATION

1. Remove the following parts:
 - a. Weatherstrip (See [GLASS PANEL REMOVAL/INSTALLATION.](#))
 - b. Roof side trim (See [ROOF SIDE TRIM REMOVAL/INSTALLATION.](#))
 - c. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - d. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - e. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
 - f. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
 - g. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - h. Map light (See [MAP LIGHT REMOVAL/INSTALLATION.](#))
 - i. Interior light (See [INTERIOR LIGHT REMOVAL/INSTALLATION.](#))
 - j. Sunvisor (See [SUNVISOR REMOVAL/INSTALLATION.](#))
 - k. Assist handle (See [ASSIST HANDLE REMOVAL/INSTALLATION.](#))
2. Disconnect the roof wiring harness connector and remove the roof wiring harness connector clip from the body.
3. Remove the fasteners.

WITHOUT SUNROOF



WITH SUNROOF

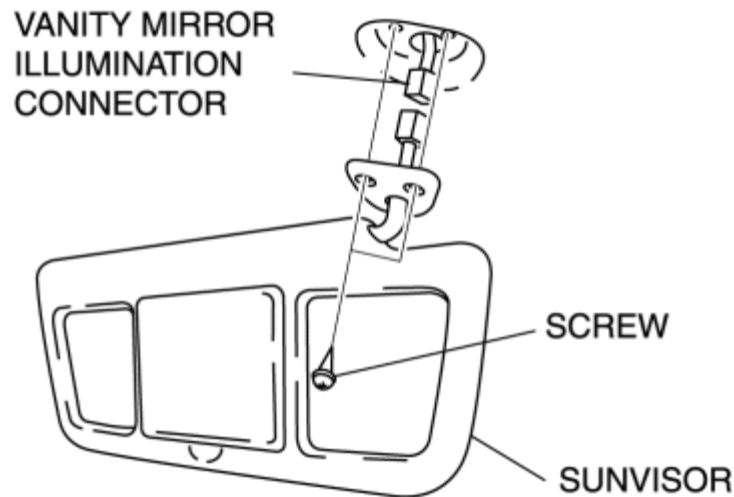


4. Detach the tab from the roof panel and remove the headliner.
5. Take the headliner out from the opened passenger-side door.
6. Install in the reverse order of removal.

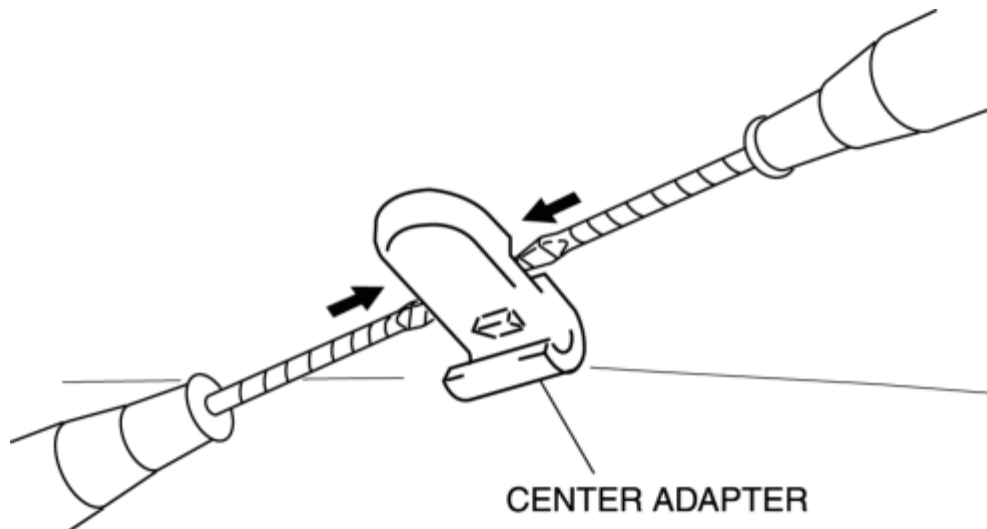
2011 - RX-8 - Body and Accessories

SUNVISOR REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the screws.



3. Disconnect the vanity mirror illumination connector.
4. Remove the sunvisor.
5. Press the center adapter tabs in the directions of the arrows using two tape-wrapped flathead screwdrivers and remove it.



6. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

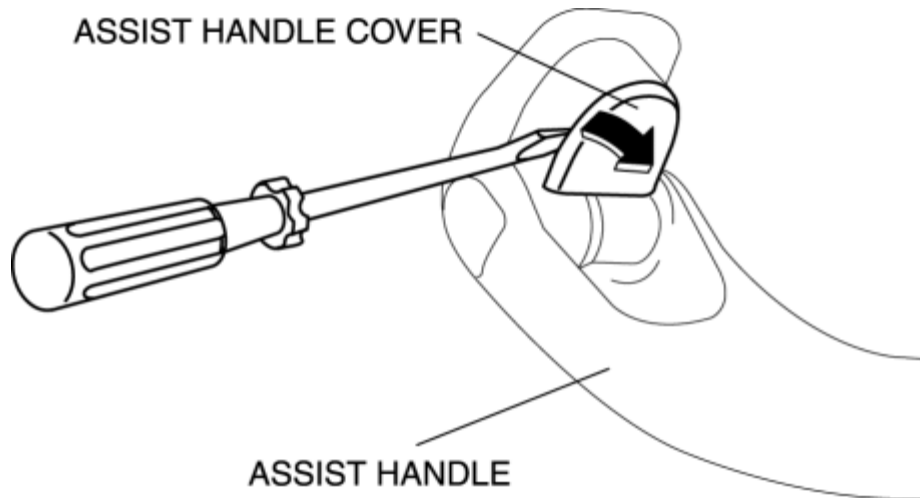
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

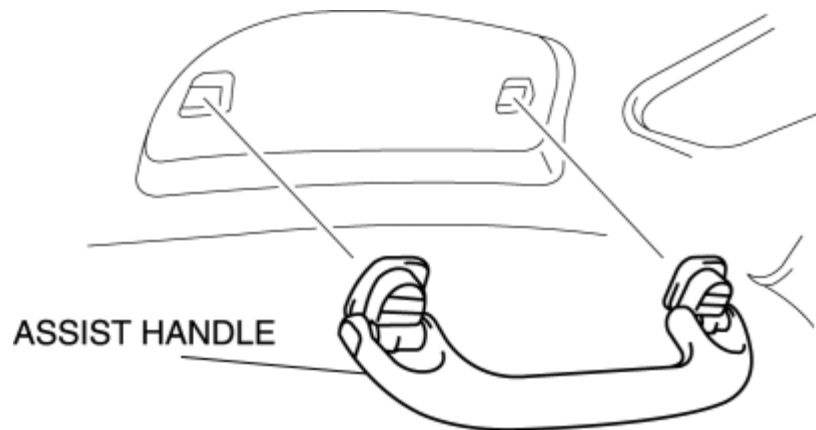
2011 - RX-8 - Body and Accessories

ASSIST HANDLE REMOVAL/INSTALLATION

1. Insert a flathead screwdriver into the assist handle notch and remove the assist handle cover.



2. Pull the assist handle outward and remove it.

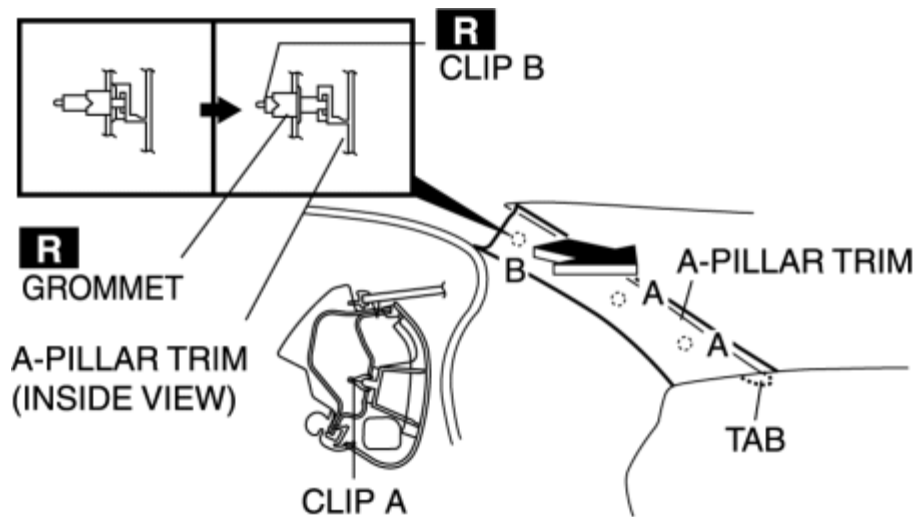


3. Install in the reverse order of removal.

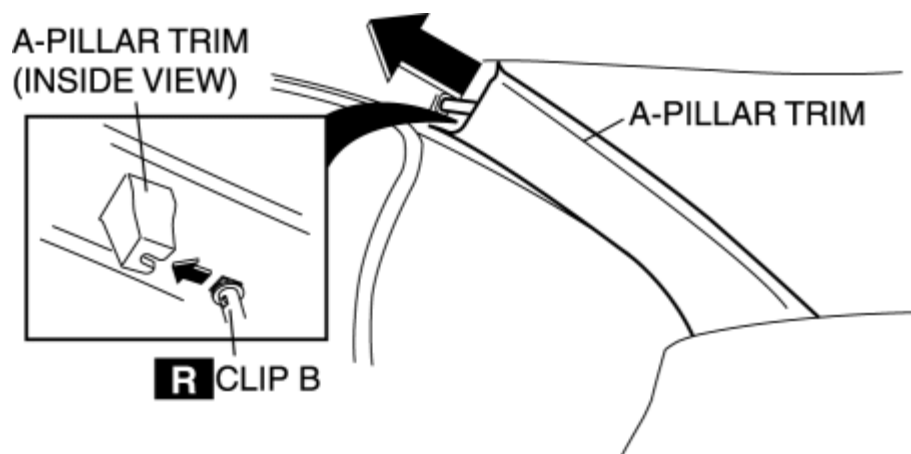
2011 - RX-8 - Body and Accessories

A-PILLAR TRIM REMOVAL/INSTALLATION

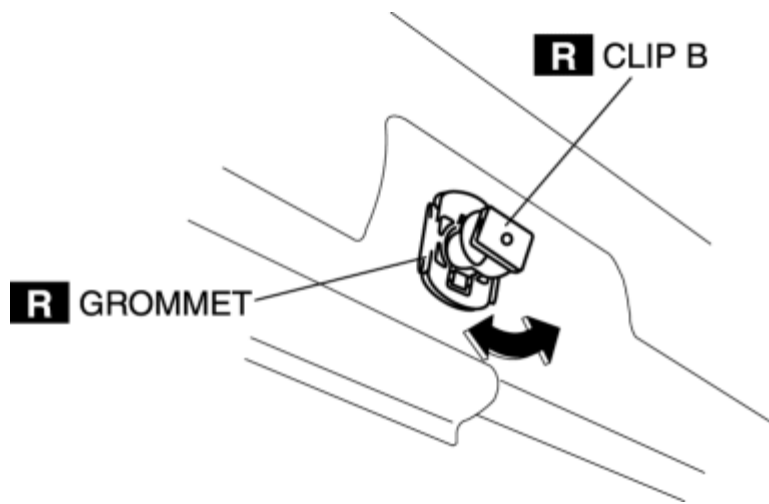
1. Partially peel back the seaming welt.
2. Pull the A-pillar trim shown in the figure in the direction of the arrow, raise clip B from its grommet together with the A-pillar trim, and remove clips A at the same time.



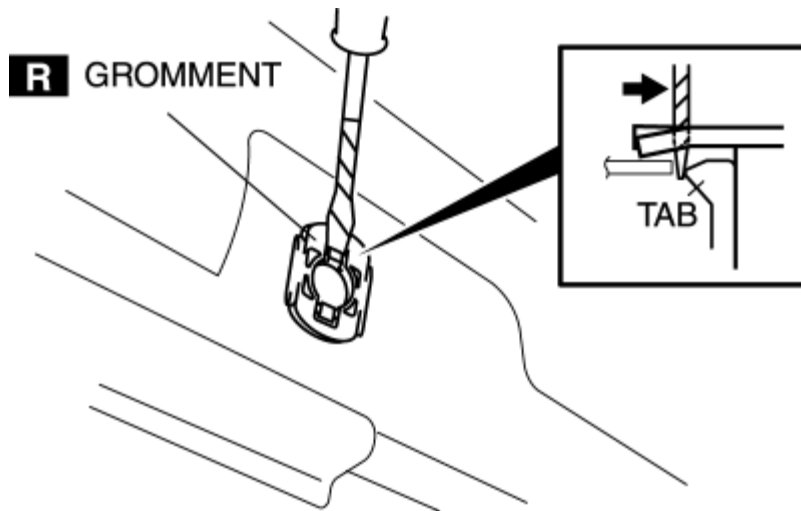
3. Slide the A-pillar trim in the direction of the arrow shown in the figure and remove the A-pillar trim from clip B.



4. Rotate and pull clip B in the direction of the arrow shown in the figure until it is no longer loose, and feels tight.



5. Pull clip B and remove it from the grommet.
6. Insert a tape-wrapped flathead screwdriver between the body and the grommet.



7. Press the tabs and remove the grommet.
8. Install the new grommet to the body.
9. Install the new clip B to the A-pillar trim.
10. Install the A-pillar trim.

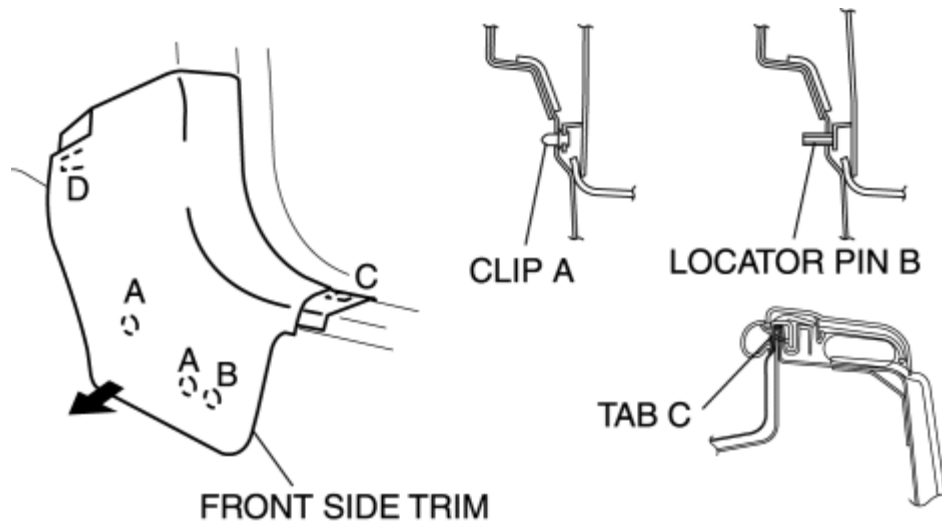
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

FRONT SIDE TRIM REMOVAL/INSTALLATION

1. Remove the inner scuff plate. (See [INNER SCUFF PLATE REMOVAL/INSTALLATION](#).)
2. Partially peel back the seaming welt.
3. Detach the tab C.
4. Pull the front side trim in the direction of the arrow and detach clips A and locator pin B.



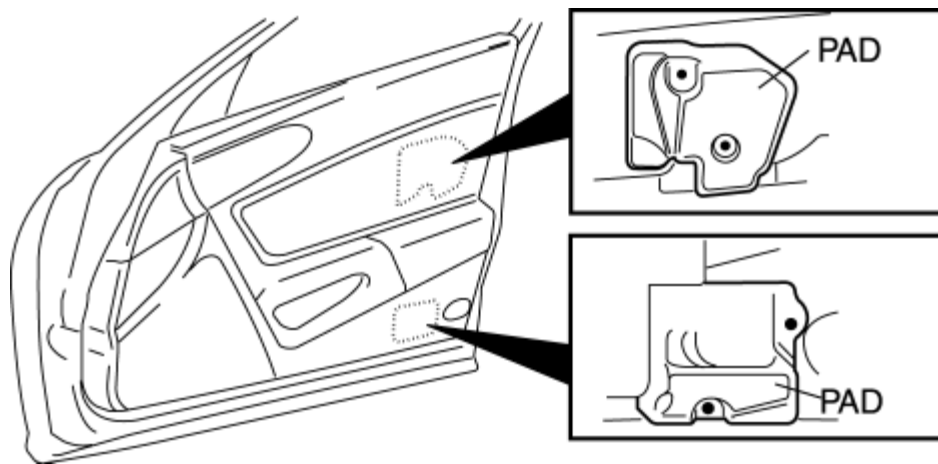
5. Detach the tab D, then remove the front side trim.
6. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

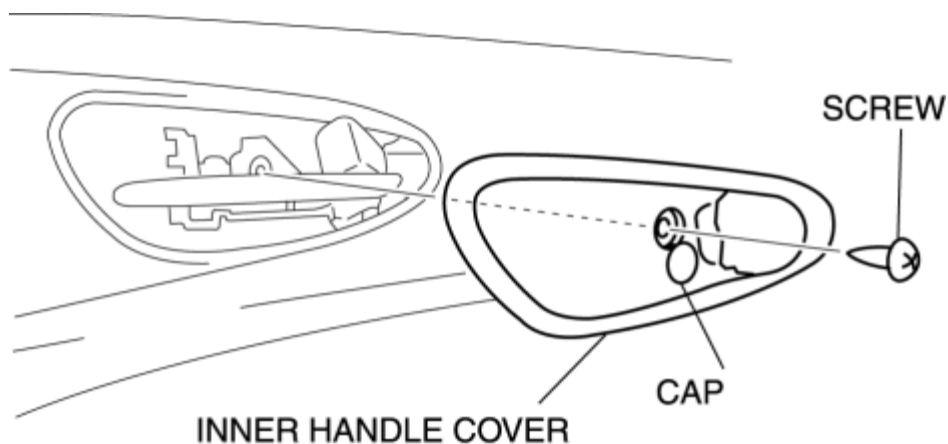
FRONT DOOR TRIM REMOVAL/INSTALLATION

CAUTION:

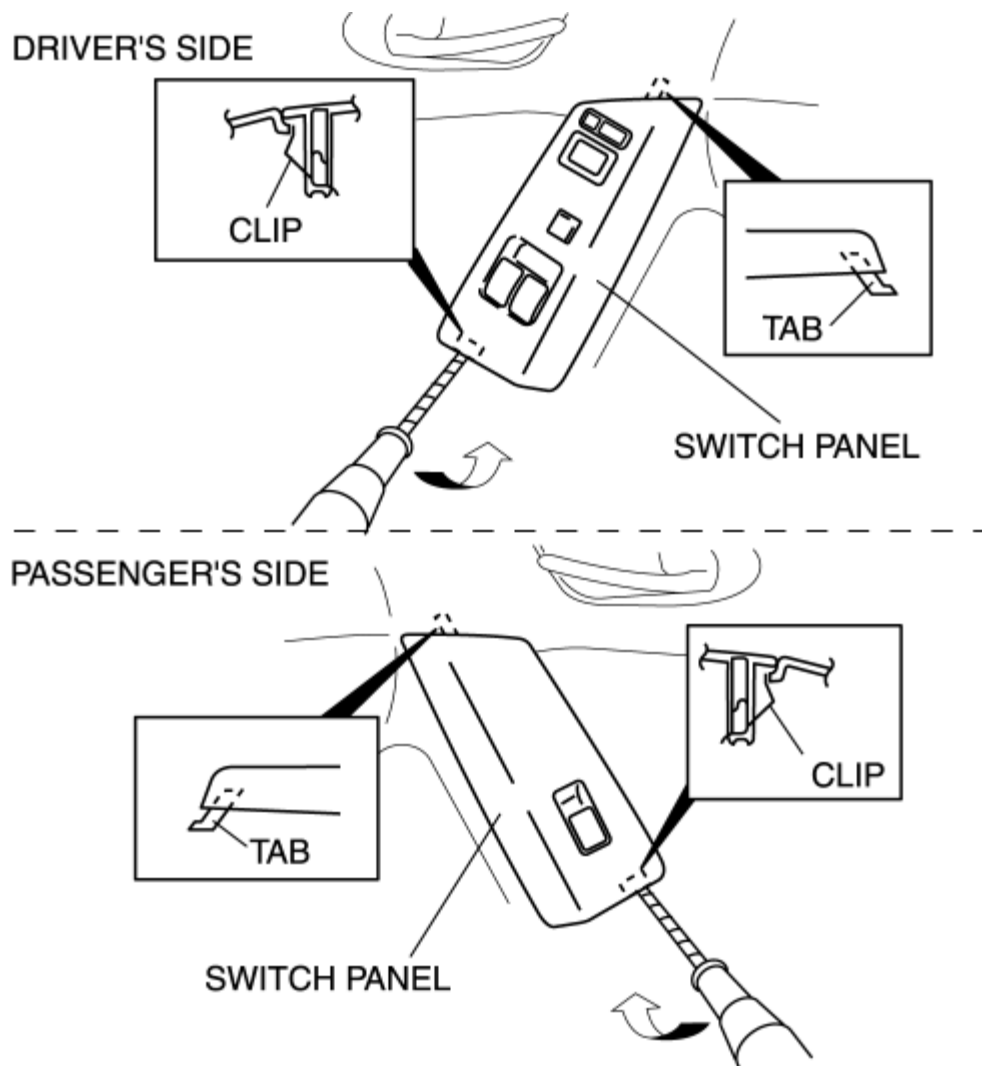
- If the pad installed to the inside of the front door trim is damaged it could cause looseness resulting in the occurrence of abnormal noise. Be careful when handling the front door trim so that it does not receive an impact by being hit or dropped.



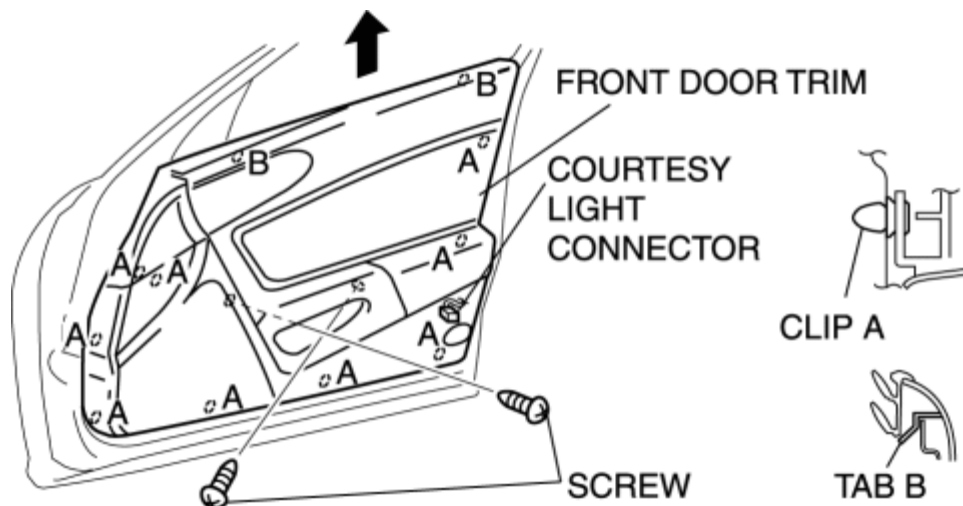
1. Disconnect the negative battery cable.
2. Using a small flathead screwdriver, open the cap and remove the screw, then remove the inner handle cover.



3. Remove the inner garnish. (See [INNER GARNISH REMOVAL/INSTALLATION](#).)
4. Using a flathead screwdriver, pry up the rear part of the switch panel and detach the clip.



5. Remove the switch panel from the front door trim keeping the tab from catching.
6. Disconnect the power window main switch connector, the power mirror switch connector, and the power window subswitch connector.
7. Remove the screws.



8. Detach clips A from the front door using a fastener remover.

9. Pull the front door trim upward, then detach tabs B from the front door.
10. Disconnect the courtesy light connector.
11. Remove the front door trim.
12. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

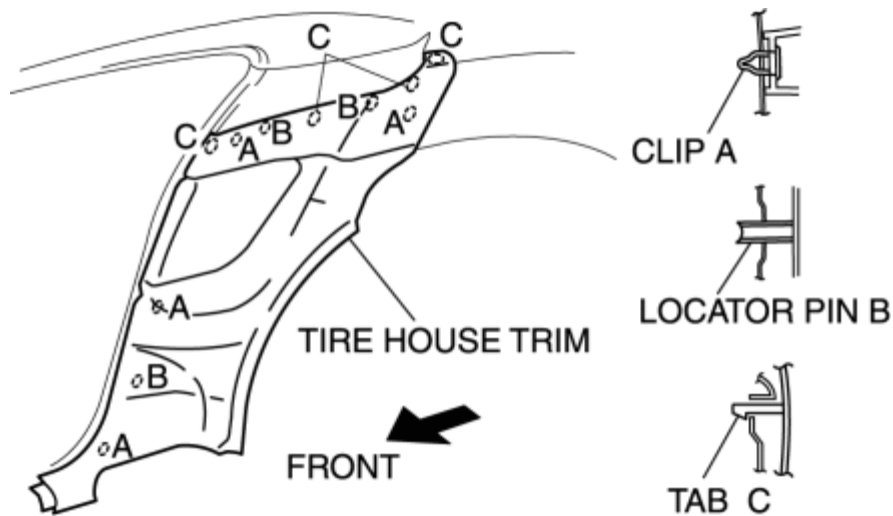
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

TIRE HOUSE TRIM REMOVAL/INSTALLATION

1. Remove the rear seat. (See [REAR SEAT REMOVAL/INSTALLATION](#).)
2. Remove the inner scuff plate. (See [INNER SCUFF PLATE REMOVAL/INSTALLATION](#).)
3. Partially peel back the seaming welt.
4. Pull the tire house trim outward and detach clips A and locator pins B.

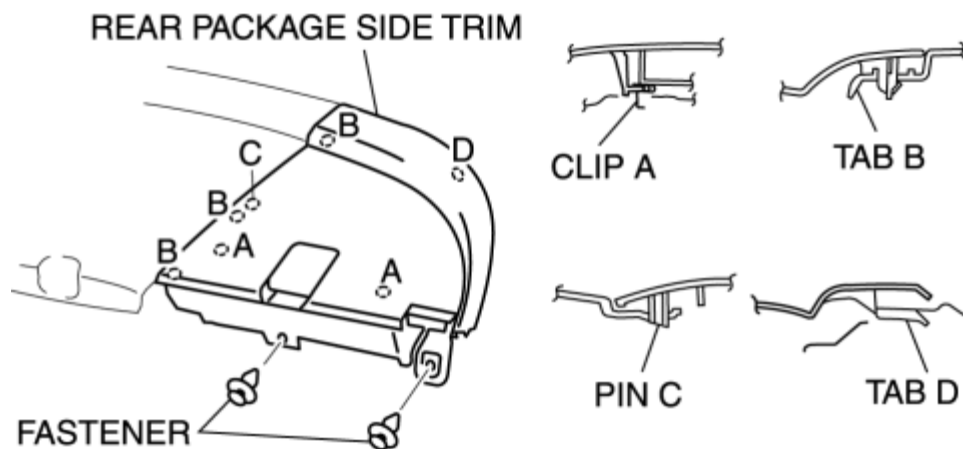


5. Detach tabs C and remove the tire house trim.
6. Install in the reverse order of removal.

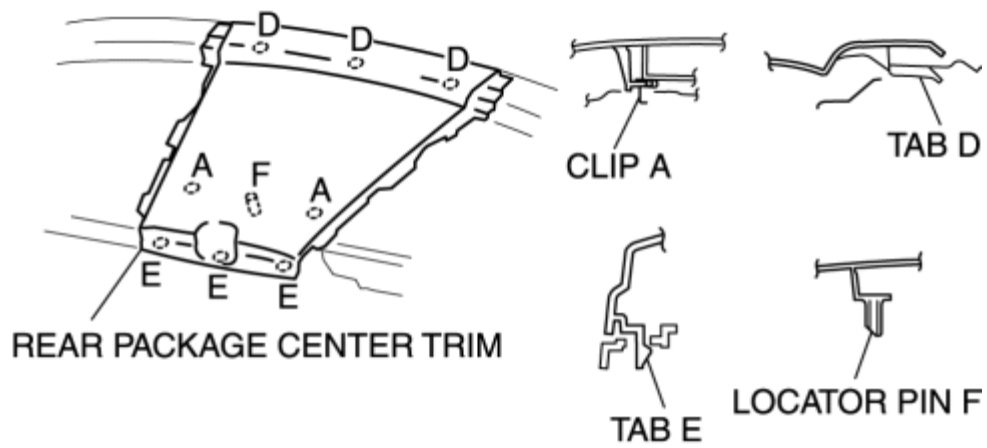
2011 - RX-8 - Body and Accessories

REAR PACKAGE TRIM REMOVAL/INSTALLATION

1. Remove the following parts:
 - a. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION](#).)
 - b. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION](#).)
 - c. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION](#).)
 - d. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION](#).)
2. Remove the rear package side trim fasteners.



3. Pull the rear package side trim upward and detach clips A from the body.
4. Detach tabs B and pin C from the rear package center trim.
5. Detach tabs D from the body and remove the rear package side trim.
6. Pull the rear package center trim upward and detach clips A, tabs E, and locator pin F from the body.



7. Detach tabs D from the body and remove the rear package center trim.
8. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

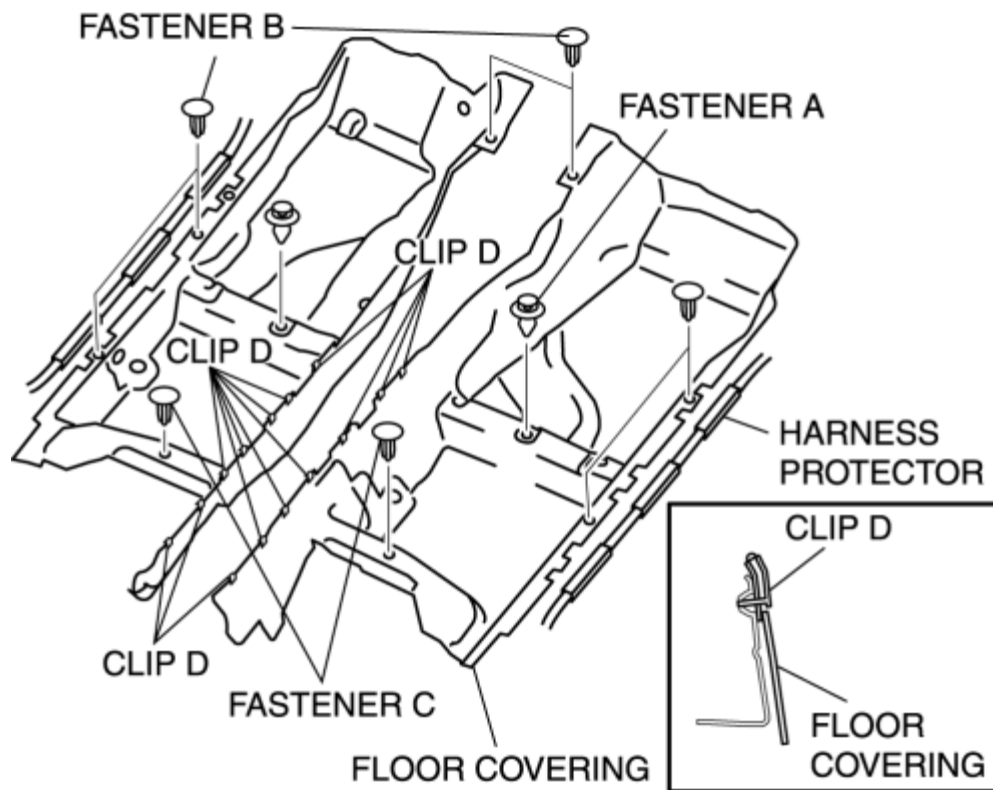
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

FLOOR COVERING REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Front seat (See [FRONT SEAT REMOVAL/INSTALLATION.](#))
 - b. Rear seat cushion (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - c. Rear seat back (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - d. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
 - e. Ashtray illumination bulb (See [ASHTRAY ILLUMINATION BULB REMOVAL/INSTALLATION.](#))
 - f. Console (See [CONSOLE REMOVAL/INSTALLATION.](#))
 - g. Front side trim (See [FRONT SIDE TRIM REMOVAL/INSTALLATION.](#))
 - h. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
 - i. Seat belt rail (See [FRONT SEAT BELT REMOVAL/INSTALLATION.](#))
3. Remove fasteners A, B, and C.
4. Detach clip D and remove the floor covering.



5. Take the floor covering out from the opened door.

6. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

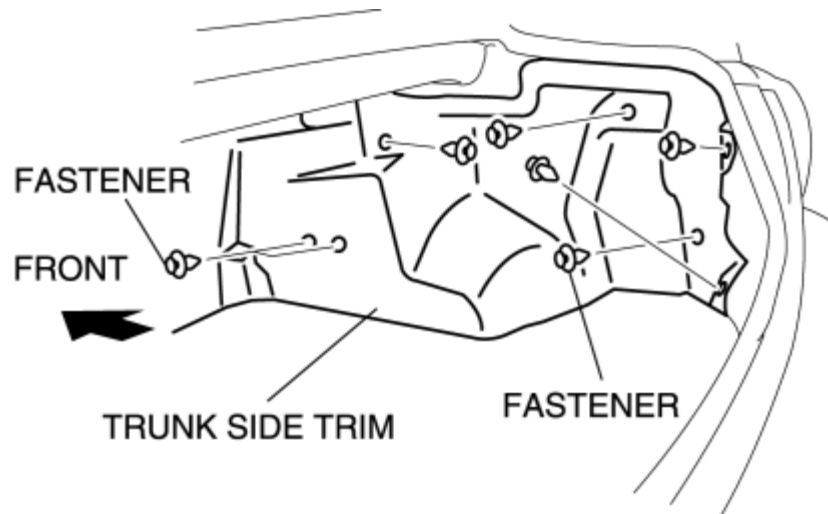
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

TRUNK SIDE TRIM REMOVAL/INSTALLATION

1. Remove the trunk end trim. (See [TRUNK END TRIM REMOVAL/INSTALLATION](#).)
2. Remove the fasteners, then remove the trunk side trim.

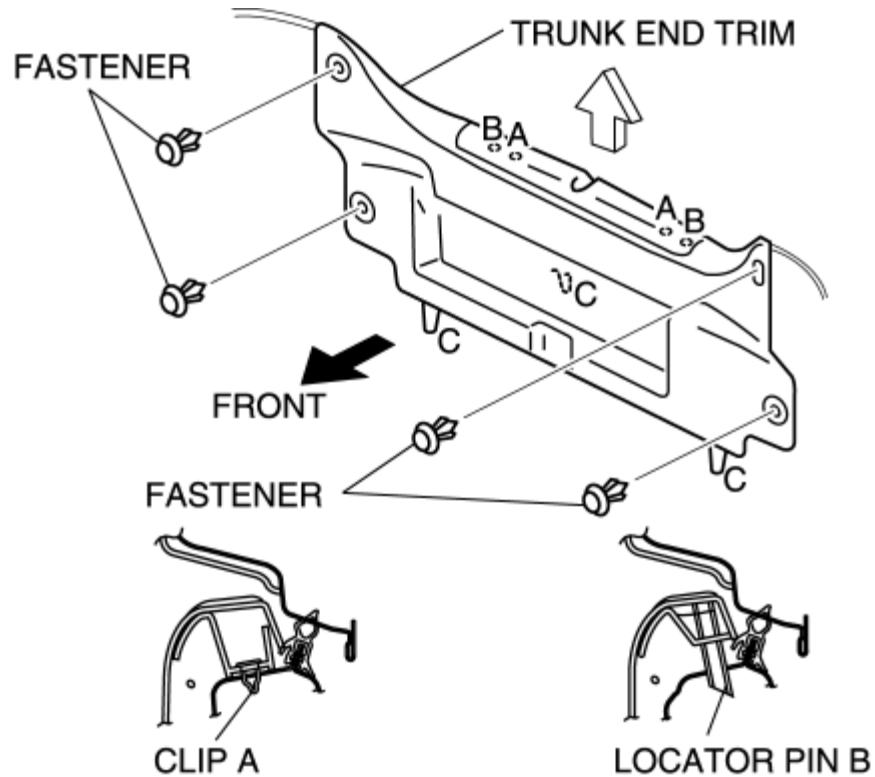


3. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

TRUNK END TRIM REMOVAL/INSTALLATION

1. Remove the fasteners.

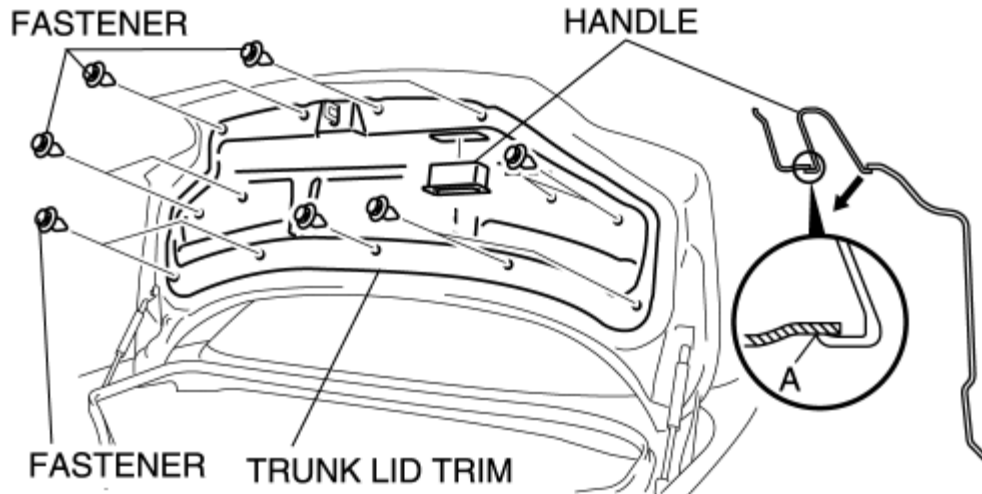


2. Pull the trunk end trim upward, then detach clips A, locator pins B, and tabs C.
3. Remove the trunk end trim.
4. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

TRUNK LID TRIM REMOVAL/INSTALLATION

1. While supporting at point A, pull the handle in the direction of the arrow and remove it.

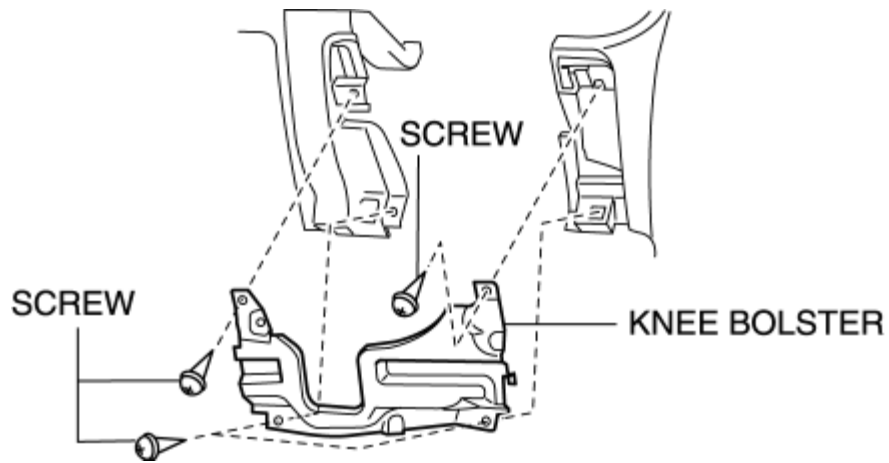


2. Remove the fasteners, then remove the trunk lid trim.
3. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

KNEE BOLSTER REMOVAL/INSTALLATION

1. Remove the lower panel. (See [LOWER PANEL REMOVAL/INSTALLATION.](#))
2. Remove the screws.



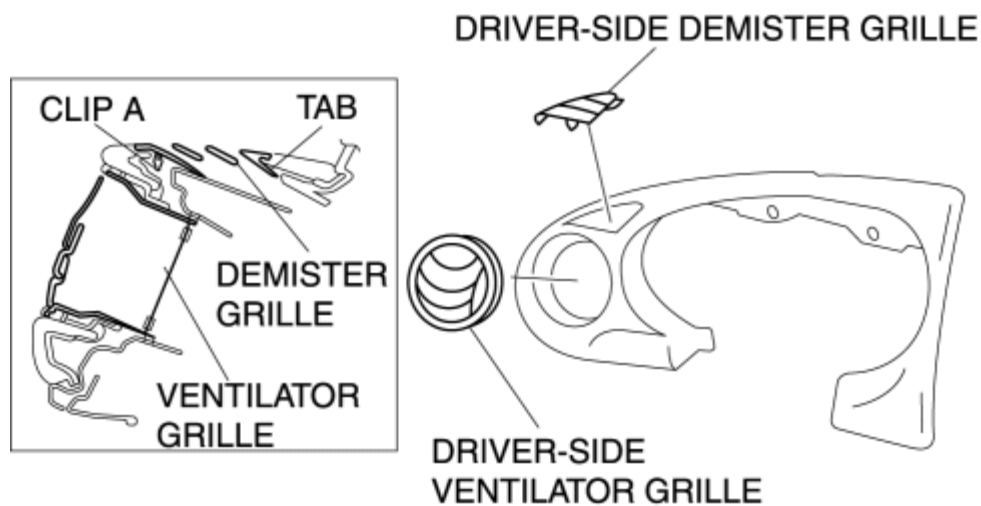
3. Remove the knee bolster.
4. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

VENTILATOR GRILLE REMOVAL/INSTALLATION

Driver's Side

1. Disconnect the negative battery cable.
2. Remove the column cover. (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
3. Remove the instrument cluster. (See [INSTRUMENT CLUSTER REMOVAL/INSTALLATION](#).)
4. Remove the dashboard garnish. (See [DASHBOARD GARNISH REMOVAL/INSTALLATION](#).)
5. Pull the driver-side demister grille upward and detach clip A.

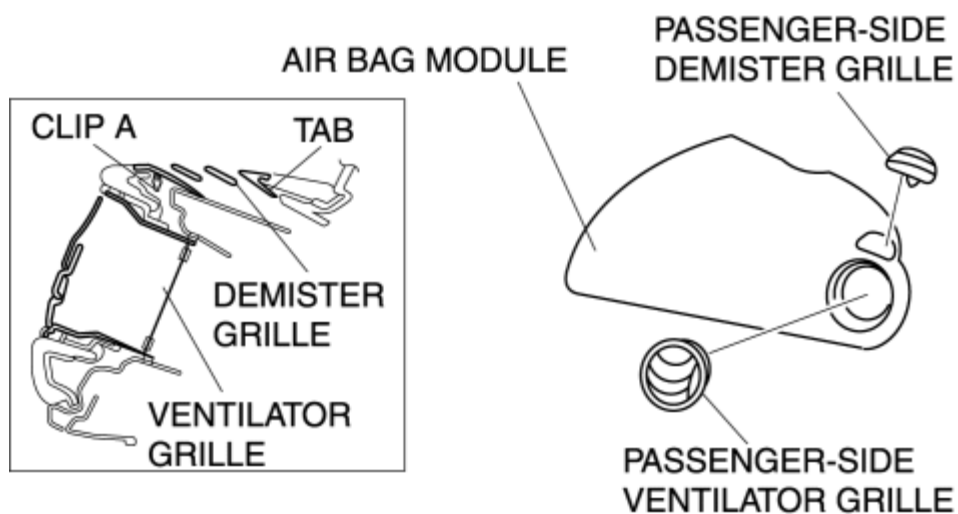


6. Pull the driver-side demister grille outward and remove it.
7. Install in the reverse order of removal.

Passenger's Side

1. Disconnect the negative battery cable. and wait the one minute.
2. Remove the glove compartment. (See [GLOVE COMPARTMENT REMOVAL/INSTALLATION](#).)
3. Remove the passenger-side air bag module. (See [PASSENGER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION](#).)

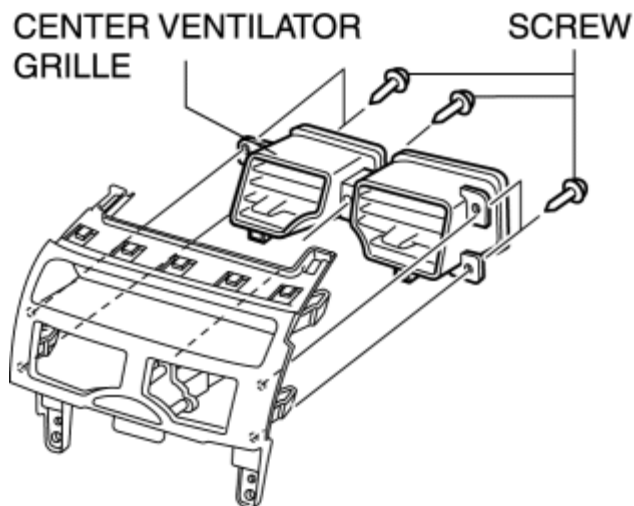
4. Pull the passenger-side demister grille upward and detach clip A.



5. Pull the passenger-side demister grille outward and remove it.
6. Install in the reverse order of removal.

Center

1. Remove the center panel. (See [CENTER PANEL REMOVAL/INSTALLATION](#).)
2. Remove the screws.



3. Install in the reverse order of removal.

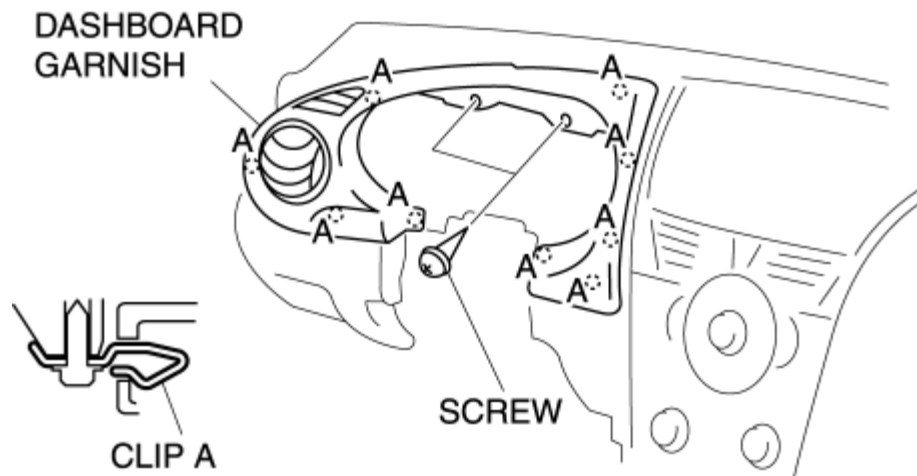
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

DASHBOARD GARNISH REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the column cover. (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
3. Remove the instrument cluster. (See [INSTRUMENT CLUSTER REMOVAL/INSTALLATION](#).)
4. Remove the screws.



5. Pull the dashboard garnish outward, and detach clips A.
6. Remove the dashboard garnish.
7. Install in the reverse order of removal.

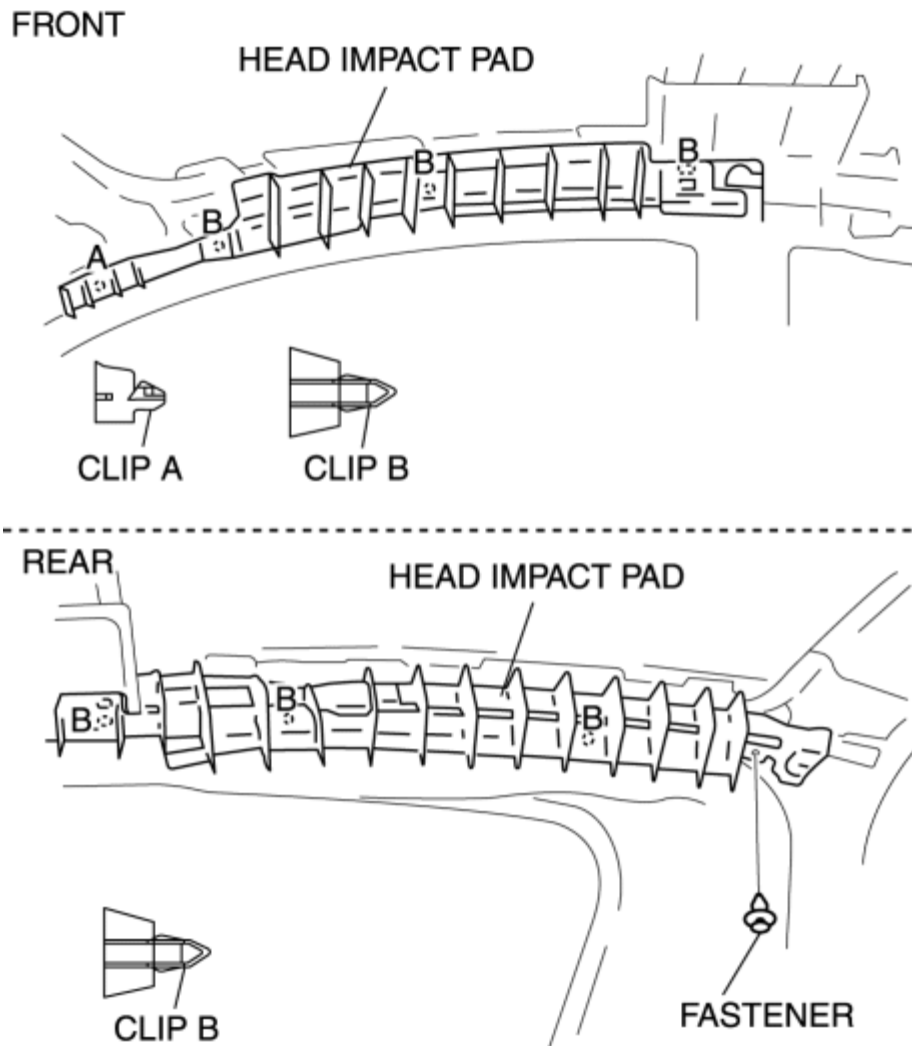
2011 - RX-8 - Body and Accessories

HEAD IMPACT PAD REMOVAL/INSTALLATION

1. Remove the following parts:

- a. Weatherstrip (See GLASS PANEL REMOVAL/INSTALLATION.)
- b. Roof side trim (See [ROOF SIDE TRIM REMOVAL/INSTALLATION.](#))
- c. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION.](#))
- d. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
- e. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
- f. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
- g. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
- h. Map light (See [MAP LIGHT REMOVAL/INSTALLATION.](#))
- i. Interior light (See [INTERIOR LIGHT REMOVAL/INSTALLATION.](#))
- j. Sunvisor (See [SUNVISOR REMOVAL/INSTALLATION.](#))
- k. Assist handle (See [ASSIST HANDLE REMOVAL/INSTALLATION.](#))
- l. Headliner (See [HEADLINER REMOVAL/INSTALLATION.](#))

2. Remove the fastener.(Rear)



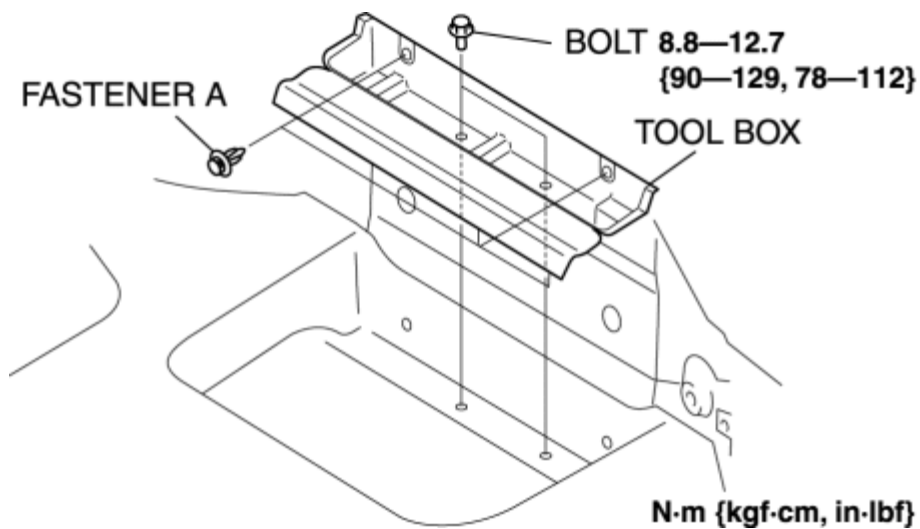
3. Pull the head impact pad outward and detach clips A and B.(Front)
4. Pull the head impact pad outward and detach clips B.(Rear)
5. Remove the head impact pad.
6. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

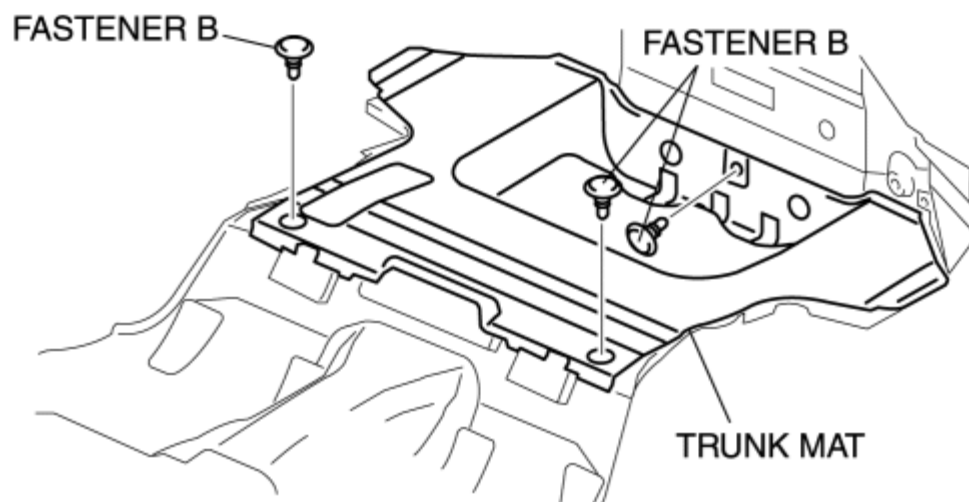
2011 - RX-8 - Body and Accessories

TRUNK MAT REMOVAL/INSTALLATION

1. Remove the trunk end trim. (See [TRUNK END TRIM REMOVAL/INSTALLATION](#).)
2. Remove the trunk side trim. (See [TRUNK SIDE TRIM REMOVAL/INSTALLATION](#).)
3. Remove the fasteners A and bolts, then remove the tool box.



4. Remove the fasteners B, then remove the trunk mat.

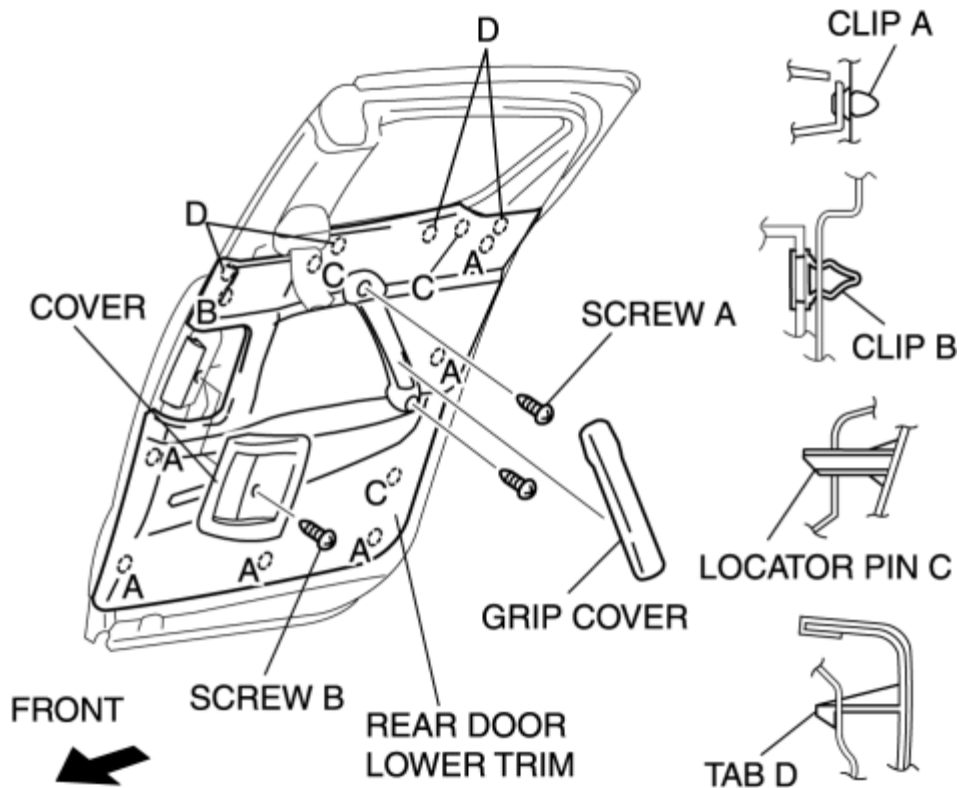


5. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

REAR DOOR LOWER TRIM REMOVAL/INSTALLATION

1. Remove the grip cover, then remove screws A.

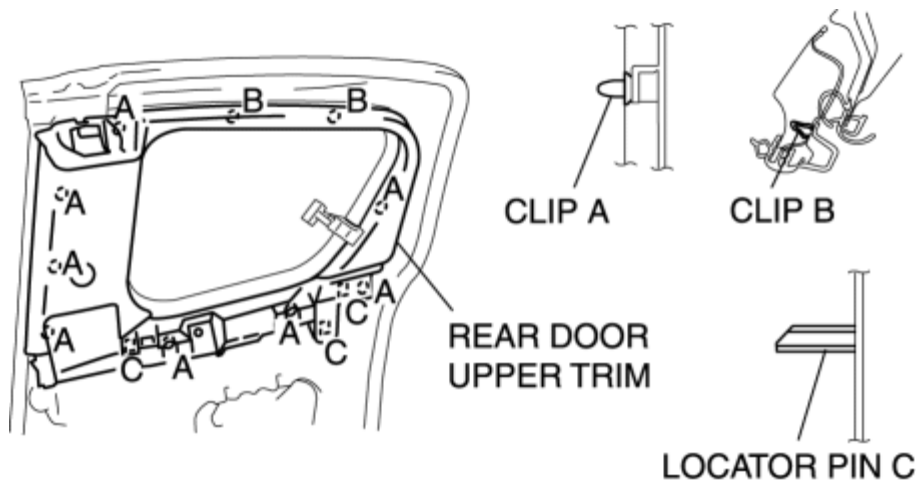


2. Using a small flathead screwdriver, open the cap and remove screw B.
3. Remove the cover while rotating it to the front.
4. Detach clips A, B, locator pins C, and tabs D from the rear door using a fastener remover.
5. Remove the rear door lower trim.
6. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

REAR DOOR UPPER TRIM REMOVAL/INSTALLATION

1. Remove the upper anchor of the front seat belt. (See [FRONT SEAT BELT REMOVAL/INSTALLATION](#).)
2. Remove the rear door lower trim. (See [REAR DOOR LOWER TRIM REMOVAL/INSTALLATION](#).)
3. Pull the rear door upper trim outward and detach clips A, B and locator pins C from the body.

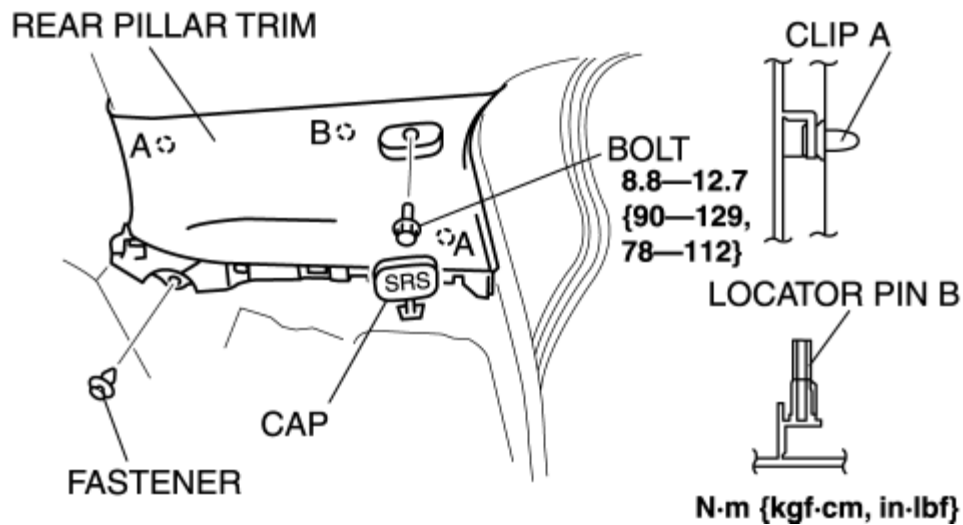


4. Remove the rear door upper trim.
5. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

REAR PILLAR TRIM REMOVAL/INSTALLATION

1. Remove the rear seat. (See [REAR SEAT REMOVAL/INSTALLATION](#).)
2. Remove the inner scuff plate. (See [INNER SCUFF PLATE REMOVAL/INSTALLATION](#).)
3. Remove the tire house trim. (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION](#).)
4. Remove the cap using a fastener remover. (Vehicles with curtain air bags)

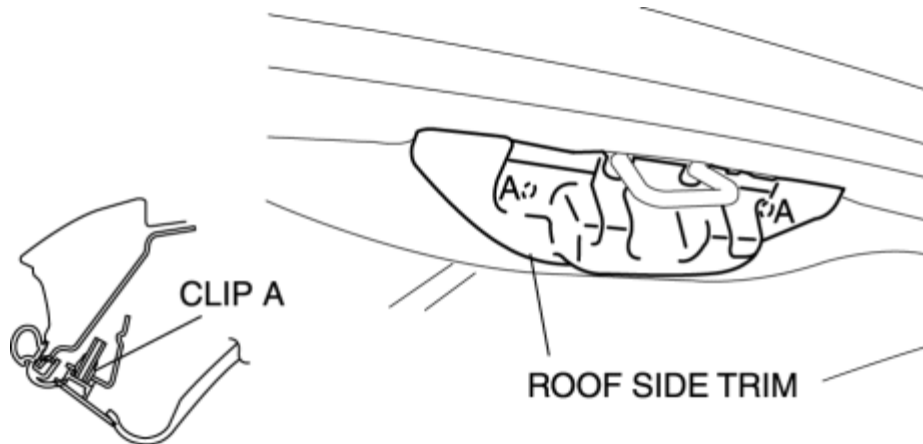


5. Remove the bolt. (Vehicles with curtain air bags)
6. Remove the fastener.
7. Detach clips A and locator pin B, using a fastener remover, and remove the rear pillar trim.
8. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

ROOF SIDE TRIM REMOVAL/INSTALLATION

1. Partially peel back the seaming welt.
2. Pull the roof side trim outward, detach clips A, and then remove the roof side trim.

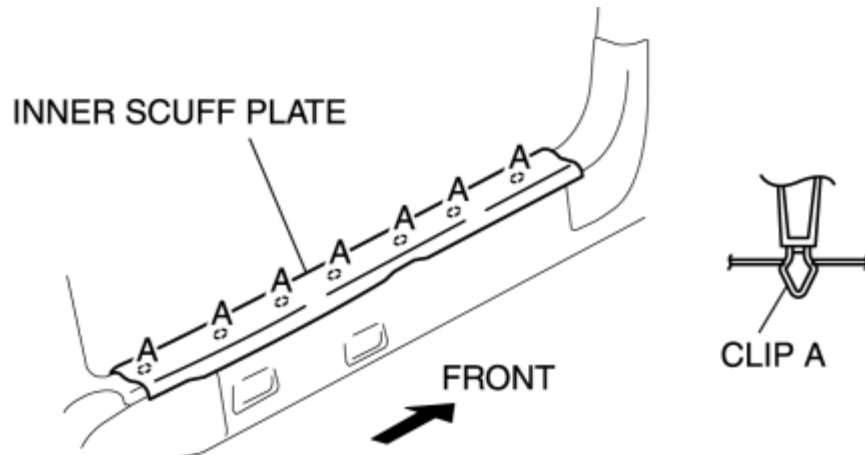


3. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

INNER SCUFF PLATE REMOVAL/INSTALLATION

1. Pull the inner scuff plate upward, detach clips A from the body, and then remove the inner scuff plate.

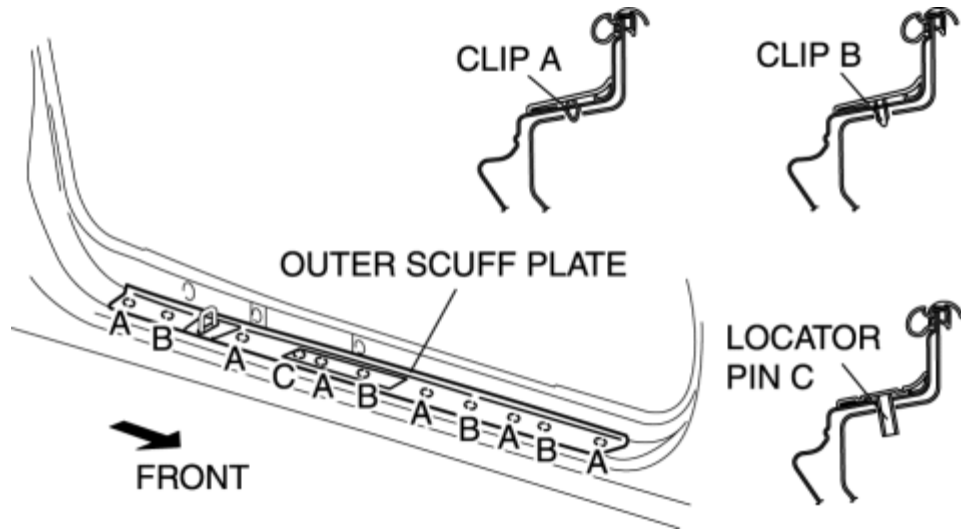


2. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

OUTER SCUFF PLATE REMOVAL/INSTALLATION

1. Pull the outer scuff plate upward, detach clips A, B, and locator pin C from the body, and then remove the outer scuff plate.

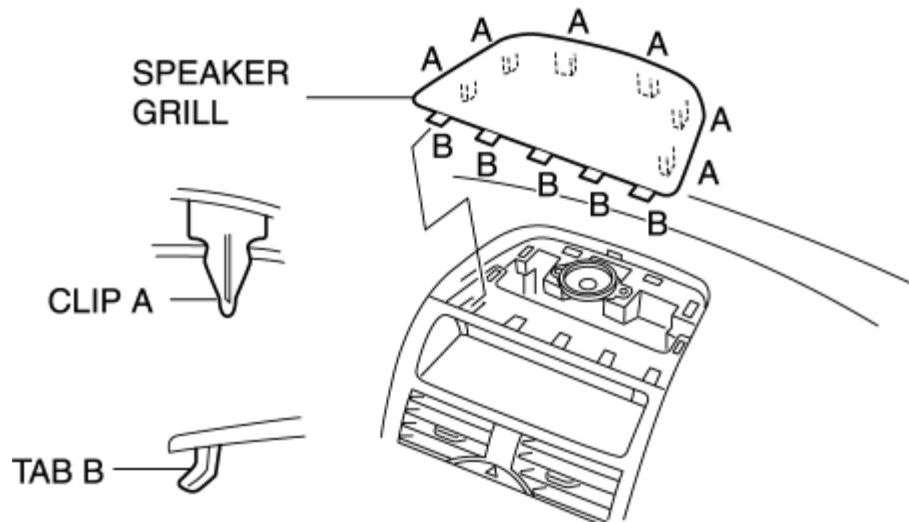


2. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

SPEAKER GRILLE REMOVAL/INSTALLATION

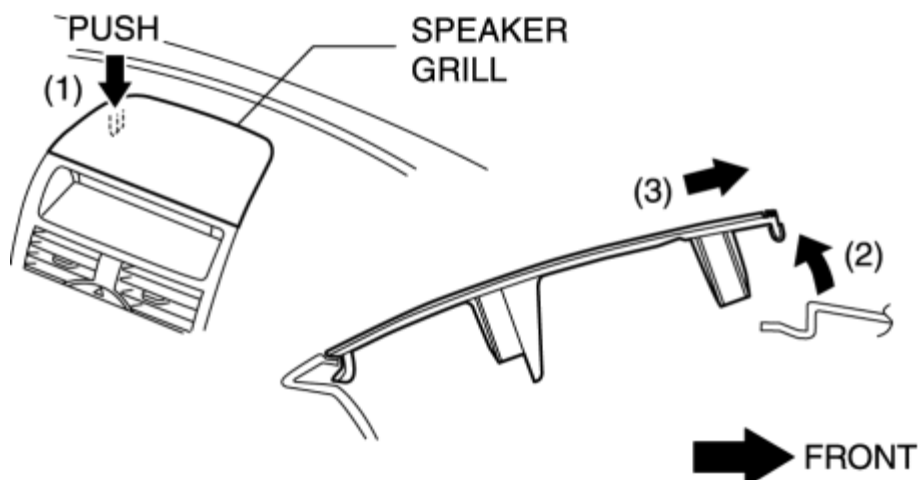
1. Remove the clips A on the speaker grille. (See [Speaker Grille Removal Note](#).)



2. Pull out the speaker grille with the tab B at the core.
3. Install in the reverse order of removal.

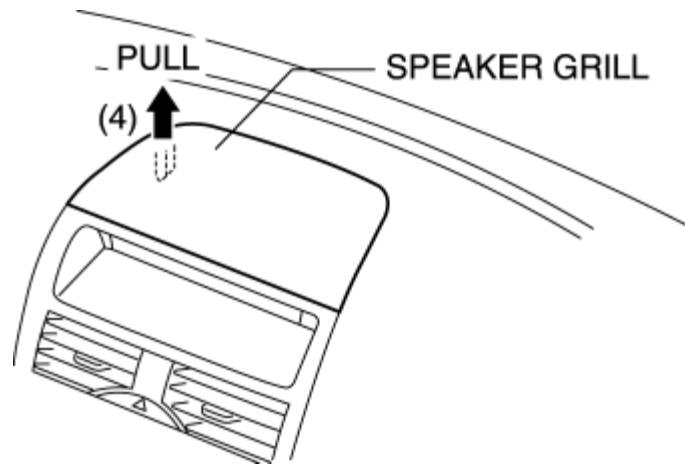
Speaker Grille Removal Note

1. Push the part (1), starting point, as shown in the figure.



2. Lift it up in the direction of the arrow (2), (3) and pull it out as shown in the figure.

3. Uninstall the speaker grill by lifting it up in the direction of (4).



[< Previous](#) [Next >](#)

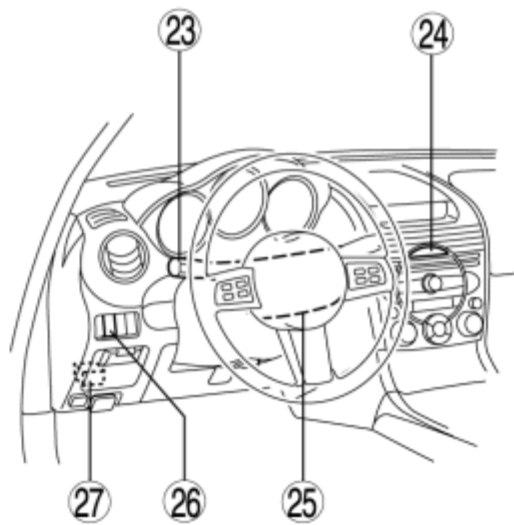
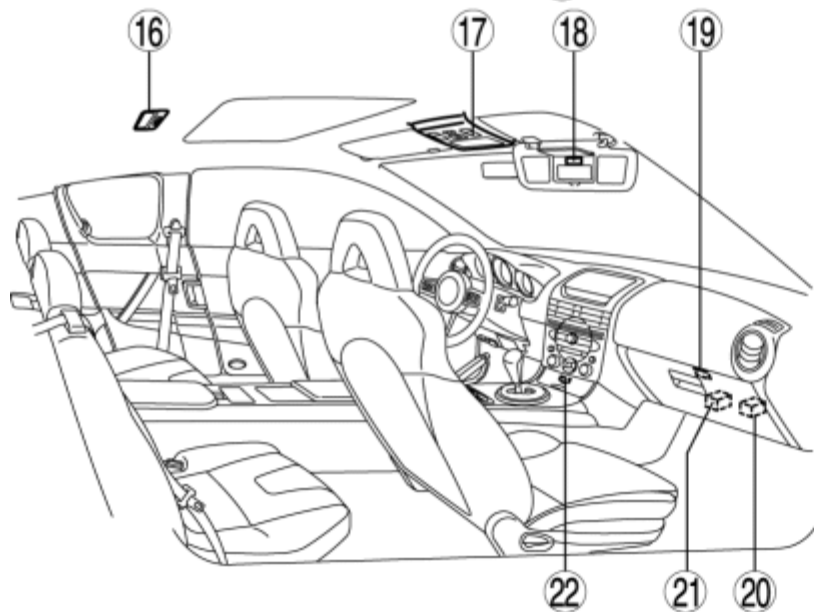
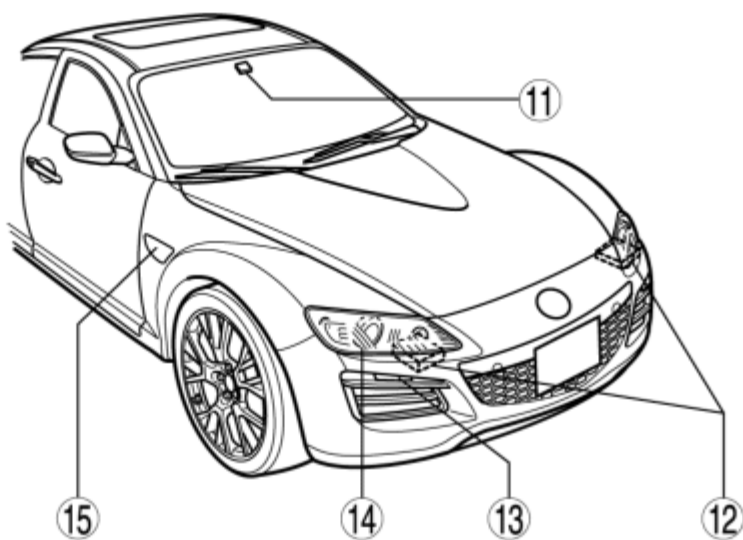
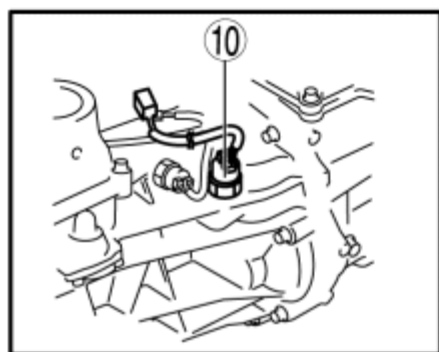
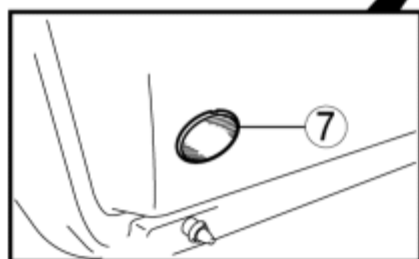
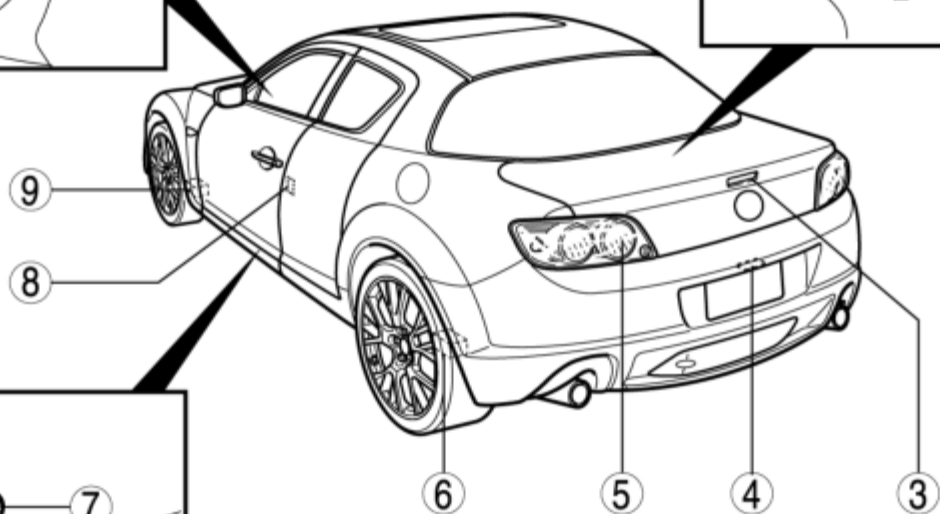
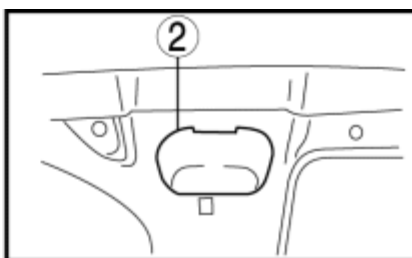
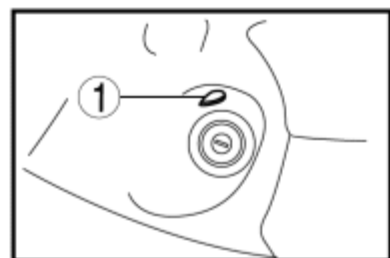
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

LIGHTING SYSTEMS LOCATION INDEX



1	Ignition key illumination (See IGNITION KEY ILLUMINATION BULB REMOVAL/INSTALLATION.)
2	Trunk compartment light (See TRUNK COMPARTMENT LIGHT BULB REMOVAL/INSTALLATION.)
3	High-mount brake light (See HIGH-MOUNT BRAKE LIGHT REMOVAL/INSTALLATION.)
4	License plate light (See LICENSE PLATE LIGHT BULB REMOVAL/INSTALLATION.) (See LICENSE PLATE LIGHT REMOVAL/INSTALLATION.)
5	Rear combination light (See REAR COMBINATION LIGHT REMOVAL/INSTALLATION.)
6	Rear auto leveling sensor (See REAR AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
7	Courtesy light (See COURTESY LIGHT BULB REMOVAL/INSTALLATION.)
8	Door switch (See DOOR SWITCH REMOVAL/INSTALLATION.) (See DOOR SWITCH INSPECTION.)
9	Front auto leveling sensor (See FRONT AUTO LEVELING SENSOR REMOVAL/INSTALLATION.)
10	Back-up light switch (See BACK-UP LIGHT SWITCH REMOVAL/INSTALLATION.) (See BACK-UP LIGHT SWITCH INSPECTION.)

11	<p>Auto light sensor</p> <p>(See RAIN SENSOR REMOVAL/INSTALLATION.)</p> <p>(See RAIN SENSOR INITIALIZATION SETTING.)</p>
12	<p>Discharge headlight control module</p> <p>(See DISCHARGE HEADLIGHT SYSTEM INSPECTION.)</p>
13	<p>Front fog light</p> <p>(See FRONT FOG LIGHT REMOVAL/INSTALLATION.)</p> <p>(See FRONT FOG LIGHT AIMING.)</p> <p>(See FRONT FOG LIGHT BULB REMOVAL/INSTALLATION.)</p>
14	<p>Front combination light</p> <p>(See FRONT COMBINATION LIGHT REMOVAL/INSTALLATION.)</p> <p>(See HEADLIGHT AIMING.)</p> <p>(See HEADLIGHT BULB REMOVAL/INSTALLATION.)</p> <p>(See FRONT TURN LIGHT BULB REMOVAL/INSTALLATION.)</p> <p>(See DISCHARGE HEADLIGHT SERVICE WARNINGS.)</p>
15	<p>Front side turn light</p> <p>(See FRONT SIDE TURN LIGHT REMOVAL/INSTALLATION.)</p>
16	<p>Interior light</p> <p>(See INTERIOR LIGHT REMOVAL/INSTALLATION.)</p> <p>(See INTERIOR LIGHT INSPECTION.)</p>
17	<p>Map light</p> <p>(See MAP LIGHT REMOVAL/INSTALLATION.)</p> <p>(See MAP LIGHT INSPECTION.)</p>
18	<p>Vanity mirror illumination</p> <p>(See VANITY MIRROR ILLUMINATION BULB REMOVAL/INSTALLATION.)</p>

19	Glove compartment light (See GLOVE COMPARTMENT LIGHT BULB REMOVAL/INSTALLATION.)
20	Auto leveling control module (See AUTO LEVELING CONTROL MODULE REMOVAL/INSTALLATION.)
21	Auto light/wiper control module (See AUTO LIGHT ILLUMINATION LEVEL SETTING.) (See AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION.) (See AUTO LIGHT/WIPER CONTROL MODULE INSPECTION.)
22	Ashtray illumination (See ASHTRAY ILLUMINATION BULB REMOVAL/INSTALLATION.)
23	Light switch (See LIGHT SWITCH REMOVAL/INSTALLATION.) (See LIGHT SWITCH INSPECTION.) (See FRONT FOG LIGHT SWITCH INSPECTION.)
24	Hazard warning switch (See HAZARD WARNING SWITCH REMOVAL/INSTALLATION.) (See HAZARD WARNING SWITCH INSPECTION.)
25	Combination switch (See COMBINATION SWITCH REMOVAL/INSTALLATION.) (See COMBINATION SWITCH DISASSEMBLY/ASSEMBLY.)
26	Flasher control module (See FLASHER CONTROL MODULE REMOVAL/INSTALLATION.) (See FLASHER CONTROL MODULE INSPECTION.)
27	Panel light control switch (See PANEL LIGHT CONTROL SWITCH REMOVAL/INSTALLATION.)

(See [PANEL LIGHT CONTROL SWITCH INSPECTION.](#))

[< Previous](#) [Next >](#)

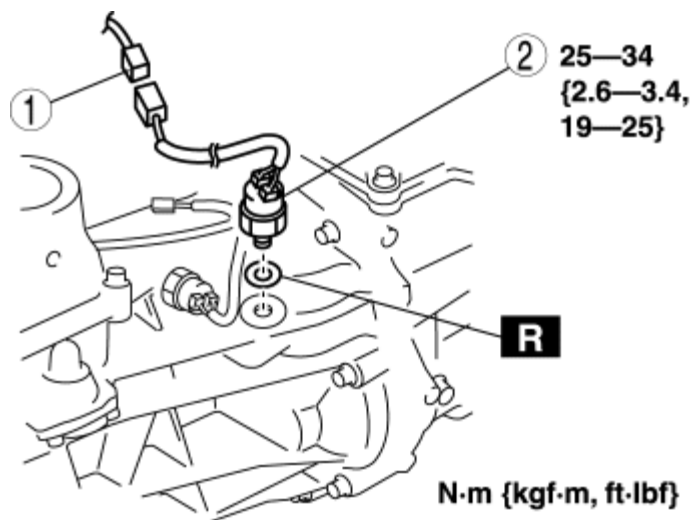
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

BACK-UP LIGHT SWITCH REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the transmission. (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#).)



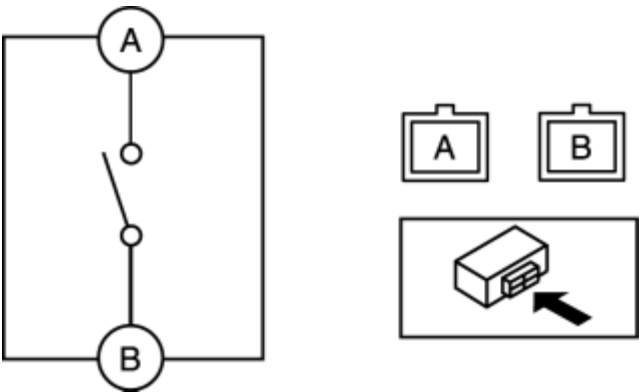
1	Back-up light switch connector
2	Back-up light switch

3. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

BACK-UP LIGHT SWITCH INSPECTION

- 1. Disconnect the back-up light switch connector.
- 2. Verify that the continuity between the back-up light switch terminals is as indicated in the table.



- If not as indicated in the table, replace the back-up light switch.

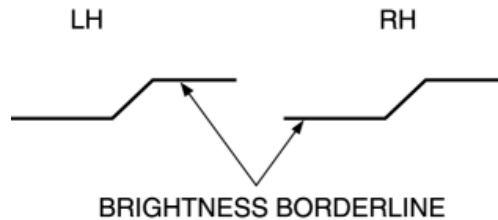
○ — ○ : Continuity

Shift lever position	Terminal	
	A	B
Reverse	○ — ○	○ — ○
Except above		

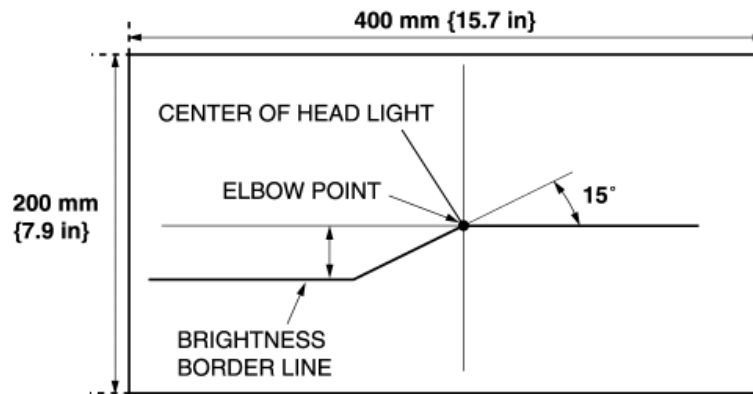
2011 - RX-8 - Body and Accessories

HEADLIGHT AIMING

1. Point the headlight beams to a wall and verify that the headlight beams are as shown in the figure.



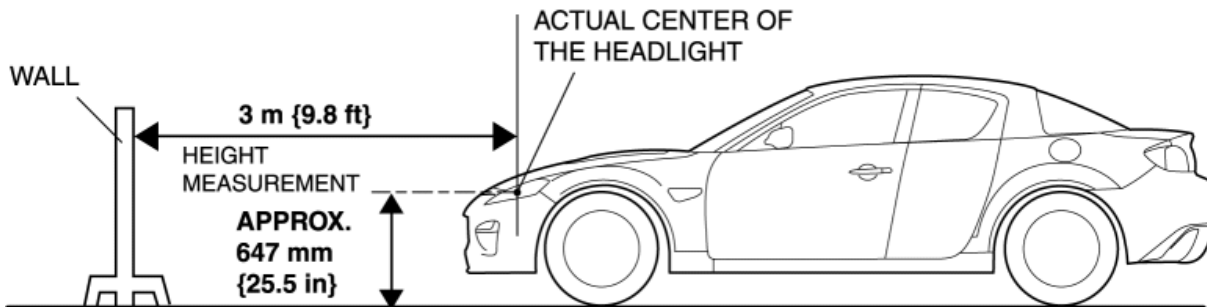
2. Make a headlight adjustment screen as shown in the figure using double-weight, white paper.



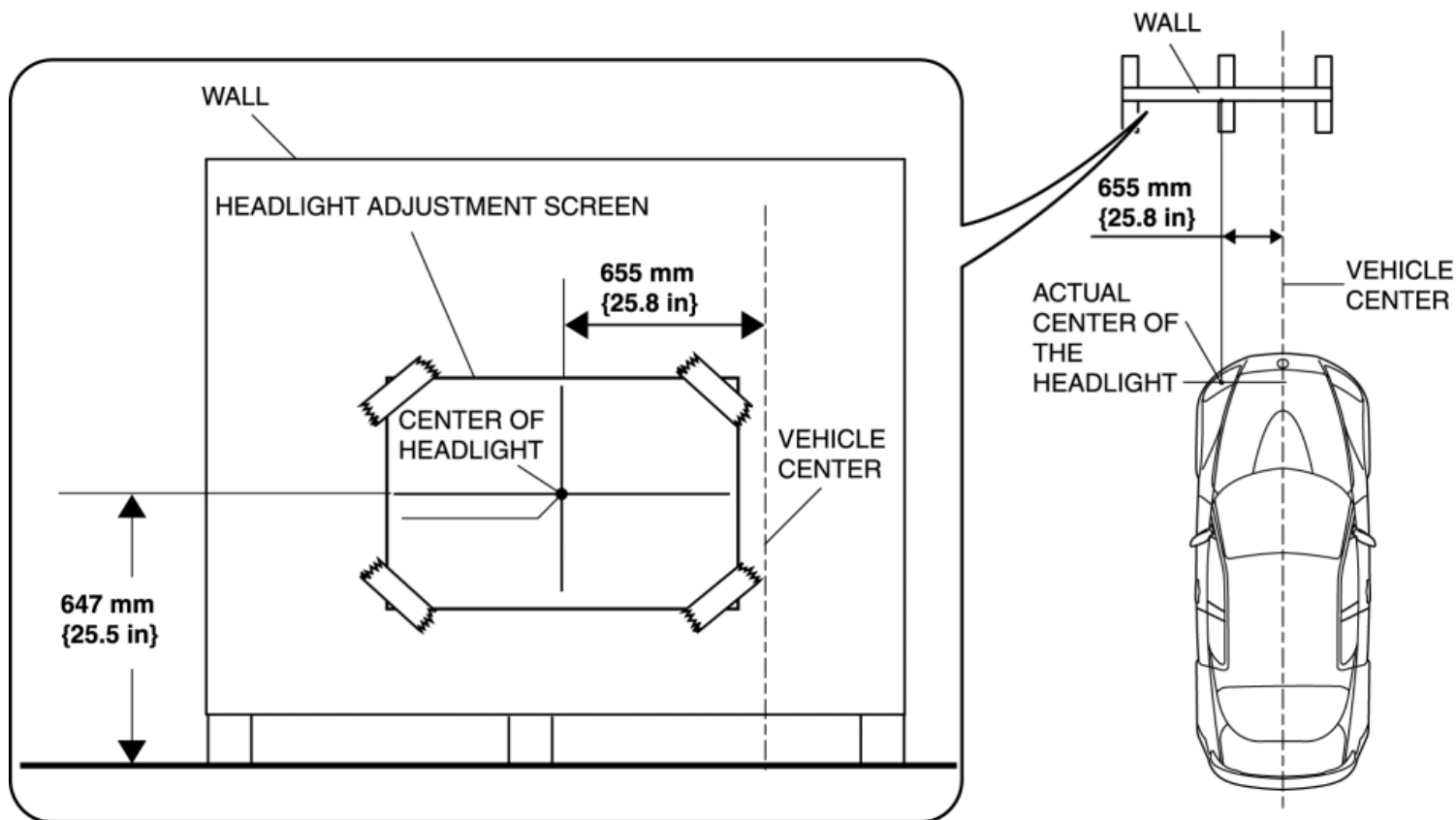
3. Adjust the tire pressure to the specification.
4. Position the unloaded vehicle on a flat, level surface.
5. Seat one person in the driver's seat.
6. Line up the front fog lights with the white screen at a distance of **3 m {9.8 ft}** apart.
7. Measure the height of the center of the headlight.

NOTE:

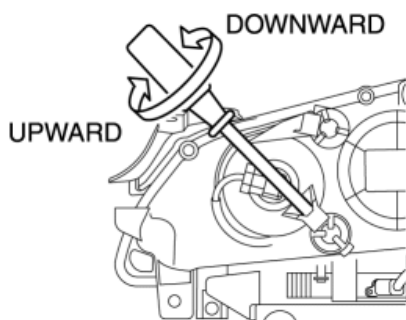
- Since the height of the vehicle varies depending on the vehicle situation, measure the height of the center of the headlight using the actual vehicle.



8. Adjust the center of the adjustment screen to the point **655 mm {25.8 in}** from the center of the vehicle and the measured height in the direction the headlight points, then affix the screen to the wall.



9. Start the engine and charge the battery.
10. Turn on the headlight low beams.
11. Block the light of the headlight which is not adjusted.
12. Verify that the elbow point of the headlight is at the position indicated by the adjustment screen.
 - If the elbow point of the head light is not positioned as indicated in the adjustment screen, align the elbow point so that it is positioned as shown in the adjustment screen by turning the adjustment screw.



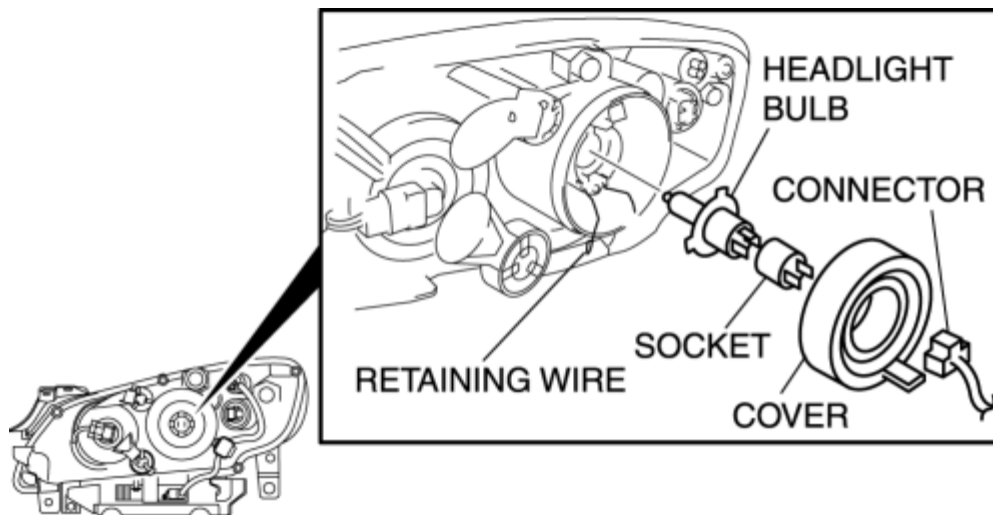
2011 - RX-8 - Body and Accessories

HEADLIGHT BULB REMOVAL/INSTALLATION

Low-beam

Halogen type

1. Disconnect the negative battery cable.
2. Remove the fasteners, then slightly bend back the front mudguard.
3. Disconnect the connector.



CAUTION:

- A halogen bulb generates extremely high heat when it is illuminated. If the surface of the bulb is soiled, excessive heat will build up and the life of the bulb will be shortened. When replacing the bulb, hold the metal flange, not the glass.

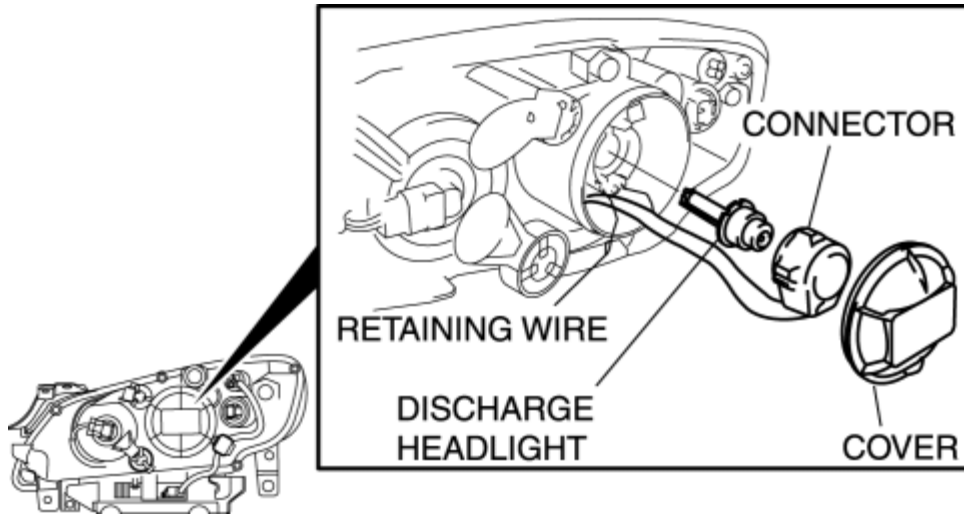
4. Remove the cover.
5. Remove the socket, then remove the headlight bulb.
6. Install in the reverse order of removal.

Discharge type

WARNING:

- Incorrect servicing of the discharge headlights could result in electrical shock. Before servicing the discharge headlights, always refer to the discharge headlight service warnings. (See [DISCHARGE HEADLIGHT SERVICE WARNINGS](#).)

1. Disconnect the negative battery cable.
2. Remove the fasteners, then slightly bend back the front mudguard.
3. Remove the cover.



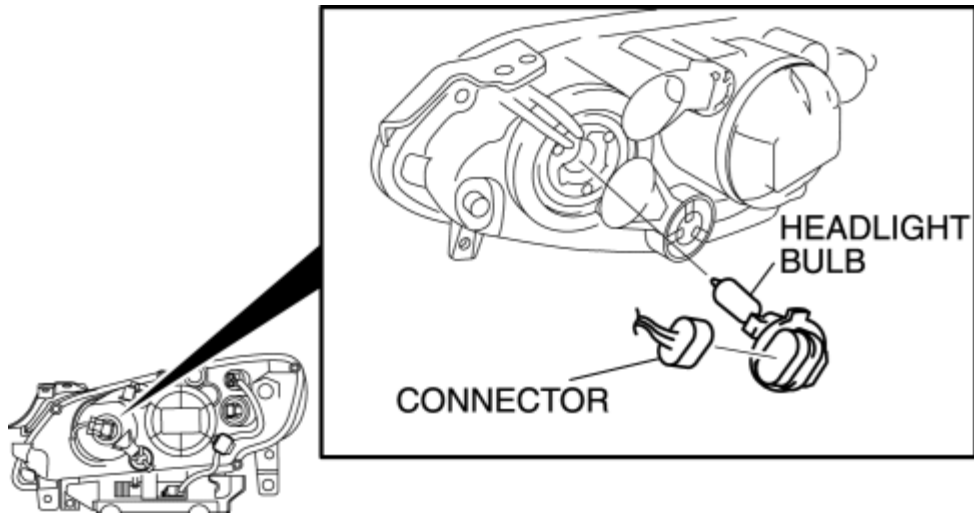
CAUTION:

- The discharge headlight generates extremely high heat when it is illuminated. If the surface of the discharge headlight is soiled, excessive heat will build up and the life of the discharge headlight will be shortened. When replacing the discharge headlight, hold the metal flange, not the glass.

4. Remove the connector.
5. Remove the discharge headlight.
6. Install in the reverse order of removal.

High-beam

1. Disconnect the negative battery cable.
2. Remove the fasteners, then slightly bend back the front mudguard.
3. Disconnect the connector.



CAUTION:

- A halogen bulb generates extremely high heat when it is illuminated. If the surface of the bulb is soiled, excessive heat will build up and the life of the bulb will be shortened. When replacing the bulb, hold the metal flange, not the glass.

4. Remove the headlight bulb.
5. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

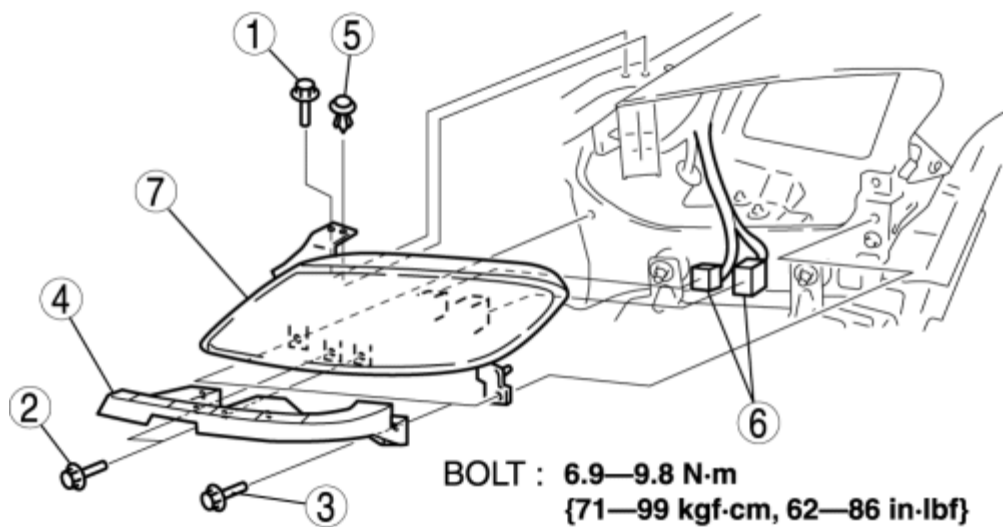
2011 - RX-8 - Body and Accessories

FRONT COMBINATION LIGHT REMOVAL/INSTALLATION

WARNING:

- Incorrect servicing of the discharge headlights could result in electrical shock. Before servicing the discharge headlights, always refer to the discharge headlight service warnings. (See [DISCHARGE HEADLIGHT SERVICE WARNINGS](#).)

1. Disconnect the negative battery cable.
2. Remove the front bumper. (See[FRONT BUMPER REMOVAL/INSTALLATION](#).)
3. Remove in the order indicated in the table.



1	Bolt A
2	Bolt B
3	Bolt C
4	Cover
5	Fastener

6	Connector
7	Front combination light

4. Install in the reverse order of removal.
5. Adjust the headlight aiming. (See[HEADLIGHT AIMING](#))

[< Previous](#) [Next >](#)

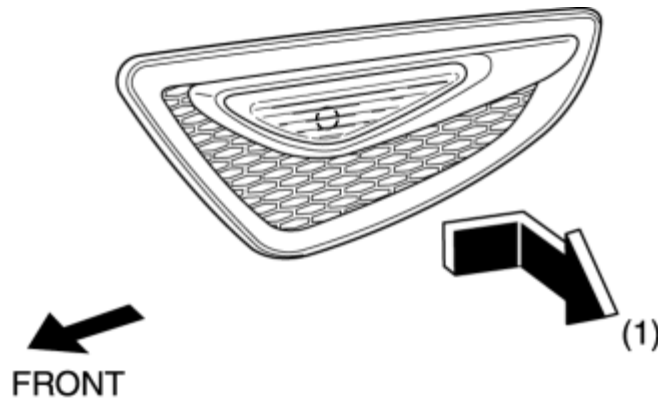
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

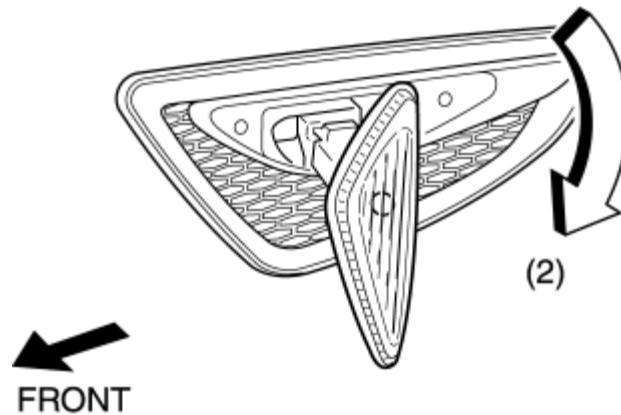
2011 - RX-8 - Body and Accessories

FRONT SIDE TURN LIGHT REMOVAL/INSTALLATION

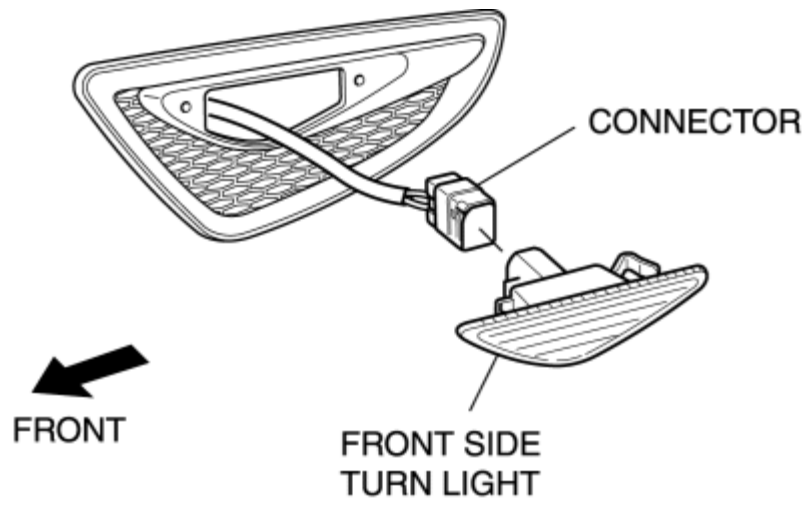
1. Disconnect the negative battery cable.
2. Push the front side turn light in the direction of the arrow (1) and pull it out.



3. Turn the front side turn light in the direction of the arrow (2).



4. Disconnect the connector.



5. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

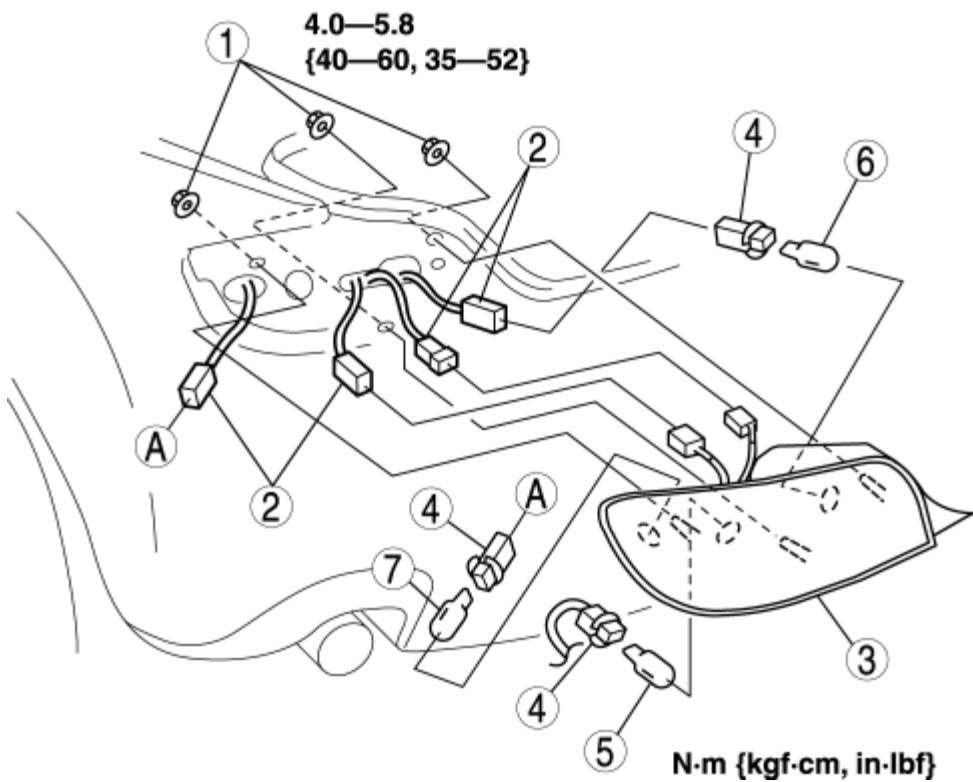
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

REAR COMBINATION LIGHT REMOVAL/INSTALLATION

- 1. Disconnect the negative battery cable.
- 2. Remove the trunk end trim. (See [TRUNK END TRIM REMOVAL/INSTALLATION](#).)
- 3. Remove the trunk side trim. (See [TRUNK SIDE TRIM REMOVAL/INSTALLATION](#).)
- 4. Remove in the order indicated in the table.



1	Nut
2	Connector
3	Rear combination light
4	Socket

5	Rear turn light bulb
6	Back-up light bulb
7	Rear side marker light bulb

5. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

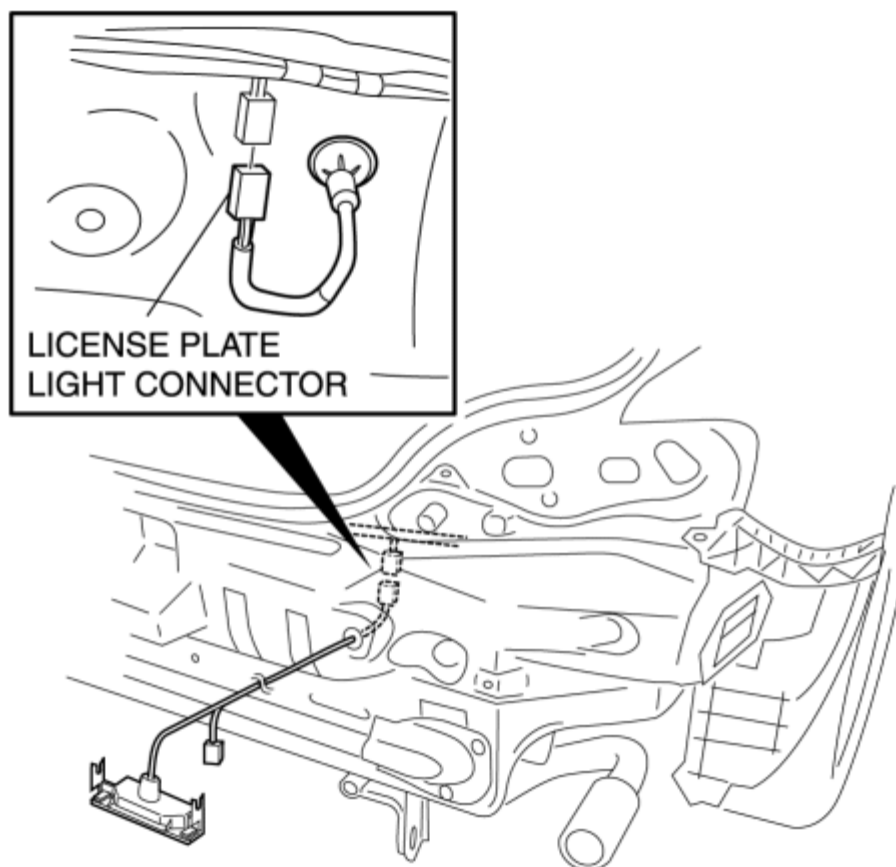
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

LICENSE PLATE LIGHT REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Trunk end trim (See [TRUNK END TRIM REMOVAL/INSTALLATION](#).)
 - b. Trunk side trim (See [TRUNK SIDE TRIM REMOVAL/INSTALLATION](#).)
 - c. Rear combination light (See [REAR COMBINATION LIGHT REMOVAL/INSTALLATION](#).)
 - d. Request switch (Vehicles with the advanced keyless system) (See [REQUEST SWITCH REMOVAL/INSTALLATION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#).)
 - e. Detach the license plate light from the rear bumper.
 - f. Rear bumper (See [REAR BUMPER REMOVAL/INSTALLATION](#).)
3. Disconnect the license plate light connector and remove the license plate light.



4. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

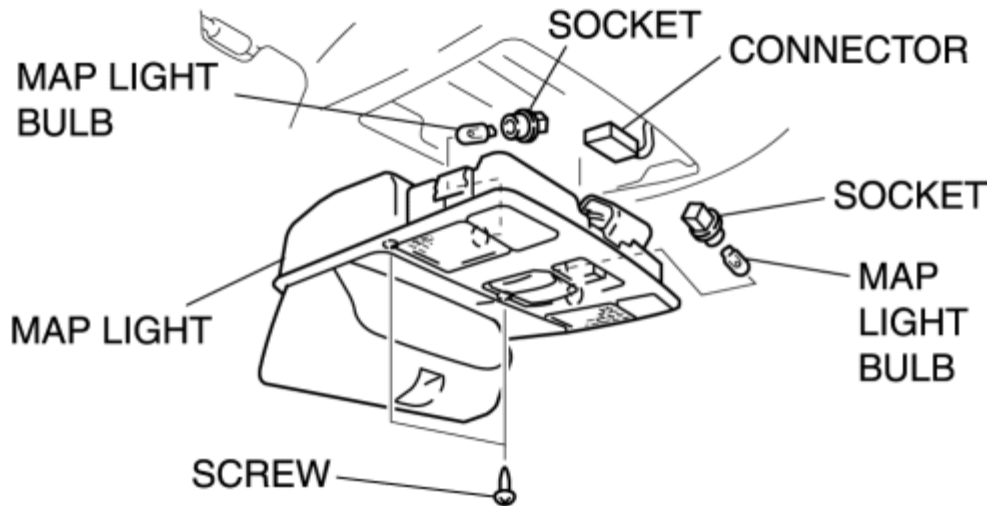
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

MAP LIGHT REMOVAL/INSTALLATION

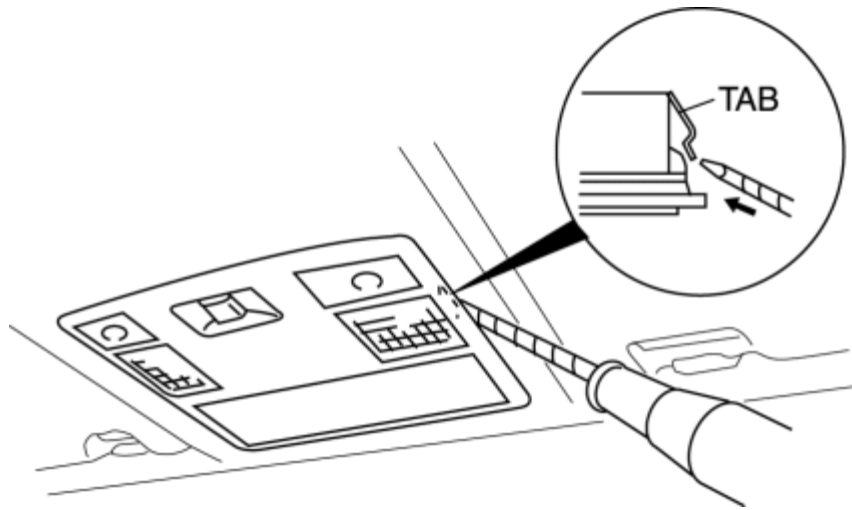
1. Disconnect the negative battery cable.
2. Remove the screws.



3. Remove the map light. (See [Map Light Removal Note](#).)
4. Disconnect the connector.
5. Remove the socket, then remove the map light bulb.
6. Install in the reverse order of removal.

Map Light Removal Note

1. Insert a tape-wrapped flathead screwdriver into the gap between the headliner and the map light.
2. Press the tab, and remove the map light.



[< Previous](#) [Next >](#)

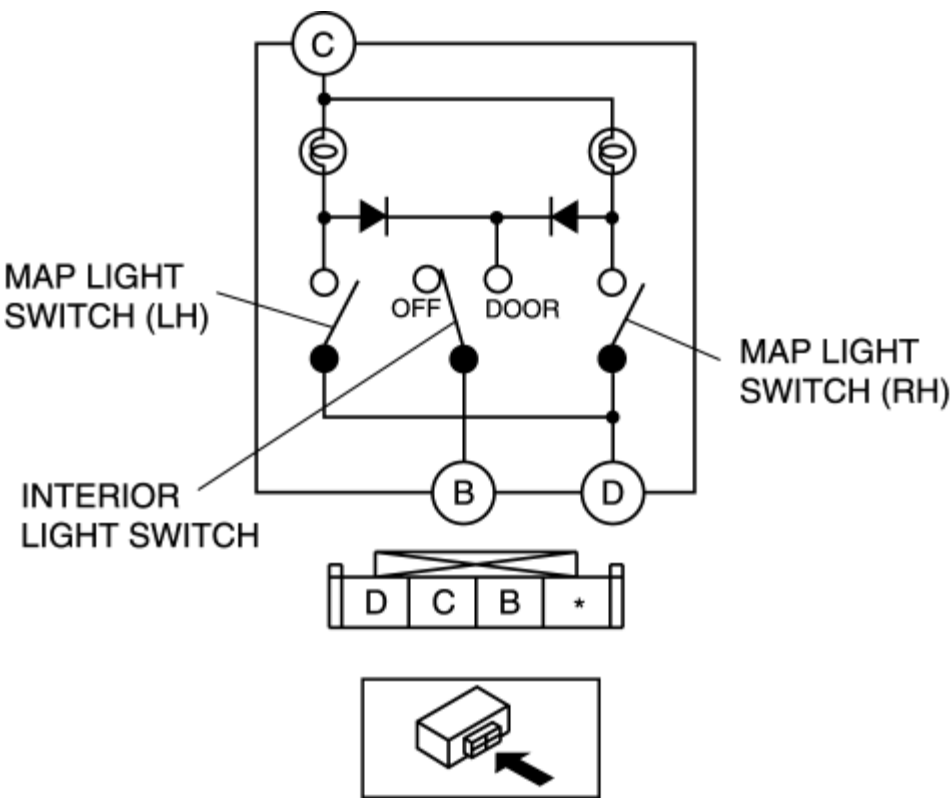
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)


2011 - RX-8 - Body and Accessories





MAP LIGHT INSPECTION

- 1. Remove the map light. (See [MAP LIGHT REMOVAL/INSTALLATION.](#))
- 2. Verify that the continuity between the map light terminals is as indicated in the table.



- If not as indicated in the table, replace the map light.

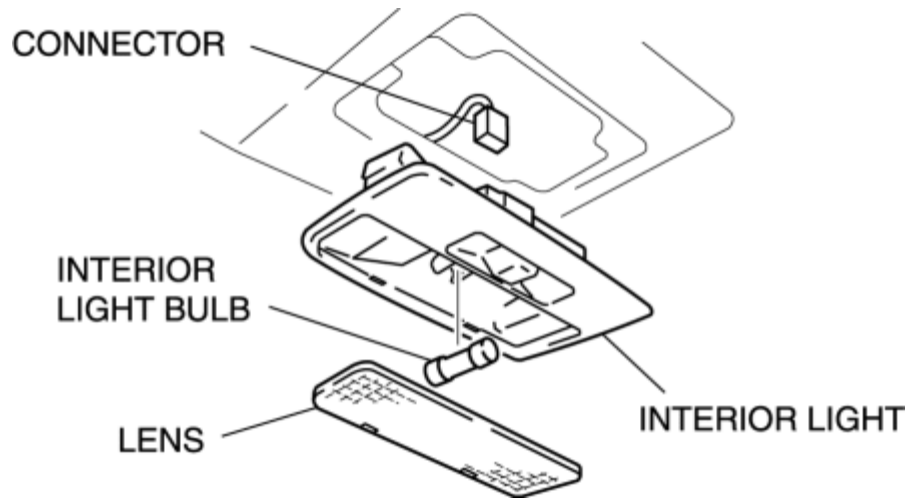
 : Bulb

Switch position		Terminal		
Map light switch	Interior light switch	B	C	D
ON	-			
-	DOOR			
	OFF			

2011 - RX-8 - Body and Accessories

INTERIOR LIGHT REMOVAL/INSTALLATION

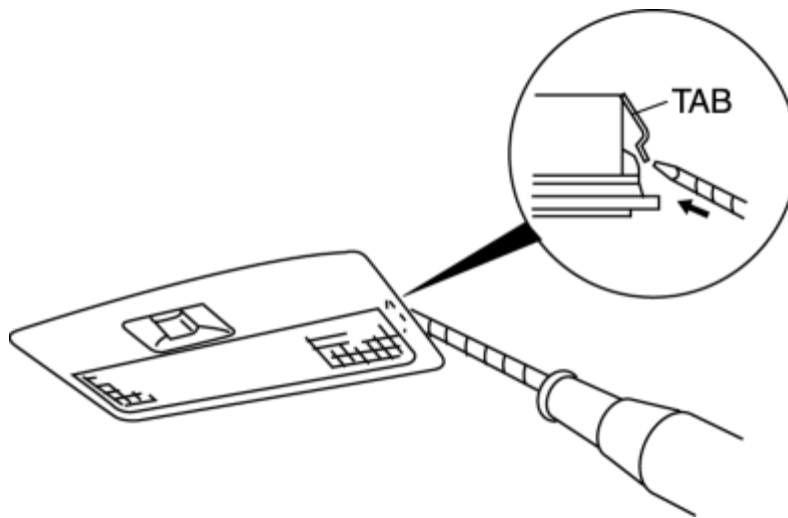
1. Disconnect the negative battery cable.
2. Remove the lens. (See [Lens Removal Note](#).)
3. Remove the interior light bulb.
4. Remove the interior light. (See [Interior Light Removal Note](#).)



5. Disconnect the connector.
6. Install in the reverse order of removal.

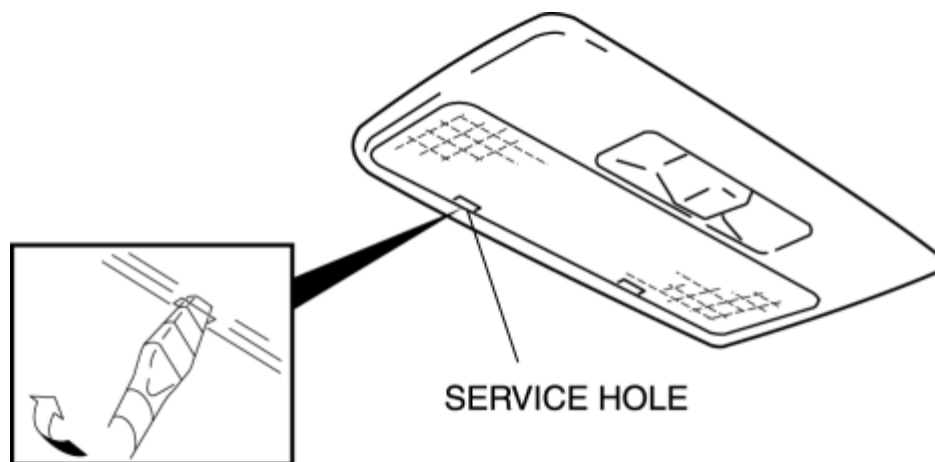
Interior Light Removal Note

1. Insert a tape-wrapped flathead screwdriver into the gap between the headliner and the interior light.
2. Press the tab, and remove the interior light.



Lens Removal Note

1. Insert a tape-wrapped flathead screwdriver into the service hole and pry with the screwdriver in the direction shown by the arrow to remove the lens.



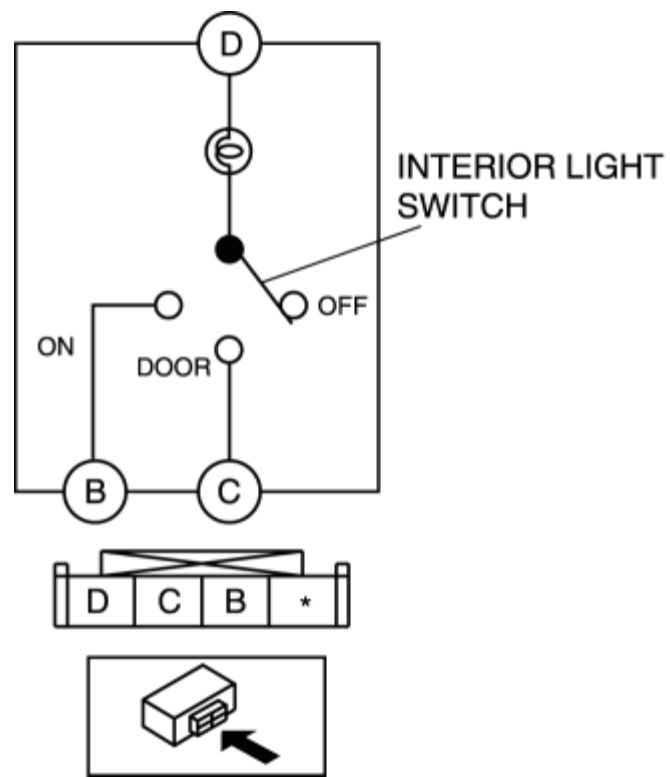
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

INTERIOR LIGHT INSPECTION

- 1. Remove the interior light. (See [INTERIOR LIGHT REMOVAL/INSTALLATION](#).)
- 2. Verify that the continuity between the interior light terminals is as indicated in the table.



- If not as indicated in the table, replace the interior light.

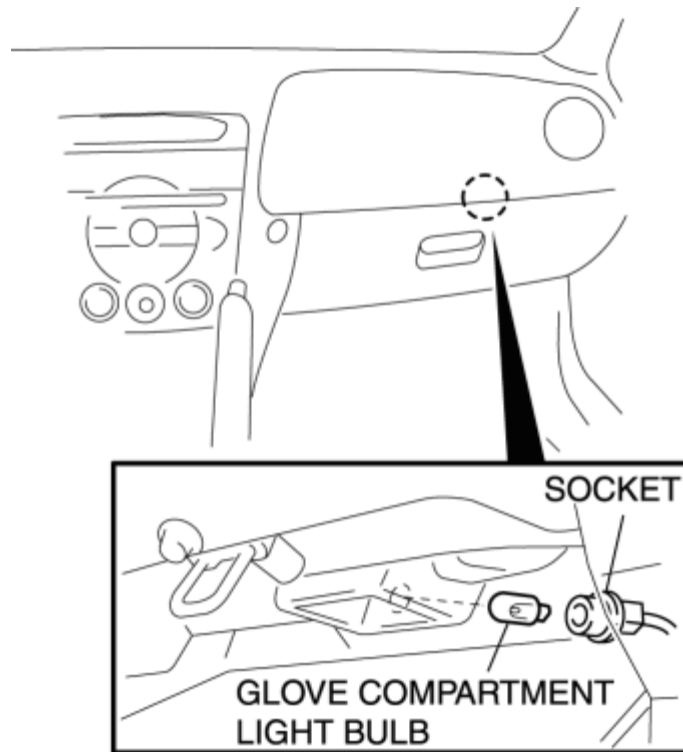
○ — (Bulb) — ○ : Bulb

Switch position	Terminal		
Interior light switch	B	C	D
ON	○ —	(Bulb) —	○
DOOR		○ — (Bulb) —	○
OFF			

2011 - RX-8 - Body and Accessories

GLOVE COMPARTMENT LIGHT BULB REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the socket, then remove the glove compartment light bulb.

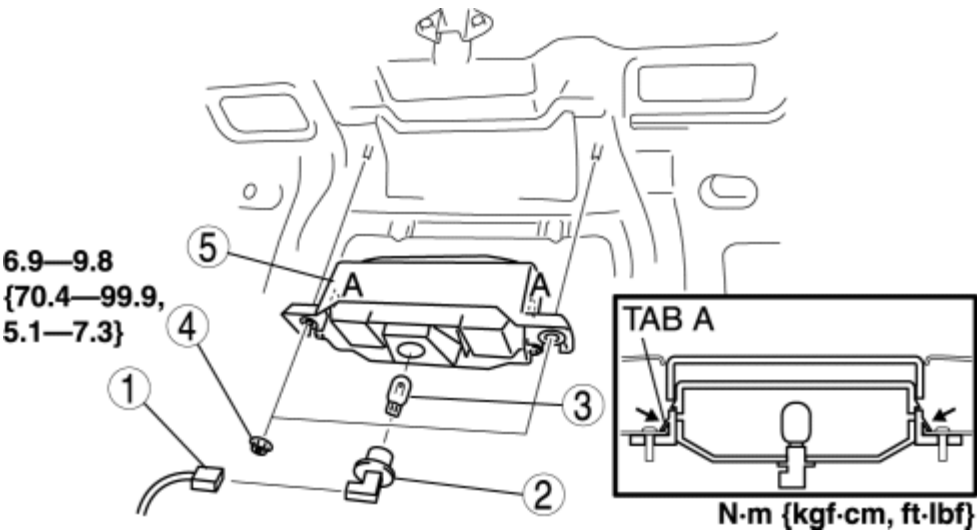


3. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

HIGH-MOUNT BRAKE LIGHT REMOVAL/INSTALLATION

- 1. Disconnect the negative battery cable.
- 2. Remove the trunk lid trim. (See [TRUNK LID TRIM REMOVAL/INSTALLATION](#).)
- 3. Remove in the order indicated in the table.



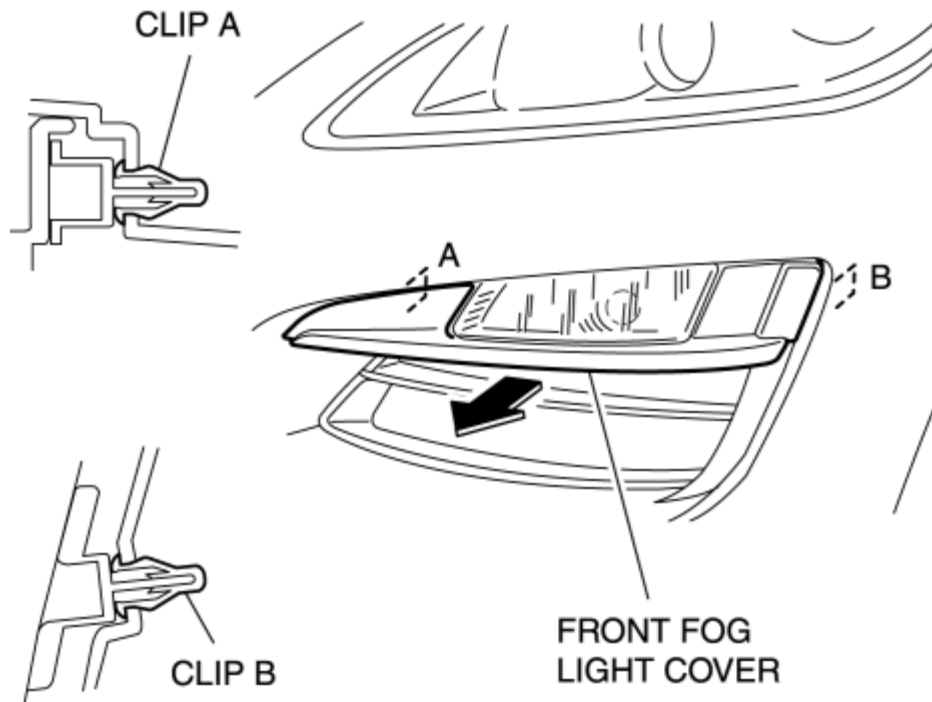
1	Connector
2	Socket
3	High-mount brake light bulb
4	Nut
5	High-mount brake light

- 4. Install in the reverse order of removal.

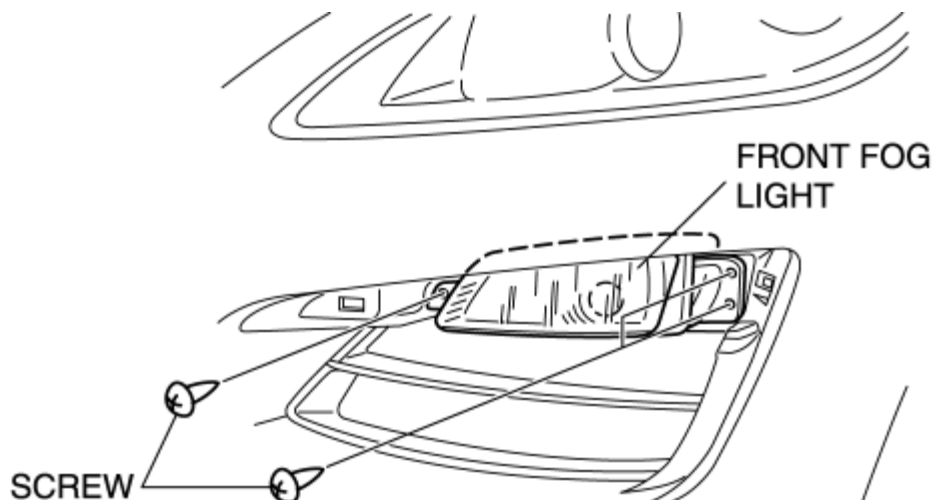
2011 - RX-8 - Body and Accessories

FRONT FOG LIGHT REMOVAL/INSTALLATION

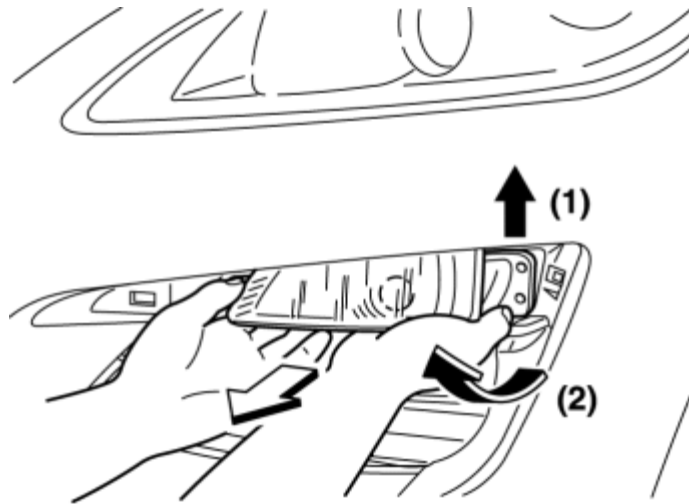
1. Disconnect the negative battery cable.
2. Remove the front fog light cover.



3. Remove the screws.



4. Hold the back surface of the front fog light and lift it up as shown in the left diagram. Then arc the front fog light as pull it out from the vehicle body with care not to contact the oil cooler.



5. Disconnect the connector.
6. Install in the reverse order of removal.
7. Adjust the front fog light aiming. (See [FRONT FOG LIGHT AIMING.](#))

[< Previous](#) [Next >](#)

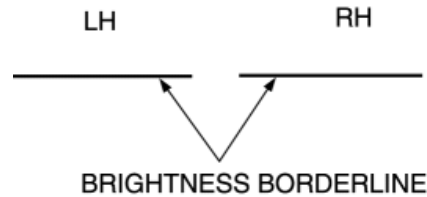
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

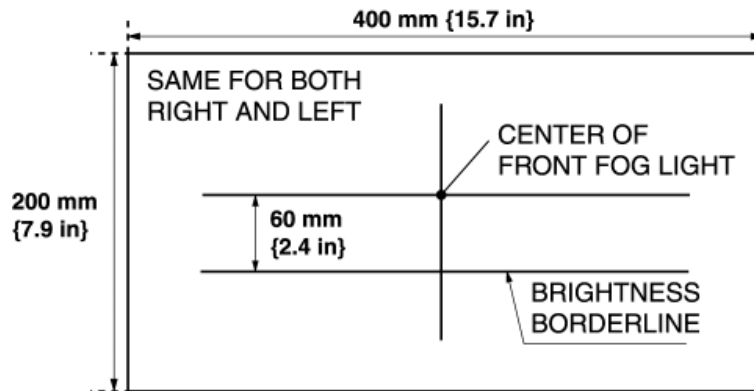
2011 - RX-8 - Body and Accessories

FRONT FOG LIGHT AIMING

1. Point the front fog lights to a wall and verify that the front fog lights are as shown in the figure.



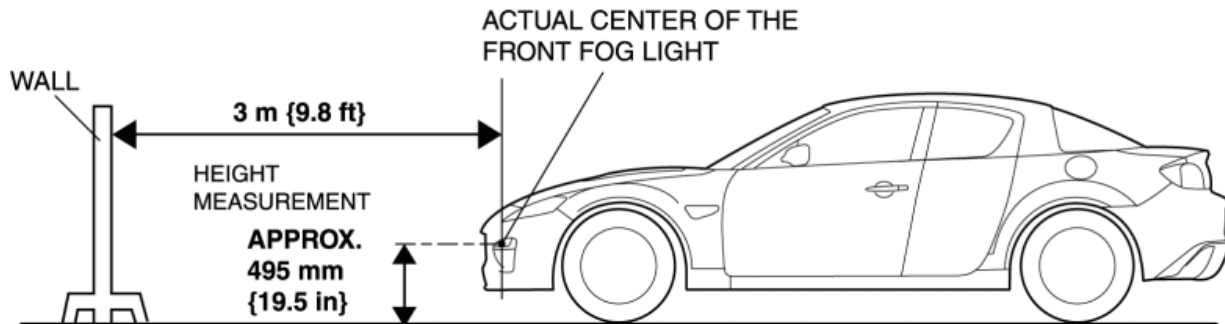
2. Make a front fog light adjustment screen as shown in the figure using double-weight, white paper.



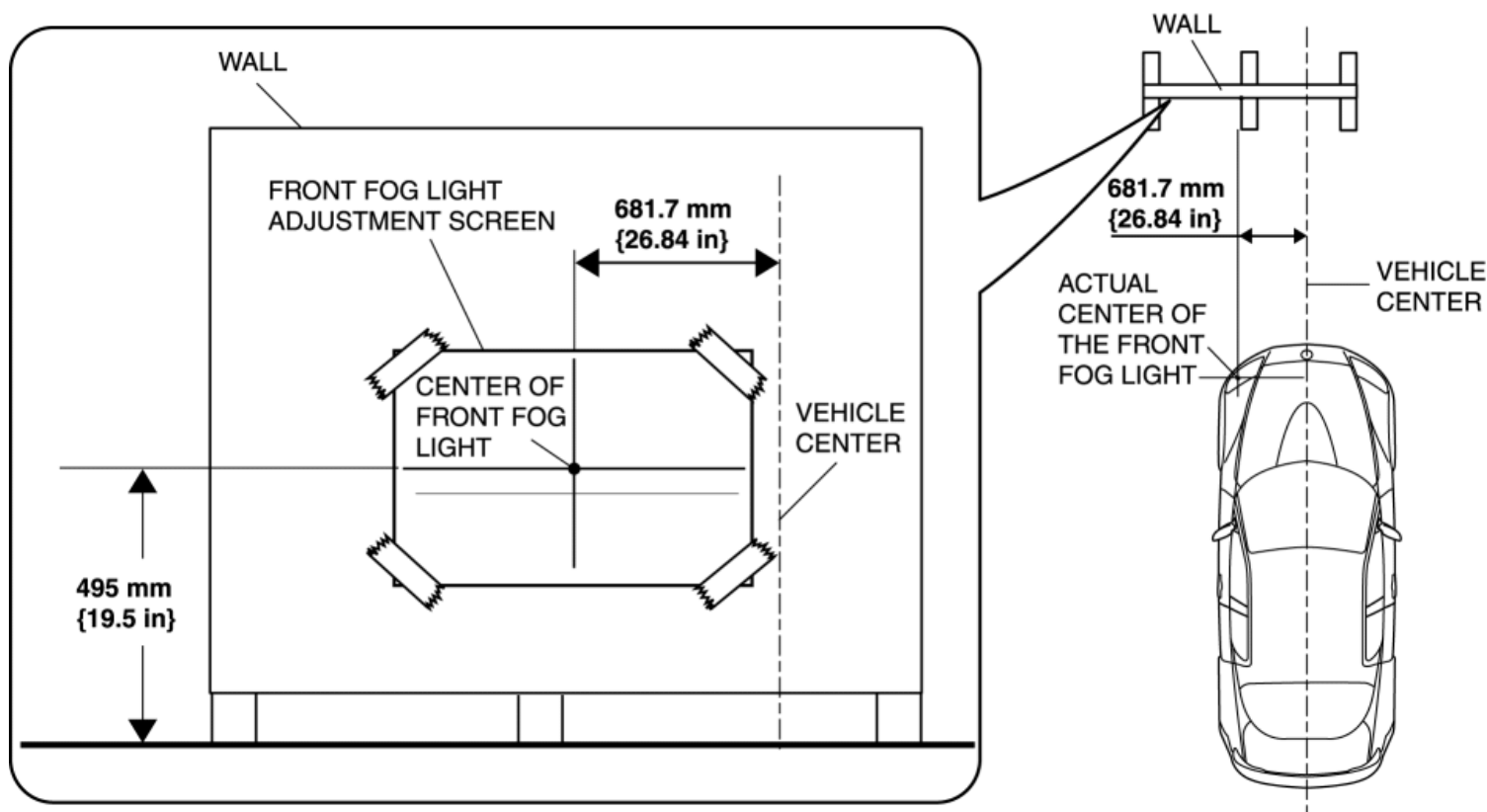
3. Adjust the tire pressure to the specification.
4. Position the unloaded vehicle on a flat, level surface.
5. Seat one person in the driver's seat.
6. Line up the front fog lights with the white screen at a distance of **3 m {9.8 ft}** apart.
7. Measure the height of the center of the fog light (the center of the fog light bulb).

NOTE:

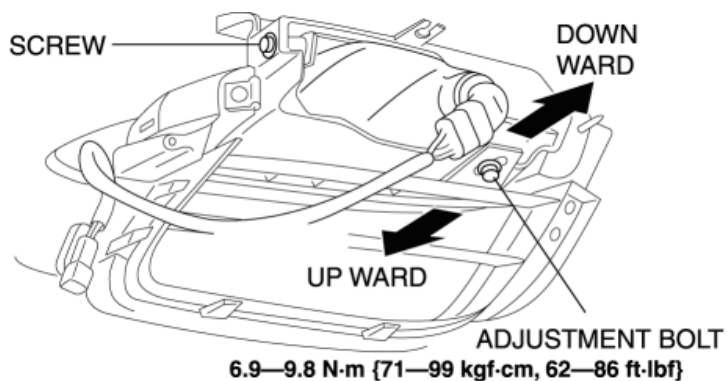
- Since the height of the vehicle varies depending on the vehicle situation, measure the height of the center of the front fog light using the actual vehicle.



8. Adjust the center of the adjustment screen to the point **681.7 mm {26.84 in}** from the center of the vehicle and the measured height in the direction the headlight points, then affix the screen to the wall.



9. Start the engine so that the battery remains charged.
10. Turn the front fog lights on.
11. Place a partition screen in front of the fog light not being adjusted to block its light beam.
12. Verify that the brightness border line of the front fog light is at the position indicated on the adjustment screen.
 - If the brightness border line is not at the position indicated on the adjustment screen, perform the following adjustment.
 - Turn up the mudguard.

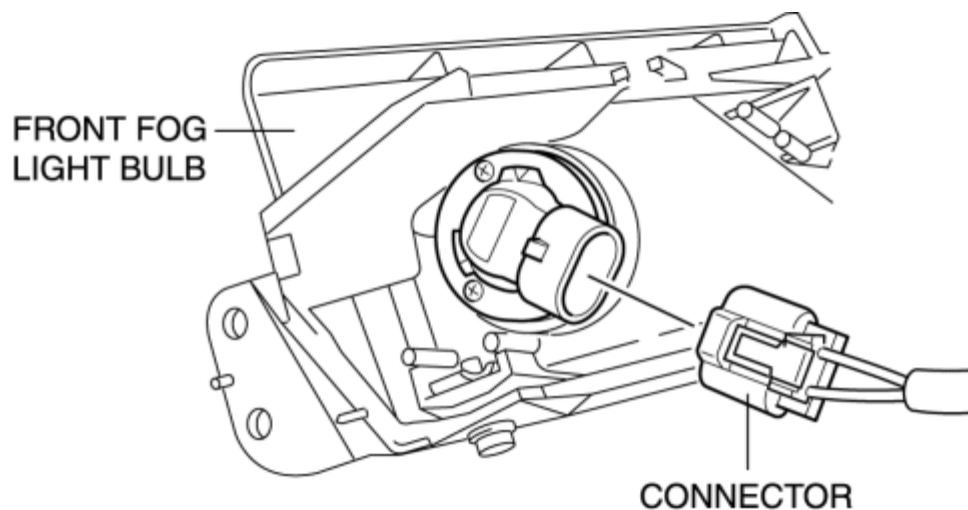


- Loosen the adjusting bolt and the screw.
- Move the front fog light in the direction of the arrow shown in the figure to adjust the brightness border line to the position indicated on the adjustment screen.
- Install the adjusting bolt and tighten the screw.

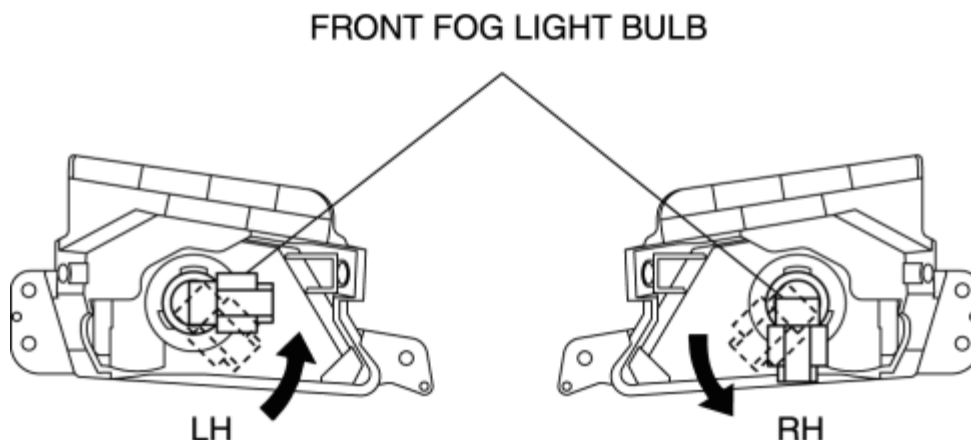
2011 - RX-8 - Body and Accessories

FRONT FOG LIGHT BULB REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the front fog light. (See [FRONT FOG LIGHT REMOVAL/INSTALLATION](#).)
3. Disconnect the connector.



4. Remove the front fog light bulb by turning it in the direction of the arrow.



CAUTION:

- A halogen bulb generates extremely high heat when it is illuminated. If the surface of the bulb is soiled, excessive heat will build up and the life of the bulb will be shortened. When handling the bulb, hold the flange, not the glass.

5. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

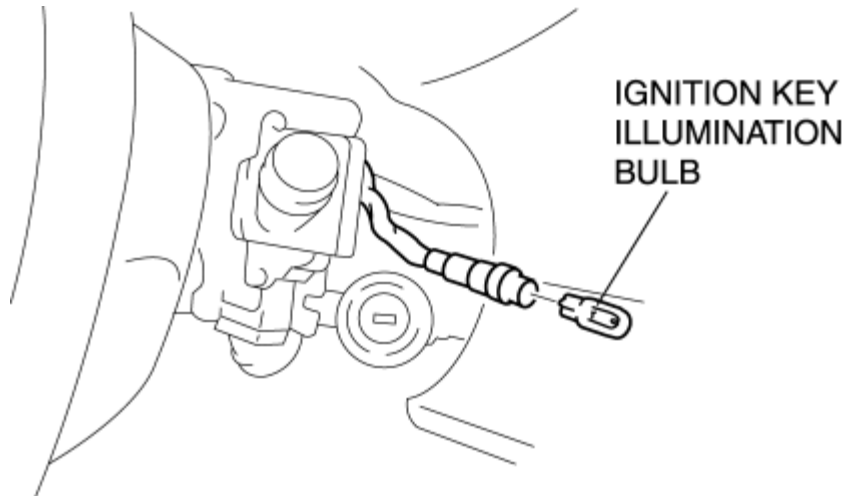
[Back to Top](#)

2011 - RX-8 - Body and Accessories

IGNITION KEY ILLUMINATION BULB REMOVAL/INSTALLATION

Vehicles With Keyless Entry System

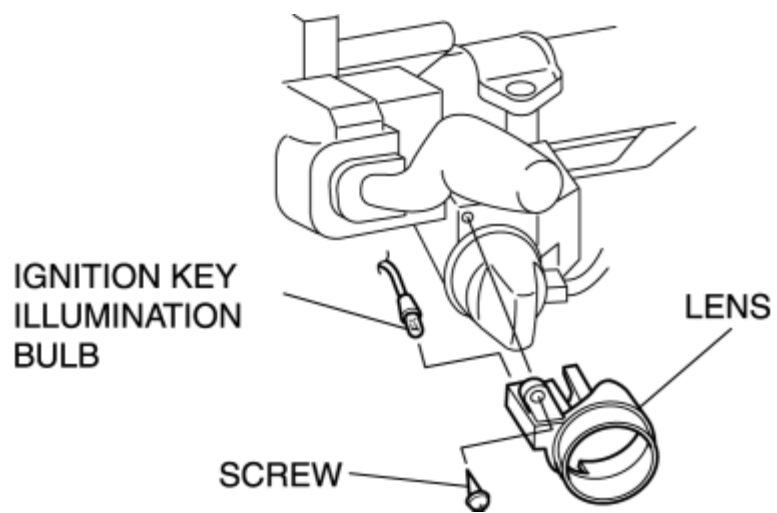
1. Disconnect the negative battery cable.
2. Remove the column cover. (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
3. Remove the ignition key illumination bulb.



4. Install in the reverse order of removal.

Vehicles With Advanced Keyless System

1. Disconnect the negative battery cable.
2. Remove the column cover. (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
3. Remove the screw.
4. Remove the lens.
5. Remove the ignition key illumination bulb.



6. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

[Back to Top](#)

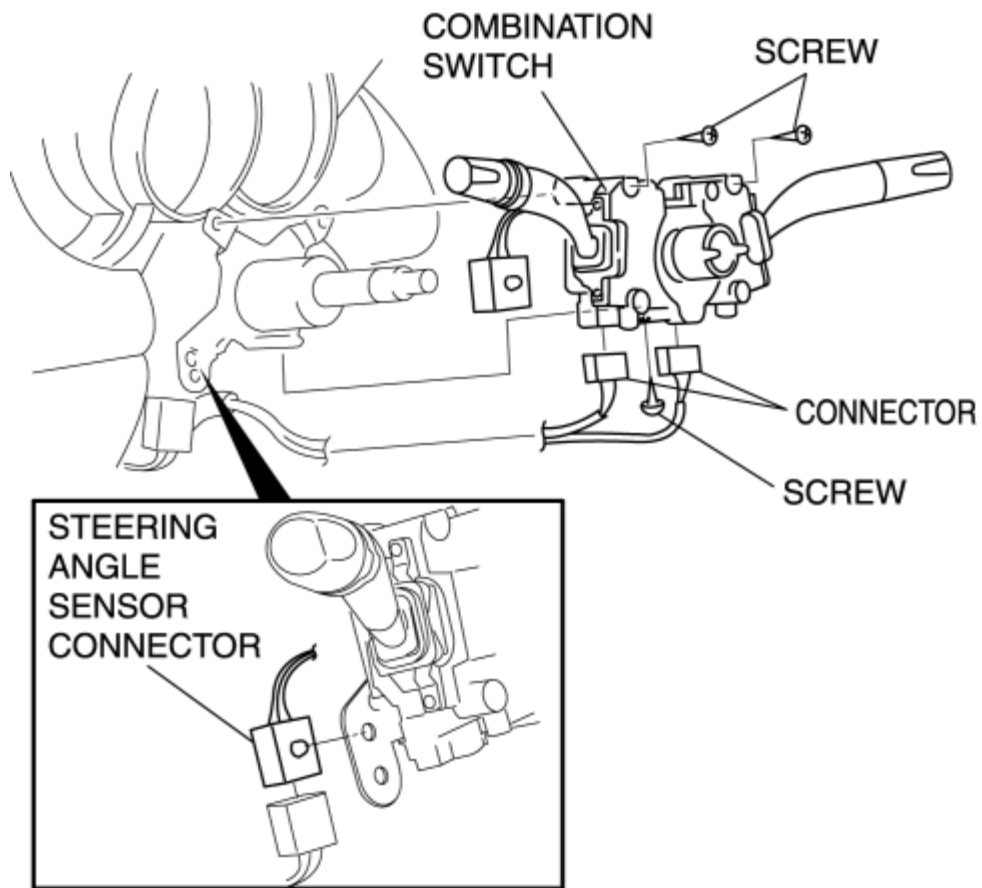
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

COMBINATION SWITCH REMOVAL/INSTALLATION

WARNING:

1. For vehicles with DSC, if the negative battery cable or the steering angle sensor connector is disconnected, the stored initial position of the steering angle sensor will be cleared and the DSC will not operate properly, making the vehicle unsafe to drive. Perform the steering angle sensor initialization procedure after connecting the negative battery cable.
1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Driver-side air bag module (See [DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION](#).)
 - b. Steering wheel (See [STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION](#).)
 - c. Column cover (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
 - d. Ignition key illumination (Vehicles with keyless entry system) (See [IGNITION KEY ILLUMINATION BULB REMOVAL/INSTALLATION](#).)
 - e. Clock spring (See [CLOCK SPRING REMOVAL/INSTALLATION](#).)
3. Disconnect the connector.



4. Disconnect the steering angle sensor connector. (Vehicles with DSC)
5. Remove the screws and then remove the combination switch.
6. Install in the reverse order of removal.
7. Perform the steering angle sensor initialization procedure. (Vehicles with DSC) (See [STEERING ANGLE SENSOR INITIALIZATION PROCEDURE](#))

[< Previous](#) [Next >](#)

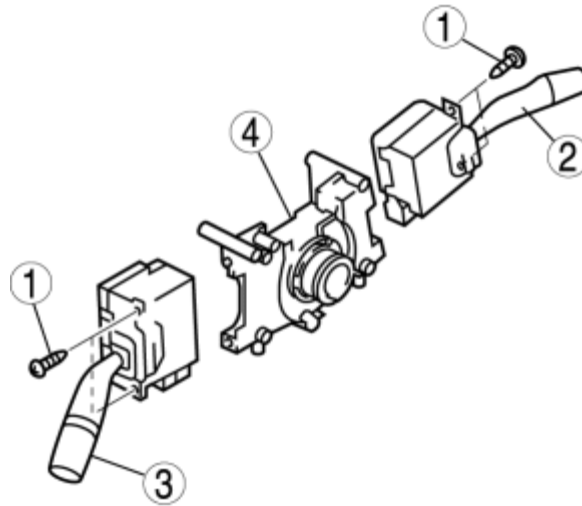
[Back to Top](#)

2011 - RX-8 - Body and Accessories

COMBINATION SWITCH DISASSEMBLY/ASSEMBLY

CAUTION:

- For vehicles with DSC: If the disc on the combination switch is deformed or has foreign material adhering to it, performance of the steering angle sensor may be reduced, causing abnormal operation. When handling the combination switch, be careful not to deform the disc and make sure there is no foreign material on it.
- Remove the combination switch. (See [COMBINATION SWITCH REMOVAL/INSTALLATION](#).)
 - Disassemble in the order indicated in the table.



1	Screw
2	Wiper and washer switch
3	Light switch
4	Body

- Assemble in the reverse order of disassembly.

[< Previous](#) [Next >](#)

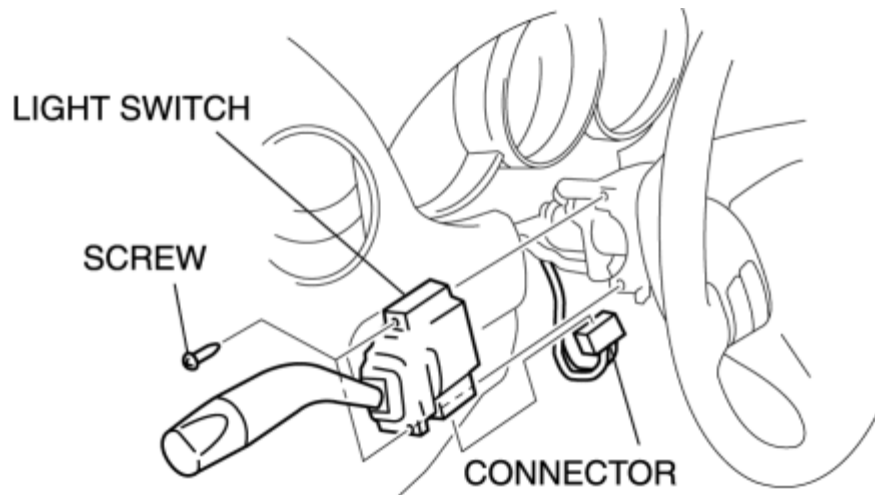
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

LIGHT SWITCH REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the column cover. (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
3. Remove the ignition key illumination. (Vehicles with keyless entry system) (See [IGNITION KEY ILLUMINATION BULB REMOVAL/INSTALLATION](#).)
4. Disconnect the connector.



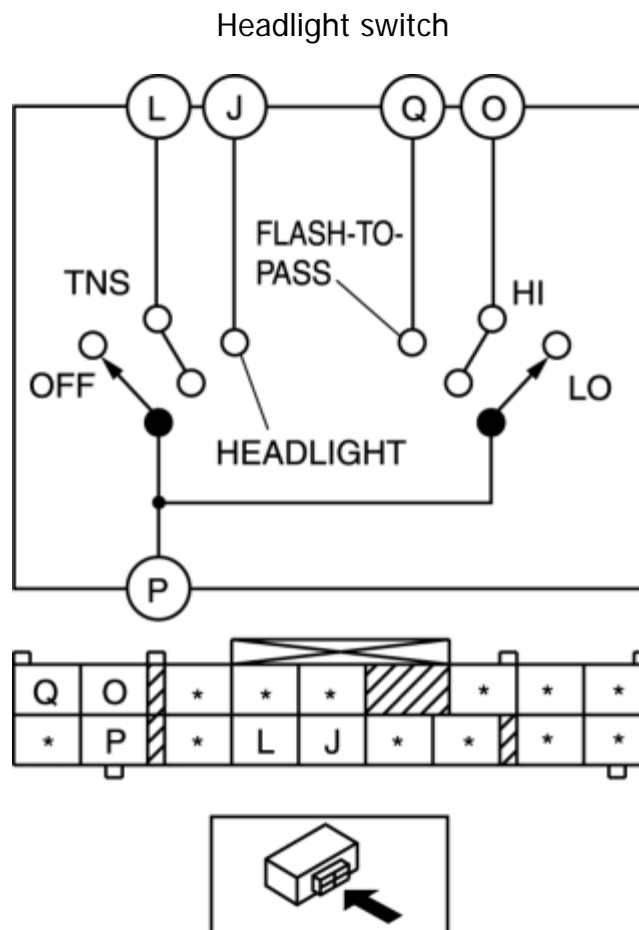
5. Remove the screws and then remove the light switch.
6. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

LIGHT SWITCH INSPECTION

Vehicle Without Auto Light System

1. Remove the column cover. (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
2. Remove the ignition key illumination. (See [IGNITION KEY ILLUMINATION BULB REMOVAL/INSTALLATION](#).)
3. Remove the light switch. (See [LIGHT SWITCH REMOVAL/INSTALLATION](#).)
4. Verify that the continuity between the light switch terminals is as indicated in the table.

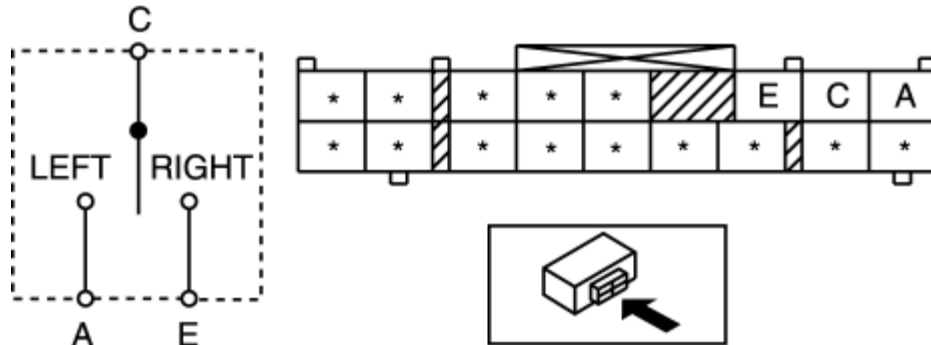


- If not as indicated in the table, replace the light switch.

○—○ : Continuity

Switch position			Terminal				
Light	Dimmer	Flash-to-pass	J	L	P	O	Q
OFF	-	OFF					
		ON			○—○—○		
TNS	-	OFF		○—○			
		ON		○—○—○—○			
Headlight	LO	OFF	○—○—○				
		ON	○—○—○—○—○				
	HI	-	○—○—○—○				

Turn switch



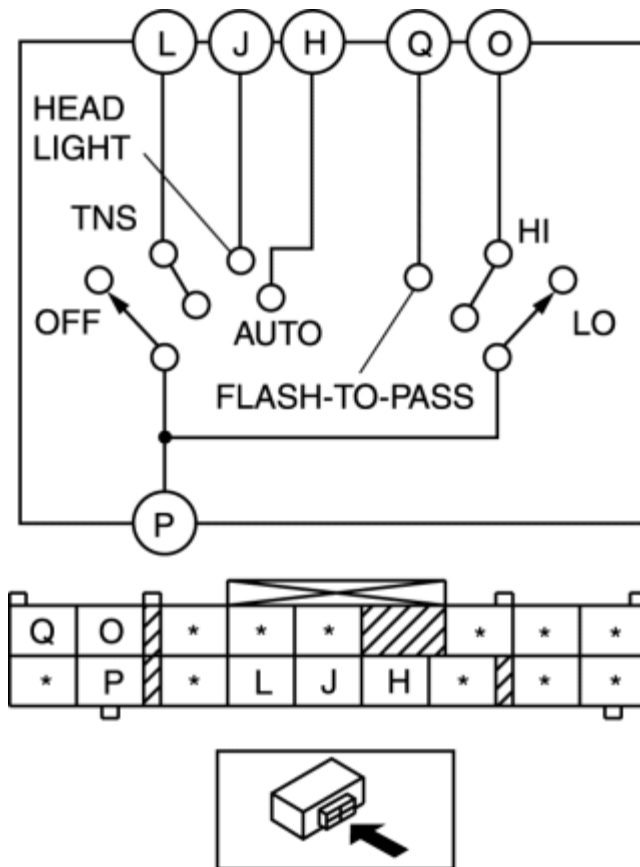
○—○ : Continuity

Switch position	Terminal		
	A	C	E
Left	○—○		
OFF			
Right		○—○	

Vehicle With Auto Light System

1. Remove the column cover. (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
2. Remove the ignition key illumination. (See [IGNITION KEY ILLUMINATION BULB REMOVAL/INSTALLATION](#).)
3. Remove the light switch. (See [LIGHT SWITCH REMOVAL/INSTALLATION](#).)
4. Verify that the continuity between the light switch terminals is as indicated in the table.

Headlight switch

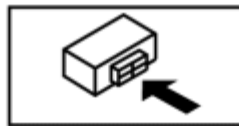
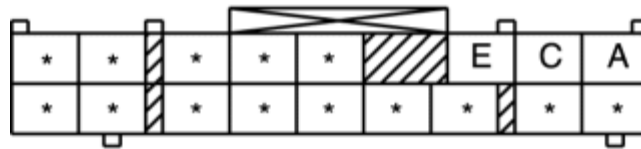
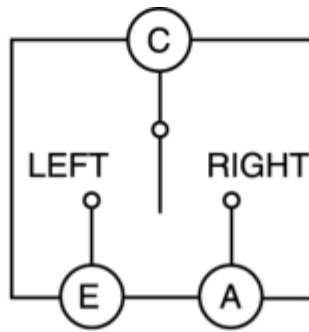


- If not as indicated in the table, replace the light switch.

○—○ : Continuity

Switch position			Terminal						
Light	Dimmer	Flash-to-pass	H	J	L	Q	O	P	
OFF	—	OFF							
		ON				○—○—○			
TNS	—	OFF			○—○—○				
		ON			○—○—○—○—○				
Headlight	LO	OFF		○—○—○—○—○					
		ON		○—○—○—○—○					
	HI	—		○—○—○—○—○					
AUTO	LO	OFF	○—○—○—○—○						
		ON	○—○—○—○—○			○—○—○			
	HI	—	○—○—○—○—○					○—○	

Turn switch



○ — ○ : Continuity

Switch position	Terminal		
	C	E	A
Left	○ — ○		
OFF			
Right	○ — ○	○ — ○	

[< Previous](#) [Next >](#)

[Back to Top](#)

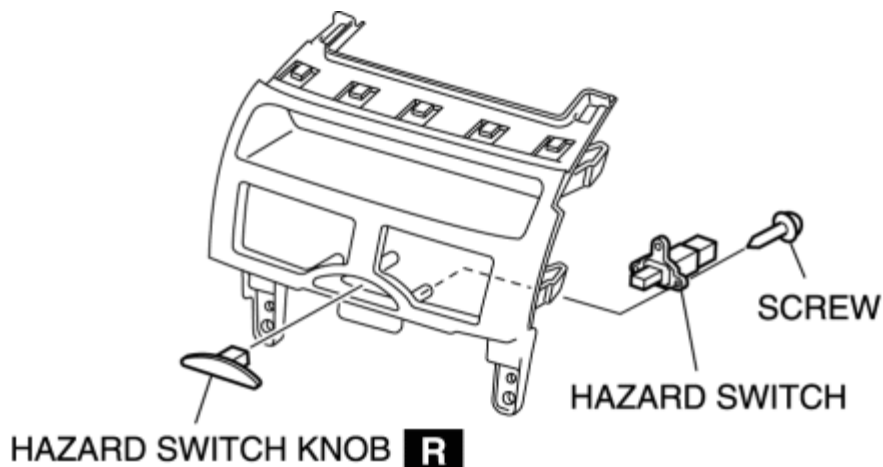
2011 - RX-8 - Body and Accessories

HAZARD WARNING SWITCH REMOVAL/INSTALLATION

CAUTION:

- The hazard switch is not reuseable since it is broken when disconnected from the hazard switch knob. Do not remove the hazard switch except when replacing it.

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Shift lever knob (MT) (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#).)
 - b. Shift knob (AT) (See [SELECTOR LEVER REMOVAL/INSTALLATION](#).)
 - c. Console panel (See [CONSOLE REMOVAL/INSTALLATION](#).)
 - d. Ashtray panel (See [CONSOLE REMOVAL/INSTALLATION](#).)
 - e. Lower panel (See [LOWER PANEL REMOVAL/INSTALLATION](#).)
 - f. Knee bolster (See [KNEE BOLSTER REMOVAL/INSTALLATION](#).)
 - g. Center panel unit (See [CENTER PANEL UNIT REMOVAL/INSTALLATION](#).)
 - h. Speaker grille (See [SPEAKER GRILLE REMOVAL/INSTALLATION](#).)
 - i. Center panel (See [CENTER PANEL REMOVAL/INSTALLATION](#).)
3. Remove the screw.



4. Remove the hazard switch knob.

5. Remove the hazard switch.
6. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

HAZARD WARNING SWITCH INSPECTION

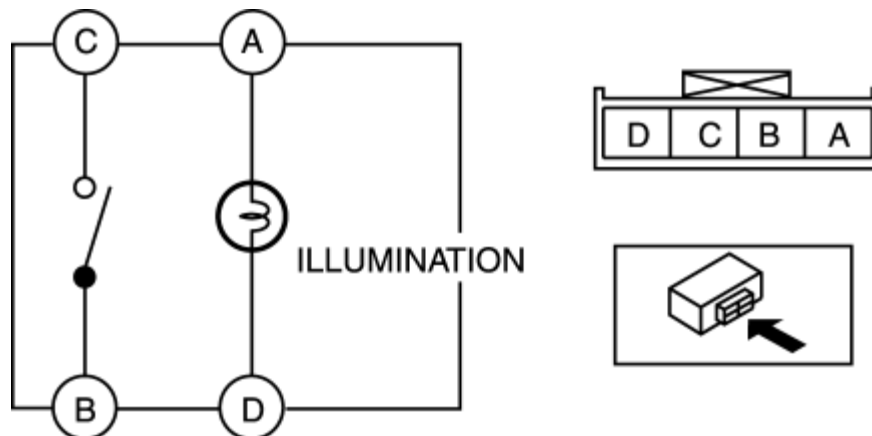
CAUTION:

- The hazard switch is not reuseable since it is broken when disconnected from the hazard switch knob. Do not remove the hazard swith except when replacing it.

1. Remove the following parts:

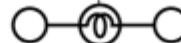

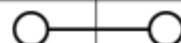
- a. Shift lever knob (MT) (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#).)
- b. Shift knob (AT) (See [SELECTOR LEVER REMOVAL/INSTALLATION](#).)
- c. Console panel (See [CONSOLE REMOVAL/INSTALLATION](#).)
- d. Ashtray panel (See [CONSOLE REMOVAL/INSTALLATION](#).)
- e. Lower panel (See [LOWER PANEL REMOVAL/INSTALLATION](#).)
- f. Knee bolster (See [KNEE BOLSTER REMOVAL/INSTALLATION](#).)
- g. Center panel unit (See [CENTER PANEL UNIT REMOVAL/INSTALLATION](#).)
- h. Speaker grille (See [SPEAKER GRILLE REMOVAL/INSTALLATION](#).)
- i. Center panel (See [CENTER PANEL REMOVAL/INSTALLATION](#).)

2. Verify that the continuity between the hazard switch terminals is as indicated in the table.



- If not as indicated in the table, replace the center panel.

 : Continuity
  : Bulb

Switch position	Terminal			
	A	D	B	C
OFF				
ON				

[< Previous](#)
 [Next >](#)

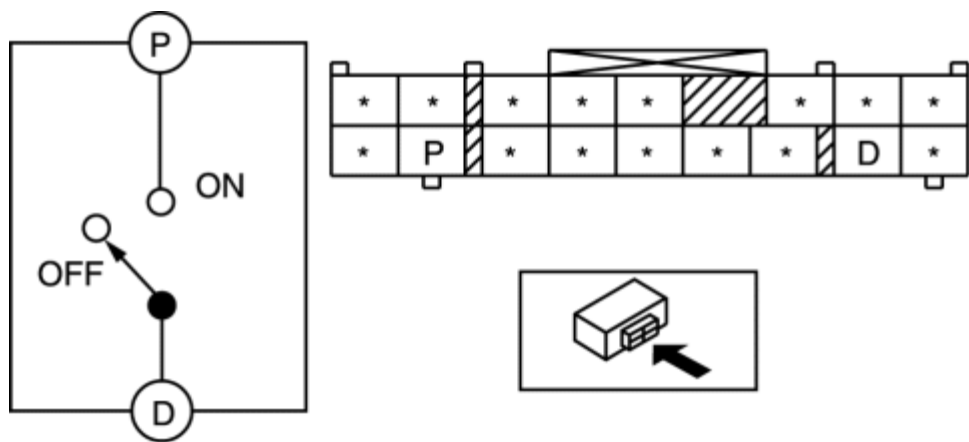
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

FRONT FOG LIGHT SWITCH INSPECTION

- 1. Remove the column cover. (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
- 2. Remove the ignition key illumination. (Vehicles with keyless entry system) (See [IGNITION KEY ILLUMINATION BULB REMOVAL/INSTALLATION](#).)
- 3. Remove the light switch. (See [LIGHT SWITCH REMOVAL/INSTALLATION](#).)
- 4. Verify that the continuity between the light switch terminals is as indicated in the table.



- If not as indicated in the table, replace the light switch.

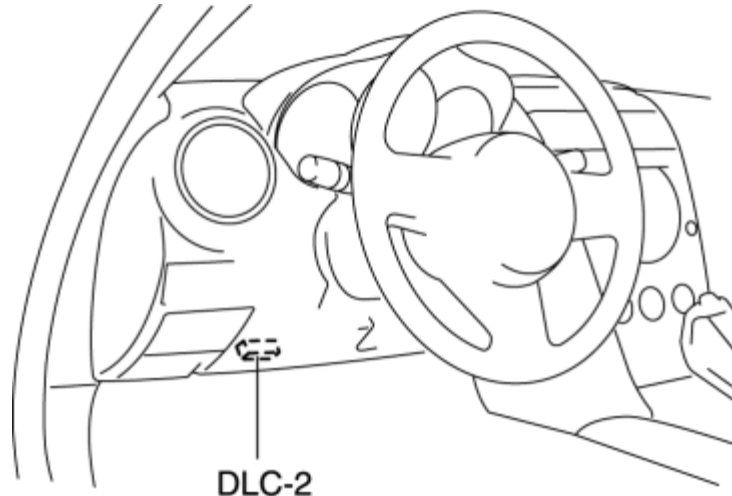
○—○ : Continuity

Switch position	Terminal	
	P	D
OFF		
ON	○—○	○—○

2011 - RX-8 - Body and Accessories

AUTO LIGHT ILLUMINATION LEVEL SETTING

1. Connect the M-MDS to the DLC-2 connector.



2. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

- When using the IDS (laptop PC)
 - Select "Module Programming".
- When using the PDS (Pocket PC)
 - Select "Programming".
 - Select "Module Programming".

3. Then, select items from the screen menu in the following order.

- Select "Programmable Parameters".
- Select "Exterior Lighting".

4. Select "Low (Other)" or "Standard (Other)" on the M-MDS to set the illumination level.

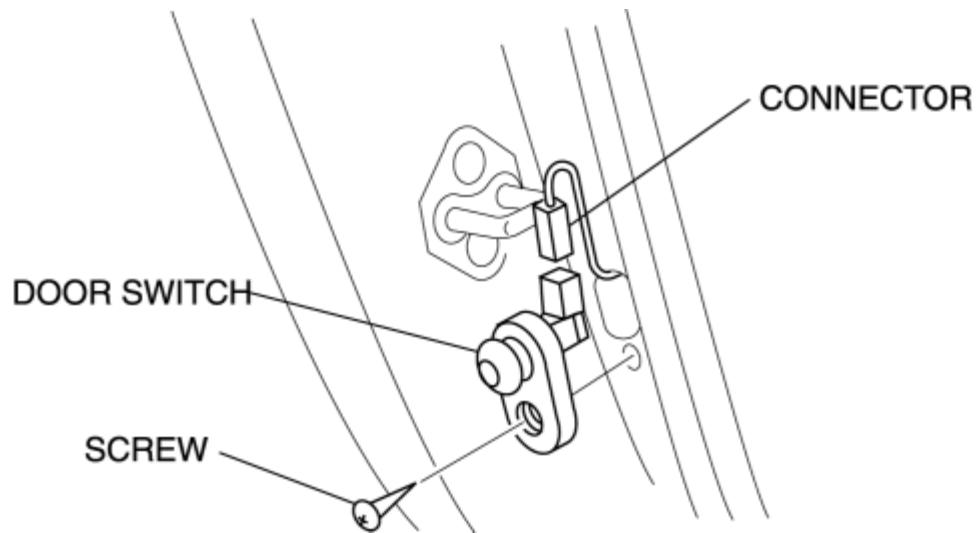
NOTE:

- When the M-MDS is set to Low (Other), the auto-light sensor sensitivity decreases, and the TNS and headlight illumination timing is slower.

2011 - RX-8 - Body and Accessories

DOOR SWITCH REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the screw.

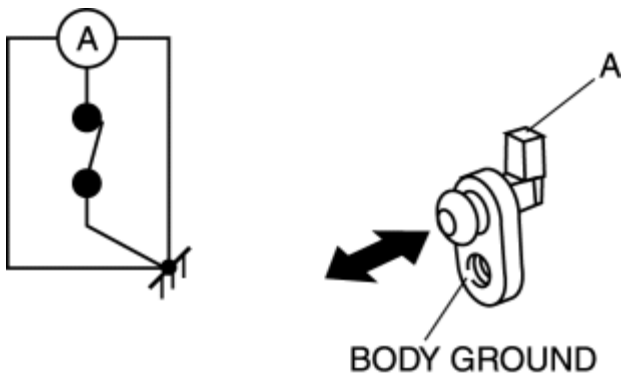


3. Disconnect the connector and remove the door switch.
4. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

DOOR SWITCH INSPECTION

- 1. Remove the door switch. (See [DOOR SWITCH REMOVAL/INSTALLATION.](#))
- 2. Verify that the continuity between door switch terminal and the body ground is as indicated in the table.



- If not as indicated in the table, replace the door switch.

○ — ○ : Continuity

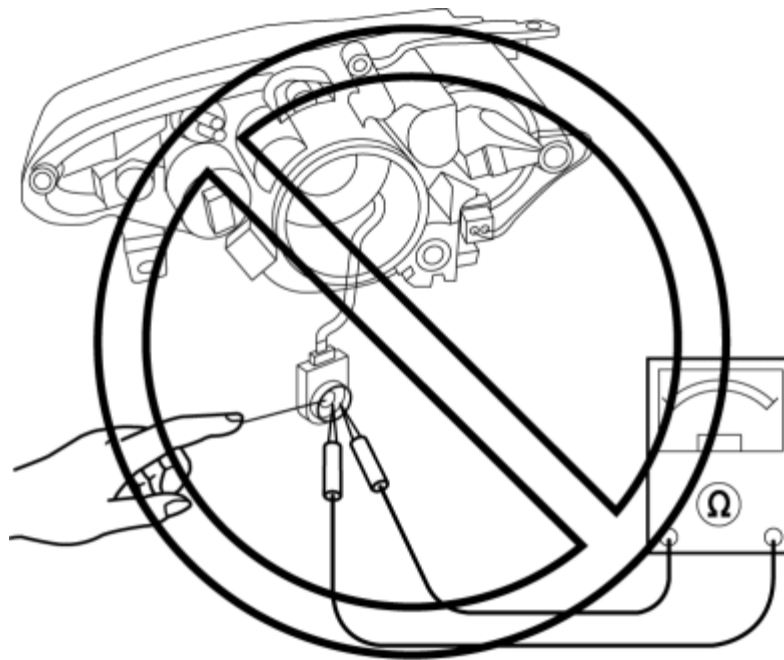
Switch position	Terminal	
	A	Body ground
Door switch pressed		
Door switch released	○ —	— ○

2011 - RX-8 - Body and Accessories

DISCHARGE HEADLIGHT SERVICE WARNINGS

Discharge Headlight Bulb Service Warnings

- To prevent electrical shock when replacing the discharge headlight bulb, dry hands thoroughly, and carry out work in an area out of rain.
- When the light switch is on, approx. 25,000 V of high voltage passes through the discharge headlight bulb socket. Because of the danger of electrical shock, do not insert fingers or a tester.



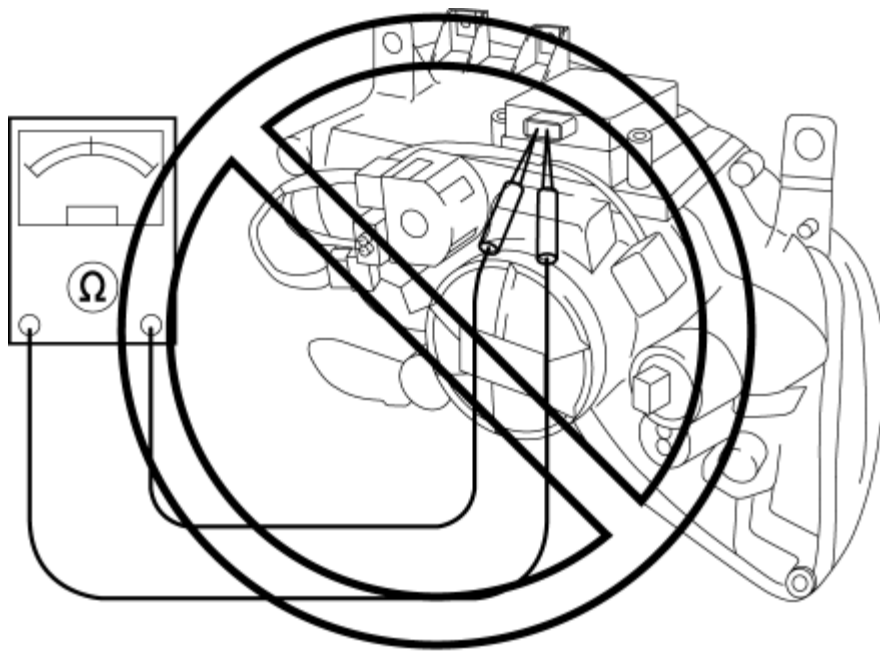
NO GOOD

- When the headlights are on, high voltage flows around the socket and bulb. When turning on the discharge headlights while working, always leave the headlights in the vehicle-installed condition to prevent electrical shock.

Discharge Headlight Control Module Service Warnings

- Because of the danger of electrical shock, when inspecting with a tester, do not inspect the discharge headlight control module as a single unit or disassemble

it.



NO GOOD

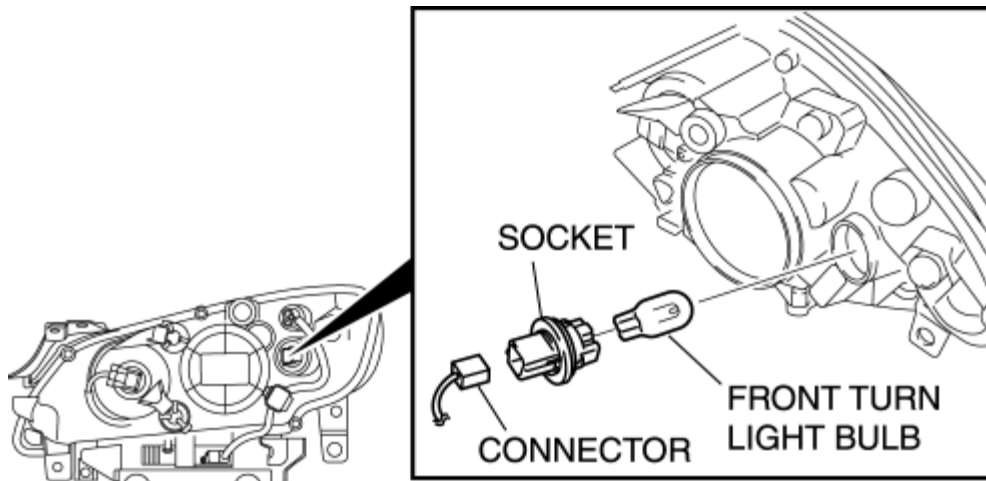
Discharge Headlight Control Module Reuse

- If the discharge headlight control module is dented or damaged in any way, replace the module with a new one to prevent electrical shock and improper operation.
- Although the control module may temporarily operate normally even though it has received an impact, it is possible that the interior may have been damaged. When reusing the control module, inspect the following items regarding discharge headlight illumination to verify that there are no malfunctions.
 - Verify that the discharge headlights illuminate normally by testing them several times under cold illumination (headlights off for approx. 10 min or more and then turned on) and hot illumination (headlights on for approx. 15 min or more, turned off for approx. 1 min, and then turned on again) conditions.
 - Inspect the headlight illumination in the period from directly after cold illumination until they are uniformly illuminated (approx. 5 min) and verify that there is no flickering or inconsistent brightness.
 - Turn on the headlights for approx. 30 min with normal condition bulbs and verify that there is no brightness difference between the right and left, and that illumination is consistent.

2011 - RX-8 - Body and Accessories

FRONT TURN LIGHT BULB REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the fasteners, then slightly bend back the front mudguard.
3. Disconnect the connector.



4. Remove the socket, then remove the front turn light bulb.
5. Install in the reverse order of removal.

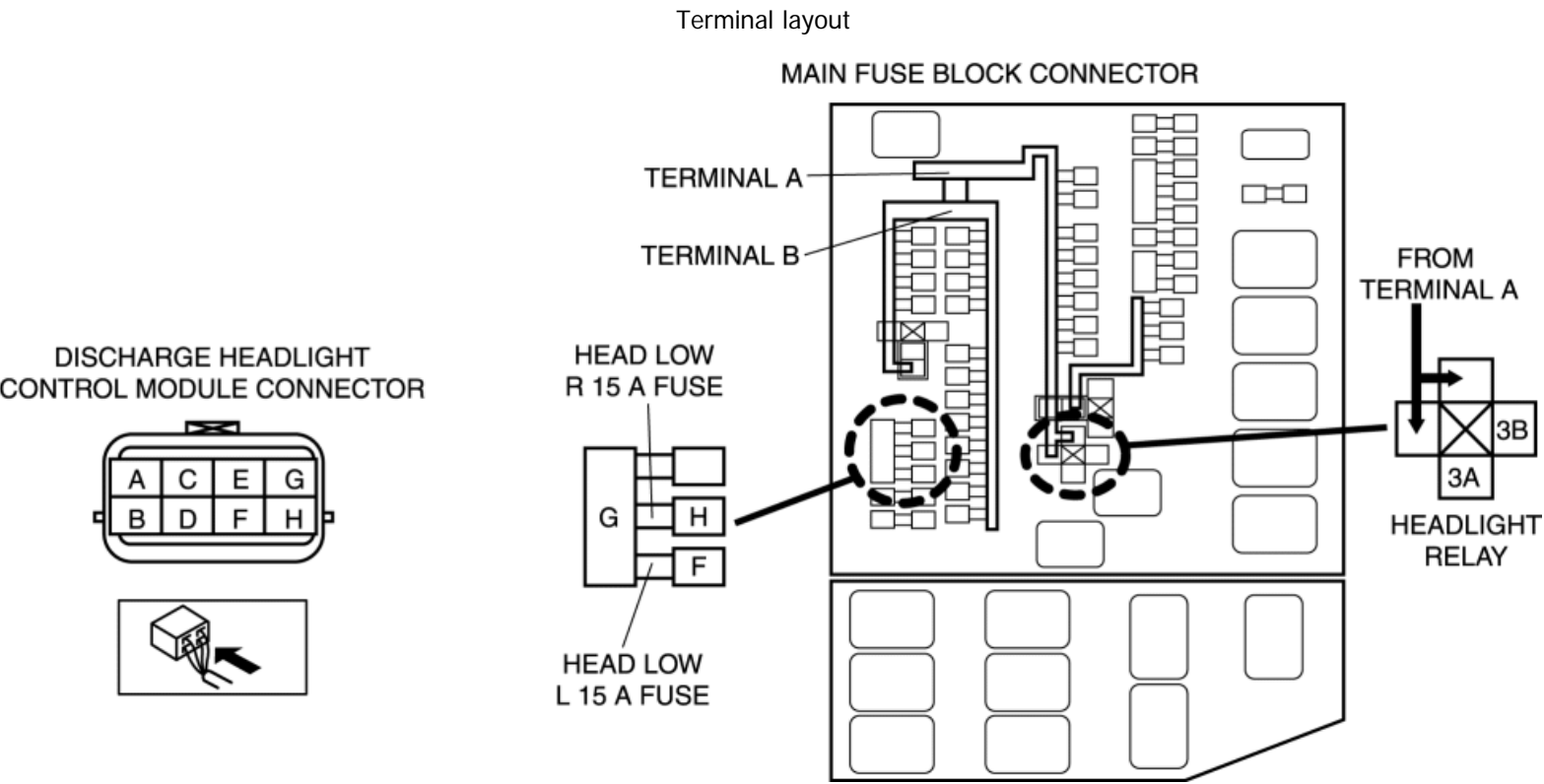
2011 - RX-8 - Body and Accessories

DISCHARGE HEADLIGHT SYSTEM INSPECTION

Discharge headlight inoperative

WARNING:

- Incorrect servicing of the discharge headlights could result in electrical shock. Before servicing the discharge headlights, always refer to the discharge headlight service warnings. (See [DISCHARGE HEADLIGHT SERVICE WARNINGS](#).)



Inspection procedure

STEP	INSPECTION	ACTION
1	INSPECT POWER SUPPLY CIRCUIT OF DISCHARGE HEADLIGHT CONTROL MODULE <ul style="list-style-type: none">• Disconnect the discharge headlight control module connector.• Turn the headlight switch to the HEADLIGHT (LO) position.• Measure the voltage at discharge headlight control module connector (harness-side) terminal C.• Is the voltage approx. 12 V?	<div>YesGo to Step 6.</div> <div>NoGo to the next step.</div>

2	INSPECT FUSE <ul style="list-style-type: none"> • Turn the headlight switch to the OFF position. • Remove the HEAD LOW R 15 A fuse (RH) or HEAD LOW L 15 A fuse (LH). • Inspect the fuses. • Are the fuses normal? 	<div>YesGo to the next step.</div> <div>No Replace the fuse.</div>
3	INSPECT HEADLIGHT RELAY <ul style="list-style-type: none"> • Remove the headlight relay. (See RELAY LOCATION.) • Inspect the headlight relay. (See RELAY INSPECTION.) • Is the headlight relay normal? 	<div>YesGo to the next step.</div> <div>No Replace the headlight relay. (See RELAY LOCATION.)</div>
4	INSPECT LIGHT SWITCH <ul style="list-style-type: none"> • Inspect the light switch. (See LIGHT SWITCH INSPECTION.) • Is the light switch normal? 	<div>YesGo to the next step.</div> <div>No Replace the light switch. (See LIGHT SWITCH REMOVAL/INSTALLATION.)</div>
5	INSPECT WIRING HARNESS BETWEEN BATTERY AND DISCHARGE HEADLIGHT CONTROL MODULE <ul style="list-style-type: none"> • Disconnect the negative battery cable. • Inspect for continuity between the following terminals: <ul style="list-style-type: none"> ▪ Battery (positive terminal) and headlight relay (main fuse block terminal A) ▪ Headlight relay terminal 3A and HEAD LOW R 15 A fuse (RH) terminal G ▪ Headlight relay terminal 3A and HEAD LOW L 15 A fuse (LH) terminal G ▪ HEAD LOW R 15 A fuse (RH) terminal H and discharge headlight control module terminal C ▪ HEAD LOW L 15 A fuse (LH) terminal F and discharge headlight control module terminal C • Are the wiring harnesses normal? 	<div>YesGo to the next step.</div> <div>No Replace the related wiring harness.</div>
6	INSPECT WIRING HARNESS BETWEEN DISCHARGE HEADLIGHT CONTROL MODULE AND GROUND <ul style="list-style-type: none"> • Inspect wiring harness between discharge headlight control module terminal D and ground for following: <ul style="list-style-type: none"> ▪ Short to power supply ▪ Open circuit • Inspect the headlight relay. (See RELAY INSPECTION.) • Is the wiring harness normal? 	<div>YesGo to the next step.</div> <div>No Replace the related wiring harness.</div>
7	VERIFY WHETHER MALFUNCTION IS IN DISCHARGE HEADLIGHT BULB OR DISCHARGE HEADLIGHT CONTROL MODULE <ul style="list-style-type: none"> • Install any other discharge headlight bulb (low-beam). 	<div>YesSystem inspection completed.</div> <div>No Replace the front combination light. (See FRONT)</div>

(See [HEADLIGHT BULB REMOVAL/INSTALLATION.](#))

- Connect the discharge headlight control module connector.
- Turn the headlight switch to the HEADLIGHT (LO) position.
- Does the headlight (low-beam) illuminate?

[COMBINATION LIGHT REMOVAL/INSTALLATION.](#))

[< Previous](#) [Next >](#)

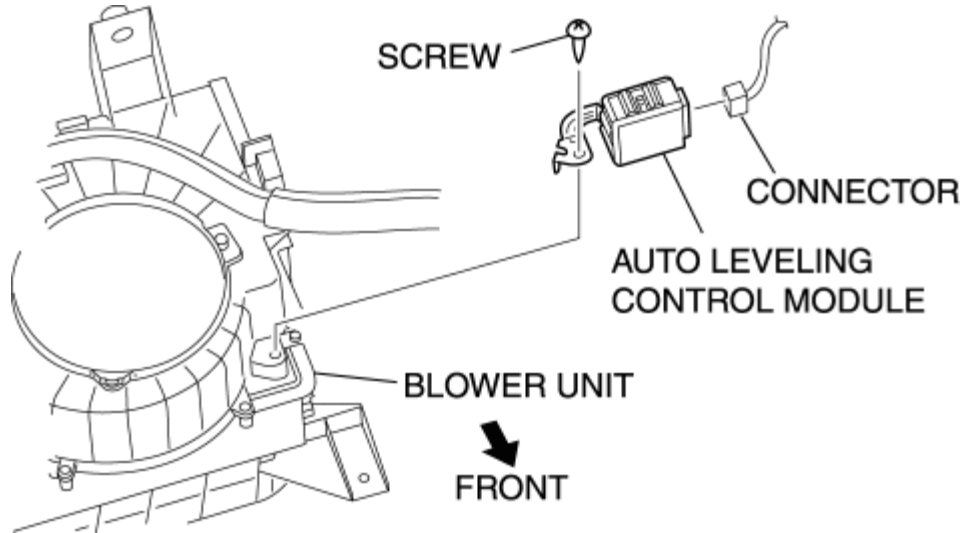
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

AUTO LEVELING CONTROL MODULE REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Disconnect the connector.

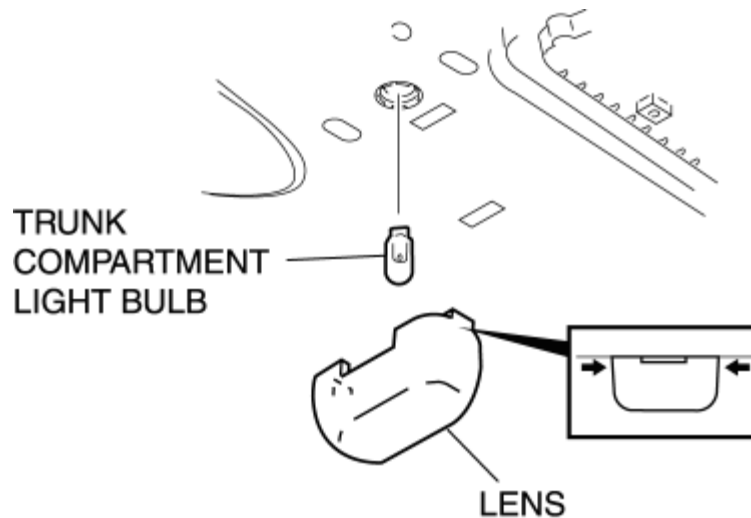


3. Remove the screw and then remove the auto leveling control module.
4. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

TRUNK COMPARTMENT LIGHT BULB REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the lens, then remove the trunk compartment light bulb.

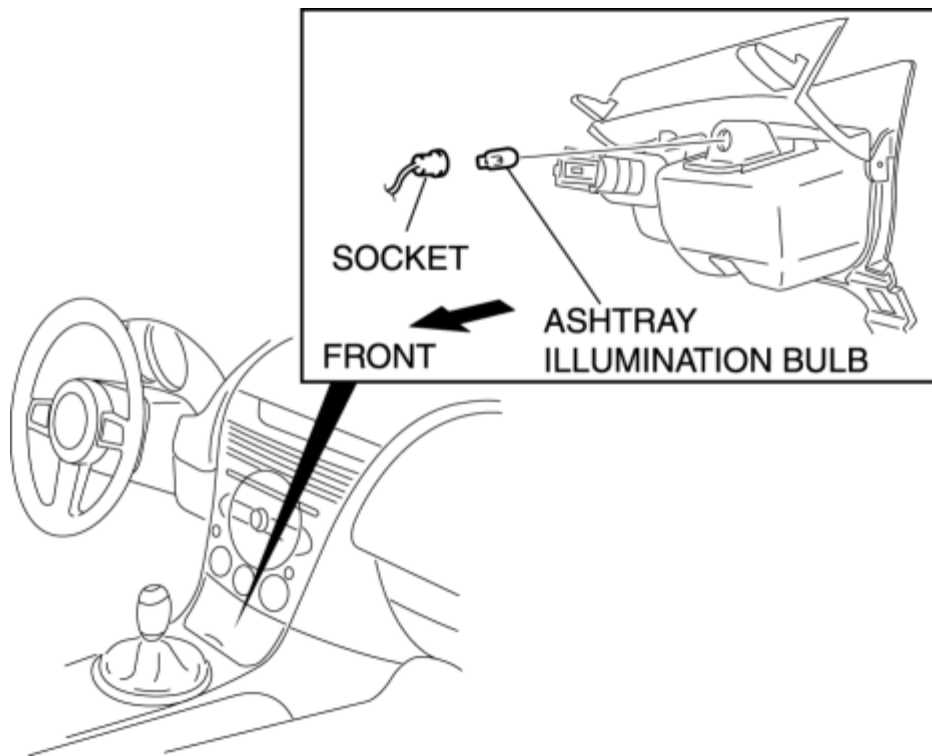


3. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

ASHTRAY ILLUMINATION BULB REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the ashtray panel. (See [CONSOLE REMOVAL/INSTALLATION](#).)
3. Remove the socket, then remove the ashtray illumination bulb.



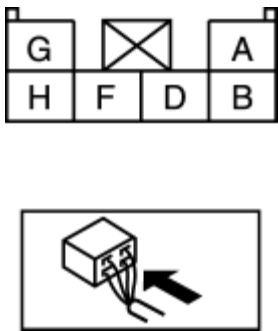
4. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

PANEL LIGHT CONTROL SWITCH INSPECTION

1. Connect the panel light control switch connector.
2. Connect the negative battery cable.
3. Measure the voltage at each terminal.
 - If the voltage is not as specified in the Terminal Voltage Table (Reference), inspect the parts under "Inspection item(s)".
4. Disconnect the panel light control switch connector.
 - If there is any malfunction, inspect the parts under "Inspection item(s)".
 - If the system does not work properly even though the parts or related wiring harnesses do not have any malfunction, replace the panel light control switch.

Terminal Voltage Table (Reference)



Terminal	Signal name	Connected to	Measured condition	Measured condition	Voltage (V)/Continuity	Inspection item(s)
A	Illumination	Instrument cluster	Inspect using an oscilloscope. (See Terminals A and F Inspection.)		—	<ul style="list-style-type: none">• Instrument cluster• Each illumination• Related wiring
F		Each illumination				

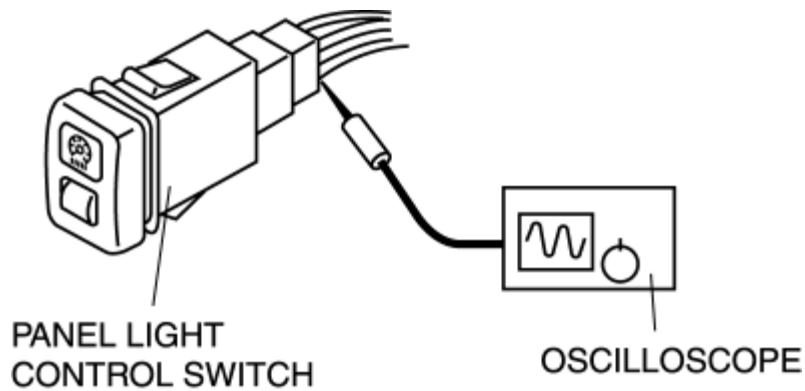
						harnesses
B	TNS	TNS relay	Turn the light switch to the TNS or ON position.		B+	<ul style="list-style-type: none"> TNS relay (See RELAY INSPECTION .)
			Turn the light switch to the OFF position.		1.0 or less	
D	GND	Body ground	Under any condition		1.0 or less	<ul style="list-style-type: none"> GND Related wiring harnesses
G	IG1	Ignition switch	Turn the ignition switch to the ON position.		B+	<ul style="list-style-type: none"> Ignition switch (See IGNITION SWITCH INSPECTION [WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM] .)
			Turn the ignition switch to the ACC or LOCK position.		1.0 or less	
H	Dimmer cancel	Instrument cluster/center panel module	Turn the light switch to the TNS or ON position.	Dimmer cancel switch is on.	B+	<ul style="list-style-type: none"> Instrument cluster Center panel module Related wiring harnesses
				Dimmer cancel switch is off.	1.0 or less	

Terminals A and F Inspection

1. Measure the wave pattern of panel light control switch terminals A and F using an oscilloscope.

- Oscilloscope setting :

5 V/DIV (Y) , 5 ms/div (X) , DC range



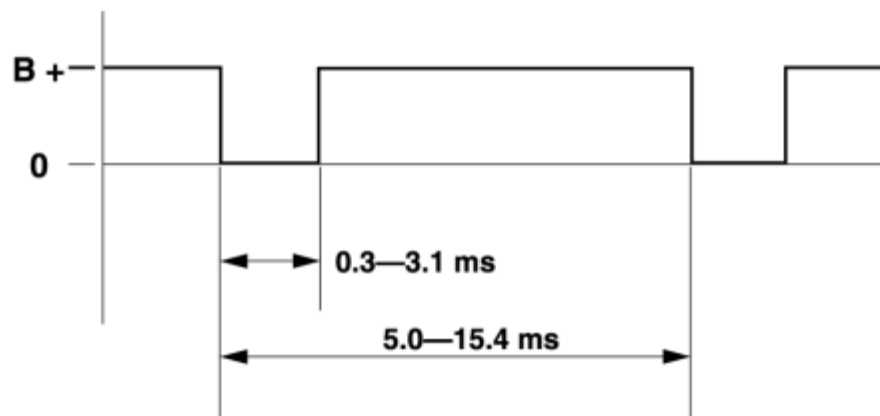
2. Turn the light switch to the TNS or ON position.
3. Turn the panel light control switch to the brightest setting.
4. Verify that the wave pattern is as shown in the figure.

V



5. Turn the panel light control switch to the darkest position and verify that the wave pattern is as shown in the figure.

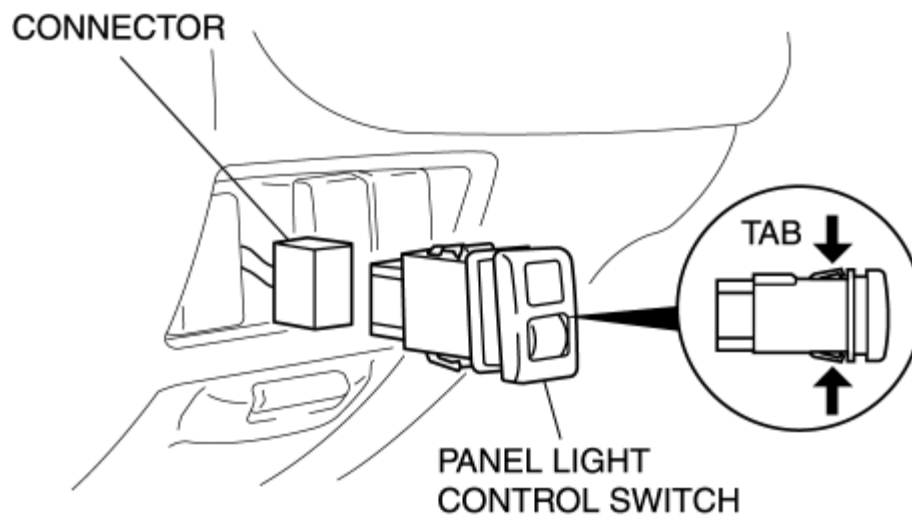
V



2011 - RX-8 - Body and Accessories

PANEL LIGHT CONTROL SWITCH REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the panel light control switch. (See [Panel Light Control Switch Removal Note.](#))
3. Disconnect the connector.



4. Install in the reverse order of removal.

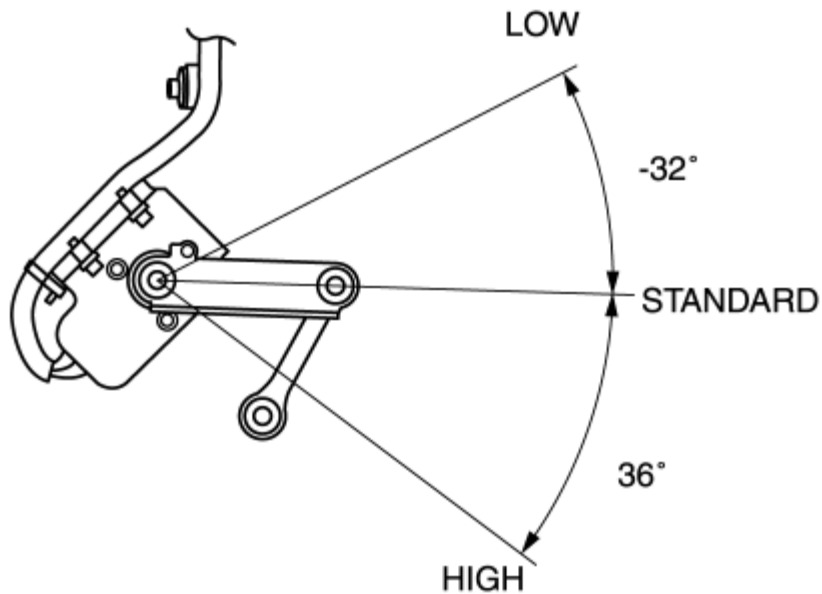
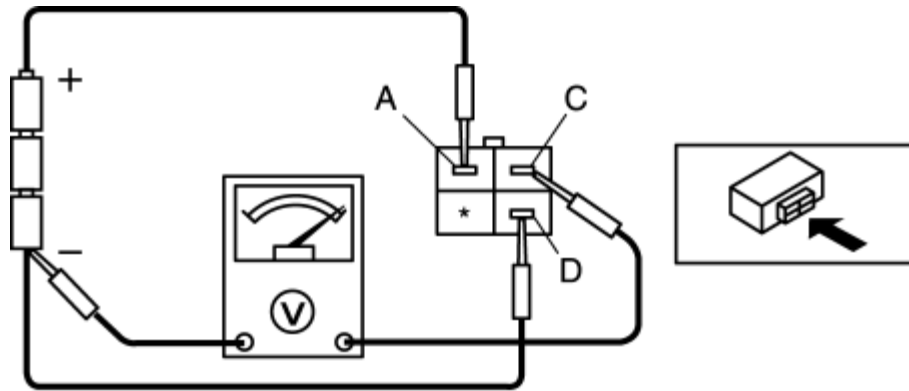
Panel Light Control Switch Removal Note

1. Reach into the dashboard through the underside of the lower panel and, while pushing on the tabs of the panel light control switch, pull it outward.

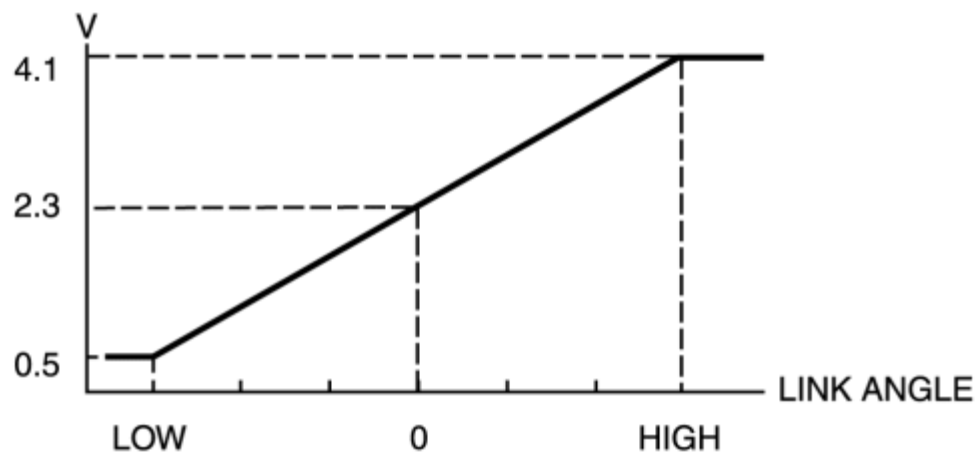
2011 - RX-8 - Body and Accessories

REAR AUTO LEVELING SENSOR INSPECTION

1. Connect three 1.5 V dry cell batteries in a series.



2. Connect the positive pole of the battery to auto leveling sensor terminal A, and the negative pole to terminal D, then apply voltage of 4.5 V between terminals A and D.
 3. Connect the tester as shown in the figure.
 4. Verify that the voltage fluctuates linearly in the 0.5 to 4.1 V range while the links are moved up and down slowly.
- If not indicated in the graph, replace the rear auto leveling sensor.



[< Previous](#) [Next >](#)

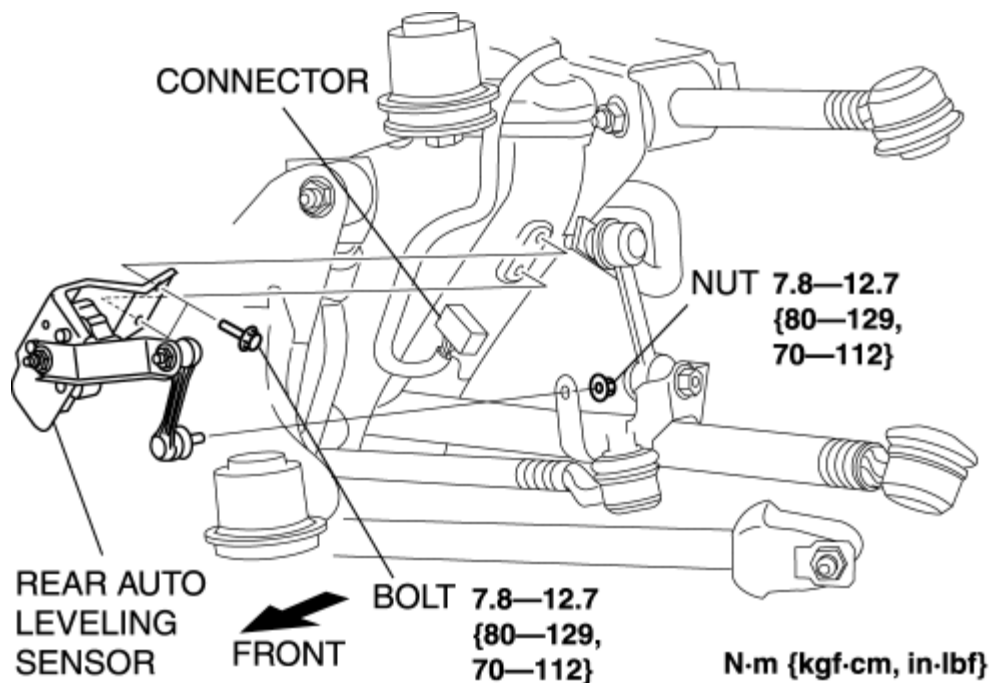
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

REAR AUTO LEVELING SENSOR REMOVAL/INSTALLATION

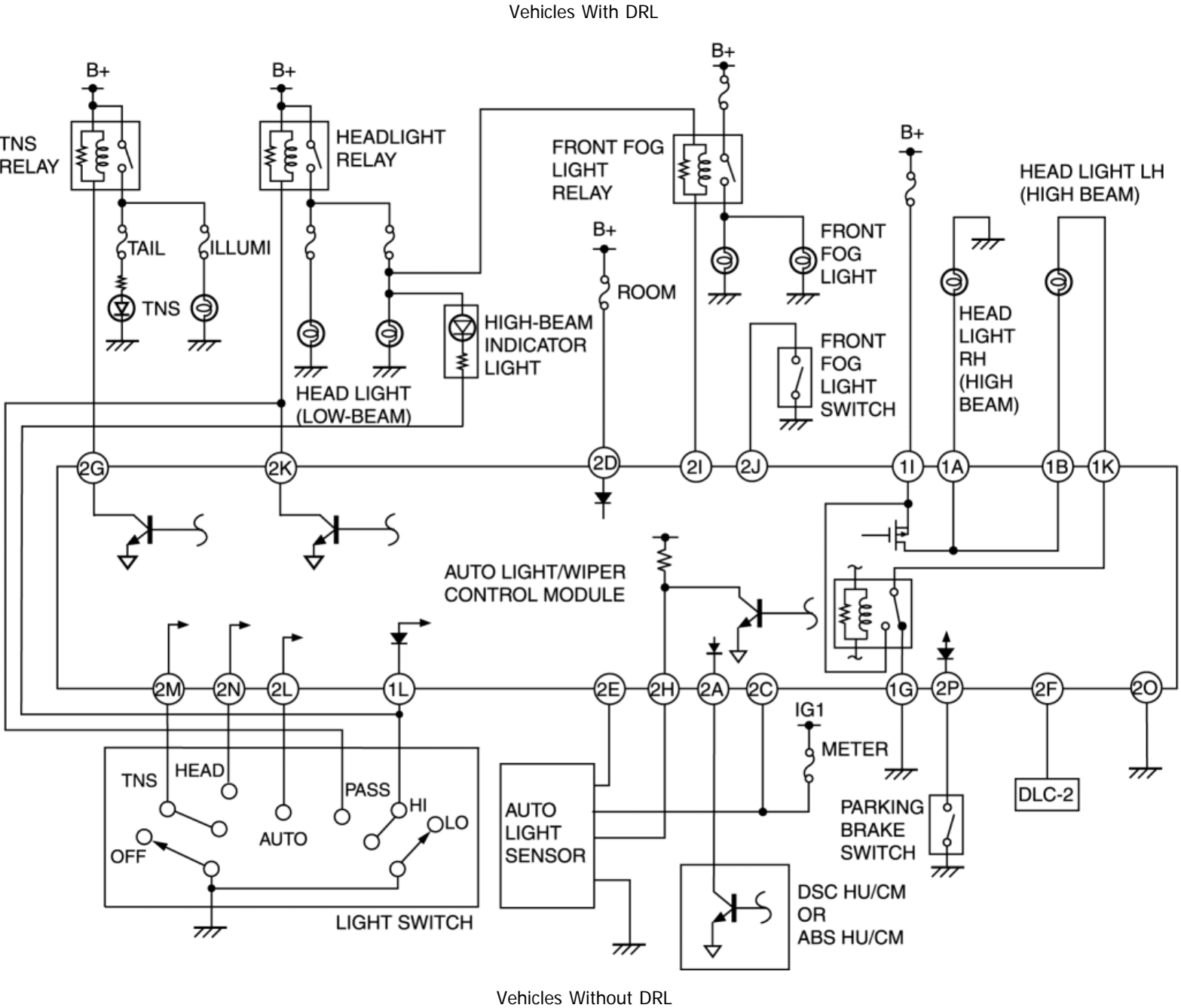
1. Disconnect the negative battery cable.
2. Jack up the vehicle and remove the wheel and tire.
3. Disconnect the connector.

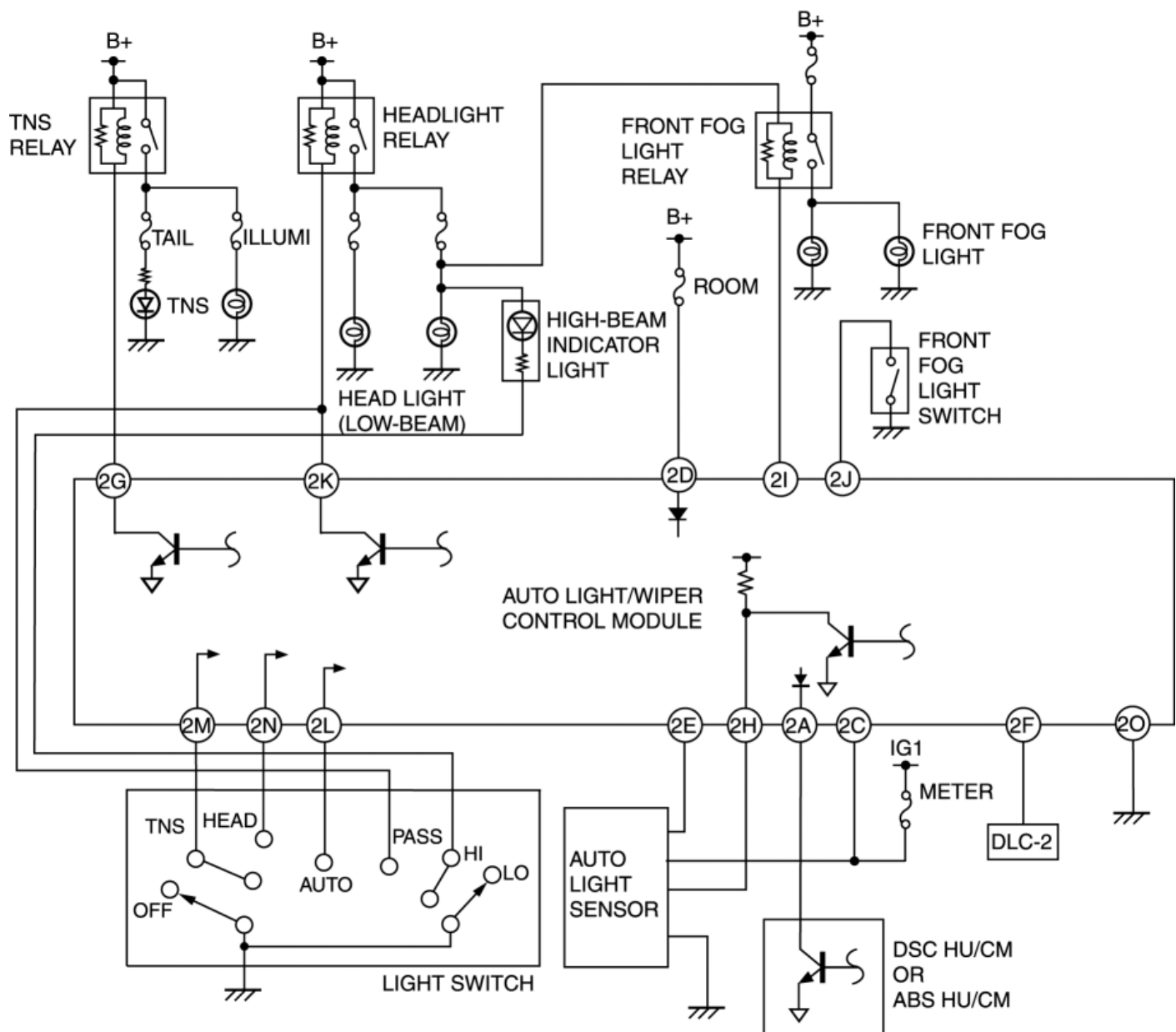


4. Remove the bolts and nut, then remove the rear auto leveling sensor.
5. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

DRL AND AUTO LIGHT SYSTEM WIRING DIAGRAM

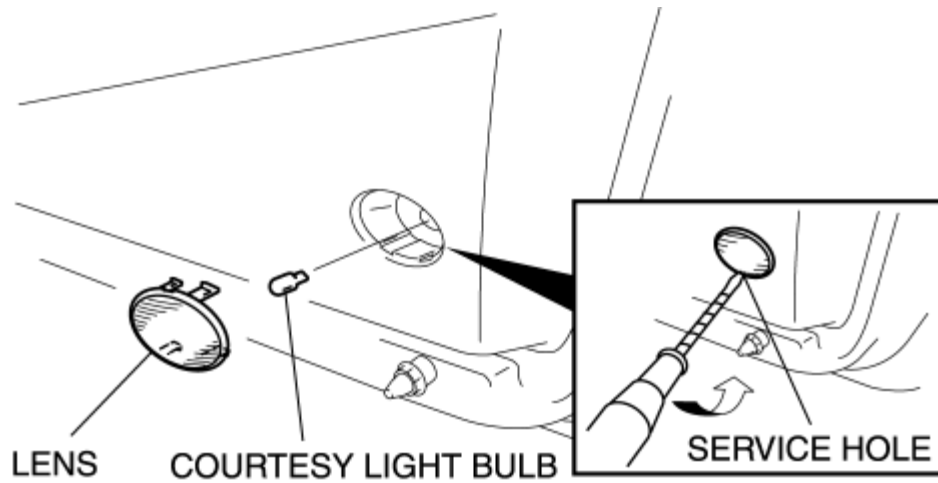




2011 - RX-8 - Body and Accessories

COURTESY LIGHT BULB REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the lens, then remove the courtesy light bulb.

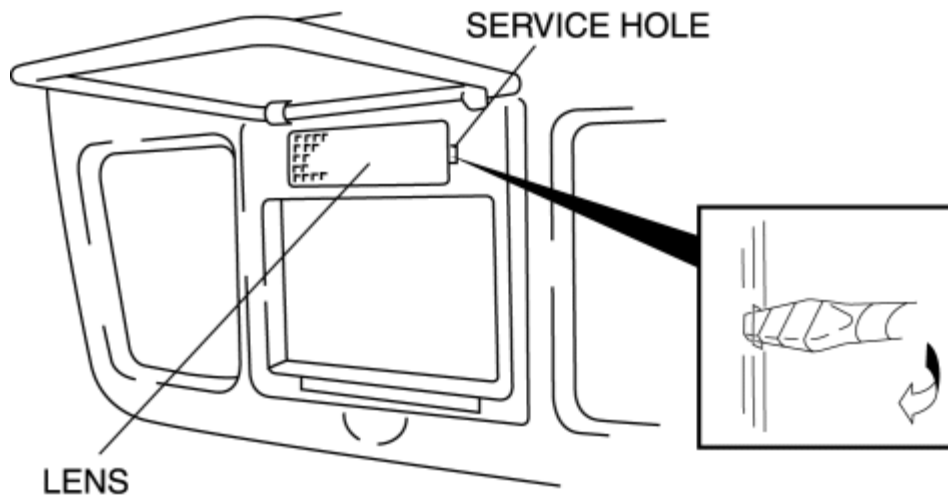


3. Install in the reverse order of removal.

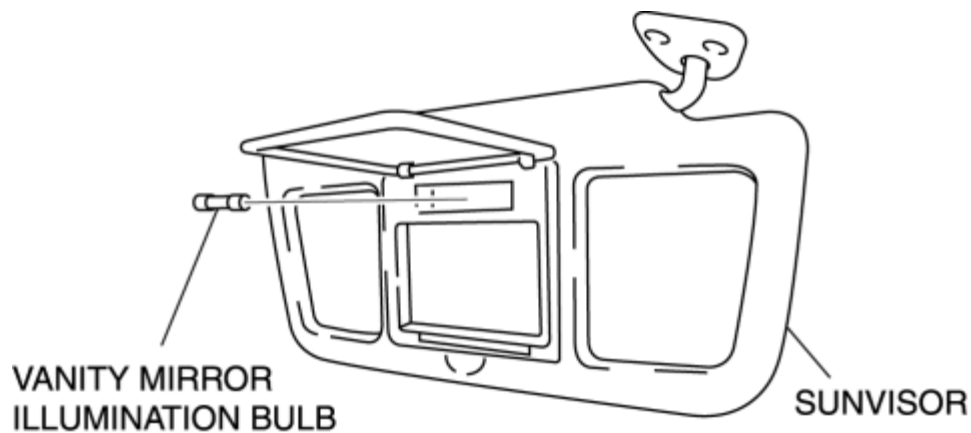
2011 - RX-8 - Body and Accessories

VANITY MIRROR ILLUMINATION BULB REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Insert a tape-wrapped flathead screwdriver into the service hole and pry with the screwdriver in the direction shown by the arrow to remove the lens.



3. Remove the vanity mirror illumination bulb.

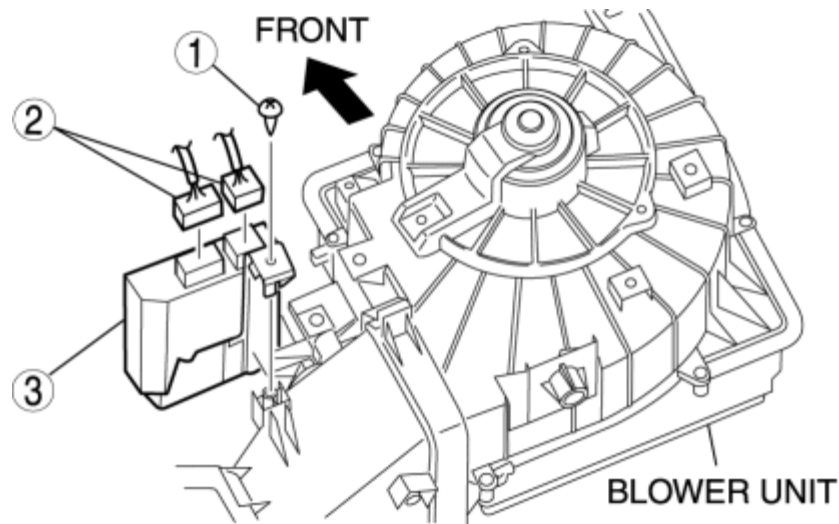


4. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove in the order indicated in the table.



1	Screw
2	Connector
3	Auto light/wiper control module

3. Install in the reverse order of removal.

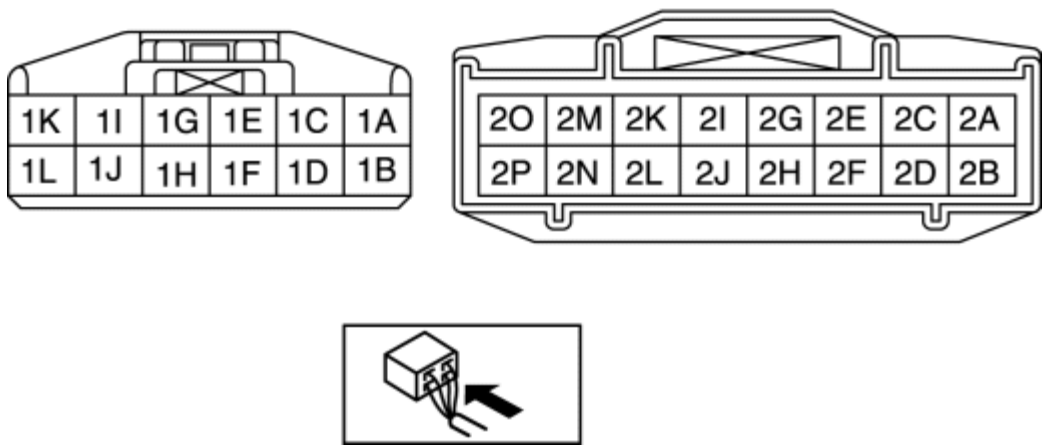
2011 - RX-8 - Body and Accessories

AUTO LIGHT/WIPER CONTROL MODULE INSPECTION

1. Measure the voltage at the auto light/wiper control module terminals as indicated below.

Terminal Voltage List (Reference)

AUTO LIGHT/WIPER CONTROL MODULE
HARNESS SIDE CONNECTOR



Terminal	Signal	Connection	Test condition		Voltage (V)	Action
1A*	RH headlight operation (high-beam)	RH headlight (high-beam)	Light switch at HEAD position	Dimmer switch at the high-beam position	B+	<ul style="list-style-type: none">• RH headlight• Related wiring harnesses
				Dimmer switch at the low-beam position	1.0 or less	
			DRL mode		Approx 6.0	

1B*	LH headlight operation (high-beam)	LH headlight (high-beam)	Light switch at HEAD position	Dimmer switch at the high-beam position	B+	<ul style="list-style-type: none"> LH headlight Related wiring harnesses
				Dimmer switch at the low-beam position	1.0 or less	
			DRL mode		Approx 6.0	
1C	Autostop switch signal	Autostop switch	Ignition switch at ON	Windshield wiper switch at LO position	B+	<ul style="list-style-type: none"> Autostop switch (Windshield wiper motor) (See WINDSHIELD WIPER MOTOR INSPECTION.) Related wiring harnesses
				Windshield wiper switch at OFF position	1.0 or less	
1D	Windshield wiper switch signal (OFF)	Windshield wiper and washer switch	Ignition switch at ON	Windshield wiper switch at LO position	B+	<ul style="list-style-type: none"> Windshield wiper and washer switch (See WINDSHIELD WIPER AND WASHER SWITCH INSPECTION.) Related wiring harnesses
				Windshield wiper switch at OFF position	1.0 or less	
1E	IG2	WIPER 30 A fuse	Ignition switch at ON		B+	<ul style="list-style-type: none"> WIPER 30 A fuse Related wiring harnesses
			Ignition switch at LOCK or ACC		1.0 or less	
1F	Windshield wiper switch signal (HI)	Windshield wiper and washer switch	Ignition switch at ON	Windshield wiper switch at HI position	B+	<ul style="list-style-type: none"> Windshield wiper and washer switch (See WINDSHIELD WIPER AND WASHER SWITCH INSPECTION.)
				Windshield wiper switch at OFF	1.0 or less	

				position		<ul style="list-style-type: none"> Related wiring harnesses
1G*	GND	GND	Under any condition		1.0 or less	<ul style="list-style-type: none"> Related wiring harnesses
1H	Windshield wiper switch signal (AUTO)	Windshield wiper and washer switch	Ignition switch at ON	Windshield wiper switch at AUTO position	B+	<ul style="list-style-type: none"> Windshield wiper and washer switch (See WINDSHIELD WIPER AND WASHER SWITCH INSPECTION.) Related wiring harnesses
				Windshield wiper switch at OFF position	1.0 or less	
1I*	Power supply	DRL 15 A fuse	Constant		B+	<ul style="list-style-type: none"> DRL 15 A fuse Related wiring harnesses
1J	Washer switch signal	Windshield wiper and washer switch	Ignition switch at ON	Washer switch at ON position	B+	<ul style="list-style-type: none"> Windshield wiper and washer switch (See WINDSHIELD WIPER AND WASHER SWITCH INSPECTION.) Related wiring harnesses
				Washer switch at OFF position	1.0 or less	
1K*	LH headlight operation (high-beam)	LH headlight (high-beam)	Light switch at the OFF position	Ignition switch at ON position	B+	<ul style="list-style-type: none"> LH headlight Related wiring harnesses
				Ignition switch LOCK or ACC position	1.0 or less	
1L*	High-beam on/off	Light switch	Ignition switch at ON	Dimmer switch at high-beam position	1.0 or less	<ul style="list-style-type: none"> Light switch (See LIGHT SWITCH INSPECTION.)

				Dimmer switch at low-beam position	B+	<ul style="list-style-type: none"> Related wiring harnesses
2A	Vehicle speed signal input	DSC HU/CM or ABS HU/CM	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.		—	<ul style="list-style-type: none"> DSC HU/CM ABS HU/CM Related wiring harnesses
2B	Sensitivity adjustment volume	Windshield wiper and washer switch	Ignition switch at ON	Sensitivity adjustment volume turned from + position to - position	0 → 0.8 → 1.5 → 1.9 → 2.2	<ul style="list-style-type: none"> Windshield wiper and washer switch (See WINDSHIELD WIPER AND WASHER SWITCH INSPECTION.) Related wiring harnesses
2C	IG1	METER 10 A fuse	Ignition switch at ON		B+	<ul style="list-style-type: none"> METER 10 A fuse Related wiring harnesses
			Ignition switch at LOCK or ACC		1.0 or less	
2D	Power supply	ROOM 15 A fuse	Constant		B+	<ul style="list-style-type: none"> ROOM 15 A fuse Related wiring harnesses
2E	Wiper or headlight operation request	Auto light (Rain) sensor	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.		—	<ul style="list-style-type: none"> Auto light (Rain) sensor Related wiring harnesses
2F	DLC-2 power supply	DLC-2	Under any condition		B+	<ul style="list-style-type: none"> Related wiring harnesses
2G	TNS relay operation	TNS relay	Light switch at low-beam or high-beam position		Below 1.5	<ul style="list-style-type: none"> TNS relay (See RELAY INSPECTION.) Related wiring

			Light switch at OFF		B+	harnesses
2H	Auto light (Rain) sensor operation request	Auto light (Rain) sensor	Because this terminal is for communication, good/no good judgment by terminal voltage is not possible.		—	<ul style="list-style-type: none"> Auto light (Rain) sensor Related wiring harnesses
2I	Front fog light relay on/off	Front fog light relay	Light switch at the headlight position and dimmer switch at LO	Front fog light switch at ON position	2.0 or less	<ul style="list-style-type: none"> FRONT FOG LIGHT relay (See RELAY INSPECTION) Related wiring harnesses
				Front fog light switch at OFF position	B+	
2J	Front fog light switch on/off	Front fog light switch	Light switch at the headlight position and dimmer switch at LO	Front fog light switch at ON position	1.0 or less	<ul style="list-style-type: none"> Light switch (See LIGHT SWITCH INSPECTION.) Related wiring harnesses
				Front fog light switch at OFF position	B+	
2K	HEADLIGHT relay operation	HEADLIGHT relay	Light switch at high-beam position		Below 1.5	<ul style="list-style-type: none"> HEADLIGHT relay (See RELAY INSPECTION.) Related wiring harnesses
			Light switch at OFF or low-beam position		B+	
2L	AUTO switch signal	Light switch	Ignition switch at ON	Light switch at AUTO position	1.0 or less	<ul style="list-style-type: none"> Light switch (See LIGHT SWITCH INSPECTION.) Related wiring harnesses
				Other	B+	
2M	TNS switch on/off	Light switch	Ignition switch at ON	Light switch at low-beam or high-beam position	1.0 or less	<ul style="list-style-type: none"> Light switch (See LIGHT SWITCH INSPECTION.) Related wiring harnesses
				Light switch at OFF position	B+	

2N	Headlight switch on/off	Light switch	Ignition switch at ON	Light switch at low-beam or high-beam position	1.0 or less	<ul style="list-style-type: none"> Light switch (See LIGHT SWITCH INSPECTION.) Related wiring harnesses
				Light switch at OFF position	B+	
2O	GND	GND	Under any condition		1.0 or less	<ul style="list-style-type: none"> Related wiring harnesses
2P*	Parking brake switch on/off	Parking brake switch	Ignition switch at ON	Parking brake switch on	1.0 or less	<ul style="list-style-type: none"> Parking brake switch Related wiring harnesses
				Parking brake switch OFF	B+	

*

For vehicles with DRL only.

[< Previous](#) [Next >](#)

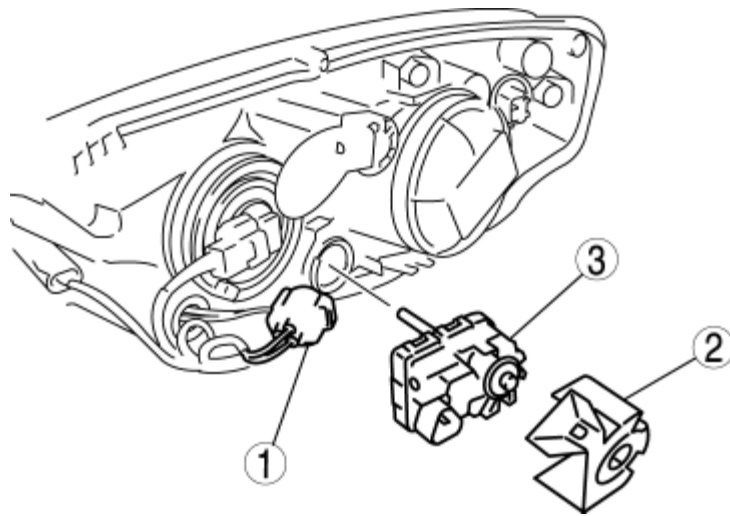
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

HEADLIGHT LEVELING ACTUATOR REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the fasteners, then slightly bend back the front mudguard.
3. Remove in the order indicated in the table.

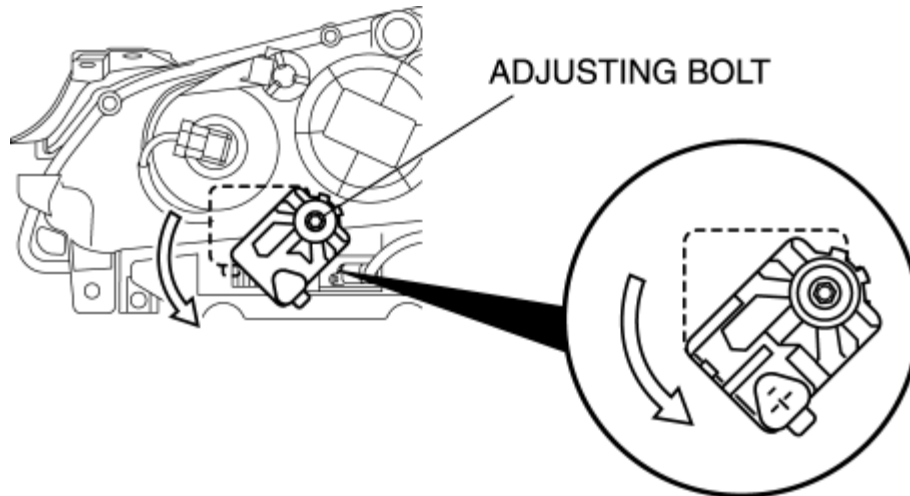


1	Connector
2	Cover
3	Headlight leveling actuator (See Headlight Leveling Actuator Removal Note)

4. Install in the reverse order of removal.
5. Adjust the headlight aiming. (See [HEADLIGHT AIMING](#).)

Headlight Leveling Actuator Removal Note

1. Loosen the adjusting bolt until the headlight leveling actuator can be rotated.
2. Rotate the headlight leveling actuator to the position shown in the figure.



3. Loosen the adjusting bolt further and remove the headlight leveling actuator.

[< Previous](#) [Next >](#)

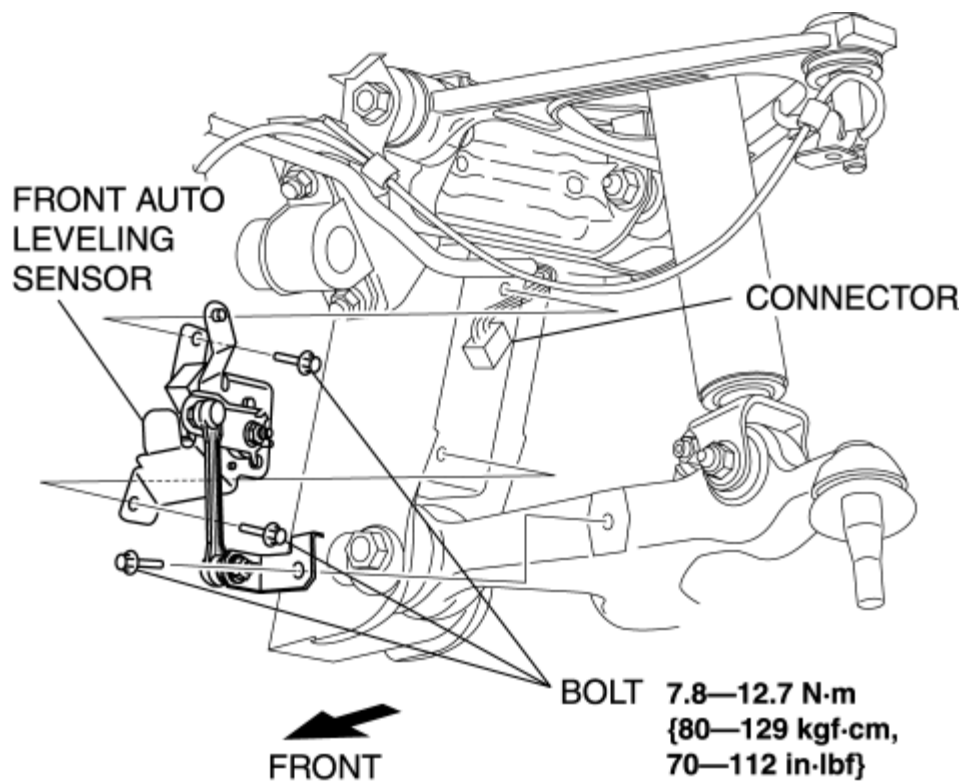
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

FRONT AUTO LEVELING SENSOR REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Jack up the vehicle and remove the wheel and tire.
3. Disconnect the connector.

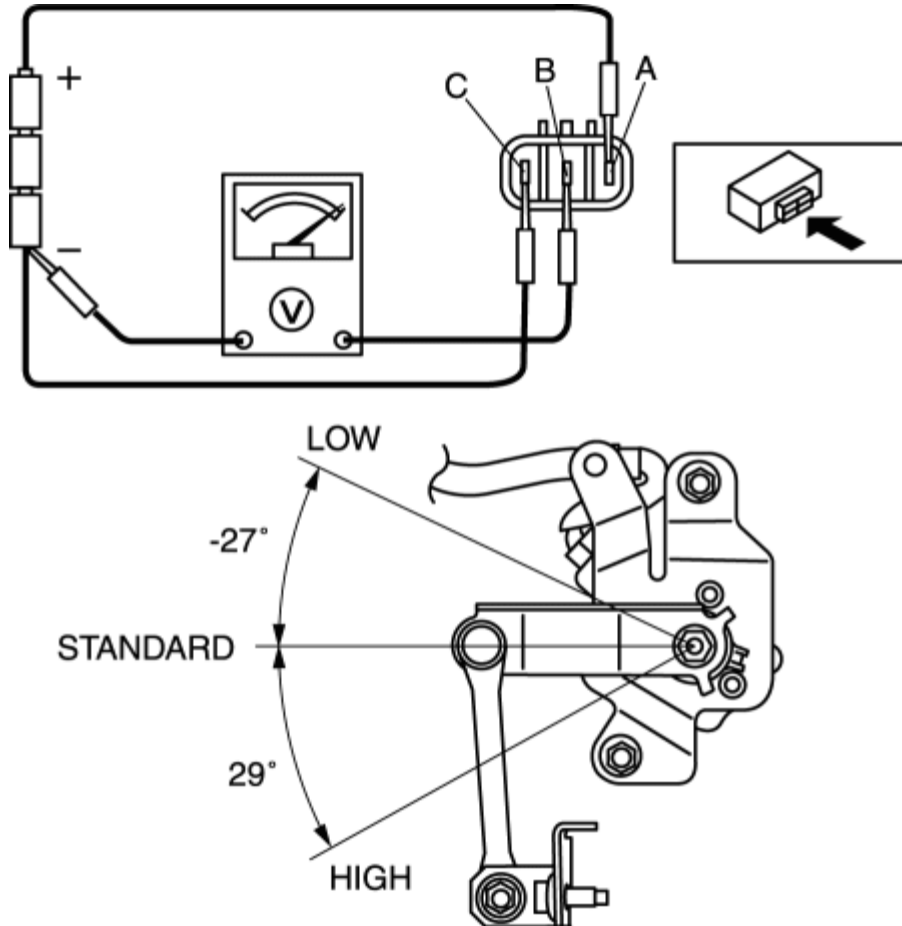


4. Remove the bolts and then remove the front auto leveling sensor.
5. Install in the reverse order of removal.

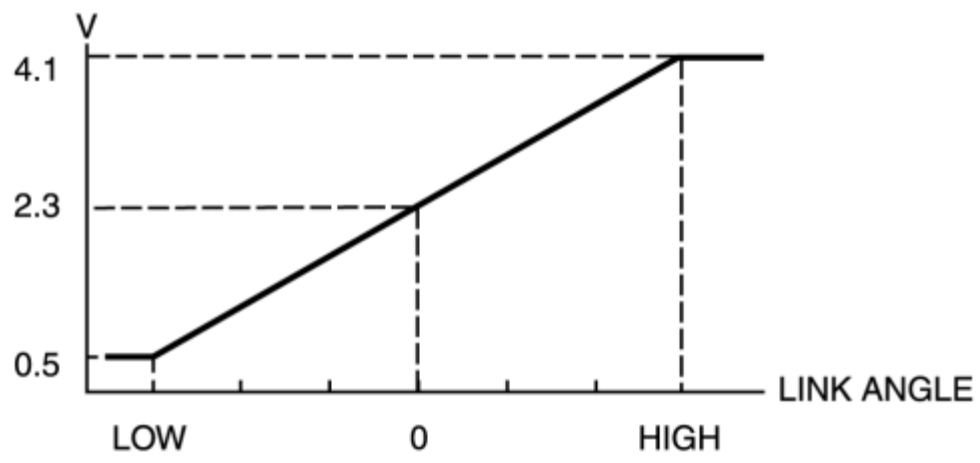
2011 - RX-8 - Body and Accessories

FRONT AUTO LEVELING SENSOR INSPECTION

1. Connect three 1.5 V dry cell batteries in a series.



2. Connect the positive pole of the battery to auto leveling sensor terminal A, and the negative pole to terminal C, then apply voltage of 4.5 V between terminals A and C.
 3. Connect the tester as shown in the figure.
 4. Verify that the voltage fluctuates linearly in the 0.5 to 4.1 V range while the links are moved up and down slowly.
- If not indicated in the graph, replace the front auto leveling sensor.



[< Previous](#) [Next >](#)

[Back to Top](#)

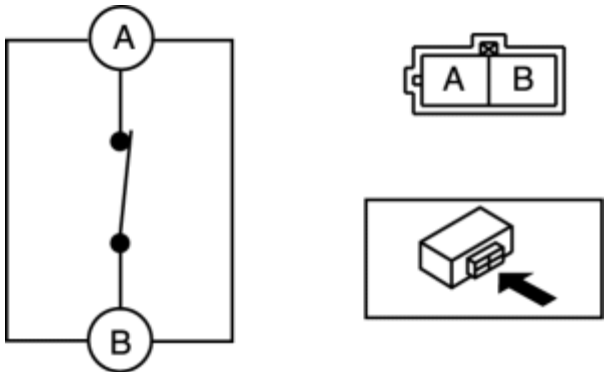
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

TRUNK COMPARTMENT LIGHT SWITCH INSPECTION

NOTE:

- The trunk compartment light switch is built into the trunk lock.
1. Remove the trunk lid trim. (See [TRUNK LID TRIM REMOVAL/INSTALLATION](#).)
 2. Disconnect the trunk compartment light switch connector.
 3. Verify that the continuity between the trunk compartment light switch terminals is as indicated in the table.



- If not as indicated in the table, replace the trunk lock.

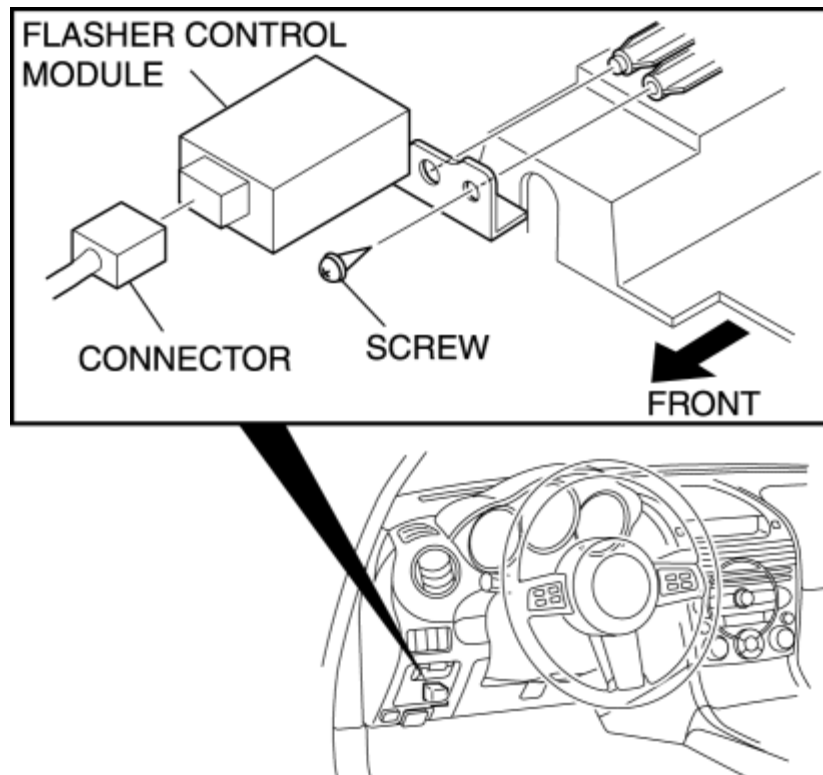
○ — ○ : Continuity

Measured condition	Terminal	
	A	B
ON (trunk lid open)	○ —	— ○
OFF (trunk lid closed)		

2011 - RX-8 - Body and Accessories

FLASHER CONTROL MODULE REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Disconnect the connector.



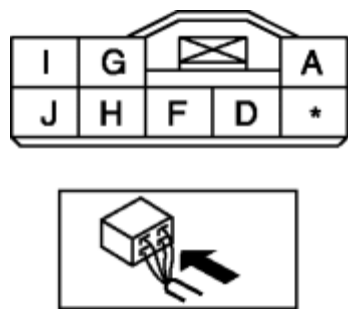
3. Remove the screw and then remove the flasher control module.
4. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

FLASHER CONTROL MODULE INSPECTION

1. Remove the flasher control module with the connector still connected.
2. Measure the voltage at each terminal.
 - If the voltage is not as specified in the Terminal Voltage Table (Reference), inspect the parts under "Inspection item(s)".

Terminal Voltage Table (Reference)



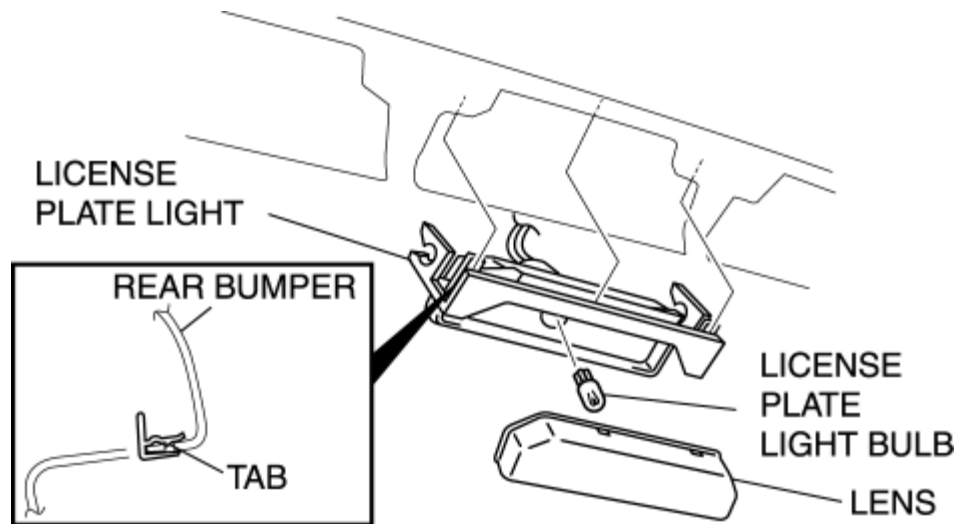
Terminal	Signal name	Connected to	Measured condition		Voltage (V)/Continuity	Inspection item(s)
A	Power supply	HAZARD 15 A fuse	Under any condition		B+	<div><div></div><div><ul style="list-style-type: none">HAZARD 15 A fuseRelated wiring harnesses</div></div>
D	Flasher control module output	Turn light (LH)	Turn light switch (LH) is on.	Turn light (LH) flashes.	Alternates between 1.0 or less and B+	<div><div></div><div><ul style="list-style-type: none">Turn light (LH)Related wiring harnesses</div></div>
			Hazard warning switch is on.			
			Except above		1.0 or less	

F	GND	Body ground	Under any condition: Inspect for continuity to ground.		Continuity detected	<ul style="list-style-type: none">GND
G	Flasher control module output	Turn light (RH)	Turn light switch (RH) is on.	Turn light (RH) flashes.	Alternates between 1.0 or less and B+	<ul style="list-style-type: none">Turn light (RH)Related wiring harnesses
			Hazard warning switch is on.			
			Except above		1.0 or less	
H	Hazard warning switch input	Hazard warning switch	Hazard warning switch is on.		1.0 or less	<ul style="list-style-type: none">Hazard warning switch (See HAZARD WARNING SWITCH INSPECTION.) <ul style="list-style-type: none">Related wiring harnesses
			Hazard warning switch is off.		B+	
I	Turn switch (RH) input	Turn switch	Turn the ignition switch to the ON position.	Turn switch (RH) is on.	B+	<ul style="list-style-type: none">Turn switch (See LIGHT SWITCH INSPECTION.) <ul style="list-style-type: none">Related wiring harnesses
			Except above		1.0 or less	
J	Turn switch (LH) input	Turn switch	Turn the ignition switch to the ON position.	Turn switch (LH) is on.	B+	<ul style="list-style-type: none">Turn switch (See LIGHT SWITCH INSPECTION.) <ul style="list-style-type: none">Related wiring harnesses
			Except above		1.0 or less	

2011 - RX-8 - Body and Accessories

LICENSE PLATE LIGHT BULB REMOVAL/INSTALLATION

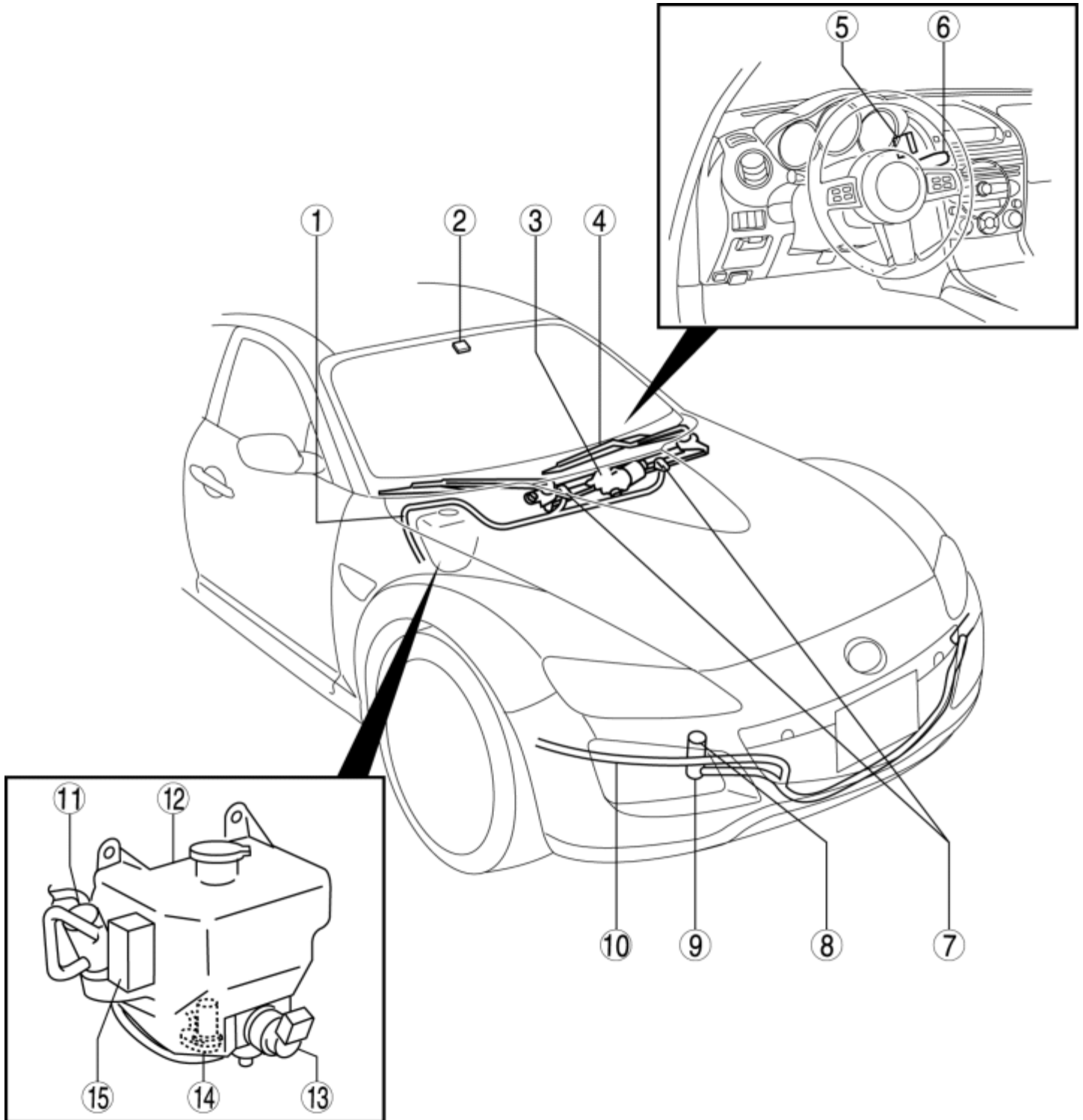
1. Disconnect the negative battery cable.
2. Remove the lens, then remove the license plate light bulb.



3. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

WIPER/WASHER SYSTEM LOCATION INDEX



1	<p>Windshield washer hose</p> <p>(See WINDSHIELD WASHER HOSE REMOVAL/INSTALLATION.)</p>
2	<p>Rain sensor</p> <p>(See RAIN SENSOR REMOVAL/INSTALLATION.)</p> <p>(See RAIN SENSOR INITIALIZATION SETTING.)</p>
3	<p>Windshield wiper motor</p> <p>(See WINDSHIELD WIPER MOTOR REMOVAL/INSTALLATION.)</p> <p>(See WINDSHIELD WIPER MOTOR DISASSEMBLY/ASSEMBLY.)</p> <p>(See WINDSHIELD WIPER MOTOR INSPECTION.)</p>
4	<p>Windshield wiper arm and blade</p> <p>(See WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION.)</p> <p>(See WINDSHIELD WIPER ARM AND BLADE ADJUSTMENT.)</p>
5	<p>Auto light/wiper control module</p> <p>(See AUTO LIGHT/WIPER CONTROL MODULE REMOVAL/INSTALLATION.)</p> <p>(See AUTO LIGHT/WIPER CONTROL MODULE INSPECTION.)</p>
6	<p>Windshield wiper and washer switch</p> <p>(See WINDSHIELD WIPER AND WASHER SWITCH REMOVAL/INSTALLATION.)</p> <p>(See WINDSHIELD WIPER AND WASHER SWITCH INSPECTION.)</p>
7	<p>Windshield washer nozzle</p> <p>(See WINDSHIELD WASHER NOZZLE REMOVAL/INSTALLATION.)</p> <p>(See WINDSHIELD WASHER NOZZLE ADJUSTMENT.)</p> <p>(See WINDSHIELD WASHER NOZZLE CLEANING.)</p>
8	<p>Headlight cleaner nozzle</p> <p>(See HEADLIGHT CLEANER NOZZLE REMOVAL.)</p>

	(See HEADLIGHT CLEANER NOZZLE INSTALLATION.)
9	Headlight cleaner actuator (See HEADLIGHT CLEANER ACTUATOR REMOVAL/INSTALLATION.)
10	Headlight cleaner hose (See HEADLIGHT CLEANER HOSE REMOVAL/INSTALLATION.)
11	Headlight cleaner motor (See HEADLIGHT CLEANER MOTOR REMOVAL/INSTALLATION.) (See HEADLIGHT CLEANER MOTOR INSPECTION.)
12	Windshield washer tank (See WINDSHIELD WASHER TANK REMOVAL/INSTALLATION.)
13	Windshield washer motor (See WINDSHIELD WASHER MOTOR REMOVAL/INSTALLATION.) (See WINDSHIELD WASHER MOTOR INSPECTION.)
14	Washer fluid-level sensor (See WASHER FLUID-LEVEL SENSOR REMOVAL/INSTALLATION.) (See WASHER FLUID-LEVEL SENSOR INSPECTION.)
15	Headlight cleaner relay (See HEADLIGHT CLEANER RELAY REMOVAL/INSTALLATION.) (See HEADLIGHT CLEANER RELAY INSPECTION.)

[< Previous](#) [Next >](#)

[Back to Top](#)

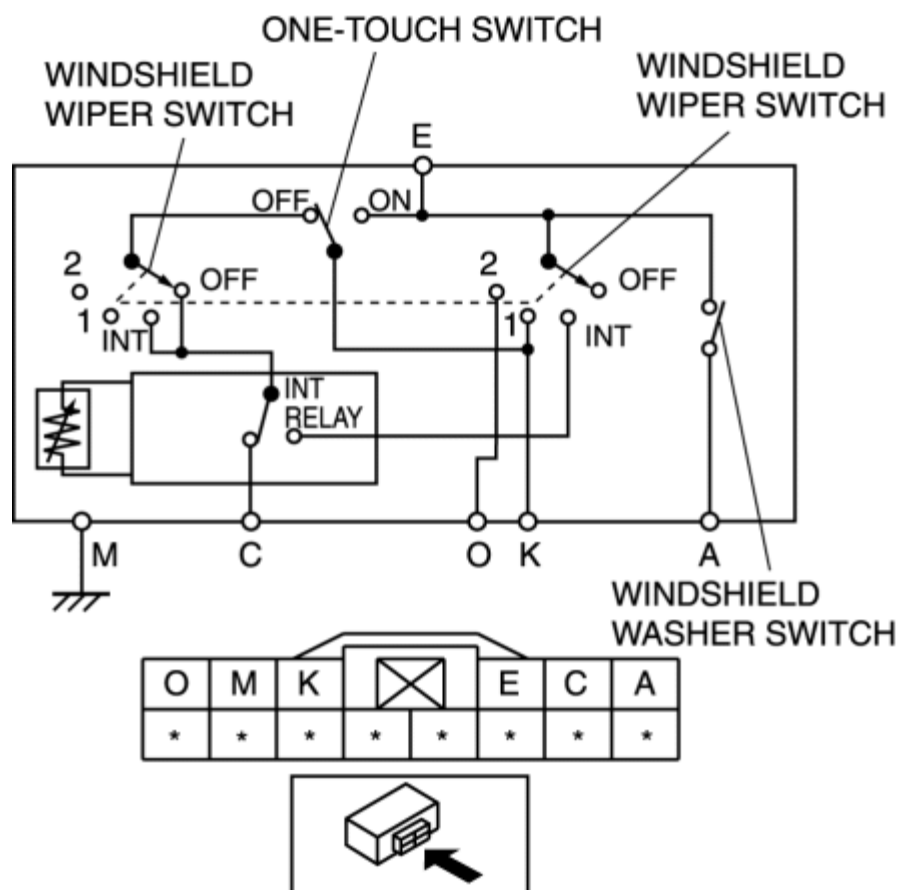
2011 - RX-8 - Body and Accessories

WINDSHIELD WIPER AND WASHER SWITCH INSPECTION

1. Remove the column cover. (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
2. Remove the ignition key illumination. (See [IGNITION KEY ILLUMINATION BULB REMOVAL/INSTALLATION](#).)
3. Remove the windshield wiper and washer switch. (See [WINDSHIELD WIPER AND WASHER SWITCH REMOVAL/INSTALLATION](#).)
4. Verify that the continuity between the windshield wiper and washer switch is as indicated in the table.

Vehicles without auto wiper system

- If not as indicated in the table, replace the windshield wiper and washer switch.

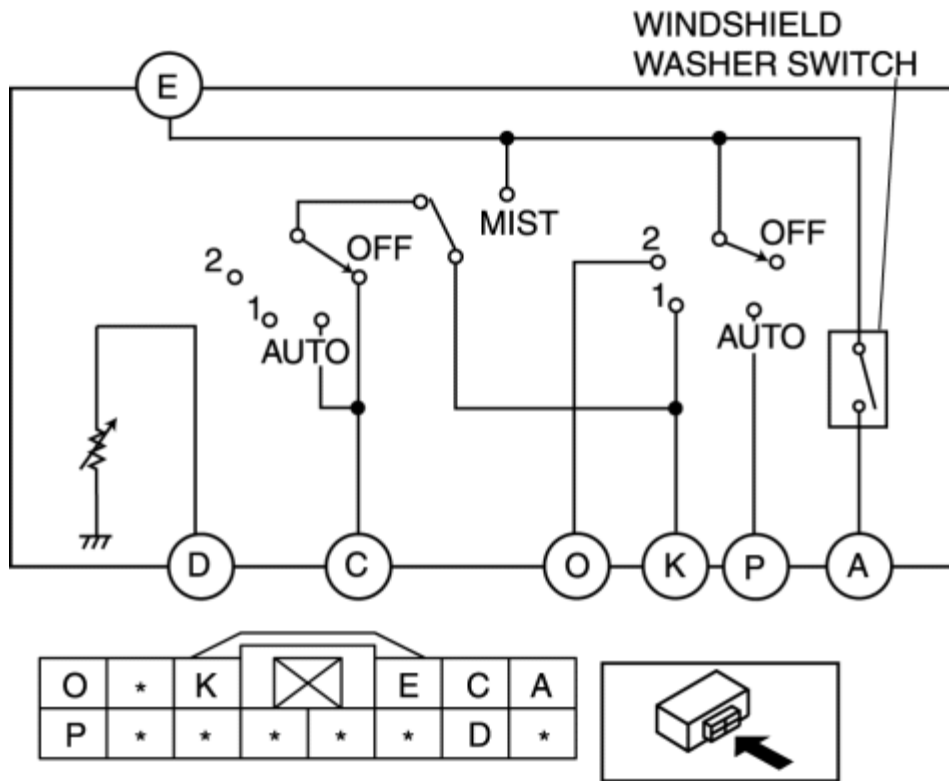


○ — ○ : Continuity

Switch position		One-touch switch	Terminal				
			A	C	E	K	O
Wind-shield wiper switch	OFF	OFF		○ — ○			
		ON			○ — ○		
	INT			○ — ○			
	1				○ — ○		
	2				○ — ○		○
Wind-shield washer switch	ON		○ — ○				

Vehicles with auto wiper system

- If not as indicated in the table, replace the windshield wiper and washer switch.



○—○ : Continuity

Switch position		Mist	Terminal						
			A	C	D	E	K	O	P BODY GND
Wind-shield wiper switch	OFF	OFF		○—○		○			
		ON				○—○			
	AUTO					○—○			○
				○—○		○			
					○—○		W		○
	1					○—○			
Wind-shield washer switch	2					○—○	○		
	ON		○—○						

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

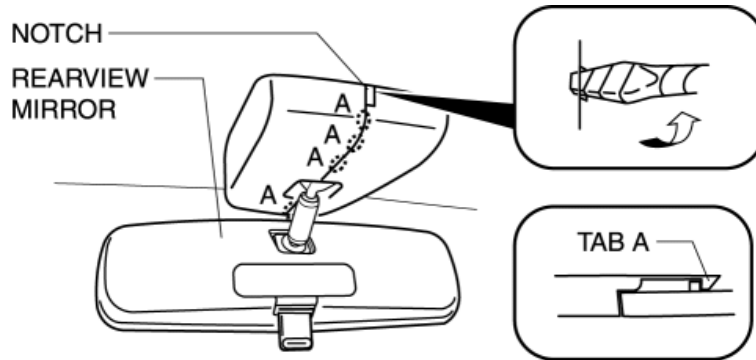
RAIN SENSOR REMOVAL/INSTALLATION

CAUTION:

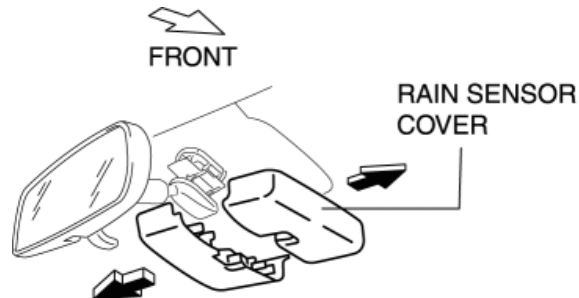
- The reflection rate at the moment the ignition switch is first turned on after replacing the rain sensor with a new one is stored as the condition indicating zero precipitation on the windshield. Therefore, before turning on the ignition switch, remove water and dirt from the windshield.
- In addition, rain sensor initialization is performed for the following cases: (See [RAIN SENSOR INITIALIZATION SETTING.](#))
 - The windshield is replaced and the rain sensor is reused.
 - The auto wiper system operates incorrectly.

1. Disconnect the negative battery cable.

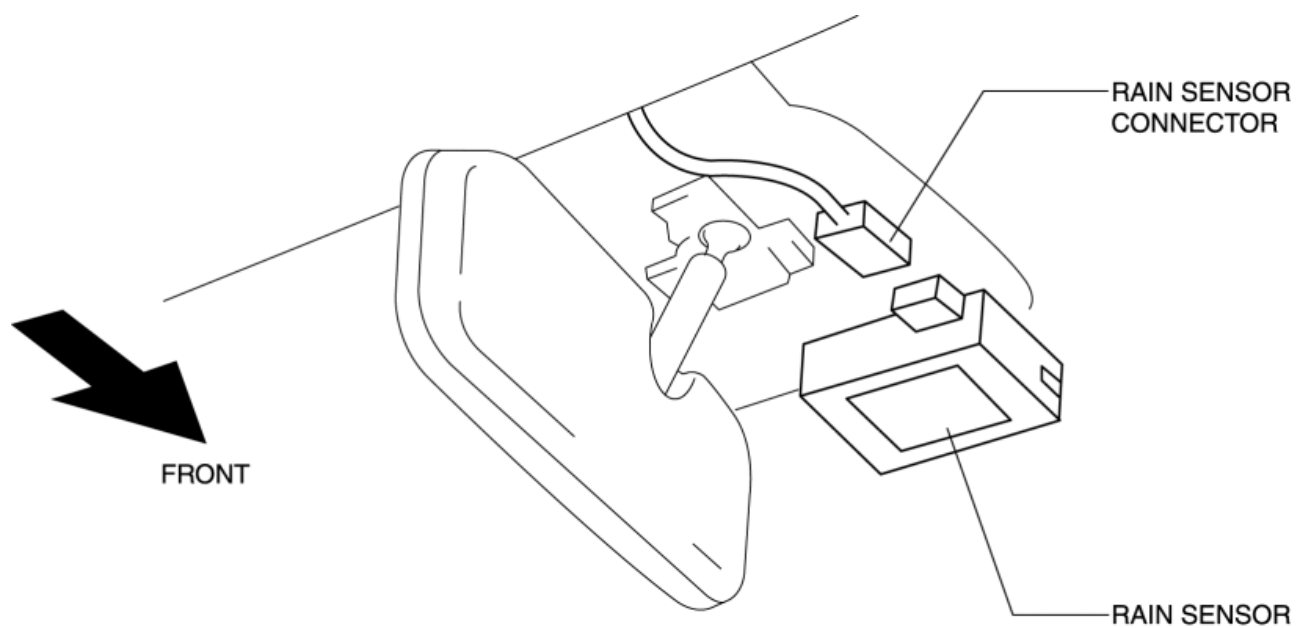
2. Insert the fastener remover wrapped with protective tape into the notch of the rain sensor cover. Then disconnect the tab A by turning the fastener remover in the direction of the arrow.



3. Remove the rain sensor cover in the direction of the arrow A.

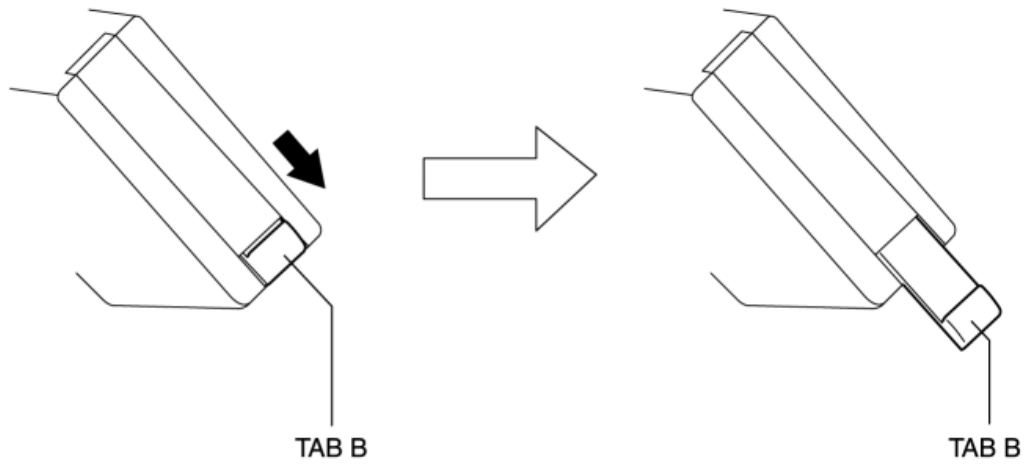


4. Disconnect the rain sensor connector.

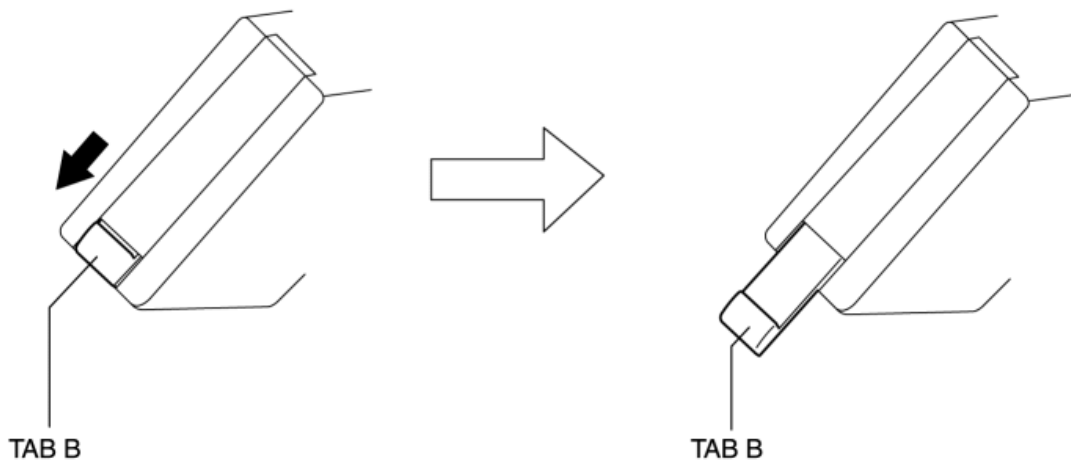


5. Slide the tab B in the direction of the arrow and disconnect it while supporting the rain sensor with your hand.

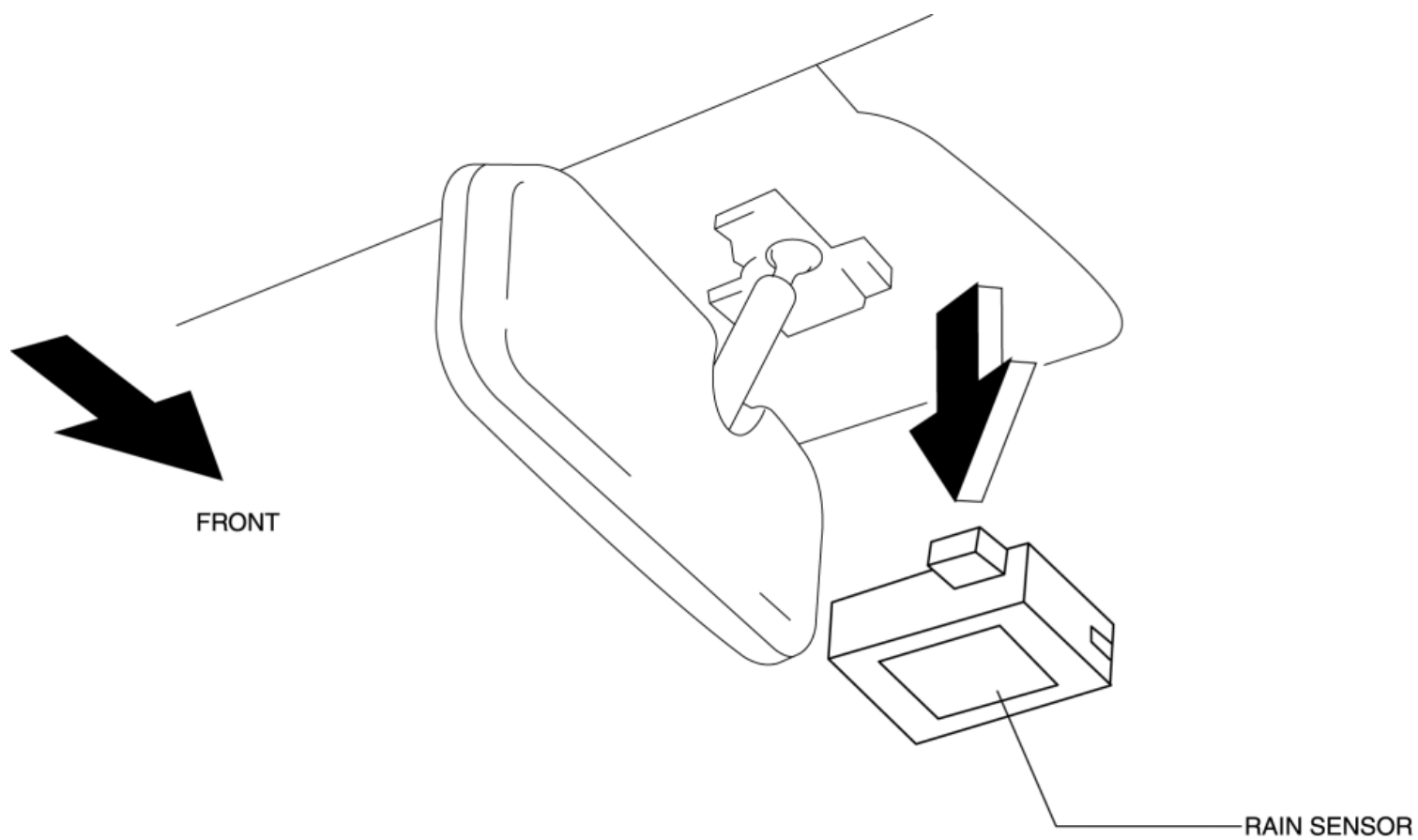
RIGHT



LEFT



6. Uninstall the rain sensor in the direction of the arrow.



7. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

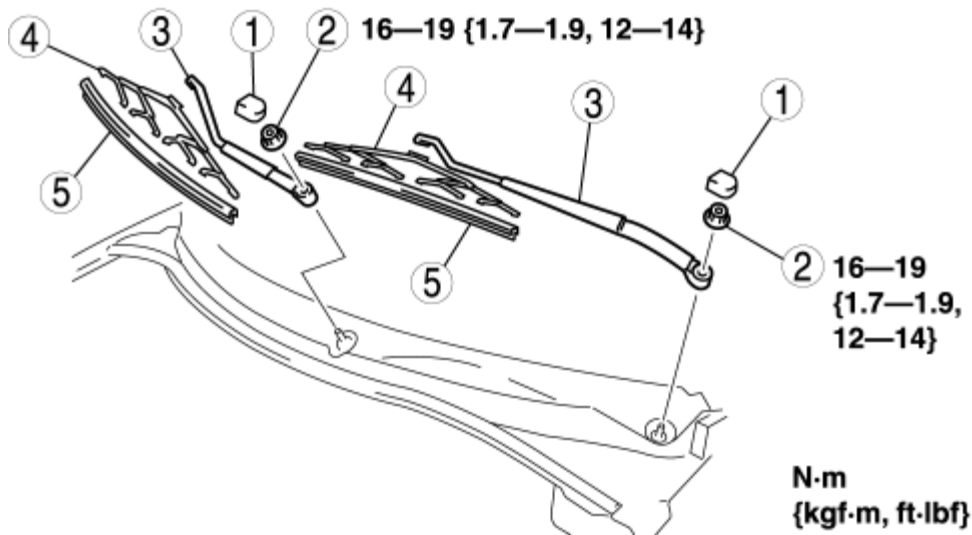
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION

1. Remove in the order indicated in the table.



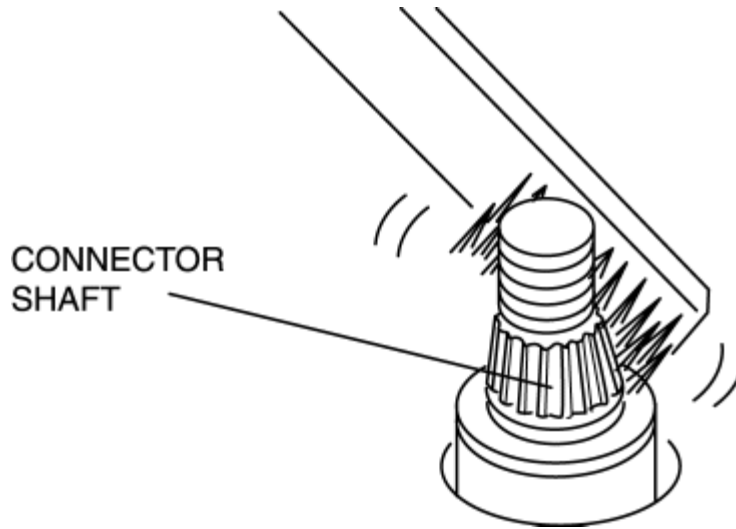
1	Cap
2	Nut
3	Windshield wiper arm (See Windshield Wiper Arm Installation Note.)
4	Windshield wiper blade
5	Rubber brush

2. Install in the reverse order of removal.

3. Adjust the windshield wiper arm and blade. (See [WINDSHIELD WIPER ARM AND BLADE ADJUSTMENT.](#))

Windshield Wiper Arm Installation Note

1. Clean the windshield wiper arm connector shafts using a wire brush before installing the windshield wiper arms.



[< Previous](#) [Next >](#)

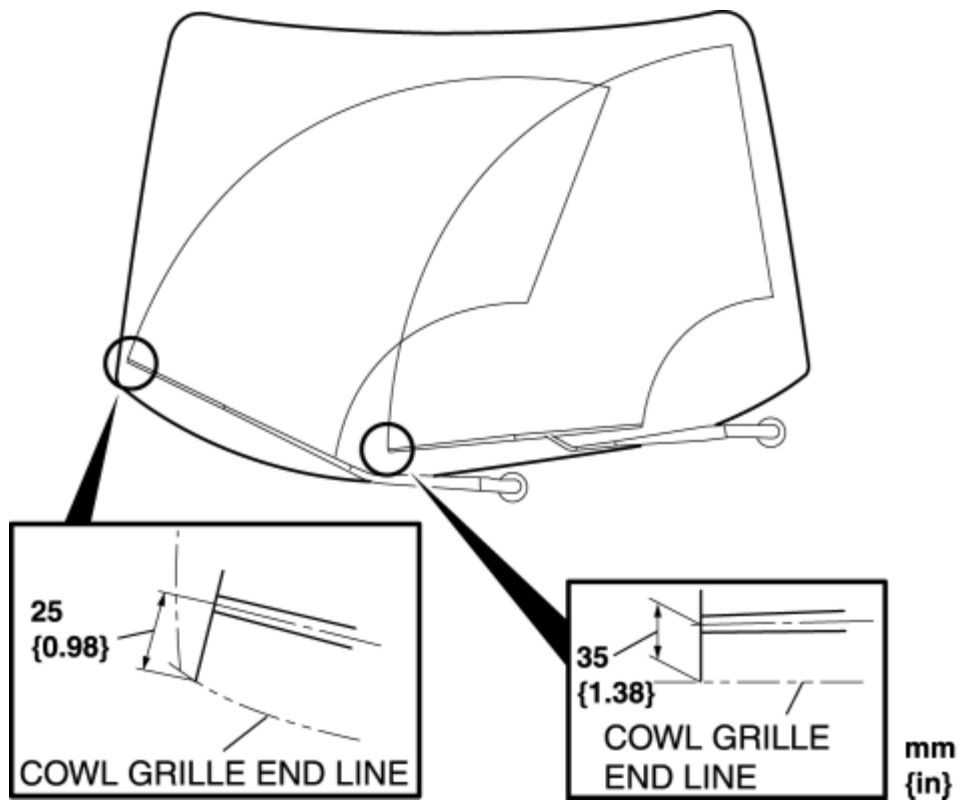
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

WINDSHIELD WIPER ARM AND BLADE ADJUSTMENT

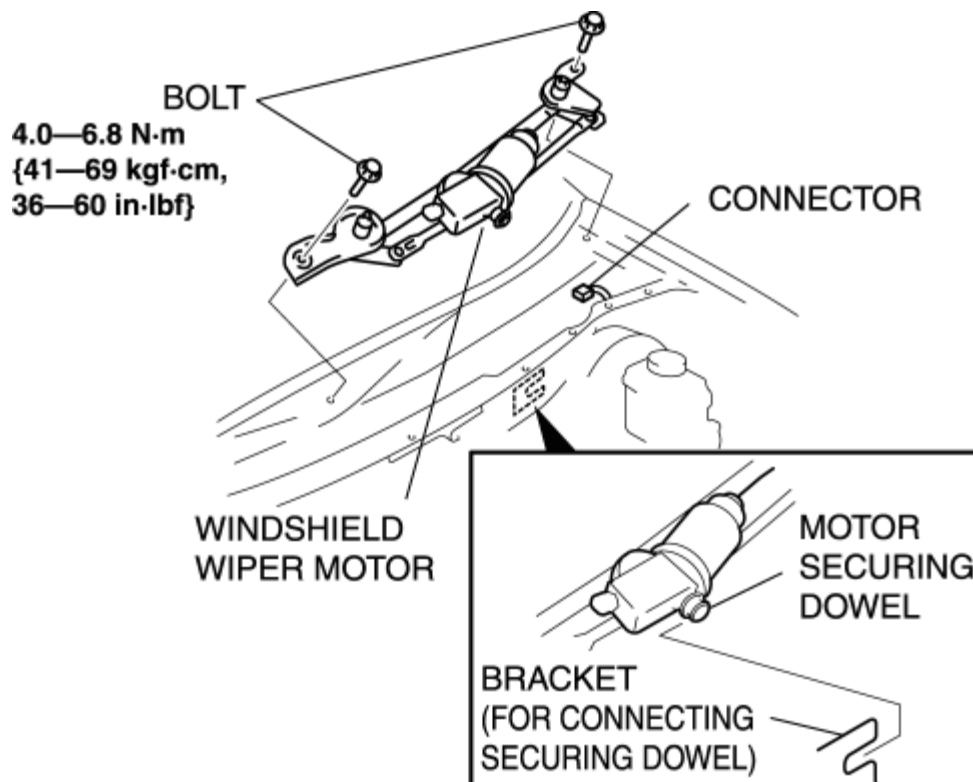
1. Operate the windshield wipers, and turn off the windshield wiper motor to set the wipers in the park position.
2. Adjust the windshield wiper arm connector shafts to set the arm heights as shown.



2011 - RX-8 - Body and Accessories

WINDSHIELD WIPER MOTOR REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the windshield wiper arm and blade. (See [WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION](#).)
3. Remove the cowl grille. (See [COWL GRILLE REMOVAL/INSTALLATION](#).)
4. Disconnect the connector.

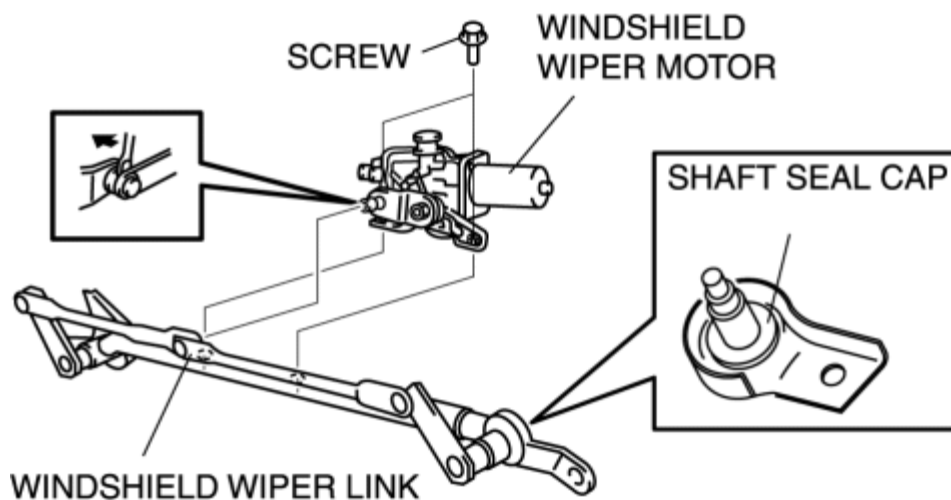


5. Remove the bolts. Move the windshield wiper motor in the direction of the arrow, remove the securing dowel from the bracket, then remove the windshield wiper motor.
6. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

WINDSHIELD WIPER MOTOR DISASSEMBLY/ASSEMBLY

1. Disconnect the negative battery cable.
2. Remove the windshield wiper arm and blade. (See [WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION](#).)
3. Remove the cowl grille. (See [COWL GRILLE REMOVAL/INSTALLATION](#).)
4. Disconnect the connector.
5. Detach the connecting part between the windshield wiper motor and the windshield wiper link.

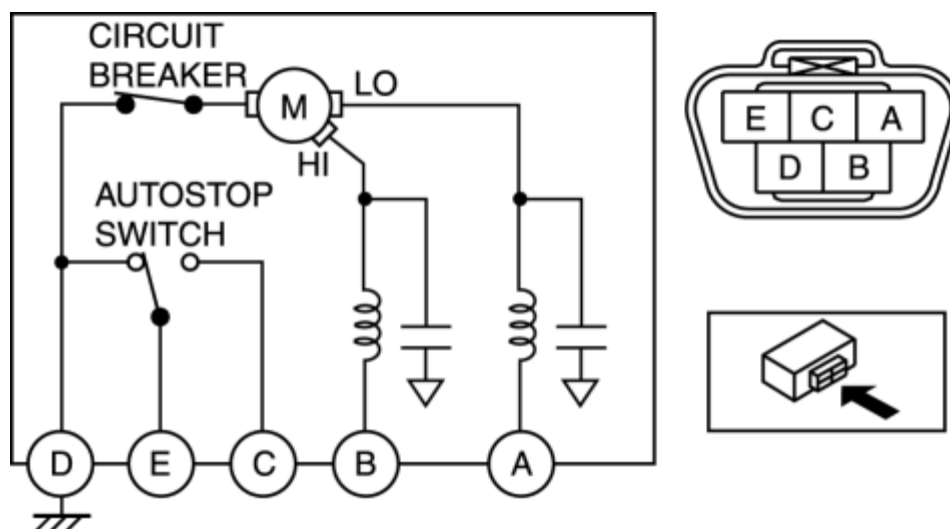


6. Remove the screws, then remove the windshield wiper motor.
7. Assemble in the reverse order of disassembly.
8. Adjust the windshield wiper arm and blade. (See [WINDSHIELD WIPER ARM AND BLADE ADJUSTMENT](#).)

2011 - RX-8 - Body and Accessories

WINDSHIELD WIPER MOTOR INSPECTION

1. Disconnect the windshield wiper motor connector.
2. Connect battery positive voltage to windshield wiper motor terminal A or B, and ground to terminal D, then verify that the windshield wipers operate as shown in the table.



- If the windshield wipers do not operate as indicated in the table, replace the windshield wiper motor.

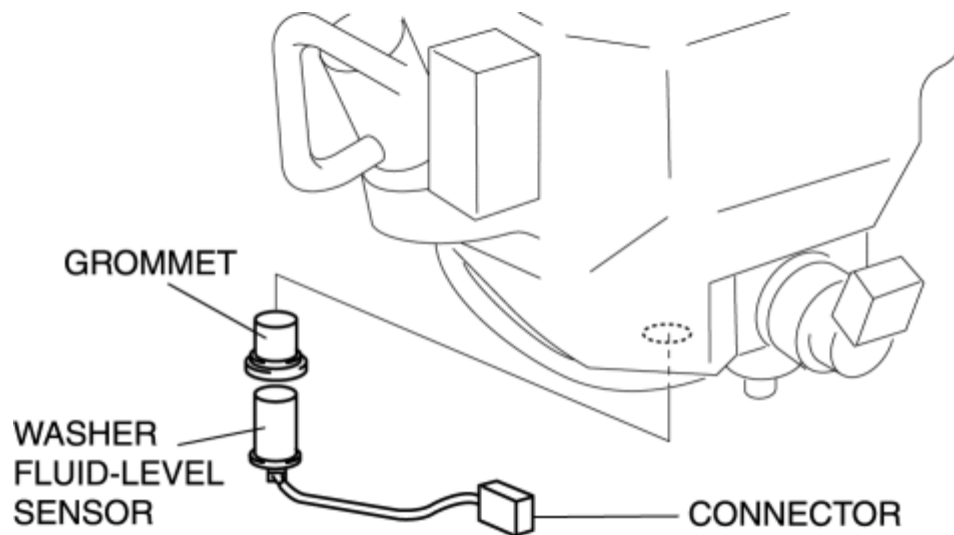
Terminal connected to battery positive voltage	Operation condition
B	HI
A	LO

3. Operate the wipers, disconnect battery positive voltage from terminal B, and then verify that the wipers stop.
4. Connect windshield wiper motor terminals E and A, and apply battery positive voltage to terminal C.
5. Operate the wipers at low speed, and verify that they stop in the park position.
 - If there is any malfunction, replace the windshield wiper motor.

2011 - RX-8 - Body and Accessories

WASHER FLUID-LEVEL SENSOR REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the washer tank. (See [WINDSHIELD WASHER TANK REMOVAL/INSTALLATION](#).)
3. Disconnect the connector.

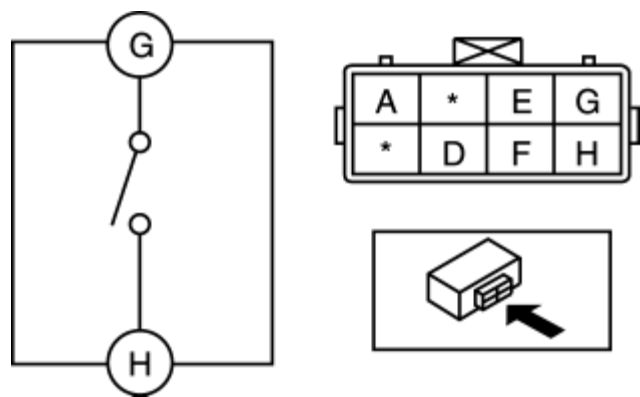


4. Remove the washer fluid-level sensor.
5. Remove the grommet.
6. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

WASHER FLUID-LEVEL SENSOR INSPECTION

- 1. Disconnect the negative battery cable.
- 2. Inspect for continuity between the washer fluid-level sensor terminals using an ohmmeter.



- If not as specified, replace the washer fluid-level sensor.

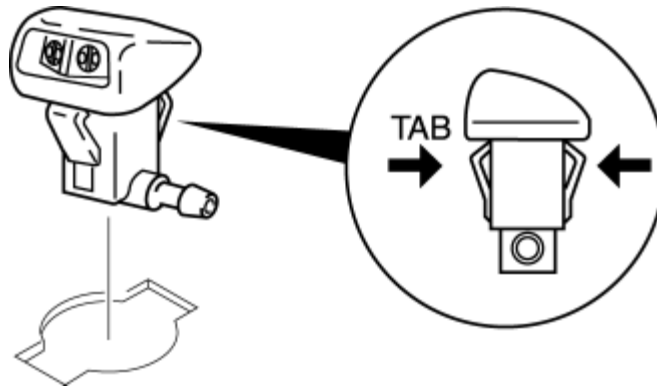
○ — ○ : Continuity

Fluid level	Terminal	
	G	H
Above low		
Below low	○ — ○	○ — ○

2011 - RX-8 - Body and Accessories

WINDSHIELD WASHER NOZZLE REMOVAL/INSTALLATION

1. Remove the cowl grille. (See [COWL GRILLE REMOVAL/INSTALLATION](#).)
2. Remove the windshield washer hose from the windshield washer nozzle. (See [WINDSHIELD WASHER HOSE REMOVAL/INSTALLATION](#).)
3. Squeeze the tabs of the windshield washer nozzle.
4. Pull the windshield washer nozzle out to remove it.

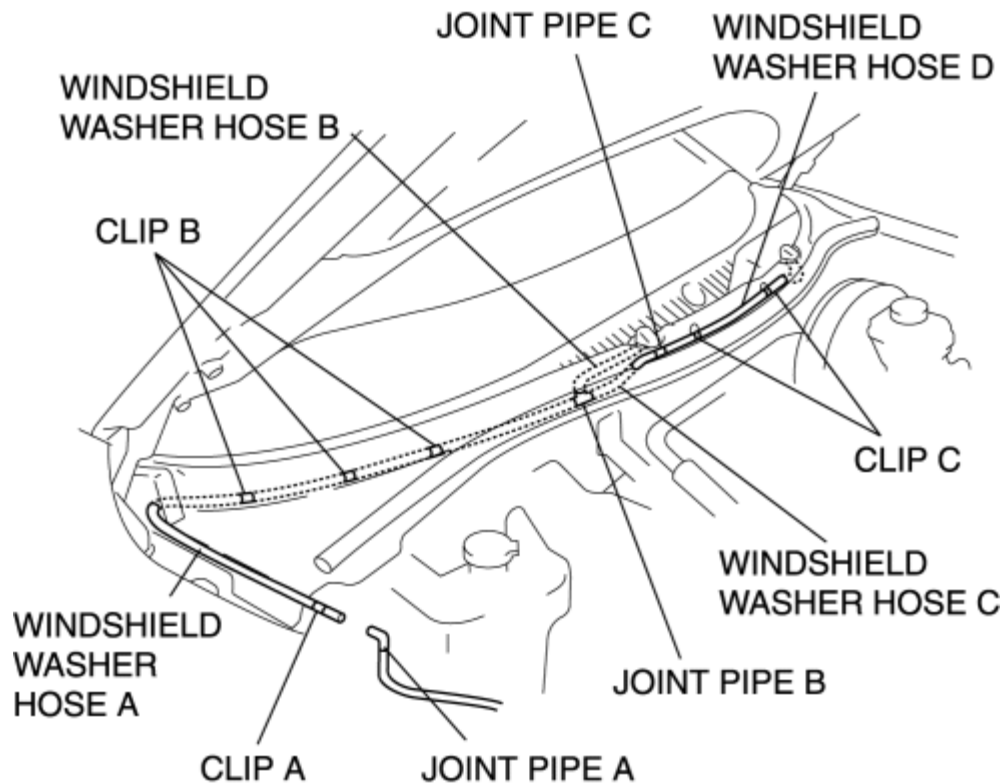


5. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

WINDSHIELD WASHER HOSE REMOVAL/INSTALLATION

1. Remove the windshield wiper arm and blade. (See [WINDSHIELD WIPER ARM AND BLADE REMOVAL/INSTALLATION](#).)
2. Disconnect joint pipe A, then remove windshield washer hose A from clip A.



3. Remove the cowl grille. (See [COWL GRILLE REMOVAL/INSTALLATION](#).)
4. Remove clips B.
5. Disconnect joint pipe B, then remove windshield washer hose A.
6. Disconnect windshield washer hose B from the washer nozzle, then remove windshield washer hose B.
7. Disconnect joint pipe C, then remove windshield washer hose C.
8. Remove windshield washer hose D from clips C.
9. Disconnect windshield washer hose D from the washer nozzle, then remove windshield washer hose D.
10. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

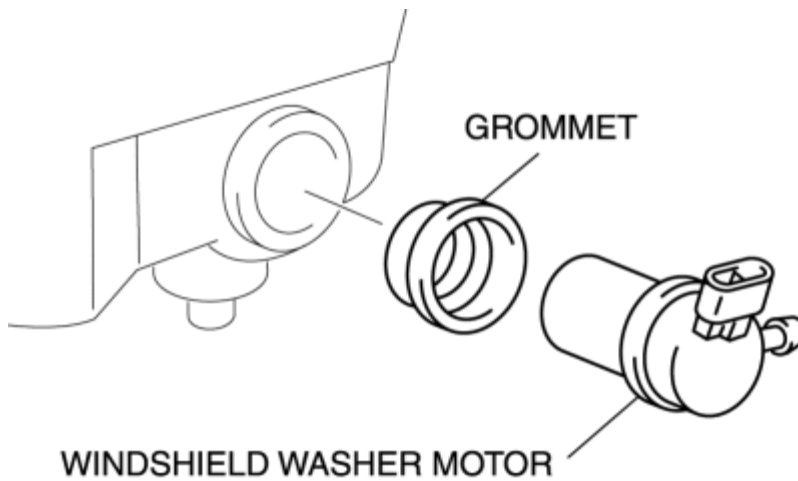
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

WINDSHIELD WASHER MOTOR REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the windshield washer tank. (See [WINDSHIELD WASHER TANK REMOVAL/INSTALLATION](#).)
3. Remove the windshield washer motor, then remove the grommet.

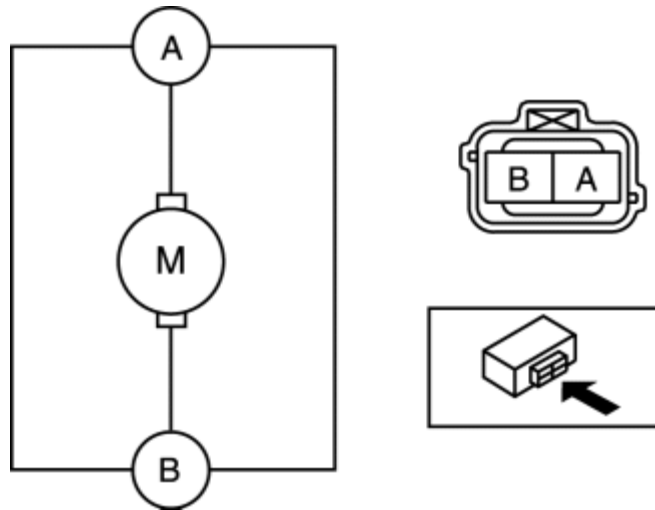


4. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

WINDSHIELD WASHER MOTOR INSPECTION

1. Disconnect the negative battery cable.
2. Remove the windshield washer tank. (See [WINDSHIELD WASHER TANK REMOVAL/INSTALLATION](#).)
3. Connect battery positive voltage to windshield washer motor terminal A and terminal B to ground.

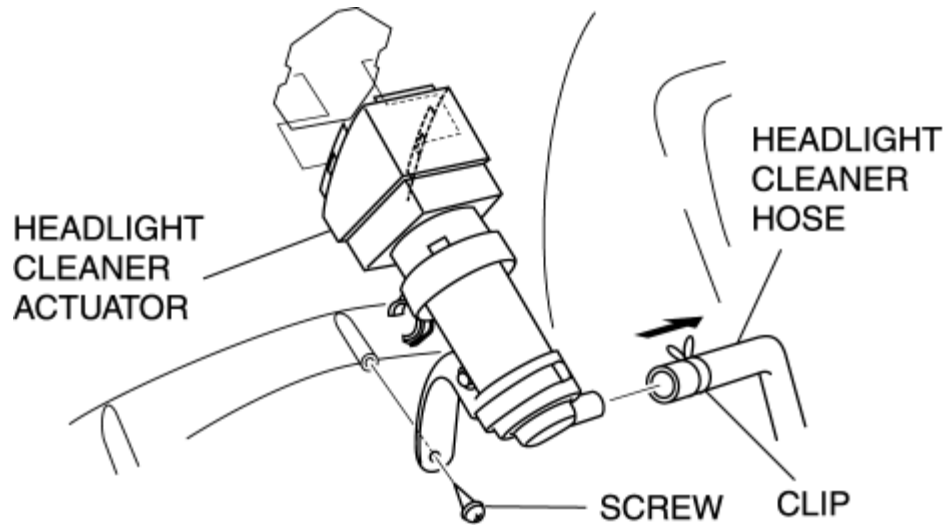


4. Verify that the windshield washer motor operates normally.
 - If there is any malfunction, replace the windshield washer motor.

2011 - RX-8 - Body and Accessories

HEADLIGHT CLEANER ACTUATOR REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the front bumper. (See [FRONT BUMPER REMOVAL/INSTALLATION](#).)
3. Remove the headlight cleaner nozzle. (See [HEADLIGHT CLEANER NOZZLE REMOVAL](#).) (See [HEADLIGHT CLEANER NOZZLE INSTALLATION](#).)
4. Squeeze the clip tabs and slide the clip in the direction of the arrow.
5. Disconnect headlight cleaner hose from the headlight cleaner actuator.

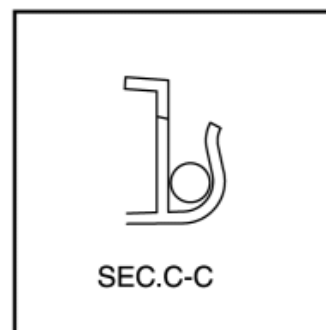
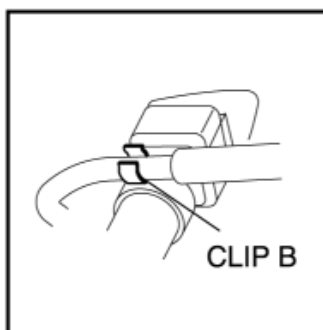
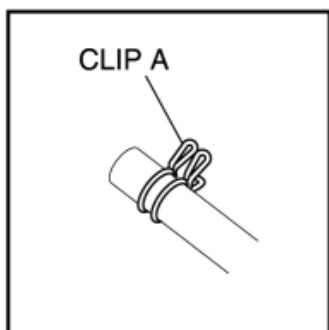
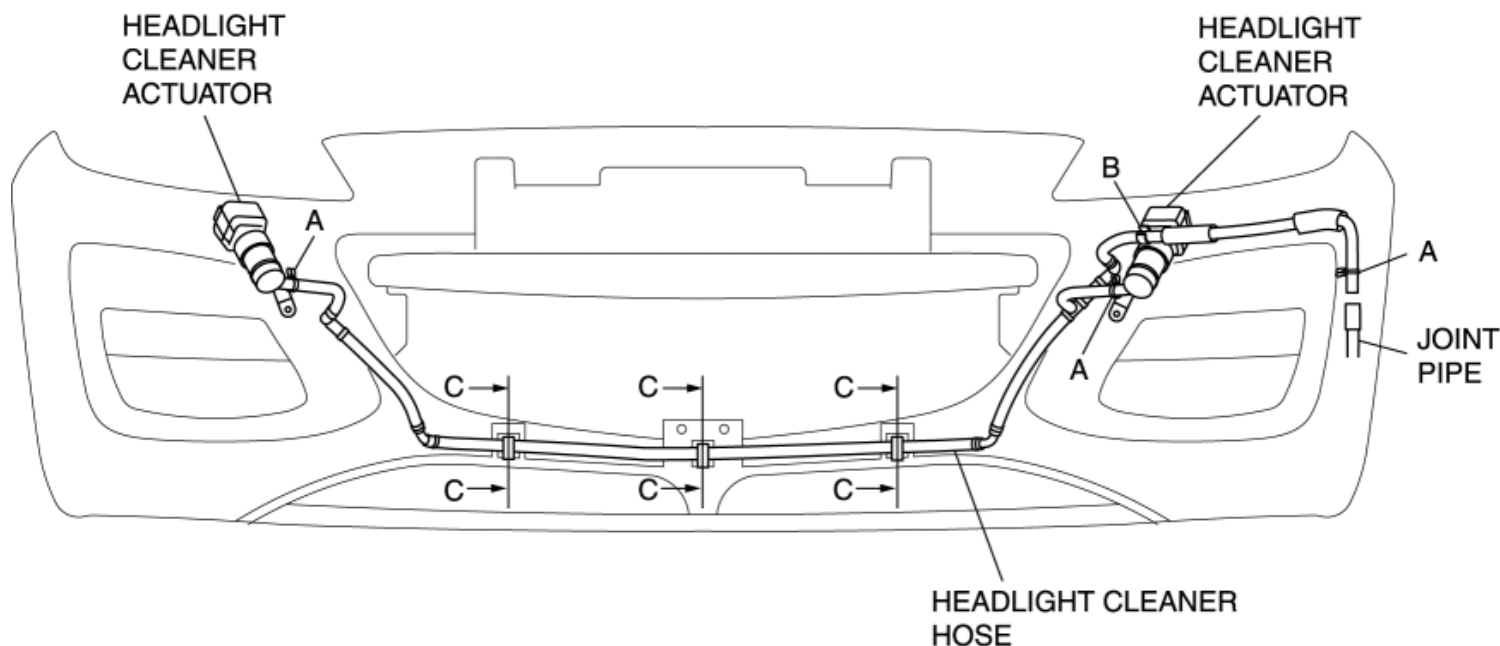


6. Remove the screw, then remove the headlight cleaner actuator.
7. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

HEADLIGHT CLEANER HOSE REMOVAL/INSTALLATION

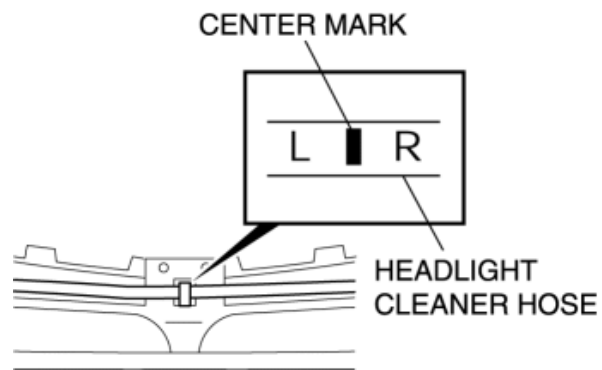
1. Disconnect the negative battery cable.
2. Remove the front bumper. (See [FRONT BUMPER REMOVAL/INSTALLATION](#).)
3. Disconnect joint pipe.



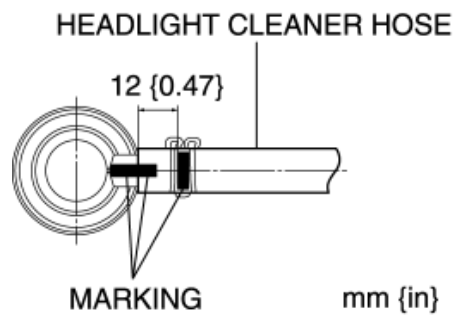
4. Disconnect headlight cleaner hose from the headlight cleaner actuator.
5. Remove the headlight cleaner hose from the front bumper.
6. Install in the reverse order of removal.

Headlight Cleaner Hose Installation Note

1. Attach the center mark area of the head light cleaner hose to the center clip of the mesh grill.



2. Install the headlight cleaner hose as shown in the figure.



[< Previous](#) [Next >](#)

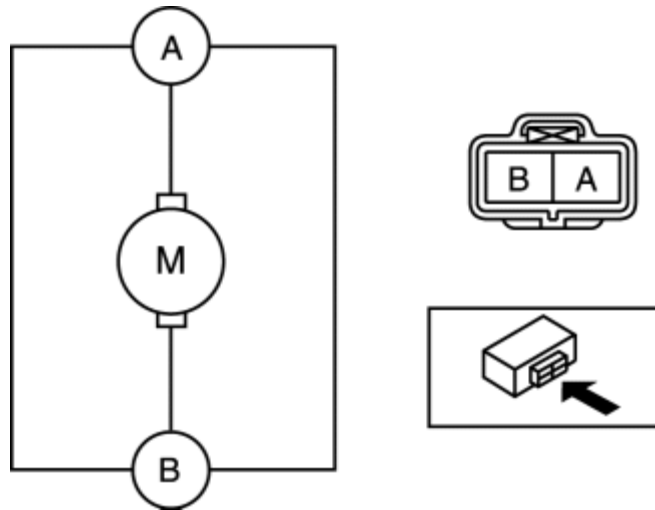
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

HEADLIGHT CLEANER MOTOR INSPECTION

1. Disconnect the negative battery cable.
2. Remove the windshield washer tank. (See [WINDSHIELD WASHER TANK REMOVAL/INSTALLATION](#).)
3. Connect battery positive voltage to headlight cleaner motor terminal A and terminal B to ground.

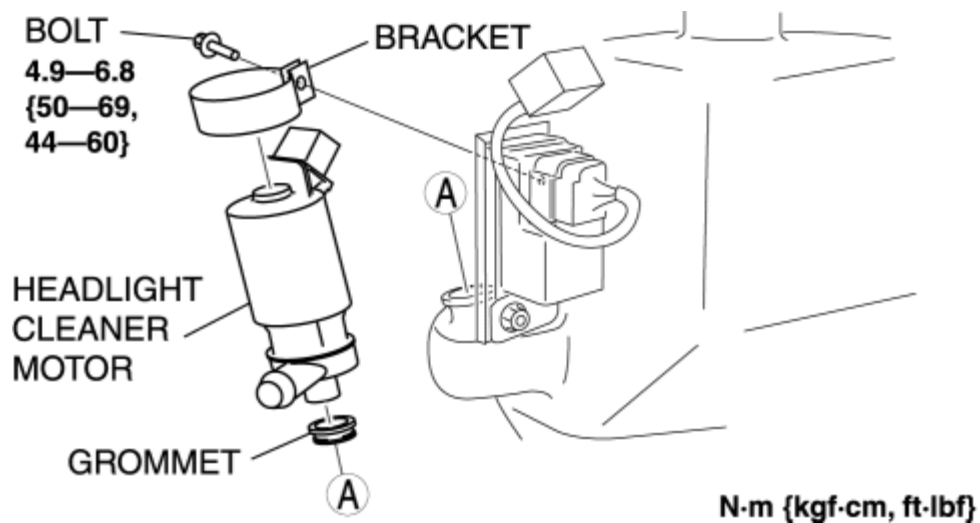


4. Verify that the headlight cleaner motor operates normally.
 - If there is any malfunction, replace the headlight cleaner motor.

2011 - RX-8 - Body and Accessories

HEADLIGHT CLEANER MOTOR REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the windshield washer tank. (See [WINDSHIELD WASHER TANK REMOVAL/INSTALLATION](#).)
3. Remove the bolt, then remove the bracket.



4. Remove the headlight cleaner motor, then remove the grommet.
5. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

HEADLIGHT CLEANER NOZZLE INSTALLATION

1. Install the headlight cleaner nozzle by pushing it in until a click is heard.

[< Previous](#) [Next >](#)

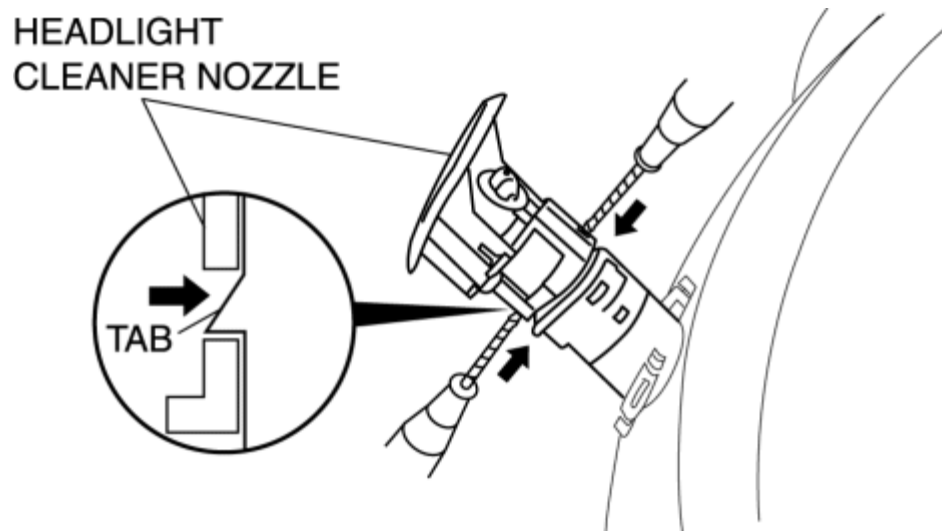
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

HEADLIGHT CLEANER NOZZLE REMOVAL

1. Pull out the headlight cleaner nozzle.
2. While pushing the tab with a tape-wrapped flathead screwdriver, remove the headlight cleaner nozzle.



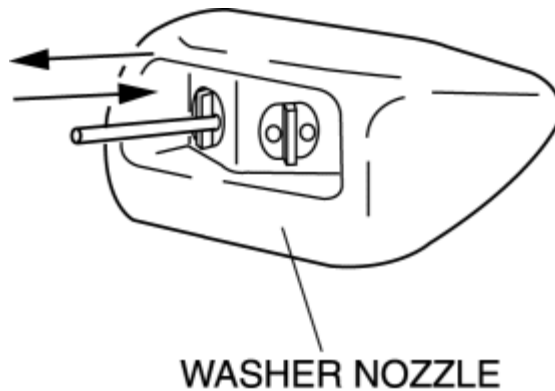
2011 - RX-8 - Body and Accessories

WINDSHIELD WASHER NOZZLE CLEANING

CAUTION:

- When cleaning the washer nozzle, use a thinner rod than the nozzle hole to prevent internal damage. If the inside of the washer nozzle is deformed or damaged, the washer fluid may not spray normally.

1. Clean the washer nozzle by inserting and moving a needle or an equivalent tool back and forth.



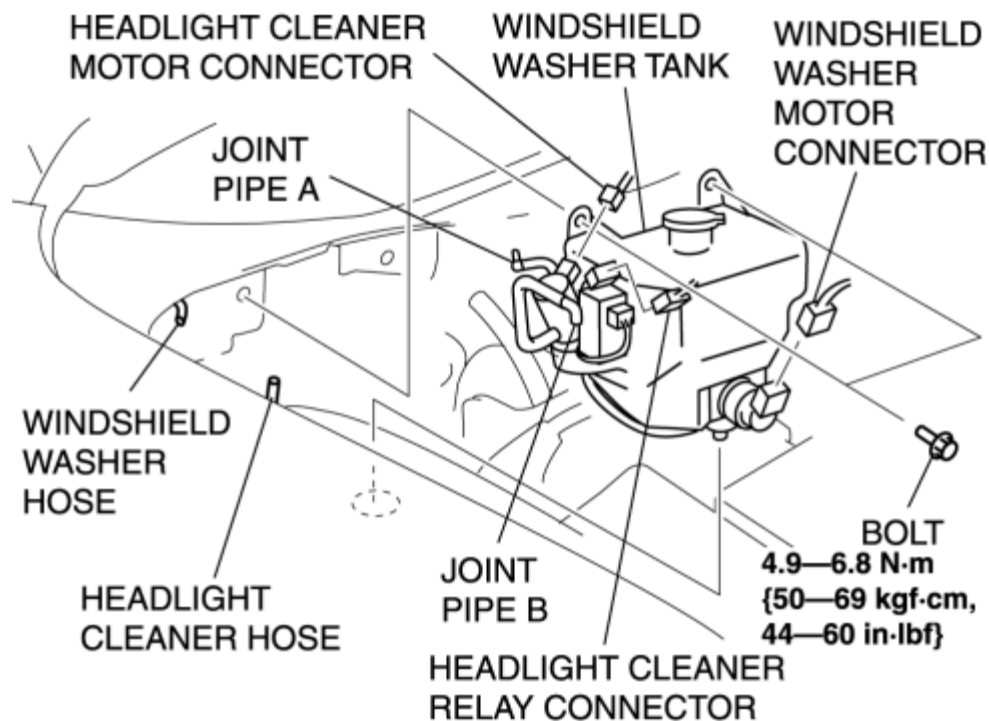
- If the nozzle becomes clogged again after cleaning, remove the hose from washer nozzle. Make sure there is enough washer fluid. Then turn the washer switch on and flush the inside of the hose.

2011 - RX-8 - Body and Accessories

WINDSHIELD WASHER TANK REMOVAL/INSTALLATION

Vehicles With The Headlight Cleaner

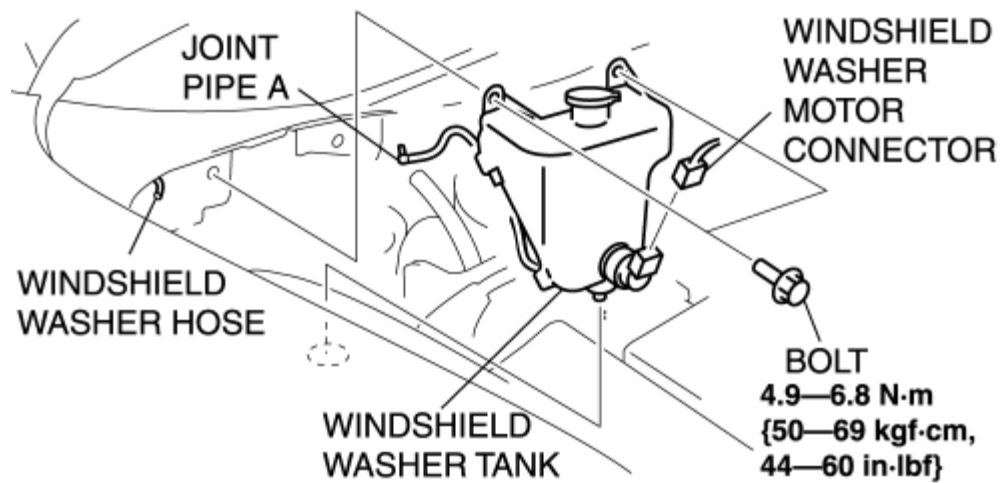
1. Disconnect the negative battery cable.
2. Disconnect the windshield washer motor connector.



3. Disconnect the headlight cleaner motor connector.
4. Disconnect the headlight cleaner relay connector.
5. Disconnect the windshield washer hose from joint pipe A.
6. Disconnect the headlight cleaner hose from joint pipe B.
7. Remove the bolts, then remove the windshield washer tank.
8. Install in the reverse order of removal.

Vehicles Without The Headlight Cleaner

1. Disconnect the negative battery cable.
2. Disconnect the windshield washer motor connector.



3. Disconnect the windshield washer hose from joint pipe A.
4. Remove the bolts, then remove the windshield washer tank.
5. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

[Back to Top](#)

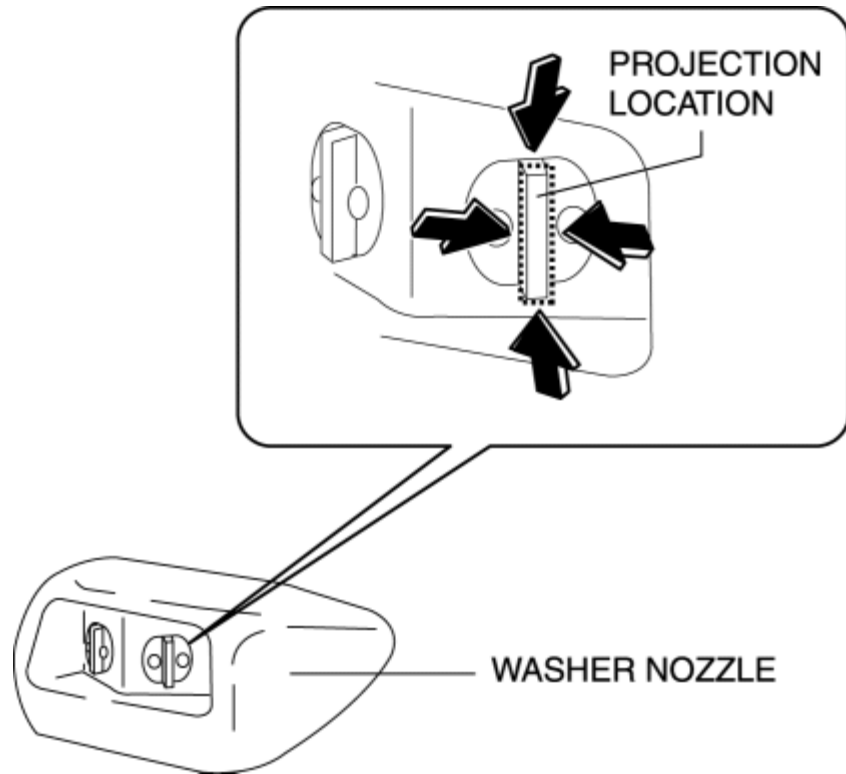
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

WINDSHIELD WASHER NOZZLE ADJUSTMENT

CAUTION:

- If the nozzle is adjusted by inserting a needle or similar thin tool into the washer nozzle, it could deform or damage the injection nozzle and the washer fluid may not spray normally.
1. Press the washer nozzle projection in the direction of the arrow and adjust the area where the washer fluid is sprayed to within the specification.

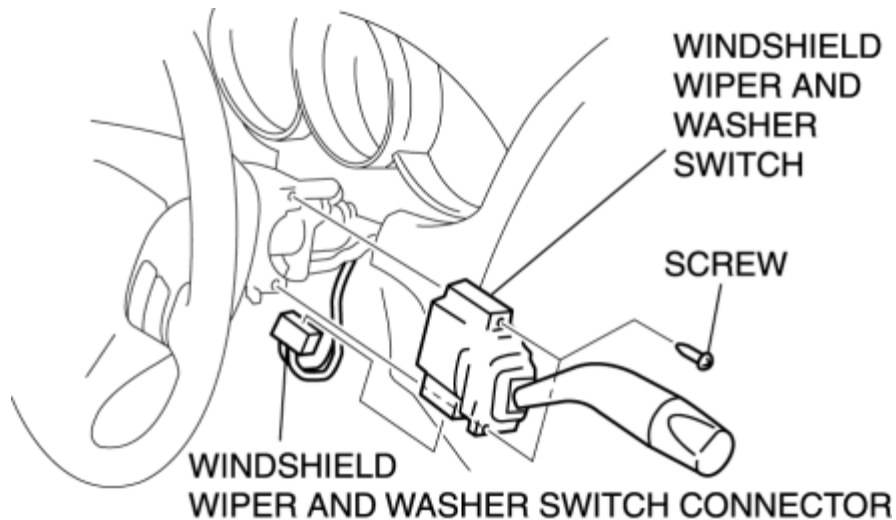


[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

WINDSHIELD WIPER AND WASHER SWITCH REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the column cover. (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
3. Remove the ignition key illumination. (See [IGNITION KEY ILLUMINATION BULB REMOVAL/INSTALLATION](#).)
4. Disconnect the windshield wiper and washer switch connector.



5. Remove the screws, then remove the windshield wiper and washer switch.
6. Install in the reverse order of removal.

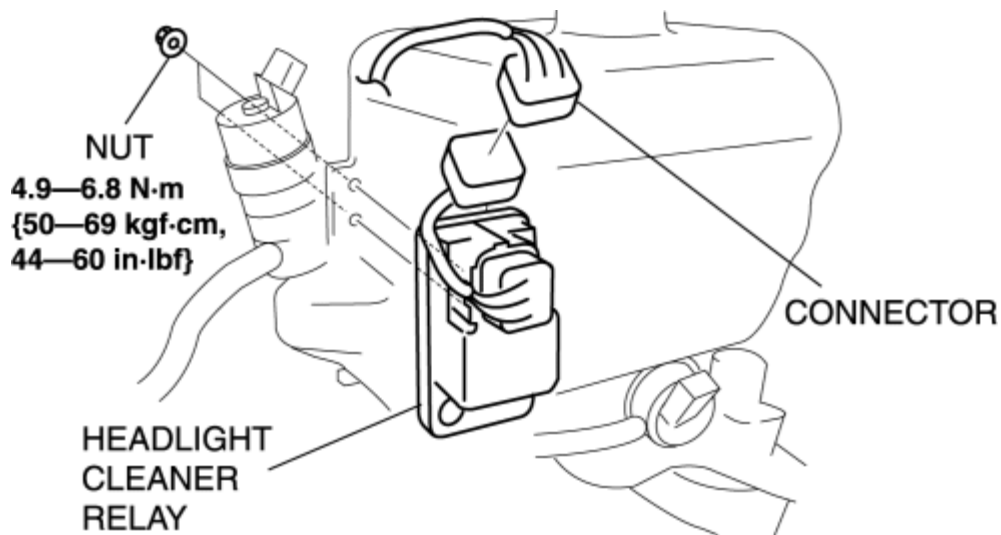
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

HEADLIGHT CLEANER RELAY REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Disconnect the connector.
3. Remove the nuts, then remove the headlight cleaner relay.



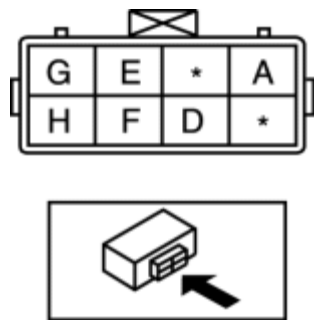
4. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

HEADLIGHT CLEANER RELAY INSPECTION

1. Remove the headlight cleaner relay with the connector still connected.
2. Measure the voltage at each terminal (other than terminal F).
 - If the voltage is not as specified in the Terminal Voltage Table (Reference), inspect the parts under "Inspection item(s)".
3. Disconnect the negative battery cable.
4. Verify that continuity at terminal F is as indicated in the Terminal Voltage Table (Reference).
 - If there is any malfunction, inspect the parts under "Inspection item(s)".
 - If the system does not work properly even though the parts or related wiring harnesses do not have any malfunction, replace the headlight cleaner relay.

Terminal Voltage Table (Reference)



Terminal	Signal name	Connected to	Measured condition	Voltage (V)/Continuity	Inspection item(s)
			Headlight cleaner activated (auto-operation or manual operation activated)	Alternates between 1.0 or less and B+	<ul style="list-style-type: none">• Headlight relay (See RELAY INSPECTION.)• Windshield wiper and washer switch

A	Headlight cleaner motor output	Headlight cleaner motor	Except above		B+	<p>(See WINDSHIELD WIPER AND WASHER SWITCH INSPECTION.)</p> <ul style="list-style-type: none"> Headlight cleaner motor (See HEADLIGHT CLEANER MOTOR INSPECTION.) Related wiring harnesses
D	Windshield washer motor output	Windshield wiper and washer switch	Turn the ignition switch to the ON position.	Turn the washer switch to the OFF position.	1.0 or less	<ul style="list-style-type: none"> Headlight relay (See RELAY INSPECTION.) Windshield wiper and washer switch (See WINDSHIELD WIPER AND WASHER SWITCH INSPECTION.) Related wiring harnesses
			Turn the ignition switch to the ON position.	Turn the washer switch to the ON position.	B+	
E	Headlight	Headlight relay	Light switch at ON position.		B+	<ul style="list-style-type: none"> Headlight relay (See RELAY INSPECTION.) Related wiring harnesses
			Except above		1.0 or less	
F	GND	Body ground	Under any condition: Inspect for continuity to ground.		Continuity detected	<ul style="list-style-type: none"> GND Related wiring harnesses

2011 - RX-8 - Body and Accessories

RAIN SENSOR INITIALIZATION SETTING

CAUTION:

- Rain sensor initialization is performed when it is newly replaced and when its previously programmed setting is modified due to the reflection rate change caused by the replacement of the windshield.

NOTE:

- The reflection rate at the moment the ignition switch is first turned on after replacing the rain sensor with a new one is stored as the condition indicating zero precipitation on the windshield. Therefore, before turning on the ignition switch, remove water and dirt from the windshield.
- Reinitialize the rain sensor in the following cases.
 - When the front window glasses are replaced while the rain sensor is reused.
 - When the auto wiper system malfunction occurs.

1. Remove water and dirt from the windshield surface.
2. Turn the ignition switch off.
3. Turn the windshield wiper switch to the AUTO position.
4. Perform the windshield wiper switch operation (AUTO→OFF→AUTO) five times within 10 s after turning the ignition switch to the ON position. The windshield wiper will operate once at low speed when the reinitialization setting is performed correctly.

CAUTION:

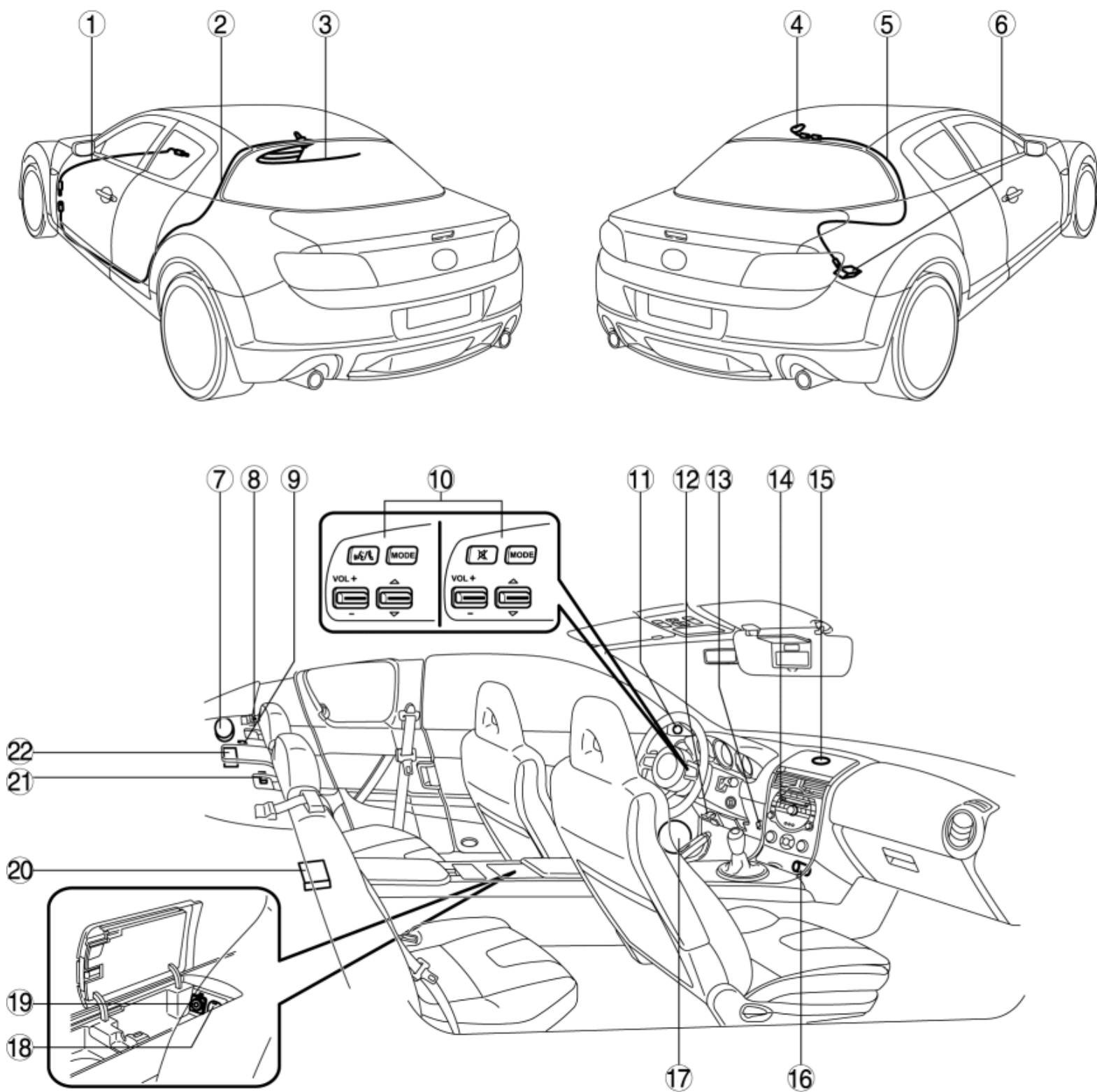
- If the operation is too fast, the windshield wiper switch position cannot be detected and the reinitialization may not be performed. Operate the windshield wiper switch one cycle every 1 s.

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

ENTERTAINMENT LOCATION INDEX

Audio System



1 AM/FM antenna feeder No.1

(See [ANTENNA FEEDER LOCATION.](#))

(See [AM/FM ANTENNA FEEDER NO.1 INSTALLATION.](#))

(See [AM/FM ANTENNA FEEDER NO.1 INSPECTION.](#))

2	<p>AM/FM antenna feeder No.2</p> <p>(See ANTENNA FEEDER LOCATION.)</p> <p>(See AM/FM ANTENNA FEEDER NO.2 INSTALLATION.)</p> <p>(See AM/FM ANTENNA FEEDER NO.2 INSPECTION.)</p>
3	<p>Glass antenna</p> <p>(See GLASS ANTENNA INSPECTION.)</p>
4	<p>SIRIUS satellite radio antenna</p> <p>(See SIRIUS SATELLITE RADIO ANTENNA REMOVAL/INSTALLATION.)</p> <p>(See SIRIUS SATELLITE RADIO ANTENNA INSPECTION.)</p>
5	<p>SIRIUS satellite radio antenna feeder</p> <p>(See ANTENNA FEEDER LOCATION.)</p> <p>(See SIRIUS SATELLITE RADIO ANTENNA FEEDER INSTALLATION.)</p> <p>(See SIRIUS SATELLITE RADIO ANTENNA FEEDER INSPECTION.)</p>
6	<p>SIRIUS satellite radio unit</p> <p>(See SIRIUS SATELLITE RADIO UNIT REMOVAL/INSTALLATION.)</p>
7	<p>Rear speaker</p> <p>(See REAR SPEAKER REMOVAL/INSTALLATION.)</p> <p>(See REAR SPEAKER INSPECTION.)</p>
8	<p>Rear tweeter (with Bose®)</p> <p>(See REAR TWEETER REMOVAL/INSTALLATION.)</p> <p>(See REAR TWEETER INSPECTION.)</p>
9	<p>Condenser</p> <p>(See CONDENSER REMOVAL/INSTALLATION.)</p>
10	<p>Audio control switch</p> <p>(See AUDIO CONTROL SWITCH REMOVAL/INSTALLATION.)</p> <p>(See AUDIO CONTROL SWITCH INSPECTION.)</p>
11	<p>Front tweeter</p> <p>(See FRONT TWEETER REMOVAL/INSTALLATION.)</p>

	(See FRONT TWEETER INSPECTION.)
12	AUDIOPILOT microphone (with Bose®) (See AUDIOPILOT MICROPHONE REMOVAL/INSTALLATION.)
13	Brake light noise filter (See NOISE FILTER REMOVAL/INSTALLATION.) (See NOISE FILTER INSPECTION.)
14	Center panel unit (See CENTER PANEL UNIT REMOVAL/INSTALLATION.) (See CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.)
15	Center speaker (with Bose®) (See CENTER SPEAKER REMOVAL/INSTALLATION.) (See CENTER SPEAKER INSPECTION.)
16	Cigarette lighter (See CIGARETTE LIGHTER REMOVAL/INSTALLATION.) (See CIGARETTE LIGHTER INSPECTION.)
17	Front door speaker (See FRONT DOOR SPEAKER REMOVAL/INSTALLATION.) (See FRONT DOOR SPEAKER INSPECTION.)
18	Accessory socket (See ACCESSORY SOCKET REMOVAL/INSTALLATION.) (See ACCESSORY SOCKET INSPECTION.)
19	Auxiliary jack (See AUXILIARY JACK REMOVAL/INSTALLATION.) (See AUXILIARY JACK INSPECTION.)
20	HF/TEL unit (with hands-free telephone (HF/TEL) system) (See HANDS-FREE TELEPHONE (HF/TEL) UNIT REMOVAL/INSTALLATION.)
21	Rear defroster noise filter

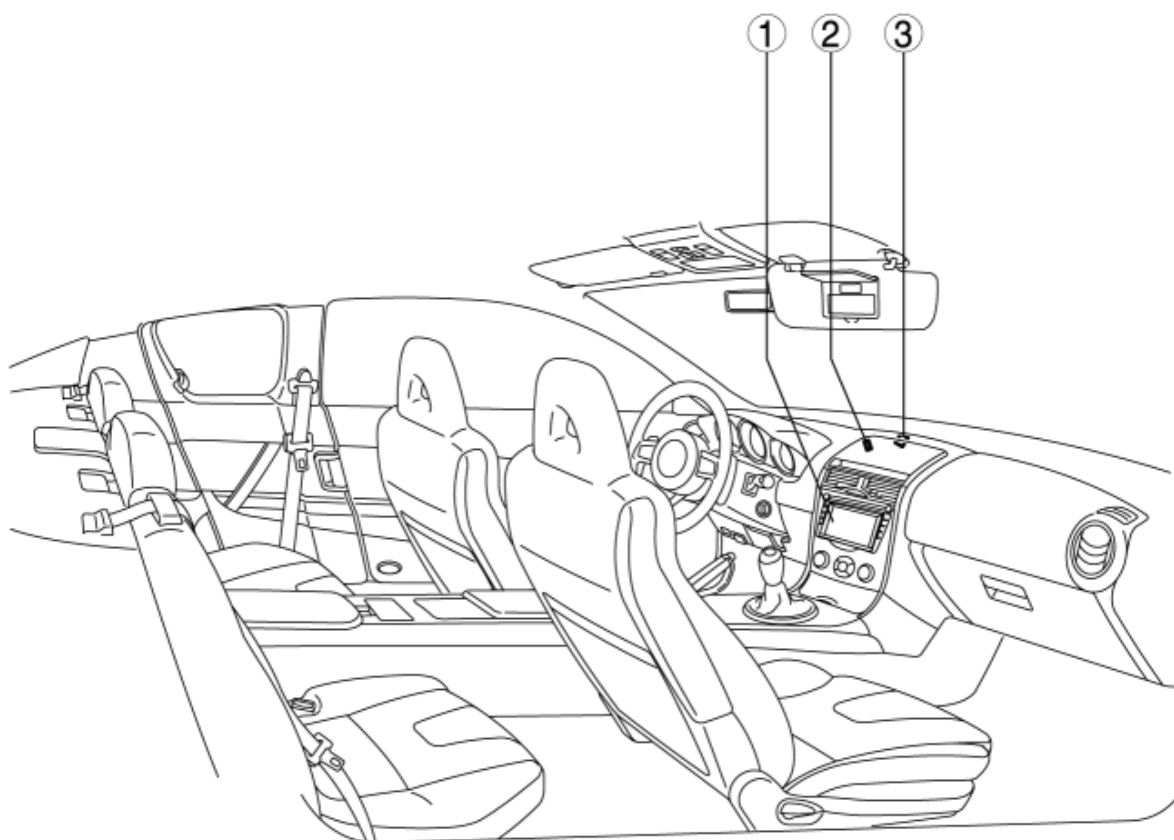
(See [NOISE FILTER REMOVAL/INSTALLATION.](#))

(See [NOISE FILTER INSPECTION.](#))

22 Audio amplifier (with Bose®)

(See [AUDIO AMPLIFIER REMOVAL/INSTALLATION.](#))

Car-navigation System



1 Center panel unit

(See [CENTER PANEL UNIT REMOVAL/INSTALLATION.](#))

(See [CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY.](#))

2 Microphone

(See [MICROPHONE REMOVAL/INSTALLATION.](#))

3 GPS antenna

(See [GPS ANTENNA REMOVAL/INSTALLATION.](#))

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

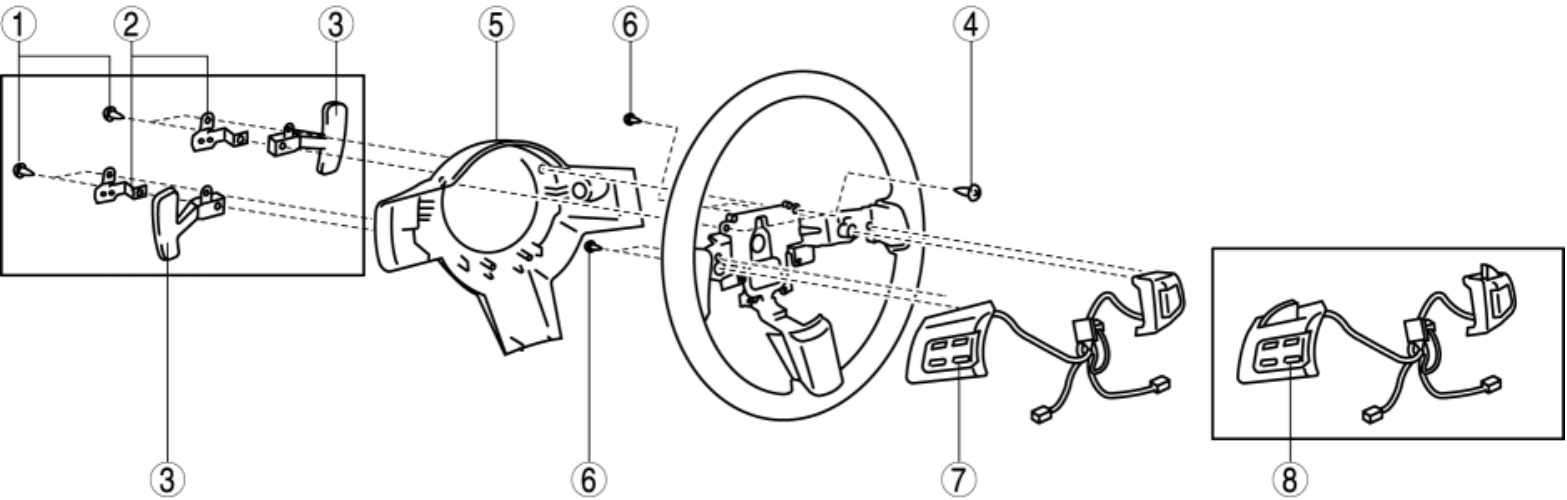
[Back to Top](#)

2011 - RX-8 - Body and Accessories

AUDIO CONTROL SWITCH REMOVAL/INSTALLATION

NOTE:

- For vehicles with the cruise control system, the audio control switch harness and the cruise control switch harness are united, therefore they cannot be separated.
1. Disconnect the negative battery cable and wait for **1 min or more**.
 2. Remove the driver-side air bag module.(See [DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.](#))
 3. Remove the steering wheel.(See [STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.](#))
 4. Remove in the order indicated in the table.
 5. Install in the reverse order of removal.



 :WITH STEERING SHIFT SWITCH

1	Screw (with steering shift switch)
2	Bracket (with steering shift switch)
3	Steering shift switch
4	Screw
5	Cover
6	Screw

7	Audio control switch
8	Audio control switch (with steering shift switch)

[< Previous](#) [Next >](#)

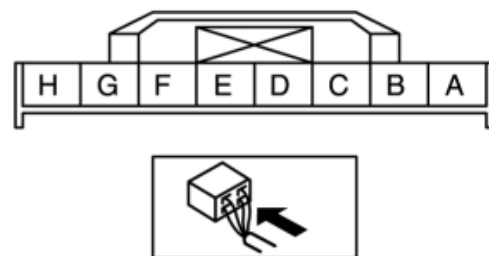
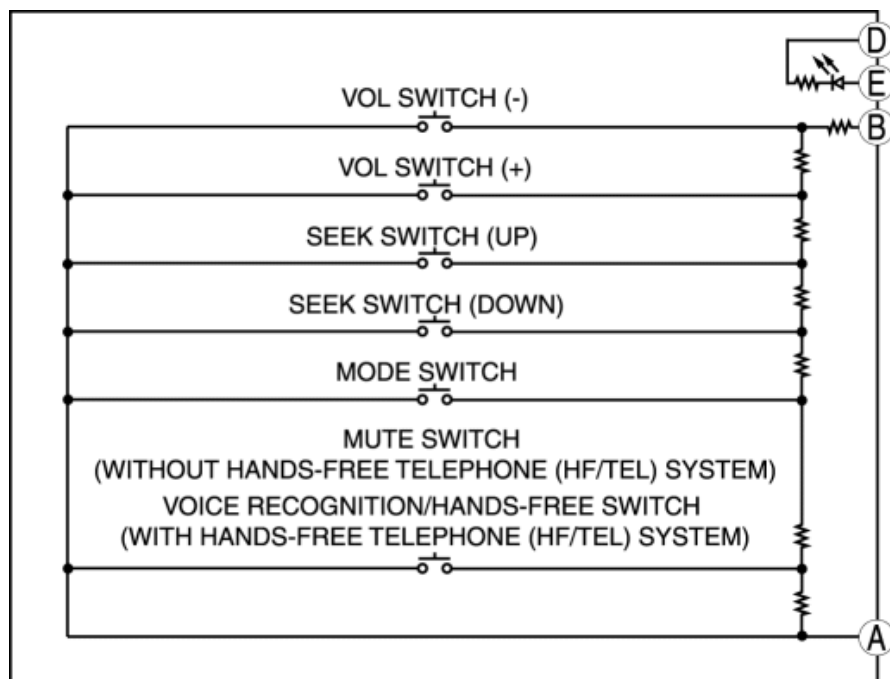
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

AUDIO CONTROL SWITCH INSPECTION

1. Disconnect the negative battery cable and wait for **1 min or more**.
2. Remove the driver-side air bag module.(See [DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION.](#))
3. Remove the steering wheel.(See [STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.](#))
4. Verify the resistance and continuity between the audio control switch terminals.

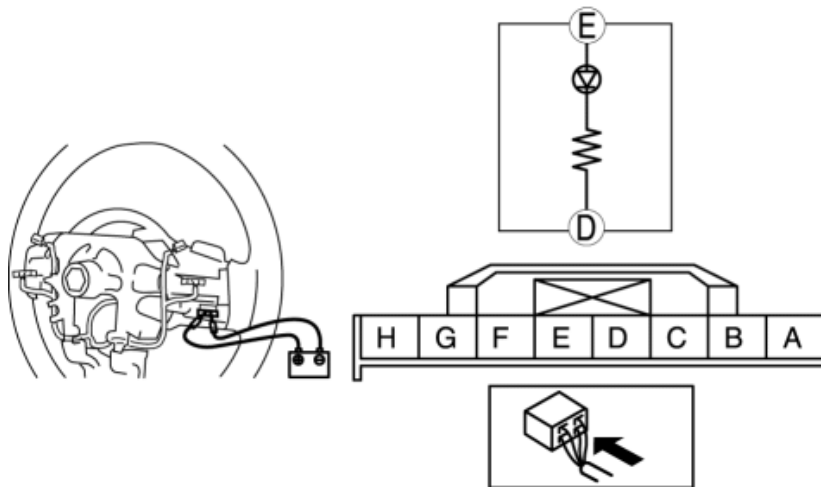


- If the resistance and continuity are not as indicated in the tables, replace the audio control switch.

○—○ : Resistance

Switch Position	Terminal		Resistance (ohm)
	A	B	
VOL Switch (-) ON	○—○		50.9—56.3
VOL Switch (+) ON	○—○		139—155
SEEK Switch (UP) ON	○—○		285—316
SEEK Switch (DOWN) ON	○—○		533—590
MODE Switch ON	○—○		984—1,089
MUTE Switch ON (without hands-free telephone (HF/TEL) system)	○—○		1,934—2,139
Voice recognition/hands-free Switch ON (with hands-free telephone (HF/TEL) system)	○—○		
OFF	○—○		4,794—5,300

5. Apply battery positive voltage to audio control switch terminal E, and connect terminal D to ground.



6. Verify that the LED illuminates.

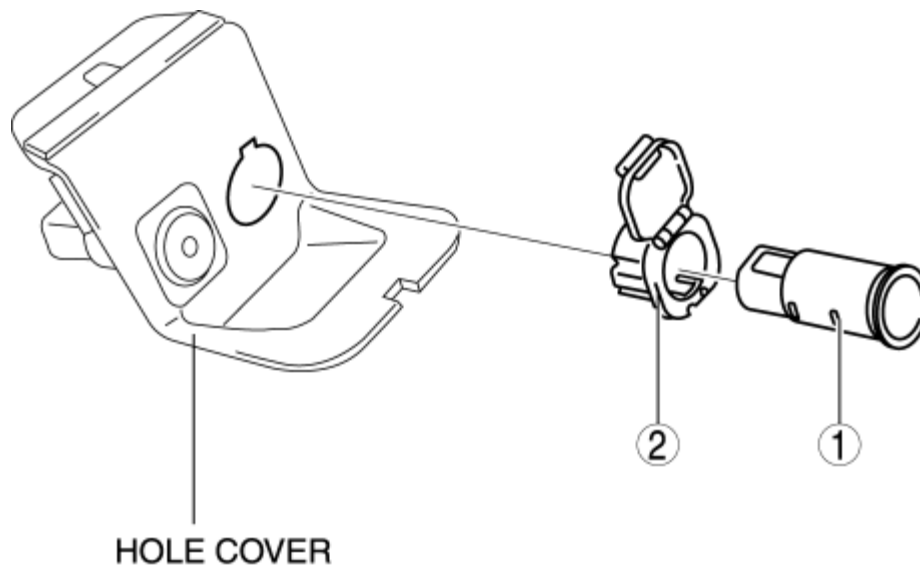
- If the LED does not illuminate, replace the audio control switch.

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

ACCESSORY SOCKET REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the hole cover. (See [CONSOLE REMOVAL/INSTALLATION](#).)
3. Remove in the order indicated in the table.

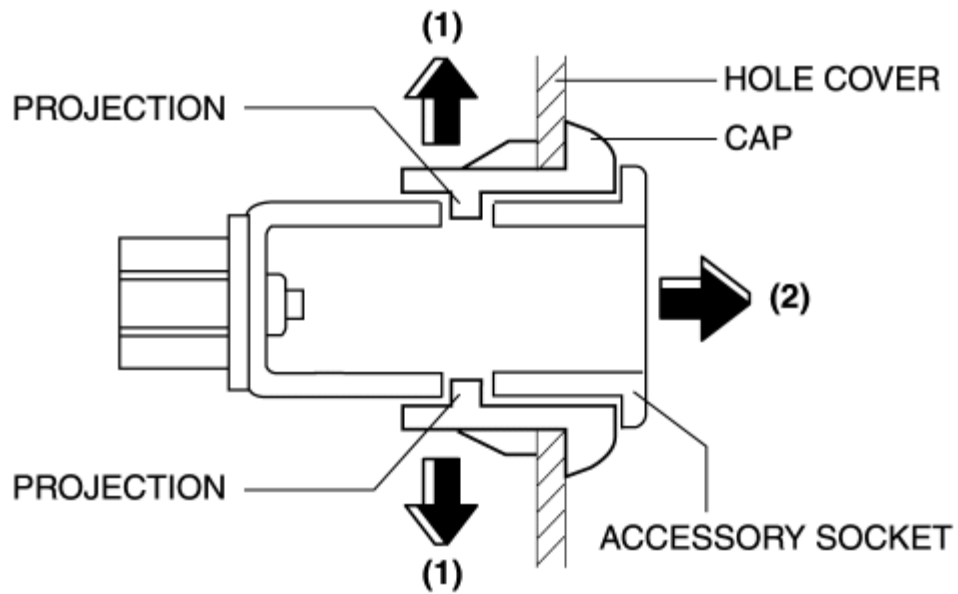


1	Accessory socket (See Accessory Socket Removal Note .)
2	Cap (See Cap Removal Note .)

4. Install in the reverse order of removal.

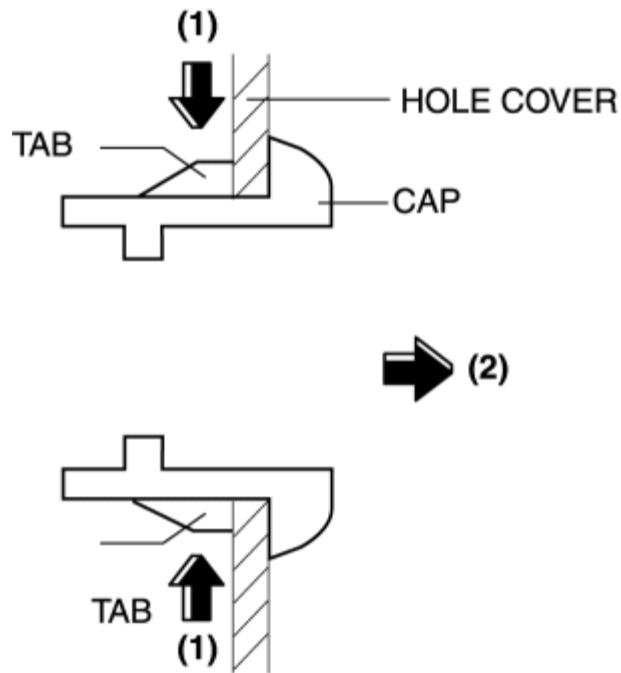
Accessory Socket Removal Note

1. Remove the accessory socket in the direction of the arrow (2) shown in the figure while opening the caps in the direction of the arrow (1) using a tape-wrapped fastener remover.



Cap Removal Note

1. Remove the cap in the direction of the arrow (2) shown in the figure while pressing the cap tabs in the direction of the arrow (1).



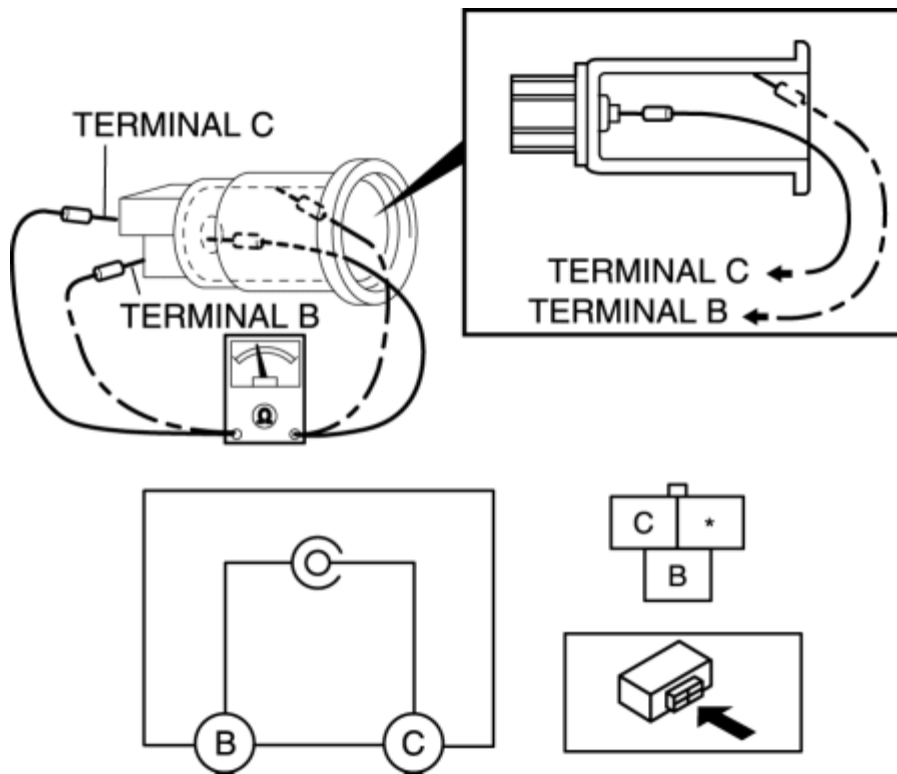
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

ACCESSORY SOCKET INSPECTION

1. Disconnect the negative battery cable.
2. Remove the hole cover. (See [CONSOLE REMOVAL/INSTALLATION](#).)
3. Connect a tester as shown in the figure and verify that there is continuity.



- If the continuity cannot be verified, replace the accessory socket.

2011 - RX-8 - Body and Accessories

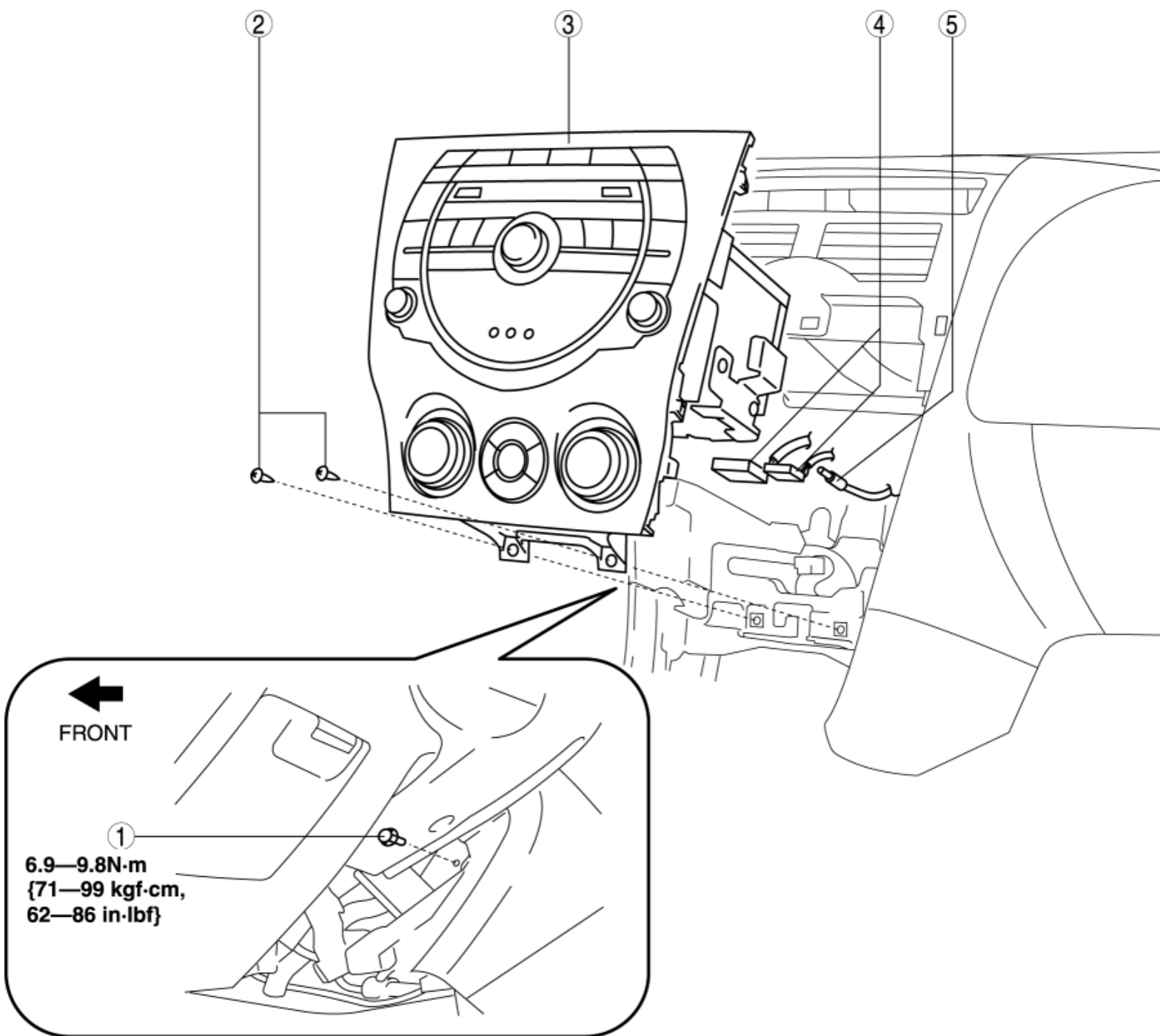
CENTER PANEL UNIT REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Shift lever knob (MT) (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#).)
 - b. Shift knob (AT) (See [SELECTOR LEVER REMOVAL/INSTALLATION](#).)
 - c. Upper panel (See [CONSOLE REMOVAL/INSTALLATION](#).)
 - d. Ashtray panel (See [CONSOLE REMOVAL/INSTALLATION](#).)
 - e. Lower panel (See [LOWER PANEL REMOVAL/INSTALLATION](#).)
 - f. Knee bolster (See [KNEE BOLSTER REMOVAL/INSTALLATION](#).)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.

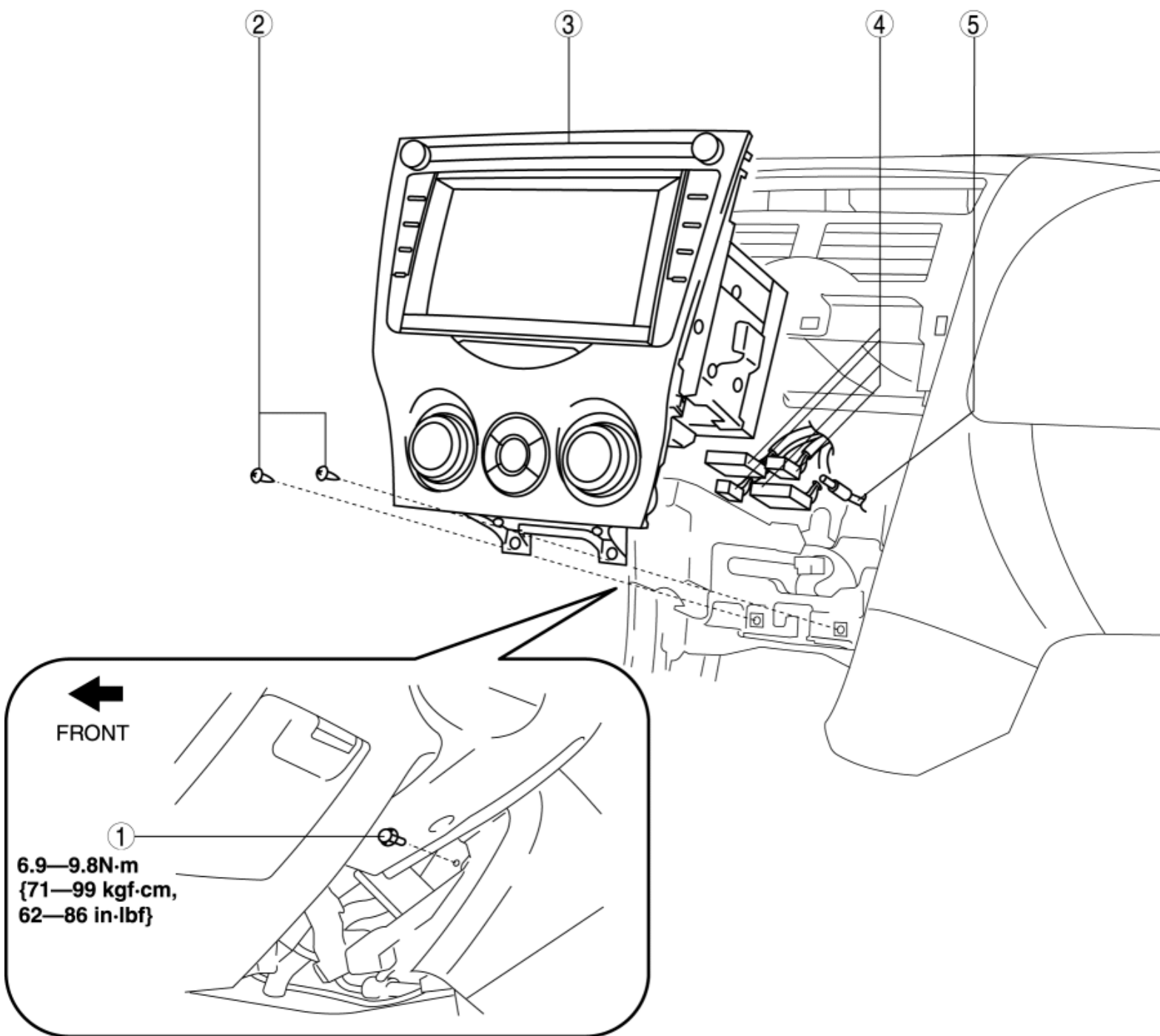
CAUTION:

- When installing the center panel unit, make sure that the wiring harness and antenna feeder are not caught between the unit and dashboard. If the wiring harness or the antenna feeder is caught between the unit and dashboard, it may cause malfunctions.

With audio unit



With car-navigation unit



1 Bolt

2 Screw

3 Center panel unit

(See [Center Panel Unit Removal Note.](#))

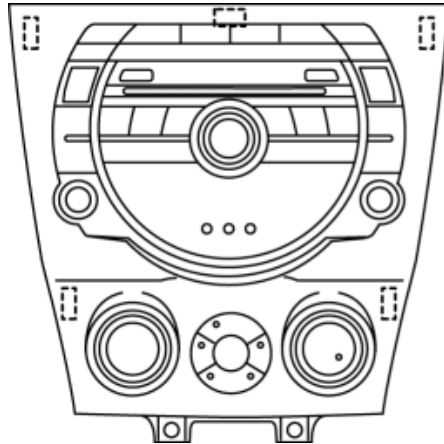
4 Connector

5 Antenna feeder

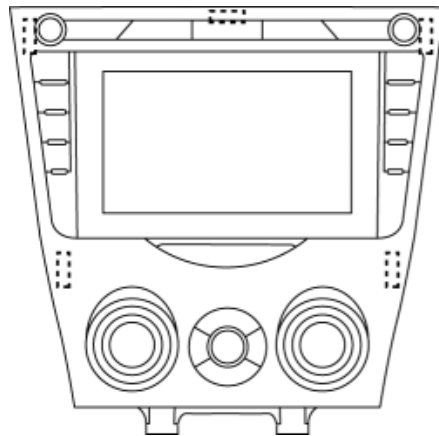
Center Panel Unit Removal Note

1. Detach the clips from the dashboard while pulling the center panel unit outward, and then remove the center panel unit.

With audio unit



With car-navigation unit



[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

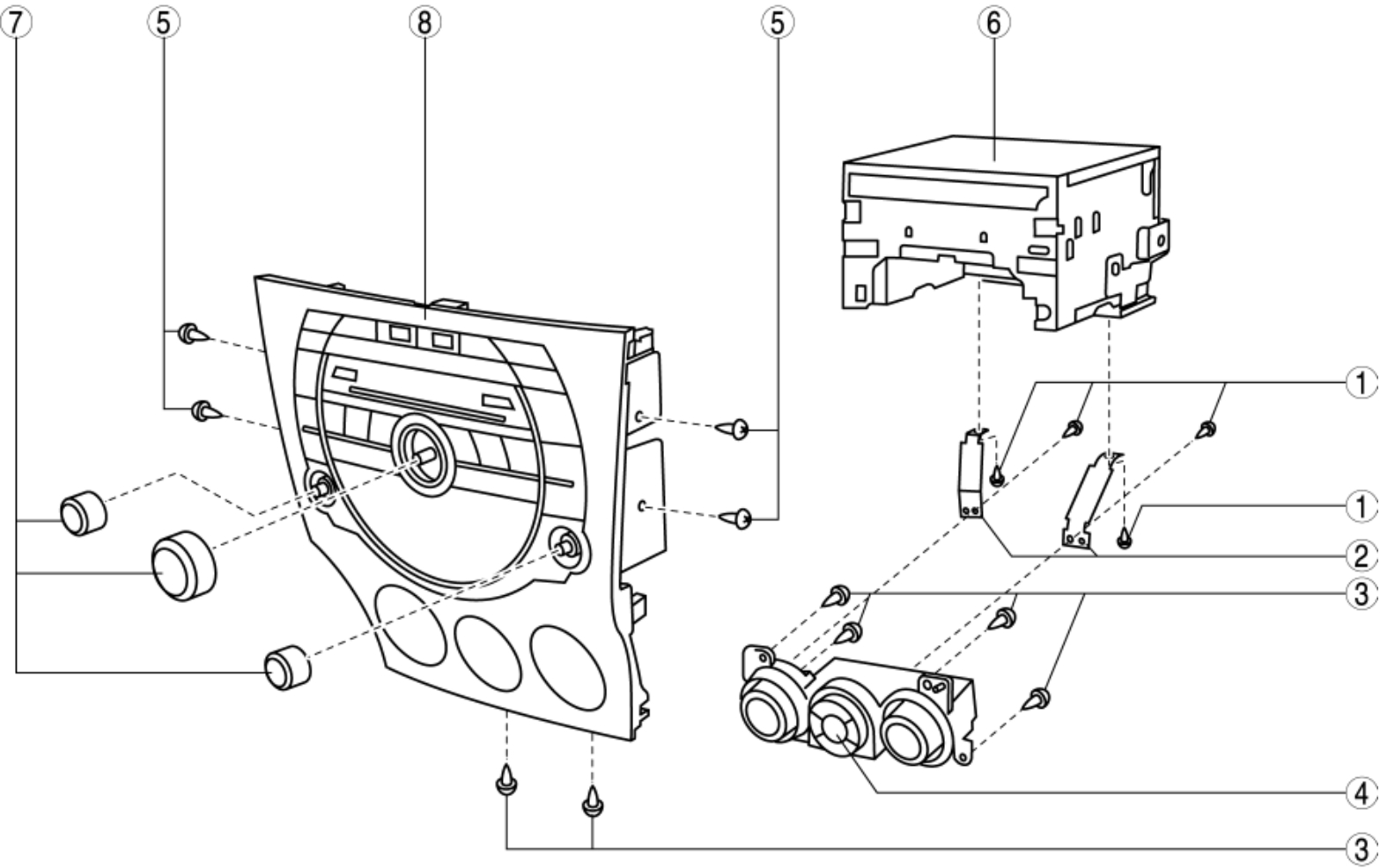
CENTER PANEL UNIT DISASSEMBLY/ASSEMBLY

CAUTION:

- When disassembling the center panel unit, it could get scratched if it is placed directly on the ground. When disassembling the center panel unit, spread a soft cloth underneath to perform the work.

With Audio Unit

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.

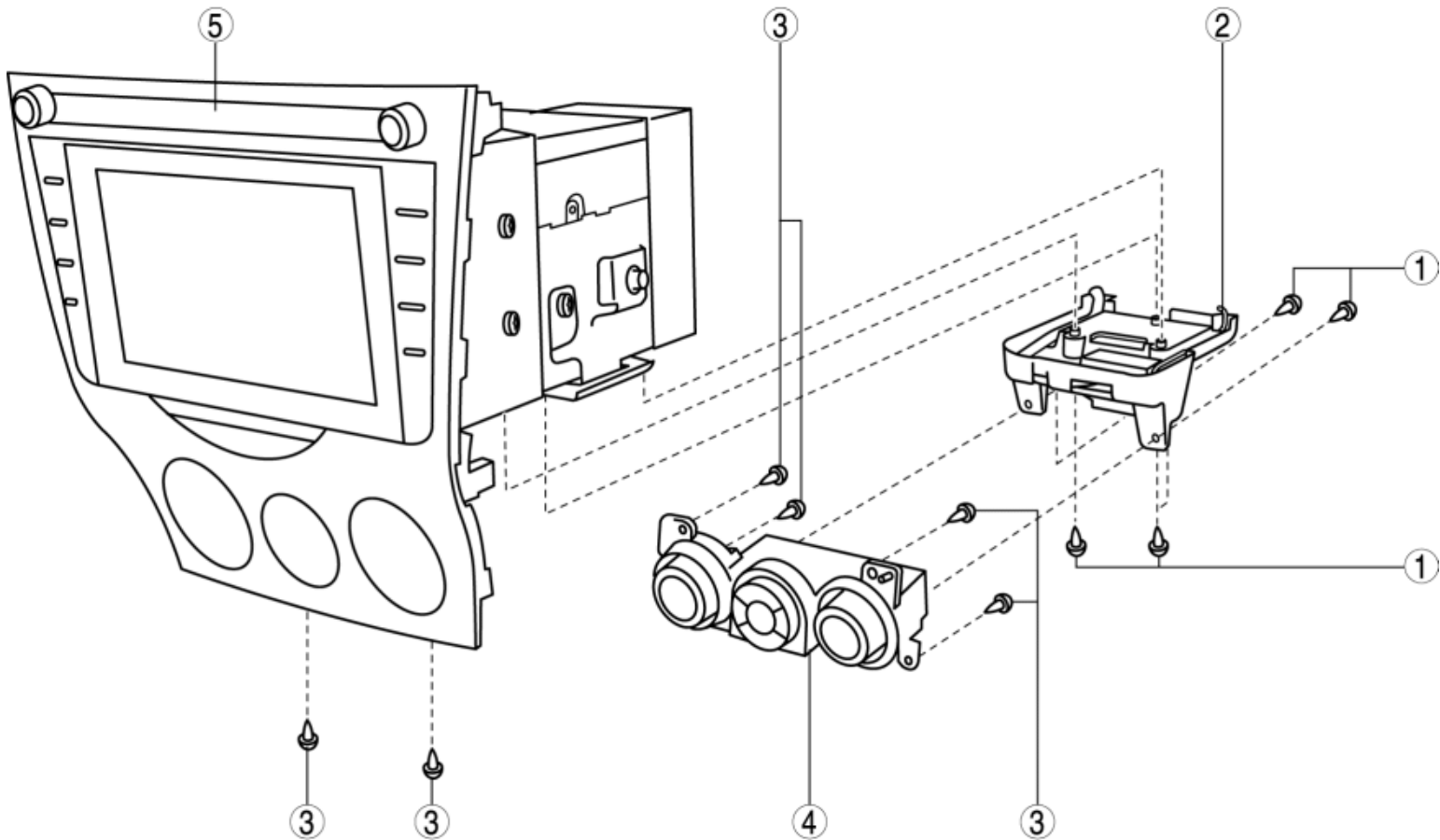


1	Screw

2	Bracket
3	Screw
4	Climate control unit
5	Screw
6	Audio unit
7	Knob
8	Center panel

With Car-navigation Unit

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.



1	Screw
---	-------

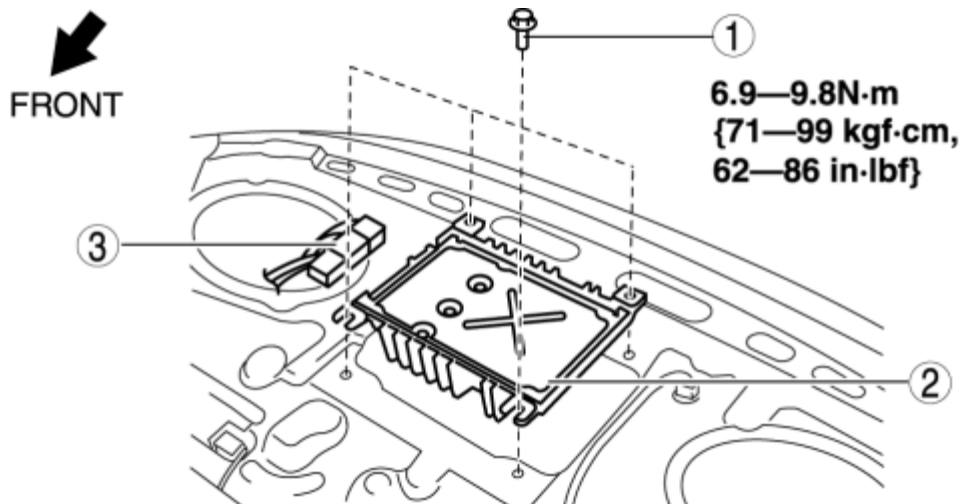
2	Bracket
3	Screw
4	Climate control unit
5	Car-navigation unit

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

AUDIO AMPLIFIER REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Console (See [CONSOLE REMOVAL/INSTALLATION](#).)
 - b. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION](#).)
 - c. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION](#).)
 - d. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION](#).)
 - e. Rear package side trim (See [REAR PACKAGE TRIM REMOVAL/INSTALLATION](#).)
 - f. Rear package center trim (See [REAR PACKAGE TRIM REMOVAL/INSTALLATION](#).)
3. Remove in the order indicated in the table.



1	Bolt
2	Audio amplifier
3	Connector

4. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

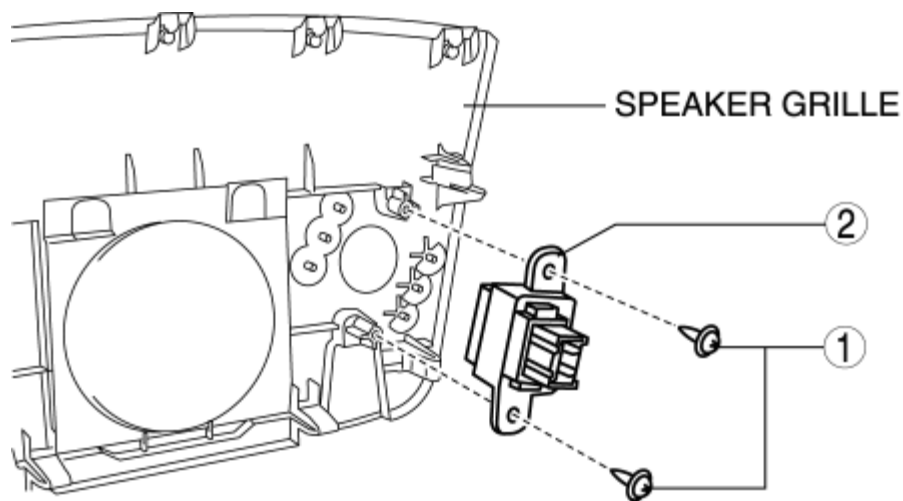
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

MICROPHONE REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the speaker grille. (See [SPEAKER GRILLE REMOVAL/INSTALLATION](#).)
3. Remove in the order indicated in the table.



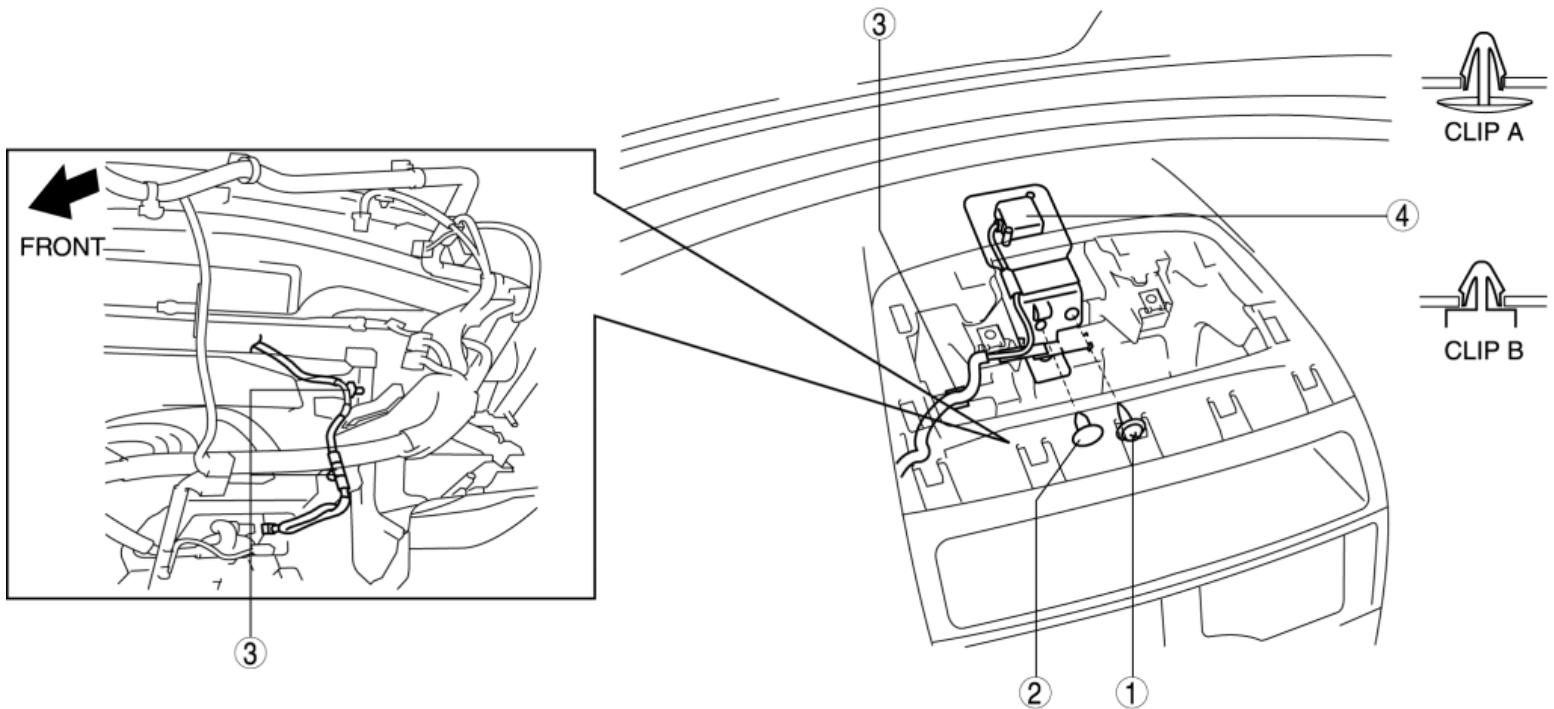
1	Screw
2	Microphone

4. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

GPS ANTENNA REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Console (See [CONSOLE REMOVAL/INSTALLATION.](#))
 - b. Glove compartment (See [GLOVE COMPARTMENT REMOVAL/INSTALLATION.](#))
 - c. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
 - d. Front side trim (See [FRONT SIDE TRIM REMOVAL/INSTALLATION.](#))
 - e. Side panel (See [SIDE PANEL REMOVAL/INSTALLATION.](#))
 - f. Lower panel (See [LOWER PANEL REMOVAL/INSTALLATION.](#))
 - g. Knee bolster (See [KNEE BOLSTER REMOVAL/INSTALLATION.](#))
 - h. Column cover (See [COLUMN COVER REMOVAL/INSTALLATION.](#))
 - i. Steering shaft installation nut (See [STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.](#))
 - j. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - k. Dashboard (See [DASHBOARD REMOVAL/INSTALLATION.](#))
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.



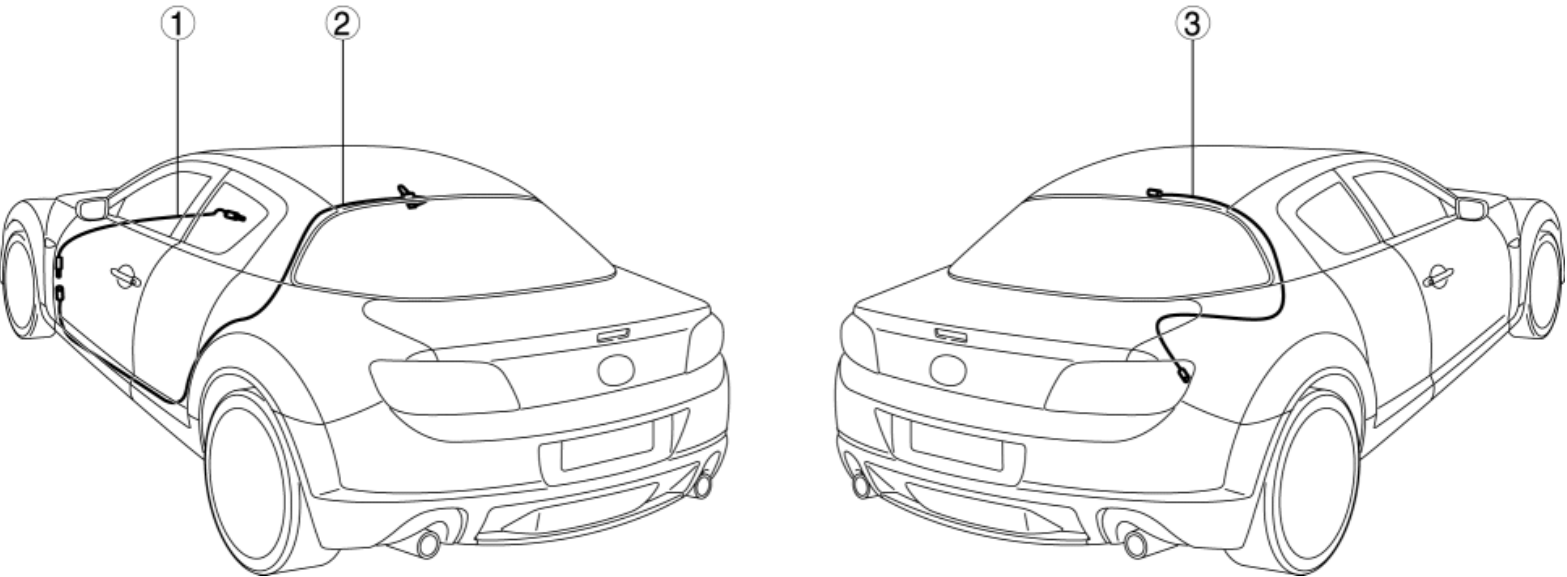
2	Clip A
3	Clip B
4	GPS antenna

2011 - RX-8 - Body and Accessories

ANTENNA FEEDER LOCATION

NOTE:

- The antenna feeder is integrated with the vehicle wiring harness.
- When installing a new antenna feeder, secure it to the vehicle wiring harness along the installation route of the old antenna feeder.



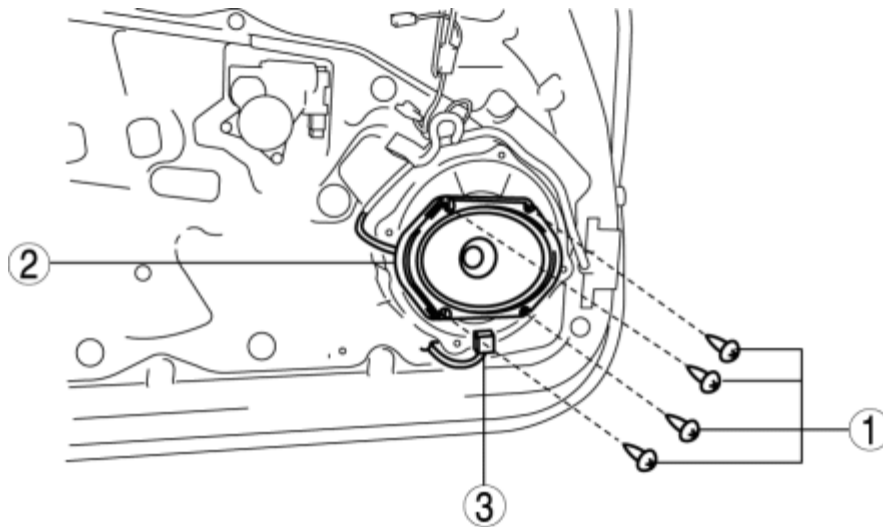
1	AM/FM antenna feeder No.1
2	AM/FM antenna feeder No.2
3	SIRIUS satellite radio antenna feeder

2011 - RX-8 - Body and Accessories

FRONT DOOR SPEAKER REMOVAL/INSTALLATION

Without Bose®

1. Disconnect the negative battery cable.
2. Remove the front door trim. (See [FRONT DOOR TRIM REMOVAL/INSTALLATION.](#))
3. Remove in the order indicated in the table.



1	Screw
2	Front door speaker (See Front door speaker installation note.)
3	Connector

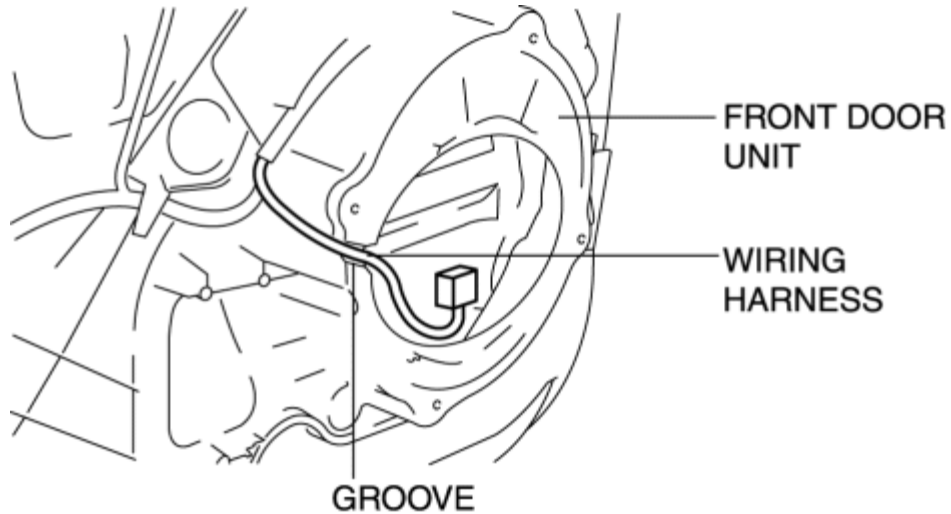
4. Install in the reverse order of removal.

Front door speaker installation note

1. Installation the speaker with the wiring harness passing through the groove of the front door unit.

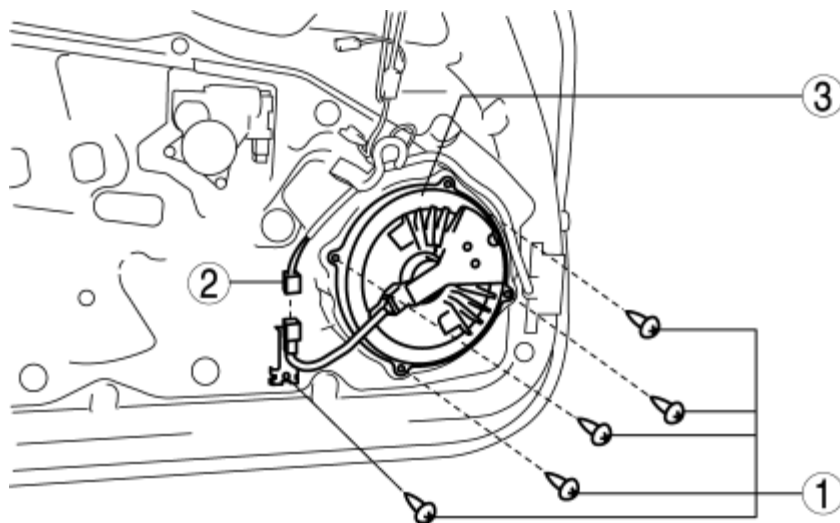
CAUTION:

- If the speaker is installed with the wiring harness out of the groove, an open circuit in the wiring harness could occur.



With Bose®

1. Disconnect the negative battery cable.
2. Remove the front door trim. (See [FRONT DOOR TRIM REMOVAL/INSTALLATION.](#))
3. Remove in the order indicated in the table.



1 Screw

2	Front door speaker
3	Connector

4. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

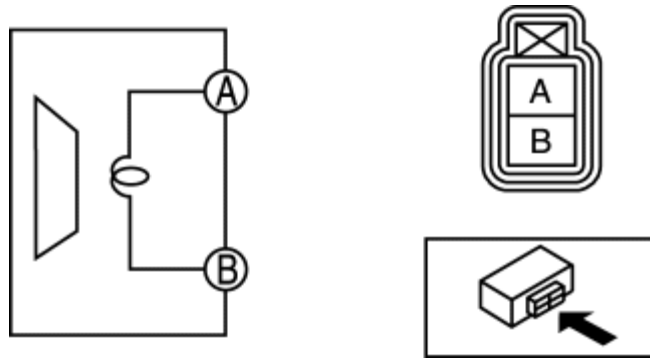
[Back to Top](#)

2011 - RX-8 - Body and Accessories

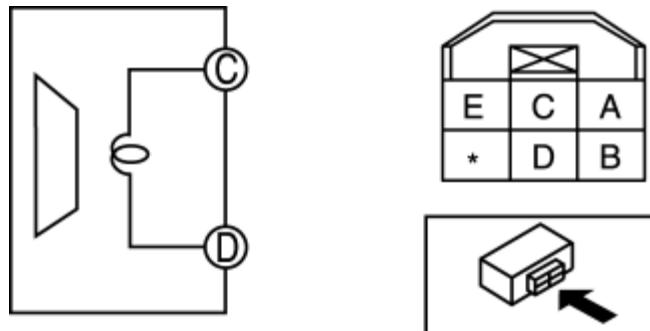
FRONT DOOR SPEAKER INSPECTION

1. Disconnect the negative battery cable.
2. Remove the front door trim. (See [FRONT DOOR TRIM REMOVAL/INSTALLATION.](#))
3. Remove the front door speaker. (See [FRONT DOOR SPEAKER REMOVAL/INSTALLATION.](#))
4. Verify the resistance between front door speaker terminals.

Without Bose®



With Bose®



- If the resistance is not within the specification, replace the front door speaker.

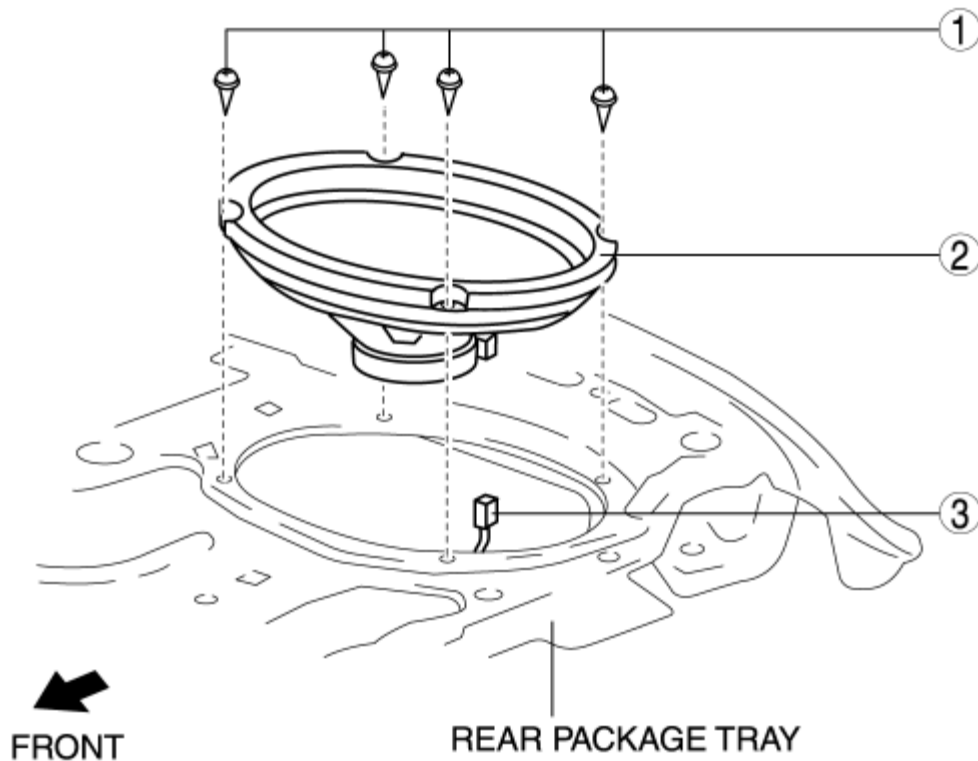
Resistance

- Without Bose®: 4 ohms
- With Bose®: 2 ohms

2011 - RX-8 - Body and Accessories

REAR SPEAKER REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION](#).)
 - b. Console (See [CONSOLE REMOVAL/INSTALLATION](#).)
 - c. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION](#).)
 - d. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION](#).)
 - e. Rear package side trim (See [REAR PACKAGE TRIM REMOVAL/INSTALLATION](#).)
 - f. Rear package center trim (See [REAR PACKAGE TRIM REMOVAL/INSTALLATION](#).)
3. Remove in the order indicated in the table.



2	Rear speaker
3	Connector

4. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

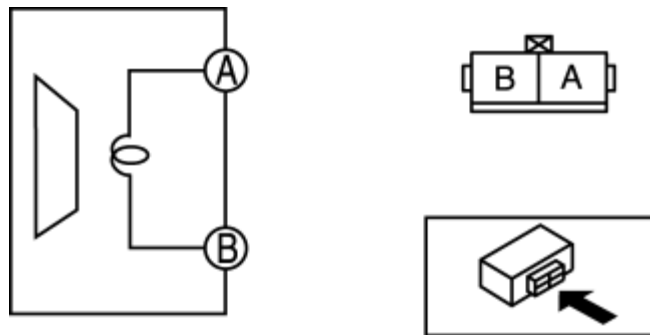
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

REAR SPEAKER INSPECTION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - b. Console (See [CONSOLE REMOVAL/INSTALLATION.](#))
 - c. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
 - d. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - e. Rear package side trim (See [REAR PACKAGE TRIM REMOVAL/INSTALLATION.](#))
 - f. Rear package center trim (See [REAR PACKAGE TRIM REMOVAL/INSTALLATION.](#))
 - g. Rear speaker (See [REAR SPEAKER REMOVAL/INSTALLATION.](#))
3. Verify the resistance between rear speaker terminals.



- If the resistance is not within the specification, replace the rear speaker.

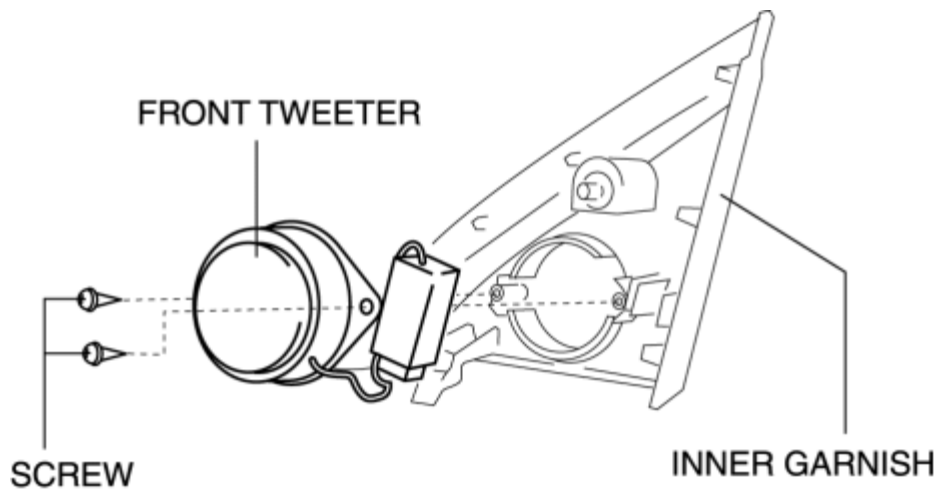
Resistance

- Without Bose[®]: 4 ohms
- With Bose[®]: 1.8 ohms

2011 - RX-8 - Body and Accessories

FRONT TWEETER REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the inner garnish. (See [INNER GARNISH REMOVAL/INSTALLATION](#).)
3. Remove the screws.

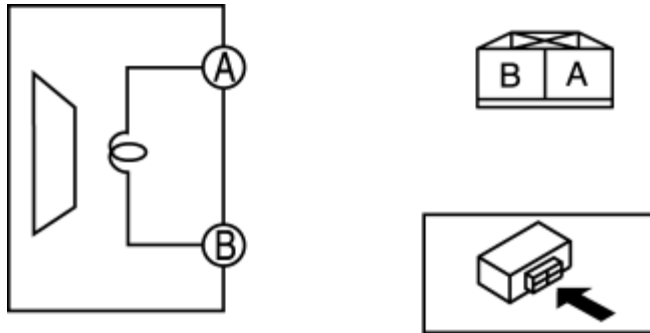


4. Remove the front tweeter.
5. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

FRONT TWEETER INSPECTION

1. Disconnect the negative battery cable.
2. Remove the inner garnish. (See [INNER GARNISH REMOVAL/INSTALLATION](#).)
3. Remove the front tweeter. (See [FRONT TWEETER REMOVAL/INSTALLATION](#).)
4. Verify the resistance between front tweeter terminals.



- If the continuity is as indicated in the table, replace the front tweeter.

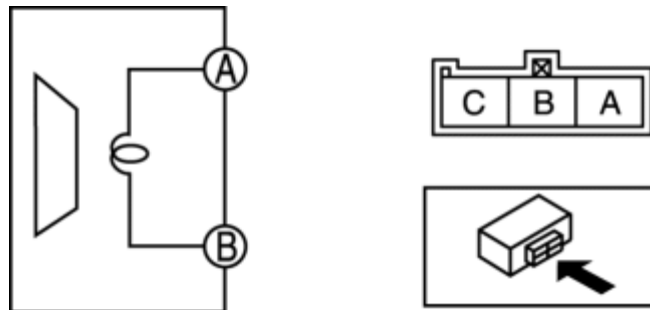
Resistance

- 3.8 ohms

2011 - RX-8 - Body and Accessories

REAR TWEETER INSPECTION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - b. Console (See [CONSOLE REMOVAL/INSTALLATION.](#))
 - c. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
 - d. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - e. Rear package side trim (See [REAR PACKAGE TRIM REMOVAL/INSTALLATION.](#))
 - f. Rear tweeter (See [REAR TWEETER REMOVAL/INSTALLATION.](#))
3. Verify the resistance between rear tweeter terminals.



- If the continuity is as indicated in the table, replace the rear tweeter.

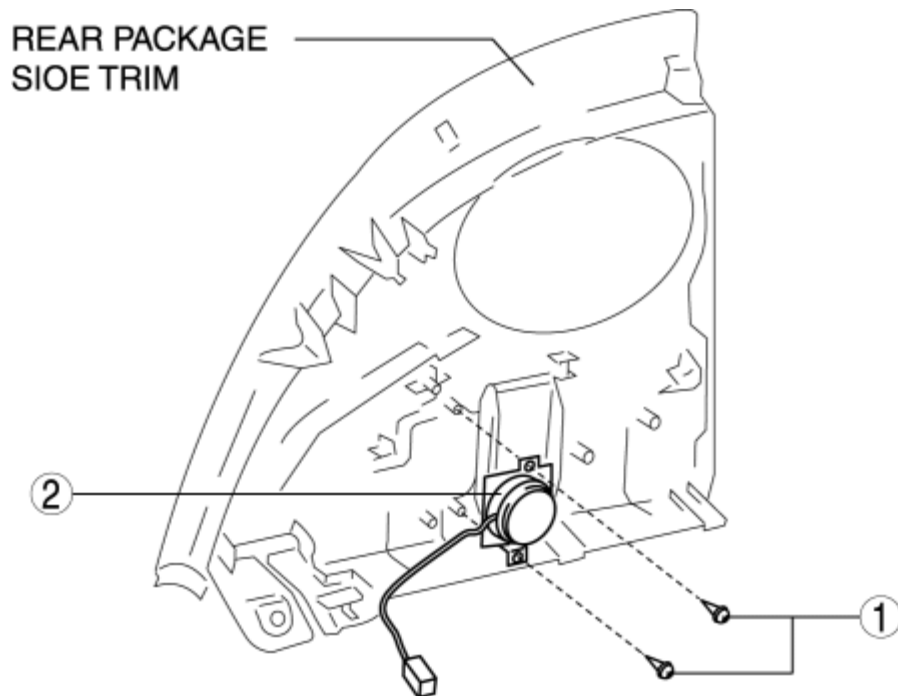
Resistance

- 3.8 ohms

2011 - RX-8 - Body and Accessories

REAR TWEETER REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION](#).)
 - b. Console (See [CONSOLE REMOVAL/INSTALLATION](#).)
 - c. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION](#).)
 - d. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION](#).)
 - e. Rear package side trim (See [REAR PACKAGE TRIM REMOVAL/INSTALLATION](#).)
3. Remove in the order indicated in the table.



1	Screw
2	Rear tweeter

4. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

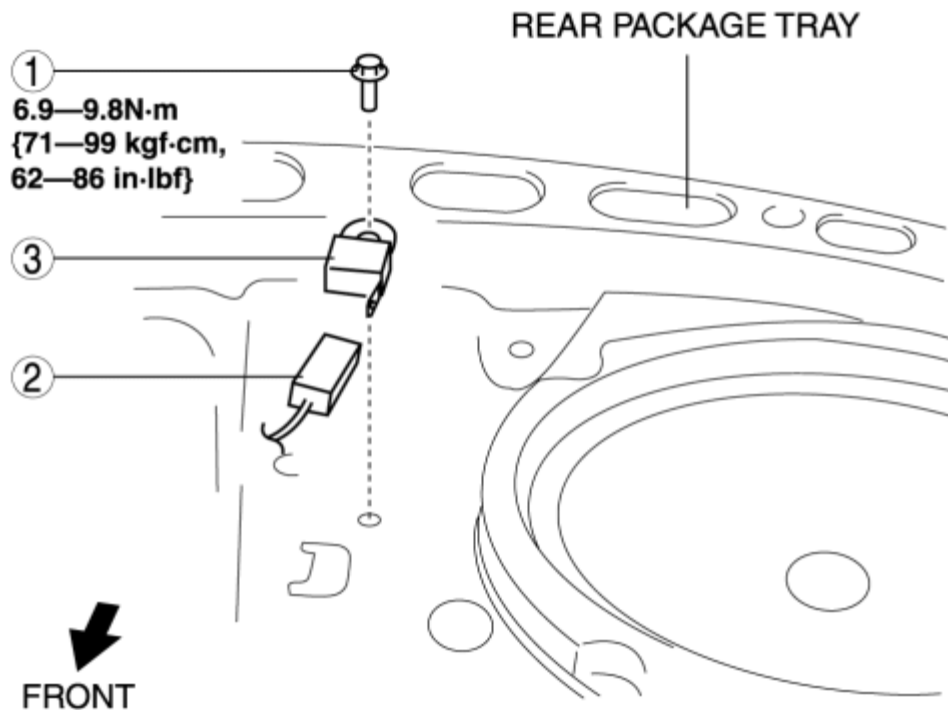
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

CONDENSER REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION](#).)
 - b. Console (See [CONSOLE REMOVAL/INSTALLATION](#).)
 - c. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION](#).)
 - d. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION](#).)
 - e. Rear package side trim (See [REAR PACKAGE TRIM REMOVAL/INSTALLATION](#).)
 - f. Rear package center trim (See [REAR PACKAGE TRIM REMOVAL/INSTALLATION](#).)
3. Remove in the order indicated in the table.



1 Bolt

2	Connector
3	Condenser

4. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

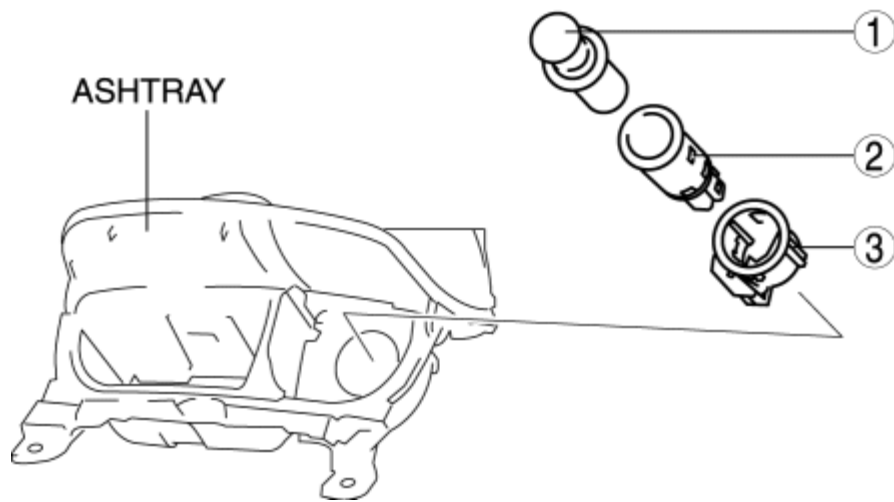
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

CIGARETTE LIGHTER REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the ashtray. (See [CONSOLE REMOVAL/INSTALLATION](#).)
3. Remove in the order indicated in the table.



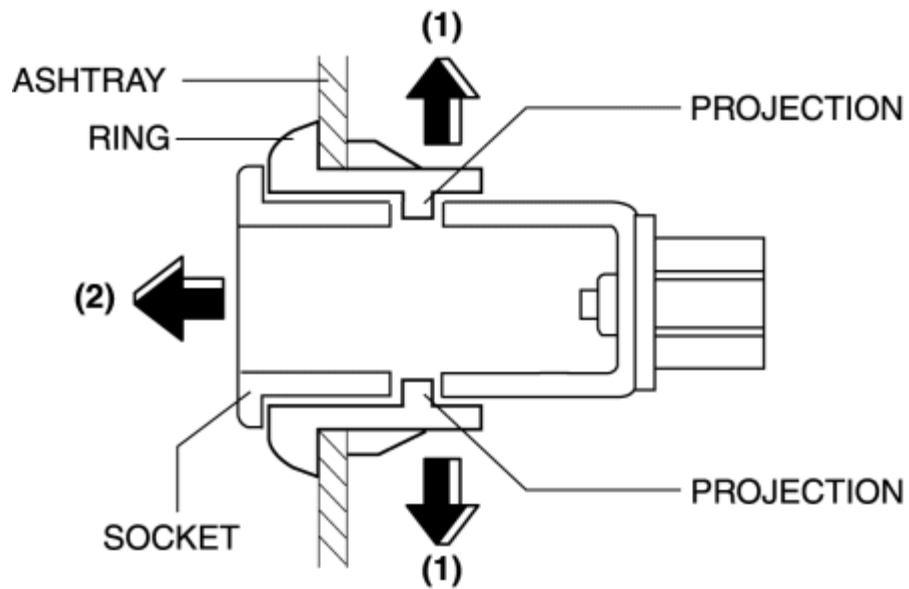
1	Cigarette lighter plug
2	Socket (See Socket Removal Note .)
3	Ring (See Ring Removal Note .)

4. Install in the reverse order of removal.

Socket Removal Note

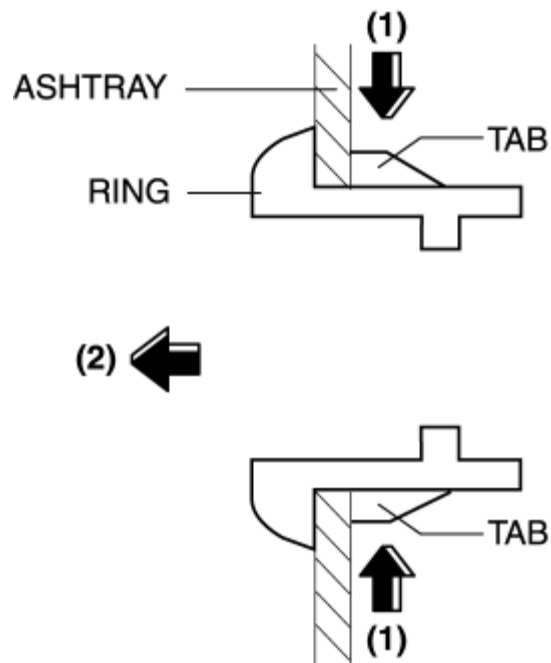
1. Remove the socket in the direction of the arrow (2) shown in the figure while opening the

rings in the direction of the arrow (1) using a tape-wrapped fastener remover.



Ring Removal Note

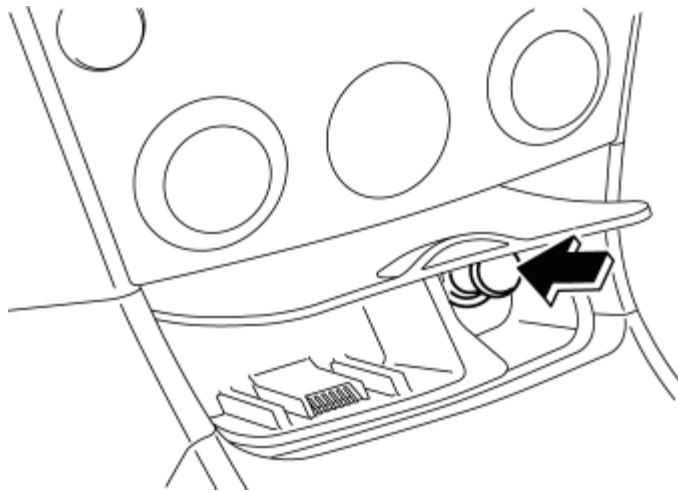
1. Remove the ring in the direction of the arrow (2) shown in the figure while pressing the ring tabs in the direction of the arrow (1).



2011 - RX-8 - Body and Accessories

CIGARETTE LIGHTER INSPECTION

1. Turn the ignition switch to the ACC position.
2. Press the cigarette lighter into the socket and verify that it returns to its original position in **10—20 s**.

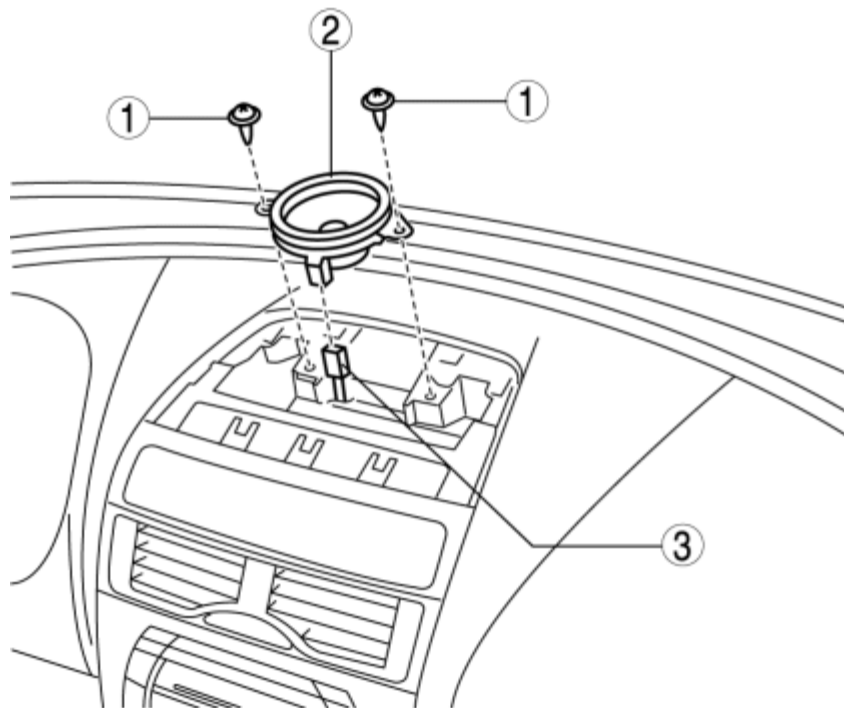


- If the cigarette lighter does not operate normally, replace the cigarette lighter and the socket.

2011 - RX-8 - Body and Accessories

CENTER SPEAKER REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the speaker grille. (See [SPEAKER GRILLE REMOVAL/INSTALLATION](#).)
3. Remove in the order indicated in the table.



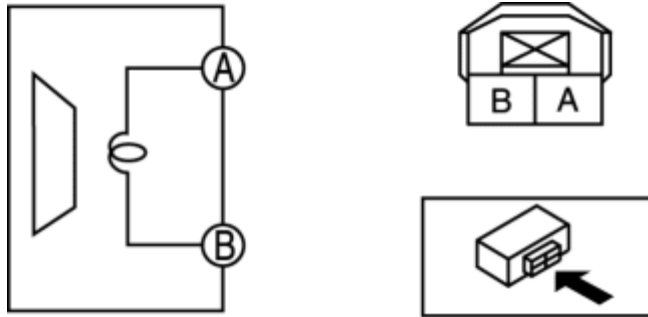
1	Screw
2	Center speaker
3	Connector

4. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

CENTER SPEAKER INSPECTION

1. Disconnect the negative battery cable.
2. Remove the speaker grille. (See [SPEAKER GRILLE REMOVAL/INSTALLATION](#).)
3. Remove the center speaker. (See [CENTER SPEAKER REMOVAL/INSTALLATION](#).)
4. Verify the resistance between center speaker terminals.



- If the resistance is not within the specification, replace the center speaker.

Resistance

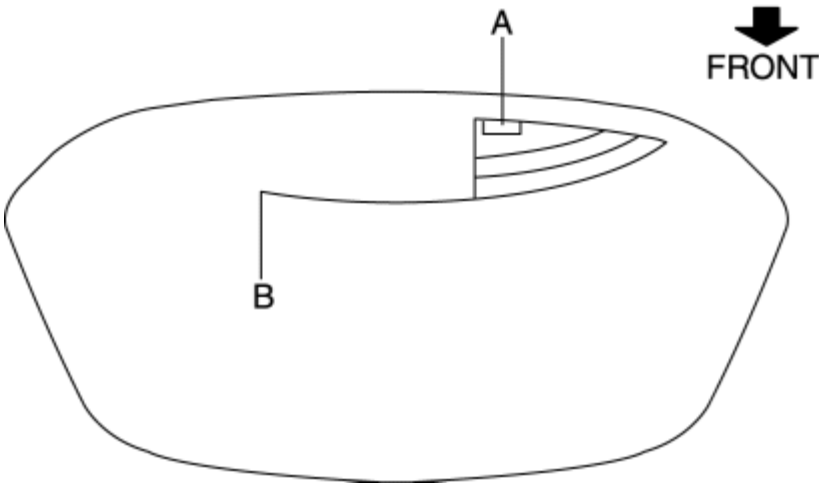
- 3.6 ohms

2011 - RX-8 - Body and Accessories

GLASS ANTENNA INSPECTION

AM/FM

- 1. Inspect the glass antenna for damage.
- 2. Verify the continuity between the glass antenna terminals.



- If there is any malfunction, repair the glass antenna.(See [FILAMENT REPAIR.](#))

○ — ○ : Continuity

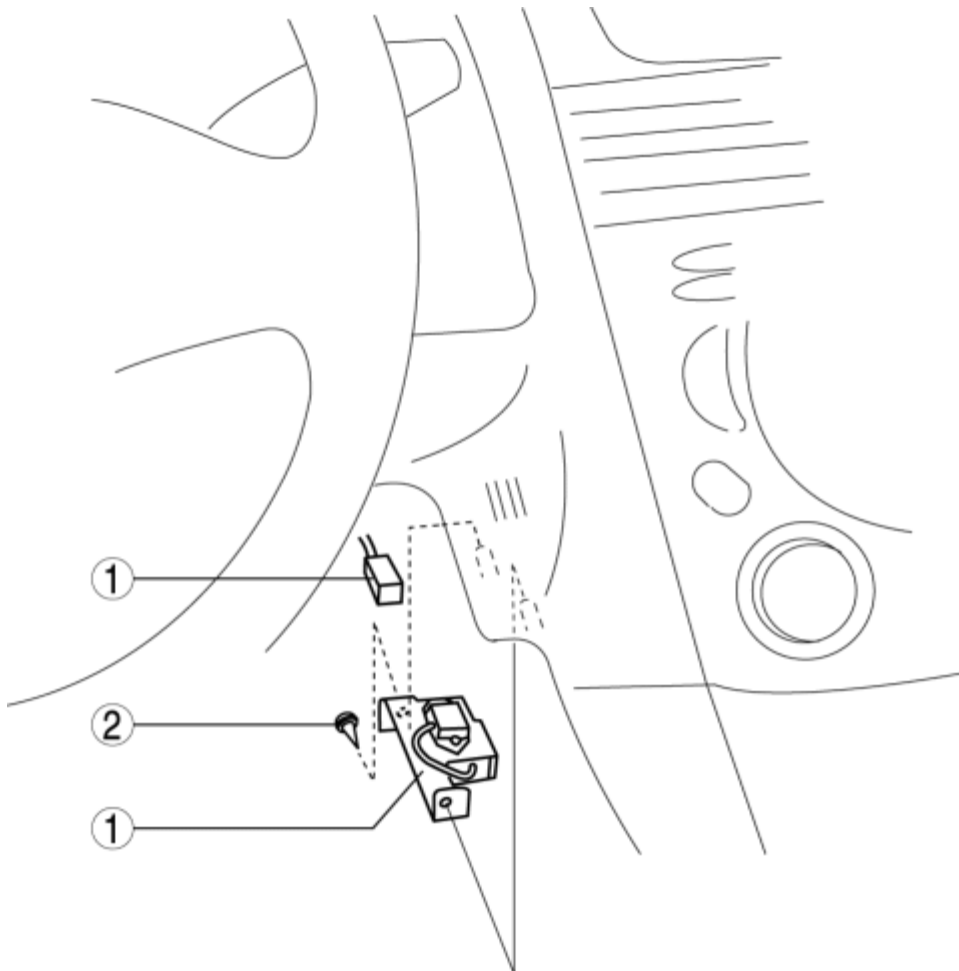
Test condition	Terminal	
	A	B
Under any condition	○ —	— ○

2011 - RX-8 - Body and Accessories

AUDIOPILOT MICROPHONE REMOVAL/INSTALLATION

NOTE:

- "AUDIOPILOT" is a registered trademark of Bose® Corporation.
1. Disconnect the negative battery cable.
 2. Remove the lower panel. (See [LOWER PANEL REMOVAL/INSTALLATION](#).)
 3. Remove the Knee bolster. (See [KNEE BOLSTER REMOVAL/INSTALLATION](#).)
 4. Remove in the order indicated in the table.



2	Screw
3	AUDIOPILOT microphone

5. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

NOISE FILTER REMOVAL/INSTALLATION

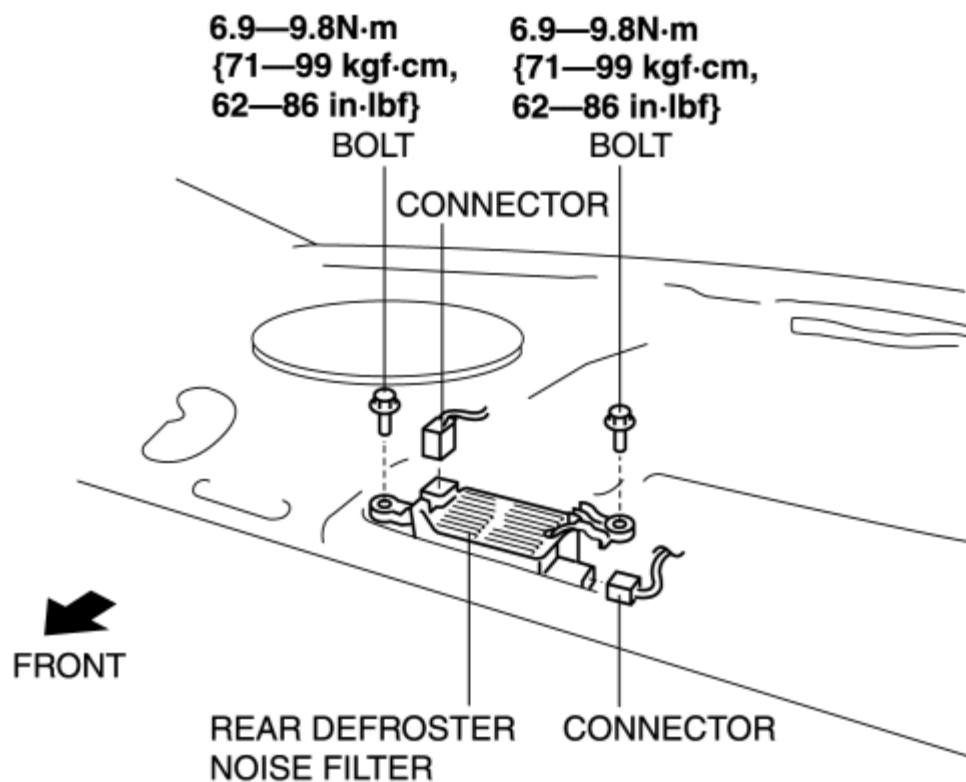
Brake Light Noise Filter

NOTE:

- The brake light noise filter is integrated with the vehicle wiring harness.

Rear Defroster Noise Filter

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - b. Console (See [CONSOLE REMOVAL/INSTALLATION.](#))
 - c. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
 - d. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - e. Rear package side trim (See [REAR PACKAGE TRIM REMOVAL/INSTALLATION.](#))
 - f. Rear package center trim (See [REAR PACKAGE TRIM REMOVAL/INSTALLATION.](#))
3. Remove the bolt.



4. Disconnect the connector.
5. Remove the rear defroster noise filter.
6. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

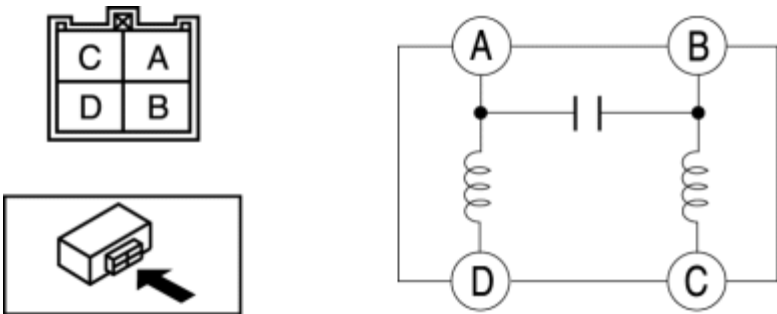
[Back to Top](#)

2011 - RX-8 - Body and Accessories


NOISE FILTER INSPECTION






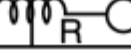
Brake Light Noise Filter

- 1. Disconnect the negative battery cable.
- 2. Remove the lower panel. (See [LOWER PANEL REMOVAL/INSTALLATION.](#))
- 3. Verify the resistance and continuity between the brake light noise filter terminals.



- If the resistance is not as indicated in the table, replace the vehicle wiring harness.

 :Continuity

Test condition	Terminal			
	A	B	C	D
Under any condition				
				

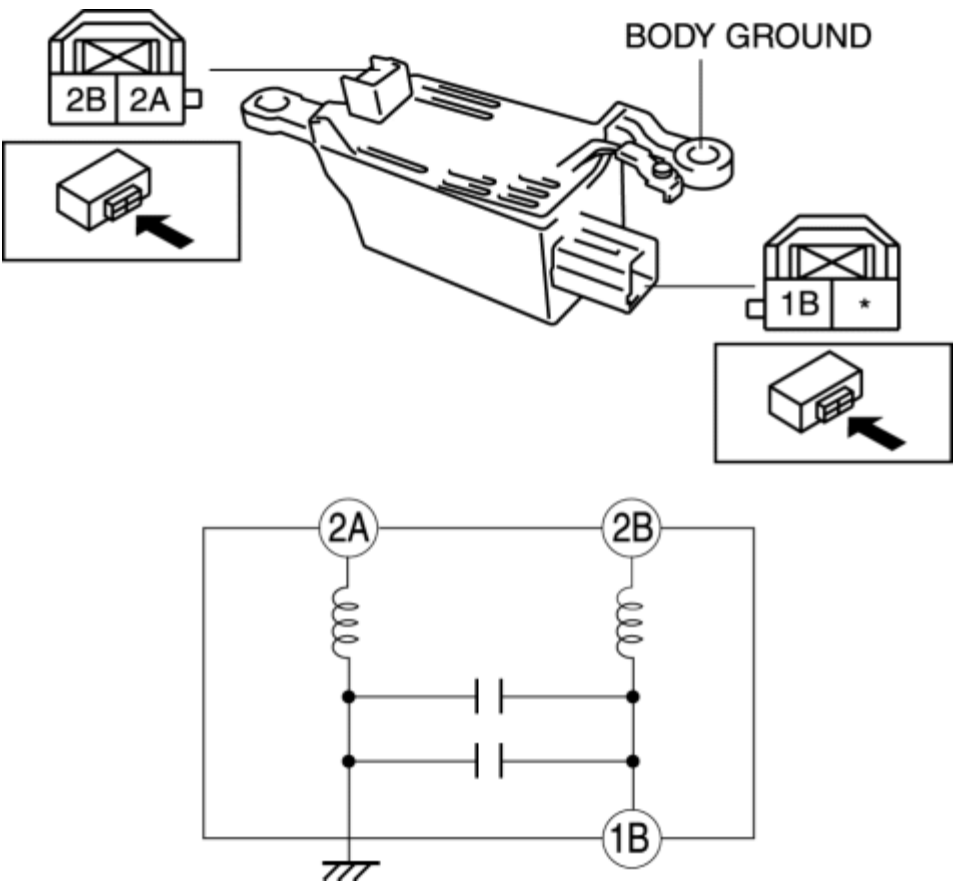
R : 0.1 ohms

Rear Defroster Noise Filter

- 1. Disconnect the negative battery cable.
- 2. Remove the following parts:

- a. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
- b. Console (See [CONSOLE REMOVAL/INSTALLATION.](#))
- c. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
- d. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
- e. Rear package side trim (See [REAR PACKAGE TRIM REMOVAL/INSTALLATION.](#))
- f. Rear package center trim (See [REAR PACKAGE TRIM REMOVAL/INSTALLATION.](#))
- g. Rear defroster noise filter (See [NOISE FILTER REMOVAL/INSTALLATION.](#))

3. Verify the resistance and continuity between the rear window defroster noise filter terminals.



- If the resistance is not as indicated in the table, replace the rear window defroster noise filter.

:Continuity

Test condition	Terminal			
	GND	1B	2A	2B
Under any condition				

R: 0.1 ohms

[< Previous](#) [Next >](#)

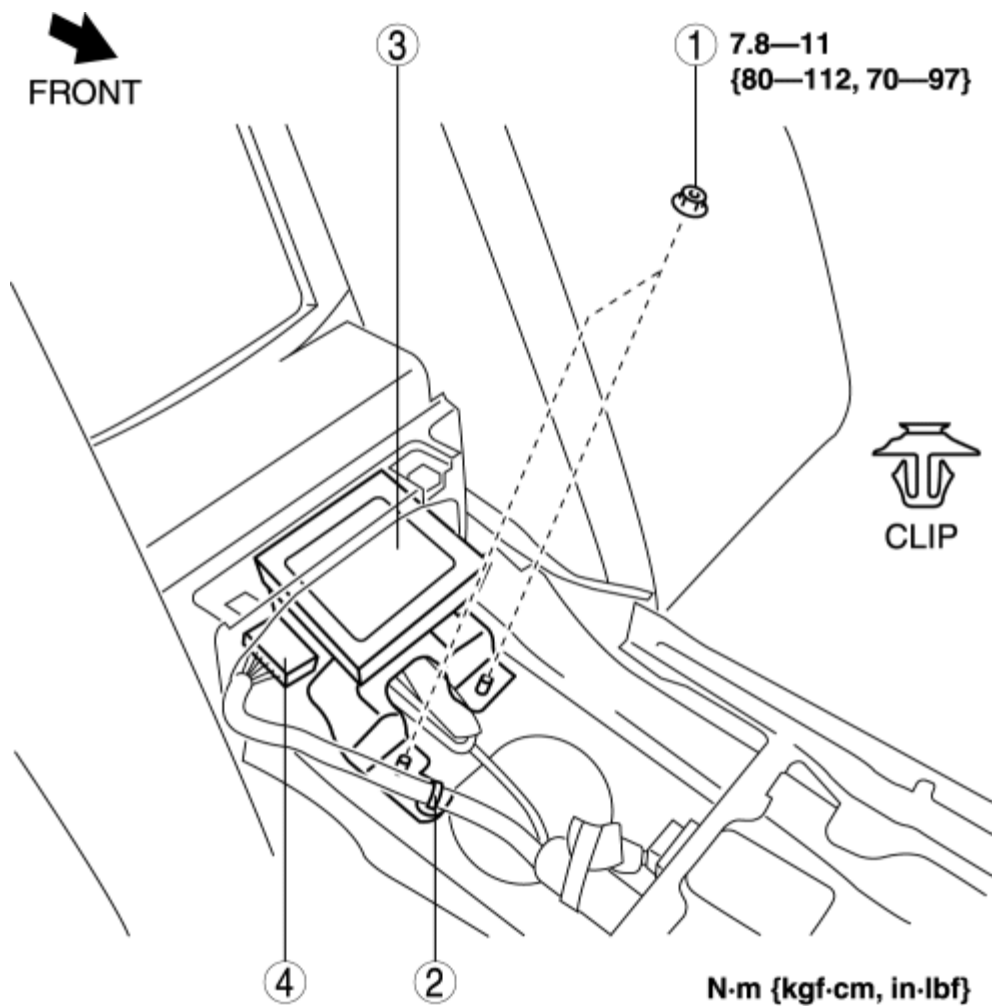
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

HANDS-FREE TELEPHONE (HF/TEL) UNIT REMOVAL/INSTALLATION

- 1. Disconnect the negative battery cable.
- 2. Remove the rear console. (See [CONSOLE REMOVAL/INSTALLATION](#).)
- 3. Remove in the order indicated in the table.



1	Nut
2	Clip

3	HF/TEL unit
4	Connector

4. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

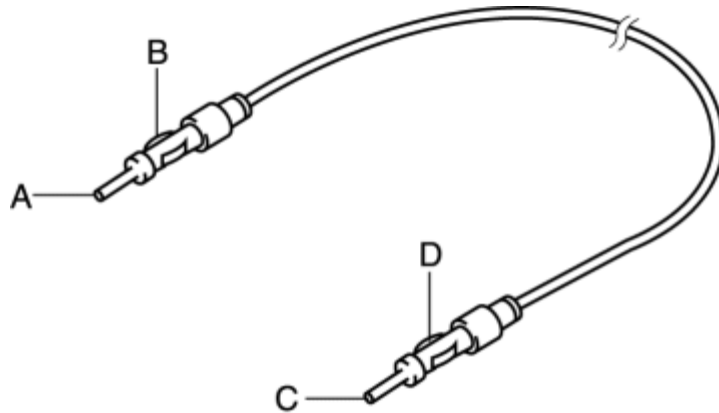
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

AM/FM ANTENNA FEEDER NO.1 INSPECTION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Shift lever knob (MT) (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\]](#).)
 - b. Shift knob (AT) (See [SELECTOR LEVER REMOVAL/INSTALLATION](#).)
 - c. Upper panel (See [CONSOLE REMOVAL/INSTALLATION](#).)
 - d. Ashtray panel (See [CONSOLE REMOVAL/INSTALLATION](#).)
 - e. Lower panel (See [LOWER PANEL REMOVAL/INSTALLATION](#).)
 - f. Knee bolster (See [KNEE BOLSTER REMOVAL/INSTALLATION](#).)
 - g. Center panel unit (See [CENTER PANEL UNIT REMOVAL/INSTALLATION](#).)
 - h. Inner scuff plate (LH) (See [INNER SCUFF PLATE REMOVAL/INSTALLATION](#).)
 - i. Front side trim (LH) (See [FRONT SIDE TRIM REMOVAL/INSTALLATION](#).)
3. Verify that the continuity is as indicated in the table.



- If not as indicated in the table, replace the AM/FM antenna feeder No.1.

○—○ : Continuity

Step	Terminal			
	A	B	C	D
1	○—	—	○—	
2		○—	—	○—

[< Previous](#) [Next >](#)

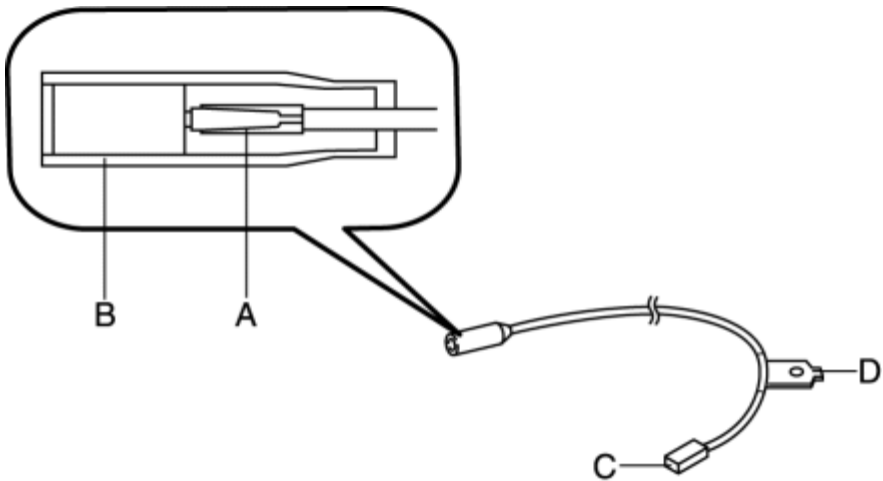
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

AM/FM ANTENNA FEEDER NO.2 INSPECTION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Inner scuff plate (LH) (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
 - b. Front side trim (LH) (See [FRONT SIDE TRIM REMOVAL/INSTALLATION.](#))
 - c. Rear seat (LH) (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - d. Tire house trim (LH) (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
 - e. Rear pillar trim (LH) (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
3. Remove the fasteners, then slightly bend back the headliner.
4. Verify that the continuity is as indicated in the table.



- If not as indicated in the table, replace the AM/FM antenna feeder No.2.

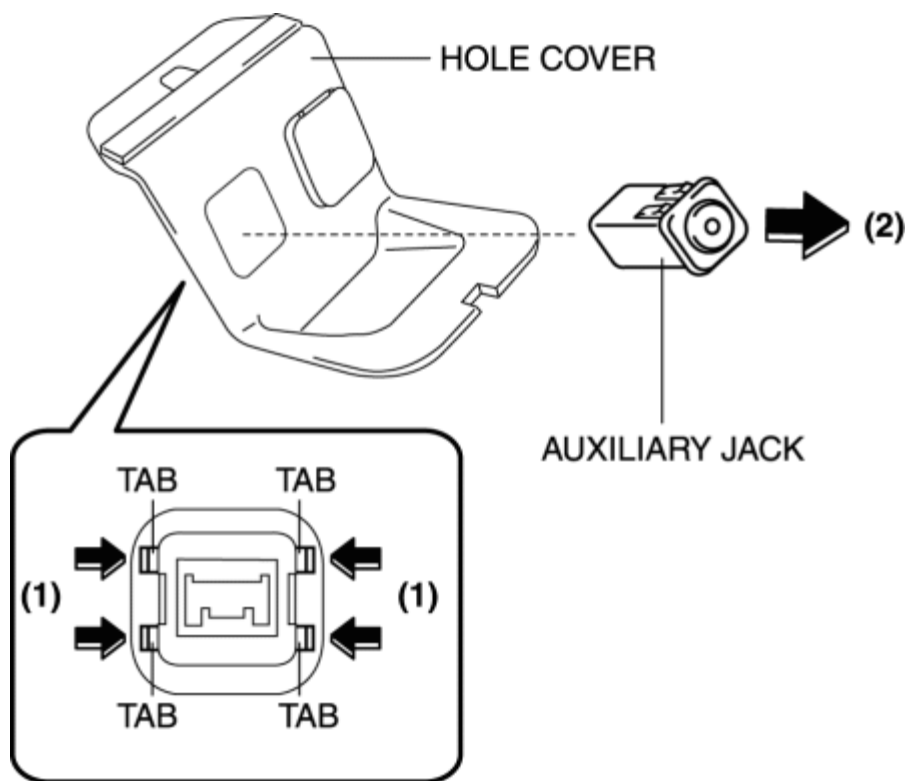
○—○ : Continuity

Step	Terminal			
	A	B	C	D
1	○	—	○	
2		○	—	○

2011 - RX-8 - Body and Accessories

AUXILIARY JACK REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the hole cover. (See [CONSOLE REMOVAL/INSTALLATION](#).)
3. Remove the auxiliary jack in the direction of the arrow (2) shown in the figure while pressing the auxiliary jack tabs in the direction of the arrow (1).

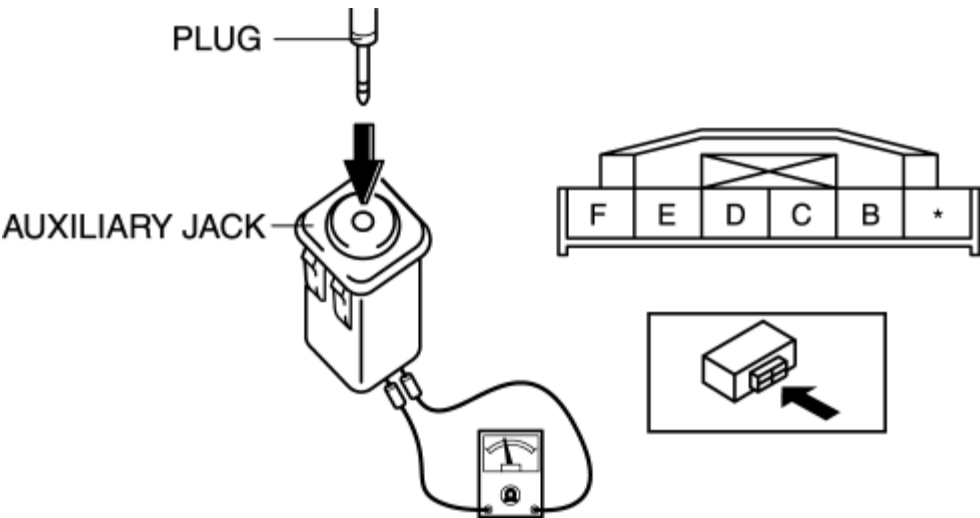


4. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

AUXILIARY JACK INSPECTION

- 1. Disconnect the negative battery cable.
- 2. Remove the hole cover. (See [CONSOLE REMOVAL/INSTALLATION.](#))
- 3. Remove the auxiliary jack. (See [AUXILIARY JACK REMOVAL/INSTALLATION.](#))
- 4. Connect a commercially-available nonresistant plug to the auxiliary jack.



- 5. Verify that the continuity between the auxiliary jack terminals is as indicated in the table.

○—○: Continuity

Test condition	Terminal				
	B	C	D	E	F
Plug is connected	○—○				○—○
Plug is not connected					

- If not as indicated in the table, replace the auxiliary jack.

2011 - RX-8 - Body and Accessories

AM/FM ANTENNA FEEDER NO.1 INSTALLATION

CAUTION:

- If the antenna feeder is installed with tension on the cable and wiring harness it could result in loosening of the connection areas and poor contact. When installing and connecting the antenna feeder, always make sure there is slack on the cable and wiring harness.

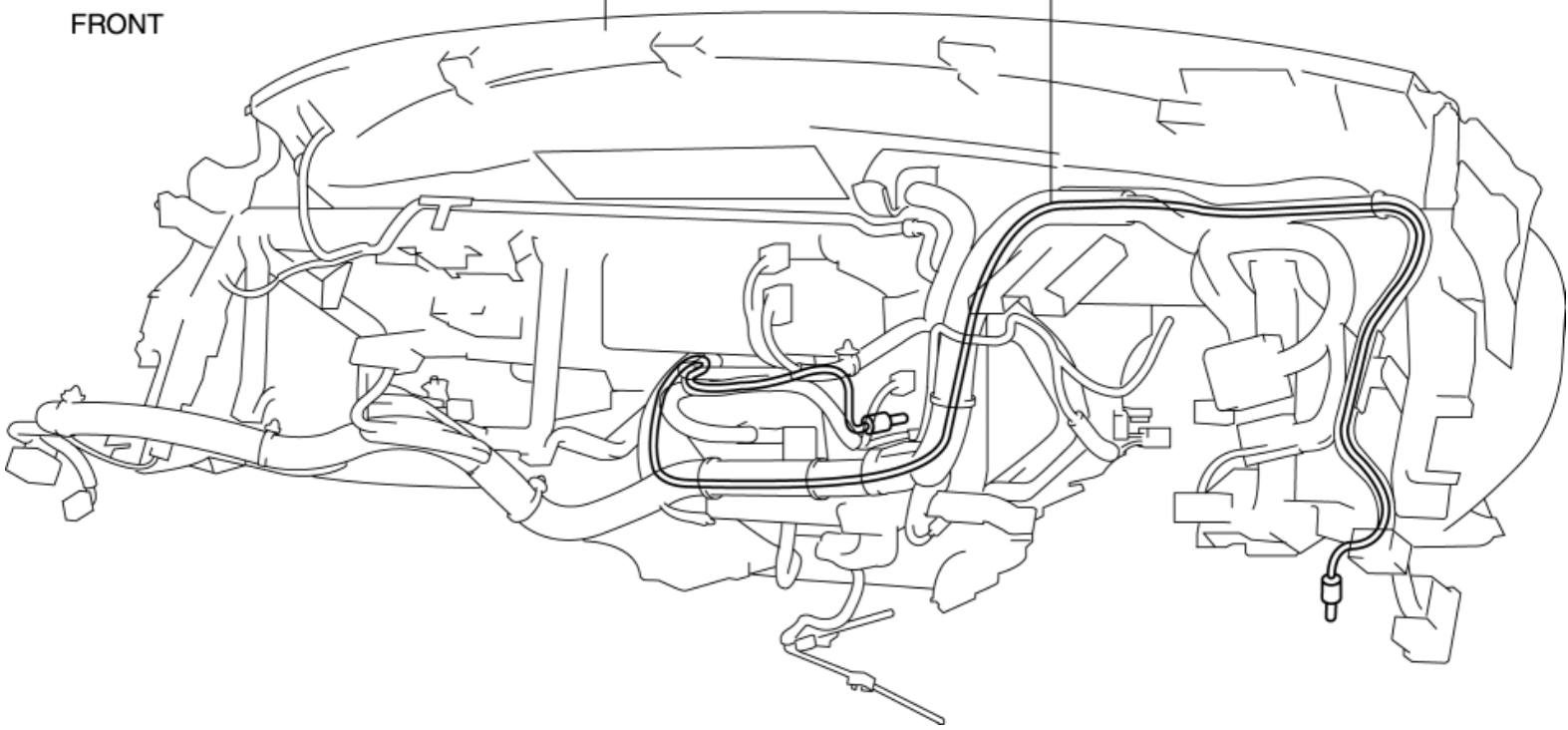
NOTE:

- The antenna feeder is integrated with the vehicle wiring harness.
 - When installing a new antenna feeder, secure it to the vehicle wiring harness along the installation route of the old antenna feeder.
1. Disconnect the negative battery cable.
 2. Remove the following parts:
 - a. Shift lever knob (MT) (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\].](#))
 - b. Shift knob (AT) (See [SELECTOR LEVER REMOVAL/INSTALLATION.](#))
 - c. Console (See [CONSOLE REMOVAL/INSTALLATION.](#))
 - d. Glove compartment (See [GLOVE COMPARTMENT REMOVAL/INSTALLATION.](#))
 - e. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
 - f. Front side trim (See [FRONT SIDE TRIM REMOVAL/INSTALLATION.](#))
 - g. Side panel (See [SIDE PANEL REMOVAL/INSTALLATION.](#))
 - h. Lower panel (See [LOWER PANEL REMOVAL/INSTALLATION.](#))
 - i. Knee bolster (See [KNEE BOLSTER REMOVAL/INSTALLATION.](#))
 - j. Column cover (See [COLUMN COVER REMOVAL/INSTALLATION.](#))
 - k. Steering shaft installation nut (See [STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION.](#))
 - l. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - m. Dashboard (See [DASHBOARD REMOVAL/INSTALLATION.](#))
 3. Align and secure the new AM/FM antenna feeder No.1 to the vehicle wiring harness.


FRONT

DASHBOARD

AM/FM ANTENNA FEEDER No.1



[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

SIRIUS SATELLITE RADIO ANTENNA FEEDER INSTALLATION

CAUTION:

- If the antenna feeder is installed with tension on the cable and wiring harness it could result in loosening of the connection areas and poor contact. When installing and connecting the antenna feeder, always make sure there is slack on the cable and wiring harness.

NOTE:

- The antenna feeder is integrated with the vehicle wiring harness.
- When installing a new antenna feeder, secure it to the vehicle wiring harness along the installation route of the old antenna feeder.

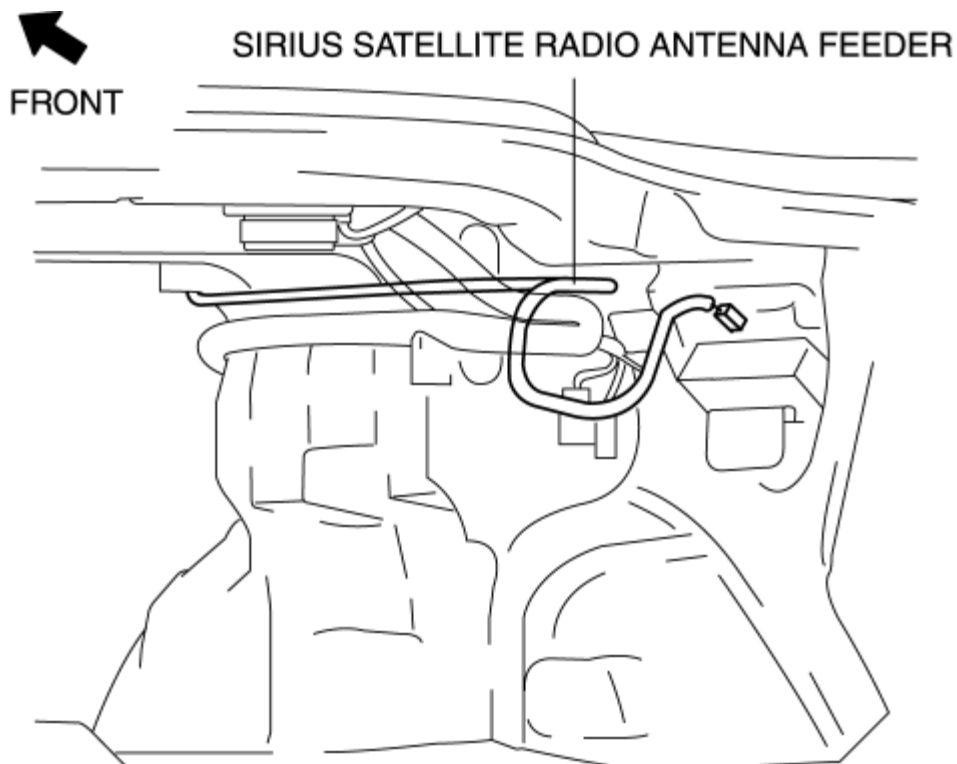
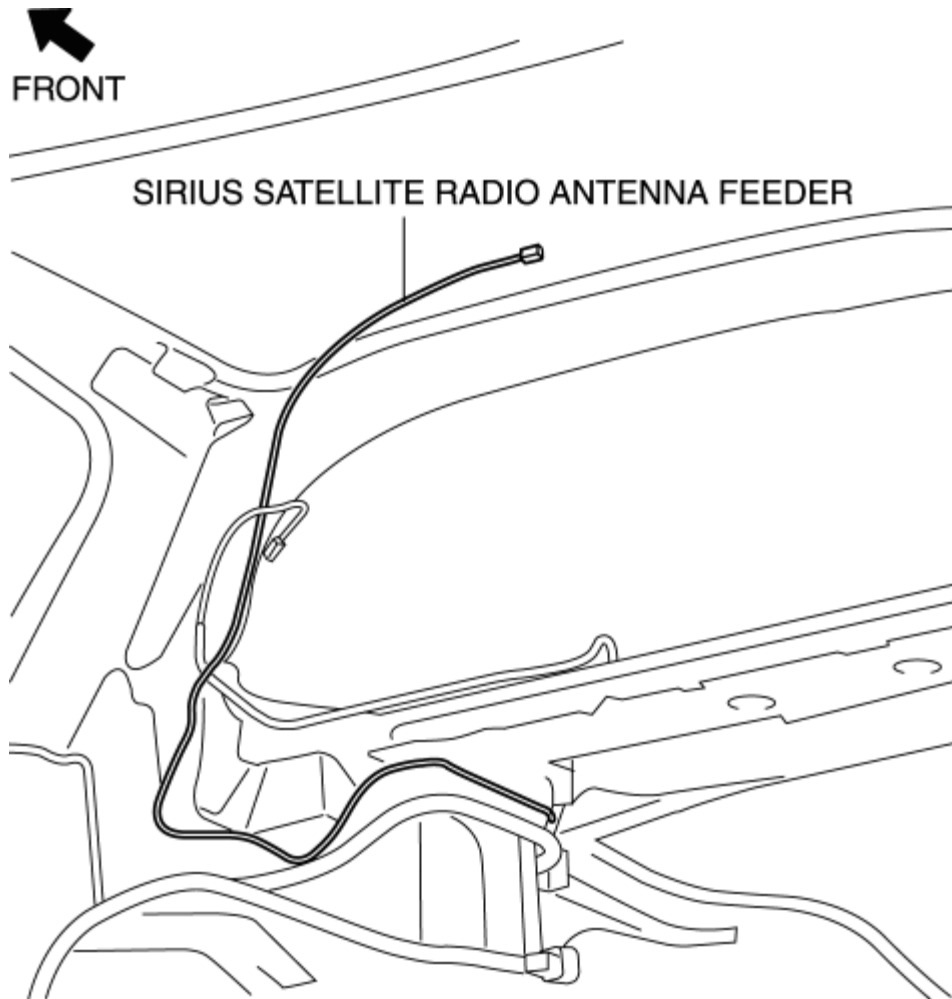
1. Disconnect the negative battery cable.

2. Remove the following parts:

- a. Sunroof seaming welt (with sunroof)
- b. Roof side trim (See [ROOF SIDE TRIM REMOVAL/INSTALLATION.](#))
- c. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
- d. Front side trim (See [FRONT SIDE TRIM REMOVAL/INSTALLATION.](#))
- e. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION.](#))
- f. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
- g. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
- h. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
- i. Map light (See [MAP LIGHT REMOVAL/INSTALLATION.](#))
- j. Interior light (See [INTERIOR LIGHT REMOVAL/INSTALLATION.](#))
- k. Sunvisor (See [SUNVISOR REMOVAL/INSTALLATION.](#))
- l. Assist handle (See [ASSIST HANDLE REMOVAL/INSTALLATION.](#))
- m. Headliner (See [HEADLINER REMOVAL/INSTALLATION.](#))
- n. Trunk end trim (See [TRUNK END TRIM REMOVAL/INSTALLATION.](#))

o. Trunk side trim (RH) (See [TRUNK SIDE TRIM REMOVAL/INSTALLATION.](#))

3. Align and secure the new SIRIUS satellite radio antenna feeder to the vehicle wiring harness.



[< Previous](#) [Next >](#)

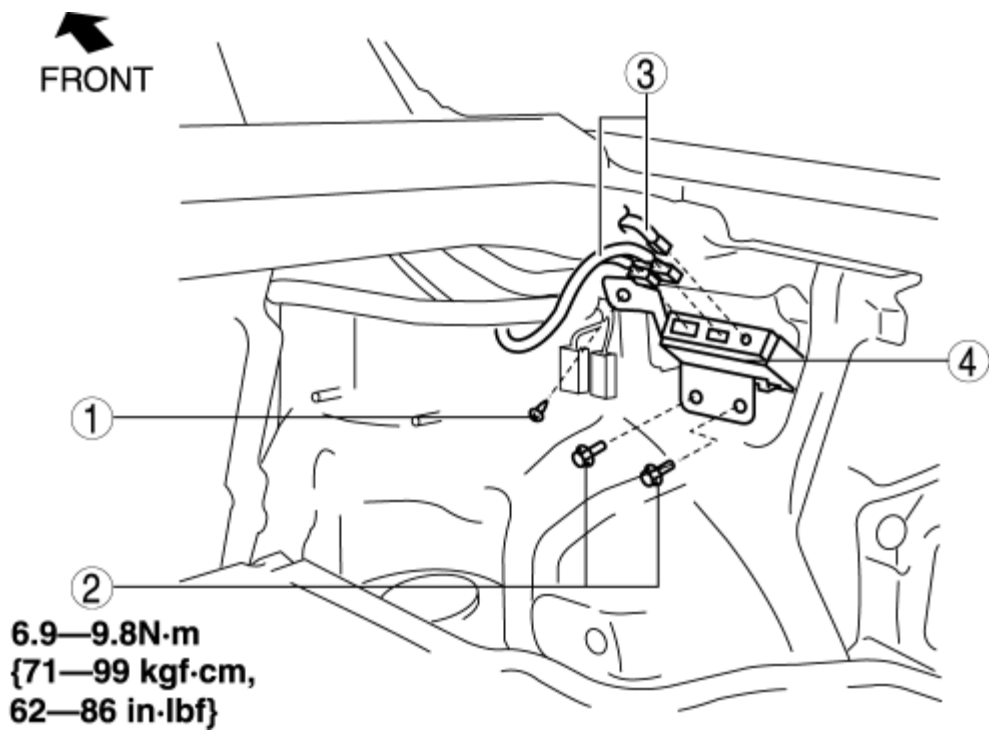
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

SIRIUS SATELLITE RADIO UNIT REMOVAL/INSTALLATION

- 1. Disconnect the negative battery cable.
- 2. Remove the trunk end trim. (See [TRUNK END TRIM REMOVAL/INSTALLATION.](#))
- 3. Remove the trunk side trim. (RH) (See [TRUNK SIDE TRIM REMOVAL/INSTALLATION.](#))
- 4. Remove in the order indicated in the table.



1	Screw
2	Bolt
3	Connector
4	SIRIUS satellite radio unit

5. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

AM/FM ANTENNA FEEDER NO.2 INSTALLATION

CAUTION:

- If the antenna feeder is installed with tension on the cable and wiring harness it could result in loosening of the connection areas and poor contact. When installing and connecting the antenna feeder, always make sure there is slack on the cable and wiring harness.

NOTE:

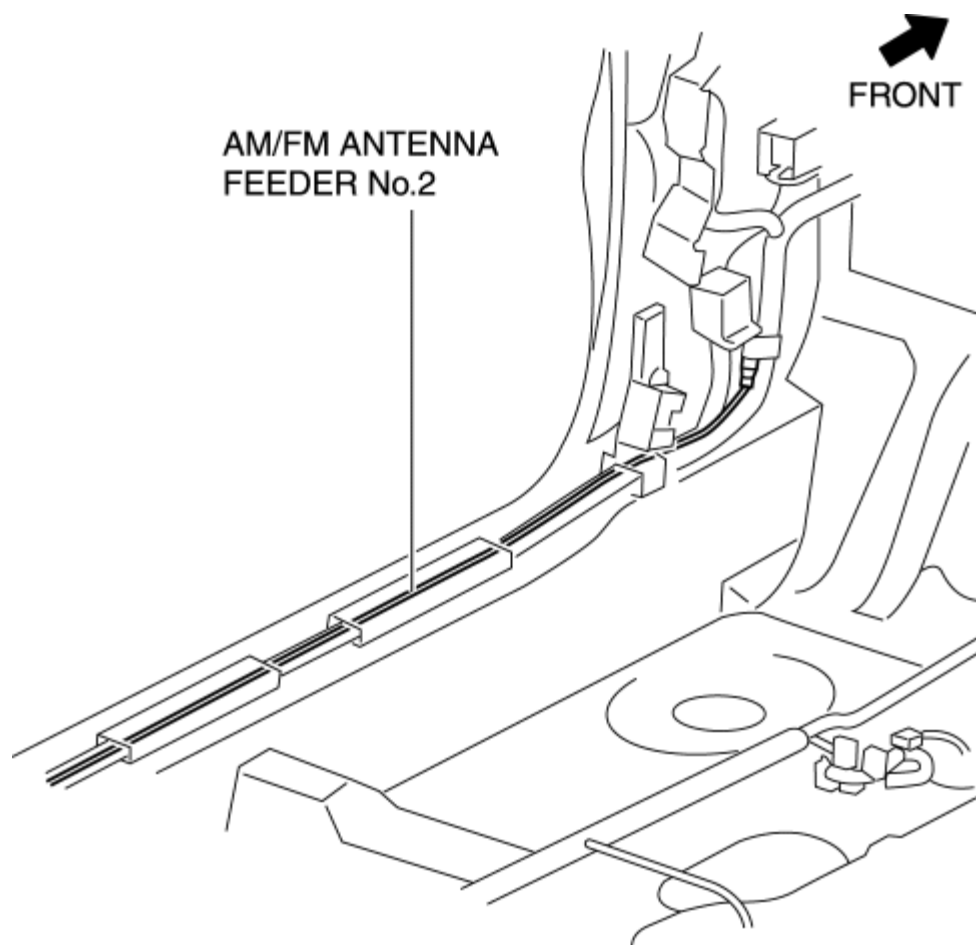
- The antenna feeder is integrated with the vehicle wiring harness.
- When installing a new antenna feeder, secure it to the vehicle wiring harness along the installation route of the old antenna feeder.

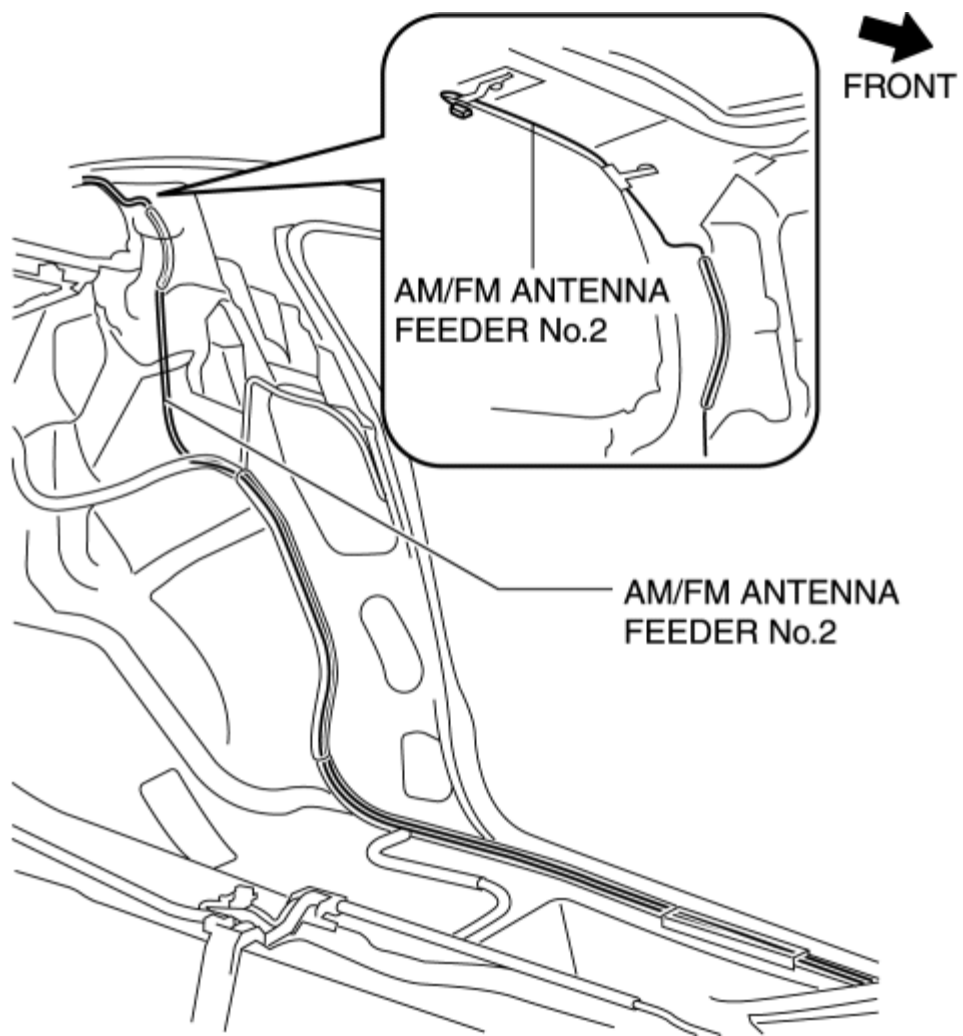
1. Disconnect the negative battery cable.

2. Remove the following parts:

- a. Sunroof seaming welt (with sunroof)
- b. Roof side trim (See [ROOF SIDE TRIM REMOVAL/INSTALLATION.](#))
- c. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
- d. Front side trim (See [FRONT SIDE TRIM REMOVAL/INSTALLATION.](#))
- e. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION.](#))
- f. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
- g. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
- h. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
- i. Map light (See [MAP LIGHT REMOVAL/INSTALLATION.](#))
- j. Interior light (See [INTERIOR LIGHT REMOVAL/INSTALLATION.](#))
- k. Sunvisor (See [SUNVISOR REMOVAL/INSTALLATION.](#))
- l. Assist handle (See [ASSIST HANDLE REMOVAL/INSTALLATION.](#))
- m. Headliner (See [HEADLINER REMOVAL/INSTALLATION.](#))

3. Align and secure the new AM/FM antenna feeder No.2 to the vehicle wiring harness.





[< Previous](#) [Next >](#)

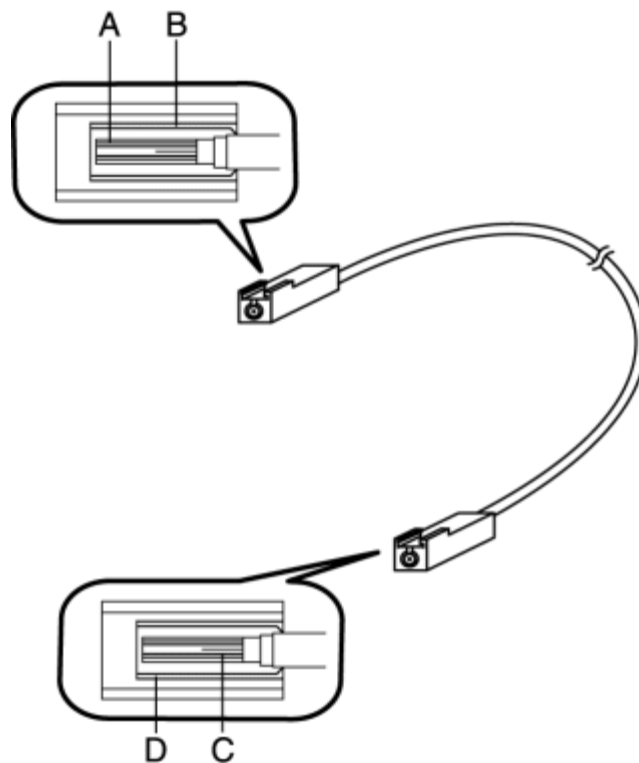
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

SIRIUS SATELLITE RADIO ANTENNA FEEDER INSPECTION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - b. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
 - c. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
 - d. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - e. Trunk end trim (See [TRUNK END TRIM REMOVAL/INSTALLATION.](#))
 - f. Trunk side trim (RH) (See [TRUNK SIDE TRIM REMOVAL/INSTALLATION.](#))
3. Remove the fasteners, then slightly bend back the headliner.
4. Verify that the continuity is as indicated in the table.



- If not as indicated in the table, replace the SIRIUS satellite radio antenna feeder.

○—○ : Continuity

Step	Terminal			
	A	B	C	D
1	○—		—○	
2		○—		—○

[< Previous](#) [Next >](#)

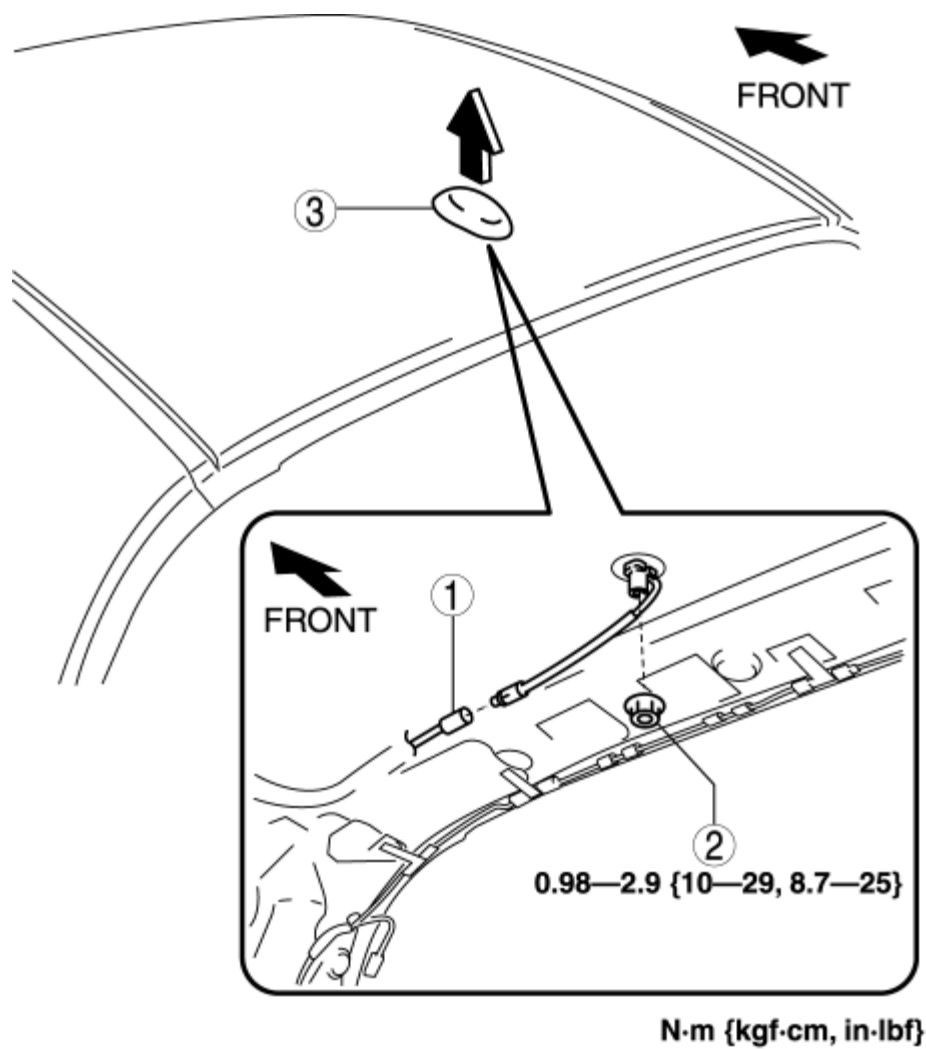
[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

SIRIUS SATELLITE RADIO ANTENNA REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Sunroof seaming welt (with sunroof)
 - b. Roof side trim (See [ROOF SIDE TRIM REMOVAL/INSTALLATION.](#))
 - c. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
 - d. Front side trim (See [FRONT SIDE TRIM REMOVAL/INSTALLATION.](#))
 - e. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - f. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - g. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
 - h. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - i. Map light (See [MAP LIGHT REMOVAL/INSTALLATION.](#))
 - j. Interior light (See [INTERIOR LIGHT REMOVAL/INSTALLATION.](#))
 - k. Sunvisor (See [SUNVISOR REMOVAL/INSTALLATION.](#))
 - l. Assist handle (See [ASSIST HANDLE REMOVAL/INSTALLATION.](#))
 - m. Headliner (See [HEADLINER REMOVAL/INSTALLATION.](#))
3. Remove in the order indicated in the table.



1	Connector
2	Nut
3	SIRIUS satellite radio antenna

4. Install in the reverse order of removal.

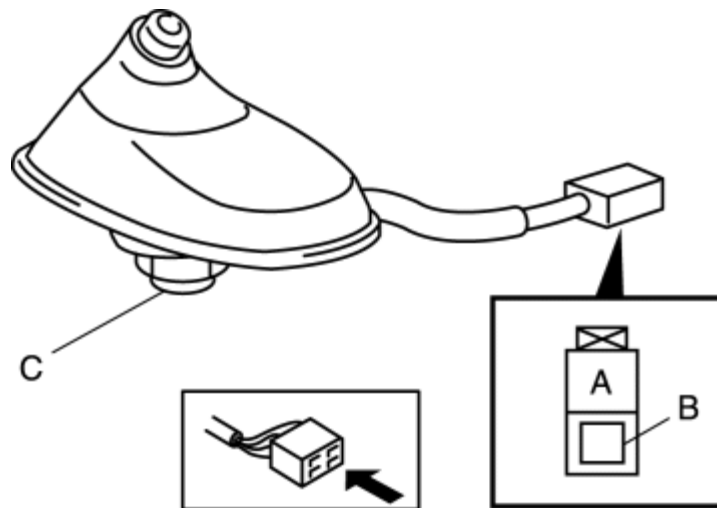
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

SIRIUS SATELLITE RADIO ANTENNA INSPECTION

1. Disconnect the negative battery cable.
2. Remove the following parts:
 - a. Sunroof seaming welt (with sunroof)
 - b. Roof side trim (See [ROOF SIDE TRIM REMOVAL/INSTALLATION.](#))
 - c. Inner scuff plate (See [INNER SCUFF PLATE REMOVAL/INSTALLATION.](#))
 - d. Front side trim (See [FRONT SIDE TRIM REMOVAL/INSTALLATION.](#))
 - e. A-pillar trim (See [A-PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - f. Rear seat (See [REAR SEAT REMOVAL/INSTALLATION.](#))
 - g. Tire house trim (See [TIRE HOUSE TRIM REMOVAL/INSTALLATION.](#))
 - h. Rear pillar trim (See [REAR PILLAR TRIM REMOVAL/INSTALLATION.](#))
 - i. Map light (See [MAP LIGHT REMOVAL/INSTALLATION.](#))
 - j. Interior light (See [INTERIOR LIGHT REMOVAL/INSTALLATION.](#))
 - k. Sunvisor (See [SUNVISOR REMOVAL/INSTALLATION.](#))
 - l. Assist handle (See [ASSIST HANDLE REMOVAL/INSTALLATION.](#))
 - m. Headliner (See [HEADLINER REMOVAL/INSTALLATION.](#))
 - n. SIRIUS satellite radio antenna (See [SIRIUS SATELLITE RADIO ANTENNA REMOVAL/INSTALLATION.](#))
3. Verify that there is no continuity between the SIRIUS satellite radio antenna terminals A and C using an ohmmeter.



4. Inspect for continuity between the SIRIUS satellite radio antenna terminals using an ohmmeter.

- If not as indicated in the table, replace the SIRIUS satellite radio antenna.

○—○ : Continuity

Test condition	Terminal			Body GND
	A	B	C	
Under any condition		○—○	○—○	○—○

[< Previous](#) [Next >](#)

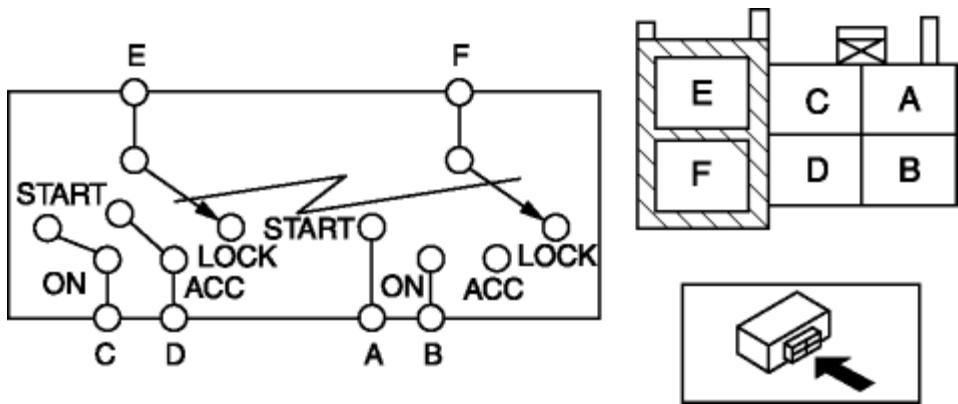
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

IGNITION SWITCH INSPECTION [WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM]

1. Verify that the continuity between the ignition switch terminals is as indicated in the table.



- If not as indicated in the table, replace the ignition switch.

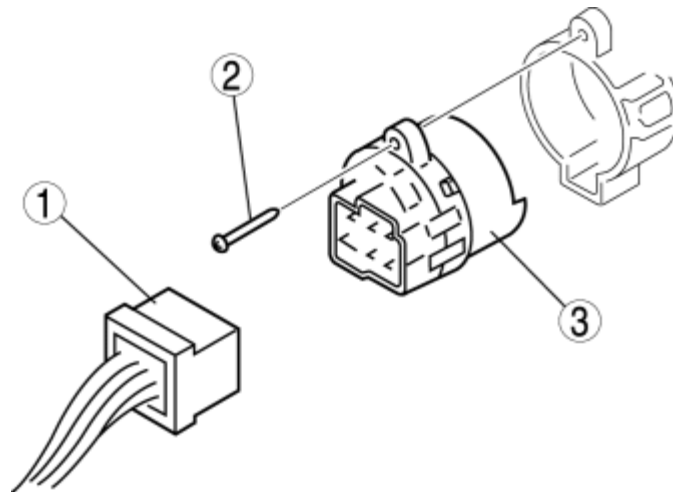
○—○: CONTINUITY

IGNITION KEY POSITION	TERMINAL					
	E	F	D	C	B	A
LOCK						
ACC	○—○					
ON	○—○	○—○	○—○			
START	○—○	○—○	○—○			

2011 - RX-8 - Body and Accessories

IGNITION SWITCH REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM]

1. Disconnect the negative battery cable.
2. Remove the column cover. (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
3. Remove in the order indicated in the table.



1	Connector
2	Screw
3	Ignition switch

4. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

RELAY INSPECTION

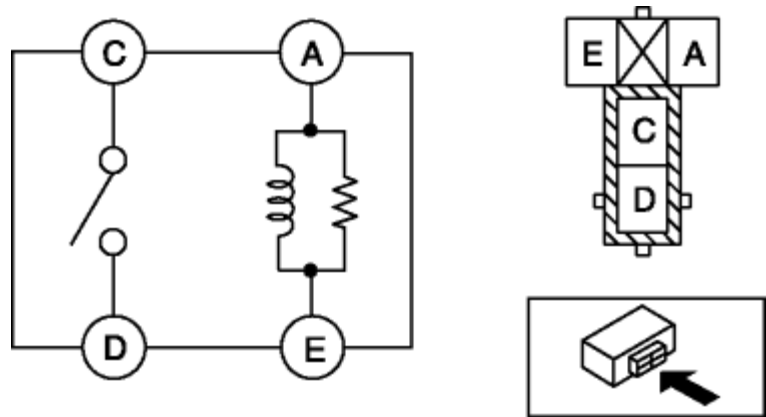
Relay type

Terminal type		Part name
4 terminals	Type A	<ul style="list-style-type: none">• Main relay• TNS relay• ACC relay• Front fog light relay• Drive-by-wire relay• Cooling fan relay No.1• Cooling fan relay No.3• Cooling fan relay No.4• Cooling fan relay No.5• A/C relay• Blower relay• Rear window defroster relay• Fuel pump speed control relay• Fuel pump relay• Horn relay• Trunk lid opener relay
		<ul style="list-style-type: none">• Ignition relay• Starter relay

	Type B	<ul style="list-style-type: none"> • Headlight relay • Air pump relay
5 terminals	Type C	Cooling fan relay No.2

Type A

1. Verify the continuity between the relay terminals.



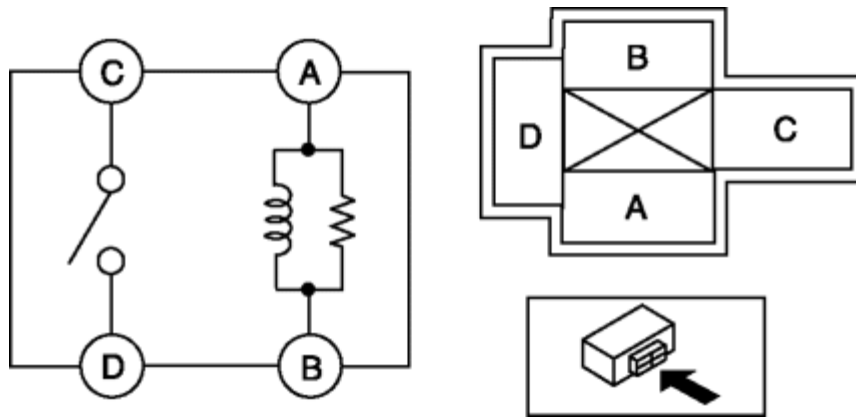
- If not as indicated in the table, replace the relay.

○—○ : CONTINUITY

STEP	TERMINAL			
	A	E	C	D
1	○—○	○—○		
2	B+	GND	○—○	○—○

Type B

1. Verify the continuity between the relay terminals.



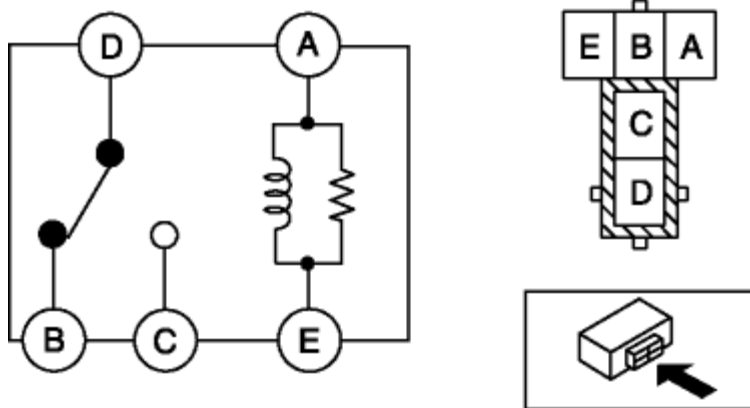
- If not as indicated in the table, replace the relay.

○—○ : CONTINUITY

STEP	TERMINAL			
	A	B	C	D
1	○—○			
2	B+	GND	○—○	

Type C

1. Verify the continuity between the relay terminals.



- If not as indicated in the table, replace the relay.

○—○ : CONTINUITY

STEP	TERMINAL				
	A	E	B	C	D
1	○—○		○—○		
2	B+	GND		○—○	

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

FUSE SERVICE CAUTIONS

CAUTION:

- Determine and correct the cause of the burnt fuse before replacing it with the specified type. If the fuse is replaced before doing this, it may burn again.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

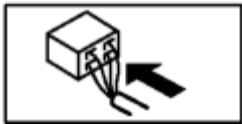
[Back to Top](#)

2011 - RX-8 - Body and Accessories

STEERING LOCK UNIT INSPECTION [WITH ADVANCED KEYLESS ENTRY AND START SYSTEM]

1. Remove the column cover. (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
2. Measure the voltage at each terminal.
 - If the voltage is not as specified in the terminal voltage table (Reference), inspect the parts under "Inspection item(s)".
 - If there is any malfunction, inspect the parts under "Inspection item(s)".
 - If the system does not work properly even though the parts or related wiring harnesses do not have any malfunction, replace the steering lock unit.

Terminal Voltage Table (Reference)

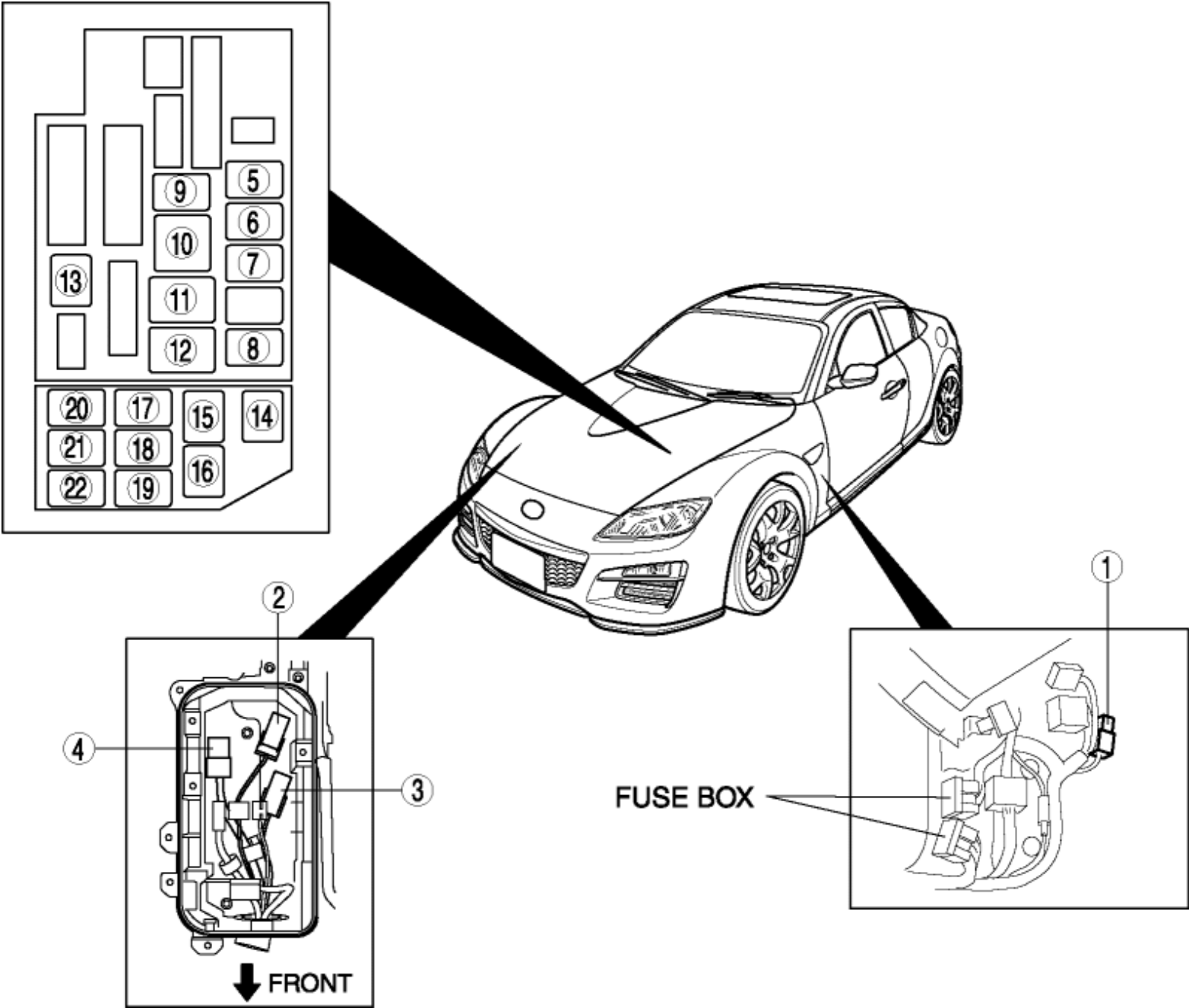


Terminal	Signal name	Connected to	Measured condition	Voltage (V)	Inspection item(s)
A	Push switch signal	Keyless control module	Start knob pressed	B+	<ul style="list-style-type: none">• Keyless control module• Related wiring harnesses
			Start knob released	1.0 or less	

B	Power supply	Fuse	Under any condition	B+	<ul style="list-style-type: none">• Fuse• Related wiring harnesses
C	Key reminder switch signal	Keyless control module	Key inserted	B+	<ul style="list-style-type: none">• Keyless control module• Related wiring harnesses
			Key removed	1.0 or less	
D	Power supply	Fuse	Under any condition	B+	<ul style="list-style-type: none">• Fuse• Related wiring harnesses
E	Power supply	Fuse	Under any condition	B+	<ul style="list-style-type: none">• Fuse• Related wiring harnesses
F	Ignition key illumination signal	Ignition key illumination bulb	Ignition switch off and driver-side door opened.	1.0 or less	<ul style="list-style-type: none">• Ignition key illumination bulb• Related wiring harnesses
			30 s or more after driver-side door closed.	B+	
G	Serial communication	Keyless control module	Because this terminal is for communication good/no good judgment by terminal voltage is not possible.		
H	GND	Body ground	Under any condition	1.0 or less	Related wiring harnesses

2011 - RX-8 - Body and Accessories

RELAY LOCATION



1	Trunk lid opener relay
---	------------------------

2	Cooling fan relay No.5
3	Cooling fan relay No.4
4	Air pump relay
5	ACC relay
6	Horn relay
7	Front fog light relay
8	Drive-by-wire relay
9	Main relay
10	Headlight relay
11	Starter relay
12	Ignition relay
13	TNS relay
14	Cooling fan relay No.2
15	A/C relay
16	Rear window defroster relay
17	Cooling fan relay No.1
18	Seat warmer relay
19	Fuel pump relay
20	Cooling fan relay No.3
21	Blower relay

22	Fuel pump speed control relay
----	-------------------------------

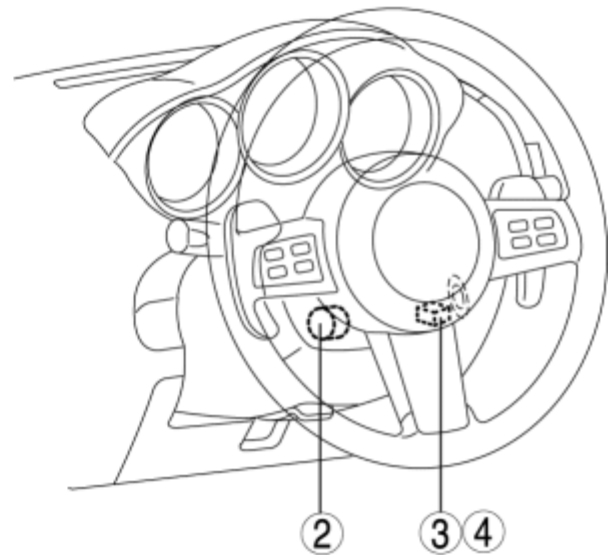
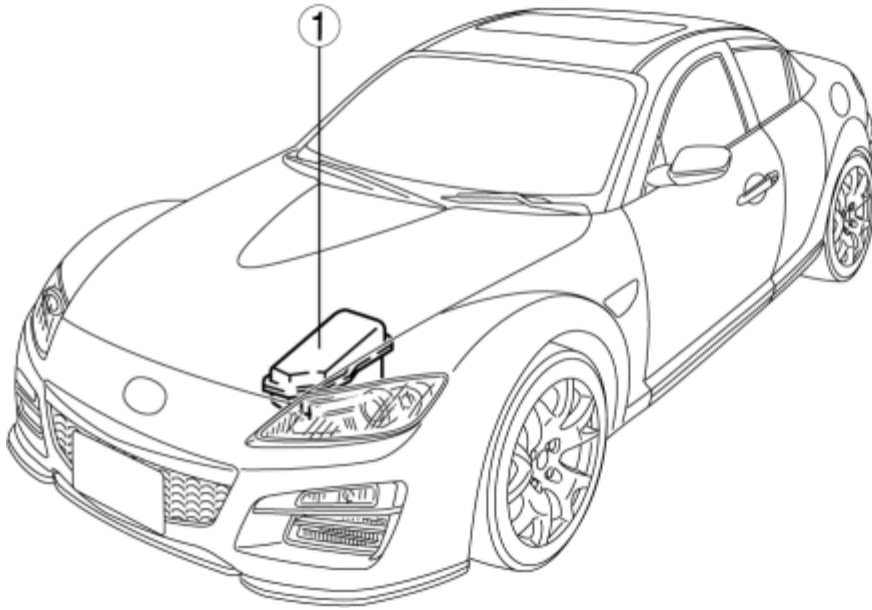
[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

POWER SYSTEM LOCATION INDEX



1 Main fuse block

(See [MAIN FUSE REMOVAL/INSTALLATION](#))

(See [RELAY LOCATION](#))

(See [RELAY INSPECTION](#))

2 Ignition switch

(See [IGNITION SWITCH REMOVAL/INSTALLATION \[WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#))

(See [IGNITION SWITCH INSPECTION \[WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#))

3 Key reminder switch

(See [KEY REMINDER SWITCH REMOVAL/INSTALLATION \[WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#))

(See [KEY REMINDER SWITCH INSPECTION \[WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#))

4Steering lock unit

(See [STEERING LOCK UNIT INSPECTION \[WITH ADVANCED KEYLESS ENTRY AND START SYSTEM\]](#))

[< Previous](#) [Next >](#)

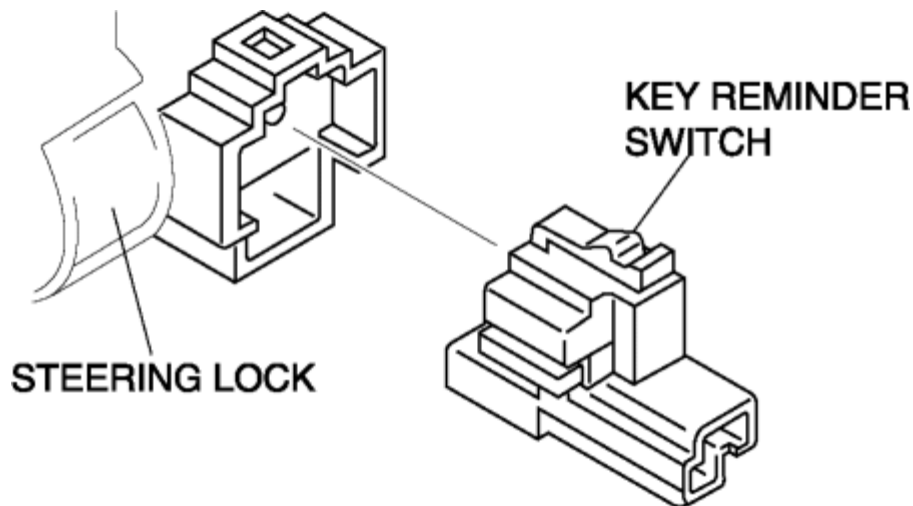
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

KEY REMINDER SWITCH REMOVAL/INSTALLATION [WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM]

1. Disconnect the negative battery cable.
2. Remove the column cover. (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
3. Disconnect the key reminder switch connector.
4. Remove the key reminder switch.

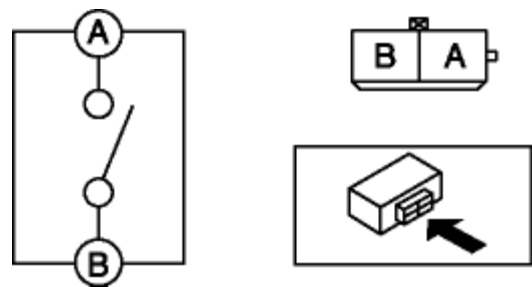


5. Install in the reverse order of removal.

2011 - RX-8 - Body and Accessories

KEY REMINDER SWITCH INSPECTION [WITHOUT ADVANCED KEYLESS ENTRY AND START SYSTEM]

1. Verify that the continuity between the key reminder switch terminals is as indicated in the table.



- If not as indicated in the table, replace the key reminder switch.

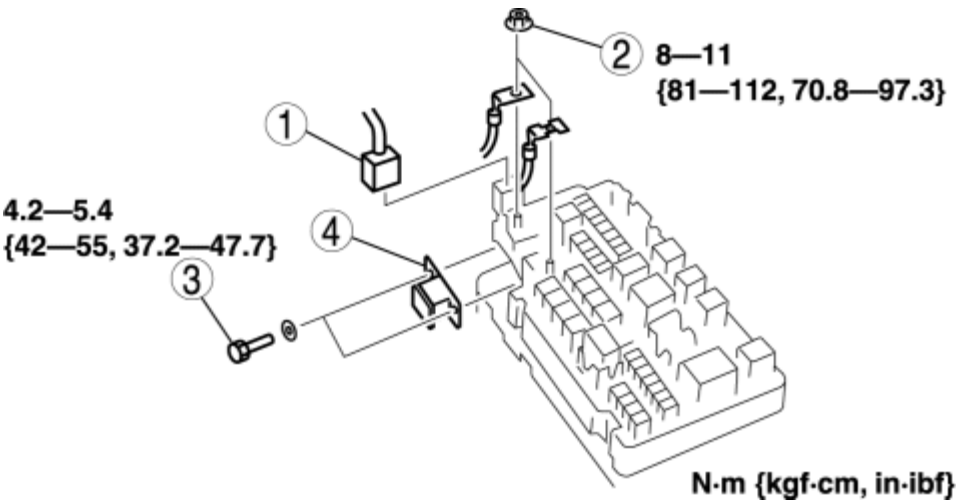
○ — ○ : CONTINUITY

KEY POSITION	TERMINAL	
	A	B
KEY INSERTED	○ —	— ○
KEY REMOVED		

2011 - RX-8 - Body and Accessories

MAIN FUSE REMOVAL/INSTALLATION

- 1. Disconnect the negative battery cable.
- 2. Remove the main fuse block cover.
- 3. Remove in the order indicated in the table.

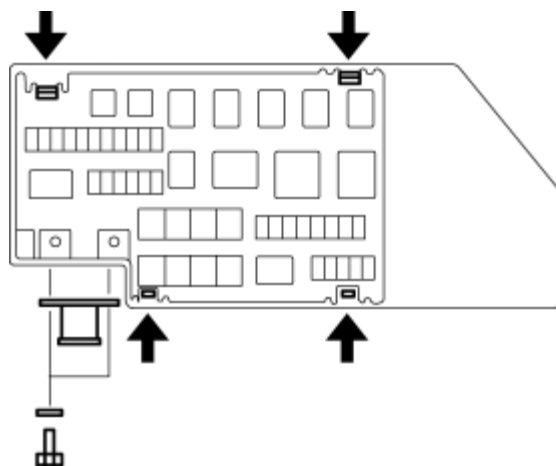


1	Connector
2	Nut
3	Bolt (See Bolt Removal Note .)
4	Main fuse

- 4. Install in the reverse order of removal.

Bolt Removal Note

1. Press the tabs in the direction indicated by the arrows, lift the main fuse block, and then remove the bolt.



[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

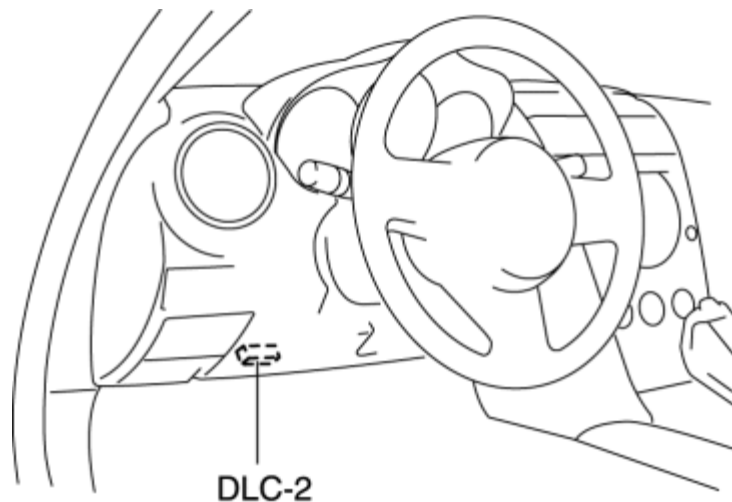
2011 - RX-8 - Body and Accessories

INSTRUMENT CLUSTER CONFIGURATION

NOTE:

- If the instrument cluster is replaced with a new one, the odometer data (total traveled distance) from the previous instrument cluster cannot be copied.

1. Connect the M-MDS to the DLC-2.



2. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 - When using the IDS (laptop PC)
 - Select the "Module Programming".
 - When using the PDS (Pocket PC)
 - Select the "Programming".
 - Select the "Module Programming".
3. Then, select items from the screen menu in the following order.
 1. Select "Programmable Module Installation".
 2. Select "IC".
4. Perform the configuration according to the directions on the screen.
5. Retrieve DTCs by the M-MDS, then verify that there is no DTC present.
 - If a DTC (s) is detected, perform the applicable DTC inspection. (See [DTC](#)

[TABLE \[INSTRUMENT CLUSTER\].\)](#)

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

INSTRUMENT CLUSTER INSPECTION

Speedometer

Using the input/output check mode

1. Inspect the speedometer by setting it to check code 12 of the input/output check mode. (See [INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE](#).)

Using a speedometer tester

1. Adjust the tire pressure to the specification.
2. Using a speedometer tester, verify that the tester reading is as indicated in the table below.

Speedometer tester indication (km/h)	Allowable range (km/h)
20	19—21
40	39—41
60	59—61
80	79—81
100	99—101
120	119—121
140	139—141

Speedometer tester indication (mph)	Allowable range (mph)
10	9—11
20	19—21
30	29—31
40	39—41
50	49—51
70	69—71
80	78—82

3. Verify that the speedometer reading is within the range indicated in the table.

- If the speedometer does not move or the indication is not within the allowable range, inspect the PCM, ABS HU/CM (vehicles with ABS), DSC HU/CM (vehicles with DSC) and related wiring harnesses.
 - If the ABS HU/CM (vehicles with ABS), DSC HU/CM (vehicles with DSC) and related wiring harnesses are normal, replace the instrument cluster.

Tachometer

Using the input/output check mode

1. Inspect the tachometer by setting it to check code 13 of the input/output check mode. (See [INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE](#).)

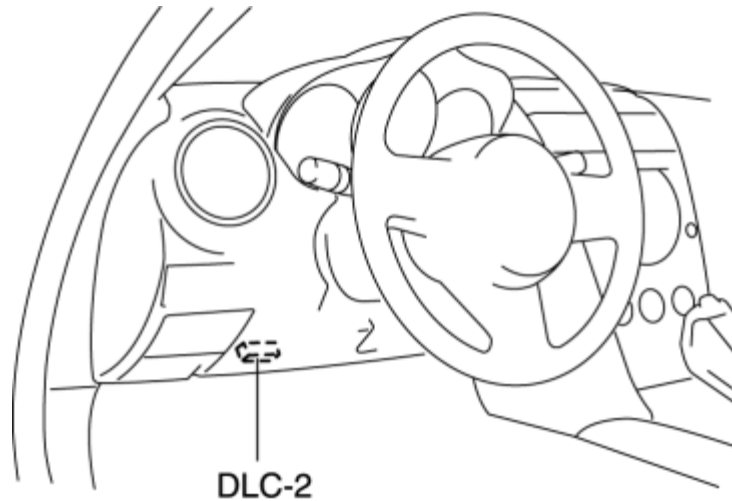
Using M-MDS

CAUTION:

- If the engine speed exceeds the allowable range, the engine could be damaged. Therefore,

when inspecting the tachometer, do not allow the engine speed to exceed the allowable range indication on the tachometer.

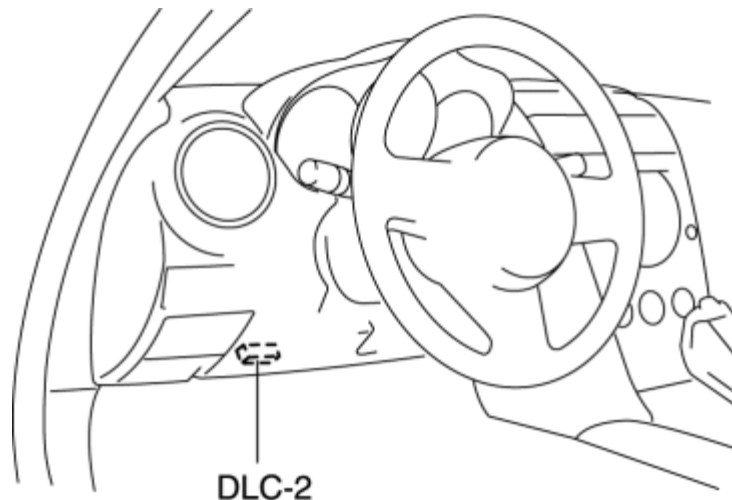
1. Connect the M-MDS to the DLC-2.



2. Compare the data monitor item (RPM) with the tachometer indication.
 - If the tachometer does not operate properly, inspect the PCM and related wiring harnesses.
 - If the PCM and related harnesses do not have any malfunction, replace the instrument cluster.

Variable red zone

1. Connect the M-MDS to the DLC-2.



2. Measure the engine coolant temperature using the PCM data monitor item "ECT".
3. Verify that the variable red zone is displayed according to the table.

	Range of variable red zone
--	----------------------------

Engine coolant temperature		
	6AT	6MT
Less than 40 °C {104 °F}	5,000 rpm	5,000 rpm
40 °C {104 °F} or more and less than 70 °C {158 °F}	6,500 rpm	7,000 rpm
70 °C {158 °F} or more	7,500 rpm	9,000 rpm

- If the variable red zone is not displayed normally, verify if the PCM and instrument cluster DTCs are output using the M-MDS.
 - If any DTCs are output, perform the corresponding DTC inspection.
 - If any DTC is not output, replace the instrument cluster.

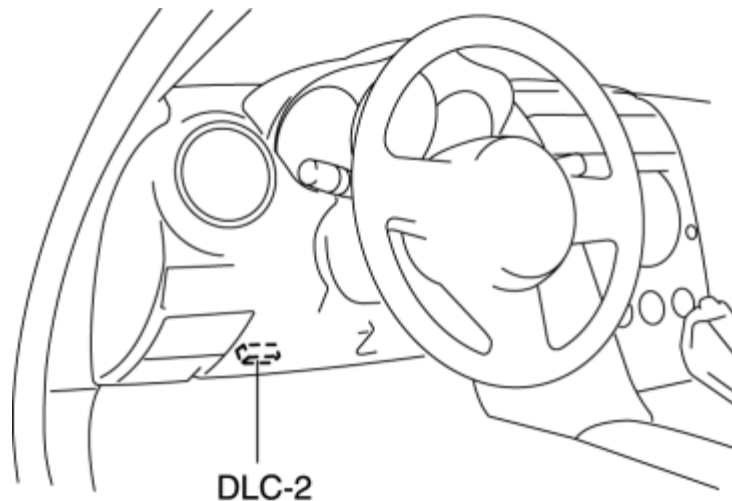
Fuel gauge

Using the input/output check mode

1. Inspect the fuel gauge by setting it to check code 23 of the input/output check mode. (See [INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE](#).)

Using M-MDS

1. Connect the M-MDS to the DLC-2.



2. Measure the fuel amount in the fuel tank using the PCM data monitor item "FLI".

3. Verify that the Fuel gauge is displayed according to the table.

M-MDS display	Fuel gauge display position
100%	Fuel gauge needle is at F position
50%	Fuel gauge needle is at middle position
0%	Fuel gauge needle is at E position

- If the fuel gauge does not operate or the indication is not within the allowable range, inspect the fuel gauge sender unit and its related wiring harnesses.
 - If the fuel gauge sender unit and the related wiring harnesses do not have any malfunction, replace the instrument cluster.

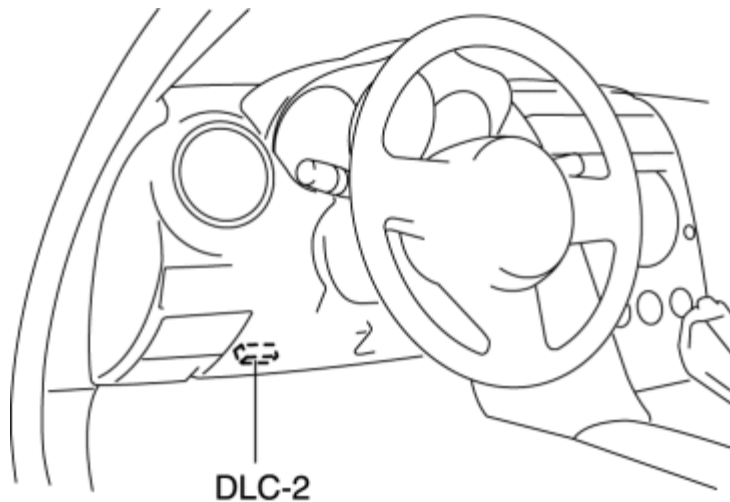
Water temperature gauge

Using the input/output check mode

1. Inspect the water temperature gauge by setting it to check code 25 of the input/output check mode. (See [INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE](#).)

Using M-MDS

1. Connect the M-MDS to the DLC-2.



2. Measure the engine coolant temperature using the PCM data monitor item "ECT".
3. Verify that the Water temperature gauge is displayed according to the table.

Engine coolant temperature	Water temperature gauge needle display position
Less than 50 °C {122 °F}	Water temperature gauge needle is a C position
70—110 °C {158—230 °F}	Water temperature gauge needle is at center position

- If the water temperature gauge does not operate or the indication is not within the allowable range, inspect the PCM, engine coolant temperature sensor, and related wiring harnesses.
 - If the PCM, engine coolant temperature sensor and related wiring harnesses do not have any malfunction, replace the instrument cluster.

[< Previous](#) [Next >](#)

[Back to Top](#)

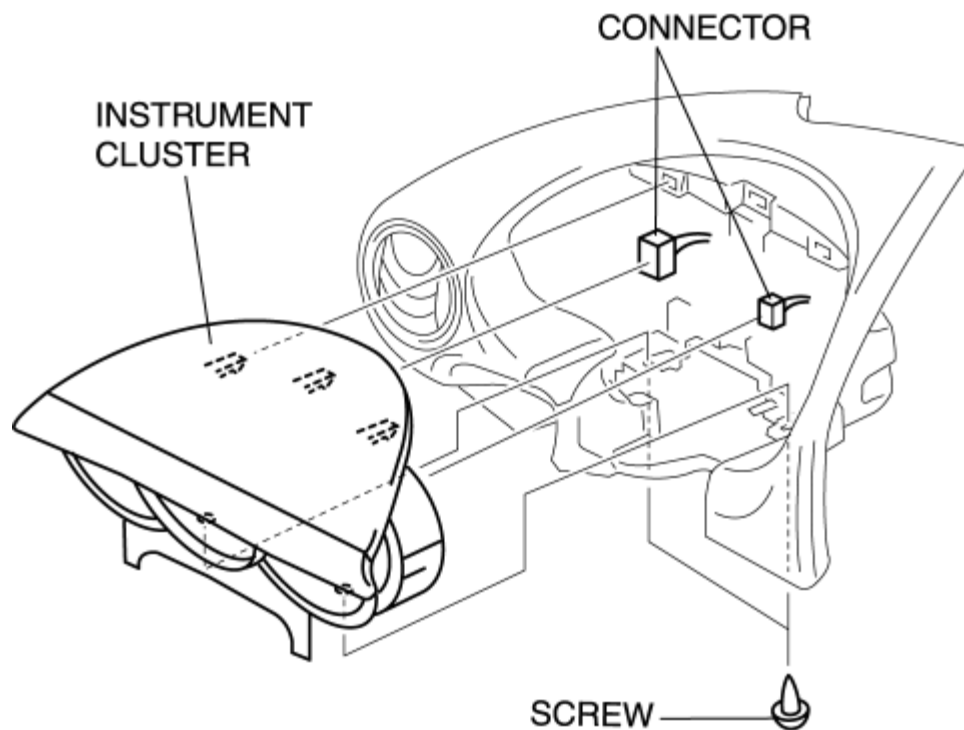
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

INSTRUMENT CLUSTER REMOVAL/INSTALLATION

CAUTION:

- When replacing the instrument cluster, the configuration procedure must be performed before removing the instrument cluster. Replacing the instrument cluster without performing the configuration procedure will result in system malfunction.
1. Perform the instrument cluster configuration when replacing it. (See [INSTRUMENT CLUSTER CONFIGURATION](#).)
 2. Disconnect the negative battery cable.
 3. Remove the column cover. (See [COLUMN COVER REMOVAL/INSTALLATION](#).)
 4. Remove the screw.



5. Pull the instrument cluster outward and remove it.
6. Disconnect the connector.
7. Install in the reverse order of removal.

CAUTION:

- The removed instrument cluster should be placed with the display side up to prevent grease from leaking from the meters.

DISPLAY
FACING
UPWARD



GOOD



DISPLAY
FACING
DOWNWARD



NO GOOD



[< Previous](#) [Next >](#)

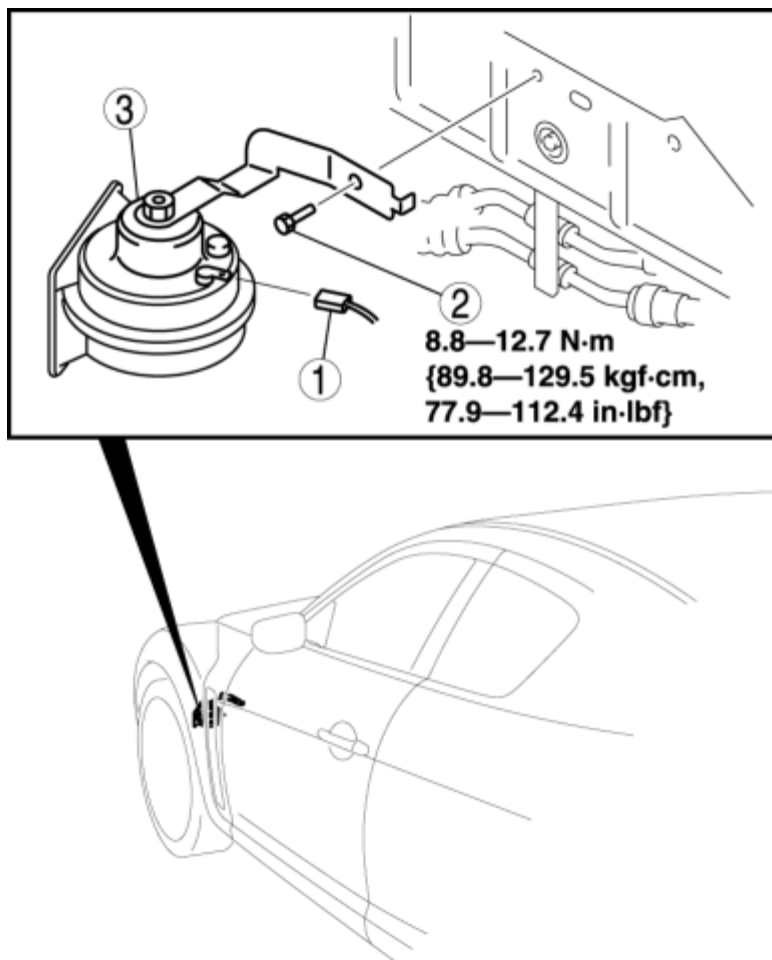
© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

HORN REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Slightly bend back the mudguard.
3. Remove in the order indicated in the table.



1	Connector
2	Bolt
3	Horn



4. Install in the reverse order of removal.

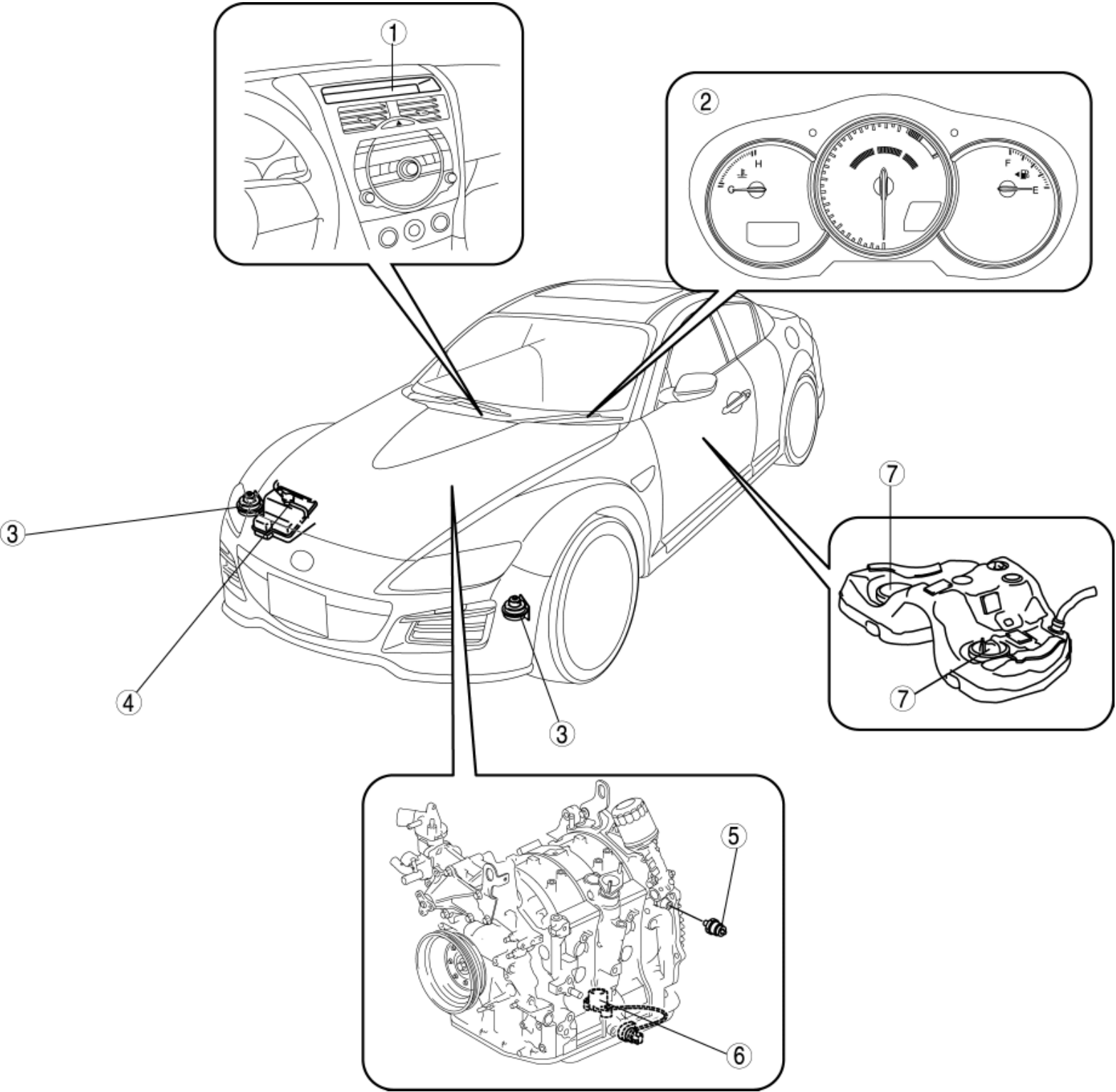
[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

INSTRUMENTATION/DRIVER INFO. LOCATION INDEX



1	Information display (See INFORMATION DISPLAY REMOVAL/INSTALLATION) (See INFORMATION DISPLAY INPUT/OUTPUT CHECK MODE)
2	Instrument cluster (See INSTRUMENT CLUSTER REMOVAL/INSTALLATION) (See INSTRUMENT CLUSTER DISASSEMBLY/ASSEMBLY) (See INSTRUMENT CLUSTER INSPECTION) (See INSTRUMENT CLUSTER CONFIGURATION) (See INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE) (See INSTRUMENTATION/DRIVER INFO. PERSONALIZATION FEATURES SETTING PROCEDURE)
3	Horn (See HORN REMOVAL/INSTALLATION)
4	Coolant level switch (See COOLANT LEVEL SWITCH INSPECTION)
5	Oil pressure switch (See OIL PRESSURE SWITCH INSPECTION)
6	Oil level switch (See OIL LEVEL SWITCH INSPECTION)
7	Fuel gauge sender unit (See FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION) (See FUEL GAUGE SENDER UNIT INSPECTION)

2011 - RX-8 - Body and Accessories

OIL PRESSURE SWITCH INSPECTION

1. Verify that the oil pressure warning light illuminates when the ignition switch is at the ON position.
2. Verify that the oil pressure warning light goes off when the engine is started.
 - If the oil pressure warning light does not illuminate or remains illuminated, inspect the related wiring harness.
 - If the related wiring harness are normal, inspect the oil pressure. (See [OIL PRESSURE INSPECTION \[13B-MSP\].](#))
 - If the oil pressure is normal, replace the oil pressure switch.

2011 - RX-8 - Body and Accessories

INFORMATION DISPLAY INPUT/OUTPUT CHECK MODE

NOTE:

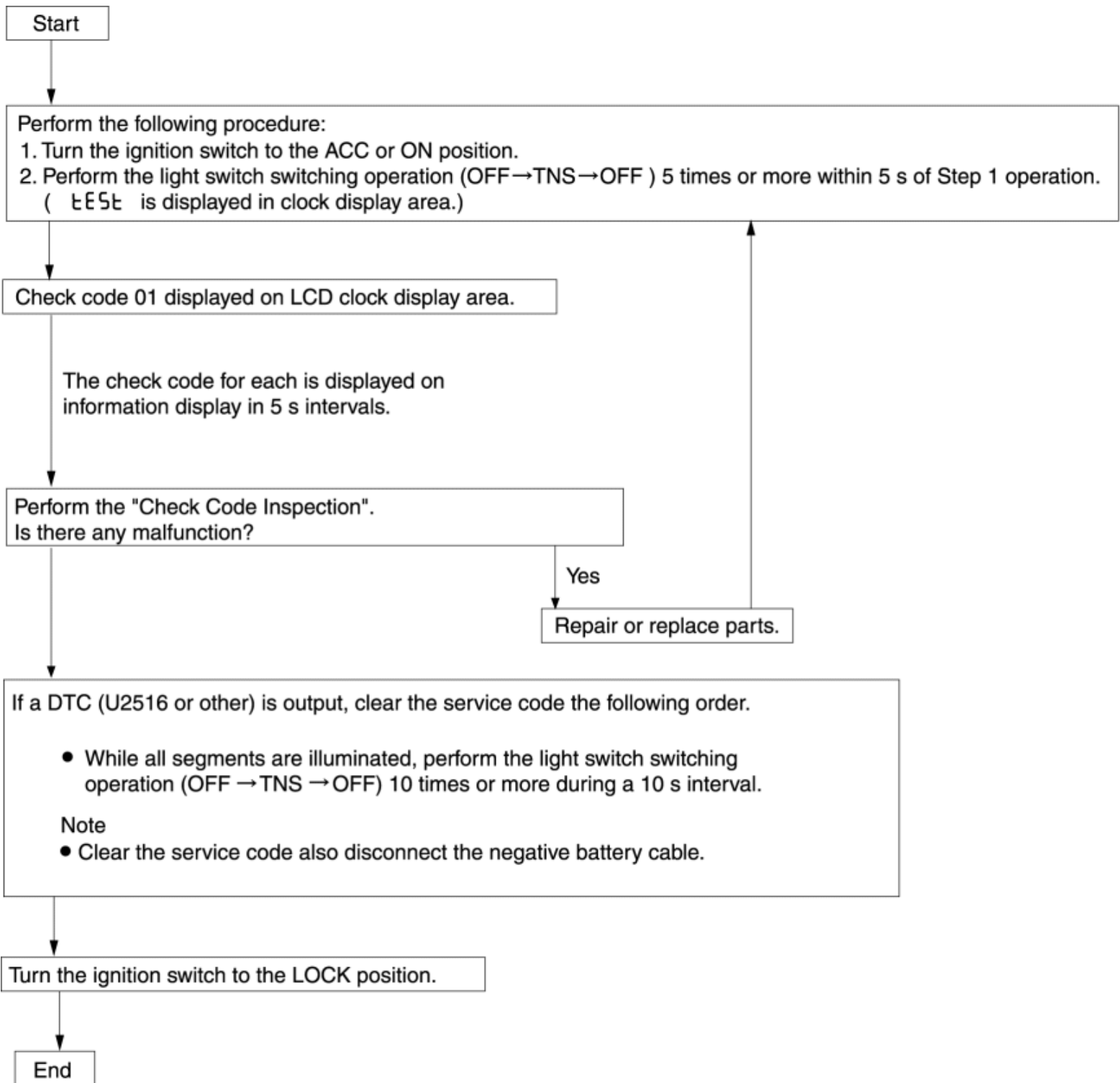
- In this mode, it is possible to verify the items in the following chart.

Check Code Table

Check code	Check item	Related items
01	Information display	CAN system <ul style="list-style-type: none">• DTC U2516: CAN system communication error
02	<ul style="list-style-type: none">• Audio unit• Climate control unit	CAN system <ul style="list-style-type: none">• DTC U0184: Communication error to audio unit• DTC U0164: Communication error to climate control unit
04	Light switch	<ul style="list-style-type: none">• TNS relay• Light switch
06	Ignition switch	Ignition switch
07	Dimmer cancel switch (Instrument cluster)	<ul style="list-style-type: none">• Instrument cluster• Related wiring harness
—	LCD	LCD



NOTE:

- The check codes are displayed in numerical order. (While performing the inspection, if you want to inspect a check code with a number smaller than the code number you are currently inspecting, terminate the check mode then repeat the inspection from the beginning.)




Check Code Inspection

Check code 01

DISPLAY	ACTION
	CAN system of information display is normal.
	CAN system communication error. (DTC U2516) (See FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)

Check code 02

Check code 02	<ul style="list-style-type: none"> Communication status to audio unit Communication status to climate control unit 		
INSPECTION CONDITION	DISPLAY		ACTION
If there is a malfunction, the diagnostic results are displayed once each in the order of audio unit and climate control unit.			All communications are normal.
	Audio unit		Communication to audio unit is normal.
			Communication error to audio unit. (DTC U0184) (See FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)
			Vehicle without audio unit.
	Climate control unit		Communication to climate control unit is normal.
			Communication error to climate control unit. (DTC U0164) (See FOREWORD [MULTIPLEX COMMUNICATION SYSTEM].)

Check code 04

Check code 04		TNS ON/OFF signal	
STEP	INSPECTION CONDITION	DISPLAY	ACTION
1	Turn the light switch to the ON position.	ON	Go to the next step.
		OFF	<p>Verify that the voltage of information display terminal C is B+ .</p> <ul style="list-style-type: none">• If the voltage is as specified, replace the information display.• If the voltage is not as specified, inspect the following parts:<ul style="list-style-type: none">▪ Light switch▪ TNS relay▪ Wiring harness (Light switch—TNS relay—information display)
2	Turn the light switch off.	ON	<p>Verify that the voltage of the information display terminal C is 1.0 V or less.</p> <ul style="list-style-type: none">• If the voltage is as specified, replace the information display.• If the voltage is not as specified, inspect the following parts:<ul style="list-style-type: none">▪ Light switch▪ TNS relay▪ Wiring harness (Light switch—TNS relay—information display)
		OFF	Input signal to the information display is normal.

Check code 06

Check code 06		Ignition switch ON/OFF signal	

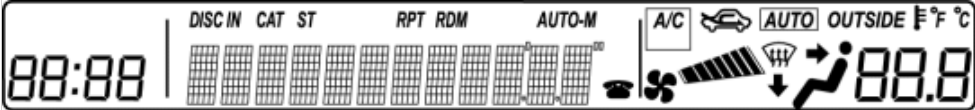
STEP	INSPECTION CONDITION	DISPLAY	ACTION
1	Turn the ignition switch to the ON position.	ON	Go to the next step.
		OFF	Verify that the voltage of information display terminal E is B+ . <ul style="list-style-type: none"> If the voltage is as specified, replace the information display. If the voltage is not as specified, inspect the following parts: <ul style="list-style-type: none"> Ignition switch Wiring harness (Battery—ignition switch—information display)
2	Turn the ignition switch to the ACC position.	ON	Verify that the voltage of the information display terminal E is 1.0 V or less . <ul style="list-style-type: none"> If the voltage is as specified, replace the information display. If the voltage is not as specified, inspect the following parts: <ul style="list-style-type: none"> Ignition switch Wiring harness (Battery—ignition switch—information display)
		OFF	Input signal to the information display is normal.

Check code 07

Check code 07		Dimmer cancel ON/OFF signal	
STEP	INSPECTION CONDITION	DISPLAY	ACTION
1	Panel light control switch turned to dimmer cancel ON	ON	Go to the next step.
			Verify that the voltage of information display terminal F is B+ . <ul style="list-style-type: none"> If the voltage is as specified, replace the information display.

		OFF	<ul style="list-style-type: none"> If the voltage is not as specified, inspect the following parts: <ul style="list-style-type: none"> Instrument cluster Wiring harness (Information display—instrument cluster)
2	Panel light control switch turned to dimmer cancel OFF	ON	<p>Verify that the voltage of the information display terminal F is 1.0 V or less.</p> <ul style="list-style-type: none"> If the voltage is as specified, replace the information display. If the voltage is not as specified, inspect the following parts: <ul style="list-style-type: none"> Instrument cluster Wiring harness (Information display—instrument cluster)
		OFF	Input signal to the information display is normal.

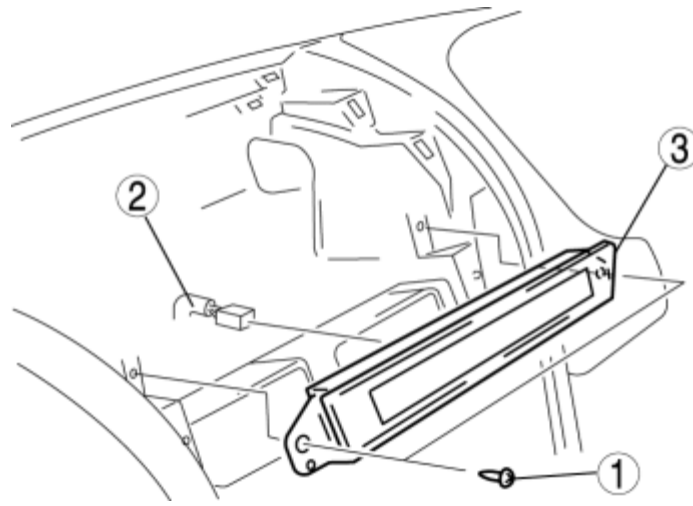
LCD

Check code —	LCD	
DISPLAY	ACTION	
	All segments and dots illuminated.	LCD is normal.
	Except above	Replace the information display.

2011 - RX-8 - Body and Accessories

INFORMATION DISPLAY REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the following parts (with audio unit):
 - a. Shift lever knob (MT) (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\].](#))
 - b. Shift knob (AT) (See [SELECTOR LEVER REMOVAL/INSTALLATION.](#))
 - c. Upper panel (See [CONSOLE REMOVAL/INSTALLATION.](#))
 - d. Ashtray panel (See [CONSOLE REMOVAL/INSTALLATION.](#))
 - e. Lower panel (See [LOWER PANEL REMOVAL/INSTALLATION.](#))
 - f. Knee bolster (See [KNEE BOLSTER REMOVAL/INSTALLATION.](#))
 - g. Center panel unit (See [CENTER PANEL UNIT REMOVAL/INSTALLATION.](#))
3. Remove the following parts (without audio unit):
 - a. Speaker grille (See [SPEAKER GRILLE REMOVAL/INSTALLATION.](#))
 - b. Shift lever knob (MT) (See [TRANSMISSION REMOVAL/INSTALLATION \[P66M-D\].](#))
 - c. Console panel (See [CONSOLE REMOVAL/INSTALLATION.](#))
 - d. Ashtray (See [CONSOLE REMOVAL/INSTALLATION.](#))
 - e. Lower panel (See [LOWER PANEL REMOVAL/INSTALLATION.](#))
 - f. Center panel (See [CENTER PANEL REMOVAL/INSTALLATION.](#))
4. Remove in the order indicated in the table.



1	Screws
2	Connector
3	Information display

5. Install in the reverse order of removal.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

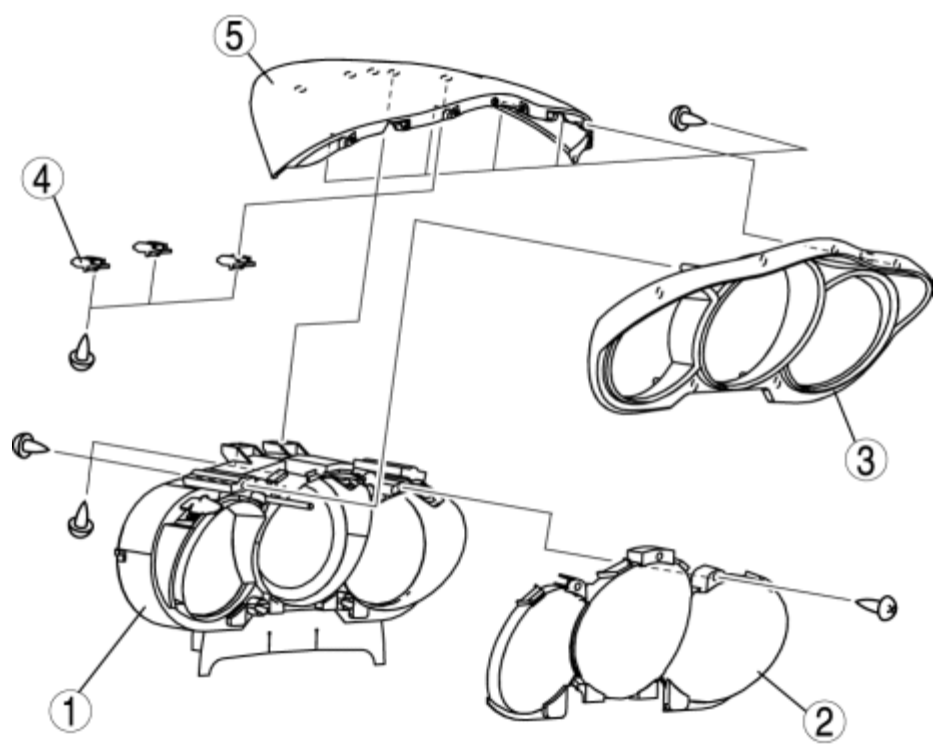
2011 - RX-8 - Body and Accessories

INSTRUMENT CLUSTER DISASSEMBLY/ASSEMBLY

CAUTION:

- Do not drop the instrument cluster or damage the printed board. This will lead to a system malfunction.

1. Disassemble in the order indicated in the table.



1	Instrument cluster unit
2	Lens
3	Panel
4	Clip
5	Cover



2. Assemble in the reverse order of disassembly.

[< Previous](#) [Next >](#)

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

2011 - RX-8 - Body and Accessories

INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE

NOTE:

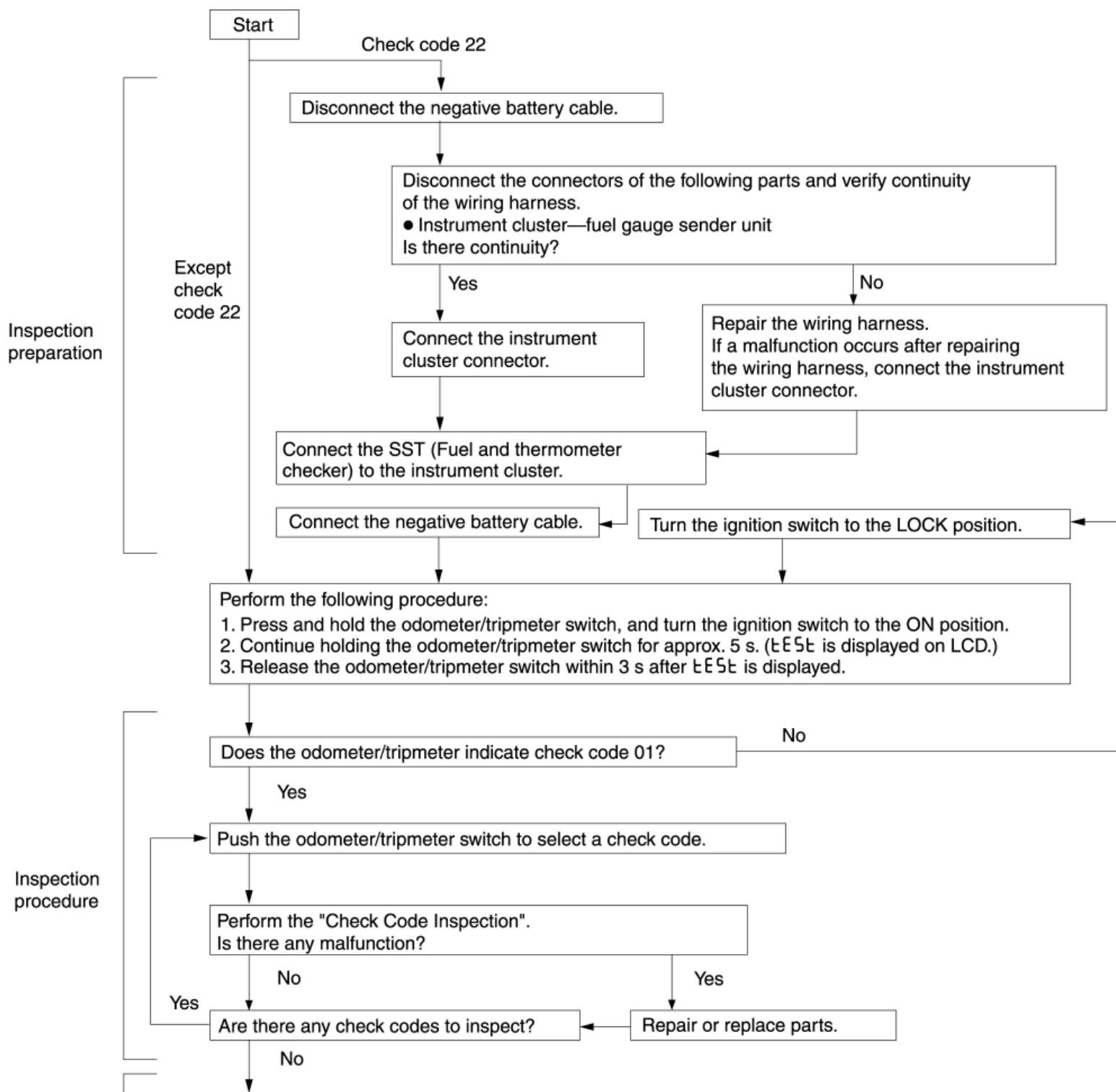
- In this mode, it is possible to verify the items in the following chart.

Check Code Table

Check code	Check item	Related items
01	Buckle switch (Driver side)	Buckle switch (Driver side)
04	Door switch	<ul style="list-style-type: none"> Lights-on reminder warning alarm Key reminder warning alarm Ignition key illumination system
08	TNS relay	Lights-on reminder warning alarm
12	Speedometer (LCD)	Speedometer
13	Tachometer	Tachometer
14	Buzzer	Buzzer
16	Fuel-level warning light	Fuel-level warning light
18	Ignition key illumination	Ignition key illumination system
22	Fuel gauge sender unit	Fuel gauge
23	Fuel gauge	Fuel gauge
25	Water temperature gauge	Water temperature gauge
26	<ul style="list-style-type: none"> Odometer/tripmeter (LCD) Warning and indicator light 	<ul style="list-style-type: none"> Odometer/tripmeter (LCD) Warning and indicator light
31	Key reminder switch	Key reminder warning alarm
55	Dimmer cancel switch	Dimmer cancel switch

NOTE:

- Check codes which are not listed may be indicated, but they cannot be inspected.
- The check codes are displayed in numerical order. (While performing the inspection, if you want to inspect a check code with a number smaller than the code number you are currently inspecting, terminate the check mode then repeat the inspection from the beginning.)
- If a speed signal is input to the instrument cluster (the wheels are rotated) while a code other than check code 50 or 51 is displayed, the input/output check mode will be cancelled.
- The check codes can be fast-forwarded by pushing and holding the odometer/tripmeter switch for **1 s or more**.



Ending
procedure of
instrument
cluster
input/output
check mode

Turn the ignition switch to the LOCK position.

Disconnect the negative battery cable.

Disconnect the SST (Fuel and thermometer checker) and connect the fuel gauge sender unit connector, if necessary.

Connect the negative battery cable.

End

Checking Order



NOTE:

- When inspecting more than two check codes, begin with the code with the highest ranking.

Priority order of inspection	Ignition switch position	Check code
1	ON	22
2		01, 04, 08, 12, 13, 14, 16, 18, 23, 25, 26, 55, 58
3	LOCK	31

Check Code Inspection

Check code 01

Check code 01		Buckle switch ON/OFF signal	
STEP	INSPECTION CONDITION	DISPLAY	ACTION
1	Unfasten driver side seat belt. (Buckle switch on.)		Go to next step.
			Measure voltage at instrument cluster terminal 2A. Is voltage 0 V ? <ul style="list-style-type: none"> If as specified, replace instrument cluster. If not as specified, inspect following parts.

			Buckle switch <ul style="list-style-type: none"> ▪ SAS control module ▪ Wiring harness (Buckle switch—SAS control module—instrument cluster)
2	Fasten driver side seat belt. (Buckle switch off.)	<div>on</div>	Measure voltage at instrument cluster terminal 2A. Is voltage 5V ? <ul style="list-style-type: none"> • If as specified, replace instrument cluster. • If not as specified, inspect following parts. <ul style="list-style-type: none"> ▪ Buckle switch ▪ SAS control module ▪ Wiring harness (Buckle switch—SAS control module—instrument cluster)
		<div>off</div>	Input signal to instrument cluster is okay.

Check code 04

Check code 04		Door switch ON/OFF signal	
STEP	INSPECTION CONDITION	DISPLAY	ACTION
1	Open the front driver side door. (The door switch is on.)	on	Close the front driver side door, then go to the next step.
		<div>off</div>	Verify that the voltage of the instrument cluster terminal 2E is 1.0 V or less . <ul style="list-style-type: none"> • If the voltage is as specified, replace the instrument cluster. • If the voltage is not as specified, inspect the following parts: <ul style="list-style-type: none"> ▪ Door switch ▪ Wiring harness (Instrument cluster—door switch)
2	Close all doors.(Door switches are off.)	<div>on</div>	Verify that the voltage of the instrument cluster terminal 2E is B+ . <ul style="list-style-type: none"> • If the voltage is as specified, replace the instrument cluster. • If the voltage is not as specified, inspect the following parts: <ul style="list-style-type: none"> ▪ Door switch ▪ Wiring harness (Instrument cluster—door switch)

		0FF	Input signal to the instrument cluster is normal.
--	--	-----	---

Check code 08

Check code 08		TNS relay ON/OFF signal	
STEP	INSPECTION CONDITION	DISPLAY	ACTION
1	Turn the headlight switch to the TNS position.(TNS relay ON)	0n	Go to the next step.
		0FF	Verify that the voltage of instrument cluster terminal 1B is B+ . <ul style="list-style-type: none"> • If the voltage is as specified, replace the instrument cluster. • If the voltage is not as specified, inspect the following parts: <ul style="list-style-type: none"> ▪ TNS relay ▪ Wiring harness (Battery—TNS relay —instrument cluster)
2	Turn the headlight switch off.(TNS relay OFF)	0n	Verify that the voltage of the instrument cluster terminal 1B is 1.0 V or less. <ul style="list-style-type: none"> • If the voltage is as specified, replace the instrument cluster. • If the voltage is not as specified, inspect the following parts: <ul style="list-style-type: none"> ▪ TNS relay ▪ Wiring harness (Battery—TNS relay —instrument cluster)
		0FF	Input signal to the instrument cluster is normal.

Check code 12

Check code 12		Speedometer display signal	
INSPECTION CONDITION	DISPLAY	ACTION	
Select check code 12.	00	All segments in the speedometer illuminate.	The speedometer is normal.
		Except above	Replace the instrument cluster.

Err

—

Check code 13

Check code 13	Tachometer operation signal		
INSPECTION CONDITION	DISPLAY	ACTION	
After selecting check code 13, wait for approx. 2 s.	□ □	The tachometer needle moves full scale then returns to approx. 3,000 rpm.	The tachometer is normal.
		Except above	Replace the instrument cluster.
	Err	—	


Check code 14

Check code 14	Buzzer operation signal		
INSPECTION CONDITION	DISPLAY	ACTION	
After selecting check code 14, wait approx. 2 s.	□ □	The buzzer sounds.	The buzzer is normal.
		The buzzer does not sound.	Replace the instrument cluster.

Check code 16

Check code 16	Fuel-level warning light flashing signal		
INSPECTION CONDITION	DISPLAY	ACTION	
After selecting check code 16, wait approx. 2 s.	□ □ (FLASHING)	Fuel-level warning light flashes three times.	The fuel-level warning light is normal.
		Except above	Replace the instrument cluster.


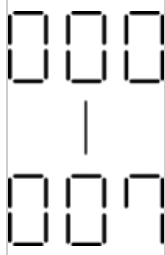
Check code 18

Check code 18	Ignition key illumination on/off signal		
INSPECTION CONDITION	DISPLAY	ACTION	
After selecting check code 18, wait approx. 2 s.	 (FLASHING)	Ignition key illumination flashes three times .	The ignition key illumination is normal.
		Except above	Verify that the voltage of the instrument cluster terminal 1K is B+ . <ul style="list-style-type: none"> If the voltage is as specified, replace the instrument cluster. If the voltage is not as specified, replace the following parts: <ul style="list-style-type: none"> Ignition key illumination Wiring harness (Battery—ignition key illumination—instrument cluster)

Check code 22

CAUTION:

- While inspecting with check code 22, the measured value is displayed in both odometer and tripmeter segments of the odometer/tripmeter. Verify both readings.

Check code 22		Fuel level signal	
STEP	INSPECTION CONDITION	DISPLAY	ACTION
1	Select check code 22 with the fuel gauge sender unit connector disconnected.		Go to the next step.
		Except above	Replace the instrument cluster.
2	Connect terminals 2T and 2R, 2T and 2P of the instrument cluster.		Go to the next step.

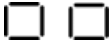
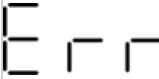
		Except above	Replace the instrument cluster.
3	Using the SST (Fuel and thermometer checker) or resistor, input 80 ohms between instrument cluster terminals 2T and 2R, and 2T and 2P.	<div>07</div> <div> </div> <div>089</div>	Go to the next step.
		Except above	Replace the instrument cluster.
4	Using the SST (Fuel and thermometer checker) or resistor, input 160 ohms between instrument cluster terminals 2T and 2R, and 2T and 2P.	<div>147</div> <div> </div> <div>173</div>	Go to the next step.
		Except above	Replace the instrument cluster.
5	Using the SST (Fuel and thermometer checker) or resistor, input 240 ohms between instrument cluster terminals 2T and 2R, and 2T and 2P.	<div>22</div> <div> </div> <div>259</div>	Inspect the fuel gauge sender unit.
		Except above	Replace the instrument cluster.

Check code 23


Check code 23	Fuel gauge operation signal		
INSPECTION CONDITION	DISPLAY	ACTION	
After selecting check code 23, wait approx. 2 s.	<div>□ □</div>	The fuel gauge indicates status in the following order approx. every 2 s. <ul style="list-style-type: none"> F → 1/2 → E → F (fixed) 	The fuel gauge is normal.
		Except above	Replace the instrument cluster.
		Replace the instrument cluster.	

Err

Check code 25

Check code 25	Water temperature gauge operation signal		
INSPECTION CONDITION	DISPLAY	ACTION	
After selecting check code 25, wait approx. 2 s.		The water temperature gauge indicates status in the following order approx. every 2 s. <ul style="list-style-type: none">• H → Center → C → H (fixed)	The water temperature gauge is normal.
		Except above	Replace the instrument cluster.
		Replace the instrument cluster.	

Check code 26

Check code 26	Odometer/tripmeter display signal		
INSPECTION CONDITION	DISPLAY	ACTION	
Select check code 26.		<ul style="list-style-type: none">• Display is normal.• Warning and indicator light (Controlled by CAN system-related module) illuminated.<ul style="list-style-type: none">▪ Generator warning light▪ AT warning light▪ DSC indicator light▪ DSC OFF light▪ ABS warning light▪ Brake system warning light▪ Cruise control main indicator light▪ Cruise control set indicator light▪ Selector indicator light▪ MIL▪ Oil level warning light	<ul style="list-style-type: none">• The odometer/tripmeter is normal.• Warning and indicator is normal.

		<ul style="list-style-type: none"> ▪ Coolant level warning light ▪ EPS warning light ▪ Keyless indicator light (green) ▪ Keyless warning light (red) ▪ Seat belt warning light ▪ Tire pressure monitoring system (TPMS) warning light 	
		Except above	Replace the instrument cluster.

Check code 31

Check code 31		Key reminder switch ON/OFF signal	
STEP	INSPECTION CONDITION	DISPLAY	ACTION
1	Turn the headlight switch to the TNS position. Remove the key from the steering lock, then reinsert the key into the steering lock after selecting check code 31. (The key reminder switch is on.)	<div>ON</div>	Go to the next step.
		<div>OFF</div>	Verify that the voltage of instrument cluster terminal 2W is B+ . <ul style="list-style-type: none"> • If the voltage is as specified, replace the instrument cluster. • If the voltage is not as specified, inspect the following parts: <ul style="list-style-type: none"> ▪ Key reminder switch ▪ Wiring harness (Battery—key reminder switch—instrument cluster)
2	Remove the key from the steering lock. (The key reminder switch is off.)	<div>ON</div>	Verify that the voltage of the instrument cluster terminal 2W is 1.0V or less . <ul style="list-style-type: none"> • If the voltage is as specified, replace the instrument cluster. • If the voltage is not as specified, inspect the following parts: <ul style="list-style-type: none"> ▪ Key reminder switch

			<ul style="list-style-type: none"> Wiring harness (Key reminder switch—instrument cluster)
		<div>off</div>	Input signal to the instrument cluster is normal.

Check code 55

Check code 55		Dimmer switch ON/OFF signal	
STEP	INSPECTION CONDITION	DISPLAY	ACTION
1	After selecting the check code 55, turn the panel light control switch toward bright until a click is heard. (Dimmer switch on)	<div>on</div>	Go to the next step.
		<div>off</div>	Verify that the voltage of the instrument cluster terminal 2U is 5V . <ul style="list-style-type: none"> If the voltage is as specified, replace the instrument cluster. If the voltage is not as specified, inspect the following parts: <ul style="list-style-type: none"> Panel light control switch Wiring harness (Battery—panel light control switch—instrument cluster)
2	Turn the panel light control switch toward dark until a click is heard. (Dimmer switch off)	<div>on</div>	Verify that the voltage of the instrument cluster terminal 2U is 1.0V or less . <ul style="list-style-type: none"> If the voltage is as specified, replace the instrument cluster. If the voltage is not as specified, inspect the following parts: <ul style="list-style-type: none"> Panel light control switch Wiring harness (Battery—panel light control switch—instrument cluster)
		<div>off</div>	Input signal to the instrument cluster is normal.

Check code 58

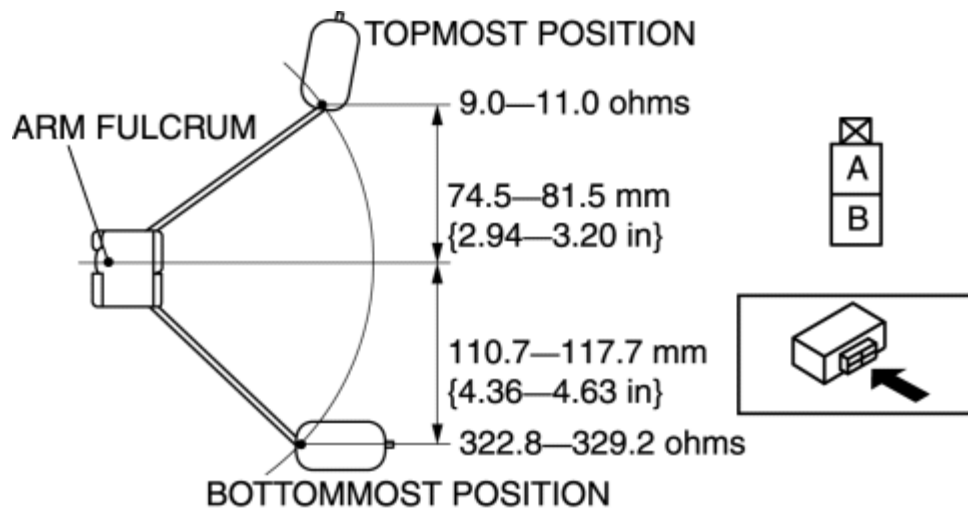
Check code 58		Buckle switch ON/OFF signal	
STEP	INSPECTION CONDITION	DISPLAY	ACTION
1	Unfasten the seat belt after sitting in the front passenger seat for 10 s or more. (Buckle switch on.)	ON	Go to next step.
		OFF	Measure voltage at instrument cluster terminal 2Q. Is voltage 0 V ? <ul style="list-style-type: none">• If as specified, replace instrument cluster.• If not as specified, inspect following parts.<ul style="list-style-type: none">▪ Buckle switch (Passenger side)▪ Seat weight sensor▪ SAS control module▪ Wiring harness (Buckle switch—instrument cluster)
2	Fasten passenger side seat belt. (Buckle switch off.)	ON	Measure voltage at instrument cluster terminal 2Q. Is voltage B+ ? <ul style="list-style-type: none">• If as specified, replace instrument cluster.• If not as specified, inspect following parts.<ul style="list-style-type: none">▪ Buckle switch (Passenger side)▪ Seat weight sensor▪ SAS control module▪ Wiring harness (Buckle switch—instrument cluster)
		OFF	Input signal to instrument cluster is okay.

2011 - RX-8 - Body and Accessories

FUEL GAUGE SENDER UNIT INSPECTION

Fuel Gauge Sender Unit (Main)

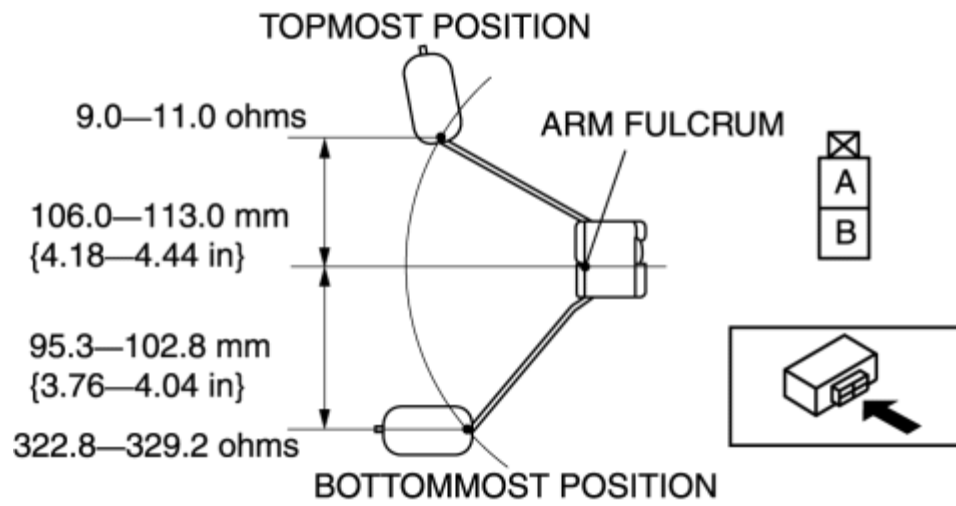
1. Move the float to the topmost and bottommost positions, and verify that the resistance between terminals A and B of the fuel gauge sender unit (main) and the position of the float are as shown in the figure.



- If they are not as shown in the figure, replace the fuel gauge sender unit (main).

Fuel Gauge Sender Unit (Sub)

1. Move the float to the topmost and bottommost positions, and verify that the resistance between terminals A and B of the fuel gauge sender unit (sub) and the position of the float are as shown in the figure.



- If they are not as shown in the figure, replace the fuel gauge sender unit (sub).

[< Previous](#) [Next >](#)

[Back to Top](#)

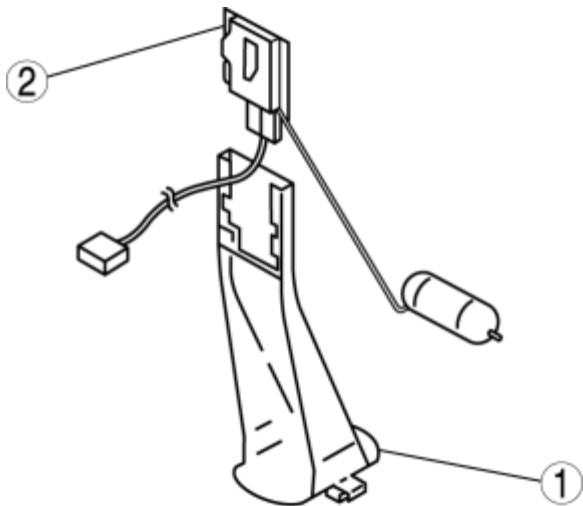
© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

FUEL GAUGE SENDER UNIT REMOVAL/INSTALLATION

Fuel Gauge Sender Unit (Main)

- 1. Remove the rear seat cushion. (See [REAR SEAT REMOVAL/INSTALLATION](#).)
- 2. Drain the fuel from the fuel tank. (See [FUEL PUMP UNIT REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- 3. Disconnect the negative battery cable.
- 4. Remove the fuel pump unit. (See [FUEL PUMP UNIT REMOVAL/INSTALLATION \[13B-MSP\]](#).)
- 5. Remove in the order indicated in the table.



1	Fuel gauge sender unit stay (See Fuel gauge sender unit stay removal note .)
---	---

2	Fuel gauge sender unit (main)
---	-------------------------------

- 6. Install in the reverse order of removal.

Fuel gauge sender unit stay removal note

CAUTION:

- A deformed fuel gauge sender unit arm could cause the fuel level to be indicated incorrectly. When holding the fuel gauge sender unit stay, grasp any part other than the arm portion.

1. Rotate the fuel gauge sender unit stay counter-clockwise to remove it.



Fuel Gauge Sender Unit (Sub)

WARNING:

- Fuel is very flammable liquid. If fuel spills or leaks from the pressurized fuel system, it will cause serious injury or death and facility breakage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure", while referring to the "BEFORE SERVICE PRECAUTIONS".

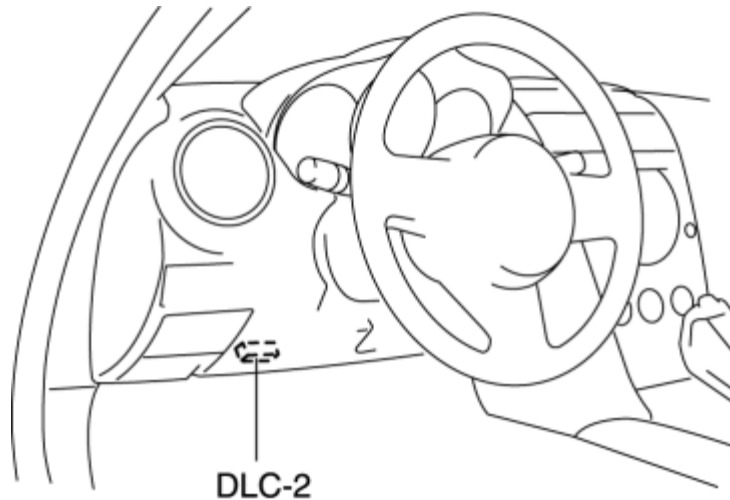
CAUTION:

- When the fuel gauge indicates 3/4 or more, the fuel level is higher than the installation surface of the fuel pump and the fuel suction pipe bracket. Due to this condition, fuel may spill or leak out when performing this procedure. Before performing this procedure, always drain out fuel so that the fuel tank is half full or less (according to the fuel gauge needle).

1. Park the vehicle on a level surface.
2. Complete the "BEFORE SERVICE PRECAUTION". (See [BEFORE SERVICE PRECAUTION \[13B-MSP\]](#).)
3. Disconnect the quick release connector from the fuel pump unit. (See [QUICK RELEASE CONNECTOR REMOVAL/INSTALLATION \[13B-MSP\]](#).)
4. Connect the hose to the fuel pump unit and drain the fuel into a container used for collecting gasoline.
5. Drain the fuel from the fuel tank using the following procedure.

Using M-MDS

- Connect the M-MDS to the DLC-2



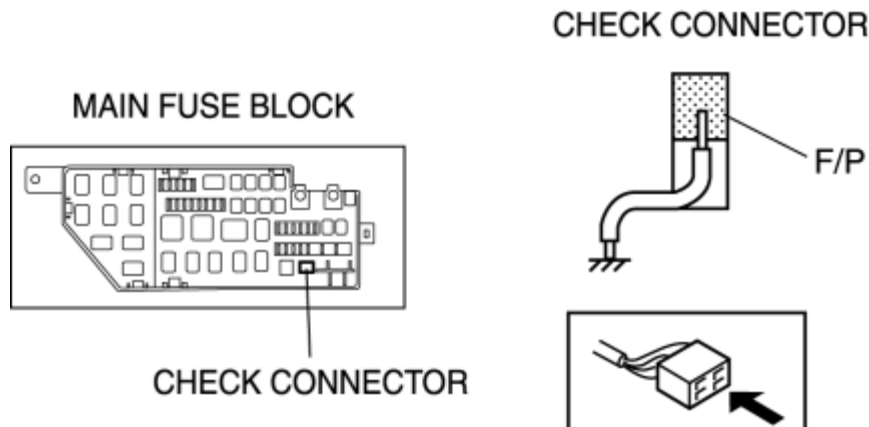
- Using the simulation function "FP", start the fuel pump. (See [ON-BOARD DIAGNOSTIC TEST \[13B-MSP\].](#))

CAUTION:

- Shorting the wrong terminal of the check connector may cause malfunctions. Make sure to short only the specified terminal.

Without using M-MDS

- Ground check connector terminal F/P to the body using a jumper wire.



CAUTION:

- The fuel pump may malfunction if it is operated without any fuel in the fuel tank (fuel pump idling). Constantly monitor the amount of fuel being discharged and immediately stop operation of the pump when essentially no fuel is being discharged.
- Turn the ignition switch to the ON position and operate the fuel pump.

NOTE:

- When operating the fuel pump with a full fuel tank, fuel discharge will become erratic after **approx. 10 min** but will continue for **approx. 10 min** more and then essentially no fuel will be discharged. At this time the fuel gauge needle will be at the halfway position.

6. Stop the fuel pump using the following procedure.

Using M-MDS

- Using the simulation function "FP", stop the fuel pump. (See [ON-BOARD DIAGNOSTIC TEST \[13B-MSP\]](#).)

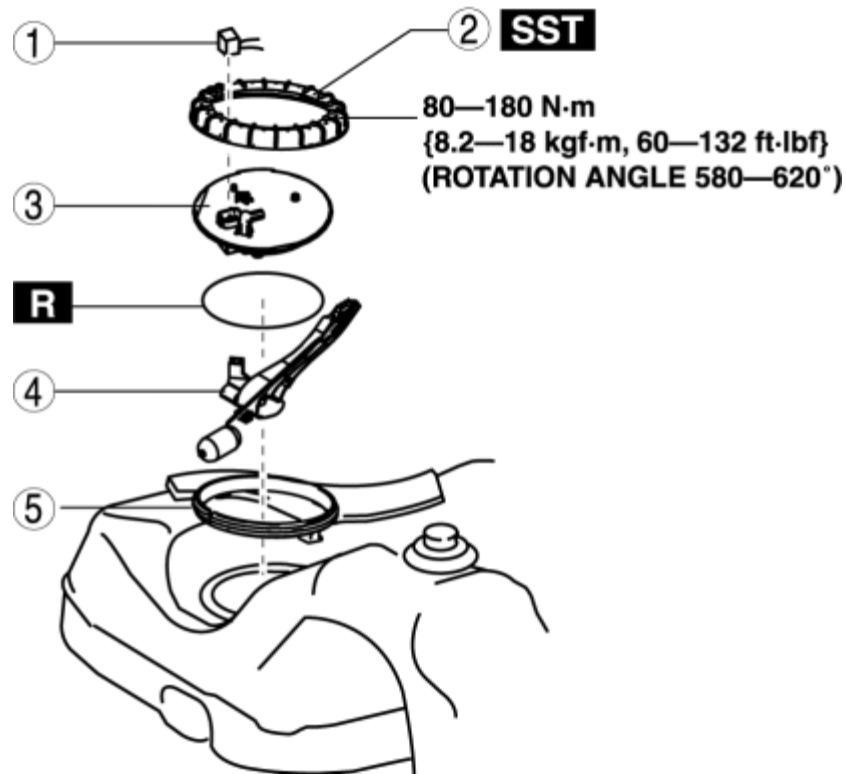
Without using M-MDS

- Turn the ignition switch to the LOCK position and stop the fuel pump.
- Disconnect the jumper wire.

7. Disconnect the negative battery cable. (See [BATTERY REMOVAL/INSTALLATION \[13B-MSP\]](#).)

8. Remove the service hole cover.

9. Remove in the order indicated in the table.



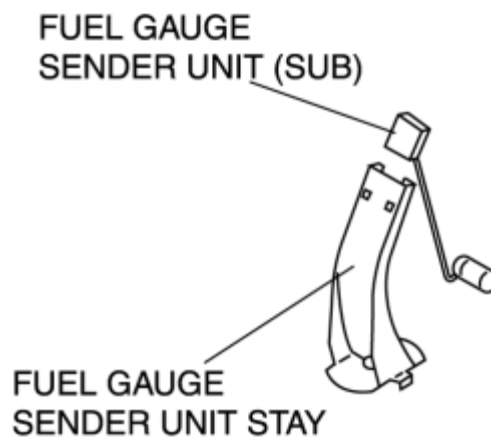
1	Connector
2	Cap

3	Fuel suction pipe bracket
4	Fuel gauge sender unit (sub)
5	Retainer

CAUTION:

- A deformed fuel gauge sender unit arm could cause the fuel level to be indicated incorrectly. When holding the fuel gauge sender unit stay, grasp any part other than the arm portion.

10. Remove the fuel gauge sender unit (sub) from the fuel gauge sender unit stay.



11. Install in the reverse order of removal.

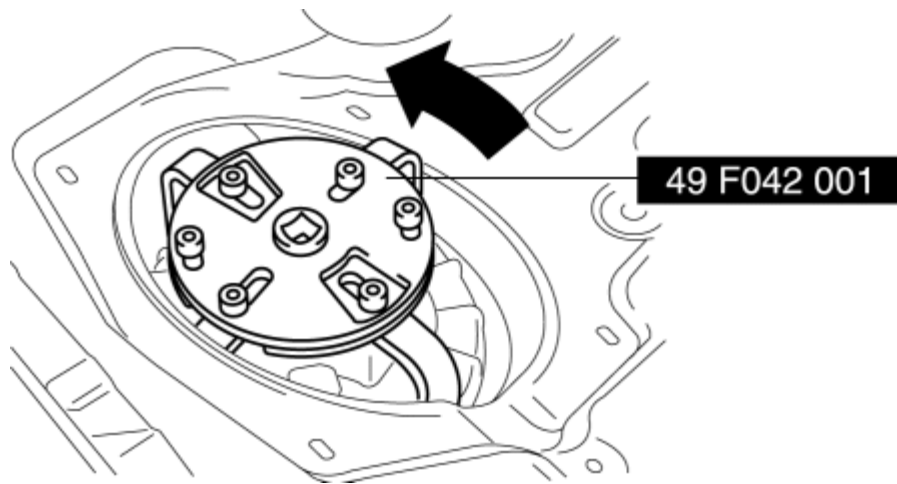
12. Complete the "AFTER SERVICE PRECAUTION".

Cap Removal Note

CAUTION:

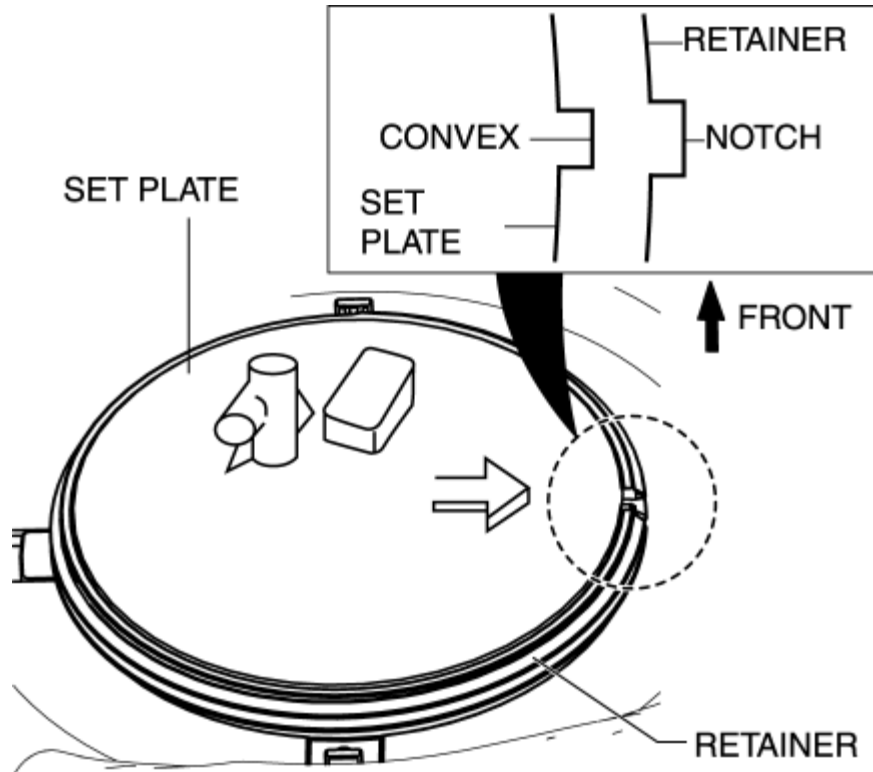
- The cap could be damaged if the SST is used with any play between the cap and the SST. Securely attach the SST so that there is no gap between the SST tabs and the side of the cap.

1. Remove the cap using the SST.



Cap Installation Note

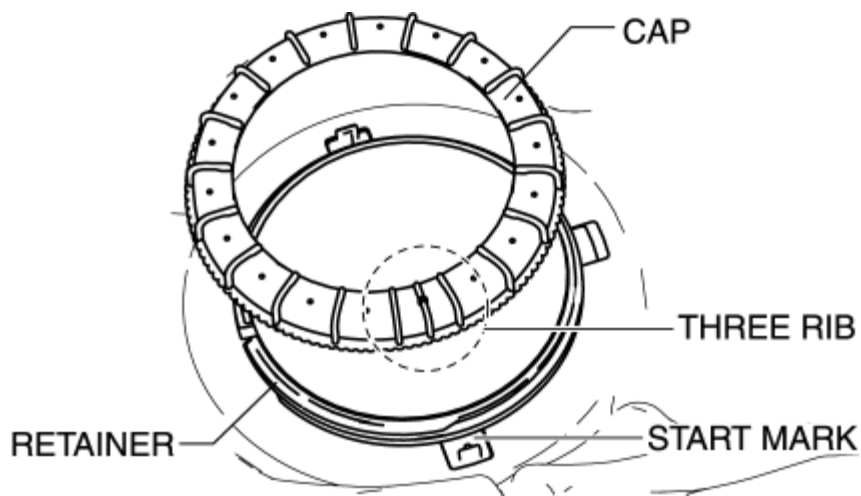
1. Align the convex of the set plate with the notch of the retainer as shown in the figure.



NOTE:

- Remove the residue of gasoline on gasket or cap completely. Any residue of gasoline can make the set plate turn round and prevent it from fixing.

2. Adjust the start mark of the fuel tank with the center one out of three rib lines of the cap, then turn it around 360° degrees by hand as shown in the figure.



- If the retainer and cap cannot be tightened by hand, remove the cap, verify that there is no damage or misalignment on the retainer and cap, and then tighten again.

CAUTION:

- The cap could be damaged if the SST is used with any play between the cap and the SST. Securely attach the SST so that there is no gap between the SST tabs and the side of the cap.

3. While keeping the alignment mark and the retainer notch aligned, tighten the cap to the rotation angle and specified torque using the **SST**.

- If the specified torque cannot be obtained even when the cap is rotated to the specified rotation angle, replace with a new cap and retainer and repeat Step 2.

Rotation angle (Total angle for Step 2 and Step 3)

- 580—620°

Cap tightening torque (approx.)

- 80—180 N·m {8.2—18 kgf·m, 60—132 ft·lbf}

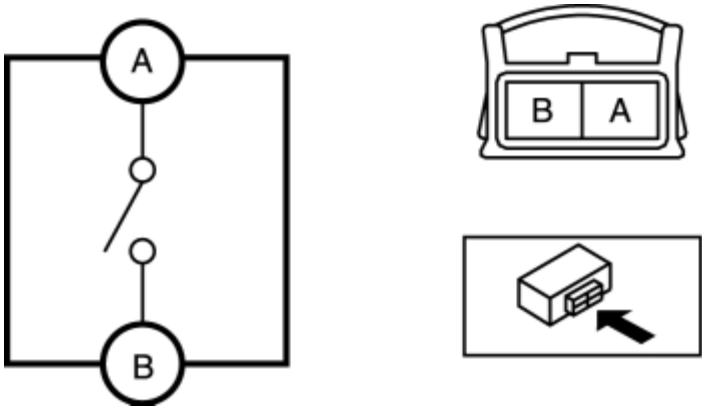
[< Previous](#) [Next >](#)

[Back to Top](#)

2011 - RX-8 - Body and Accessories

OIL LEVEL SWITCH INSPECTION

- 1. Disconnect the oil level switch connector.
- 2. Verify the continuity between the oil level switch terminals.
 - 1. If the continuity is not as indicated in the tables, replace the oil level switch.
(See [OIL PAN REMOVAL/INSTALLATION \[13B-MSP\]](#).)



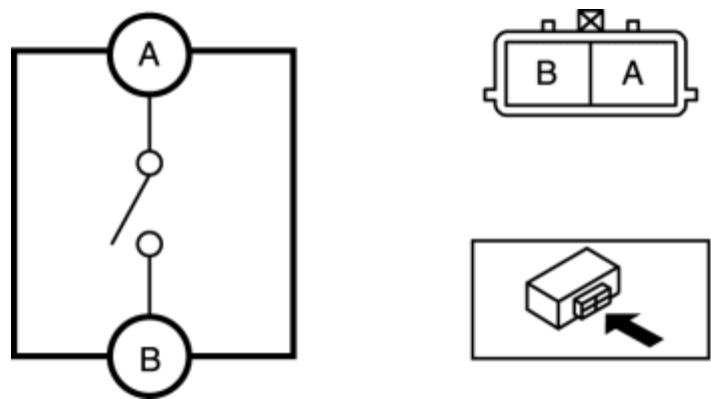
○—○ :Continuity

Condition	Terminal	
	A	B
Oil level is between F and L marks on the dipstic	○—	—○
Oil level is below the L marks on the dipstic		

2011 - RX-8 - Body and Accessories

COOLANT LEVEL SWITCH INSPECTION

- 1. Disconnect the coolant level switch.
- 2. Verify the continuity between the coolant level switch terminals.
 - 1. If the continuity is not as indicated in the tables, replace the coolant reserve tank.



○—○ : Continuity

Amount of engine coolant	Terminal	
	A	B
Above LOW		
Below LOW	○—○	○—○

[< Previous](#) [Next >](#)

2011 - RX-8 - Body and Accessories

INSTRUMENTATION/DRIVER INFO. PERSONALIZATION FEATURES SETTING PROCEDURE

CAUTION:

- Although there is an item in the instrument cluster customize function for changing the fuel gauge response setting, it cannot be used. If the fuel gauge response setting is changed, a difference occurs between the instrument cluster indication and the actual fuel level which could lead to an unexpected fuel shortage.

[< Previous](#) [Next >](#)

[Back to Top](#)

© 2010 Mazda North American Operations, U.S.A.

2011 - RX-8 - Body and Accessories

BODY ELECTRICAL SYSTEM

	Item	Specifications (W) × number
Exterior light bulb capacity	Headlight bulb (high-beam)	65 × 2
	Headlight bulb (low-beam)	Discharge headlight bulb 35 × 2
		Halogen headlight bulb 55 × 2
	Front fog light bulb	51 × 2
	Front turn light bulb	21 × 2
	Front turn/parking light bulb	27/8 × 2
	Front side turn light bulb	5 × 2
	Brake/tail light (LED)	2.3/0.2 × 2
	Rear turn light bulb	21 × 2
	Back-up light bulb	16 × 2
	Rear side marker light bulb	5 × 2
	License plate light bulb	5 × 1
	High-mount brake light bulb	21 × 1
	Map light bulb	5 × 2

Interior light bulb capacity	Interior light bulb	10 × 1
	Courtesy light bulb	5 × 2
	Trunk compartment light bulb	5 × 1
	Glove compartment light bulb	1.7 × 1
	Ignition key illumination bulb	1.4 × 1
	Ashtray illumination bulb	1.4 × 1
	Vanity mirror illumination bulb	1.8 × 2

[< Previous](#) [Next >](#)

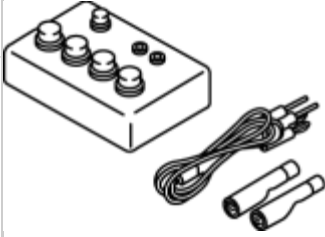

© 2010 Mazda North American Operations, U.S.A.

[Back to Top](#)

[< Previous](#)

2011 - RX-8 - Body and Accessories

BODY AND ACCESSORIES SST

49 N088 0A0 Fuel And Thermometer Checker		49 F042 001 Wrench		
---	---	-----------------------	--	--

[< Previous](#)

[Back to Top](#)