INTRODUCTION

How to Use This Manual

This manual is divided into multiple sections. The first page of each section is marked with a black tab that lines up with its corresponding thumb index tab on this page and the back cover. You can quickly find the first page of each section without looking through a full table of contents. The symbols printed at the top corner of each page can also be used as a quick reference system.
Each section includes:

1. A table of contents, or an exploded view index showing:
   - Parts disassembly sequence.
   - Bolt torques and thread sizes.
   - Page references to descriptions in text.
2. Disassembly/assembly procedures and tools.
3. Inspection.
4. Testing/troubleshooting.
5. Repair.
6. Adjustments.

Safety Messages

Your safety, and the safety of others, is very important. To help you make informed decisions, we have provided safety messages, and other safety information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with servicing this vehicle. You must use your own good judgment.
You will find important safety information in a variety of forms including:

- **Safety Labels** — on the vehicle.
- **Safety Messages** — preceded by a safety alert symbol ⚠ and one of three signal words, DANGER, WARNING, or CAUTION. These signal words mean:

⚠ DANGER	You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.
⚠ WARNING	You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.
⚠ CAUTION	You CAN be HURT if you don't follow instructions.

- **Instructions** — how to service this vehicle correctly and safely.

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at anytime without notice. No part of this publication may be reproduced, or stored in a retrieval system, or transmitted, in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. This includes text, figures, and tables.

As you read this manual, you will find information that is preceded by a NOTICE symbol. The purpose of this message is to help prevent damage to your vehicle, other property, or the environment.

First Edition 06/2007 2,392 pages
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HONDA MOTOR CO., LTD.
Service Publication Office

As sections with * include SRS components; special precautions are required when servicing.

General Information
Specifications
Maintenance
*Engine Electrical
Engine Mechanical
Engine Cooling
Fuel and Emissions
*Transaxle
*Steering
Suspension
*Brakes (Including VSA)
*Body
*Heating, Ventilation, and Air Conditioning
*Body Electrical
*Audio, Navigation, and Telematics
*Restraints

A Few Words About Safety

Service Information

The service and repair information contained in this manual is intended for use by qualified, professional technicians. Attempting service or repairs without the proper training, tools, and equipment could cause injury to you or others. It could also damage the vehicle or create an unsafe condition.

This manual describes the proper methods and procedures for doing service, maintenance, and repairs. Some procedures require the use of specially designed tools and dedicated equipment. Any person who intends to use a replacement part, service procedure, or a tool that is not recommended by Honda, must determine the risks to their personal safety and the safe operation of the vehicle.

If you need to replace any parts, always use the correct parts supplied by a Honda dealer. Never use inferior quality parts.

FOR YOUR CUSTOMER'S SAFETY

Proper service and maintenance are essential to the customer's safety and the reliability of the vehicle. Any error or oversight while servicing a vehicle can result in faulty operation, damage to the vehicle, or injury to others.

⚠ WARNING

Improper service or repairs can create an unsafe condition that can cause your customer or others to be seriously hurt or killed.
Follow the procedures and precautions in this manual and other service materials carefully.

FOR YOUR SAFETY

Because this manual is intended for the professional service technician, we do not provide warnings about many basic shop safety practices (for example, Hot parts—wear gloves). If you have not received shop safety training or do not feel confident about your knowledge of safe servicing practices, we recommend that you do not attempt to do the procedures described in this manual.

⚠ WARNING

Failure to properly follow instructions and precautions can cause you to be seriously hurt or killed.
Follow the procedures and precautions in this manual carefully.

Some of the most important general service safety precautions follow this text. However, we cannot warn you of every conceivable hazard that can arise in doing service and repair procedures. Only you can decide whether or not you should do a given task.

IMPORTANT SAFETY PRECAUTIONS

- Make sure you have a clear understanding of all basic shop safety practices and that you are wearing appropriate clothing and using safety equipment. When doing any service task, be especially careful of the following:
  - Read all of the instructions before you begin, and make sure you have the tools, the replacement or repair parts, and the skills required to do the tasks safely and completely.
  - Protect your eyes by using proper safety glasses, goggles, or face shields anytime you hammer, drill, grind, or work around pressurized air or liquids and springs or other stored-energy components. If there is any doubt, put on eye protection.
  - Use other protective wear when necessary, such as gloves or safety shoes. Handling hot or sharp parts can cause severe burns or cuts. Before you grab something that looks like it can hurt you, stop and put on gloves.
  - Protect yourself and others whenever you have the vehicle up in the air. Anytime you raise the vehicle, either with a lift or a jack, make sure that it is always securely supported. Use jack stands if needed.
  - Protect yourself by wearing an approved welding helmet, gloves, and safety shoes anytime you are welding. You can receive burns from hot parts; allow the parts to cool before working in that area.
  - Protect yourself from paints and harmful chemicals by wearing an approved respirator, eye protection, and gloves whenever you are painting. Spray paint only in an approved paint booth that is well ventilated.

- Make sure the engine is off before you begin any servicing procedures, unless the instruction tells you to do otherwise. This will help eliminate several potential hazards:
  - Carbon monoxide poisoning from engine exhaust. Be sure there is adequate ventilation whenever you run the engine.
  - Burns from hot parts or coolant. Let the engine and exhaust system cool before working in those areas.
  - Injury from moving parts. If the instruction tells you to run the engine, be sure your hands, fingers, and clothing are out of the way.

- Gasoline vapors and hydrogen gases from batteries are explosive. To reduce the possibility of a fire or explosion, be careful when working around gasoline or batteries.
  - Use only a nonflammable solvent, not gasoline, to clean parts.
  - Never drain or store gasoline in an open container.
  - Keep all cigarettes, sparks, and flames away from the battery and all fuel-related parts.

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

The Ridgeline SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the sides of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items requires special precautions and tools, and should be done by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work should be done by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.

General Information

Chassis and Paint Codes
- '06 Model 1-2
- '07 Model 1-3
- '08 Model 1-4

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Chassis and Paint Codes

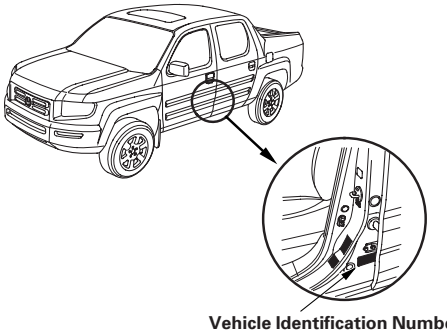
'06 Model

Vehicle Identification Number

2HJ YK1 6 2 * 6 H 500001

a b c d e f g h

a. Manufacturer, Make, and Type of Vehicle
2HJ: Honda of Canada Mfg.,
Honda Canada Inc.
Honda Light duty truck
b. Line, Body, and Engine Type
YK1: Ridgeline/J35A9
c. Body Type and Transmission Type
6: 4-door/5-speed Automatic
d. Vehicle Grade (Series)
USA models
2: RT
4: RTS
5: RTL
RTL with Moonroof and XM radio
RTL with Moonroof and XM radio and Navigation System
Canada models
4: LX
5: EXL
EXL SR
EXL with Navigation System
e. Check Digit
f. Model Year
6: '06
g. Factory Code
H: Alliston, Ontario Factory in Canada
h. Serial Number
500001: USA models
000001: Canada models



Vehicle Identification Number and Federal Motor Vehicle Safety Standard Certification.

Vehicle Identification Number and Canadian Motor Vehicle Safety Standard Certification.

Engine Number

J35A9 - 1000001

a b

a. Engine Type
J35A9: 3.5 L SOHC VTEC Sequential Multiport Fuel-injected engine
b. Serial Number

Transmission Number

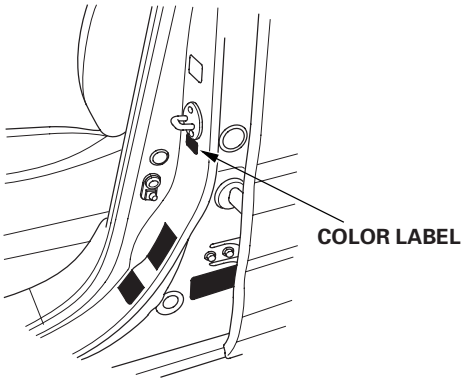
BJFA - 8000001

a b

a. Transmission Type
BJFA: 5-speed Automatic
b. Serial Number

Paint Code

Code	Color	USA models	Canada models
NH-578	White	○	
NH-689M	Billet Silver Metallic	○	○
B-92P	Nighthawk Black Pearl	○	○
B-533M	Steel Blue Metallic	○	○
G-521M	Amazon Green Metallic	○	○
R-519P	Redrock Pearl	○	○



'07 Model

Vehicle Identification Number

2HJ YK1 6 2 * 7 H 500001

a b c d e f g h

a. Manufacturer, Make, and Type of Vehicle
2HJ: Honda of Canada Mfg.,
Honda Canada Inc.
Honda Light duty truck

b. Line, Body, and Engine Type
YK1: Ridgeline/J35A9

c. Body Type and Transmission Type
6: 4-door/5-speed Automatic

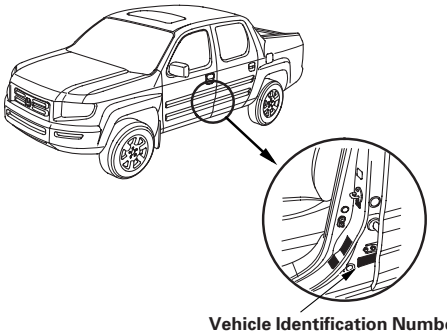
d. Vehicle Grade (Series)
USA models
2: RT
3: RTX
4: RTS
5: RTL
RTL with Navigation System
Canada models
4: LX
5: EXL
EXL with Moonroof
EXL with Moonroof and Navigation System

e. Check Digit

f. Model Year
7: '07

g. Factory Code
H: Alliston, Ontario Factory in Canada

h. Serial Number
500001: USA models
000001: Canada models



Vehicle Identification Number and Federal Motor Vehicle Safety Standard Certification.

Vehicle Identification Number and Canadian Motor Vehicle Safety Standard Certification.

Engine Number

J35A9 - 2000001

a b

a. Engine Type
J35A9: 3.5 L SOHC VTEC Sequential Multiport Fuel-injected engine

b. Serial Number

Transmission Number

BJFA - 9000001

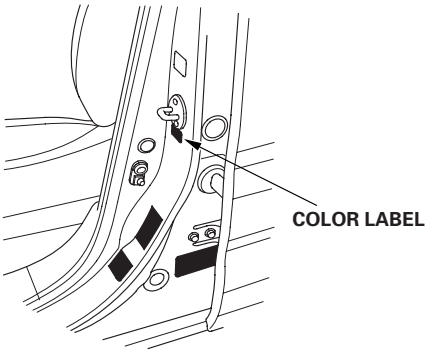
a b

a. Transmission Type
BJFA: 5-speed Automatic

b. Serial Number

Paint Code

Code	Color	USA models	Canada models
NH-578	White		○
NH-578X	White	○	
NH-689M	Billet Silver Metallic	○	○
NH-705M	Nimbus Gray Metallic	○	○
NH-707	Formal Black II		○
NH-707X	Formal Black II	○	○
B-533M	Steel Blue Metallic	○	○
G-525M	Dark Silver Sage Metallic	○	○
R-529P	Dark Cherry Pearl	○	○



Chassis and Paint Codes (cont'd)

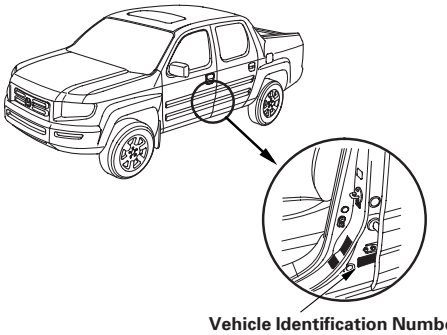
'08 Model

Vehicle Identification Number

2HJ YK1 6 2 * 8 H 500001

a b c d e f g h

a. Manufacturer, Make, and Type of Vehicle
2HJ: Honda of Canada Mfg.,
Honda Canada Inc.
Honda Light duty truck
b. Line, Body, and Engine Type
YK1: Ridgeline/J35A9
c. Body Type and Transmission Type
6: 4-door/5-speed Automatic
d. Vehicle Grade (Series)
USA models
2: RT
3: RTX
4: RTS
5: RTL
RTL with Navigation System
Canada models
4: LX
5: EXL
EXL with Moonroof
EXL with Moonroof and Navigation System
e. Check Digit
f. Model Year
8: '08
g. Factory Code
H: Alliston, Ontario Factory in Canada
h. Serial Number
500001: USA models
000001: Canada models



Vehicle Identification Number and Federal Motor Vehicle Safety Standard Certification.

Vehicle Identification Number and Canadian Motor Vehicle Safety Standard Certification.

Engine Number

J35A9 - 4000001

a b

a. Engine Type
J35A9: 3.5 L SOHC VTEC Sequential Multiport Fuel-injected engine
b. Serial Number

Transmission Number

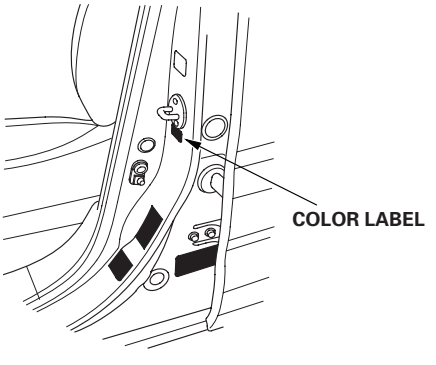
BJFA - 1000001

a b

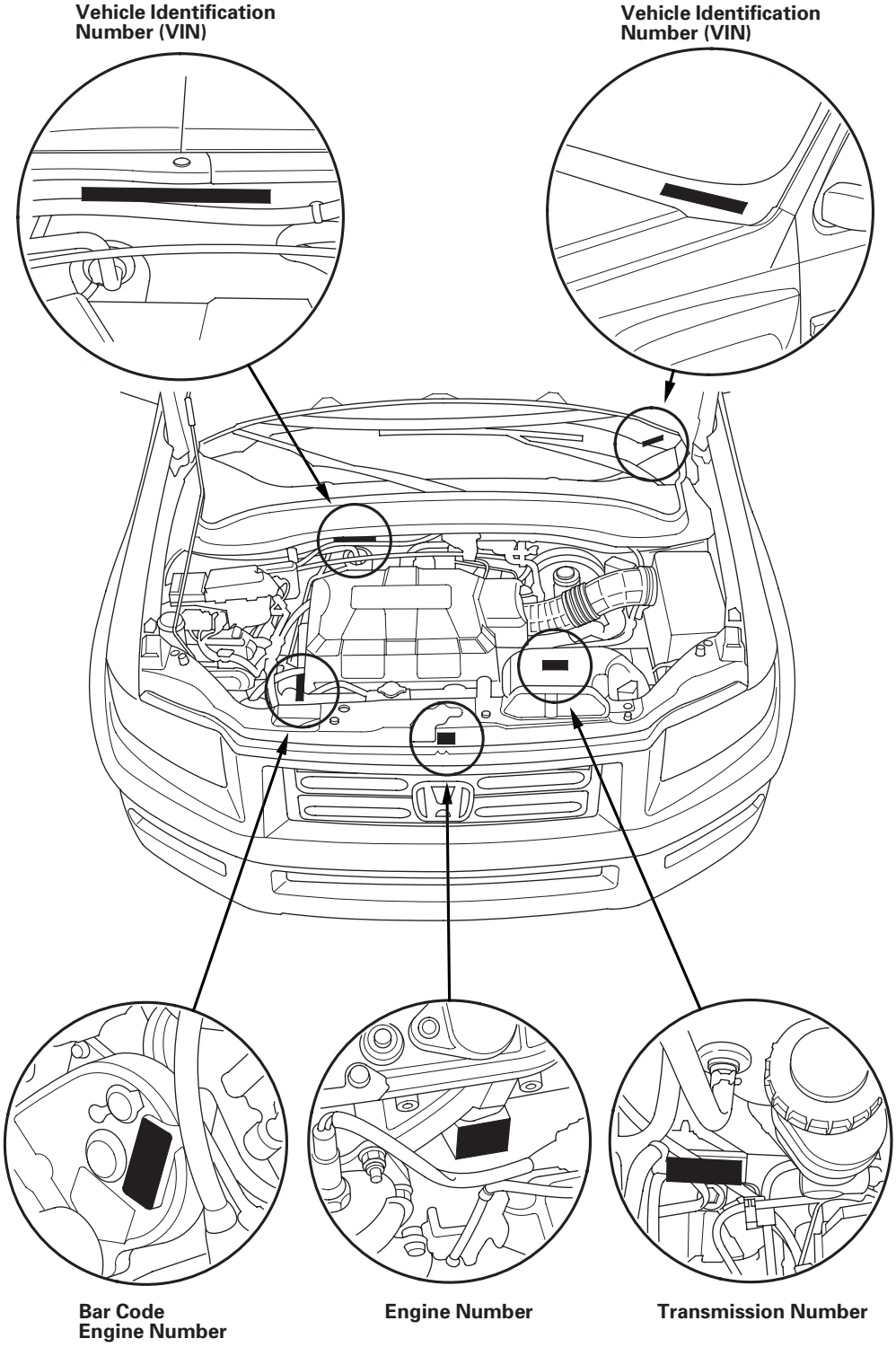
a. Transmission Type
BJFA: 5-speed Automatic
b. Serial Number

Paint Code

Code	Color	USA models	Canada models
NH-578	White		○
NH-578X	White	○	
NH-689M	Billet Silver Metallic	○	○
NH-705M	Nimbus Gray Metallic	○	○
NH-707	Formal Black II		○
NH-707X	Formal Black II	○	○
B-533M	Steel Blue Metallic	○	○
R-529P	Dark Cherry Pearl	○	○

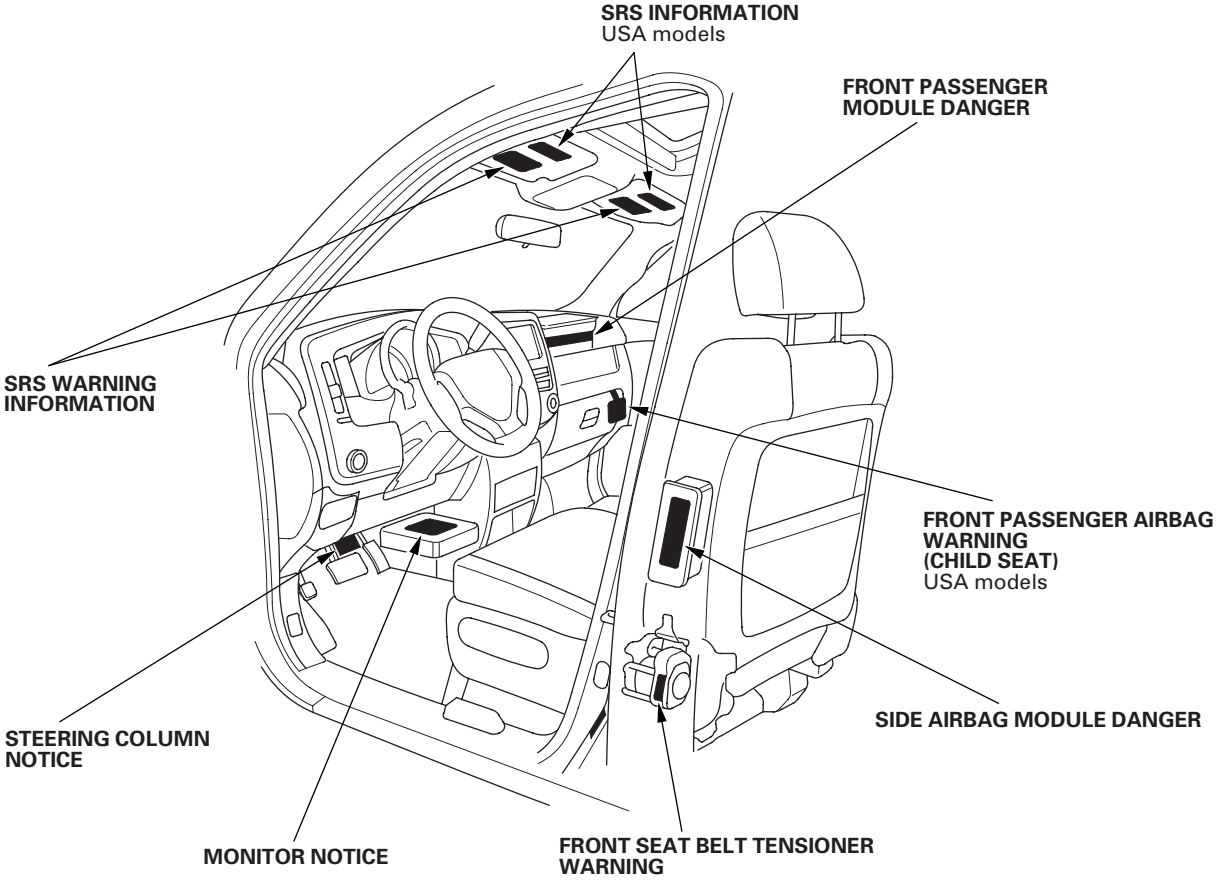


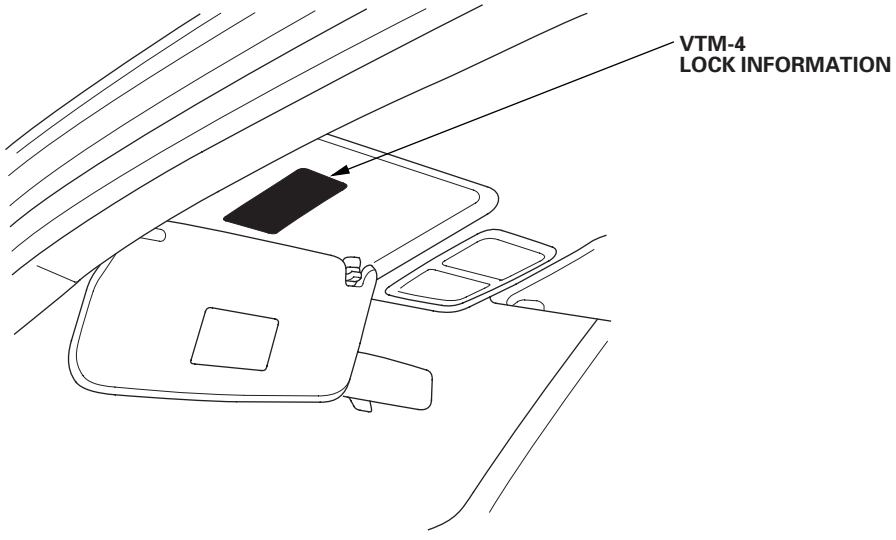
Identification Number Locations



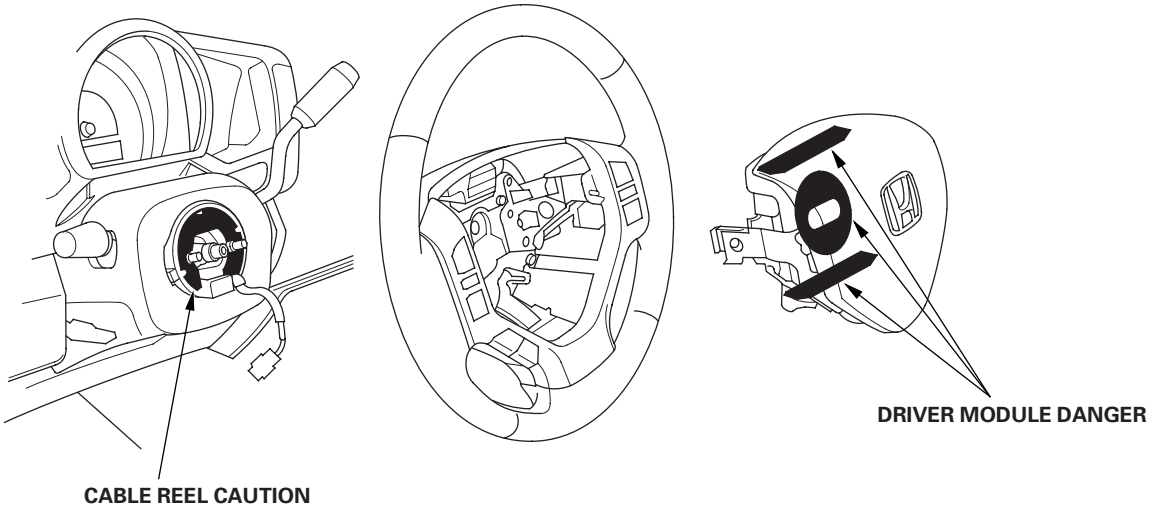
Danger/Warning/Caution Label Locations

Passenger's Compartment:

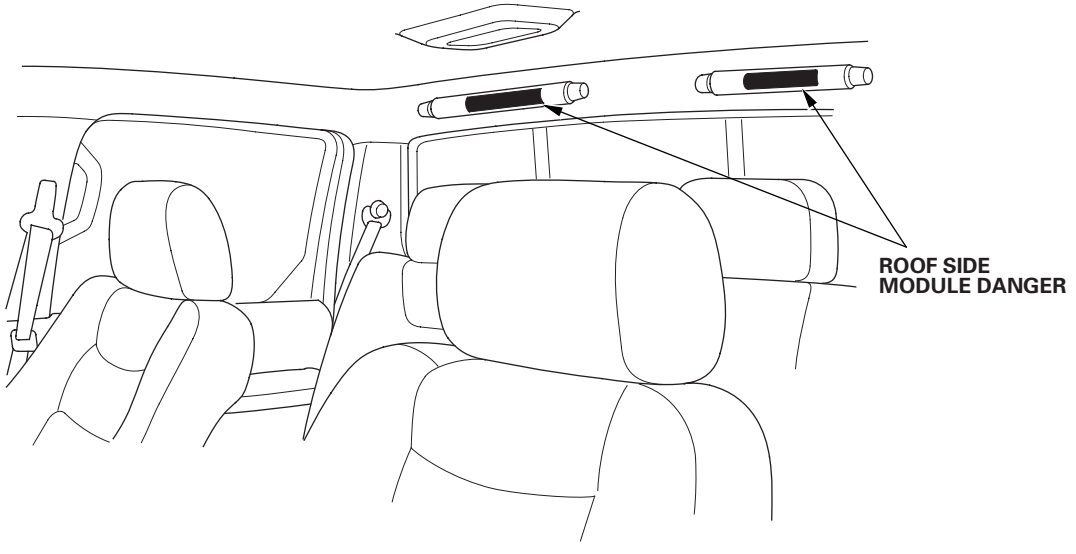




Steering Wheel:



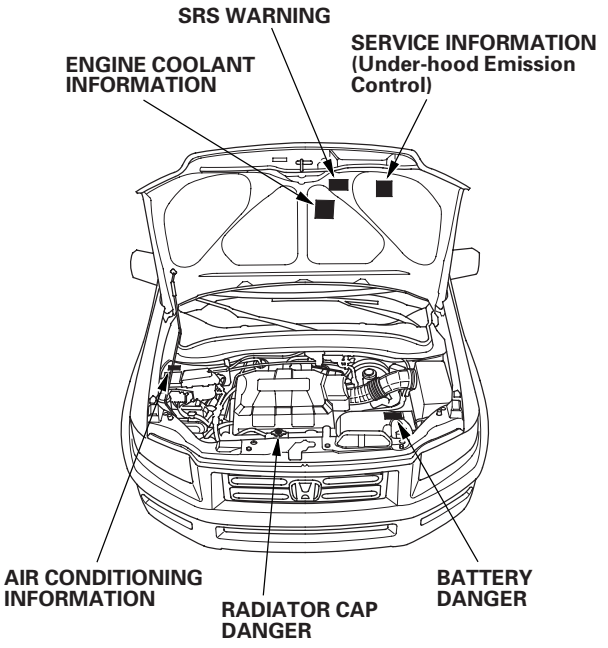
Rear Compartment:



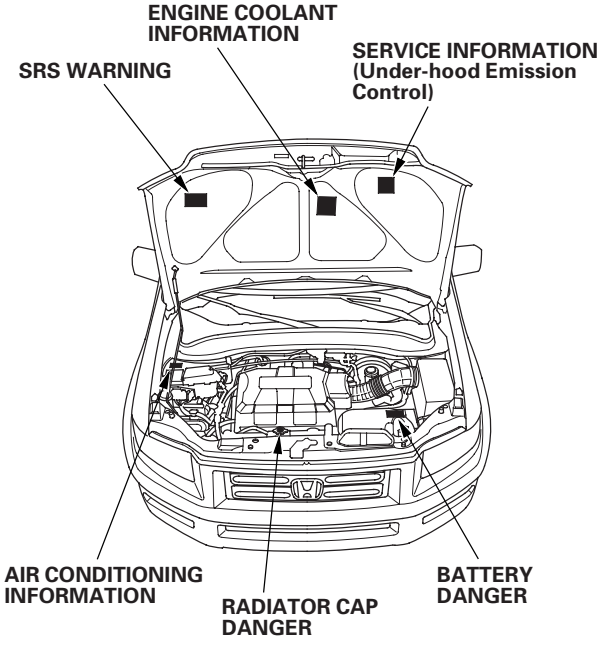
(cont'd)

Danger/Warning/Caution Label Locations (cont'd)

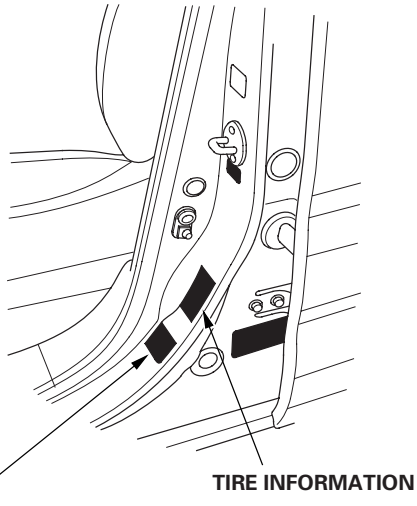
'06 Model:



'07-08 Models:

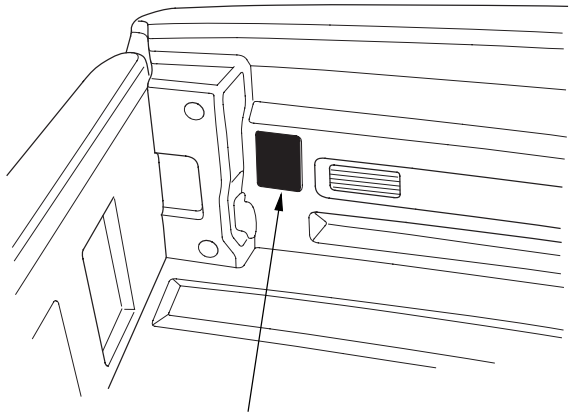


Driver's Doorjamb:



SIDE AIRBAG INFORMATION
Located on driver's doorjamb and passenger's doorjamb (not shown)

Left Bed Side Panel:

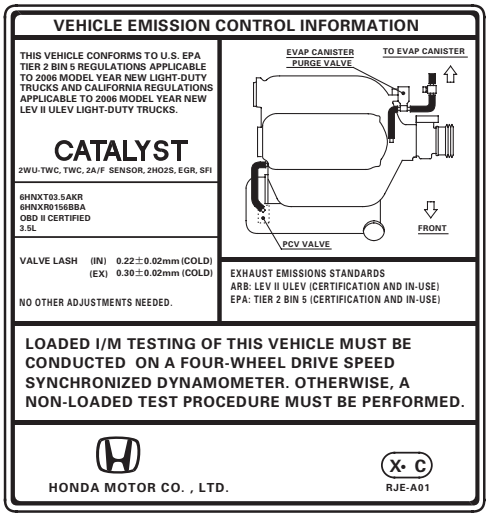


Under-hood Emission Control Label

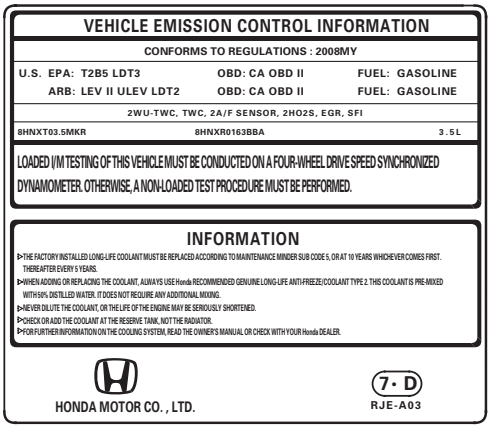
Emission Group Identification

Example:

'06-07 Models



'08 Model

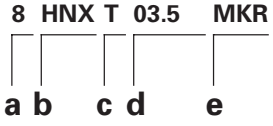


'06 Model
THIS VEHICLE CONFORMS TO U.S. EPA TIER 2 BIN 5 REGULATIONS APPLICABLE TO 2006 MODEL YEAR NEW LIGHT-DUTY TRUCKS AND CALIFORNIA REGULATIONS APPLICABLE TO 2006 MODEL YEAR NEW LEV II ULEV LIGHT-DUTY TRUCKS.

'07 Model
THIS VEHICLE CONFORMS TO U.S. EPA TIER 2 BIN 5 REGULATIONS APPLICABLE TO 2007 MODEL YEAR NEW LIGHT-DUTY TRUCKS AND CALIFORNIA REGULATIONS APPLICABLE TO 2007 MODEL YEAR NEW LEV II ULEV LIGHT-DUTY TRUCKS.

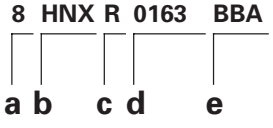
Test Group and Evaporative Family

Test Group:



- **a. Model Year**
  6: '06
  7: '07
  8: '08
- **b. Manufacturer Subcode**
  HNX: HONDA
- **c. Family Type**
  T: LDT
- **d. Displacement**
- **e. Sequence Characters**
  AKR: '06 model
  TKR: '07 model
  MKR: '08 model

Evaporative Family:



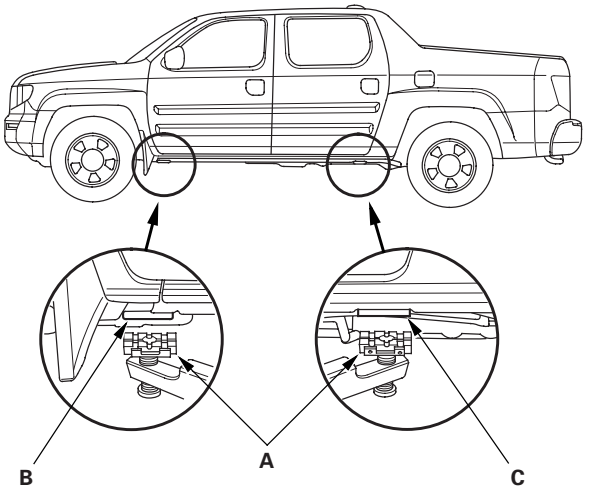
- **a. Model Year**
  6: '06
  7: '07
  8: '08
- **b. Manufacturer Subcode**
  HNX: HONDA
- **c. Family Type**
  R: EVAP/ORVR
- **d. Canister Working Capacity Group**
  0156: '06 model
  0163: '07-08 models
- **e. Sequence Characters**
  BBA: '06 and '08 models
  BBY: '07 model

Lift and Support Points

NOTE: If you are going to remove heavy components such as suspension or the fuel tank from the rear of the vehicle, first support the front of the vehicle with tall safety stands. When substantial weight is removed from the rear of the vehicle, the center of gravity can change, causing the vehicle to tip forward on the lift.

Vehicle Lift

1. Position the lift blocks (A) under the vehicle's front support points (B) and rear support points (C).



2. Raise the lift a few inches, and rock the vehicle gently to be sure it's firmly supported.

3. Raise the lift to its height, and inspect the vehicle support points for solid contact with the lift blocks.

Safety Stands

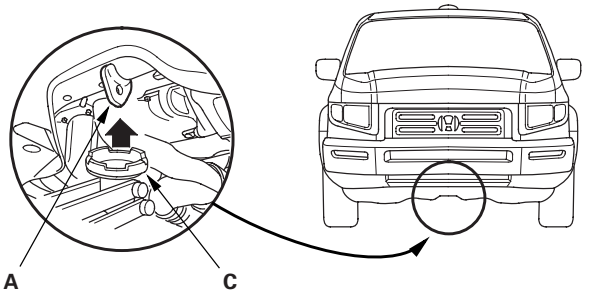
To support the vehicle on safety stands, use the same support points (B and C) as for a vehicle lift. Always use safety stands when working on or under any vehicle that is supported only by a jack.

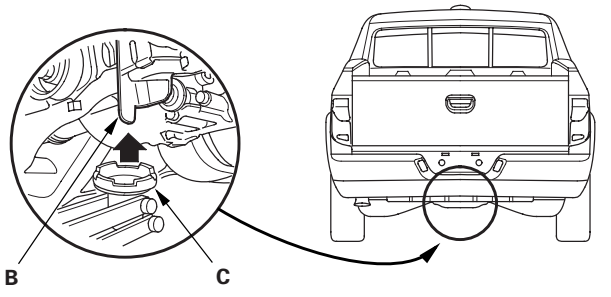
Floor Jack

1. When lifting the front of the vehicle, set the parking brake. When lifting the rear of the vehicle, put the shift lever in the P position.

2. Block the wheels that are not being lifted.

3. Position the floor jack under the front jacking bracket (A) or the rear jacking bracket (B). Center the jacking bracket on the jack lift platform (C), and jack up the vehicle high enough to fit the safety stands under it.





4. Position the safety stands under the support points and adjust them so the vehicle is level.

5. Lower the vehicle onto the stands.

Towing

If the vehicle needs to be towed, call a professional towing service. Never tow the vehicle behind another vehicle with a rope or chain. It is very dangerous.

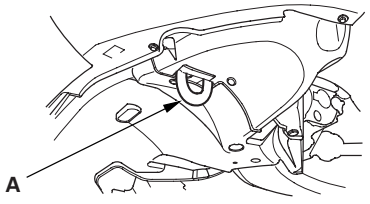
Emergency Towing
There are three popular methods of towing a vehicle.

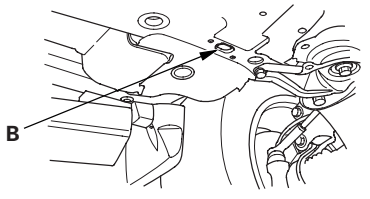
Flat-bed Equipment — The operator loads the vehicle on the back of a truck. **This is the only way of transporting the vehicle.**

To accommodate flat-bed equipment, the vehicle is equipped with a front towing hook (A), front tie down hook slot (B), rear towing hook (C), and rear tie down hook slot (D).

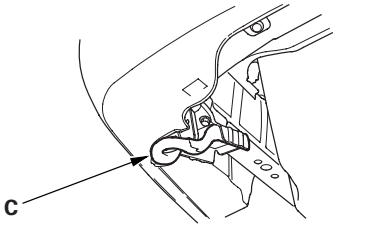
The towing hooks can be used with a winch to pull the vehicle onto the truck, and the tie down hook slots can be used to secure the vehicle to the truck.

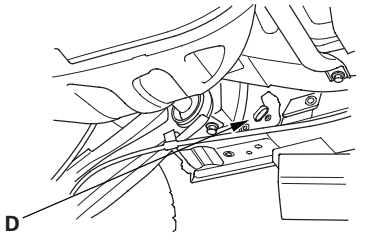
Front:





Rear:





Wheel Lift Equipment — The tow truck uses two pivoting arms that go under the tires (front or rear) and lift them off the ground. The other two wheels remain on the ground. **Never tow the vehicle with this wheel lift equipment.**

Sling-type Equipment — The tow truck uses metal cables with hooks on the ends. These hooks go around parts of the frame or suspension, and the cables lift that end of the vehicle off the ground. The vehicle's suspension and body can be seriously damaged if this method of towing is attempted. **This method of towing the Ridgeline is unacceptable.**

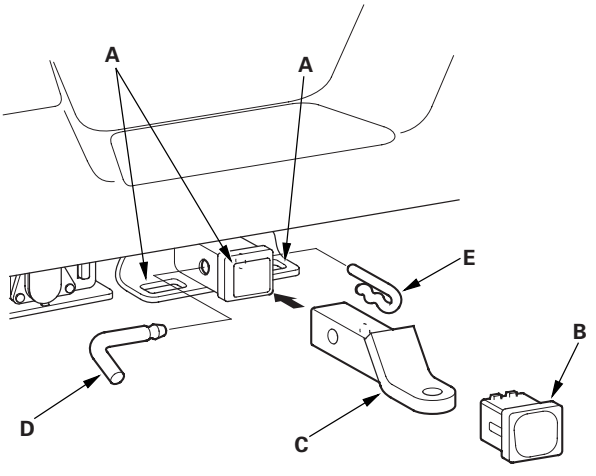
The only recommended way of towing the Ridgeline is on a flat-bed truck.

NOTICE

- Towing the Ridgeline with only two wheels on the ground will damage parts of the 4WD system. If the vehicle is damaged, it should be transported on a flat-bed truck or trailer.
- Trying to lift or tow the vehicle by the bumpers will cause serious damage. The bumpers are not designed to support the vehicle's weight.

For non-emergency towing information, refer to the owner's manual.

Trailer Towing ('07-08 USA RTX model)
This vehicle has a class three trailer hitch (A) as standard equipment. The cover (B), the ball mount (C), the hitch pin (D), and the hitch pin clip (E) are stored in the in-bed trunk.



Parts Marking

To deter vehicle theft, certain major components are marked with the vehicle identification number (VIN). Original parts have self-adhesive labels. Replacement body parts have generic self-adhesive labels. These labels should not be removed. The original engine or transmission VIN plates are not transferable to the replacement engine or transmission.

NOTE: Be careful not to damage the parts marking labels during body repair. Mask the labels before repairing the part.

Precautions for Variable Torque Management 4WD (VTM-4) System

This vehicle is equipped with the Variable Torque Management 4WD (VTM-4) System. The VTM-4 system distributes driving torque between the front and rear wheels when accelerating and when wheel spin occurs.

The VTM-4 system does not have a manual switch to disable the 4WD system. Whenever service work requires spinning the front or rear wheels with the engine, always lift and support the vehicle so all four wheels are off the ground.

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Standards and Service Limits

Engine Electrical

Item	Measurement	Qualification	Standard or New	Service Limit
Ignition coil	Rated voltage		12 V	
	Firing order		1—4—2—5—3—6	
Spark plug	Type		NGK: IZFR5K11 DENSO: SKJ16DR-M11	
	Gap		1.0—1.1 mm (0.039—0.043 in.)	———
Ignition timing	At idle Check the *red* mark	In N or P position	10±2 °BTDC	
Drive belt	Tension		Auto tensioner	
Alternator	Output	At 13.5 V and normal engine temperature	130 A	
	Coil (rotor) resistance	At 68 °F (20 °C)	2.3 –2.7 Ω	
	Slip ring O.D.		14.2—14.4 mm (0.56—0.57 in.)	13.8 mm (0.54 in.)
	Brush length		10.5 mm (0.41 in.)	1.5 mm (0.06 in.)
	Brush spring tension		2.94—3.53 N (0.30—0.36 kgf, 0.66—0.80 lbf)	
Starter	Output		1.6 kW	
	Commutator mica depth		0.4—0.6 mm (0.016—0.024 in.)	0.20 mm (0.008 in.)
	Commutator runout		0.05 mm (0.002 in.) max.	0.1 mm (0.004 in.)
	Commutator O.D.		29.3—29.5 mm (1.154—1.161 in.)	28.8 mm (1.134 in.)
	Brush length		7.7—8.0 mm (0.30—0.31 in.)	0.9 mm (0.04 in.)
	Brush spring tension (new)		15.9—19.5 N (1.62—1.99 kgf, 3.57—4.39 lbf)	

Engine Assembly

Item	Measurement	Qualification	Standard or New	Service Limit
Compression	Pressure	Minimum	930 kPa (9.5 kgf/cm^2, 135 psi)	———
	Check the engine with the starter cranking	Maximum variation	200 kPa (2.0 kgf/cm^2, 28 psi)	———

Cylinder Head

Item	Measurement	Qualification	Standard or New	Service Limit
Head	Warpage		———	0.05 mm (0.002 in.)
	Height		120.95—121.05 mm (4.762—4.766 in.)	———
Camshaft	End play		0.05—0.20 mm (0.002—0.008 in.)	0.20 mm (0.008 in.)
	Camshaft-to-holder oil clearance		0.050—0.089 mm (0.0020—0.0035 in.)	0.15 mm (0.006 in.)
	Total runout		0.03 mm (0.001 in.) max.	0.04 mm (0.002 in.)
	Cam lobe height	Intake, primary	35.041 mm (1.3796 in.)	———
		Intake, mid	36.445 mm (1.4348 in.)	———
		Intake, secondary	35.284 mm (1.3891 in.)	———
		Exhaust	36.326 mm (1.4302 in.)	———
Valve	Clearance (cold)	Intake	0.20—0.24 mm (0.008—0.009 in.)	———
		Exhaust	0.28—0.32 mm (0.011—0.013 in.)	———
	Stem O.D.	Intake	5.485—5.495 mm (0.2159—0.2163 in.)	5.455 mm (0.2148 in.)
		Exhaust	5.450—5.460 mm (0.2146—0.2150 in.)	5.420 mm (0.2134 in.)
	Stem-to-guide clearance	Intake	0.020—0.045 mm (0.0008—0.0018 in.)	0.08 mm (0.003 in.)
		Exhaust	0.055—0.080 mm (0.0022—0.0031 in.)	0.11 mm (0.004 in.)
Valve seat	Width	Intake	1.25—1.55 mm (0.049—0.061 in.)	2.00 mm (0.079 in.)
		Exhaust	1.25—1.55 mm (0.049—0.061 in.)	2.00 mm (0.079 in.)
	Stem installed height	Intake	46.75—47.55 mm (1.841—1.872 in.)	47.80 mm (1.882 in.)
		Exhaust	46.68—47.48 mm (1.838—1.869 in.)	47.73 mm (1.879 in.)
Valve spring	Free length	Intake	51.54 mm (2.029 in.)	———
		Exhaust	51.06 mm (2.010 in.)	———
Valve guide	I.D.	Intake	5.515—5.530 mm (0.2171—0.2177 in.)	5.55 mm (0.219 in.)
		Exhaust	5.515—5.530 mm (0.2171—0.2177 in.)	5.55 mm (0.219 in.)
	Installed height	Intake	21.20—22.20 mm (0.835—0.874 in.)	———
		Exhaust	20.60—21.60 mm (0.811—0.850 in.)	———
Rocker arm	Arm-to-shaft clearance	Intake	0.026—0.067 mm (0.0010—0.0026 in.)	0.067 mm (0.0026 in.)
		Exhaust	0.026—0.077 mm (0.0010—0.0030 in.)	0.077 mm (0.0030 in.)

Standards and Service Limits

Engine Block

Item	Measurement	Qualification	Standard or New	Service Limit
Block	Warpage of deck		0.07 mm (0.003 in.) max.	0.10 mm (0.004 in.)
	Bore diameter		89.000—89.015 mm (3.5039—3.5045 in.)	89.065 mm (3.5065 in.)
	Bore taper		———	0.05 mm (0.002 in.)
	Reboring limit		———	0.25 mm (0.01 in.)
Piston	Skirt O.D. at 16.0 mm (0.63 in.) from bottom of skirt		88.975—88.985 mm (3.5029—3.5033 in.)	88.965 mm (3.5026 in.)
	Clearance in cylinder		0.015—0.040 mm (0.0006—0.0016 in.)	0.08 mm (0.003 in.)
	Ring groove width	Top	1.240—1.250 mm (0.0488—0.0492 in.)	1.27 mm (0.050 in.)
		Second	1.220—1.230 mm (0.0480—0.0484 in.)	1.25 mm (0.049 in.)
		Oil	2.805—2.825 mm (0.1104—0.1112 in.)	2.85 mm (0.112 in.)
Piston ring	Ring-to-groove clearance	Top	0.055—0.080 mm (0.0022—0.0031 in.)	0.15 mm (0.006 in.)
		Second	0.030—0.055 mm (0.0012—0.0022 in.)	0.13 mm (0.005 in.)
	Ring end gap	Top	0.20—0.35 mm (0.008—0.014 in.)	0.60 mm (0.024 in.)
		Second	0.40—0.55 mm (0.016—0.022 in.)	0.70 mm (0.028 in.)
		Oil	0.20—0.70 mm (0.008—0.028 in.)	0.80 mm (0.031 in.)
Piston pin	O.D.		21.962—21.965 mm (0.8646—0.8648 in.)	21.954 mm (0.8643 in.)
	Pin-to-piston clearance		−0.0050 to +0.0010 mm (−0.00020 to +0.00004 in.)	0.004 mm (0.0002 in.)
Connecting rod	Pin-to-rod clearance		0.005—0.014 mm (0.0002—0.0006 in.)	0.019 mm (0.0007 in.)
	Small-end bore diameter		21.970—21.976 mm (0.8650—0.8652 in.)	———
	Large-end bore diameter		58.0 mm (2.28 in.)	———
	End play installed on crankshaft		0.15—0.35 mm (0.006—0.014 in.)	0.45 mm (0.018 in.)
Crankshaft	Main journal diameter		71.976—72.000 mm (2.8337—2.8346 in.)	———
	Rod journal diameter		54.976—55.000 mm (2.1644—2.1654 in.)	———
	Rod/main journal taper		0.005 mm (0.0002 in.) max.	0.010 mm (0.0004 in.)
	Rod/main journal out-of-round		0.005 mm (0.0002 in.) max.	0.010 mm (0.0004 in.)
	End play		0.10—0.35 mm (0.004—0.014 in.)	0.45 mm (0.018 in.)
	Runout		0.025 mm (0.0010 in.) max.	0.03 mm (0.0012 in.)
Crankshaft bearing	Main bearing-to-journal oil clearance		0.020—0.044 mm (0.0008—0.0017 in.)	0.050 mm (0.0020 in.)
	Rod bearing clearance		0.020—0.044 mm (0.0008—0.0017 in.)	0.050 mm (0.0020 in.)

Engine Lubrication

Item	Measurement	Qualification	Standard or New	Service Limit
Engine oil	Capacity	Engine overhaul	5.0 L (5.3 US qt)	
		Oil change, including filter	4.3 L (4.5 US qt)	
		Oil change, without filter	4.0 L (4.2 US qt)	
Oil pump	Inner-to-outer rotor clearance		0.04—0.16 mm (0.002—0.006 in.)	0.20 mm (0.008 in.)
	Pump housing-to-outer rotor clearance		0.10—0.19 mm (0.004—0.007 in.)	0.20 mm (0.008 in.)
	Pump housing-to-outer rotor axial clearance		0.02—0.07 mm (0.001—0.003 in.)	0.12 mm (0.005 in.)
	Oil pressure with oil temperature at 176 ℉ (80 ℃)	At idle	70 kPa (0.7 kgf/cm^2, 10 psi)	
		At 3,000 rpm	490 kPa (5.0 kgf/cm^2, 71 psi)	

Cooling System

Item	Measurement	Qualification	Standard or New
Radiator	Coolant capacities (including engine, heater, hoses, and reservoir) Use Honda Long Life Antifreeze/ Coolant Type 2	Engine overhaul	8.1 L (2.14 US gal)
		Coolant change	6.2 L (1.64 US gal)
Coolant reservoir	Coolant capacity		0.6 L (0.16 US gal)
Radiator cap	Opening pressure		93—123 kPa (0.95—1.25 kgf/cm^2, 14—18 psi)
Thermostat	Opening temperature	Begins to open	169—176 ℉ (76—80 ℃)
		Fully open	194 ℉ (90 ℃)
	Valve lift at fully open		10.0 mm (0.39 in.) min.

Fuel and Emissions

Item	Measurement	Qualification	Standard or New
Fuel pressure regulator	Pressure with fuel pressure gauge connected		390—440 kPa (4.0—4.5 kgf/cm^2, 57—64 psi)
Fuel tank	Capacity		83.3 L (22.01 US gal)
Engine idle	Idle speed without load	In N or P position	730±50 rpm
	Idle speed with high electrical load (A/C switch ON, temperature set to Max Cool, blower fan on High, and headlights on high beam)	In N or P position	730±50 rpm

Standards and Service Limits

Automatic Transmission and A/T Differential

Item	Measurement	Qualification	Standard or New	Service Limit
Automatic transmission fluid	Capacity Use Honda ATF-Z1	Fluid change	3.1 L (3.3 US qt)	
		Overhaul	8.1 L (8.6 US qt) (2006 models) 8.0 L (8.4 US qt) (2007 models)	
ATF pressure	Line pressure	At 2,000 rpm in N or P position	950—1,010 kPa (9.7—10.3 kgf/cm², 140—146 psi)	900 kPa (9.2 kgf/cm², 130 psi)
	5th clutch pressure	At 2,000 rpm in D position	950—1,010 kPa (9.7—10.3 kgf/cm², 140—146 psi)	890 kPa (9.1 kgf/cm², 130 psi)
	4th clutch pressure	At 2,000 rpm in D position	950—1,010 kPa (9.7—10.3 kgf/cm², 140—146 psi)	890 kPa (9.1 kgf/cm², 130 psi)
	3rd clutch pressure	At 2,000 rpm in D position	950—1,010 kPa (9.7—10.3 kgf/cm², 140—146 psi)	890 kPa (9.1 kgf/cm², 130 psi)
	2nd clutch pressure	At 2,000 rpm in 2 position	950—1,010 kPa (9.7—10.3 kgf/cm², 140—146 psi)	890 kPa (9.1 kgf/cm², 130 psi)
	1st clutch pressure	At 2,000 rpm in 1 position	950—1,010 kPa (9.7—10.3 kgf/cm², 140—146 psi)	890 kPa (9.1 kgf/cm², 130 psi)
	1st-hold clutch pressure	At 2,000 rpm in 1 position	800—880 kPa (8.2—9.0 kgf/cm², 120—130 psi)	760 kPa (7.7 kgf/cm², 110 psi)
Torque converter	Stall speed Check with vehicle on level ground		1,950 rpm	1,800—2,100 rpm
Clutch	Clutch end-plate-to-top-disc clearance	1st	———	1.15—1.35 mm (0.045—0.053 in.)
		2nd	———	1.05—1.25 mm (0.041—0.049 in.)
		3rd	———	0.8—1.0 mm (0.031—0.039 in.)
		4th, 5th	———	0.75—0.95 mm (0.030—0.037 in.)
		1st-hold	———	0.6—1.0 mm (0.024—0.039 in.)
	Clutch return spring free length	1st	68.3 mm (2.69 in.)	66.3 mm (2.61 in.)
		2nd	48.3 mm (1.90 in.)	46.3 mm (1.82 in.)
		3rd	52.0 mm (2.05 in.)	50.0 mm (1.97 in.)
		4th	37.4 mm (1.47 in.)	35.4 mm (1.39 in.)
		5th	50.0 mm (1.97 in.)	48.0 mm (1.89 in.)
	Clutch disc thickness		1.94 mm (0.076 in.)	———
	Clutch plate thickness	1st	1.6 mm (0.063 in.)	When discolored
		2nd	1.8 mm (0.071 in.)	When discolored
		3rd	2.0 mm (0.079 in.)	When discolored
		4th, 5th	1.6 mm (0.063 in.)	When discolored
		1st-hold	1.8 mm (0.071 in.)	When discolored
	1st clutch end plate thickness	Mark 1	3.1 mm (0.122 in.)	When discolored
		Mark 2	3.2 mm (0.126 in.)	When discolored
		Mark 3	3.3 mm (0.130 in.)	When discolored
		Mark 4	3.4 mm (0.134 in.)	When discolored
		Mark 5	3.5 mm (0.138 in.)	When discolored
		Mark 6	3.6 mm (0.142 in.)	When discolored
		Mark 7	3.7 mm (0.146 in.)	When discolored
		Mark 8	3.8 mm (0.150 in.)	When discolored
		Mark 9	3.9 mm (0.154 in.)	When discolored
	1st-hold clutch plate B thickness		5.0 mm (0.197 in.)	When discolored

Item	Measurement	Qualification	Standard or New	Service Limit
Clutch (cont'd)	2nd, 3rd, 4th, 5th clutch end plate thickness	Mark 1	2.1 mm (0.083 in.)	When discolored
		Mark 2	2.2 mm (0.087 in.)	When discolored
		Mark 3	2.3 mm (0.091 in.)	When discolored
		Mark 4	2.4 mm (0.094 in.)	When discolored
		Mark 5	2.5 mm (0.098 in.)	When discolored
		Mark 6	2.6 mm (0.102 in.)	When discolored
		Mark 7	2.7 mm (0.106 in.)	When discolored
		Mark 8	2.8 mm (0.110 in.)	When discolored
		Mark 9	2.9 mm (0.114 in.)	When discolored
Stator shaft	I.D. at needle bearing contact area	Torque converter side	27.000—27.021 mm (1.063—1.064 in.)	When worn or damaged
		ATF pump side	31.000—31.025 mm (1.220—1.221 in.)	———
	I.D. at mainshaft sealing ring contact area		31.000—31.025 mm (1.220—1.221 in.)	31.05 mm (1.222 in.)
ATF pump	Gear-to-body thrust clearance		0.03—0.06 mm (0.001—0.002 in.)	0.07 mm (0.003 in.)
	Gear-to-body clearance	Drive gear	0.210—0.265 mm (0.008—0.010 in.)	———
		Driven gear	0.070—0.125 mm (0.003—0.005 in.)	———
	Driven gear I.D.		14.016—14.034 mm (0.5518—0.5525 in.)	When worn or damaged
	Driven gear shaft O.D.		13.980—13.990 mm (0.5504—0.5508 in.)	When worn or damaged
Reverse shift fork	Fork finger thickness		5.90—6.00 mm (0.220—0.236 in.)	5.4 mm (0.213 in.)
Park gear and pawl	———		———	When worn or damaged
Regulator valve body	Shift fork shaft bore I.D.		14.000—14.010 mm (0.5512—0.5516 in.)	———
	Shift fork shaft/servo valve bore I.D.		37.000—37.039 mm (1.4567—1.4582 in.)	37.045 mm (1.4585 in.)
	Mainshaft sealing ring contact I.D.		31.000—31.025 mm (1.220—1.221 in.)	31.05 mm (1.222 in.)
Main valve body	Third shaft sealing ring contact I.D.		35.000—35.025 mm (1.3780—1.3789 in.)	35.05 mm (1.3799 in.)
ATF guide collar	Secondary shaft sealing ring contact I.D.		29.000—29.021 mm (1.1417—1.1426 in.)	29.05 mm (1.1437 in.)
Mainshaft	Diameter at stator shaft needle bearing contact area		22.984—23.000 mm (0.9049—0.9055 in.)	When worn or damaged
	5th gear collar diameter at needle bearing contact area		39.975—39.991 mm (1.5738—1.5744 in.)	When worn or damaged
	5th gear collar length		48.7—48.8 mm (1.917—1.921 in.)	———
	5th gear collar flange thickness		5.15—5.30 mm (0.203—0.209 in.)	When worn or damaged
	5th gear I.D.		46.000—46.016 mm (1.8110—1.8116 in.)	When worn or damaged
	5th gear axial clearance		0.10—0.22 mm (0.004—0.009 in.)	———
	Sealing ring thickness		1.90—1.96 mm (0.074—0.077 in.)	1.85 mm (0.073 in.)
	Sealing ring groove width		2.025—2.060 mm (0.080—0.081 in.)	2.08 mm (0.082 in.)

(cont'd)

Standards and Service Limits

Automatic Transmission and A/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Countershaft	Diameter at bearing contact area	Torque converter housing bearing	40.505—40.515 mm (1.5947—1.5951 in.)	When worn or damaged
		5th gear	34.975—34.991 mm (1.3770—1.3776 in.)	When worn or damaged
	Diameter of 2nd gear at needle bearing contact area		61.975—61.991 mm (2.2400—2.2406 in.)	When worn or damaged
	Reverse gear collar O.D.		39.979—40.000 mm (1.5740—1.5748 in.)	When worn or damaged
	Reverse selector hub O.D.		55.885—55.900 mm (2.200—2.201 in.)	When worn or damaged
	Cotter thickness	4th gear	1.99—2.02 mm (0.078—0.080 in.)	———
		2nd gear	7.74—7.52 mm (0.295—0.296 in.)	———
	I.D. of gears	5th gear	41.000—41.016 mm (1.6142—1.6148 in.)	When worn or damaged
		Idler gear	70.000—70.019 mm (2.7559—2.7567 in.)	When worn or damaged
		Reverse gear	46.000—46.016 mm (1.8110—1.8116 in.)	When worn or damaged
	Axial clearance of gears	2nd gear	0.005—0.040 mm (0.0002—0.0016 in.)	———
		5th gear	0.12—0.27 mm (0.0047—0.0106 in.)	———
		Idler gear	0.005—0.040 mm (0.0002—0.0016 in.)	———
		Reverse gear	0.10—0.25 mm (0.0039—0.0098 in.)	———
	61 mm washer thickness	A	1.525 mm (0.0600 in.)	When worn or damaged
		B	1.505 mm (0.0593 in.)	When worn or damaged
		C	1.485 mm (0.0585 in.)	When worn or damaged
		D	1.465 mm (0.0577 in.)	When worn or damaged
		E	1.445 mm (0.0569 in.)	When worn or damaged
		F	1.425 mm (0.0561 in.)	When worn or damaged
		G	1.405 mm (0.0553 in.)	When worn or damaged
	50.8 mm washer thickness	A	1.91 mm (0.0752 in.)	When worn or damaged
		B	1.93 mm (0.0760 in.)	When worn or damaged
		C	1.95 mm (0.0768 in.)	When worn or damaged
		D	1.97 mm (0.0776 in.)	When worn or damaged
		E	1.99 mm (0.0783 in.)	When worn or damaged
		F	2.01 mm (0.0791 in.)	When worn or damaged
		G	2.03 mm (0.0794 in.)	When worn or damaged
		H	2.05 mm (0.0807 in.)	When worn or damaged
		I	2.07 mm (0.0815 in.)	When worn or damaged
		J	2.09 mm (0.0823 in.)	When worn or damaged
		K	2.11 mm (0.0831 in.)	When worn or damaged
		L	2.13 mm (0.0839 in.)	When worn or damaged
		M	2.15 mm (0.0846 in.)	When worn or damaged
		N	2.17 mm (0.0854 in.)	When worn or damaged
		O	2.19 mm (0.0862 in.)	When worn or damaged
		P	2.21 mm (0.0870 in.)	When worn or damaged
		Q	2.23 mm (0.0878 in.)	When worn or damaged
		R	2.25 mm (0.0886 in.)	When worn or damaged
		S	2.27 mm (0.0894 in.)	When worn or damaged
		T	2.29 mm (0.0902 in.)	When worn or damaged
		U	2.31 mm (0.0909 in.)	When worn or damaged
		V	2.33 mm (0.0917 in.)	When worn or damaged
		W	2.35 mm (0.0925 in.)	When worn or damaged
		X	2.37 mm (0.0933 in.)	When worn or damaged
		Y	2.39 mm (0.0941 in.)	When worn or damaged
		Z	2.41 mm (0.0949 in.)	When worn or damaged
		AA	2.43 mm (0.0957 in.)	When worn or damaged
		AB	2.45 mm (0.0965 in.)	When worn or damaged
	35 x 47 mm thrust washer thickness		5.97—6.00 mm (0.2350—0.2362 in.)	When worn or damaged

Item	Measurement	Qualification	Standard or New	Service Limit
Secondary shaft	Diameter at bearing contact area	2nd gear	43.986—43.999 mm (1.7317—1.7322 in.)	When worn or damaged
		Torque converter housing bearing	32.002—32.015 mm (1.2599—1.2604 in.)	When worn or damaged
		Torque converter housing bearing (shaft end side)	28.592—28.608 mm (1.1257—1.1263 in.)	When worn or damaged
	Diameter of 1st gear collar at needle bearing contact area		38.975—38.991 mm (1.5344—1.5351 in.)	When worn or damaged
	I.D. of gears	1st gear	44.000—44.013 mm (1.7323—1.7328 in.)	When worn or damaged
		2nd gear	50.00—50.02 mm (1.9685—1.9693 in.)	When worn or damaged
	Axial clearance of gears	1st gear	0.100—0.130 mm (0.0039—0.0051 in.)	———
		2nd gear	0.060—0.228 mm (0.0024—0.0090 in.)	———
	52 mm thrust washer thickness	M	2.405 mm (0.095 in.)	When worn or damaged
		L	2.430 mm (0.096 in.)	When worn or damaged
		K	2.455 mm (0.097 in.)	When worn or damaged
		J	2.480 mm (0.098 in.)	When worn or damaged
		I	2.505 mm (0.099 in.)	When worn or damaged
		H	2.530 mm (0.100 in.)	When worn or damaged
		G	2.555 mm (0.101 in.)	When worn or damaged
		F	2.580 mm (0.102 in.)	When worn or damaged
		E	2.605 mm (0.103 in.)	When worn or damaged
		D	2.630 mm (0.104 in.)	When worn or damaged
		C	2.655 mm (0.105 in.)	When worn or damaged
		B	2.680 mm (0.106 in.)	When worn or damaged
		A	2.705 mm (0.106 in.)	When worn or damaged
	1st gear collar length		63.3—63.4 mm (2.4921—2.4961 in.)	———
	Sealing ring thickness		1.91—1.97 mm (0.075—0.078 in.)	1.86 mm (0.073 in.)
	Sealing ring groove width		2.025—2.060 mm (0.080—0.081 in.)	2.08 mm (0.082 in.)
	ATF feed pipe O.D.	1st clutch	11.47—11.48 mm (0.4516—0.4520 in.)	11.45 mm (0.4508 in.)
		1st-hold clutch	5.97—5.98 mm (0.2350—0.2354 in.)	5.95 mm (0.2343 in.)
	Feed pipe bushing I.D.	1st clutch	11.518—11.530 mm (0.4535—0.4539 in.)	11.545 mm (0.4545 in.)
		1st-hold clutch	6.018—6.030 mm (0.2369—0.2374 in.)	6.045 mm (0.2380 in.)

(cont'd)

Automatic Transmission and A/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Secondary shaft (cont'd)	65 mm thrust shim thickness	0A	0.80 mm (0.031 in.)	When worn or damaged
		A	0.84 mm (0.033 in.)	When worn or damaged
		B	0.88 mm (0.035 in.)	When worn or damaged
		C	0.92 mm (0.036 in.)	When worn or damaged
		D	0.96 mm (0.038 in.)	When worn or damaged
		E	1.00 mm (0.039 in.)	When worn or damaged
		F	1.04 mm (0.041 in.)	When worn or damaged
		G	1.08 mm (0.043 in.)	When worn or damaged
		H	1.12 mm (0.044 in.)	When worn or damaged
		I	1.16 mm (0.046 in.)	When worn or damaged
		J	1.20 mm (0.047 in.)	When worn or damaged
		K	1.24 mm (0.049 in.)	When worn or damaged
		L	1.28 mm (0.050 in.)	When worn or damaged
		M	1.32 mm (0.052 in.)	When worn or damaged
		N	1.36 mm (0.054 in.)	When worn or damaged
		O	1.40 mm (0.055 in.)	When worn or damaged
		P	1.44 mm (0.057 in.)	When worn or damaged
		Q	1.48 mm (0.058 in.)	When worn or damaged
		R	1.52 mm (0.060 in.)	When worn or damaged
		S	1.56 mm (0.061 in.)	When worn or damaged
		T	1.60 mm (0.063 in.)	When worn or damaged
		U	1.64 mm (0.065 in.)	When worn or damaged
		V	1.68 mm (0.066 in.)	When worn or damaged
		W	1.72 mm (0.068 in.)	When worn or damaged
		X	1.76 mm (0.069 in.)	When worn or damaged
		Y	1.80 mm (0.071 in.)	When worn or damaged
		Z	1.84 mm (0.072 in.)	When worn or damaged
		AA	1.88 mm (0.074 in.)	When worn or damaged
		AB	1.92 mm (0.076 in.)	When worn or damaged
		AC	1.96 mm (0.077 in.)	When worn or damaged
		AD	2.00 mm (0.079 in.)	When worn or damaged
		AE	2.04 mm (0.080 in.)	When worn or damaged
		AF	2.08 mm (0.082 in.)	When worn or damaged
		AG	2.12 mm (0.083 in.)	When worn or damaged
		AH	2.16 mm (0.085 in.)	When worn or damaged
		AI	2.20 mm (0.087 in.)	When worn or damaged
		AJ	2.24 mm (0.088 in.)	When worn or damaged
		AK	2.28 mm (0.090 in.)	When worn or damaged
		AL	2.32 mm (0.091 in.)	When worn or damaged

Item	Measurement	Qualification	Standard or New	Service Limit
Intermediary shaft	I.D. of 3rd gear		36.000—36.016 mm (1.4173—1.4179 in.)	When worn or damaged
	Axial clearance of 3rd gear		0.005—0.045 mm (0.0002—0.0018 in.)	———
	Cotter thickness		2.99—3.02 mm (0.1177—0.1189 in.)	———
	Sealing ring thickness		1.89—1.95 mm (0.0744—0.0768 in.)	1.84 mm (0.0724 in.)
	Sealing ring groove width		2.025—2.060 mm (0.080—0.081 in.)	2.08 mm (0.082 in.)
	53 mm splined washer thickness	A	3.995 mm (0.1573 in.)	When worn or damaged
		B	4.015 mm (0.1581 in.)	When worn or damaged
		C	4.035 mm (0.1589 in.)	When worn or damaged
		D	4.055 mm (0.1596 in.)	When worn or damaged
		E	4.075 mm (0.1604 in.)	When worn or damaged
		F	4.095 mm (0.1612 in.)	When worn or damaged
		G	4.115 mm (0.1620 in.)	When worn or damaged
		H	4.135 mm (0.1628 in.)	When worn or damaged
		I	4.155 mm (0.1636 in.)	When worn or damaged
		J	4.175 mm (0.1644 in.)	When worn or damaged
		K	4.195 mm (0.1652 in.)	When worn or damaged
		L	4.215 mm (0.1659 in.)	When worn or damaged
		M	4.235 mm (0.1667 in.)	When worn or damaged
		N	4.255 mm (0.1675 in.)	When worn or damaged
	26.5 mm washer thickness	A	1.05 mm (0.041 in.)	When worn or damaged
		B	1.13 mm (0.044 in.)	When worn or damaged
		C	1.21 mm (0.048 in.)	When worn or damaged
		D	1.29 mm (0.051 in.)	When worn or damaged
		E	1.37 mm (0.054 in.)	When worn or damaged
		F	1.45 mm (0.057 in.)	When worn or damaged
		G	1.53 mm (0.060 in.)	When worn or damaged
		H	1.61 mm (0.063 in.)	When worn or damaged
		I	1.69 mm (0.067 in.)	When worn or damaged
		J	1.77 mm (0.070 in.)	When worn or damaged
		K	1.85 mm (0.073 in.)	When worn or damaged
		L	1.93 mm (0.076 in.)	When worn or damaged
		M	2.01 mm (0.079 in.)	When worn or damaged
		N	2.09 mm (0.082 in.)	When worn or damaged
Reverse idler gear	Gear shaft O.D.		13.99—14.00 mm (0.5508—0.5512 in.)	When worn or damaged
	I.D. of transmission housing of gear shaft contact area		14.006—14.024 mm (0.5514—0.5521 in.)	———
	I.D.		18.007—18.020 mm (0.7089—0.7094 in.)	When worn or damaged
	Axial clearance		0.07—0.38 mm (0.003—0.015 in.)	———
	Thrust washer thickness	Transmission housing	0.97—1.05 mm (0.038—0.041 in.)	———
		Holder side	0.97—1.05 mm (0.038—0.041 in.)	———

(cont'd)

Standards and Service Limits

Automatic Transmission and A/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New			
			Wire Diameter	O.D.	Free Length	No. of Coil
Main valve body spring (see page 14-307)	Cooler check valve spring		0.6 mm (0.024 in.)	5.8 mm (0.228 in.)	14.5 mm (0.571 in.)	6.8
	Lock-up timing valve spring		0.65 mm (0.026 in.)	6.6 mm (0.260 in.)	34.8 mm (1.370 in.)	15.6
	Shift valve D spring		0.7 mm (0.028 in.)	6.6 mm (0.260 in.)	32.2 mm (1.268 in.)	13.4
	Shift valve B spring		0.8 mm (0.031 in.)	6.6 mm (0.260 in.)	49.1 mm (1.933 in.)	21.7
	Shift valve A spring		0.8 mm (0.031 in.)	6.6 mm (0.260 in.)	49.1 mm (1.933 in.)	21.7
	Modulator valve spring		1.6 mm (0.063 in.)	10.4 mm (0.409 in.)	33.5 mm (1.319 in.)	9.8
	CPC valve C spring		0.7 mm (0.028 in.)	6.1 mm (0.240 in.)	17.8 mm (0.701 in.)	7.9
	Shift valve E spring		0.8 mm (0.031 in.)	7.1 mm (0.280 in.)	49.0 mm (1.929 in.)	17.2
	Torque converter check valve spring		1.1 mm (0.043 in.)	8.6 mm (0.339 in.)	35.0 mm (1.378 in.)	12.6
	Relief valve spring		1.1 mm (0.043 in.)	8.6 mm (0.339 in.)	32.1 mm (1.264 in.)	11.2
	Lubrication control valve spring		0.7 mm (0.028 in.)	7.7 mm (0.303 in.)	28.8 mm (1.134 in.)	10.4
	Lock-up shift valve spring		0.9 mm (0.035 in.)	7.6 mm (0.299 in.)	63.0 mm (2.480 in.)	22.4
Secondary valve body spring (see page 14-309)	Reverse CPC valve spring		0.7 mm (0.028 in.)	6.1 mm (0.240 in.)	17.8 mm (0.701 in.)	7.9
	Servo control valve spring		0.7 mm (0.028 in.)	6.6 mm (0.260 in.)	35.7 mm (1.406 in.)	17.2
	Shift valve C spring		0.8 mm (0.031 in.)	6.6 mm (0.260 in.)	49.1 mm (1.933 in.)	21.7
	CPC valve A spring		0.7 mm (0.028 in.)	6.1 mm (0.240 in.)	17.8 mm (0.701 in.)	7.9
	Kick-down valve spring		0.8 mm (0.031 in.)	6.6 mm (0.260 in.)	49.1 mm (1.933 in.)	21.7
	CPC valve B spring		0.7 mm (0.028 in.)	6.1 mm (0.240 in.)	17.8 mm (0.701 in.)	7.9
Regulator valve body spring (see page 14-310)	3rd accumulator spring		3.1 mm (0.122 in.)	19.6 mm (0.772 in.)	41.4 mm (1.630 in.)	5.5
	Lock-up control valve spring		0.7 mm (0.028 in.)	6.6 mm (0.260 in.)	42.9 mm (1.689 in.)	14.2
			0.8 mm (0.031 in.)	6.6 mm (0.260 in.)	44.3 mm (1.744 in.)	25.5
	Regulator valve spring B		1.4 mm (0.055 in.)	8.8 mm (0.346 in.)	44.0 mm (1.732 in.)	12.0
	Regulator valve spring A		1.85 mm (0.073 in.)	14.7 mm (0.579 in.)	86.9 mm (3.421 in.)	16.2
	Stator reaction spring		5.5 mm (0.217 in.)	37.4 mm (1.472 in.)	30.3 mm (1.193 in.)	2.1

Item	Measurement	Qualification	Standard or New			
			Wire Diameter	O.D.	Free Length	No. of Coil
Accumulator body spring (see page 14-311)	1st-hold accumulator spring		2.0 mm (0.079 in.)	13.1 mm (0.516 in.)	42.9 mm (1.689 in.)	9.8
	4th accumulator spring		3.0 mm (0.118 in.)	19.6 mm (0.772 in.)	45.3 mm (1.783 in.)	6.4
	1st accumulator spring A		2.2 mm (0.087 in.)	17.7 mm (0.697 in.)	77.6 mm (3.055 in.)	12.1
	1st accumulator spring B		2.0 mm (0.079 in.)	11.1 mm (0.437 in.)	49.0 mm (1.929 in.)	10.0
	2nd accumulator spring		3.1 mm (0.122 in.)	19.6 mm (0.772 in.)	53.4 mm (2.102 in.)	7.5
	5th accumulator spring A		2.2 mm (0.087 in.)	16.4 mm (0.646 in.)	75.7 mm (2.980 in.)	14.2
	5th accumulator spring B		2.0 mm (0.079 in.)	10.0 mm (0.394 in.)	45.5 mm (1.791 in.)	11.6

Item	Measurement	Qualification	Standard or New	Service Limit
A/T differential carrier	Pinion shaft contact area I.D.		18.000—18.025 mm (0.7087—0.7096 in.)	———
	Carrier-to-pinion shaft clearance		0.013—0.054 mm (0.0005—0.0021 in.)	0.1 mm (0.004 in.)
	Driveshaft contact area I.D.		30.025—30.055 mm (1.182—1.183 in.)	———
	Carrier-to-driveshaft clearance		0.045—0.096 mm (0.002—0.004 in.)	0.13 mm (0.005 in.)
	Carrier-to-intermediate shaft clearance		0.080—0.126 mm (0.003—0.005 in.)	———
	Tapered roller bearing starting torque (preload)	For new bearing	3.9—5.1 N·m (40—52 kgf·cm, 35—45 lbf·in.)	Adjust
		For used bearing	3.6—4.8 N·m (37—49 kgf·cm, 32—43 lbf·in.)	Adjust
A/T differential pinion gear	Backlash		0.05—0.15 mm (0.002—0.006 in.)	———
	I.D.		18.042—18.066 mm (0.7103—0.7113 in.)	———
	Pinion gear-to-pinion shaft clearance		0.055—0.095 mm (0.0022—0.0037 in.)	0.12 mm (0.005 in.)

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Automatic Transmission and A/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Transfer output shaft	Diameter at bearing contact area	Transmission housing side	21.977—21.990 mm (0.8652—0.8657 in.)	21.92 mm (0.8630 in.)
		Torque converter housing side	40.002—40.018 mm (1.5749—1.5755 in.)	39.95 mm (1.5728 in.)
	Axial clearance		0—0.39 mm (0—0.015 in.)	———
	28.5 mm thrust washer thickness	A	1.82 mm (0.0717 in.)	When worn or damaged
		B	1.84 mm (0.0724 in.)	When worn or damaged
		C	1.86 mm (0.0732 in.)	When worn or damaged
		D	1.88 mm (0.0740 in.)	When worn or damaged
		E	1.90 mm (0.0748 in.)	When worn or damaged
		F	1.92 mm (0.0756 in.)	When worn or damaged
		G	1.94 mm (0.0764 in.)	When worn or damaged
		H	1.96 mm (0.0772 in.)	When worn or damaged
		I	1.98 mm (0.0780 in.)	When worn or damaged
		J	2.00 mm (0.0787 in.)	When worn or damaged
		K	2.02 mm (0.0795 in.)	When worn or damaged
		L	2.04 mm (0.0803 in.)	When worn or damaged
		M	2.06 mm (0.0811 in.)	When worn or damaged
		N	2.08 mm (0.0819 in.)	When worn or damaged
		O	2.10 mm (0.0827 in.)	When worn or damaged
		P	2.12 mm (0.0835 in.)	When worn or damaged
		Q	2.14 mm (0.0843 in.)	When worn or damaged
		R	2.16 mm (0.0850 in.)	When worn or damaged
		S	2.18 mm (0.0858 in.)	When worn or damaged
		T	2.20 mm (0.0866 in.)	When worn or damaged
		U	2.22 mm (0.0874 in.)	When worn or damaged
		V	2.24 mm (0.0882 in.)	When worn or damaged
		W	2.26 mm (0.0890 in.)	When worn or damaged
		X	2.28 mm (0.0898 in.)	When worn or damaged
		Y	2.30 mm (0.0906 in.)	When worn or damaged
		Z	2.32 mm (0.0913 in.)	When worn or damaged
		AA	2.34 mm (0.0921 in.)	When worn or damaged
Transfer assembly fluid	Capacity	Fluid change	0.43 L (0.45 us qt)	
		Overhaul	0.45 L (0.48 us qt)	
Transfer assembly	Diameter of transfer hypoid drive gear/shaft assembly at tapered roller bearing contact area	Transfer cover side	50.002—50.018 mm (1.9686—1.9692 in.)	49.95 mm (1.9665 in.)
		Transfer gear side	24.987—25.000 mm (0.9837—0.9843 in.)	24.93 mm (0.9815 in.)
	Diameter of transfer output shaft (hypoid gear) at tapered roller bearing contact area	Transfer gear side	40.002—40.018 mm (1.5749—1.5755 in.)	39.95 mm (1.5728 in.)
		Companion flange side	27.975—27.990 mm (1.1014—1.1020 in.)	27.92 mm (1.0992 in.)
	Transfer gear backlash		0.06—0.17 mm (0.002—0.007 in.)	Adjust
	Tapered roller bearing total starting torque (preload)		3.20—4.16 N·m (32.6—42.4 kgf·cm, 28.3—36.8 lbf·in.)	Adjust

Rear Differential

Item	Measurement	Qualification	Standard or New
Rear differential fluid	Capacity Use Honda VTM-4 Differential Fluid	Fluid replacement	2.64 L (2.79 US qt)

Steering

Item	Measurement	Qualification	Standard or New
Steering wheel	Rotational play measured at outside edge	With engine running	0—10 mm (0—0.39 in.)
	Starting load measured at outside edge	With engine running	29 N (3.0 kgf, 6.6 lbf)
Gearbox	Angle of rack guide screw loosened from locked position		20 ° max.
Pump	Output pressure with shut-off valve closed		8,850—9,350 kPa (90—95 kgf/cm², 1,280—1,350 psi)
Power steering fluid	Capacity Use Honda Power Steering Fluid	System overhaul	1.15 L (1.22 US qt)
		Reservoir capacity	0.34 L (0.36 US qt)

Suspension

Item	Measurement	Qualification	Standard or New	Service Limit
Wheel alignment	Camber	Front	−0 °30 ′±1 °	
		Rear	−0 °30 ′±45 ′	
	Camber (Maximum difference left to right)	Front	1 °00 ′	
	Caster	Front	1 °53 ′±1 °	
	Total toe-in	Front	0±2 mm (0±0.08 in.)	
		Rear	0±2 mm (0±0.08 in.)	
	Front wheel turning angle	Inward wheel	37 °54 ′±2 °	
		Outward wheel	30 °16 ′ (reference)	
Wheel	Aluminum wheel runout	Axial	0—0.7 mm (0—0.03 in.)	2.0 mm (0.08 in.)
		Radial	0—0.7 mm (0—0.03 in.)	1.5 mm (0.06 in.)
	Steel wheel runout	Axial	0—1.0 mm (0—0.04 in.)	2.0 mm (0.08 in.)
		Radial	0—1.0 mm (0—0.04 in.)	1.5 mm (0.06 in.)
Wheel bearing	End play	Front	0—0.05 mm (0—0.002 in.)	
		Rear	0—0.05 mm (0—0.002 in.)	
Tire	Front and rear size		P245/65R17 105S	
	Spare tire size		T165/90R17 105M	
	Pressure	Front/Rear	220 kPa (2.2 kgf/cm², 32 psi)	
		Spare	420 kPa (4.3 kgf/cm², 60 psi)	

Standards and Service Limits

Brakes

Item	Measurement	Qualification	Standard or New	Service Limit
Parking brake	Distance traveled when pedal pressed with 294 N (30 kgf, 66 lbf) of force		10 to 12 clicks	
	Shoe lining thickness		3.6—4.3 mm (0.14—0.17 in.)	1.0 mm (0.04 in.)
	Drum I.D.		209.9—210.0 mm (8.264—8.268 in.)	211.0 mm (8.307 in.)
Brake pedal	Pedal height (carpet removed)		155 mm (6 1/8 in.)	
	Free play		1—5 mm (1/16—3/16 in.)	
Brake disc	Thickness	Front	27.9—28.1 mm (1.10—1.11 in.)	26.0 mm (1.02 in.)
		Rear	10.9—11.1 mm (0.43—0.44 in.)	9.0 mm (0.35 in.)
	Runout	Front and rear	———	0.04 mm (0.0016 in.)
	Parallelism	Front and rear	———	0.015 mm (0.0006 in.)
Brake pad	Thickness	Front	11.6—12.2 mm (0.46—0.48 in.)	1.0 mm (0.04 in.)
		Rear	9.6—10.4 mm (0.38—0.41 in.)	1.0 mm (0.04 in.)

Air Conditioning

Item	Measurement	Qualification	Standard or New
Refrigerant	Type		HFC-134a (R-134a)
	Capacity of system	Dual	600—650 g (20.3—22.0 oz)
Refrigerant oil	Type		DENSO ND-OIL 8 (P/N 38897-PR7-A01AH or 38899-PR7-A01)
	Capacity of components	Condenser	45 mL (1 1/2 fl·oz)
		Evaporator	45 mL (1 1/2 fl·oz)
		Each line and hose	10 mL (1/3 fl·oz)
		Compressor	180—195 mL (6—6 1/2 fl·oz)
Compressor	Field coil resistance	At 68 ℉ (20 ℃)	3.9 —4.3 Ω
	Pulley-to-pressure plate clearance		0.35—0.60 mm (0.014—0.024 in.)

Design Specifications

Item	Measurement	Qualification	Specification
DIMENSIONS	Overall length		5,251 mm (206.7 in.)
	Overall width		1,976 mm (77.8 in.)
	Overall height		1,785 mm (70.3 in.)
	Wheelbase		3,100 mm (122.0 in.)
	Track	Front	1,705 mm (67.1 in.)
		Rear	1,700 mm (66.9 in.)
	Ground clearance		208 mm (8.2 in.)
	Seating capacity		Five (5)
WEIGHT	Gross Vehicle Weight Rating (GVWR)		2,745 kg (6,050 lbs)
ENGINE	Type		Water-cooled, 4-stroke SOHC VTEC V6 gasoline engine
	Cylinder arrangement		60 ° V6-cylinder, transverse
	Bore and stroke		89.0 x 93.0 mm (3.50 x 3.66 in.)
	Displacement		3,471 cm^3 (mL) (222 cu in.)
	Compression ratio		10.0
	Valve train		Belt driven, SOHC VTEC 4 valves per cylinder
	Ignition system		DLI (Distributorless Ignition)
	Lubrication system		Forced, wet sump, with trochoid pump
	Oil pump displacement	At 6,000 rpm	48.9 L (51.7 US qt)/minute
	Water pump displacement	At 6,000 rpm	176 L (186 US qt)/minute
	Fuel required	Normal driving	Unleaded gasoline with 86 Pump Octane Number or higher
		Towing	Towing performance can be affected by high altitude, high temperature, or when climbing steep grades. Therefore, premium fuel is recommended when towing more than 1,590 kg (3,500 lbs).
STARTER	Type		Gear reduction
	Normal output		1.6 kW
	Nominal voltage		12 V
	Hour rating		30 seconds
	Direction of rotation		Clockwise as viewed from gear end

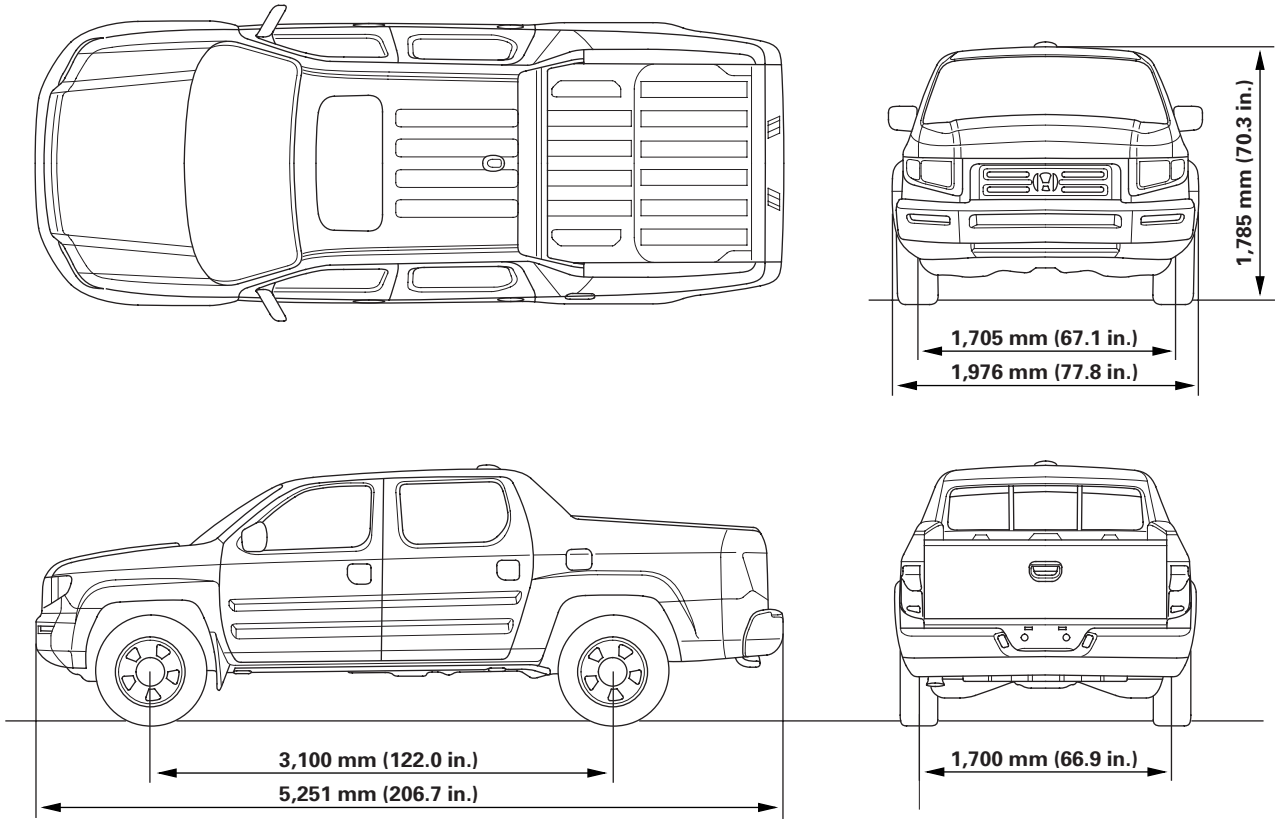
(cont'd)

Design Specifications

Item	Measurement	Qualification	Specification
AUTOMATIC TRANSMISSION	Type	BJFA	Electronically-controlled automatic, 5-speed forward, 1 reverse
	Primary reduction		Direct 1:1
	Gear ratio	1st	2.693
		2nd	1.565
		3rd	1.023
		4th	0.729
		5th	0.530
		Reverse	1.888
	Final reduction	Type	Single helical gear
		Gear ratio	4.533
STEERING	Type		Hydraulic power-assisted rack and pinion
	Gear ratio		42.3
	Overall ratio		17.9
	Turns, lock-to-lock		3.38
	Steering wheel diameter		390 mm (15.4 in.)
SUSPENSION	Type	Front	Strut with ''L'' (lower) arm
		Rear	Multi-link with trailing arm
	Shock absorber	Front	Twin tube gas
		Rear	Twin tube gas
WHEEL ALIGNMENT	Camber	Front	−0 °30 ′
		Rear	−0 °30 ′
	Camber (Max difference left to right)	Front	1 °00 ′
	Caster	Front	1 °53 ′
	Total toe	Front	0 mm (0 in.)
		Rear	0 mm (0 in.)
	Front wheel turning angle	Inside wheel	37 °54 ′
		Outside wheel	30 °16 ′
	SAI at camber (kingpin axis)		12 °24 ′
BRAKES	Type of service brake	Front	Power-assisted self-adjusting ventilated disc
		Rear	Power-assisted self-adjusting solid disc
	Type of parking brake		Foot type mechanical actuating, rear wheels
	Pad friction surface area (swept area)	Front	59.2 cm^2 (9.18 sq in.) x 2
		Rear	34.4 cm^2 (5.33 sq in.) x 2
	Parking brake shoe friction surface area		60.2 cm^2 (9.33 sq in.) x 2
TIRES	Size of front and rear tires		P245/65R17 105S
	Size of spare tire		T165/90R17 105M
	Tire pressure	Front/Rear	220 kPa (2.2 kgf/cm^2, 32 psi)
		Spare	420 kPa (4.3 kgf/cm^2, 61 psi)
AIR CONDITIONING	Cooling capacity	Front	4,375 Kcal/h (17,300 BTU/h)
		Rear	3,119 Kcal/h (12,400 BTU/h)
	Compressor	Type/Manufacturer	Swash plate/DENSO
		Number of cylinders	10
		Capacity	214.7 mL/rev. (13.09 cu in./rev.)
		Maximum speed	7,600 rpm
		Lubricant capacity	180 mL (6 fl·oz)
		Lubricant type	DENSO ND-OIL 8
	Condenser	Type	Corrugated fin
	Evaporator	Type	Corrugated fin

Item	Measurement	Qualification	Specification	
AIR CONDITIONING (cont'd)	Blower	Type	Sirocco fan	
		Motor input (Front)	228 W/12 V	
		Speed control (Front)	Infinite variable	
		Maximum capacity (Front)	490 m^3/h (17,300 cu ft/h)	
	Temperature control		Air-mix type	
	Compressor clutch	Type	Dry, single plate, Poly-V belt drive	
		Electrical power consumption at 68 ℉ (20 ℃)	35 W maximum at 12 V	
	Refrigerant	Type	HFC-134a (R-134a)	
		Quantity (Dual)	600—650 g (20—22 fl·oz)	
ELECTRICAL RATINGS	Battery		12 V—72 Ah/20 HR (12 V—60 Ah/5 HR)	
	Fuses	Under-hood fuse/relay box	120 A, 50 A, 40 A, 30 A, 20 A, 15 A, 10 A, 7.5 A	
		Under-dash fuse/relay box	30 A, 20 A, 15 A, 10 A, 7.5 A	
		Auxiliary under-hood relay box	40 A, 20 A, 15 A, 7.5 A	
	Light bulbs	Headlight high beam	12 V—60 W	
		Headlight low beam	12 V—55 W	
		Front turn signal/front side marker lights	12 V—28/8 W (two filaments) Amber color	
		Rear turn signal lights	12 V—21 W Amber color	
		Brake/taillights	12 V—21/5 W (two filaments)	
		High mount brake light	12 V—3 CP	
		Back-up lights	12 V—18 W	
		Cargo area lights	12 V—3 CP	
		License plate light	12 V—3 CP	
		Ceiling light	12 V—5 W	
		Map lights	12 V—8 W	
		Console box light 1	12 V—3.8 W	
		Console box light 2	12 V—1.4 W	
		Door courtesy lights	12 V—3.8 W	
		Glove box light	12 V—3.4 W	
		Vanity mirror light	12 V—2 W	
		Gauge lights	12 V—LED (non-replaceable)	
		Indicator, panel, ambient light	12 V—LED, 14 V—0.56 W, 0.84 W	
	Clock non-navigation system equipped vehicles	Clock standard daily difference	±2.0 seconds per day or less	
		Electrical characteristics	±2.0 seconds per day or less	
		Temperature characteristics	—20—0 degrees C	±4.0 seconds per day or less
			0—40 degrees C	±2.0 seconds per day or less
			40—60 degrees C	±4.0 seconds per day or less
	Washer reservoir	Capacity	4.5 L (4.7 US qt)	

Body Specifications



Maintenance

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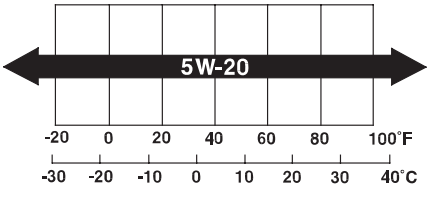
Lubricants and Fluids

For details of the lubrication points and type of lubricants to be applied, refer to the illustrated index and various work procedures (such as Assembly/Reassembly, Replacement, Overhaul, Installation, etc.) contained in each section.

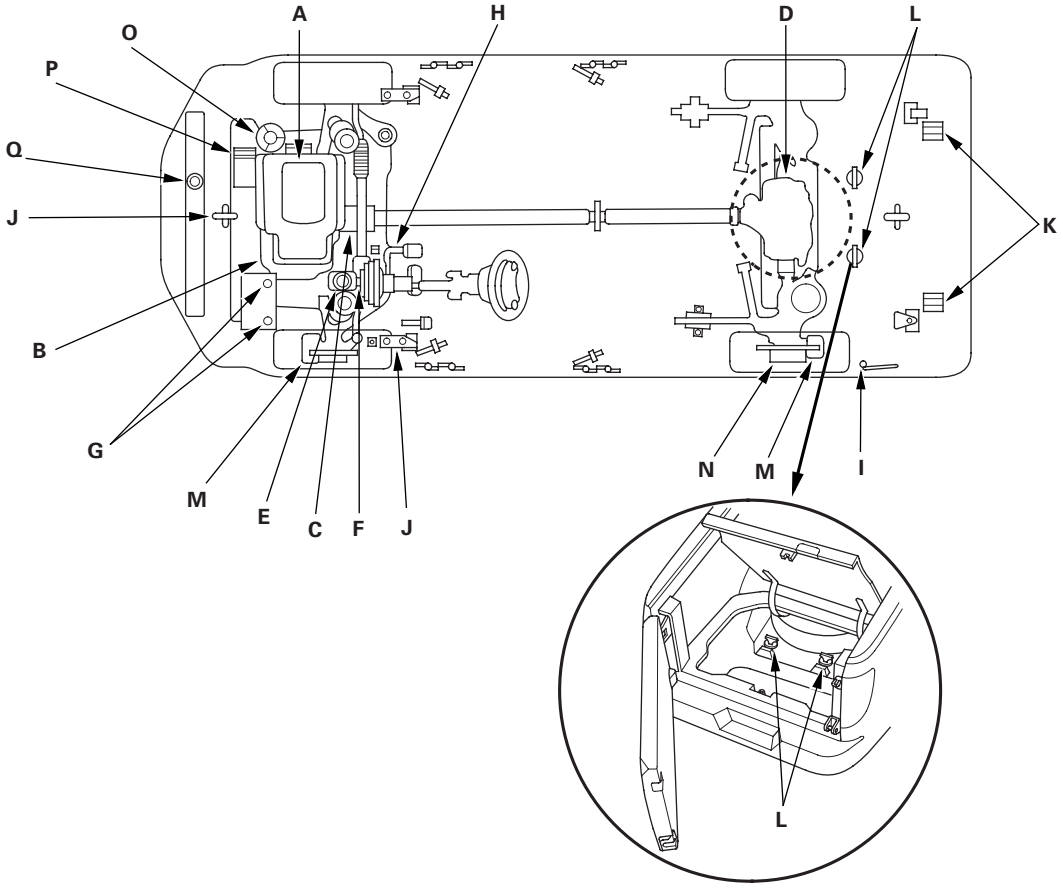
Lubrication Points		Lubricant
A	Engine	Honda Motor Oil: American Honda P/N 08798-9023, Honda Canada P/N CA66806 Use 5W-20 motor oil. Look for the API certification seal on the oil container as shown below. Make sure it says ''For Gasoline Engines.'' SAE Viscosity: See chart.
B	Automatic transmission	Honda Automatic Transmission Fluid (ATF-Z1): American Honda P/N 08200-9001, Honda Canada P/N CA66689 Always use Honda ATF-Z1. Using a non-Honda ATF can affect shift quality.
C	Transfer assembly	Hypoid gear oil GL4 or GL5 Use a SAE 90 or SAE 80W-90 viscosity hypoid gear oil, API classified GL4 or GL5 only Viscosity SAE 90: above 0 ℉ (—18 ℃) SAE 80W-90: below 0 ℉ (—18 ℃)
D	Rear differential	Honda VTM-4 Differential Fluid: P/N 08200-9003
E	Brake system (including VSA lines)	Honda DOT 3 Brake Fluid: P/N 08798-9008 Always use Honda DOT 3 Brake Fluid. Using a non-Honda brake fluid can cause corrosion and decrease the life of the system.
F G H I J K L	Brake booster clevis pin Battery terminals Pedal linkage Fuel fill door Hood hinges and hood latch Tailgate hinges Spare tire tray bolt	Multipurpose Grease
M	Caliper piston boot, caliper pins, and boots	Honda Caliper Grease: P/N 08C30-B0234M
N	Rear brake shoe linkage	Molykote Grease 44MA
O	Power steering system	Honda Power Steering Fluid: P/N 08206-9002 Always use Honda Power Steering Fluid. Using any other type of power steering fluid or automatic transmission fluid can cause increased wear and poor steering in cold weather.
P	Air conditioning compressor	Compressor Oil: DENSO ND-OIL 8 (P/N 38897-PR7-A01) for refrigerant HFC-134a (R-134a)
Q	Cooling system	Honda Long Life Antifreeze/Coolant Type 2: P/N OL 999-9001

API CERTIFICATION SEAL

Recommended Engine Oil
Engine oil viscosity for ambient temperature ranges



NOTE:
- Lubricate all hinges, latches, and locks once a year.
- In corrosive areas, more frequent lubrication is necessary.

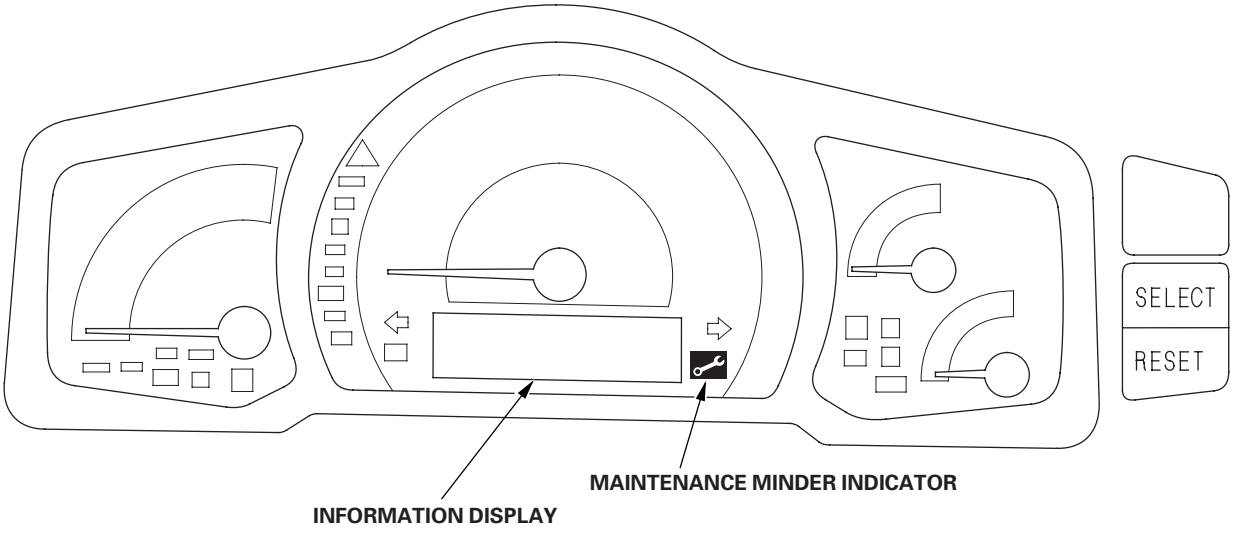


Maintenance Minder

General Information

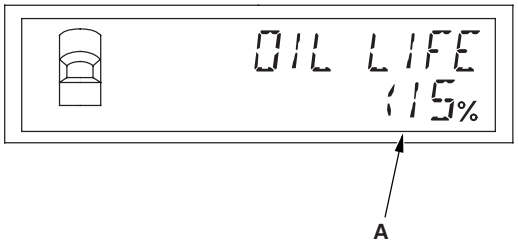
Maintenance Display

The maintenance minder is an important feature of the information display. Based on engine operating conditions and accumulated engine revolutions, the Ridgeline's onboard computer (PCM) calculates the remaining engine oil life. The system also displays the code for other scheduled maintenance items needing service.



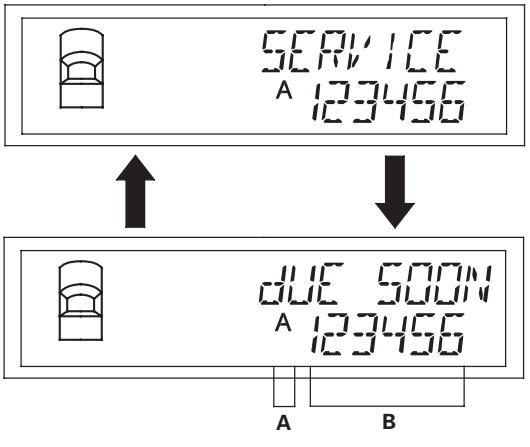
Service Information

1. The remaining engine oil life is displayed (A) as a percentage on the information display. To see the current engine oil life, turn the ignition switch to ON (II), then push and release the SELECT button repeatedly until the engine oil life is displayed.

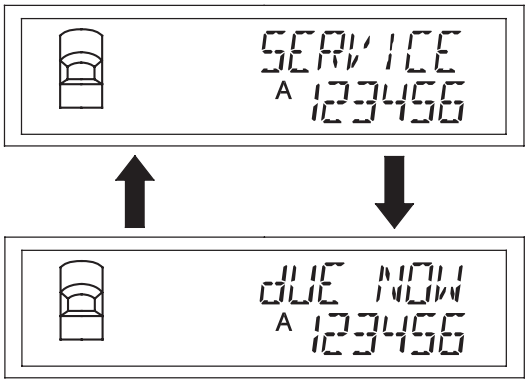


2. When the remaining engine oil life is at 15 percent or less, the maintenance message ''SERVICE DUE SOON,'' along with the maintenance items currently requiring service are displayed.
   The service message alternates between SERVICE and DUE SOON repeatedly.

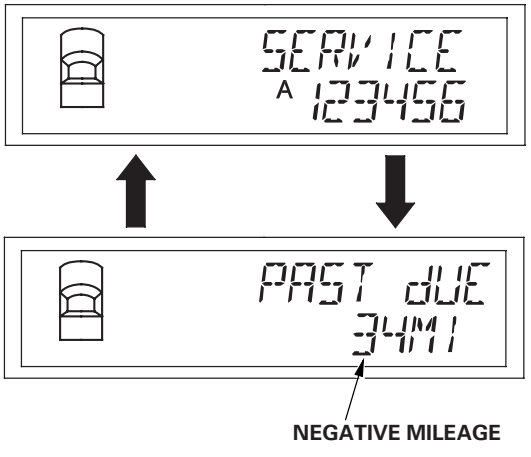
   - Complete list of maintenance main items ''A'' (see page 3-7).
   - Complete list of maintenance sub items ''B'' (see page 3-8).



3. When the remaining oil life is less than 5 percent, the maintenance message ''SERVICE DUE NOW,'' along with the items shown in ''SERVICE DUE SOON'' display. At this point, the indicated maintenance must be performed as soon as possible.
   The service message alternates between SERVICE and DUE NOW repeatedly.



4. When the remaining oil life is 0 percent, the display shows a ''SERVICE PAST DUE'' message.
   The service message alternates between SERVICE and PAST DUE repeatedly.



5. If the indicated maintenance is not performed the display shows ''SERVICE DUE NOW'' message, then the display will show negative mileage for example ''34MI.'' This means that the indicated maintenance item should have been performed 34 miles ago.

(cont'd)

General Information (cont'd)

Resetting the Engine Oil Life Indicator

1. Turn the ignition switch to ON (II).

2. Press the SELECT button repeatedly until the oil life is displayed (if oil life is more than 15 %) or the maintenance message is displayed (if oil life is less than 15 %).

3. Press the RESET button for about 10 seconds. You will see a service message to reset the maintenance item code(s) ''MAINT RESET.''

   NOTE: If you are resetting the display when the oil life is more than 15 %, or if the maintenance message ''SERVICE DUE SOON'' is displayed, make sure the maintenance items requiring service have been performed before resetting this display.

4. Select the appropriate answer, ''MAINT RESET > N'' (NO) or ''MAINT RESET > Y'' (YES) by pressing the SELECT button repeatedly. ''>N'' or ''>Y'' is displayed on the outside temperature display.

5. Select the ''MAINT RESET > Y'' (YES) and press the RESET button again to reset the engine oil life to ''100.''

NOTE:
- If the required service is performed and the display is not reset, or if the display is reset without performing the service, the system will not show the proper maintenance levels. This can lead to serious mechanical problems because there will be no record of when maintenance is needed.
- The engine oil life and the maintenance items may be reset independently only with the HDS.

Maintenance Main Items

If the message ''SERVICE DUE NOW'' does not appear more than 12 months after the display is reset, change the engine oil every year.

NOTE:
- Independent of the maintenance messages in the information display, replace the brake fluid every 3 years.
- Inspect idle speed every 160,000 miles (256,000 km).
- Adjust the valves during services A, B, 1, 2, or 3, only if they are noisy.

Symbol	Maintenance Main Items
A	Replace engine oil (see page 8-6). Engine oil capacity without oil filter: 4.0 L (4.2 US qt).
B	Replace engine oil and oil filter (see page 8-7). Engine oil capacity with oil filter: 4.3 L (4.5 US qt).
	Check front and rear brakes (see page 19-4). • Check pads and discs for wear (thickness), damage, and cracks. • Check calipers for damage, leaks, and tightness of mounting bolts.
	Check parking brake adjustment (see page 19-7). Check the number of clicks (10 to 12) when the parking brake pedal is pressed with 294 N (30 kgf, 66 lbf) of force.
	Inspect tie-rod ends, steering gearbox, and gearbox boots (see page 17-8). • Check rack grease and steering linkage. • Check boots for damage and leaking grease. • Check fluid lines for damage or leaks.
	Inspect suspension components (see page 18-3). • Check bolts for tightness. • Check condition of ball joint boots for deterioration and damage.
	Inspect driveshaft boots (see page 16-4). Check boots for cracks and boot bands for tightness.
	Inspect brake hoses and lines including VSA (see page 19-33). Check the master cylinder and VSA modulator-control unit for damage and leakage.
	Inspect all fluid levels and condition of fluids. • Engine coolant (see page 10-6). • Automatic transmission fluid (ATF) (see page 14-209). • VTM-4 rear differential fluid (Honda VTM-4 Differential Fluid) (see page 15-47). • Power steering fluid (see page 17-12). • Brake fluid (see page 19-9). • Windshield washer fluid.
	Inspect exhaust system (see page 9-7)*. Check catalytic converter heat shields, exhaust pipes, and muffler for damage, leaks, and tightness.
	Inspect fuel lines (see page 11-290)* and connections (see page 11-292)*. Check for loose connections, cracks, and deterioration; retighten loose connections and replace damaged parts.

NOTE: According to state and federal regulations, failure to do the maintenance items marked with an asterisk (*) will not void the customer's emissions warranties. However, Honda recommends that all maintenance services be done at the recommended interval, to ensure long-term reliability.

Maintenance Sub Items

Number	Maintenance Sub Items
1	Rotate tires, and check tire inflation and condition. Follow the pattern shown in the Owner's Manual.
2	Replace air cleaner element (see page 11-315). If the vehicle is regularly driven in dusty conditions, replace the element every 15,000 miles (24,000 km).
	Replace dust and pollen filter (see page 21-58). • If the vehicle is driven mostly in areas that have high concentrations of dust, pollen, or soot in the air, replace every 15,000 miles (24,000km). • Replace the filter whenever airflow from the heating and air conditioning control system is less than normal.
	Inspect drive belt (see page 4-31). Look for cracks and damage, then check the position of the drive belt auto-tensioner indicator.
3	Replace automatic transmission (see page 14-210) and transfer (see page 14-211) fluid. • Driving in mountainous areas at very low vehicle speeds or trailer towing results in higher transmission and transfer fluid temperatures. This requires transmission fluid changes more frequently than recommended by the Maintenance Minder. If the vehicle is regularly driven in these conditions, replace the transmission and transfer fluid every 30,000 miles (48,000 km). • Automatic transmission fluid capacity: 3.1 L (3.3 US qt), use Honda automatic transmission fluid (ATF-Z1). • Transfer fluid capacity: 0.43 L (0.45 US qt), use hypoid gear oil GL4 or GL5.
4	Replace spark plugs (see page 4-22). Use IZFR5K11 (NGK) or SKJ16DR-M11 (DENSO).
	Replace timing belt (see page 6-20). If the vehicle is regularly driven in very high temperatures (over 110 ℉, 43 ℃), or in very low temperatures (under −20 ℉, −29 ℃), or towing a trailer, replace every 60,000 miles (USA models)/100,000 km (Canada models) and inspect water pump (see page 10-5).
	Inspect the valve clearance (cold) (see page 6-8). Intake: 0.20—0.24 mm (0.008—0.009 in.), Exhaust: 0.28—0.32 mm (0.011—0.013 in.).
5	Replace engine coolant (see page 10-6). Capacity (including the reservoir tank): 6.2 L (1.64 US gal), use Honda Long Life Antifreeze/Coolant Type 2.
6	Replace VTM-4 rear differential fluid (see page 15-47). • Driving in mountainous areas at very low speeds, towing a trailer, or frequently driving fully loaded results in a higher level of mechanical (shear) stress to fluid. This requires differential fluid changes more frequently than recommended by the Maintenance Minder. If you regularly drive your vehicle under these conditions, have the differential fluid changed at 7,500 miles (12,000 km), then every 15,000 miles (24,000 km). • Capacity: 2.64 L (2.79 US qt), use Honda VTM-4 Differential Fluid.

SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If engine electrical maintenance is required)

The Ridgeline SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the sides of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items requires special precautions and tools, and should be done by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work should be done by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.

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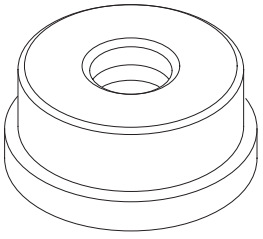
Special Tools

Ref. No.	Tool Number	Description	Qty
①	07746-0010300	Attachment, 42 x 47 mm	1
②	07749-0010000	Driver	1



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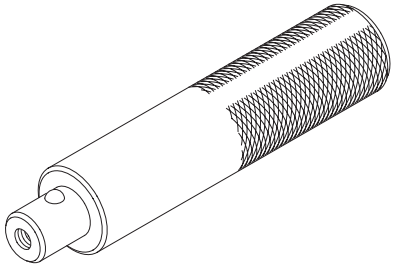

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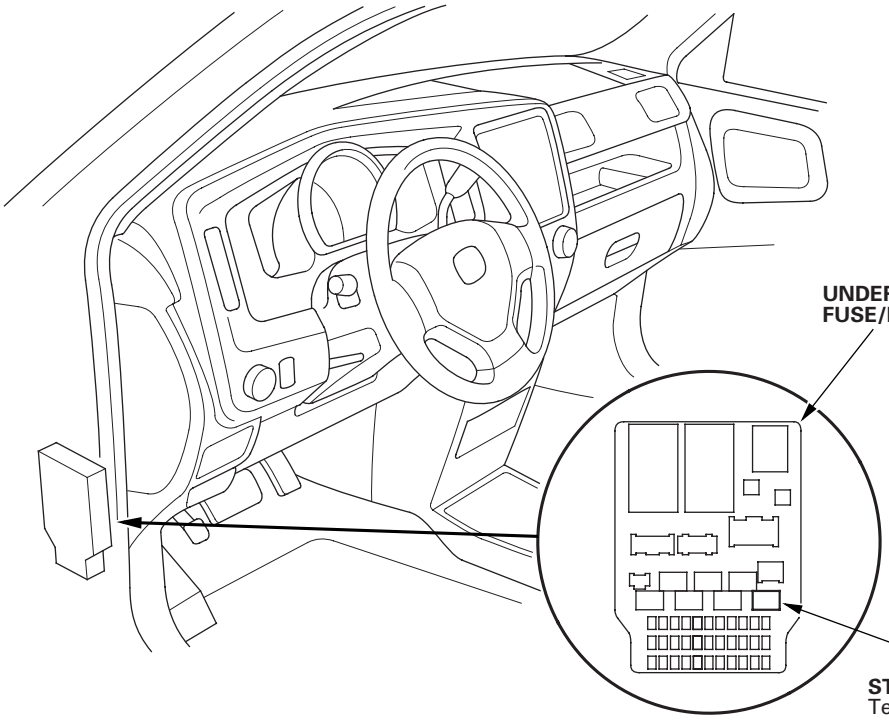
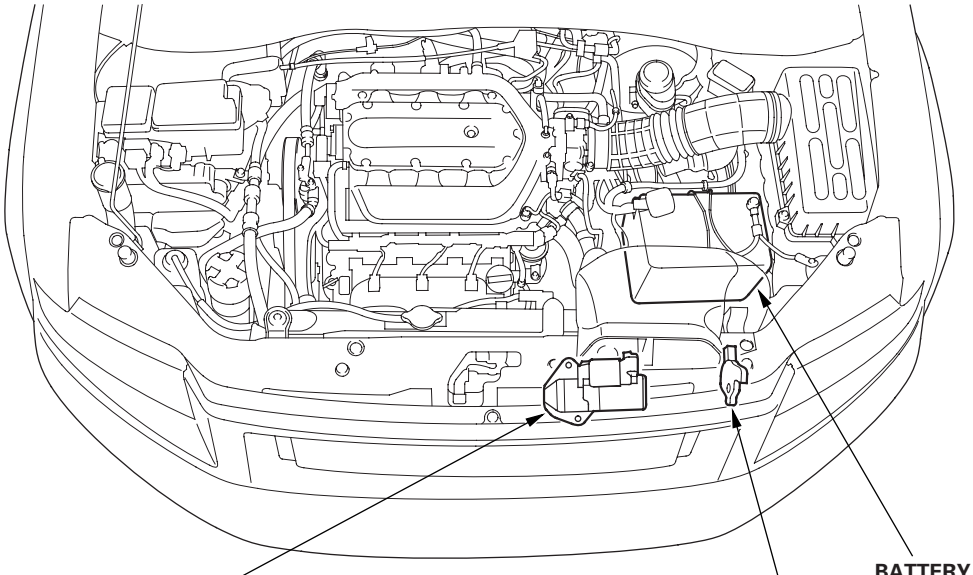
Component Location Index

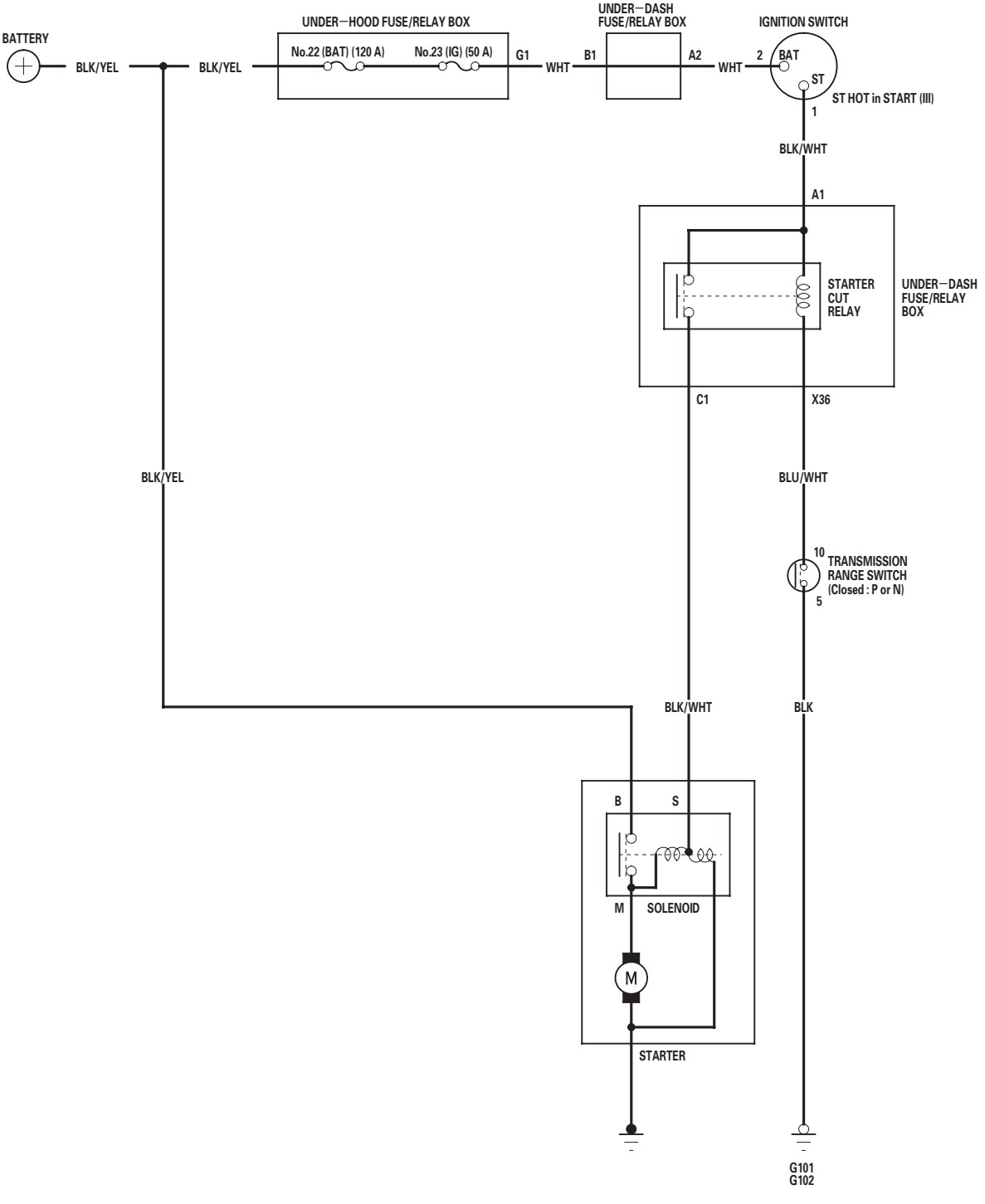




Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Engine does not start (does not crank)	1. Check for loose battery terminals or connections. 2. Test the battery for a low charge (see page 22-74). 3. Check the starter (see page 4-6). 4. Check the starter cut relay (see page 22-75). 5. Check the transmission range switch (see page 14-272). 6. Check the ignition switch or wire (see page 22-77).	Poor ground at G101, G102
Engine cranks, but does not start	1. Check for PGM-FI DTCs. 2. Check the fuel pressure (see page 11-288). 3. Check for a plugged or damaged fuel line (see page 11-290). 4. Check for a plugged fuel filter (see page 11-299). 5. Check the throttle body (see page 11-314). 6. Check for low engine compression (see page 6-6). 7. Check for a damaged or broken timing belt.	Fuel level in tank
Engine is hard to start	1. Check for PGM-FI DTCs. 2. Check the fuel pressure (see page 11-288). 3. Check for a plugged or damaged fuel line (see page 11-290). 4. Check for a plugged fuel filter (see page 11-299).	
Engine cranks slowly	1. Check for loose battery terminals or connections. 2. Test the battery for a low charge (see page 22-74). 3. Check the starter for binding (see page 4-11). 4. Check for excessive drag in the engine.	

Circuit Diagram

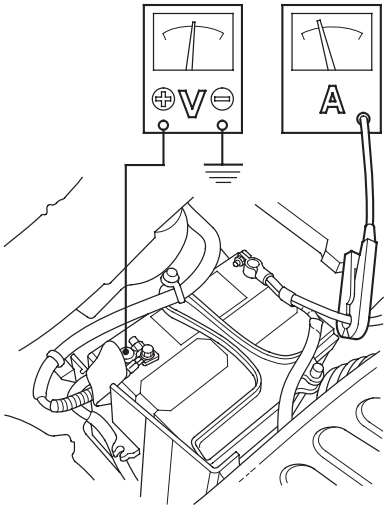


Starter System Circuit Troubleshooting

NOTE:
- Air temperature must be between 59 and 100 °F (15 and 38 °C) during this procedure.
- After this inspection, you must reset the powertrain control module (PCM), otherwise the PCM will continue to stop the fuel injectors from functioning. Select PCM reset using the Honda Diagnostic System (HDS) (see page 11-4).
- The battery must be in good condition and fully charged.

1. Hook up the following equipment:

   - Ammeter, 0—400 A
   - Voltmeter, 0—20 V (accurate within 0.1 V)



2. Connect the HDS to the data link connector (DLC) (see step 2 on page 11-3).

3. Turn the ignition switch ON (II), and select PGM-FI, INSPECTION, then ALL INJECTORS OFF on the HDS.

4. Set the parking brake, then with the shift lever in the N or P position, turn the ignition switch to START (III).

   Does the starter crank the engine normally?

   YES—The starting system is OK. Go to step 11.

   NO—Go to step 5.

5. Check the battery condition (see page 22-74). Check the electrical connections at the battery, the negative battery cable to the body, the engine ground cables, and the starter for looseness and corrosion. Then try cranking the engine again.

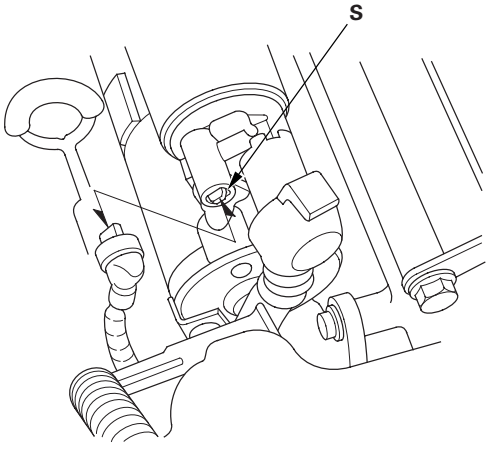
   Does the starter crank the engine?

   YES—Repairing the loose connection corrected the problem. The starting system is OK. Go to step 11.

   NO—Check the following:

   - If the starter will not crank the engine at all, go to step 6.
   - If the starter cranks the engine erratically or too slowly, go to step 8.
   - If the starter does not disengage from the torque converter ring gear when you release the key, replace the starter or remove it, and check for the following:
     – Solenoid plunger and switch malfunction
     – Dirty drive gear or damaged overrunning clutch

6. Make sure the shift lever is in the N or P position, and set the parking brake. Disconnect the BLK/WHT wire from the starter solenoid S terminal. Connect a jumper wire from the battery positive terminal to the solenoid terminal.



Does the starter crank the engine?

YES—Go to step 7.

NO—Remove the starter, and repair or replace as necessary. ■

7. Check the following items in the order listed until you find the open circuit:

NOTE: After the open circuit is found and repaired, go to step 11.

- The BLK/WHT wire and connectors between the under-dash fuse/relay box and the ignition switch.
- The BLK/WHT wire and connectors between the under-dash fuse/relay box and the starter.
- The ignition switch (see page 22-77).
- The transmission range switch and connector (see page 14-272).
- The starter cut relay (see page 22-75).

8. While cranking the engine, check the cranking voltage and the current draw.

Is the cranking voltage greater than or equal to 7.7 V and is the current draw less than or equal to 400 A?

YES—Go to step 9.

NO—Replace the starter, or remove and disassemble it, and check for the following: ■

- Drag in the starter armature
- Shorted armature winding
- Excessive drag in the engine

9. Check the engine speed while cranking the engine.

Is the engine speed above 100 rpm?

YES—Go to step 10.

NO—Replace the starter, or remove and disassemble it, and check the following until you find the problem: ■

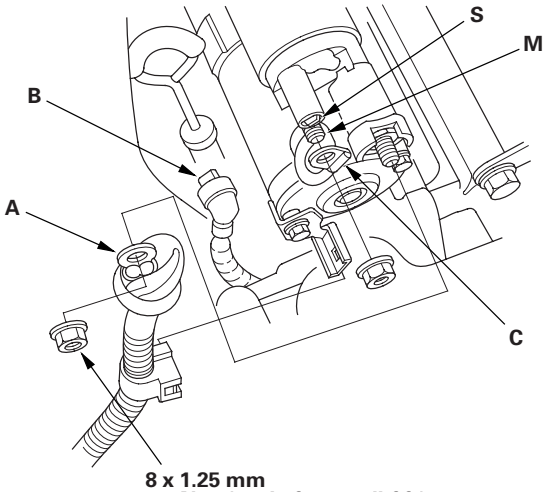
- Open circuit in starter armature commutator segments
- Excessively worn starter brushes
- Open circuit in the starter brushes
- Dirty or damaged helical splines or drive gear
- Faulty drive gear clutch

10. Remove the starter, and inspect its drive gear and the torque converter ring gear for damage. Replace any damaged parts.

11. Select PCM reset (see page 11-4) to cancel the ALL INJECTORS OFF on the HDS.

Starter Solenoid Test

1. Make sure you have anti-theft codes for the audio system and navigation system (if equipped).
2. Disconnect the negative cable from the battery.
3. Remove the starter cable terminal (A), BLK/WHT wire connector (B), and motor cable (C).

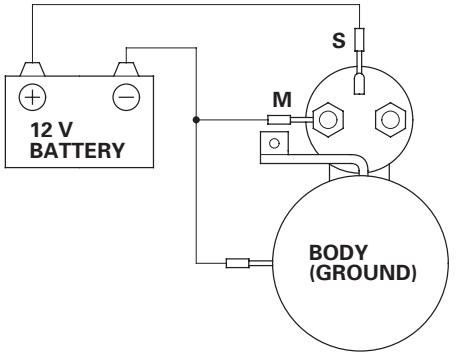


4. Check the hold-in coil for continuity between the S terminal and the armature housing (ground). There should be continuity.
   - If there is continuity, go to step 5.
   - If there is no continuity, replace the solenoid.
5. Check the pull-in coil for continuity between the S terminal and the M terminal. There should be continuity.
   - If there is continuity, the solenoid is OK.
   - If there is no continuity, replace the solenoid.
6. Install in the reverse order of removal.
7. Connect the negative cable.
8. Enter the anti-theft codes for the audio system and navigation system (if equipped).
9. Do the power window control unit reset procedure (see page 22-209).
10. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock (on vehicles without navigation).

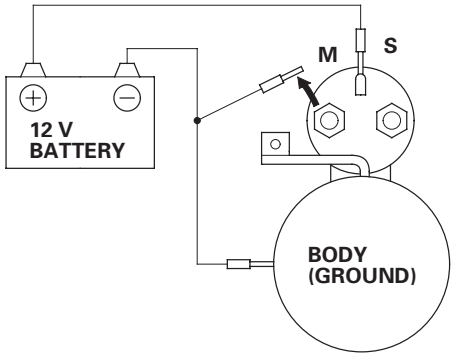
Starter Performance Test

1. Disconnect the motor cable from the M terminal.
2. Make a connection for this test using the thickest (gauge) wire possible (preferably the same gauge as used on the vehicle).

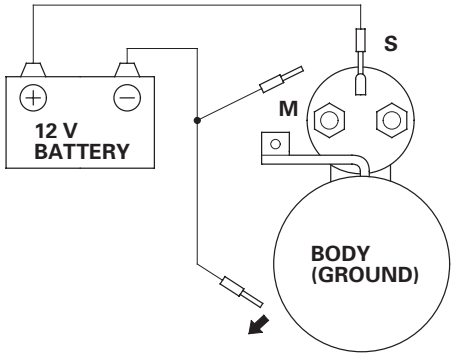
   NOTE: To avoid damaging the starter, never leave the battery connected for more than 10 seconds.



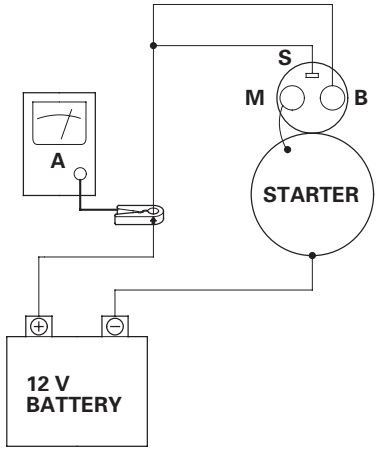
3. Connect the battery as shown. Make sure you disconnect the starter motor wire from the solenoid. If the starter pinion moves out, it is working properly.
4. Disconnect the battery from the M terminal. If the pinion does not retract, the hold-in coil of the solenoid is working properly.



5. Disconnect the battery from the starter body. If the pinion retracts immediately, it is working properly.



6. Firmly clamp the starter in a vise.
7. Reconnect the wire to the M terminal.
8. Connect the starter to the battery as shown, and check that the motor turns and keeps rotating.



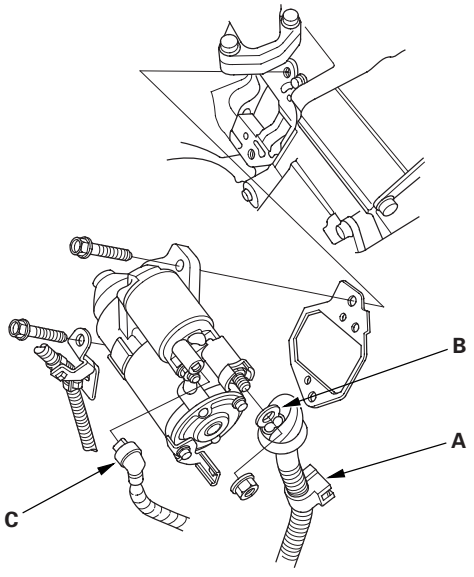
9. If the electric current meets the specification when the battery voltage is at 11 V, the starter is working properly.

   Specifications
   Electric Current: 90 A or less

Starter Removal and Installation

Removal

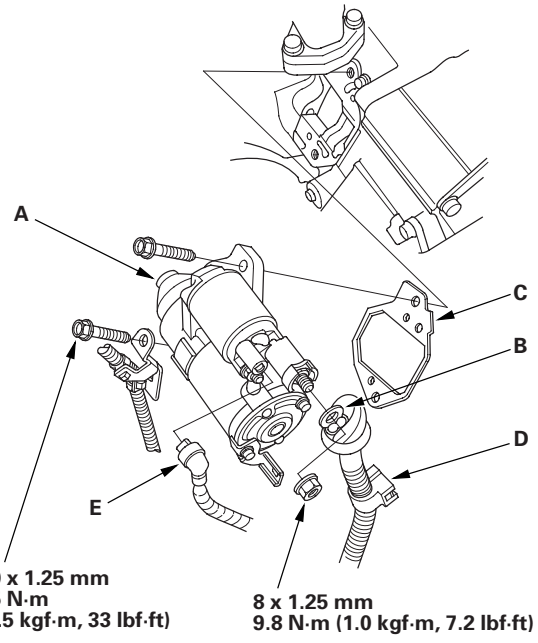
1. Make sure you have anti-theft codes for the audio system and navigation system (if equipped).
2. Disconnect the negative cable from the battery.
3. Remove the automatic transmission fluid (ATF) dipstick.
4. Remove the harness clamp (A).



5. Disconnect the starter cable (B) from the B terminal, then disconnect the BLK/WHT wire (C) from the S terminal.
6. Remove the two bolts holding the starter.

Installation

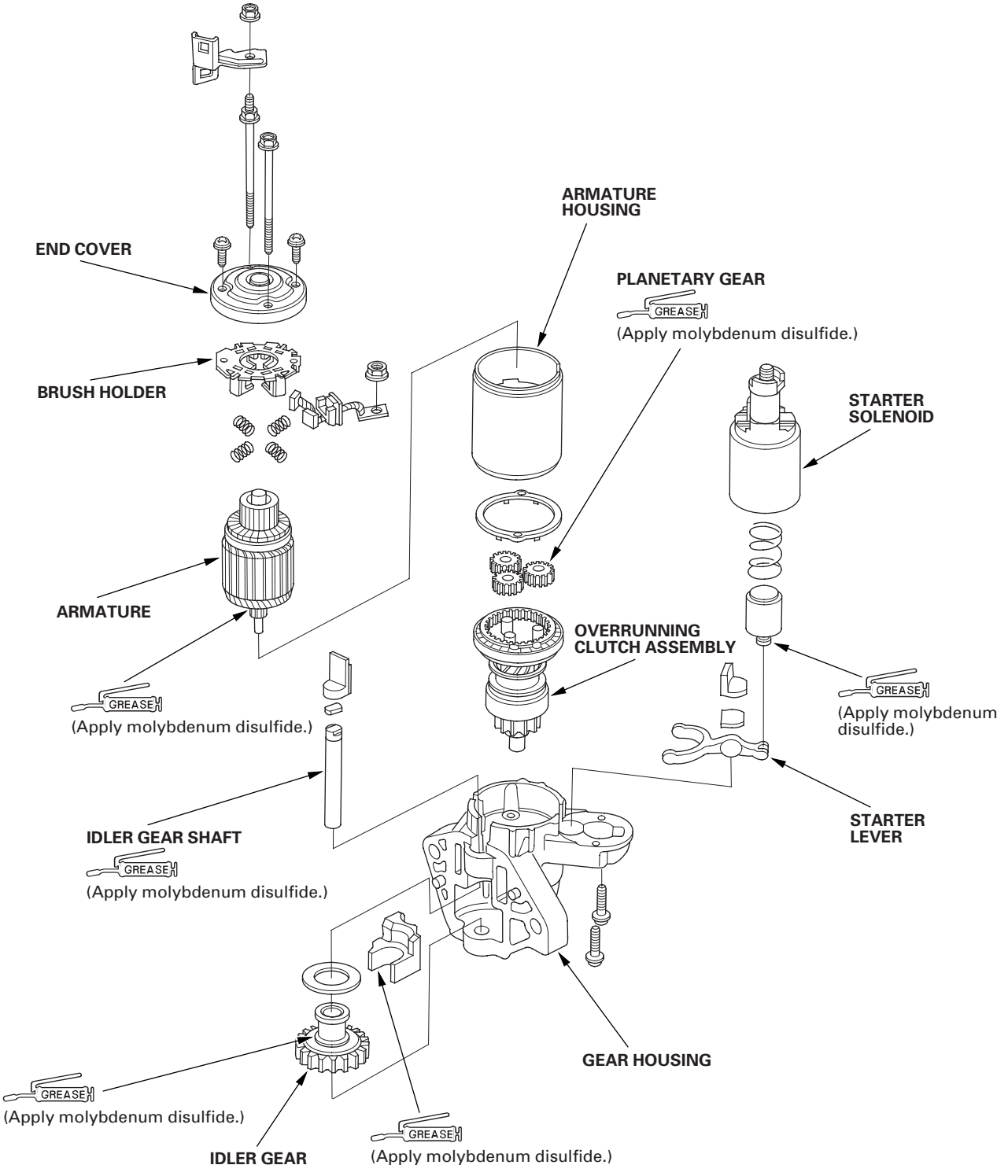
1. Install the starter (A) using a new gasket (C), then install the harness clamp (D), and connect the B terminal and BLK/WHT wire (E). Make sure the crimped side of the B terminal faces away from the starter when you connect it.



2. Install the automatic transmission fluid (ATF) dipstick.
3. Connect the negative cable.
4. Start the engine to make sure the starter works properly.
5. Enter the anti-theft codes for the audio system and navigation system (if equipped).
6. Do the power window control unit reset procedure (see page 22-209).
7. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock (on vehicles without navigation).

Starter Overhaul

Disassembly/Reassembly

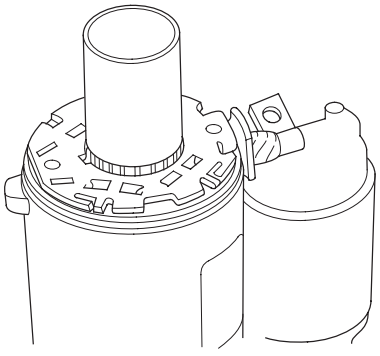


(cont'd)

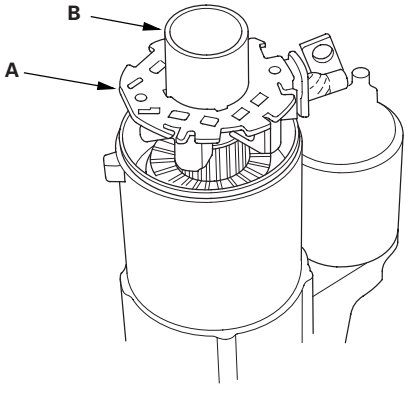
Starter Overhaul (cont'd)

Brush Holder Removal

1. Remove the starter (see page 4-10).
2. Disconnect the wire from the M terminal, and remove the end cover.
3. Place a plastic pipe with an outside diameter of 29.4 mm (1.16 in.) on the armature.

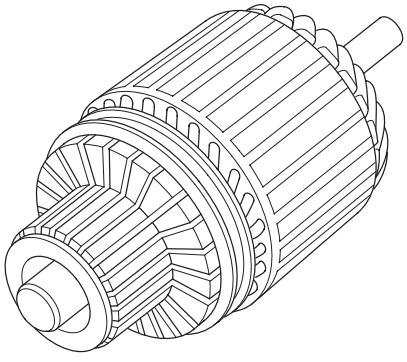


4. Move the brush holder (A) up to the pipe (B) while holding the pipe so the brushes do not pop out from the holder.

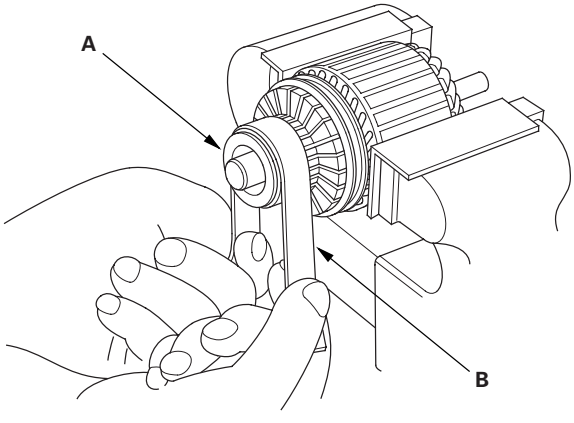


Armature Inspection and Test

1. Remove the starter (see page 4-10).
2. Disassemble the starter as shown at the beginning of this procedure.
3. Inspect the armature for wear or damage from contact with the permanent magnet. If there is wear or damage, replace the armature.

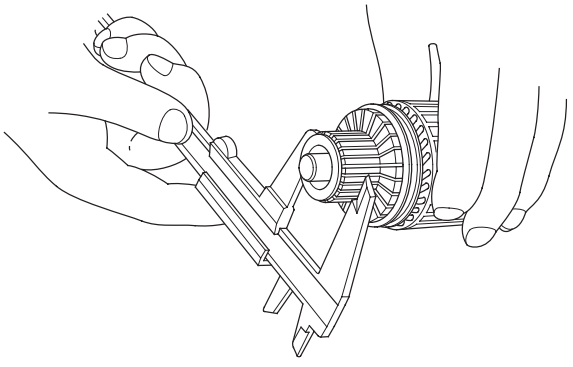


4. Check the commutator (A) surface. If the surface is dirty or burnt, resurface it with an emery cloth or a lathe to the specifications in step 5, or recondition with #500 or #600 sandpaper (B).



5. Check the commutator diameter. If the diameter is below the service limit, replace the armature.

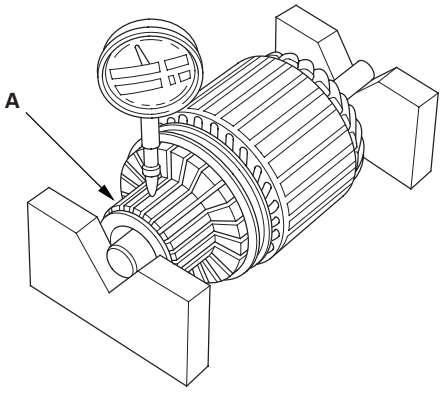
   Commutator Diameter
   Standard (New): 29.3—29.5 mm (1.154—1.161 in.)
   Service Limit: 28.8 mm (1.134 in.)



6. Measure the commutator (A) runout.

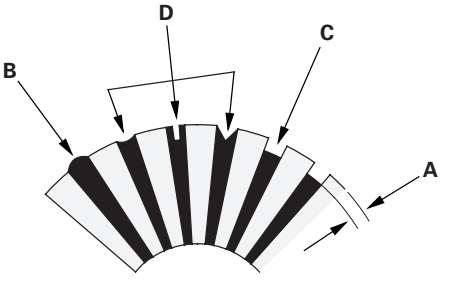
   - If the commutator runout is within the service limit, check the commutator for carbon dust or brass chips between the segments.
   - If the commutator runout is not within the service limit, replace the armature.

   Commutator Runout
   Standard (New): 0.05 mm (0.002 in.) max.
   Service Limit: 0.1 mm (0.004 in.)

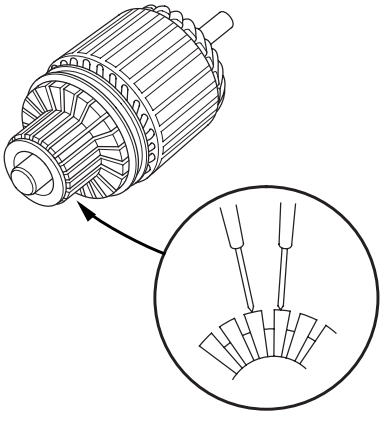


7. Check the mica depth (A). If the mica is too high (B), undercut the mica with a hacksaw blade to the proper depth. Cut away all the mica (C) between the commutator segments. The undercut should not be too shallow, too narrow, or V-shaped (D).

   Commutator Mica Depth
   Standard (New): 0.40—0.50 mm (0.016—0.020 in.)
   Service Limit: 0.20 mm (0.008 in.)



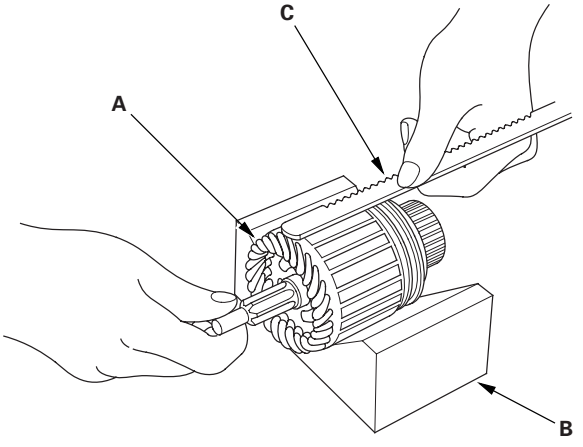
8. Check for continuity between the segments of the commutator. If there is an open circuit between any segments, replace the armature.



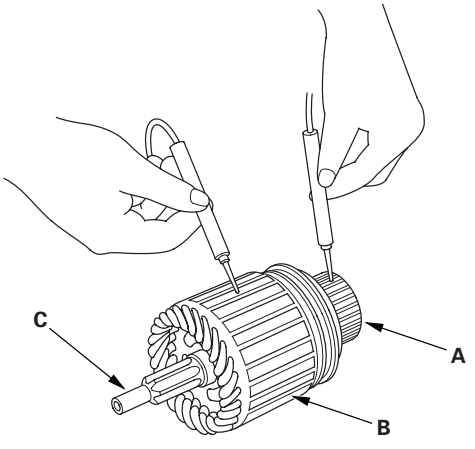
(cont'd)

Starter Overhaul (cont'd)

9. Place the armature (A) on an armature tester (B). Hold a hacksaw blade (C) on the armature core. If the blade is attracted to the core or vibrates while the core is turned, the armature is shorted. Replace the armature.



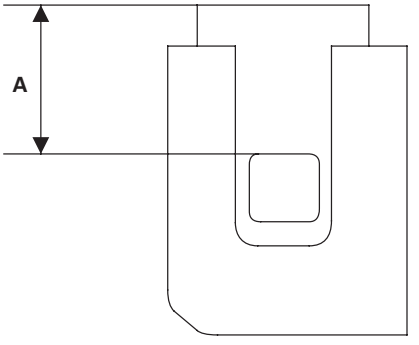
10. Use an ohmmeter to check for continuity between the commutator (A) and the armature coil core (B), and between the commutator and the armature shaft (C). If there is continuity, replace the armature.



Starter Brush Inspection

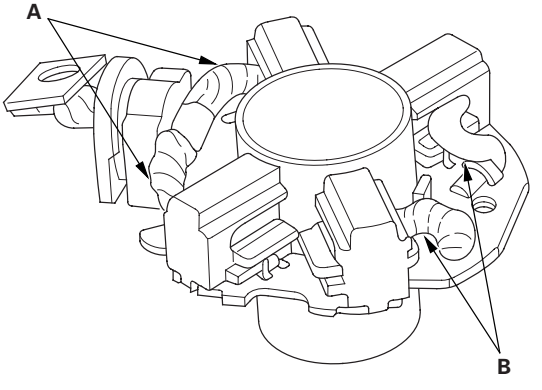
11. Measure the brush length (A). If it is shorter than the service limit, replace the brush holder assembly.

Brush Length
Standard (New): 7.7—8.0 mm (0.30—0.31 in.)
Service Limit: 0.9 mm (0.04 in.)



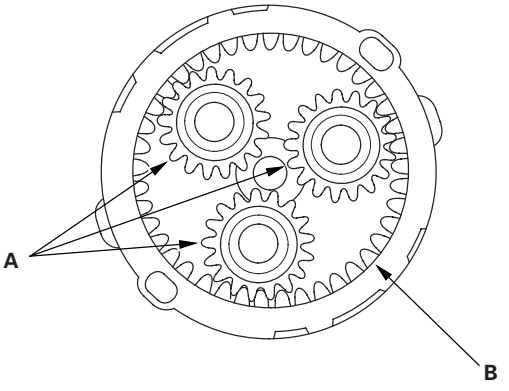
Starter Brush Holder Test

12. Check for continuity between the (+) brush (A) and (—) brush (B). If there is continuity, replace the brush holder assembly.



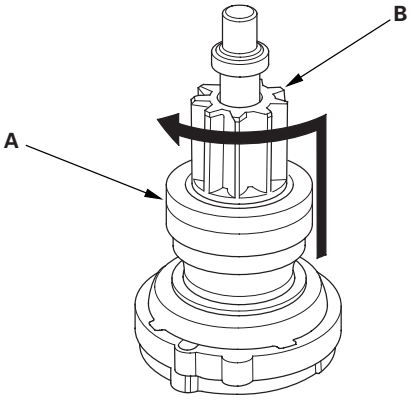
Planetary Gear Inspection

13. Check the planetary gears (A) and ring gear (B). Replace them if they are worn or damaged.



Overrunning Clutch Inspection

14. Slide the overrunning clutch (A) along the shaft. Replace it if it does not slide smoothly.



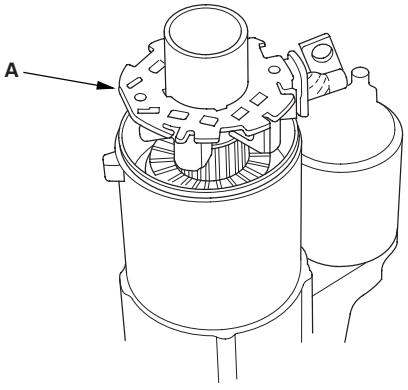
15. Hold the overrunning clutch, and turn the drive gear (B) in the direction shown to make sure it turns freely. Also make sure the drive gear locks in the opposite direction. If it does not lock in either direction, or it locks in both directions, replace it.

16. If the starter drive gear is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately. Check the condition of the idler gear and drive plate ring gear to see if the starter drive gear teeth are damaged.

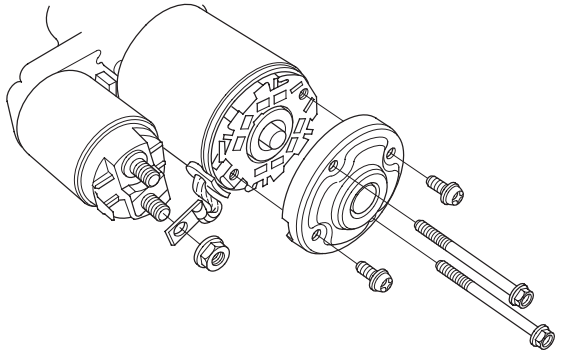
Starter Reassembly

17. Install the armature in the housing.

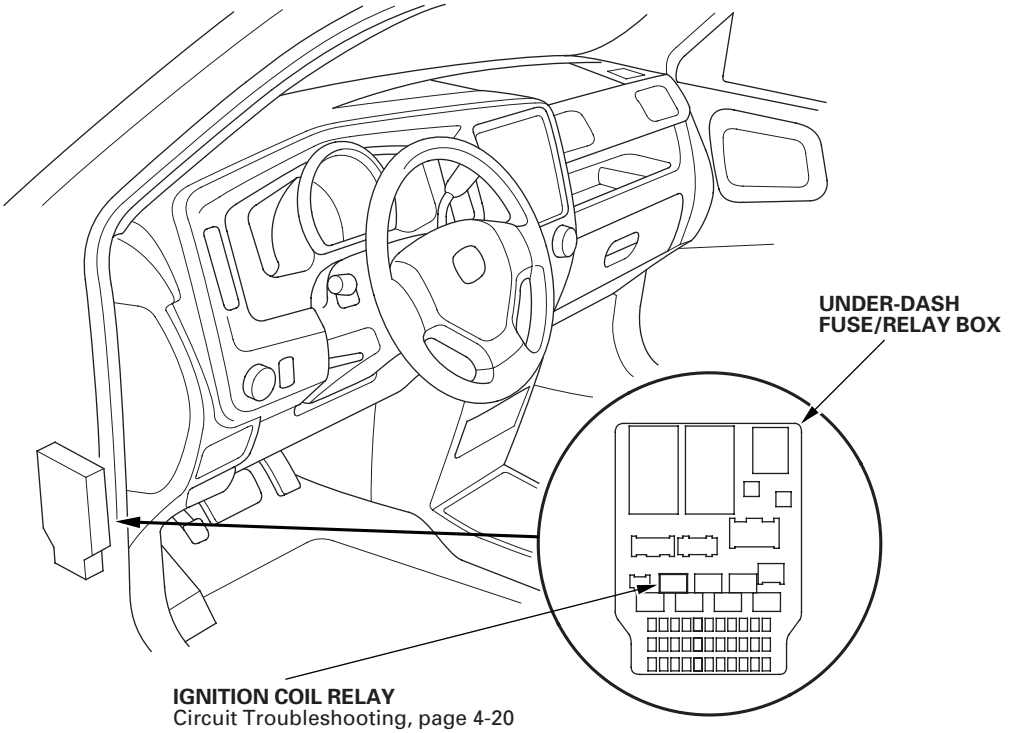
18. Place the brush holder assembly on the armature, then move the brush holder (A) down to the armature.



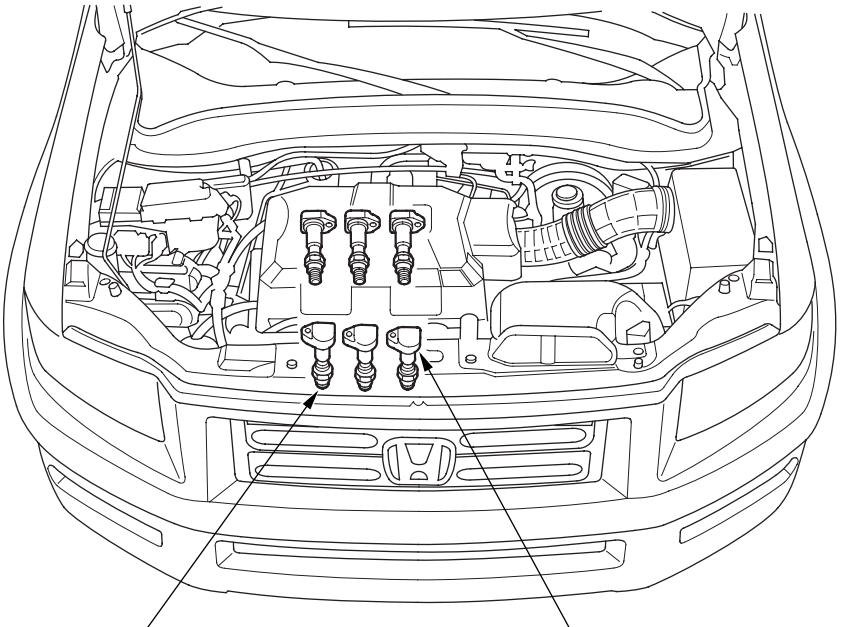
19. Install the end cover to retain the brush holder.



Component Location Index



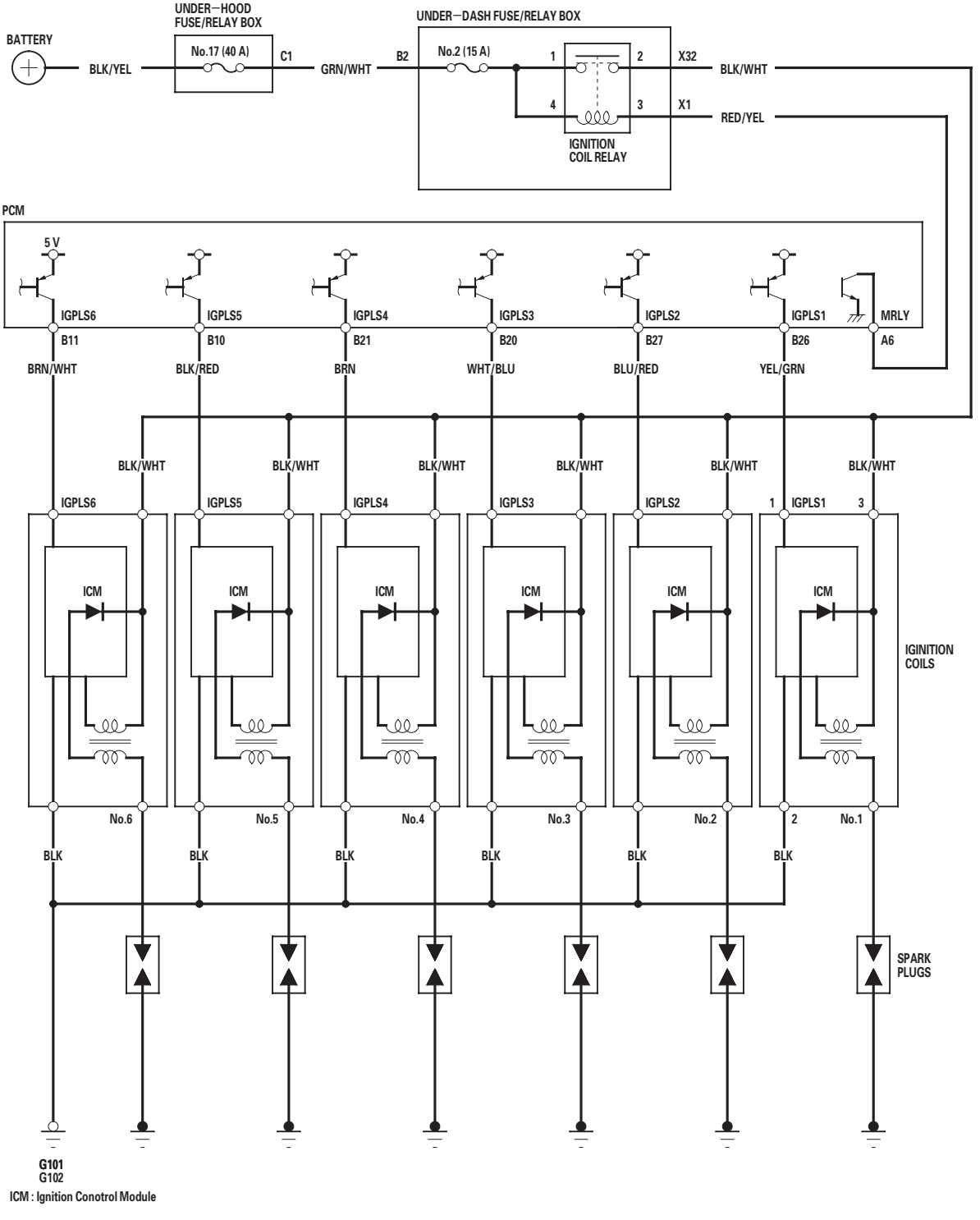
IGNITION COIL RELAY
Circuit Troubleshooting, page 4-20



SPARK PLUG
Inspection, page 4-22

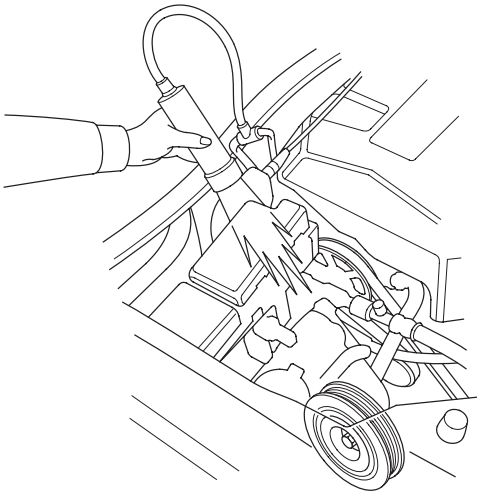
IGNITION COIL
Ignition Timing Inspection, page 4-18
Removal/Installation, page 4-19

Circuit Diagram



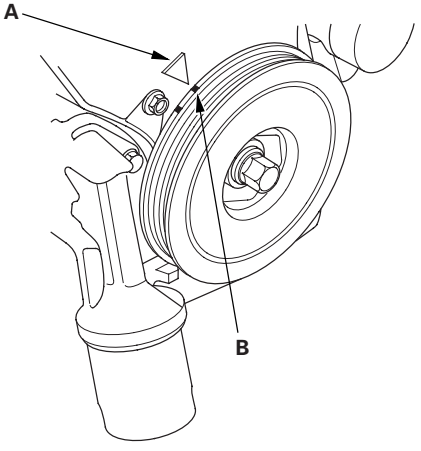
Ignition Timing Inspection

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
2. Start the engine. Hold the engine speed at 3,000 rpm with no load (in Park or Neutral) until the radiator fan comes on, then let it idle.
3. Check the idle speed (see page 11-272).
4. Jump the SCS line with the HDS.
5. Connect the timing light to the No. 1 ignition coil harness.



6. Aim the light toward the pointer (A) on the timing belt cover. Check the ignition timing under a no load condition (headlights, blower fan, rear window defogger, and air conditioner are turned off).

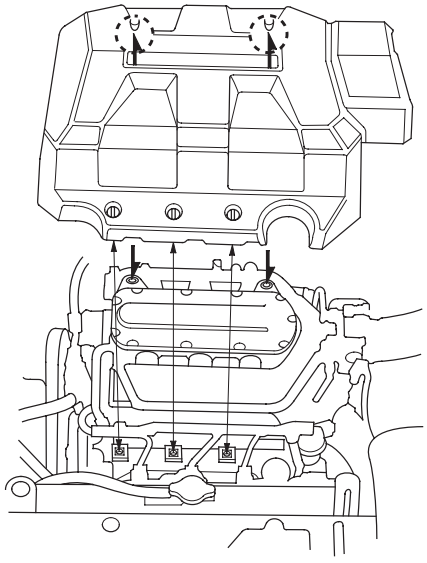
Ignition Timing
10 °±2 °BTDC (RED mark (B)) at idle in Park or Neutral



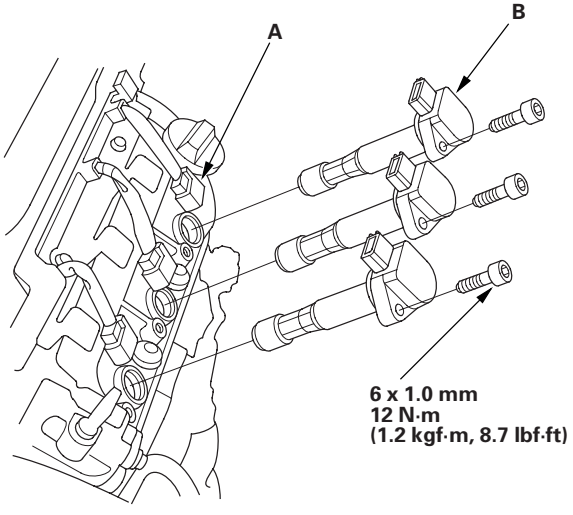
7. If the ignition timing differs from the specification, check the cam timing. If the cam timing is OK, update the powertrain control module (PCM). If it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the system works properly, and the PCM was substituted, replace the original PCM (see page 11-205).
8. Disconnect the HDS and the timing light.

Ignition Coil Removal/Installation

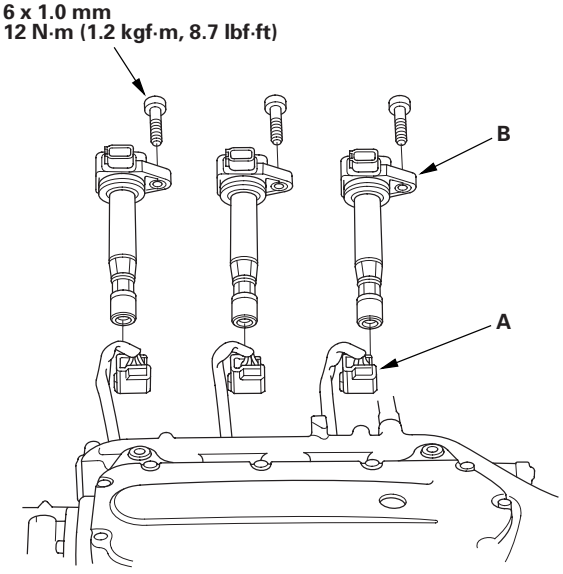
1. Remove the engine cover.



2. Disconnect the ignition coil connectors (A), then remove the front bank ignition coils (B).



3. Disconnect the ignition coil connectors (A), then remove the rear bank ignition coils (B).



4. Install the ignition coils in the reverse order of removal.

Ignition Coil Relay Circuit Troubleshooting

1. Check the No. 2 (15 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 2.

   NO—Replace the fuse . If the fuse continues to blow, locate and repair the short in the circuit between the subfuse box and the ignition coils. ■

2. Remove the ignition coil relay from the under-dash fuse/relay box, and test it (see page 22-75).

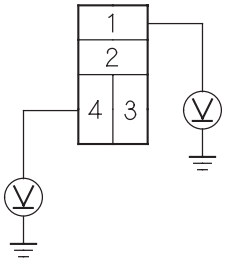
   Is the relay OK?

   YES—Go to step 3.

   NO—Replace the ignition coil relay. ■

3. Measure the voltage between ignition coil relay 4P socket terminal No. 1 and body ground, then terminal No. 4 and body ground.

   IGNITION COIL RELAY 4P SOCKET



   Terminal side of female terminals

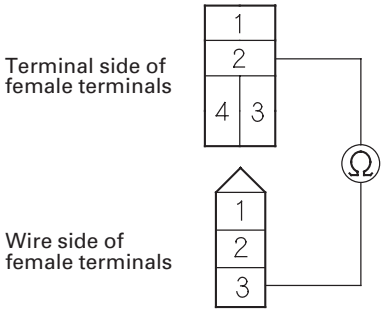
   Is there battery voltage?

   YES—Go to step 4.

   NO—Replace the under-dash fuse/relay box. ■

4. Check for continuity between ignition coil relay 4P socket terminal No. 2 and the No. 1 ignition coil 3P connector terminal No. 3.

   IGNITION COIL RELAY 4P SOCKET



   No.1 IGNITION COIL 3P CONNECTOR

   Is there continuity?

   YES—Go to step 5.

   NO—Repair open in the wire between ignition coil relay 4P socket terminal No. 2 and No. 1 ignition coil 3P connector terminal No. 3. ■

5. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).

6. Turn the ignition switch OFF.

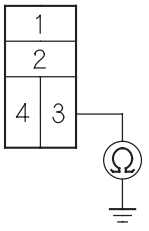
7. Jump the SCS line with the HDS.

   NOTE: This step must be done to protect the powertrain control module (PCM) from damage.

8. Disconnect PCM connector A (44P).

9. Check for continuity between ignition coil relay 4P socket terminal No. 3 and body ground.

IGNITION COIL RELAY 4P SOCKET



Terminal side of female terminals

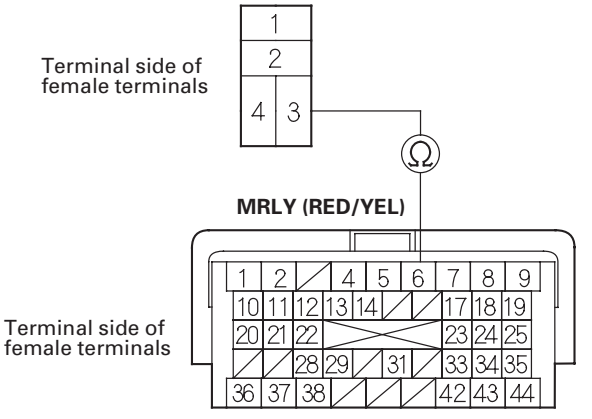
Is there continuity?

YES—Repair short in the wire between ignition coil relay 4P socket terminal No. 3 and the PCM (A6). ■

NO—Go to step 10.

10. Check for continuity between ignition coil relay 4P socket terminal No. 3 and PCM connector terminal A6.

IGNITION COIL RELAY 4P SOCKET



PCM CONNECTOR A (44P)

Is there continuity?

YES—The system is OK at this time. Check for loose or poor connections at the ignition coil relay and the PCM (A6). ■

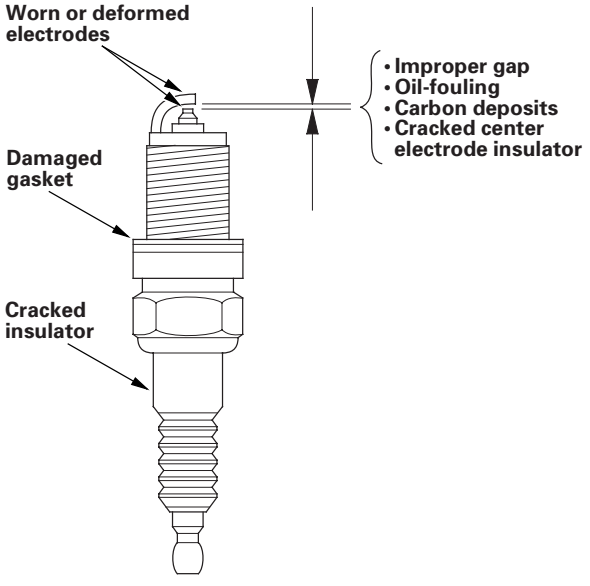
NO—Repair open in the wire between ignition coil relay 4P socket terminal No. 3 and the PCM (A6). ■

Spark Plug Inspection

1. Remove the spark plugs and inspect the electrodes and the ceramic insulator.

   • Burned or worn electrodes may be caused by:
   – Advanced ignition timing
   – Loose spark plug
   – Plug heat range too hot
   – Insufficient cooling

   • Fouled plugs may be caused by:
   – Retarded ignition timing
   – Oil in combustion chamber
   – Incorrect spark plug gap
   – Plug heat range too cold
   – Excessive idling/low speed running
   – Clogged air cleaner element
   – Deteriorated ignition coils



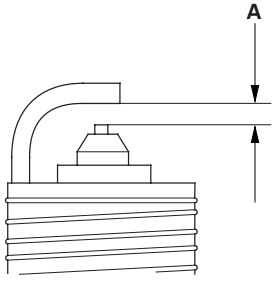
2. If the spark plug electrode is dirty or contaminated, clean the electrode with a plug cleaner.

   NOTE:
   • Do not use a wire brush or scrape the iridium electrode since this will damage the electrode.
   • When using a sand blaster spark plug cleaner, do not clean for more than 20 seconds to avoid damaging the electrode.

3. Replace the spark plug if the gap is out of specification.

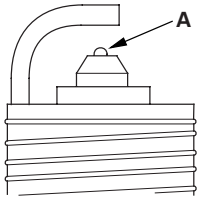
   NOTE: Do not adjust the gap of iridium tip plugs.

   Electrode Gap
   Standard (New): 1.0—1.1 mm (0.039—0.043 in.)



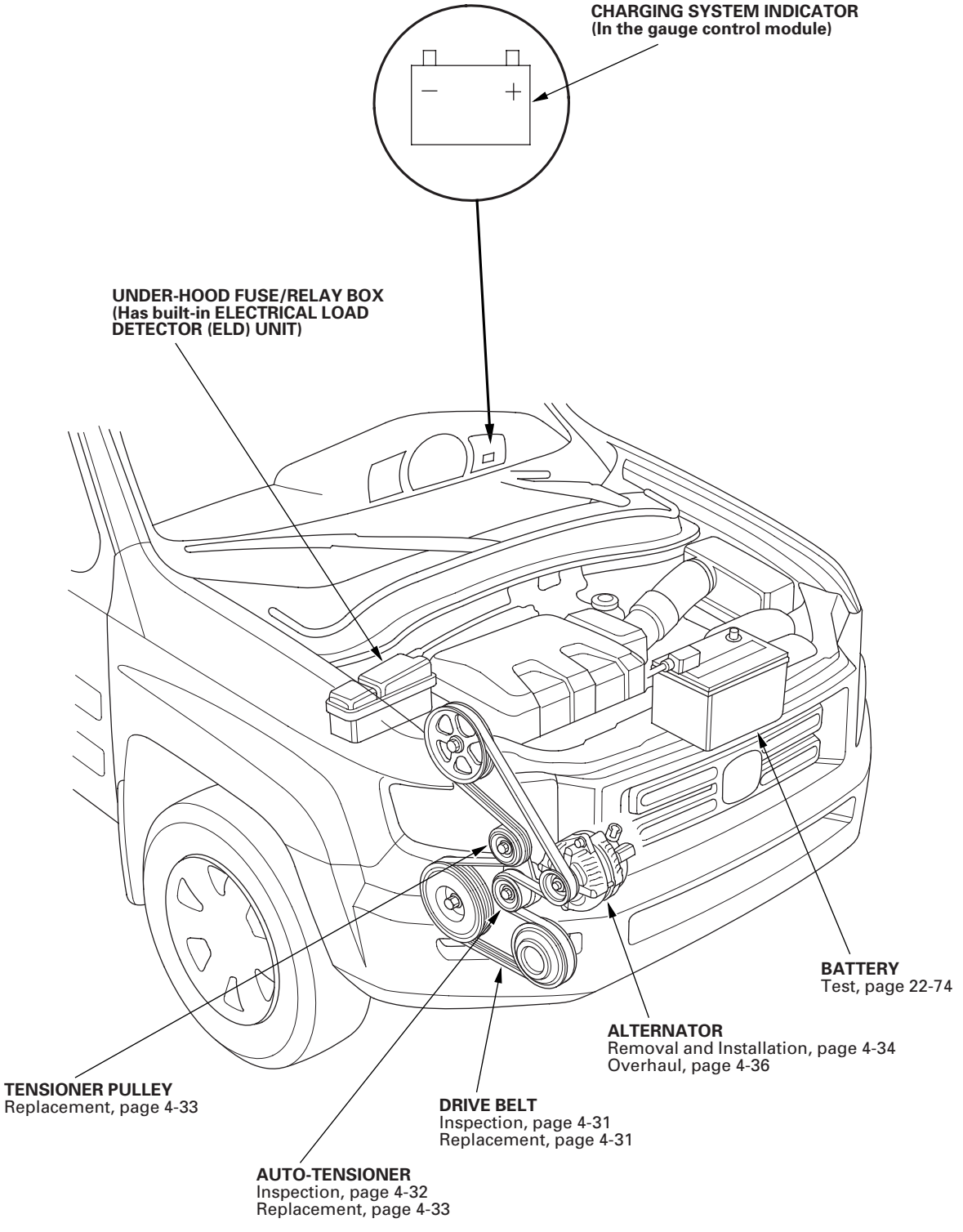
4. Replace the plug at the specified interval, or when the center electrode is rounded (A). Use only the listed spark plugs.

   Spark Plugs
   NGK: IZFR5K-11
   DENSO: SKJ16DR-M11



5. Apply a small amount of anti-seize compound to the plug threads, and screw the plugs into the cylinder head, finger-tight. Torque them to 18 N·m (1.8 kgf·m, 13 lbf·ft).

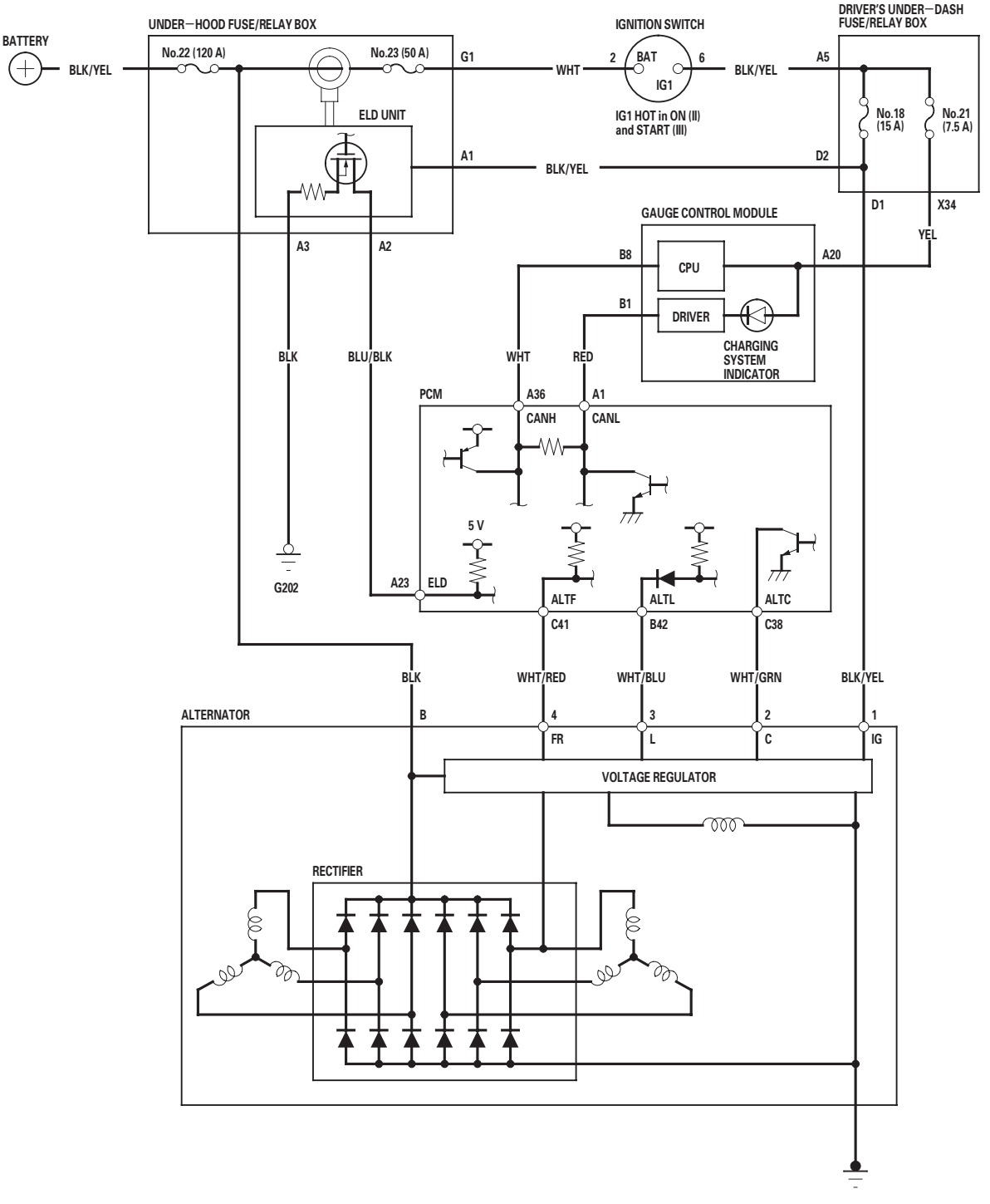
Component Location Index



Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Charging system indicator does not come on with the ignition switch ON (II)	Troubleshoot the charging system indicator circuit (see page 4-26).	
Charging system indicator stays on	1. Troubleshoot the charging system indicator circuit (see page 4-26). 2. Check for a broken drive belt (see page 4-31). 3. Check the drive belt auto-tensioner (see page 4-32).	
Battery discharged	1. Check for excessive parasitic electrical current draw with the ignition switch OFF, and the key removed. The multiplex control unit may take up to 10 minutes to turn off (sleep mode) for some models. 2. Check for a broken drive belt (see page 4-31). 3. Check the drive belt auto-tensioner (see page 4-32). 4. Troubleshoot the alternator and regulator circuit (see page 4-28). 5. Check for a poor connection at the battery terminal. 6. Test the battery (see page 22-74).	
Battery overcharged	1. Troubleshoot the alternator and regulator circuit (see page 4-28). 2. Test the battery (see page 22-74).	

Circuit Diagram



Charging System Indicator Circuit Troubleshooting

1. Turn the ignition switch ON (II).

   Does the charging system indicator come on?

   YES—Go to step 2.

   NO—Go to step 12.

2. Start the engine. Hold the engine speed at 2,000 rpm for 1 minute.

   Does the charging system indicator go off?

   YES—Charging system indicator circuit is OK. Go to the alternator and regulator circuit troubleshooting (see page 4-28). ■

   NO—Go to step 3.

3. Do the gauge control module self-diagnostic function procedure (see page 22-244).

   Does the charging system indicator flash?

   YES—Go to step 4.

   NO—Replace the gauge control module (see page 22-263). ■

4. Turn the ignition switch OFF.

5. Disconnect the alternator 4P connector.

6. Turn the ignition switch ON (II).

   NOTE: The charging system indicator may come on and then go off.

   Does the charging system indicator go off?

   YES—Replace the alternator (see page 4-34) or repair the alternator (see page 4-36). ■

   NO—Go to step 7.

7. Turn the ignition switch OFF.

8. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC).

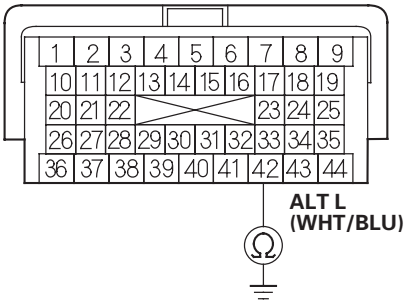
9. Jump the SCS line with the HDS.

   NOTE: This step must be done to protect the powertrain control module (PCM) from damage.

10. Disconnect PCM connector B (44P).

11. Check for continuity between PCM connector terminal B42 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the alternator and the PCM. ■

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-205). ■

12. Do the gauge control module self-diagnostic function procedure (see page 22-244).

    Does the charging system indicator flash?

    YES—Go to step 13.

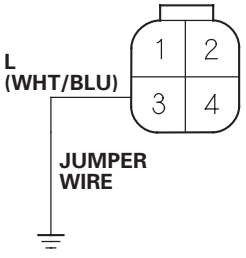
    NO—Replace the gauge control module (see page 22-263). ■

13. Turn the ignition switch OFF.

14. Disconnect the alternator 4P connector.

15. Connect alternator 4P connector terminal No. 3 and body ground with a jumper wire.

ALTERNATOR 4P CONNECTOR



Wire side of female terminals

16. Turn the ignition switch ON (II).

    Does the charging system indicator come on?

    YES—Replace the alternator (see page 4-34) or repair the alternator (see page 4-36). ■

    NO—Go to step 17.

17. Turn the ignition switch OFF.

18. Connect the HDS to the DLC (see step 2 on page 11-3).

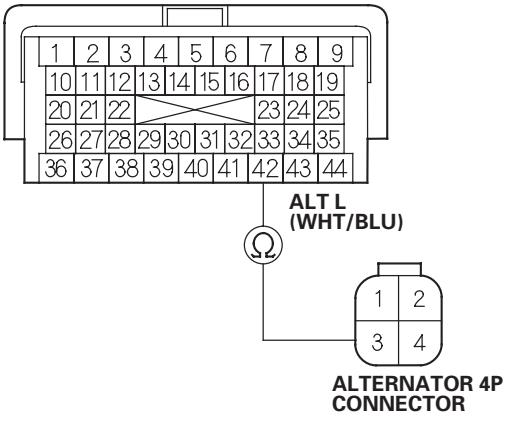
19. Jump the SCS line with the HDS.

    NOTE: This step must be done to protect the PCM from damage.

20. Disconnect PCM connector B (44P).

21. Check for continuity between PCM connector terminal B42 and alternator 4P connector terminal No. 3.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

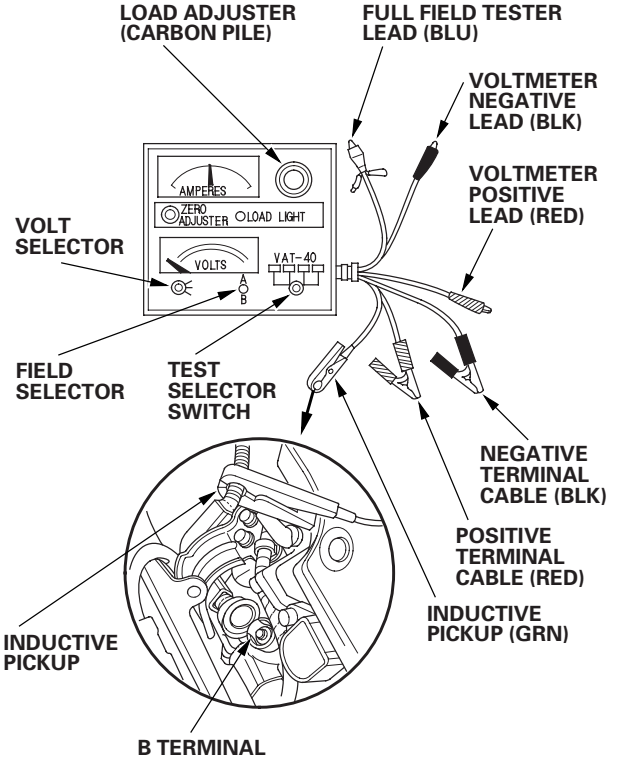
YES—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-205). ■

NO—Repair open in the wire between the alternator and the PCM. ■

Alternator and Regulator Circuit Troubleshooting

1. Make sure the battery connections are good and the battery is sufficiently charged (see page 22-74).

2. Connect a VAT-40 (or equivalent tester), and turn the selector switch to position 1 (starting).



3. Start the engine. Hold the engine speed at 3,000 rpm, with no load until the radiator fan comes on, then let it idle.

4. Raise the engine speed to 2,000 rpm, and hold it there.

   Is the voltage over 15.1 V?

   YES—Check the alternator mounting bolt torque. If they are loose, retorque them. If the bolts are tight, replace the alternator (see page 4-34) or rear housing assembly (see page 4-36). ■

   NO—Go to step 5.

5. Release the accelerator pedal, and let the engine idle.

6. Turn off all the accessories. Select the charging test on the tester.

7. Remove the inductive pickup, and zero the ammeter.

8. Place the inductive pickup over the B terminal wire of the alternator so the arrow points away from the alternator.

9. Raise the engine speed to 2,000 rpm, and hold it there.

   Is the voltage less than 13.5 V?

   YES—Go to alternator control circuit troubleshooting (see page 4-29). ■

   NO—Go to step 10.

10. Apply a load with the VAT-40 until the battery voltage drops to between 12—13.5 V.

    Is the amperage 87.5 A or more?

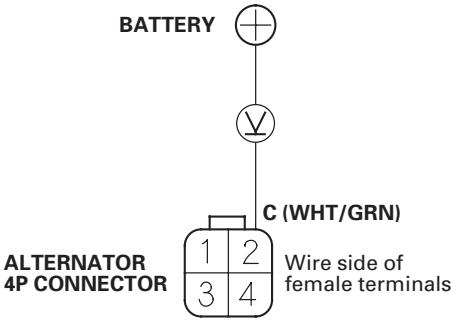
    YES—The charging system is OK. ■

    NOTE: If the charging system indicator is still on, replace the alternator (see page 4-34).

    NO—Replace the alternator (see page 4-34) or repair the alternator (see page 4-36). ■

Alternator Control Circuit Troubleshooting

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC), and check for DTCs (see page 11-3). If a DTC is present, diagnose and repair the cause before continuing with this test.
2. Disconnect the alternator 4P connector from the alternator.
3. Start the engine, and turn on the headlights to high beam.
4. Measure the voltage between alternator 4P connector terminal No. 2 and the positive terminal of the battery.



Is there 1 V or less?

YES—Go to step 9.

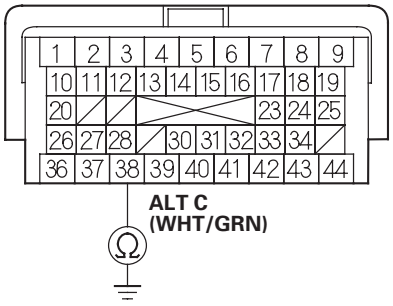
NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.

   NOTE: This step must be done to protect the powertrain control module (PCM) from damage.

7. Disconnect PCM connector C (44P).
8. Check for continuity between PCM connector terminal C38 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the alternator and the PCM. ■

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-205). ■

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.

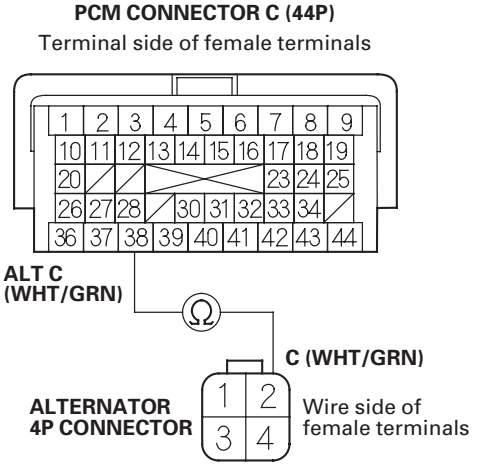
    NOTE: This step must be done to protect the PCM from damage.

11. Disconnect PCM connector C (44P).

(cont'd)

Alternator Control Circuit Troubleshooting (cont'd)

12. Check for continuity between PCM connector terminal C38 and alternator 4P connector terminal No. 2.



Is there continuity?

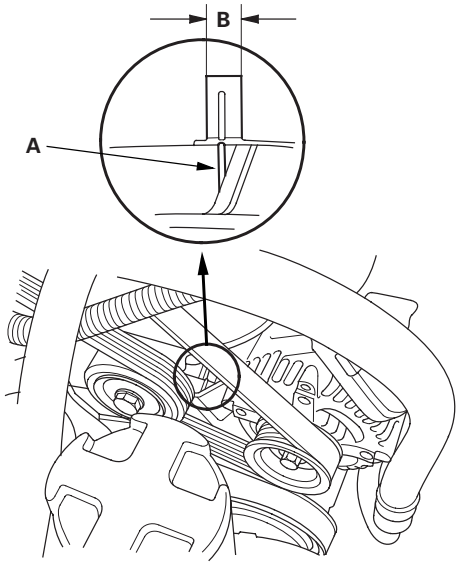
YES—Replace the alternator (see page 4-34) or repair the alternator (see page 4-36). ■

NO—Repair open in the wire between the alternator and the PCM. ■

Drive Belt Inspection

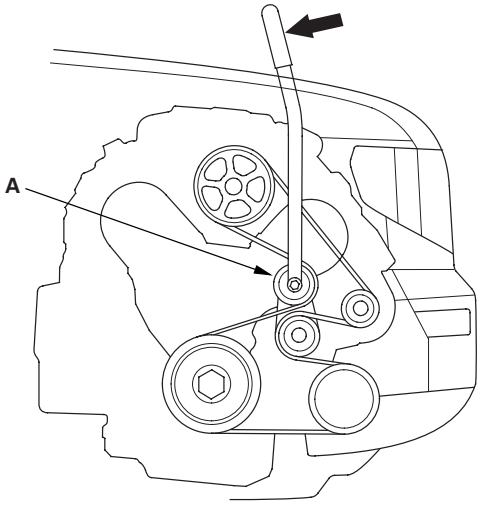
1. Inspect the belt for cracks or damage. If the belt is cracked or damaged, replace it.

2. Check that the auto-tensioner indicator (A) is within the standard range (B) as shown. If it is out of the standard range, replace the drive belt (see page 4-31).



Drive Belt Replacement

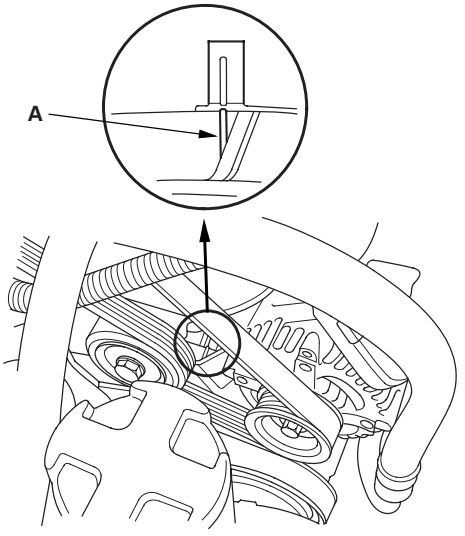
1. Move the auto-tensioner (A) to relieve tension from the drive belt, then remove the drive belt.



2. Install the new belt in the reverse order of removal.

Drive Belt Auto-tensioner Inspection

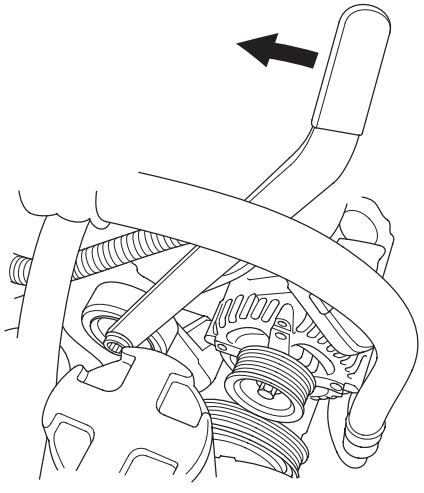
1. Check the position of the auto-tensioner indicator's pointer (A), start the engine, then check the position of the pointer again. If the position changes, replace the auto-tensioner.



2. Check for abnormal noise from the tensioner pulley. If you hear abnormal noise, replace the auto-tensioner pulley (see page 4-33).

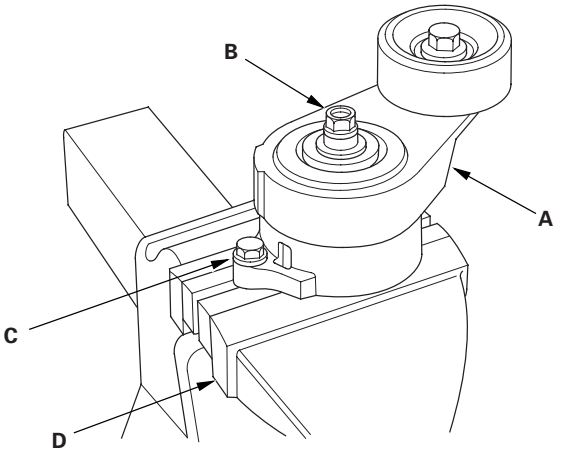
3. Remove the drive belt (see page 4-31).

4. Move the auto-tensioner within its limit using the belt tension release tool in the direction shown. Check that the tensioner moves smoothly and without any abnormal noise. If the tensioner does not move smoothly, or you hear abnormal noises, replace the auto-tensioner (see page 4-33).



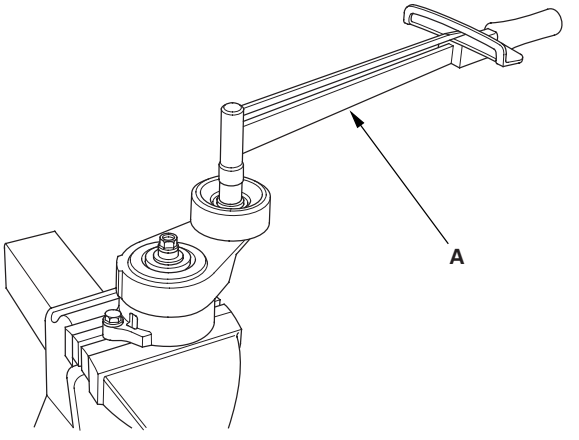
5. Remove the auto-tensioner (see page 4-33).

6. Clamp the auto-tensioner (A) by using a 10 mm bolt (B), 8 mm bolt (C), and a vise (D) as shown. Do not clamp the auto-tensioner itself.



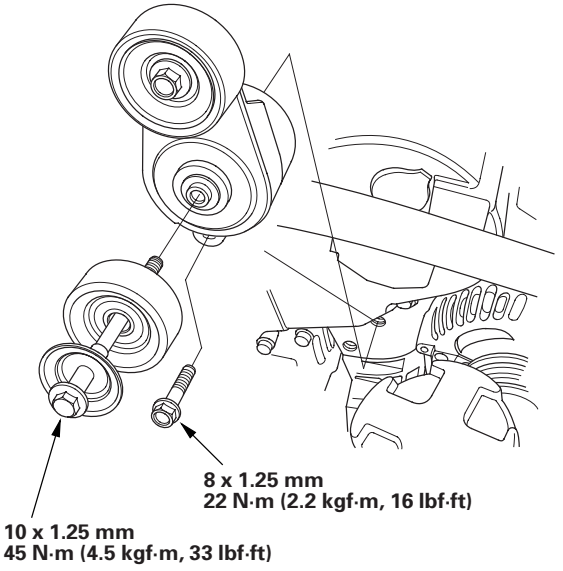
7. Attach a torque wrench (A) to the pulley bolt. Measure the torque when the tensioner is turned counterclockwise and begins to move. If the torque is less than the specified value, replace the auto-tensioner (see page 4-33).

Auto-tensioner Spring Torque:
50.5 N·m (5.15 kgf·m, 37.2 lbf·ft)



Drive Belt Auto-tensioner Replacement

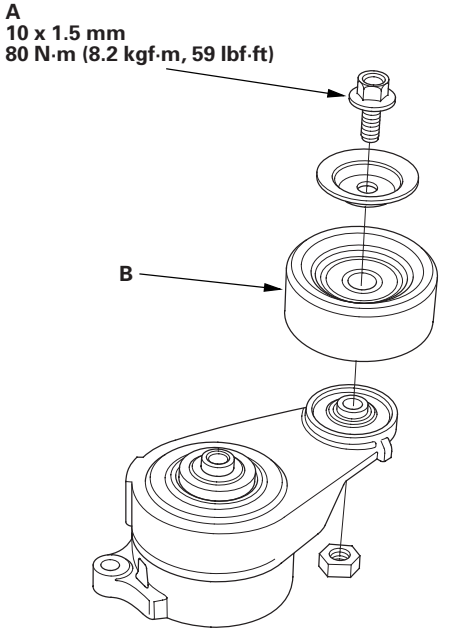
1. Remove the drive belt (see page 4-31).
2. Remove the splash shield (see step 30 on page 5-5).
3. Remove the auto-tensioner.



4. Install the auto-tensioner in the reverse order of removal.

Tensioner Pulley Replacement

1. Remove the auto-tensioner (see page 4-33).
2. Remove the pulley bolt (A) (left-hand threads), and remove the tensioner pulley (B).

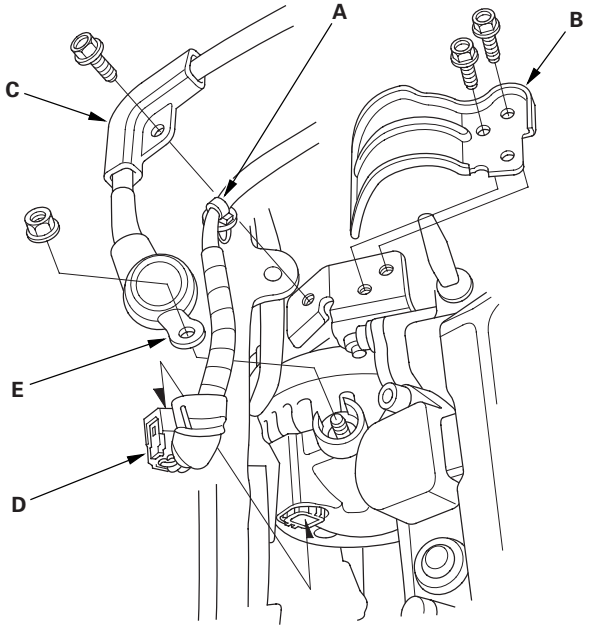


3. Install the tensioner pulley in the reverse order of removal.

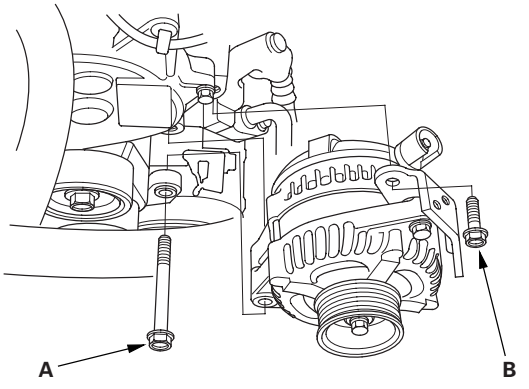
Alternator Removal and Installation

Removal

1. Make sure you have anti-theft codes for the audio system and the navigation system (if equipped).
2. Disconnect the negative cable from the battery.
3. Remove the engine manifold cover (see step 1 on page 4-19).
4. Remove the drive belt (see page 4-31).
5. Remove the harness clamp (A) and harness clamp bracket (B), then remove the harness holder (C).

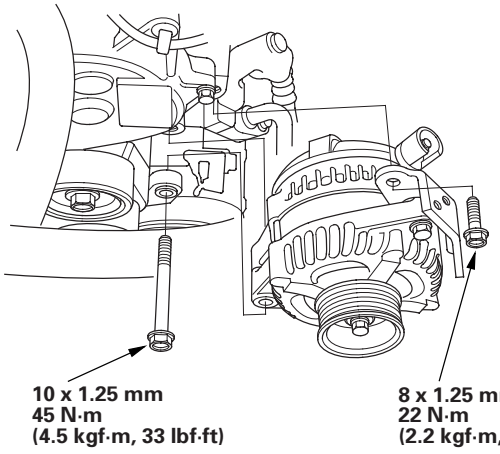


6. Disconnect the alternator connector (D) and the BLK wire (E) from the alternator.
7. Remove the mounting bolt (A) and alternator bracket mounting bolt (B), then remove the alternator.

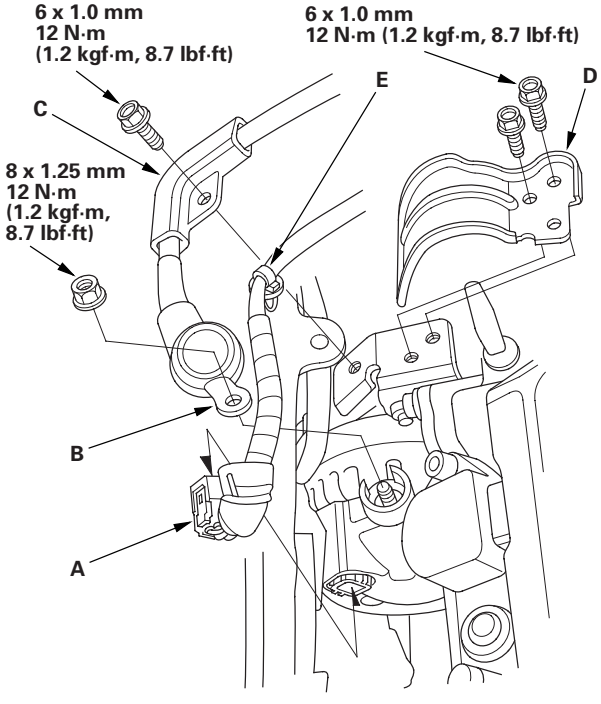


Installation

1. Install the alternator.



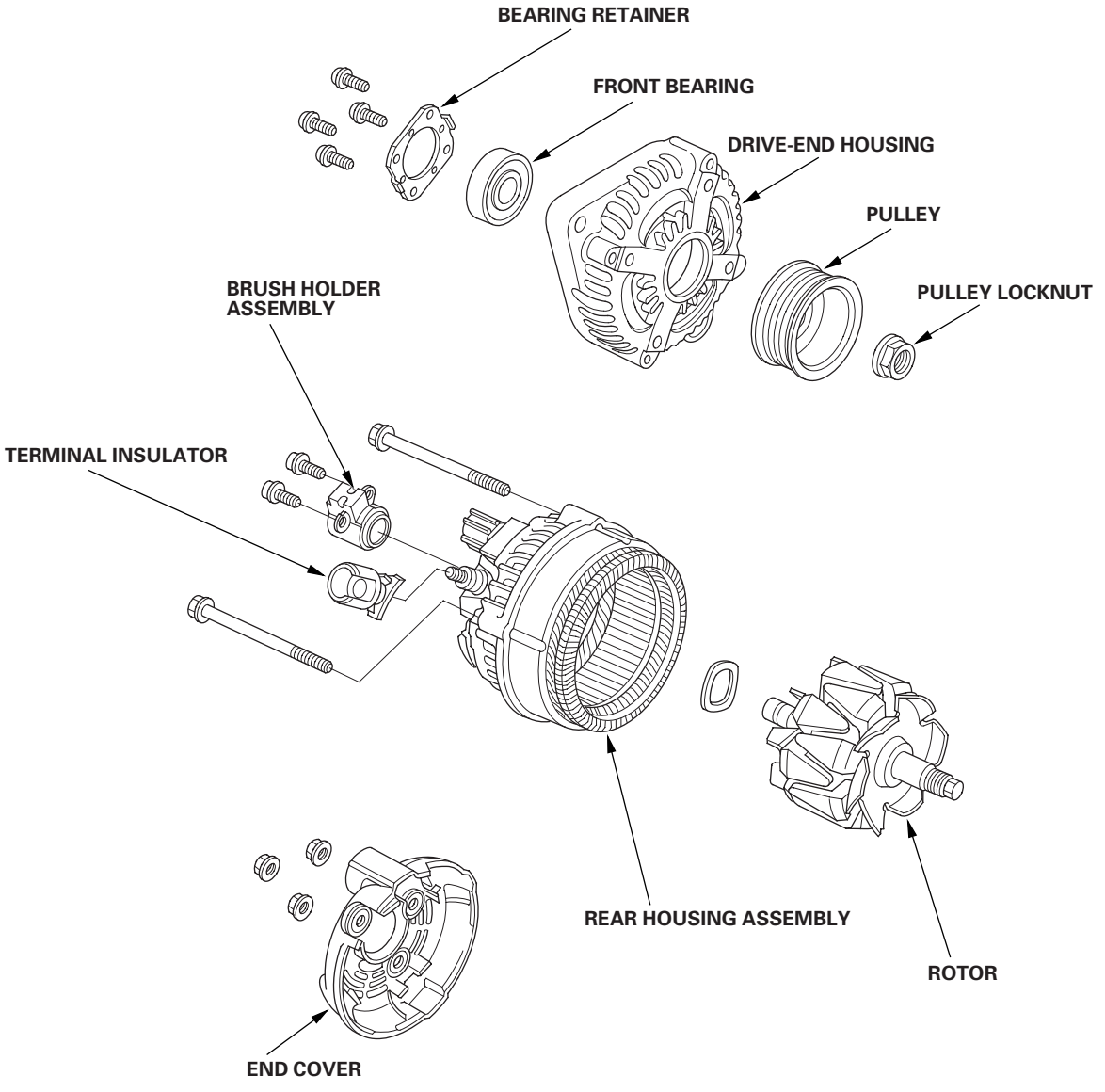
2. Connect the alternator connector (A) and the BLK wire (B) to the alternator.



3. Install the harness holder (C), then install the harness clamp bracket (D) and harness clamp (E).
4. Install the drive belt (see page 4-31).
5. Install the engine cover (see step 1 on page 4-19).
6. Connect the negative cable.
7. Enter the anti-theft codes for the audio system and navigation system (if equipped).
8. Do the power window control unit reset procedure (see page 22-209).
9. Set the clock (on vehicles without navigation).

Alternator Overhaul

Exploded View



Special Tools Required
- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300

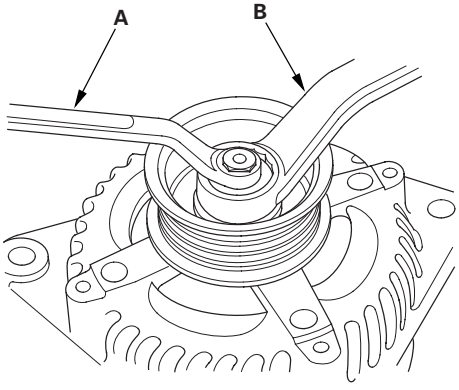
NOTE: Refer to the Exploded View as needed during this procedure.

Alternator Disassembly

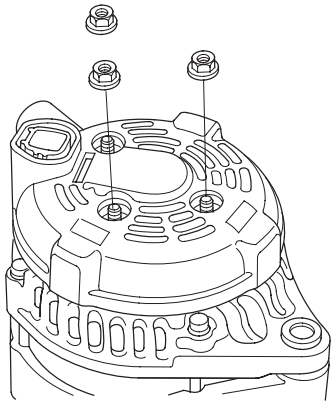
1. Test the alternator and regulator before you remove them (see page 4-28).

2. Remove the alternator (see page 4-34).

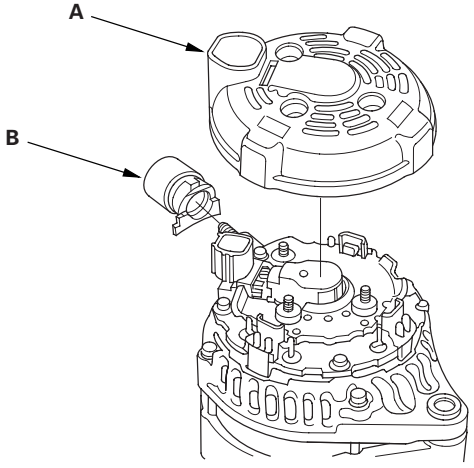
3. If the front bearing needs replacing, remove the pulley locknut with a 10 mm wrench (A) and a 22 mm wrench (B). If necessary, use an impact wrench.



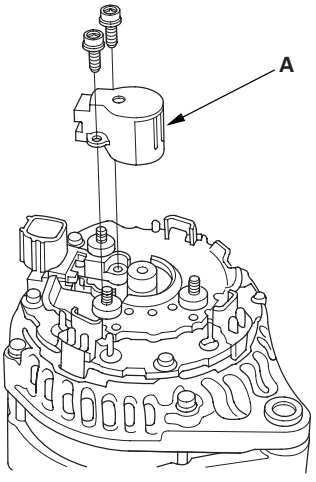
4. Remove the three flange nuts.



5. Remove the end cover (A) and the insulator (B).



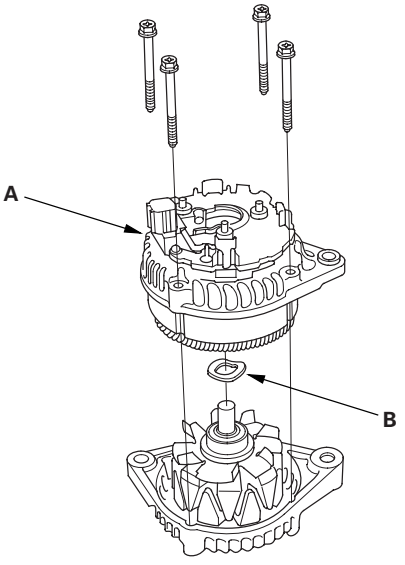
6. Remove the brush holder (A).



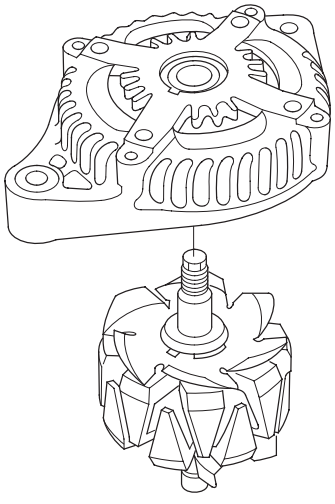
(cont'd)

Alternator Overhaul (cont'd)

7. Remove the four bolts, then remove the rear housing assembly (A) and washer (B).



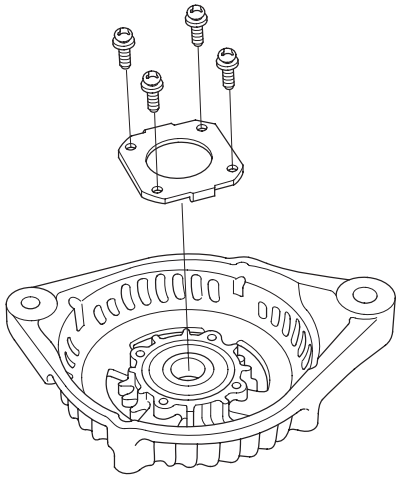
8. If you are not replacing the front bearing, go to step 13. Remove the rotor from the drive-end housing.



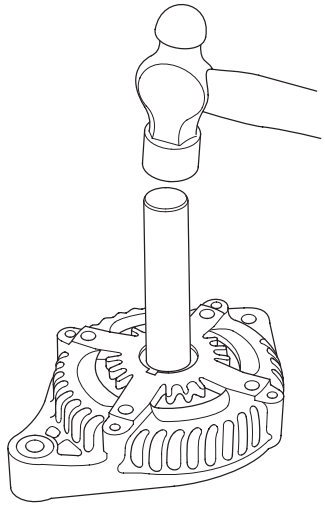
9. Inspect the rotor shaft for scoring, and inspect the bearing journal surface in the drive-end housing for seizure marks.

   - If the rotor is damaged, replace the rotor assembly.
   - If the rotor is OK, go to step 10.

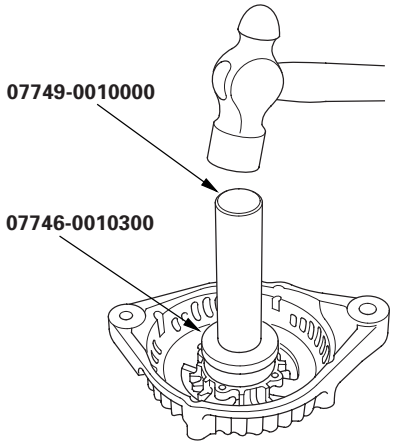
10. Remove the front bearing retainer plate.



11. Drive out the front bearing with a brass drift and hammer.



12. Install a new front bearing in the drive end housing with a hammer, driver handle, and attachment.

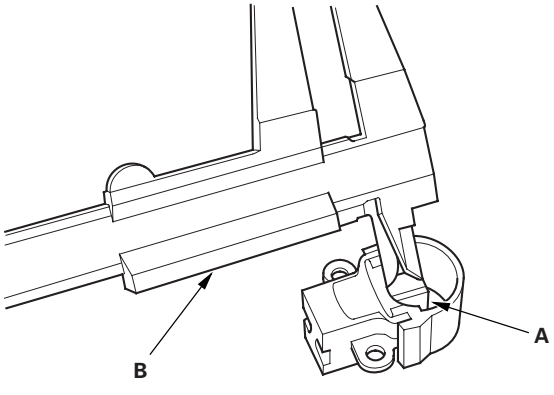


Alternator Brush Inspection

13. Measure the length of both brushes (A) with a vernier caliper (B).

    - If either brush is shorter than the service limit, replace the brush holder assembly.
    - If the brush length is OK, go to step 14.

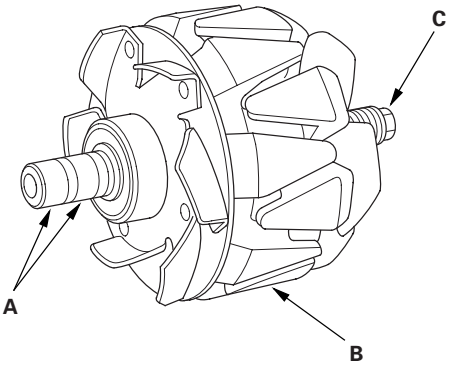
    Alternator Brush Length
    Standard (New): 10.5 mm (0.41 in.)
    Service Limit: 1.5 mm (0.06 in.)



Rotor Slip Ring Test

14. Check for continuity between the slip rings (A).

    - If there is continuity, go to step 15.
    - If there is no continuity, replace the rotor assembly.



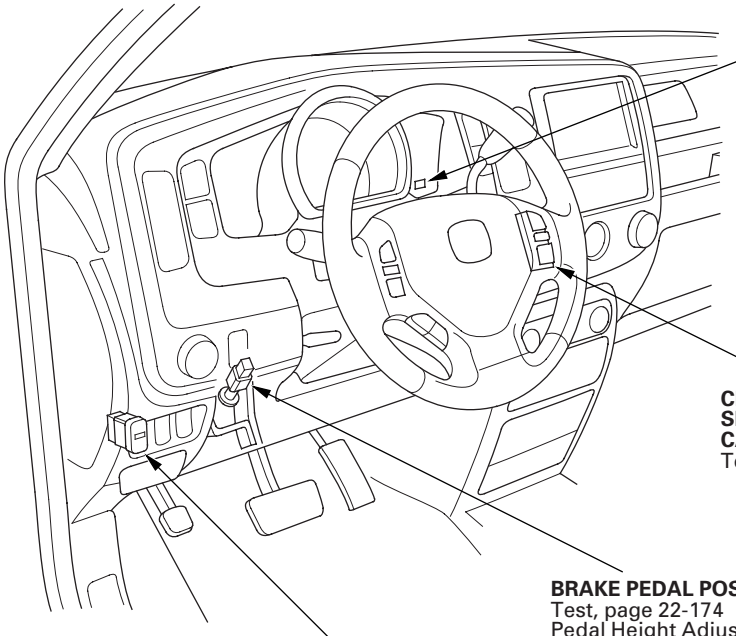
15. Check for continuity between each slip ring and the rotor (B) and the rotor shaft (C).

    - If there is no continuity, replace the rear housing assembly, and go to step 16.
    - If there is continuity, replace the rotor assembly.

16. Assemble the alternator in the reverse order of disassembly, and note these items:

    - Be careful not to get any grease or oil on the slip rings.
    - If you removed the pulley, tighten its locknut to 110 N·m (11.2 kgf·m, 81.0 lbf·ft) when you reinstall it.

Component Location Index

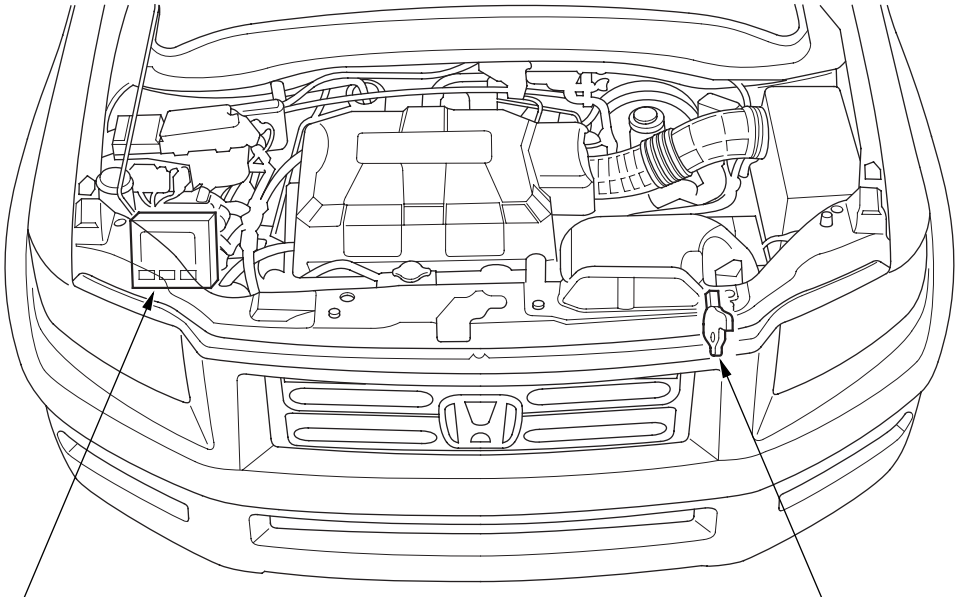


CRUISE CONTROL INDICATOR
(Built into gauge control module)

CRUISE CONTROL
SET/DECEL, RESUME/ACCEL,
CANCEL SWITCH
Test/Replacement, page 4-46

BRAKE PEDAL POSITION SWITCH
Test, page 22-174
Pedal Height Adjustment, page 19-6

CRUISE CONTROL MAIN SWITCH
Test/Replacement, page 4-46



POWERTRAIN CONTROL MODULE (PCM)
Cruise Control Input Test, page 4-44

TRANSMISSION RANGE SWITCH
Test, page 14-272
Replacement, page 14-273

Symptom Troubleshooting Index

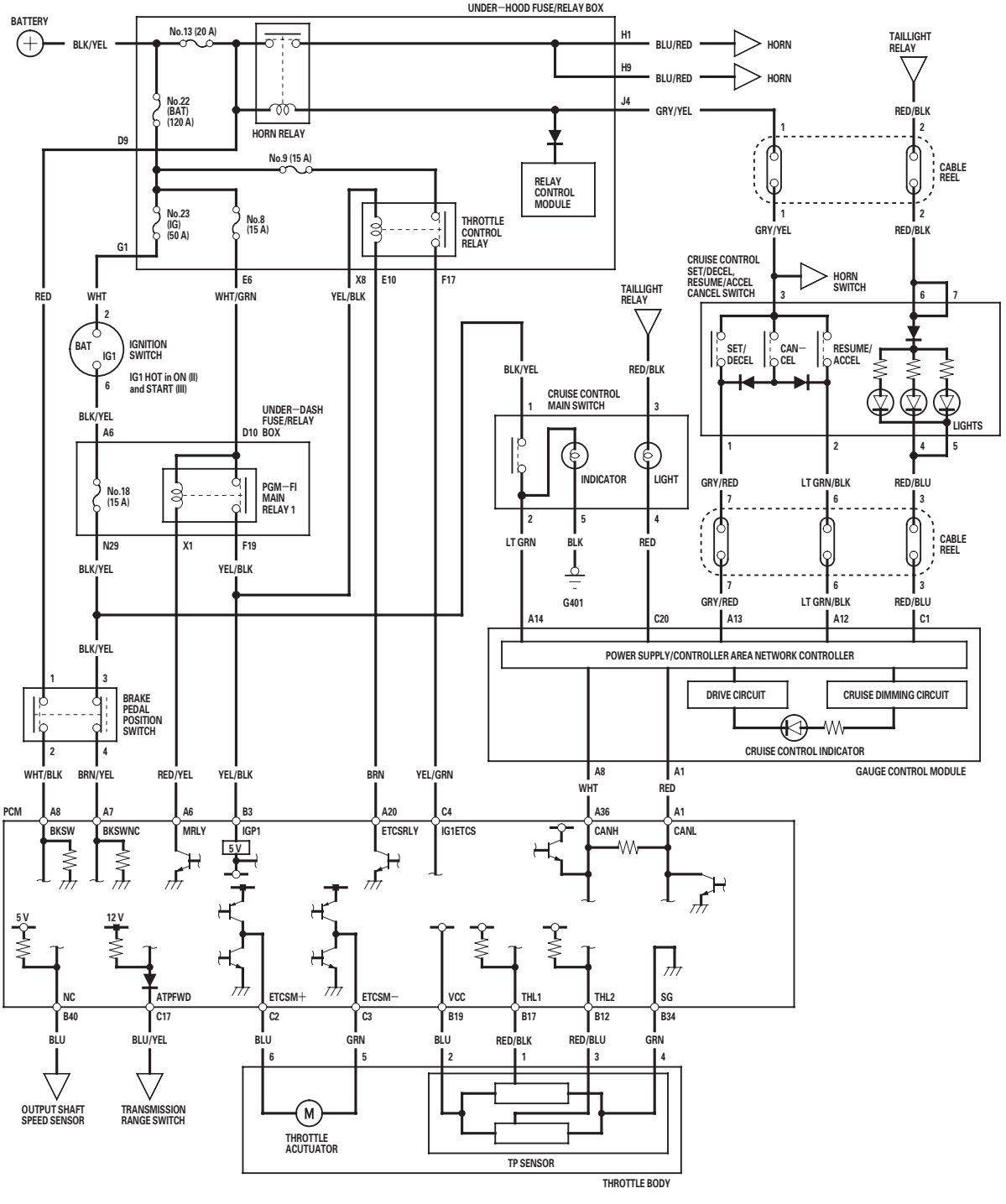
Symptom	Diagnostic procedure	Also check for
Cruise control cannot be set	1. Check for PGM-FI and body DTCs. 2. Check the No. 13 (20 A) fuse in the under-hood fuse/relay box, and No. 18 (15 A) fuse in the under-dash fuse/relay box. 3. Do the cruise control input test (see page 4-44). 4. Do the cruise control main switch test (see page 4-46).	
Cruise control can be set, but the cruise control main switch indicator does not come on	1. Do the cruise control main switch test (see page 4-46). 2. Check for a faulty cruise control main switch illumination bulb.	Faulty cruise control main switch
Cruise control can be set, but the cruise control indicator does not come on	1. Check for PGM-FI and body DTCs. 2. Do the gauge control module self-diagnostic function (see page 22-244). 3. Do the cruise control input test (see page 4-44). Test the cruise control indicator signal input.	Faulty gauge control module
Vehicle does not decelerate or accelerate accordingly when the set/decel or resume/accel switch is pressed	1. Check for PGM-FI and body DTCs. 2. Do the cruise control input test (see page 4-44). Test the cruise control set/decel, resume/accel switch signal input. 3. Do the cruise control set/decel, resume/accel, cancel switch test (see page 4-46).	Open circuit, loose or disconnected terminals: GRY/RED or LT GRN/BLK
Set speed does not cancel when the brake pedal is pressed	1. Check for PGM-FI and body DTCs. 2. Do the cruise control input test (see page 4-44). Test the brake pedal position switch signal input. 3. Do the brake pedal position switch test (see page 22-174).	• Short to power on the BRN/YEL wire • Faulty brake pedal position switch
Set speed does not cancel when the cruise control main switch is pressed	1. Check for PGM-FI and body DTCs. 2. Do the cruise control input test (see page 4-44). Test the cruise control main switch signal input. 3. Do the cruise control main switch test (see page 4-46).	Short to power on the LT GRN wire
Set speed does not cancel when the cancel switch is pressed	1. Check for PGM-FI and body DTCs. 2. Do the cruise control input test (see page 4-44). Test the cruise control cancel switch signal input. 3. Do the cruise control set/decel, resume/accel, cancel switch test (see page 4-46).	Open circuit, loose or disconnected terminals: GRY/RED or LT GRN/BLK

(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
Set speed will not resume when the resume/accel switch is pressed (with the cruise control main switch turned on, and set speed temporarily canceled by pressing the brake pedal)	1. Check for PGM-FI and body DTCs. 2. Check the brake pedal position switch adjustment (see page 19-6). 3. Do the cruise control input test (see page 4-44). Test the cruise control resume/accel switch signal input. Test the brake pedal position switch signal input. 4. Do the cruise control set/decel, resume/accel, cancel switch test (see page 4-46).	• Faulty brake pedal position switch • Open circuit, loose or disconnected terminals: LT GRN/BLK
With the ignition switch ON (II), and the lighting switch turned on, the cruise control main switch illumination does not come on	1. Replace the cruise control main switch illumination bulb (see page 4-46). 2. Do the cruise control main switch test (see page 4-46).	
With the ignition switch ON (II), and the lighting switch turned on, the cruise control set/decel, resume/accel, cancel switch illumination does not come on	Replace the cruise control set/decel, resume/accel, cancel switch (see page 4-46).	

Circuit Diagram



Cruise Control Input Test

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
2. Turn the ignition switch ON (II).
3. Go to PGM-FI, and check for DTCs.
4. Do the following tests while monitoring parameters in the PGM-FI DATA LIST with the HDS.

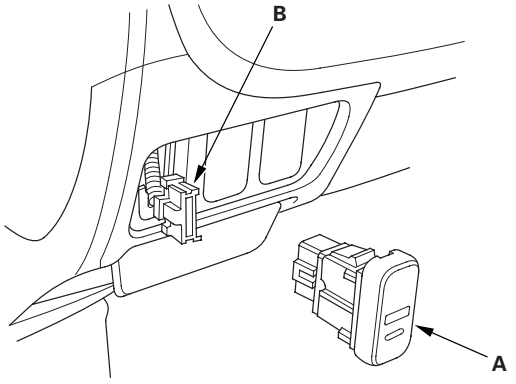
   NOTE: Intermitent failures are often caused by loose circuit connections. While monitoring cruise control inputs, flex their circuits, and note if any of the test results change.

Signal to be tested	Test condition	Parameter: Desired result	Possible cause if result is not obtained
Brake switch signal	Brake pedal pressed, then released	CRUISE BRAKE SW should indicate OFF when the brake pedal is pressed and ON when the brake pedal is released.	• Faulty brake pedal position switch • Blown No. 18 (15 A) fuse in the under-dash fuse/relay box • An open in the wire between the powertrain control module (PCM) and the brake pedal position switch • A wire shorted to ground between the PCM and the brake pedal position switch
Transmission range switch signal	Shift lever in D	SHIFT/CLUTCH SW should indicate ON in P, R, N, 2, and 1 and OFF in D.	• Faulty transmission range switch • An open in the wire between the PCM and the transmission range switch • A wire shorted to ground between the PCM and the transmission range switch • Poor ground G101 and G102
Cruise control main switch signal	Cruise control main switch ON and OFF	CRUISE CONTROL MAIN SW should indicate ON when the cruise control main switch is turned ON and OFF when the cruise control main switch is turned OFF.	• Faulty cruise control main switch • An open in the wire between the gauge control module and the cruise control main switch • A wire shorted to ground between the gauge control module and the cruise control main switch • An open in the wire between the cruise control main switch and ground
Set switch signal	Set/decel switch pressed and released	CRUISE CONTROL SET SW should indicate ON when the set/decel switch is pressed and OFF when the set/decel switch is released.	• Faulty cruise control set/decel, resume/accel, cancel switch • An open in the wire between the gauge control module and the cruise control set/decel, resume/accel, cancel switch • A wire shorted to ground between the gauge control module and the cruise control set/decel, resume/accel, cancel switch

Signal to be tested	Test condition	Parameter: Desired result	Possible cause if result is not obtained
Resume switch signal	Resume/accel switch pressed and released	CRUISE CONTROL RESUME SW should indicate ON when the resume/accel switch is pressed and OFF when the resume/accel switch is released.	• Faulty cruise control set/decel, resume/accel, cancel switch • An open in the wire between the gauge control module and the cruise control set/decel, resume/accel, cancel switch • A wire shorted to ground between the gauge control module and the cruise control set/decel, resume/accel, cancel switch
Cancel switch signal	Cancel switch pressed and released	CRUISE CONTROL CANCEL SW should indicate ON when the cancel switch is pressed and OFF when the cancel switch is released.	Faulty cruise control set/decel, resume/accel, cancel switch
Cruise control indicator signal	Start the engine, turn the cruise control main switch on and drive the vehicle above 25 mph (40 km/h). Set and cancel the cruise control.	CRUISE INDICATOR should indicate ON when the cruise control is set and OFF when the cruise control is canceled.	Faulty gauge control module

Cruise Control Main Switch Test/ Replacement

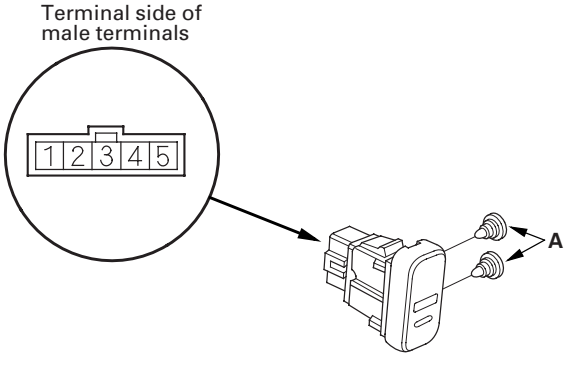
1. Release the clips of the cruise control main switch, and push the cruise control main switch (A) out of the driver's dashboard lower cover.



2. Disconnect the 5P connector (B), then remove the cruise control main switch.

3. Check for continuity between the terminals in each switch position according to the table. If there is no continuity, replace illumination bulbs (A) or the switch.

Position \ Terminal	5		2	1	3		4
OFF	○	⊗	○		○	⊗	○
ON	○	⊗	○	○	○	⊗	○



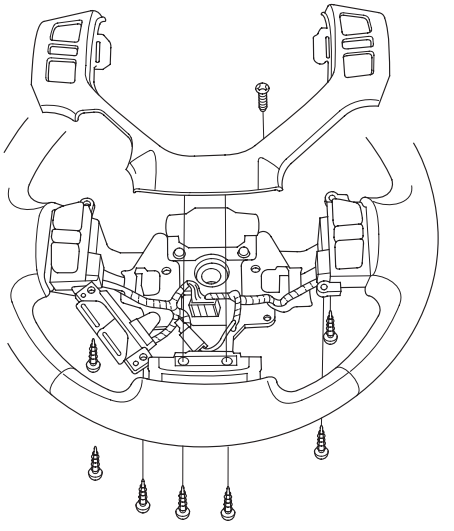
Cruise Control Set/decel, Resume/ accel, Cancel Switch Test/ Replacement

SRS components are located in this area. Review the SRS component locations (see page 24-14), and the precautions and procedures (see page 24-16), in the SRS before doing repairs or service.

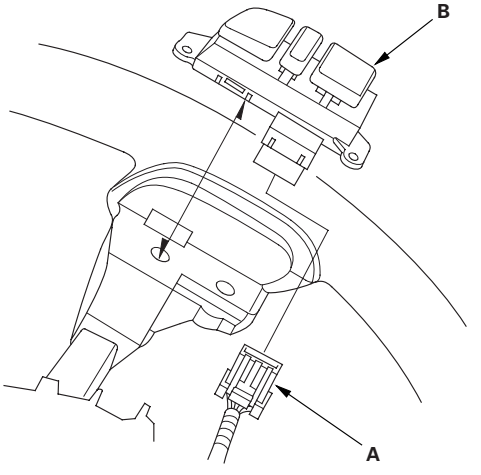
1. Remove the driver's airbag (see page 24-174).

2. Remove the steering wheel (see page 17-21).

3. Remove the steering wheel trim.



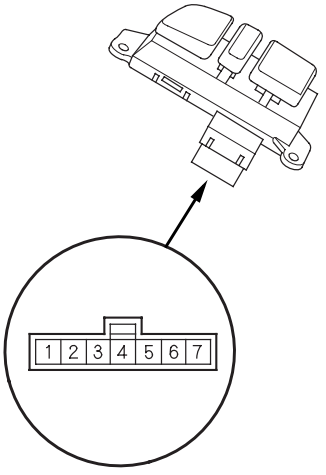
4. Disconnect the 7P connector (A), then remove the cruise control set/decel, resume/accel, cancel switch (B).



5. Check for continuity between the terminals in each switch position according to the table.

   - If there is continuity, and it matches the table, but switch failure occurred on the cruise control input test, check and repair the wire harness on the switch circuit.
   - If there is no continuity in one or more positions, replace the switch.

Terminal / Position	3		2	1
Set/decel (ON)	○			○
Resume/accel (ON)	○		○	
Cancel (ON)	○		○	○



Terminal side of male terminals

Engine Mechanical

Engine Assembly
- Engine Removal 5-2
- Engine Installation 5-12
- Engine Mount Replacement 5-23

Cylinder Head 6-1

Engine Block 7-1

Engine Lubrication 8-1

Intake Manifold and Exhaust System 9-1

Engine Assembly

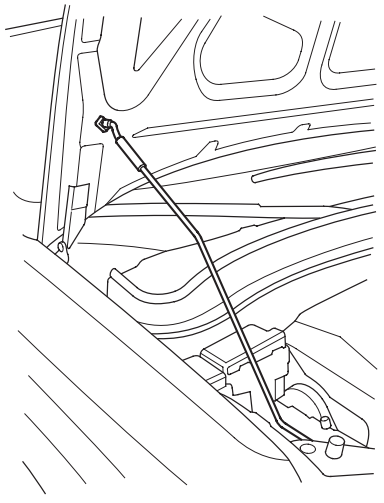
Engine Removal

Special Tools Required
- Front subframe adapter EQS02BMDXSB0
- Engine support hanger, A and Reds AAR-T-12566
- Engine hanger balance bar VSB02C000019
- Engine hanger adapter set VSB02C000024

These special tools are available through the Honda Tool and Equipment program, 1-888-424-6857.

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- To avoid damage, unplug the wiring connectors carefully while holding the connector portion.
- Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact other wiring, hoses, or interfere with other parts.

1. Secure the hood in the wide open position (position the support rod in the lower hole).



2. Relieve the fuel pressure (see page 11-286).

3. Drain the power steering system fluid, then plug the fluid reservoir and return hose (see page 17-12).

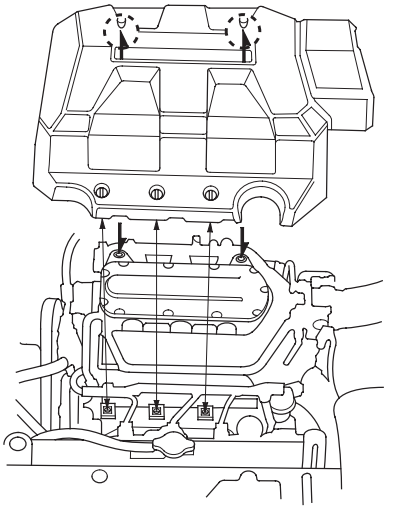
4. Remove the bulkhead cover (see page 20-171).

5. Make sure you have the anti-theft codes for the audio system and navigation system (if equipped). Make sure the ignition switch is OFF.

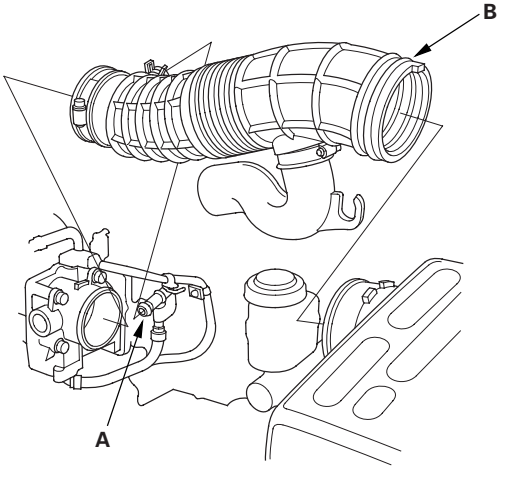
6. Disconnect the negative cable from the battery, then disconnect the positive cable.

7. Remove the battery.

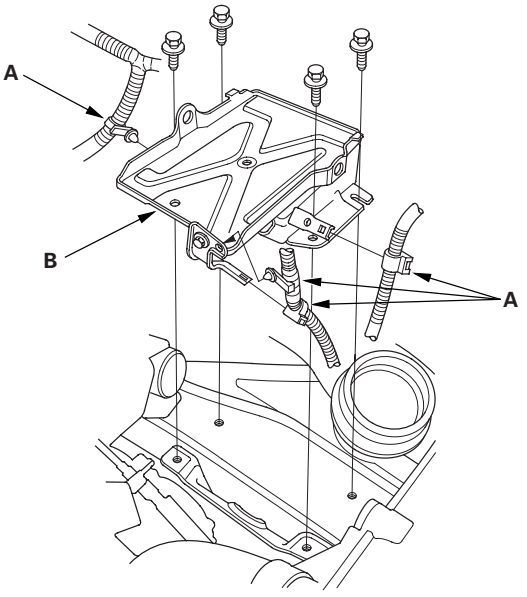
8. Remove the engine cover.



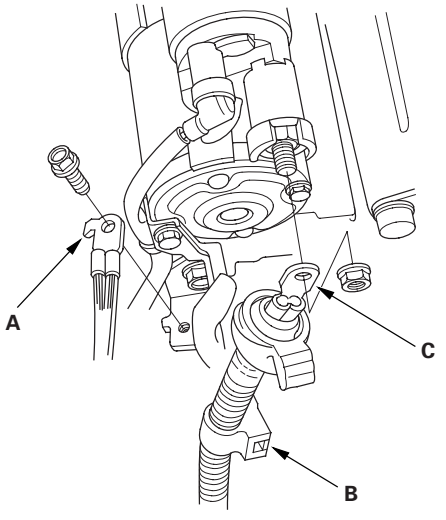
9. Disconnect the breather pipe (A), then remove the air intake duct (B).



10. Remove the harness clamps (A), then remove the battery base (B).

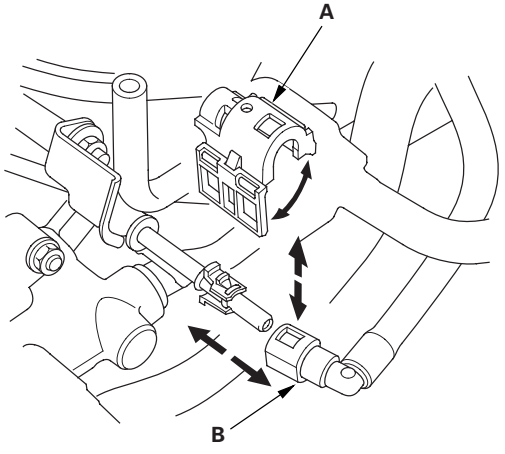


11. Remove the ground cable (A), harness clamp (B) and starter motor cable (C).

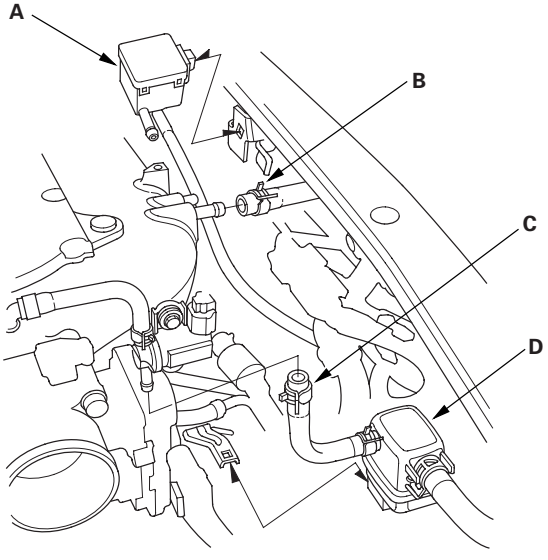


12. Remove the shift cable (see step 19 on page 14-219).

13. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (B) (see page 11-293).



14. Remove the transfer breather tube box (A) and disconnect brake booster vacuum hose (B).



15. Disconnect the evaporative emission (EVAP) canister hose (C), then remove the purge joint (D).

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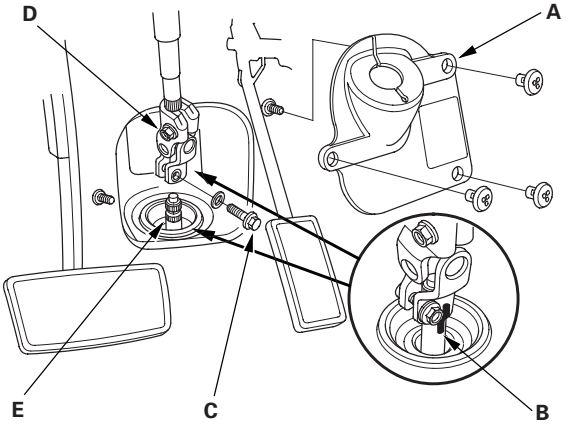
Engine Removal (cont'd)

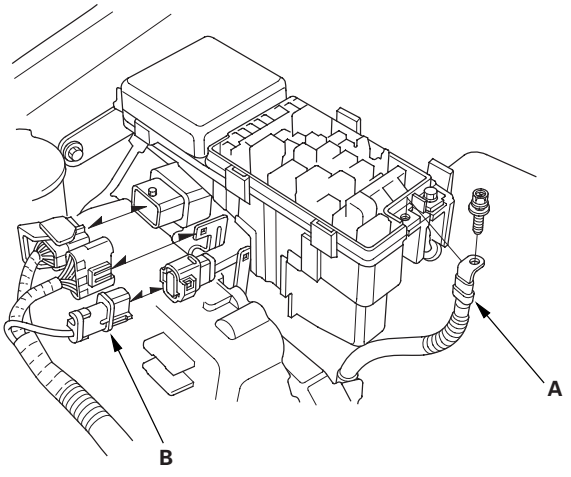
16. Remove the steering wheel (see page 17-21).

17. Remove the steering joint cover (A).



18. Make a reference mark (B) across the steering joint and steering gearbox pinion shaft. Remove the steering joint bolt (C), and loosen the steering joint bolt (D), then disconnect the steering joint from the steering gearbox pinion shaft (E).

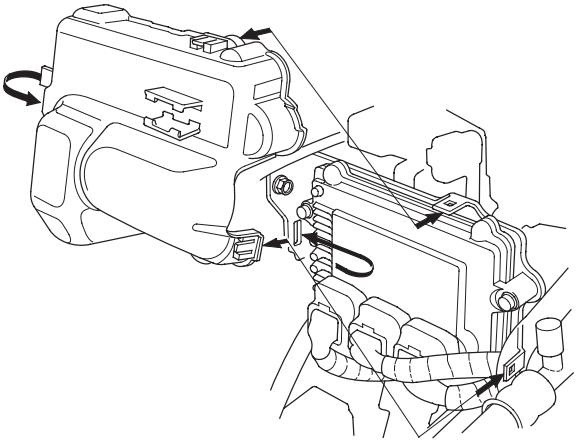
19. Remove the alternator cable (A) from the under-hood fuse/relay box.



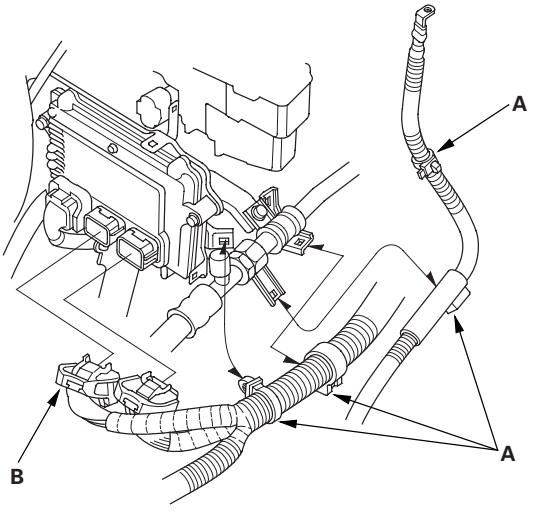
20. Disconnect the harness connectors (B).

21. Remove the coolant reservoir from the bracket.

22. Remove the powertrain control module (PCM) cover.

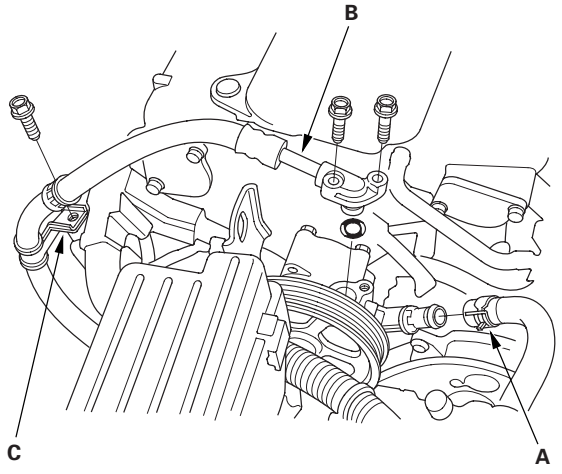


23. Remove the harness clamps (A), then disconnect the two PCM connectors (B).



24. Remove the drive belt (see page 4-31).

25. Remove the power steering (P/S) pump inlet hose (A) and P/S pump outlet hose (B) from the P/S pump, then plug the P/S lines and P/S pump.



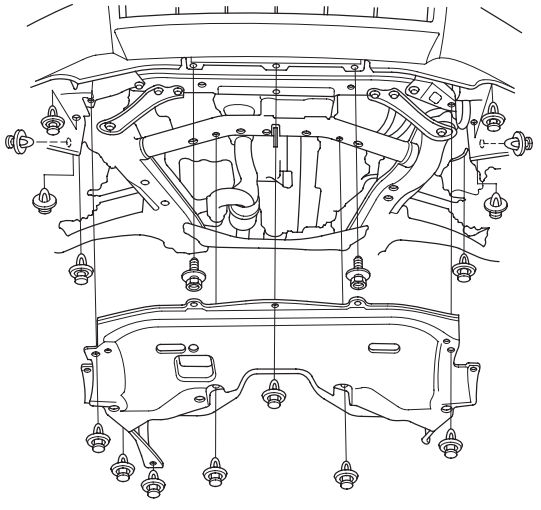
26. Remove the P/S hose clamp (C) from the cylinder head cover.

27. Remove the radiator cap.

28. Raise the vehicle on the lift to full height.

29. Remove the front wheels.

30. Remove the splash shield.

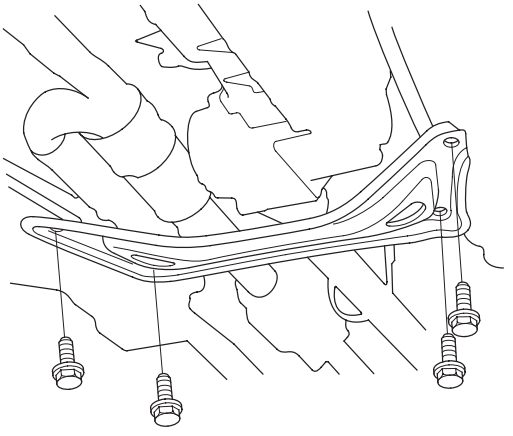


31. Loosen the drain plug in the radiator, and drain the engine coolant (see page 10-6).

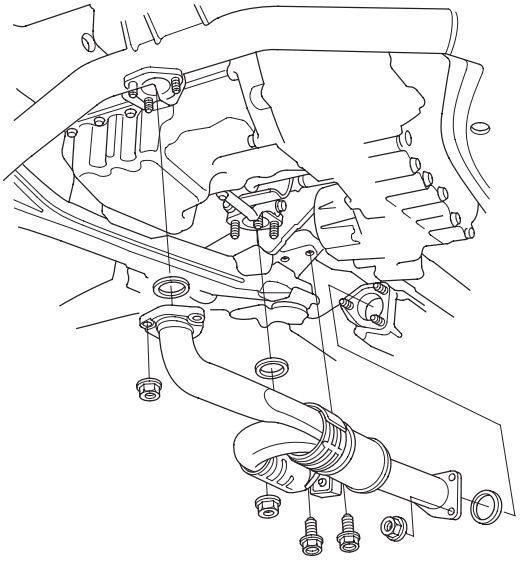
32. Drain the automatic transmission fluid (ATF) (see page 14-210).

33. Drain the engine oil (see page 8-6).

34. Remove the front subframe stiffener.



35. Remove exhaust pipe A.



(cont'd)

Engine Removal (cont'd)

36. Separate the stabilizer links from the dampers (see page 18-20).

37. Separate the tie-rod end ball joints from the knuckles (see step 9 on page 18-15).

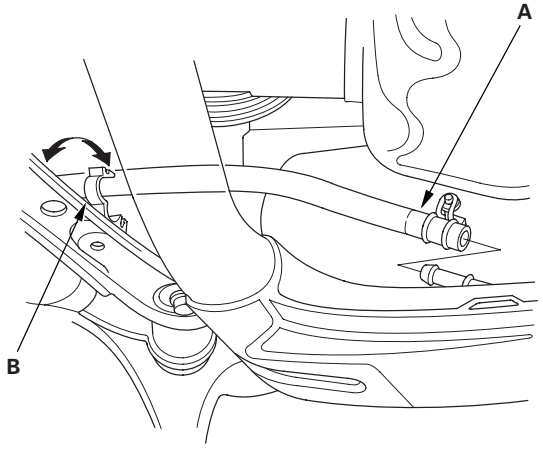
38. Separate the knuckles from the lower arms (see step 13 on page 18-15).

39. Remove the driveshafts (see page 16-4). Coat all precision-finished surfaces with clean engine oil. Tie plastic bags over the driveshaft ends.

40. Remove the propeller shaft from the transfer shaft flange (see page 16-40).

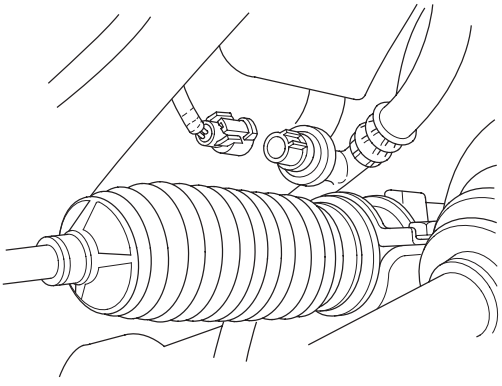
41. Remove the transfer assembly (see page 14-213).

42. Disconnect the P/S hose (A), then plug the line and hose.

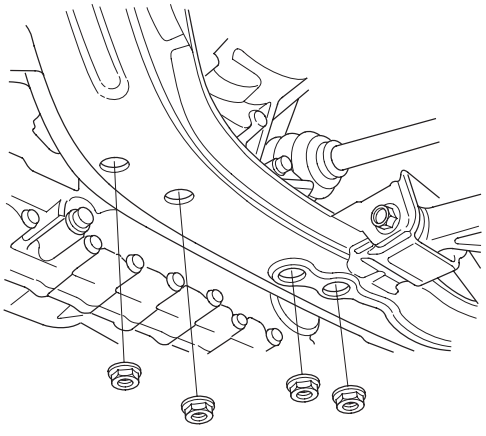


43. Unclamp the power steering fluid line clamp (B) on the front subframe.

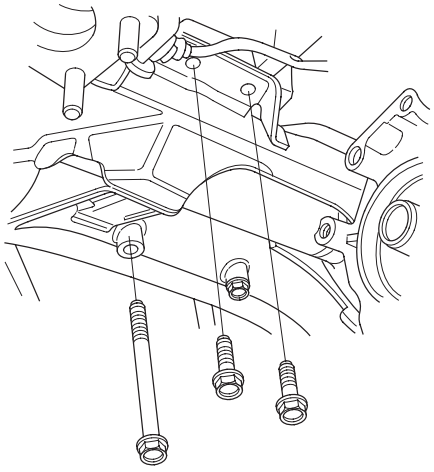
44. Disconnect the power steering pressure switch connector.



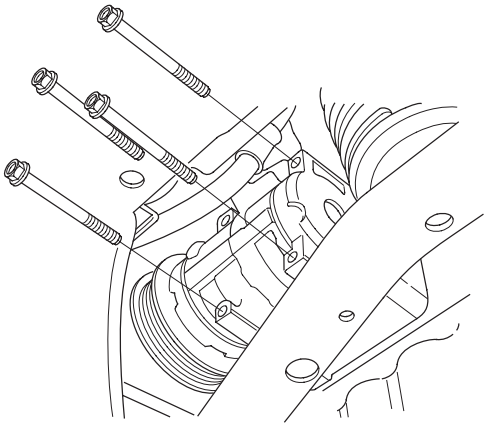
45. Remove the transmission lower front mount nuts and transmission lower rear mount nuts.



46. Remove the rear mount bolts.

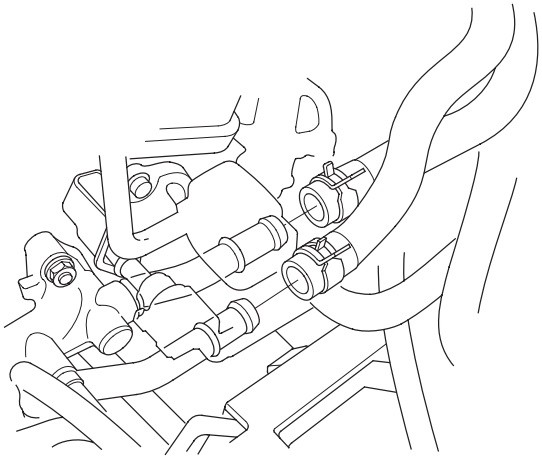


47. Remove the A/C compressor without disconnecting the A/C hoses.

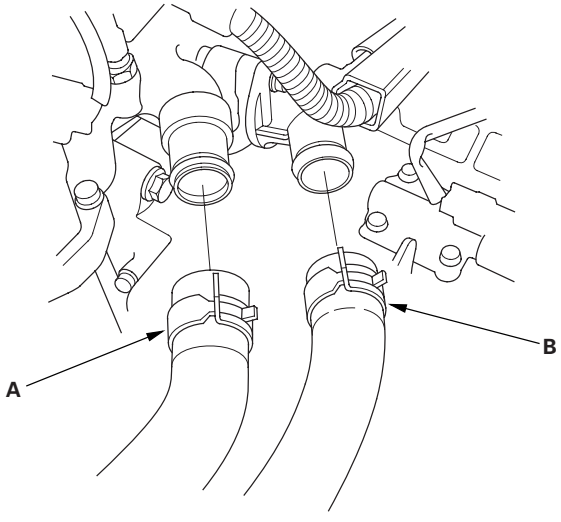


48. Lower the vehicle on the lift.

49. Disconnect the heater hoses.



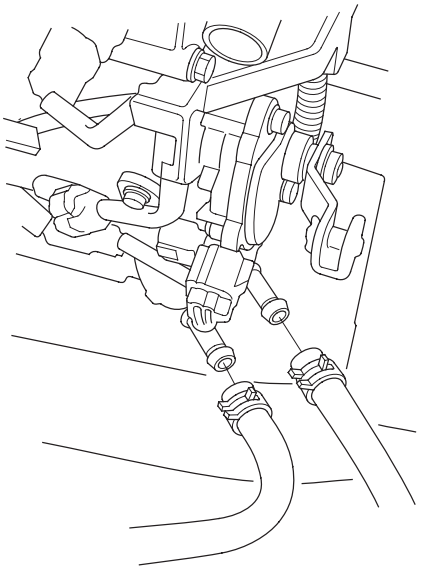
50. Remove the upper radiator hose (A) and lower radiator hose (B).



(cont'd)

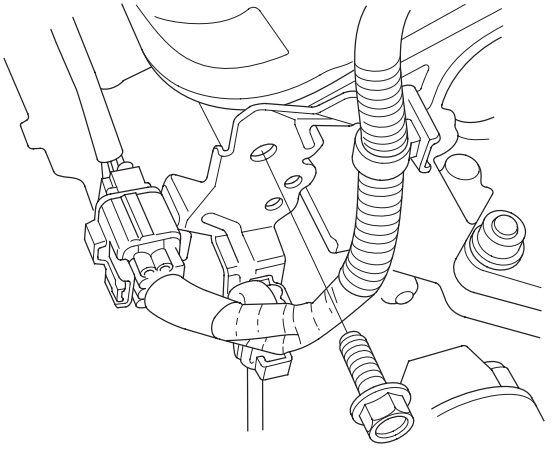
Engine Removal (cont'd)

51. Disconnect the ATF cooler hoses from the transmission, then plug the ATF cooler hoses and lines.

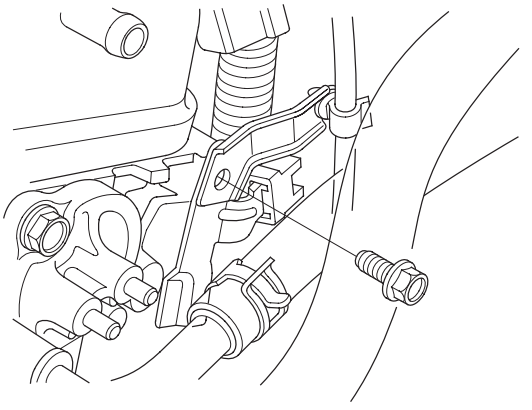


52. Remove the radiator (see page 10-12).

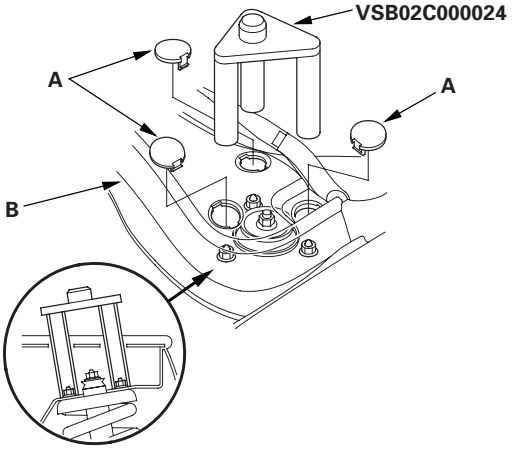
53. Remove the connector bracket from the front cylinder head; use the bracket bolt hole to attach the engine hanger balance bar front arm.



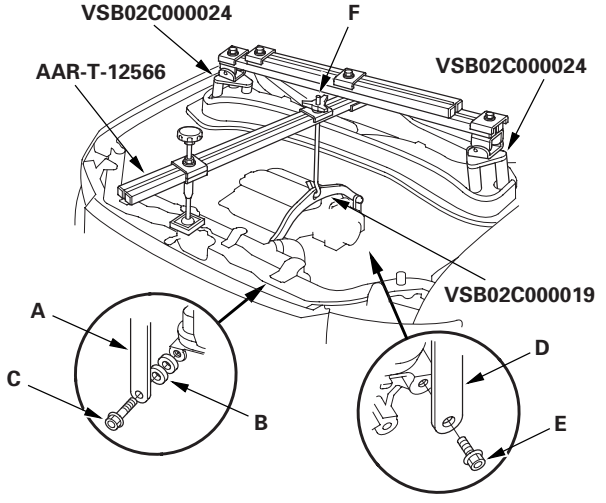
54. Remove the harness clamp bracket from the rear cylinder head; use the bracket bolt hole to attach the engine hanger balance bar rear arm.



55. Remove the service caps (A) for the front damper flange nuts from the cowl cover (B). Position the engine hanger adapters (VSB02C000024) with the ''FRONT''mark facing forward over the damper flange nuts.

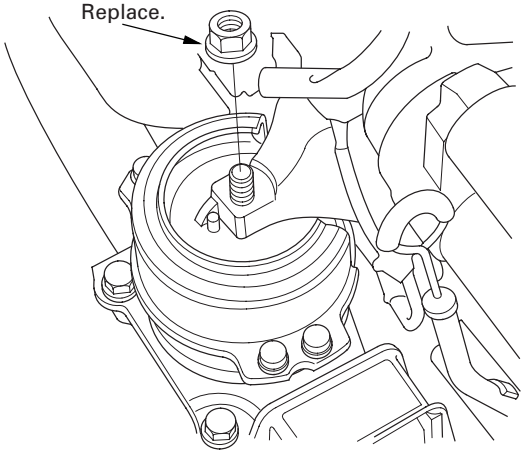


56. Install the engine hanger balance bar (VSB02C000019); then attach the front arm (A) to the front cylinder head with a spacer (B) and 10 x 1.25 mm bolt (C), and attach the rear arm (D) to the rear cylinder head with 8 x 1.25 mm bolt (E).



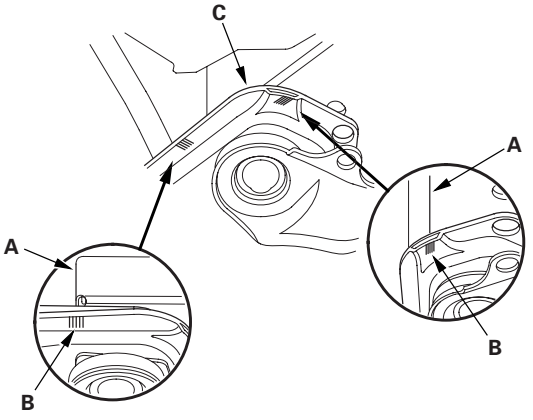
57. Install the engine support hanger (AAR-T-12566) to the vehicle, and attach the hook to the slotted hole in the engine hanger balance bar. Tighten the wing nut (F) by hand to lift and support the engine/ transmission assembly.

58. Remove the front engine mount nut.

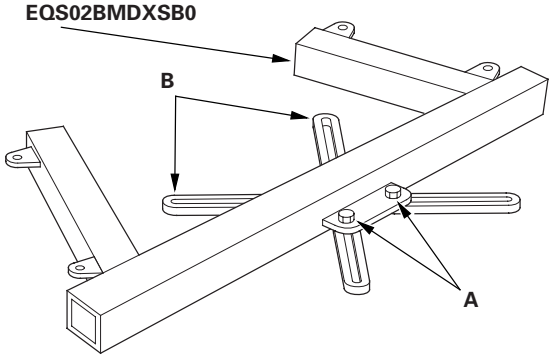


59. Raise the vehicle on the lift to full height.

60. Note the reference marks (A) on the body across the marks (B) on the edge of the front subframe (C).



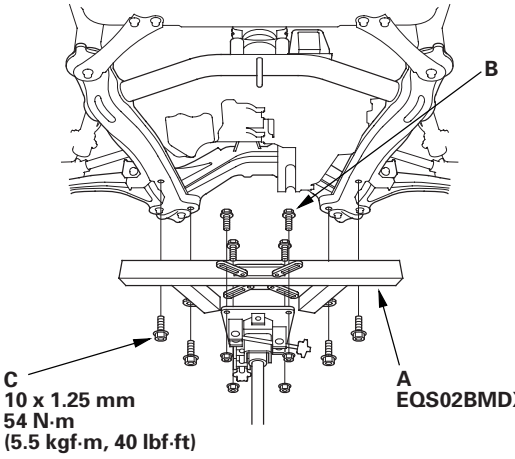
61. Loosen the four bolts (A) holding the adjustable arms (B) of the front subframe adapter to its center plate.



(cont'd)

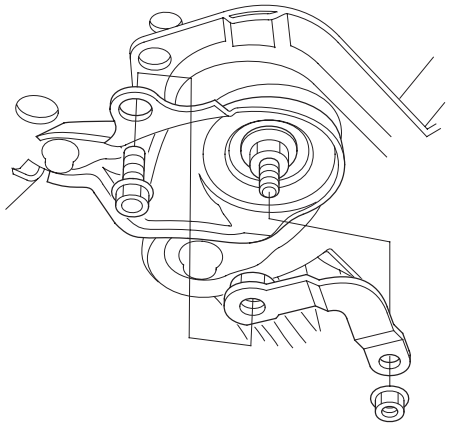
Engine Removal (cont'd)

62. Line up the slots in the arms with the bolt holes on the corner of the jack base, then attach the front subframe adapter (A) to the jack base with the bolts (B) that came with the jack. Tighten all bolts securely.

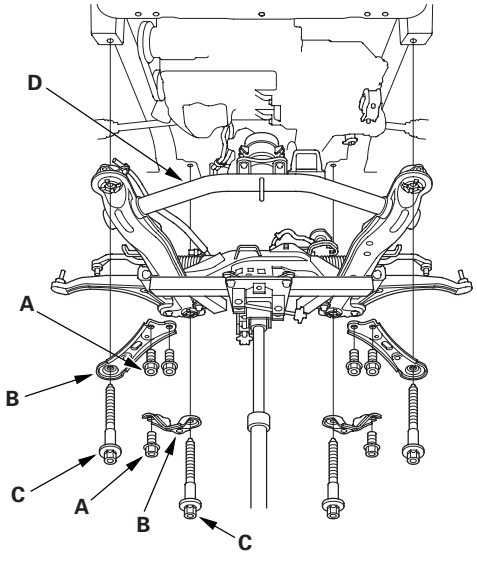


63. Raise the jack to vehicle height, then attach the front subframe adapter to the front subframe using the subframe stiffener mounting bolts (C) and bolt holes.

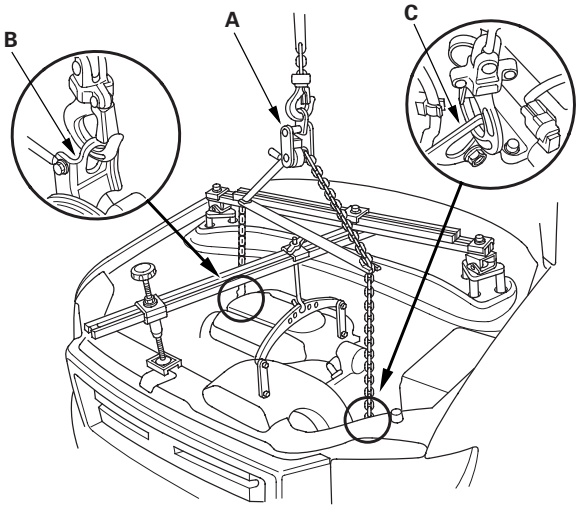
64. Remove the bolt retainers from both ends of the subframe.



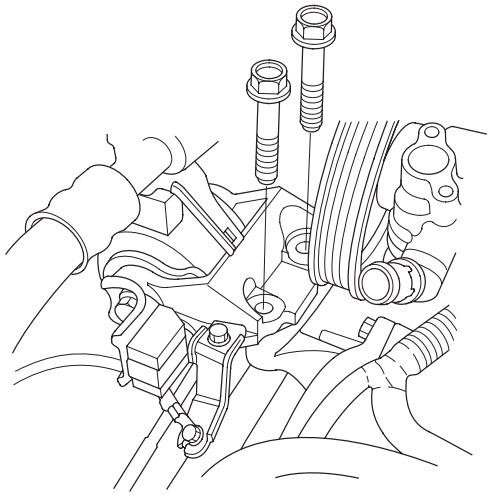
65. Remove the six 12 x 1.25 mm bolts (A) securing the subframe stiffeners (B), the four subframe mounting bolts (C), and the stiffeners, then lower the front subframe (D).



66. Lower the vehicle and attach a chain hoist (A) to the engine hook (B) and transmission hook (C). Lift up on the engine/transmission assembly until it's securely supported by the chain hoist, then remove the engine support hanger and the engine hanger balance bar from the engine and vehicle.



67. Remove the mounting bolts from the upper half of the side engine mount bracket.



68. Check that the engine/transmission is completely free of vacuum hoses, fuel and coolant hoses, and electrical wiring.

69. Slowly lower the engine/transmission assembly about 150 mm (6 in.). Check once again that all hoses and electrical wiring are disconnected and free from the engine/transmission, then lower it all the way.

70. Disconnect the chain hoist lift the engine/ transmission assembly.

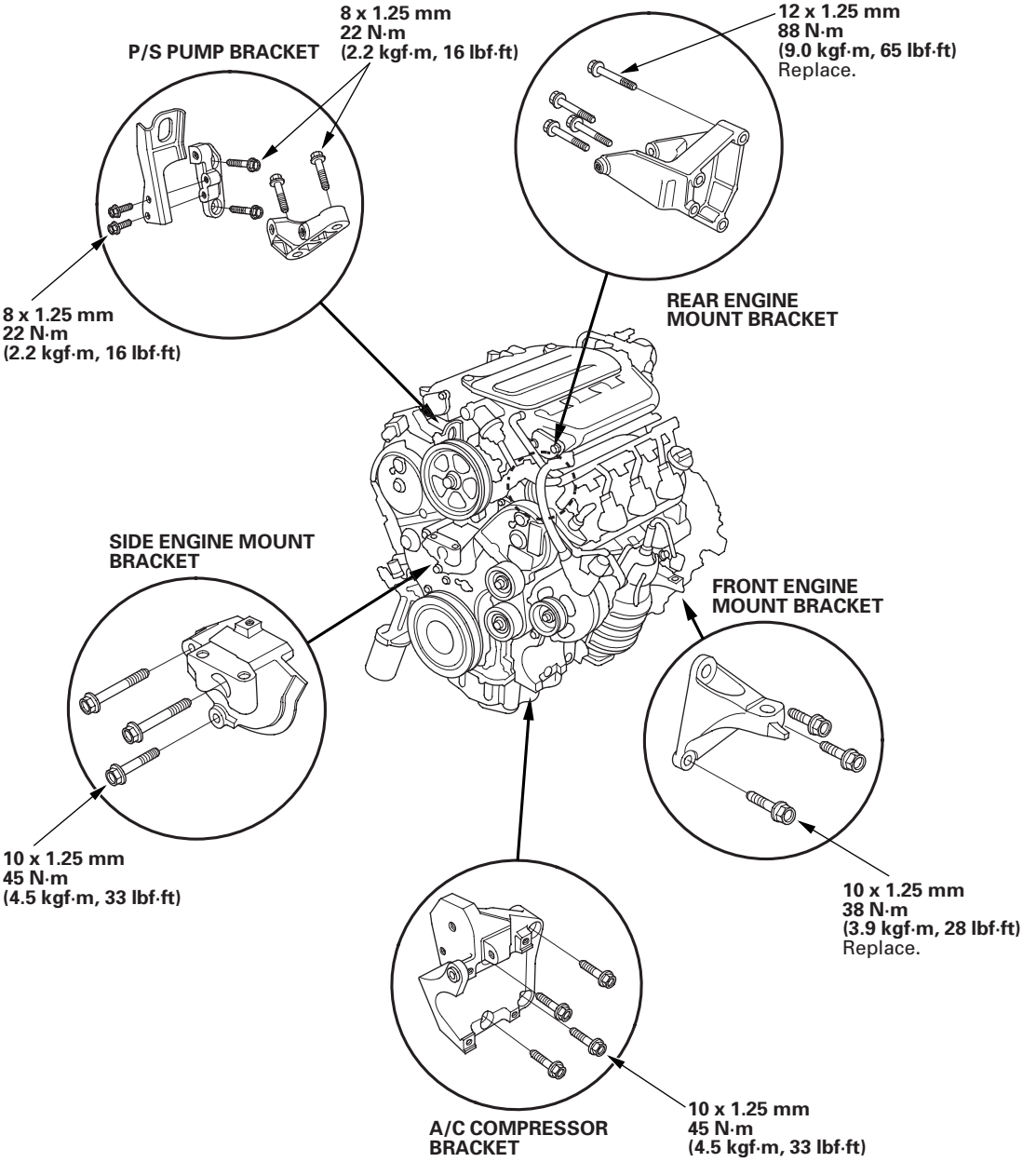
71. Raise the vehicle all the way, and remove the engine/transmission assembly from under the vehicle.

Engine Installation

Special Tools Required
- Front subframe adapter EQS02BMDXSB0
- Engine support hanger, A and Reds AAR-T-12566
- Engine hanger balance bar VSB02C000019
- Engine hanger adapter set VSB02C000024

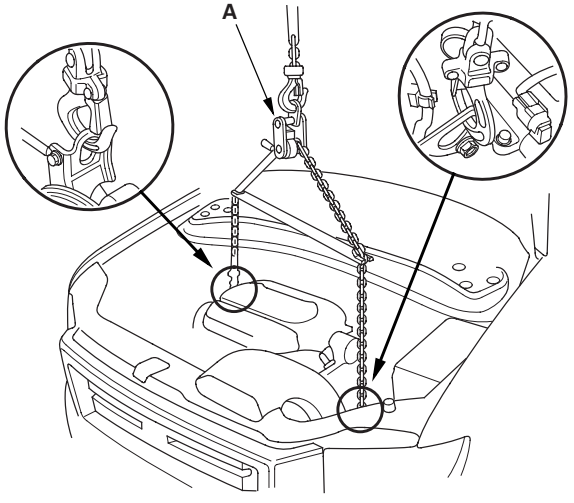
These special tools are available through the Honda Tool and Equipment program, 1-888-424-6857.

1. Install the engine mount bracket and accessory brackets, then tighten their bolts to the specified torque.

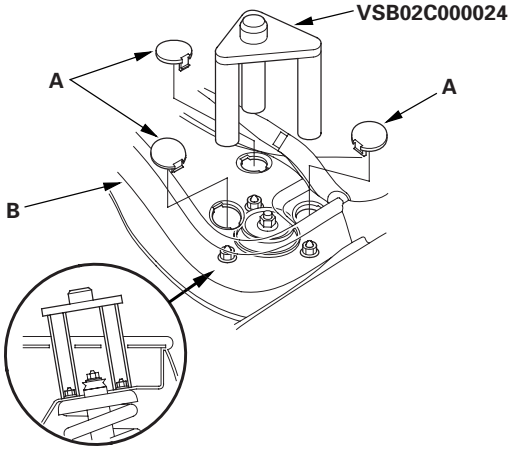


2. Position the engine/transmission assembly under the vehicle. Be sure that they are properly aligned. Carefully lower the vehicle until the engine and transmission are properly positioned in the engine compartment. Make sure the vehicle is not resting on any part of the engine or transmission. Lift and support the engine/transmission (A) and carefully raise the engine/transmission assembly into place.

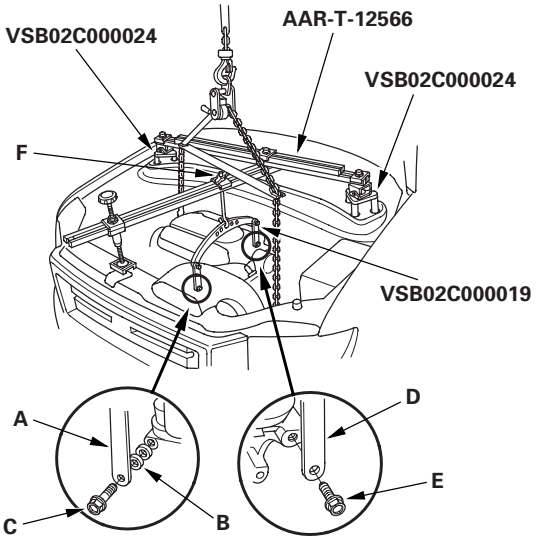
   NOTE: Reinstall the mounting bolts/support nuts in the sequence given in the following steps. Failure to follow this sequence may cause excessive noise, vibration, and reduce engine mount life.



3. Remove the service caps (A) for the front damper flange nuts from the cowl cover (B). Position the engine hanger adapters (VSB02C000024) with the ''FRONT''mark facing forward over the damper flange nuts.



4. Install the engine hanger balance bar (VSB02C000019); then attach the front arm (A) to the front cylinder head with a spacer (B) and 10 x 1.25 mm bolt (C), and attach the rear arm (D) to the rear cylinder head with an 8 x 1.25 mm bolt (E).

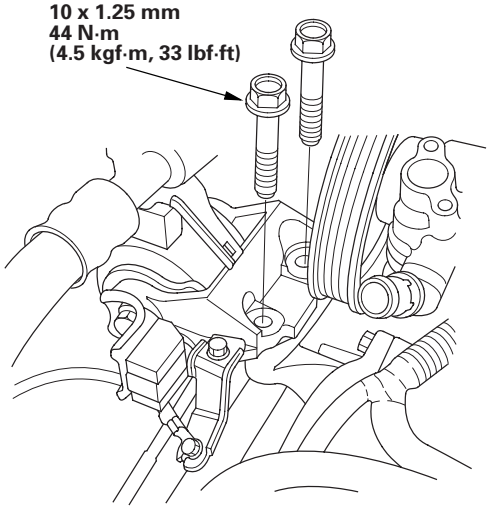


(cont'd)

Engine Installation (cont'd)

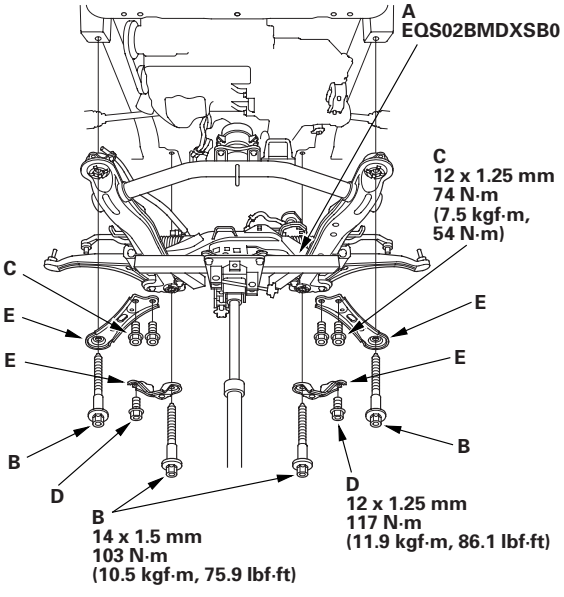
5. Install the engine support hanger (AAR-T-12566) to the vehicle, then attach the hook to the slotted hole in the engine hanger balance bar. Tighten the wing nut (F) by hand to lift and support the engine/ transmission assembly.

6. Install new mounting bolts into the upper half of the engine mount bracket. Tighten the bolts to the specified torque.



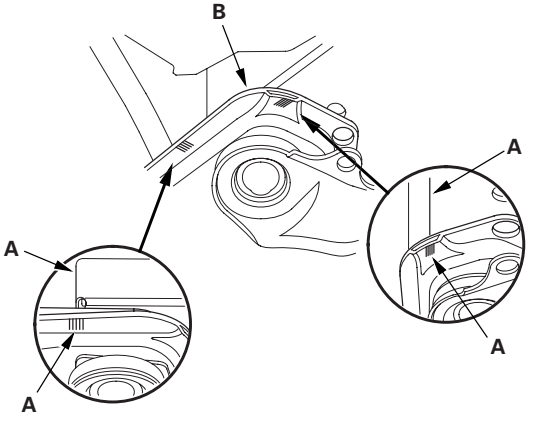
7. Remove the chain hoist, then raise the vehicle on the lift to full height.

8. Using the subframe adapter (A) and a jack, raise the front subframe up to the body.

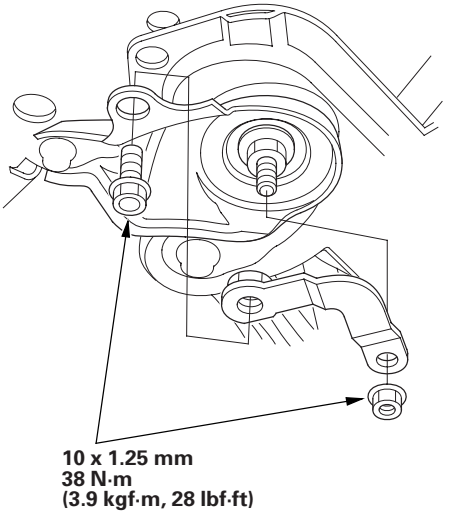


9. Loosely install the new front subframe mounting bolts (four) (B), the 12 x 1.25 mm bolts (six) (C) (D), and the stiffeners (E).

10. Align all reference marks (A) on the front subframe (B) with the body, then tighten the bolts on the front subframe to the specified torque.

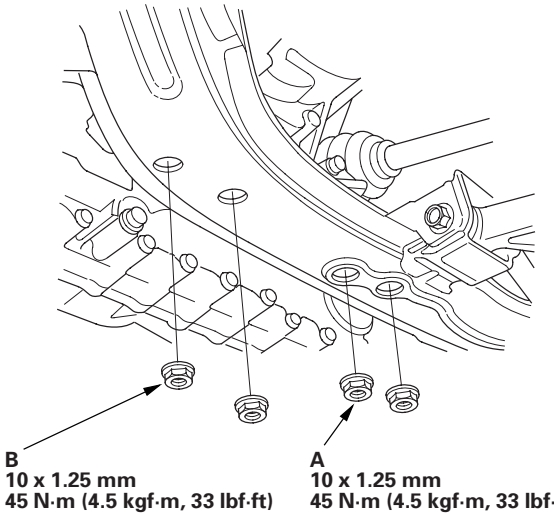


11. Install the bolt retainers on both ends of the subframe.

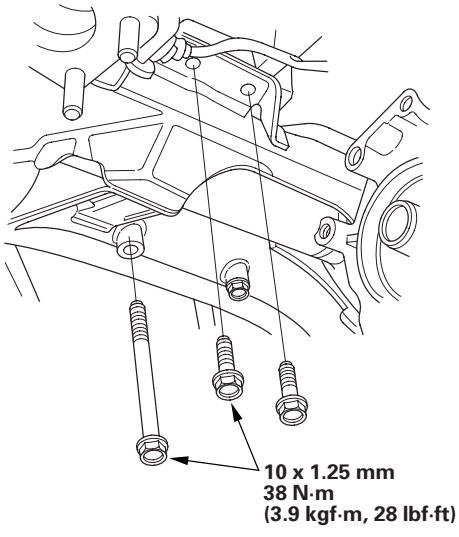


12. Remove the jack and front subframe adapter.

13. Torque the transmission lower rear mount nuts (A) and transmission lower front mount nuts (B).

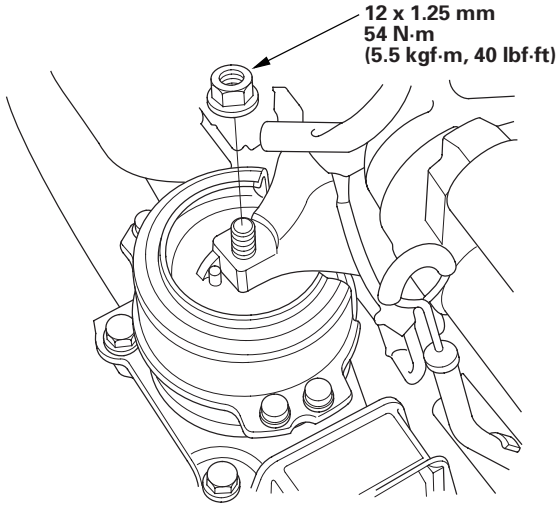


14. Torque the rear mount bolts.

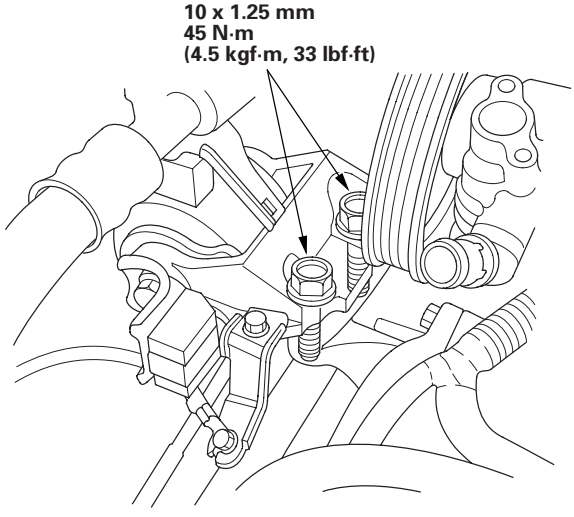


15. Lower the vehicle on the lift.

16. Torque the new front mount nut.



17. Loosen the mounting bolts for the upper half of the side engine mount bracket, then retighten them to the specified torque.



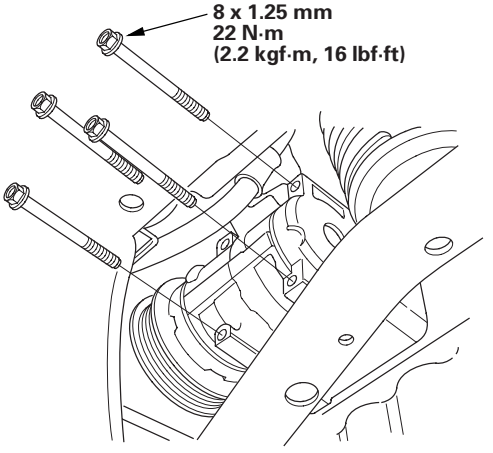
18. Remove the engine hanger and balance bar.

19. Raise the vehicle on the lift to full height.

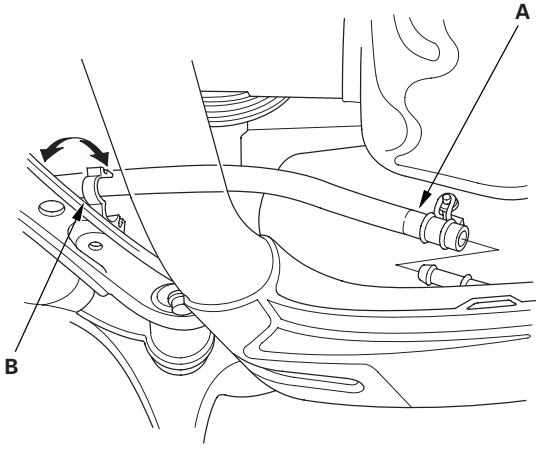
(cont'd)

Engine Installation (cont'd)

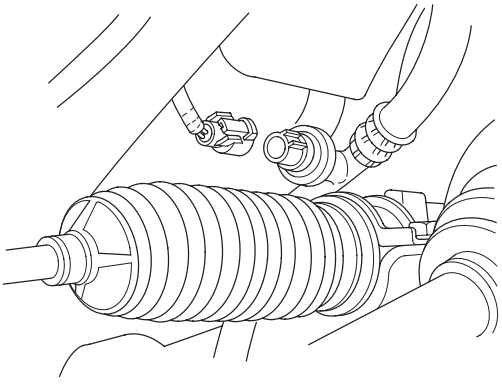
20. Install the A/C compressor.



21. Install the power steering (P/S) hose (A), then install the P/S hose on the clamp (B).



22. Connect the power steering pressure switch connector.



23. Install the transfer assembly (see page 14-215).

24. Install the propeller shaft onto the transfer shaft flange (see page 16-41).

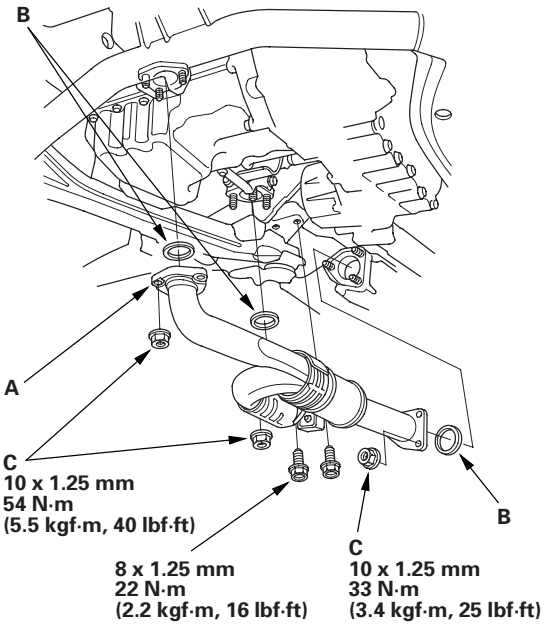
25. Install a new set ring on the end of each driveshaft, then install the driveshafts. Make sure each ring ''clicks'' into place in the differential and intermediate shaft.

26. Connect the suspension lower arms to the knuckles (see step 9 on page 18-20).

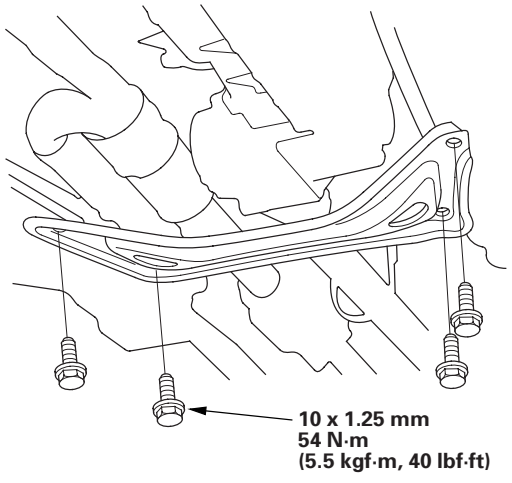
27. Connect the tie-rod end ball joints to the knuckles (see step 15 on page 18-16).

28. Connect the stabilizer links (see page 18-20).

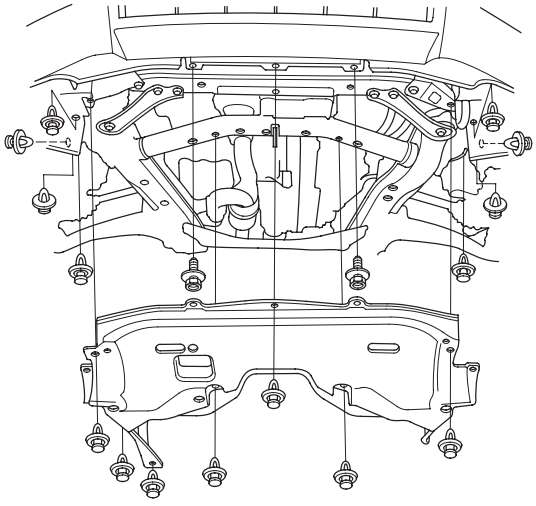
29. Install exhaust pipe A using new gaskets (B) and new self-locking nuts (C).



30. Install the front subframe stiffener using new bolts.



31. Install the splash shield.

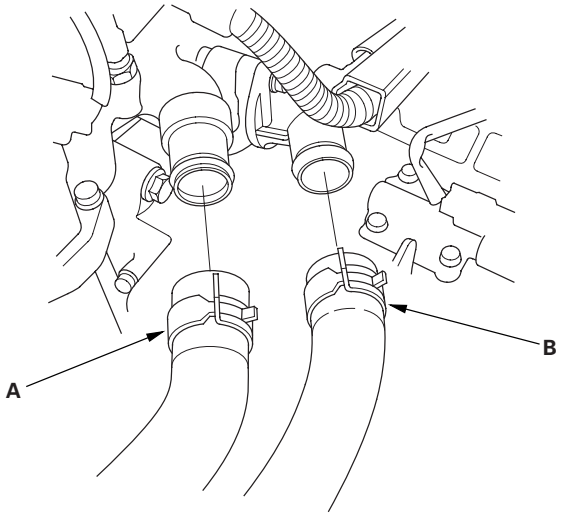


32. Install the front wheels.

33. Lower the vehicle on the lift.

34. Install the radiator (see page 10-12).

35. Install the upper radiator hose (A) and lower radiator hose (B).



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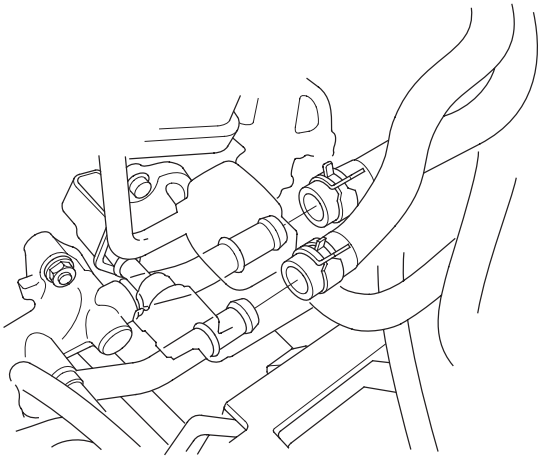
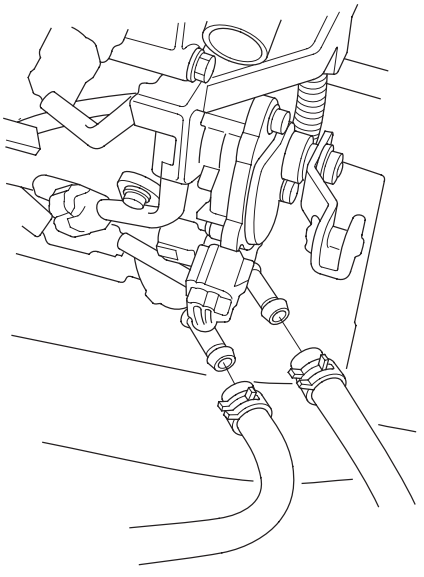
Engine Installation (cont'd)

36. Install the heater hoses.

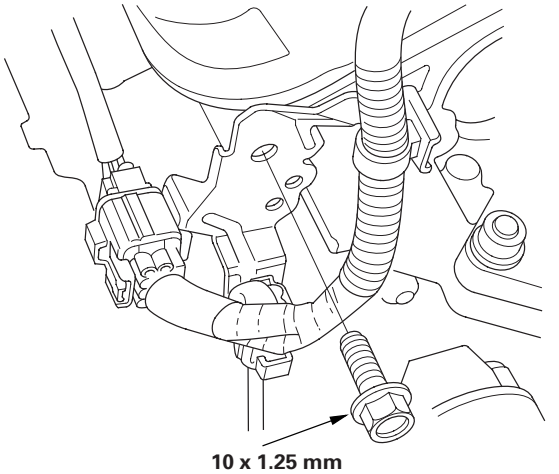


37. Install the automatic transmission fluid (ATF) cooler hoses to the transmission, and secure the hoses with the clamps.

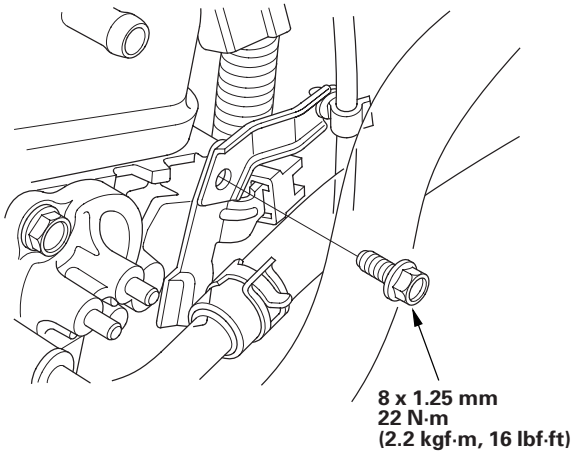
    NOTE: Check the installation location of the clamps (see step 6 on page 14-242).



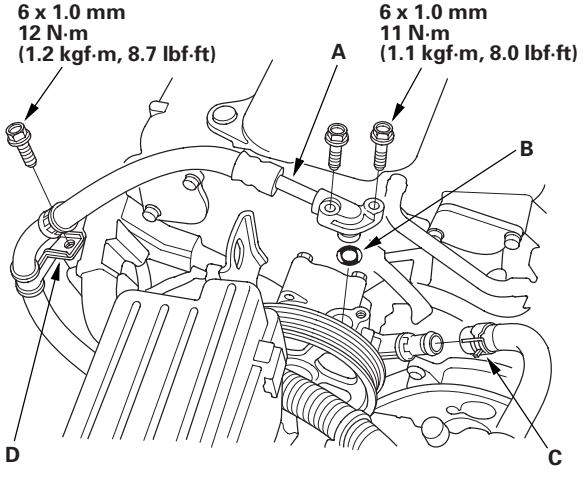
38. Install the connector bracket to the front cylinder head.



39. Install the harness clamp bracket to the rear cylinder head.



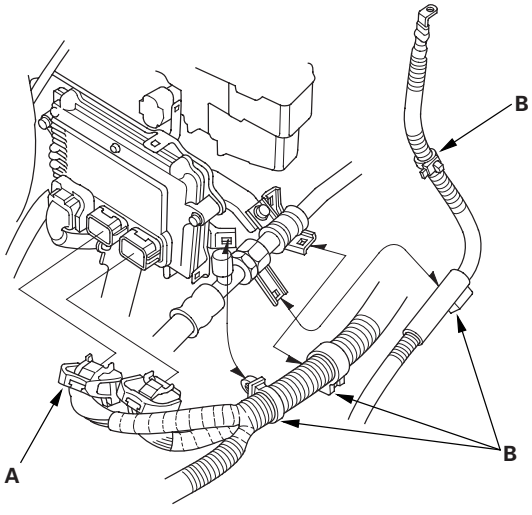
40. Install the P/S pump outlet hose (A) with a new O-ring (B), and install the P/S pump inlet hose (C).



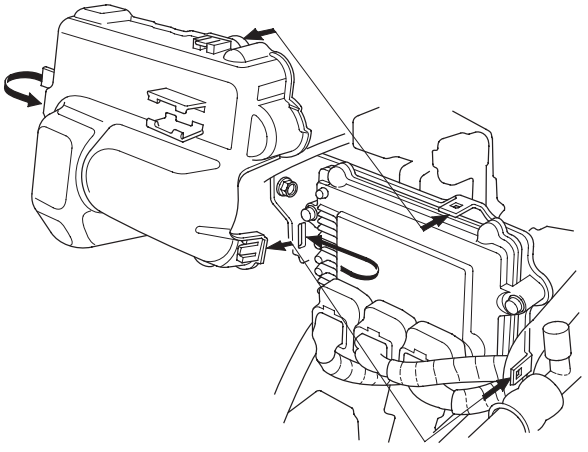
41. Install the P/S hose clamp (D) to the cylinder head.

42. Install the drive belt (see page 4-31).

43. Connect the powertrain control module (PCM) connectors (A), then install the harness clamps (B).

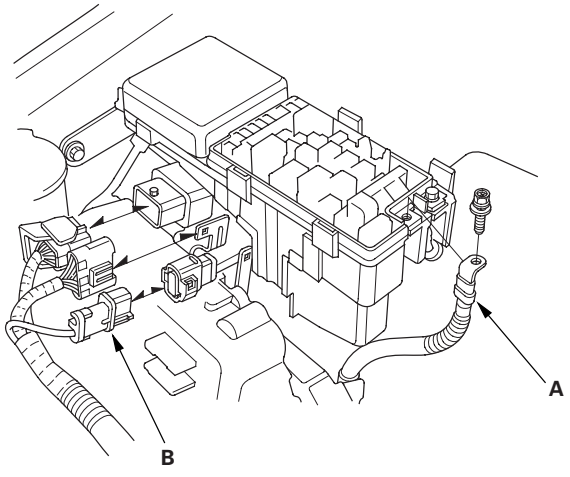


44. Install the PCM cover.



45. Install the coolant reservoir tank to the bracket.

46. Install the alternator cable (A) to the under-hood fuse/relay box.

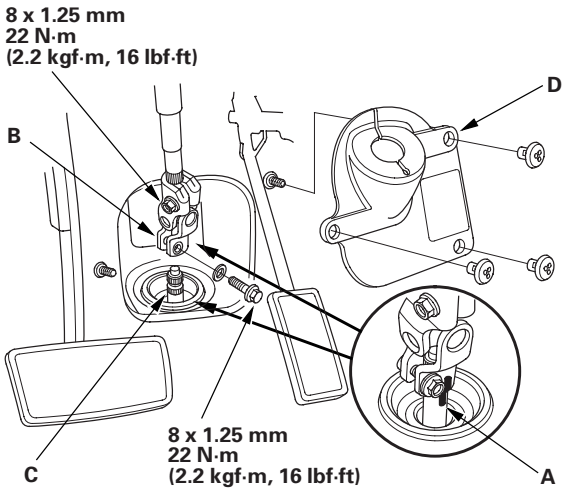


47. Connect the harness connectors (B).

(cont'd)

Engine Installation (cont'd)

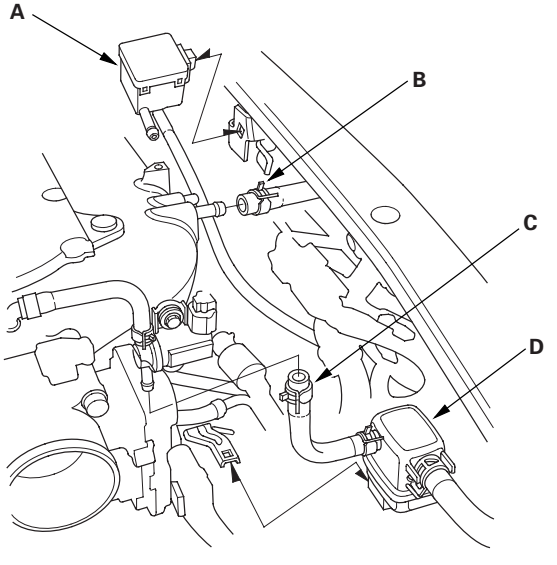
48. Align the reference mark (A) on the steering joint and steering gearbox pinion shaft. Connect the steering joint (B) to the steering gearbox pinion shaft (C). Tighten the steering joint bolt.



49. Install the steering joint cover (D).

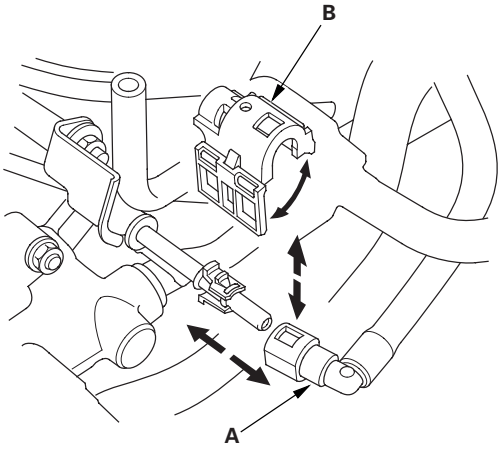
50. Install the steering wheel (see page 17-23).

51. Install the transfer breather tube box (A) and brake booster vacuum hose (B).



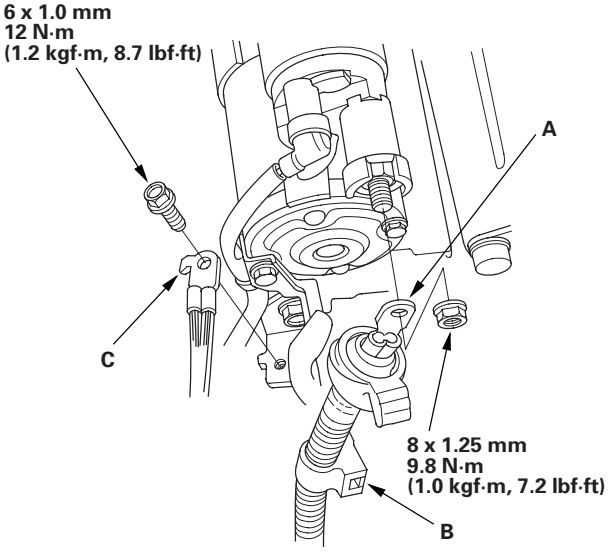
52. Install evaporative emission (EVAP) canister hose (C), then install the purge joint (D).

53. Connect the fuel feed hose (A) (see page 11-295), then install the quick-connect fitting cover (B).

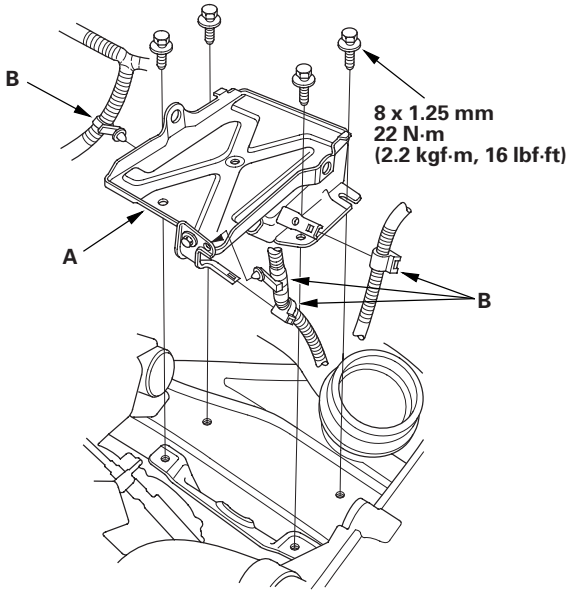


54. Install the shift cable (see step 48 on page 14-236).

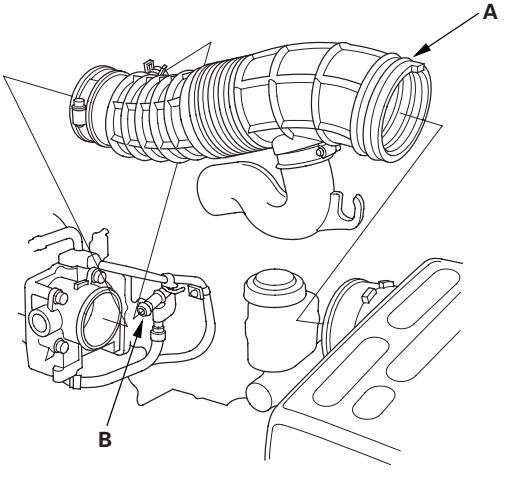
55. Install the starter motor cable (A), harness clamp (B) and ground cable (C).



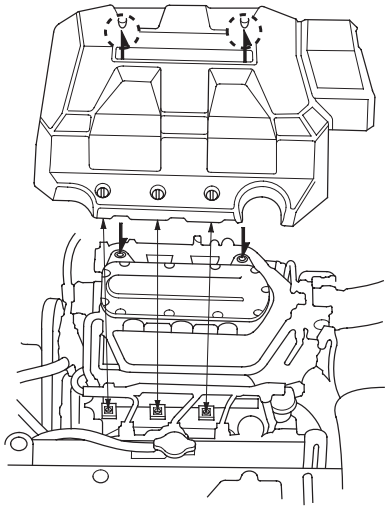
56. Install the battery base (A), then install the harness clamps (B).



57. Install the air intake duct (A), then install the breather pipe (B).



58. Install the engine cover.



59. Install the bulkhead cover (see page 20-171).

60. Install the service caps on the cowl cover.

61. Install the battery. Clean the battery posts and cable terminals, then assemble them and apply grease to prevent corrosion.

62. Move the shift lever to each gear, and verify that the A/T gear position indicator follows the transmission range switch.

63. Inspect for fuel leaks. Turn the ignition switch ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation two or three times, then check for fuel leakage at any point in the fuel line.

64. Refill the engine with engine oil (see step 4 on page 8-6).

65. Refill the transmission with ATF (see page 14-210).

66. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 9 on page 10-7).

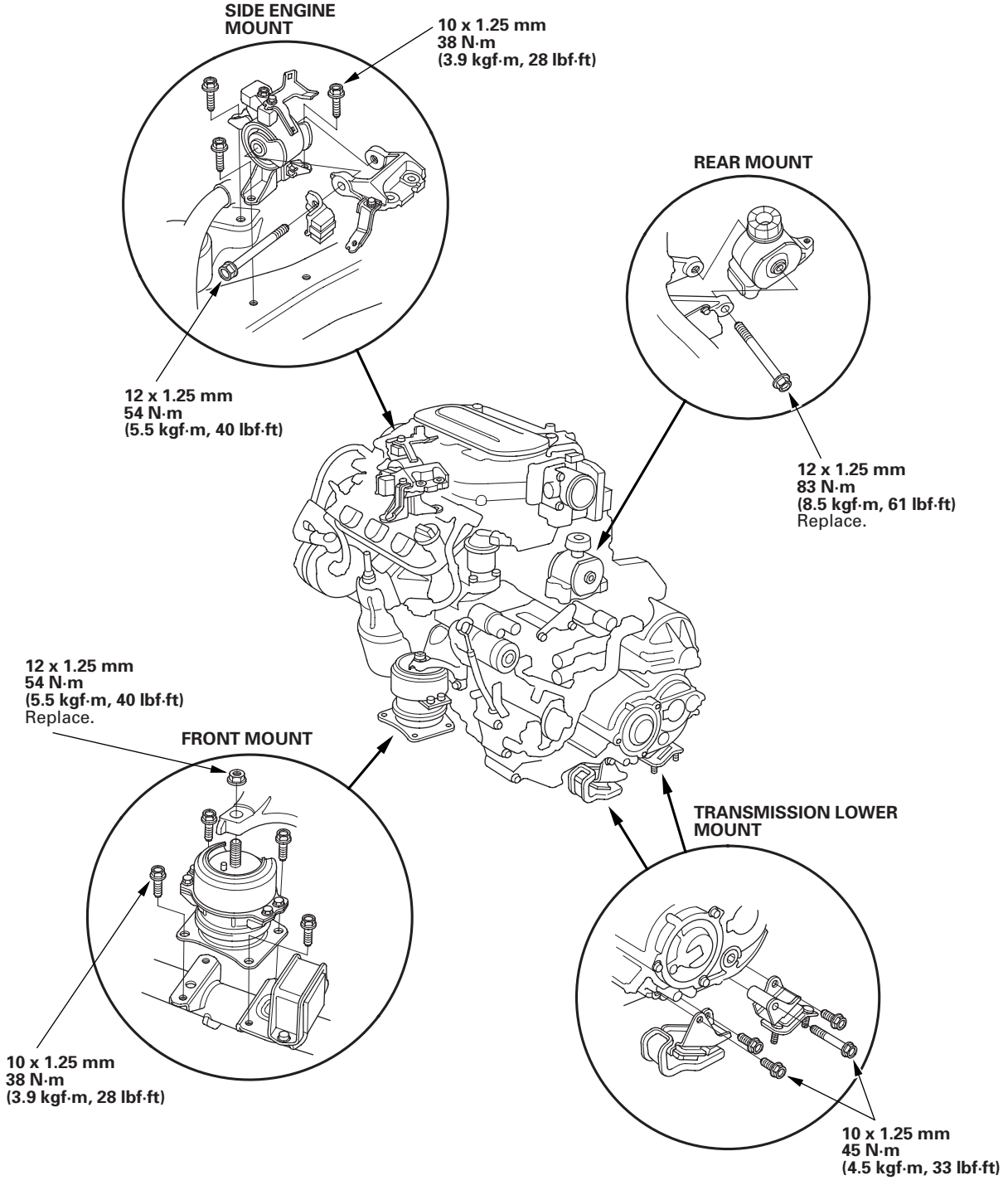
67. Install the return hose to the power steering fluid reservoir. Refill the power steering system (see page 17-12).

(cont'd)

Engine Installation (cont'd)

68. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-4).
69. Inspect the idle speed (see page 11-272).
70. Inspect the ignition timing (see page 4-18).
71. Enter the anti-theft codes for the audio system and navigation system (if equipped).
72. Do the power window control unit reset procedure (see page 22-209).
73. Set the clock (on vehicles without navigation).

Engine Mount Replacement



Engine Mechanical

Cylinder Head

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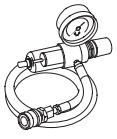
Special Tools

Ref. No.	Tool Number	Description	Qty
①	07AAJ-PNAA101	Air Pressure Regulator	1
②	07HAH-PJ7A100	Valve Guide Reamer, 5.5 mm	1
③	07JAA-001020A	Socket, 19 mm	1
④	07JAB-001020A	Holder Handle	1
⑤	07MAB-PY3010A	Holder Attachment, 50 mm, Offset	1
⑥	07PAD-0010000	Stem Seal Driver	1
⑦	07PAF-0030100	Camshaft Oil Seal Driver	1
⑧	07VAJ-P8A010A	VTEC Air Adapter	1
⑨	070AJ-0030100	VTEC Air Stopper	1
⑩	07742-0010100	Valve Guide Driver, 5.5 mm	1
⑪	07757-PJ1010A	Valve Spring Compressor Attachment	1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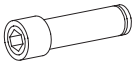
②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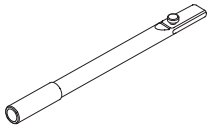
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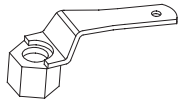
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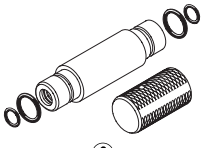
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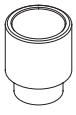
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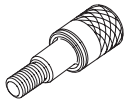
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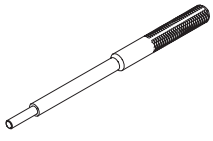
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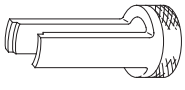
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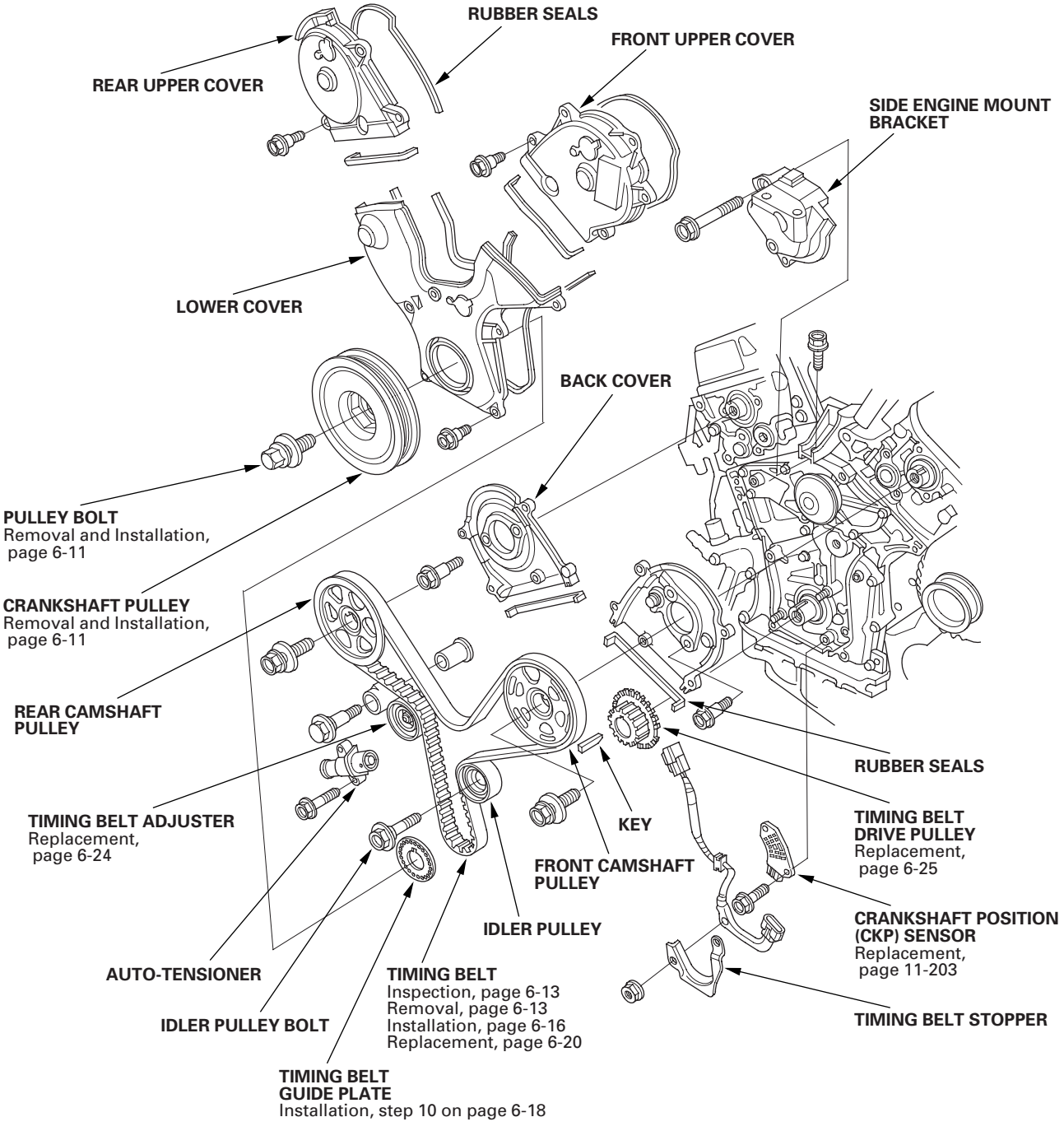
Component Location Index



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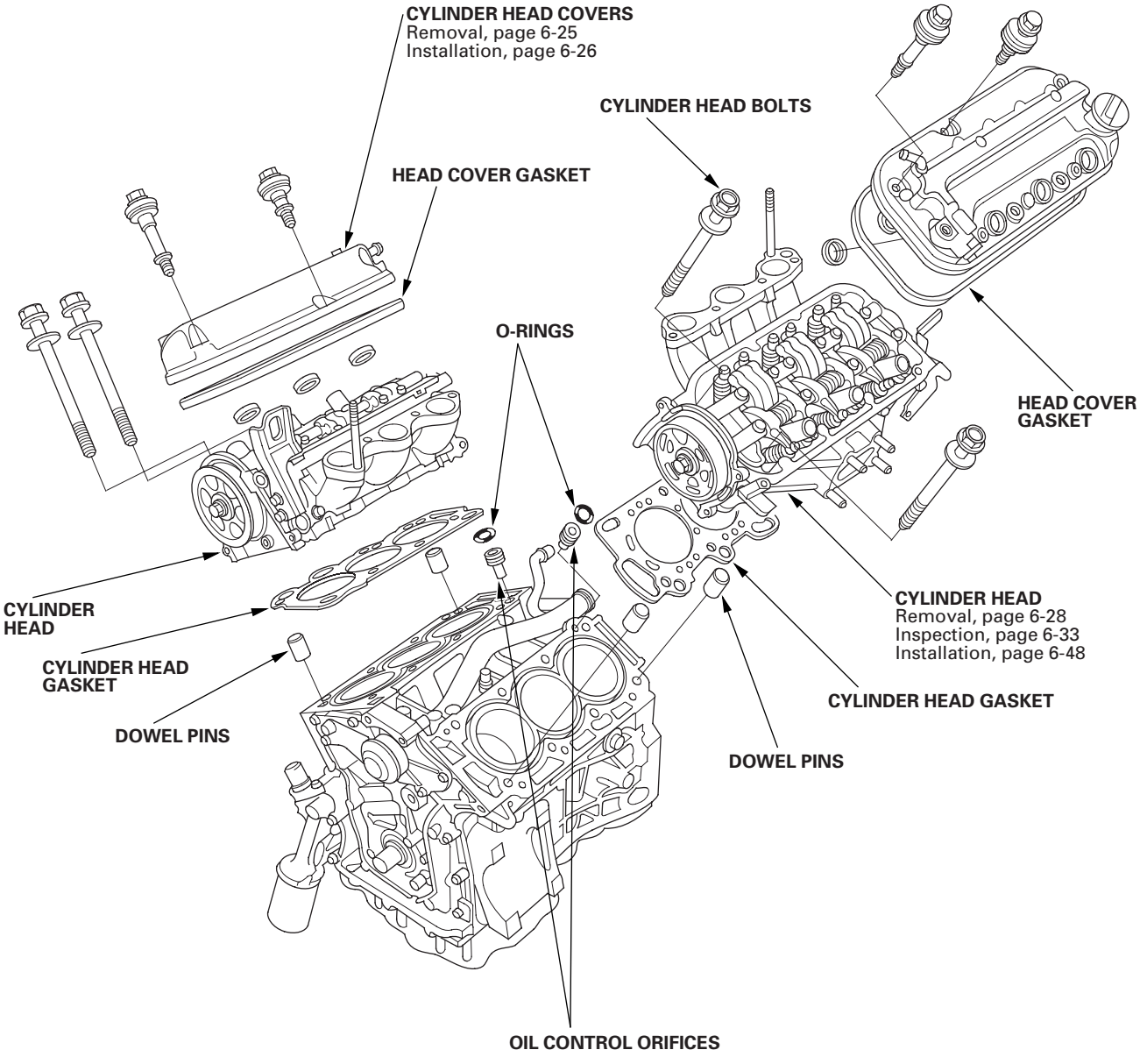
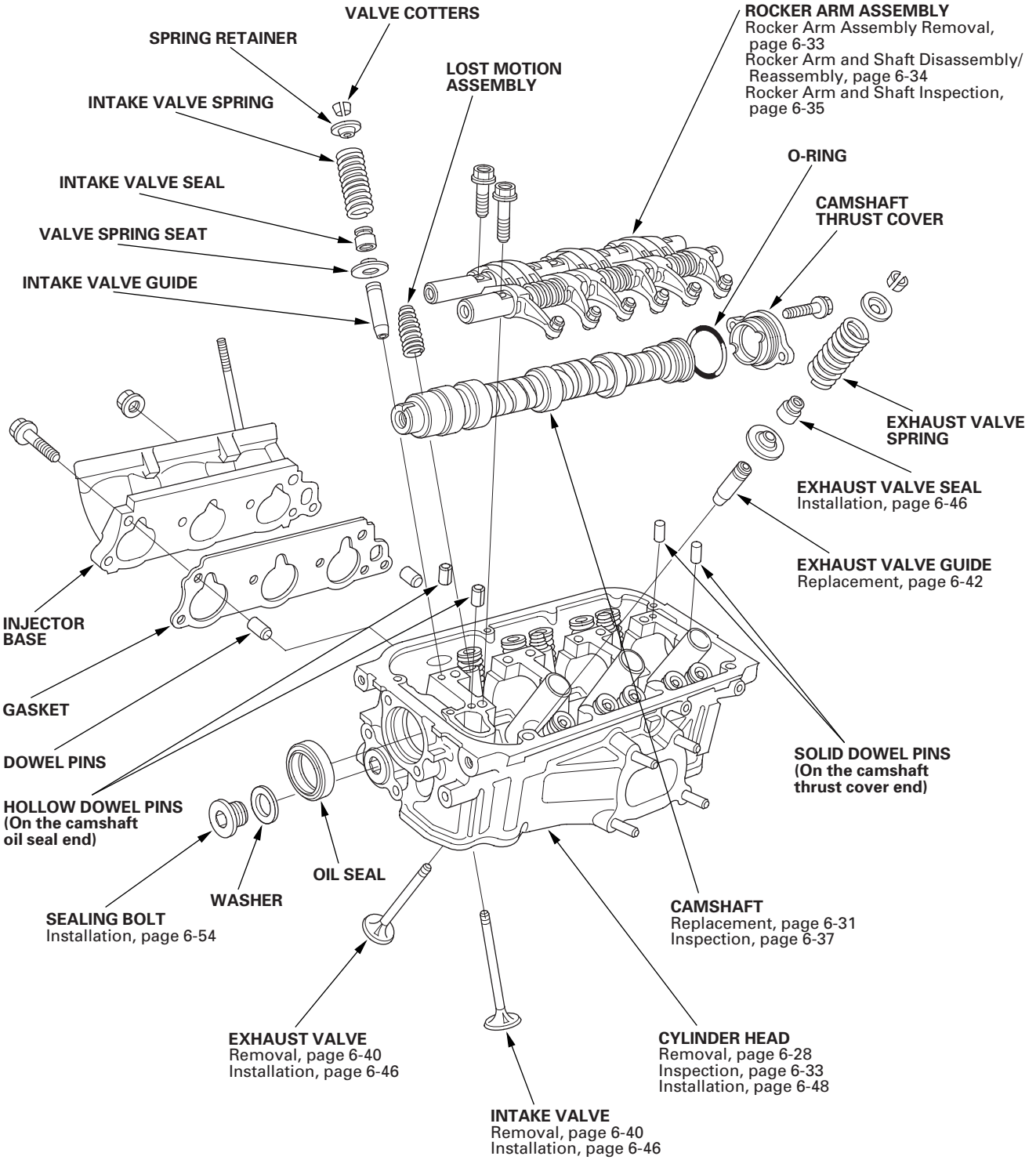
Component Location Index (cont'd)




VALVE COTTERS
SPRING RETAINER
INTAKE VALVE SPRING
INTAKE VALVE SEAL
VALVE SPRING SEAT
INTAKE VALVE GUIDE
LOST MOTION ASSEMBLY
ROCKER ARM ASSEMBLY
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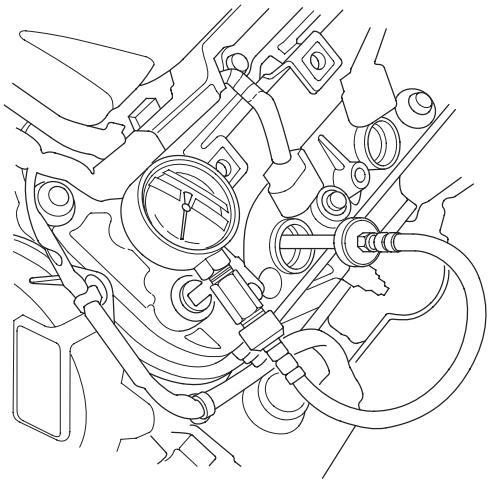
Engine Compression Inspection

NOTE: After this inspection, you must reset the powertrain control module (PCM), otherwise the PCM will continue to stop the injectors from functioning. Select PCM reset using the Honda Diagnostic System (HDS) (see page 11-4).

1. Warm up the engine to normal operating temperature (cooling fan comes on).
2. Turn the ignition switch OFF.
3. Connect the HDS to the data link connector (DLC) (see step 2 on page 11-3).
4. On the HDS select PGM-FI, INSPECTION, then ALL INJECTORS OFF function.
5. Remove the six ignition coils (see page 4-19).
6. Remove the six spark plugs.
7. Attach the compression gauge to a spark plug hole.



8. Open the throttle fully, crank the engine with the starter motor and measure the compression.

   Compression Pressure:
   Above 930 kPa (9.5 kgf/cm^2, 135 psi)

9. Measure the compression on the remaining cylinders.

   Maximum Variation:
   Within 200 kPa (2.0 kgf/cm^2, 28 psi)

10. If the compression is not within specifications, check the following items, then remeasure the compression.

    - Damaged or worn valves and seats
    - Damaged cylinder head gasket
    - Damaged or worn piston rings
    - Damaged or worn piston and cylinder bore

11. Select PCM reset (see page 11-4) to cancel the ALL INJECTORS OFF function on the HDS.

VTEC Rocker Arm Test

Special Tools Required
- VTEC air adapter 07VAJ-P8A010A
- VTEC air stopper 070AJ-0030100
- Air pressure regulator 07AAJ-PNAA101

1. Start the engine and let it run for 5 minutes, then turn the ignition switch OFF.

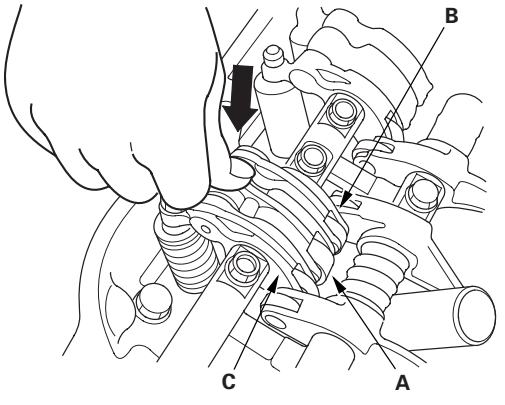
2. Remove the intake manifold (see page 9-3).

3. Remove the cylinder head covers (see page 6-25).

4. Set the No. 1 piston at top dead center (TDC) (see step 3 on page 6-8).

5. Push on the intake mid rocker arm (A) for the No. 1 cylinder. The mid rocker arm should move independently of the primary rocker arm (B) and secondary rocker arm (C).

   - If the mid rocker arm moves freely, go to step 6.
   - If the intake mid rocker arm does not move, remove the mid, primary, and secondary intake rocker arms as an assembly, then check that the pistons in the mid and primary rocker arms move smoothly. If any rocker arm needs replacing, replace the mid, primary, and secondary rocker arms as an assembly, then retest.



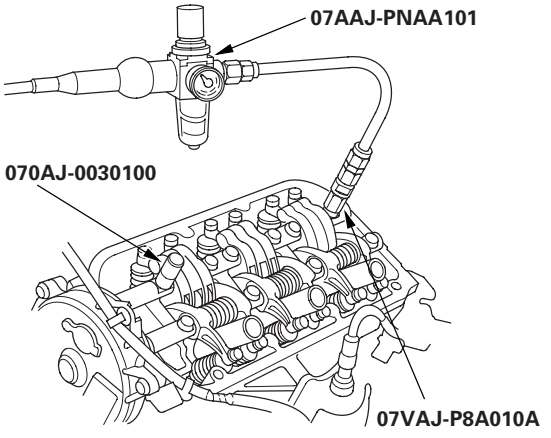
6. Repeat step 5 on the remaining intake mid rocker arms with each piston at TDC. When all the mid rocker arms pass the test, go to step 7.

7. Check that the air pressure on the shop air compressor gauge indicates over 690 kPa (7.0 kgf/cm^2, 100 psi).

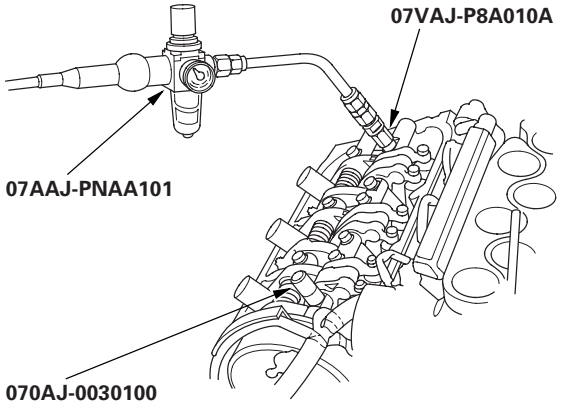
8. Inspect the valve clearance (see page 6-8).

9. Remove the No. 1 and No. 6 intake rocker shaft mounting bolts, then install the VTEC air adapter and VTEC air stopper, and connect the air pressure regulator as shown.

   Front:



   Rear:



10. Loosen the valve on the air pressure regulator, and apply the specified air pressure.

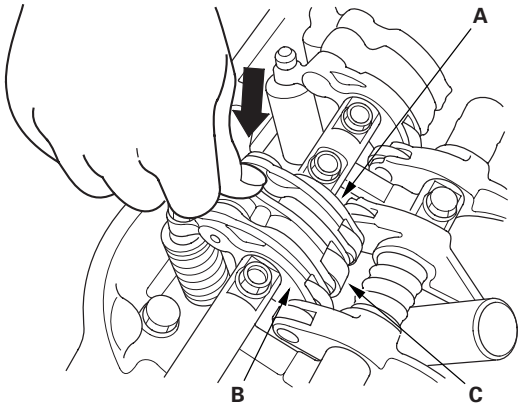
    Specified Air Pressure:
    440—540 kPa (4.5—5.5 kgf/cm^2, 64—78 psi)

    NOTE: If the synchronizing pistons do not move after applying air pressure, move the primary or secondary rocker arm up and down manually.

(cont'd)

VTEC Rocker Arm Test (cont'd)

11. Make sure that the intake primary rocker arm (A) and intake secondary rocker arm (B) are mechanically connected by the piston and that the mid rocker arm (C) does not move when pushed manually. If any intake mid rocker arm moves independently of the primary and secondary rocker arms, replace the rocker arms as a set.

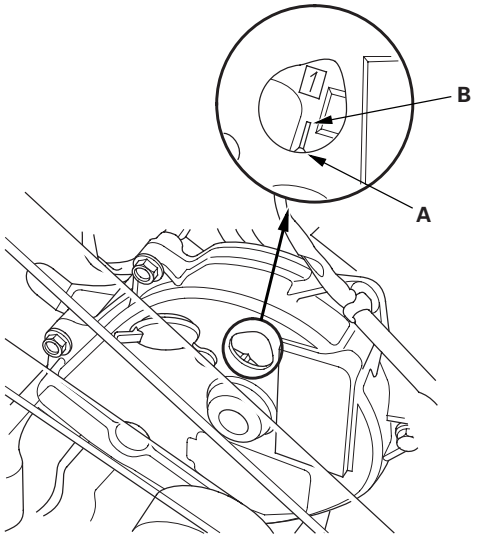


12. Remove the special tools.
13. Tighten the rocker shaft bolts to 24 N·m (2.4 kgf·m, 17 lbf·ft)
14. Install the cylinder head covers (see page 6-26).
15. Install the intake manifold (see page 9-5).

Valve Clearance Adjustment

NOTE: Adjust the valves only when the cylinder head temperature is less than 100 ℉ (38 ℃).

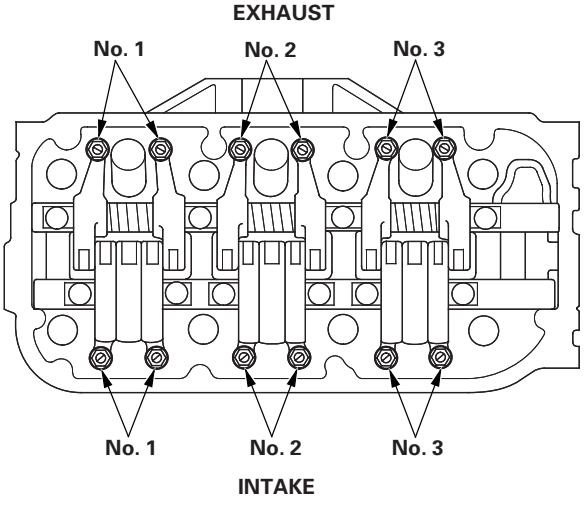
1. Remove the intake manifold (see page 9-3).
2. Remove the cylinder head covers (see page 6-25).
3. Set the No. 1 piston at top dead center (TDC). Align the pointer (A) on the front upper cover with the No. 1 piston TDC mark (B) on the front camshaft pulley.



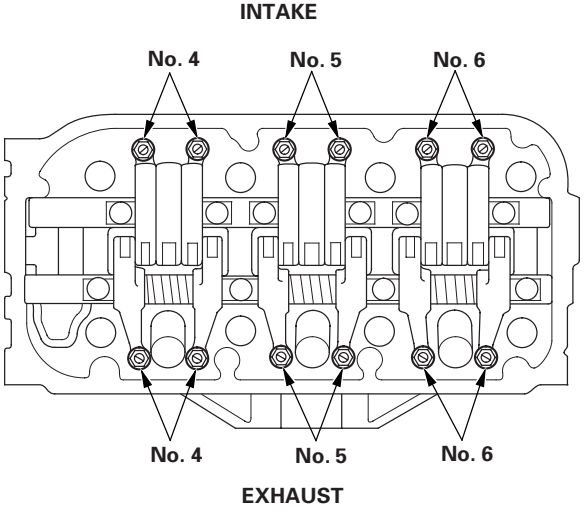
4. Select the correct thickness feeler gauge for the valves you're going to check.

Valve Clearance
Intake: 0.20—0.24 mm (0.008—0.009 in.)
Exhaust: 0.28—0.32 mm (0.011—0.013 in.)

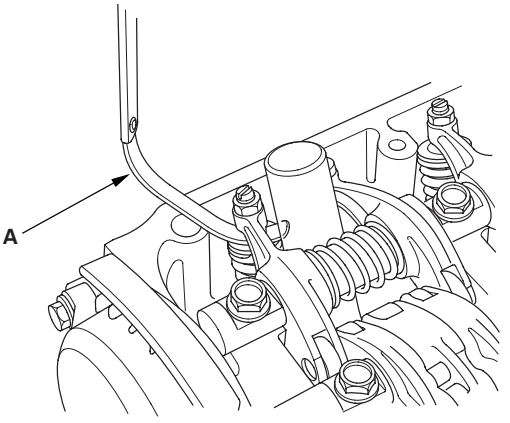
Rear:



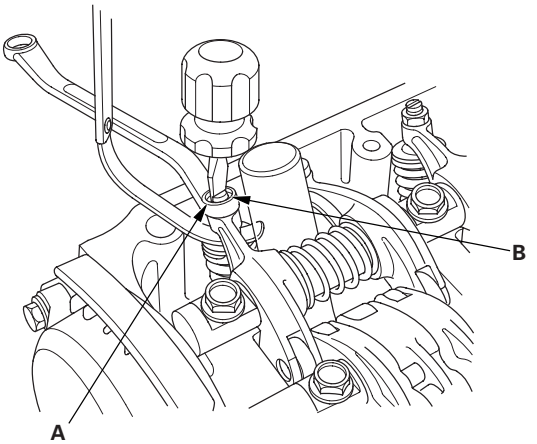
Front:



5. Insert the feeler gauge (A) between the adjusting screw and the end of the valve stem on No. 1 cylinder and slide it back and forth; you should feel a slight amount of drag.



6. If you feel too much or too little drag, loosen the locknut (A), and turn the adjusting screw (B) until the drag on the feeler gauge is correct.



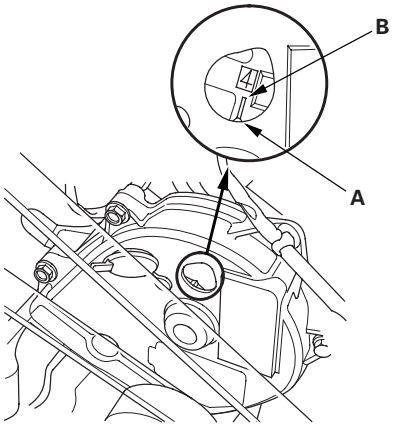
A
9 x 0.75 mm
20 N·m (2.0 kgf·m, 14 lbf·ft)

7. Tighten the locknut and recheck the clearance. Repeat the adjustment, if necessary.

(cont'd)

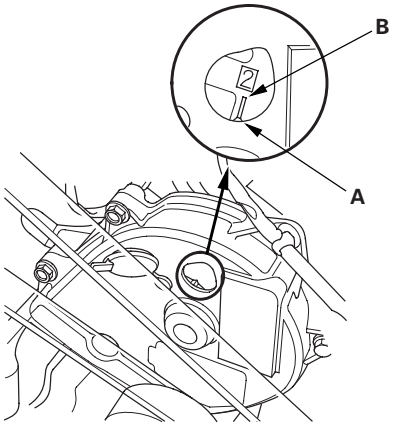
Valve Clearance Adjustment (cont'd)

8. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 4 piston TDC mark (B) on the front camshaft pulley.



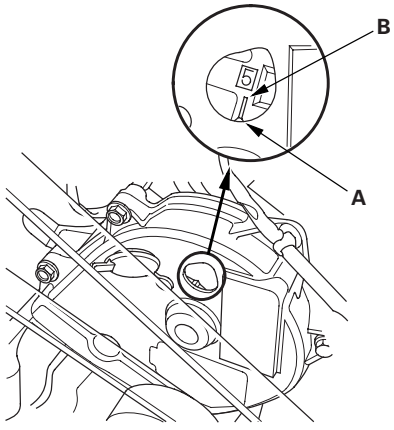
9. Check and, if necessary, adjust the valve clearance on No. 4 cylinder.

10. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 2 piston TDC mark (B) on the front camshaft pulley.



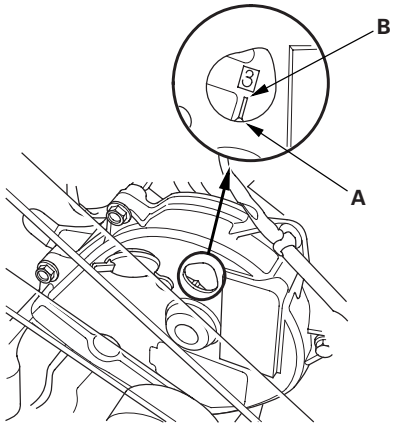
11. Check and, if necessary, adjust the valve clearance on No. 2 cylinder.

12. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 5 piston TDC mark (B) on the front camshaft pulley.



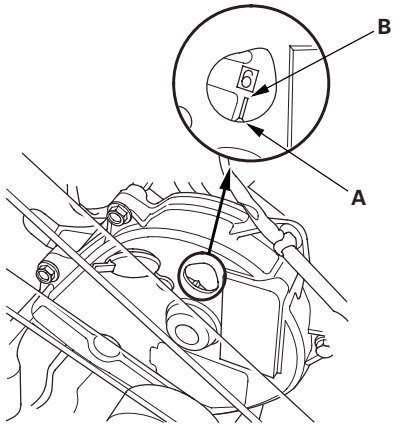
13. Check and, if necessary, adjust the valve clearance on No. 5 cylinder.

14. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 3 piston TDC mark (B) on the front camshaft pulley.



15. Check and, if necessary, adjust the valve clearance on No. 3 cylinder.

16. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 6 piston TDC mark (B) on the front camshaft pulley.



17. Check and, if necessary, adjust the valve clearance on No. 6 cylinder.

18. Install the cylinder head covers (see page 6-26).

19. Install the intake manifold (see page 9-5).

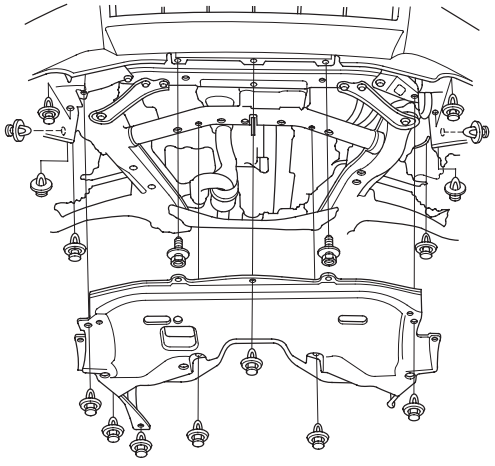
Crankshaft Pulley Removal and Installation

Special Tools Required
- Holder handle 07JAB-001020A
- Holder attachment, 50 mm, offset 07MAB-PY3010A
- Socket, 19 mm 07JAA-001020A , or a commercially available 19 mm socket

Removal

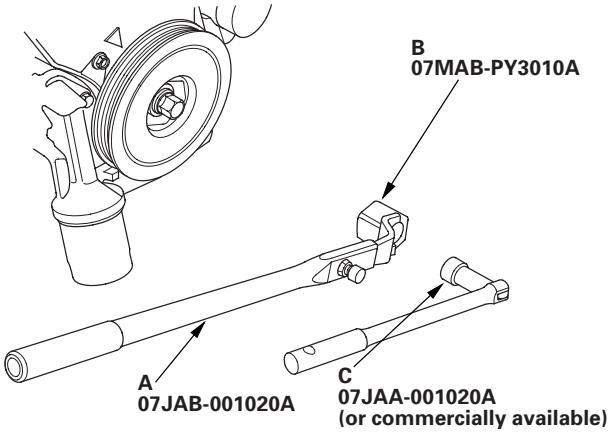
1. Remove the right front wheel.

2. Remove the splash shield.



3. Remove the drive belt (see page 4-31).

4. Hold the pulley with the holder handle (A) and holder attachment (B).



5. Remove the bolt with a heavy duty 19 mm socket (C) and breaker bar, then remove the crankshaft pulley.

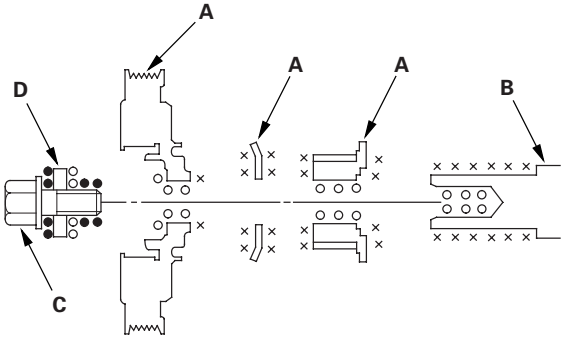
(cont'd)

Crankshaft Pulley Removal and Installation (cont'd)

Installation

1. Remove any oil and clean the pulleys (A), crankshaft (B), bolt (C), and washer (D). Lubricate with new engine oil as shown.

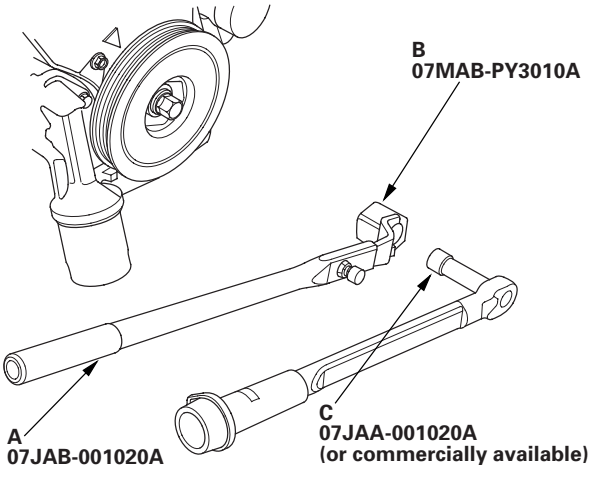
×: Remove any oil
○: Clean
●: Lubricate with new engine oil

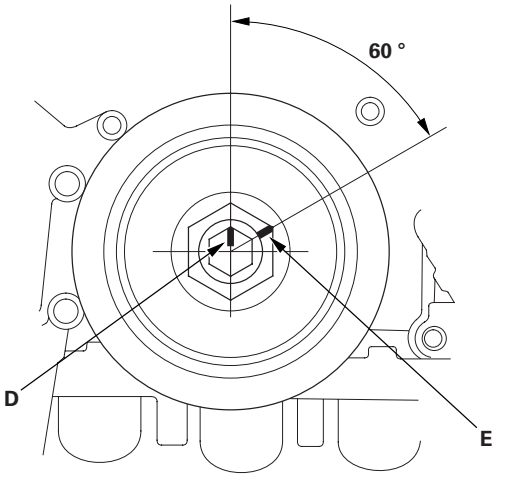


2. Install the crankshaft pulley, and tighten the bolt. Do not use an impact wrench.

–1 Hold the pulley with the holder handle (A) and holder attachment (B), then torque the bolt to 64 N·m (6.5 kgf·m, 47 lbf·ft) with a torque wrench and heavy duty 19 mm socket (C).

–2 Mark the bolt head (D) and crankshaft pulley (E) as shown, then tighten the bolt an additional 60 ° (The mark on the bolt head line up with the mark on the crankshaft pulley).





3. Install the drive belt (see page 4-31).

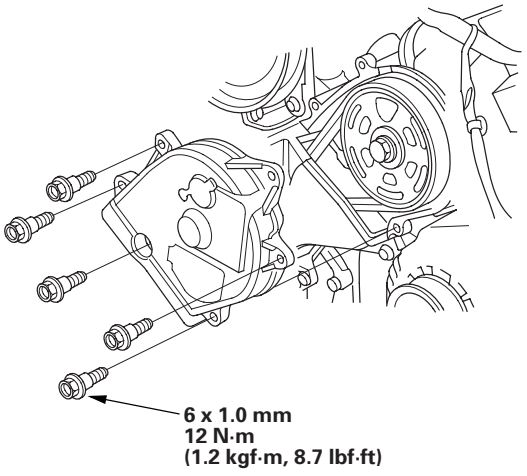
4. Install the splash shield.

5. Install the right front wheel.

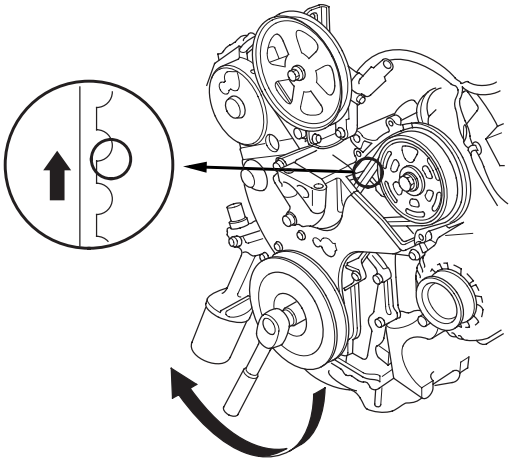
Timing Belt Inspection

1. Remove the drive belt (see page 4-31).

2. Remove the front upper cover.

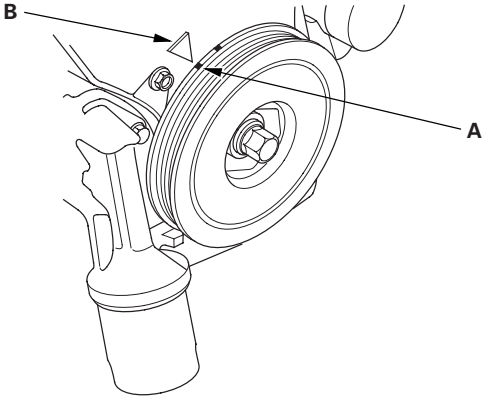


3. Inspect the timing belt for cracks and oil or coolant contamination. Replace the belt if it is cracked, or is contaminated with oil or coolant. Wipe off any oil or solvent that gets on the belt.



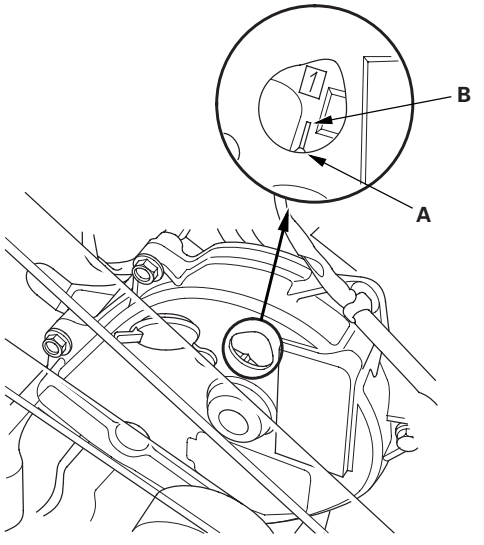
Timing Belt Removal

1. Turn the crankshaft so its white mark (A) lines up with the pointer (B).



2. Check that the No. 1 piston top dead center (TDC) mark (A) on the front camshaft pulley and the pointer (B) on the front upper cover are aligned.

   NOTE: If the marks are not aligned, rotate the crankshaft 360 degrees, then recheck the camshaft pulley mark.

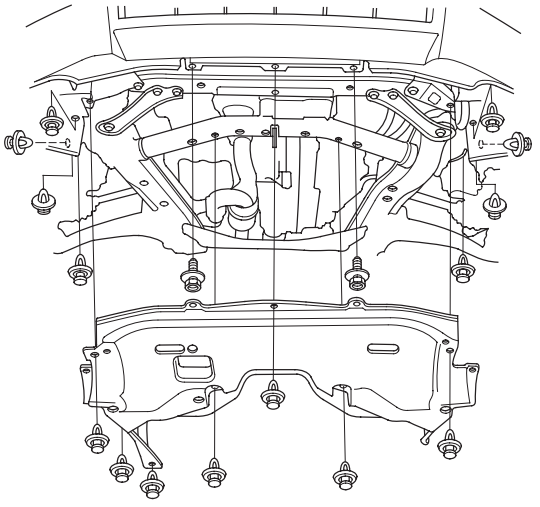


(cont'd)

Timing Belt Removal (cont'd)

3. Raise the vehicle on the lift, then remove the right front wheel.

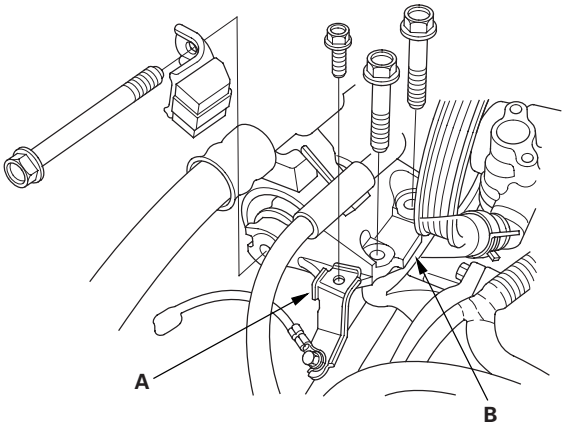
4. Remove the splash shield.



5. Remove the drive belt (see page 4-31).

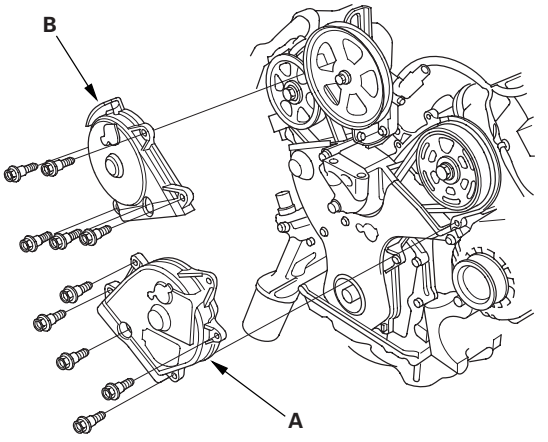
6. Support the engine with a jack and wood block under the oil pan.

7. Remove the ground cable bracket (A), then remove the upper half of the side engine mount bracket (B).

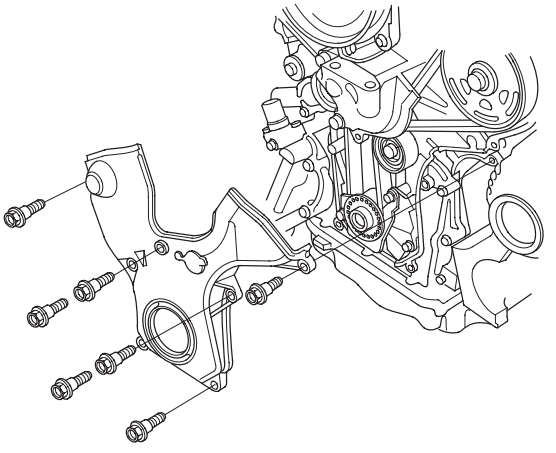


8. Remove the crankshaft pulley (see page 6-11).

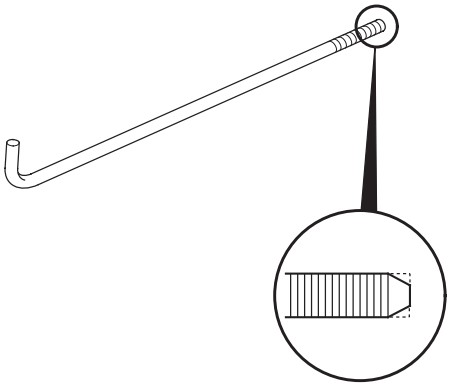
9. Remove the front upper cover (A) and rear upper cover (B).



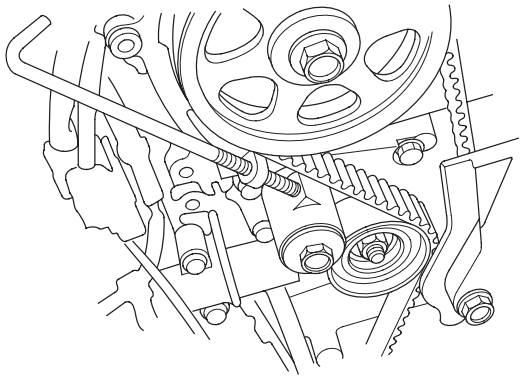
10. Remove the lower cover.



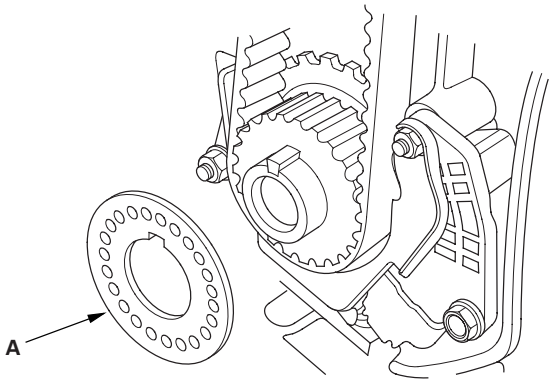
11. Remove one of the battery clamp bolts from the battery tray, then grind the end of it as shown.



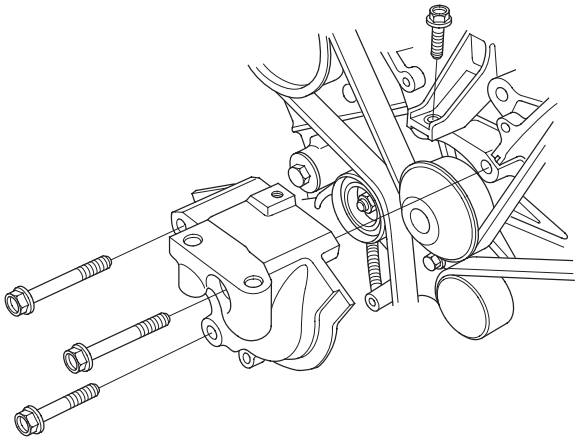
12. Thread the battery clamp bolt in as shown to hold the timing belt adjuster in its current position. Tighten it by hand; do not use a wrench.



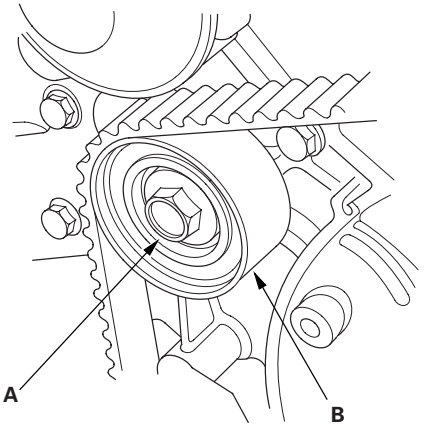
13. Remove the timing belt guide plate (A).



14. Remove the lower side engine mount bracket.



15. Remove the idler pulley bolt (A) and idler pulley (B), then remove the timing belt. Discard the idler pulley bolt.

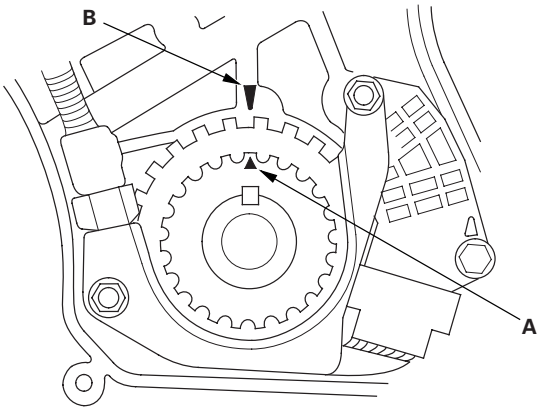


Timing Belt Installation

NOTE: The following is the installation procedure for a used timing belt. If you are installing a new belt, refer to the timing belt replacement procedure (see page 6-20).

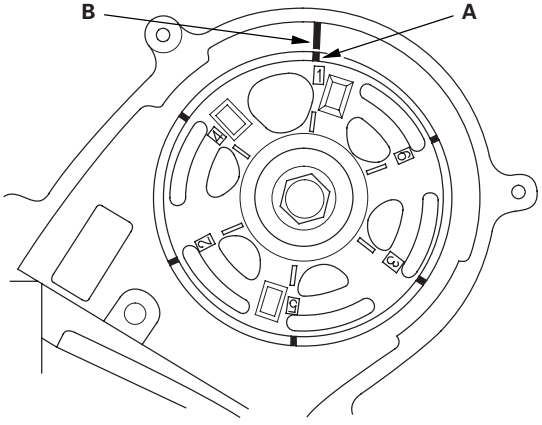
1. Clean the timing belt pulleys, timing belt guide plate, and the upper and lower covers.

2. Set the timing belt drive pulley to top dead center (TDC) by aligning the TDC mark (A) on the tooth of the timing belt drive pulley with the pointer (B) on the oil pump.

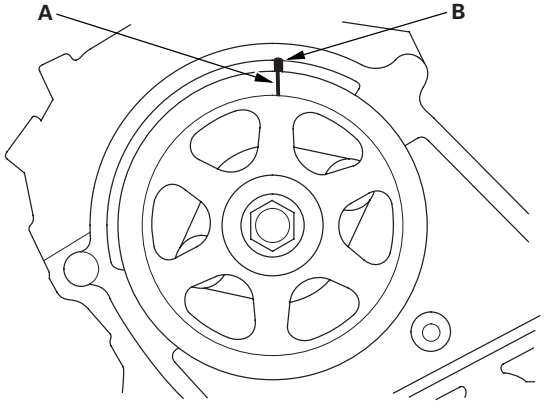


3. Set the camshaft pulleys to TDC by aligning the TDC marks (A) on the camshaft pulleys with the pointers (B) on the back covers.

Front:



Rear:

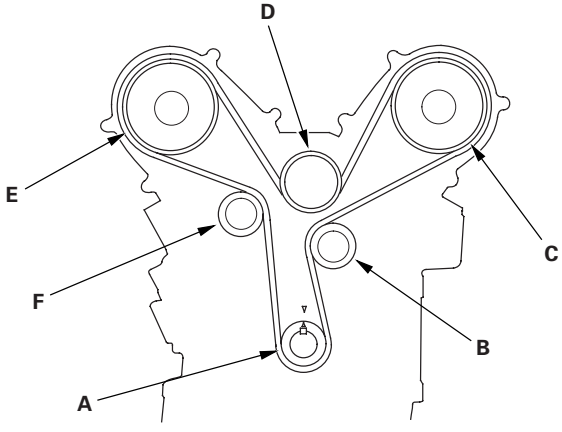


4. Loosely install the idler pulley with a new idler pulley bolt so the pulley can move but does not come off.

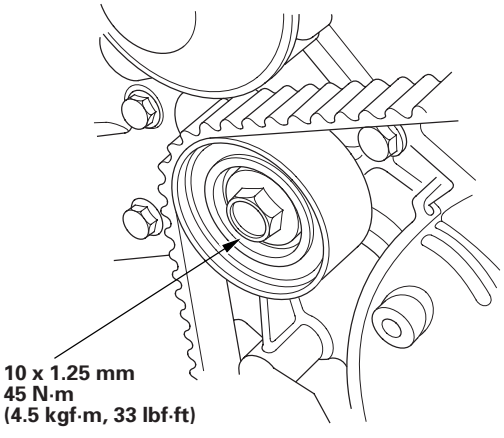
5. If the auto-tensioner has extended and the timing belt cannot be installed, do the timing belt replacement procedure (see page 6-20).

6. Install the timing belt in a counterclockwise sequence starting with the drive pulley. Take care not to damage the timing belt during installation.

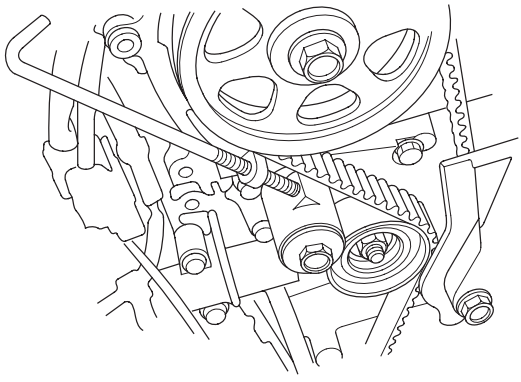
   1. Drive pulley (A)
   2. Idler pulley (B)
   3. Front camshaft pulley (C)
   4. Water pump pulley (D)
   5. Rear camshaft pulley (E)
   6. Adjusting pulley (F)



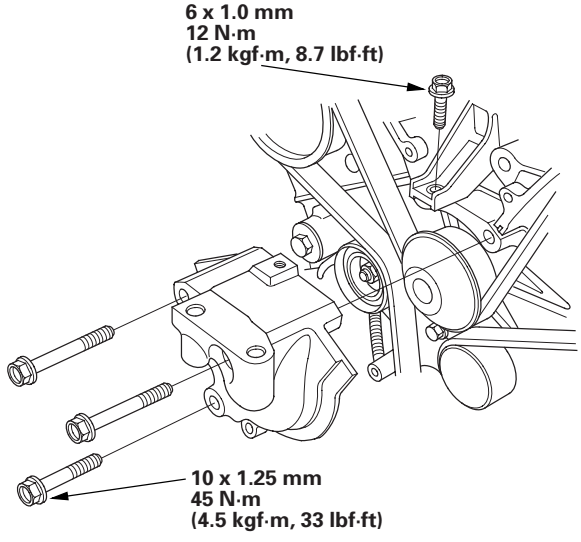
7. Tighten the idler pulley bolt.



8. Remove the battery clamp bolt from the back cover.



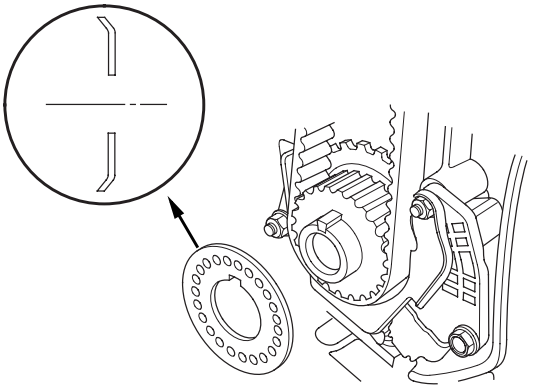
9. Install the lower half of the side engine mount bracket.



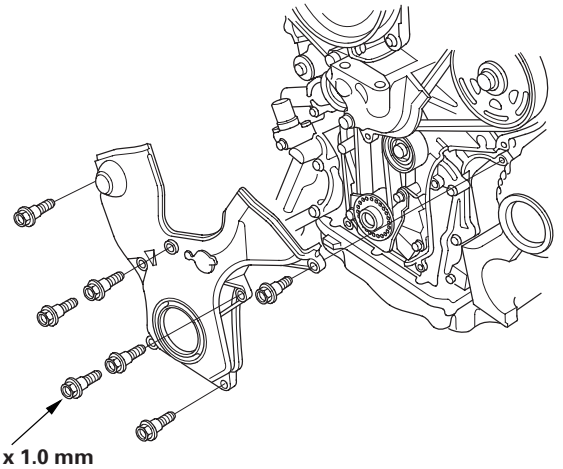
(cont'd)

Timing Belt Installation (cont'd)

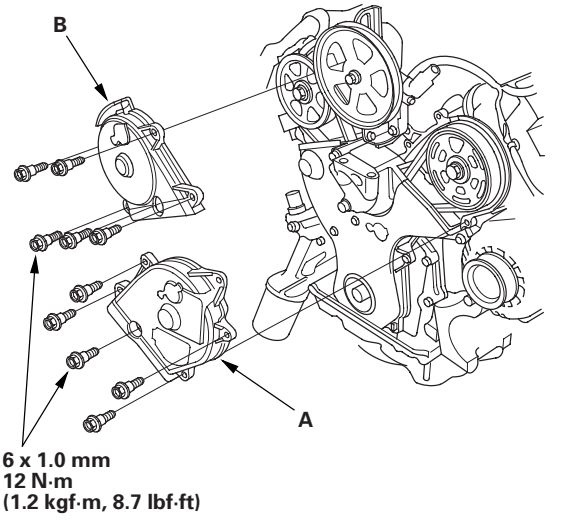
10. Install the timing belt guide plate as shown.



11. Install the lower cover.



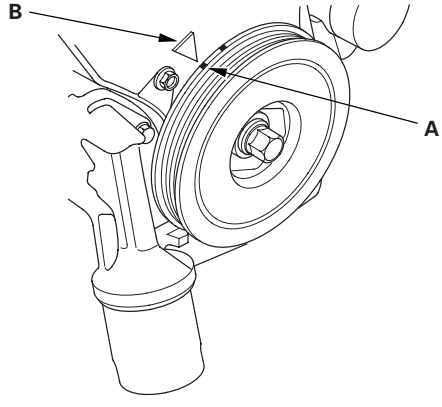
12. Install the front upper cover (A) and rear upper cover (B).



13. Install the crankshaft pulley (see page 6-12).

14. Rotate the crankshaft pulley six turns clockwise so the timing belt positions itself on the pulleys.

15. Turn the crankshaft pulley so the white mark (A) lines up with the pointer (B).

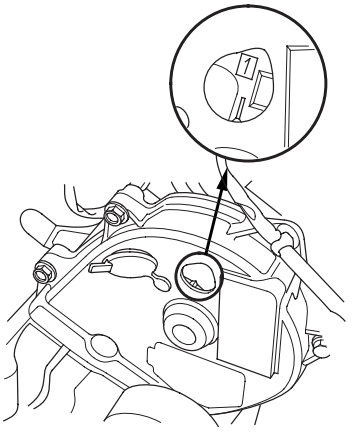


16. Check the camshaft pulley marks.

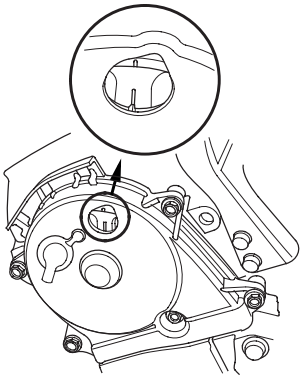
    NOTE: If the marks are not aligned, rotate the crankshaft 360 degrees, and recheck the camshaft pulley mark.

    - If the camshaft pulley marks are at TDC, go to step 17.
    - If the camshaft pulley marks are not at TDC, remove the timing belt and repeat steps 2 through 16.

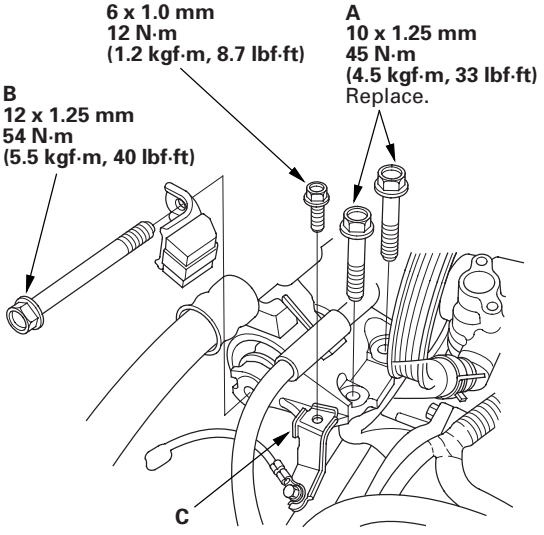
    Front:



    Rear:



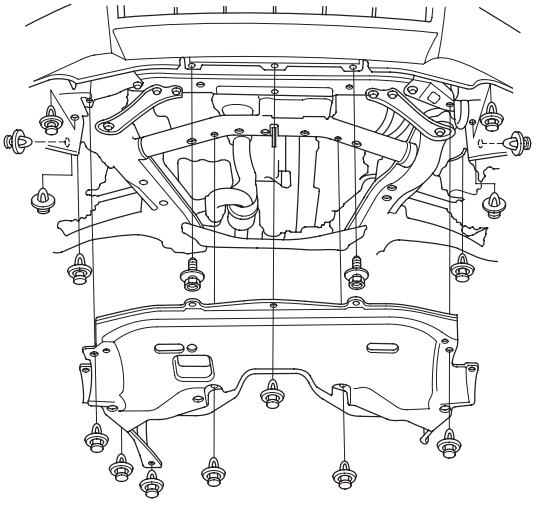
17. Install the upper half of the side engine mount bracket, then tighten the new mounting bolts (A), and the mass damper mounting bolt (B).



18. Install the ground cable bracket (C).

19. Install the drive belt (see page 4-31).

20. Install the splash shield.



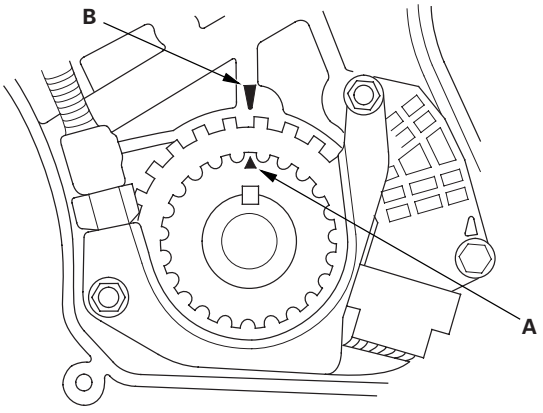
21. Install the right front wheel.

22. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-4).

Timing Belt Replacement

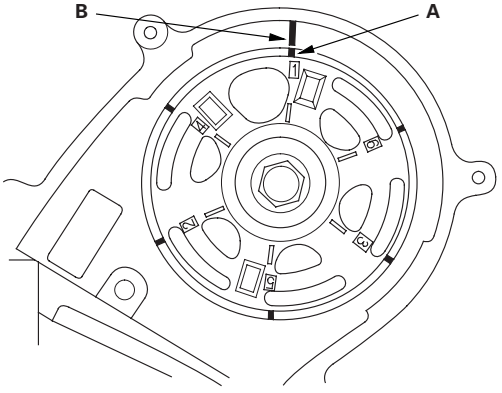
NOTE: The following procedure is for the installation of a new timing belt. If you are installing a used timing belt, refer to the timing belt installation procedure (see page 6-16).

1. Remove the timing belt (see page 6-13).
2. Clean the timing belt pulleys, timing belt guide plate, and the upper and lower covers.
3. Set the timing belt drive pulley to top dead center (TDC) by aligning the TDC mark (A) on the tooth of the timing belt drive pulley with the pointer (B) on the oil pump.

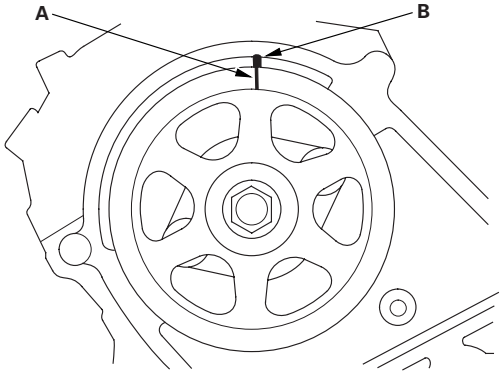


4. Set the camshaft pulleys to TDC by aligning the TDC marks (A) on the camshaft pulleys with the pointers (B) on the back covers.

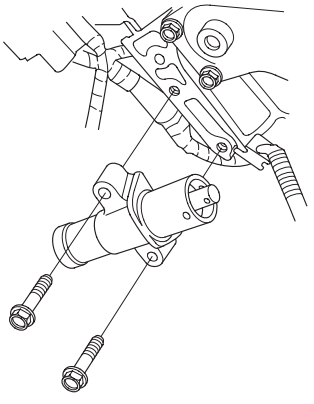
Front:



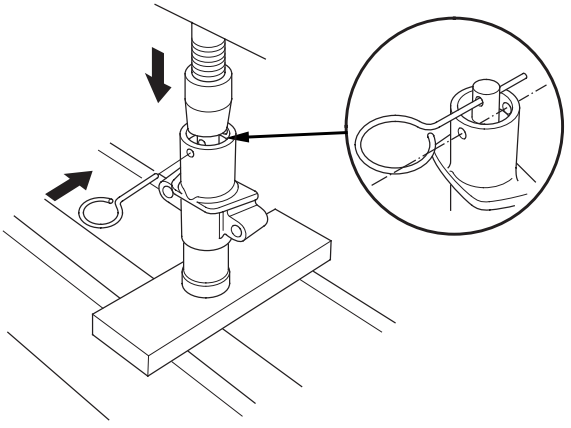
Rear:



5. Remove the battery clamp bolt from the back cover.
6. Remove the auto-tensioner.



7. Align the holes on the rod and housing of the auto-tensioner.

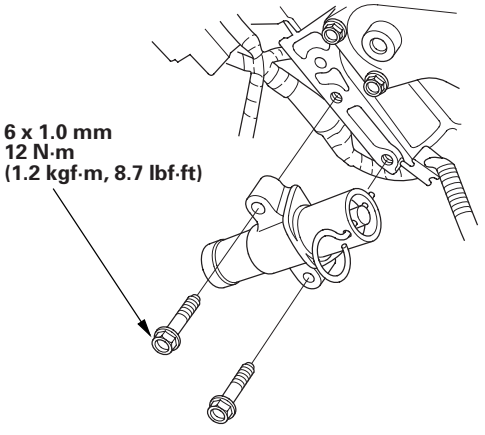


8. Use a hydraulic press to slowly compress the auto-tensioner. Insert a 2.0 mm (0.08 in.) pin through the housing and the rod.

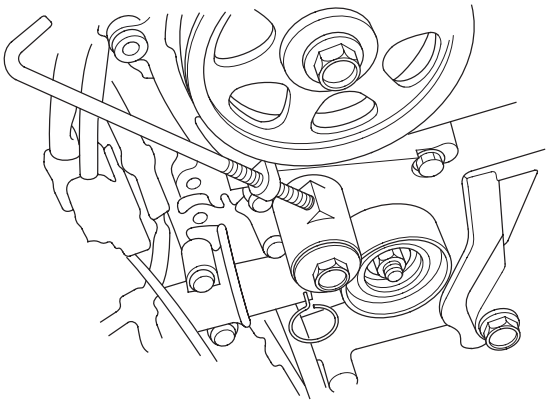
   NOTE: The compression pressure should not exceed 9,800 N (1,000 kgf, 2,200 lbf).

9. Install the auto-tensioner.

   NOTE: Make sure the pin stays in place.



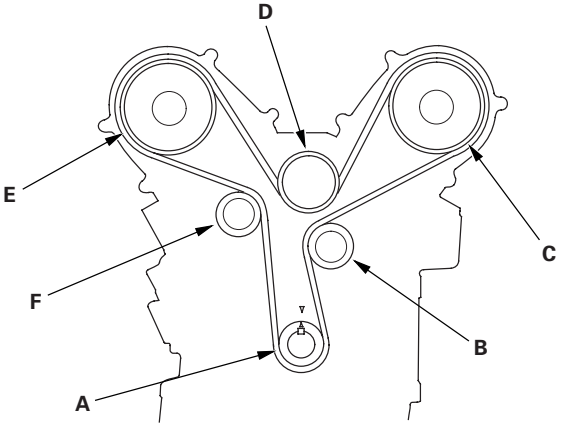
10. Thread the battery clamp bolt in as shown to hold the timing belt adjuster. Tighten it by hand; do not use a wrench.



11. Loosely install the idler pulley with a new idler pulley bolt so the pulley can move but does not come off.

12. Install the timing belt in a counterclockwise sequence starting with the drive pulley.

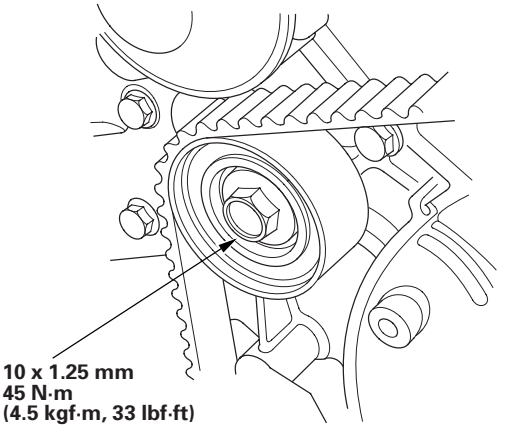
   1. Drive pulley (A)
   2. Idler pulley (B)
   3. Front camshaft pulley (C)
   4. Water pump pulley (D)
   5. Rear camshaft pulley (E)
   6. Adjusting pulley (F)



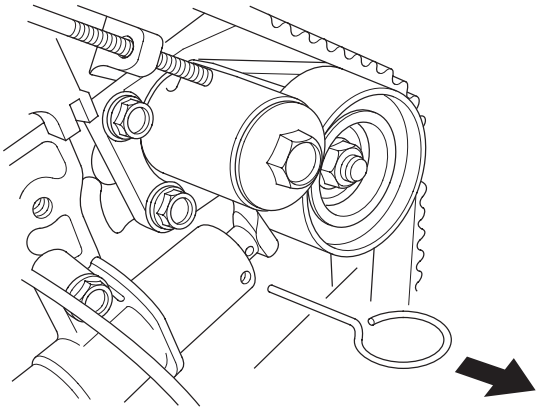
(cont'd)

Timing Belt Replacement (cont'd)

13. Tighten the idler pulley bolt.

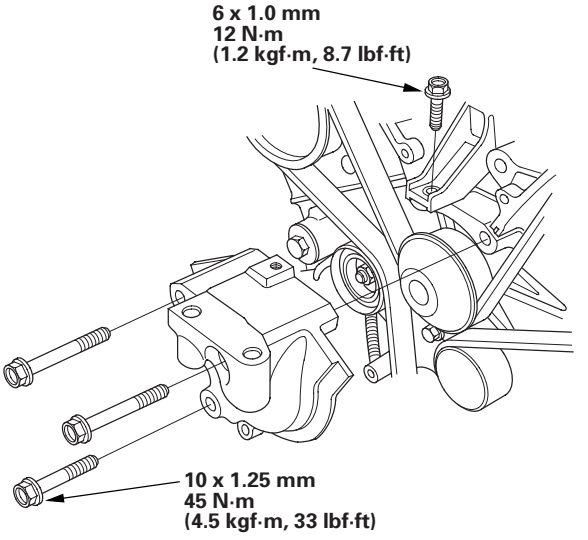


14. Remove the pin from the auto-tensioner.

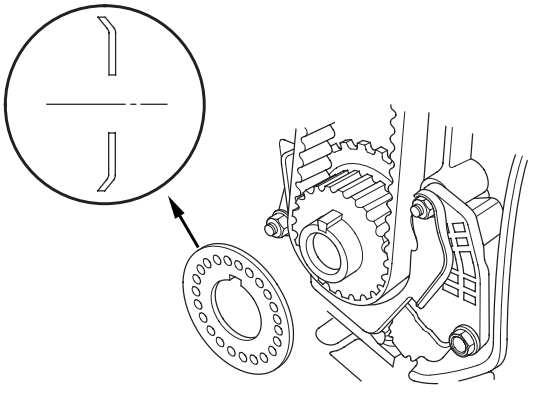


15. Remove the battery clamp bolt from the back cover.

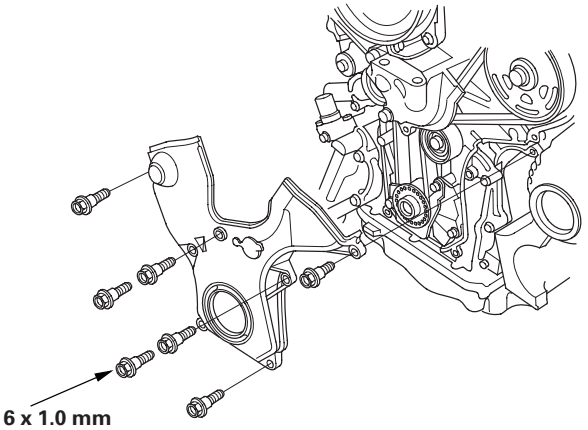
16. Install the lower half of the side engine mount bracket.



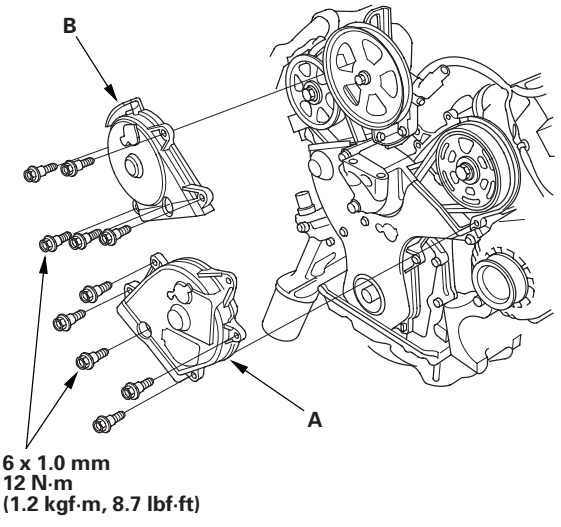
17. Install the timing belt guide plate as shown.



18. Install the lower cover.



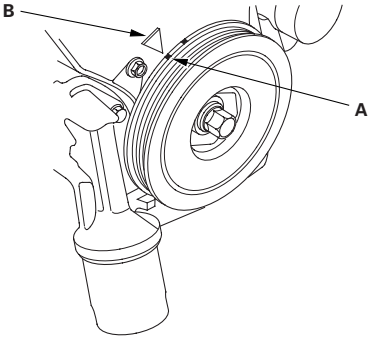
19. Install the front upper cover (A) and rear upper cover (B).



20. Install the crankshaft pulley (see page 6-12).

21. Rotate the crankshaft pulley six turns clockwise so the timing belt positions itself on the pulleys.

22. Turn the crankshaft pulley so the white mark (A) lines up with the pointer (B).

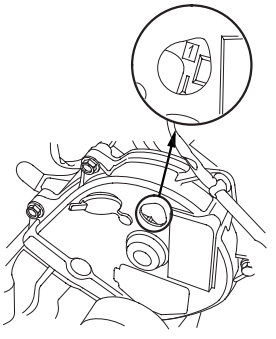


23. Check the camshaft pulley marks.

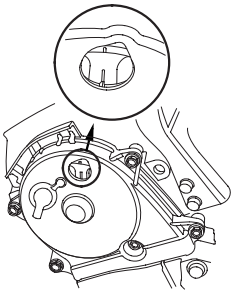
    NOTE: If the marks are not aligned, rotate the crankshaft 360 degrees, and recheck the camshaft pulley mark.

    - If the camshaft pulley marks are at TDC, go to step 24.
    - If the camshaft pulley marks are not at TDC, remove the timing belt and repeat steps 3 through 22.

Front:



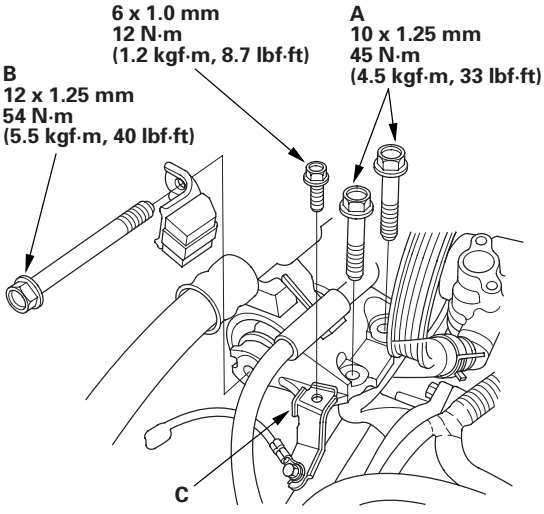
Rear:



(cont'd)

Timing Belt Replacement (cont'd)

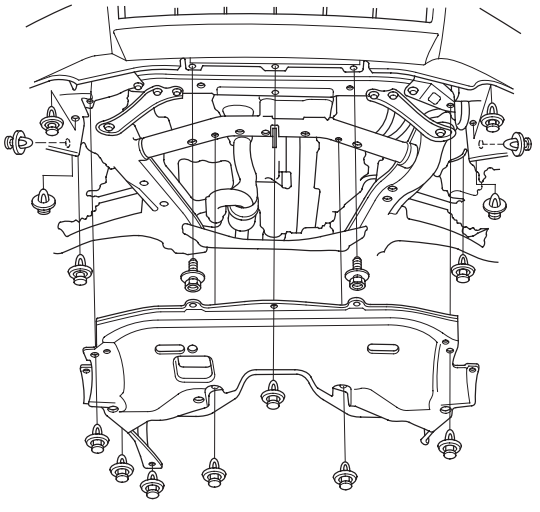
24. Install the upper half of the side engine mount bracket, then tighten the new mounting bolts (A), and the mass damper mounting bolt (B).



25. Install the ground cable bracket (C).

26. Install the drive belt (see page 4-31).

27. Install the splash shield.



28. Install the right front wheel.

29. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-4).

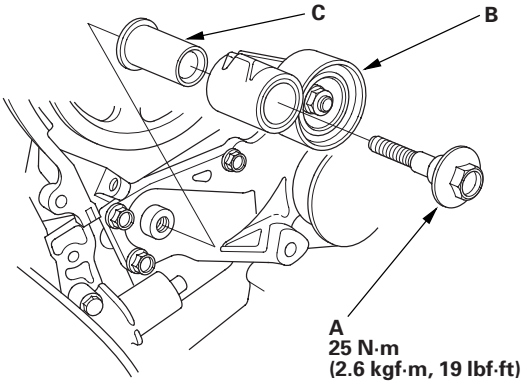
Timing Belt Adjuster Replacement

1. Remove the timing belt (see page 6-13).

2. Remove the battery clamp bolt from the back cover.

3. Remove the auto-tensioner.

4. Remove the bolt (A), then remove the timing belt adjuster (B) and collar (C).

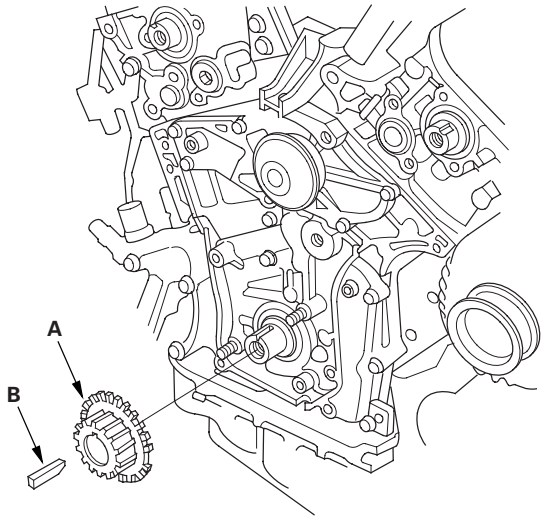


5. Install in the reverse order of removal.

6. Install the timing belt (see page 6-16).

Timing Belt Drive Pulley Replacement

1. Remove the timing belt (see page 6-13).
2. Remove the crankshaft position (CKP) sensor (see page 11-203).
3. Remove the timing belt drive pulley (A) and key (B).

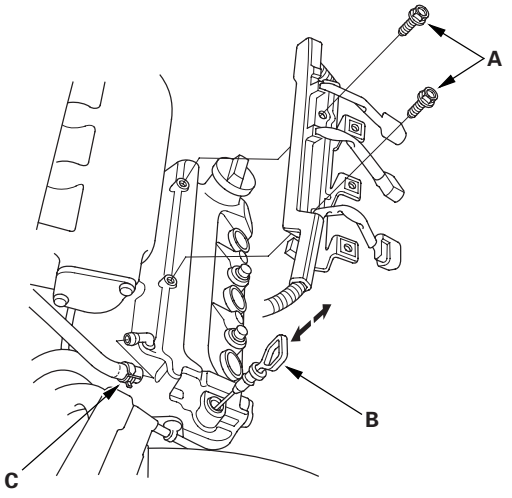


4. Inspect the timing belt pulley and key for damage. If it is cracked or damaged, replace the timing belt drive pulley.
5. Install the new timing belt drive pulley.
6. Install the CKP sensor (see page 11-203).
7. Install the timing belt (see page 6-16).
8. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-4).

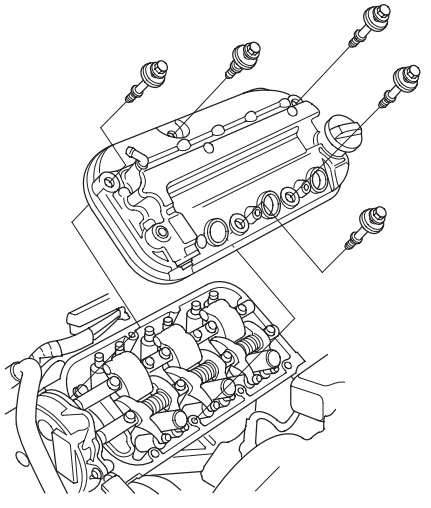
Cylinder Head Cover Removal

Front

1. Remove the three ignition coils from the front cylinder head (see page 4-19).
2. Remove the two bolts (A) securing the harness holder.



3. Remove the dipstick (B) and positive crankcase ventilation (PCV) hose (C).
4. Remove the front cylinder head cover.

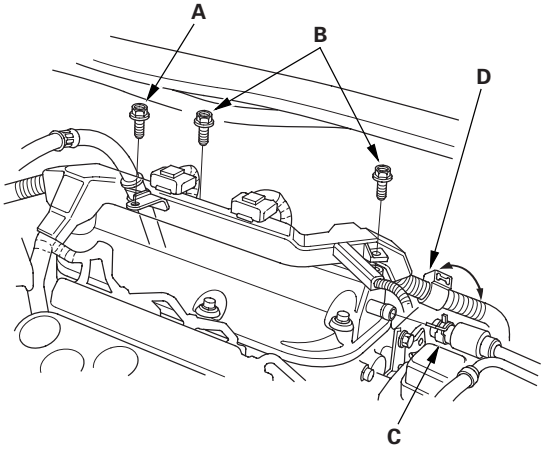


(cont'd)

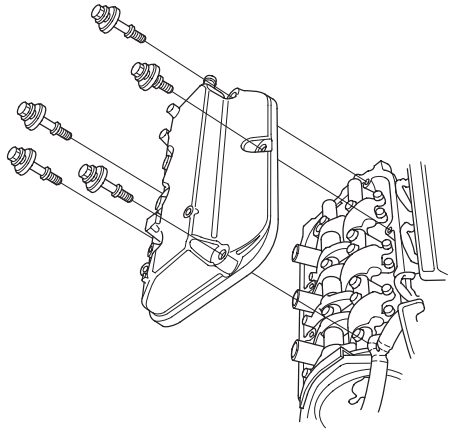
Cylinder Head Cover Removal (cont'd)

Rear

1. Remove the intake manifold (see page 9-3).
2. Remove the three ignition coils from the rear cylinder head (see page 4-19).
3. Remove the bolt (A) securing the power steering hose clamp.



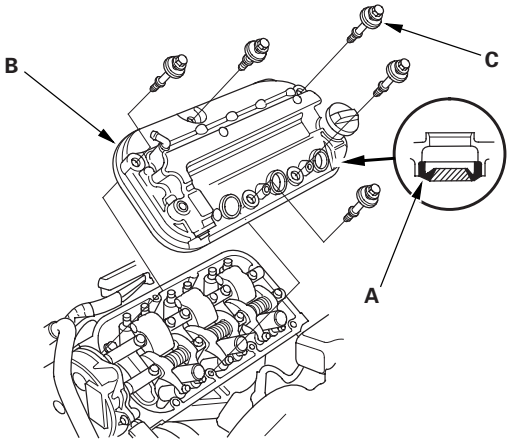
4. Remove the two bolts (B) securing the harness holder.
5. Disconnect the breather hose (C) and harness clamp (D).
6. Remove the rear cylinder head cover.



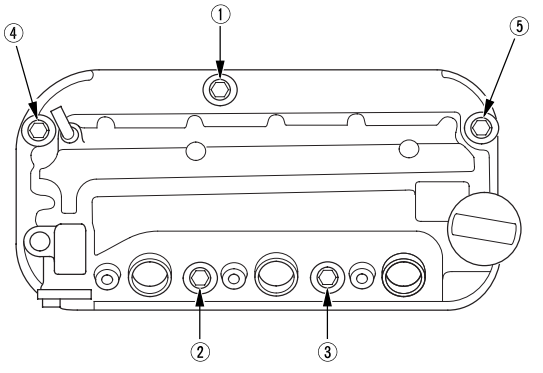
Cylinder Head Cover Installation

Front

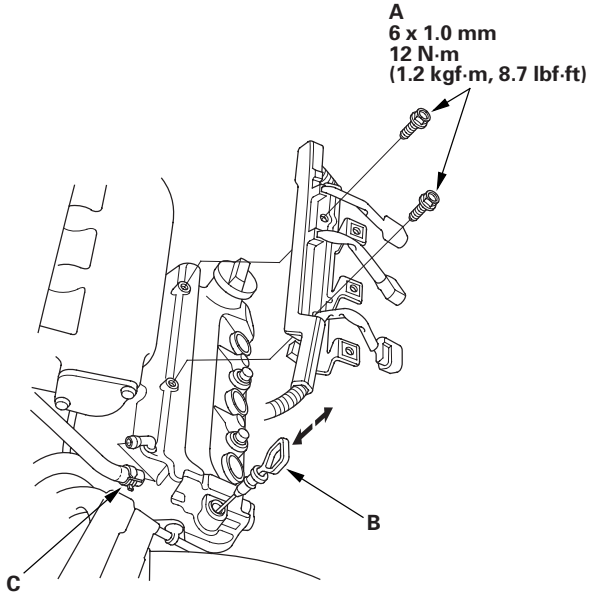
1. Check the spark plug seals for damage. If a seal is damaged, replace it.
2. Clean the head cover contacting surfaces with a shop towel.
3. Set the spark plug seals (A) on the spark plug tubes, then install the cylinder head cover (B).



4. Visually check the spark plug seals for damage.
5. Inspect the cover washers (C). Replace any washer that is damaged or deteriorated.
6. Tighten the bolts in three steps. In the final step torque all bolts, in sequence, 12 N·m (1.2 kgf·m, 8.7 lbf·ft).



7. Tighten the two bolts (A) securing the harness holder.



8. Install the dipstick (B) and positive crankcase ventilation (PCV) hose (C).

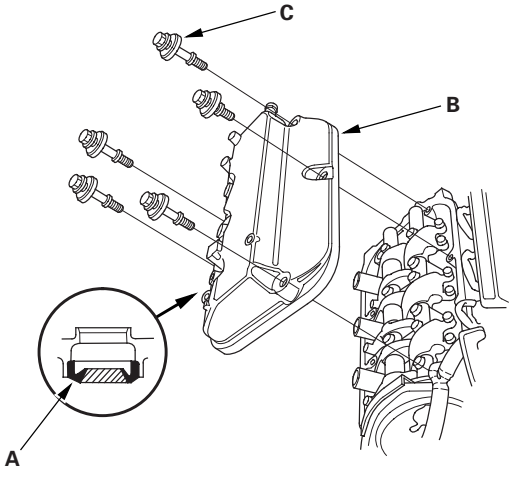
9. Install the three ignition coils to the front cylinder head (see page 4-19).

Rear

1. Check the spark plug seals for damage. If the seal is damaged, replace it.

2. Clean the head cover contacting surfaces with a shop towel.

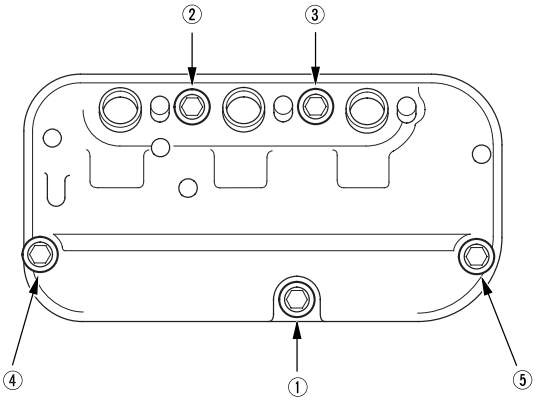
3. Set the spark plug seals (A) on the spark plug tubes, then install the cylinder head cover (B).



4. Visually check the spark plug seals for damage.

5. Inspect the cover washers (C). Replace any washer that is damaged or deteriorated.

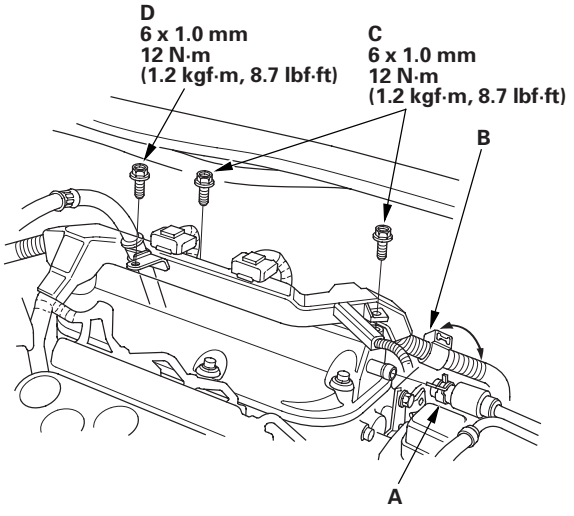
6. Tighten the bolts in three steps. In the final step torque all bolts, in sequence, 12 N·m (1.2 kgf·m, 8.7 lbf·ft).



(cont'd)

Cylinder Head Cover Installation (cont'd)

7. Install the breather hose (A) and harness clamp (B).

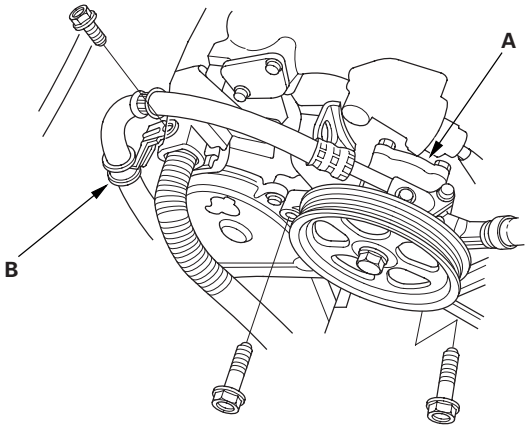


8. Tighten the two bolts (C) securing the harness holder.
9. Tighten the bolt (D) securing the power steering hose bracket.
10. Install the three ignition coils to the rear cylinder head (see page 4-19).
11. Install the intake manifold (see page 9-5).

Cylinder Head Removal

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- To avoid damage, unplug the wiring connectors carefully while holding the connector portion.
- To avoid damaging the cylinder head, wait until the engine coolant temperature drops below 100 ℉ (38 ℃) before loosening the cylinder head bolts.
- Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact other wiring or hoses, or interfere with other parts.

1. Make sure you have the anti-theft codes for the audio system and navigation system (if equipped).
2. Relieve the fuel pressure (see page 11-286).
3. Disconnect the battery negative cable from the battery.
4. Drain the engine coolant (see page 10-6).
5. Remove the drive belt (see page 4-31).
6. Remove the power steering (P/S) pump (A), and P/S hose clamp (B).



7. Remove the alternator (see page 4-34).

8. Remove the timing belt (see page 6-13).

9. Remove the intake manifold (see page 9-3).

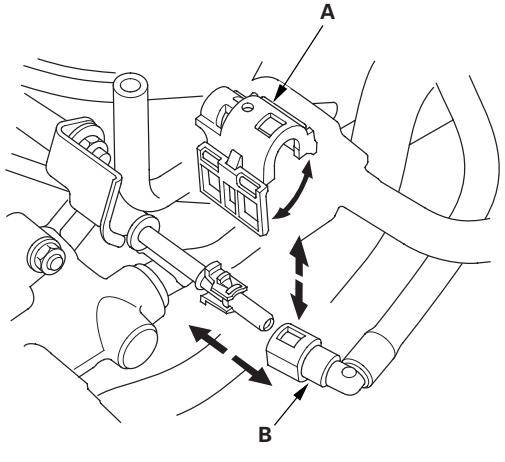
10. Remove the six ignition coils (see page 4-19).

11. Remove the engine wire harness connectors and wire harness clamps from the cylinder head.

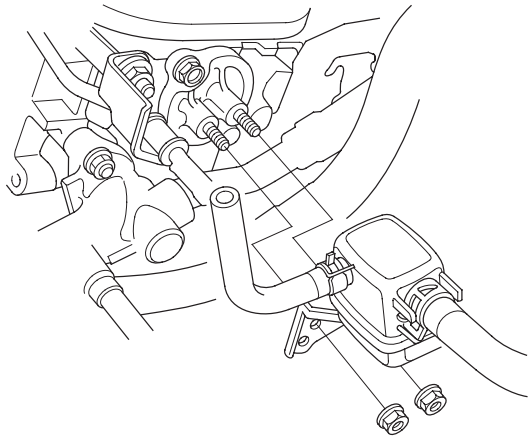
    - Six injector connectors
    - Engine coolant temperature (ECT) sensor 1 connector
    - Engine coolant temperature (ECT) sensor 2 connector
    - Crankshaft position (CKP) sensor connector
    - Exhaust gas recirculation (EGR) valve connector
    - Rocker arm oil control solenoid (VTEC solenoid valve) connector
    - Rocker arm oil pressure switch (VTEC oil pressure switch) connector
    - Oil pressure switch connector
    - Two air fuel ratio (A/F) sensor connectors
    - Two secondary heated oxygen sensor (secondary HO2S) connectors

12. Remove the front warm up three way catalytic converter (front WU-TWC) (see page 11-325) and rear warm up three way catalytic converter (rear WU-TWC) (see page 11-326).

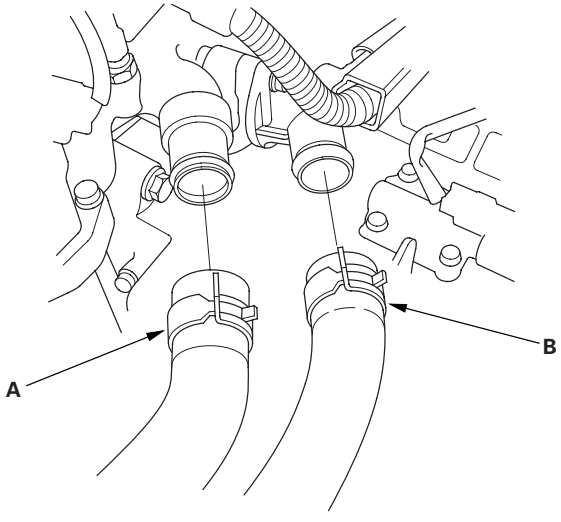
13. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (B) (see page 11-293).



14. Remove the purge joint.



15. Remove the upper radiator hose (A) and lower radiator hose (B).



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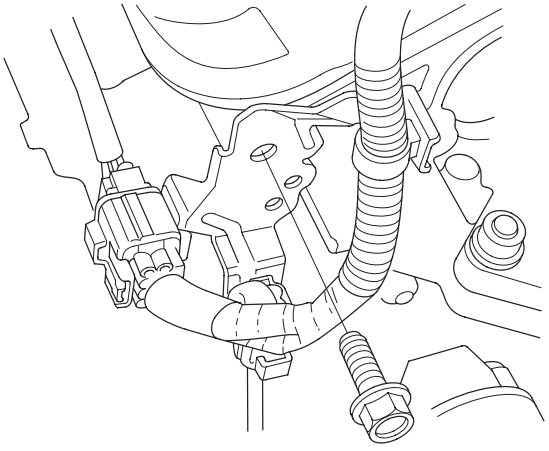
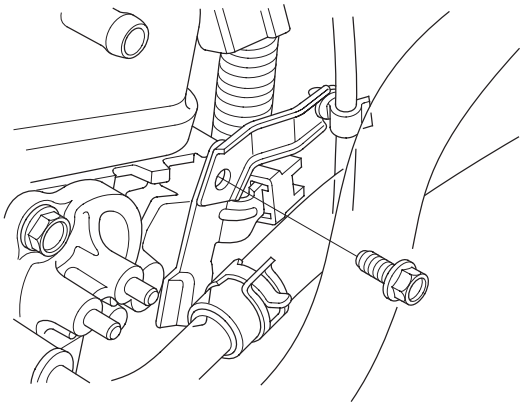
Cylinder Head Removal (cont'd)

16. Remove the connector bracket from the front cylinder head.



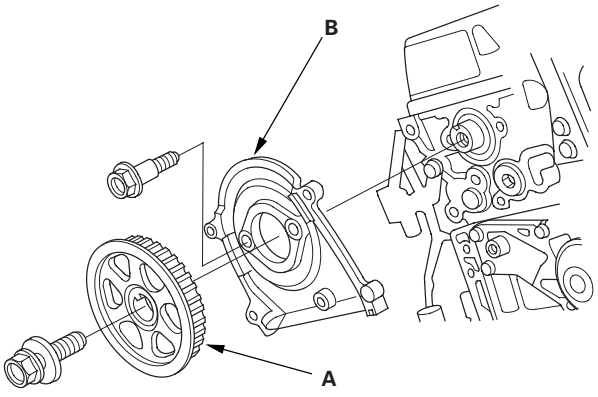
17. Remove the harness clamp bracket from the rear cylinder head.



18. Remove the fuel rails (see page 11-197).

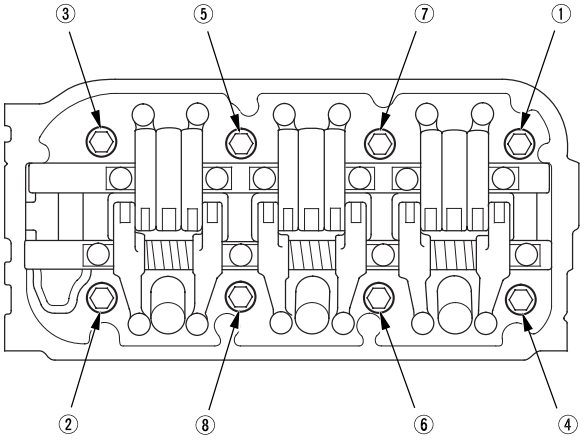
19. Remove the water passage (see page 10-9).

20. Remove the front and rear camshaft pulleys (A) and back covers (B).



21. Remove the cylinder head covers (see page 6-25).

22. Remove the cylinder head bolts. To prevent warpage, loosen the bolts in sequence 1/3 turn at a time; repeat the sequence until all bolts are loosened.

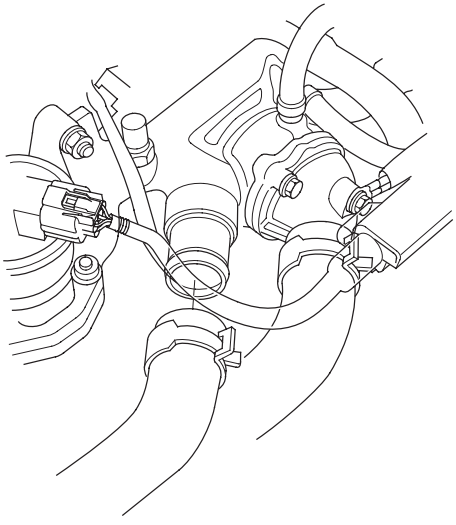


23. Remove the cylinder heads.

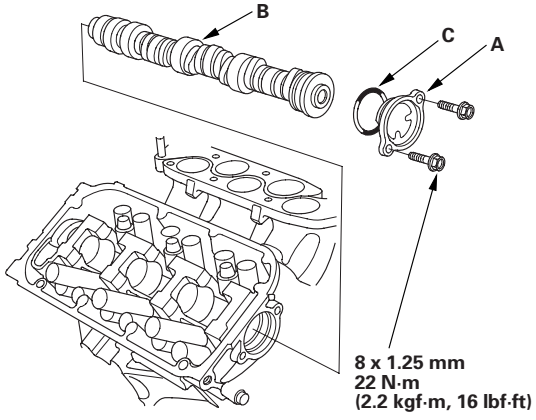
Camshaft Replacement

Front

1. Make sure you have the anti-theft codes for the audio system and navigation system (if equipped).
2. Disconnect the negative cable from the battery, then disconnect the positive cable.
3. Remove the battery and battery base.
4. Drain the engine coolant (see page 10-6).
5. Remove the upper radiator hose.



6. Remove the exhaust gas recirculation (EGR) valve (see page 11-342).
7. Remove the timing belt (see page 6-13).
8. Remove the rocker arm assembly (see page 6-33).
9. Remove the front camshaft pulley.
10. Remove the thrust cover (A), then remove the camshaft (B).



11. Install the camshaft in the reverse order of removal. Always use a new O-ring (C). Apply new engine oil to the journals and cam lobes.
12. Apply new engine oil to the threads of the camshaft pulley mounting bolt, then install the front camshaft pulley (see step 11 on page 6-48).
13. Install the rocker arm assembly, then tighten the mounting bolts (see step 6 on page 6-47).
14. Install the timing belt (see page 6-16).
15. Adjust the valve clearance (see page 6-8).
16. Install the upper radiator hose.
17. Install the battery and battery base. Clean the battery posts and cable terminals, then assemble them and apply grease to prevent corrosion.
18. Fill the radiator with engine coolant and bleed the air out from the system (see step 9 on page 10-7).
19. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-4).
20. Do the power window control unit reset procedure (see page 22-209).
21. Enter the anti-theft codes for the audio system and navigation system (if equipped).
22. Set the clock (on vehicles without navigation).

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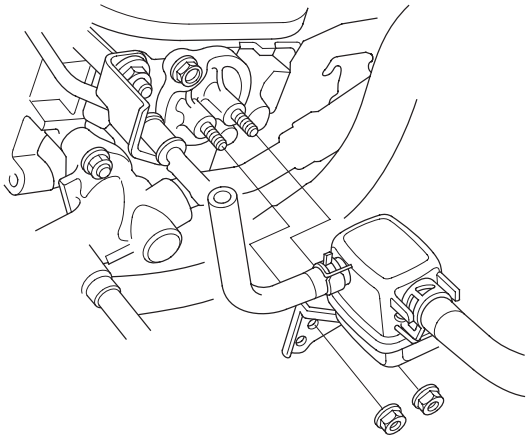
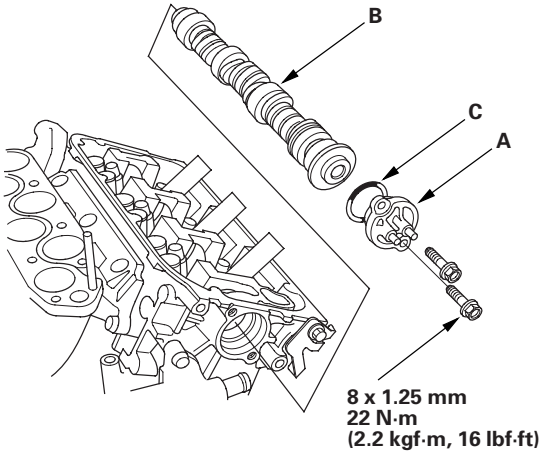
Camshaft Replacement (cont'd)

Rear

1. Remove the intake manifold (see page 9-3).
2. Remove the purge joint.



3. Remove the brake lines from the master cylinder (see page 19-17).
4. Remove the timing belt (see page 6-13).
5. Remove the rocker arm assembly (see page 6-33).
6. Remove the rear camshaft pulley.
7. Remove the thrust cover (A), then remove the camshaft (B).

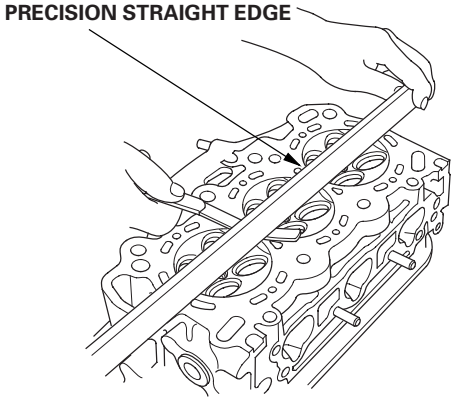


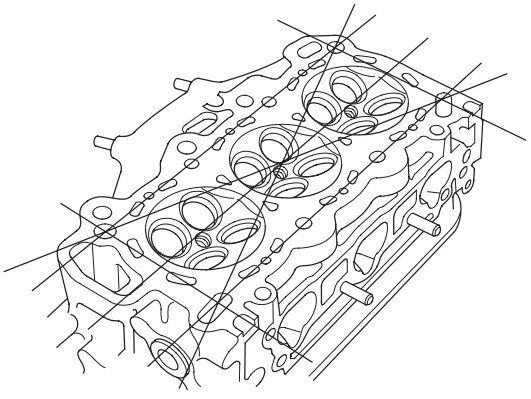
8. Install the camshaft in the reverse order of removal. Always use a new O-ring (C). Apply new engine oil to the journals and cam lobes.
9. Apply new engine oil to the threads of the camshaft pulley mounting bolt, then install the rear camshaft pulley (see step 11 on page 6-48).
10. Install the rocker arm assembly, then tighten the mounting bolts (see step 6 on page 6-47).
11. Install the timing belt (see page 6-16).
12. Adjust the valve clearance (see page 6-8).
13. Install the brake lines (see page 19-17) and do the brake system bleeding procedure (see page 19-9).
14. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-4).

Cylinder Head Inspection for Warpage

1. Remove the cylinder head (see page 6-28).
2. Inspect the camshaft (see page 6-37).
3. Check the cylinder head for warpage. Measure along the edges, and three ways across the center.
   - If warpage is less than 0.05 mm (0.002 in.), cylinder head resurfacing is not required.
   - If warpage is between 0.05 mm (0.002 in.) and 0.2 mm (0.008 in.), resurface the cylinder head.
   - Maximum resurface limit is 0.2 mm (0.008 in.) based on a height of 121 mm (4.76 in.).

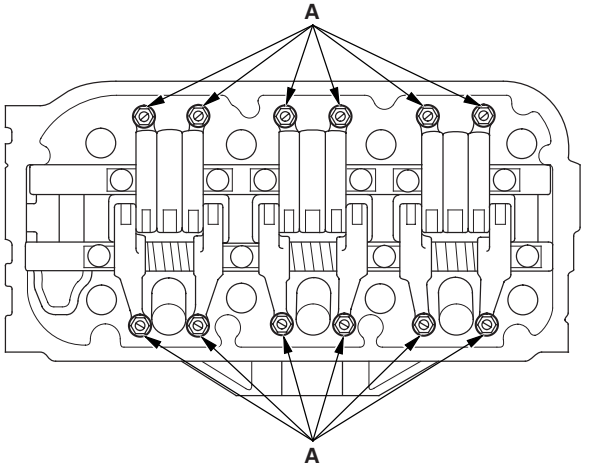
Cylinder Head Height
Standard (New): 120.95—121.05 mm (4.762—4.766 in.)



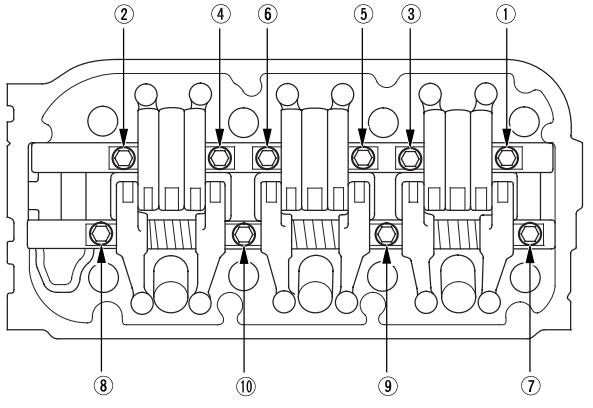


Rocker Arm Assembly Removal

1. Remove the intake manifold (see page 9-3).
2. Remove the cylinder head cover (see page 6-25).
3. Loosen the locknuts and adjusting screws (A).

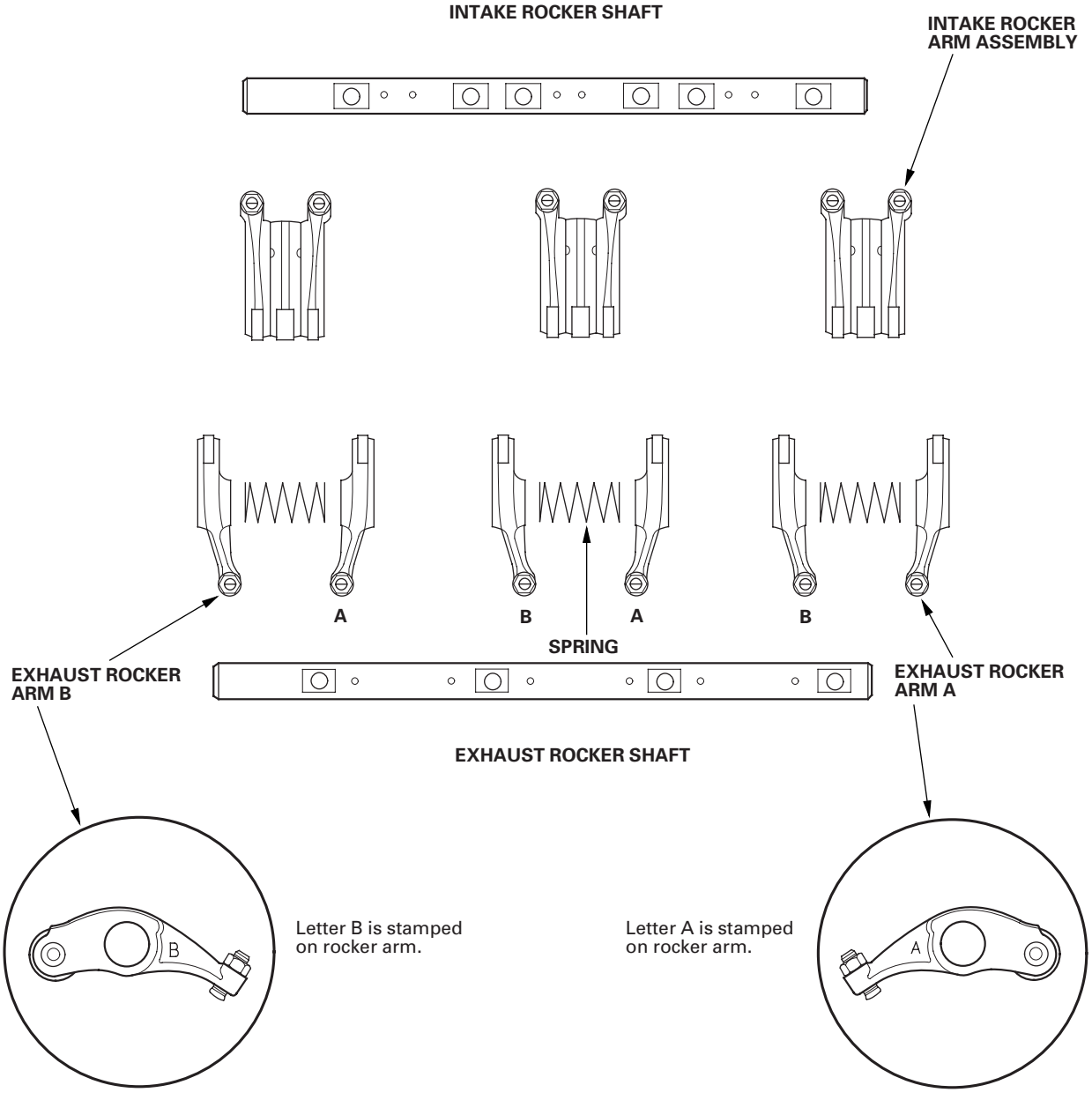


4. Remove the bolts and the rocker arm assembly.
   - 1 Loosen the rocker shaft mounting bolts two turns at a time in sequence, to prevent damaging the valves or rocker arm assembly.
   - 2 When removing the rocker arm assembly, do not remove the rocker shaft mounting bolts. The bolts will keep the springs and the rocker arms on the shafts.



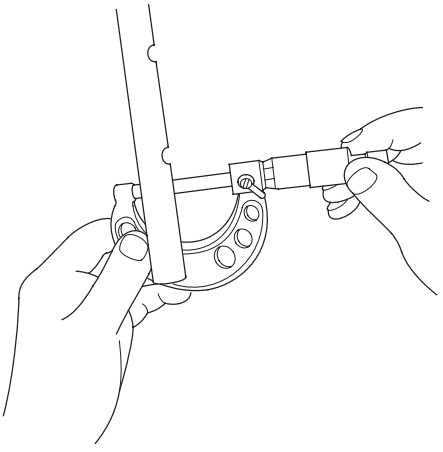
Rocker Arm and Shaft Disassembly/Reassembly

NOTE:
- Identify parts as they are removed so they can be reinstalled in their original locations.
- Inspect the rocker shafts and rocker arms (see page 6-35).
- If reused, the rocker arms must be installed in their original location.
- When removing or installing the rocker arm assembly, do not remove the rocker shaft mounting bolts. The bolts will keep the springs and rocker arms on the shaft.
- Bundle the intake rocker arms with rubber bands to keep them together as a set.
- Prior to reassembling, clean all the parts in solvent, dry them and apply new engine oil to any contact points.
- When replacing the intake rocker arm assembly, remove the fastening hardwares from the new intake rocker arm assembly.

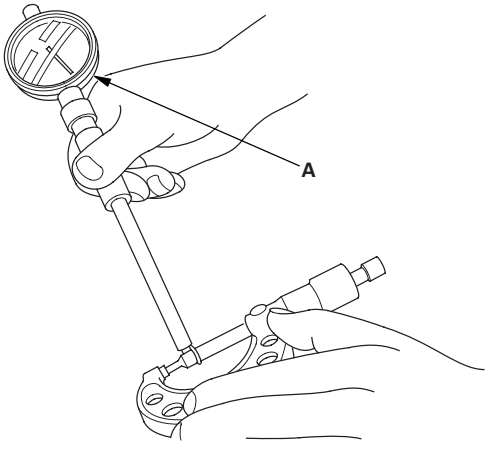


Rocker Arm and Shaft Inspection

1. Remove the rocker arm assembly (see page 6-33).
2. Disassemble the rocker arm assembly (see page 6-34).
3. Measure the diameter of the shaft at the first rocker location.



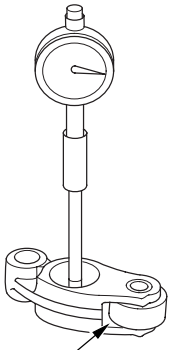
4. Zero the gauge (A) to the shaft diameter.



5. Measure the inside diameter of the rocker arm, and check it for an out-of-round condition.

Intake Rocker Arm-to-Shaft Clearance
Standard (New): 0.026—0.067 mm (0.0010—0.0026 in.)
Service Limit: 0.067 mm (0.0026 in.)

Exhaust Rocker Arm-to-Shaft Clearance
Standard (New): 0.026—0.077 mm (0.0010—0.0030 in.)
Service Limit: 0.077 mm (0.0030 in.)



6. Repeat for all rockers and both shafts. If the clearance is over the limit, replace the rocker shaft and all over-tolerance rocker arms. If any intake rocker arm needs replacement, replace all three rocker arms in that set (primary, mid, and secondary).

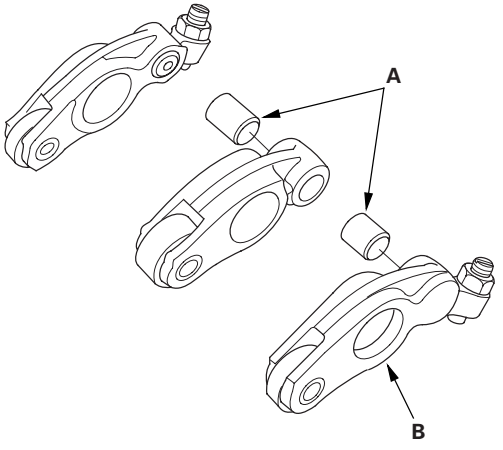
(cont'd)

Rocker Arm and Shaft Inspection (cont'd)

VTEC Rocker Arms

7. Inspect the rocker arm synchronizing pistons (A). Push them manually. If they do not move smoothly, replace the rocker arm set.

   NOTE:
   - Apply new engine oil to the pistons when reassembling.
   - When reassembling the primary rocker arm (B), carefully apply air pressure to the oil passage of the rocker arm.



8. Reassemble the rocker arm assembly (see page 6-34).

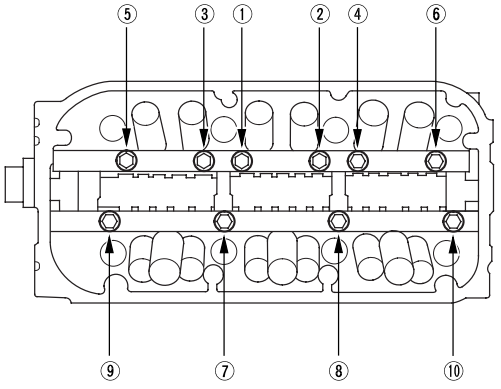
9. Install the rocker arm assembly (see page 6-47).

Camshaft Inspection

1. Remove the cylinder head (see page 6-28).
2. Remove the rocker arms (see page 6-33).
3. Put the rocker shafts on the cylinder head, then torque the bolts in sequence.

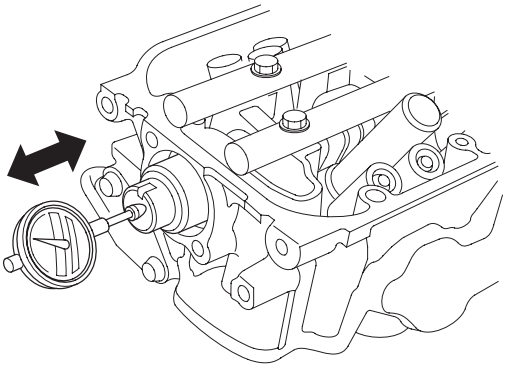
   NOTE: Apply new engine oil to the threads and flange of the exhaust rocker shaft mounting bolts.

   Specified Torque
   8 x 1.25 mm: 24 N·m (2.4 kgf·m, 17 lbf·ft)

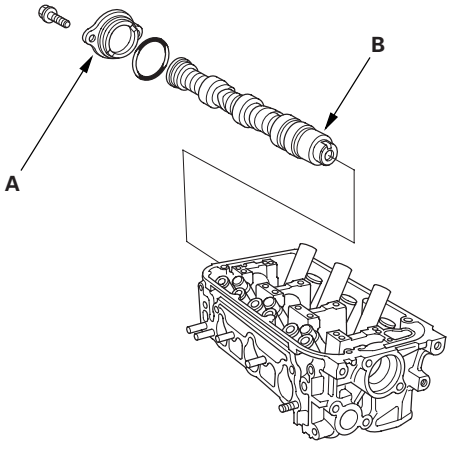


4. Seat the camshaft by pushing it toward the rear of the cylinder head.
5. Zero the dial indicator against the end of the camshaft. Push the camshaft back and forth and read the end play. If the end play is beyond the service limit, replace the thrust cover and recheck. If it is still beyond the service limit, replace the camshaft.

   Camshaft End Play
   Standard (New): 0.05—0.20 mm (0.002—0.008 in.)
   Service Limit: 0.20 mm (0.008 in.)



6. Remove the camshaft thrust cover (A), then pull out the camshaft (B).

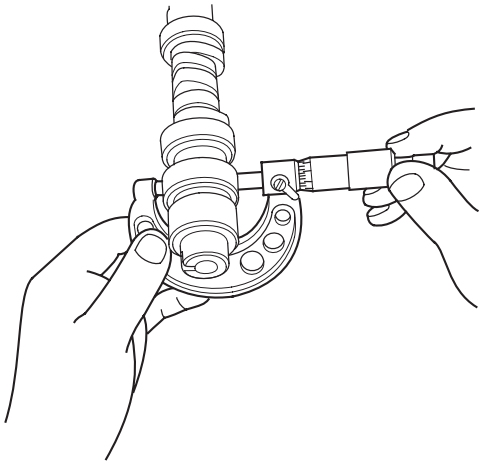


(cont'd)

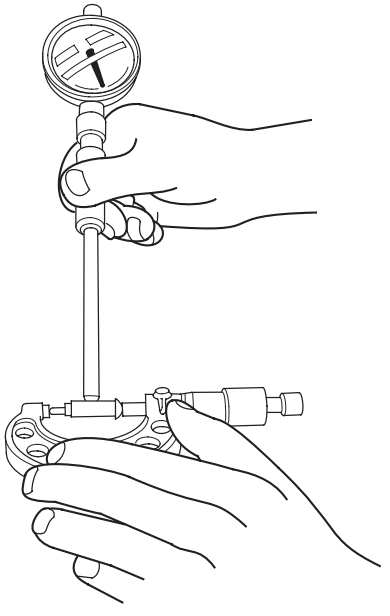
Camshaft Inspection (cont'd)

7. Wipe the camshaft clean, then inspect the lift ramps. Replace the camshaft if any lobes are pitted, scored, or excessively worn.

8. Measure the diameter of each camshaft journal.



9. Zero the gauge to the journal diameter.

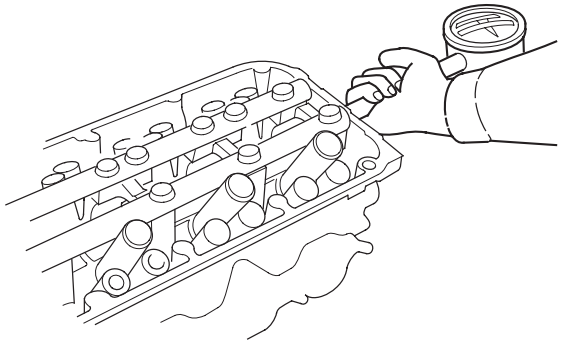


10. Clean the camshaft bearing surfaces in the cylinder head. Measure the inside diameter of each camshaft bearing surface, and check for an out-of-round condition.

    - If the camshaft-to-holder clearance is within limits, go to step 12.
    - If the camshaft-to-holder clearance is beyond the service limit and the camshaft has been replaced, replace the cylinder head.
    - If the camshaft-to-holder clearance is beyond the service limit and the camshaft has not been replaced, go to step 11.

Camshaft-to-Holder Oil Clearance

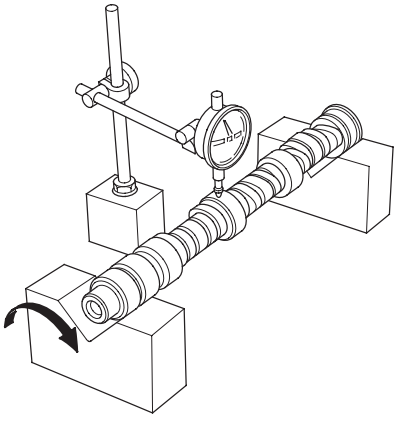
Standard (New):	**0.050—0.089 mm (0.0020—0.0035 in.)**
Service Limit:	**0.15 mm (0.006 in.)**



11. Check total runout with the camshaft supported on V-blocks.

    - If the total runout of the camshaft is within the service limit, replace the cylinder head.
    - If the total runout is beyond the service limit, replace the camshaft and recheck the oil clearance. If the oil clearance is still out of tolerance, replace the cylinder head.

Camshaft Total Runout
Standard (New): 0.03 mm (0.001 in.) max.
Service Limit: 0.04 mm (0.002 in.)

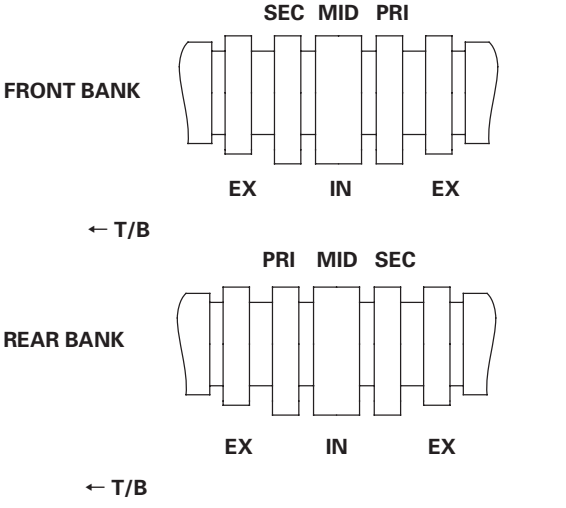


12. Measure cam lobe height.

Cam Lobe Height Standard (New):

	INTAKE	EXHAUST
PRI	35.041 mm (1.3796 in.)	36.326 mm (1.4302 in.)
MID	36.445 mm (1.4348 in.)	
SEC	35.284 mm (1.3891 in.)	

PRI: Primary MID: Mid SEC: Secondary
IN: Intake EX: Exhaust T/B: Timing Belt



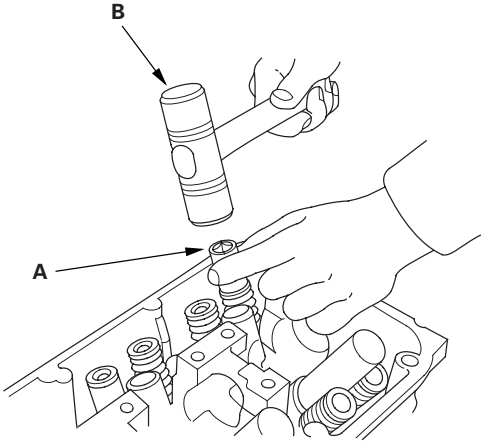
Valve, Spring, and Valve Seal Removal

Special Tools Required
Valve spring compressor attachment
07757-PJ1010A

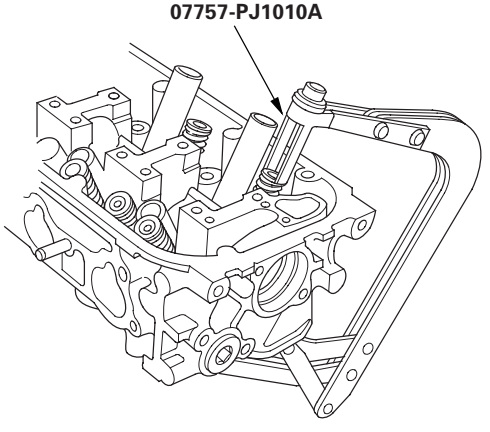
Identify the valves and valve springs as they are removed so that each item can be reinstalled in its original position.

1. Remove the cylinder head (see page 6-28).

2. Using an appropriate-sized socket (A) and plastic mallet (B), lightly tap the valve retainer to loosen the valve cotters.

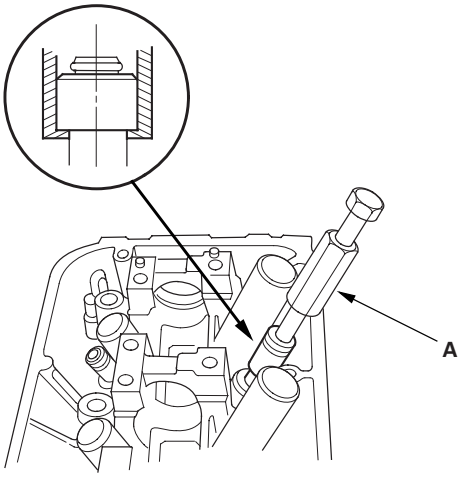


3. Install the valve spring compressor attachment and valve spring compressor. Compress the spring and remove the valve cotters.

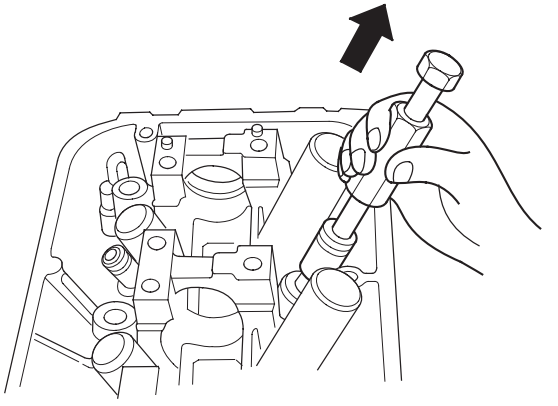


4. Remove the valve spring compressor, valve spring compressor attachment, spring retainer, and spring.

5. Install the valve guide seal remover (A).



6. Remove the valve seal.



7. Remove the valve spring seat and valve.

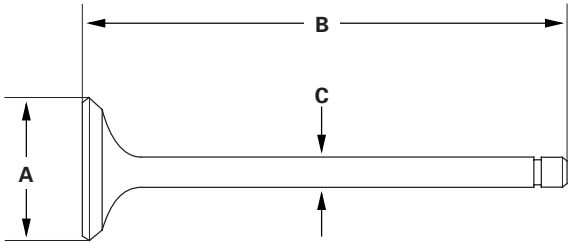
Valve Inspection

1. Remove the valves (see page 6-40).

2. Measure the valve in these areas.

Intake Valve Dimensions
A Standard (New): 34.90—35.10 mm (1.374—1.382 in.)
B Standard (New): 115.70—116.30 mm (4.555—4.579 in.)
C Standard (New): 5.485—5.495 mm (0.2159—0.2163 in.)
C Service Limit: 5.455 mm (0.2148 in.)

Exhaust Valve Dimensions
A Standard (New): 29.90—30.10 mm (1.177—1.185 in.)
B Standard (New): 113.90—114.50 mm (4.484—4.508 in.)
C Standard (New): 5.450—5.460 mm (0.2146—0.2150 in.)
C Service Limit: 5.420 mm (0.2134 in.)



Valve Stem-to-Guide Clearance Inspection

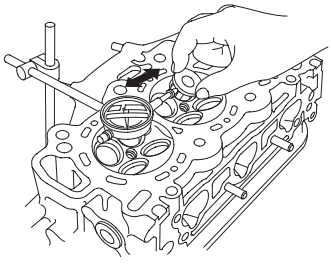
1. Remove the valves (see page 6-40).

2. Slide the valve out of its guide about 10 mm (0.39 in.), then measure the guide-to-stem clearance with a dial indicator while rocking the stem in the direction of normal thrust (wobble method).

- If the measurement exceeds the service limit, recheck it using a new valve.
- If the measurement is now within the service limit, reassemble using a new valve.
- If the measurement with a new valve still exceeds the service limit, go to step 3.

Intake Valve Stem-to-Guide Clearance
Standard (New): 0.04—0.09 mm (0.002—0.004 in.)
Service Limit: 0.16 mm (0.006 in.)

Exhaust Valve Stem-to-Guide Clearance
Standard (New): 0.11—0.16 mm (0.004—0.006 in.)
Service Limit: 0.22 mm (0.009 in.)



3. Subtract the valve stem O.D. (measured with a micrometer) from the valve guide I.D. (measured with an inside micrometer or ball gauge).
Take the measurements in three places along the valve stem and three places inside the valve guide. The difference between the largest guide measurement and the smallest stem measurement should not exceed the service limit.

Intake Valve Stem-to-Guide Clearance
Standard (New): 0.020—0.045 mm (0.0008—0.0018 in.)
Service Limit: 0.08 mm (0.003 in.)

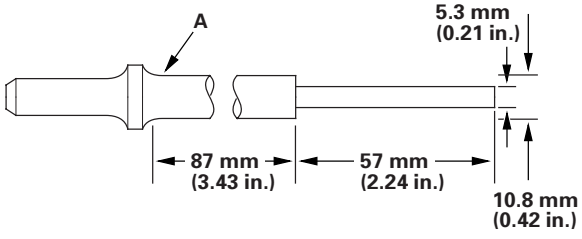
Exhaust Valve Stem-to-Guide Clearance
Standard (New): 0.055—0.080 mm (0.0022—0.0031 in.)
Service Limit: 0.11 mm (0.004 in.)

Valve Guide Replacement

Special Tools Required
- Valve guide driver, 5.5 mm 07742-0010100
- Valve guide reamer, 5.5 mm 07HAH-PJ7A100

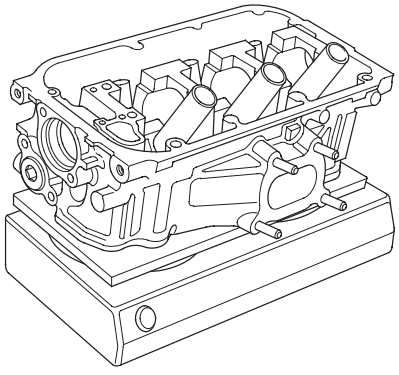
1. Inspect valve stem-to-guide clearance (see page 6-41).

2. As illustrated, use a commercially available air-impact valve guide driver (A) modified to fit the diameter of the valve guides. In most cases, the same procedure can be done using the special tool and a conventional hammer.



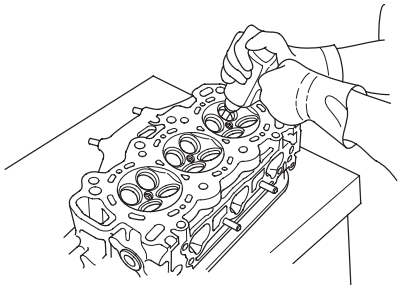
3. Select the proper replacement guides, and chill them in the freezer section of a refrigerator for about an hour.

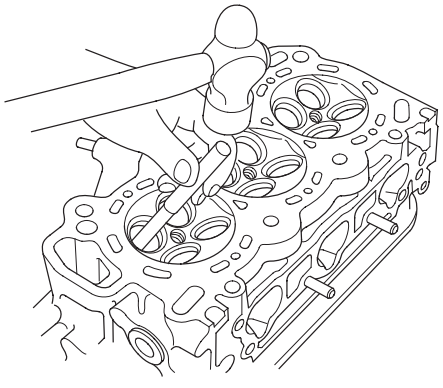
4. Use a hot plate or oven to evenly heat the cylinder head to 300 ℉ (150 ℃). Monitor the temperature with a cooking thermometer. Do not get the head hotter than 300 ℉ (150 ℃); excessive heat may loosen the valve seats.



5. Working from the camshaft side, use the driver and an air hammer to drive the guide about 2 mm (0.1 in.) towards the combustion chamber. This will knock off some of the carbon and make removal easier. Hold the air hammer directly in line with the valve guide to prevent damaging the driver. Wear safety goggles or a face shield.

6. Turn the head over, and drive the guide out toward the camshaft side of the head.





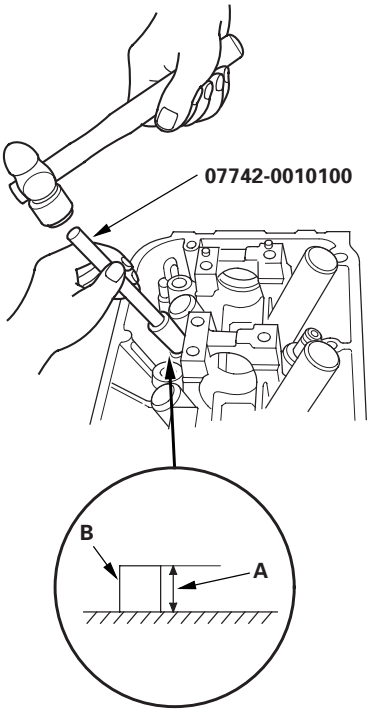
7. If a valve guide still won't move, drill it out with a 8 mm (5/16 in.) bit, then try again.

   NOTE: Drill guides only in extreme cases; you could damage the cylinder head if the guide breaks.

8. Take out the new guide(s) from the freezer, one at a time, as you need them.

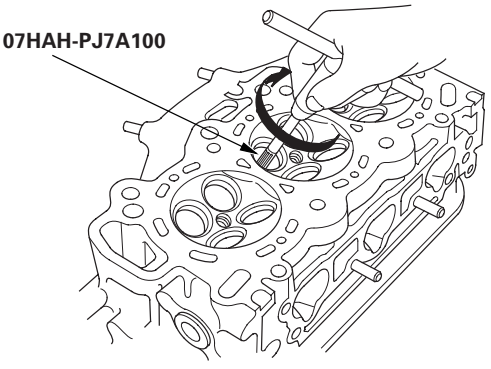
9. Apply a thin coat of new engine oil to the outside of the new valve guide. Install the valve guide from the camshaft side of the head; use the valve guide driver to drive the guide to the specified installed height (A) of the guide (B). If you have all 12 guides to do, you may have to reheat the head.

Valve Guide Installed Height
Intake: 21.20—22.20 mm (0.835—0.874 in.)
Exhaust: 20.60—21.60 mm (0.811—0.850 in.)



10. Coat both the reamer and the valve guide with cutting oil.

11. Rotate the reamer clockwise the full length of the valve guide bore.



12. Continue to rotate the reamer clockwise while drawing it from the bore.

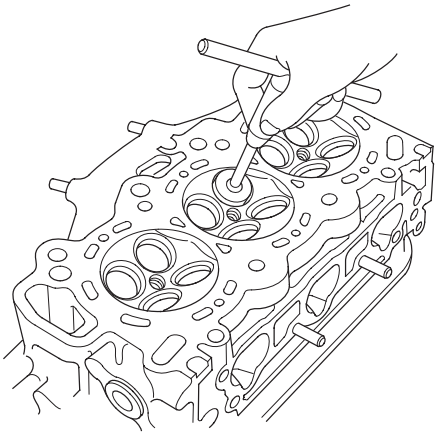
13. Thoroughly wash the guide in detergent and water to remove any cutting residue.

14. Check the clearance with a valve (see page 6-41). Verify that a valve slides in the intake and exhaust valve guides without sticking.

Valve Seat Reconditioning

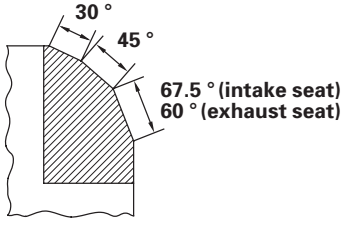
1. Inspect valve stem-to-guide clearance (see page 6-41). If the valve guides are worn, replace them (see page 6-42) before cutting the valve seats.

2. Renew the valve seats in the cylinder head using a valve seat cutter.



3. Carefully cut a 45 ° seat, removing only enough material to ensure a smooth and concentric seat.

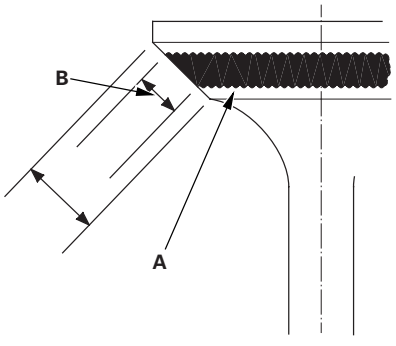
4. Bevel the upper edge of the seat with the 30 ° cutter and the lower edge of the seat with the 67.5 ° cutter (intake seat) or the 60 ° cutter (exhaust seat). Check the width of the seat and adjust accordingly.



5. Make one more very light pass with the 45 ° cutter to remove any possible burrs caused by the other cutters.

   Valve Seat Width
   Standard (New): 1.25—1.55 mm (0.049—0.061 in.)
   Service Limit: 2.00 mm (0.079 in.)

6. After resurfacing the seat, inspect it for even valve seating. Apply Prussian Blue compound (A) to the valve face. Insert the valve in its original location in the head, then lift it and snap it closed against the seat several times.



7. The actual valve seating surface (B), as shown by the blue compound, should be centered on the seat.

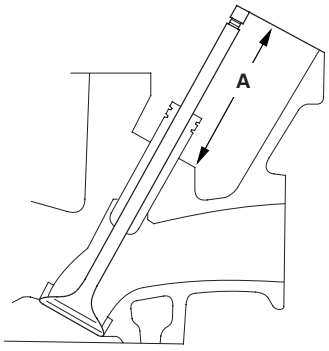
   - If it is too high (closer to the valve stem), you must make a second cut with the 67.5 ° cutter (intake seat) or the 60 ° cutter (exhaust seat) to move it down, then one more cut with the 45 ° cutter to restore seat width.
   - If it is too low (closer to the valve edge), you must make a second cut with the 30 ° cutter to move it up, then one more cut with the 45 ° cutter to restore seat width.

   NOTE: The final cut should always be made with the 45 ° cutter.

8. Insert the intake and exhaust valves in the head, and measure the valve stem installed height (A).

Intake Valve Stem Installed Height
Standard (New): 46.75—47.55 mm (1.841—1.872 in.)
Service Limit: 47.80 mm (1.882 in.)

Exhaust Valve Stem Installed Height
Standard (New): 46.68—47.48 mm (1.838—1.869 in.)
Service Limit: 47.73 mm (1.879 in.)



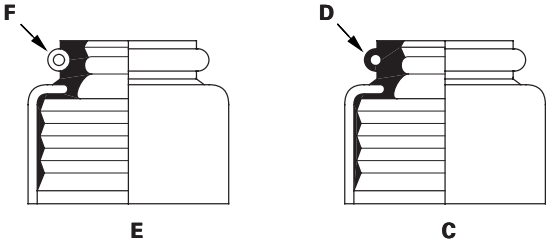
9. If the valve stem installed height is over the service limit, replace the valve and recheck. If it is still over the service limit, replace the cylinder head; the valve seat in the head is too deep.

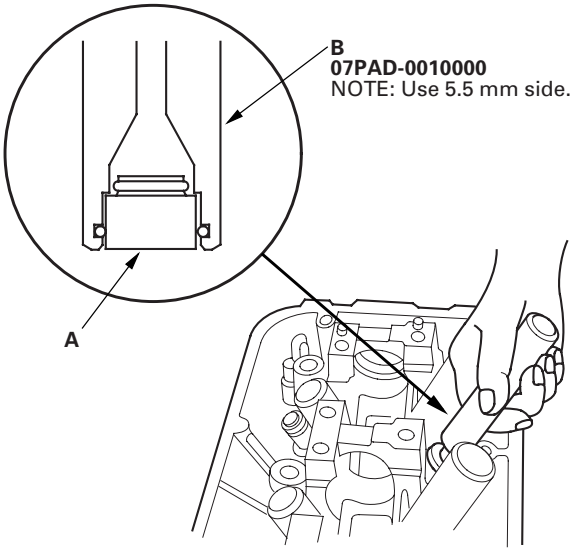
Valve, Spring, and Valve Seal Installation

Special Tools Required
- Stem seal driver 07PAD-0010000
- Valve spring compressor attachment 07757-PJ1010A

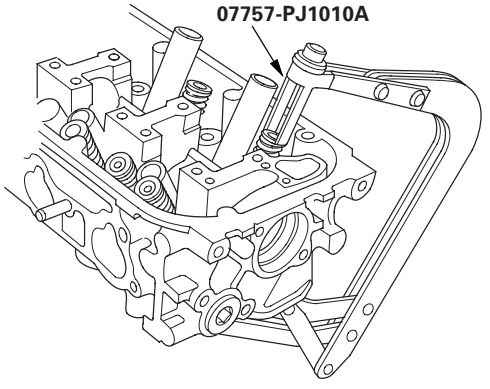
1. Coat the valve stems with new engine oil. Install the valves in the valve guides.
2. Check that the valves move up and down smoothly.
3. Install the spring seats on the cylinder head.
4. Install the new valve seals (A) using the stem seal driver (B).

   NOTE: Exhaust valve seals (C) have a black spring (D) and intake valve seals (E) have a white spring (F); they are not interchangeable.

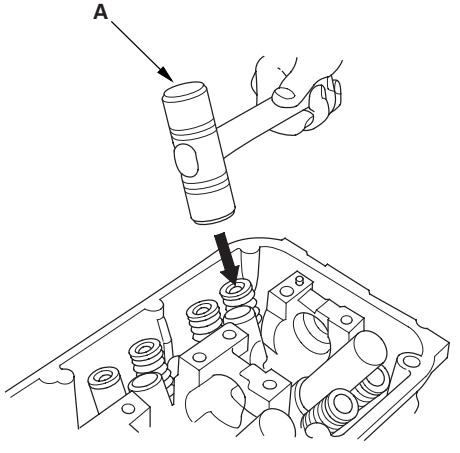




5. Install the valve spring and valve retainer. Place the end of the valve spring with closely wound coils toward the cylinder head.
6. Install the valve spring compressor attachment and valve spring compressor. Compress the spring and install the valve cotters.



7. Remove the valve spring compressor and valve spring compressor attachment.
8. Lightly tap the end of each valve stem two or three times with a plastic mallet (A) to ensure proper seating of the valve and valve cotters. Tap the valve stem only along its axis so you do not bend the stem.



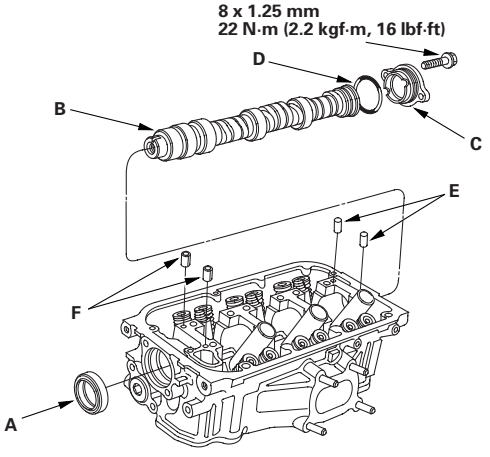
Camshaft, Rocker Arm Assembly, Camshaft Seal, and Pulley Installation

1. Apply a light coat of new engine oil around the camshaft oil seal.

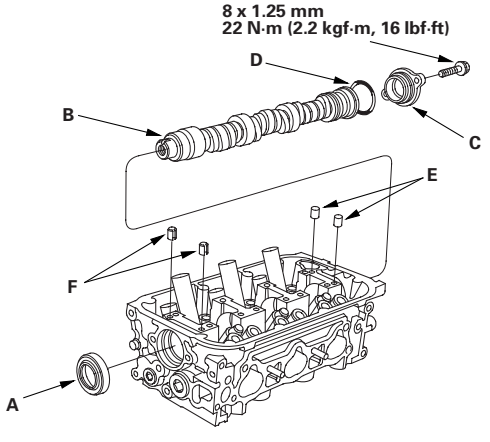
2. Gently tap the new camshaft oil seal (A) into the cylinder head using a seal driver.

   –1 Tap the camshaft oil seal in squarely.
   –2 Install the oil seal about 0.5 —1.5 mm (0.02—0.06 in.) below the surface of the cylinder head.

Front:



Rear:



3. Insert the camshaft (B) into the cylinder head, then install the camshaft thrust cover (C). Always use a new O-ring (D).

4. Check that the oil seal lips are not distorted.

5. Install the solid dowel pins (E) and the hollow dowel pins (F).

6. Loosen the valve adjusting screws.

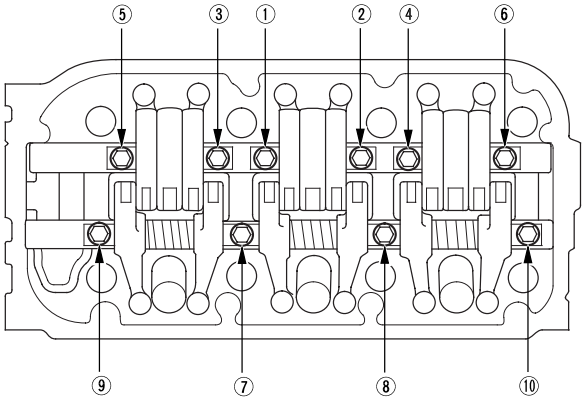
7. If the rocker arm assembly is disassembled, reassemble the rocker arm assembly (see page 6-34).

8. Set the rocker arm assembly in place, and loosely install the bolts. Make sure that the rocker arms are properly positioned on the valve stems.

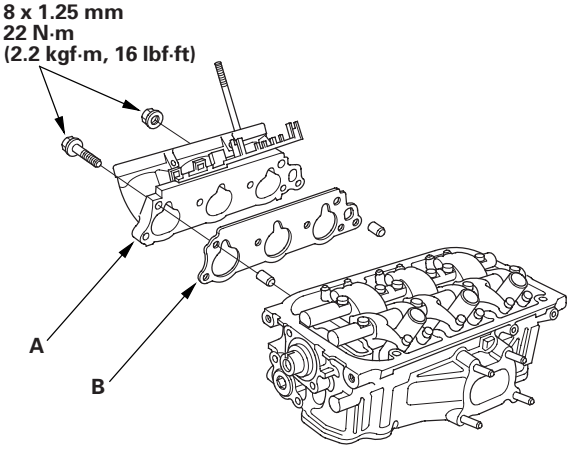
9. Torque each bolt two turns at a time in the sequence shown to ensure that the rockers do not bind on the valves.

   NOTE: Apply new engine oil to the threads and flange of the exhaust rocker shaft mounting bolts.

Specified Torque
8 x 1.25 mm: 24 N·m (2.4 kgf·m, 17 lbf·ft)



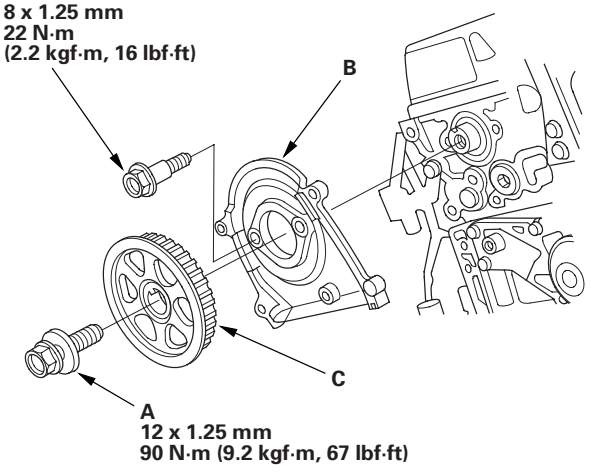
10. Install the injector base (A). Always use a new gasket (B).



(cont'd)

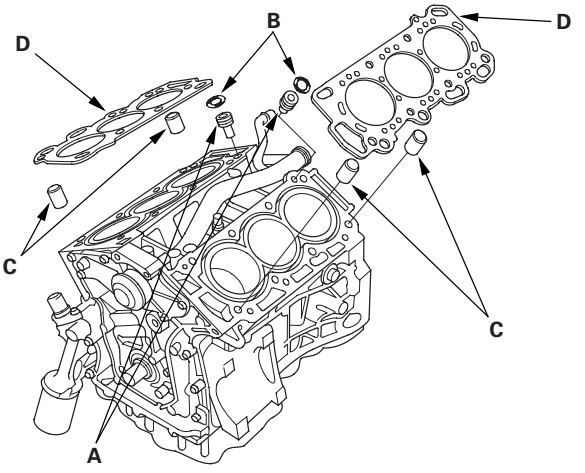
Camshaft, Rocker Arm Assembly, Camshaft Seal, and Pulley Installation (cont'd)

11. Apply new engine oil to the threads of the camshaft pulley mounting bolt (A). Install the back cover (B), then install the camshaft pulley (C).



Cylinder Head Installation

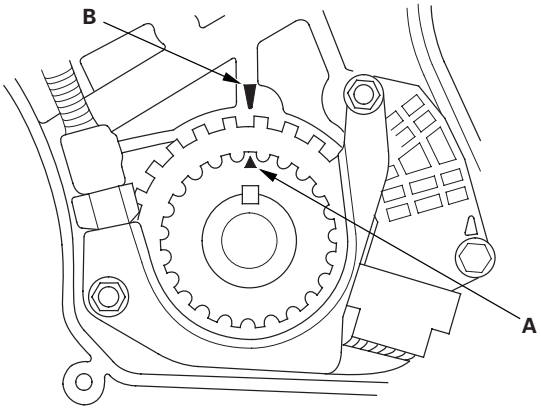
1. Clean the cylinder head and engine block surface.
2. Clean and install the oil control orifices (A) with new O-rings (B).



3. Install the dowel pins (C) and new cylinder head gaskets (D).

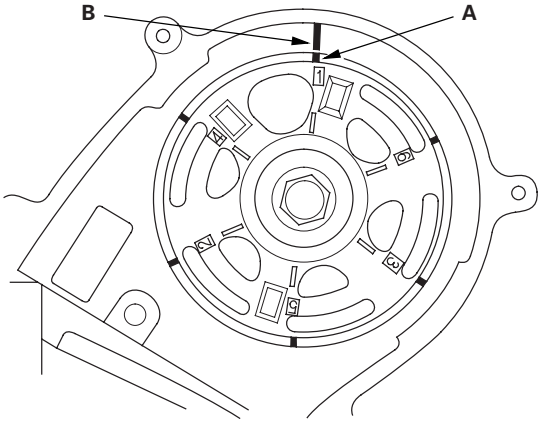
4. Clean the timing belt pulleys, timing belt guide plate, and the upper and lower covers.

5. Set the timing belt drive pulley to top dead center (TDC) by aligning the TDC mark (A) on the tooth of the timing belt drive pulley with the pointer (B) on the oil pump.

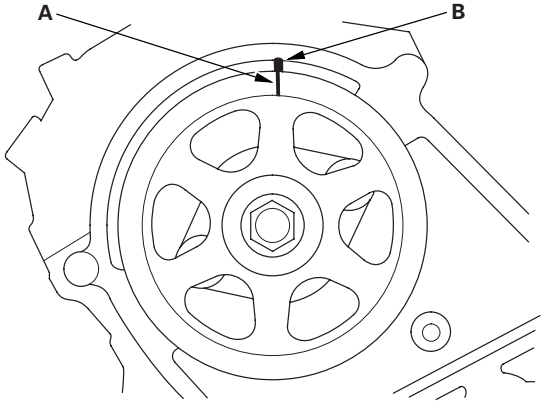


6. Set the camshaft pulleys to TDC by aligning the TDC marks (A) on the camshaft pulleys with the pointers (B) on the back covers.

Front:



Rear:



7. Place the cylinder head onto the engine block.

8. Install the cylinder head bolts:

   • 6 point head bolt: Go to step 9.
   • 12 point head bolt: Go to step 11.

   NOTE: Head bolt types must be all the same type on the cylinder head. Do not mix head bolt types.

(cont'd)

Cylinder Head Installation (cont'd)

Tightening sequence for 6 point head bolts

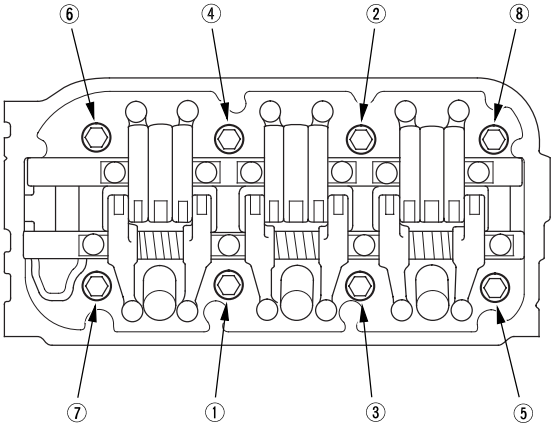
9. Apply new engine oil to the threads and flanges of the cylinder head bolts.

10. Torque the cylinder head bolts sequentially in three steps. Then go to step 16.

    NOTE: Perform each step twice.

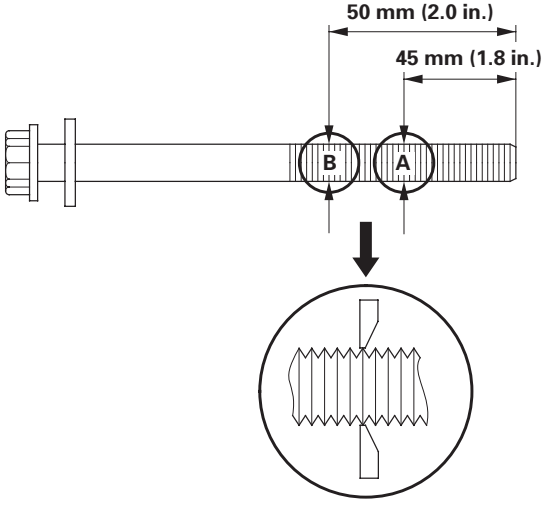
    1st Step Torque: 39 N·m (4.0 kgf·m, 29 lbf·ft)
    2nd Step Torque: 69 N·m (7.0 kgf·m, 51 lbf·ft)
    3rd Step Torque: 98.1 N·m (10.0 kgf·m, 72.3 lbf·ft)

    Use a beam-type torque wrench. When using a preset-type torque wrench, be sure to tighten slowly and not to overtorque. If a bolt makes any noise while you are torquing it, loosen the bolt, and retighten it from the 1st step.



Tightening sequence for 12 point head bolts

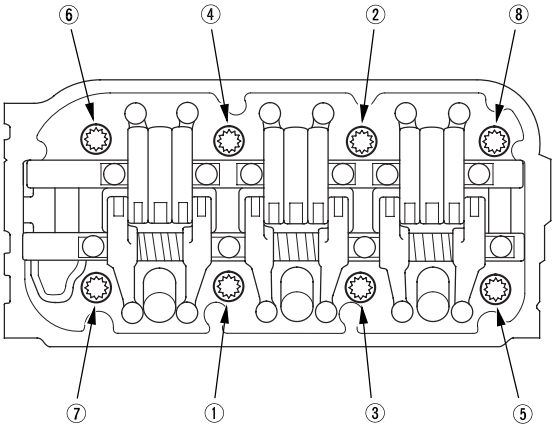
11. Measure the diameter of each cylinder head bolt at point A and point B.



12. If either diameter is less than 11.3 mm (0.44 in.), replace the cylinder head bolt.

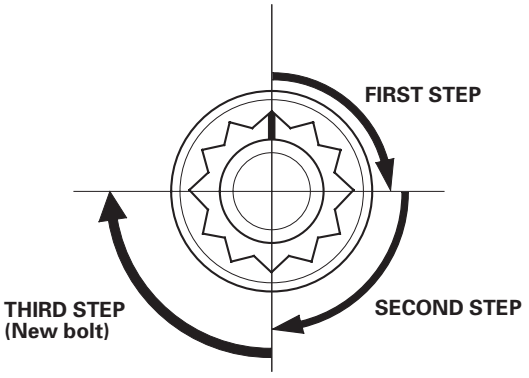
13. Apply new engine oil to the threads and under the bolt heads of all cylinder head bolts.

14. Torque the cylinder head bolts in sequence to 29 N·m (3.0 kgf·m, 22 lbf·ft). Use a beam-type torque wrench. When using a preset-type torque wrench, be sure to tighten slowly and do not overtighten. If a bolt makes any noise while you are torquing it, loosen the bolt and retighten it from the first step.



15. After torquing, tighten all cylinder head bolts in two steps (90 ° per step). If you are using a new cylinder head bolt, tighten the bolt an extra 90 °.

    NOTE: Remove the cylinder head bolt if you tightened it beyond the specified angle, and go back to step 11 of the procedure. Do not loosen it back to the specified angle.



16. Install the timing belt (see page 6-16).

17. Adjust the valve clearance (see page 6-8).

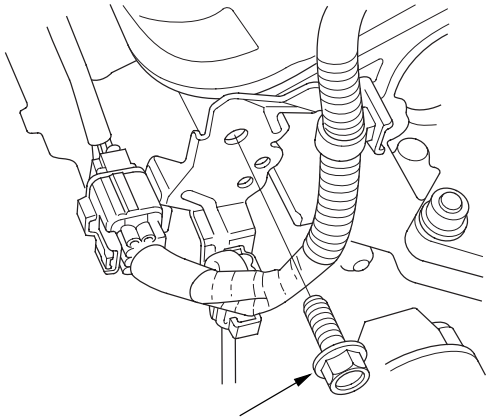
18. Install the cylinder head covers (see page 6-26).

19. Install the water passage (see page 10-9).

20. Install the front warm up three way catalytic converter (front WU-TWC) (see page 11-325) and rear warm up three way catalytic converter (rear WU-TWC) (see page 11-326).

21. Install the fuel rails (see page 11-197).

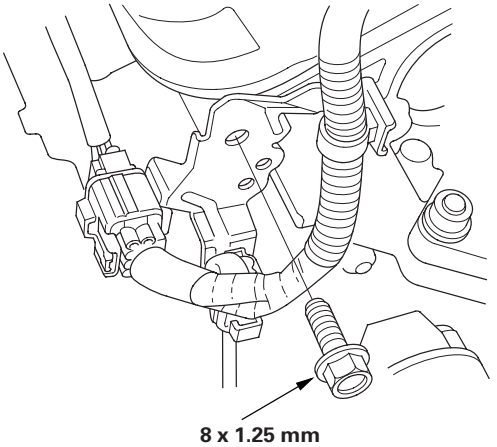
22. Install the connector bracket to the front cylinder head.



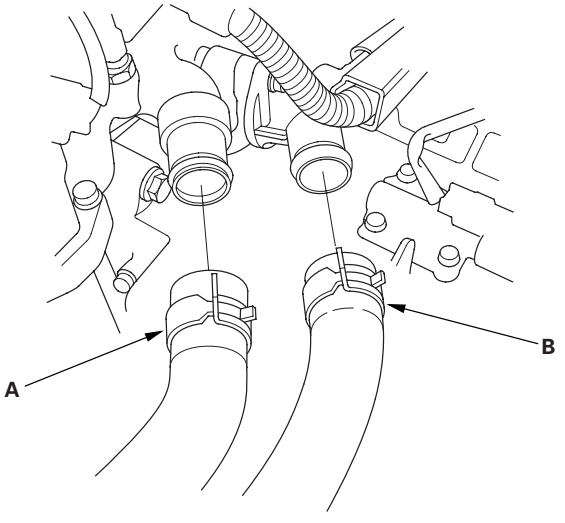
(cont'd)

Cylinder Head Installation (cont'd)

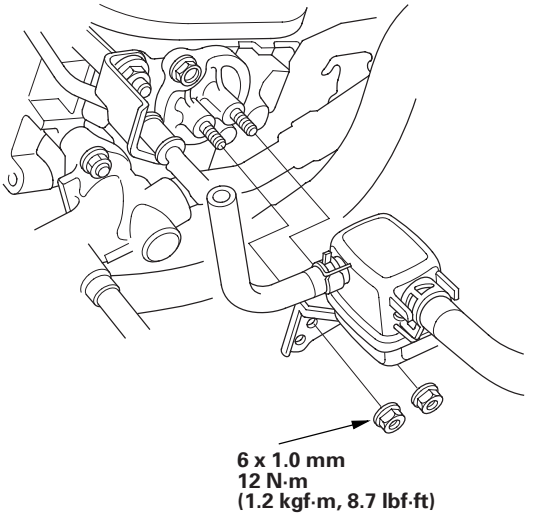
23. Install the harness clamp bracket to the rear cylinder head.



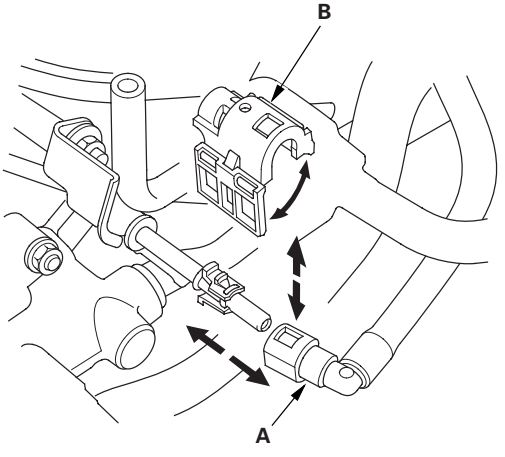
24. Install the upper radiator hose (A) and lower radiator hose (B).



25. Install the purge joint.



26. Connect the fuel feed hose (A) (see page 11-295), then install the quick-connect fitting cover (B).



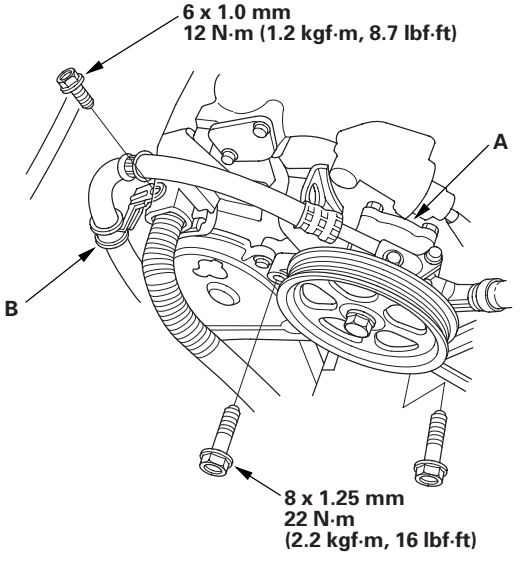
27. Connect the engine wire harness connectors, and install the wire harness clamps to the cylinder head.

    - Six injector connectors
    - Engine coolant temperature (ECT) sensor 1 connector
    - Engine coolant temperature (ECT) sensor 2 connector
    - Crankshaft position (CKP) sensor connector
    - Exhaust gas recirculation (EGR) valve connector
    - Rocker arm oil control solenoid (VTEC solenoid valve) connector
    - Rocker arm oil pressure switch (VTEC oil pressure switch) connector
    - Oil pressure switch connector
    - Two air fuel ratio (A/F) sensor connectors
    - Two secondary heated oxygen sensor (secondary HO2S) connectors

28. Install the intake manifold (see page 9-5).

29. Install the alternator (see page 4-35).

30. Install the power steering (P/S) pump (A) and P/S hose bracket (B).



31. Install the drive belt (see page 4-31).

32. Clean the battery posts and cable terminals, then assemble them and apply grease to prevent corrosion.

33. After installation, check that all tubes, hoses, and connectors are installed correctly.

34. Inspect for fuel leaks. Turn the ignition switch ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation three times, then check for fuel leakage at any point in the fuel line.

35. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 9 on page 10-7).

36. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-4).

37. Do the power window control unit reset procedure (see page 22-209).

38. Inspect the idle speed (see page 11-272).

39. Inspect the ignition timing (see page 4-18).

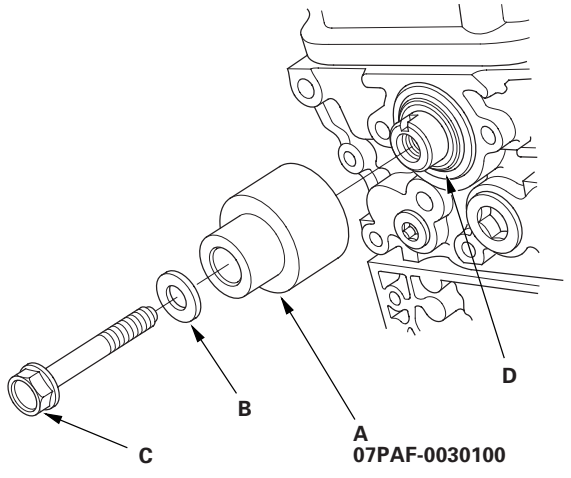
40. Enter the anti-theft codes for the audio system and navigation system (if equipped).

41. Set the clock (on vehicles without navigation).

Camshaft Oil Seal Installation - In Car

Special Tools Required
Camshaft oil seal driver 07PAF-0030100

1. Remove the timing belt (see page 6-13).
2. Remove the camshaft pulley and back cover (see step 20 on page 6-30).
3. Remove the camshaft oil seal.
4. Dry the camshaft oil seal housing.
5. Apply a light coat of multipurpose grease to the lip of the camshaft oil seal.
6. Using the special tool (A), washer (B), and a 12 x 75 x 1.25 mm bolt (C), press in the camshaft oil seal (D) about 0.5—1.5 mm (0.02—0.06 in.) below the surface of the cylinder head.

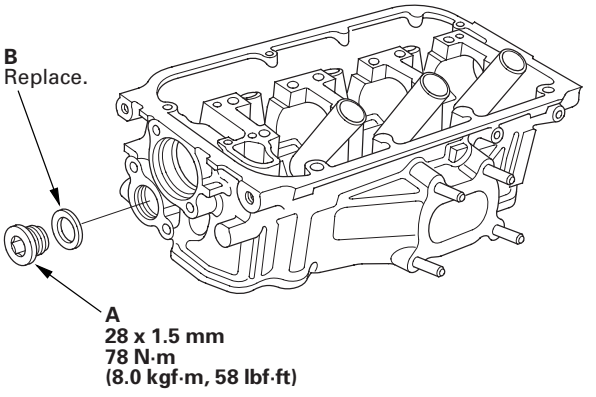


7. Apply new engine oil to the threads of the camshaft pulley mounting bolt. Install the back cover, then install the camshaft pulley (see step 11 on page 6-48).
8. Install the timing belt (see page 6-16).

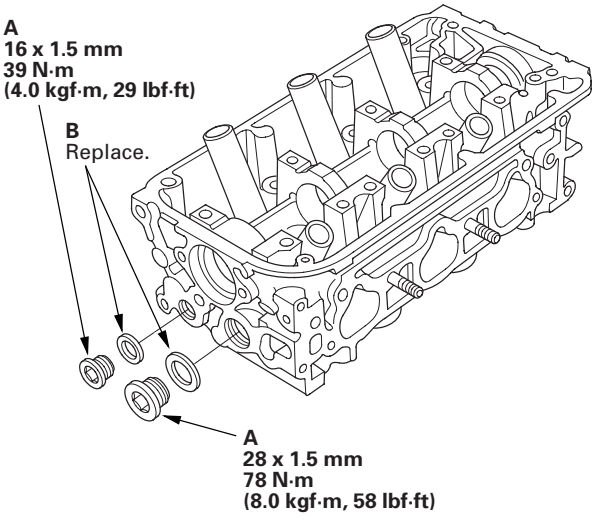
Sealing Bolt Installation

NOTE: When installing the sealing bolt (A), always use a new washer (B).

Front:



Rear:



Engine Mechanical

Engine Block

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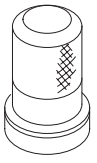
Drain Bolt Installation 7-31

Special Tools

Ref. No.	Tool Number	Description	Qty
①	070AD-RCAA100	Oil Seal Driver, 64 mm	1
②	070AD-RCAA200	Driver Attachment, 106 mm	1
③	07749-0010000	Driver	1



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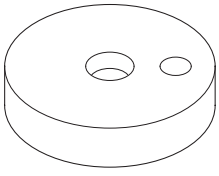

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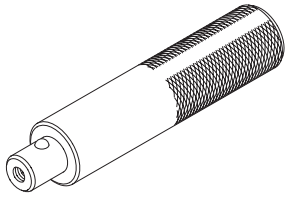

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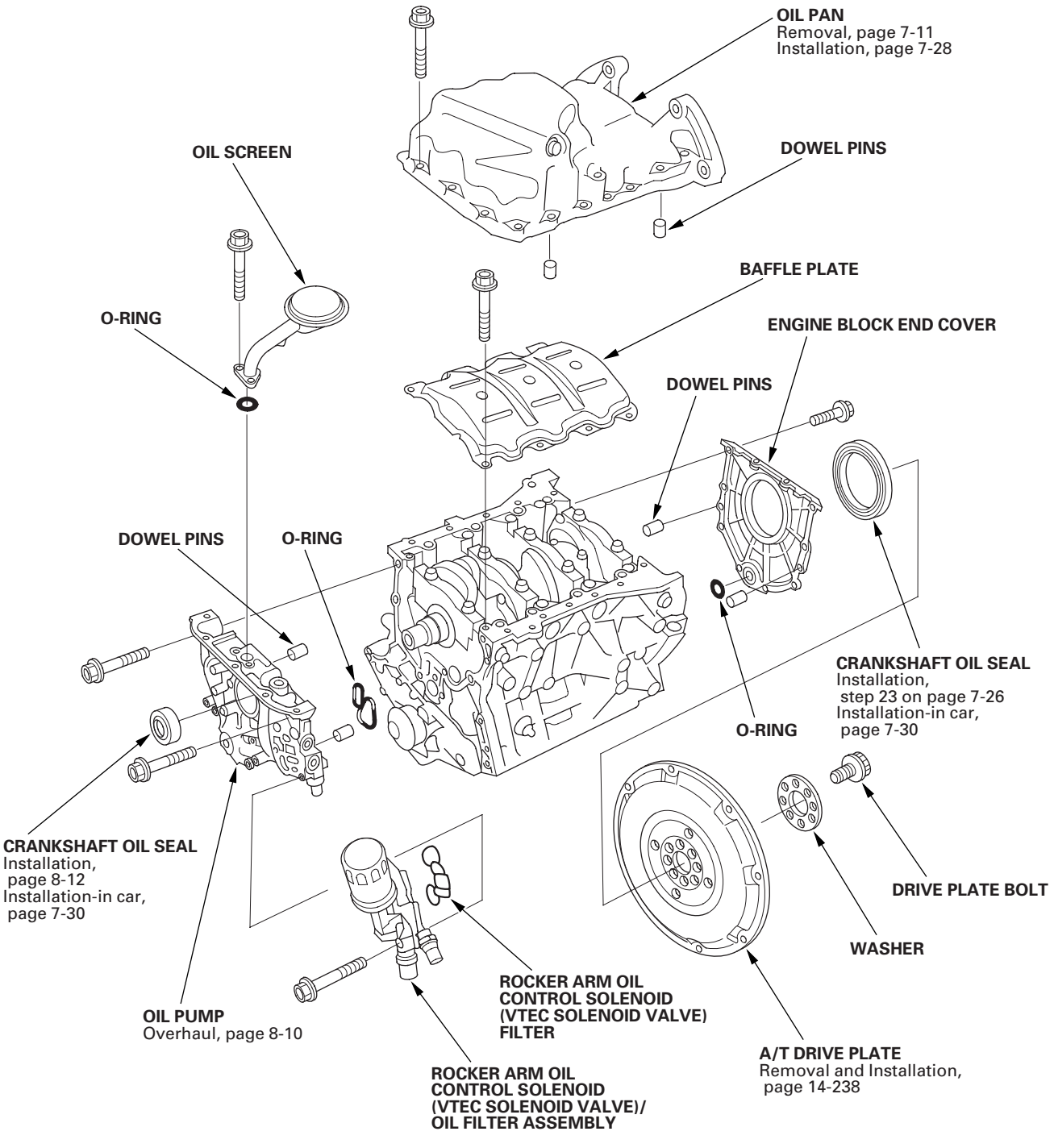
Component Location Index



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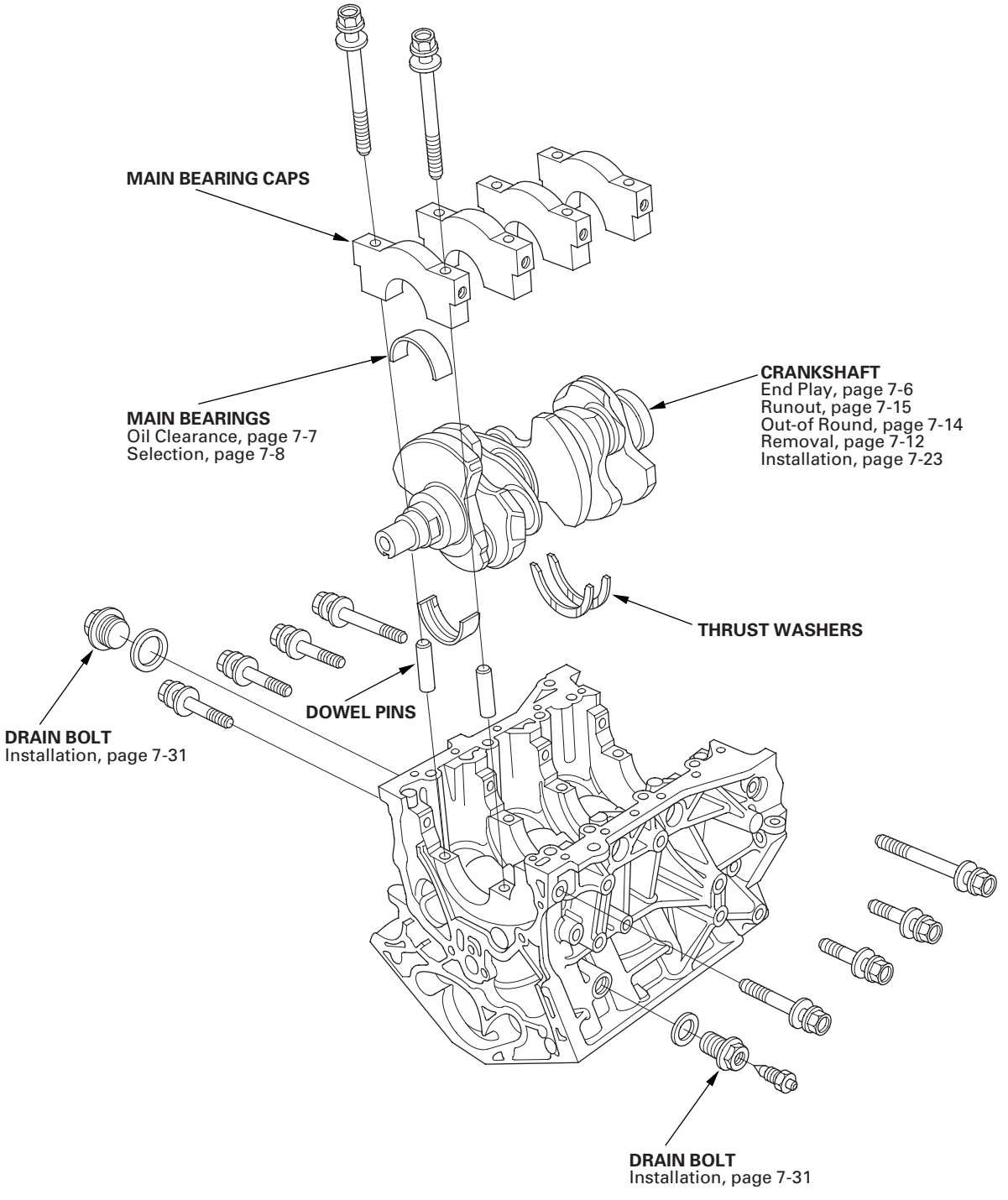
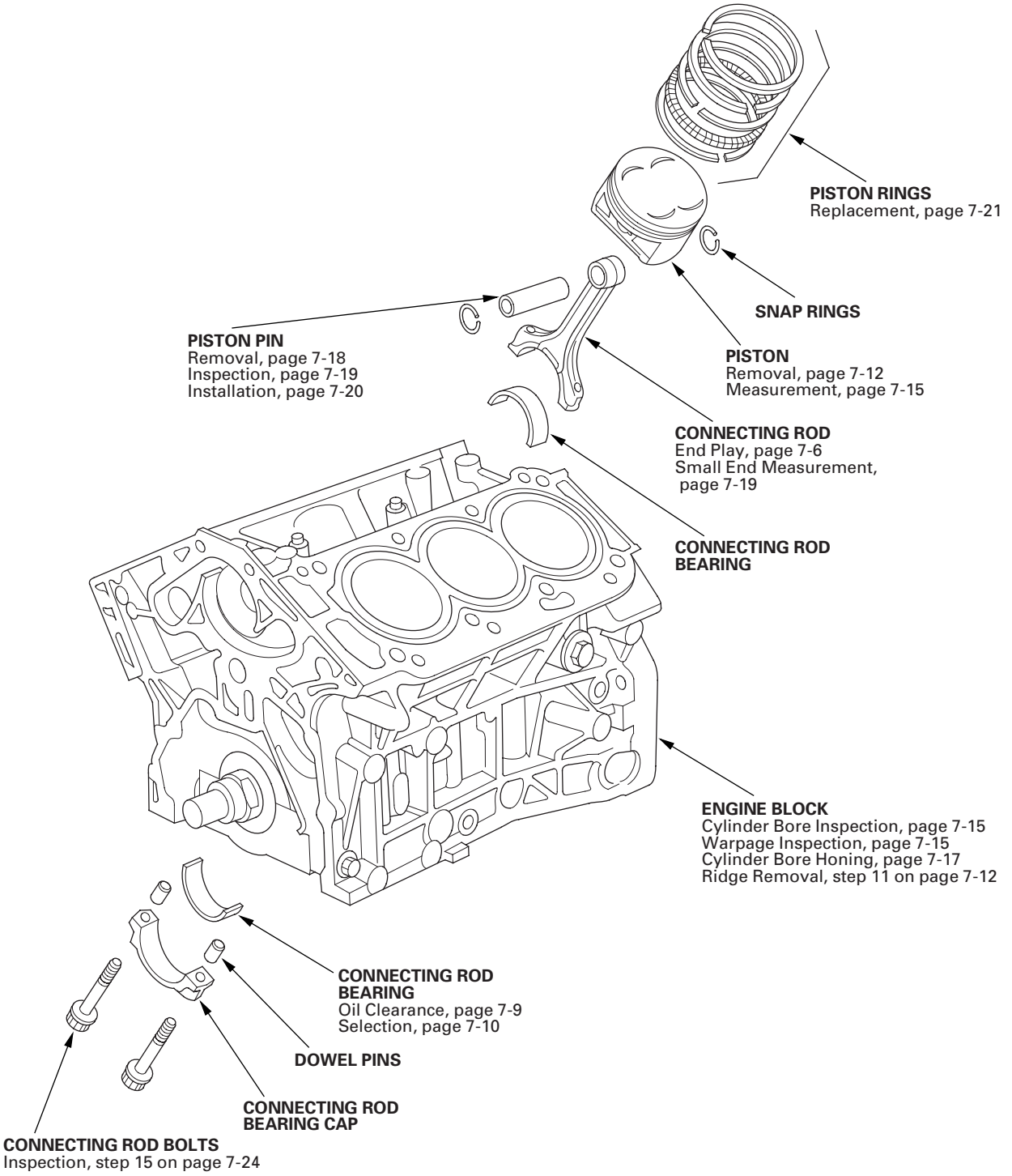
Component Location Index (cont'd)

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CONNECTING ROD BOLTS
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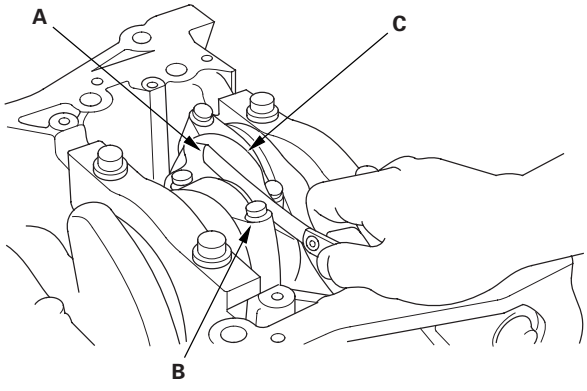
Connecting Rod and Crankshaft End Play Inspection

1. Remove the oil pump (see page 8-10).

2. Remove the baffle plate (see step 10 on page 7-12).

3. Measure the connecting rod end play with a feeler gauge (A) between the connecting rod (B) and crankshaft (C).

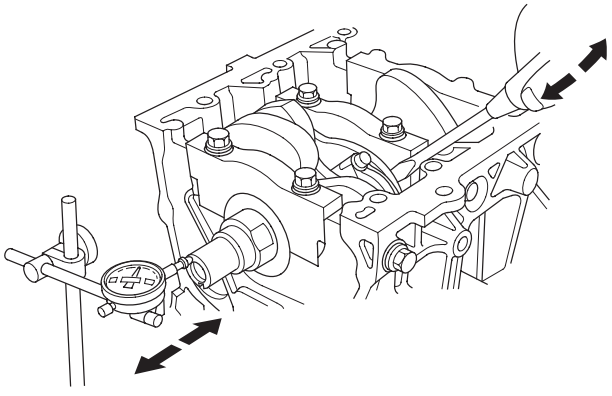
   Connecting Rod End Play
   Standard (New): 0.15—0.35 mm (0.006—0.014 in.)
   Service Limit: 0.45 mm (0.018 in.)



4. If the connecting rod end play is out-of-tolerance, install a new connecting rod and recheck. If it is still out-of-tolerance, replace the crankshaft (see page 7-12).

5. Push the crankshaft firmly away from the dial indicator, and zero the dial against the end of the crankshaft. Then pull the crankshaft firmly back toward the indicator; the dial reading should not exceed the service limit.

   Crankshaft End Play
   Standard (New): 0.10—0.35 mm (0.004—0.014 in.)
   Service Limit: 0.45 mm (0.018 in.)



6. If the end play is excessive, replace the thrust washers and recheck. If it is still out-of-tolerance, replace the crankshaft (see page 7-12).

Crankshaft Main Bearing Replacement

Main Bearing Clearance Inspection

1. Remove the main bearing caps and bearing halves (see page 7-12).

2. Clean each main journal and bearing half with a clean shop towel.

3. Place one strip of plastigage across each main journal.

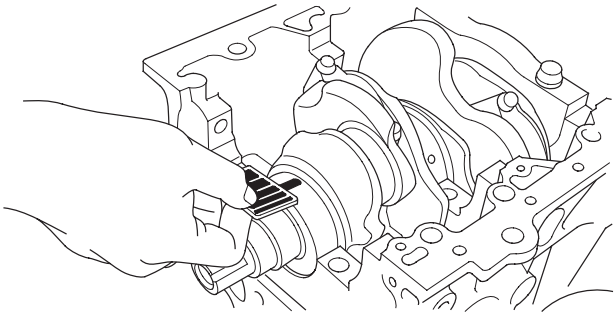
   NOTE: If the engine is still in the vehicle when you bolt the main cap down to check the clearance, the weight of the crankshaft and drive plate will flatten the plastigage further than just the torque on the cap bolt and give you an incorrect reading. For an accurate reading, support the crank with a jack under the counterweights, and check only one bearing at a time.

4. Reinstall the bearings and caps, then torque the bearing cap bolts to 74 N·m (7.5 kgf·m, 54 lbf·ft), and the bearing cap side bolts to 49 N·m (5.0 kgf·m, 36 lbf·ft) in the proper sequence (see step 22 on page 7-25).

   NOTE: Do not rotate the crankshaft during inspection.

5. Remove the cap and bearing half, and measure the widest part of the plastigage.

   Main Bearing-to-Journal Oil Clearance
   Standard (New): 0.020—0.044 mm (0.0008—0.0017 in.)
   Service Limit: 0.050 mm (0.0020 in.)



6. If the plastigage measures too wide or too narrow, remove the crankshaft, and remove the upper half of the bearing. Install a new, complete bearing with the same color code, and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.

7. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below that one), and check again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crankshaft and start over (see page 7-12).

(cont'd)

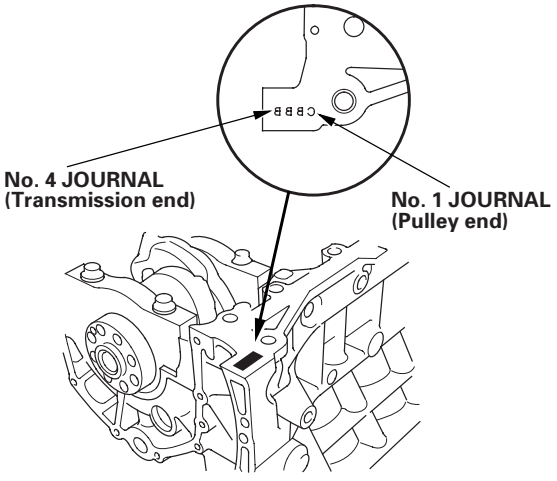
Crankshaft Main Bearing Replacement (cont'd)

Main Bearing Selection

Crankshaft Bore Code Location

Letters or bars have been stamped on the end of the block as a code for the size of each of the four main journal bores.

Use them, and the numbers stamped on the crankshaft (codes for main journal size), to choose the correct bearings. If the codes are indecipherable because of an accumulation of dirt and dust, do not scrub them with a wire brush or scraper. Clean them only with solvent or detergent.



Bearing Identification

Color code is on the edge of the bearing

Larger crank bore →

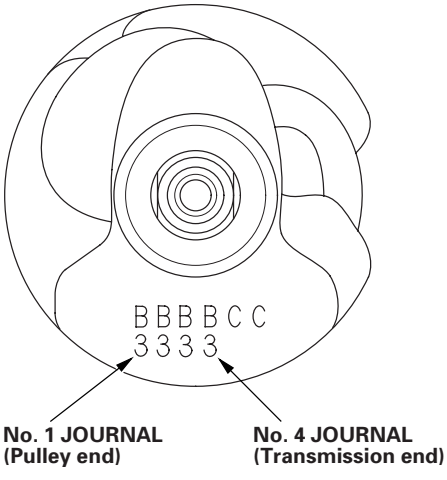
Smaller bearing (Thicker) ↓	A or I	B or II	C or III	D or IIII
1 or I	Red/ Pink	Pink	Pink/ Yellow	Yellow
2 or II	Pink	Pink/ Yellow	Yellow	Yellow/ Green
3 or III	Pink/ Yellow	Yellow	Yellow/ Green	Green
4 or IIII	Yellow	Yellow/ Green	Green	Green/ Brown
5 or IIIII	Yellow/ Green	Green	Green/ Brown	Brown
6 or IIIIII	Green	Green/ Brown	Brown	Brown/ Black

Smaller main journal ↓

Smaller bearing (Thicker) ↓

NOTE: When using bearing halves of different colors, it does not matter which color is used in the top or bottom.

Main Journal Code Locations (Numbers or Bars)



Connecting Rod Bearing Replacement

Rod Bearing Clearance Inspection

1. Remove the connecting rod cap and bearing half (see page 7-12).

2. Clean the crankshaft rod journal and bearing half with a clean shop towel.

3. Place a strip of plastigage across the rod journal.

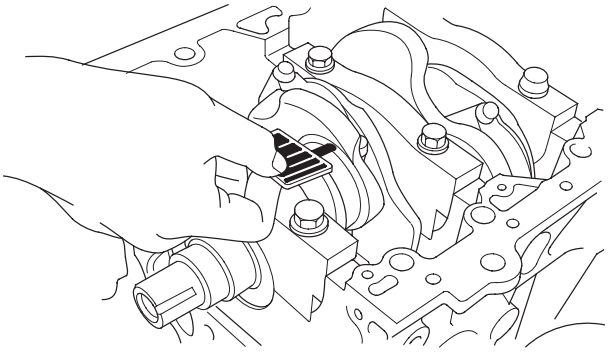
4. Reinstall the bearing half and cap, and torque the bolts.

   NOTE:
   - Apply new engine oil to the bolt threads and flanges.
   - Do not rotate the crankshaft during inspection.

   Tightening Torque:
   20 N·m (2.0 kgf·m, 14 lbf·ft) + 90 °

5. Remove the rod cap and bearing half and measure the widest part of the plastigage.

   Connecting Rod Bearing-to-Journal Oil Clearance
   Standard (New): 0.020—0.044 mm
   (0.0008—0.0017 in.)
   Service Limit: 0.050 mm (0.0020 in.)



6. If the plastigage measures too wide or too narrow, remove the upper half of the bearing, then install a new, complete bearing with the same color code, and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.

7. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below that one), and check clearance again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crankshaft and start over (see page 7-12).

(cont'd)

Connecting Rod Bearing Replacement (cont'd)

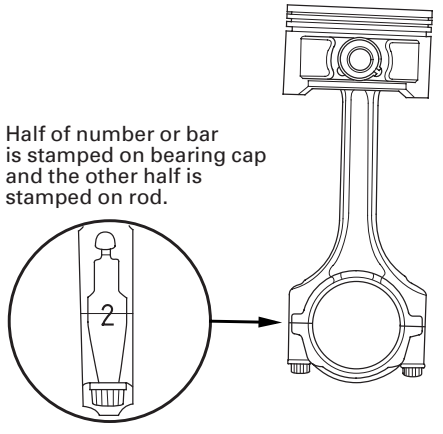
Rod Bearing Selection

Each rod falls into one of four tolerance ranges (from 0 to 0.024 mm (0.0009 in.), in 0.006 mm (0.0002 in.) increments) depending on the size of its big end bore. It's then stamped with a number or bar (1, 2, 3, or 4/I, II, III, or IIII) indicating the range. You may find any combination of 1, 2, 3, or 4/I, II, III, or IIII in any engine.

Normal Bore Size: 58.0 mm (2.28 in.)

Inspect the connecting rod for cracks and heat damage.

Connecting Rod Journal Code Locations
Numbers or bars have been stamped on the side of each connecting rod as a code for the size of the big end. Use them, and the letters or bars stamped on the crank (codes for rod journal size), to choose the correct bearings. If the codes are indecipherable because of an accumulation of dirt and dust, do not scrub them with a wire brush or scraper. Clean them only with solvent or detergent.



Bearing Identification

Color code is on the edge of the bearing

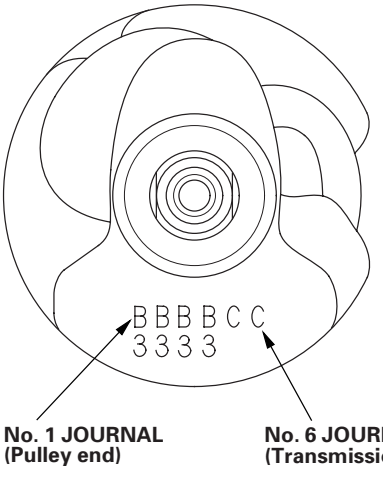
Smaller rod journal	Larger big end bore: 1 or I	2 or II	3 or III	4 or IIII
A or I	Pink	Pink/ Yellow	Yellow	Yellow/ Green
B or II	Pink/ Yellow	Yellow	Yellow/ Green	Green
C or III	Yellow	Yellow/ Green	Green	Green/ Brown
D or IIII	Yellow/ Green	Green	Green/ Brown	Brown
E or IIIII	Green	Green/ Brown	Brown	Brown/ Black
F or IIIIII	Green/ Brown	Brown	Brown/ Black	Black

Smaller bearing (Thicker)

Smaller bearing (Thicker)

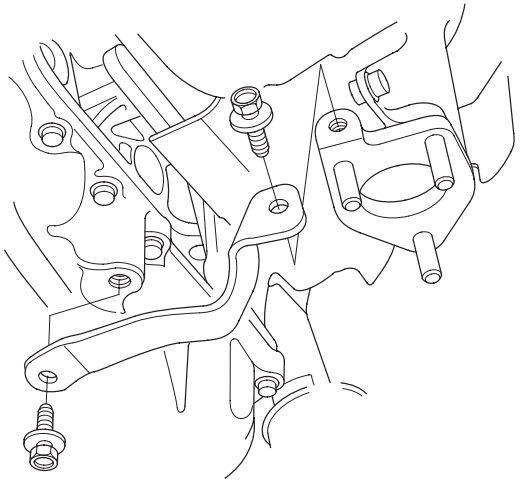
NOTE: When using bearing halves of different colors, it does not matter which color is used in the top or bottom.

Connecting Rod Journal Code Locations (Letters or Bars)

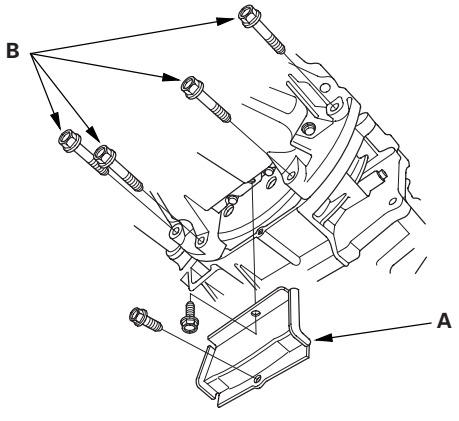


Oil Pan Removal

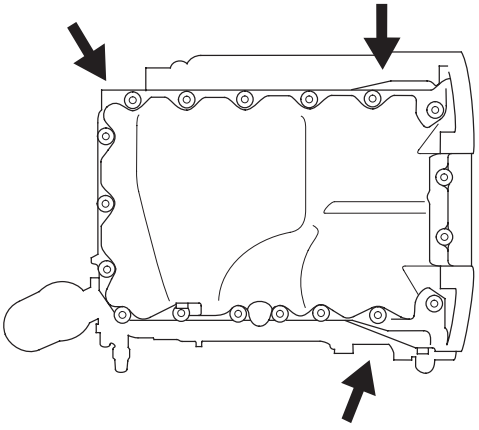
1. If the engine is already out of the vehicle, go to step 6.
2. Raise the vehicle on the hoist to full height.
3. Drain the engine oil (see page 8-6).
4. Remove the splash shield (see step 30 on page 5-5).
5. Remove the front subframe stiffener (see step 34 on page 5-5).
6. Remove exhaust pipe A (see step 35 on page 5-5).
7. Remove the rear warm up three way catalytic converter (rear WU-TWC) bracket.



8. Remove the torque converter cover (A) and the four bolts (B) securing the transmission.



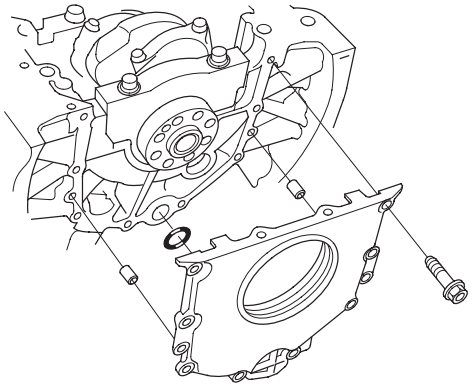
9. Remove the bolts securing the oil pan.
10. Using a flat blade screwdriver, separate the oil pan from the block in the places shown.



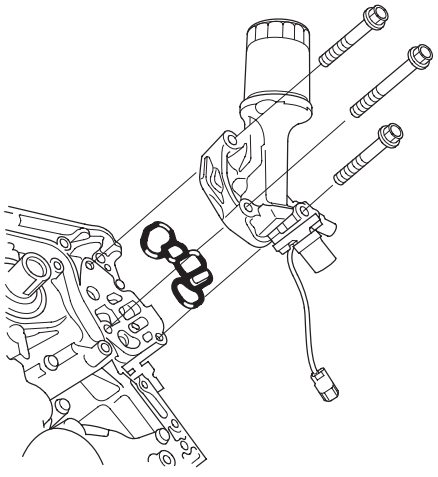
11. Remove the oil pan.

Crankshaft and Piston Removal

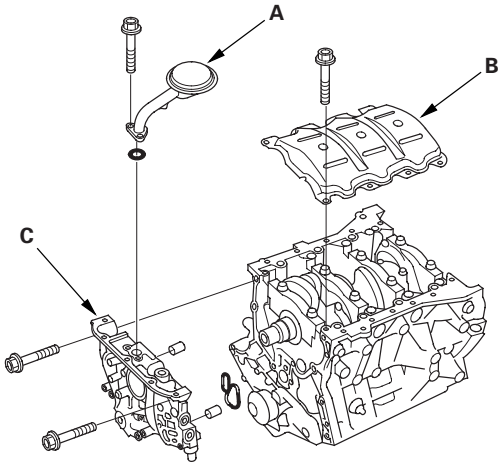
1. Remove the engine assembly (see page 5-2).
2. Remove the transmission (see page 14-218).
3. Remove the drive plate (see page 14-238).
4. Remove the cylinder heads (see page 6-28).
5. Remove the crankshaft position (CKP) sensor (see page 11-203).
6. Remove the timing belt drive pulley from the crankshaft.
7. Remove the oil pan (see page 7-11).
8. Remove the engine block end cover.



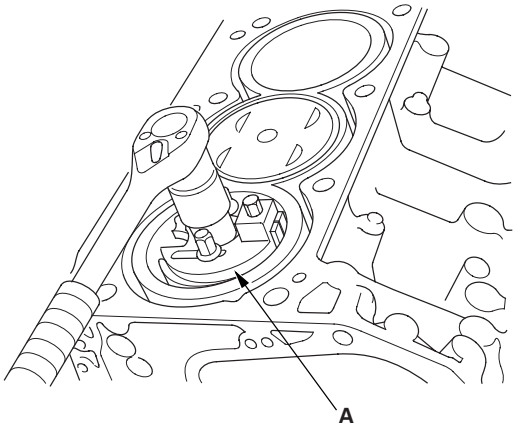
9. Remove the rocker arm oil control solenoid (VTEC solenoid valve)/oil filter assembly.



10. Remove the oil screen (A), baffle plate (B), and oil pump (C).

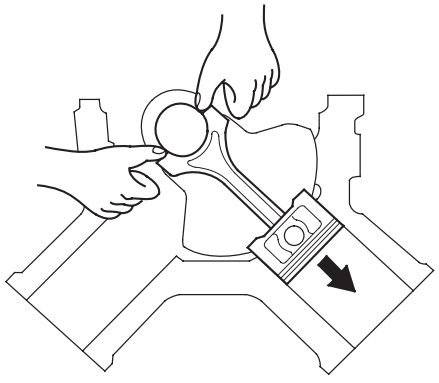


11. If you can feel a ridge of metal or hard carbon around the top of any cylinder, remove it with a ridge reamer (A). Follow the reamer manufacturer's instructions. If the ridge is not removed, it may damage the piston as it's pushed out.

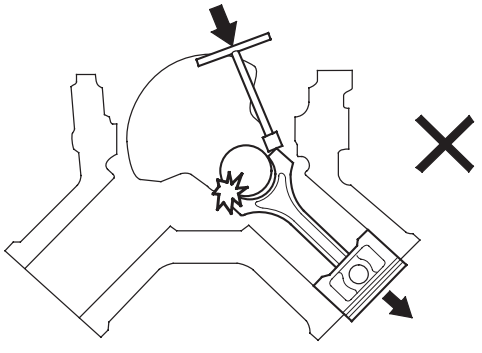


12. Remove the connecting rod caps after setting the crank pin at bottom dead center (BDC) for each cylinder. Remove the piston/connecting rod assembly by pushing on the connecting rod. Take care not to damage the crank pin or cylinder with the connecting rod.

CORRECT



INCORRECT



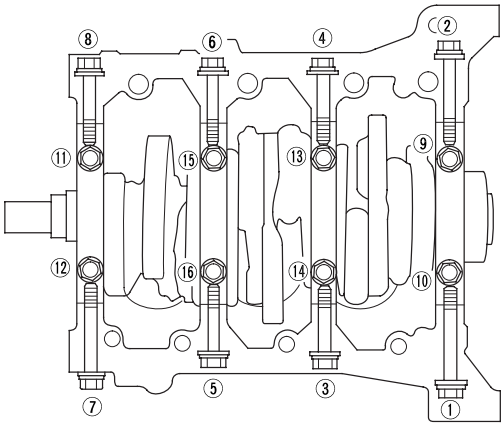
13. Remove the bearing from the cap. Keep all caps/bearings in order.

14. Remove the upper bearing halves from the connecting rods, and set them aside with their respective caps.

15. After removing a piston/connecting rod assembly, reinstall the cap on the rod.

16. To avoid mix-up during reassembly, mark each piston/connecting rod assembly with its cylinder number.

17. Unscrew the bearing cap bolts and bearing cap side bolts in sequence 1/3 turn at a time; repeat the sequence until all bolts are loosened.



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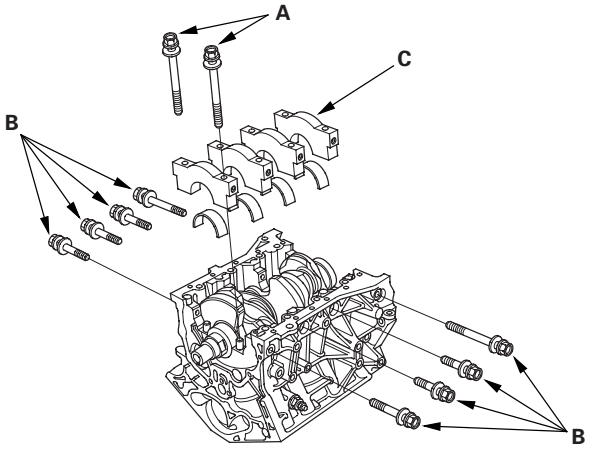
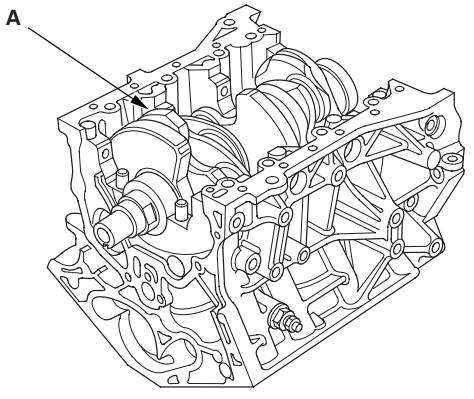
Crankshaft and Piston Removal (cont'd)

18. Remove the bearing cap bolts (A) and bearing cap side bolts (B), then remove the bearing cap (C).



19. Lift the crankshaft (A) out of the engine block, being careful not to damage the journals.



20. Reinstall the main caps and bearings on the engine block in the proper order.

Crankshaft Inspection

Out-of-Round and Taper

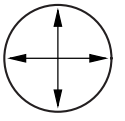
1. Remove the crankshaft from the engine block (see page 7-12).

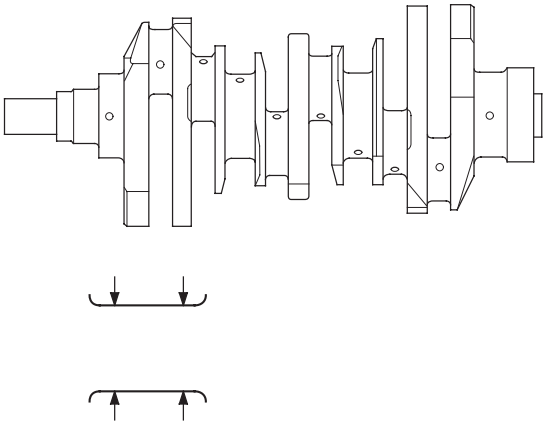
2. Clean the crankshaft oil passages with pipe cleaners or a suitable brush.

3. Check the keyway and threads.

4. Measure out-of -round at the middle of each rod and main journal in two places. The difference between measurements on each journal must not be more than the service limit.

   Journal Out-of-Round
   Standard (New): 0.005 mm (0.0002 in.) max.
   Service Limit: 0.010 mm (0.0004 in.)





5. Measure taper at the edges of each rod and main journal. The difference between measurements on each journal must not be more than the service limit.

   Journal Taper
   Standard (New): 0.005 mm (0.0002 in.) max.
   Service Limit: 0.010 mm (0.0004 in.)

Straightness

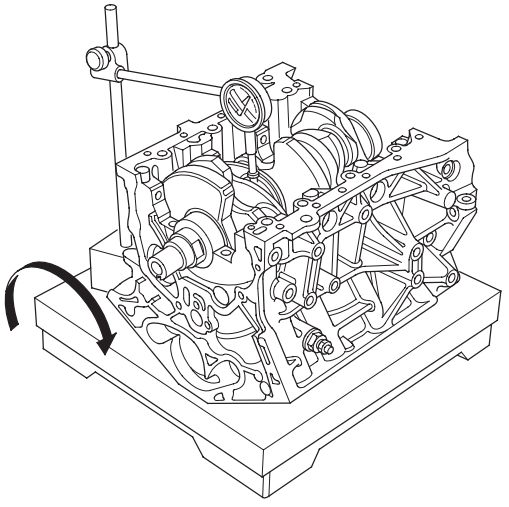
6. Place the engine block on the surface plate.

7. Clean and install the bearings on the No. 1 and No. 4 journal of the engine block.

8. Lower the crankshaft into the engine block.

9. Measure the runout on all of the main journals. Rotate the crankshaft two complete revolutions. The difference between measurements on each journal must not be more than the service limit.

Crankshaft Total Runout
Standard (New): 0.025 mm (0.0010 in.) max.
Service Limit: 0.030 mm (0.0012 in.)



Block and Piston Inspection

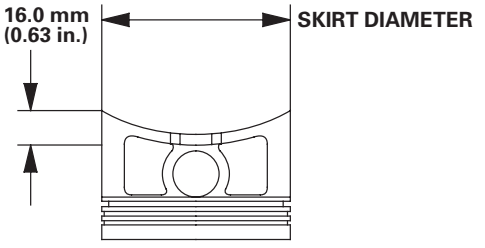
1. Remove the piston from the engine block (see page 7-12).

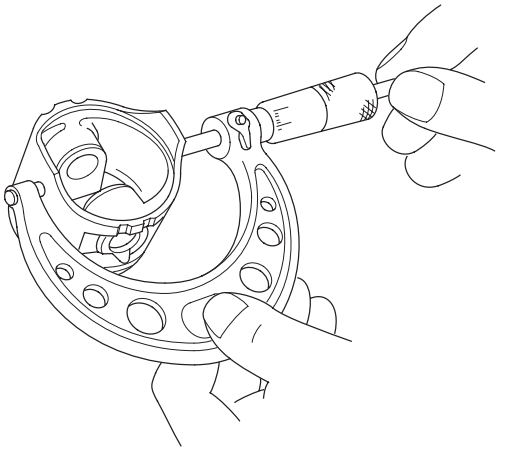
2. Check the piston for distortion or cracks.

3. Measure the piston diameter at a point 16.0 mm (0.63 in.) from the bottom of the skirt.

Piston Diameter
Standard (New): 88.975—88.985 mm (3.5029—3.5033 in.)
Service Limit: 88.965 mm (3.5026 in.)

Oversize Piston Diameter
0.25: 89.225—89.235 mm (3.5128—3.5132 in.)





(cont'd)

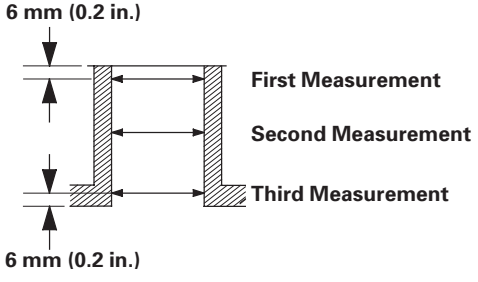
Block and Piston Inspection (cont'd)

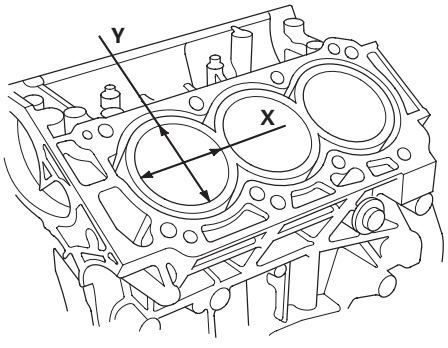
4. Measure wear and taper in direction X and Y at three levels in each cylinder as shown. If measurements in any cylinder are beyond the oversize bore service limit, replace the engine block. If the engine block has to be rebored, refer to step 7 after reboring.

Cylinder Bore Size
Standard (New): 89.000—89.015 mm (3.5039—3.5045 in.)
Service Limit: 89.065 mm (3.5065 in.)

Oversize
0.25: 89.250—89.265 mm (3.5138—3.5144 in.)
Reboring Limit: 0.25 mm (0.01 in.)

Bore Taper
Limit: (Difference between first and third measurement) 0.05 mm (0.002 in.)

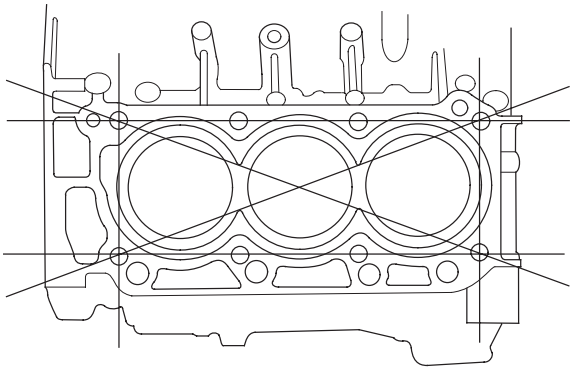


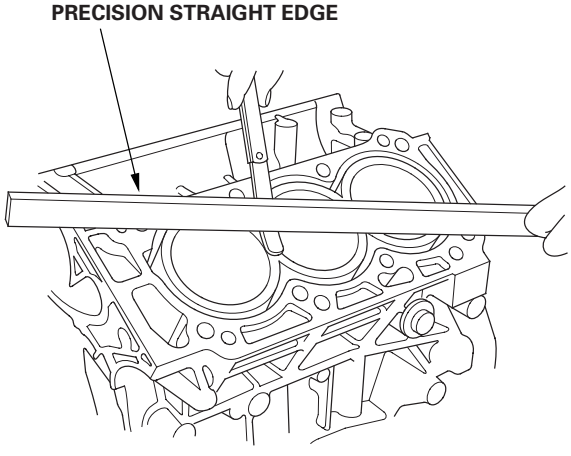


5. Hone any scored or scratched cylinder bores. (see page 7-17).

6. Check the top of the engine block for warpage. Measure along the edges and across the center as shown.

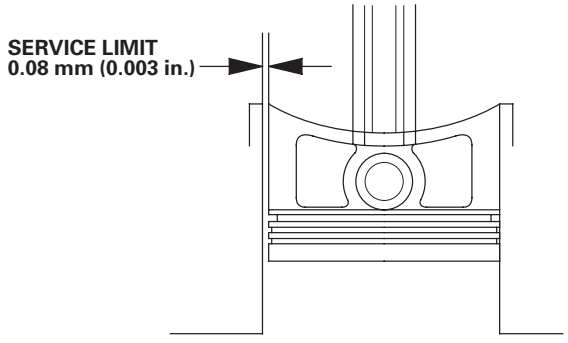
Engine Block Warpage
Standard (New): 0.07 mm (0.003 in.) max.
Service Limit: 0.10 mm (0.004 in.)





7. Calculate the difference between cylinder bore diameter and piston diameter. If the clearance is near or exceeds the service limit, inspect the piston and cylinder bore for excessive wear.

Piston-to-Cylinder Bore Clearance
Standard (New): 0.015—0.040 mm (0.0006—0.0016 in.)
Service Limit: 0.08 mm (0.003 in.)

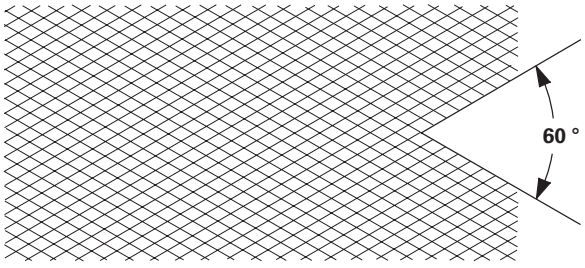


Cylinder Bore Honing

1. Measure the cylinder bores (see step 4 on page 7-16). If the engine block is to be reused, hone the cylinders and remeasure the bores. Only scored or scratched cylinder bores must be honed.

2. Hone the cylinder bores with honing oil and a fine (400 grit) stone in a 60 degree crosshatch pattern.

   NOTE:
   - Use only a rigid hone with 400 grit or finer stone, such as Sunnen, Ammco, or equivalent.
   - Do not use stones that are worn or broken.



3. When honing is complete, thoroughly clean the engine block of all metal particles. Wash the cylinder bores with hot soapy water, then dry and oil them immediately to prevent rusting. Never use solvent, it will only redistribute the grit on the cylinder walls.

4. If scoring or scratches are still present in the cylinder bores after honing to the service limit, rebore the engine block. Some light vertical scoring and scratching is acceptable if it is not deep enough to catch your fingernail and does not run the full length of the bore.

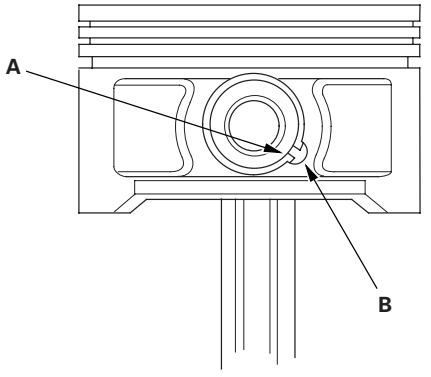
Piston, Pin, and Connecting Rod Replacement

Disassembly

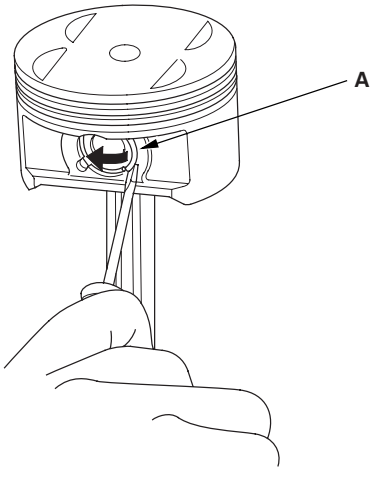
1. Remove the piston from the engine block (see page 7-12).

2. Apply new engine oil to the piston pin snap rings (A) and turn them in the ring grooves until the end gaps are lined up with the cutouts in the piston pin bores (B).

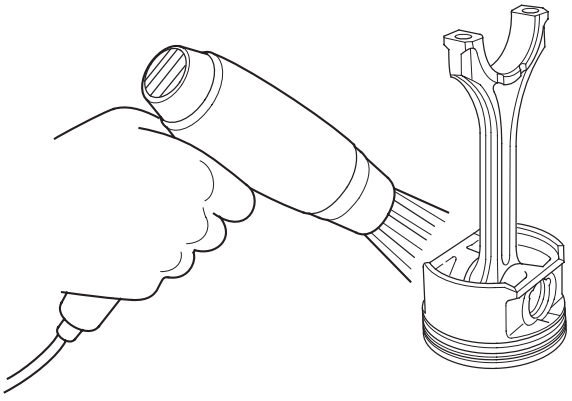
   NOTE: Take care not to damage the ring grooves.



3. Remove snap rings (A) from both sides of the piston. Start at the cutout in the piston pin bore. Remove the snap rings carefully so they do not go flying or get lost. Wear eye protection.



4. Heat the piston and connecting rod assembly to about 158 ℉ (70 ℃), then remove the piston pin.

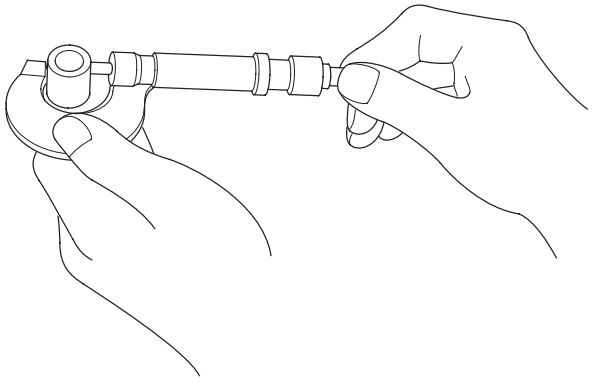


Inspection

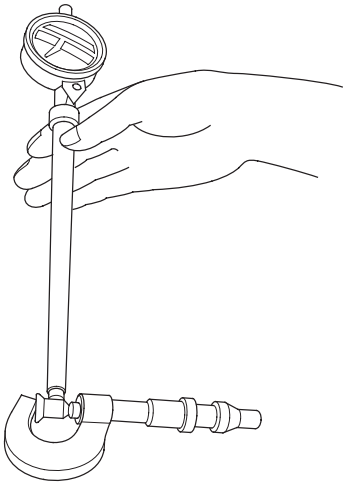
NOTE: Inspect the piston, piston pin, and connecting rod when they are at room temperature.

1. Measure the diameter of the piston pin.

   Piston Pin Diameter
   Standard (New): 21.962—21.965 mm (0.8646—0.8648 in.)
   Service Limit: 21.954 mm (0.8643 in.)

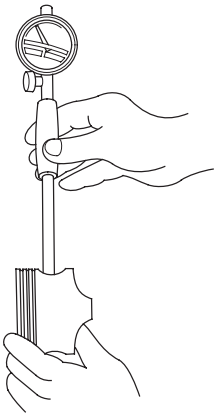


2. Zero the dial indicator to the piston pin diameter.



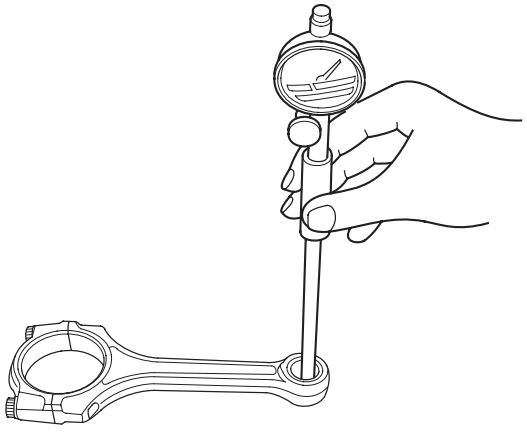
3. Check the difference between the piston pin diameter and piston pin hole diameter on the piston.

   Piston Pin-to-Piston Clearance
   Standard (New): —0.0050 to +0.0010 mm (—0.00020 to +0.00004 in.)
   Service Limit: 0.004 mm (0.0002 in.)



4. Measure the piston pin-to-connecting rod clearance.

   Piston Pin-to-Connecting Rod Clearance
   Standard (New): 0.005—0.014 mm (0.0002—0.0006 in.)
   Service Limit: 0.019 mm (0.0007 in.)

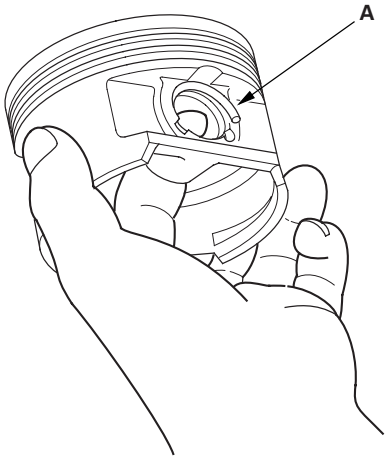


(cont'd)

Piston, Pin, and Connecting Rod Replacement (cont'd)

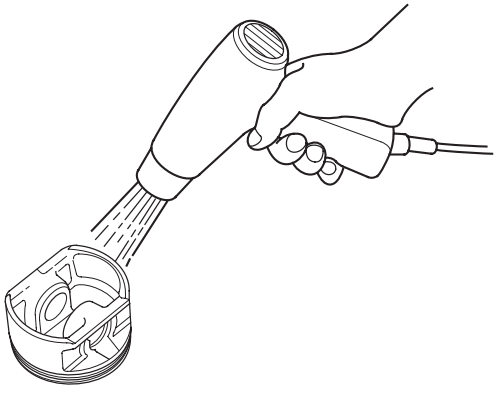
Reassembly

1. Install a piston pin snap ring (A) only on one side.

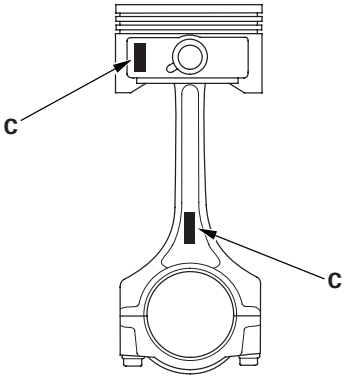


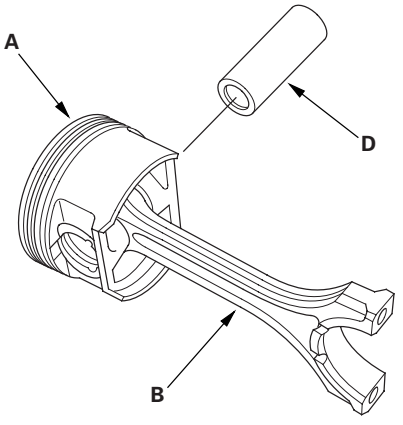
2. Coat the piston pin bore in the piston, the bore in the connecting rod, and the piston pin with new engine oil.

3. Heat the piston to about 158 °F (70 °C).



4. Assemble the piston (A) and connecting rod (B) with the embossed marks (C) on the same side. Install the piston pin (D).



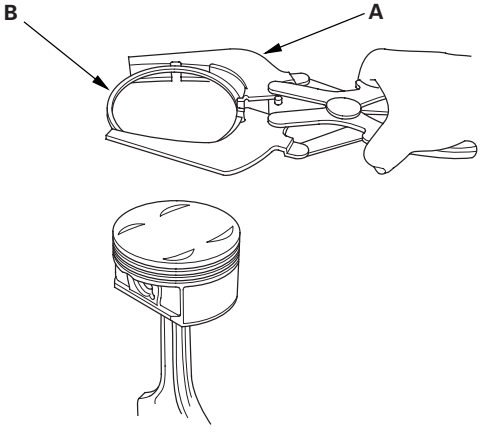


5. Install the remaining snap ring.

Piston Ring Replacement

1. Remove the piston from the engine block (see page 7-12).

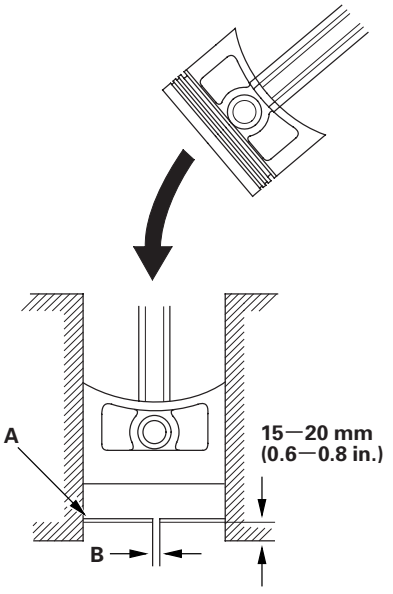
2. Using a ring expander (A), remove the old piston rings (B).



3. Clean all the ring grooves thoroughly with a squared-off broken ring, or a ring groove cleaner with a blade to fit the piston grooves. File down the blade, if necessary. The top ring and second ring grooves are 1.2 mm (0.05 in.) wide, and the oil ring groove is 2.8 mm (0.11 in.) wide. Do not use a wire brush to clean the ring grooves, or cut the ring grooves deeper with the cleaning tool.

   NOTE: If the piston is to be separated from the connecting rod, do not install new rings yet.

4. Using a piston, push a new ring (A) into the cylinder bore 15—20 mm (0.6—0.8 in.) from the bottom.



5. Measure the piston ring end-gap (B) with a feeler gauge:

   - If the gap is too small, check to see if you have the proper rings for your engine.
   - If the gap is too large, recheck the cylinder bore diameter against the wear limits (see step 4 on page 7-16). If the bore is over the service limit, the engine block must be rebored.

Piston Ring End-Gap

Top Ring:
Standard (New): 0.20—0.35 mm (0.008—0.014 in.)
Service Limit: 0.60 mm (0.024 in.)

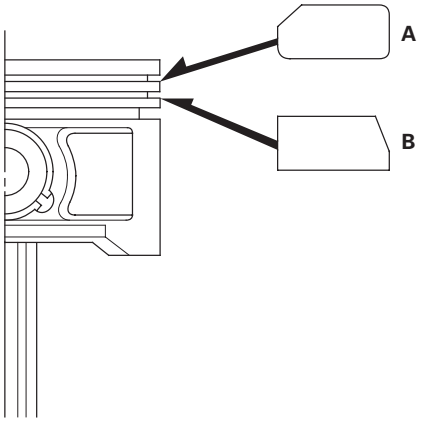
Second Ring:
Standard (New): 0.40—0.55 mm (0.016—0.022 in.)
Service Limit: 0.70 mm (0.028 in.)

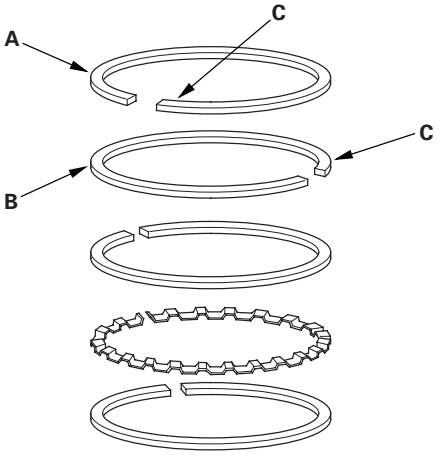
Oil Ring:
Standard (New): 0.20—0.70 mm (0.008—0.028 in.)
Service Limit: 0.80 mm (0.031 in.)

(cont'd)

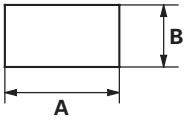
Piston Ring Replacement (cont'd)

6. Install the rings as shown. The top ring (A) has a 1D mark and the second ring (B) has a 2C mark. The manufacturing marks (C) must be facing upward.





Piston Ring Dimensions:



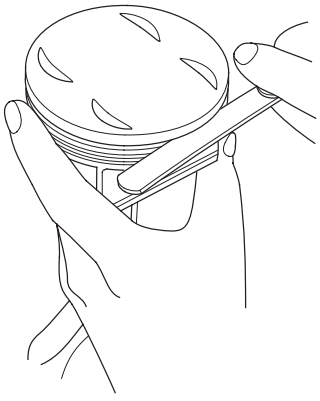
Top Ring (Standard)
A: 3.1 mm (0.12 in.)
B: 1.2 mm (0.05 in.)

Second Ring (Standard)
A: 3.4 mm (0.13 in.)
B: 1.2 mm (0.05 in.)

7. After installing a new set of rings, measure the ring-to-groove clearance:

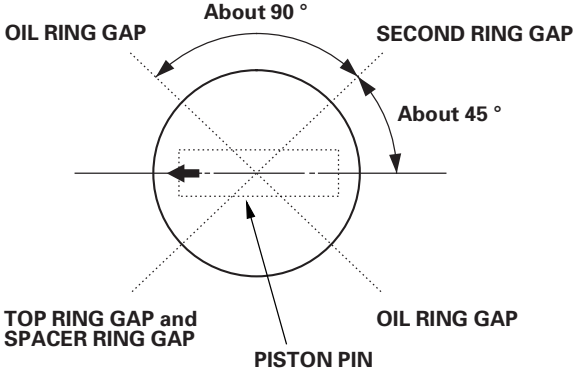
Top Ring Clearance
Standard (New): 0.055—0.080 mm (0.0022—0.0031 in.)
Service Limit: 0.15 mm (0.006 in.)

Second Ring Clearance
Standard (New): 0.030—0.055 mm (0.0012—0.0022 in.)
Service Limit: 0.13 mm (0.005 in.)



8. Rotate the rings in their grooves to make sure they do not bind.

9. Position the ring end gaps as shown:



Crankshaft and Piston Installation

Special Tools Required
- Driver 07749-0010000
- Driver attachment, 106 mm 070AD-RCAA200

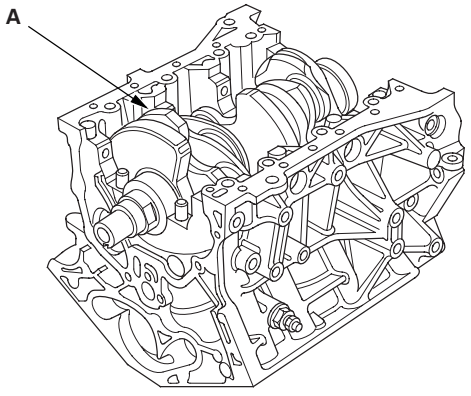
1. Check the connecting rod bearing clearance with plastigage (see page 7-9).

2. Check the main bearing clearance with plastigage (see page 7-7).

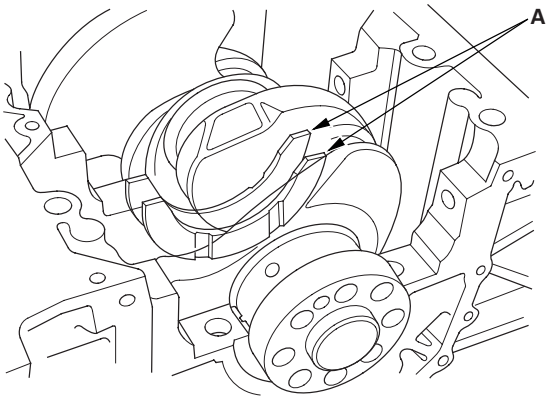
3. Install the bearing halves in the engine block and connecting rods.

4. Apply new engine oil to inside of the main bearings and rod bearings.

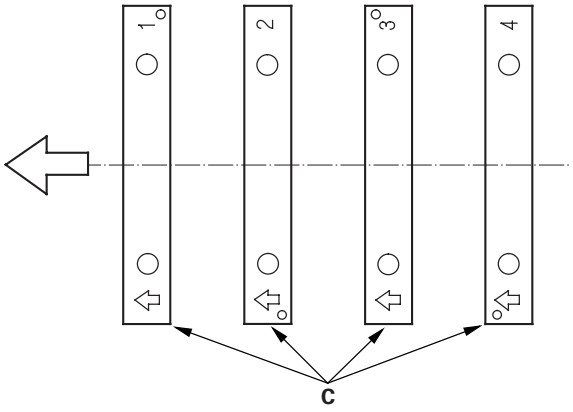
5. Lower the crankshaft (A) into the engine block.

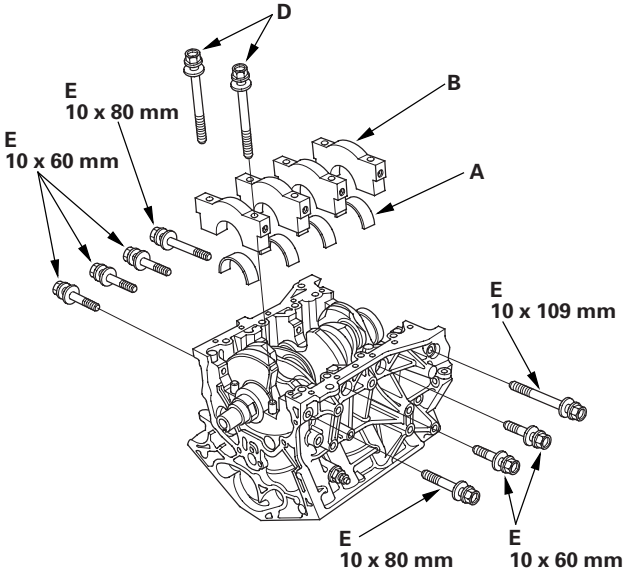


6. Apply new engine oil to the side with the thrust washer groove. Install the thrust washers (A) in the No. 3 journal.



7. Install the bearings (A) and bearing caps (B) with the arrow (C) facing the timing belt end of the engine.





8. Apply new engine oil to the bolt threads and flanges, then loosely install the bearing cap bolts (D) and bearing cap side bolts (E).

(cont'd)

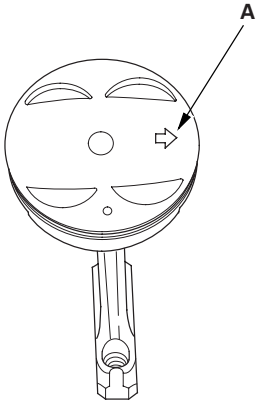
Crankshaft and Piston Installation (cont'd)

9. Set the crankshaft to bottom dead center (BDC) for the cylinder you are installing the piston in.

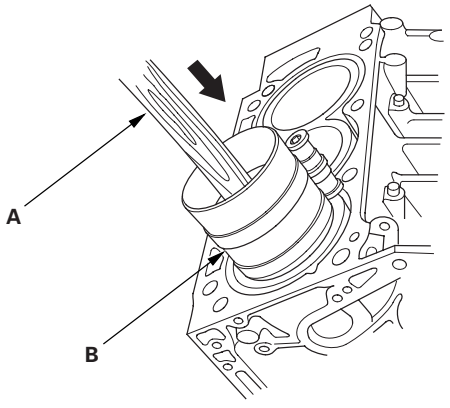
10. Apply new engine oil to the piston, inside of the ring compressor, and the cylinder bore.

11. Attach the ring compressor to the piston/connecting rod assembly, and check that the bearing is securely in place.

12. Position the piston/connecting rod assembly with the arrow (A) facing the timing belt side of the engine.

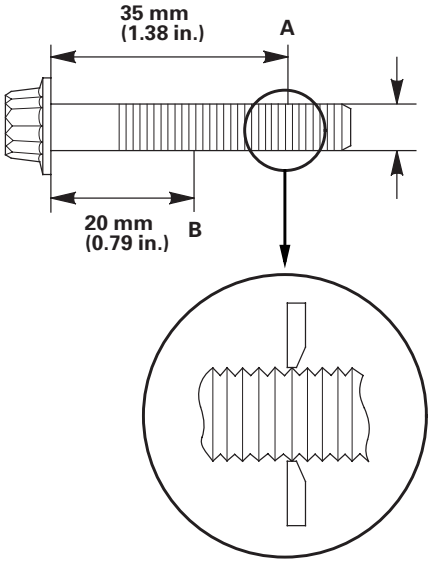


13. Position the piston/connecting rod assembly in the cylinder, and tap it in using the wooden handle of a hammer (A). Maintain downward force on the ring compressor (B) to prevent the rings from expanding before entering the cylinder bore.



14. Stop after the ring compressor pops free, and check the connecting rod-to-crank journal alignment before pushing the piston into place.

15. Measure the diameter of each connecting rod bolt at point A and point B.



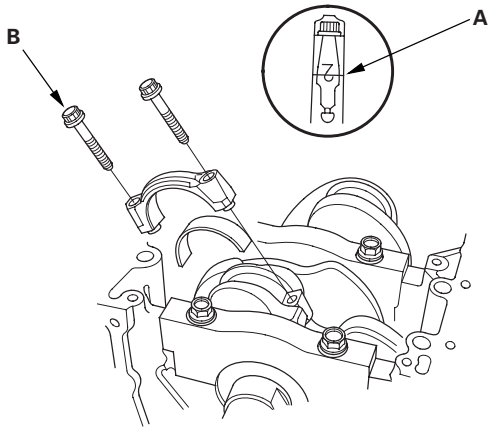
16. Calculate the difference in diameter between point A and point B.

    Point A—Point B = Difference in Diameter

    Difference in Diameter
    Specification: 0—0.1 mm (0—0.004 in.)

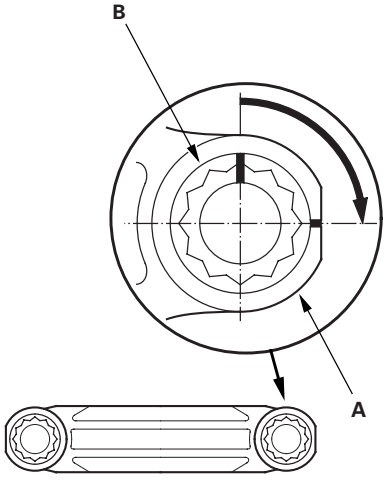
17. If the difference in diameter is out of tolerance, replace the connecting rod bolt.

18. Line up the mark (A) on the connecting rod and cap, then install the cap.



19. Apply new engine oil to the bolt threads and flanges. Torque the bolts (B) to 20 N·m (2.0 kgf·m, 14 lbf·ft).

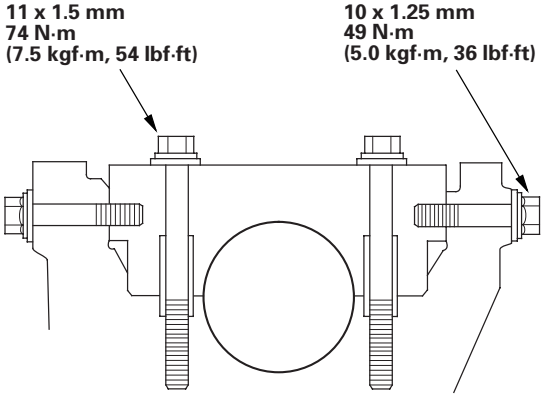
20. Mark the connecting rod (A) and bolt head (B) as shown.

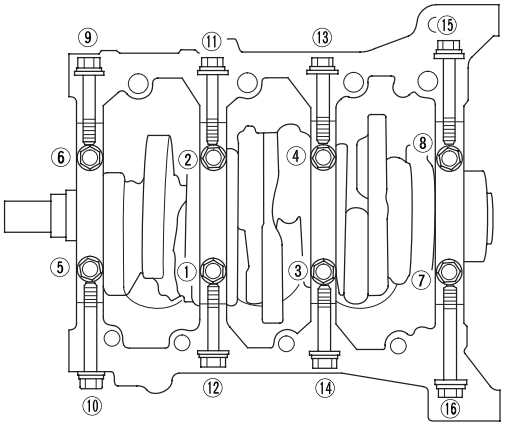


21. Tighten the bolt until the mark on the bolt head lines up with the mark on the connecting rod (turn the bolt 90 °).

    NOTE: Remove the connecting rod bolt if you tightened it beyond the specified angle, and go back to step 15 of the procedure. Do not loosen it back to the specified angle.

22. Tighten the bearing cap bolts, and then the bearing cap side bolts to the specified torque in the sequence as shown. Repeat the torque sequence again to measure the bolts are properly torqued.



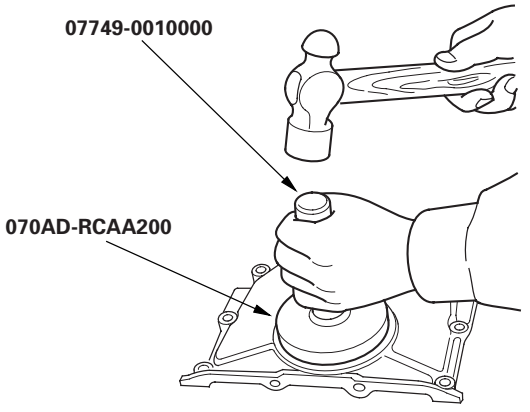


(cont'd)

Crankshaft and Piston Installation (cont'd)

23. Apply a light coat of multipurpose grease to the crankshaft and to the lip of the seal.

24. Drive the new crankshaft oil seal until the driver attachment bottoms on the engine block end cover.

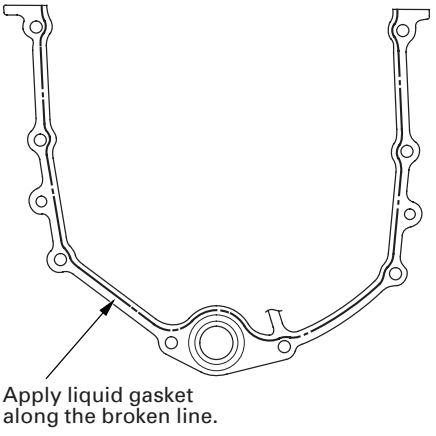


25. Remove all of the old liquid gasket from the engine block end cover mating surfaces, bolts, and bolt holes.

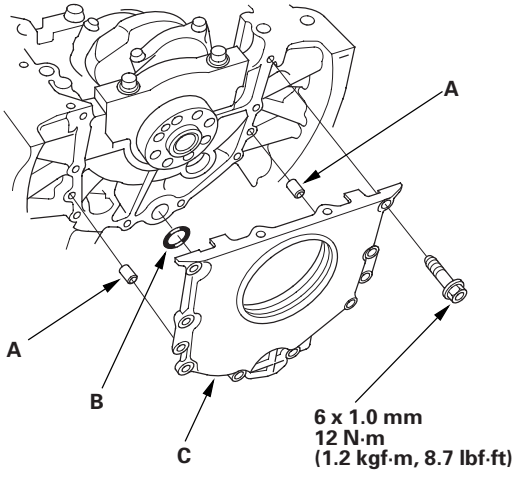
26. Clean and dry the engine block end cover mating surfaces.

27. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0002, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the engine block end cover.

    NOTE: Do not install components if too much time has passed after applying the liquid gasket (for P/N 08718-0002, no more than 4 minutes, for all others, no more than 5 minutes). Instead, remove the old residue and reapply the liquid gasket.



28. Install the dowel pins (A), new O-ring (B), and the engine block end cover (C) on the engine block.



29. Clean the excess grease off the crankshaft, and check the seal for distortion.

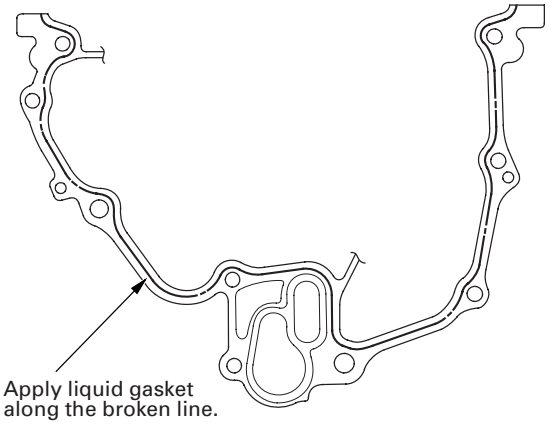
30. Install a new crankshaft oil seal in the oil pump (see step 2 on page 8-12).

31. Remove all of the old liquid gasket from the oil pump mating surfaces, bolts, and bolt holes.

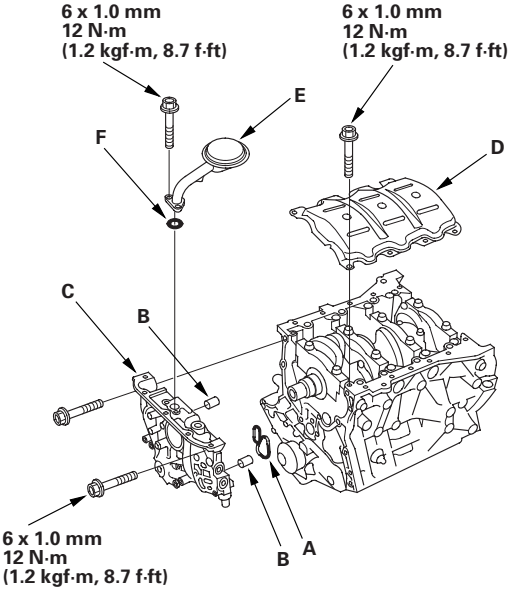
32. Clean and dry the oil pump mating surfaces.

33. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0002, 08718- 0003, or 08718-0009, evenly to the engine block mating surface of the oil pump.

    NOTE: Do not install components if too much time has passed after applying liquid gasket (for P/N 08718-0002, no more than 4 minutes, for all others, no more than 5 minutes). Instead, remove the old residue and reapply the liquid gasket.



34. Grease the lip of the oil seal, and apply oil to the new O-ring (A).

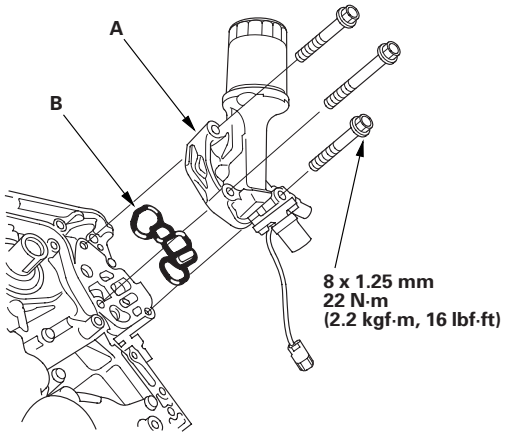


35. Install the dowel pins (B), then align the inner rotor with the crankshaft, and install the oil pump (C).

36. Clean the excess grease off the crankshaft, and check the seal for distortion.

37. Install the baffle plate (D), then install the oil screen (E) with new O-ring (F).

38. Install the rocker arm oil control solenoid (VTEC solenoid valve)/oil filter assembly (A), with a new rocker arm oil control solenoid (VTEC solenoid valve) filter (B).



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Crankshaft and Piston Installation (cont'd)

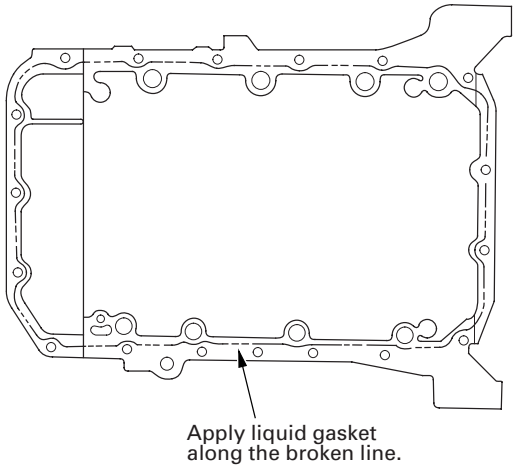
39. Install the oil pan (see page 7-28).
40. Install the crankshaft position (CKP) sensor (see page 11-203).
41. Install the cylinder heads (see page 6-48).
42. Install the drive plate (see page 14-238).
43. Install the transmission (see page 14-229).
44. Install the engine assembly (see page 5-12).

    NOTE: When any crankshaft or connecting rod bearing is replaced, after assembly it is necessary to run the engine at idling speed until it reaches normal operating temperature, then continue to run it for about 15 minutes.

Oil Pan Installation

1. Remove all of the old liquid gasket from the oil pan mating surfaces, bolts, and bolt holes.
2. Clean and dry the oil pan mating surfaces.
3. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0002, 08718-0003, or 08718-009, evenly to the oil pan mating surface of the engine block.

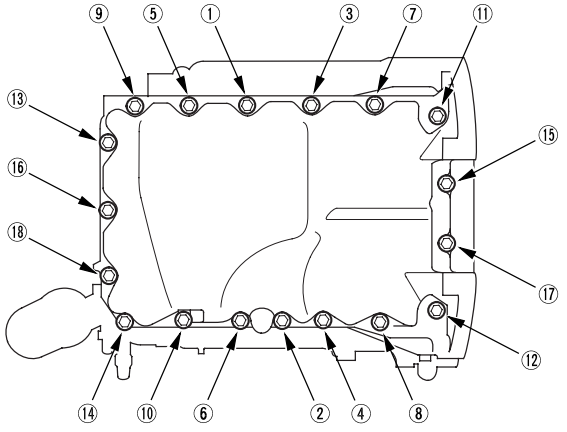
   NOTE: Do not install components if too much time has passed after applying the liquid gasket (for P/N 08718-0002, no more than 4 minutes, for all others, no more than 5 minutes). Instead, remove the old residue and reapply the liquid gasket.



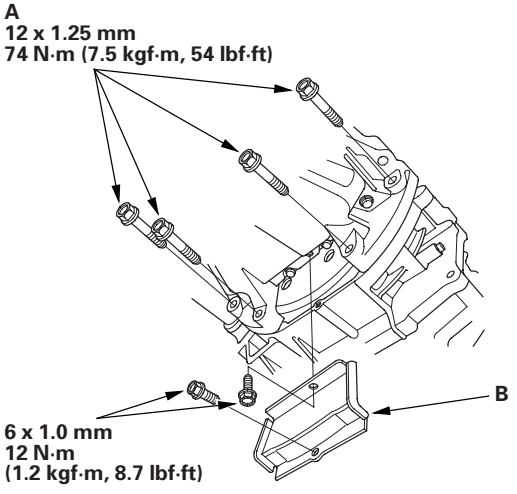
4. Install the oil pan on the engine block.

5. Tighten the bolts in two or three steps. In the final step, tighten all bolts, in sequence, to 12 N·m (1.2 kgf·m, 8.7 lbf·ft).

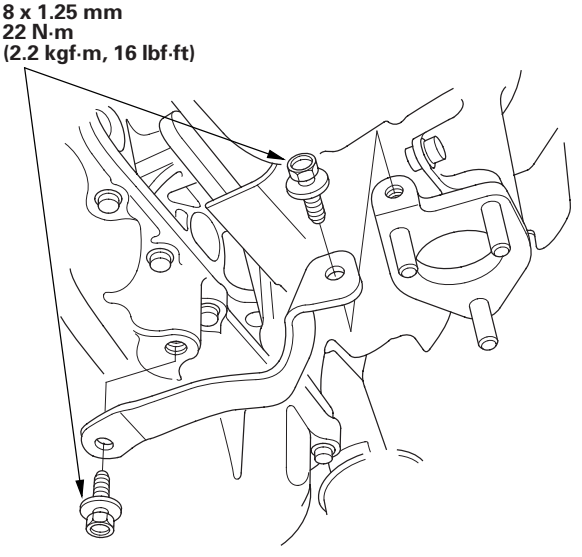
   NOTE: After assembly, wait at least 30 minutes before filling the engine with oil.



6. Tighten the four bolts (A) securing the transmission, then install the torque converter cover (B).



7. Install the rear warm up three way catalytic converter (rear WU-TWC) bracket.



8. If the engine is still in the vehicle, do the following steps.

9. Install exhaust pipe A using new gaskets and new self-locking nuts (see step 29 on page 5-17).

10. Install the front subframe stiffener using new bolts (see step 30 on page 5-17).

11. Install the splash shield (see step 31 on page 5-17).

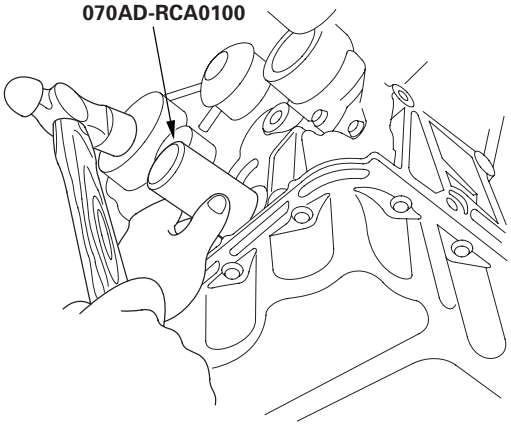
12. Refill the engine with engine oil (see step 4 on page 8-6).

13. Lower the vehicle on the hoist.

Pulley End Crankshaft Oil Seal Installation - In Car

Special Tools Required
Oil seal driver, 64 mm 070AD-RCA0100

1. Remove the crankshaft position (CKP) sensor, timing belt, and timing belt drive pulley (see page 6-25).
2. Remove the pulley end crankshaft oil seal.
3. Clean and dry the crankshaft oil seal housing.
4. Apply a light coat of multipurpose grease to the crankshaft and to the lip of the seal.
5. Using the seal driver, drive in the crankshaft oil seal until the driver bottoms against the oil pump. When the seal is in place, clean any excess grease off the crankshaft, and check that the oil seal lip is not distorted.

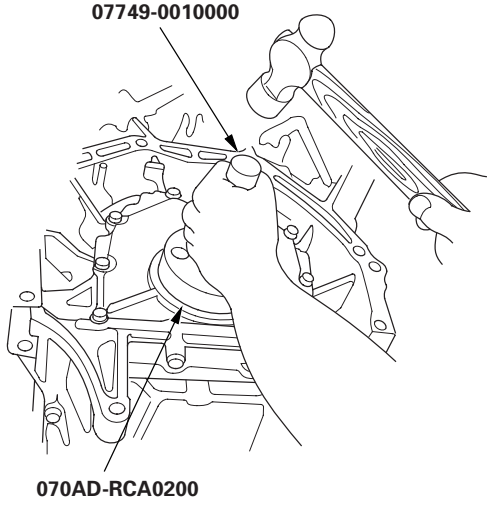


6. Install the timing belt drive pulley, CKP sensor, and timing belt (see page 6-25).

Transmission End Crankshaft Oil Seal Installation - In Car

Special Tools Required
- Driver 07749-0010000
- Driver attachment, 106 mm 070AD-RCA0200

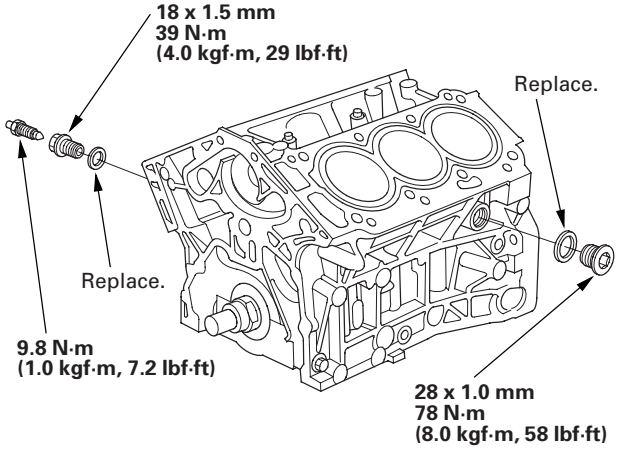
1. Remove the transmission (see page 14-218) and the drive plate (see page 14-238).
2. Remove the transmission end crankshaft oil seal.
3. Clean and dry the crankshaft oil seal housing.
4. Apply a light coat of multipurpose grease to the crankshaft and to the lip of the seal.
5. Using the special tools, drive in the crankshaft oil seal until the driver attachment bottoms against the engine block end cover. Align the hole in the driver attachment with the pin on the crankshaft.



6. Clean any excess grease off the crankshaft, and check that the oil seal lip is not distorted.
7. Install the drive plate (see page 14-238), and the transmission (see page 14-229).

Drain Bolt Installation

NOTE: When installing the drain bolt, always use new washer.



Engine Mechanical

Engine Lubrication

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Oil Pressure Test 8-6
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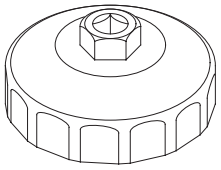
Oil Filter Feed Pipe Replacement 8-8
Oil Pump Overhaul 8-9

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07HAA-PJ70100	Oil Filter Wrench	1
②	070AD-RCAA100	Oil Seal Driver, 64 mm	1



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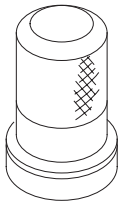

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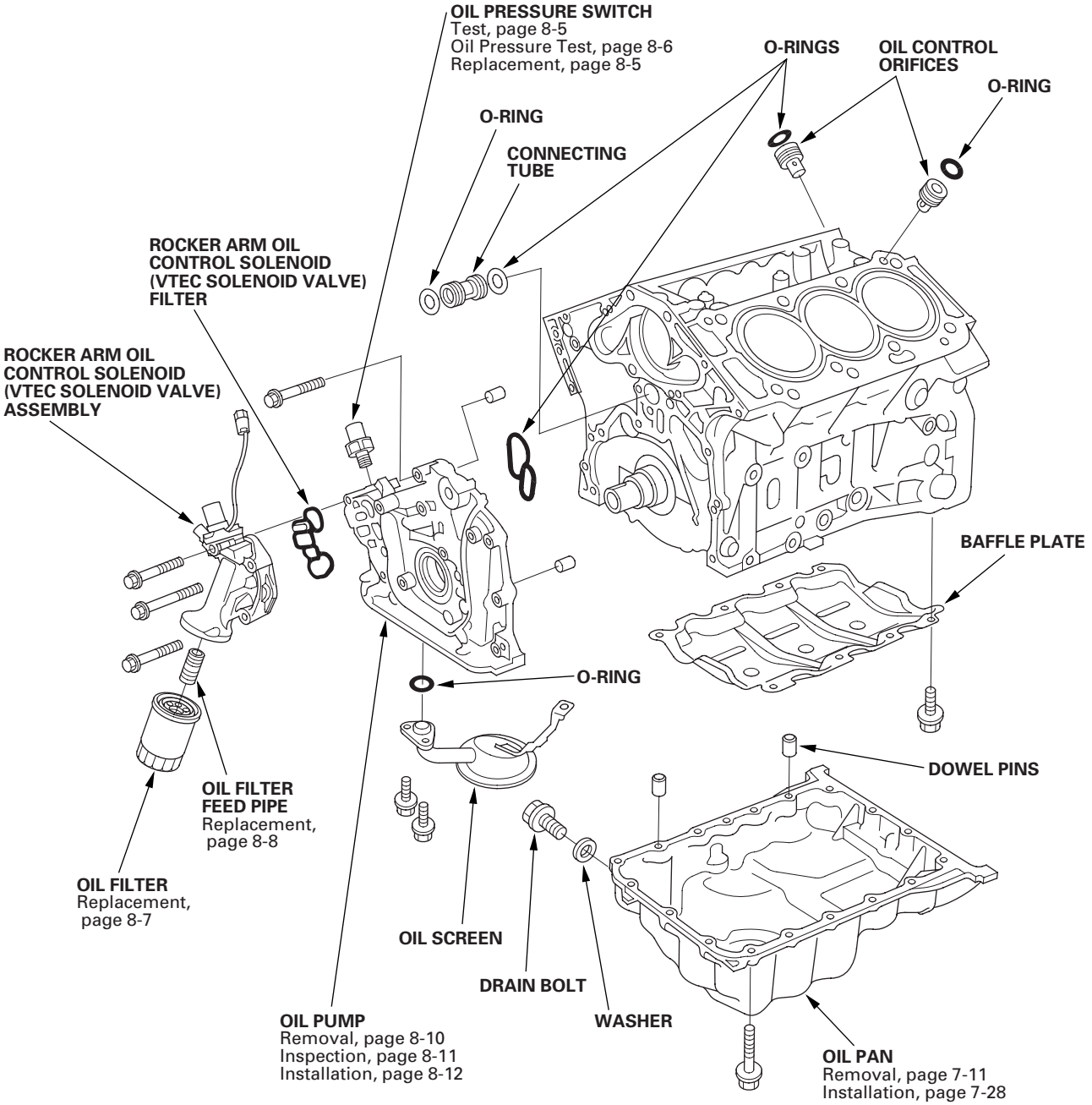
Component Location Index

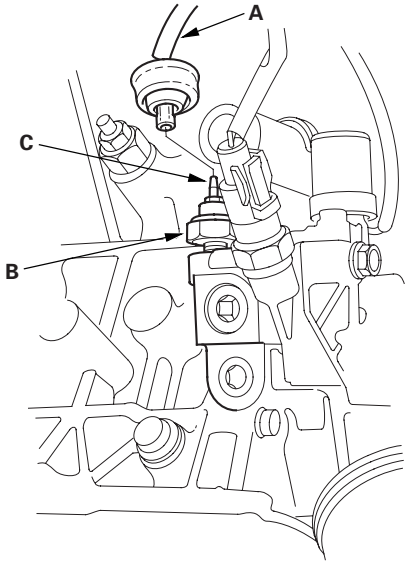


Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Excessive engine oil consumption	1. Check the loose of the engine oil fill cap, oil drain bolt, and oil filter. 2. Check for oil leaks. 3. Check for worn valve guide(s) (see page 6-41) or worn valve stem seal(s) (see page 6-41). 4. Check for damaged or worn piston ring(s) (see page 7-21). 5. Check for damaged or worn engine internal parts (cylinder wall, pistons, etc.) (see page 7-15).	
Low oil pressure indicator does not come on with the ignition switch ON (II)	1. Do the gauge control module self-diagnostic function (see page 22-244). 2. Test the oil pressure switch (see page 8-5).	An open in the wire between the gauge control module and the oil pressure switch
Low oil pressure indicator stays on	1. Check the engine oil level. 2. Do the gauge control module self-diagnostic function (see page 22-244). 3. Test the oil pressure switch (see page 8-5). 4. Check the engine oil pressure (see page 8-6). 5. Check the oil filter for clogging. 6. Check the oil screen for clogging. 7. Check the relief valve. 8. Test the oil pump (see page 8-11).	A wire shorted to ground between the gauge control module and the oil pressure switch

Oil Pressure Switch Test

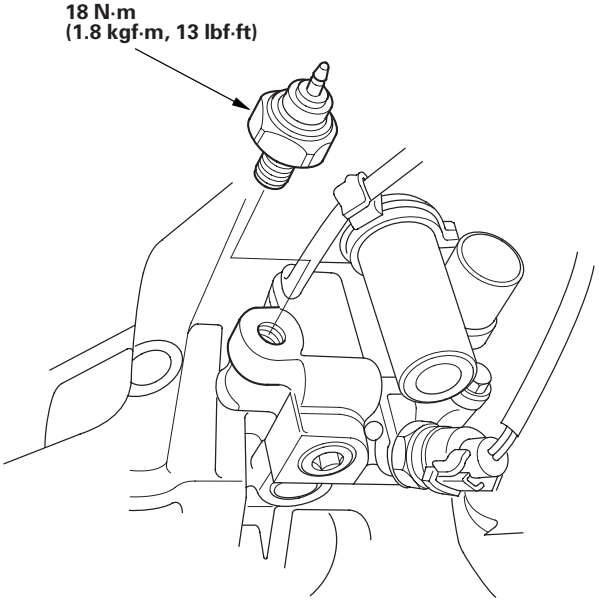
1. Remove the BLU/YEL wire (A) from the engine oil pressure switch (B).



2. Check for continuity between the positive terminal (C) and the engine (ground). There should be continuity with the engine stopped. There should be no continuity with the engine running.

Oil Pressure Switch Replacement

1. Disconnect the oil pressure switch connector, then remove the oil pressure switch.



2. Remove any old liquid gasket from the switch and switch mounting hole.

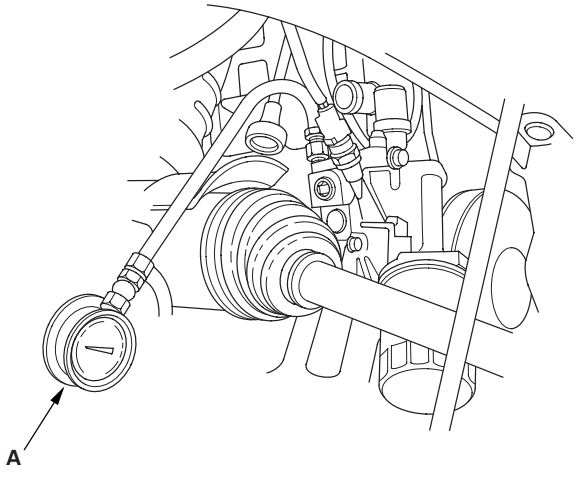
3. Apply a very small amount of liquid gasket to the oil pressure switch threads, then install the oil pressure switch.

   NOTE: Using too much liquid gasket may cause liquid gasket to enter the oil passage or the end of the new oil pressure switch.

Oil Pressure Test

If the low oil pressure indicator stays on with the engine running, check the engine oil level. If the oil level is correct:

1. Remove the engine oil pressure switch, then install an oil pressure gauge (A).



2. Start the engine. Shut it off immediately if the gauge registers no oil pressure. Repair the problem before continuing.

3. Allow the engine to reach operating temperature (fan comes on at least twice). The pressure should be:

   Engine Oil Temperature: 176 °F (80 °C)
   Engine Oil Pressure:
   At Idle: 70 kPa (0.7 kgf/cm², 10 psi) min.
   At 3,000 rpm: 490 kPa (5.0 kgf/cm², 71 psi) min.

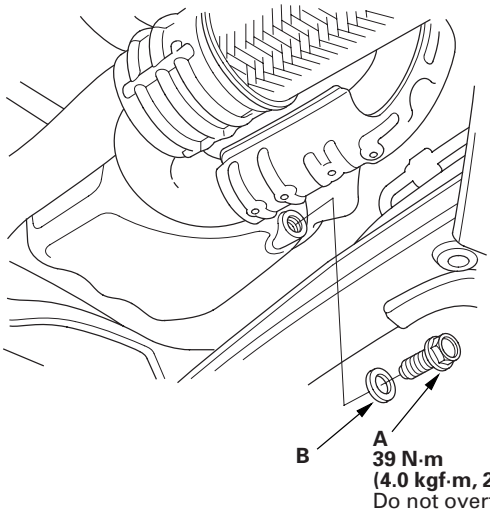
4. If oil pressure is out of specifications, inspect these items:

   - Inspect the oil pressure relief valve (see page 8-9).
   - Check the oil screen for clogging.
   - Inspect the oil pump (see page 8-11).

Engine Oil Replacement

1. Warm up the engine.

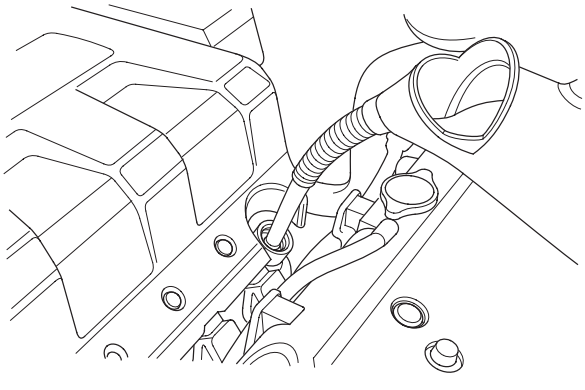
2. Remove the drain bolt (A), and drain the engine oil.



3. Reinstall the drain bolt with a new washer (B).

4. Refill with the recommended oil (see page 3-2).

   Capacity
   At Oil Change:
   4.0 L (4.2 US qt)
   At Oil Change including Filter:
   4.3 L (4.5 US qt)
   After Engine Overhaul:
   5.0 L (5.3 US qt)



5. Run the engine for more than 3 minutes, then check for oil leakage.

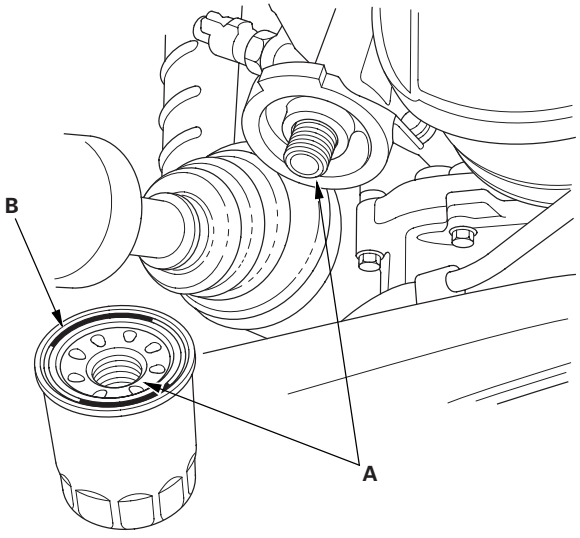
Engine Oil Filter Replacement

Special Tools Required
Oil filter wrench 07HAA-PJ70100

1. Remove the oil filter with the oil filter wrench.

2. Inspect the filter to make sure the rubber seal is not stuck to the oil filter seating surface of the engine.

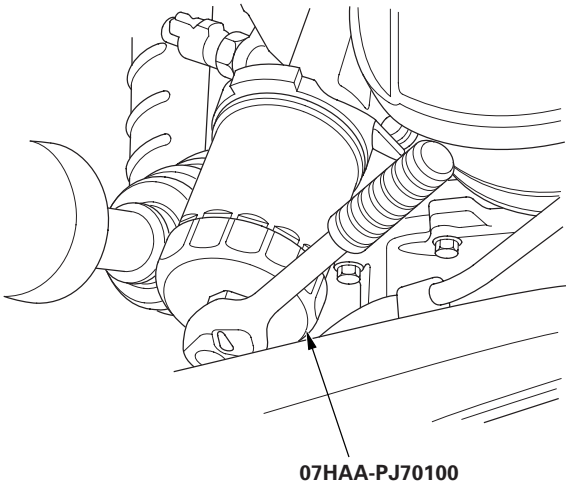
3. Inspect the threads (A) and rubber seal (B) on the new filter. Clean the seat on the engine block, then apply a light coat of new engine oil to the filter rubber seal. Use only filters with a built-in bypass system.



4. Install the oil filter by hand.

5. After the rubber seal seats, tighten the oil filter clockwise with the oil filter wrench.

   Tighten: 3/4 Turn Clockwise
   Tightening Torque:12 N·m (1.2 kgf·m, 8.7 lbf·ft)



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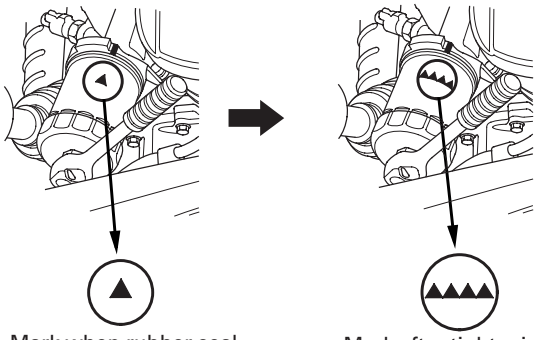
Engine Oil Filter Replacement (cont'd)

6. If four numbers or marks (1 to 4 or ▼ to ▼▼▼▼) are printed around the outside of the filter, you can use the following procedure to tighten the filter.

   - Spin the filter on until its seal lightly seats against the block, and note which number or mark is at the bottom.
   - Tighten the filter by turning it clockwise three numbers or marks from the one you noted. For example, if mark ▼ is at the bottom when the seal is lightly seated, tighten the filter until the mark ▼▼▼▼ comes around to the bottom.



Mark when rubber seal is seated.

Mark after tightening.

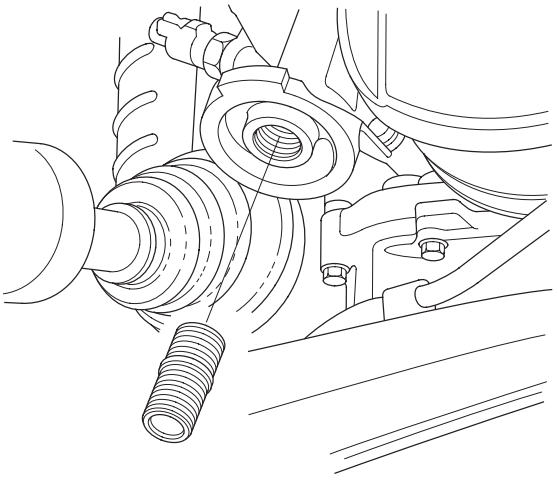
Number or Mark when rubber seal is seated	1 or ▼	2 or ▼▼	3 or ▼▼▼	4 or ▼▼▼▼
Number or Mark after tightening	4 or ▼▼▼▼	1 or ▼	2 or ▼▼	3 or ▼▼▼

7. After installation, fill the engine with oil up to the specified level, run the engine for more than 3 minutes, then check for oil leakage.

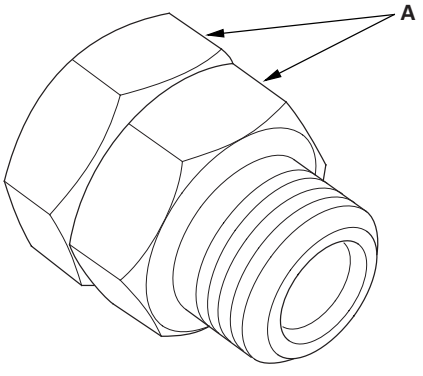
Oil Filter Feed Pipe Replacement

1. Remove the filter (see page 8-7).

2. Remove the oil filter feed pipe.



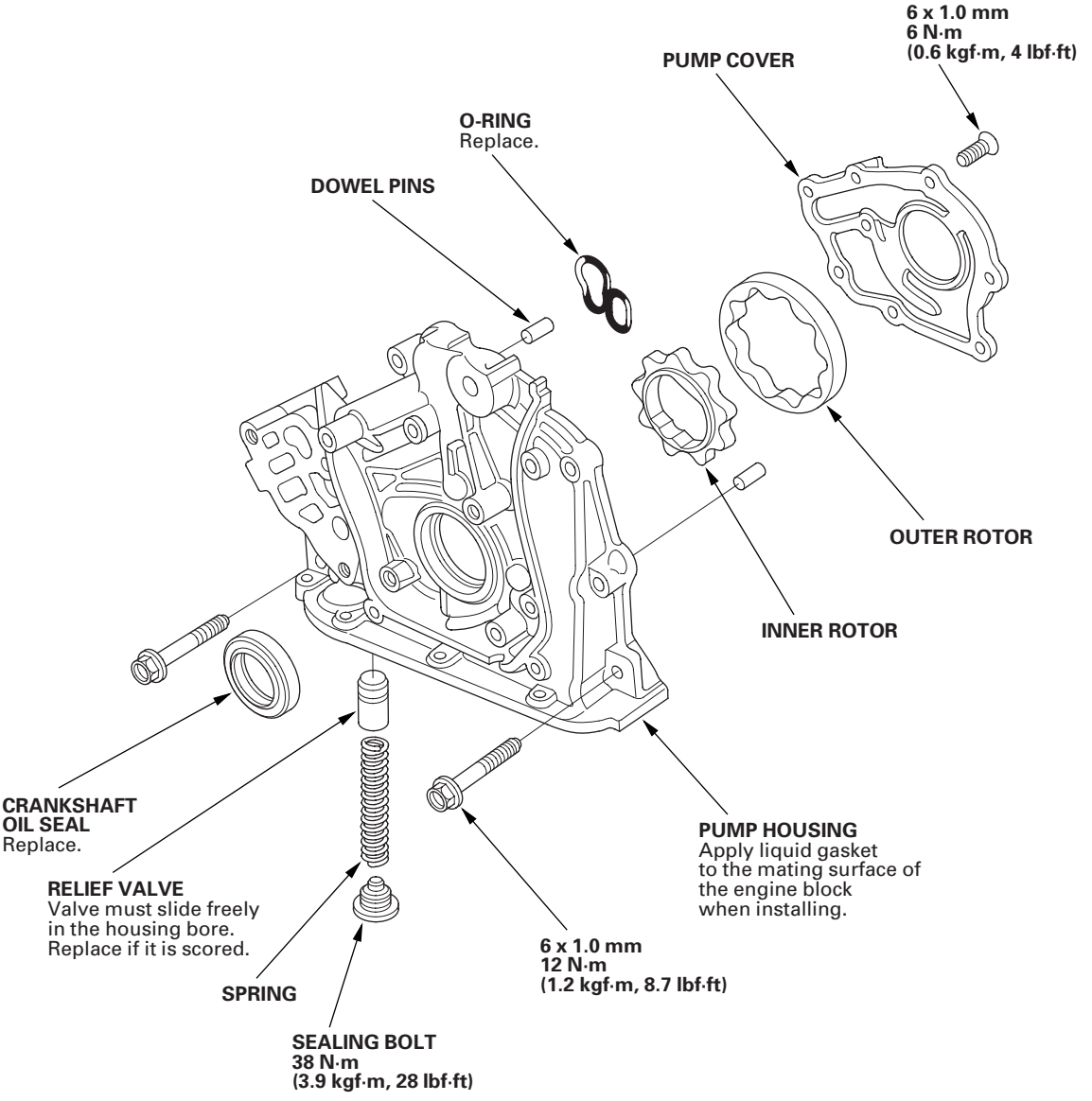
3. Install two 20 x 1.5 mm nuts (A) onto the new oil filter feed pipe, and hold one nut with a wrench, then tighten the other nut.



4. Tighten the oil filter feed pipe to 49 N·m (5.0 kgf·m, 36 lbf·ft), then remove the nuts from the oil filter feed pipe.

Oil Pump Overhaul

Exploded View



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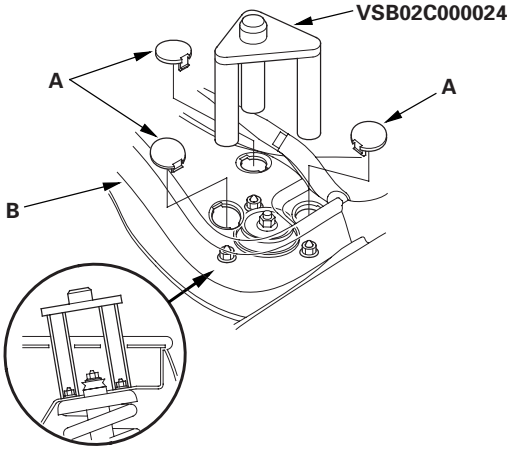
Oil Pump Overhaul (cont'd)

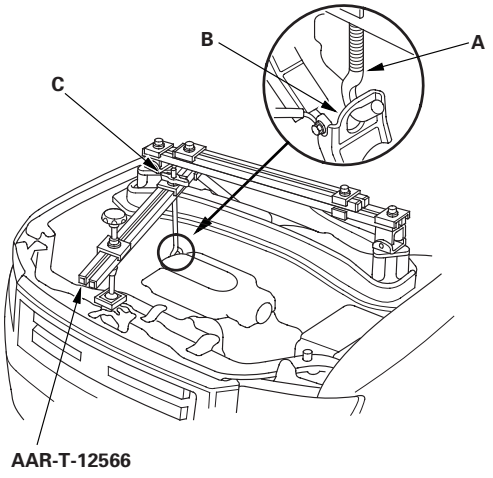
Special Tools Required
- Oil seal driver, 64 mm 070AD-RCAA100
- Engine support hanger, A and Reds AAR-T-12566
- Engine hanger adapter set VSB02C000024
  These special tools are available through Honda Tool and Equipment program, 888-424-6857.

Removal

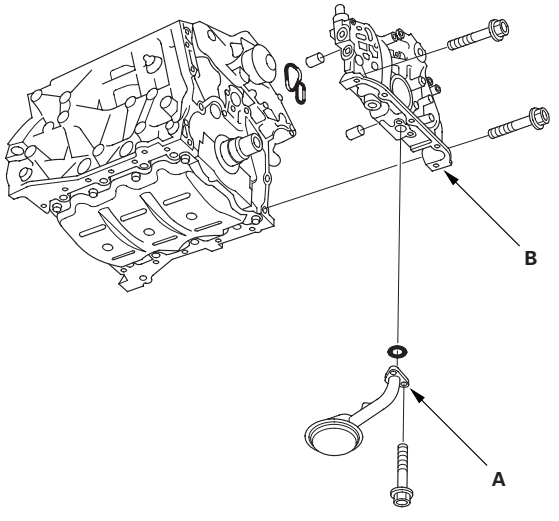
1. Remove the bulkhead cover (see page 20-171).
2. Remove the intake manifold cover.
3. Remove the drive belt (see page 4-31).
4. Remove the power steering (P/S) pump and P/S line bracket (see step 6 on page 6-28).
5. Remove the service caps (A) for the front damper flange nuts from the cowl cover (B). Position the engine hanger adapters (VSB02C000024) with the ''FRONT''mark facing forward over the damper flange nuts.



6. Install the engine support hanger (AAR-T-12566) to the vehicle, and attach the hook (A) to the engine hanger (B). Tighten the wing nut (C) by hand, and support the engine.



7. Remove the timing belt (see page 6-13).
8. Remove the crankshaft position (CKP) sensor (see page 11-203).
9. Remove the rocker arm oil control solenoid (VTEC solenoid valve)/oil filter assembly (see step 9 on page 7-12).
10. Remove the oil pan (see page 7-11).
11. Remove the oil screen (A), then remove the oil pump (B).

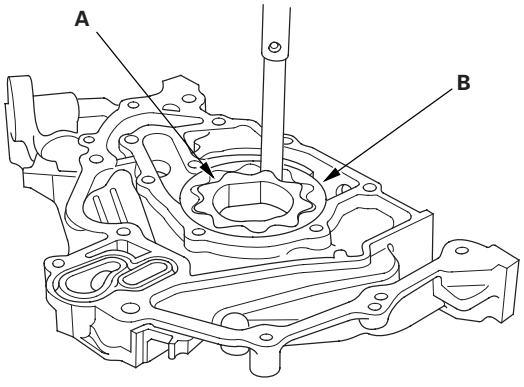


Inspection

1. Remove the screws from the pump housing, then separate the housing and cover.

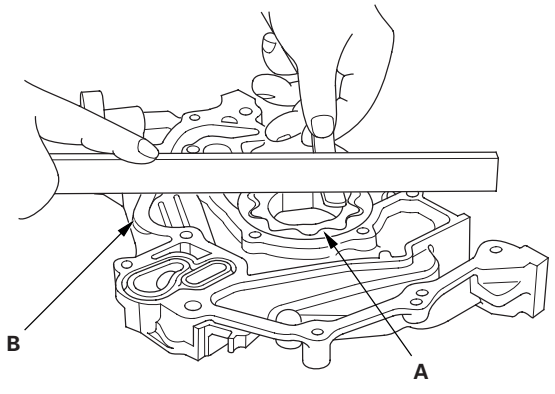
2. Check the inner-to-outer rotor radial clearance between the inner rotor (A) and outer rotor (B). If the inner-to-outer rotor clearance exceeds the service limit, replace the oil pump assembly.

   Inner Rotor-to-Outer Rotor Radial Clearance
   Standard (New): 0.04—0.16 mm (0.002—0.006 in.)
   Service Limit: 0.20 mm (0.008 in.)



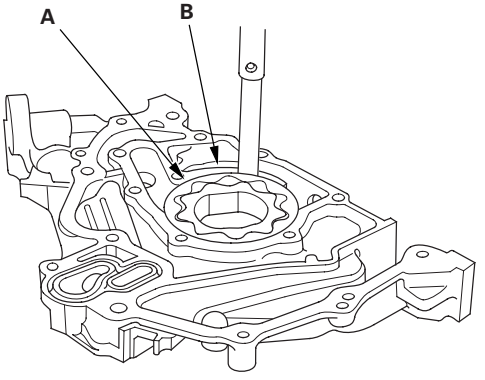
3. Check the housing-to-rotor axial clearance between the rotors (A) and pump housing (B). If the housing-to-rotor axial clearance exceeds the service limit, replace the oil pump assembly.

   Housing-to-Rotor Axial Clearance
   Standard (New): 0.02—0.07 mm (0.001—0.003 in.)
   Service Limit: 0.12 mm (0.005 in.)



4. Check the housing-to-outer rotor radial clearance between the outer rotor (A) and pump housing (B). If the housing-to-outer rotor radial clearance exceeds the service limit, replace the oil pump assembly.

   Housing-to-Outer Rotor Radial Clearance
   Standard (New): 0.14—0.19 mm (0.006—0.007 in.)
   Service Limit: 0.20 mm (0.008 in.)



5. Inspect both rotors and pump housing for scoring or other damage. Replace the parts, if necessary.

6. Apply liquid thread lock to the pump housing screws, then install the oil pump cover.

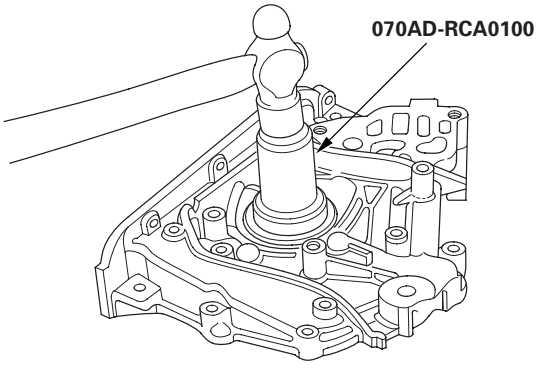
7. Check that the oil pump turns freely.

(cont'd)

Oil Pump Overhaul (cont'd)

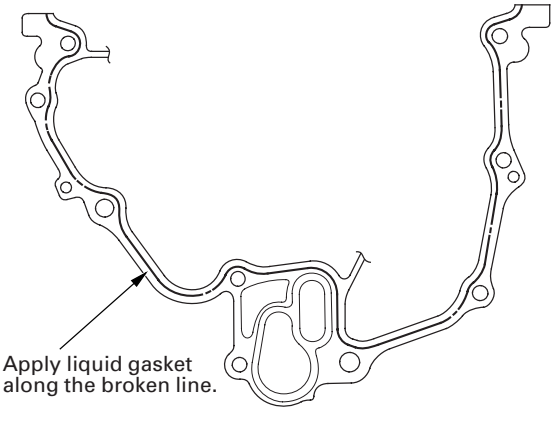
Installation

1. Remove the old oil seal from the oil pump.
2. Gently tap in the new oil seal until the oil seal driver bottoms on the pump.

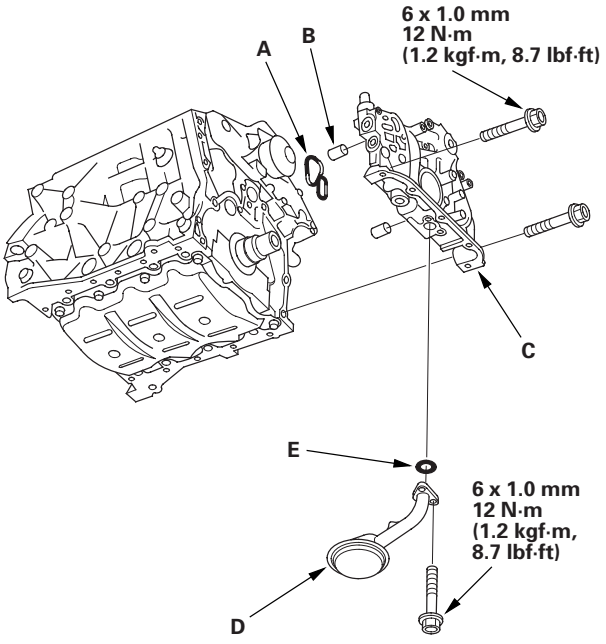


3. Remove all of the old liquid gasket from the oil pump mating surfaces, bolts, and bolt holes.
4. Clean and dry the oil pump mating surfaces.
5. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0002, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the oil pump.

   NOTE: Do not install components if too much time has passed after applying the liquid gasket (for P/N 08718-0002, no more than 4 minutes, for all others, no more than 5 minutes). Instead, remove the old residue and reapply the liquid gasket.



6. Grease the lip of the oil seal, and apply oil to the new O-ring (A).



7. Install the dowel pins (B), then align the inner rotor with the crankshaft, and install the oil pump (C).
8. Clean the excess grease off the crankshaft, and check the seal for distortion.
9. Install the oil screen (D) with new O-ring (E).
10. Install the rocker arm oil control solenoid (VTEC solenoid valve)/oil filter assembly, with a new rocker arm oil control solenoid (VTEC solenoid valve) filter (see step 38 on page 7-27).
11. Install the oil pan (see page 7-28).
12. Install the crankshaft position (CKP) sensor (see page 11-203).
13. Install the timing belt (see page 6-16).
14. Remove the engine hanger.
15. Install the service caps on the cowl cover.

16. Install the power steering (P/S) pump and P/S line bracket (see step 30 on page 6-53).

17. Install the drive belt (see page 4-31).

18. Install the bulkhead cover (see page 20-171).

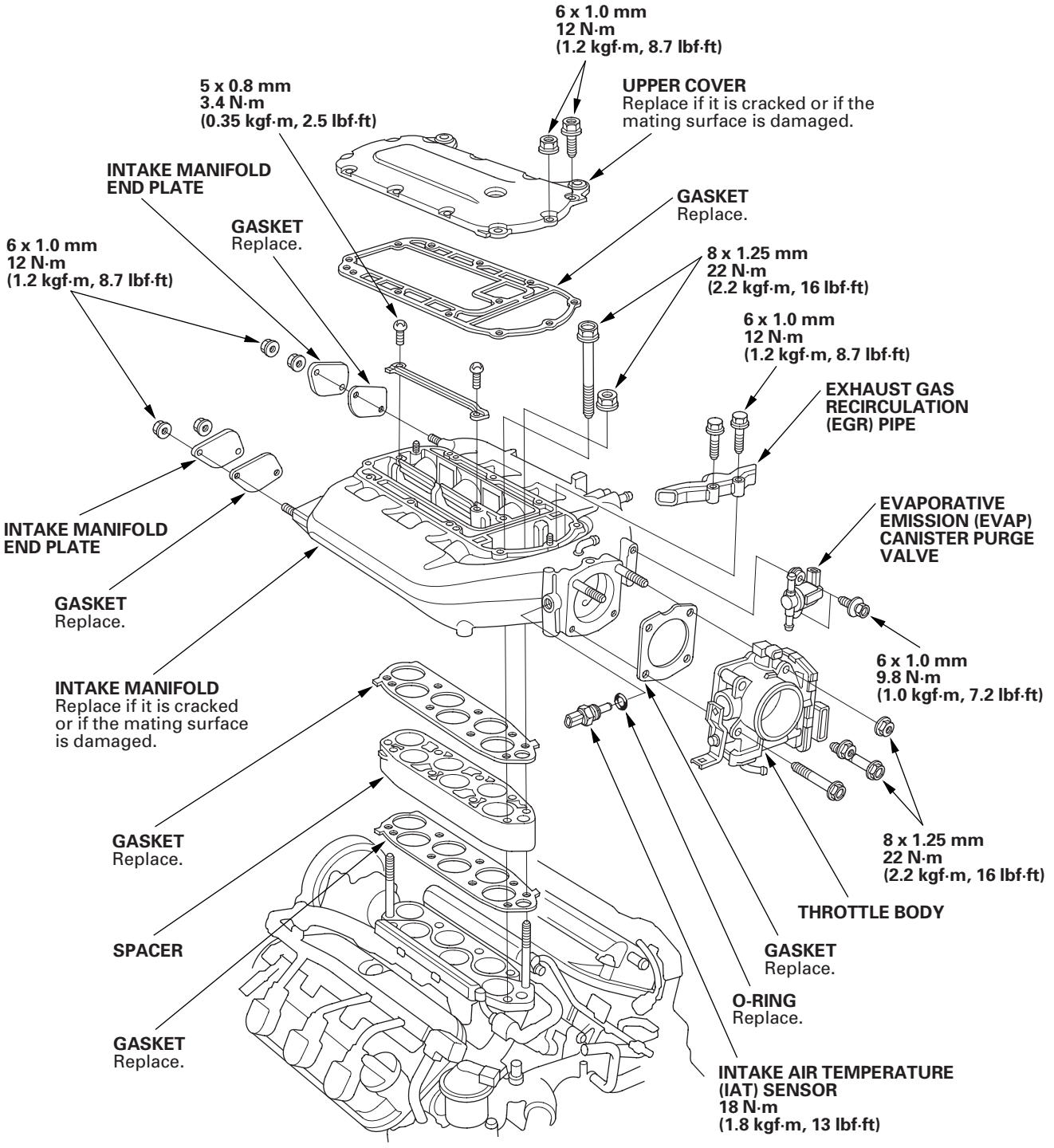
Engine Mechanical

Intake Manifold and Exhaust System

Intake Manifold Removal and Installation 9-2
Exhaust Pipe and Muffler Replacement 9-7

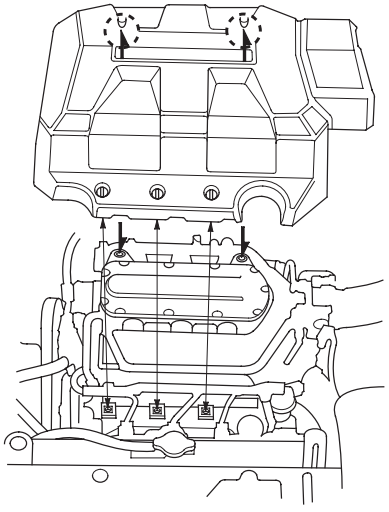
Intake Manifold Removal and Installation

Exploded View

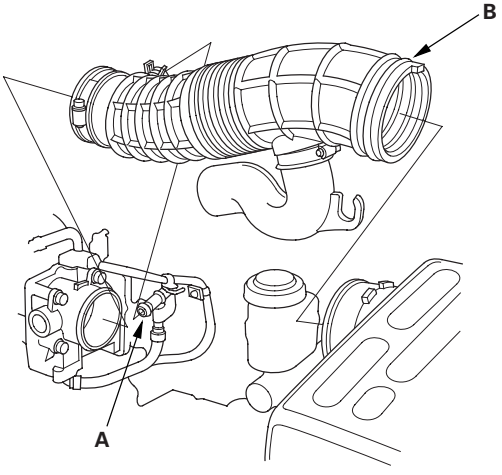


Removal

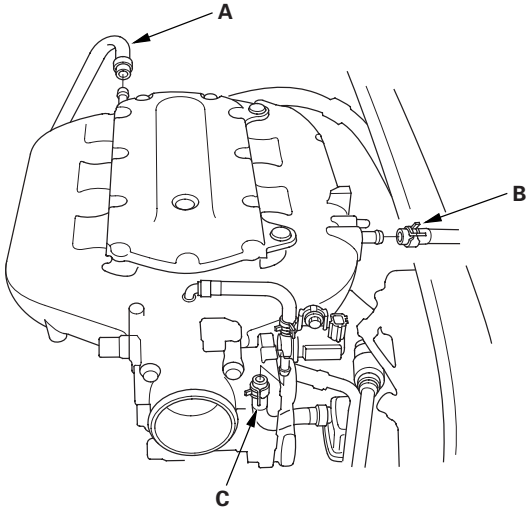
1. Remove the engine cover.



2. Remove the breather pipe (A), then remove the air intake duct (B).



3. Remove the positive crankcase ventilation (PCV) hose (A), brake booster vacuum hose (B), and evaporative emission (EVAP) canister purge hose (C).



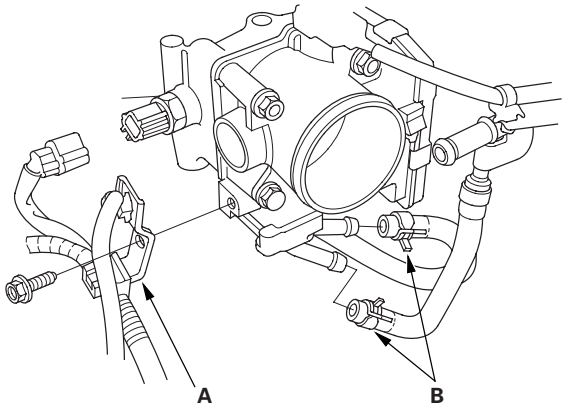
4. Remove the engine wire harness connectors and wire harness clamps from the intake manifold.

   - Intake air temperature (IAT) sensor connector
   - Throttle actuator connector
   - Manifold absolute pressure (MAP) sensor connector
   - Evaporative emission (EVAP) canister purge valve connector
   - Intake manifold tuning (IMT) valve actuator connector

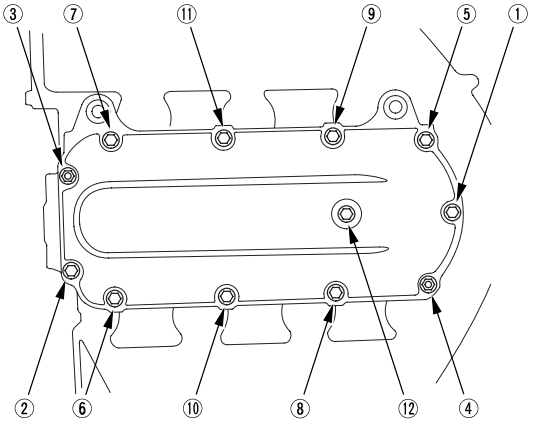
(cont'd)

Intake Manifold Removal and Installation (cont'd)

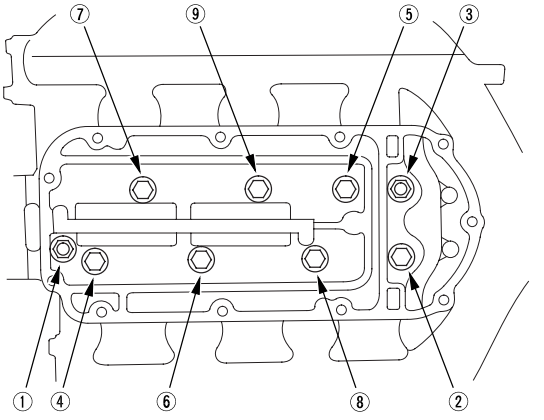
5. Remove the harness clamp bracket (A) and water bypass hoses (B), then plug the water bypass hoses.



6. Remove the upper cover mounting bolts and nuts sequentially, in two or three steps, then remove the upper cover.



7. Remove the intake manifold mounting bolts and nuts sequentially, in two or three steps, then remove the intake manifold and spacer.

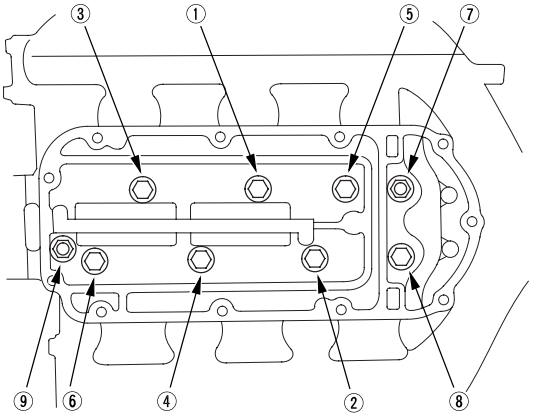


Installation

1. Put a new gasket and the spacer on the injector base.

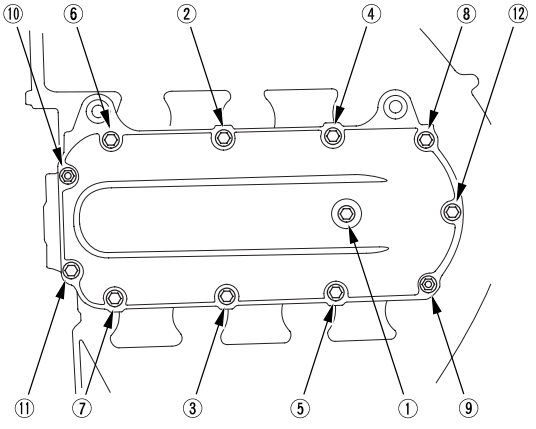
2. Install the intake manifold. Tighten the bolts and nuts sequentially, in two or three steps. Always use a new intake manifold gasket.

   Specified Torque
   8 x 1.25 mm: 22 N·m (2.2 kgf·m, 16 lbf·ft)

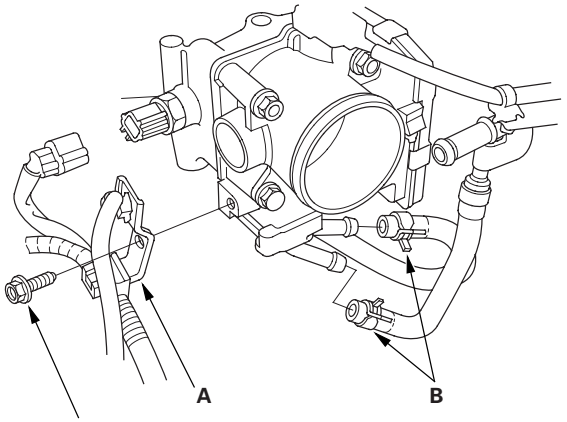


3. Install the upper cover. Tighten the bolts and nuts sequentially, in two or three steps. Always use a new gasket.

   Specified Torque
   6 x 1.0 mm: 12 N·m (1.2 kgf·m, 8.7 lbf·ft)



4. Install the harness clamp bracket (A) and water bypass hoses (B).



6 x 1.0 mm
12 N·m
(1.2 kgf·m, 8.7 lbf·ft)

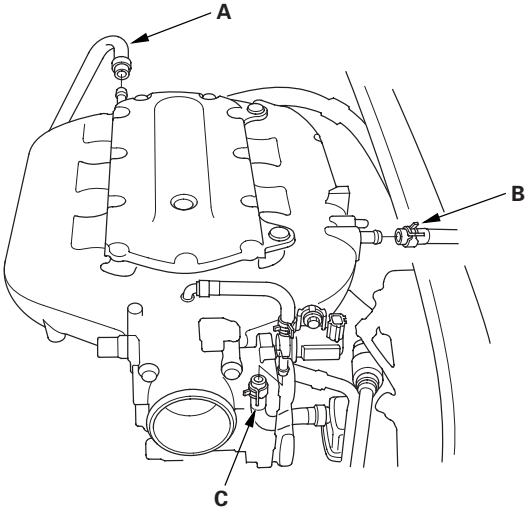
5. Connect the engine wire harness connectors, and install the wire harness clamps to the intake manifold.

   - Intake air temperature (IAT) sensor connector
   - Throttle actuator connector
   - Manifold absolute pressure (MAP) sensor connector
   - Evaporative emission (EVAP) canister purge valve connector
   - Intake manifold tuning (IMT) valve actuator connector

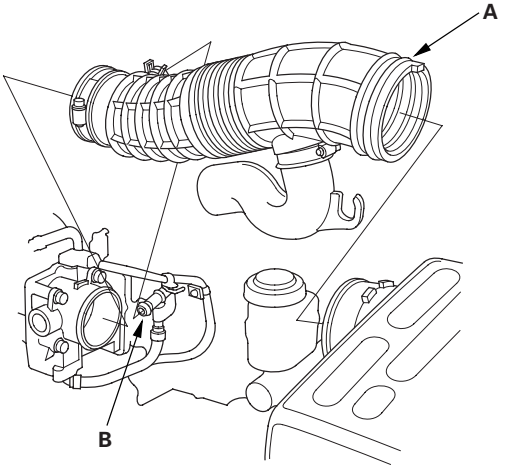
(cont'd)

Intake Manifold Removal and Installation (cont'd)

6. Install the positive crankcase ventilation (PCV) hose (A), brake booster vacuum hose (B), and evaporative emission (EVAP) canister purge hose (C).



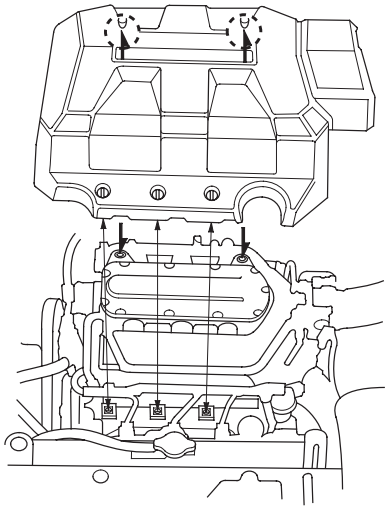
7. Install the air intake duct (A), then install the breather pipe (B).



8. Clean up any spilled engine coolant.

9. After installation, check that all tubes, hoses and connectors are installed correctly.

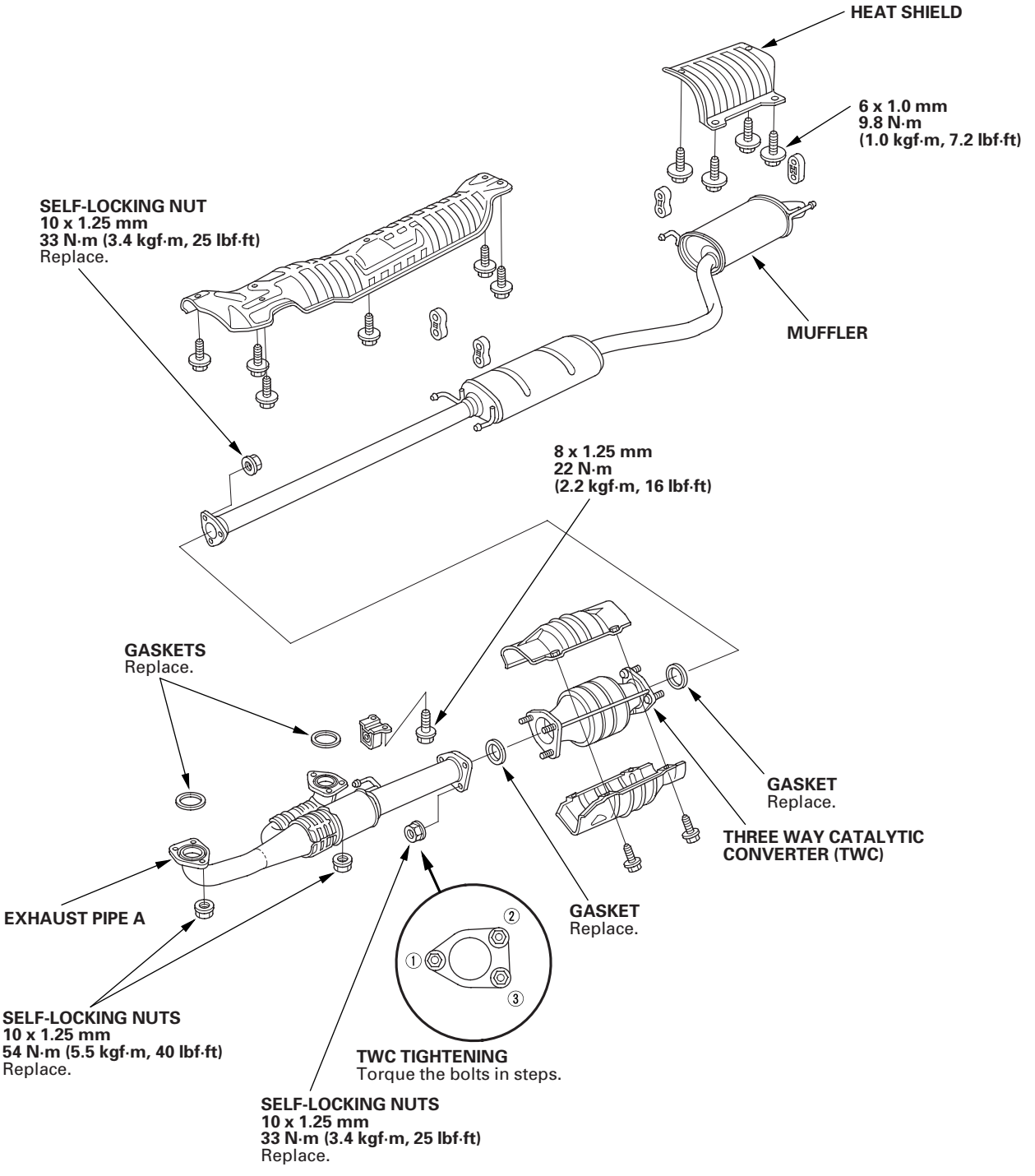
10. Install the engine cover.



11. Refill the radiator with engine coolant, then bleed air from the cooling system with the heater valve open (see step 9 on page 10-7).

Exhaust Pipe and Muffler Replacement

NOTE: Use new gaskets and self-locking nuts when reassembling.



Engine Cooling

Cooling System

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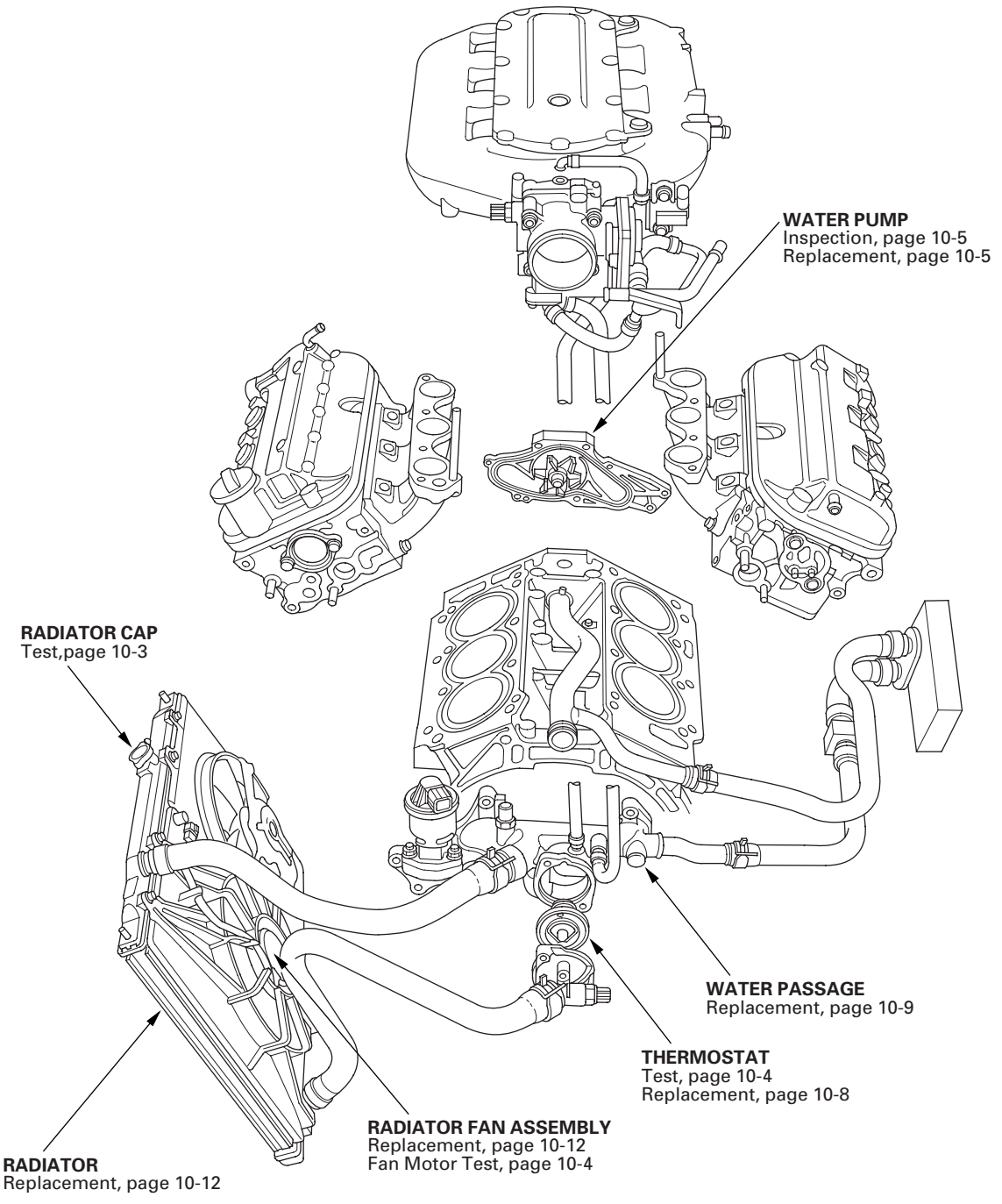
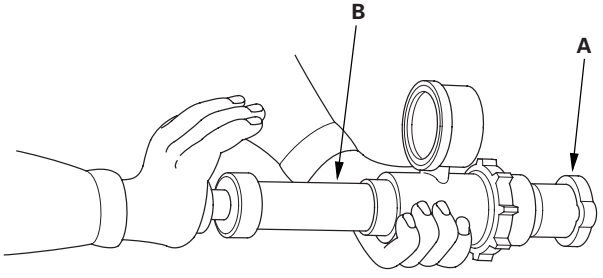
Component Location Index



Radiator Cap Test

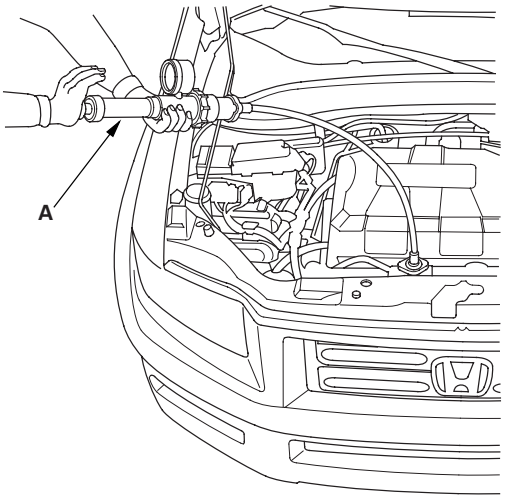
1. Remove the radiator cap (A). Wet its seal with engine coolant, then install it on a commercially available pressure tester (B).



2. Apply a pressure of 93—123 kPa (0.95—1.25 kgf/cm^2, 14—18 psi).
3. Check for a drop in pressure.
4. If the pressure drops, replace the cap.

Radiator Test

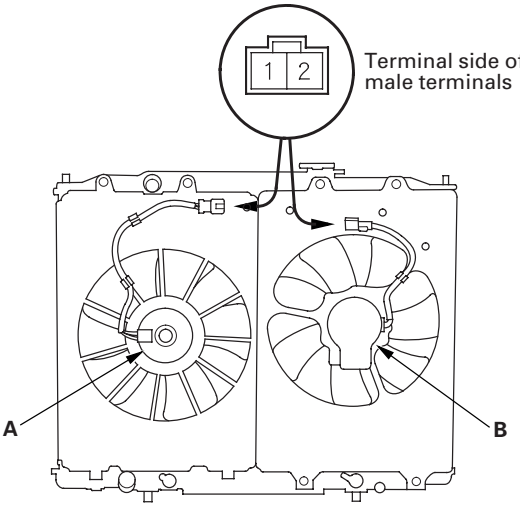
1. Wait until the engine is cool, then carefully remove the radiator cap, and fill the radiator with engine coolant to the top of the filler neck.
2. Attach a commercially available pressure tester (A) to the radiator, and apply a pressure of 93—123 kPa (0.95—1.25 kgf/cm^2, 14—18 psi).



3. Inspect for engine coolant leaks and a drop in pressure.
4. Remove the tester, then reinstall the radiator cap.

Fan Motor Test

1. Disconnect the 2P connectors from the radiator fan motor (A) and condenser fan motor (B).



2. Test each motor by connecting battery power to the No. 1 terminal and ground to the No. 2 terminal.

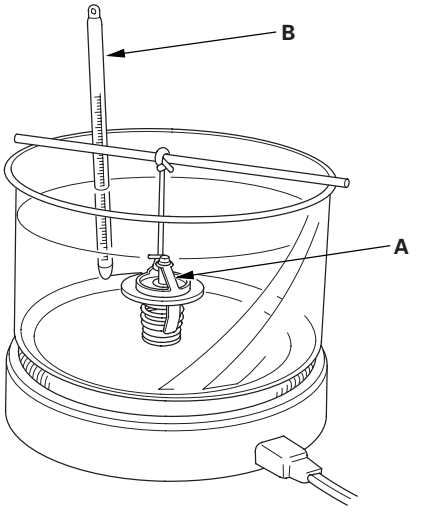
3. If either motor fails to run or does not run smoothly, replace it (see page 10-12).

Thermostat Test

Replace the thermostat if it is in the stuck open position at room temperature.

To test a closed thermostat:

1. Suspend the thermostat (A) in a container of water. Do not let the thermometer (B) touch the bottom of the hot container.



2. Heat the water and check the temperature with a thermometer. Note the temperature at which the thermostat first opens, and at which it is fully open.

3. Measure the lift height of the thermostat when it is fully open.

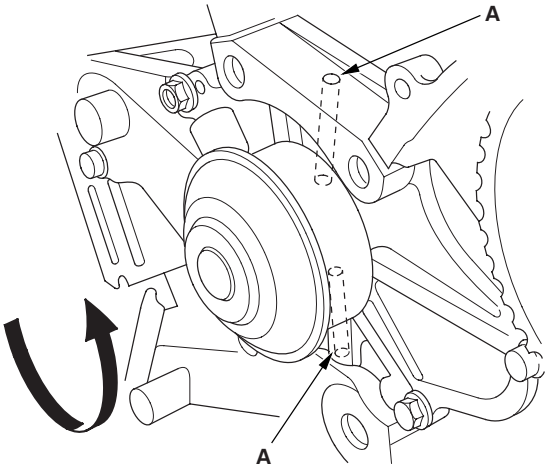
Standard Thermostat

Lift Height:	**Above 10.0 mm (0.39 in.)**
Starts Opening:	**169—176 °F (76—80 °C)**
Fully Open:	**194 °F (90 °C)**

Water Pump Inspection

1. Remove the timing belt (see page 6-13).
2. Turn the water pump pulley counterclockwise. Check that it turns freely. If it doesn't turn smoothly, replace the water pump (see page 10-5).

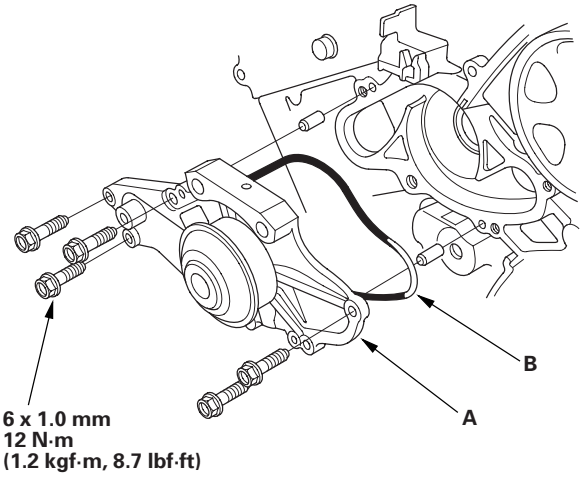
   NOTE: When you check the water pump, you may see a small amount of ''weeping'' from the bleed holes (A). This is normal.



3. Install the timing belt (see page 6-16).

Water Pump Replacement

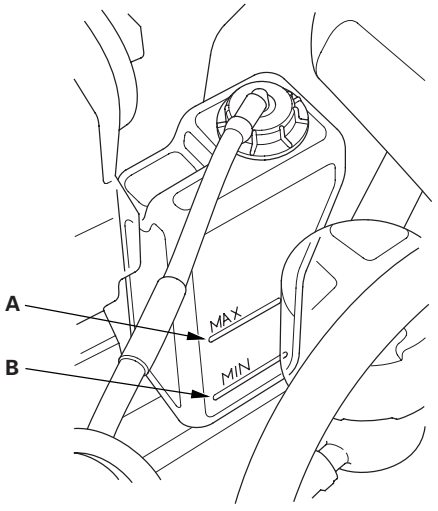
1. Drain the engine coolant (see page 10-6).
2. Remove the timing belt (see page 6-13).
3. Remove the timing belt adjuster (see page 6-24).
4. Remove the water pump (A) by removing the five bolts.



5. Inspect and clean the O-ring groove and the mating surface of the engine block.
6. Install the water pump with a new O-ring (B) in the reverse order of removal.
7. Clean up any spilled engine coolant.
8. Install the timing belt adjuster (see page 6-24).
9. Install the timing belt (see page 6-16).
10. Refill the radiator with engine coolant, then bleed the air from the cooling system (see step 9 on page 10-7).

Coolant Check

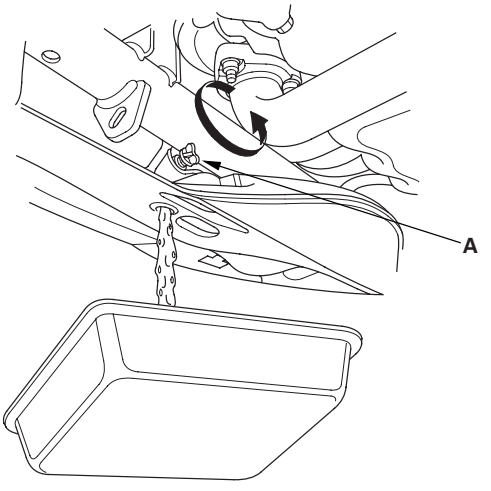
1. Look at the coolant level in the coolant reservoir. Make sure it is between the MAX mark (A) and MIN mark (B).



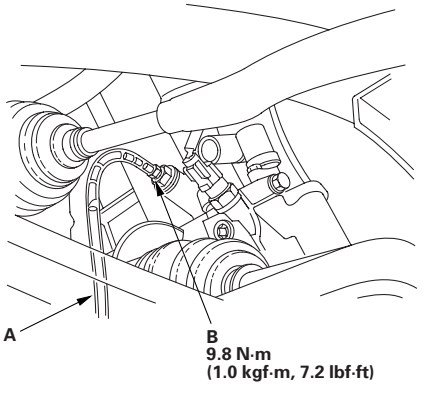
2. If the coolant level in the coolant reservoir is at or below the MIN mark, add coolant to bring it between the MIN and MAX marks, then inspect the cooling system for leaks.

Coolant Replacement

1. Start the engine. Set the heater temperature control dial to maximum heat, then turn off the ignition switch. Make sure the engine and radiator are cool to the touch.
2. Remove the radiator cap.
3. Remove the splash shield (see step 30 on page 5-5).
4. Loosen the drain plug (A), and drain the coolant.



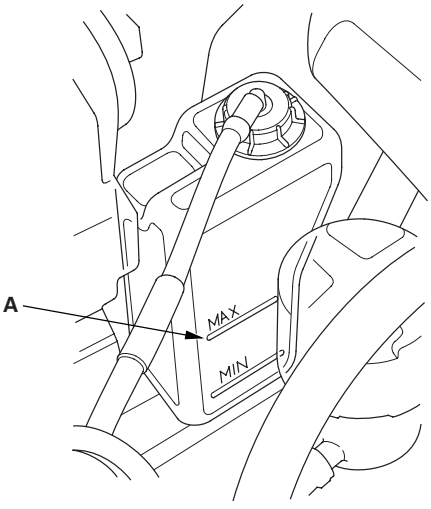
5. Install a rubber hose (A) on the drain bolt (B) located at the rear of the engine block, then loosen the drain bolt.



6. When the coolant stops draining, tighten the drain bolt. Remove the rubber hose.
7. Tighten the radiator drain plug securely.
8. Install the splash shield (see step 31 on page 5-17).

9. Remove, drain, and reinstall the reserve tank.

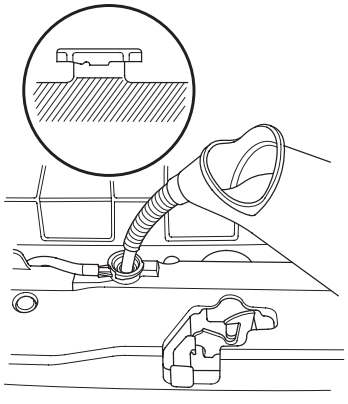
10. Fill the reserve tank to the MAX mark (A) with Honda Long Life Antifreeze/Coolant Type 2 (P/N OL999-9001).



11. Pour Honda Long Life Antifreeze/Coolant Type 2 into the radiator up to the base of the filler neck.

    NOTE:
    - Always use Honda Long Life Antifreeze/Coolant Type 2 (P/N OL999-9001). Using a non-Honda coolant can result in corrosion, causing the cooling system to malfunction or fail.
    - Honda Long Life Antifreeze/Coolant Type 2 is a mixture of 50 % antifreeze and 50 % water. Do not add water.

    Engine Coolant Capacities (Including the reserve tank capacity of 0.6 L (0.16 US gal)):
    After Coolant Change: 6.2 L (1.64 US gal)
    After Engine Overhaul: 8.1 L (2.14 US gal)



12. Install the radiator cap loosely.

13. Start the engine and let it run until it warms up (the radiator fan comes on at least twice).

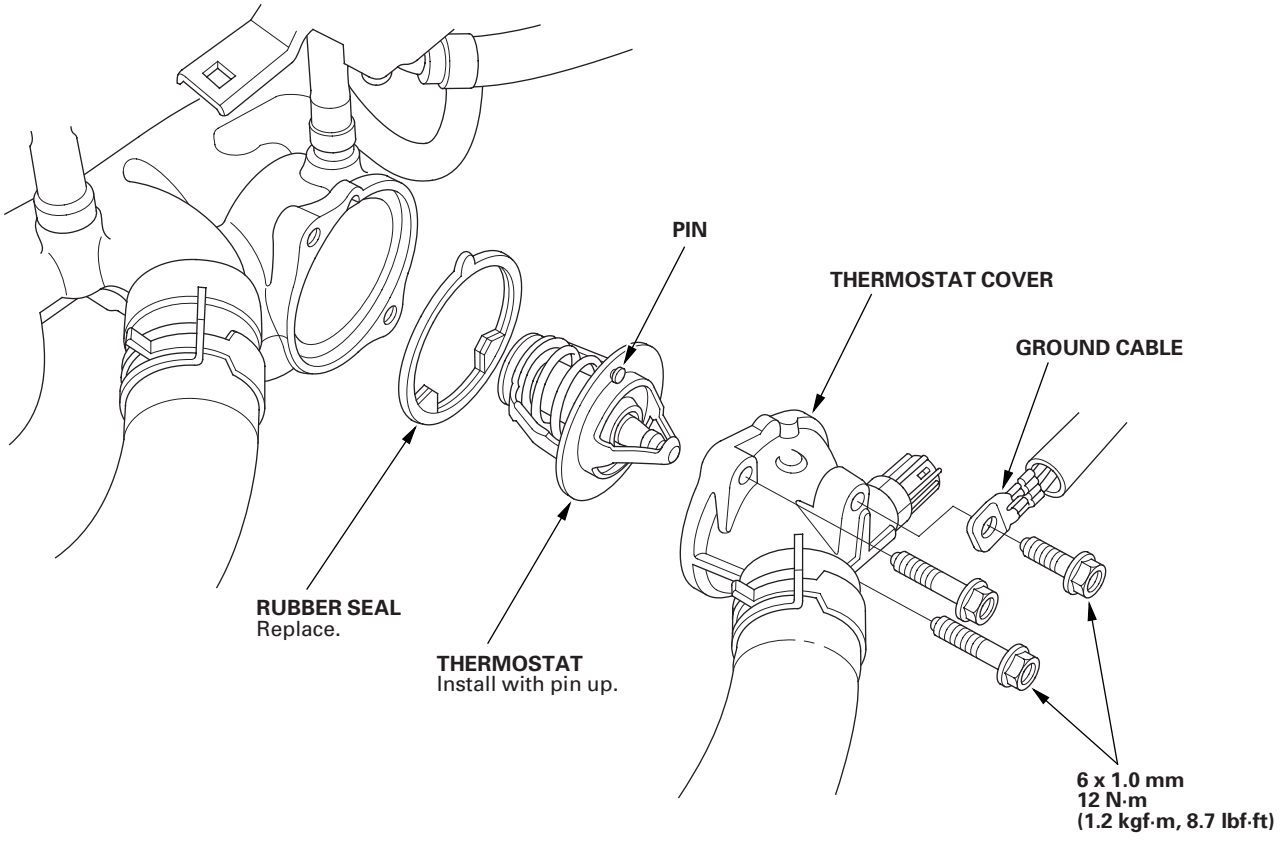
14. Turn off the engine. Check the level in the radiator and add Honda Long Life Antifreeze/Coolant Type 2, if needed.

15. Put the radiator cap on tightly, then run the engine again, and check for leaks.

16. Clean up any spilled engine coolant.

Thermostat Replacement

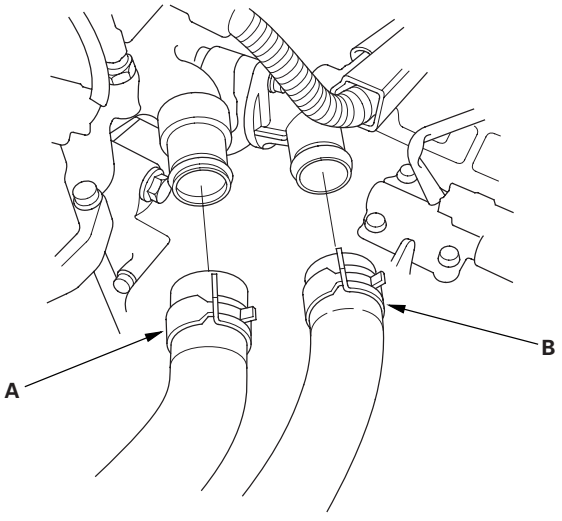
1. Disconnect the breather pipe, then remove the air intake duct (see step 9 on page 5-2).
2. Drain the engine coolant (see page 10-6).
3. Remove the ground cable and thermostat cover, then remove the thermostat.



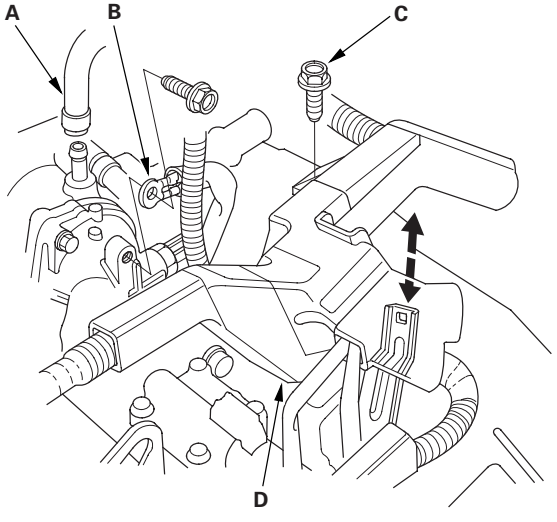
4. Install the new thermostat with a new rubber seal.
5. Refill the radiator with engine coolant, then bleed air from the cooling system (see step 9 on page 10-7).
6. Clean up any spilled engine coolant.

Water Passage Replacement

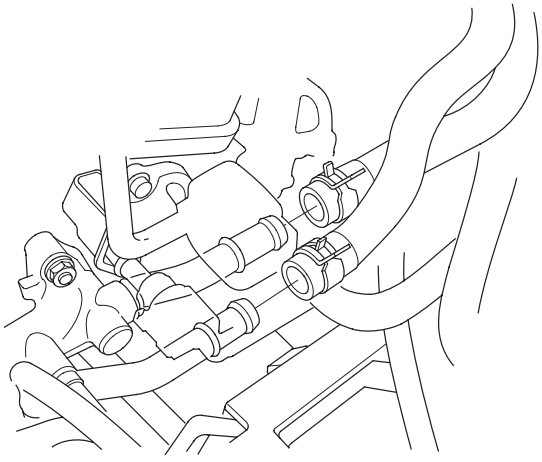
1. Drain the engine coolant (see page 10-6).
2. Remove the intake manifold (see page 9-3).
3. Remove the upper radiator hose (A) and lower radiator hose (B).



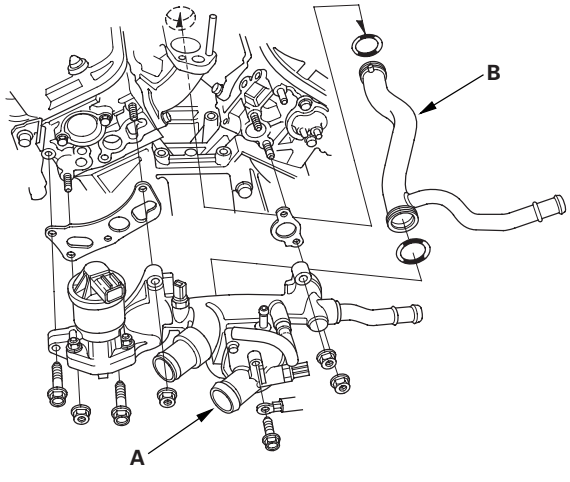
4. Remove the water bypass hose (A) and ground cable (B).



5. Remove the harness holder mounting bolt (C), then remove the harness holder (D) from the bracket.
6. Remove the heater hoses.



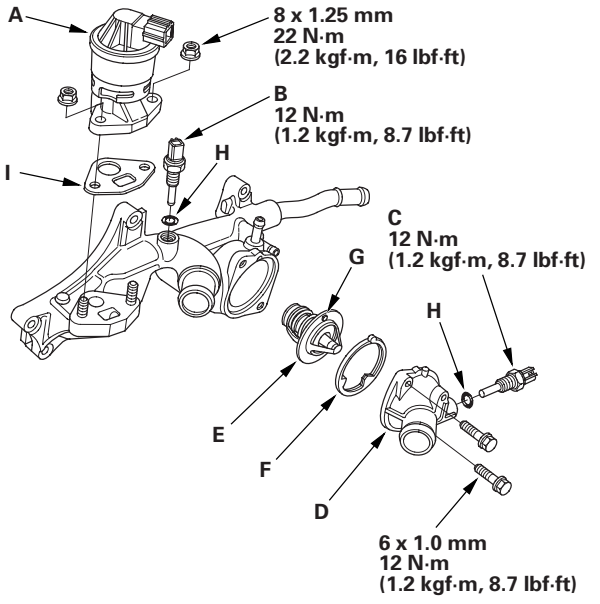
7. Remove the engine wire harness connectors from the water passage.
   - Engine coolant temperature (ECT) sensor 1 connector
   - Engine coolant temperature (ECT) sensor 2 connector
   - Exhaust gas recirculation (EGR) valve connector
8. Remove the water passage (A) and connecting pipe (B).



(cont'd)

Water Passage Replacement (cont'd)

9. Remove the EGR valve (A), ECT sensor 1 (B), ECT sensor 2 (C), thermostat cover (D), and thermostat (E).

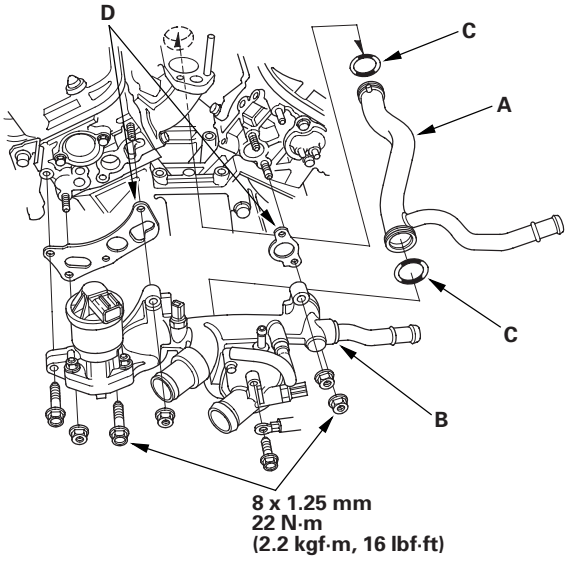


10. Install the new rubber seal (F) onto the thermostat, then install the thermostat with pin (G) up, and install the thermostat cover.

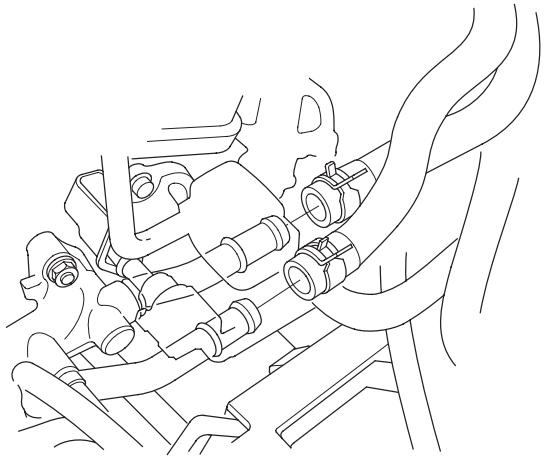
11. Install the ECT sensor 1 and ECT sensor 2, using the new O-rings (H).

12. Install the EGR valve, using a new gasket (I).

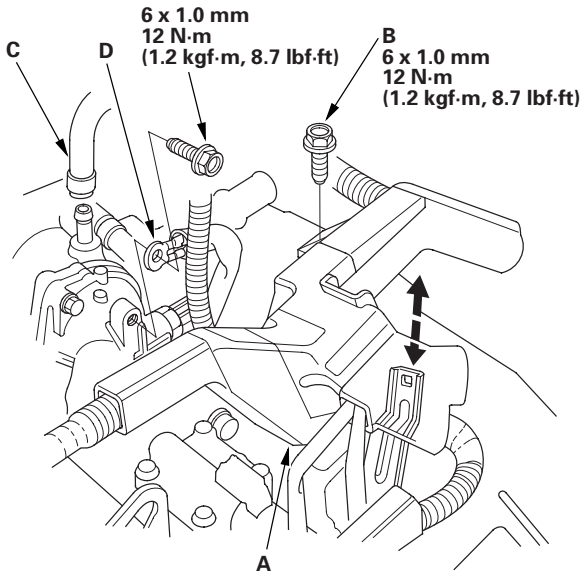
13. Install the connecting pipe (A) and water passage (B), using the new O-rings (C) and new gaskets (D).



14. Install the heater hoses.

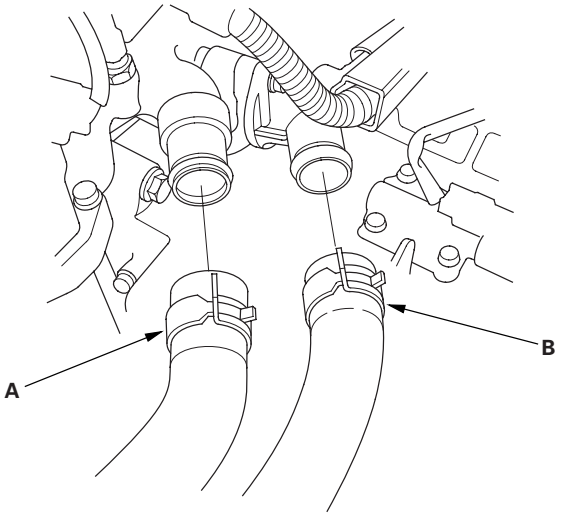


15. Install harness holder (A) to the bracket, then tighten the mounting bolt (B).



16. Install the water bypass hose (C) and ground cable (D).

17. Install the upper radiator hose (A) and lower radiator hose (B).



18. Install the intake manifold (see page 9-5).

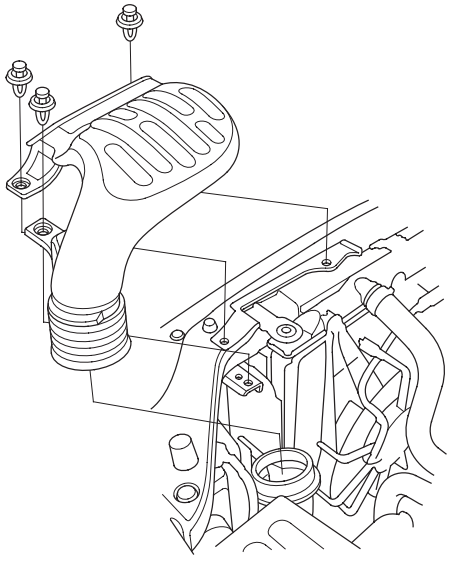
19. After installation, check that all tubes, hoses and connectors are installed correctly.

20. Refill the radiator with engine coolant, then bleed air from the cooling system (see step 9 on page 10-7).

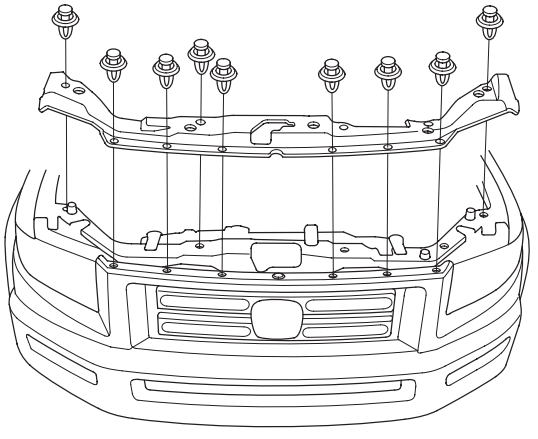
21. Clean up any spilled engine coolant.

Radiator and Fan Replacement

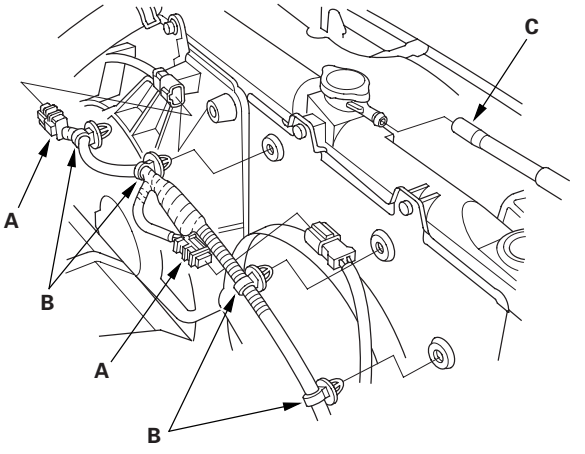
1. Drain the engine coolant (see page 10-6).
2. Remove the front air intake duct.



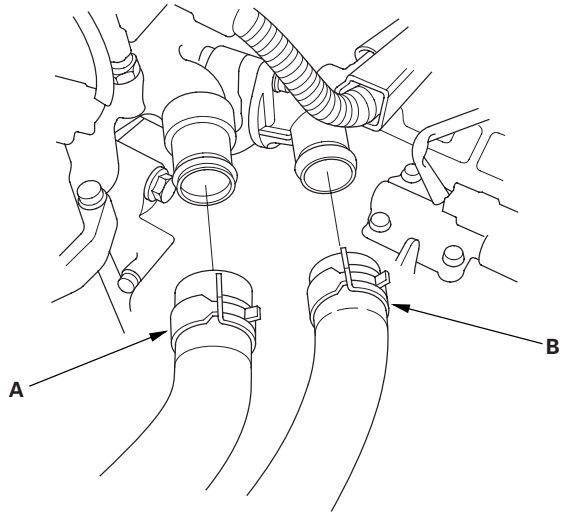
3. Remove the bulkhead cover.



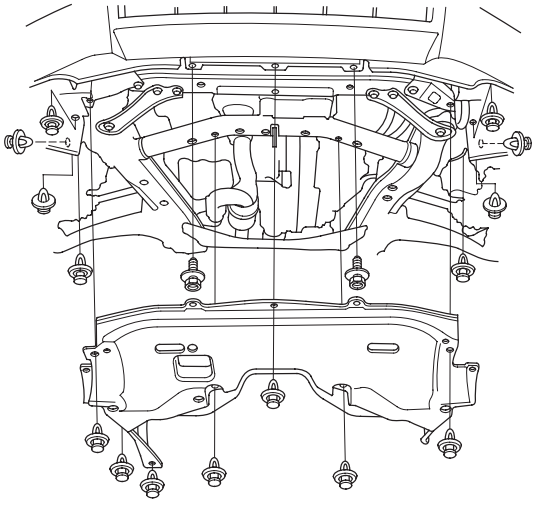
4. Disconnect the fan motor connectors (A), then remove the harness clamps (B) and reservoir tank hose (C).



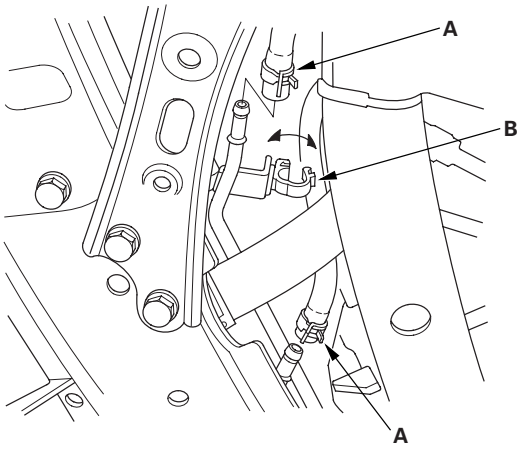
5. Remove the upper radiator hose (A) and lower radiator hose (B).



6. Remove the splash shield.

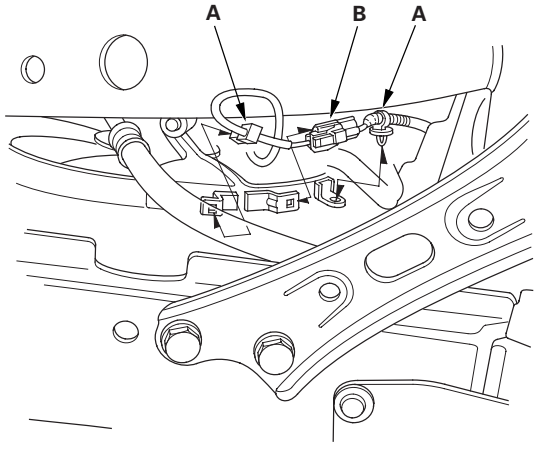


7. Remove the automatic transmission fluid (ATF) cooler hoses (A) from the radiator, then plug the line and hose.



8. Unclamp the ATF cooler hoses clamp (B) on the ATF cooler line.

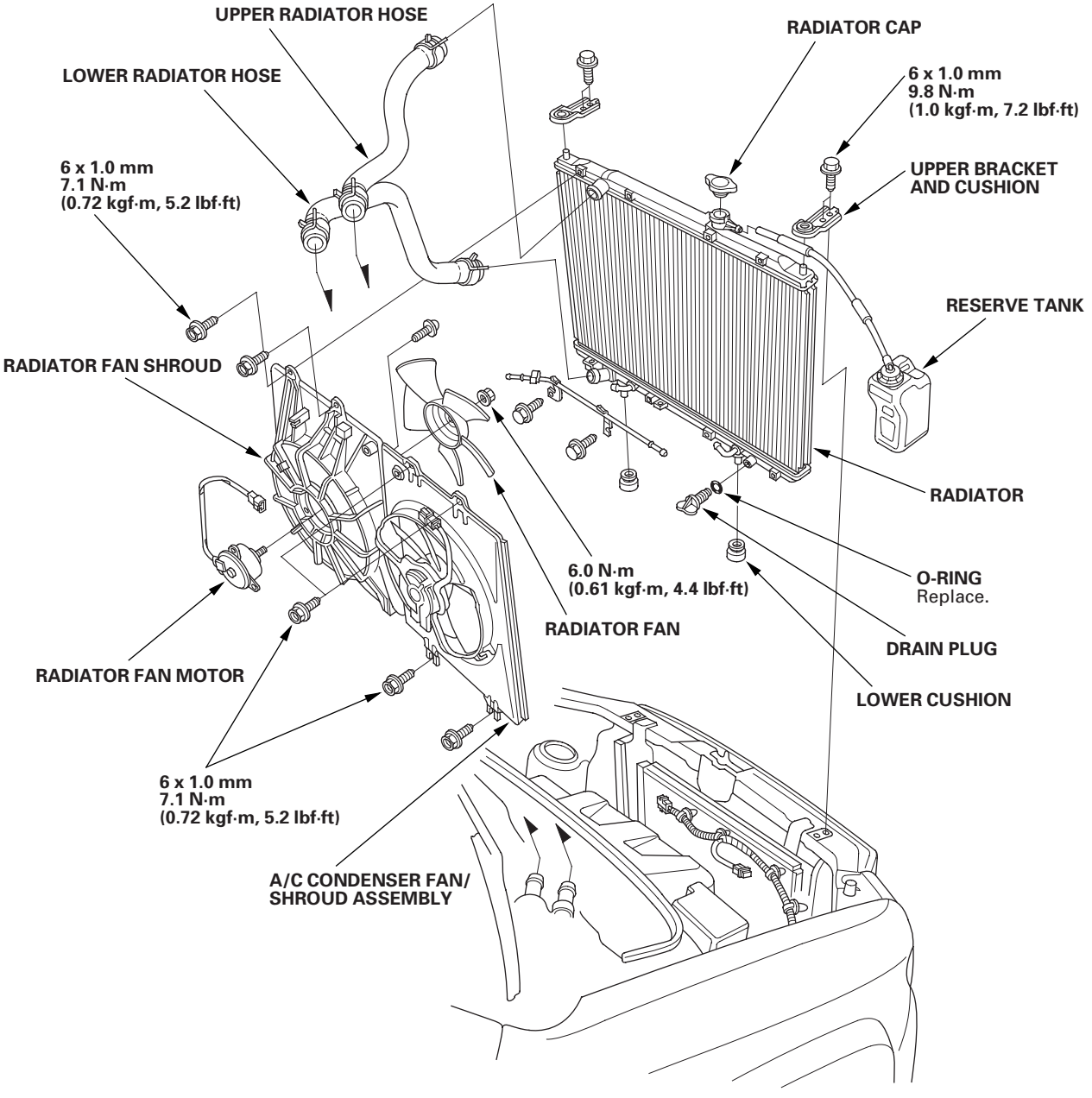
9. Remove the harness clamps (A) and A/C compressor clutch connector (B) from the A/C condenser fan shroud.



(cont'd)

Radiator and Fan Replacement (cont'd)

10. Remove the upper bracket cushions, then pull up the radiator.

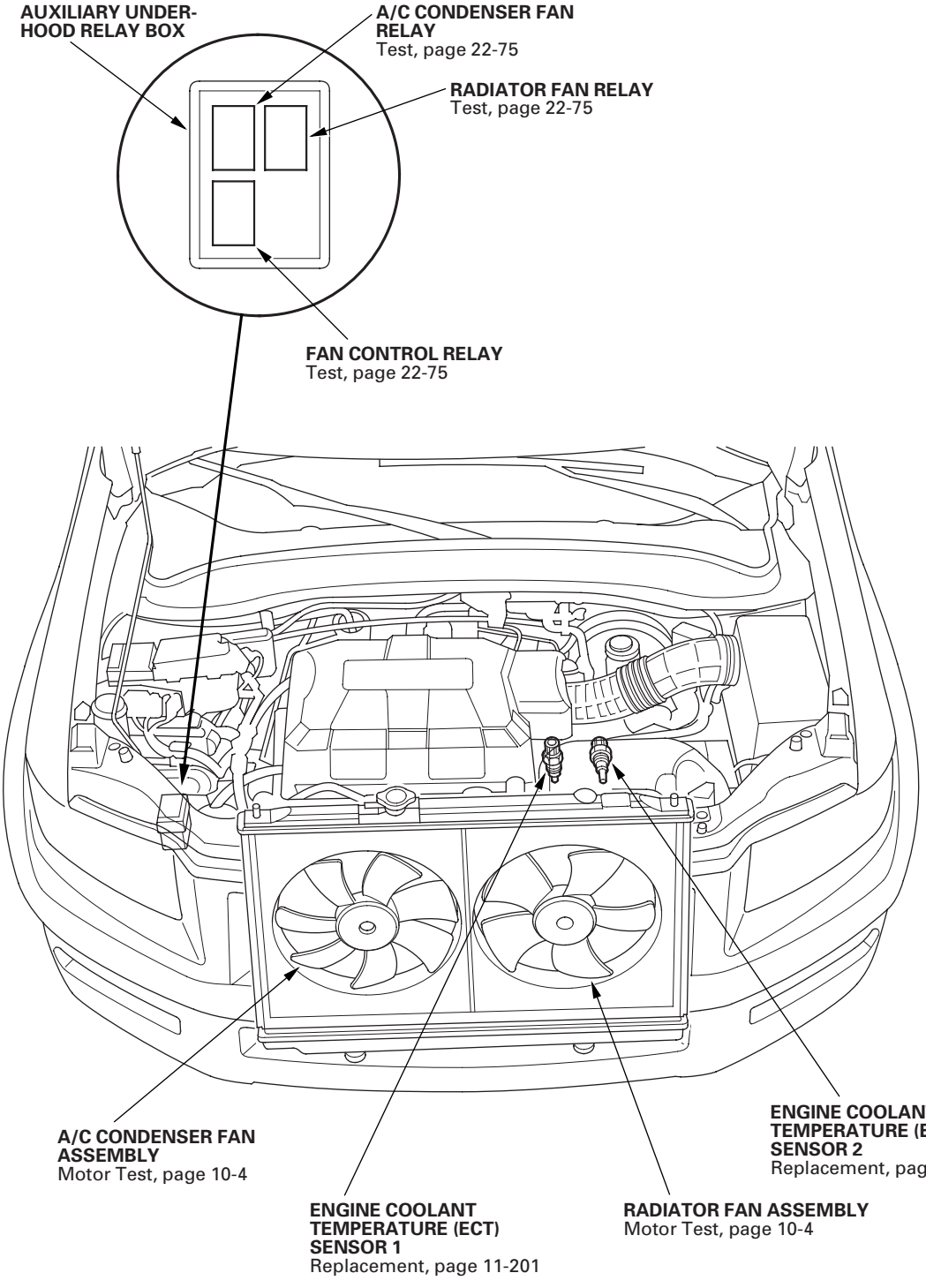


11. Remove the fan shroud assemblies and other parts from the radiator.

12. Install the radiator in the reverse order of removal. Make sure the upper and lower cushions are set securely.

13. Fill the radiator with engine coolant, then bleed air from the cooling system (see step 9 on page 10-7).

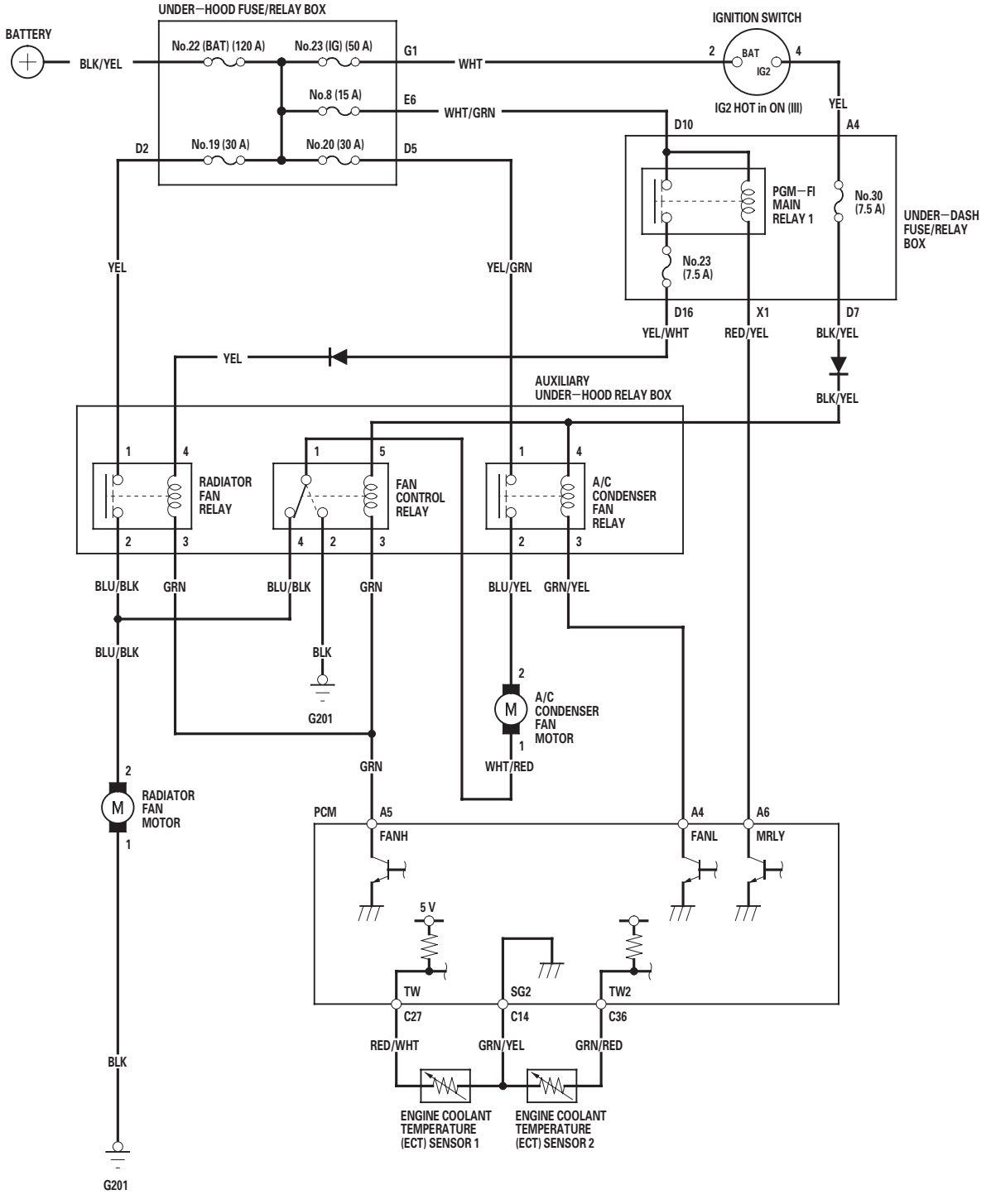
Component Location Index



Symptom Troubleshooting Index

Symptom	Diagnostic Procedure	Also check for
Engine overheats	1. Check the coolant level. 2. Check for any engine coolant leaks (from gaskets, hoses, O-rings, etc.). 3. Check for dirt, leaves, or insects on radiator and A/C condenser. 4. Check for deteriorated coolant. 5. Check for damaged or deformed fan shroud. 6. Inspect the fan motors (see page 10-4) or fan relays (see page 22-75). 7. Check the radiator cap (see page 10-3). 8. Check the thermostat (see page 10-4). 9. Inspect the water pump (see page 10-5). 10. Check for a plugged or deteriorated radiator hoses. 11. Check for plugged heater core or hoses. 12. Check for a damaged cylinder head gasket.	
The radiator fan runs at low speed, but it does not run at high speed when the engine coolant temperature is above 206 ℉ (97 ℃)	Radiator fan high speed circuit troubleshooting (see page 10-18).	Cleanliness and tightness of all connectors
With the A/C off and the engine coolant temperature at 206 ℉ (97 ℃) or below, the A/C condenser fan runs at high speed and the radiator fan does not run. When the engine coolant temperature is above 206 ℉ (97 ℃), both fans run at high speed	Remove the fan control relay, and test. • If the relay is faulty, replace it. • If the relay is OK, check for a short in the wire between fan control relay 5P socket terminal No. 1 and condenser fan motor 2P connector terminal No. 1.	Cleanliness and tightness of all connectors
The radiator fan runs at high speed with the ignition switch ON (II), the A/C off, and the engine coolant temperature below 204 ℉ (95 ℃)	Check for a short in the wire between radiator fan relay 4P socket terminal No. 3 and PCM connector terminal A5.	Cleanliness and tightness of all connectors
Both the radiator fan and the A/C condenser fan run at low speed with the ignition switch ON (II) and the A/C off	Check for a short in the wire between A/C condenser fan relay 4P socket terminal No. 3 and PCM connector terminal A4.	Cleanliness and tightness of all connectors
Both the radiator fan and the A/C condenser fan do not run at low speed with the A/C on	Radiator and A/C condenser fans low speed circuit troubleshooting (see page 21-40).	Cleanliness and tightness of all connectors
The A/C condenser fan does not run at all. The radiator fan does not run at low speed, but it runs at high speed	A/C condenser fans high speed circuit troubleshooting (see page 21-44).	Cleanliness and tightness of all connectors
Both the radiator fan and the A/C condenser fan do not run at high speed when the engine coolant temperature is above 206 ℉ (97 ℃)	Check for an open in the wire between radiator fan relay 4P socket terminal No. 3 and PCM connector terminal A5.	Cleanliness and tightness of all connectors

Circuit Diagram



Radiator Fan High Speed Circuit Troubleshooting

1. Check the No. 19 (30 A) fuse in the under-hood fuse/relay box, and the No. 23 (7.5 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Go to step 2.

   NO—Replace the fuse(s) and recheck. ■

2. Remove the radiator fan relay from the auxiliary under-hood relay box and test it (see page 22-75).

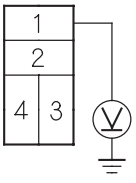
   Is the relay OK?

   YES—Go to step 3.

   NO—Replace the radiator fan relay. ■

3. Measure the voltage between the radiator fan relay 4P socket terminal No. 1 and the body ground.

   RADIATOR FAN RELAY 4P SOCKET



   Terminal side of female terminals

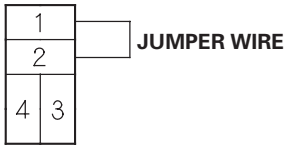
   Is there battery voltage?

   YES—Go to step 4.

   NO—Repair open in the wire between radiator fan relay 4P socket terminal No. 1 and the under-hood fuse/relay box. ■

4. Connect radiator fan relay 4P socket terminals No. 1 and No. 2 with a jumper wire.

   RADIATOR FAN RELAY 4P SOCKET



   Terminal side of female terminals

   Does the radiator fan run at high speed?

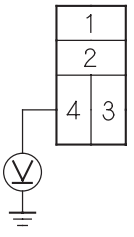
   YES—Go to step 5.

   NO—Repair open in the wire between the radiator fan relay 4P socket terminal No. 2 and radiator fan motor 2P connector terminal No. 2. ■

5. Turn the ignition switch ON (II).

6. Measure voltage between radiator fan relay 4P socket terminal No. 4 and the body ground.

   RADIATOR FAN RELAY 4P SOCKET



   Terminal side of female terminals

   Is there battery voltage?

   YES—Repair open in the wire between the radiator fan relay 4P socket terminal No. 3 and the powertrain control module (PCM) (A5). ■

   NO—Repair open in the wire between the radiator fan relay 4P socket terminal No. 4 and the under-dash fuse/relay box. ■

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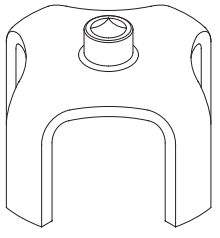
Special Tools

Ref. No.	Tool Number	Description	Qty
①	07AAA-S0XA100	Fuel Sender Wrench	1
②	07AAJ-S6MA150	Fuel Pressure Gauge Attachment Set	1
③	07JAZ-001000B	Vacuum/Pressure Gauge, 0—4 in.Hg	1
④	07NAJ-P07010A	Pressure Gauge Adapter	1
⑤	07ZAJ-S5A0200	Oil Pressure Hose	1
⑥-1	07406-0020201	A/T Pressure Hose	1
⑥-2	07406-0070301	A/T Low Pressure Gauge W/Panel	1
⑥-3	07MAJ-PY4011A	A/T Pressure Hose, 2,210 mm	1
⑥-4	07MAJ-PY40120	A/T Pressure Hose, Adapter	1
⑦	07406-004000B	Fuel Pressure Gauge	1



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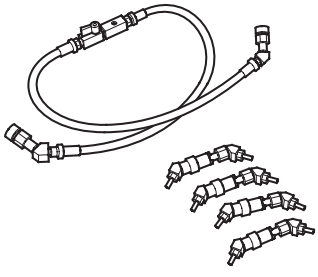

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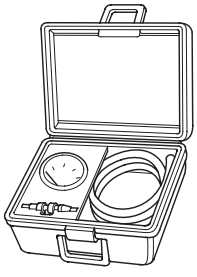

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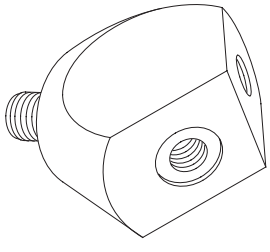

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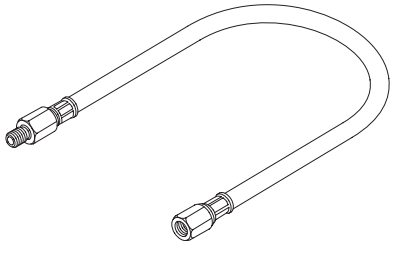

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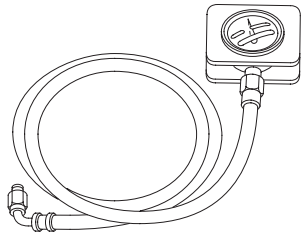

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⑦

General Troubleshooting Information

Intermittent Failures

The term ''intermittent failure'' means a system may have had a failure, but it checks OK now. If the malfunction indicator lamp (MIL) on the dash does not come on, check for poor connections or loose pins at all connectors related to the circuit that you are troubleshooting. If the MIL was on but then went out, the original problem may have been intermittent.

Service Information

Some DTCs or symptoms can be caused by a combination of PCM software and specific driving habits. Periodically, new PCM software or new service procedures may become available. Always check online for the latest software or service information related to the DTCs or symptoms you are troubleshooting.

Opens and Shorts

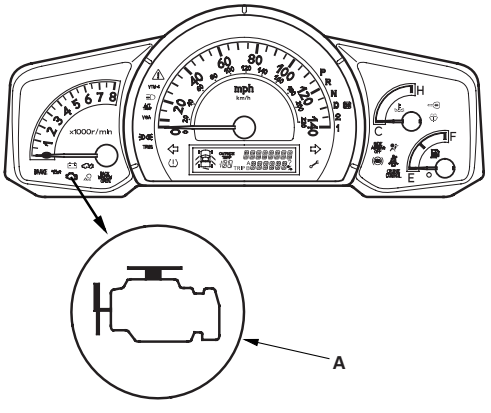
''Open'' and ''short'' are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something won't work at all. With complex electronics (such as PCMs) this can sometimes mean something works, but not the way it's supposed to.

How to Use the HDS (Honda Diagnostic System)

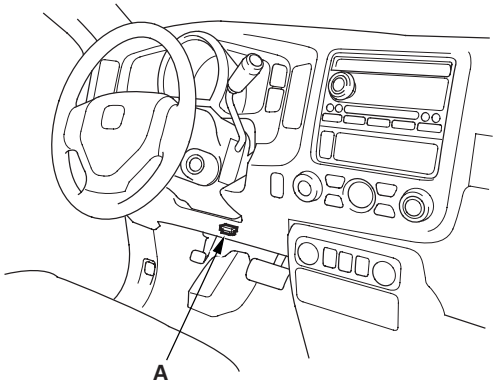
If the MIL (malfunction indicator lamp) has come on

1. Start the engine, and check the MIL (A).

   NOTE: If the ignition switch is turned ON (II), and the engine is not started, the MIL stays on for 15—20 seconds (see page 11-54).



2. If the MIL stays on, connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Turn the ignition switch ON (II).

4. Make sure the HDS communicates with the PCM. If it doesn't, go to DLC Circuit Troubleshooting (see page 11-194).

5. Check the diagnostic trouble code (DTC) and note it. Also check the freeze data and/or on-board snapshot data, and download any data found. Then refer to the indicated DTC's troubleshooting, and begin the appropriate troubleshooting procedure.

   NOTE:
   - Freeze data indicates the engine conditions when the first malfunction, misfire, or fuel trim malfunction was detected.
   - The HDS can read the DTCs, freeze data, on-board snapshot, current data, and other powertrain control module (PCM) data.
   - For specific operations, refer to the user's manual that came with the HDS.

6. If no DTCs are found, go to MIL troubleshooting (see page 11-184).

If the MIL did not stay on
If the MIL did not stay on but there is a driveability problem, do the symptom troubleshooting.

If you can't duplicate the DTC
Some of the troubleshooting requires you to reset the PCM and try to duplicate the DTC. If the problem is intermittent and you can't duplicate the code, do not continue through the procedure. To do so will only result in confusion and possibly, a needlessly replaced PCM.

(cont'd)

General Troubleshooting Information (cont'd)

HDS Clear Command

The PCM stores various specific data to correct the system even if there is no electrical power such as when the battery negative terminal or No. 8 FI ECU (15 A) fuse are disconnected. Stored data based on failed parts should be cleared by using the ''CLEAR COMMAND'' of the HDS, if parts are replaced.

The HDS has three kinds of clear commands to meet this purpose. They are DTC clear, PCM reset, and crank (CKP) pattern clear. DTC clear command erases all stored DTC codes, freeze data, on-board snapshot, and readiness codes. This must be done with the HDS after reproducing the DTC during troubleshooting.
The PCM reset command erases all stored DTC codes, freeze data, on-board snapshot, readiness codes, and all specific data to correct the system except crank (CKP) pattern. If the crank (CKP) pattern data in the PCM was cleared, you must do the crank (CKP) pattern learn procedure. The crank (CKP) pattern clear command erases only crank (CKP) pattern data. This command is for repair of a misfire or the CKP sensor.

Scan Tool Clear Command

If you are using a generic scan tool to clear commands, be aware that there is only one setting for clearing the PCM, and it clears all commands at the same time (crank (CKP) pattern learn, idle learn, readiness codes, freeze data, on-board snapshot, and DTCs). After you clear all commands, you then need to do these procedures, in this order: PCM idle learn procedure (see page 11-273); crank (CKP) pattern learn procedure; test-drive to set readiness codes to complete (see page 11-54).

DTC Clear

1. Clear the DTC with the HDS while the engine is stopped.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II), and wait 30 seconds.
4. Turn the ignition switch OFF, and disconnect the HDS from the DLC.

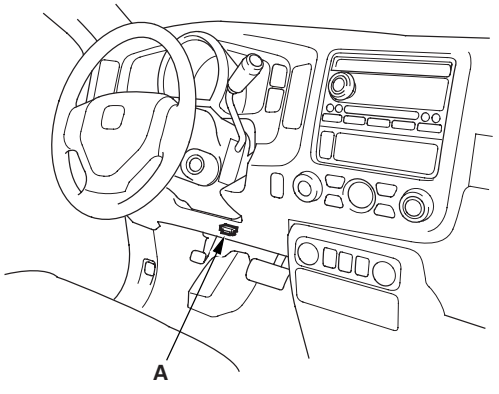
PCM Reset

1. Reset the PCM with the HDS while the engine is stopped.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II), and wait 30 seconds.
4. Turn the ignition switch OFF, and disconnect the HDS from the DLC.
5. Do the PCM idle learn procedure (see page 11-273).

Crank (CKP) Pattern Clear/Crank (CKP) Pattern Learn

Clear/Learn Procedure (with the HDS)

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-194).
4. Select CRANK PATTERN in the ADJUSTMENT MENU with the HDS.
5. Select CRANK PATTERN LEARNING with the HDS, and follow the screen prompts.

Learn Procedure (without the HDS)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Test-drive the vehicle on a level road: Decelerate (with the throttle fully closed) from an engine speed of 2,500 rpm down to 1,000 rpm with the transmission in 2 position.
3. Test-drive the vehicle on a level road: Decelerate (with the throttle fully closed) from an engine speed of 5,000 rpm down to 3,000 rpm with the transmission in 2 position.
4. Repeat steps 2 and 3 several times.
5. Turn the ignition switch OFF.
6. Turn the ignition switch ON (II), and wait 30 seconds.

How to End a Troubleshooting Session (required after any troubleshooting)

1. Reset the PCM with the HDS.
2. Do the PCM idle learn procedure (see page 11-273).
3. Turn the ignition switch OFF.
4. Disconnect the HDS from the DLC.

NOTE: The PCM is part of the immobilizer system. If you replace the PCM, it will have a different immobilizer code. In order for the engine to start, you must rewrite the immobilizer code with the HDS.

(cont'd)

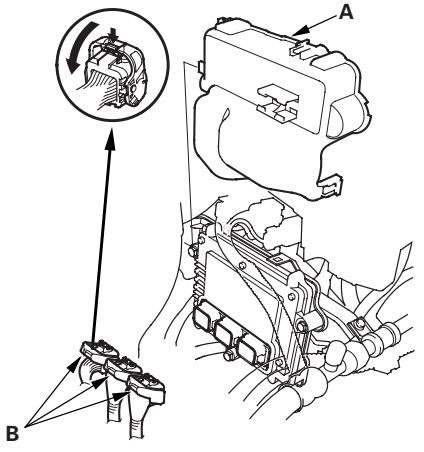
General Troubleshooting Information (cont'd)

How to Troubleshoot Circuits at the PCM Connectors

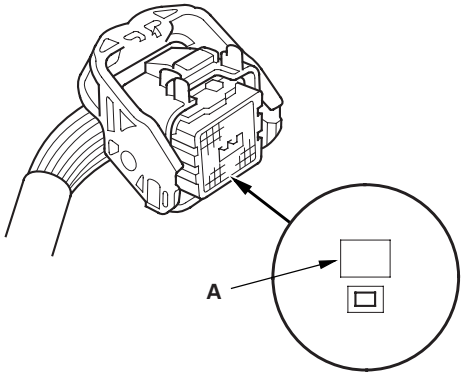
NOTE:
- The PCM overwrites data and monitors the EVAP system for up to 15 minutes after the ignition switch is turned OFF. Jumping the SCS line after turning the ignition switch OFF cancels this function. Disconnecting the PCM during this function, without jumping the SCS line first, can damage the PCM.
- PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embosed on them for identification.

1. Jump the SCS line with the HDS.

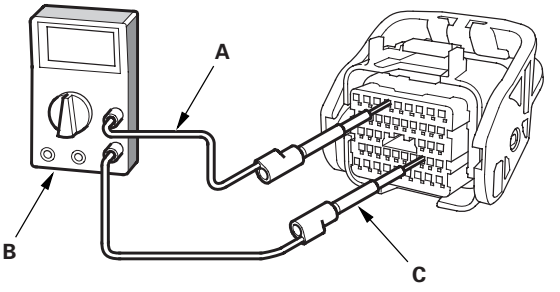
2. Remove the cover (A). Disconnect the PCM connectors (B), and probe the terminals from the terminal side of the connectors.



3. When diagnosis/troubleshooting is done at the PCM connector, use the terminal test port (A) above the terminal you need to check.



4. Connect one side of the patch cord (A) terminals to a commercially available digital multimeter (B), and connect the other side of the patch cord terminals to a commercially available banana jack (Pomona Electronics Tool No. 3563 or equivalent) (C).



5. Gently contact the pin probe (male) at the terminal test port from the terminal side. Do not force the tips into the terminals.

NOTICE
- For accurate results, always use the pin probe (male).
- To prevent damage to the connector terminals, do not insert test equipment probes, paper clips, or other substitutes as they can damage the terminals. Damaged terminals cause a poor connection and an incorrect measurement.
- Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.

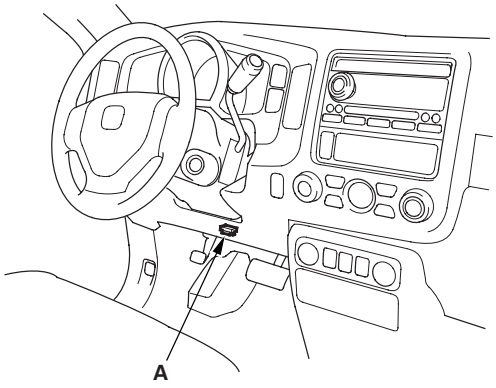
Updating the PCM

Special Tools Required
- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with HDS and CM update software
- HDS pocket tester
- GNA-600 and an iN workstation with HDS and CM update software

NOTE:
- Use this procedure when you have to update the PCM during troubleshooting procedures.
- Make sure the HDS/HIM has the latest software version downloaded from the iN (interactive network).
- Before you update the PCM, make sure the battery in the vehicle is fully charged, and connect a jumper battery (not a battery charger).
- Never turn the ignition switch OFF during the update. If there is a problem with the update, leave the ignition switch ON.
- To prevent PCM damage, do not operate anything electrical (headlights, audio system, brakes, A/C, power windows, door locks, etc.) during the update.
- To ensure the latest program is installed, do a PCM update whenever the PCM is substituted or replaced.
- You cannot update a PCM with a program it already has. It will only accept a new program.
- If you need to diagnose the Honda interface module (HIM) because the HIM's red (#3) light came on or was flashed during the update, leave the ignition switch in the ON (II) position when you disconnect the HIM from the data link connector (DLC). This will prevent PCM damage.

1. Turn the ignition switch ON (II), but do not start the engine.

2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Make sure the HDS communicates with the PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-194). If you are returning from the DLC circuit troubleshooting, skip steps 4 and 5 and clean the throttle body after updating the PCM.

4. Select the INSPECTION MENU with the HDS.

5. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts with the HDS.

   NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.

6. Exit the HDS diagnostic system, then select the update mode, and follow the screen prompts to update the PCM.

(cont'd)

General Troubleshooting Information (cont'd)

7. If the software in the PCM is the latest, disconnect the HDS/HIM from the DLC, and go back to the procedure that you were doing. If the software in the PCM is not the latest, follow the instructions on the screen. If prompted to choose the PGM-FI system or the A/T system, make sure you update both.

   NOTE: If the PCM update system requires you to cool the PCM, follow the screen prompts. If you run into a problem (programming takes over 15 minutes, status bar goes over 100 %, D or immobilizer light flashes, HDS tablet freezes, etc.) during the update procedure, follow these steps to minimize the chance of damaging the PCM:
   - Leave the ignition switch in the ''ON (II)'' position.
   - Connect a jumper battery (do not connect a battery charger).
   - Shut down the HDS.
   - Disconnect the HDS from the DLC.
   - Reboot the HDS.
   - Reconnect the HDS to the DLC, and try the update procedure again.

8. If the TP POSITION CHECK failed in step 6, clean the throttle body (see page 11-314).

9. Do the PCM idle learn procedure (see page 11-273).

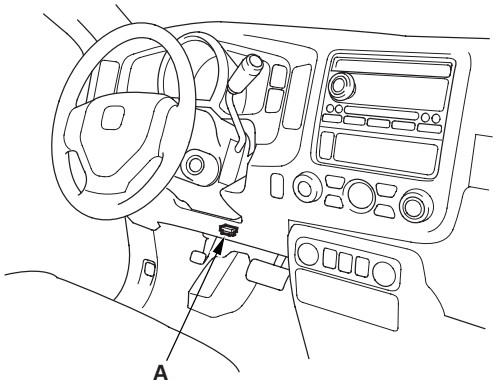
10. Do the crank (CKP) pattern learn procedure.

Substituting the PCM

Special Tools Required
- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with HDS and CM update software
- HDS pocket tester
- GNA-600 and an iN workstation with HDS and CM update software

NOTE: Use this procedure when you have to substitute a known-good PCM during troubleshooting procedures.

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch ON (II).

3. Make sure the HDS communicates with the PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see page 11-194). If you are returning from DLC circuit troubleshooting, skip step 4 to 8, then clean the throttle body after substituting the PCM (see page 11-314).

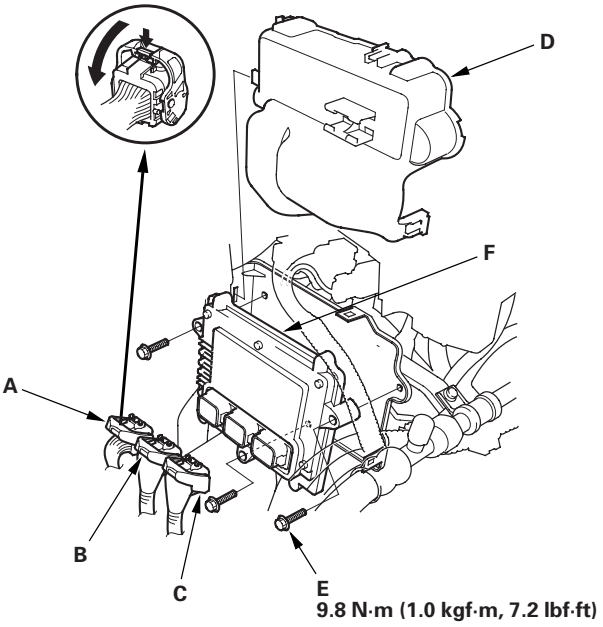
4. Select the INSPECTION MENU with the HDS.

5. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts.

   NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.

6. Jump the SCS line with the HDS.

7. Remove the cover (D).



8. Disconnect PCM connectors A, B, and C.

   NOTE: PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embosed on them for identification.

9. Remove the bolts (E), then remove the PCM (F).

10. Install the parts in the reverse order of removal.

11. Open the SCS with the HDS.

12. Turn the ignition switch ON (II).

    NOTE: DTC P0630 ''VIN Not Programmed or Mismatch'' may be stored because the VIN has not been programmed into the PCM; ignore it, and continue this procedure.

13. Manually input the VIN to the PCM with the HDS.

14. Update the PCM if it does not have the latest software.

15. Select the IMMOBI SYSTEM with the HDS.

16. Enter the immobilizer code with the PCM replacement procedure in the HDS; it allows you to start the engine.

17. Reset the PCM with the HDS.

18. If the TP POSITION CHECK failed in step 6, clean the throttle body (see page 11-314).

19. Do the PCM idle learn procedure (see page 11-273).

20. Do the crank (CKP) pattern learn procedure.

OBD Status

The OBD status shows the current system status of each DTC and all of the parameters. This function is used to see if the repair was successfully completed. The results of diagnostic tests for the DTC are displayed as:

- PASSED: The on board diagnosis is successfully finished.
- FAILED: The on board diagnosis has finished but failed.
- EXECUTING: The vehicle is in enable criteria conditions for the DTC and the on board diagnosis is running.
- NOT COMPLETED: The on board diagnosis was running but is out of the enable conditions of the DTC.
- OUT OF CONDITION: The vehicle has stayed out of the enable conditions for the DTC.

DTC Troubleshooting Index

DTC (MIL indication *1)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0107 (3)	———	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	ON	(see page 11-59)
P0108 (3)	———	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	ON	(see page 11-61)
P0111 (10)	○	Intake Air Temperature (IAT) Sensor Circuit Range/Performance Problem	ON	(see page 11-64)
P0112 (10)	———	Intake Air Temperature (IAT) Sensor Circuit Low Voltage	ON	(see page 11-65)
P0113 (10)	———	Intake Air Temperature (IAT) Sensor Circuit High Voltage	ON	(see page 11-67)
P0116 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Circuit Range/Performance Problem	ON	(see page 11-70)
P0117 (6)	———	Engine Coolant Temperature (ECT) Sensor 1 Circuit Low Voltage	ON	(see page 11-71)
P0118 (6)	———	Engine Coolant Temperature (ECT) Sensor 1 Circuit High Voltage	ON	(see page 11-73)
P0122 (7)	———	Throttle Position (TP) Sensor A Circuit Low Voltage	ON	(see page 11-208)
P0123 (7)	———	Throttle Position (TP) Sensor A Circuit High Voltage	ON	(see page 11-210)
P0125 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Malfunction/Slow Response	ON	(see page 11-76)
P0128 (87)	○	Cooling System Malfunction	ON	(see page 11-77)
P0133 (157)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Circuit Slow Response	ON	(see page 11-79)
P0134 (151)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Heater System Malfunction	ON	(see page 11-80)
P0135 (151)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Heater Circuit Malfunction	ON	(see page 11-81)
P0137 (161)	———	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Circuit Low Voltage	ON	(see page 11-86)
P0138 (161)	———	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Circuit High Voltage	ON	(see page 11-88)
P0139 (161)	○	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Circuit Slow Response	ON	(see page 11-91)
P0141 (163)	———	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Heater Circuit Malfunction	ON	(see page 11-92)
P0153 (158)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Circuit Slow Response	ON	(see page 11-79)
P0154 (152)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Heater System Malfunction	ON	(see page 11-80)
P0155 (152)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Heater Circuit Malfunction	ON	(see page 11-81)
P0157 (162)	○	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Circuit Low Voltage	ON	(see page 11-86)
P0158 (162)	○	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Circuit High Voltage	ON	(see page 11-88)
P0159 (162)	○	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Circuit Slow Response	ON	(see page 11-91)
P0161 (164)	———	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Heater Circuit Malfunction	ON	(see page 11-92)
P0171 (153)	○	Rear Bank (Bank 1) Fuel System Too Lean	ON	(see page 11-96)
P0172 (153)	○	Rear Bank (Bank 1) Fuel System Too Rich	ON	(see page 11-96)
P0174 (154)	○	Front Bank (Bank 2) Fuel System Too Lean	ON	(see page 11-96)
P0175 (154)	○	Front Bank (Bank 2) Fuel System Too Rich	ON	(see page 11-96)
P0222 (7)	———	Throttle Position (TP) Sensor B Circuit Low Voltage	ON	(see page 11-213)
P0223 (7)	———	Throttle Position (TP) Sensor B Circuit High Voltage	ON	(see page 11-215)
P0300 (77) and some of P0301 (71) P0302 (72) P0303 (73) P0304 (74) P0305 (75) P0306 (76)	○	Random Misfire Detected	ON	(see page 11-98)
P0301 (71)	○	No. 1 Cylinder Misfire Detected	ON	(see page 11-101)
P0302 (72)	○	No. 2 Cylinder Misfire Detected	ON	(see page 11-101)
P0303 (73)	○	No. 3 Cylinder Misfire Detected	ON	(see page 11-101)
P0304 (74)	○	No. 4 Cylinder Misfire Detected	ON	(see page 11-101)
P0305 (75)	○	No. 5 Cylinder Misfire Detected	ON	(see page 11-101)
P0306 (76)	○	No. 6 Cylinder Misfire Detected	ON	(see page 11-101)
P0325 (23)	———	Knock Sensor Circuit Malfunction	ON	(see page 11-110)

NOTE: The above DTCs are indicated when the PGM-FI system is selected in the HDS.
Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

DTC (MIL indication *1)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0335 (4)	———	Crankshaft Position (CKP) Sensor A No Signal	ON	(see page 11-113)
P0339 (4)	———	Crankshaft Position (CKP) Sensor A Intermittent Interruption	ON	(see page 11-116)
P0340 (9)	———	Camshaft Position (CMP) Sensor No Signal	ON	(see page 11-117)
P0344 (9)	———	Camshaft Position (CMP) Sensor Intermittent Interruption	ON	(see page 11-120)
P0385 (54)	———	Crankshaft Position (CKP) Sensor B No Signal	ON	(see page 11-113)
P0389 (54)	———	Crankshaft Position (CKP) Sensor B Intermittent Interruption	ON	(see page 11-116)
P0401 (80)	○	Exhaust Gas Recirculation (EGR) Insufficient Flow	ON	(see page 11-328)
P0404 (12)	○	Exhaust Gas Recirculation (EGR) Control Circuit Range/Performance Problem	ON	(see page 11-330)
P0406 (12)	———	Exhaust Gas Recirculation (EGR) Valve Position Sensor Circuit High Voltage	ON	(see page 11-333)
P0420 (165)	○	Rear Bank Catalyst System Efficiency Below Threshold (Bank 1)	ON	(see page 11-323)
P0430 (166)	○	Front Bank Catalyst System Efficiency Below Threshold (Bank 2)	ON	(see page 11-323)
P0443 (92)	———	Evaporative Emission (EVAP) Canister Purge Valve Circuit Malfunction	ON	(see page 11-347)
P0451 (91)	○	Fuel Tank Pressure (FTP) Sensor Circuit Range/Performance Problem	ON	(see page 11-351)
P0452 (91)	———	Fuel Tank Pressure (FTP) Sensor Circuit Low Voltage	ON	(see page 11-352)
P0453 (91)	———	Fuel Tank Pressure (FTP) Sensor Circuit High Voltage	ON	(see page 11-355)
P0455 (90)	○	Evaporative Emission (EVAP) System Very Large Leak Detected	ON	(see page 11-358)
P0456 (90)	○	Evaporative Emission (EVAP) System Very Small Leak Detected	ON	(see page 11-358)
P0457 (90)	○	Evaporative Emission (EVAP) System Leak Detected/Fuel Fill Cap Loose or Missing	ON	(see page 11-361)
P0461 (121)	———	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Range/Performance Problem	OFF	(see page 11-276)
P0462 (121)	———	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Low Voltage	OFF	(see page 11-277)
P0463 (121)	———	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit High Voltage	OFF	(see page 11-279)
P0496 (92)	○	Evaporative Emission (EVAP) System High Purge Flow	ON	(see page 11-363)
P0497 (90)	○	Evaporative Emission (EVAP) System Low Purge Flow	ON	(see page 11-364)
P0498 (117)	———	Evaporative Emission (EVAP) Canister Vent Shut Valve Control Circuit Low Voltage	ON	(see page 11-367)
P0499 (117)	———	Evaporative Emission (EVAP) Canister Vent Shut Valve Control Circuit High Voltage	ON	(see page 11-370)
P0506 (14)	○	Idle Control System RPM Lower than Expected	ON	(see page 11-263)
P0507 (14)	○	Idle Control System RPM Higher than Expected	ON	(see page 11-265)
P0562 (34)	———	Charging System Low Voltage	OFF	(see page 11-121)
P0563 (34)	———	Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	OFF	(see page 11-122)
P0602 (196)	———	Powertrain Control Module (PCM) Programming Error	OFF	(see page 11-125)
P0603 (131)	———	Powertrain Control Module (PCM) Internal Circuit Malfunction (Keep Alive Memory (KAM) Error)	ON	(see page 11-125)
P0607 (131)	———	Lost Communication with Electronic Throttle Control System (ETCS)	ON	(see page 11-217)
P061F (132)	———	Electronic Throttle Control System (ETCS) Malfunction	ON	(see page 11-218)
P0630 (139)	———	VIN Not Programmed or Mismatch	ON	(see page 11-126)
P0641 (133)	———	Sensor Reference Voltage A Malfunction	ON	(see page 11-127)
P0685 (135)	○	Powertrain Control Module (PCM) Power Control Circuit/Internal Circuit Malfunction	ON	(see page 11-130)
P0700 (70) *2	———	Automatic Transmission (A/T) Control System Malfunction	ON	(see page 11-131)
P0700 (70)	———	Automatic Transmission (A/T) Control System Malfunction	OFF	(see page 11-131)

NOTE: The above DTCs are indicated when the PGM-FI system is selected in the HDS.
Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.
* 2: The D indicator and the MIL may come on at the same time.

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC (MIL indication *1)	Two Drive Cycle Detection	Detection Item	MIL	Note
P1077 (106)	○	Intake Manifold Tuning (IMT) Valve Stuck in High RPM Position	ON	(see page 11-305)
P1078 (106)	○	Intake Manifold Tuning (IMT) Valve Stuck in Low RPM Position	ON	(see page 11-309)
P1109 (13)	———	Barometric Pressure (BARO) Sensor Circuit Out of Range High	ON	(see page 11-131)
P1116 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Performance Problem	ON	(see page 11-132)
P1128 (5)	○	Manifold Absolute Pressure (MAP) Sensor Signal Lower Than Expected	ON	(see page 11-134)
P1129 (5)	○	Manifold Absolute Pressure (MAP) Sensor Signal Higher Than Expected	ON	(see page 11-135)
P1172 (157)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Circuit Out of Range High	ON	(see page 11-137)
P1174 (158)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Circuit Out of Range High	ON	(see page 11-137)
P1297 (20)	———	Electrical Load Detector (ELD) Circuit Low Voltage	OFF	(see page 11-138)
P1298 (20)	———	Electrical Load Detector (ELD) Circuit High Voltage	OFF	(see page 11-140)
P1454 (91)	○	Fuel Tank Pressure (FTP) Sensor Circuit Range/Performance Problem	ON	(see page 11-371)
P1549 (34)	———	Charging System High Voltage	OFF	(see page 11-142)
P1658 (40)	———	Electronic Throttle Control System (ETCS) Control Relay ON Malfunction	ON	(see page 11-219)
P1659 (40)	———	Electronic Throttle Control System (ETCS) Control Relay OFF Malfunction	ON	(see page 11-221)
P1683 (40)	———	Throttle Valve Default Position Spring Performance Problem	ON	(see page 11-226)
P1684 (40)	———	Throttle Valve Return Spring Performance Problem	ON	(see page 11-227)
P16BB (116)	———	Alternator B Terminal Circuit Low Voltage	OFF	(see page 11-143)
P16BC (116)	———	Alternator FR Terminal Circuit/IGP Circuit Low Voltage	OFF	(see page 11-144)
P2101 (40)	———	Electronic Throttle Control System (ETCS) Malfunction	ON	(see page 11-228)
P2118 (40)	———	Throttle Actuator Current Range/Performance Problem	ON	(see page 11-230)
P2122 (37)	———	Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit Low Voltage	ON	(see page 11-232)
P2123 (37)	———	Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit High Voltage	ON	(see page 11-235)
P2127 (37)	———	Accelerator Pedal Position (APP) Sensor B (Throttle Position Sensor E) Circuit Low Voltage	ON	(see page 11-237)
P2128 (37)	———	Accelerator Pedal Position (APP) Sensor B (Throttle Position Sensor E) Circuit High Voltage	ON	(see page 11-240)
P2135 (7)	———	Throttle Position (TP) Sensor A/B Voltage Incorrect Correlation	ON	(see page 11-242)
P2138 (37)	———	Accelerator Pedal Position (APP) Sensor A/B (Throttle Position Sensor D/E) Incorrect Voltage Correlation	ON	(see page 11-244)
P2176 (40)	———	Throttle Actuator Control System Idle Position Not Learned	ON	(see page 11-246)
P2183 (192)	○	Engine Coolant Temperature (ECT) Sensor 2 Circuit Range/Performance Problem	ON	(see page 11-147)
P2184 (192)	———	Engine Coolant Temperature (ECT) Sensor 2 Circuit Low Voltage	ON	(see page 11-149)
P2185 (192)	———	Engine Coolant Temperature (ECT) Sensor 2 Circuit High Voltage	ON	(see page 11-151)
P2195 (155)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Signal Stuck Lean	ON	(see page 11-154)
P2197 (156)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Signal Stuck Lean	ON	(see page 11-154)
P2227 (13)	○	Barometric Pressure (BARO) Sensor Range/Performance Problem	ON	(see page 11-155)
P2228 (13)	———	Barometric Pressure (BARO) Sensor Circuit Low Voltage	ON	(see page 11-157)
P2229 (13)	———	Barometric Pressure (BARO) Sensor Circuit High Voltage	ON	(see page 11-157)
P2237 (155)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) IP Circuit High Voltage	ON	(see page 11-158)
P2238 (155)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) IP Circuit Low Voltage	ON	(see page 11-160)
P2240 (156)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) IP Circuit High Voltage	ON	(see page 11-158)
P2241 (156)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) IP Circuit Low Voltage	ON	(see page 11-160)
P2243 (155)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VCENT Circuit High Voltage	ON	(see page 11-162)
P2245 (155)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VCENT Circuit Low Voltage	ON	(see page 11-164)
P2247 (156)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VCENT Circuit High Voltage	ON	(see page 11-162)
P2249 (156)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VCENT Circuit Low Voltage	ON	(see page 11-164)

NOTE: The above DTCs are indicated when the PGM-FI system is selected in the HDS.
Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

DTC (MIL indication *1)	Two Drive Cycle Detection	Detection Item	MIL	Note
P2251 (155)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VS Circuit High Voltage	ON	(see page 11-166)
P2252 (155)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VS Circuit Low Voltage	ON	(see page 11-168)
P2254 (156)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VS Circuit High Voltage	ON	(see page 11-166)
P2255 (156)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VS Circuit Low Voltage	ON	(see page 11-168)
P2270 (161)	○	Rear Secondary Heated Oxygen Sensor (Secondary HO2S) (Bank 1, Sensor 2) Circuit Signal Stuck Lean	ON	(see page 11-170)
P2271 (161)	○	Rear Secondary Heated Oxygen Sensor (Secondary HO2S) (Bank 1, Sensor 2) Circuit Signal Stuck Rich	ON	(see page 11-170)
P2272 (162)	○	Front Secondary Heated Oxygen Sensor (Secondary HO2S) (Bank 2, Sensor 2) Circuit Signal Stuck Lean	ON	(see page 11-170)
P2273 (162)	○	Front Secondary Heated Oxygen Sensor (Secondary HO2S) (Bank 2, Sensor 2) Circuit Signal Stuck Rich	ON	(see page 11-170)
P2279 (109)	○	Intake Air System Leak	ON	(see page 11-344)
P2413 (12)	○	Exhaust Gas Recirculation (EGR) System Malfunction	ON	(see page 11-335)
P2422 (117)	○	Evaporative Emission (EVAP) Canister Vent Shut Valve Close Malfunction	ON	(see page 11-371)
P2610 (132)	———	Powertrain Control Module (PCM) Internal Power Off Timer Malfunction	ON	(see page 11-171)
P2627 (155)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) LABEL Circuit Low Voltage	ON	(see page 11-172)
P2628 (155)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) LABEL Circuit High Voltage	ON	(see page 11-174)
P2630 (156)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) LABEL Circuit Low Voltage	ON	(see page 11-172)
P2631 (156)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) LABEL Circuit High Voltage	ON	(see page 11-174)
P2646 (22)	———	Rocker Arm Oil Pressure Switch (VTEC Oil Pressure Switch) Circuit Low Voltage	ON	(see page 11-251)
P2647 (22)	———	Rocker Arm Oil Pressure Switch (VTEC Oil Pressure Switch) Circuit High Voltage	ON	(see page 11-254)
P2648 (21)	———	Rocker Arm Oil Control Solenoid (VTEC Solenoid Valve) Circuit Low Voltage	ON	(see page 11-257)
P2649 (21)	———	Rocker Arm Oil Control Solenoid (VTEC Solenoid Valve) Circuit High Voltage	ON	(see page 11-259)
P2A00 (157)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Circuit Range/ Performance Problem	ON	(see page 11-176)
P2A03 (158)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Circuit Range/ Performance Problem	ON	(see page 11-176)
U0073 (126)	———	F-CAN Malfunction (BUS-OFF)	OFF	(see page 11-177)
U0114 (126)	———	F-CAN Malfunction (VTM-4 Control Unit-PCM)	OFF	(see page 11-180)
U0122 (126)	———	F-CAN Malfunction (VSA modulator-control unit-PCM)	OFF	(see page 11-182)
U0155 (126)	———	F-CAN Malfunction (Gauge Control Module-PCM)	OFF	(see page 11-177)

NOTE: The above DTCs are indicated when the PGM-FI system is selected in the HDS.
Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

Symptom Troubleshooting Index

When the vehicle has one of these symptoms, check for a diagnostic trouble code (DTC) with the HDS. If there is no DTC, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

Symptom	Diagnostic procedure	Also check for
Engine will not start (MIL works OK, no DTCs set)	1. Test the battery (see page 22-74). 2. Test the starter (see page 4-6). 3. Check the fuel pressure (see page 11-288). 4. Troubleshoot the fuel pump circuit (see page 11-282).	• Low compression • No ignition spark • Intake air leaks • Locked up engine • Broken timing belt • Contaminated fuel
Engine will not start (MIL comes on and stays on, or never comes on at all, no DTCs set)	Troubleshoot the MIL circuit (see page 11-184).	• Low compression • No ignition spark • Intake air leaks • Locked up engine • Broken timing belt • Contaminated fuel • No power to PCM • No ground to PCM • Shorted reference voltage
MIL comes on and stays on, or never comes on at all, no DTCs set	Troubleshoot the MIL circuit (see page 11-184).	
Engine will not start (MIL works OK, no DTCs set, immobilizer indicator stays on or flashes)	Check the immobilizer system.	
Engine starts but stalls immediately (MIL works OK, no DTCs set, immobilizer indicator stays on or flashes)	Check the immobilizer system.	
Engine is hard to start (MIL works OK, no DTCs set)	1. Test the battery (see page 22-74). 2. Check the fuel pressure (see page 11-288). 3. Clean the throttle body (see page 11-314).	• Low compression • Intake air leaks • Contaminated fuel • Weak spark • Restricted exhaust
Cold fast idle too low (MIL works OK, no DTCs set)	1. Do the PCM idle learn procedure (see page 11-273). 2. Check the idle speed (see page 11-272). 3. Clean the throttle body (see page 11-314).	Incorrect valve adjustment
Cold fast idle too high (MIL works OK, no DTCs set)	1. Do the PCM idle learn procedure (see page 11-273). 2. Check the idle speed (see page 11-272). 3. Do the throttle position learning check (see page 11-314).	Intake vacuum leaks
Idle speed fluctuates (MIL works OK, no DTCs set)	1. Do the PCM idle learn procedure (see page 11-273). 2. Check the idle speed (see page 11-272). 3. Do the carbon accumulation check (see page 11-314).	Intake vacuum leaks
After warming up, idle speed is below specification without load (MIL works OK, no DTCs set)	1. Troubleshoot the alternator FR signal circuit (see page 11-267). 2. Do the carbon accumulation check (see page 11-314).	Incorrect valve adjustment

Symptom	Diagnostic procedure	Also check for
After warming up, idle speed is above specification without load (MIL works OK, no DTCs set)	1. Troubleshoot the alternator FR signal circuit (see page 11-267). 2. Inspect the APP sensor (see page 11-248).	Intake vacuum leaks
After warming up, idle speed drops when steering wheel is turning (MIL works OK, no DTCs set)	1. Do the PCM idle learn procedure (see page 11-273). 2. Troubleshoot the PSP switch signal circuit (see page 11-268). 3. Do the carbon accumulation check (see page 11-314).	Power steering system problems
Low power (MIL works OK, no DTCs set)	Check the fuel pressure (see page 11-288).	• Low compression • Incorrect camshaft timing • Incorrect engine oil level • Restricted exhaust • Fuel contamination
Engine stalls (MIL works OK, no DTCs set)	1. Do the PCM idle learn procedure (see page 11-273). 2. Check the fuel pressure (see page 11-288). 3. Check the idle speed (see page 11-272). 4. Troubleshoot the brake pedal position switch signal circuit (see page 11-270).	• Intake air leaks • Faulty harness and sensor connections • Fuel contamination
Difficult to refuel (MIL works OK, no DTCs set)	1. Check the fuel vent tube between the EVAP canister and the fuel tank. 2. Check the fuel tank vapor recirculation tube between the fuel pipe and the fuel tank. 3. Inspect the fuel filler neck for restrictions. 4. Replace the fuel tank unit (see page 11-300). 5. Replace the fuel tank (see page 11-301).	Malfunctioning gas station filling nozzle.
Fuel overflows during refueling (No DTCs set)	1. Replace the fuel tank unit (see page 11-300). 2. Inspect the fuel filler neck for restrictions. 3. Replace the fuel tank (see page 11-301).	Malfunctioning gas station filling nozzle.
HDS does not communicate with the PCM or the vehicle	Troubleshoot the DLC circuit (see page 11-194).	

System Description

Electronic Control System

The functions of the fuel and emission control systems are managed by the powertrain control module (PCM).

Self-diagnosis
The PCM detects a failure of a signal from a sensor or from another control unit and stores a Temporary DTC or a DTC in erasable memory (RAM). Depending on the failure, a DTC is stored in either the first or the second drive cycle. (DTC P0457 turns on the malfunction indicator lamp (MIL) during the third drive cycle). When a DTC is stored, the PCM turns on the MIL by supplying ground to the MIL circuit.

- **One Drive Cycle Detection Method**
  When an abnormality occurs in the signal from a sensor or from another control unit, the PCM stores a DTC for the failure and turns on the MIL immediately.

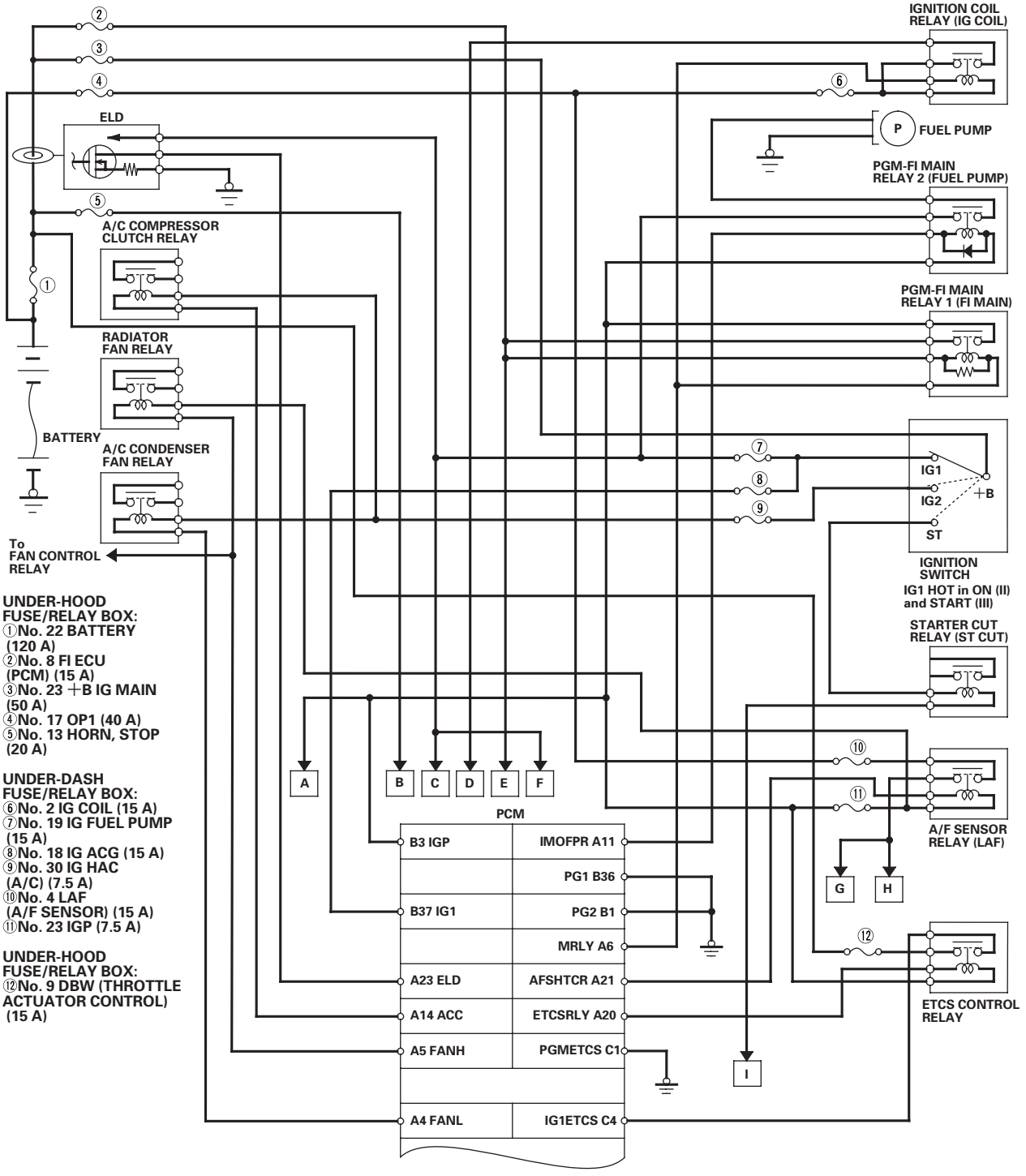
- **Two Drive Cycle Detection Method**
  When an abnormality occurs in the signal from a sensor or from another control unit in the first drive cycle, the PCM stores a Temporary DTC for the failure. The MIL does not come on at this time. If the failure continues in the second drive cycle, the PCM stores a DTC in erasable memory and turns on the MIL.

Fail-safe Function
When an abnormality occurs in the signal from a sensor or from another control unit, the PCM ignores that signal and substitutes a pre-programmed value that allows the engine to continue running. This causes a DTC to be stored and the MIL to come on.

MIL Bulb Check and Readiness Code Condition
When the ignition switch is turned ON (II), the PCM sends a signal to the gauge control module for about 15 to 20 seconds to check the bulb condition. If any readiness codes are not set to complete, the MIL flashes five times. If all readiness codes are set to complete, the MIL goes off.

Self Shut Down (SSD) Mode
After the ignition switch is turned OFF, the PCM stays on (up to 15 minutes). If the PCM connector is disconnected during this time, the PCM may be damaged. To cancel this mode, disconnect the negative cable from the battery or jump the SCS line with the HDS after the ignition switch is turned OFF.

PCM Electrical Connections



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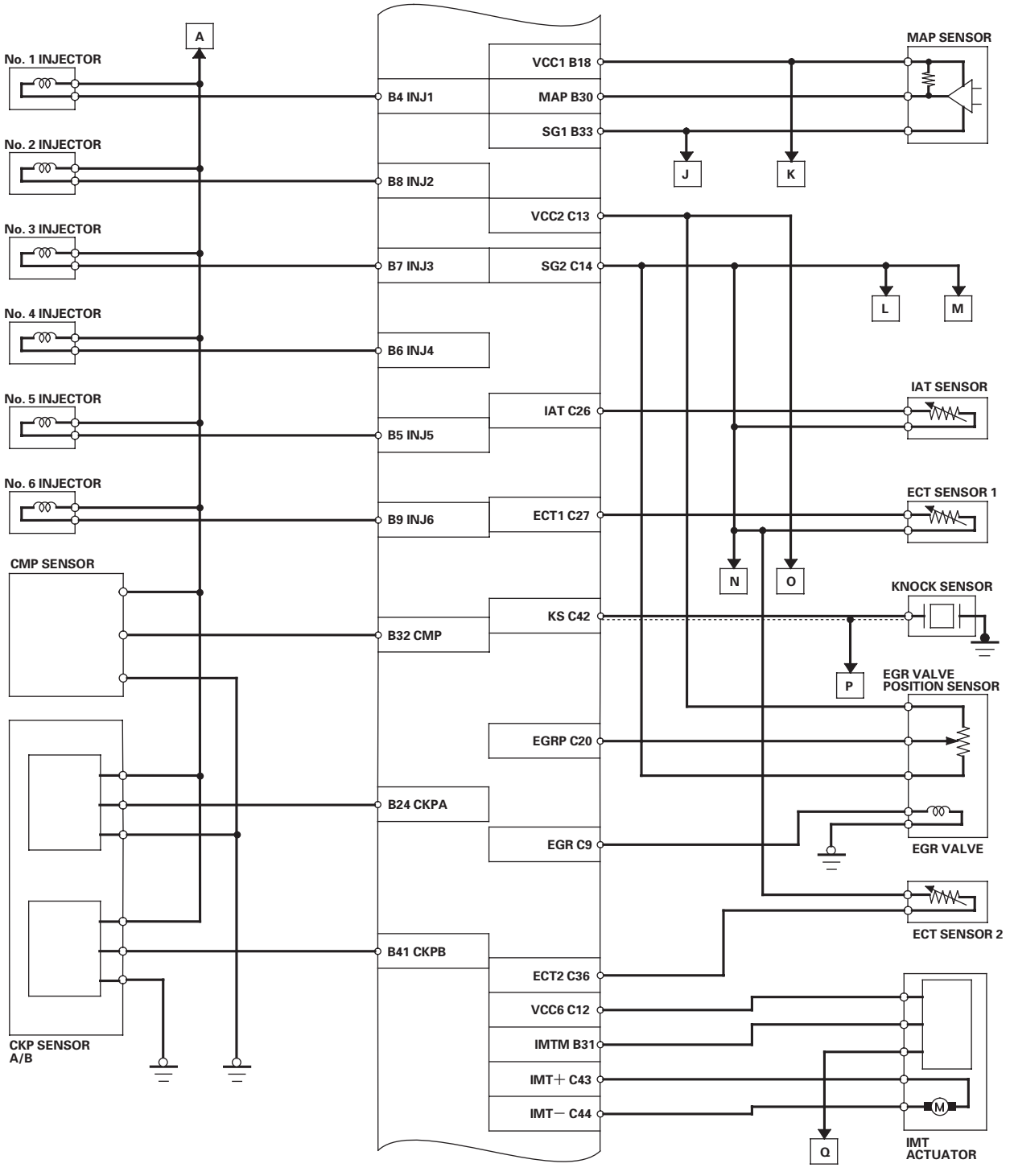
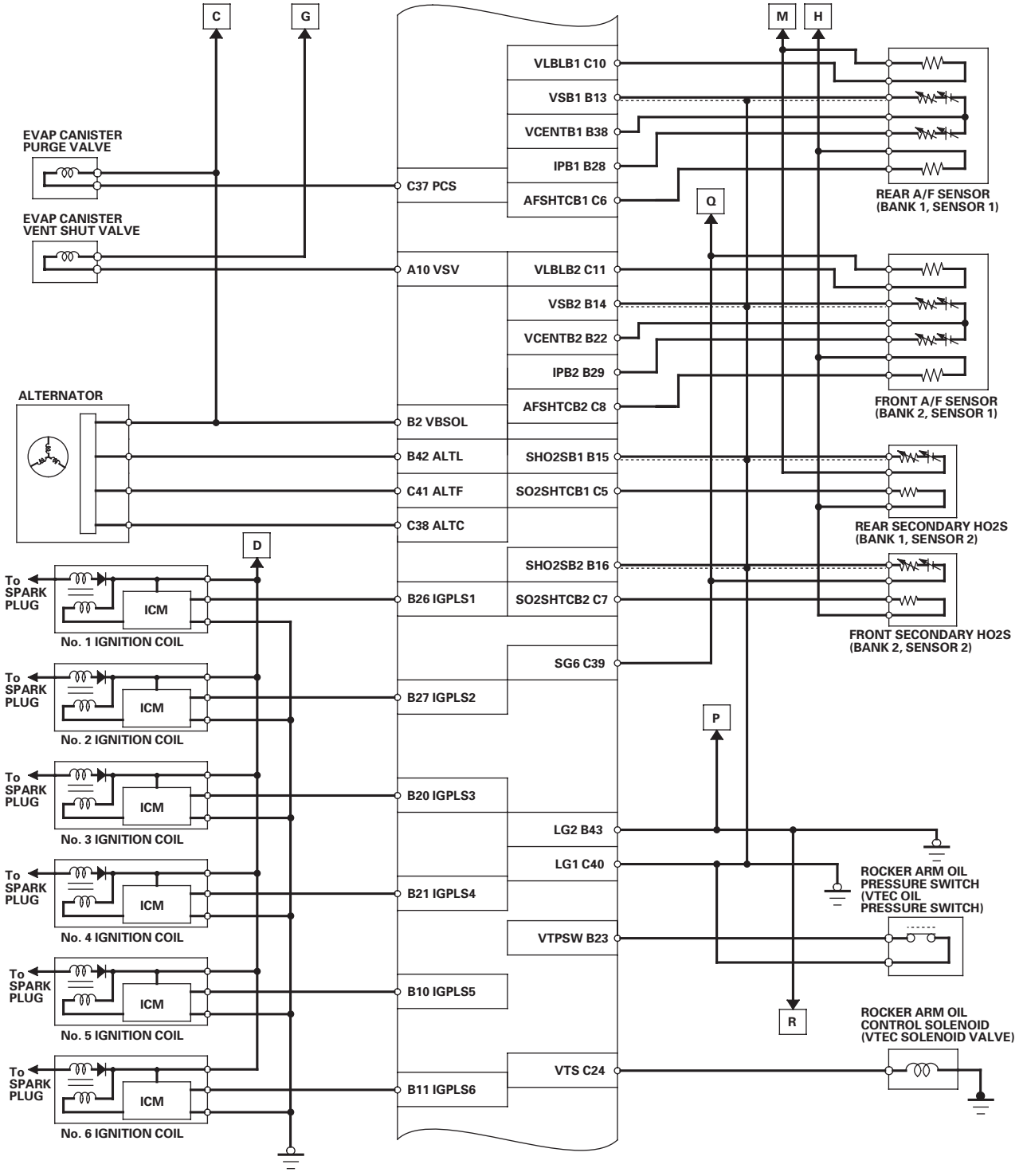
System Description (cont'd)

PCM Electrical Connections (cont'd)




C
G
M
H
VLBLB1 C10
VSB1 B13
VCENTB1 B38
IPB1 B28
AFSHTCB1 C6
REAR A/F SENSOR
(BANK 1, SENSOR 1)
EVAP CANISTER
PURGE VALVE
C37 PCS
EVAP CANISTER
VENT SHUT VALVE
A10 VSV
Q
VLBLB2 C11
VSB2 B14
VCENTB2 B22
IPB2 B29
AFSHTCB2 C8
FRONT A/F SENSOR
(BANK 2, SENSOR 1)
ALTERNATOR
B2 VBSOL
B42 ALTL
C41 ALTF
C38 ALTC
SHO2SB1 B15
SO2SHTCB1 C5
REAR SECONDARY HO2S
(BANK 1, SENSOR 2)
D
SHO2SB2 B16
SO2SHTCB2 C7
FRONT SECONDARY HO2S
(BANK 2, SENSOR 2)
To
SPARK
PLUG
ICM
B26 IGPLS1
No. 1 IGNITION COIL
SG6 C39
B27 IGPLS2
No. 2 IGNITION COIL
P
B20 IGPLS3
No. 3 IGNITION COIL
LG2 B43
LG1 C40
B21 IGPLS4
No. 4 IGNITION COIL
ROCKER ARM OIL
PRESSURE SWITCH
(VTEC OIL
PRESSURE SWITCH)
VTPSW B23
B10 IGPLS5
No. 5 IGNITION COIL
R
ROCKER ARM OIL
CONTROL SOLENOID
(VTEC SOLENOID VALVE)
VTS C24
B11 IGPLS6
No. 6 IGNITION COIL

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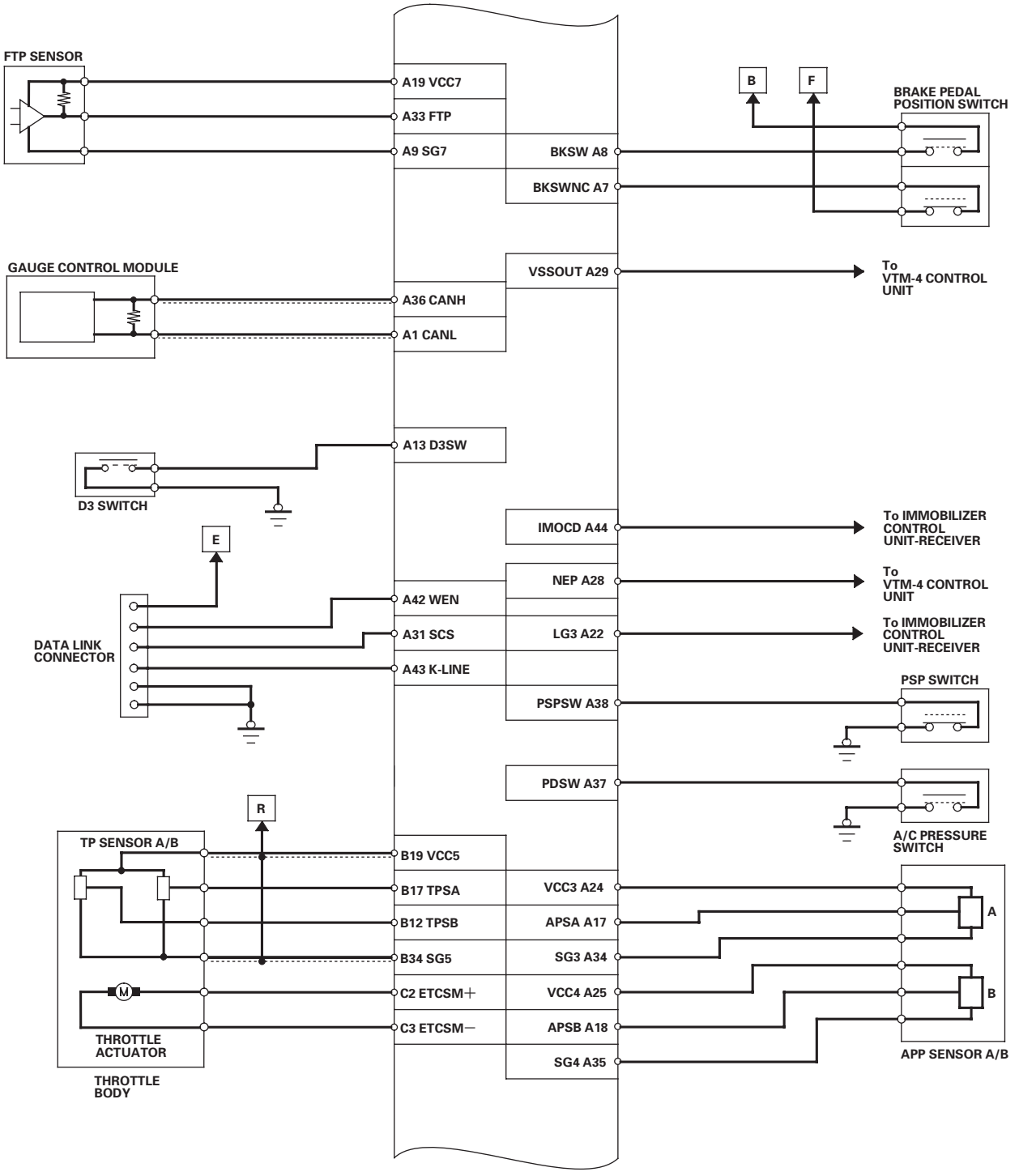
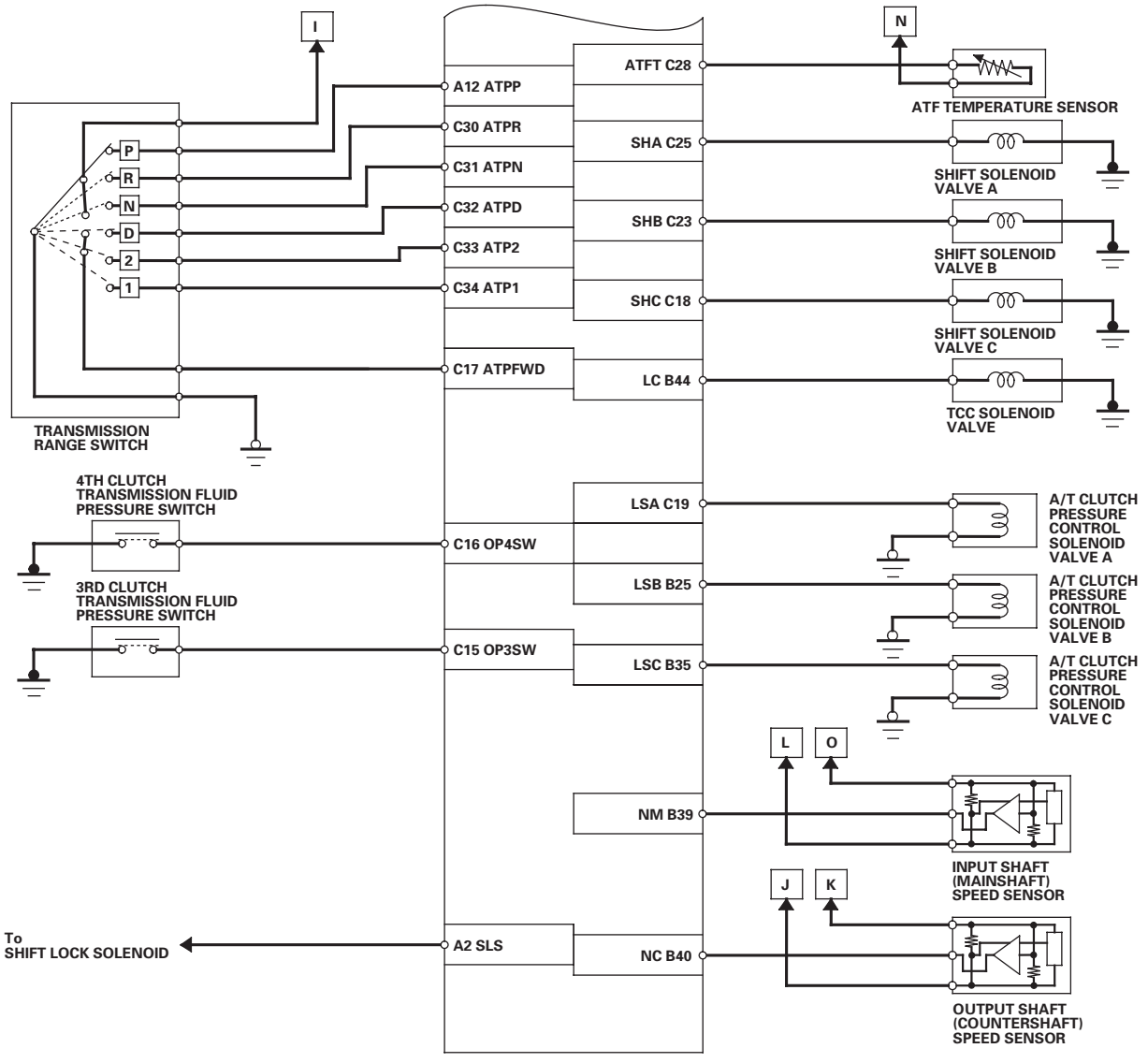
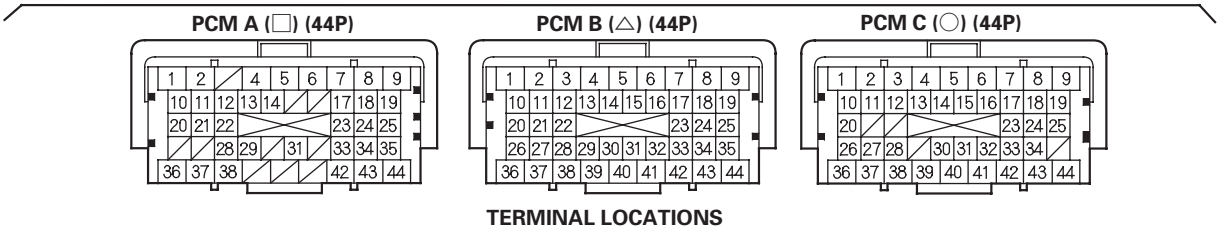
System Description (cont'd)

PCM Electrical Connections (cont'd)





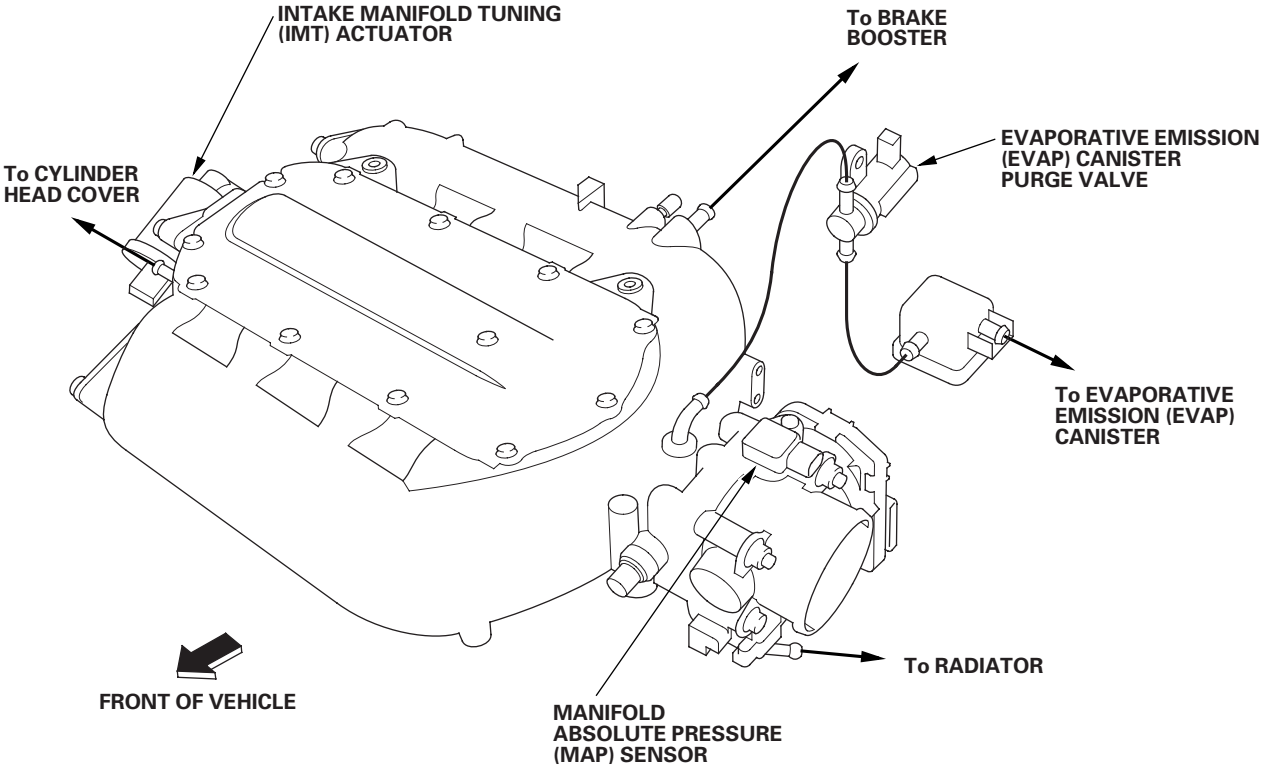


TERMINAL LOCATIONS

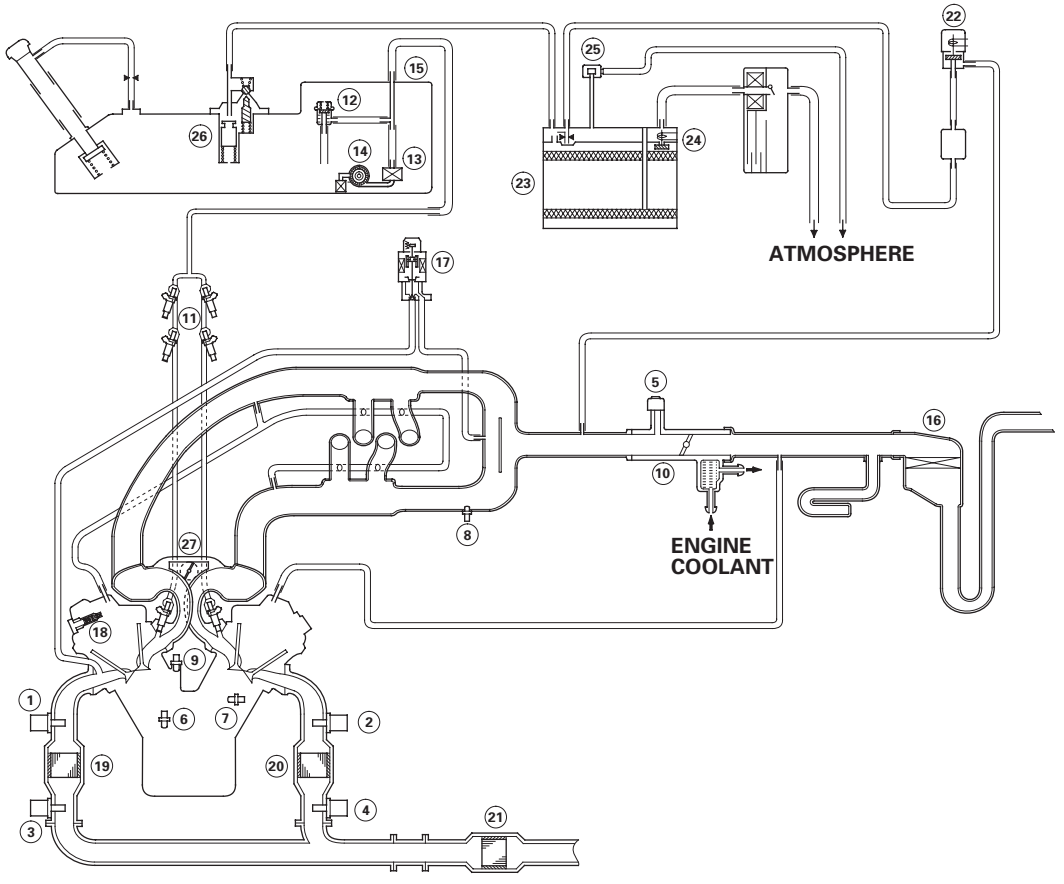
(cont'd)

System Description (cont'd)

Vacuum Hose Routing



Vacuum Distribution

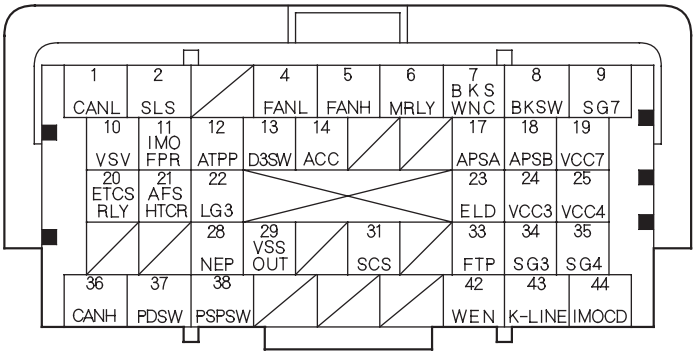


① FRONT AIR FUEL RATIO (A/F) SENSOR 2 (BANK 2, SENSOR 1)
② REAR AIR FUEL RATIO (A/F) SENSOR 1 (BANK 1, SENSOR 1)
③ FRONT SECONDARY HEATED OXYGEN SENSOR 2 (SECONDARY HO2S) (BANK 2, SENSOR 2)
④ REAR SECONDARY HEATED OXYGEN SENSOR 2 (SECONDARY HO2S) (BANK 1, SENSOR 2)
⑤ MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
⑥ ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1
⑦ ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2
⑧ INTAKE AIR TEMPERATURE (IAT) SENSOR
⑨ KNOCK SENSOR
⑩ THROTTLE BODY
⑪ INJECTOR
⑫ FUEL PRESSURE REGULATOR
⑬ FUEL FILTER
⑭ FUEL PUMP
⑮ FUEL TANK
⑯ AIR CLEANER
⑰ EXHAUST GAS RECIRCULATION (EGR) VALVE and POSITION SENSOR
⑱ POSITIVE CRANKCASE VENTILATION (PCV) VALVE
⑲ FRONT WARM UP THREE WAY CATALYTIC CONVERTER (WU-TWC) (BANK 2)
⑳ REAR WARM UP THREE WAY CATALYTIC CONVERTER (WU-TWC) (BANK 1)
㉑ UNDER-FLOOR THREE WAY CATALYTIC CONVERTER (TWC)
㉒ EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
㉓ EVAPORATIVE EMISSION (EVAP) CANISTER
㉔ EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE
㉕ FUEL TANK PRESSURE (FTP) SENSOR
㉖ FUEL TANK VAPOR CONTROL VALVE
㉗ INTAKE MANIFOLD TUNING (IMT) VALVE

(cont'd)

System Description (cont'd)

PCM Inputs and Outputs at Connector A (□) (44P)

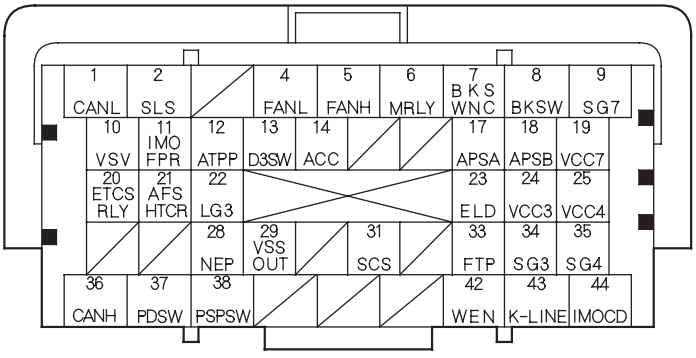


Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	RED	CANL (CAN COMMUNICATION SIGNAL LOW)	Sends communication signal	With ignition switch ON (II): about 2.5 V (pulses)
2	YEL/BLK	SLS (SHIFT LOCK SOLENOID)	Drives shift lock solenoid	With ignition switch ON (II), in the P position, brake pedal pressed, and accelerator released: about 0 V
4	GRN/YEL	FANL (RADIATOR FAN CONTROL)	Drives condenser fan relay	With condenser fan running: about 0 V With condenser fan stopped: battery voltage
5	GRN	FANH (RADIATOR FAN CONTROL)	Drives radiator fan relay	With radiator fan running: about 0 V With radiator fan stopped: battery voltage
6	RED/YEL	MRLY (PGM-FI MAIN RELAY 1)	Drives PGM-FI main relay 1 (FI MAIN) Power source for DTC memory	With ignition switch ON (II): about 0 V With ignition switch OFF: battery voltage
7	BRN/YEL	BKSWNC (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With ignition switch ON (II) and brake pedal released: battery voltage With ignition switch ON (II) and brake pedal pressed: about 0 V
8	WHT/BLK	BKSW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal released: about 0 V With brake pedal pressed: battery voltage
9	GRN/YEL	SG7 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
10	LT GRN/ RED	VSV (EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE)	Drives EVAP canister vent shut valve	With ignition switch ON (II): battery voltage
11	GRN/WHT	IMOFPR (IMMOBILIZER FUEL PUMP RELAY)	Drives PGM-FI main relay 2 (FUEL PUMP)	0 V for 2 seconds after turning ignition switch ON (II), then battery voltage
12	BLU/BLK	ATPP (TRANSMISSION RANGE SWITCH PARK)	Detects transmission range switch P position signal	In P position: about 0 V In any other position: battery voltage
13	GRN	D3SW (D3 SWITCH)	Detects D3 switch signal	With D3 switch released: battery voltage With D3 switch pressed: about 0 V
14	RED	ACC (A/C COMPRESSOR CLUTCH RELAY)	Drives A/C compressor clutch relay	With compressor ON: about 0 V With compressor OFF: battery voltage
17	ORN	APSA (ACCELERATOR PEDAL POSITION (APP) SENSOR A)	Detects APP sensor A signal	With ignition switch ON (II) and accelerator pedal pressed: about 4.7 V With ignition switch ON (II) and accelerator pedal released: about 0.5 V
18	YEL	APSB (ACCELERATOR PEDAL POSITION (APP) SENSOR B)	Detects APP sensor B signal	With ignition switch ON (II) and accelerator pedal pressed: about 2.3 V With ignition switch ON (II) and accelerator pedal released: about 0.25 V
19	YEL/BLU	VCC7 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5.0 V

PCM Inputs and Outputs at Connector A (□) (44P)



Terminal side of female terminals

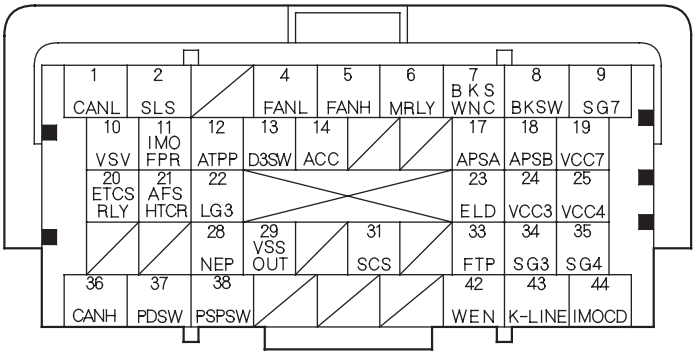
NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
20	BRN	ETCSRLY (ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY)	Drives electronic throttle control system (ETCS) control relay	With ignition switch ON (II): about 0 V
21	ORN	AFSHTCR (AIR FUEL RATIO (A/F) SENSOR HEATER CONTROL RELAY)	Drives A/F sensor relay	With ignition switch ON (II): about 0 V
22	BRN/YEL	LG3 (LOGIC GROUND)	Ground circuit for PCM	Less than 1.0 V at all times
23	BLU/BLK	ELD (ELECTRICAL LOAD DETECTOR (ELD))	Detects ELD signal	With ignition switch ON (II): about 0.1—4.8 V (depending on electrical load)
24	GRN	VCC3 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5.0 V
25	WHT	VCC4 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5.0 V
28	BLU	NEP (ENGINE SPEED PULSE)	Outputs engine speed pulses	With engine running: pulses
29	BLU/WHT	VSSOUT (VEHICLE SPEED SIGNAL OUTPUT)	Sends vehicle speed sensor signal	Depending on vehicle speed: pulses
31	BRN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With service check signal shorted using the HDS: about 0 V With service check signal opened: about 5.0 V

(cont'd)

System Description (cont'd)

PCM Inputs and Outputs at Connector A (□) (44P)

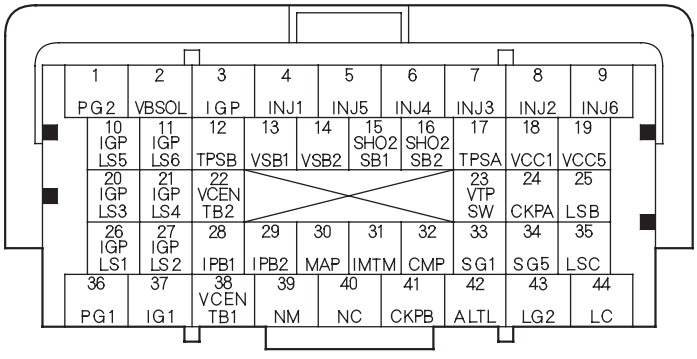


Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
33	LT GRN	FTP (FUEL TANK PRESSURE (FTP) SENSOR)	Detects FTP sensor signal	With ignition switch ON (II) and fuel fill cap removed: about 2.5 V
34	BLK	SG3 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
35	RED	SG4 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
36	WHT	CANH (CAN COMMUNICATION SIGNAL HIGH)	Sends communication signal	With ignition switch ON (II): about 2.5 V (pulses)
37	RED/GRN	PDSW (A/C PRESSURE SWITCH)	Detects A/C pressure switch signal	With A/C pressure switch ON: about 0 V With A/C pressure switch OFF: battery voltage
38	BLU/YEL	PSPSW (POWER STEERING PRESSURE (PSP) SWITCH SIGNAL)	Detects PSP switch signal	At idle with steering wheel in straight ahead position: about 0 V At idle with steering wheel at full lock: battery voltage
42	RED/WHT	WEN (WRITE ENABLE SIGNAL)	Detects write enable signal	With ignition switch ON (II): about 0 V
43	LT BLU	K-LINE	Sends and receives scan tool signal	With ignition switch ON (II) and HDS disconnected: about 10.0 V
44	RED/BLU	IMOCD (IMMOBILIZER CODE)	Detects immobilizer signal	

PCM Inputs and Outputs at Connector B (△) (44P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	BLK	PG2 (POWER GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
2	BLK/YEL	VBSOL (POWER SOURCE FOR SOLENOID VALVES)	Power source for solenoid valve	With ignition switch ON (II): battery voltage
3	YEL/BLK	IGP (POWER SOURCE)	Power source for PCM circuit	With ignition switch ON (II): battery voltage
4	BRN	INJ1 (No. 1 INJECTOR)	Drives No. 1 injector	At idle: duty controlled With ignition switch ON (II): battery voltage
5	BLK/RED	INJ5 (No. 5 INJECTOR)	Drives No. 5 injector	
6	YEL	INJ4 (No. 4 INJECTOR)	Drives No. 4 injector	
7	BLU	INJ3 (No. 3 INJECTOR)	Drives No. 3 injector	
8	RED	INJ2 (No. 2 INJECTOR)	Drives No. 2 injector	
9	WHT/BLU	INJ6 (No. 6 INJECTOR)	Drives No. 6 injector	
10	BLK/RED	IGPLS5 (No. 5 IGNITION COIL PULSE)	Drives No. 5 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
11	BRN/WHT	IGPLS6 (No. 6 IGNITION COIL PULSE)	Drives No. 6 ignition coil	
12	RED/BLU	TPSB (THROTTLE POSITION (TP) SENSOR B)	Detects TP sensor B signal	With throttle fully open: about 4.1 V With throttle fully closed: about 1.7 V
13	BLU	VSB1 (VS CELL+ BANK 1)	Detects rear A/F sensor (Bank 1, sensor 1) VS CELL signal	With fully warmed up engine running: about 3.4—4.8 V
14	RED/BLU	VSB2 (VS CELL+ BANK 2)	Detects front A/F sensor (Bank 2, sensor 1) VS CELL signal	With fully warmed up engine running: about 3.4—4.8 V
15	GRN	SHO2SB1 (REAR SECONDARY HEATED OXYGEN SENSOR (REAR SECONDARY HO2S) BANK 1, SENSOR 2)	Detects rear secondary HO2S (Bank 1, sensor 2) signal	With throttle fully opened at idle and fully warmed up engine: about 0.6 V With throttle quickly closed: below 0.4 V
16	WHT	SHO2SB2 (FRONT SECONDARY HEATED OXYGEN SENSOR (FRONT SECONDARY HO2S) BANK 2, SENSOR 2)	Detects front secondary HO2S (Bank 2, sensor 2) signal	With throttle fully opened at idle and fully warmed up engine: about 0.6 V With throttle quickly closed: below 0.4 V
17	RED/BLK	TPSA (THROTTLE POSITION (TP) SENSOR A)	Detects TP sensor A signal	With throttle fully open: about 3.9 V With throttle fully closed: about 0.9 V
18	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5.0 V

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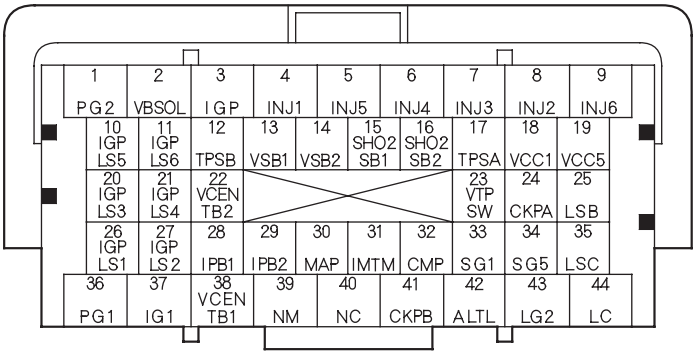
System Description (cont'd)

PCM Inputs and Outputs at Connector B (△) (44P)

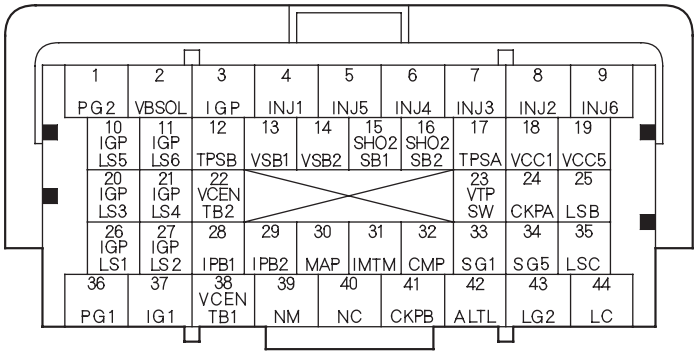


Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
19	BLU	VCC5 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5.0 V
20	WHT/BLU	IGPLS3 (No. 3 IGNITION COIL PULSE)	Drives No. 3 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
21	BRN	IGPLS4 (No. 4 IGNITION COIL PULSE)	Drives No. 4 ignition coil	
22	RED/WHT	VCENTB2 (VIRTUAL GROUND BANK 2)	Reference voltage supply for front A/F sensor (Bank 2, sensor 1)	With fully warmed up engine at idle: about 3.4—4.8 V
23	BLU/WHT	VTPSW (ROCKER ARM OIL PRESSURE SWITCH) (VTEC PRESSURE SWITCH)	Detects rocker arm oil pressure switch (VTEC oil pressure switch) signal	With engine at low speed: about 0 V With engine at high speed: battery voltage
24	BLU	CKPA (CRANKSHAFT POSITION (CKP) SENSOR A)	Detects CKP sensor A signal	With engine running: pulses
25	BRN/WHT	LSB (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B)	Drives A/T clutch pressure control solenoid valve B	With ignition switch ON (II): duty controlled
26	YEL/GRN	IGPLS1 (No. 1 IGNITION COIL PULSE)	Drives No. 1 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
27	BLU/RED	IGPLS2 (No. 2 IGNITION COIL PULSE)	Drives No. 2 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
28	GRN	IPB1 (IP CELL+ BANK 1)	Detects rear A/F sensor (Bank 1, sensor 1) pump cell	With engine running: about 2.0—5.6 V
29	GRN/RED	IPB2 (IP CELL+ BANK 2)	Detects front A/F sensor (Bank 2, sensor 1) pump cell	With engine running: about 2.0—5.6 V
30	GRN/RED	MAP (MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR)	Detects MAP sensor signal	With ignition switch ON (II): about 3.0 V At idle: about 1.0 V (depending on engine speed)
31	WHT/BLK	IMTM (INTAKE MANIFOLD TUNING (IMT) VALVE MONITOR)	Detects IMT valve position	With ignition switch ON (II): about 5.0 V With engine speed above 4,000 rpm: about 0 V
32	YEL	CMP (CAMSHAFT POSITION (CMP) SENSOR)	Detects CMP sensor signal	With engine running: pulses
33	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
34	GRN	SG5 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
35	GRN/RED	LSC (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C)	Drives A/T clutch pressure control solenoid valve C	With ignition switch ON (II): duty controlled

PCM Inputs and Outputs at Connector B (△) (44P)



Terminal side of female terminals

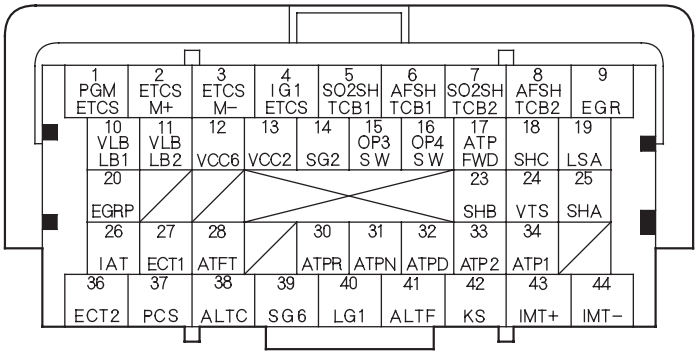
NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
36	BLK	PG1 (POWER GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
37	BLK/YEL	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): battery voltage
38	RED	VCENTB1 (VIRTUAL GROUND BANK 1)	Reference voltage supply for rear A/F sensor (Bank 1, sensor 1)	With fully warmed up engine at idle: about 3.4—3.8 V
39	RED	NM (INPUT SHAFT (MAINSHAFT) SPEED SENSOR)	Detects input shaft (mainshaft) speed sensor signal	With ignition switch ON (II): about 0 V or about 5.0 V With engine idling in N position: about 2.5 V (pulses)
40	BLU	NC (OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR)	Detects output shaft (countershaft) speed sensor signals	With ignition switch ON (II): pulses With vehicle moving: about 2.5 V (pulses)
41	BLU/RED	CKPB (CRANKSHAFT POSITION (CKP) SENSOR B)	Detects CKP sensor B signal	With engine running: pulses
42	WHT/BLU	ALTL (ALTERNATOR L SIGNAL)	Detects alternator L signal	With ignition switch ON (II): about 0 V With engine running: battery voltage
43	BRN/YEL	LG2 (LOGIC GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
44	YEL	LC (TORQUE CONVERTER CLUTCH (TCC) SOLENOID)	Drives TCC solenoid valve	During lock-up condition: battery voltage During no lock-up condition: about 0 V

(cont'd)

System Description (cont'd)

PCM Inputs and Outputs at Connector C (◯) (44P)

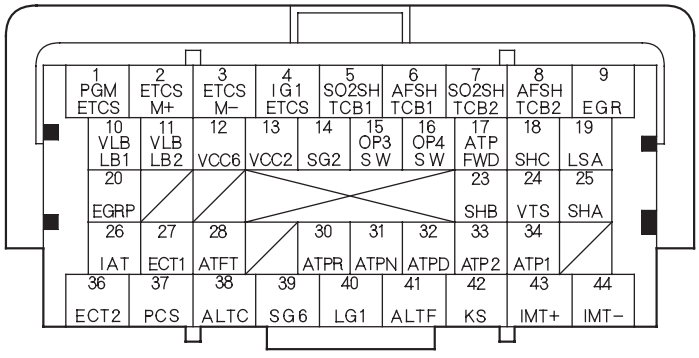


Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	BLK	PGMETCS (POWER GROUND ETCS)	Ground circuit for PCM circuit	Less than 1.0 V at all times
2	BLU	ETCSM+ (THROTTLE ACTUATOR +SIDE)	Drives throttle actuator	With ignition switch ON (II): about 0 V
3	GRN	ETCSM− (THROTTLE ACTUATOR −SIDE)	Ground for throttle actuator	With ignition switch ON (II): about 0 V
4	YEL/GRN	IG1ETCS (IGNITION SIGNAL ETCS)	Detects ignition signal	With ignition switch ON (II): battery voltage
5	BLK/WHT	SO2SHTCB1 (REAR SECONDARY HEATED OXYGEN SENSOR (REAR SECONDARY HO2S) HEATER)	Drives rear secondary HO2S heater (Bank 1, sensor 2)	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
6	BLK/WHT	AFSHTCB1 (REAR AIR FUEL RATIO (REAR A/F) SENSOR HEATER CONTROL BANK 1, SENSOR 1)	Drives rear A/F sensor heater (Bank 1, sensor 1)	With ignition switch ON (II): battery voltage With fully warmed up engine running: about 0 V or pulses
7	GRN/RED	SO2SHTCB2 (FRONT SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) HEATER)	Drives front secondary HO2S heater (Bank 2, sensor 2)	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
8	GRN/WHT	AFSHTCB2 (FRONT AIR FUEL RATIO (FRONT A/F) SENSOR HEATER CONTROL BANK 2, SENSOR 1)	Drives front A/F sensor heater (Bank 2, sensor 1)	With ignition switch ON (II): battery voltage With fully warmed up engine running: about 0 V or pulses
9	BLU/RED	EGR (EXHAUST GAS RECIRCULATION (EGR) VALVE)	Drives EGR valve	With EGR operating: duty controlled With EGR not operating: about 0 V
10	WHT	VLBLB1 (LABEL RESISTER BANK 1)	Detects rear A/F sensor (Bank 1, sensor 1) LABEL signal	With engine running: about 0.4—4.6 V
11	WHT/RED	VLBLB2 (LABEL RESISTER BANK 2)	Detects front A/F sensor (Bank 2, sensor 1) LABEL signal	With engine running: about 0.4—4.6 V
12	YEL/BLU	VCC6 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5.0 V
13	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5.0 V
14	GRN/YEL	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
15	BLU/WHT	OP3SW (3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 3rd clutch transmission fluid pressure switch input	With ignition switch ON (II): • Without 3rd clutch pressure: about 5.0 V • With 3rd clutch pressure: about 0 V

PCM Inputs and Outputs at Connector C (◯) (44P)



Terminal side of female terminals

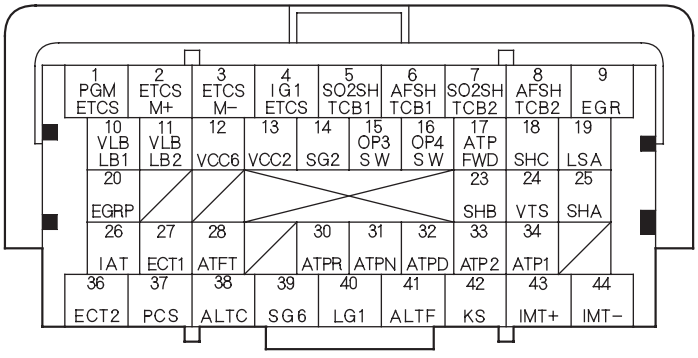
NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
16	BLU/YEL	OP4SW (4TH CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 4th clutch transmission fluid pressure switch input	With ignition switch ON (II): • Without 4th clutch pressure: about 5.0 V • With 4th clutch pressure: about 0 V
17	BLU/YEL	ATPFWD (TRANSMISSION RANGE SWITCH D/2 POSITION)	Detects transmission range switch D, and 2 positions signal	In D and 2 positions: about 0 V In any other position: battery voltage
18	GRN	SHC (SHIFT SOLENOID VALVE C)	Drives shift solenoid valve C	With engine running in 1 position, and D position (in 1st, 3rd, and 5th gears): battery voltage With engine running in P, R, N, 2 positions, and D position (in 2nd and 4th gears): about 0 V
19	RED	LSA (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A)	Drives A/T clutch pressure control solenoid valve A	With ignition switch ON (II): duty controlled
20	WHT/BLK	EGRP (EXHAUST GAS RECIRCULATION (EGR) VALVE POSITION SENSOR)	Detects EGR valve position sensor signal	With engine running: about 1.2—3.0 V (depending on EGR valve lift)
23	GRN/WHT	SHB (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running in P, R, N, 2 and 1 positions, and D position (in 1st, 2nd, or 3rd gears): battery voltage With engine running in D position (in 4th or 5th gears): about 0 V
24	GRN/YEL	VTS (VTEC SOLENOID VALVE)	Drives VTEC solenoid valve	At idle: about 0 V
25	BLU/YEL	SHA (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	With engine running in 2 and 1 positions, and D position (in 1st, 2nd, or 5th gears): battery voltage With engine running in P, R, N positions, and D position (in 3rd and 4th gears): about 0 V
26	RED/YEL	IAT (INTAKE AIR TEMPERATURE (IAT) SENSOR)	Detects IAT sensor signal	With ignition switch ON (II): about 0.1—4.0 V (about 1.8 V at normal operating temperature)
27	RED/WHT	ECT1 (ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1)	Detects ECT sensor 1 signal	With ignition switch ON (II): about 0.1—4.8 V (depending on engine coolant temperature)
28	BLU/YEL	ATFT (ATF TEMPERATURE SENSOR)	Detects ATF temperature signal	With ignition switch ON (II): about 0.2—4.0 V (about 1.8 V at operating temperature) (depending on ATF temperature)
30	WHT	ATPR (TRANSMISSION RANGE SWITCH R)	Detects transmission range switch R position signal input	In R position: about 0 V In any position other than R position: battery voltage
31	RED/BLK	ATPN (TRANSMISSION RANGE SWITCH N)	Detects transmission range switch N position signal input	In N position: about 0 V In any position other than N position: battery voltage
32	YEL/GRN	ATPD (TRANSMISSION RANGE SWITCH D)	Detects transmission range switch D position signal input	In D position: about 0 V In any position other than D position: battery voltage

(cont'd)

System Description (cont'd)

PCM Inputs and Outputs at Connector C (◯) (44P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
33	BLU	ATP2 (TRANSMISSION RANGE SWITCH 2)	Detects transmission range switch 2 signal input	In 2 position: about 0 V In any position other than 2 position: battery voltage
34	BRN	ATP1 (TRANSMISSION RANGE SWITCH 1)	Detects transmission range switch 1 signal input	In 1 position: about 0 V In any position other than 1 position: battery voltage
36	GRN/RED	ECT2 (ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2)	Detects ECT sensor 2 signal	With ignition switch ON (II): about 0.1—4.8 V (depending on engine coolant temperature)
37	RED/YEL	PCS (EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE)	Drives EVAP canister purge valve	With engine running, engine coolant below 140 °F (60 °C): battery voltage With engine running, engine coolant above 140 °F (60 °C): duty controlled
38	WHT/GRN	ALTC (ALTERNATOR CONTROL)	Sends alternator control signal	With fully warmed up engine running: battery voltage (depending on electrical load)
39	GRN/YEL	SG6 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
40	BRN/YEL	LG1 (LOGIC GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
41	WHT/RED	ALTF (ALTERNATOR FR SIGNAL)	Detects alternator FR signal	With engine running: about 0—5.0 V (depending on electrical load)
42	RED/BLU	KS (KNOCK SENSOR)	Detects knock sensor signal	With engine knocking: pulses
43	WHT/BLU	IMT+ (INTAKE MANIFOLD TUNING (IMT) ACTUATOR +SIDE)	Drives IMT actuator	With ignition switch ON (II): battery voltage
44	WHT/RED	IMT− (INTAKE MANIFOLD TUNING (IMT) ACTUATOR −SIDE)	Ground for IMT actuator	With ignition switch ON (II): battery voltage

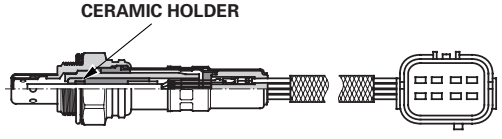
PGM-FI System

The programmed fuel injection (PGM-FI) system is a sequential multiport fuel injection system.

Alternator Control
The alternator signals the PCM during charging.

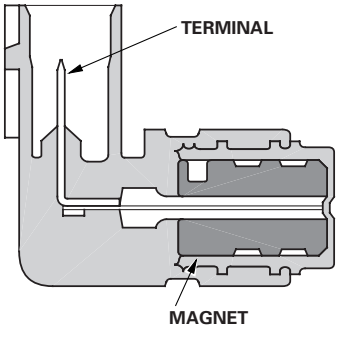
Air Conditioning (A/C) Compressor Clutch Relay
When the PCM receives a demand for cooling from the A/C system, it delays the compressor from being energized, and enriches the mixture to assure smooth transition to the A/C mode.

Air Fuel Ratio (A/F) Sensor
The A/F sensor operates over a wide air/fuel range. The A/F sensor is installed upstream of the TWC, and sends signals to the PCM which varies the duration of fuel injection accordingly.

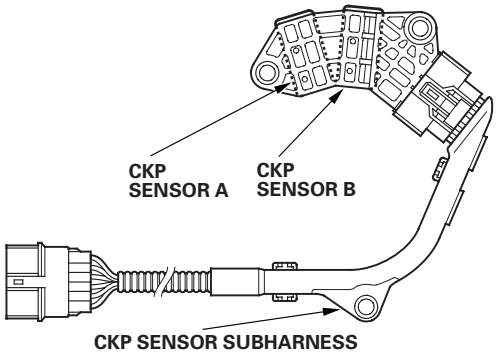


Barometric Pressure (BARO) Sensor
The BARO sensor is inside the PCM. It converts atmospheric pressure into a voltage signal that is used by the PCM to modify the basic duration of the fuel injection discharge.

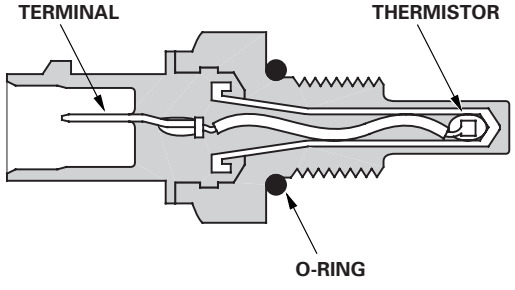
Camshaft Position (CMP) Sensor
The CMP sensor input is used by the PCM to determine ignition timing at start up (cranking) and when crank angle is abnormal.



Crankshaft Position (CKP) Sensor
The CKP sensor detects crankshaft speed and is used by the PCM to determine ignition timing and timing for fuel injection of each cylinder, as well as detecting engine misfire.



Engine Coolant Temperature (ECT) Sensor 1 and 2
ECT sensors 1 and 2 are temperature dependent resistors (thermistors). The resistance decreases as the engine coolant temperature increases.



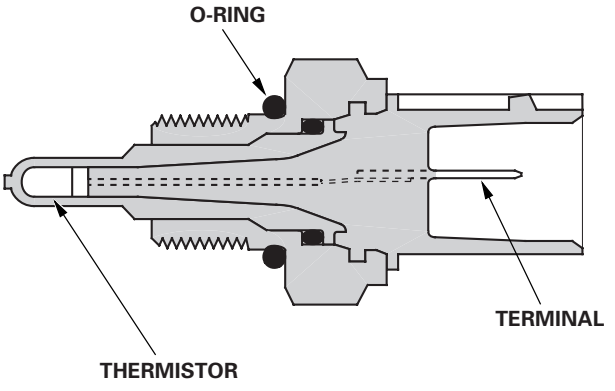
Ignition Timing Control
The PCM contains the memory for basic ignition timing at various engine speeds and manifold absolute pressures. It also adjusts the timing according to engine coolant temperature.

Injector Timing and Duration
The PCM contains the memory for basic discharge duration at various engine speeds and manifold pressures. The basic discharge duration, after being read out from the memory, is further modified by signals sent from various sensors to obtain the final discharge duration.
By monitoring long term fuel trim, the PCM detects long term malfunctions in the fuel system and sets a diagnostic trouble code (DTC).

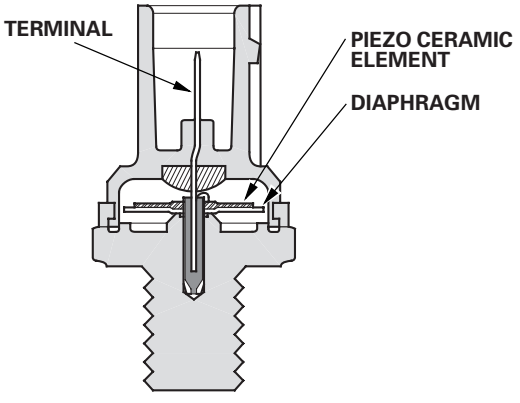
(cont'd)

System Description (cont'd)

Intake Air Temperature (IAT) Sensor
The IAT sensor is a temperature dependent resistor (thermistor). The resistance of the thermistor decreases as the intake air temperature increases.



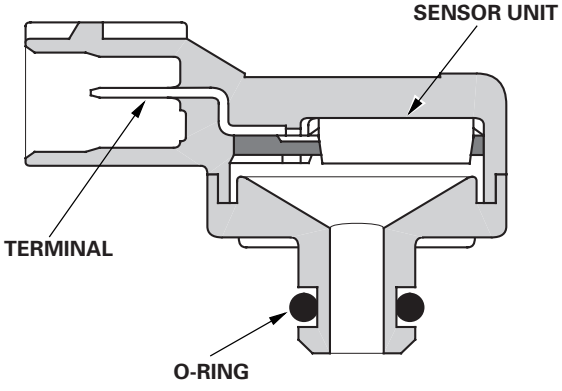
Knock Sensor
The knock control system adjusts the ignition timing to minimize knock.



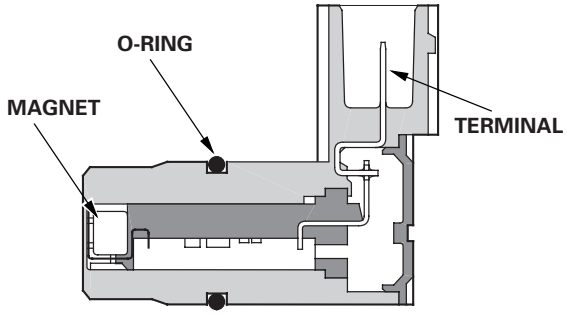
Malfunction Indicator Lamp (MIL) Indication (In relation to Readiness Codes)
The vehicle has certain ''readiness codes'' that are part of the on-board diagnostics for the emissions systems. If the vehicle's battery has been disconnected or gone dead, if the DTCs have been cleared, or if the PCM has been reset, these codes are reset. In some states, part of the emissions testing is to make sure these codes are set to complete. If all of them are not set to complete, the vehicle may fail the test, or the test cannot be finished.

To check if the readiness codes are set to complete, turn the ignition switch ON (II), but do not start the engine. The MIL will come on for 15—20 seconds. If it then goes off, the readiness codes are complete. If it flashes five times, one or more readiness codes are not set to complete. To set each code, drive the vehicle or run the engine as described in the procedures (see page 11-54).

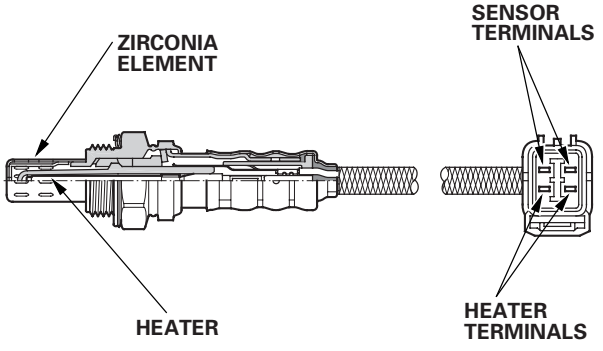
Manifold Absolute Pressure (MAP) Sensor
The MAP sensor converts manifold absolute pressure into electrical signals to the PCM.



Output Shaft (Countershaft) Speed Sensor
This sensor detects countershaft speed.



Secondary Heated Oxygen Sensor (Secondary HO2S)
The secondary HO2S detects the oxygen content in the exhaust gas downstream of the warm up three way catalytic converter (WU-TWC), and sends signals to the PCM. To stabilize its output, the sensor has an internal heater. The PCM compares the HO2S output with the A/F sensor output to determine catalyst efficiency. The secondary HO2S is on the WU-TWC.



Electronic Throttle Control System

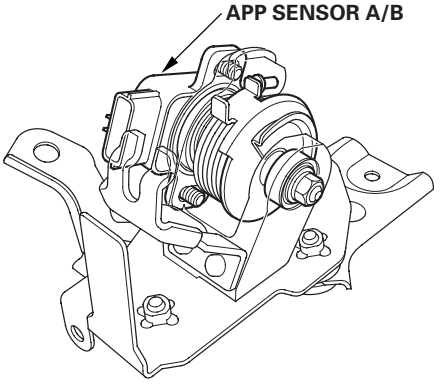
The throttle is electronically controlled by the electronic throttle control system. Refer to the system diagram to see a functional layout of the system.

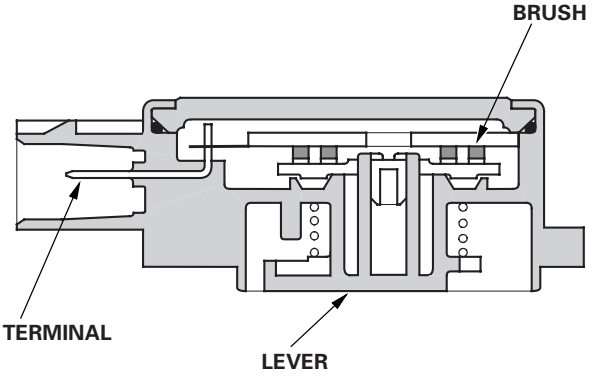
Idle control: When the engine is idling, the PCM controls the throttle actuator to maintain the proper idle speed according to engine loads.

Acceleration control: When the accelerator pedal is pressed, the PCM opens the throttle valve depending on the accelerator pedal position (APP) sensor signal.

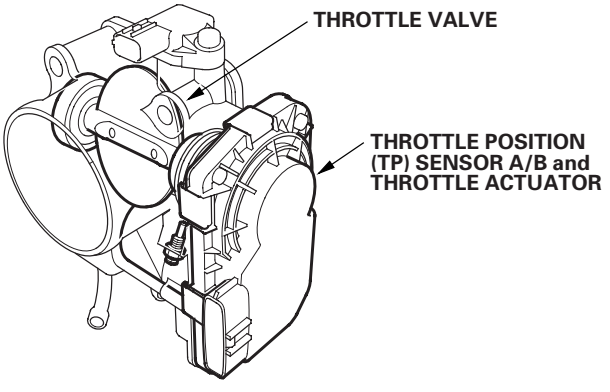
Cruise control: The PCM controls the throttle actuator to maintain the set speed when cruise control is operating. The throttle actuator takes the place of the cruise control actuator.

Accelerator Pedal Position (APP) Sensor
As the accelerator pedal position changes, the sensor varies the signal voltage to the PCM.





Throttle Body
The throttle body is a single-barrel side draft type. The lower portion of the throttle valve is heated by engine coolant from the cylinder head to prevent icing of the throttle plate.



(cont'd)

System Description (cont'd)

Idle Control System

When the engine is cold, the A/C compressor is on, the transmission is in gear, the brake pedal is pressed, the power steering load is high, or the alternator is charging, the PCM sends signals to the throttle actuator to maintain the correct idle speed.

Brake Pedal Position Switch
The brake pedal position switch signals the PCM when the brake pedal is pressed.

Power Steering Pressure (PSP) Switch
The PSP switch signals the PCM when the power steering load is high.

Fuel Supply System

Fuel Cutoff Control
During deceleration with the throttle valve closed, current to the injectors is cut off to improve fuel economy at engine speeds over 950 rpm. Fuel cutoff control also occurs when the engine speed exceeds 6,500 rpm, regardless of the position of the throttle valve, to protect the engine from over-revving. When the vehicle is stopped, the PCM cuts the fuel at engine speeds over 5,000 rpm. Engine speed of fuel cut is lower on a cold engine.

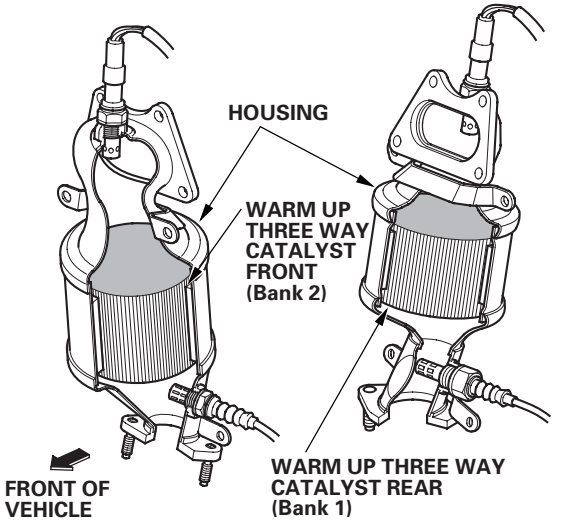
Fuel Pump Control
When the ignition is turned on, the PCM grounds PGM-FI main relay 2 (FUEL PUMP) which feeds current to the fuel pump for 2 seconds to pressurize the fuel system. With the engine running, the PCM grounds PGM-FI main relay 2 (FUEL PUMP) and feeds current to the fuel pump. When the engine is not running and the ignition is on, the PCM cuts ground to PGM-FI main relay 2 (FUEL PUMP) which cuts current to the fuel pump.

PGM-FI Main Relay 1 and 2
PGM-FI main relay 1 (FI MAIN) is energized whenever the ignition switch is ON (II) to supply battery voltage to the PCM, power to the injectors, and power for PGM-FI main relay 2 (FUEL PUMP). PGM-FI main relay 2 (FUEL PUMP) is energized to supply power to the fuel pump for 2 seconds when the ignition switch is turned ON (II), and when the engine is cranking or running.

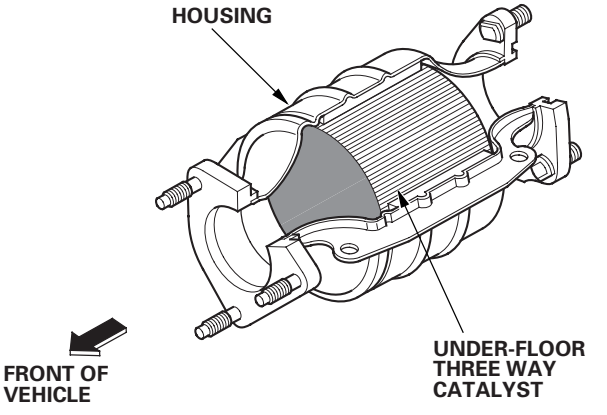
Catalytic Converter System

Warm Up/Three Way Catalytic Converter (WU-TWC) and Under-Floor Three Way Catalytic Converter (TWC)
The WU-TWC/TWC converts hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas to carbon dioxide (CO_2), nitrogen (N_2), and water vapor.

WU-TWC



TWC



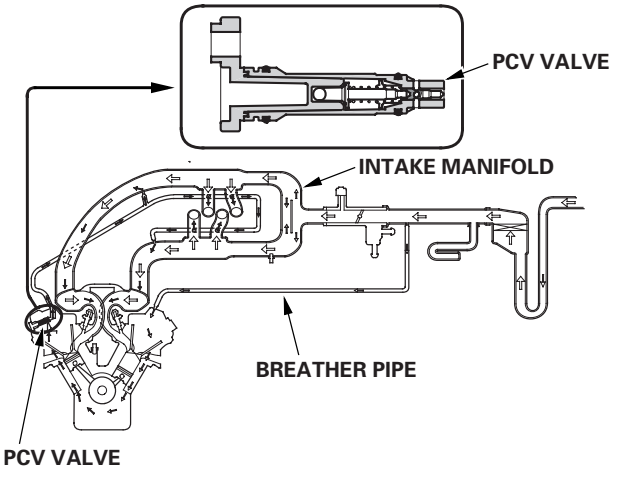
Exhaust Gas Recirculation (EGR) System

Refer to the system diagram to see a functional layout of the system.

EGR Valve
The EGR valve lowers peak combustion temperatures and reduces oxides of nitrogen emissions (NOx) by recirculating exhaust gas through the intake manifold and into the combustion chambers.

Positive Crankcase Ventilation (PCV) System

The PCV valve prevents blow-by gasses from escaping into the atmosphere by venting them into the intake manifold.



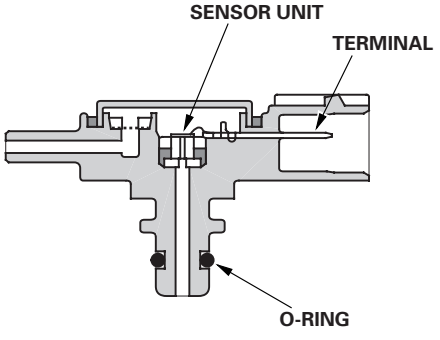
Evaporative Emission (EVAP) Control System

Refer to the system diagram to see a functional layout of the system.

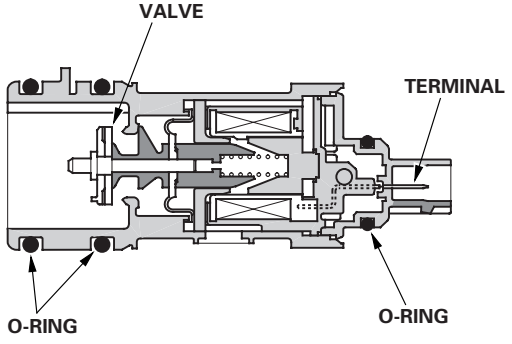
EVAP Canister
The EVAP canister temporarily stores fuel vapor from the fuel tank until it can be purged from the EVAP canister into the engine and burned.

EVAP Canister Purge Valve
When the engine coolant temperature is below 140 ℉ (60 ℃), the PCM turns off the EVAP canister purge valve which cuts vacuum to the EVAP canister.

Fuel Tank Pressure (FTP) Sensor
The FTP sensor converts fuel tank absolute pressure into an electrical input to the PCM.



EVAP Canister Vent Shut Valve
The EVAP canister vent shut valve is on the EVAP canister.
The EVAP canister vent shut valve controls the venting of the EVAP canister.



(cont'd)

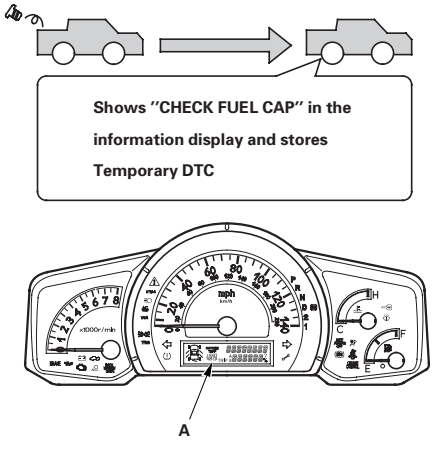
System Description (cont'd)

Fuel Cap Warning Message

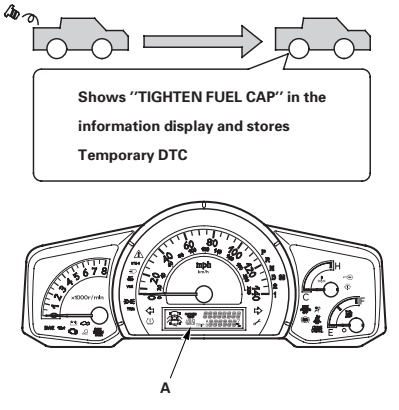
The PCM detects a loose or missing fuel fill cap under certain conditions, and alerts the driver by showing the information in the odometer/ outside temperature display. If the PCM detects a small volume leak, the MIL may come on during the third drive cycle, and store a DTC.

First drive cycle
During the first drive cycle after a cold start, the PCM alerts the driver to check the fuel fill cap by showing a ''CHECK FUEL CAP'' ('06 model) or a ''TIGHTEN FUEL CAP'' ('07-08 models) message on the multi-information display (A), and it stores Temporary DTC P0457 ''Evaporative Emission (EVAP) System Leak Detected/Fuel Fill Cap Loose or Missing.'' Tightening the fuel cap does not make the message go off immediately.

'06 model



'07-08 models



To make the message go off (with the HDS)

Procedure

1. Tighten the fuel fill cap until it clicks.
2. Clear the Temporary DTC with the HDS.
3. Verify there is no leak by doing the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

To make the message go off (without the HDS) ('06 model)

Procedure

1. Tighten the fuel fill cap until it clicks.
2. The message should go off after several days normal driving.

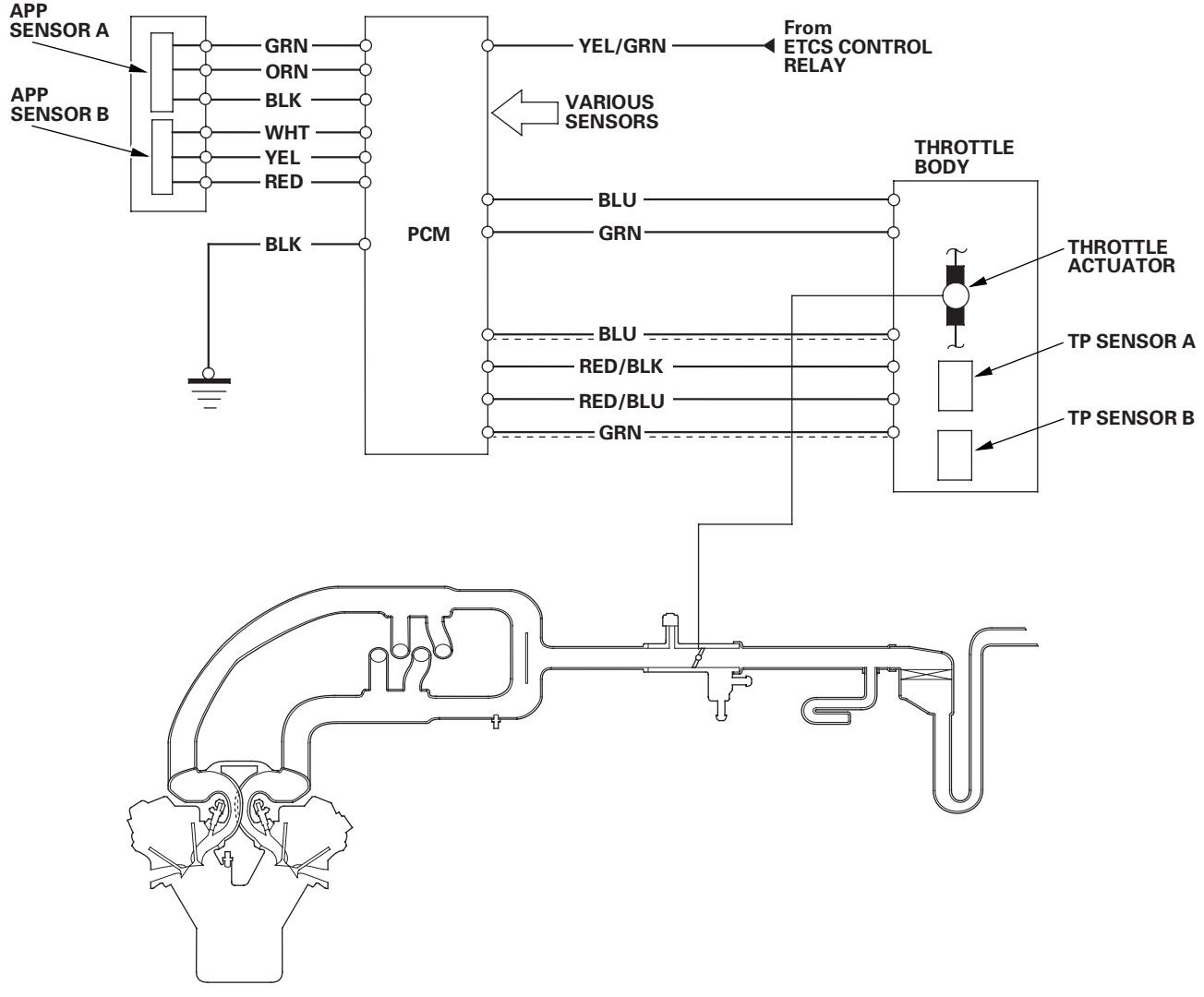
To make the message go off (without the HDS) ('07-08 models)

Procedure

1. Tighten the fuel fill cap until it clicks.
2. Turn the ignition switch ON (II), then turn the ignition switch OFF.
3. Do step 2 two more times.

Electronic Throttle Control System Diagram

The electronic throttle control system consists of the throttle actuator, throttle position (TP) sensor A/B, accelerator pedal position (APP) sensor A/B, the electronic throttle control system (ETCS) control relay, and the PCM.

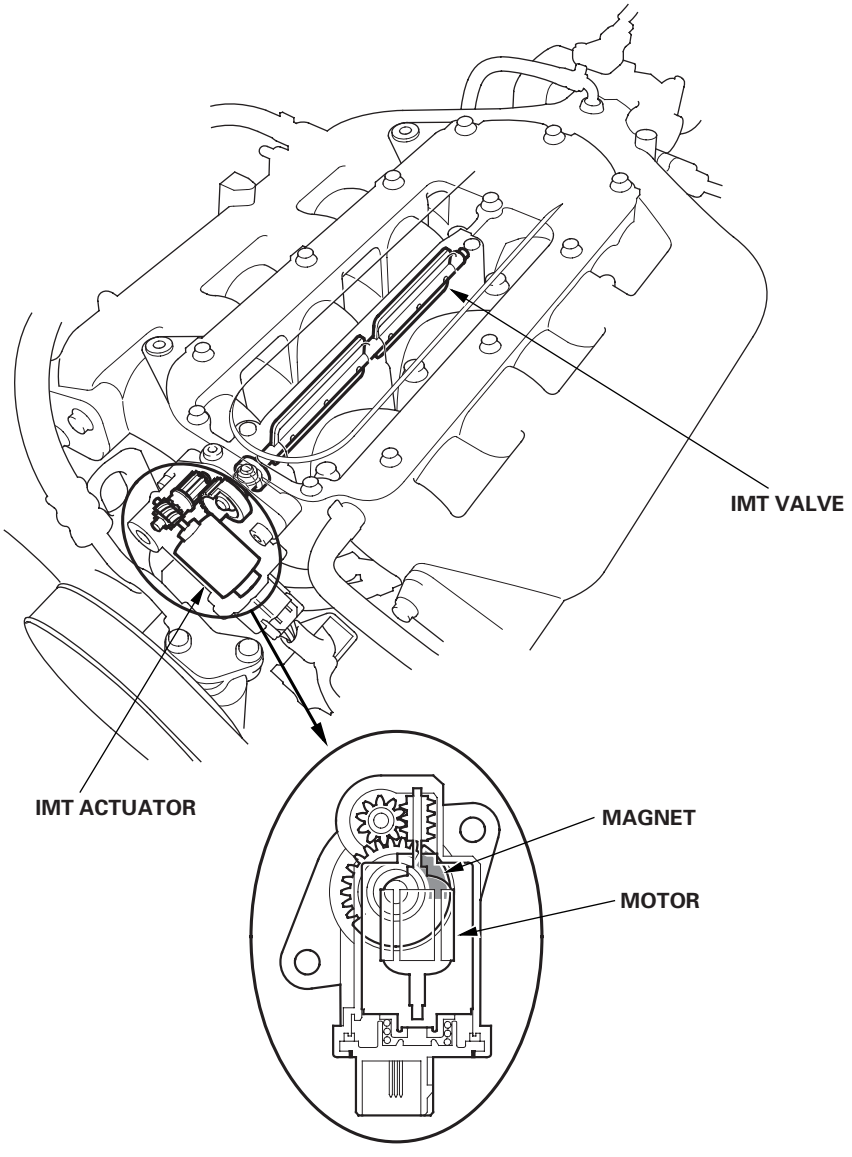


(cont'd)

System Description (cont'd)

Intake Manifold Tuning (IMT) Valve System

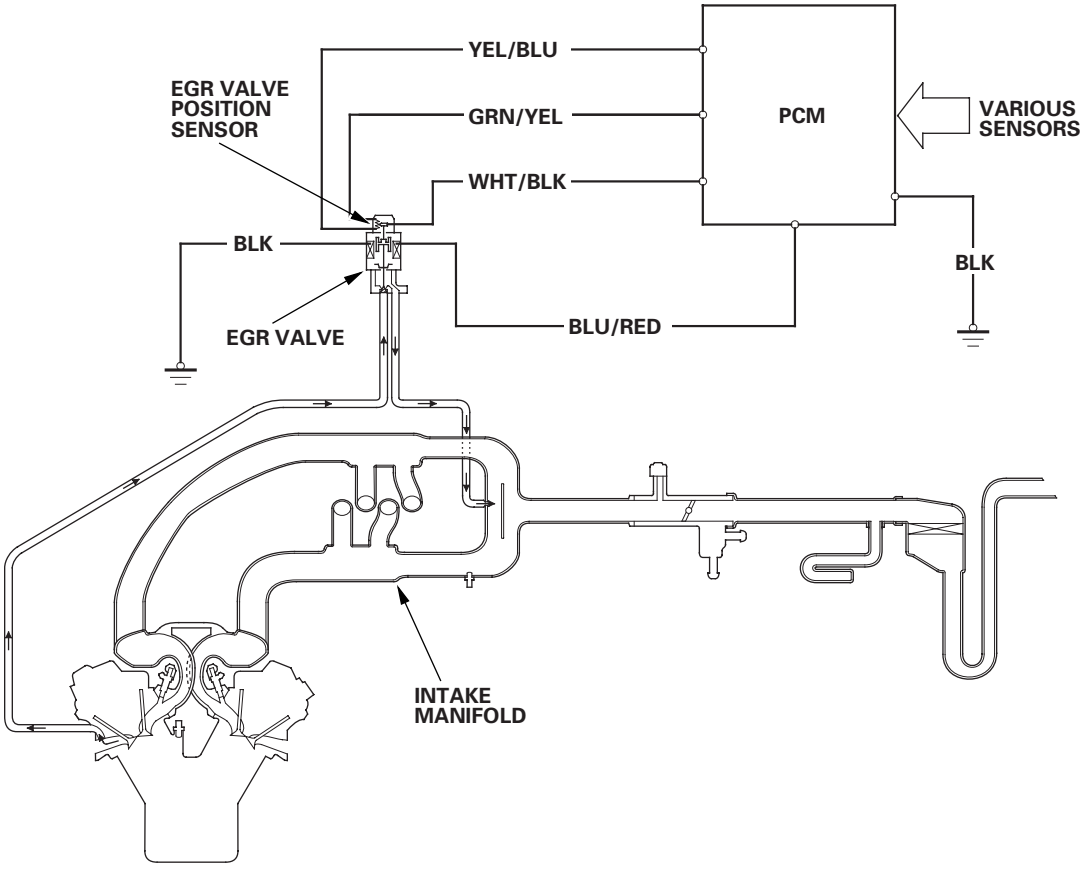
Engine power is adjusted by opening and closing the intake manifold tuning (IMT) actuator. When the valve is closed, there is high torque at low engine speed. When the valve is open, there is high torque at high engine speed.
The intake manifold tuning (IMT) valve actuator contains a sensor that detects the IMT valve position and sends it to the PCM.



Exhaust Gas Recirculation (EGR) System Diagram

The EGR system reduces oxides of nitrogen (NOx) emissions by recirculating exhaust gas through the EGR valve and the intake manifold into the combustion chambers. The PCM memory contains the ideal EGR valve position for various operating conditions.

The EGR valve position sensor detects the amount of EGR valve lift, and sends it to the PCM. The PCM then compares it with the ideal lift in its memory (based on signals sent from other sensors). If there is any difference between the two, the PCM cuts current to the EGR valve.



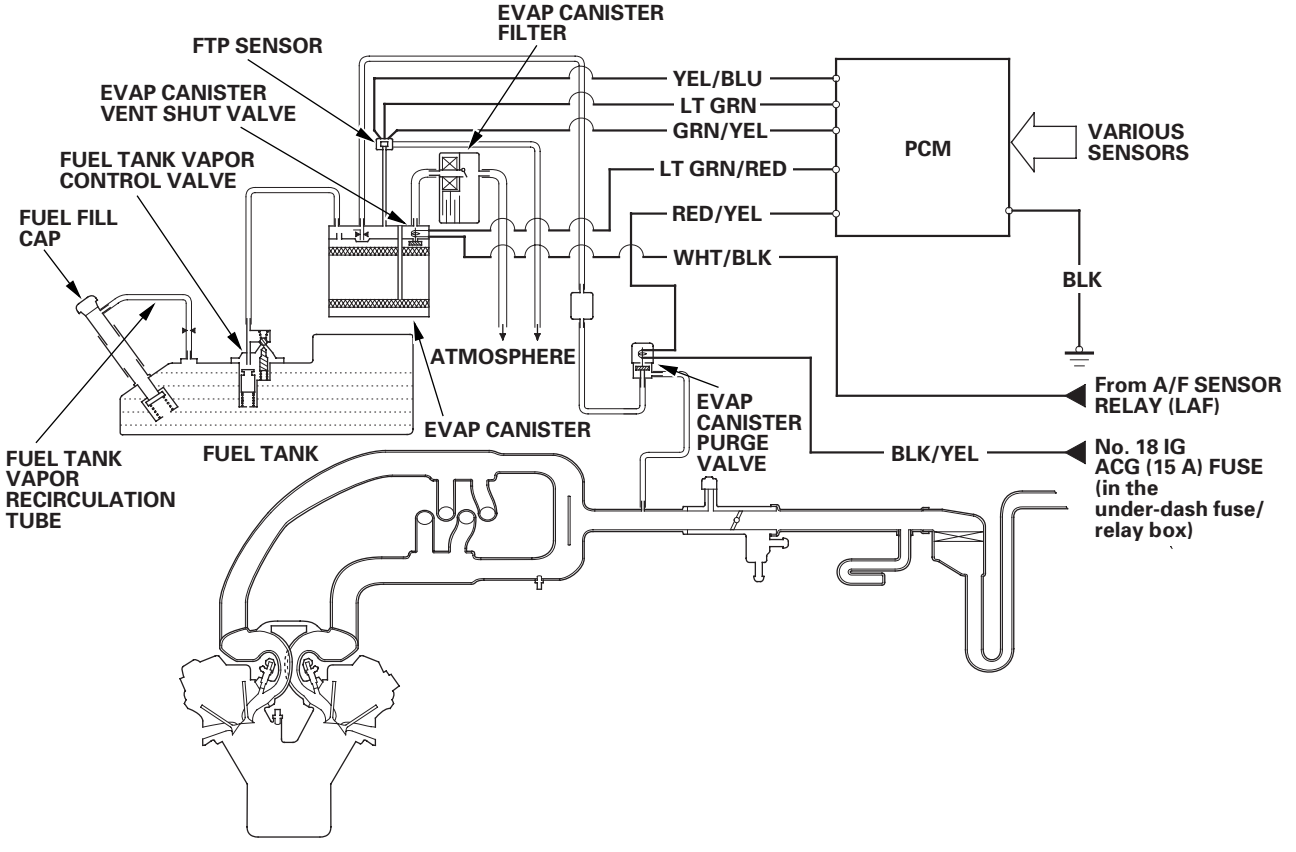
(cont'd)

System Description (cont'd)

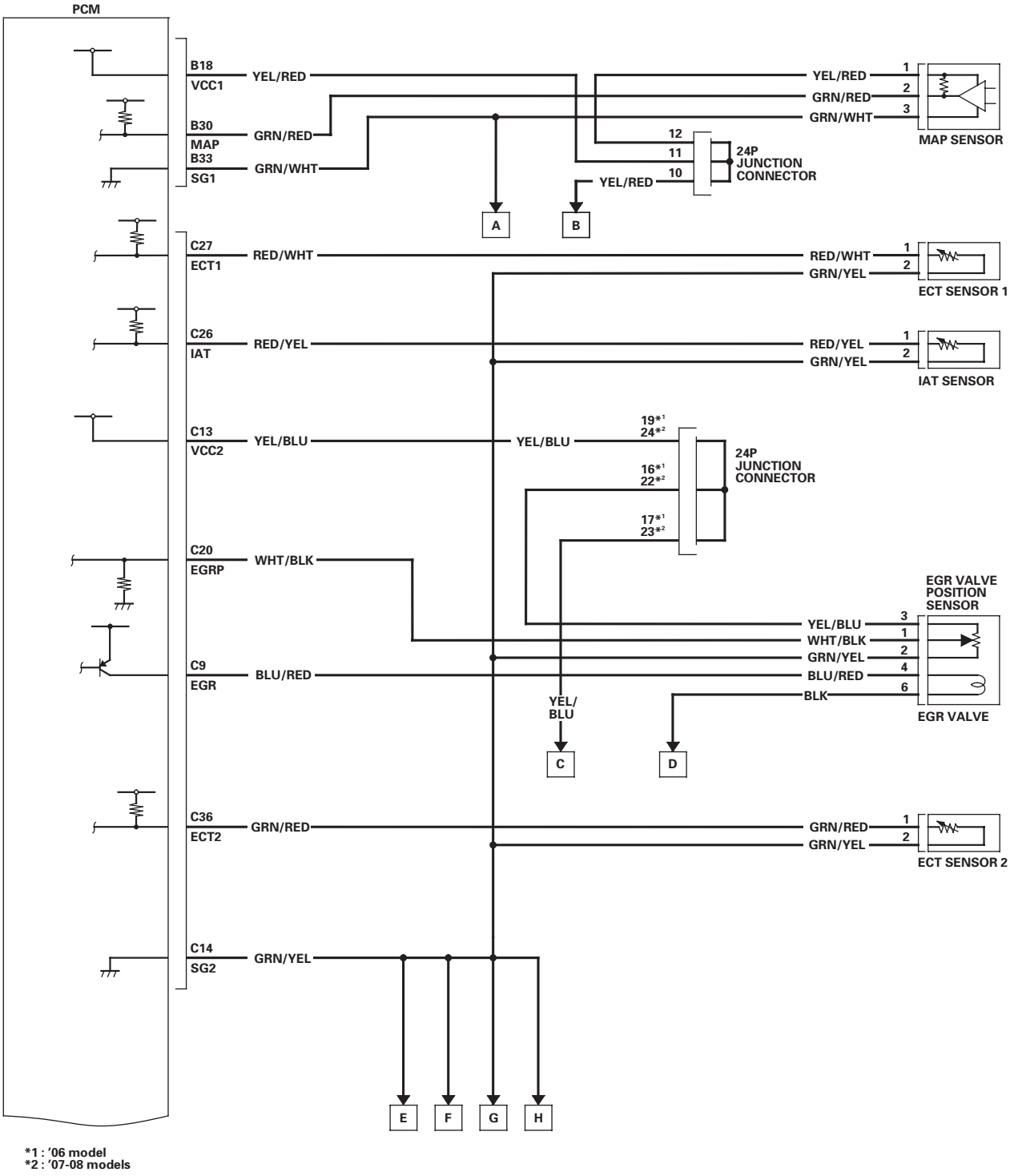
Evaporative Emission (EVAP) Control Diagram

The EVAP controls minimize the amount of fuel vapor escaping to the atmosphere. Vapor from the fuel tank is temporarily stored in the EVAP canister until it can be purged from the canister into the engine and burned.

- The EVAP canister is purged by drawing fresh air through it and into a port on the intake manifold. The purging vacuum is controlled by the EVAP canister purge valve, which operates whenever engine coolant temperature is above 140 ℉ (60 ℃).
- During refueling, the fuel tank vapor control valve opens with the pressure in the fuel tank, and feeds the fuel vapor to the EVAP canister.



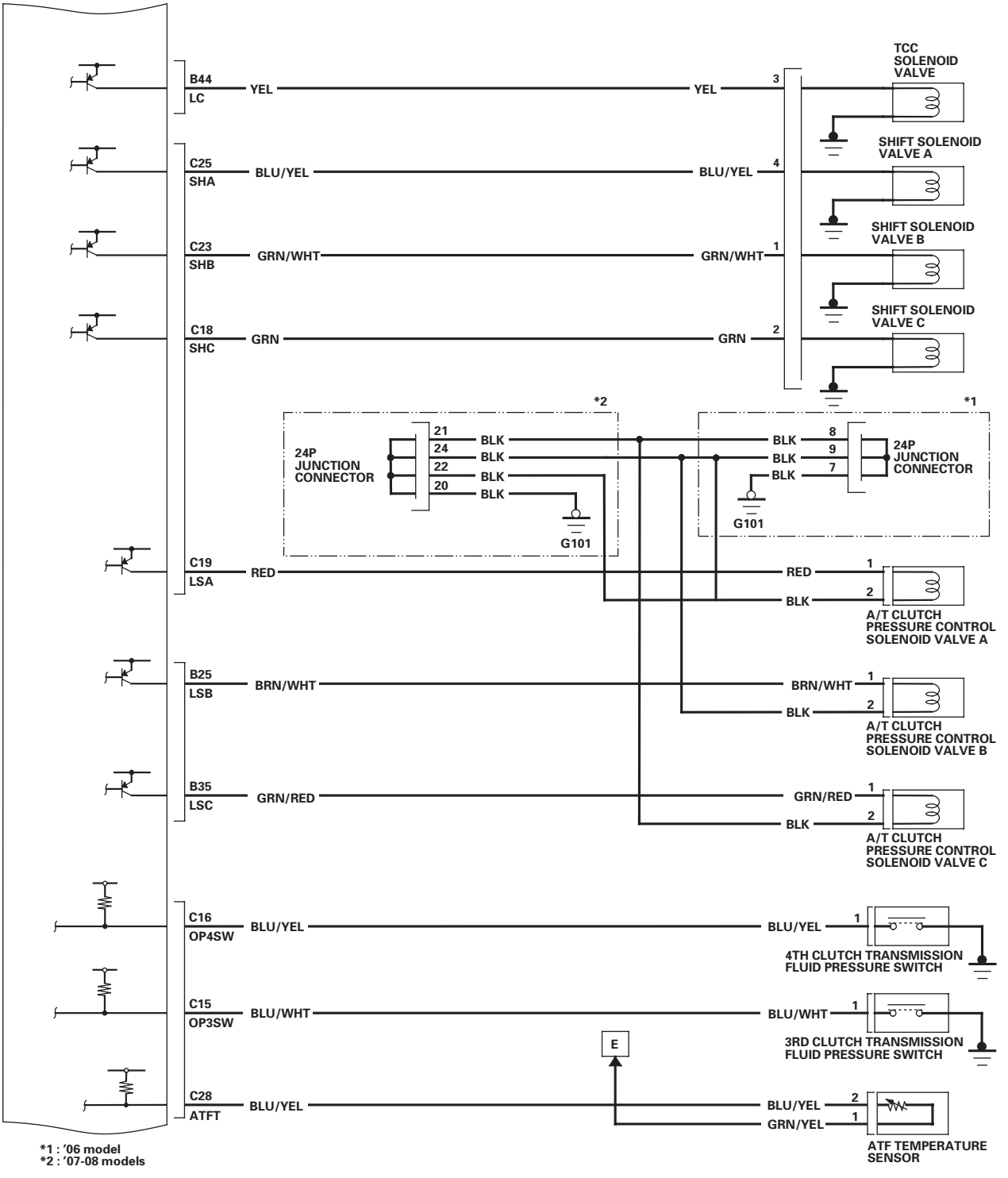
PCM Circuit Diagram

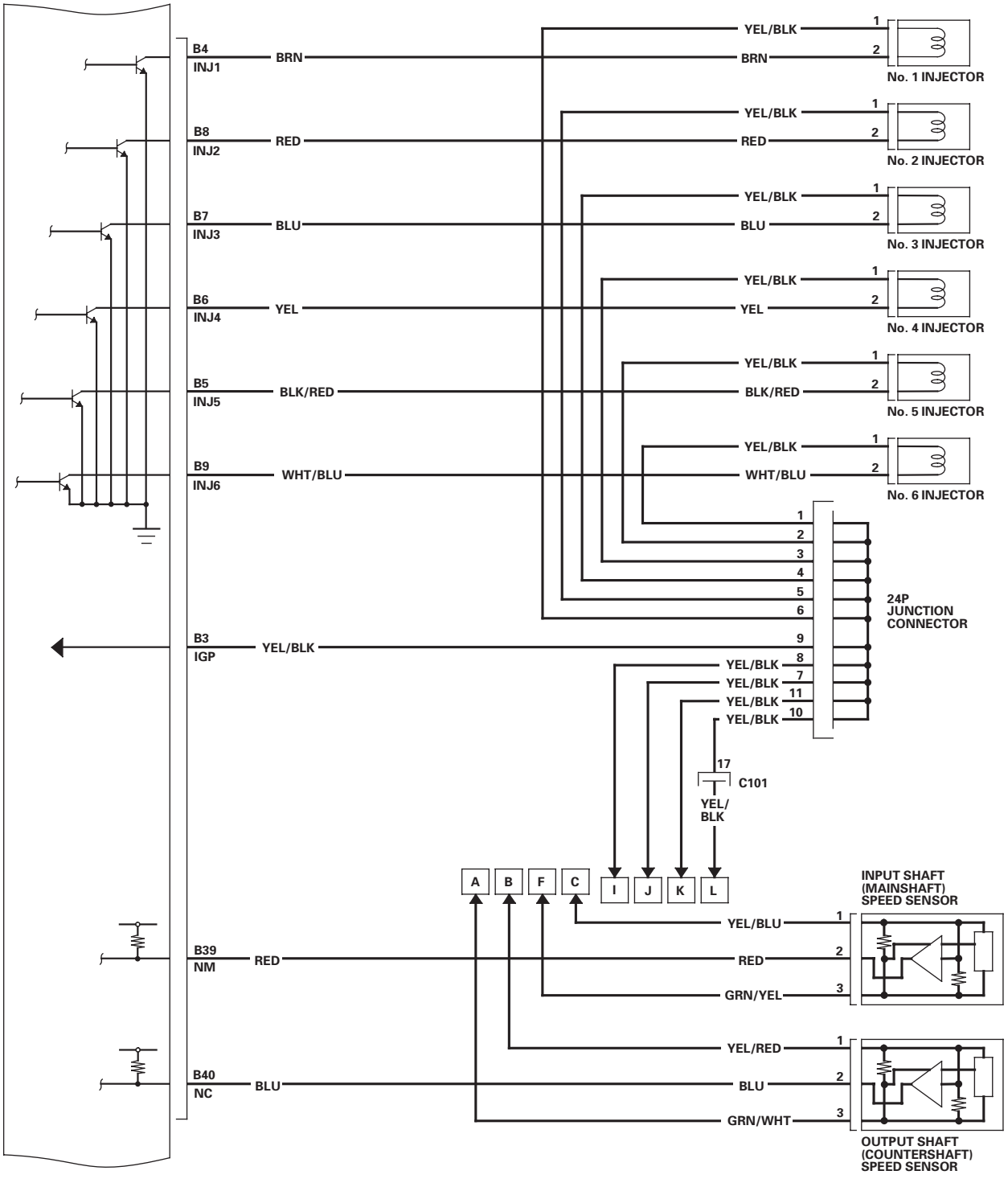


(cont'd)

System Description (cont'd)

PCM Circuit Diagram (cont'd)

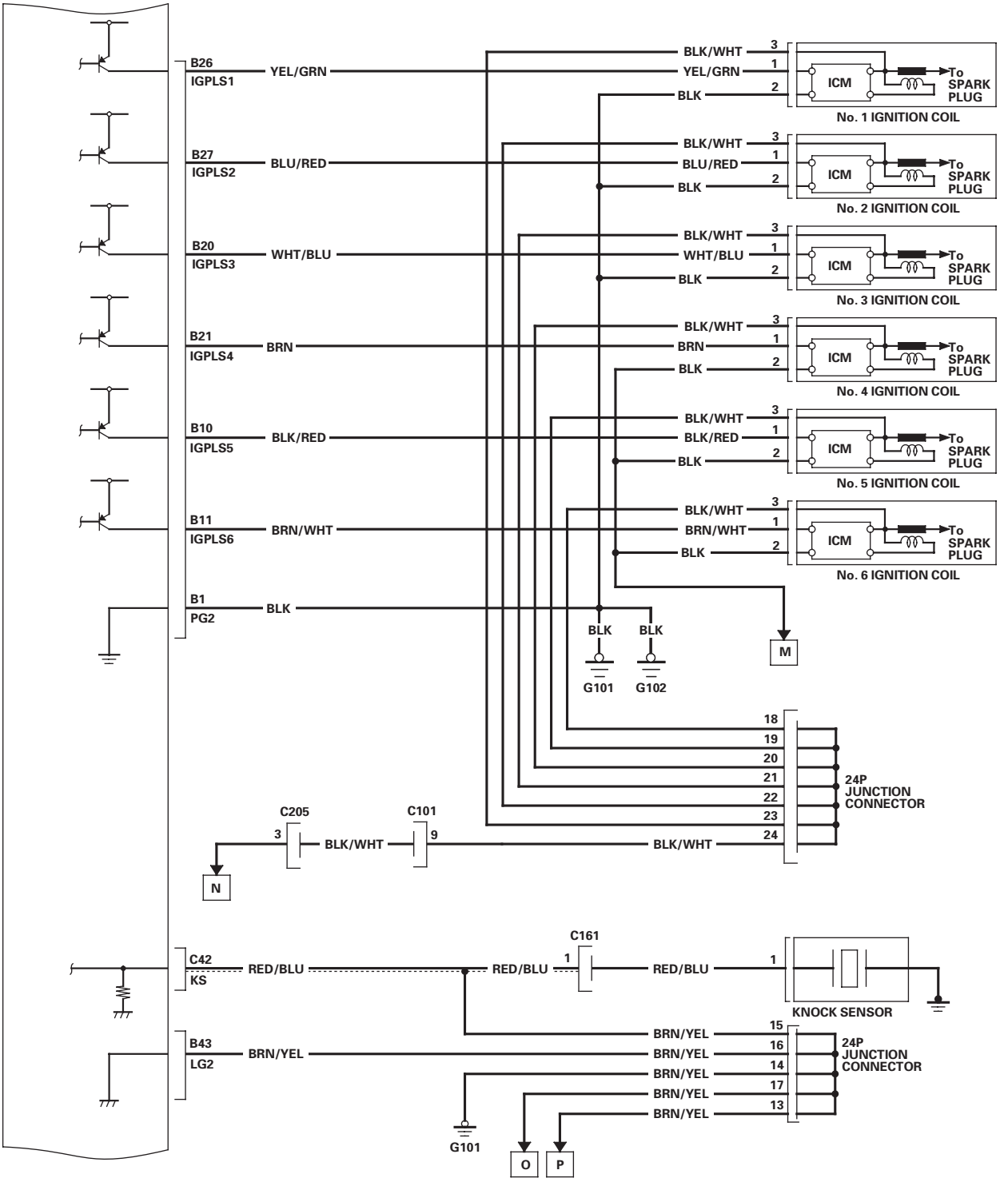


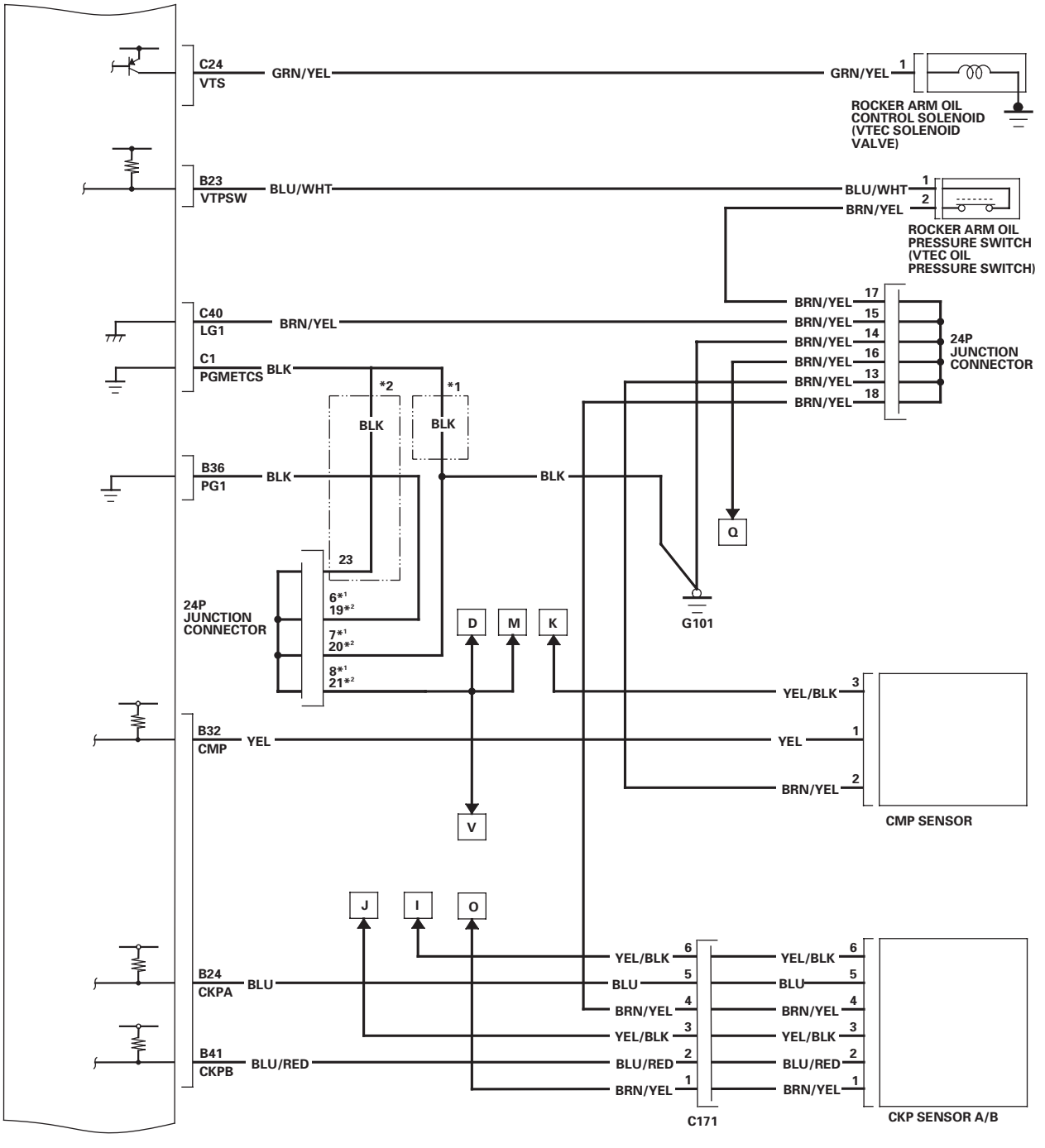

B4
INJ1
BRN
B8
INJ2
RED
B7
INJ3
BLU
B6
INJ4
YEL
B5
INJ5
BLK/RED
B9
INJ6
WHT/BLU
B3
IGP
YEL/BLK
B39
NM
RED
B40
NC
BLU
YEL/BLK
BRN
No. 1 INJECTOR
YEL/BLK
RED
No. 2 INJECTOR
YEL/BLK
BLU
No. 3 INJECTOR
YEL/BLK
YEL
No. 4 INJECTOR
YEL/BLK
BLK/RED
No. 5 INJECTOR
YEL/BLK
WHT/BLU
No. 6 INJECTOR
24P
JUNCTION
CONNECTOR
YEL/BLK
YEL/BLK
YEL/BLK
YEL/BLK
17
C101
YEL/
BLK
A
B
F
C
I
J
K
L
INPUT SHAFT
(MAINSHAFT)
SPEED SENSOR
YEL/BLU
RED
GRN/YEL
YEL/RED
BLU
GRN/WHT
OUTPUT SHAFT
(COUNTERSHAFT)
SPEED SENSOR

(cont'd)

System Description (cont'd)

PCM Circuit Diagram (cont'd)



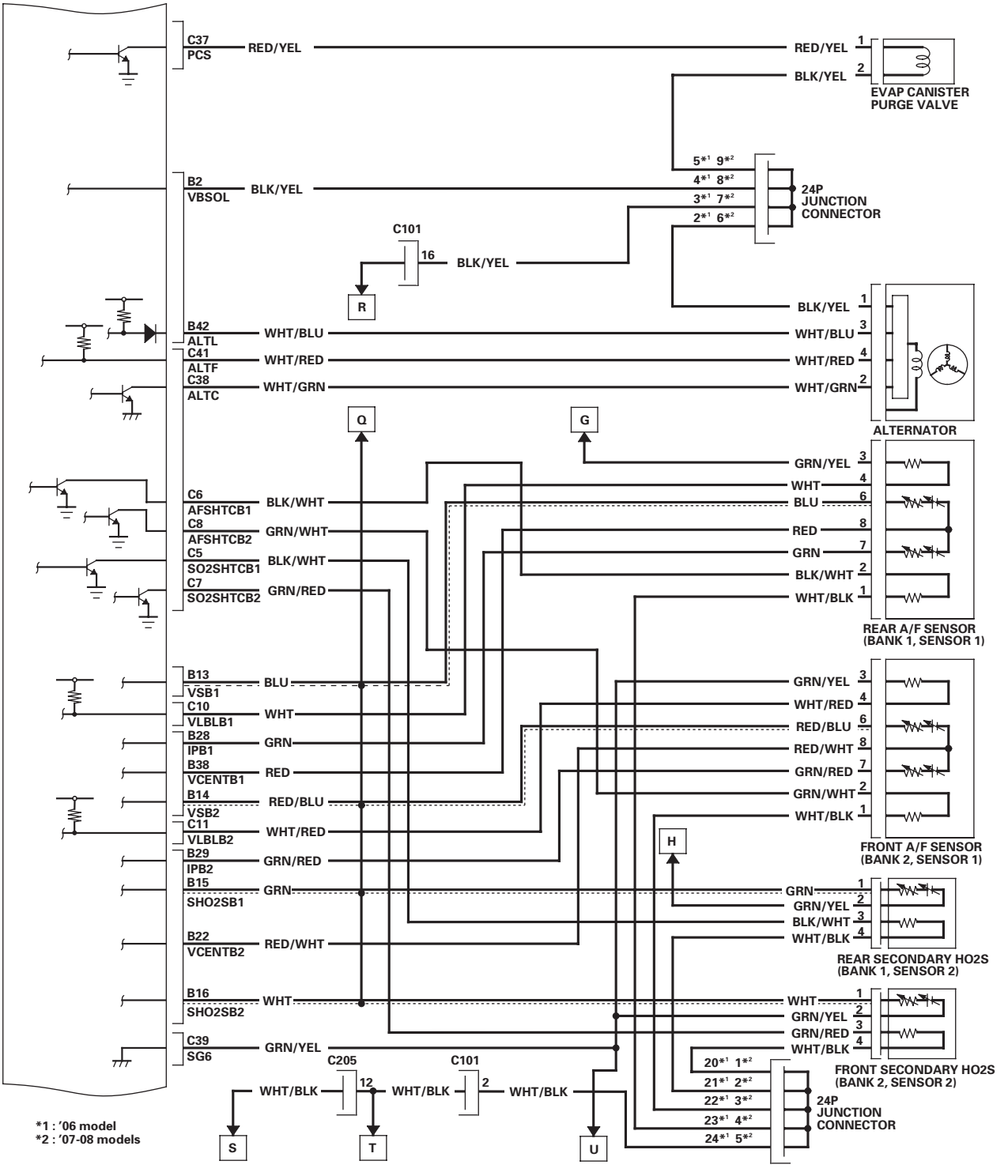


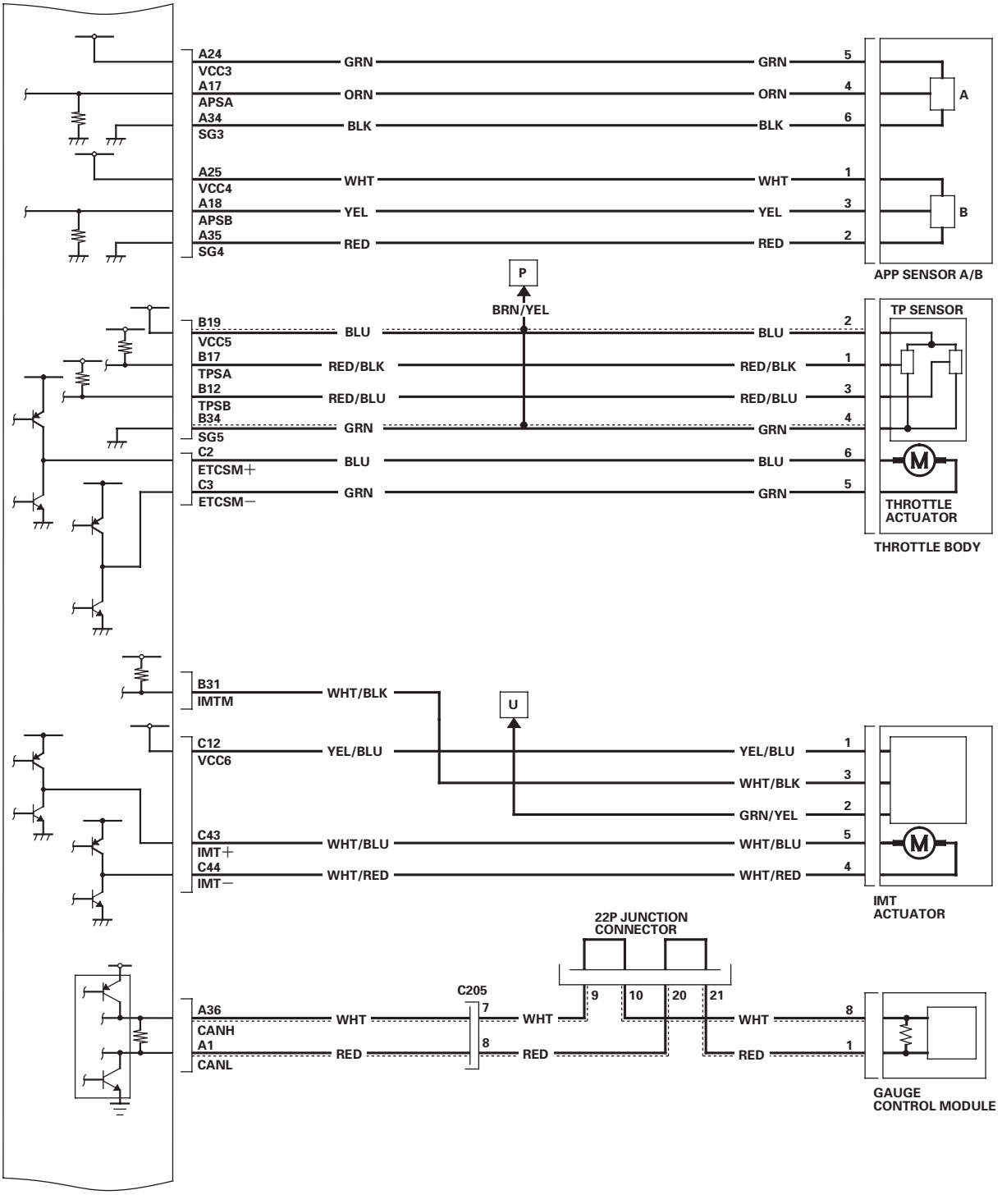
*1 : '06 model
*2 : '07-08 models

(cont'd)

System Description (cont'd)

PCM Circuit Diagram (cont'd)

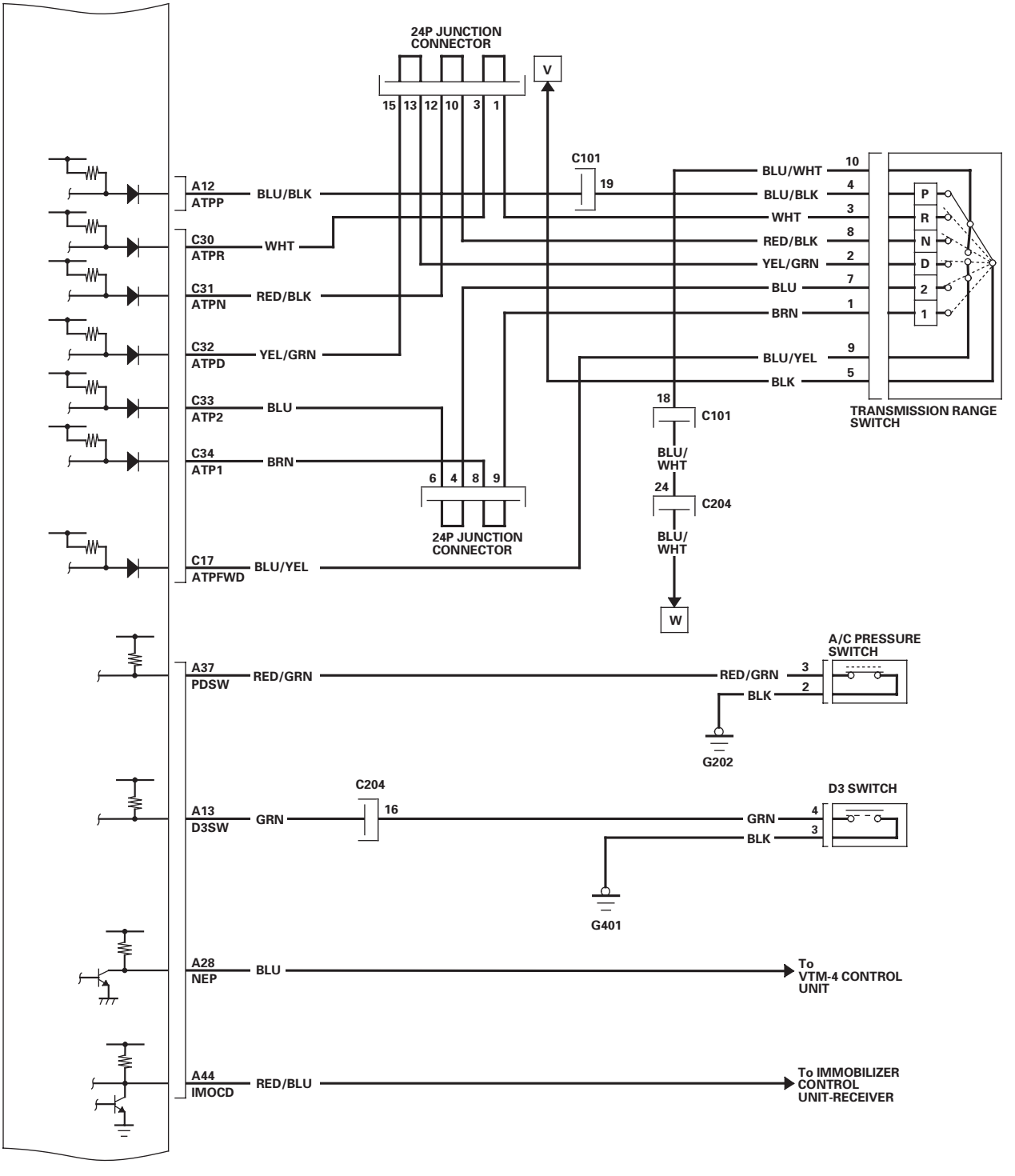


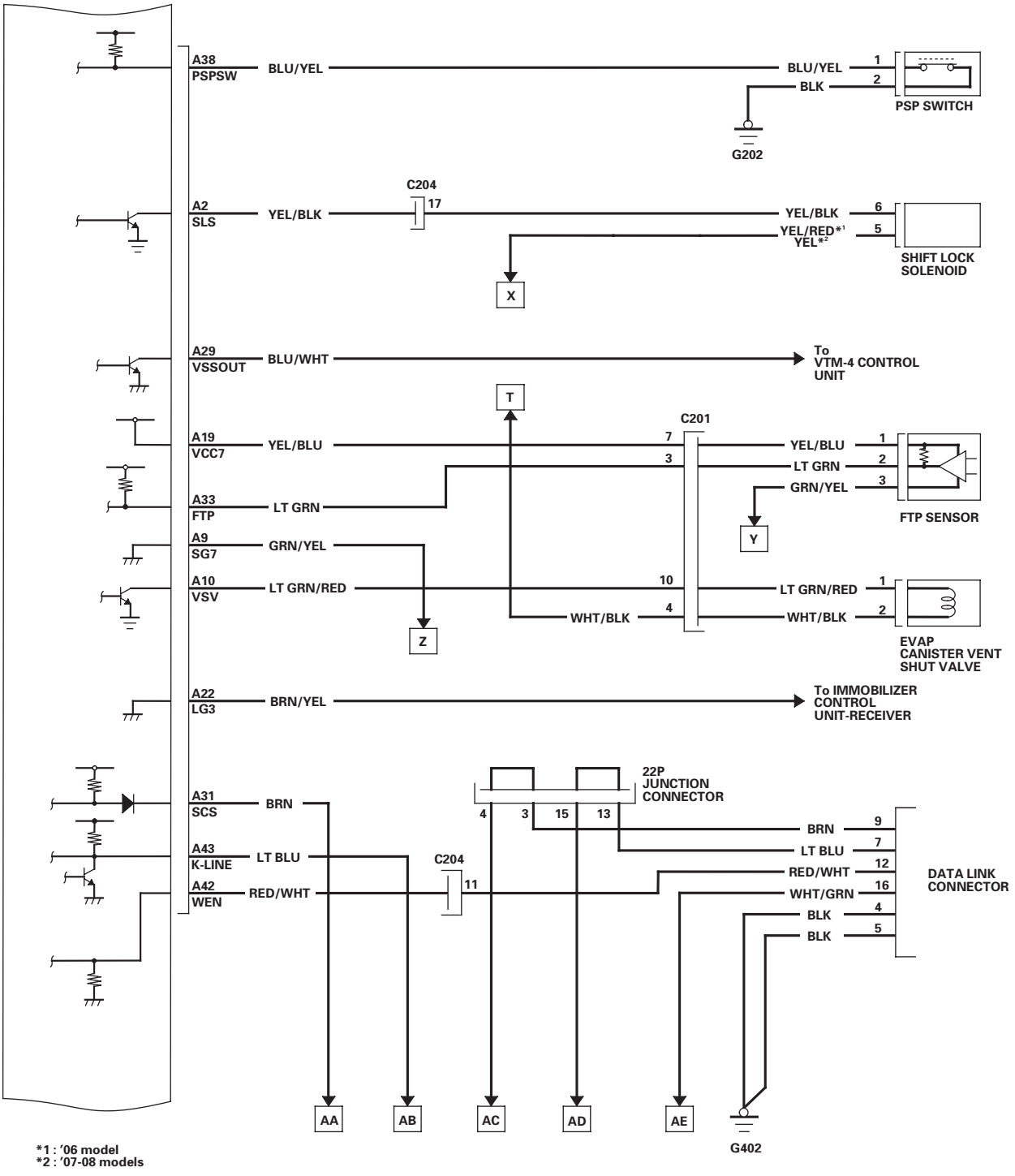

A24
VCC3
A17
APSA
A34
SG3
A25
VCC4
A18
APSB
A35
SG4
GRN
ORN
BLK
WHT
YEL
RED
GRN
ORN
BLK
WHT
YEL
RED
5
4
6
1
3
2
A
B
APP SENSOR A/B
P
BRN/YEL
B19
VCC5
B17
TPSA
B12
TPSB
B34
SG5
C2
ETCSM+
C3
ETCSM−
BLU
RED/BLK
RED/BLU
GRN
BLU
GRN
BLU
RED/BLK
RED/BLU
GRN
BLU
GRN
2
1
3
4
6
5
TP SENSOR
M
THROTTLE ACTUATOR
THROTTLE BODY
B31
IMTM
WHT/BLK
U
C12
VCC6
C43
IMT+
C44
IMT−
YEL/BLU
WHT/BLU
WHT/RED
YEL/BLU
WHT/BLK
GRN/YEL
WHT/BLU
WHT/RED
1
3
2
5
4
M
IMT ACTUATOR
22P JUNCTION CONNECTOR
C205
9
10
20
21
A36
CANH
A1
CANL
WHT
RED
7
8
WHT
RED
WHT
RED
8
1
GAUGE CONTROL MODULE

(cont'd)

System Description (cont'd)

PCM Circuit Diagram (cont'd)



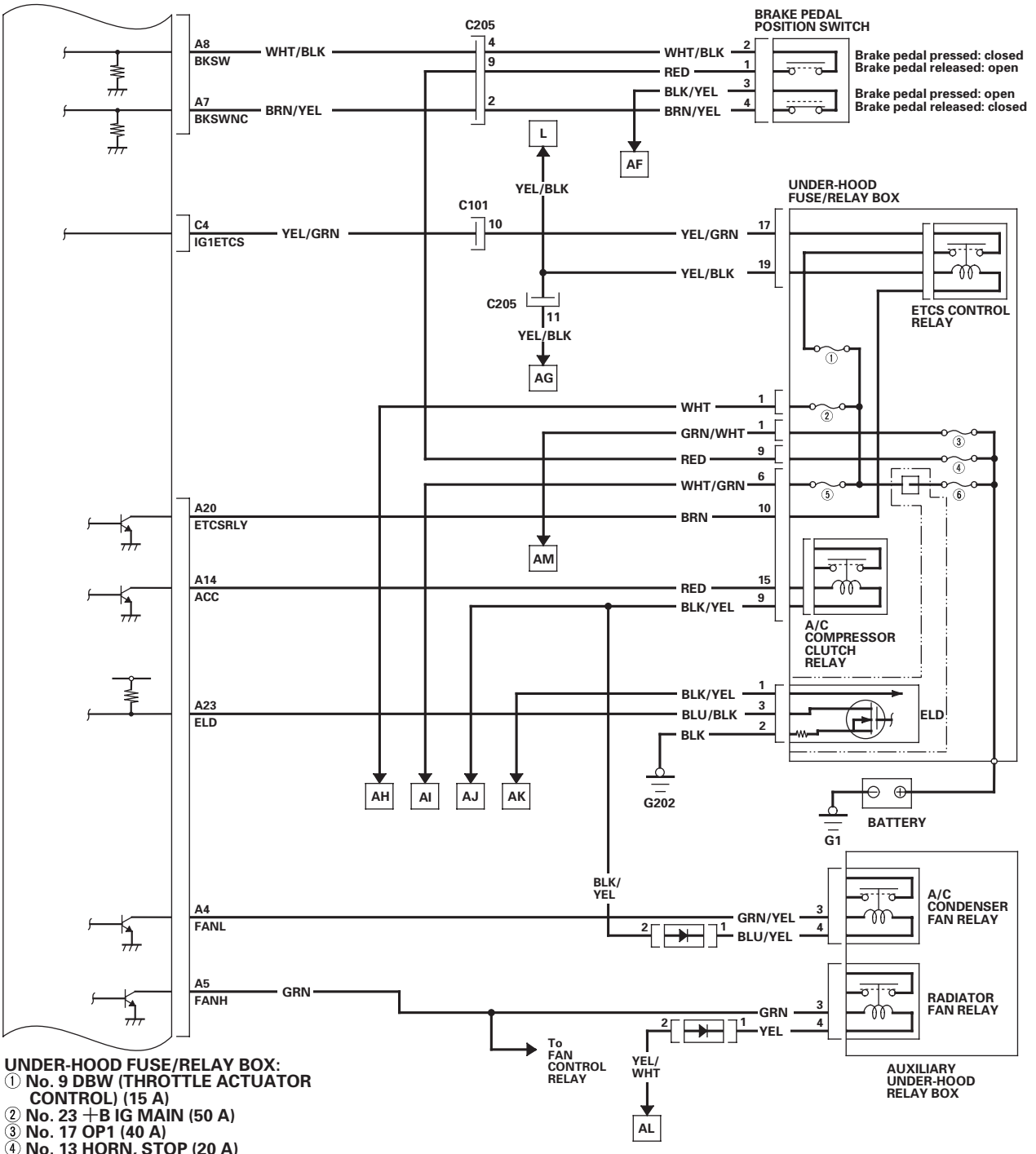


*1 : '06 model
*2 : '07-08 models

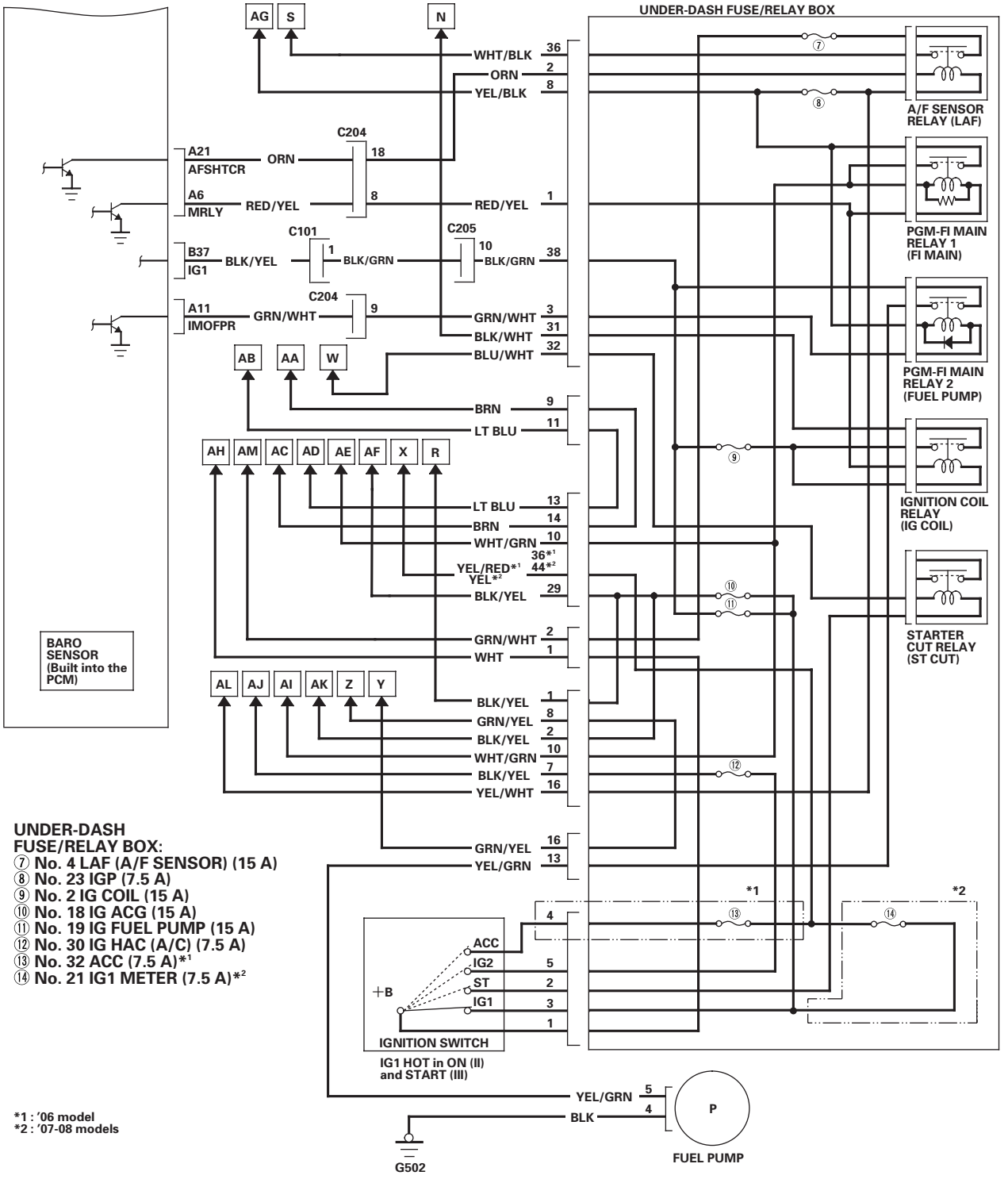
(cont'd)

System Description (cont'd)

PCM Circuit Diagram (cont'd)



UNDER-HOOD FUSE/RELAY BOX:
① No. 9 DBW (THROTTLE ACTUATOR CONTROL) (15 A)
② No. 23 +B IG MAIN (50 A)
③ No. 17 OP1 (40 A)
④ No. 13 HORN, STOP (20 A)
⑤ No. 8 FI ECU (PCM) (15 A)
⑥ No. 22 BATTERY (120 A)



UNDER-DASH FUSE/RELAY BOX:

⑦ No. 4 LAF (A/F SENSOR) (15 A)
⑧ No. 23 IGP (7.5 A)
⑨ No. 2 IG COIL (15 A)
⑩ No. 18 IG ACG (15 A)
⑪ No. 19 IG FUEL PUMP (15 A)
⑫ No. 30 IG HAC (A/C) (7.5 A)
⑬ No. 32 ACC (7.5 A)*1
⑭ No. 21 IG1 METER (7.5 A)*2

*1 : '06 model
*2 : '07-08 models

How to Set Readiness Codes

Malfunction Indicator Lamp (MIL) Indication (In relation to Readiness Codes)

The vehicle has certain ''readiness codes'' that are part of the on-board diagnostics for the emissions systems. If the vehicle's battery has been disconnected or gone dead, if the DTCs have been cleared, or if the PCM has been reset, these readiness codes are reset to incomplete. In some states, part of the emissions testing is to make sure these codes are set to complete. If all of them are not set to complete, the vehicle may fail the emission test, or the test cannot be finished.

To check if the readiness codes are set to complete, turn the ignition switch ON (II), but do not start the engine. The MIL will come on for 15—20 seconds. If it then goes off, the readiness codes are set to complete. If it flashes five times, one or more readiness codes are not set to complete. To set readiness codes from incomplete to complete, do the procedure for the appropriate code.

To check the status of a specific DTC system, check the OBD status in the DTC MENU with the HDS (see page 11-9). This screen displays the code, the current data list of the enable criteria, and the status of the readiness testing.

Catalytic Converter Monitor and Readiness Code

NOTE:
- Do not turn the ignition switch off during the procedure.
- All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the PCM is reset with the HDS.
- Low ambient temperatures or excessive stop-and-go traffic may increase the drive time needed to switch the readiness code from incomplete to complete.
- The readiness code will not switch to complete until all the enable criteria are met.
- If a fault in the secondary HO2S system caused the MIL to come on, the readiness code cannot be set to complete until you correct the fault.

Enable Criteria

- ECT SENSOR 1 at 158 ℉ (70 ℃) or more.
- IAT SENSOR at 20 ℉ (—7 ℃) or more.
- Vehicle speed sensor (VSS) above 25 mph (40 km/h).

Procedure

1. Connect the HDS to the vehicle's data link connector (DLC), and bring up the READINESS CODEs screen for Catalyst in the DTCs MENU.

2. Start the engine.

3. Test-drive the vehicle under stop-and-go conditions with short periods of steady cruise. After about 5 miles (8 km), the readiness code should switch to complete.

4. If the readiness code is still not set to complete, check for a Temporary DTC with the HDS. If there is no DTC, one or more of the enable criteria were probably not met; repeat the procedure.

Evaporative Emission (EVAP) Control System Monitor and Readiness Code

NOTE: All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the PCM is reset with the HDS.

Enable Criteria

- Battery voltage is more than 10.5 V.
- Engine at idle.
- ECT SENSOR 1 and 2 between 176 °F (80 °C) and 212 °F (100 °C).
- MAP SENSOR less than 46.6 kPa (14 in.Hg, 350 mmHg).
- VSS 0 mph (0 km/h).
- IAT SENSOR between 32 °F (0 °C) and 212 °F (100 °C).

Procedure

1. Connect the HDS to the DLC.
2. Start the engine.
3. Select EVAP TEST in the INSPECTION MENU with the HDS, then select the FUNCTION TEST in the EVAP TEST MENU.
   - If the result is normal, readiness is complete.
   - If the result is not normal, go to the next step.
4. Check for a Temporary DTC. If there is no DTC, one or more of the enable criteria were probably not met; repeat the procedure.

Air Fuel Ratio (A/F) Sensor Monitor and Readiness Code

NOTE:
- Do not turn the ignition switch off during the procedure.
- All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the PCM is reset with the HDS.

Enable Criteria

ECT SENSOR 1 at 140 °F (60 °C) or more.

Procedure

1. Start the engine.
2. Test-drive the vehicle under stop-and-go conditions with short periods of steady cruise. During the drive, decelerate (with the throttle fully closed) for 5 seconds. After about 3.5 miles (5.6 km), the readiness code should switch from incomplete to complete.
3. Check the readiness codes screen for the AIR FUEL RATIO (A/F) SENSOR in the DTCs MENU with the HDS.
   - If the screen shows complete, readiness is complete.
   - If the screen shows not complete, go to the next step.
4. Check for a Temporary DTC. If there is no DTC, the enable criteria was probably not met. Select the DATA LIST Menu. Check the ECT in the ALL DATA LIST with the HDS. If the ECT is less than 140 °F (60 °C), run the engine until it is more than 140 °F (60 °C), then repeat the procedure.

(cont'd)

How to Set Readiness Codes (cont'd)

Air Fuel Ratio (A/F) Sensor Heater Monitor Readiness Code

NOTE: All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the PCM is reset with the HDS.

Procedure

1. Start the engine, and let it idle for 1 minute. The readiness code should switch from incomplete to complete.

2. If the readiness code is still not set to complete, check for a Temporary DTC. If there is no DTC, repeat the procedure.

Misfire Monitor and Readiness Code

- This readiness code is always set to available because misfiring is continuously monitored.
- Monitoring pauses, and the misfire counter resets, if the vehicle is driven over a rough road.
- Monitoring also pauses, and the misfire counter holds at its current value, if the throttle position changes more than a predetermined value, or if driving conditions fall outside the range of any related enable criteria.

Fuel System Monitor and Readiness Code

- This readiness code is always set to available because the fuel system is continuously monitored during closed loop operation.
- Monitoring pauses when the catalytic converter, EVAP control system, and A/F sensor monitors are active.
- Monitoring also pauses when any related enable criteria are not being met. Monitoring resumes when the enable criteria is again being met.

Comprehensive Component Monitor and Readiness Code

This readiness code is always set to available because the comprehensive component monitor is continuously running whenever the engine is cranking or running.

EGR Monitor and Readiness Code

NOTE:
- Do not turn the ignition switch off during the procedure.
- All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the PCM is reset with the HDS.

Enable Criteria

ECT SENSOR 1 at 176 ℉ (80 ℃) or more.

Procedure

1. Connect the HDS to the DLC.

2. Start the engine.

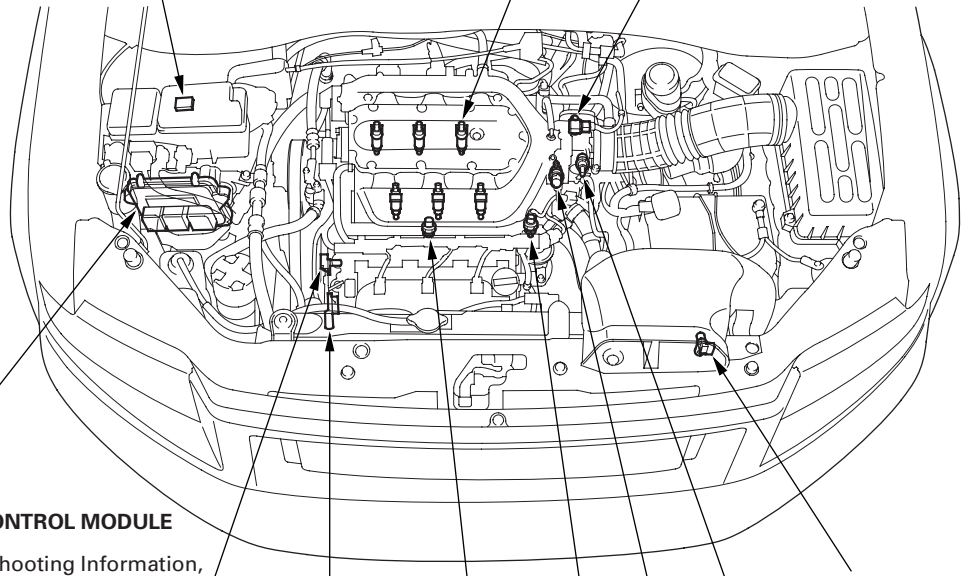
3. Drive at a steady speed with the transmission in D position, at 50—62 mph (80—100 km/h) or above for more than 10 seconds.

4. With the transmission in D position, decelerate from 62 mph (100 km/h) or above by completely releasing the throttle for at least 5 seconds. If the engine is stopped during this procedure, go to step 3 and do the procedure again.

5. Check the OBD status screen for DTC P0401 in the DTC's MENU with the HDS.

   - If it is passed, readiness is complete.
   - If it is not passed, go to step 3 and retest.

Component Location Index



INJECTORS
Replacement, page 11-197

ELECTRICAL LOAD DETECTOR (ELD)

MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
Replacement, page 11-204

POWERTRAIN CONTROL MODULE (PCM)
General Troubleshooting Information, page 11-3
Update, page 11-7
Substitution, page 11-8
Replacement, page 11-205

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR
Replacement, page 14-205

CAMSHAFT POSITION (CMP) SENSOR
Replacement, page 11-203

ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2
Replacement, page 11-201

CRANKSHAFT POSITION (CKP) SENSOR
Replacement, page 11-203

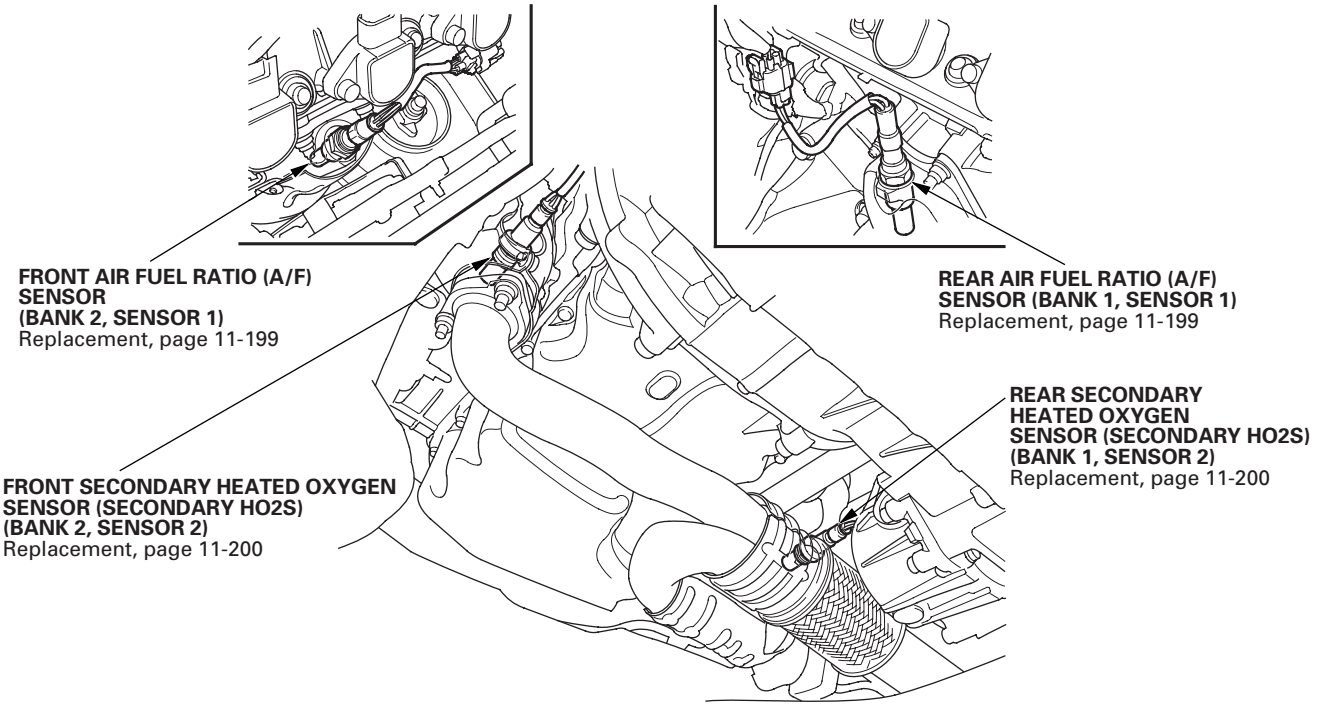
INTAKE AIR TEMPERATURE (IAT) SENSOR
Replacement, page 11-202

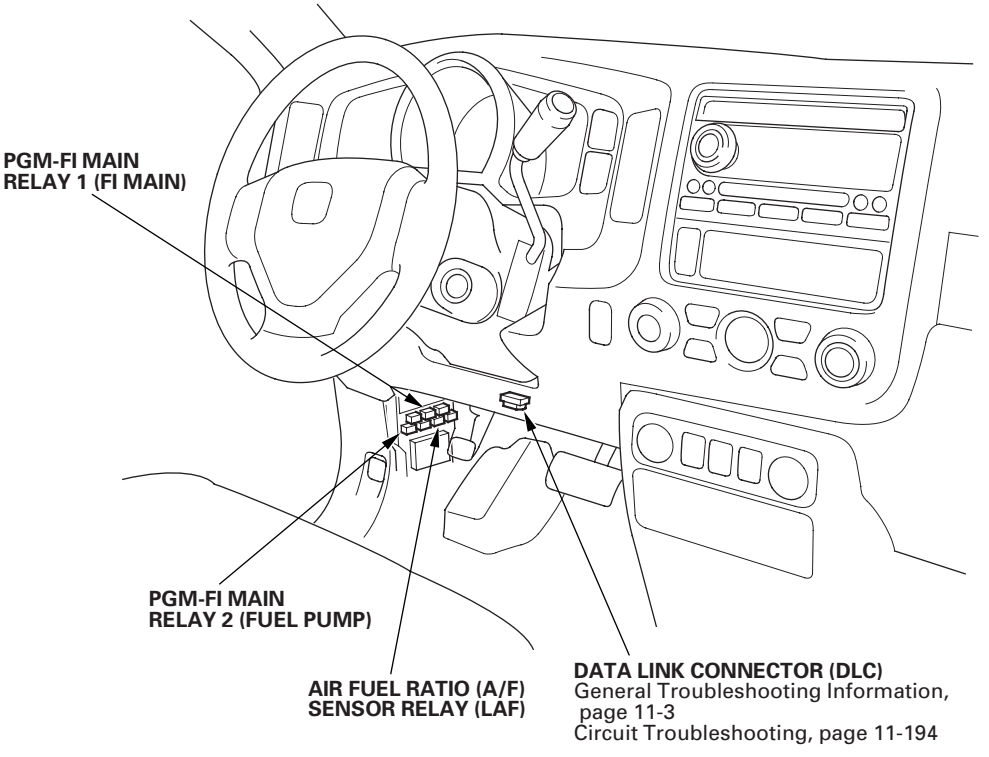
ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1
Replacement, page 11-201

KNOCK SENSOR
Replacement, page 11-202

(cont'd)

Component Location Index (cont'd)





DTC P0107: MAP Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 3 kPa (1.0 in.Hg, 26 mmHg), or 0.23 V or less indicated?

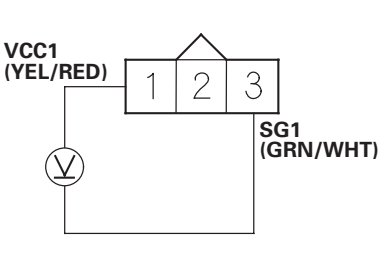
   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the MAP sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 3 kPa (1.0 in.Hg, 26 mmHg), or 0.23 V or less indicated?

   YES—Go to step 12.

   NO—Go to step 7.
7. Measure voltage between MAP sensor 3P connector terminals No. 1 and No. 3.



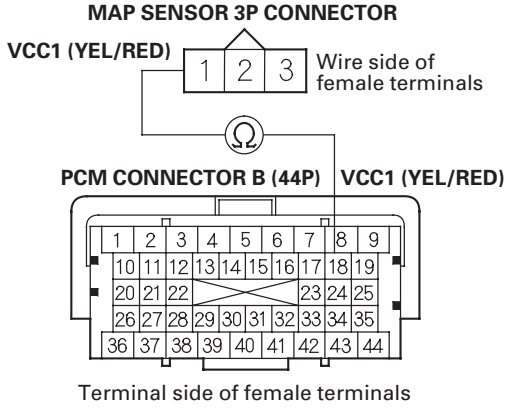
Wire side of female terminals

Is there about 5 V?

YES—Go to step 16.

NO—Go to step 8.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector B (44P).
11. Check for continuity between PCM connector terminal B18 and MAP sensor 3P connector terminal No. 1.



Terminal side of female terminals

Is there continuity?

YES—Go to step 23.

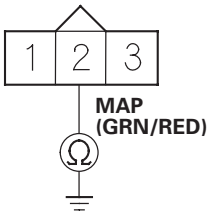
NO—Repair open in the wire between the PCM (B18) and the MAP sensor, then go to step 18.

(cont'd)

DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector B (44P).
15. Check for continuity between MAP sensor 3P connector terminal No. 2 and body ground.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (B30) and the MAP sensor, then go to step 18.

NO—Go to step 23.

16. Turn the ignition switch OFF.
17. Replace the MAP sensor (see page 11-204).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Do the PCM idle learn procedure (see page 11-273).
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0107 indicated?

    YES—Check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
23. Reconnect all connectors.
24. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0107 indicated?

    YES—Check for poor connections or loose terminals at the MAP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0108: MAP Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

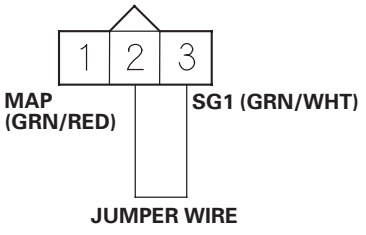
1. Turn the ignition switch ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 160 kPa (47.1 in.Hg, 1,197 mmHg), or 4.49 V or more indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the MAP sensor 3P connector.
5. Connect MAP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

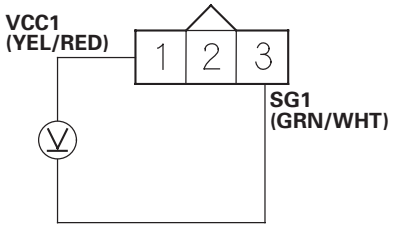
6. Turn the ignition switch ON (II).
7. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 160 kPa (47.1 in.Hg, 1,197 mmHg), or 4.49 V or more indicated?

   YES—Go to step 8.

   NO—Go to step 18.
8. Remove the jumper wire from the MAP sensor 3P connector.
9. Measure voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

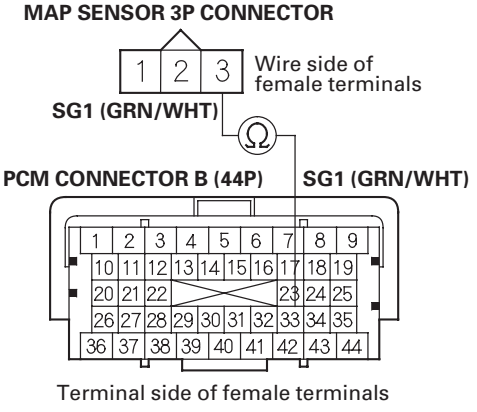
YES—Go to step 14.

NO—Go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector B (44P).
13. Check for continuity between PCM connector terminal B33 and MAP sensor 3P connector terminal No. 3.

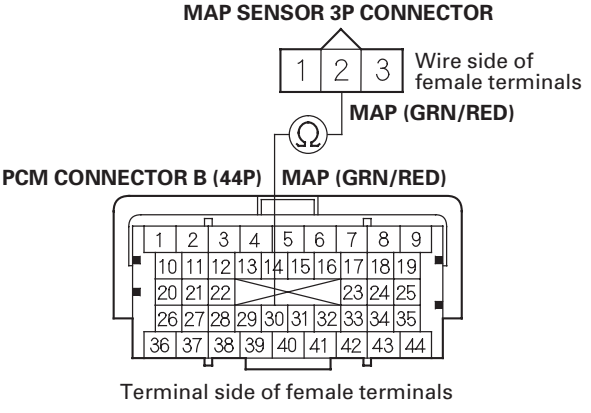


Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the PCM (B33) and the MAP sensor, then go to step 20.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect PCM connector B (44P).
17. Check for continuity between PCM connector terminal B30 and MAP sensor 3P connector terminal No. 2.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the PCM (B30) and the MAP sensor, then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the MAP sensor (see page 11-204).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the PCM with the HDS.
23. Do the PCM idle learn procedure (see page 11-273).
24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0108 indicated?

    YES—Check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
25. Reconnect all connectors.
26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0108 indicated?

    YES—Check for poor connections or loose terminals at the MAP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P0111: IAT Sensor Circuit Range/ Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check for poor connections or loose terminals at ECT sensor 1 and the IAT sensor.

   Are the connections and terminals OK?

   YES—Go to step 2.

   NO—Repair the connections or terminals, then go to step 15.

2. Remove the IAT sensor (see page 11-202).
3. Allow the IAT sensor to cool to ambient temperature.
4. Note the ambient temperature.
5. Connect the IAT sensor to its 2P connector, but do not install it on the intake manifold.
6. Turn the ignition switch ON (II).
7. Note the value of the IAT SENSOR quickly in the DATA LIST with the HDS.
8. Compare the value of the IAT SENSOR to the ambient temperature.

   Does the value of the IAT SENSOR differ 5.4 °F (3 °C) or more?

   YES—Go to step 13.

   NO—Go to step 9.

9. Disconnect the IAT sensor from the 2P connector.
10. Using a heat gun, blow hot air on the IAT sensor for a few seconds. Do not apply the heat longer than a few seconds or you will damage the sensor.
11. Connect the IAT sensor to its 2P connector, but do not install it on the intake manifold.
12. Check the IAT SENSOR in the DATA LIST with the HDS.

    Does the IAT SENSOR change 58 °F (32 °C) or more?

    YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and the PCM. ■

    NO—Go to step 13.

13. Turn the ignition switch OFF.
14. Replace the IAT sensor (see page 11-202).
15. Turn the ignition switch ON (II).
16. Reset the PCM with the HDS.
17. Do the PCM idle learn procedure (see page 11-273).
18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0111 indicated?

    YES—Check for poor connections or loose terminals at the IAT sensor and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0112: IAT Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check the IAT SENSOR in the DATA LIST with the HDS.

   Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

   YES—Go to step 3.

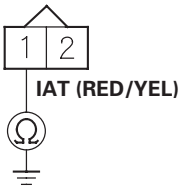
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the IAT sensor 2P connector.
5. Turn the ignition switch ON (II).
6. Check the IAT SENSOR in the DATA LIST with the HDS.

   Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

   YES—Go to step 7.

   NO—Go to step 11.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector C (44P).
10. Check for continuity between IAT sensor 2P connector terminal No. 1 and body ground.

IAT SENSOR 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the IAT sensor and the PCM (C26), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch OFF.
12. Replace the IAT sensor (see page 11-202).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-273).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0112 indicated?

    YES—Check for poor connections or loose terminals at the IAT sensor and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

(cont'd)

DTC Troubleshooting (cont'd)

18. Reconnect all connectors.

19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0112 indicated?

    YES—Check for poor connections or loose terminals at the IAT sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0113: IAT Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

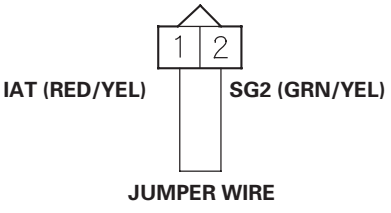
1. Turn the ignition switch ON (II).
2. Check the IAT SENSOR in the DATA LIST with the HDS.

   Is about −40 °F (−40 °C) or less, or 4.92 V or more indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the IAT sensor 2P connector.
5. Connect IAT sensor 2P connector terminals No. 1 and No. 2 with a jumper wire.

IAT SENSOR 2P CONNECTOR



Wire side of female terminals

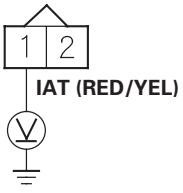
6. Turn the ignition switch ON (II).
7. Check the IAT SENSOR in the DATA LIST with the HDS.

   Is about −40 °F (−40 °C) or less, or 4.92 V or more indicated?

   YES—Go to step 8.

   NO—Go to step 20.
8. Turn the ignition switch OFF.
9. Remove the jumper wire.
10. Turn the ignition switch ON (II).
11. Measure voltage between IAT sensor 2P connector terminal No. 1 and body ground.

IAT SENSOR 2P CONNECTOR



Wire side of female terminals

Is there about 5 V?

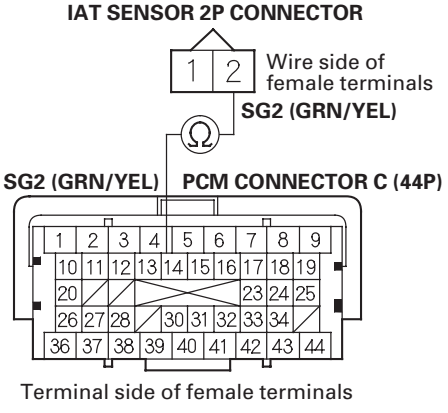
YES—Go to step 12.

NO—Go to step 16.

(cont'd)

DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (44P).
15. Check for continuity between PCM connector terminal C14 and IAT sensor 2P connector terminal No. 2.

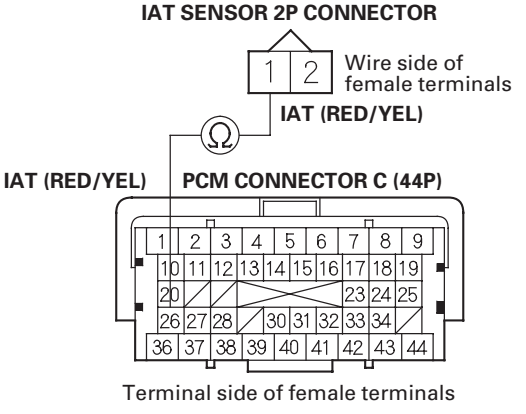


Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (C14) and the IAT sensor, then go to step 22.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector C (44P).
19. Check for continuity between PCM connector terminal C26 and IAT sensor 2P connector terminal No. 1.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (C26) and the IAT sensor, then go to step 22.

20. Turn the ignition switch OFF.
21. Replace the IAT sensor (see page 11-202).
22. Reconnect all connectors.
23. Turn the ignition switch ON (II).
24. Reset the PCM with the HDS.
25. Do the PCM idle learn procedure (see page 11-273).
26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0113 indicated?

    YES—Check for poor connections or loose terminals at the IAT sensor and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
27. Reconnect all connectors.
28. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0113 indicated?

    YES—Check for poor connections or loose terminals at the IAT sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P0116: ECT Sensor 1 Range/ Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about 176 °F (80 °C) or more, or 0.78 V or less indicated?

   YES—Go to step 6.

   NO—Go to step 3.
3. Note the value of ECT SENSOR 1 in the DATA LIST with the HDS.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Does ECT SENSOR 1 change 18 °F (10 °C) or more?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the PCM. ■

   NO—Go to step 11.
6. Note the value of ECT SENSOR 1 in the DATA LIST with the HDS.
7. Turn the ignition switch OFF.
8. Open the hood, and let the engine cool for 3 hours.
9. Turn the ignition switch ON (II).
10. Check ECT SENSOR 1 in the DATA LIST with the HDS.

    Does ECT SENSOR 1 change 18 °F (10 °C) or more?

    YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the PCM. ■

    NO—Go to step 11.
11. Turn the ignition switch OFF.
12. Replace ECT sensor 1 (see page 11-201).
13. Turn the ignition switch ON (II).
14. Reset the PCM with the HDS.
15. Do the PCM idle learn procedure (see page 11-273).
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0116 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1 and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0117: ECT Sensor 1 Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

   YES—Go to step 3.

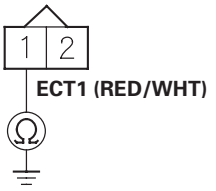
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 1 2P connector.
5. Turn the ignition switch ON (II).
6. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

   YES—Go to step 7.

   NO—Go to step 11.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector C (44P).
10. Check for continuity between ECT sensor 1 2P connector terminal No. 1 and body ground.

ECT SENSOR 1 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between ECT sensor 1 and the PCM (C27), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch OFF.
12. Replace ECT sensor 1 (see page 11-201).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-273).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0117 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1 and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

(cont'd)

DTC Troubleshooting (cont'd)

18. Reconnect all connectors.

19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0117 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1 and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0118: ECT Sensor 1 Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

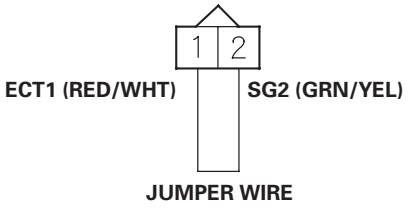
1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about −40 °F (−40 °C) or less, or 4.92 V or more indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 1 2P connector.
5. Connect ECT sensor 1 2P connector terminals No. 1 and No. 2 with a jumper wire.

ECT SENSOR 1 2P CONNECTOR



Wire side of female terminals

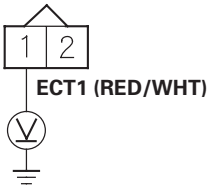
6. Turn the ignition switch ON (II).
7. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about −40 °F (−40 °C) or less, or 4.92 V or more indicated?

   YES—Go to step 8.

   NO—Go to step 20.
8. Turn the ignition switch OFF.
9. Remove the jumper wire.
10. Turn the ignition switch ON (II).
11. Measure voltage between ECT sensor 1 2P connector terminal No. 1 and body ground.

ECT SENSOR 1 2P CONNECTOR



Wire side of female terminals

Is there about 5 V?

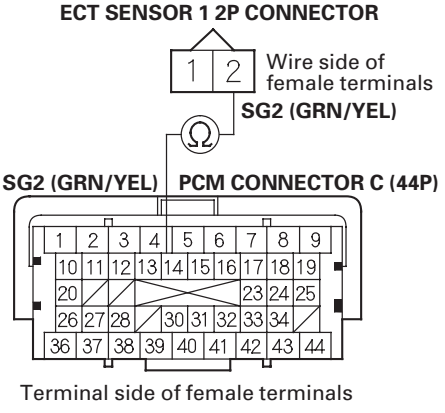
YES—Go to step 12.

NO—Go to step 16.

(cont'd)

DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (44P).
15. Check for continuity between PCM connector terminal C14 and ECT sensor 1 2P connector terminal No. 2.

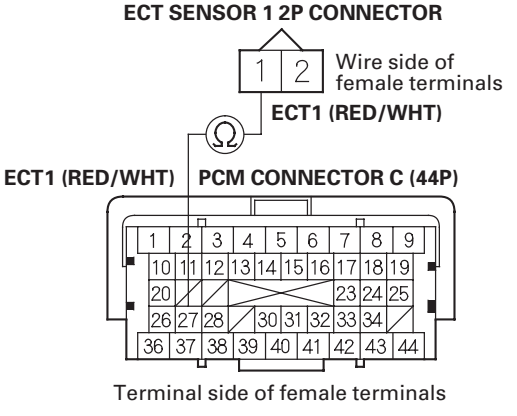


Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (C14) and ECT sensor 1, then go to step 22.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector C (44P).
19. Check for continuity between PCM connector terminal C27 and ECT sensor 1 2P connector terminal No. 1.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (C27) and ECT sensor 1, then go to step 22.

20. Turn the ignition switch OFF.
21. Replace ECT sensor 1 (see page 11-201).
22. Reconnect all connectors.
23. Turn the ignition switch ON (II).
24. Reset the PCM with the HDS.
25. Do the PCM idle learn procedure (see page 11-273).
26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0118 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1 and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
27. Reconnect all connectors.
28. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0118 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1 and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P0125: ECT Sensor 1 Malfunction/Slow Response

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Start the engine, and let it idle for 5 minutes or more.
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about 10 °F (−12 °C) or less, or 4.45 V or more indicated?

   YES—Go to step 9.

   NO—Go to step 3.
3. Allow the engine to cool to 104 °F (40 °C) or less.
4. Note the value of ECT SENSOR 1 and ECT SENSOR 2 in the DATA LIST with the HDS.
5. Start the engine, and let it idle.
6. Let the engine idle until ECT SENSOR 1 goes up 49 °F (27 °C) or more from the recorded temperature.
7. Note the value of ECT SENSOR 2 in the DATA LIST with the HDS.
8. Compare ECT SENSOR 2 and the recorded temperature.

   Did ECT SENSOR 2 change 17 °F (9.5 °C) or more?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. ■

   NO—Test the thermostat (see page 10-4). If the thermostat is OK, go to step 9. If you replaced the thermostat, go to step 11.
9. Turn the ignition switch OFF.
10. Replace ECT sensor 1 (see page 11-201).
11. Turn the ignition switch ON (II).
12. Reset the PCM with the HDS.
13. Do the PCM idle learn procedure (see page 11-273).
14. Allow the engine to cool to the ambient temperature.
15. Start the engine, and let it idle 20 minutes.
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0125 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM, then go to step 1.

    NO—Go to step 17.
17. Monitor the OBD STATUS for DTC P0125 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 15.

DTC P0128: Cooling System Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the blower switch OFF.
4. Turn the A/C switch OFF.
5. Check the FAN CTRL in the DATA LIST with the HDS.

   Is it OFF?

   YES—Go to step 6.

   NO—Wait until the FAN CTRL is off, then go to step 6.
6. Check the radiator fan operation.

   Does the radiator fan keep running?

   YES—Check for symptoms in the cooling system. If the cooling system is OK, go to step 20.

   NO—Go to step 7.
7. Let the engine cool until the coolant temperature is 104 °F (40 °C) or less.
8. Note the value of ECT SENSOR 1 and ECT SENSOR 2 in the DATA LIST with the HDS.
9. Start the engine, and let it idle.
10. Let the engine idle until ECT SENSOR 1 goes up 49 °F (27 °C) or more from the recorded temperature.
11. Check ECT SENSOR 2 in the DATA LIST with the HDS.
12. Compare the recorded value of ECT SENSOR 2 and the present value of ECT SENSOR 2.

    Did temperature rise 17 °F (9.5 °C) or more?

    YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. ■

    NO—Test the thermostat (see page 10-4), then go to step 13.
13. Turn the ignition switch ON (II).
14. Reset the PCM with the HDS.
15. Let the engine cool until the coolant temperature is between 21 °F (—6 °C) and 104 °F (40 °C).
16. Do the PCM idle learn procedure (see page 11-273).
17. Test-drive at a steady speed between 15—75 mph (24—120 km/h) for 10 minutes.
18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0128 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. then go to step 1.

    NO—Go to step 19.
19. Monitor the OBD STATUS for DTC P0128 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 17.

(cont'd)

DTC Troubleshooting (cont'd)

20. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

21. Let the engine cool until the coolant temperature is between 21 ℉ (—6 ℃) and 104 ℉ (40 ℃).

22. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

23. Test-drive at a steady speed between 15—75 mph (24—120 km/h) for 10 minutes.

24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0128 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 21. If the PCM was substituted, go to step 1.

    NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P0128 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 21. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 21.

DTC P0133: Rear A/F Sensor (Bank 1, Sensor 1) Circuit Slow Response

DTC P0153: Front A/F Sensor (Bank 2, Sensor 1) Circuit Slow Response

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0139 and/or P0159* is stored at the same time as DTC P0133 and/or P0153*, troubleshoot DTC P0139 and/or P0159* first, then recheck for DTC P0133 and/or P0153*.
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 176 °F (80 °C)
   - Transmission in D position
   - Drive the vehicle at 25 mph (40 km/h) or less for 5 minutes, then drive at a steady speed between 26—81 mph (41—130 km/h)
5. Monitor the OBD STATUS for DTC P0133 and/or P0153* in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 6.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.
6. Turn the ignition switch OFF.
7. Replace the A/F sensor (Sensor 1) (see page 11-199).
8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-273).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
12. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 176 °F (80 °C)
    - Transmission in D position
    - Drive the vehicle at 25 mph (40 km/h) or less for 5 minutes, then drive at a steady speed between 26—81 mph (41—130 km/h)
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0133 and/or P0153 indicated?*

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

    NO—Go to step 14.
14. Monitor the OBD STATUS for DTC P0133 and/or P0153* in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 12.

DTC Troubleshooting (cont'd)

DTC P0134: Rear A/F Sensor (Bank 1, Sensor 1) Heater System Malfunction

DTC P0154: Front A/F Sensor (Bank 2, Sensor 1) Heater System Malfunction

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P2251, P2237, P2240*, and/or P2254* is stored at the same time as DTC P0134 and/or P0154*, troubleshoot DTC P2251, P2237, P2240* and/or P2254* first, then recheck for P0134 and/or P0154*.
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0134 and/or P0154 indicated?*

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the A/F sensor relay (LAF), the under-dash fuse/relay box, and the PCM. ■
5. Turn the ignition switch OFF.
6. Replace the A/F sensor (Sensor 1) (see page 11-199).
7. Turn the ignition switch ON (II).
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure (see page 11-273).
10. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0134 and/or P0154 indicated?*

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the A/F sensor relay (LAF), the under-dash fuse/relay box, and the PCM, then go to step 1.

    NO—Go to step 12.
12. Monitor the OBD STATUS for DTC P0134 and/or P0154* in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the A/F sensor relay (LAF), the under-dash fuse/relay box, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0135: Rear A/F Sensor (Bank 1, Sensor 1) Heater Circuit Malfunction

DTC P0155: Front A/F Sensor (Bank 2, Sensor 1) Heater Circuit Malfunction

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0135 and/or P0155 indicated?*

   YES—Go to step 5.

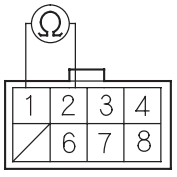
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the A/F sensor relay (LAF), the under-dash fuse/relay box, and the PCM. ■
5. Turn the ignition switch OFF.
6. Check these fuses:
   - No. 17 OP1 (40 A) fuse in the under-hood fuse/relay box
   - No. 4 LAF (A/F SENSOR) (15 A) fuse in the under-dash fuse/relay box
   - No. 23 IGP (7.5 A) fuse in the under-dash fuse/relay box

   Are any of the above fuses blown?

   YES—Repair short in the wire between the A/F sensors, A/F sensor relay (LAF), then replace the blown fuse(s), and go to step 25.

   NO—Go to step 7.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. At the sensor side, measure resistance between A/F sensor (Sensor 1) 8P connector terminals No. 1 and No. 2.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Terminal side of male terminals

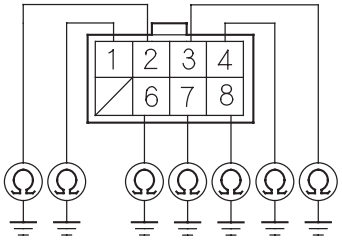
Is there 2.5—3.2 Ω at room temperature?

YES—Go to step 9.

NO—Go to step 23.

9. At the sensor side, check for continuity between each terminal at the A/F sensor (Sensor 1) 8P connector and body ground.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Go to step 23.

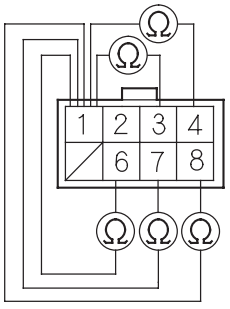
NO—Go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

10. At the sensor side, check for continuity between A/F sensor (Sensor 1) 8P connector terminals No. 1 and No. 3, No. 1 and No. 4, No. 1 and No. 6, No. 1 and No. 7, and No. 1 and No. 8 individually.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Go to step 23.

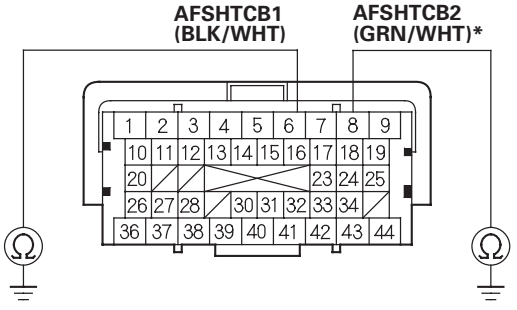
NO—Go to step 11.

11. Jump the SCS line with the HDS.

12. Disconnect PCM connector C (44P).

13. Check for continuity between PCM connector terminal C6 (C8)* and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

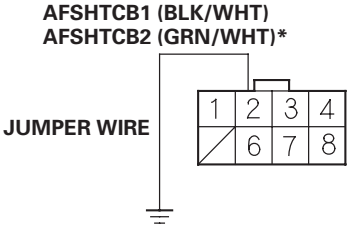
Is there continuity?

YES—Repair short in the wire between the PCM (C6 (C8)*) and the A/F sensor (Sensor 1), then go to step 24.

NO—Go to step 14.

14. Connect A/F sensor (Sensor 1) 8P connector terminal No. 2 to body ground with a jumper wire.

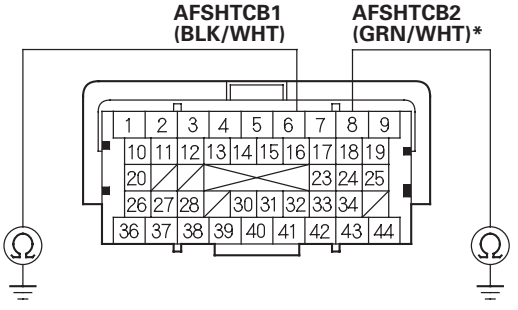
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

15. Check for continuity between PCM connector terminal C6 (C8)* and body ground.

PCM CONNECTOR C (44P)



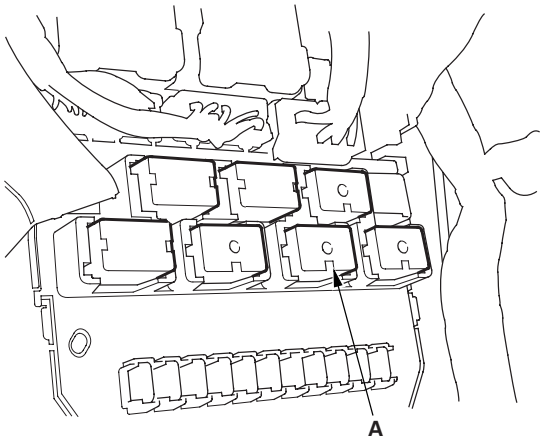
Terminal side of female terminals

Is there continuity?

YES—Go to step 16.

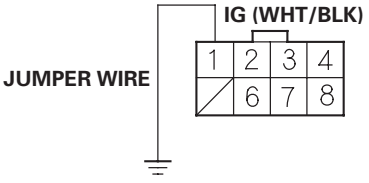
NO—Repair open in the wire between the PCM (C6 (C8)*) and the A/F sensor (Sensor 1), then go to step 24.

16. Remove the A/F sensor relay (LAF) (A) from the under-dash fuse/relay box.



17. Connect A/F sensor (Sensor 1) 8P connector terminal No. 1 to body ground with a jumper wire.

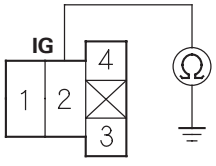
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

18. Check for continuity between A/F sensor relay (LAF) 4P connector terminal No. 2 and body ground.

A/F SENSOR RELAY (LAF) 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the A/F sensor (Sensor 1) and the A/F sensor relay (LAF), then go to step 24.

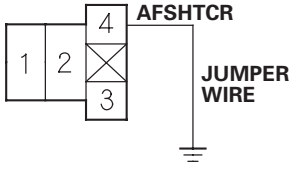
19. Disconnect PCM connector A (44P).

(cont'd)

DTC Troubleshooting (cont'd)

20. Connect A/F sensor relay (LAF) 4P connector terminal No. 4 to body ground with a jumper wire.

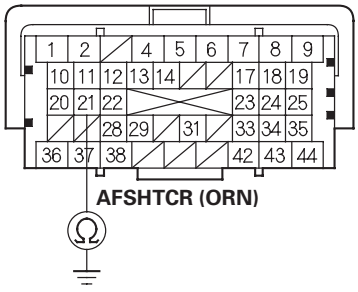
A/F SENSOR RELAY (LAF) 4P CONNECTOR



Terminal side of female terminals

21. Check for continuity between PCM connector terminal A21 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between the PCM (A21) and the A/F sensor relay (LAF), then go to step 24.

22. Test the A/F sensor relay (LAF) (see page 22-75).

Is the A/F sensor relay (LAF) OK?

YES—Go to step 30.

NO—Replace the A/F sensor relay (LAF), then go to step 24.

23. Replace the A/F sensor (Sensor 1) (see page 11-199).

24. Reconnect all connectors.

25. Turn the ignition switch ON (II).

26. Reset the PCM with the HDS.

27. Do the PCM idle learn procedure (see page 11-273).

28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0135 and/or P0155 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the A/F sensor relay (LAF), the under-dash fuse/relay box, and the PCM, then go to step 1.

NO—Go to step 29.

29. Monitor the OBD STATUS for DTC P0135 and/or P0155* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the A/F sensor relay (LAF), the under-dash fuse/relay box, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

30. Reconnect all connectors.

31. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0135 and/or P0155 indicated?*

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the A/F sensor relay (LAF), the under-dash fuse/relay box, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 33.

33. Monitor the OBD STATUS for DTC P0135 and/or P0155* in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the A/F sensor relay (LAF), the under-dash fuse/relay box, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC Troubleshooting (cont'd)

DTC P0137: Rear Secondary HO2S (Bank 1, Sensor 2) Circuit Low Voltage

DTC P0157: Front Secondary HO2S (Bank 2, Sensor 2) Circuit Low Voltage

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 0.29 V or less?

   YES—Go to step 5.

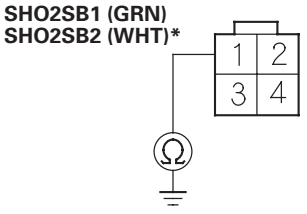
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. ■
5. Turn the ignition switch OFF.
6. Disconnect the secondary HO2S (Sensor 2) 4P connector.
7. Turn the ignition switch ON (II).
8. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 0.29 V or less?

   YES—Go to step 9.

   NO—Go to step 13.
9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector B (44P).
12. Check for continuity between secondary HO2S (Sensor 2) 4P connector terminal No. 1 and body ground.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (B15 (B16)*) and the secondary HO2S (Sensor 2), then go to step 15.

NO—Go to step 23.

13. Turn the ignition switch OFF.
14. Replace the secondary HO2S (Sensor 2) (see page 11-200).
15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Reset the PCM with the HDS.
18. Do the PCM idle learn procedure (see page 11-273).
19. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

20. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 176 °F (80 °C)
    - Transmission in D position
    - Engine speed at 1,500—3,000 rpm
    - Drive 1 minute or more

21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0137 and/or P0157 indicated?*

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1.

    NO—Go to step 22.

22. Monitor the OBD STATUS for DTC P0137 and/or P0157* in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 20.

23. Reconnect all connectors.

24. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

25. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

26. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 176 °F (80 °C)
    - Transmission in D position
    - Engine speed at 1,500—3,000 rpm
    - Drive 1 minute or more

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0137 and/or P0157 indicated?*

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P0137 and/or P0157* in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 24. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 24.

DTC Troubleshooting (cont'd)

DTC P0138: Rear Secondary HO2S (Bank 1, Sensor 2) Circuit High Voltage

DTC P0158: Front Secondary HO2S (Bank 2, Sensor 2) Circuit High Voltage

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

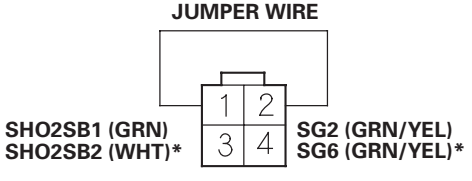
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 1.25 V or more?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. ■
5. Turn the ignition switch OFF.
6. Disconnect the secondary HO2S (Sensor 2) 4P connector.
7. Connect secondary HO2S (Sensor 2) 4P connector terminals No. 1 and No. 2 with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

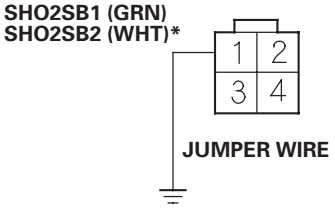
8. Turn the ignition switch ON (II).
9. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 1.25 V or more?

   YES—Go to step 10.

   NO—Go to step 19.
10. Turn the ignition switch OFF.
11. Remove the jumper wire from the secondary HO2S (Sensor 2) 4P connector.
12. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 1 to body ground with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

13. Turn the ignition switch ON (II).
14. Check the HO2S S2 in the DATA LIST with the HDS.

    Does the voltage stay at 1.25 V or more?

    YES—Go to step 15.

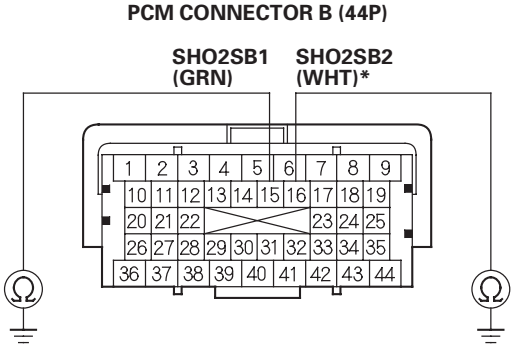
    NO—Repair open in the wire between the PCM (C14 (C39)*) and the secondary HO2S (Sensor 2), then go to step 21.

15. Turn the ignition switch OFF.

16. Jump the SCS line with the HDS.

17. Disconnect PCM connector B (44P).

18. Check for continuity between PCM connector terminal B15 (B16)* and body ground.



Terminal side of female terminals

Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between the PCM (B15 (B16)*) and the secondary HO2S (Sensor 2), then go to step 21.

19. Turn the ignition switch OFF.

20. Replace the secondary HO2S (Sensor 2) (see page 11-200).

21. Reconnect all connectors.

22. Turn the ignition switch ON (II).

23. Reset the PCM with the HDS.

24. Do the PCM idle learn procedure (see page 11-273).

25. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

26. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 176 ℉ (80 ℃)
- Transmission in D position
- Engine speed at 1,500—3,000 rpm
- Drive 1 minute or more

27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0138 and/or P0158 indicated?*

YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1.

NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P0138 and/or P0158* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 25.

(cont'd)

DTC Troubleshooting (cont'd)

29. Reconnect all connectors.

30. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

31. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

32. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 176 °F (80 °C)
    - Transmission in D position
    - Engine speed at 1,500—3,000 rpm
    - Drive 1 minute or more

33. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0138 and/or P0158 indicated?*

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 32. If the PCM was substituted, go to step 1.

    NO—Go to step 34.

34. Monitor the OBD STATUS for DTC P0138 and/or P0158* in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 33, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 32. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 32.

DTC P0139: Rear Secondary HO2S (Bank 1, Sensor 2) Slow Response

DTC P0159: Front Secondary HO2S (Bank 2, Sensor 2) Slow Response

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 176 °F (80 °C)
   - Transmission in D position
   - Vehicle speed between 35—55 mph (56—88 km/h)
   - Drive 5 minutes or more
5. Monitor the OBD STATUS for DTC P0139 and/or P0159 * in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 6.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.
6. Turn the ignition switch OFF.
7. Replace the secondary HO2S (Sensor 2) (see page 11-200).
8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-273).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
12. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 176 °F (80 °C)
    - Transmission in D position
    - Vehicle speed between 35—55 mph (56—88 km/h)
    - Drive 5 minutes or more
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0139 and/or P0159 indicated?*

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1.

    NO—Go to step 14.
14. Monitor the OBD STATUS for DTC P0139 and/or P0159 * in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.

DTC Troubleshooting (cont'd)

DTC P0141: Rear Secondary HO2S (Bank 1, Sensor 2) Heater Circuit Malfunction

DTC P0161: Front Secondary HO2S (Bank 2, Sensor 2) Heater Circuit Malfunction

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0141 and/or P0161 indicated?*

   YES—Go to step 5.

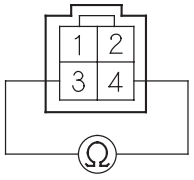
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2), the A/F sensor relay (LAF), the under-dash fuse/relay box, and the PCM. ■
5. Turn the ignition switch OFF.
6. Check these fuses:
   - No. 17 OP1 (40 A) fuse in the under-hood fuse/relay box
   - No. 4 LAF (A/F SENSOR) (15 A) fuse in the under-dash fuse/relay box
   - No. 23 IGP (7.5 A) fuse in the under-dash fuse/relay box

   Are any of the fuses blown?

   YES—Repair short in the wire between the A/F sensors, A/F sensor relay (LAF) and the fuse, then go to step 23.

   NO—Go to step 7.
7. Disconnect the secondary HO2S (Sensor 2) 4P connector.
8. At the secondary HO2S (Sensor 2) side, measure resistance between secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

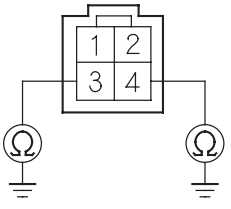
Is there 5.4—6.6 Ω at room temperature?

YES—Go to step 9.

NO—Go to step 22.

9. Check for continuity between body ground and secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4 individually.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there continuity?

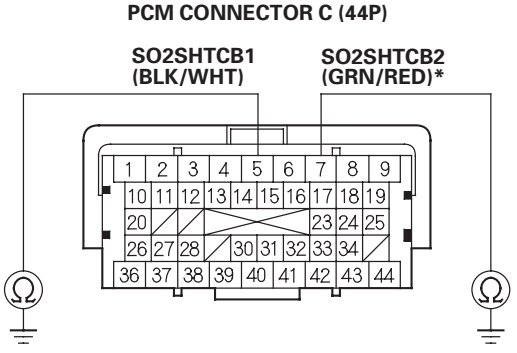
YES—Go to step 22.

NO—Go to step 10.

10. Jump the SCS line with the HDS.

11. Disconnect PCM connector C (44P).

12. Check for continuity between PCM connector terminal C5 (C7)* and body ground.



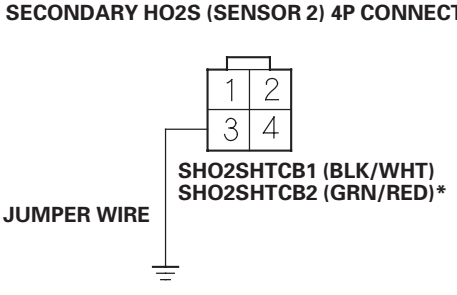
Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (C5 (C7)*) and the secondary HO2S (Sensor 2), then go to step 23.

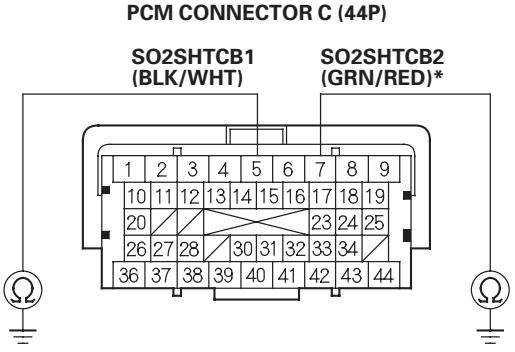
NO—Go to step 13.

13. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 3 to body ground with a jumper wire.



Wire side of female terminals

14. Check for continuity between PCM connector terminal C5 (C7)* and body ground.



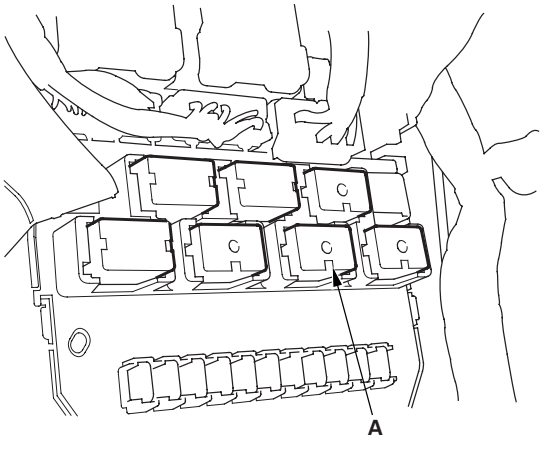
Terminal side of female terminals

Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the PCM (C5 (C7)*) and the secondary HO2S (Sensor 2), then go to step 23.

15. Remove the A/F sensor relay (LAF) (A) from the under-dash fuse/relay box.

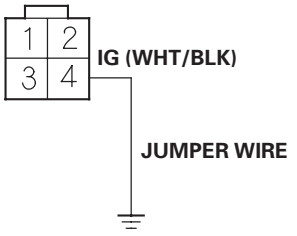


(cont'd)

DTC Troubleshooting (cont'd)

16. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 4 to body ground with a jumper wire.

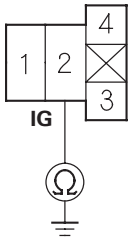
SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

17. Check for continuity between A/F sensor relay (LAF) 4P connector terminal No. 2 and body ground.

A/F SENSOR RELAY (LAF) 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

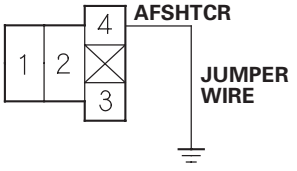
YES—Go to step 18.

NO—Repair open in the wire between the secondary HO2S (Sensor 2) and the A/F sensor relay (LAF), then go to step 23.

18. Disconnect PCM connector A (44P).

19. Connect A/F sensor relay (LAF) 4P connector terminal No. 4 to body ground with a jumper wire.

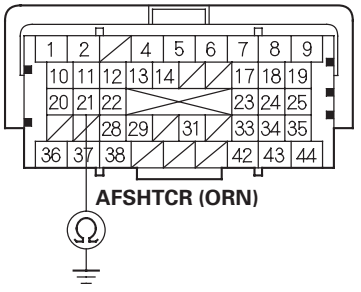
A/F SENSOR RELAY (LAF) 4P CONNECTOR



Terminal side of female terminals

20. Check for continuity between PCM connector terminal A21 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 21.

NO—Repair open in the wire between the PCM (A21) and the A/F sensor relay (LAF), then go to step 23.

21. Test the A/F sensor relay (LAF) (see page 22-75).

    Is the A/F sensor relay (LAF) OK?

    YES—Go to step 29.

    NO—Replace the A/F sensor relay (LAF), then go to step 23.

22. Replace the secondary HO2S (Sensor 2) (see page 11-200).

23. Reconnect all connectors.

24. Turn the ignition switch ON (II).

25. Reset the PCM with the HDS.

26. Do the PCM idle learn procedure (see page 11-273).

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0141 and/or P0161 indicated?*

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2), the A/F sensor relay (LAF), and the PCM, then go to step 1.

    NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P0141 and/or P0161* in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2), the A/F sensor relay (LAF), and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

29. Reconnect all connectors.

30. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

31. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0141 and/or P0161 indicated?*

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2), the A/F sensor relay (LAF), and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 32.

32. Monitor the OBD STATUS for DTC P0141 and/or P0161* in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 31, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2), the A/F sensor relay (LAF), and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC Troubleshooting (cont'd)

DTC P0171: Rear Bank (Bank 1) Fuel System Too Lean

DTC P0172: Rear Bank (Bank 1) Fuel System Too Rich

DTC P0174: Front Bank (Bank 2) Fuel System Too Lean

DTC P0175: Front Bank (Bank 2) Fuel System Too Rich

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If some of the DTCs listed below are stored at the same time as DTC P0171, P0172, P0174, and/or P0175, troubleshoot those DTCs first, then recheck for P0171, P0172, P0174, and/or P0175.

  P0107, P0108, P1128, P1129: Manifold absolute pressure (MAP) sensor
  P0133, P0153, P1172, P1174, P2195, P2197, P2237, P2238, P2240, P2241, P2243, P2245, P2247, P2249, P2251, P2252, P2254, P2255, P2627, P2628, P2630, P2631, P2A00, P2A03: Air fuel ratio (A/F) sensor (Sensor 1)
  P0134, P0135, P0154, P0155: Air fuel ratio (A/F) sensor (Sensor 1) heater
  P0137, P0138, P0139, P0157, P0158, P0159, P2270, P2271, P2272, P2273: Secondary HO2S (Sensor 2)
  P0141, P0161: Secondary HO2S (Sensor 2) heater
  P2646, P2647, P2648, P2649: VTEC system
  P0401, P0404, P0406, P2413: Exhaust gas recirculation (EGR) system
  P2279: Intake air leakage

1. Check the fuel pressure (see page 11-288).

   Is the fuel pressure OK?

   YES—If you are troubleshooting DTC P0171 or P0174, go to step 2. If you are troubleshooting DTC P0172 or P0175, check the valve clearances, and adjust if necessary. If the valve clearances are OK, replace the injectors (see page 11-197), then go to step 2.

   NO—Check these items:

   - If the pressure is too high, replace the fuel pressure regulator (see page 11-299), then go to step 2.
   - If the pressure is too low, check the fuel pump, the fuel pressure regulator, the fuel filter, and the fuel lines for restrictions, then go to step 2.

2. Turn the ignition switch ON (II).

3. Reset the PCM with the HDS.

4. Do the PCM idle learn procedure (see page 11-273).

5. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

6. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
   - Transmission in D position
   - Drive at a steady speed between 25—55 mph (40—88 km/h) for 5 minutes, then drive at a steady speed between 15—75 mph (24—120 km/h) for 15 minutes.

   NOTE: DTC P0171, P0172, P0174, and/or P0175 may take up to 40 minutes of test driving to set. Use the HDS to monitor the LT FUEL TRIM for 15 minutes of driving under the freeze data conditions. If the value stays within 10 % of 1.0 (0.0 %), there is no problem at this time.

7. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0171, P0172, P0174, or P0175 indicated?

   YES—Go to step 8.

   NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

8. Check for poor connections or loose terminals at the PCM.

   Are the connections and terminals OK?

   YES—Go to step 9.

   NO—Repair the connections or terminals, then step 2.

9. Check the fuel quality.

   Is the fuel quality OK?

   YES—Replace the injectors (see page 11-197), then go to step 2.

   NO—Drain the fuel tank (see page 11-289), replace the fuel, then go to step 2.

DTC Troubleshooting (cont'd)

DTC P0300: Random Misfire and Any Combination of the Following:

DTC P0301: No. 1 Cylinder Misfire Detected

DTC P0302: No. 2 Cylinder Misfire Detected

DTC P0303: No. 3 Cylinder Misfire Detected

DTC P0304: No. 4 Cylinder Misfire Detected

DTC P0305: No. 5 Cylinder Misfire Detected

DTC P0306: No. 6 Cylinder Misfire Detected

Special Tools Required
- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070301
- A/T pressure hose 07406-0020201
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure adapter 07MAJ-PY40120
- Oil pressure hose 07ZAJ-S5A0200

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If the misfire is frequent enough to trigger detection of increased emissions during two consecutive driving cycles, the MIL will come on, and DTC P0300 (and some combination of P0301 through P0306) will be stored.
- If the misfire is frequent enough to damage the catalyst, the MIL will blink whenever the misfire occurs, and DTC P0300 (and some combination of P0301 through P0306) will be stored. When the misfire stops, the MIL will remain on.
- Troubleshoot the following DTCs first, if any of them were stored along with the random misfire DTC(s):

  P0107, P0108, P1128, P1129: Manifold absolute pressure (MAP) sensor
  P0171, P0172, P0174, P0175: Fuel system
  P0335, P0339, P0385, P0389: Crankshaft position (CKP) sensor A/B
  P0506, P0507: Idle control system
  P0340, P0344: Camshaft position (CMP) sensor
  P2646, P2647, P2648, P2649: VTEC system
  P0401, P0404, P0406, P2413: Exhaust gas recirculation (EGR) system

1. Turn the ignition switch ON (II).

2. Clear the DTC with the HDS.

3. Start the engine, and let it idle without load.

4. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 9.

   NO—If the screen indicates PASSED, go to step 4. If the screen indicates EXECUTING, let it idle until a result comes on. If the screen indicates OUT OF CONDITION, wait for several minutes, then recheck.

5. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

   YES—Go to step 9.

   NO—Go to step 6.

6. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

   - ENGINE SPEED
   - VSS
   - REL TP SENSOR
   - CLV (calculated load value)
   - GEAR POSITION
   - ECT SENSOR 1

7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 9.

   NO—If the screen indicates PASSED, go to step 8. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6 and recheck.

8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

   YES—Go to step 9.

   NO—Intermittent failure, the system is OK at this time.■

9. Turn the ignition switch OFF.

10. Check the fuel quality.

    Is the quality good?

    YES—Go to step 11.

    NO—Drain the tank, and fill it with a known-good fuel, then go to step 20.

11. Inspect the spark plugs (see page 4-22). If the spark plugs are fouled or worn, replace them.

12. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - ECT SENSOR 1
    - APP SENSOR

13. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

    YES—Go to step 14.

    NO—Go to step 20.

14. Check the fuel pressure (see page 11-288).

    Is the fuel pressure OK?

    YES—Go to step 15.

    NO—
    - If the pressure is too high, replace the fuel pressure regulator (see page 11-299), then go to step 20.
    - If the pressure is too low, check the fuel pump, the fuel feed lines, and the fuel filter. If they are OK, replace the fuel pressure regulator (see page 11-299), then go to step 20.

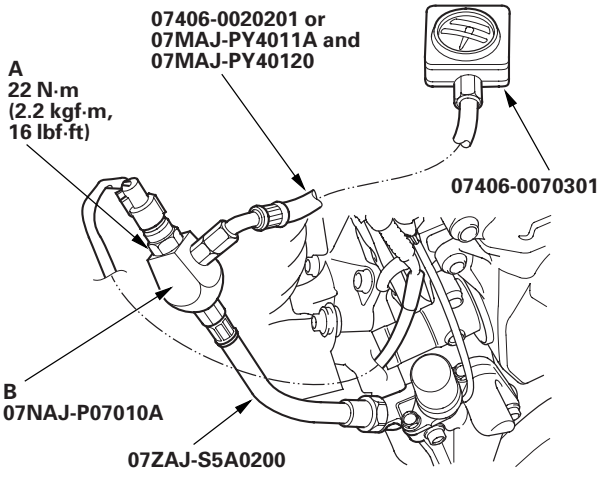
15. Turn the ignition switch OFF.

(cont'd)

DTC Troubleshooting (cont'd)

16. Remove the rocker arm oil pressure switch (VTEC oil pressure switch) (A), and install the special tools as shown, then install the rocker arm oil pressure switch (VTEC oil pressure switch) in the pressure gauge adapter (B).

    NOTE: Install the parts in the reverse order of removal with a new O-ring.



17. Reconnect the rocker arm oil pressure switch (VTEC oil pressure switch) 2P connector.

18. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.

19. Check the oil pressure at engine speeds of 1,000 and 2,000 rpm. Keep the measuring time as short as possible (less than 1 minute) because the engine is running without load.

    Is the oil pressure below 49 kPa (0.5 kgf/cm², 7 psi)?

    YES—Check for air in the fuel line, then go to step 20.

    NO—Inspect the VTEC system (see page 6-7), then go to step 20.

20. Turn the ignition switch ON (II).

21. Reset the PCM with the HDS.

22. Clear the CKP pattern with the HDS.

23. Do the PCM idle learn procedure (see page 11-273).

24. Do the CKP pattern learn procedure (see page 11-4).

25. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - ECT SENSOR 1
    - APP SENSOR

26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0300 and any combination of DTC P0301, P0302, P0303, P0304, P0305, or P0306 indicated?

    YES—Check for poor connections or loose terminals at the ignition coil, the injector, and the PCM, then go to step 1.

    NO—Go to step 27.

27. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 26, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connection or loose terminals at the ignitions coil, the injector, and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 25.

DTC P0301: No. 1 Cylinder Misfire Detected

DTC P0302: No. 2 Cylinder Misfire Detected

DTC P0303: No. 3 Cylinder Misfire Detected

DTC P0304: No. 4 Cylinder Misfire Detected

DTC P0305: No. 5 Cylinder Misfire Detected

DTC P0306: No. 6 Cylinder Misfire Detected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load for 2 minutes (in Park or neutral).
4. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 9.

   NO—If the screen indicates PASSED, go to step 4. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, wait for several minutes, and recheck.

5. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

   YES—Go to step 9.

   NO—Go to step 6.

6. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

   - ENGINE SPEED
   - VSS
   - REL TP SENSOR
   - CLV (calculated load value)
   - GEAR POSITION
   - ECT SENSOR 1

7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 9.

   NO—If the screen indicates PASSED, go to step 8. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6.

8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

   YES—Go to step 9.

   NO—Intermittent failure, the system is OK at this time. Check the fuel and ignition system circuit connectors for loose wires or poor connections. ■

9. Turn the ignition switch OFF.
10. Exchange the ignition coil from the problem cylinder with one from another cylinder.
11. Reconnect all connectors.

(cont'd)

DTC Troubleshooting (cont'd)

12. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    • ENGINE SPEED
    • VSS
    • REL TP SENSOR
    • CLV (calculated load value)
    • GEAR POSITION
    • ECT SENSOR 1

13. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

    YES—Go to step 14.

    NO—Intermittent failure due to poor contact at the ignition coil contactor (no misfire at this time). Make sure that the ignition coil connectors are secure. ■

14. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the ignition coil was moved?

    YES—Replace the faulty ignition coil (see page 4-19), then go to step 54.

    NO—Go to step 15.

15. Turn the ignition switch OFF.

16. Exchange the spark plug from the problem cylinder with the one from another cylinder.

17. Reconnect all connectors.

18. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    • ENGINE SPEED
    • VSS
    • REL TP SENSOR
    • CLV (calculated load value)
    • GEAR POSITION
    • ECT SENSOR 1

19. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

    YES—Go to step 20.

    NO—Intermittent failure due to spark plug fouling (no misfire at this time). ■

20. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the ignition coil was moved?

    YES—Replace the faulty spark plug, then go to step 54.

    NO—Go to step 21.

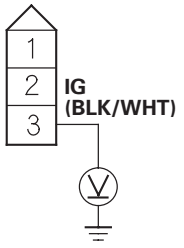
21. Turn the ignition switch OFF.

22. Disconnect the ignition coil 3P connector from the problem cylinder.

23. Turn the ignition switch ON (II).

24. Measure voltage between ignition coil 3P connector terminal No. 3 and body ground.

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

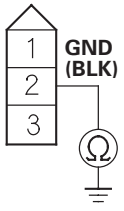
YES—Go to step 25.

NO—Repair open in the wire between the ignition coil and the ignition coil relay, then go to step 54.

25. Turn the ignition switch OFF.

26. Check for continuity between ignition coil 3P connector terminal No. 2 and body ground.

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the ignition coil, G101, and G102, then go to step 54.

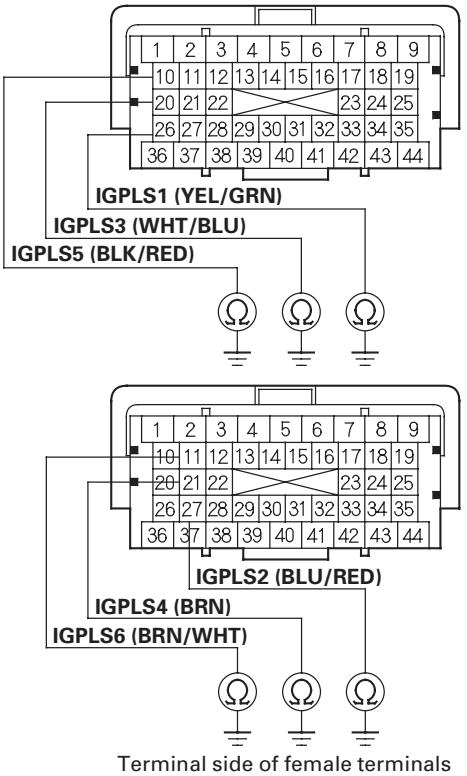
27. Jump the SCS line with the HDS.

28. Disconnect PCM connector B (44P).

29. Check for continuity between body ground and the appropriate PCM connector terminal (see table).

PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	B26	YEL/GRN
No. 2	P0302	B27	BLU/RED
No. 3	P0303	B20	WHT/BLU
No. 4	P0304	B21	BRN
No. 5	P0305	B10	BLK/RED
No. 6	P0306	B11	BRN/WHT

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM and the ignition coil, then go to step 54.

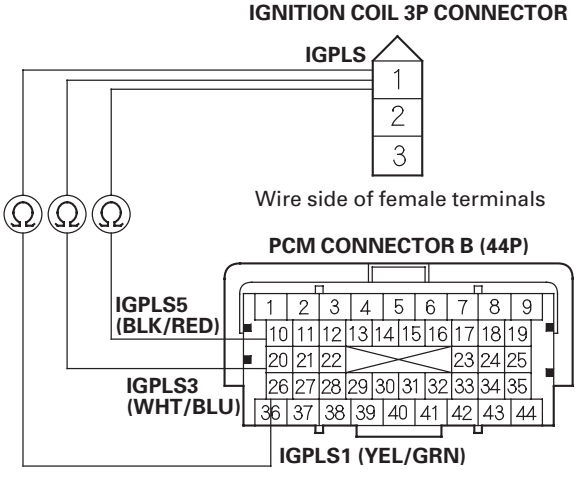
NO—Go to step 30.

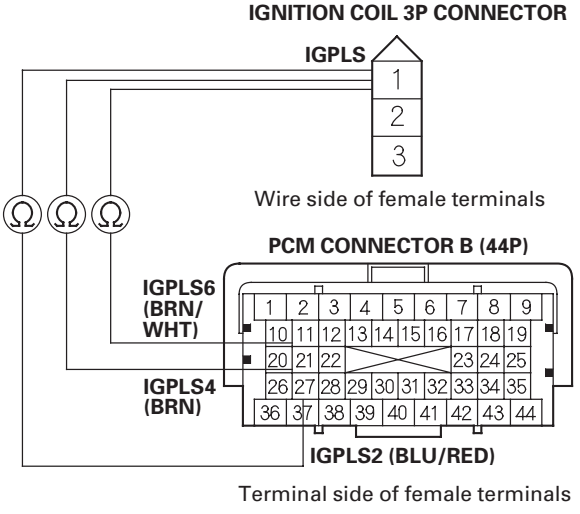
(cont'd)

DTC Troubleshooting (cont'd)

30. Check for continuity between appropriate ignition coil 3P connector terminal No. 1 and the appropriate PCM connector terminal of the problem cylinder (see table).

PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	B26	YEL/GRN
No. 2	P0302	B27	BLU/RED
No. 3	P0303	B20	WHT/BLU
No. 4	P0304	B21	BRN
No. 5	P0305	B10	BLK/RED
No. 6	P0306	B11	BRN/WHT





Is there continuity?

YES—Go to step 31.

NO—Repair open in the wire between the PCM and the ignition coil, then go to step 54.

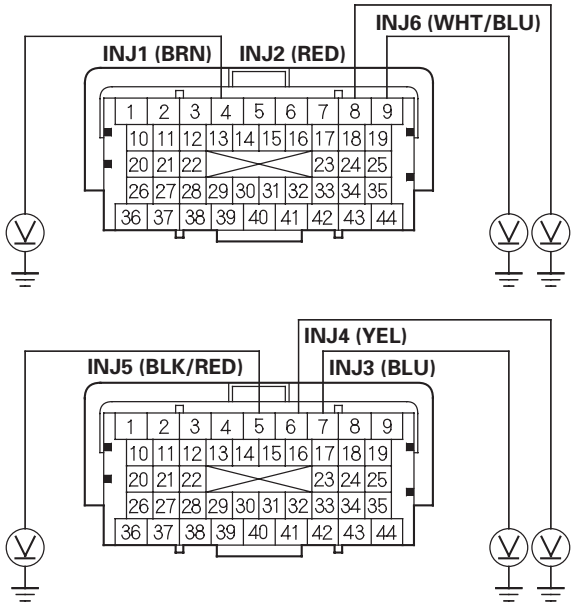
31. Remove the intake manifold (see page 9-3).

32. Turn the ignition switch ON (II).

33. Measure voltage between body ground and the appropriate PCM connector terminal (see table).

PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	B4	BRN
No. 2	P0302	B8	RED
No. 3	P0303	B7	BLU
No. 4	P0304	B6	YEL
No. 5	P0305	B5	BLK/RED
No. 6	P0306	B9	WHT/BLU

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 40.

NO—Go to step 34.

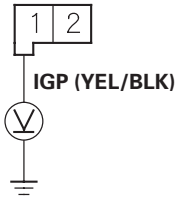
34. Turn the ignition switch OFF.

35. Disconnect the injector 2P connector from the problem cylinder.

36. Turn the ignition switch ON (II).

37. Measure voltage between injector 2P connector terminal No. 1 and body ground.

INJECTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 38.

NO—Repair open in the wire between the injector and PGM-FI main relay 1 (FI MAIN), then go to step 51.

38. Turn the ignition switch OFF.

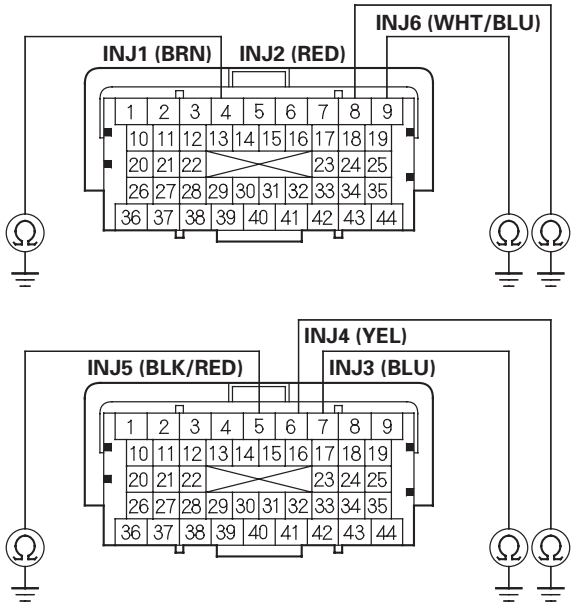
(cont'd)

DTC Troubleshooting (cont'd)

39. Check for continuity between body ground and the appropriate PCM connector terminal (see table).

PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	B4	BRN
No. 2	P0302	B8	RED
No. 3	P0303	B7	BLU
No. 4	P0304	B6	YEL
No. 5	P0305	B5	BLK/RED
No. 6	P0306	B9	WHT/BLU

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

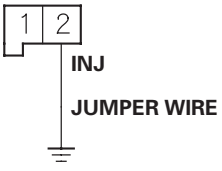
YES—Repair short in the wire between the PCM and the injector, then go to step 54.

NO—Go to step 40.

40. Connect appropriate injector 2P connector terminal No. 2 to body ground with a jumper wire (see table).

PROBLEM CYLINDER	DTC	WIRE COLOR
No. 1	P0301	BRN
No. 2	P0302	RED
No. 3	P0303	BLU
No. 4	P0304	YEL
No. 5	P0305	BLK/RED
No. 6	P0306	WHT/BLU

INJECTOR 2P CONNECTOR

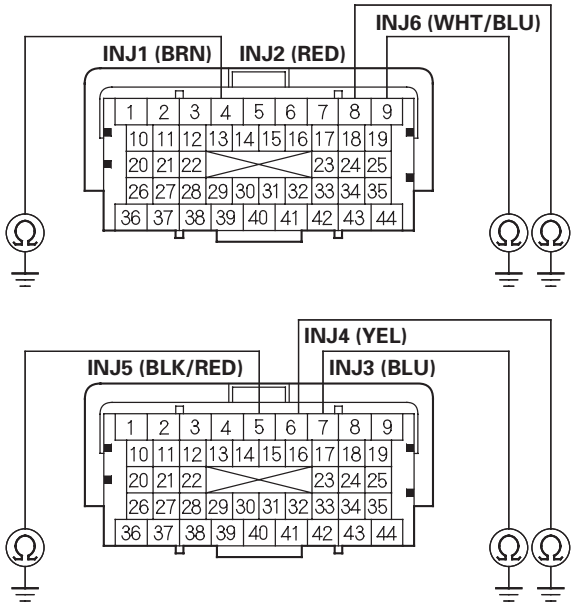


Wire side of female terminals

41. Check for continuity between body ground and the appropriate PCM connector terminal (see table).

PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	B4	BRN
No. 2	P0302	B8	RED
No. 3	P0303	B7	BLU
No. 4	P0304	B6	YEL
No. 5	P0305	B5	BLK/RED
No. 6	P0306	B9	WHT/BLU

PCM CONNECTOR B (44P)



Terminal side of female terminals

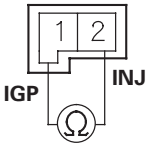
Is there continuity?

YES—Check for poor connections or loose terminals at the injector and PGM-FI main relay 1 (FI MAIN), then go to step 42.

NO—Repair open in the wire between the PCM and the injector, then go to step 54.

42. Measure resistance between injector 2P connector terminals No. 1 and No. 2.

INJECTOR 2P CONNECTOR



Terminal side of male terminals

Is there 10— 13 Ω ?

YES—Go to step 43.

NO—Replace the injector (see page 11-197), then go to step 54.

43. Exchange the injector from the problem cylinder with the one from another cylinder. Also check the injector fuel inlet screen for debris, and clean if needed.

44. Reconnect all connectors, and install the intake manifold (see page 9-5).

45. Turn the ignition switch ON (II).

46. Clear the DTCs with the HDS.

47. Start the engine, and let it idle without load for 2 minutes (in Park or neutral).

(cont'd)

DTC Troubleshooting (cont'd)

48. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    • ENGINE SPEED
    • VSS
    • REL TP SENSOR
    • CLV (calculated load value)
    • GEAR POSITION
    • ECT SENSOR 1

49. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

    YES—Go to step 50.

    NO—Intermittent failure due to poor contact in the injector connector (no misfire at this time). Check for poor connections or loose terminals at the injector. ■

50. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the injector was moved?

    YES—Replace the faulty injector (see page 11-197), then go to step 54.

    NO—Go to step 51.

51. Turn the ignition switch OFF.

52. Do an engine compression and a cylinder leakdown test (see page 6-6).

    Did the engine pass both tests?

    YES—Go to step 53.

    NO—Repair the engine, then go to step 54.

53. Do the VTEC rocker arm test (see page 6-7).

    Did the engine pass the test?

    YES—Go to step 62.

    NO—Repair the VTEC rocker arm, then go to step 54.

54. Reconnect all connectors.

55. Reset the PCM with the HDS.

56. Clear the CKP pattern with the HDS.

57. Do the PCM idle learn procedure (see page 11-273).

58. Do the CKP pattern learn procedure (see page 11-4).

59. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    • ENGINE SPEED
    • VSS
    • REL TP SENSOR
    • CLV (calculated load value)
    • GEAR POSITION
    • ECT SENSOR 1

60. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0301, P0302, P0303, P0304, P0305, or P0306 indicated?

    YES—Check for poor connections or loose terminals at the ignition coil, the injector, and the PCM, then go to step 1.

    NO—Go to step 61.

61. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 60, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the ignition coil, the injector, and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 59.

62. Reconnect all connectors.

63. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

64. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - GEAR POSITION
    - ECT SENSOR 1

65. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0301, P0302, P0303, P0304, P0305, or P0306 indicated?

    YES—Check for poor connections or loose terminals at the ignition coil, the injector, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 64. If the PCM was substituted, go to step 1.

    NO—Go to step 66.

66. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 65, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the ignition coil, the injector, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 65. If the PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 65.

DTC Troubleshooting (cont'd)

DTC P0325: Knock Sensor Circuit Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

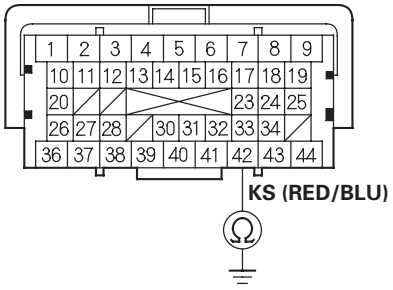
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Hold the engine speed at 3,000—4,000 rpm for at least 10 seconds.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0325 indicated?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the knock sensor and the PCM. ■
6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect the knock sensor subharness 1P connector.
9. Disconnect PCM connector C (44P).
10. Check for continuity between PCM connector terminal C42 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

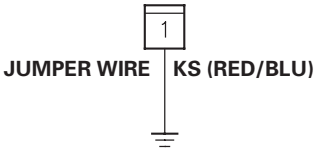
Is there continuity?

YES—Repair short in the wire between the PCM (C42) and the knock sensor subharness, then go to step 19.

NO—Go to step 11.

11. Connect the knock sensor subharness 1P connector terminal to body ground with a jumper wire.

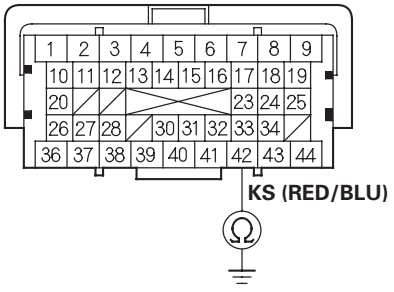
KNOCK SENSOR SUBHARNESS 1P CONNECTOR



Wire side of female terminals

12. Check for continuity between PCM connector terminal C42 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 13.

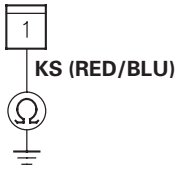
NO—Repair open in the wire between the PCM (C42) and the knock sensor subharness, then go to step 19.

13. Remove the intake manifold (see page 9-3).

14. Disconnect the knock sensor 1P connector.

15. Check for continuity between the knock sensor subharness 1P connector terminal and body ground.

KNOCK SENSOR SUBHARNESS 1P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the knock sensor subharness, then go to step 18.

NO—Go to step 16.

16. Check for an open in the knock sensor subharness.

Is the harness OK?

YES—Go to step 17.

NO—Repair open in the knock sensor subharness, then go to step 19.

17. Replace the knock sensor (see page 11-202).

18. Install the intake manifold (see page 9-5).

19. Reconnect all connectors.

20. Turn the ignition switch ON (II).

21. Reset the PCM with the HDS.

22. Do the PCM idle learn procedure (see page 11-273).

23. Hold the engine speed at 3,000—4,000 rpm for at least 10 seconds.

24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0325 indicated?

YES—Check for poor connections or loose terminals at the knock sensor and the PCM, then go to step 26.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P0325 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the knock sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 23.

(cont'd)

DTC Troubleshooting (cont'd)

26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

27. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

28. Hold the engine speed at 3,000—4,000 rpm for at least 10 seconds.

29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0325 indicated?

    YES—Check for poor connections or loose terminals at the ignition coil, the injector, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 28. If the PCM was substituted, go to step 1.

    NO—Go to step 30.

30. Monitor the OBD STATUS for DTC P0325 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 29, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the ignition coil, the injector, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 28. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 28.

DTC P0335: CKP Sensor A No Signal

DTC P0385: CKP Sensor B No Signal

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to CKP sensor B.

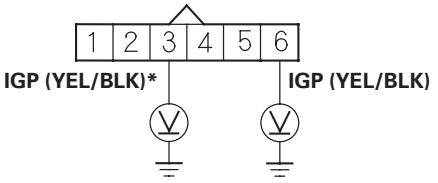
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0335 and/or P0385 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at CKP sensor A/B and the PCM. ■
5. Turn the ignition switch OFF.
6. Disconnect CKP sensor A/B 6P connector (see page 11-203).
7. Turn the ignition switch ON (II).
8. Measure voltage between CKP sensor A/B 6P connector terminal No. 6 (No. 3) * and body ground.

CKP SENSOR A/B 6P CONNECTOR



Wire side of female terminals

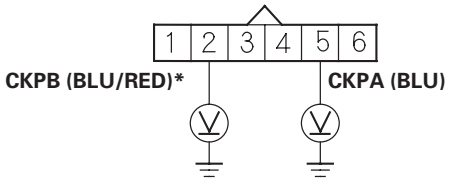
Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between CKP sensor A/B and PGM-FI main relay 1 (FI MAIN), then go to step 18.

9. Measure voltage between CKP sensor A/B 6P connector terminal No. 5 (No. 2) * and body ground.

CKP SENSOR A/B 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

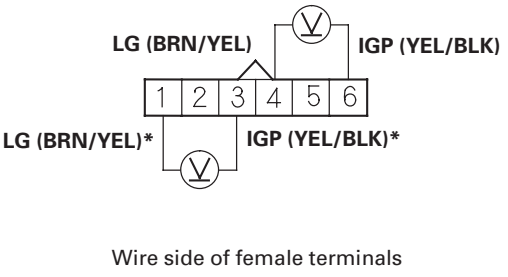
YES—Go to step 10.

NO—Go to step 11.

(cont'd)

DTC Troubleshooting (cont'd)

10. Measure voltage between CKP sensor A/B 6P connector terminals No. 4 (No. 1)* and No. 6 (No. 3)*.



Is there battery voltage?

YES—Go to step 16.

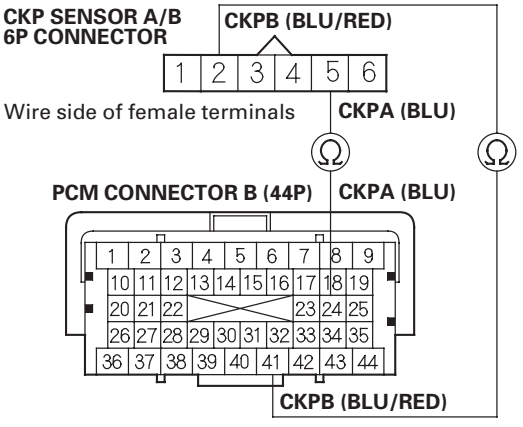
NO—Repair open in the wire between CKP sensor A/B and G101, then go to step 18.

11. Turn the ignition switch OFF.

12. Jump the SCS line with the HDS.

13. Disconnect PCM connector B (44P).

14. Check for continuity between PCM connector terminal B24 (B41)* and CKP sensor A/B 6P connector No. 5 (No. 2)*.



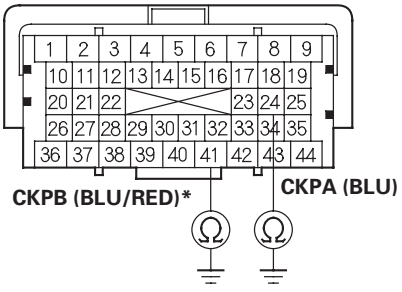
Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the PCM (B24 (B41)*) and CKP sensor A/B, then go to step 18.

15. Check for continuity between PCM connector terminal (B24 (B41)*) and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (B24 (B41)*) and CKP sensor A/B, then go to step 18.

NO—Go to step 25.

16. Turn the ignition switch OFF.
17. Replace the CKP sensor (see page 11-203).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Clear the CKP pattern with the HDS.
22. Do the PCM idle learn procedure (see page 11-273).
23. Do the CKP pattern learn procedure (see page 11-4).
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0335 and/or P0385 indicated?*

YES—Check for poor connections or loose terminals at CKP sensor A/B and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

25. Reconnect all connectors.
26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0335 and/or P0385 indicated?*

YES—Check for poor connections or loose terminals at CKP sensor A/B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P0339: CKP Sensor A Intermittent Interruption

DTC P0389: CKP Sensor B Intermittent Interruption

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to CKP sensor B.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle for 10 minutes in the range of these recorded freeze data parameters:
   - ENGINE SPEED
   - VSS
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0339 and/or P0389 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at CKP sensor A/B and the PCM. ■
5. Check for poor or loose connections at these connectors and terminals:
   - CKP sensor A/B
   - PCM
   - Engine ground
   - Body ground

   Are the connections OK?

   YES—Go to step 6.

   NO—Reconnect the connectors or terminals, then go to step 9.
6. Check for damage to the CKP sensor A/B pulse plate on the timing belt drive pulley (see page 6-25).

   Is there damage?

   YES—Replace the CKP sensor A/B pulse plate/ timing belt drive pulley (see page 6-25), then go to step 9.

   NO—Go to step 7.
7. Turn the ignition switch OFF.
8. Replace CKP sensor A/B (see page 11-203).
9. Turn the ignition switch ON (II).
10. Reset the PCM with the HDS.
11. Clear the CKP pattern with the HDS.
12. Do the PCM idle learn procedure (see page 11-273).
13. Do the CKP pattern learn procedure (see page 11-4).
14. Test-drive the vehicle for 10 minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0339 and/or P0389 indicated?*

    YES—Check for poor connections or loose terminals at CKP sensor A/B and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0340: CMP Sensor No Signal

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

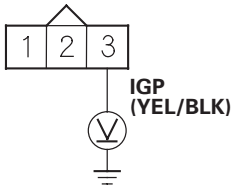
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0340 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the CMP sensor and the PCM. ■
5. Turn the ignition switch OFF.
6. Disconnect the CMP sensor 3P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between CMP sensor 3P connector terminal No. 3 and body ground.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

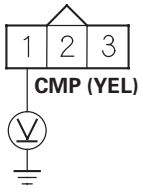
Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between the CMP sensor and PGM-FI main relay 1 (FI MAIN), then go to step 18.

9. Measure voltage between CMP sensor 3P connector terminal No. 1 and body ground.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

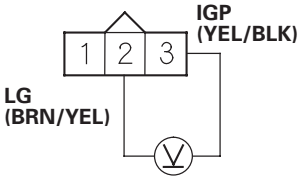
Is there about 5 V?

YES—Go to step 10.

NO—Go to step 11.

10. Measure voltage between CMP sensor 3P connector terminals No. 2 and No. 3.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

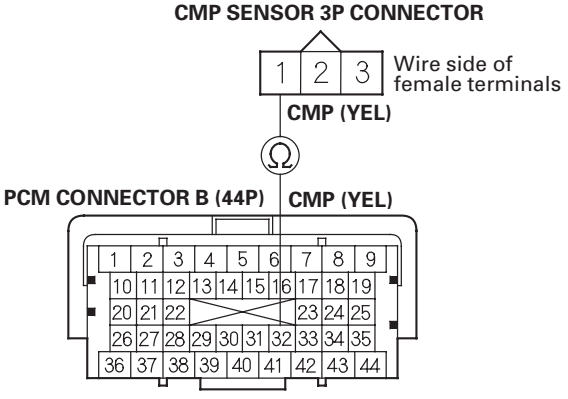
YES—Go to step 16.

NO—Repair open in the wire between the CMP sensor and G101, then go to step 18.

(cont'd)

DTC Troubleshooting (cont'd)

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (44P).
14. Check for continuity between PCM connector terminal B32 and CMP sensor 3P connector terminal No. 1.



Terminal side of female terminals

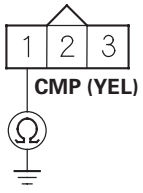
Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the PCM (B32) and the CMP sensor, then go to step 18.

15. Check for continuity between CMP sensor 3P connector terminal No. 1 and body ground.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (B32) and the CMP sensor, then go to step 18.

NO—Go to step 26.

16. Turn the ignition switch OFF.
17. Replace the CMP sensor (see page 11-203).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Clear the CKP pattern with the HDS.
22. Do the PCM idle learn procedure (see page 11-273).
23. Do the CKP pattern learn procedure (see page 11-4).
24. Start the engine.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0340 indicated?

    YES—Check for poor connections or loose terminals at the CMP sensor and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

26. Reconnect all connectors.

27. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0340 indicated?

    YES—Check for poor connections or loose terminals at the CMP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P0344: CMP Sensor Intermittent Interruption

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle for 10 minutes in the range of these recorded freeze data parameters:

   • ENGINE SPEED
   • VSS

4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0344 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the CMP sensor and the PCM. ■

5. Check for poor or loose connections at these connectors and terminals:

   • CMP sensor
   • PCM
   • Engine ground
   • Body ground

   Are the connections OK?

   YES—Go to step 6.

   NO—Reconnect or repair the connectors or terminals, then go to step 9.

6. Check for damage to the CMP sensor pulse projection on the front camshaft pulley (see page 11-203).

   Is there damage?

   YES—Replace the front camshaft pulley (see page 6-11), then go to step 9.

   NO—Go to step 7.

7. Turn the ignition switch OFF.
8. Replace the CMP sensor (see page 11-203).
9. Turn the ignition switch ON (II).
10. Reset the PCM with the HDS.
11. Clear the CKP pattern with the HDS.
12. Do the PCM idle learn procedure (see page 11-273).
13. Do the CKP pattern learn procedure (see page 11-4).
14. Test-drive the vehicle for 10 minutes in the range of these recorded freeze data parameters:

    • ENGINE SPEED
    • VSS

15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0344 indicated?

    YES—Check for poor connections or loose terminals at the CMP sensor and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0562: Charging System Low Voltage

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If any high current load accessories are installed, this DTC can be set.
- If DTC P16BB and/or P16BC is stored at the same time as DTC P0562, troubleshoot DTC P16BB and/or P16BC first, then recheck for DTC P0562.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check under these conditions:
   - A/C on
   - Temperature control at maximum cool
   - Blower fan at maximum speed
   - Headlights on high beam
5. Hold the engine speed at 2,000 rpm (in Park or neutral) for 1 minute.
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0562 indicated?

   YES—Replace the alternator (see page 4-34), then go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, and check the battery performance (see page 22-74). ■
7. Turn the ignition switch ON (II).
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure (see page 11-273).
10. Start the engine.
11. Check under these conditions:
    - A/C on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Headlights on high beam
12. Hold the engine speed at 2,000 rpm (in Park or neutral) for 1 minute.
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0562 indicated?

    YES—Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P0563: PCM Power Source Circuit Unexpected Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

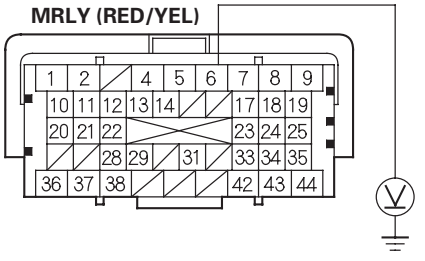
   Is DTC P0563 indicated?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at PGM-FI main relay 1 (FI MAIN) and the No. 8 FI ECU (PCM) (15 A) fuse in the under-hood fuse/relay box and the PCM.■

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (44P).
10. Measure voltage between PCM connector terminal A6 and body ground.

PCM CONNECTOR A (44P)



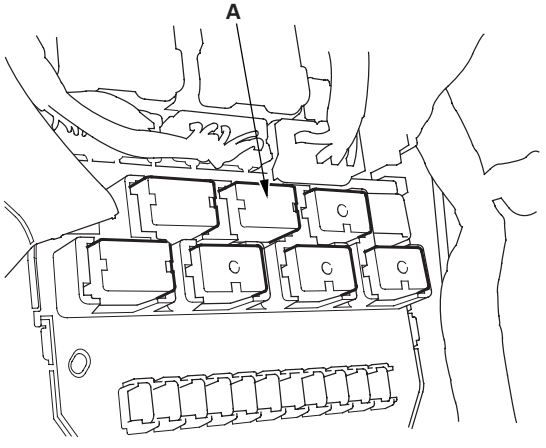
Terminal side of female terminals

Is there battery voltage?

YES—Go to step 13.

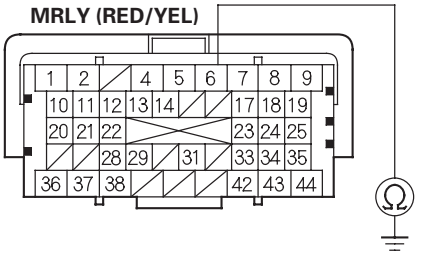
NO—Go to step 11.

11. Remove PGM-FI main relay 1 (FI MAIN) (A) from the under-dash fuse/relay box.



12. Check for continuity between PCM connector terminal A6 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A6) and PGM-FI main relay 1 (FI MAIN), then go to step 19.

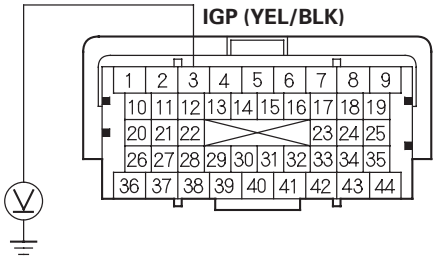
NO—Go to step 18.

13. Reconnect PCM connector A (44P).

14. Disconnect PCM connector B (44P).

15. Measure voltage between PCM connector terminal B3 and body ground.

PCM CONNECTOR B (44P)



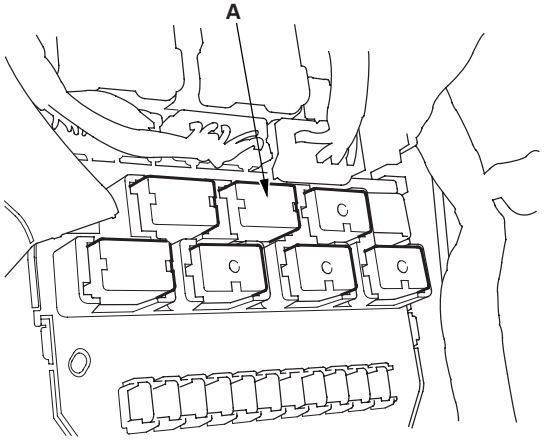
Terminal side of female terminals

Is there battery voltage?

YES—Go to step 16.

NO—Go to step 26.

16. Remove PGM-FI main relay 1 (FI MAIN) (A) from the under-dash fuse/relay box.

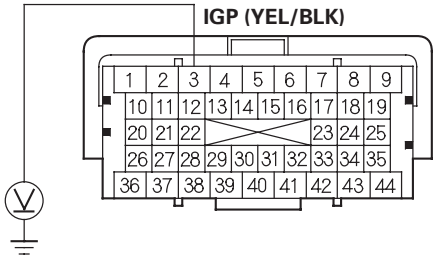


(cont'd)

DTC Troubleshooting (cont'd)

17. Measure voltage between PCM connector terminal B3 and body ground.

PCM CONNECTOR B (44P)



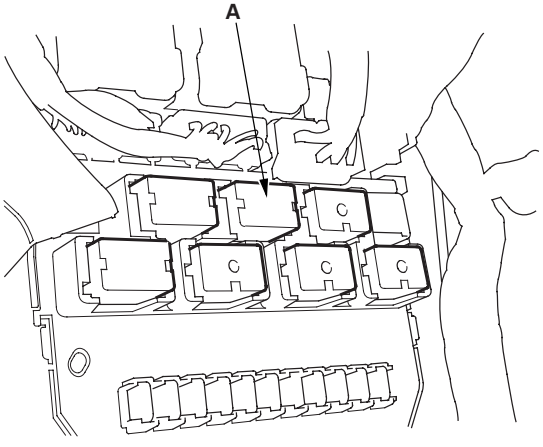
Terminal side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the PCM (B3) and PGM-FI main relay 1 (FI MAIN), then go to step 19.

NO—Go to step 18.

18. Replace PGM-FI main relay 1 (FI MAIN) (A).



19. Reconnect all connectors.

20. Turn the ignition switch ON (II).

21. Reset the PCM with the HDS.

22. Turn the ignition switch OFF.

23. Wait 10 seconds.

24. Do the PCM idle learn procedure (see page 11-273).

25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0563 indicated?

YES—Check for poor connections or loose terminals at PGM-FI main relay 1 (FI MAIN) and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

26. Reconnect all connectors.

27. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0563 indicated?

YES—Check for poor connections or loose terminals at PGM-FI main relay 1 (FI MAIN) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0602: PCM Programming Error

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- This DTC is indicated when a PCM update is not completed.
- Do not turn the ignition switch OFF while updating the PCM. If you turn the ignition switch OFF before completion, the PCM can be damaged.

1. Do the PCM update procedure (see page 11-7).
2. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0602 indicated?

   YES—Replace the original PCM (see page 11-205). ■

   NO—The update is complete. ■

DTC P0603: PCM Internal Circuit Malfunction (Keep Alive Memory (KAM) Error)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Are any Temporary DTCs or DTCs indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■
4. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0603 indicated?

   YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

   NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P0630: VIN Not Programmed or Mismatch

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- This DTC is stored only when the PCM does not have the VIN information of the vehicle. Use the HDS to input the missing VIN information.

1. Turn the ignition switch ON (II).
2. Check the VIN with the HDS.

   Does the HDS show the vehicle's VIN?

   YES—Go to step 5.

   NO—Go to step 3.
3. Input the VIN to the PCM with the HDS.

   Does the screen show COMPLETE?

   YES—Go to step 5.

   NO—Go to step 4.
4. Check for DTCs with the HDS.

   Is DTC P0603 indicated?

   YES—Do the troubleshooting for P0603 (see page 11-125). ■

   NO—Go to step 9.
5. Clear the DTC with the HDS.
6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II), and wait 5 seconds.
8. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0603 indicated?

   YES—Go to step 9.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
9. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0630 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0641: Sensor Reference Voltage A Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0641 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the PCM and these connectors: ■

   - MAP sensor
   - APP sensor
   - Front/rear A/F sensor (Sensor 1)
   - IMT actuator
   - EGR valve
   - FTP sensor
   - Input shaft (mainshaft) speed sensor
   - Output shaft (countershaft) speed sensor

4. Turn the ignition switch OFF.
5. Disconnect the MAP sensor 3P connector.
6. Turn the ignition switch ON (II).
7. Clear the DTC with the HDS.
8. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0641 indicated?

   YES—Go to step 9.

   NO—Replace the MAP sensor (see page 11-204), then go to step 53.

9. Turn the ignition switch OFF.
10. Disconnect the APP sensor 6P connector.
11. Turn the ignition switch ON (II).
12. Clear the DTC with the HDS.
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0641 indicated?

    YES—Go to step 14.

    NO—Replace the APP sensor (see page 11-249), then go to step 53.

14. Turn the ignition switch OFF.
15. Disconnect the front A/F sensor (Bank 2, Sensor 1) 8P connector.
16. Turn the ignition switch ON (II).
17. Clear the DTC with the HDS.
18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0641 indicated?

    YES—Go to step 19.

    NO—Replace the front A/F sensor (Bank 2, Sensor 1) (see page 11-199), then go to step 53.

19. Turn the ignition switch OFF.
20. Disconnect the rear A/F sensor (Bank 1, Sensor 1) 8P connector.
21. Turn the ignition switch ON (II).
22. Clear the DTC with the HDS.
23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0641 indicated?

    YES—Go to step 24.

    NO—Replace the rear A/F sensor (Bank 1, Sensor 1) (see page 11-199), then go to step 53.

(cont'd)

DTC Troubleshooting (cont'd)

24. Turn the ignition switch OFF.
25. Disconnect the IMT actuator 5P connector.
26. Turn the ignition switch ON (II).
27. Clear the DTC with the HDS.
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0641 indicated?

    YES—Go to step 29.

    NO—Replace the IMT actuator (see page 11-316), then go to step 53.
29. Turn the ignition switch OFF.
30. Disconnect the EGR valve 6P connector.
31. Turn the ignition switch ON (II).
32. Clear the DTC with the HDS.
33. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0641 indicated?

    YES—Go to step 34.

    NO—Replace the EGR valve (see page 11-342), then go to step 53.
34. Turn the ignition switch OFF.
35. Disconnect the FTP sensor 3P connector.
36. Turn the ignition switch ON (II).
37. Clear the DTC with the HDS.
38. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0641 indicated?

    YES—Go to step 39.

    NO—Replace the FTP sensor (see page 11-374), then go to step 53.
39. Turn the ignition switch OFF.
40. Disconnect the input shaft (mainshaft) speed sensor 3P connector.
41. Turn the ignition switch ON (II).
42. Clear the DTC with the HDS.
43. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0641 indicated?

    YES—Go to step 44.

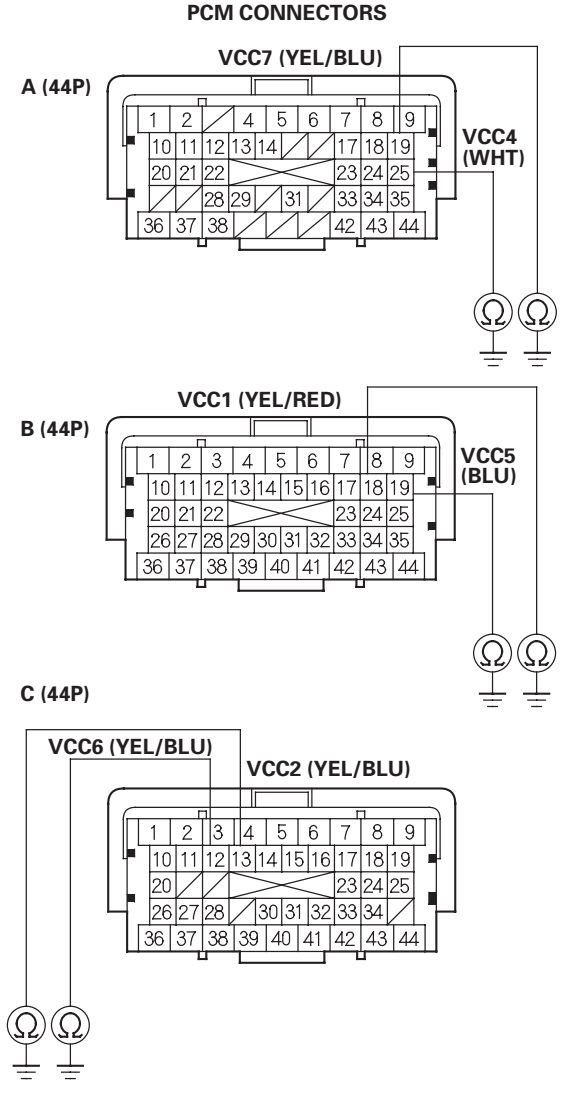
    NO—Replace the input shaft (mainshaft) speed sensor (see page 14-205), then go to step 53.
44. Turn the ignition switch OFF.
45. Disconnect the output shaft (countershaft) speed sensor 3P connector.
46. Turn the ignition switch ON (II).
47. Clear the DTC with the HDS.
48. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0641 indicated?

    YES—Go to step 49.

    NO—Replace the output shaft (countershaft) speed sensor (see page 14-205), then go to step 53.
49. Turn the ignition switch OFF.
50. Jump the SCS line with the HDS.
51. Disconnect PCM connectors A (44P), B (44P), and C (44P).

52. Check for continuity between body ground and PCM connector terminals A19, A25, B18, B19, C12, and C13 individually.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A19, A25, B18, B19, C12, or C13) and each sensor, then go to step 53.

NO—Go to step 59.

53. Turn the ignition switch OFF.

54. Reconnect all connectors.

55. Turn the ignition switch ON (II).

56. Reset the PCM with the HDS.

57. Do the PCM idle learn procedure (see page 11-273).

58. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0641 indicated?

YES—Check for poor connections or loose terminals at the PCM and these connectors:

- MAP sensor
- APP sensor
- Front/rear A/F sensor (Sensor 1)
- IMT actuator
- EGR valve
- FTP sensor
- Input shaft (mainshaft) speed sensor
- Output shaft (countershaft) speed sensor

After checking the above, go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

(cont'd)

DTC Troubleshooting (cont'd)

59. Reconnect all connectors.

60. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

61. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0641 indicated?

    YES—Check for poor connections or loose terminals at the PCM and these connectors:

    - MAP sensor
    - APP sensor
    - Front/rear A/F sensor (Sensor 1)
    - IMT actuator
    - EGR valve
    - FTP sensor
    - Input shaft (mainshaft) speed sensor
    - Output shaft (countershaft) speed sensor

    If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0685: PCM Power Control Circuit/ Internal Circuit Malfunction

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If the problem does not return after clearing the DTC, or if this DTC is stored intermittently, check for loose terminals at the IGP line connectors before you replace the PCM.

1. Turn the ignition switch ON (II).

2. Clear the DTC with the HDS.

3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0685 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

4. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0685 indicated?

   YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

   NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0700: A/T Control System Malfunction

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- This DTC is stored when there is a problem in the A/T control system. Check for A/T DTCs with the HDS, and go to the indicated DTC's troubleshooting.

DTC P1109: BARO Sensor Circuit Out of Range High

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Reset the PCM with the HDS.
2. Start the engine.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1109 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
4. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1109 indicated?

   YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

   NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P1116: ECT Sensor 1 Circuit Range/ Performance Problem

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0111 is stored at the same time as DTC P1116, troubleshoot DTC P0111 first, then recheck for DTC P1116.

1. Check for poor connections or loose terminals at ECT sensor 1 and ECT sensor 2.

   Are the connections and terminals OK?

   YES—Go to step 2.

   NO—Repair the connectors or terminals, then go to step 27.

2. Turn the ignition switch ON (II).

3. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P1116 and P2183 indicated at the same time?

   YES—Go to step 15.

   NO—Go to step 4.

4. Start the engine, and let it idle 10 minutes.

5. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about 129 °F (54 °C) or less, or 1.54 V or more indicated?

   YES—Replace ECT sensor 1 (see page 11-201), then go to step 27.

   NO—Go to step 6.

6. Turn the ignition switch OFF.

7. Drain the coolant (see page 10-6).

8. Remove ECT sensor 1 (see page 11-201).

9. Allow ECT sensor 1 to cool to 77 °F (25 °C).

10. Note the ambient temperature.

11. Connect ECT sensor 1 to its 2P connector, but do not install it on the engine.

12. Turn the ignition switch ON (II).

13. Note the value of ECT SENSOR 1 quickly in the DATA LIST with the HDS.

14. Compare the value of ECT SENSOR 1 and the ambient temperature.

    Does the value of ECT SENSOR 1 differ 5.4 °F (3 °C) or more?

    YES—Replace ECT sensor 1 (see page 11-201), then go to step 27.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. ■

15. Start the engine, and let it idle 10 minutes.

16. Check ECT SENSOR 1 in the DATA LIST with the HDS.

    Is about 118 °F (48 °C) or less, or 1.75 V or more indicated?

    YES—Replace ECT sensor 1 (see page 11-201), then go to step 27.

    NO—Go to step 17.

17. Let the engine idle 10 minutes.

18. Check ECT SENSOR 2 in the DATA LIST with the HDS.

    Is about 131 °F (55 °C) or less, or 1.50 V or more indicated?

    YES—Replace ECT sensor 2 (see page 11-201), then go to step 27.

    NO—Go to step 19.

19. Turn the ignition switch OFF.

20. Drain the coolant (see page 10-6).

21. Remove ECT sensor 1 (see page 11-201), and ECT sensor 2 (see page 11-201).

22. Allow the sensors to cool to 77 °F (25 °C).

23. Note the ambient temperature.

24. Connect ECT sensor 1 to its 2P connector, and ECT sensor 2 to its 2P connector, but do not install them on the engine.

25. Note the value of ECT SENSOR 1 and ECT SENSOR 2 quickly in the DATA LIST with the HDS.

26. Compare the value of ECT SENSOR 1 and the ambient temperature, and the value of ECT SENSOR 2 and the ambient temperature individually.

    Does one of the sensors differ more than 5.4 °F (3 °C) from the ambient temperature?

    YES—Replace the sensor that differed more than 5.4 °F (3 °C) from the ambient temperature, then go to step 27.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. ■

27. Turn the ignition switch ON (II).

28. Reset the PCM with the HDS.

29. Do the PCM idle learn procedure (see page 11-273).

30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0116 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P1128: MAP Sensor Signal Lower Than Expected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Inspect the air cleaner element (see page 11-315).

   Is it OK?

   YES—Go to step 2.

   NO—Clean or replace the air cleaner element (see page 11-315).

2. Turn the ignition switch ON (II).

3. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is there less than 54.1 kPa (16.0 in.Hg, 406 mmHg) or 1.61 V held for more than 5 seconds?

   YES—Go to step 7.

   NO—Go to step 4.

4. Clear the DTC with the HDS.

5. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

6. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
   - Engine speed between 1,200 and 5,500 rpm
   - Transmission in D position
   - Vehicle speed accelerated from 16—31 mph (25—50 km/h) under half throttle

7. Monitor the OBD STATUS for DTC P1128 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 8.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 5 and recheck.

8. Turn the ignition switch OFF.

9. Replace the MAP sensor (see page 11-204).

10. Turn the ignition switch ON (II).

11. Reset the PCM with the HDS.

12. Do the PCM idle learn procedure (see page 11-273).

13. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

14. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
    - Engine speed between 1,200 and 5,500 rpm
    - Transmission in D position
    - Vehicle speed accelerated from 16—31 mph (25—50 km/h) under half throttle

15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1128 indicated?

    YES—Check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1.

    NO—Go to step 16.

16. Monitor the OBD STATUS for DTC P1128 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 14.

DTC P1129: MAP Sensor Signal Higher than Expected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check for vacuum leaks at these parts:

   - PCV valve
   - PCV hose
   - EVAP canister purge valve
   - Throttle body
   - Intake manifold
   - Brake booster hose

   Are there any vacuum leaks?

   YES—Repair or replace the part(s) with vacuum leaks, then go to step 9.

   NO—Go to step 2.

2. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

3. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is there more than 36.9 kPa (11.0 in.Hg, 277 mmHg) or 1.14 V held for more than 5 seconds?

   YES—Go to step 7.

   NO—Go to step 4.

4. Clear the DTC with the HDS.

5. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
   - Engine speed between 1,400 and 6,500 rpm
   - Transmission in D position
   - Vehicle speed decelerated from more than 50 mph (80 km/h) with the throttle fully closed for at least 5 seconds

6. Monitor the OBD STATUS for DTC P1129 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 7.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 5 and recheck.

7. Turn the ignition switch OFF.

8. Replace the MAP sensor (see page 11-204).

9. Turn the ignition switch ON (II).

10. Reset the PCM with the HDS.

11. Do the PCM idle learn procedure (see page 11-273).

12. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

(cont'd)

DTC Troubleshooting (cont'd)

13. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
    - Engine speed between 1,400 and 6,500 rpm
    - Transmission in D position
    - Vehicle speed decelerated from more than 50 mph (80 km/h) with the throttle fully closed for at least 5 seconds

14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1129 indicated?

    YES—Check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1.

    NO—Go to step 15.

15. Monitor the OBD STATUS for DTC P1129 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 13.

DTC P1172: Rear A/F Sensor (Bank 1, Sensor 1) Circuit Out of Range High

DTC P1174: Front A/F Sensor (Bank 2, Sensor 1) Circuit Out of Range High

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Monitor the OBD STATUS for P1172 and/or P1174* in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 5.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.
5. Turn the ignition switch OFF.
6. Replace the A/F sensor (Sensor 1) (see page 11-199).
7. Turn the ignition switch ON (II).
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure (see page 11-273).
10. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1172 and/or P1174 indicated?*

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

    NO—Go to step 12.
12. Monitor the OBD STATUS for DTC P1172 and/or P1174* in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

DTC Troubleshooting (cont'd)

DTC P1297: ELD Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check the ELD in the DATA LIST with the HDS.

   Is 72 A or more indicated?

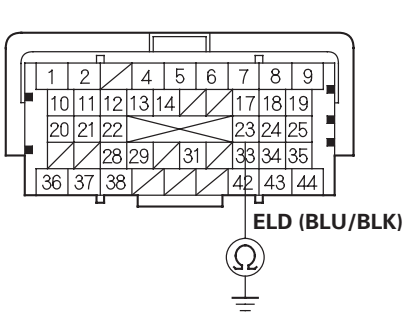
   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ELD and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch ON (II).
6. Check the ELD in the DATA LIST with the HDS.

   Is 72 A or more indicated?

   YES—Go to step 7.

   NO—Go to step 11.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (44P).
10. Check for continuity between PCM connector terminal A23 and body ground.



Terminal side of female terminals

   Is there continuity?

   YES—Repair short in the wire between the PCM (A23) and the ELD, then go to step 13.

   NO—Go to step 19.
11. Turn the ignition switch OFF.
12. Replace the under-hood fuse/relay box (see page 22-72).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-273).
17. Start the engine.
18. Turn on the headlights.

19. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1297 indicated?

    YES—Check for poor connections or loose terminals at the ELD unit and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

20. Reconnect all connectors.

21. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

22. Start the engine.

23. Turn on the headlights.

24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1297 indicated?

    YES—Check for poor connections or loose terminals at the ELD unit and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 22. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P1298: ELD Circuit High Voltage

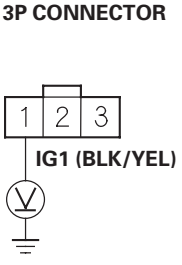
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Start the engine, and let it idle.
2. Check the ELD in the DATA LIST with the HDS.

   Is 0.2 A or less indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ELD and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between ELD 3P connector terminal No. 1 and body ground.



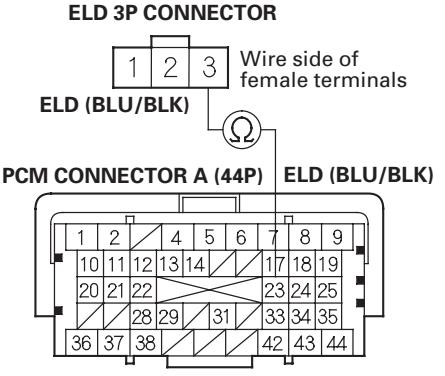
Wire side of female terminals

Is there battery voltage?

YES—Go to step 7.

NO—Repair open in the wire between the No. 18 IG ACG (15 A) fuse in the under-dash fuse/relay box and the ELD, then go to step 13.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (44P).
10. Check for continuity between PCM connector terminal A23 and ELD 3P connector terminal No. 3.



Terminal side of female terminals

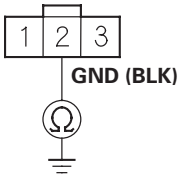
Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the PCM (A23) and the ELD, then go to step 13.

11. Check for continuity between ELD 3P connector terminal No. 2 and body ground.

ELD 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between the ELD and G202, then go to step 13.

12. Replace the under-hood fuse/relay box (see page 22-72).

13. Reconnect all connectors.

14. Turn the ignition switch ON (II).

15. Reset the PCM with the HDS.

16. Do the PCM idle learn procedure (see page 11-273).

17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1298 indicated?

YES—Check for poor connections or loose terminals at the ELD unit and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

18. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1298 indicated?

YES—Check for poor connections or loose terminals at the ELD unit and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P1549: Charging System High Voltage

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If a high voltage battery (24 V, etc.) is connected to the vehicle, this DTC can be stored.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check under these conditions:
   - A/C off
   - Headlights off
5. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1549 indicated?

   YES—Replace the alternator (see page 4-34), then go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box. ■
7. Turn the ignition switch ON (II).
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure (see page 11-273).
10. Start the engine.
11. Check under these conditions:
    - A/C off
    - Headlights off
12. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1549 indicated?

    YES—Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P16BB: Alternator B Terminal Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check under these conditions:
   - A/C on
   - Temperature control at maximum cool
   - Blower fan at maximum speed
   - Headlights on high beam
5. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P16BB indicated?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, and check the battery performance (see page 22-74). ■
7. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box (+B line).

   Are the connections and terminals OK?

   YES—Go to step 8.

   NO—Repair the connectors or terminals, then go to step 9.
8. Check for an open in the wire between the alternator and under-hood fuse/relay box at the starter subharness.

   Is the harness OK?

   YES—Replace the alternator (see page 4-34), then go to step 9.

   NO—Repair open in the wire between the alternator and the under-hood fuse/relay box, then go to step 9.
9. Turn the ignition switch ON (II).
10. Reset the PCM with the HDS.
11. Do the PCM idle learn procedure (see page 11-273).
12. Start the engine.
13. Check under these conditions:
    - A/C on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Headlights on high beam
14. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.
15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P16BB indicated?

    YES—Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P16BC: Alternator FR Terminal Circuit/ IGP Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check for poor connections at the alternator 4P connector.

   Are the connections OK?

   YES—Go to step 2.

   NO—Repair the connections, then go to step 18.

2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Start the engine.
5. Check under these conditions:

   - A/C on
   - Temperature control at maximum cool
   - Blower fan at maximum speed
   - Headlights on high beam

6. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.
7. Check for Temporary DTCs or DTCs with the HDS.

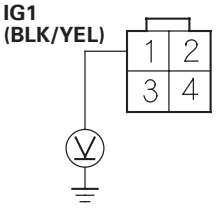
   Is DTC P16BC indicated?

   YES—Go to step 8.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator. ■

8. Turn the ignition switch OFF.
9. Disconnect the alternator 4P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between alternator 4P connector terminal No. 1 and body ground.

ALTERNATOR 4P CONNECTOR



Wire side of female terminals

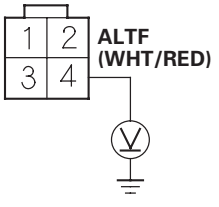
Is there battery voltage?

YES—Go to step 12.

NO—Repair open in the wire between the alternator (IG1 line) and the No. 18 IG ACG (15 A) fuse in under-dash fuse/relay box, then go to step 18.

12. Measure voltage between alternator 4P connector terminal No. 4 and body ground.

ALTERNATOR 4P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the alternator (see page 4-34), then go to step 18.

NO—Go to step 13.

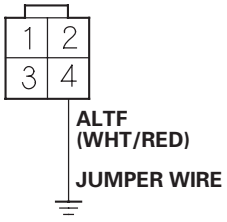
13. Turn the ignition switch OFF.

14. Jump the SCS line with the HDS.

15. Disconnect PCM connector C (44P).

16. Connect alternator 4P connector terminal No. 4 to body ground with a jumper wire.

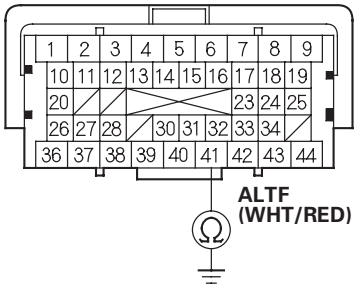
ALTERNATOR 4P CONNECTOR



Wire side of female terminals

17. Check for continuity between PCM connector terminal C41 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 26.

NO—Repair open in the wire between the PCM (C41) and the alternator, then go to step 18.

18. Reconnect all connectors.

19. Turn the ignition switch ON (II).

20. Reset the PCM with the HDS.

21. Do the PCM idle learn procedure (see page 11-273).

22. Start the engine.

23. Check under these conditions:

- A/C on
- Temperature control at maximum cool
- Blower fan at maximum speed
- Headlights on high beam

24. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.

25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16BC indicated?

YES—Check for poor connections or loose terminals at the alternator and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

(cont'd)

DTC Troubleshooting (cont'd)

26. Reconnect all connectors.

27. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

28. Start the engine.

29. Check under these conditions:

    - A/C on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Headlights on high beam

30. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.

31. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P16BC indicated?

    YES—Check for poor connections or loose terminals at the alternator and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 28. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2183: ECT Sensor 2 Circuit Range/ Performance Problem

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0111 is stored at the same time as DTC P2183, troubleshoot DTC P0111 first, then recheck for DTC P2183.

1. Check for poor connections or loose terminals at ECT sensor 1 and ECT sensor 2.

   Are the connections and terminals OK?

   YES—Go to step 2.

   NO—Repair the connectors or terminals, then go to step 27.

2. Turn the ignition switch ON (II).

3. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P1116 and P2183 indicated at the same time?

   YES—Go to step 15.

   NO—Go to step 4.

4. Start the engine, and let it idle 10 minutes.

5. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about 131 °F (55 °C) or less, or 1.50 V or more indicated?

   YES—Replace ECT sensor 2 (see page 11-201), then go to step 27.

   NO—Go to step 6.

6. Turn the ignition switch OFF.

7. Drain the coolant (see page 10-6).

8. Remove ECT sensor 2 (see page 11-201).

9. Allow ECT sensor 2 to cool to ambient temperature.

10. Note the ambient temperature.

11. Connect ECT sensor 2 to its 2P connector, but do not install it on the engine.

12. Turn the ignition switch ON (II).

13. Note the value of ECT SENSOR 2 quickly in the DATA LIST with the HDS.

14. Compare the value of ECT SENSOR 2 and the ambient temperature.

    Does ECT SENSOR 2 differ 5.4 °F (3 °C) or more?

    YES—Replace ECT sensor 2 (see page 11-201), then go to step 27.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. ■

15. Start the engine, and let it idle 10 minutes.

16. Check ECT SENSOR 1 in the DATA LIST with the HDS.

    Is about 118 °F (48 °C) or less, or 1.75 V or more indicated?

    YES—Replace ECT sensor 1 (see page 11-201), then go to step 27.

    NO—Go to step 17.

17. Let the engine idle 10 minutes.

18. Check ECT SENSOR 2 in the DATA LIST with the HDS.

    Is about 131 °F (55 °C) or less, or 1.50 V or more indicated?

    YES—Replace ECT sensor 2 (see page 11-201), then go to step 27.

    NO—Go to step 19.

(cont'd)

DTC Troubleshooting (cont'd)

19. Turn the ignition switch OFF.
20. Drain the coolant (see page 10-6).
21. Remove ECT sensor 1 (see page 11-201), and ECT sensor 2 (see page 11-201).
22. Allow the sensors to cool to ambient temperature.
23. Note the ambient temperature.
24. Connect ECT sensor 1 to its 2P connector, and ECT sensor 2 to its 2P connector, but do not install them on the engine.
25. Note the value of ECT SENSOR 1 and ECT SENSOR 2 quickly in the DATA LIST with the HDS.
26. Compare the value of ECT SENSOR 1 and the ambient temperature, and the value of ECT SENSOR 2 and the ambient temperature individually.

    Does one of the sensor differ more than 5.4 °F (3 °C) from the ambient temperature?

    YES—Replace the sensor that differed more than 5.4 °F (3 °C) from the ambient temperature, then go to step 27.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. ■
27. Turn the ignition switch ON (II).
28. Reset the PCM with the HDS.
29. Do the PCM idle learn procedure (see page 11-273).
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2183 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2184: ECT Sensor 2 Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

   YES—Go to step 3.

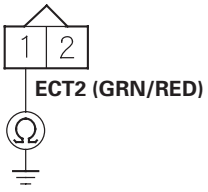
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 2 and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 2 2P connector.
5. Turn the ignition switch ON (II).
6. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

   YES—Go to step 7.

   NO—Go to step 11.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (49P).
10. Check for continuity between ECT sensor 2 2P connector terminal No. 1 and body ground.

ECT SENSOR 2 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between ECT sensor 2 and the PCM (A21), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch OFF.
12. Replace ECT sensor 2 (see page 11-201).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-273).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2184 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 2 and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

(cont'd)

DTC Troubleshooting (cont'd)

18. Reconnect all connectors.

19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2184 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 2 and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2185: ECT Sensor 2 Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

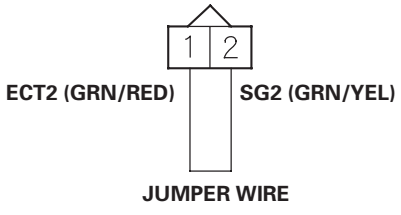
1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about −40 °F (−40 °C) or less, or 4.92 V or more indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 2 and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 2 2P connector.
5. Connect ECT sensor 2 2P connector terminals No. 1 and No. 2 with a jumper wire.

ECT SENSOR 2 2P CONNECTOR



Wire side of female terminals

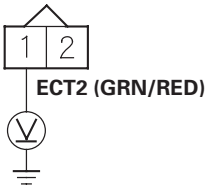
6. Turn the ignition switch ON (II).
7. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about −40 °F (−40 °C) or less, or 4.92 V or more indicated?

   YES—Go to step 8.

   NO—Go to step 20.
8. Turn the ignition switch OFF.
9. Remove the jumper wire from the ECT sensor 2 2P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between ECT sensor 2 2P connector terminal No. 1 and body ground.

ECT SENSOR 2 2P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 12.

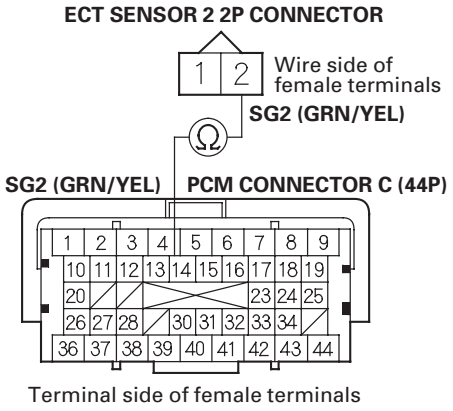
NO—Go to step 16.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (44P).

(cont'd)

DTC Troubleshooting (cont'd)

15. Check for continuity between PCM connector terminal C14 and ECT sensor 2 2P connector terminal No. 2.



Is there continuity?

YES—Go to step 27.

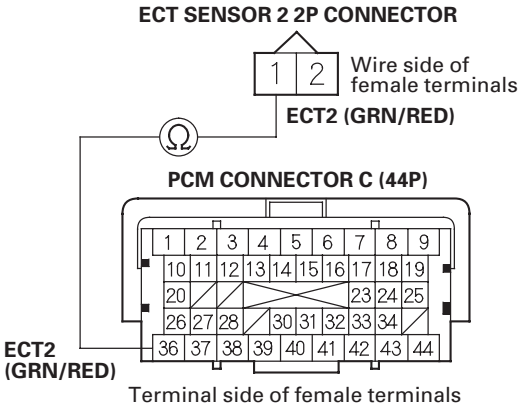
NO—Repair open in the wire between the PCM (C14) and ECT sensor 2, then go to step 22.

16. Turn the ignition switch OFF.

17. Jump the SCS line with the HDS.

18. Disconnect PCM connector C (44P).

19. Check for continuity between PCM connector terminal C36 and ECT sensor 2 2P connector terminal No. 1.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (C36) and ECT sensor 2, then go to step 22.

20. Turn the ignition switch OFF.

21. Replace ECT sensor 2 (see page 11-201).

22. Reconnect all connectors.

23. Turn the ignition switch ON (II).

24. Reset the PCM with the HDS.

25. Do the PCM idle learn procedure (see page 11-273).

26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2185 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 2 and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

27. Reconnect all connectors.

28. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2185 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 2 and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P2195: Rear A/F Sensor (Bank 1, Sensor 1) Signal Stuck Lean

DTC P2197: Front A/F Sensor (Bank 2, Sensor 1) Signal Stuck Lean

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).
- If the vehicle was out of fuel and the engine stalled before this DTC was stored, refuel, and clear the DTC with the HDS.
- If DTC P2101, P2108, P2118, P2135, P2176, U0107, or a combination of P2122 and P2127, P2122 and P2138 or P2127 and P2138 is stored at the same time as DTC P2195 (P2197)*, troubleshoot those DTCs first, then recheck for DTC P2195 (P2197)*.

1. Check the installation of the A/F sensor (Sensor 1).

   Is the A/F sensor loose or disconnected from the exhaust pipe?

   YES—Go to step 6.

   NO—Go to step 2.

2. Turn the ignition switch ON (II).

3. Clear the DTC with the HDS.

4. Start the engine, then let it idle.

5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2195 and/or P2197 indicated?*

   YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 13.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

6. Turn the ignition switch OFF.

7. Reinstall the A/F sensor (Sensor 1) (see page 11-199).

8. Turn the ignition switch ON (II).

9. Reset the PCM with the HDS.

10. Do the PCM idle learn procedure (see page 11-273).

11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2195 and/or P2197 indicated?*

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

    NO—Go to step 12.

12. Monitor the OBD STATUS for DTC P2195 and/or P2197* in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

13. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

14. Start the engine, then let it idle for 2 minutes.

15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2195 and/or P2197 indicated?*

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 14. If the PCM was substituted, go to step 1.

    NO—Go to step 16.

16. Monitor the OBD STATUS for DTC P2195 and/or P2197* in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P2227: BARO Sensor Circuit Range/ Performance Problem

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0107, P0108, P1128, and/or P1129 are stored at the same time as DTC P2227, troubleshoot those DTCs first, then recheck for DTC P2227.

1. Turn the ignition switch ON (II), and wait 2 seconds.

2. Check the BARO SENSOR in the DATA LIST with the HDS.

   Is about 101 kPa (29.9 in.Hg, 760 mmHg), or about 2.9 V at sea level indicated?

   YES—Go to step 3.

   NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-205). ■

3. Clear the DTC with the HDS.

4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

5. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
   - Transmission in D position
   - Throttle position between 14 degrees and 45 degrees for 2 seconds

6. Monitor the OBD STATUS for DTC P2227 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—If the screen indicates FAILED, go to step 7. If the screen indicates NOT COMPLETED, go to step 5.

(cont'd)

DTC Troubleshooting (cont'd)

7. Check the condition of the air cleaner element.

   Is the air cleaner element OK?

   YES—Go to step 8.

   NO—Replace the air cleaner element (see page 11-315).

8. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

9. Reset the PCM with the HDS.

10. Do the PCM idle learn procedure (see page 11-273).

11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

12. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
    - Transmission in D position
    - Throttle position between 14 degrees and 45 degrees for 2 seconds

13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2227 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 11. If the PCM was substituted, go to step 1.

    NO—Go to step 14.

14. Monitor the OBD STATUS for DTC P2227 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 11. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 11.

DTC P2228: BARO Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check the BARO SENSOR in the DATA LIST with the HDS.

   Is about 53 kPa (15.6 in.Hg, 397 mmHg), or 1.58 V or less indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. ■
3. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2228 indicated?

   YES—Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted in step 3, go to step 1.

   NO—If the PCM was updated, troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2229: BARO Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check the BARO SENSOR in the DATA LIST with the HDS.

   Is about 160 kPa (47.2 in.Hg, 1,200 mmHg), or 4.49 V, or more indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. ■
3. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2229 indicated?

   YES—Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted in step 3, go to step 1.

   NO—If the PCM was updated, troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P2237: Rear A/F Sensor (Bank 1, Sensor 1) IP Circuit High Voltage

DTC P2240: Front A/F Sensor (Bank 2, Sensor 1) IP Circuit High Voltage

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

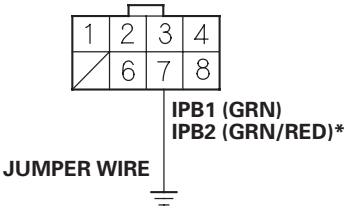
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2237 and/or P2240 indicated?*

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■
5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (44P).
9. Connect A/F sensor (Sensor 1) 8P connector terminal No. 7 to body ground with a jumper wire.

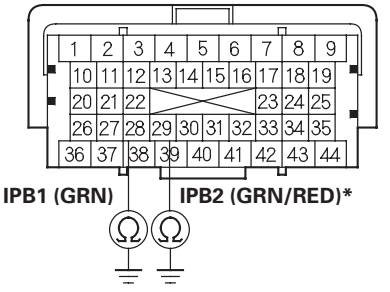
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

10. Check for continuity between PCM connector terminal B28 (B29)* and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 11.

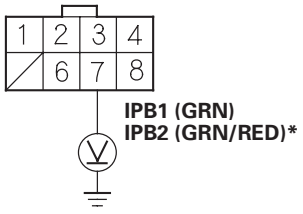
NO—Repair open in the wire between the PCM (B28 (B29)*) and the A/F sensor (Sensor 1), then go to step 15.

11. Remove the jumper wire from the A/F sensor (Sensor 1) 8P connector, then reconnect PCM connector B (44P).

12. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.

13. Measure voltage between A/F sensor (Sensor 1) 8P connector terminal No. 7 and body ground.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 21.

NO—Go to step 14.

14. Replace the A/F sensor (Sensor 1) (see page 11-199).

15. Reconnect all connectors.

16. Turn the ignition switch ON (II).

17. Reset the PCM with the HDS.

18. Do the PCM idle learn procedure (see page 11-273).

19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2237 and/or P2240 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P2237 and/or P2240* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

21. Turn the ignition switch OFF.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2237 and/or P2240 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P2237 and/or P2240* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC Troubleshooting (cont'd)

DTC P2238: Rear A/F Sensor (Bank 1, Sensor 1) IP Circuit Low Voltage

DTC P2241: Front A/F Sensor (Bank 2, Sensor 1) IP Circuit Low Voltage

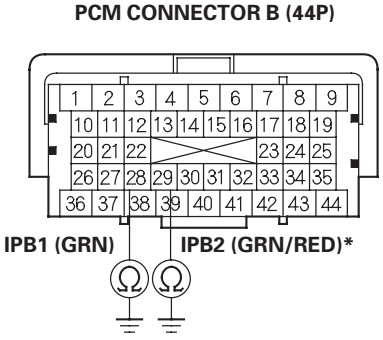
NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2238 and/or P2241 indicated?*

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■
5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (44P).
9. Check for continuity between PCM connector terminal B28 (B29)* and body ground.



Terminal side of female terminals

Is there continuity?

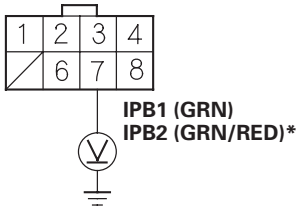
YES—Repair short in the wire between the PCM (B28 (B29)*) and the A/F sensor (Sensor 1), then go to step 14.

NO—Go to step 10.

10. Reconnect PCM connector B (44P).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.

12. Measure voltage between A/F sensor (Sensor 1) 8P connector terminal No. 7 and body ground.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

13. Replace the A/F sensor (Sensor 1) (see page 11-199).

14. Reconnect all connectors.

15. Turn the ignition switch ON (II).

16. Reset the PCM with the HDS.

17. Do the PCM idle learn procedure (see page 11-273).

18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2238 and/or P2241 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P2238 and/or P2241* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

20. Turn the ignition switch OFF.

21. Reconnect all connectors.

22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2238 and/or P2241 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P2238 and/or P2241* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC Troubleshooting (cont'd)

DTC P2243: Rear A/F Sensor (Bank 1, Sensor 1) VCENT Circuit High Voltage

DTC P2247: Front A/F Sensor (Bank 2, Sensor 1) VCENT Circuit High Voltage

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

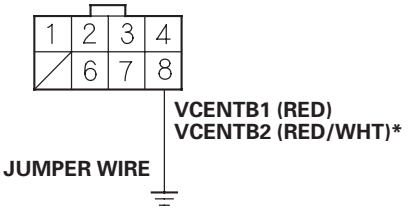
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2243 and/or P2247 indicated?*

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■
5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (44P).
9. Connect A/F sensor (Sensor 1) 8P connector terminal No. 8 to body ground with a jumper wire.

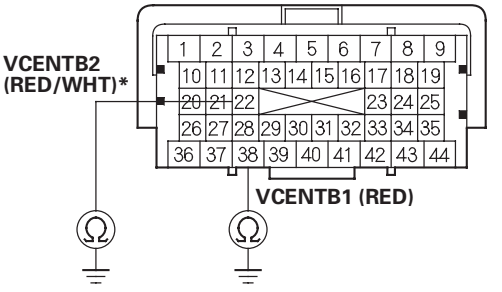
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

10. Check for continuity between PCM connector terminal B38 (B22)* and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 11.

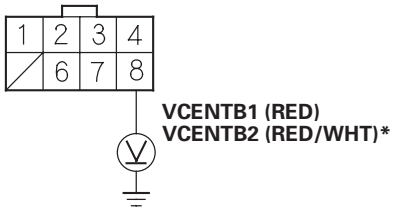
NO—Repair open in the wire between the PCM (B38 (B22)*) and the A/F sensor (Sensor 1), then go to step 15.

11. Remove the jumper wire from the A/F sensor (Sensor 1) 8P connector, then reconnect PCM connector B (44P).

12. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.

13. Measure voltage between A/F sensor (Sensor 1) 8P connector terminal No. 8 and body ground.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 21.

NO—Go to step 14.

14. Replace the A/F sensor (Sensor 1) (see page 11-199).

15. Reconnect all connectors.

16. Turn the ignition switch ON (II).

17. Reset the PCM with the HDS.

18. Do the PCM idle learn procedure (see page 11-273).

19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2243 and/or P2247 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P2243 and/or P2247* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

21. Turn the ignition switch OFF.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2243 and/or P2247 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P2243 and/or P2247* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC Troubleshooting (cont'd)

DTC P2245: Rear A/F Sensor (Bank 1, Sensor 1) VCENT Circuit Low Voltage

DTC P2249: Front A/F Sensor (Bank 2, Sensor 1) VCENT Circuit Low Voltage

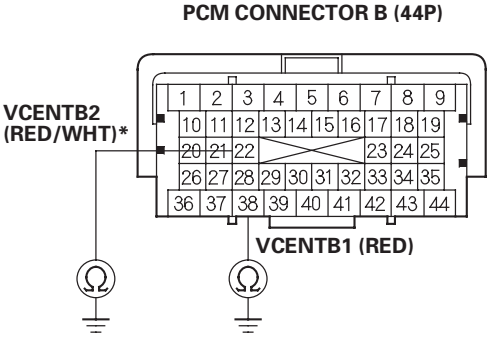
NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2245 and/or P2249 indicated?*

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■
5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (44P).
9. Check for continuity between PCM connector terminal B38 (B22)* and body ground.



Terminal side of female terminals

Is there continuity?

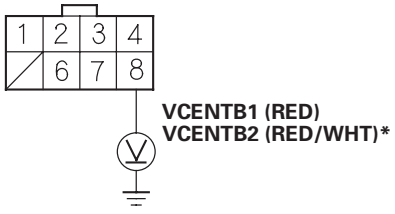
YES—Repair short in the wire between the PCM (B38 (B22)*) and the A/F sensor (Sensor 1), then go to step 14.

NO—Go to step 10.

10. Reconnect PCM connector B (44P).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.

12. Measure voltage between A/F sensor (Sensor 1) 8P connector terminal No. 8 and body ground.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

13. Replace the A/F sensor (Sensor 1) (see page 11-199).

14. Reconnect all connectors.

15. Turn the ignition switch ON (II).

16. Reset the PCM with the HDS.

17. Do the PCM idle learn procedure (see page 11-273).

18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2245 and/or P2249 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P2245 and/or P2249* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

20. Turn the ignition switch OFF.

21. Reconnect all connectors.

22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2245 and/or P2249 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P2245 and/or P2249* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC Troubleshooting (cont'd)

DTC P2251: Rear A/F Sensor (Bank 1, Sensor 1) VS Circuit High Voltage

DTC P2254: Front A/F Sensor (Bank 2, Sensor 1) VS Circuit High Voltage

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P2251 and/or P2254* is stored at the same time as DTC P0134 and/or P0154*, troubleshoot DTC P2251 and/or P2254* first, then recheck for P0134 and/or P0154*.
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

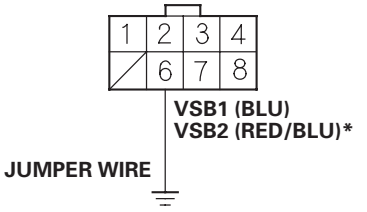
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2251 and/or P2254 indicated?*

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■
5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (44P).
9. Connect A/F sensor (Sensor 1) 8P connector terminal No. 6 to body ground with a jumper wire.

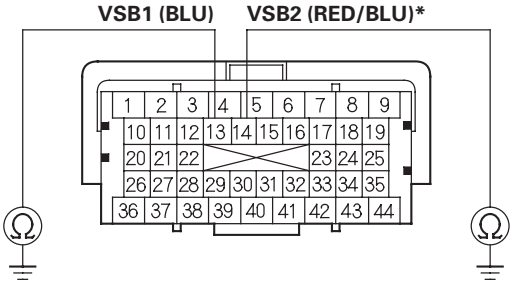
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

10. Check for continuity between PCM connector terminal B13 (B14)* and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 11.

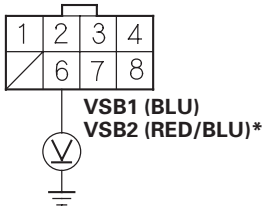
NO—Repair open in the wire between the PCM (B13 (B14)*) and the A/F sensor (Sensor 1), then go to step 15.

11. Remove the jumper wire from the A/F sensor (Sensor 1) 8P connector, then reconnect PCM connector B (44P).

12. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.

13. Measure voltage between A/F sensor (Sensor 1) 8P connector terminal No. 6 and body ground.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 21.

NO—Go to step 14.

14. Replace the A/F sensor (Sensor1) (see page 11-199).

15. Reconnect all connectors.

16. Turn the ignition switch ON (II).

17. Reset the PCM with the HDS.

18. Do the PCM idle learn procedure (see page 11-273).

19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2251 and/or P2254 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P2251 and/or P2254* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

21. Turn the ignition switch OFF.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

24. Check for Temporary DTCs or DTCs with the HDS.

If DTC P2251 and/or P2254 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P2251 and/or P2254* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC Troubleshooting (cont'd)

DTC P2252: Rear A/F Sensor (Bank 1, Sensor 1) VS Circuit Low Voltage

DTC P2255: Front A/F Sensor (Bank 2, Sensor 1) VS Circuit Low Voltage

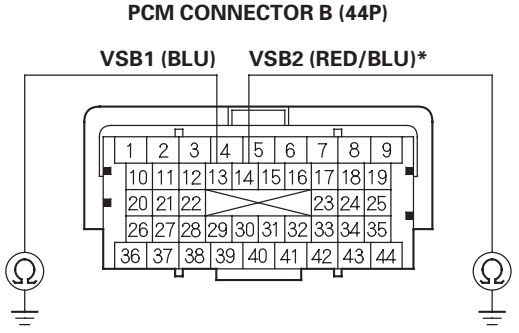
NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2252 and/or P2255 indicated?*

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■
5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (44P).
9. Check for continuity between PCM connector terminal B13 (B14)* and body ground.



Terminal side of female terminals

Is there continuity?

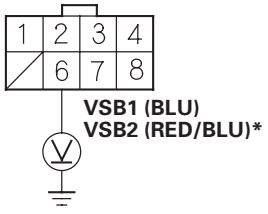
YES—Repair short in the wire between the PCM (B13 (B14)*) and the A/F sensor (Sensor 1), then go to step 14.

NO—Go to step 10.

10. Reconnect PCM connector B (44P).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.

12. Measure voltage between A/F sensor (Sensor 1) 8P connector terminal No. 6 and body ground.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

13. Replace the A/F sensor (Sensor 1) (see page 11-199).

14. Reconnect all connectors.

15. Turn the ignition switch ON (II).

16. Reset the PCM with the HDS.

17. Do the PCM idle learn procedure (see page 11-273).

18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2252 and/or P2255 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P2252 and/or P2255* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

20. Turn the ignition switch OFF.

21. Reconnect all connectors.

22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2252 and/or P2255 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P2252 and/or P2255* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC Troubleshooting (cont'd)

DTC P2270: Rear Secondary HO2S (Bank 1, Sensor 2) Circuit Signal Stuck Lean

DTC P2271: Rear Secondary HO2S (Bank 1, Sensor 2) Circuit Signal Stuck Rich

DTC P2272: Front Secondary HO2S (Bank 2, Sensor 2) Circuit Signal Stuck Lean

DTC P2273: Front Secondary HO2S (Bank 2, Sensor 2) Circuit Signal Stuck Rich

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 176 °F (80 °C)
   - Vehicle speed between 35—55 mph (56—88 km/h)
   - Drive 1 minute or more
5. Monitor the OBD STATUS for DTC P2270, P2271, P2272*, and/or P2273* in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 6.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.
6. Turn the ignition switch OFF.
7. Replace the secondary HO2S (Sensor 2) (see page 11-200).
8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-273).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
12. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 176 °F (80 °C)
    - Vehicle speed between 35—55 mph (56—88 km/h)
    - Drive 1 minute or more
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2270, P2271, P2272, and/or P2273* indicated?*

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1.

    NO—Go to step 14.
14. Monitor the OBD STATUS for DTC P2270, P2271, P2272*, and/or P2273* in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.

DTC P2610: PCM Internal Power Off Timer Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2610 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
4. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2610 indicated?

   YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

   NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P2627: Rear A/F Sensor (Bank 1, Sensor 1) LABEL Circuit Low Voltage

DTC P2630: Front A/F Sensor (Bank 2, Sensor 1) LABEL Circuit Low Voltage

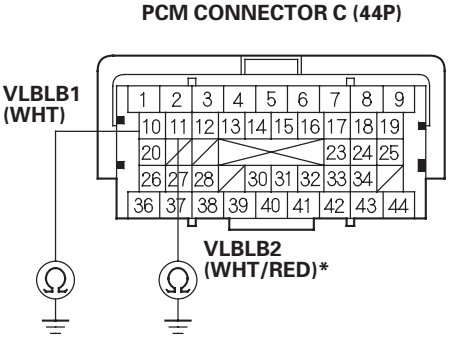
NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2627 and/or P2630 indicated?*

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■
5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect PCM connector C (44P).
8. Check for continuity between PCM connector terminal C10 (C11)* and body ground.



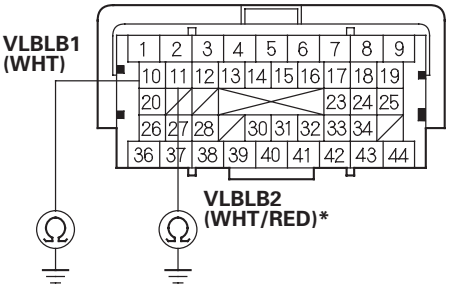
Terminal side of female terminals

Is there continuity?

YES—Go to step 9.

NO—Go to step 17.

9. Disconnect the A/F sensor (Sensor 1) 8P connector.
10. Check for continuity between PCM connector terminal C10 (C11)* and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (C10 (C11)*) and the A/F sensor (Sensor 1), then go to step 12.

NO—Go to step 11.

11. Replace the A/F sensor (Sensor 1) (see page 11-199).

12. Reconnect all connectors.

13. Turn the ignition switch ON (II).

14. Reset the PCM with the HDS.

15. Do the PCM idle learn procedure (see page 11-273).

16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2627 and/or P2630 indicated?*

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

17. Reconnect all connectors.

18. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

19. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2627 and/or P2630 indicated?*

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P2628: Rear A/F Sensor (Bank 1, Sensor 1) LABEL Circuit High Voltage

DTC P2631: Front A/F Sensor (Bank 2, Sensor 1) LABEL Circuit High Voltage

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

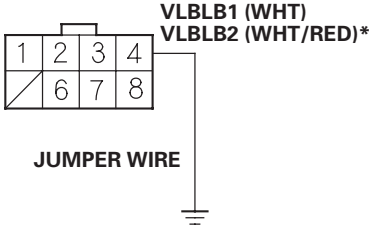
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2628 and/or P2631 indicated?*

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■
5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector C (44P).
9. Connect A/F sensor (Sensor 1) 8P connector terminal No. 4 to body ground with a jumper wire.

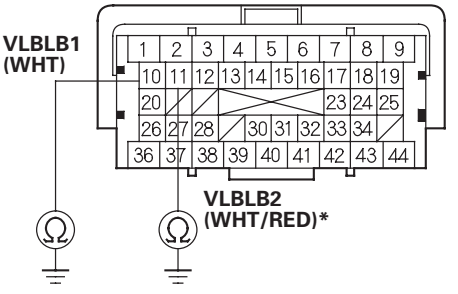
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

10. Check for continuity between PCM connector terminal C10 (C11)* and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 11.

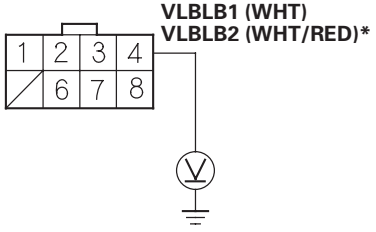
NO—Repair open in the wire between the PCM (C10 (C11)*) and the A/F sensor (Sensor 1), then go to step 15.

11. Remove the jumper wire from the A/F sensor (Sensor 1) 8P connector, then reconnect PCM connector C (44P).

12. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.

13. Measure voltage between A/F sensor (Sensor 1) 8P connector terminal No. 4 and body ground.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 14.

NO—Go to step 20.

14. Replace the A/F sensor (Sensor 1) (see page 11-199).

15. Reconnect all connectors.

16. Turn the ignition switch ON (II).

17. Reset the PCM with the HDS.

18. Do the PCM idle learn procedure (see page 11-273).

19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2628 and/or P2631 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

20. Turn the ignition switch OFF.

21. Reconnect all connectors.

22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2628 and/or P2631 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P2A00: Rear A/F Sensor (Bank 1, Sensor 1) Circuit Range/Performance Problem

DTC P2A03: Front A/F Sensor (Bank 2, Sensor 1) Circuit Range/Performance Problem

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
   - Transmission in D position
   - Vehicle speed at 30 mph (48 km/h) or more, and engine speed at 2,600 rpm or less
   - Drive at an engine speed of 1,600 rpm. Accelerate to full open throttle for 5 seconds, then slow down with the throttle completely closed.
5. Monitor the OBD STATUS for DTC P2A00 and/or P2A03* in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 6.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If it is EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.
6. Turn the ignition switch OFF.
7. Replace the A/F sensor (Sensor 1) (see page 11-199).
8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-273).
11. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
    - Transmission in D position
    - Vehicle speed at 30 mph (48 km/h) or more, and engine speed at 2,600 rpm or less
    - Drive at an engine speed of 1,600 rpm. Accelerate to full open throttle for 5 seconds, then slow down with the throttle completely closed.
12. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2A00 and/or P2A03 indicated?*

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

    NO—Go to step 13.
13. Monitor the OBD STATUS for DTC P2A00 and/or P2A03* in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 12, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.

DTC U0073: F-CAN Malfunction (BUS-OFF)

DTC U0155: F-CAN Malfunction (Gauge Control Module-PCM)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC U0073 and/or U0155 indicated?

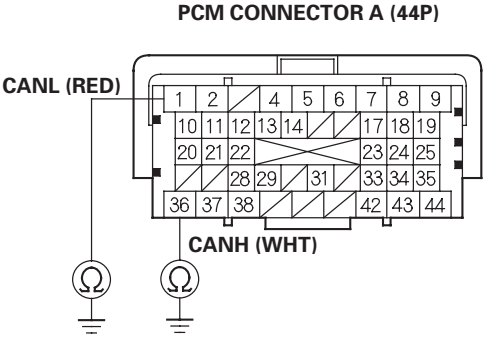
   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module, the VSA modulator-control unit, the yaw rate/lateral acceleration sensor, the steering angle sensor, the VTM-4 control unit, the TPMS control unit, and the PCM. ■
4. Check for DTCs in the body electrical system DTCs menu with the HDS.

   Is DTC B1168, B1169, and/or B1178 indicated?

   YES—Go to step 5.

   NO—Do the gauge control module input test (see page 22-122). ■
5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect PCM connector A (44P).
8. Remove the gauge control module (see page 22-263).
9. Disconnect the gauge control module 14P connector.
10. Disconnect the yaw rate/lateral acceleration sensor 4P connector.
11. Disconnect the steering angle sensor 5P connector.
12. Disconnect the TPMS control unit 20P connector.
13. Disconnect the VTM-4 control unit 22P connector.
14. Disconnect the VSA modulator-control unit 46P connector.
15. Check for continuity between PCM connector terminals A1 and A36 and body ground individually.



Terminal side of female terminals

Is there continuity?

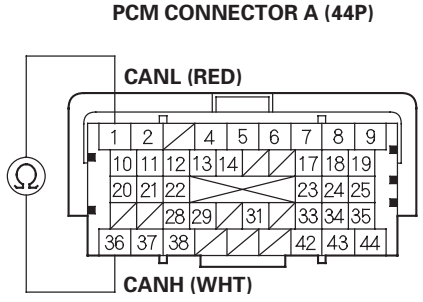
YES—Repair short in the wire between the gauge control module, the VSA modulator-control unit, the yaw rate/lateral acceleration sensor, the steering angle sensor, the VTM-4 control unit, the TPMS control unit, and the PCM (A36 (A1)), then go to step 20.

NO—Go to step 16.

(cont'd)

DTC Troubleshooting (cont'd)

16. Check for continuity between PCM connector terminals A1 and A36.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminals A1 (CANL line) and A36 (CANH line), then go to step 20.

NO—Go to step 17.

17. Check for continuity between PCM connector terminals A36 and these connector terminals:

Connector	Terminal
Gauge control module 14P	No. 8 (WHT)
VSA modulator-control unit 46P	No. 33 (WHT)
VTM-4 control unit 22P	No. 11 (WHT)
TPMS control unit 20P	No. 19 (WHT)

Is there continuity between the PCM terminal and each of the terminals in the chart?

YES—Go to step 18.

NO—Repair open in the wire between the PCM (A36) and the appropriate connector, then go to step 20.

18. Check for continuity between PCM connector terminal A1 and these connector terminals:

Connector	Terminal
Gauge control module 14P	No. 1 (RED)
VSA modulator-control unit 46P	No. 12 (RED)
VTM-4 control unit 22P	No. 22 (RED)
TPMS control unit 20P	No. 10 (RED)

Is there continuity between the PCM terminal and each of the terminals in the chart?

YES—Go to step 19.

NO—Repair open in the wire between the PCM (A1) and the appropriate connector, then go to step 20.

19. Referring to the chart below, select the row that most closely represents the combination of DTCs retrieved from the PGM-FI, VSA, VTM-4, TPMS, and Body Electrical systems. Then check the connections at the control module indicated in the last column. If all the connections are OK, substitute the control module. After substituting the control module, check for DTCs with the HDS.

PGM-FI	VSA	VTM-4	TPMS	Body Electrical	Control module
U0073 U0155	86	41-1 41-2	85	B1168 B1169 B1178	Gauge control module
U0073 U0114 U0122 U0155	68 86	41-1 41-2	85	B1168 B1169 B1178	PCM
U0073 U0122 U0155	68 86	41-1 41-2	85	B1168 B1170	VSA modulator-control unit
U0073 U0114 U0155	68 86	41-1 41-2	85	B1168	VTM-4 control unit
U0073 U0155	68 86	41-1 41-2	85	B1168 B1173	TPMS control unit

Are the DTCs still indicated?

YES—Substitute the remaining control modules, one at time, until the DTCs are no longer present, then replace the control module that made the DTCs go away. After replacing the faulty control module, go to step 20.

NO—Replace the faulty control module, then go to step 20.

20. Reconnect all connectors.

21. Turn the ignition switch ON (II).

22. Reset the PCM with the HDS.

23. Do the PCM idle learn procedure (see page 11-273).

24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0073 and/or U0155 indicated?

YES—Check for poor connections or loose terminals at the gauge control module, the VSA modulator-control unit, the yaw rate/lateral acceleration sensor, the steering angle sensor, the VTM-4 control unit, the TPMS control unit, and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC U0114: F-CAN Malfunction (VTM-4 Control Unit-PCM)

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC U0073 is stored at the same time as DTC U0114, troubleshoot DTC U0073 first, then recheck for DTC U0114.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC U0114 indicated?

   YES—Go to step 4.

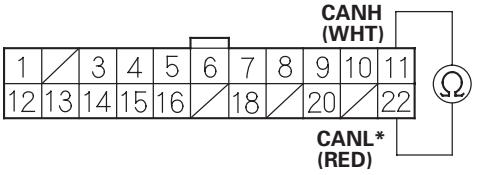
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module, the VTM-4 control unit, and the PCM. ■
4. Check for DTCs in the DTCs MENU with the HDS.

   Is TCS DTC 41 indicated?

   YES—Go to step 5.

   NO—Go to step 8.
5. Turn the ignition switch OFF.
6. Disconnect the VTM-4 control unit 22P connector.
7. Check for continuity between VTM-4 control unit 22P connector terminals No. 11 and No. 22*.

VTM-4 CONTROL UNIT 22P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good VTM-4 control unit, then go to step 15 and recheck. If no DTCs are indicated, replace the original VTM-4 control unit, then go to step 15.

NO—Repair open in the wire between the VTM-4 control unit (No. 11 (No. 22)*) and the PCM (A36 (A1)*), then go to step 15.

*: CANL line

8. Check for poor connections at the VTM-4 control unit 22P connector and 12P connector.

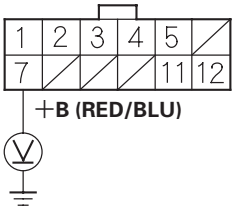
   Are the connections OK?

   YES—Go to step 9.

   NO—Repair the connections, then go to step 15.

9. Turn the ignition switch OFF.
10. Disconnect the VTM-4 control unit 12P connector.
11. Turn the ignition switch ON (II).
12. Measure voltage between VTM-4 control unit 12P connector terminal No. 7 and body ground.

VTM-4 CONTROL UNIT 12P CONNECTOR



Wire side of female terminals

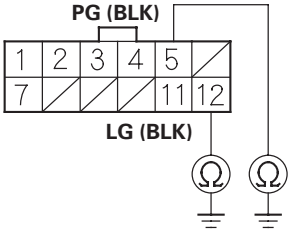
Is there battery voltage?

YES—Go to step 13.

NO—Check for a VTM-4 system DTC 44-1 (see page 15-30). If DTC 44-1 is indicated, troubleshoot and repair as needed, then go to step 15. If DTC 44-1 is not indicated, go to step 15.

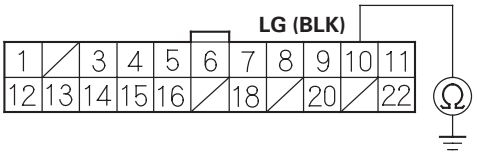
13. Turn the ignition switch OFF.
14. Check for continuity between VTM-4 control unit 12P connector terminals No. 5 and No. 12 and body ground, and between VTM-4 control unit 22P connector terminal No. 10 and body ground individually.

VTM-4 CONTROL UNIT 12P CONNECTOR



Wire side of female terminals

VTM-4 CONTROL UNIT 22P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good VTM-4 control unit, then go to step 15 and recheck. If no DTCs are indicated, replace the original VTM-4 control unit, then go to step 15.

NO—Repair open in the wire between the VTM-4 control unit and body ground (G501), then go to step 15.

15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Reset the PCM with the HDS.
18. Do the PCM idle learn procedure (see page 11-273).
19. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC U0114 indicated?

YES—Check for poor connections or loose terminals at the gauge control module, the VTM-4 control unit, and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC U0122: F-CAN Malfunction (VSA Modulator-Control Unit-PCM)

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC U0073 is stored at the same time as DTC U0122, troubleshoot DTC U0073 first, then recheck for DTC U0122.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC U0122 indicated?

   YES—Go to step 4.

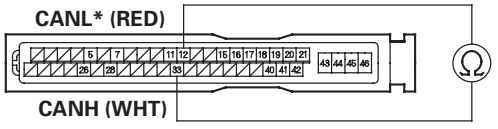
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge assembly, the VSA modulator-control unit, and the PCM. ■
4. Check for DTCs in the DTCs MENU with the HDS.

   Is VSA DTC 86 indicated?

   YES—Go to step 5.

   NO—Go to step 8.
5. Turn the ignition switch OFF.
6. Disconnect the VSA modulator-control unit 46P connector.
7. Check for continuity between VSA modulator-control unit 46P connector terminals No. 12* and No. 33.

   VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



   Wire side of female terminals

   Is there continuity?

   YES—Substitute a known-good VSA modulator-control unit, then go to step 15 and recheck. If no DTCs are indicated, replace the original VSA modulator-control unit, then go to step 15.

   NO—Repair open in the wire between the VSA modulator-control unit (No. 35 (No. 14)*) and the PCM (A36 (A1)*), then go to step 15.

   *: CANL line
8. Check for a poor connection at the VSA modulator-control unit 46P connector.

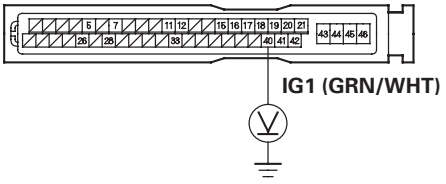
   Are the connections OK?

   YES—Go to step 9.

   NO—Repair the connection(s), then go to step 15.

9. Turn the ignition switch OFF.
10. Disconnect the VSA modulator-control unit 46P connector.
11. Turn the ignition switch ON (II).
12. Measure voltage between VSA modulator-control unit 46P connector terminal No. 40 and body ground.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

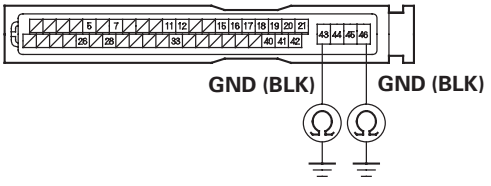
Is there battery voltage?

YES—Go to step 13.

NO—Check the No. 31 VSA/ABS (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the No. 31 VSA/ABS (7.5 A) fuse and the VSA modulator-control unit, then go to step 15.

13. Turn the ignition switch OFF.
14. Check for continuity between VSA modulator-control unit 46P connector terminals No. 43 and No. 46 and body ground.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good VSA modulator-control unit, then go to step 15 and recheck. If no DTCs are indicated, replace the original VSA modulator-control unit, then go to step 15.

NO—Repair open in the wire between the VSA modulator-control unit and body ground (G302), then go to step 15.

15. Reconnect the VSA modulator-control unit 46P connector.
16. Turn the ignition switch ON (II).
17. Reset the PCM with the HDS.
18. Do the PCM idle learn procedure (see page 11-273).
19. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC U0122 indicated?

YES—Check for poor connections or loose terminals at the gauge assembly, the VSA modulator-control unit, and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

MIL Circuit Troubleshooting

1. Turn the ignition switch ON (II).
2. Do the gauge self-diagnostic procedure (see page 22-244).

   Does the MIL indicator flash?

   YES—Go to step 3.

   NO—Substitute a known-good gauge control module, and recheck. If the MIL circuit is OK, replace the original gauge control module. ■
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II), and watch the MIL.

   Does the MIL stay off?

   YES—Go to step 17.

   NO—Go to step 5.
5. Turn the ignition switch OFF.
6. Turn the ignition switch ON (II), wait 20 seconds, and watch the MIL.

   Does the MIL stay on or flash more than 5 times?

   YES—Go to step 7.

   NO—The MIL circuit is OK. ■
7. Turn the ignition switch OFF.
8. Connect the HDS to the DLC (see page 11-3).
9. Turn the ignition switch ON (II), and read the HDS.

   Does the HDS communicate with the PCM?

   YES—Go to step 10.

   NO—Go to ''DLC Circuit Troubleshooting'' (see page 11-194). ■
10. Check for Temporary DTCs or DTCs with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—Go to the indicated DTC's troubleshooting. ■

    NO—Go to step 11.
11. Check the MIL in the DATA LIST with the HDS.

    Does it indicate ON?

    YES—Go to step 12.

    NO—Substitute a known-good gauge control module, and recheck. If the MIL circuit is OK, replace the original gauge control module. ■
12. Check the SCS in the DATA LIST with the HDS.

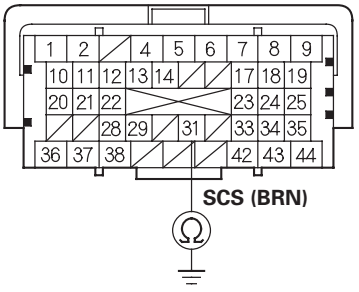
    Is a short indicated?

    YES—Go to step 13.

    NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-205). ■
13. Turn the ignition switch OFF.
14. Jump the SCS line with the HDS.
15. Disconnect PCM connector A (44P), then disconnect the HDS.

16. Check for continuity between PCM connector terminal A31 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A31) and the DLC. ■

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-205). ■

17. Try to start the engine.

Does the engine start and idle smoothly?

YES—Go to step 18.

NO—Go to step 22.

18. Turn the ignition switch OFF.

19. Connect the HDS to the DLC (see page 11-3).

20. Turn the ignition switch ON (II), and read the HDS.

Does the HDS communicate with the PCM?

YES—Go to step 21.

NO—Go to ''DLC Circuit Troubleshooting'' (see page 11-194). ■

21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0073 and/or U0155 indicated?

YES—Go to the indicated DTC's troubleshooting. ■

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-205). ■

22. Turn the ignition switch OFF.

23. Inspect the No. 23 +B IG MAIN (50 A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES—Repair open in the wire between the No. 23 +B IG MAIN (50 A) fuse and the ignition switch. If the wire is OK, go to step 24.

NO—Repair short in the wire between the No. 23 +B IG MAIN (50 A) fuse and the under-hood fuse/relay box. Also replace the No. 23 +B IG MAIN (50 A) fuse. ■

(cont'd)

MIL Circuit Troubleshooting (cont'd)

24. Inspect the No. 8 FI ECU (PCM) (15 A) fuse in the under-hood fuse/relay box.

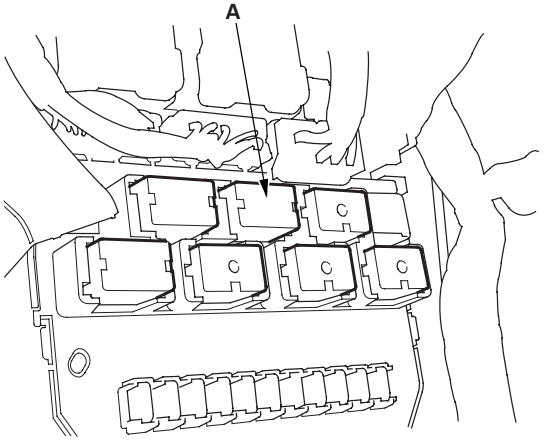
    Is the fuse OK?

    YES—Go to step 31.

    NO—Go to step 25.

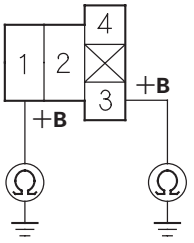
25. Remove the blown No. 8 FI ECU (PCM) (15 A) fuse from the under-hood fuse/relay box.

26. Remove PGM-FI main relay 1 (FI MAIN) (A) from the driver's under-dash fuse/relay box.



27. Check for continuity between body ground and PGM-FI main relay 1 (FI MAIN) 4P connector terminals No. 1 and No. 3 individually.

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

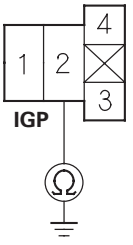
YES—Repair short in the wire between the No. 8 FI ECU (PCM) (15 A) fuse and PGM-FI main relay 1 (FI MAIN). Also replace the No. 8 FI ECU (PCM) (15 A) fuse.■

NO—Go to step 28.

28. Disconnect each of the components or connectors below, one at a time, and check for continuity between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 2 and body ground.

    - PGM-FI main relay 2 (FUEL PUMP)
    - PCM connector B (44P)
    - Each injector 2P connector
    - Camshaft position (CMP) sensor 3P connector
    - Crankshaft position (CKP) sensor A/B 6P connector
    - Electronic throttle control system (ETCS) control relay

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Terminal side of female terminals

Does continuity go away when one of the above components is disconnected?

YES—Replace the component that made the short to body ground go away when disconnected. If the item is the PCM, update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-205). Also replace the No. 8 FI ECU (PCM) (15 A) fuse. ■

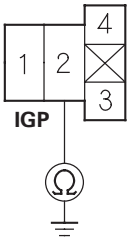
NO—Go to step 29.

29. Disconnect the all connectors from these components:

    - PGM-FI main relay 2 (FUEL PUMP)
    - PCM connector B (44P)
    - Injectors
    - Camshaft position (CMP) sensor
    - Crankshaft position (CKP) sensor A/B
    - Electronic throttle control system (ETCS) control relay

30. Check for continuity between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 2 and body ground.

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PGM-FI main relay 1 (FI MAIN) and each item. Also replace the No. 8 FI ECU (PCM) (15 A) fuse. ■

NO—Replace PGM-FI main relay 1 (FI MAIN). Also replace the No. 8 FI ECU (PCM) (15 A) fuse. ■

31. Inspect the No. 19 IG FUEL PUMP (15 A) fuse in the under-dash fuse/relay box.

    Is the fuse OK?

    YES—Go to step 44.

    NO—Go to step 32.

32. Remove the blown No. 19 IG FUEL PUMP (15 A) fuse in the under-dash fuse/relay box.

33. Jump the SCS line with the HDS.

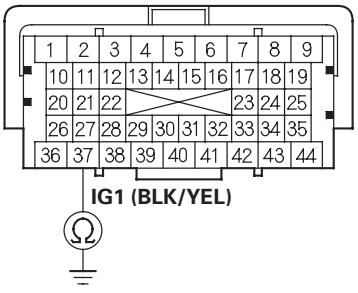
34. Disconnect PCM connector B (44P).

(cont'd)

MIL Circuit Troubleshooting (cont'd)

35. Check for continuity between PCM connector terminal B37 and body ground.

PCM CONNECTOR B (44P)



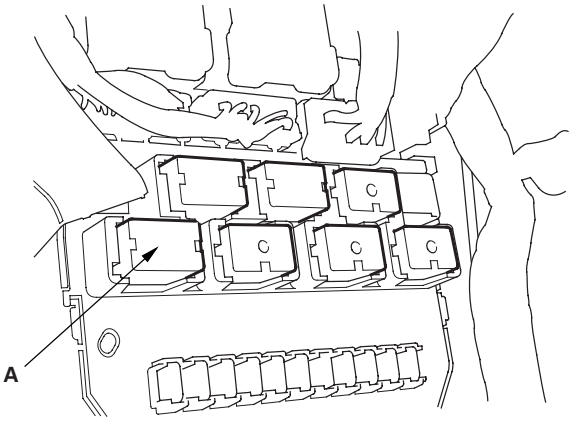
Terminal side of female terminals

Is there continuity?

YES—Go to step 36.

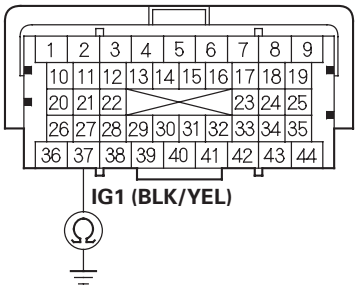
NO—Replace the No. 19 IG FUEL PUMP (15 A) fuse, and update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-205). ■

36. Remove PGM-FI main relay 2 (FUEL PUMP) (A) from the driver's under-dash fuse/relay box.



37. Check for continuity between PCM connector terminal B37 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the No. 19 IG FUEL PUMP (15 A) fuse and the PCM (B37), between the No. 19 IG FUEL PUMP (15 A) fuse and PGM-FI main relay 2 (FUEL PUMP), or between the No. 19 IG FUEL PUMP (15 A) fuse and the immobilizer control unit-receiver. Also replace the No. 19 IG FUEL PUMP (15 A) fuse. ■

NO—Go to step 38.

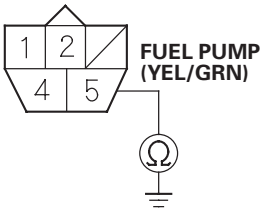
38. Remove the rear seat (see page 20-117).

39. Remove the access panel from the floor.

40. Disconnect the fuel pump 5P connector.

41. Check for continuity between fuel pump 5P connector terminal No. 5 and body ground.

FUEL PUMP 5P CONNECTOR



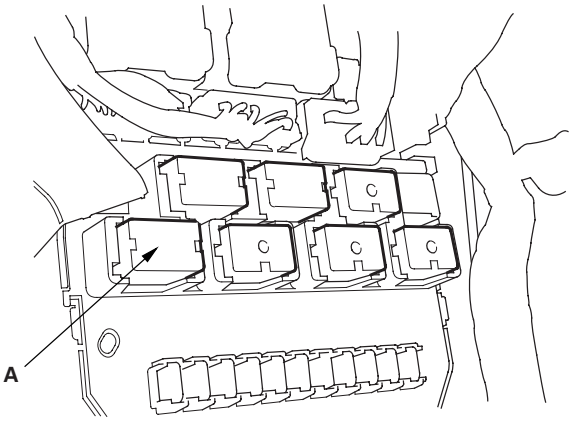
Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the fuel pump and PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 19 IG FUEL PUMP (15 A) fuse. ■

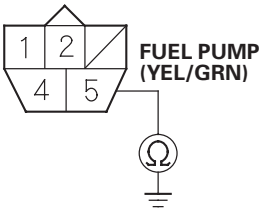
NO—Go to step 42.

42. Reinstall PGM-FI main relay 2 (FUEL PUMP) (A).



43. Check for continuity between fuel pump 5P connector terminal No. 5 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 19 IG FUEL PUMP (15 A) fuse. ■

NO—Check the fuel pump, and replace it if necessary (see page 11-300). Also replace the No. 19 IG FUEL PUMP (15 A) fuse. ■

44. Jump the SCS line with the HDS.

45. Disconnect PCM connectors A (44P) and B (44P).

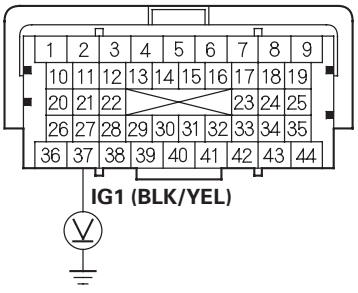
46. Turn the ignition switch ON (II).

(cont'd)

MIL Circuit Troubleshooting (cont'd)

47. Measure voltage between PCM connector terminal B37 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

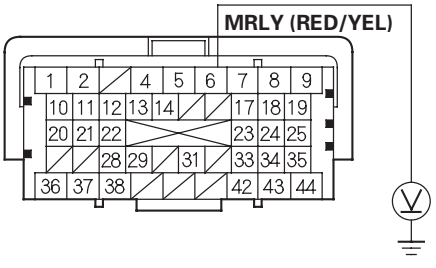
Is there battery voltage?

YES—Go to step 48.

NO—Repair open in the wire between the No. 19 IG FUEL PUMP (15 A) fuse and the PCM (B37).■

48. Measure voltage between PCM connector terminal A6 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

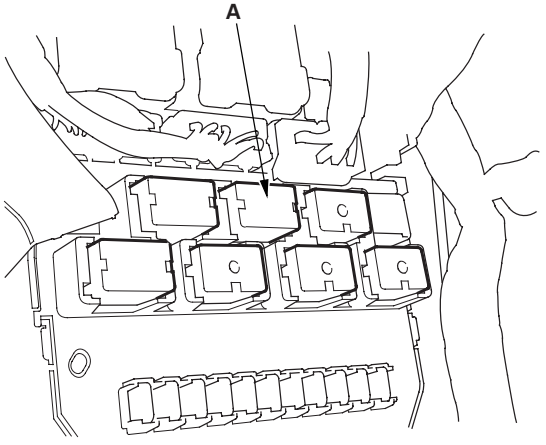
Is there battery voltage?

YES—Go to step 54.

NO—Go to step 49.

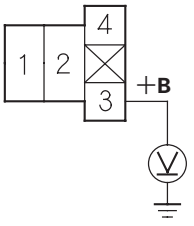
49. Turn the ignition switch OFF.

50. Remove PGM-FI main relay 1 (FI MAIN) (A) from the under-dash fuse/relay box.



51. Measure voltage between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 3 and body ground.

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Terminal side of female terminals

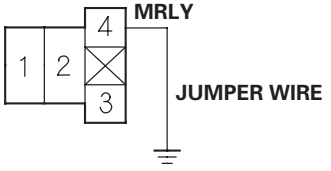
Is there battery voltage?

YES—Go to step 52.

NO—Repair open in the wire between the No. 8 FI ECU (PCM) (15 A) fuse and PGM-FI main relay 1 (FI MAIN).■

52. Connect PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 4 to body ground with a jumper wire.

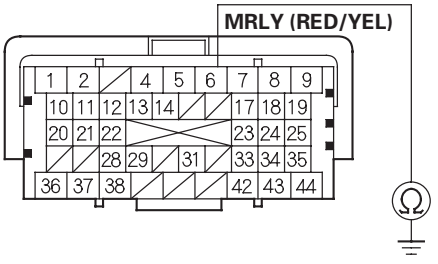
PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Terminal side of female terminals

53. Check for continuity between PCM connector terminal A6 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Test PGM-FI main relay 1 (FI MAIN) (see page 22-75). If the relay is OK, update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-205). ■

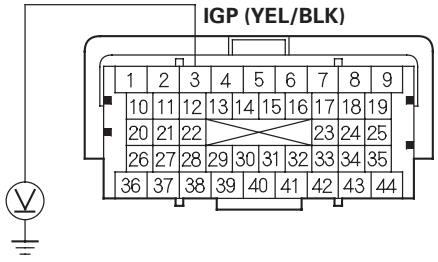
NO—Repair open in the wire between PGM-FI main relay 1 (FI MAIN) and the PCM (A6). ■

54. Reconnect PCM connector A (44P).

55. Turn the ignition switch ON (II).

56. Measure voltage between body ground and PCM connector terminal B3.

PCM CONNECTOR B (44P)



Terminal side of female terminals

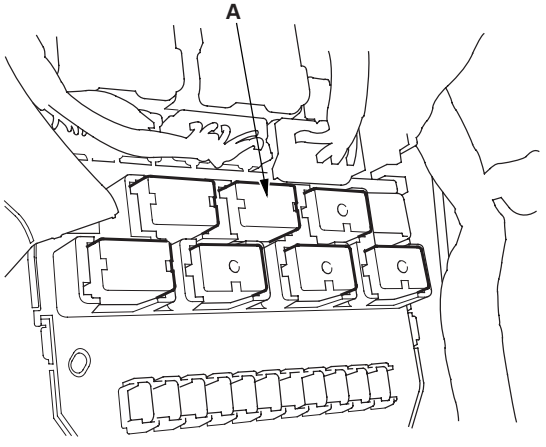
Is there battery voltage?

YES—Go to step 64.

NO—Go to step 57.

57. Turn the ignition switch OFF.

58. Remove PGM-FI main relay 1 (FI MAIN) (A) from the under-dash fuse/relay box.



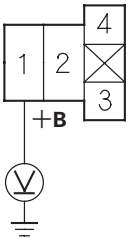
59. Turn the ignition switch ON (II).

(cont'd)

MIL Circuit Troubleshooting (cont'd)

60. Measure voltage between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 1 and body ground.

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

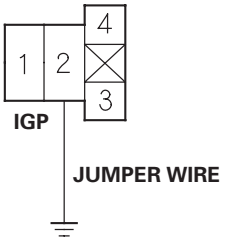
YES—Go to step 61.

NO—Repair open in the wire between the No. 8 FI ECU (PCM) (15 A) fuse and PGM-FI main relay 1 (FI MAIN). ■

61. Turn the ignition switch OFF.

62. Connect PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 2 to body ground with a jumper wire.

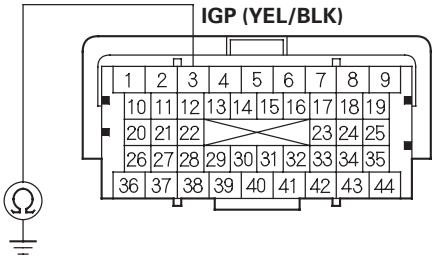
PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Terminal side of female terminals

63. Check for continuity between PCM connector terminal B3 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

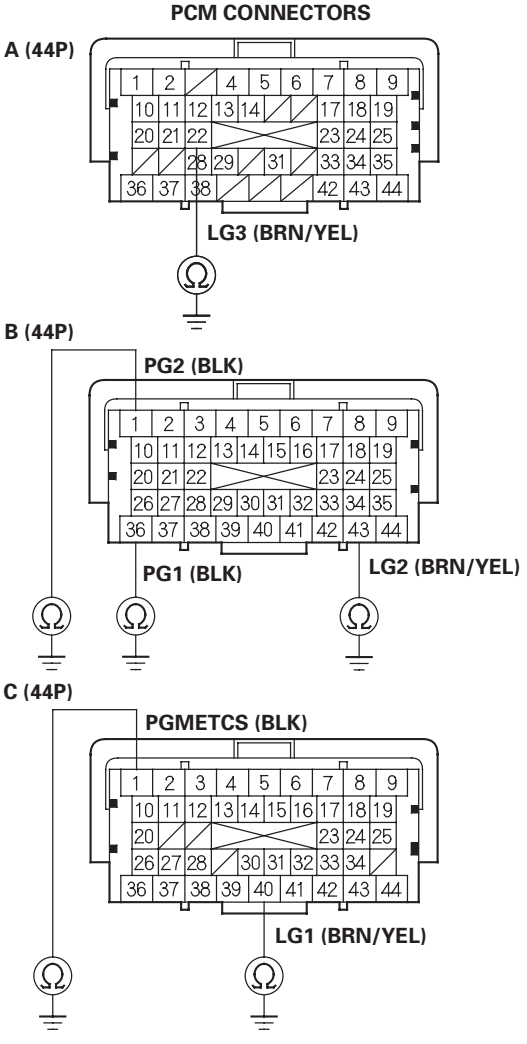
YES—Replace PGM-FI main relay 1 (FI MAIN). ■

NO—Repair open in the wire between PGM-FI main relay 1 (FI MAIN) and the PCM (B3). ■

64. Turn the ignition switch OFF.

65. Disconnect PCM connectors A, B, and C.

66. Check for continuity between body ground and PCM connector terminals A22, B1, B36, B43, C1, and C40 individually.



Terminal side of female terminals

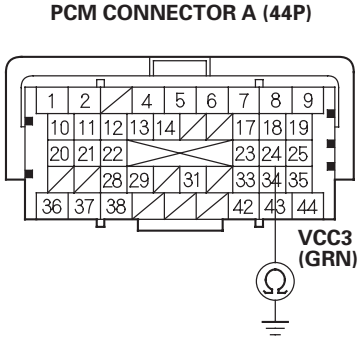
Is there continuity?

YES—Go to step 67.

NO—Repair open in the wire(s) between the PCM (A22, B1, B36, B43, C1, C40) and body ground (G101).

67. Disconnect the APP sensor 6P connector.

68. Check for continuity between PCM connector terminal A24 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A24) and the APP sensor. ■

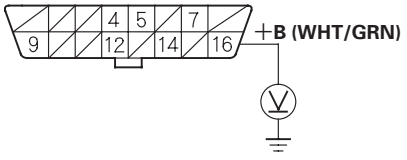
NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-205). ■

DLC Circuit Troubleshooting

NOTE:
- Make sure the HDS and the DLC cable of the HDS are normal.
- If the PCM does not communicate with the HDS, do this troubleshooting procedure.
- Check that MIL circuit is normal, then do this troubleshooting.

1. Measure voltage between DLC terminal No. 16 and body ground.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

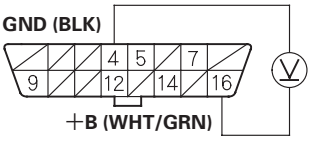
Is there battery voltage?

YES—Go to step 2.

NO—Repair open in the wire between DLC terminal No. 16 and the No. 8 FI ECU (PCM) (15 A) fuse in the under-hood fuse/relay box. ■

2. Measure voltage between DLC terminals No. 4 and No. 16.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

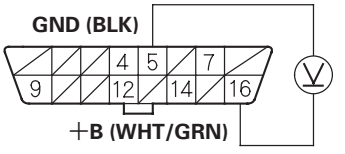
Is there battery voltage?

YES—Go to step 3.

NO—Repair open in the wire between DLC terminal No. 4 and body ground (G402). ■

3. Measure voltage between DLC terminals No. 5 and No. 16.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

Is there battery voltage?

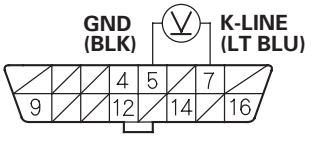
YES—Go to step 4.

NO—Repair open in the wire between DLC terminal No. 5 and body ground (G402). ■

4. Turn the ignition switch ON (II).

5. Measure voltage between DLC terminals No. 5 and No. 7.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

Is there 8.5 V or more?

YES—Go to step 12.

NO—Go to step 6.

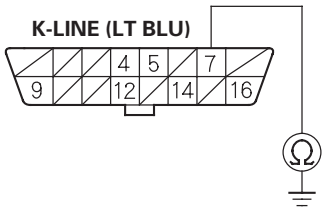
6. Turn the ignition switch OFF.

7. Jump the SCS line with the HDS.

8. Disconnect PCM connector A (44P).

9. Check for continuity between DLC terminal No. 7 and body ground.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

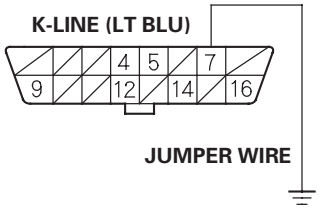
Is there continuity?

YES—Repair short to ground in the wire between DLC terminal No. 7 and the PCM (A43). After repairing the wire, check for a DTC with the HDS, and go to the indicated DTC's troubleshooting. ■

NO—Go to step 10.

10. Connect DLC terminal No. 7 to body ground with a jumper wire.

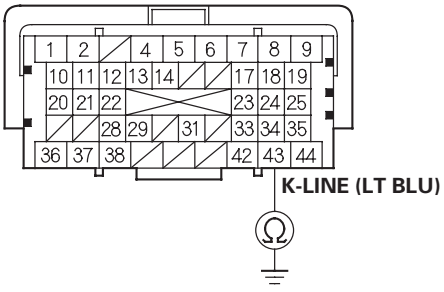
DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

11. Check for continuity between PCM connector terminal A43 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8). then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-205). ■

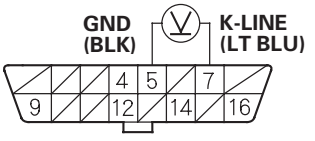
NO—Repair open in the wire between DLC terminal No. 7 and the PCM (A43). After repairing the wire, check for a DTC with the HDS, and go to the indicated DTC's troubleshooting. ■

(cont'd)

DLC Circuit Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector A (44P).
15. Turn the ignition switch ON (II).
16. Measure voltage between DLC terminals No. 5 and No. 7.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

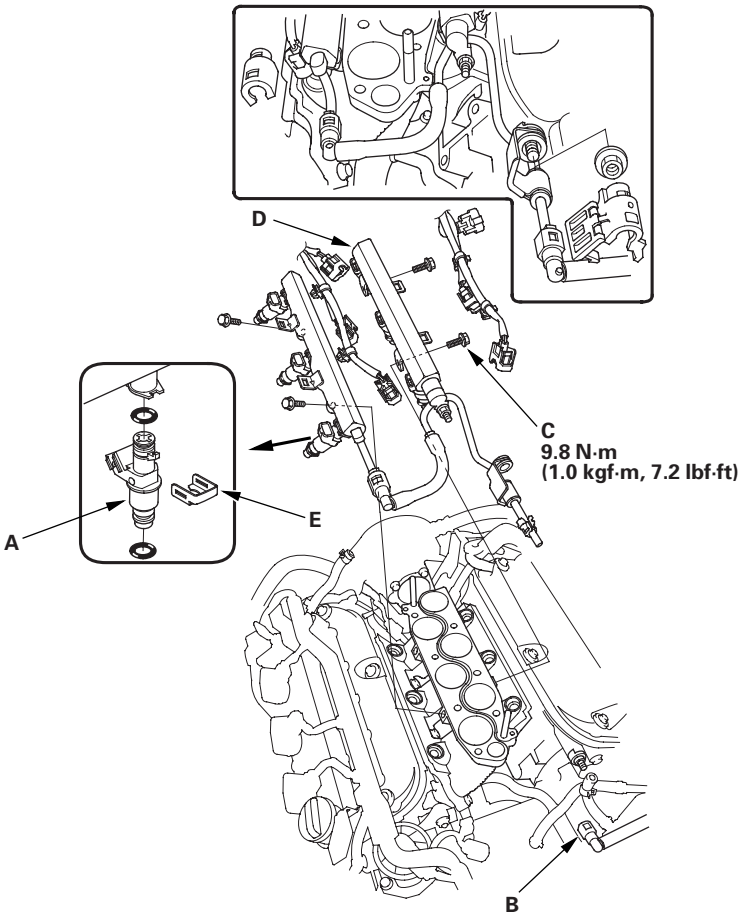
Is there about 0 V?

YES—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-205). ■

NO—Repair short to power in the wire between DLC terminal No. 7 and the PCM (A43). After repairing the wire, check for Temporary DTCs or DTCs with the HDS, and go to the indicated DTC's troubleshooting. ■

Injector Replacement

1. Relieve fuel pressure (see page 11-286).
2. Remove the intake manifold (see page 9-3).
3. Disconnect the connectors from the injectors (A).

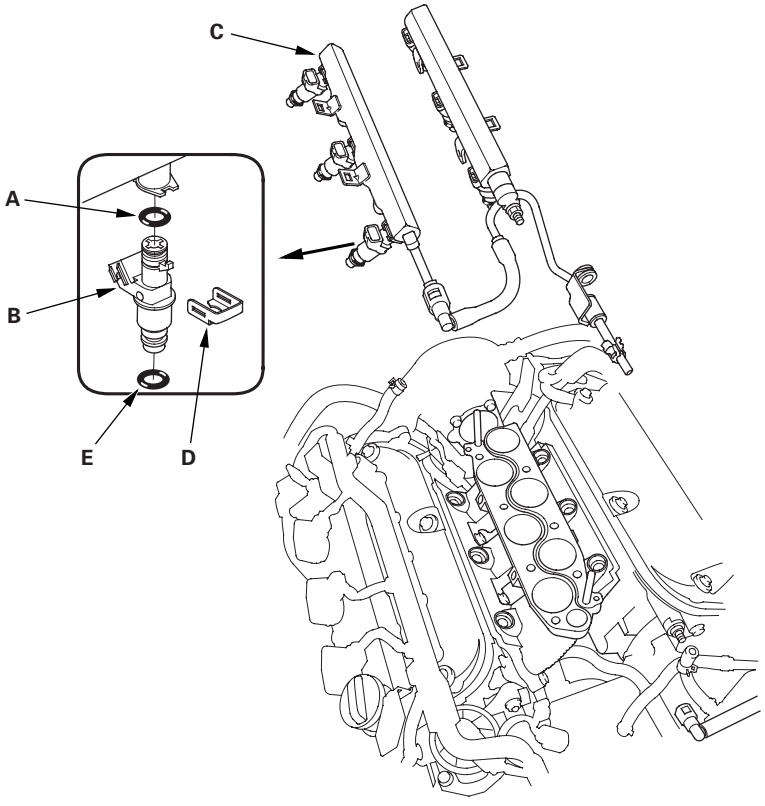


4. Disconnect the quick-connect fitting (B).
5. Remove the fuel rail mounting bolts (C) from the fuel rail (D).
6. Remove the injector clip (E) from the fuel rail.
7. Remove the injectors from the rails.

(cont'd)

Injector Replacement (cont'd)

8. Coat the new O-ring (A) with clean engine oil, and insert the injectors (B) into the fuel rail (C).



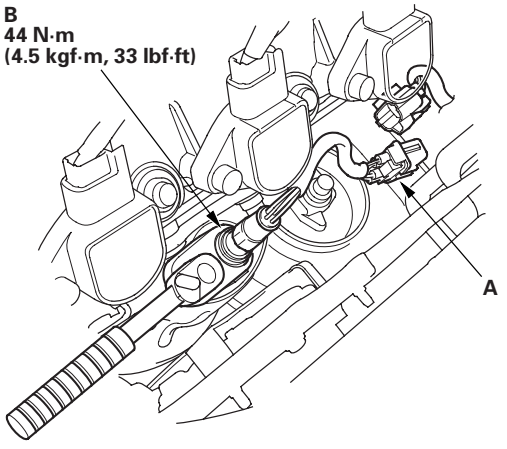
9. Install the injector clip (D).
10. Coat the new injector O-ring (E) with clean engine oil.
11. Install the injectors in the injector base.
12. Install the fuel rail mounting bolts.
13. Install the connectors on the injectors.
14. Connect the quick-connect fitting (see page 11-295).
15. Turn the ignition switch ON (II), but do not operate the starter. After the fuel pump runs for about 2 seconds, the fuel pressure in the fuel line rises. Repeat this two or three times, then check for fuel leakage.
16. Install the intake manifold.

A/F Sensor Replacement

Special Tools Required
O2 sensor socket wrench, Snap-on YA8875, SP Tools 93750, or equivalent, commercially available

Front Bank (Bank 2)

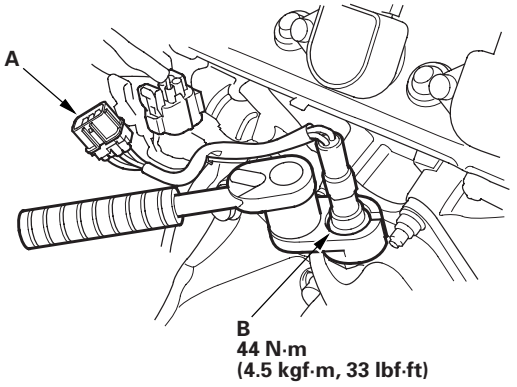
1. Disconnect the front A/F sensor 8P connector (A), then remove the A/F sensor (B).



2. Install the parts in the reverse order of removal.

Rear Bank (Bank 1)

1. Disconnect the rear A/F sensor 8P connector (A), then remove the rear A/F sensor (B).



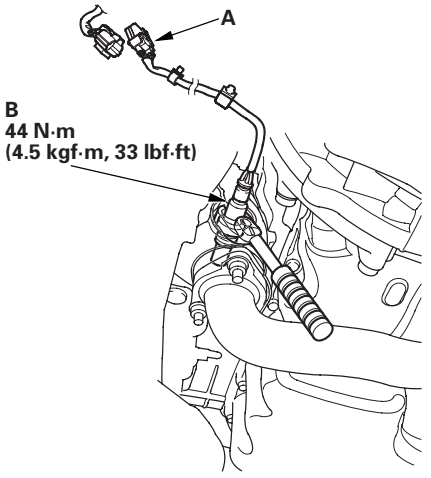
2. Install the parts in the reverse order of removal.

Secondary HO2S Replacement

Special Tools Required
O2 sensor socket wrench, Snap-on YA8875, SP Tools 93750, or equivalent, commercially available

Front Bank (Bank 2)

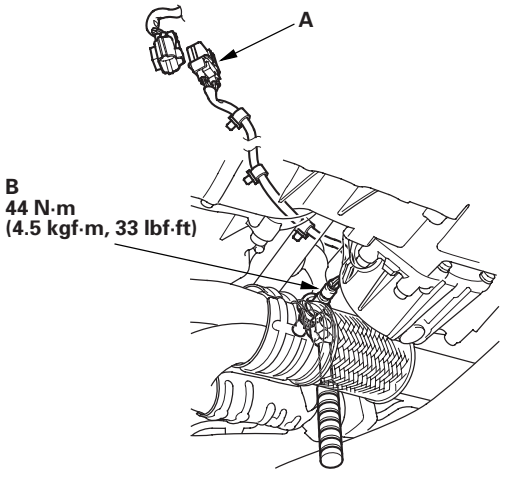
1. Disconnect the front secondary HO2S 4P connector (A), then remove the front secondary HO2S (B).



2. Install the parts in the reverse order of removal.

Rear Bank (Bank 1)

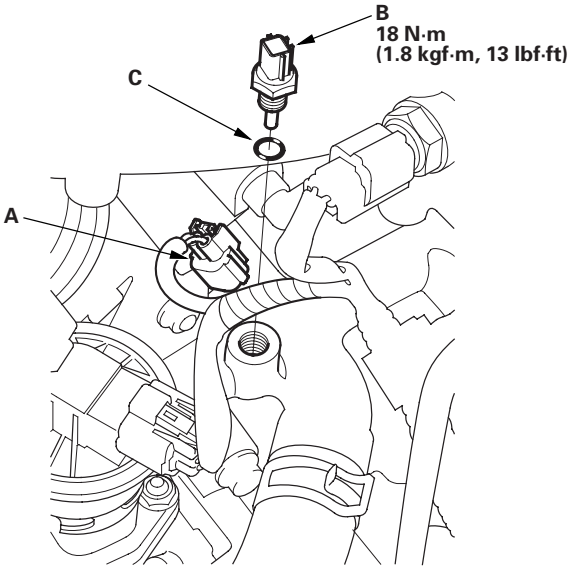
1. Disconnect the rear secondary HO2S 4P connector (A), then remove the rear secondary HO2S (B).



2. Install the parts in the reverse order of removal.

ECT Sensor 1 Replacement

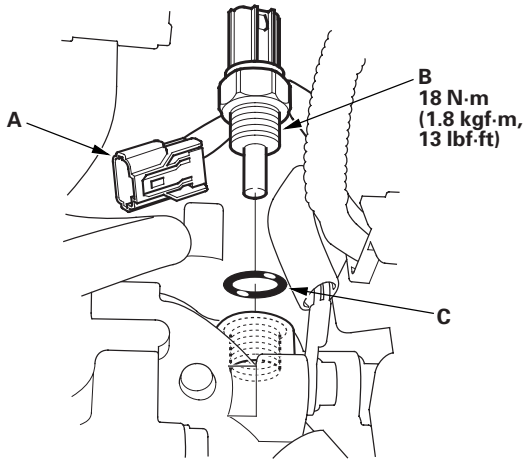
1. Drain the engine coolant (see page 10-6).
2. Remove the intake manifold cover (see step 1 on page 9-3).
3. Disconnect the ECT sensor 1 2P connector (A).



4. Remove ECT sensor 1 (B).
5. Install the parts in the reverse order of removal with a new O-ring (C), then refill the radiator with engine coolant (see page 10-6).

ECT Sensor 2 Replacement

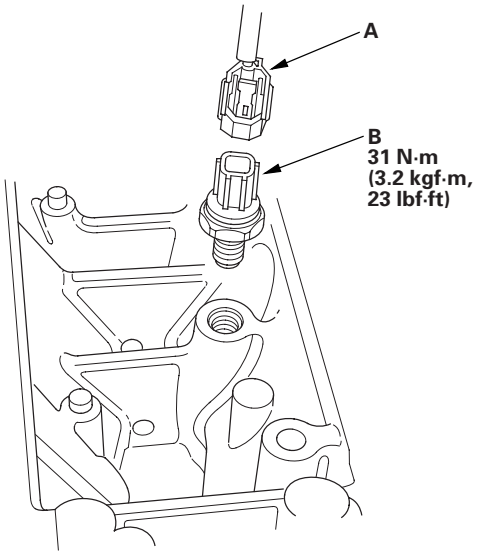
1. Drain the engine coolant (see page 10-6).
2. Remove the intake manifold cover (see step 1 on page 9-3).
3. Disconnect the ECT sensor 2 2P connector (A).



4. Remove ECT sensor 2 (B).
5. Install the parts in the reverse order of removal with a new O-ring (C), then refill the radiator with engine coolant (see page 10-6).

Knock Sensor Replacement

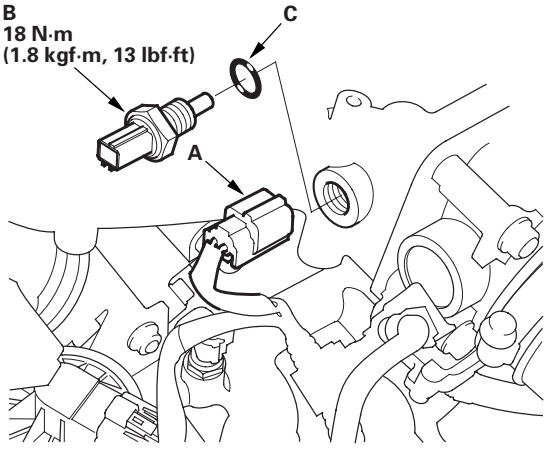
1. Remove the intake manifold (see page 9-3).
2. Remove the injector rails and the base.
3. Disconnect the knock sensor 1P connector (A), then remove the knock sensor (B).



4. Install the parts in the reverse order of removal.

IAT Sensor Replacement

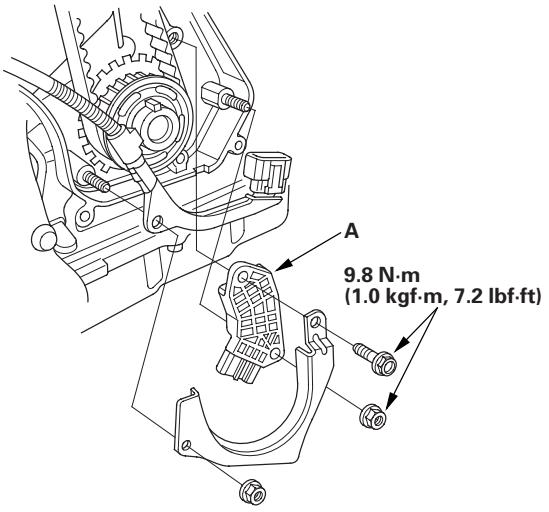
1. Remove the intake manifold cover (see step 1 on page 9-3).
2. Disconnect the IAT sensor 2P connector (A).



3. Remove the IAT sensor (B).
4. Install the parts in the reverse order of removal with a new O-ring (C).

CKP Sensor Replacement

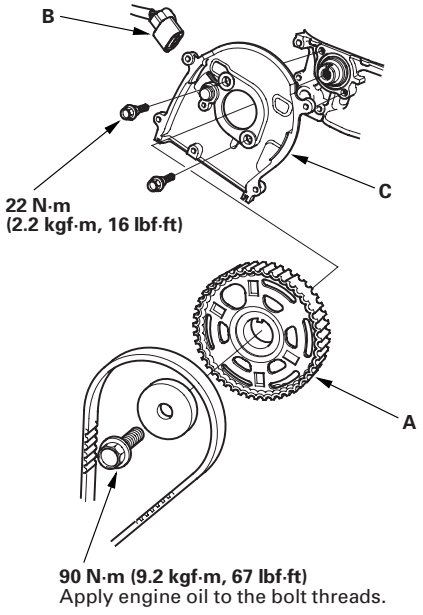
1. Move the auto-tensioner to remove tension from the drive belt, then remove the belt (see page 4-31).
2. Remove the crankshaft pulley (see page 6-11).
3. Remove the upper and lower front covers from the engine (see page 6-13).
4. Remove the CKP sensor (A) from the oil pump.



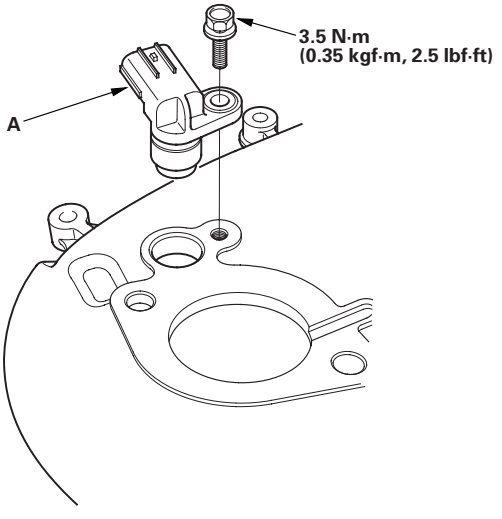
5. Install the parts in the reverse order of removal.
6. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-4).

CMP Sensor Replacement

1. Remove the timing belt (see page 6-13).
2. Remove the front camshaft pulley (CMP sensor pulse plate) (A).



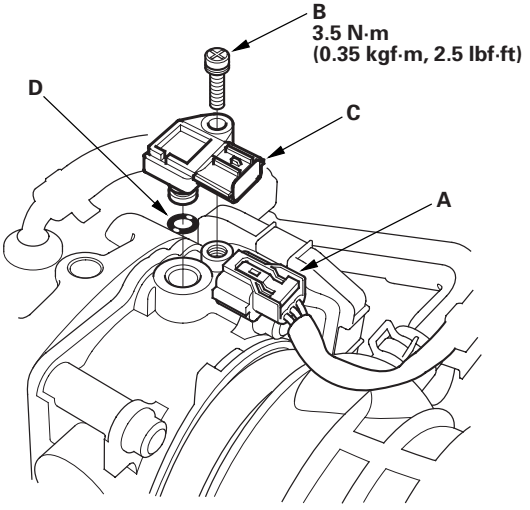
3. Disconnect the CMP sensor connector (B), then remove the back cover (C).
4. Remove the CMP sensor (A) from the back cover.



5. Install the parts in the reverse order of removal. Install the timing belt (see page 6-16).
6. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-4).

MAP Sensor Replacement

1. Remove the intake manifold cover (see step 1 on page 9-3).
2. Disconnect the MAP sensor connector (A).



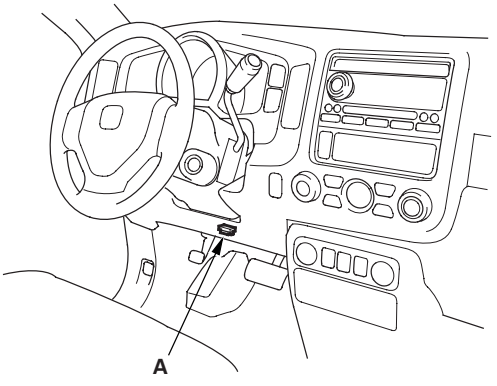
3. Remove the screw (B).
4. Remove the MAP sensor (C).
5. Install the parts in the reverse order of removal with a new O-ring (D).

PCM Replacement

Special Tools Required
- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with HDS and CM update software
- HDS pocket tester
- GNA-600 and an iN workstation with HDS and CM update software

NOTE:
- Make sure the HDS is loaded with the latest software version.
- If you are replacing the PCM after substituting a known-good PCM, reinstall the original PCM, then do this procedure.
- During the procedure, if any READ DATA, WRITE DATA, or other data checks fail, note the failure, then continue.

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch ON (II).

3. Make sure the HDS communicates with the PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see page 11-194). If you are returning from DLC circuit troubleshooting, skip steps 4 through 9, 16 through 18, 21, and 22, then do this after replacing the PCM:
   - Replace the engine oil (see page 8-6) and the engine oil filter (see page 8-7).
   - Clean the throttle body (see page 11-314).

4. Select the PGM-FI system with the HDS.

5. Select the INSPECTION MENU with the HDS.

6. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts.

   NOTE: If the TP POSITION CHECK indicates FAILED, continue with this procedure.

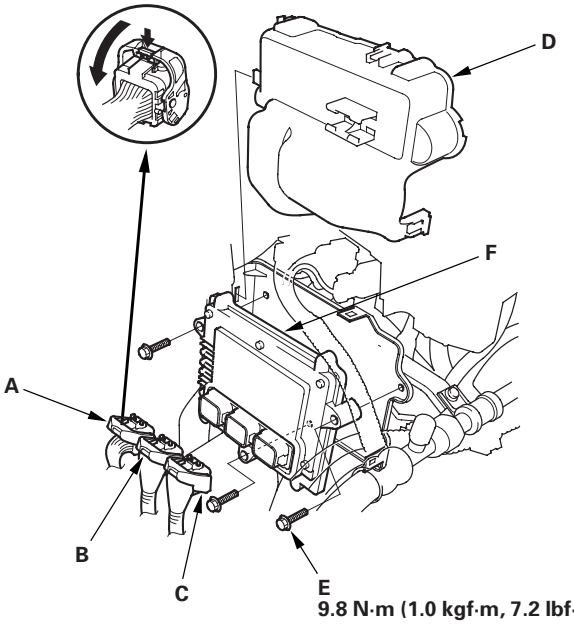
7. Select the REPLACE PCM MENU, then select READ DATA and follow the screen prompts.

   NOTE:
   - Doing this step copies (READS) the engine oil life data from the original PCM so you can later download (WRITE) it into the new PCM.
   - If READ DATA indicates FAILED, continue with this procedure.

8. Turn the ignition switch OFF.

9. Jump the SCS line with the HDS.

10. Remove the cover (D).



11. Disconnect PCM connectors A, B, and C.

    NOTE: PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embosed on them for identification.

12. Remove the bolts (E), then remove the PCM (F).

(cont'd)

PCM Replacement (cont'd)

13. Install the parts in the reverse order of removal.
14. Turn the ignition switch ON (II).
15. Manually input the VIN to the PCM with the HDS.

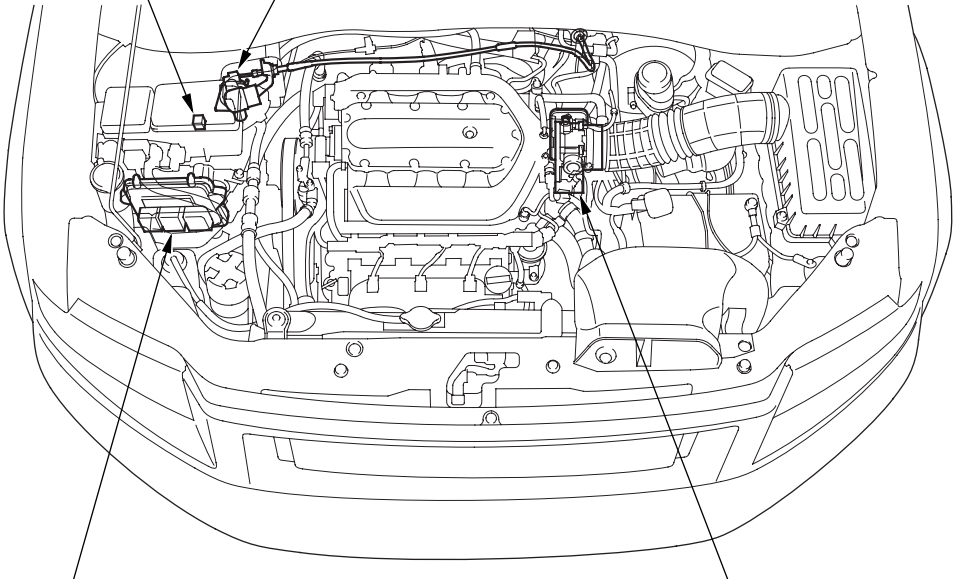
    NOTE: DTC P0630 ''VIN Not Programmed or Mismatch'' may be stored because the VIN has not been programmed into the PCM, ignore it, and continue this procedure.

16. If the READ DATA (engine oil life) failed in step 7, go to step 19. Otherwise, go to step 17.
17. Select the PGM-FI system with the HDS.
18. Select the REPLACE PCM MENU, then select WRITE DATA and follow the screen prompts.

    NOTE: If the WRITE DATA indicates FAILED, continue this procedure.

19. Select IMMOBI system with the HDS.
20. Enter the immobilizer code with the PCM replacement procedure in the HDS, it allows you to start the engine.
21. If the TP POSITION CHECK failed in step 6, clean the throttle body (see page 11-314), then go to step 22.
22. If the READ DATA failed in step 7 or the WRITE DATA failed in step 18, replace the engine oil (see page 8-6) and engine oil filter (see page 8-7), then go to step 23.
23. Select PGM-FI system, and reset the PCM with the HDS.
24. Update the PCM if it does not have the latest software (see page 11-7).
25. Do the PCM idle learn procedure (see page 11-273).
26. Do the CKP pattern learn procedure (see page 11-4).

Component Location Index



DTC Troubleshooting

DTC P0122: TP Sensor A Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR A in the DATA LIST with the HDS.

   Is there about 0.3 V or less?

   YES—Go to step 4.

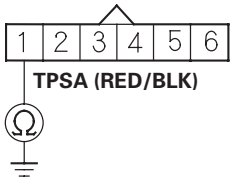
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. ■
4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0122 and P0222 indicated at the same time?

   YES—Go to step 10.

   NO—Go to step 5.
5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect PCM connector B (44P).
9. Check for continuity between throttle body 6P connector terminal No. 1 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

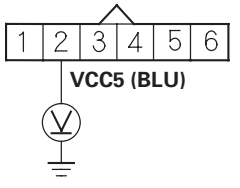
Is there continuity?

YES—Repair short in the wire between the throttle body and the PCM (B17), then go to step 18.

NO—Go to step 23.

10. Disconnect the throttle body 6P connector.
11. Measure voltage between throttle body 6P connector terminal No. 2 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 16.

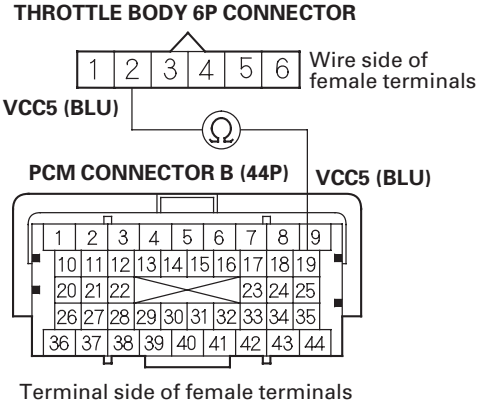
NO—Go to step 12.

12. Turn the ignition switch OFF.

13. Jump the SCS line with the HDS.

14. Disconnect PCM connector B (44P).

15. Check for continuity between PCM connector terminal B19 and throttle body 6P connector terminal No. 2.



Terminal side of female terminals

Is there continuity?

YES—Reconnect all connectors, then go to step 23.

NO—Repair open in the wire between the throttle body and the PCM (B19), then go to step 18.

16. Turn the ignition switch OFF.

17. Replace the throttle body (see page 11-319).

18. Reconnect all connectors.

19. Turn the ignition switch ON (II).

20. Reset the PCM with the HDS.

21. Do the PCM idle learn procedure (see page 11-273).

22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0122 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

23. Reconnect all connectors.

24. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0122 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P0123: TP Sensor A Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR A in the DATA LIST with the HDS.

   Is there about 4.8 V or more?

   YES—Go to step 4.

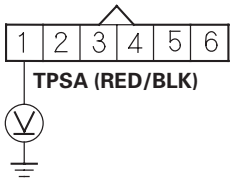
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. ■
4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0123 and P0223 indicated at the same time?

   YES—Go to step 13.

   NO—Go to step 6.
5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between throttle body 6P connector terminal No. 1 and body ground.

THROTTLE BODY 6P CONNECTOR



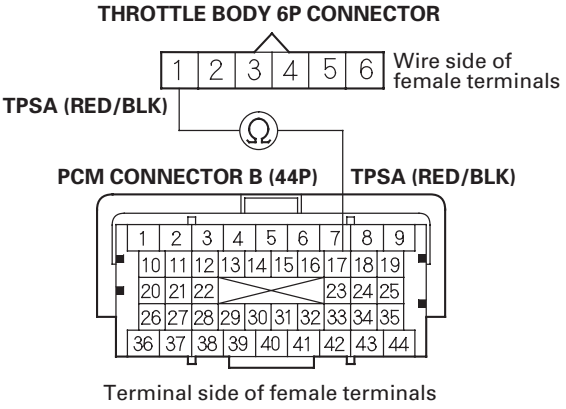
Wire side of female terminals

   Is there about 5 V?

   YES—Go to step 18.

   NO—Go to step 9.
9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector B (44P).

12. Check for continuity between PCM connector terminal B17 and throttle body 6P connector terminal No. 1.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the PCM (B17), then go to step 20.

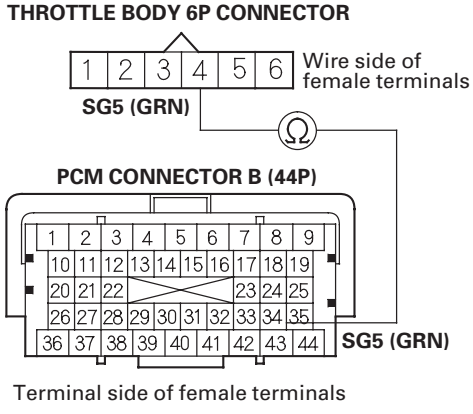
13. Turn the ignition switch OFF.

14. Disconnect the throttle body 6P connector.

15. Jump the SCS line with the HDS.

16. Disconnect PCM connector B (44P).

17. Check for continuity between PCM connector terminal B34 and throttle body 6P connector terminal No. 4.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the PCM (B34), then go to step 20.

(cont'd)

DTC Troubleshooting (cont'd)

18. Turn the ignition switch OFF.
19. Replace the throttle body (see page 11-319).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the PCM with the HDS.
23. Do the PCM idle learn procedure (see page 11-273).
24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0123 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
25. Reconnect all connectors.
26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0123 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0222: TP Sensor B Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR B in the DATA LIST with the HDS.

   Is there about 0.3 V or less?

   YES—Go to step 4.

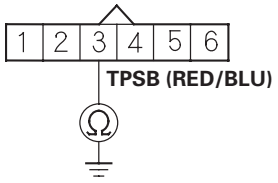
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. ■
4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0122 and P0222 indicated at the same time?

   YES—Go to step 10.

   NO—Go to step 5.
5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect PCM connector B (44P).
9. Check for continuity between throttle body 6P connector terminal No. 3 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

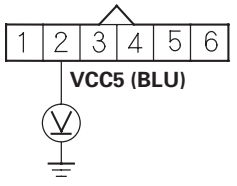
Is there continuity?

YES—Repair short in the wire between the throttle body and the PCM (B12), then go to step 18.

NO—Go to step 23.

10. Measure voltage between throttle body 6P connector terminal No. 2 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

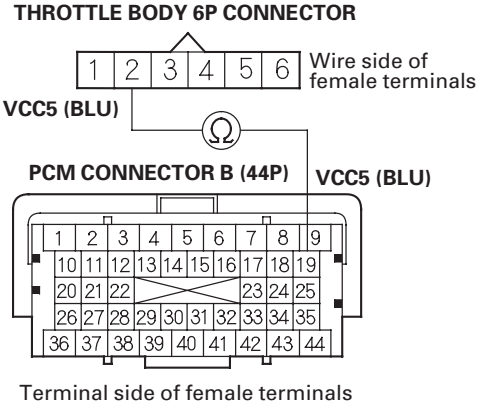
YES—Go to step 16.

NO—Go to step 11.

(cont'd)

DTC Troubleshooting (cont'd)

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (44P).
14. Disconnect the throttle body 6P connector.
15. Check for continuity between PCM connector terminal B19 and throttle body 6P connector terminal No. 2.



Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the throttle body and the PCM (B19), then go to step 18.

16. Turn the ignition switch OFF.
17. Replace the throttle body (see page 11-319).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Do the PCM idle learn procedure (see page 11-273).
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0222 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
23. Reconnect all connectors.
24. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0222 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0223: TP Sensor B Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR B in the DATA LIST with the HDS.

   Is there about 4.8 V or more?

   YES—Go to step 4.

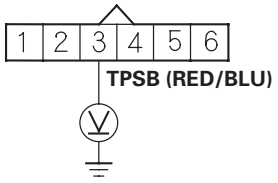
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. ■
4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0123 and P0223 indicated at the same time?

   YES—Go to step 11.

   NO—Go to step 5.
5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between throttle body 6P connector terminal No. 3 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

   Is there about 5 V?

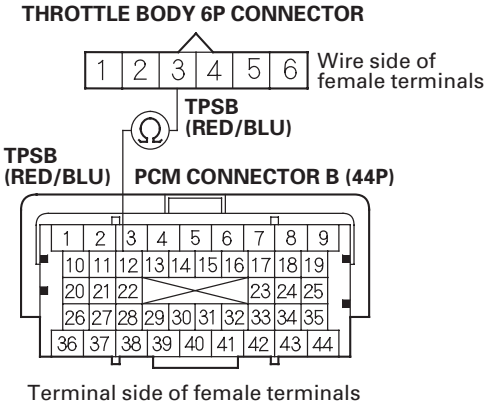
   YES—Go to step 16.

   NO—Go to step 7.
9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector B (44P).

(cont'd)

DTC Troubleshooting (cont'd)

12. Check for continuity between PCM connector terminal B12 and throttle body 6P connector terminal No. 3.

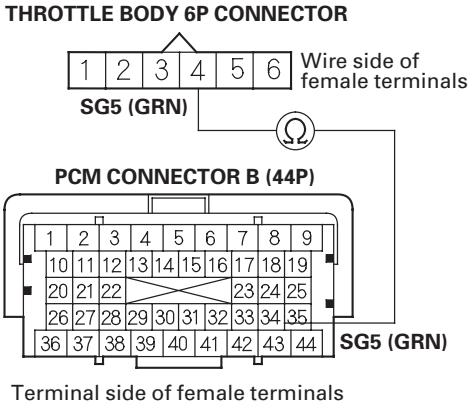


Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the PCM (B12), then go to step 20.

13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect PCM connector B (44P).
17. Check for continuity between PCM connector terminal B34 and throttle body 6P connector terminal No. 4.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the PCM (B34), then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the throttle body (see page 11-319).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the PCM with the HDS.
23. Do the PCM idle learn procedure (see page 11-273).
24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0223 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
25. Reconnect all connectors.
26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0223 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0607: Lost Communication with Electronic Throttle Control System (ETCS)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0607 indicated?

    YES—Go to step 4.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
4. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
5. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0607 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P061F: Electronic Throttle Control System (ETCS) Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P061F indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
6. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
7. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P061F indicated?

   YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

   NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P1658: Electronic Throttle Control System (ETCS) Control Relay ON Malfunction

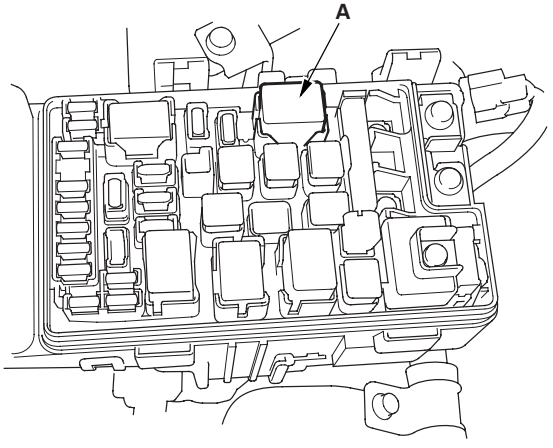
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Do the ETCS TEST in the INSPECTION MENU with the HDS.

   Is the RELAY circuit OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ETCS control relay and the PCM. ■

   NO—Go to step 3.
3. Turn the ignition switch OFF.
4. Remove the ETCS control relay (A) from the under-hood fuse/relay box.



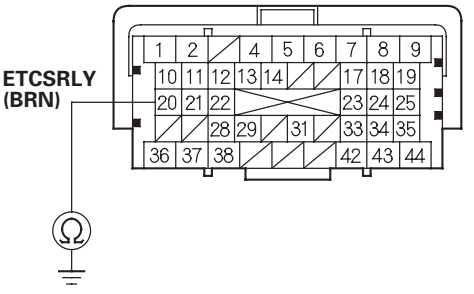
5. Test the ETCS control relay (see page 22-75).

   Is the ETCS control relay OK?

   YES—Go to step 6.

   NO—Replace the ETCS control relay, then go to step 13.
6. Jump the SCS line with the HDS.
7. Disconnect PCM connector A (44P).
8. Check for continuity between PCM connector terminal A20 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A20) and the ETCS control relay, then go to step 13.

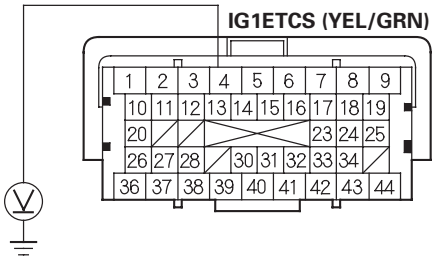
NO—Go to step 9.

(cont'd)

DTC Troubleshooting (cont'd)

9. Disconnect PCM connector C (44P).
10. Turn the ignition switch ON (II).
11. Measure voltage between PCM connector terminal C4 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the PCM (C4) and the ETCS control relay, then go to step 12.

NO—Go to step 18.

12. Turn the ignition switch OFF.
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-273).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1658 indicated?

    YES—Check for poor connections or loose terminals at the ETCS control relay and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
18. Reconnect all connectors.
19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1658 indicated?

    YES—Check for poor connections or loose terminals at the ETCS control relay and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P1659: Electronic Throttle Control System (ETCS) Control Relay OFF Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1659 indicated?

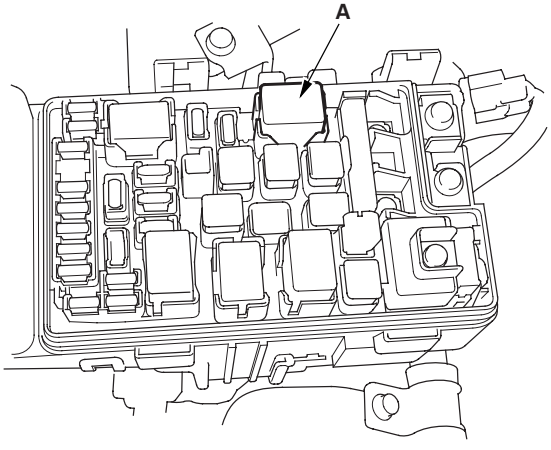
   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ETCS control relay and the PCM. ■
4. Turn the ignition switch OFF.
5. Check the No. 9 DBW (THROTTLE ACTUATOR CONTROL) (15 A) fuse in the under-hood fuse/relay box.

   Is the fuse OK?

   YES—Go to step 6.

   NO—Go to step 20.
6. Remove the ETCS control relay (A) from the under-hood fuse/relay box.



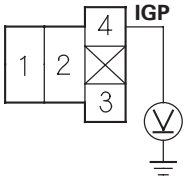
7. Test the ETCS control relay (see page 22-75).

   Is the ETCS control relay OK?

   YES—Go to step 8.

   NO—Replace the ETCS control relay, then go to step 28.
8. Turn the ignition switch ON (II).
9. Measure voltage between ETCS control relay 4P connector terminal No. 4 and body ground.

ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 10.

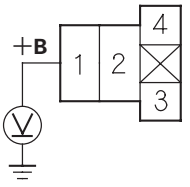
NO—Repair open in the wire between PGM-FI main relay 1 (FI MAIN) and the ETCS control relay, then go to step 27.

(cont'd)

DTC Troubleshooting (cont'd)

10. Measure voltage between ETCS control relay 4P connector terminal No. 1 and body ground.

ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

Is the battery voltage?

YES—Go to step 11.

NO—Repair open in the wire between the ETCS control relay and the No. 9 DBW (THROTTLE ACTUATOR CONTROL) (15 A) fuse in the under-hood fuse/relay box, then go to step 27.

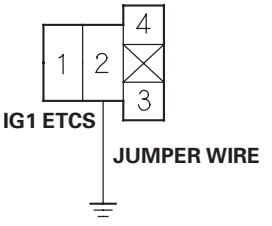
11. Turn the ignition switch OFF.

12. Jump the SCS line with the HDS.

13. Disconnect PCM connector C (44P).

14. Connect ETCS control relay 4P connector terminal No. 2 to body ground with a jumper wire.

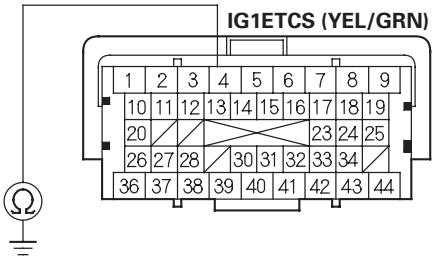
ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

15. Check for continuity between PCM connector terminal C4 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 16.

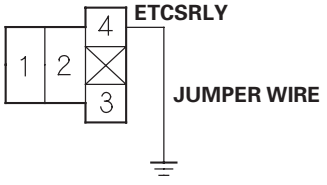
NO—Repair open in the wire between the PCM (C4) and the ETCS control relay, then go to step 28.

16. Remove the jumper wire.

17. Disconnect PCM connector A (44P).

18. Connect ETCS control relay 4P connector terminal No. 4 to body ground with a jumper wire.

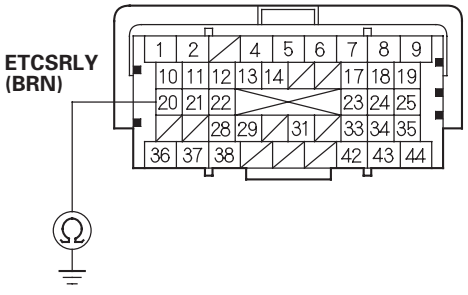
ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

19. Check for continuity between PCM connector terminal A20 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 33.

NO—Repair open in the wire between the PCM (A20) and the ETCS control relay, then go to step 28.

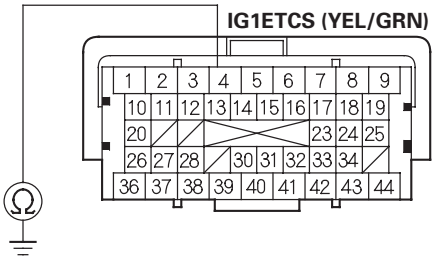
20. Remove the blown No. 9 DBW (THROTTLE ACTUATOR CONTROL) (15 A) fuse in the under-hood fuse/relay box.

21. Jump the SCS line with the HDS.

22. Disconnect PCM connector C (44P).

23. Check for continuity between PCM connector terminal C4 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

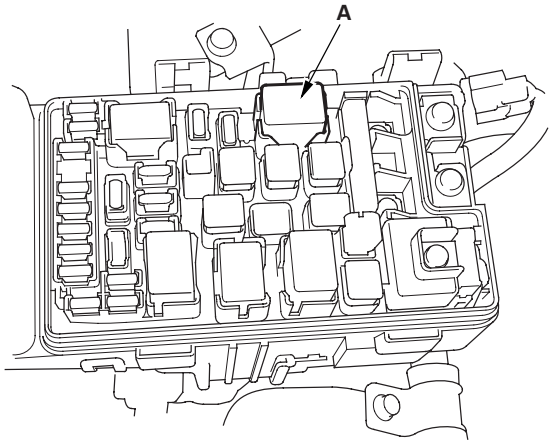
YES—Go to step 24.

NO—Replace the No. 9 DBW (THROTTLE ACTUATOR CONTROL) (15 A) fuse, then go to step 28.

(cont'd)

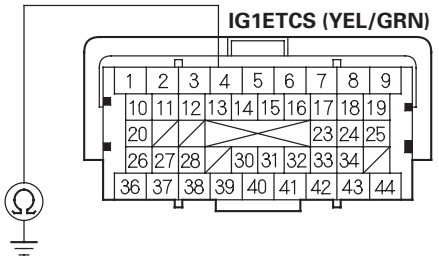
DTC Troubleshooting (cont'd)

24. Remove the ETCS control relay (A) from the under-hood fuse/relay box.



25. Check for continuity between PCM connector terminal C4 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

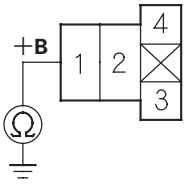
Is there continuity?

YES—Repair short in the wire between the ETCS control relay and the PCM (C4), then go to step 28.

NO—Go to step 26.

26. Check for continuity between ETCS control relay 4P connector terminal No. 1 and body ground.

ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the No. 9 DBW (THROTTLE ACTUATOR CONTROL) (15 A) fuse and the ETCS control relay, then go to step 28.

NO—Replace the No. 9 DBW (THROTTLE ACTUATOR CONTROL) (15 A) fuse, then go to step 28.

27. Turn the ignition switch OFF.

28. Reconnect all connectors.

29. Turn the ignition switch ON (II).

30. Reset the PCM with the HDS.

31. Do the PCM idle learn procedure (see page 11-273).

32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1659 indicated?

    YES—Check for poor connections or loose terminals at the ETCS control relay and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

33. Reconnect all connectors.

34. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

35. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1659 indicated?

    YES—Check for poor connections or loose terminals at the ETCS control relay and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P1683: Throttle Valve Default Position Spring Performance Problem

⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

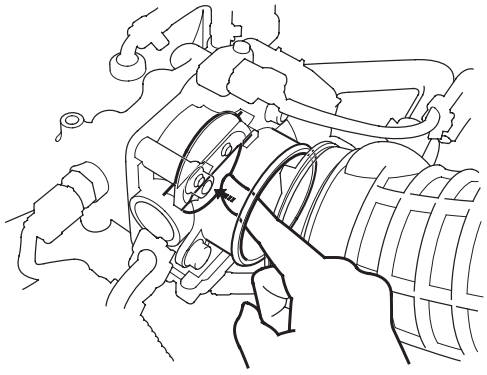
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF, and wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1683 indicated?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. ■
7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body.
9. Push the throttle valve closed as shown.



10. Release the throttle valve.

    Does the throttle valve return?

    YES—Clean the throttle body (see page 11-314), then go to step 12.

    NO—Go to step 11.
11. Replace the throttle body (see page 11-319).
12. Turn the ignition switch ON (II).
13. Reset the PCM with the HDS.
14. Do the PCM idle learn procedure (see page 11-273).
15. Turn the ignition switch OFF, and wait 10 seconds.
16. Turn the ignition switch ON (II).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1683 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P1684: Throttle Valve Return Spring Performance Problem

⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

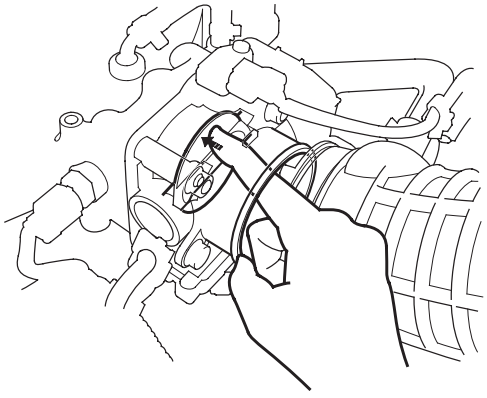
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF, and wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1684 indicated?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. ■
7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body.
9. Push the throttle valve open as shown.



10. Release the throttle valve.

    Does the throttle valve return?

    YES—Clean the throttle body (see page 11-314), then go to step 12.

    NO—Go to step 11.
11. Replace the throttle body (see page 11-319).
12. Turn the ignition switch ON (II).
13. Reset the PCM with the HDS.
14. Do the PCM idle learn procedure (see page 11-273).
15. Turn the ignition switch OFF, and wait 10 seconds.
16. Turn the ignition switch ON (II).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1684 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P2101: Electronic Throttle Control System (ETCS) Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the ETCS TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2101 indicated?

   YES—Go to step 7.

   NO—Go to step 5.
5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

   • ENGINE SPEED
   • VSS
   • APP SENSOR A
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2101 indicated?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM, then clean the throttle body (see page 11-314). ■
7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body.
9. Turn the ignition switch ON (II).
10. Clear the DTC with the HDS.
11. Do the ETCS TEST in the INSPECTION MENU with the HDS.
12. Visually check the throttle valve operation.

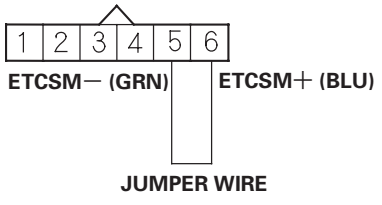
    NOTE: Be careful not to pinch your fingers during the check.

    Does the throttle valve operate smoothly?

    YES—Clean the throttle body (see page 11-314), then go to step 21 and recheck. If DTC P2101 is indicated, go to step 19.

    NO—Go to step 13.
13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect PCM connector C (44P).
17. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

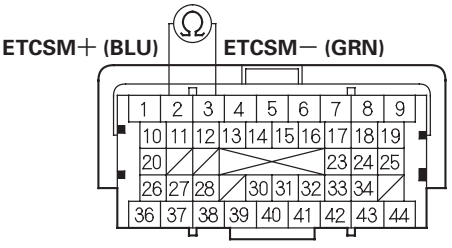
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

18. Check for continuity between PCM connector terminals C2 and C3.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Reconnect all connectors, then go to step 26.

NO—Repair open in the wires between the throttle body and the PCM (C2, C3), then go to step 20.

19. Turn the ignition switch OFF.

20. Replace the throttle body (see page 11-319).

21. Turn the ignition switch ON (II).

22. Reset the PCM with the HDS.

23. Do the PCM idle learn procedure (see page 11-273).

24. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    - ENGINE SPEED
    - VSS
    - APP SENSOR A

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2101 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM, then clean the throttle body (see page 11-314), and go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

26. Reconnect all connectors.

27. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2101 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

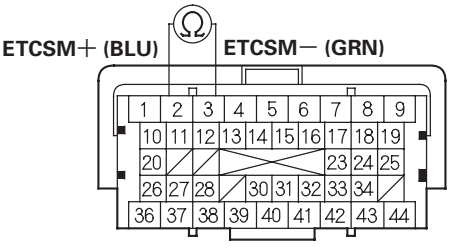
DTC Troubleshooting (cont'd)

DTC P2118: Throttle Actuator Current Range/ Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Jump the SCS line with the HDS.
2. Disconnect PCM connector C (44P).
3. Measure resistance between PCM connector terminals C2 and C3.

PCM CONNECTOR C (44P)



Terminal side of female terminals

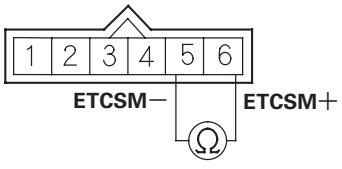
Is there about 1.0 Ω or less?

YES—Go to step 4.

NO—Go to step 15.

4. Disconnect the throttle body 6P connector.
5. At the throttle body side, measure resistance between throttle body 6P connector terminals No. 5 and No. 6 with the throttle fully closed.

THROTTLE BODY 6P CONNECTOR



Terminal side of male terminals

Is there about 1.0 Ω or less?

YES—Go to step 6.

NO—Repair short in the wires between the throttle body and the PCM (C2, C3), then go to step 7.

6. Replace the throttle body (see page 11-319).
7. Reconnect all connectors.
8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.

10. Do the PCM idle learn procedure (see page 11-273).

11. Turn the ignition switch OFF.

12. Turn the ignition switch ON (II).

13. Slowly press the accelerator pedal to the floor.

14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2118 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

15. Reconnect all connectors.

16. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2118 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P2122: APP Sensor A (Throttle Position Sensor D) Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

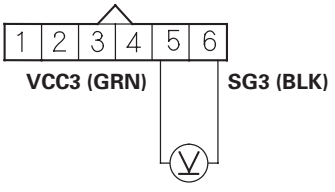
1. Turn the ignition switch ON (II).
2. Check APP SENSOR A in the DATA LIST with the HDS.

   Is there about 0.2 V or less?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor A and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect APP sensor A/B 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor A/B 6P connector terminals No. 5 and No. 6.

APP SENSOR A/B 6P CONNECTOR



Wire side of female terminals

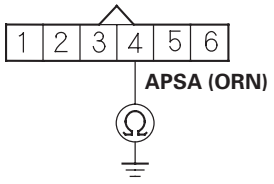
Is there about 5 V?

YES—Go to step 7.

NO—Go to step 16.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (44P).
10. Check for continuity between APP sensor A/B 6P connector terminal No. 4 and body ground.

APP SENSOR A/B 6P CONNECTOR



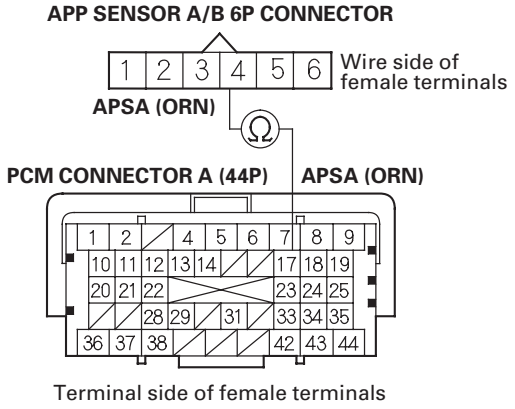
Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between APP sensor A and the PCM (A17), then go to step 21.

NO—Go to step 11.

11. Check for continuity between PCM connector terminal A17 and APP sensor A/B 6P connector terminal No. 4.



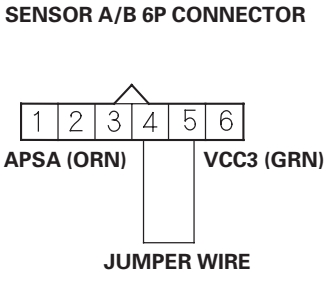
Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between APP sensor A and the PCM (A17), then go to step 21.

12. Reconnect PCM connector A (44P).

13. Connect APP sensor A/B 6P connector terminals No. 4 and No. 5 with a jumper wire.



14. Turn the ignition switch ON (II).

15. Check APP SENSOR A in the DATA LIST with the HDS.

Is there 0.2 V or less?

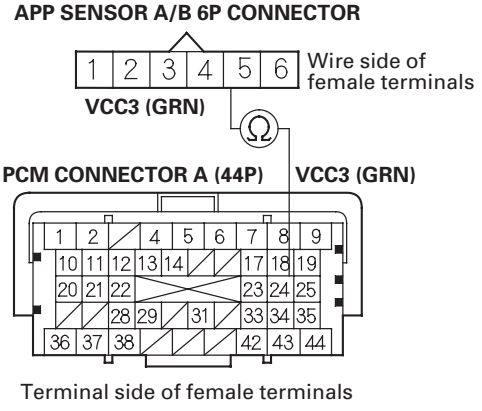
YES—Go to step 26.

NO—Go to step 20.

(cont'd)

DTC Troubleshooting (cont'd)

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector A (44P).
19. Check for continuity between PCM connector terminal A24 and APP sensor A/B 6P connector terminal No. 5.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between APP sensor A and the PCM (A24), then go to step 21.

20. Replace the APP sensor (see page 11-249).
21. Reconnect all connectors.
22. Turn the ignition switch ON (II).
23. Reset the PCM with the HDS.
24. Do the PCM idle learn procedure (see page 11-273).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2122 indicated?

    YES—Check for poor connections or loose terminals at APP sensor A and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
26. Turn the ignition switch OFF.
27. Reconnect all connectors.
28. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2122 indicated?

    YES—Check for poor connections or loose terminals at APP sensor A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2123: APP Sensor A (Throttle Position Sensor D) Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

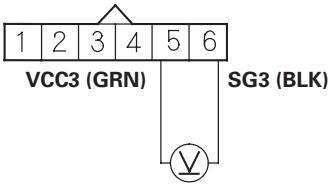
1. Turn the ignition switch ON (II).
2. Check APP SENSOR A in the DATA LIST with the HDS.

   Is there about 4.9 V or more?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor A and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the APP sensor A/B 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor A/B 6P connector terminals No. 5 and No. 6.

APP SENSOR A/B 6P CONNECTOR



Wire side of female terminals

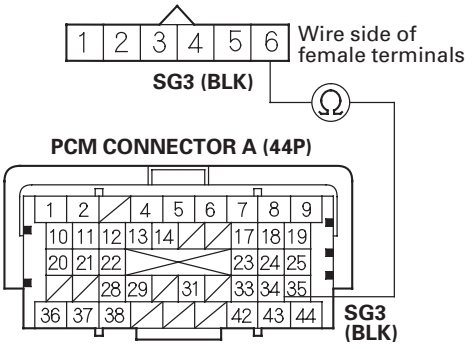
Is there about 5 V?

YES—Go to step 11.

NO—Go to step 7.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (44P).
10. Check for continuity between PCM connector terminal A34 and APP sensor A/B 6P connector terminal No. 6.

APP SENSOR A/B 6P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between APP sensor A and the PCM (A34), then go to step 13.

(cont'd)

DTC Troubleshooting (cont'd)

11. Turn the ignition switch OFF.
12. Replace the APP sensor (see page 11-249).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-273).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2123 indicated?

    YES—Check for poor connections or loose terminals at APP sensor A and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
18. Reconnect all connectors.
19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2123 indicated?

    YES—Check for poor connections or loose terminals at APP sensor A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2127: APP Sensor B (Throttle Position Sensor E) Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

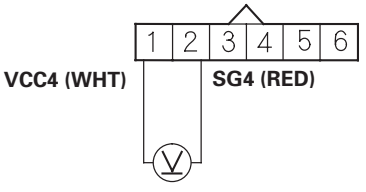
1. Turn the ignition switch ON (II).
2. Check APP SENSOR B in the DATA LIST with the HDS.

   Is there about 0.2 V or less?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor B and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect APP sensor A/B 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor A/B 6P connector terminals No. 1 and No. 2.

APP SENSOR A/B 6P CONNECTOR



Wire side of female terminals

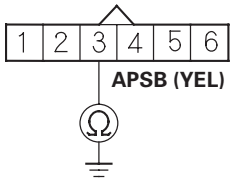
Is there about 5 V?

YES—Go to step 7.

NO—Go to step 16.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (44P).
10. Check for continuity between APP sensor A/B 6P connector terminal No. 3 and body ground.

APP SENSOR A/B 6P CONNECTOR



Wire side of female terminals

Is there continuity?

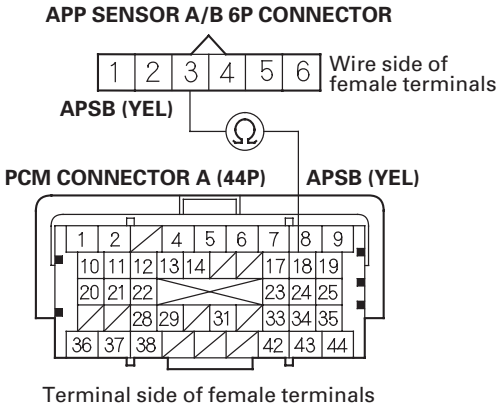
YES—Repair short in the wire between APP sensor B and the PCM (A18), then go to step 22.

NO—Go to step 11.

(cont'd)

DTC Troubleshooting (cont'd)

11. Check for continuity between PCM connector terminal A18 and APP sensor A/B 6P connector terminal No. 3.



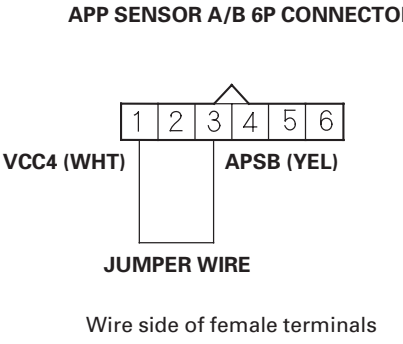
Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between APP sensor B and the PCM (A18), then go to step 22.

12. Reconnect PCM connector A (44P).

13. Connect APP sensor A/B 6P connector terminals No. 1 and No. 3 with a jumper wire.



14. Turn the ignition switch ON (II).

15. Check APP SENSOR B in the DATA LIST with the HDS.

Is there about 0.2 V or less?

YES—Go to step 26.

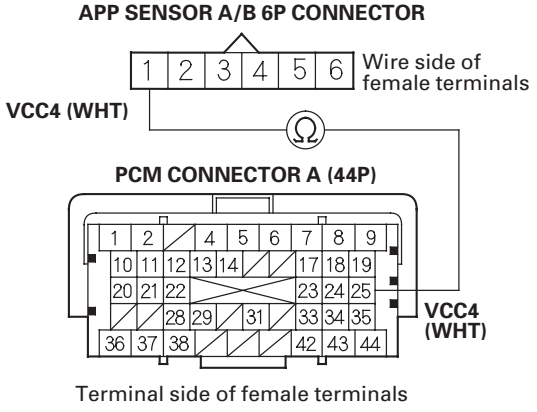
NO—Go to step 20.

16. Turn the ignition switch OFF.

17. Jump the SCS line with the HDS.

18. Disconnect PCM connector A (44P).

19. Check for continuity between PCM connector terminal A25 and APP sensor A/B 6P connector terminal No. 1.



Terminal side of female terminals

Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between APP sensor B and the PCM (A25), then go to step 22.

20. Replace the APP sensor (see page 11-249).

21. Reconnect all connectors.

22. Turn the ignition switch ON (II).

23. Reset the PCM with the HDS.

24. Do the PCM idle learn procedure (see page 11-273).

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2127 indicated?

    YES—Check for poor connections or loose terminals at APP sensor B and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

26. Turn the ignition switch OFF.

27. Reconnect all connectors.

28. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2127 indicated?

    YES—Check for poor connections or loose terminals at APP sensor B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P2128: APP Sensor B (Throttle Position Sensor E) Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

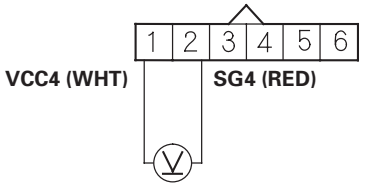
1. Turn the ignition switch ON (II).
2. Check APP SENSOR B in the DATA LIST with the HDS.

   Is there about 4.0 V or more?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor B and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect APP sensor A/B 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor A/B 6P connector terminals No. 1 and No. 2.

APP SENSOR A/B 6P CONNECTOR



Wire side of female terminals

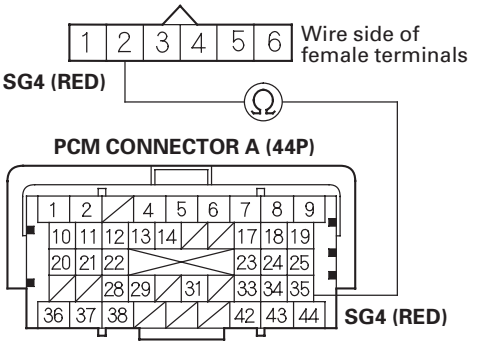
Is there about 5 V?

YES—Go to step 11.

NO—Go to step 7.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (44P).
10. Check for continuity between PCM connector terminal A35 and APP sensor A/B 6P connector terminal No. 2.

APP SENSOR A/B 6P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between APP sensor B and the PCM (A35), then go to step 13.

11. Turn the ignition switch OFF.
12. Replace the APP sensor (see page 11-249).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-273).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2128 indicated?

    YES—Check for poor connections or loose terminals at APP sensor B and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
18. Reconnect all connectors.
19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2128 indicated?

    YES—Check for poor connections or loose terminals at APP sensor B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P2135: TP Sensor A/B Voltage Incorrect Correlation

⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the ETCS TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2135 indicated?

   YES—Go to step 5.

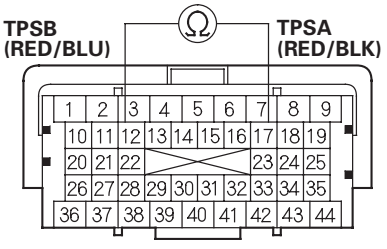
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. ■
5. Turn the ignition switch OFF.
6. Disconnect the intake air duct from the throttle body.
7. Turn the ignition switch ON (II).
8. Clear the DTC with the HDS.
9. Visually check the throttle valve operation.

   Does the valve temporarily move to the fully closed position?

   YES—Go to step 16.

   NO—Go to step 10.
10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector B (44P).
13. Check for continuity between PCM connector terminals B12 and B17.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

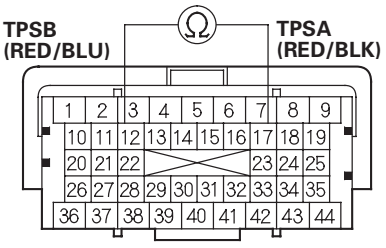
YES—Go to step 14.

NO—Go to step 23.

14. Disconnect the throttle body 6P connector.

15. Check for continuity between PCM connector terminals B12 and B17.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the TPSA line and the TPSB line, then go to step 18.

NO—Go to step 16.

16. Turn the ignition switch OFF.

17. Replace the throttle body (see page 11-319).

18. Reconnect all connectors.

19. Turn the ignition switch ON (II).

20. Reset the PCM with the HDS.

21. Do the PCM idle learn procedure (see page 11-273).

22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2135 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

23. Reconnect all connectors.

24. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2135 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P2138: APP Sensor A/B (Throttle Position Sensor D/E) Incorrect Voltage Correlation

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with HDS.
3. Press the accelerator pedal to the floor.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2138 indicated?

   YES—Go to step 5.

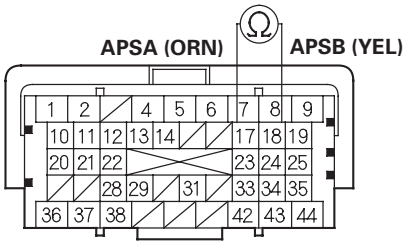
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor A/B and the PCM. ■
5. Check APP SENSOR A and APP SENSOR B in the DATA LIST with the HDS.

   Are they the same voltage?

   YES—Go to step 6.

   NO—Go to step 11.
6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect APP sensor A/B 6P connector.
9. Disconnect PCM connector A (44P).
10. Check for continuity between PCM connector terminals A17 and A18.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM terminals (A17, A18), then go to step 13.

NO—Go to step 21.

11. Turn the ignition switch OFF.
12. Replace the APP sensor (see page 11-249).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-273).
17. Turn the ignition switch OFF.
18. Turn the ignition switch ON (II).
19. Press the accelerator pedal to the floor.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2138 indicated?

    YES—Check for poor connections or loose terminals at the APP sensor and the PCM, then clean the throttle body (see page 11-314), and go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

21. Reconnect all connectors.

22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

23. Turn the ignition switch OFF.

24. Turn the ignition switch ON (II).

25. Press the accelerator pedal to the floor.

26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2138 indicated?

    YES—Check for poor connections or loose terminals at the APP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P2176: Throttle Actuator Control System Idle Position Not Learned

⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P2135 is stored at the same time as DTC P2176, troubleshoot DTC P2135 first, then recheck for DTC P2176.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II), and wait 10 seconds.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2176 indicated?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM, then clean the throttle body (see page 11-314). ■
6. Turn the ignition switch OFF.
7. Disconnect the intake air duct from the throttle body.
8. Turn the ignition switch ON (II).
9. Clear the DTC with the HDS.
10. Visually check the throttle valve operation while doing the ETCS TEST in the INSPECTION MENU with the HDS.

    Does the throttle valve move to its fully closed position?

    YES—Go to step 11.

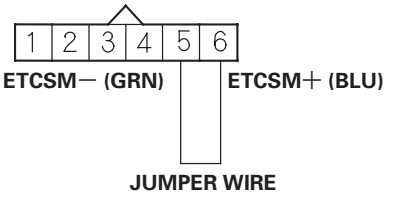
    NO—Go to step 12.
11. Check for sludge or carbon on the throttle valve.

    Is there sludge or carbon on the throttle valve?

    YES—Clean the throttle body (see page 11-314), then go to step 21.

    NO—Go to step 18.
12. Turn the ignition switch OFF.
13. Disconnect the throttle body 6P connector.
14. Jump the SCS line with the HDS.
15. Disconnect PCM connector C (44P).
16. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

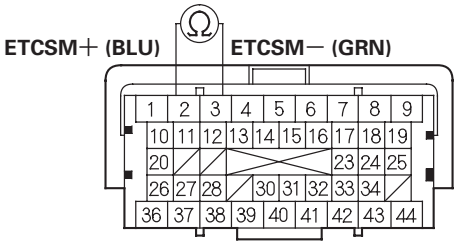
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

17. Check for continuity between PCM connector terminals C2 and C3.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 27.

NO—Repair open in the wires between the throttle body and the PCM (C2, C3), then go to step 20.

18. Turn the ignition switch OFF.

19. Replace the throttle body (see page 11-319).

20. Reconnect all connectors.

21. Turn the ignition switch ON (II).

22. Reset the PCM with the HDS.

23. Do the PCM idle learn procedure (see page 11-273).

24. Turn the ignition switch OFF.

25. Turn the ignition switch ON (II), and wait 10 seconds.

26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2176 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

27. Reconnect all connectors.

28. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2176 indicated?

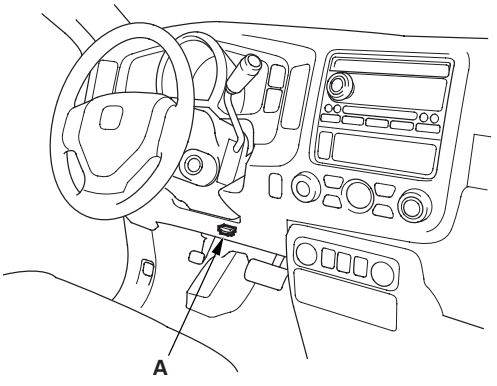
YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

APP Sensor Signal Inspection

NOTE:
- This procedure checks the APP sensor in its fully closed position. In any other position, the APP sensor stores DTCs which are covered in other troubleshooting procedure.
- Check for Temporary DTCs or DTCs with the HDS before doing this procedure. If any DTCs are indicated, troubleshoot them first, then do this procedure.
- Press the accelerator pedal several times to check its operation. If it does not operate smoothly, check the pedal, the throttle cable, and the APP sensor individually. If you find a problem in one of them, replace the part(s) that caused the problem.

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch ON (II).

3. Make sure the accelerator pedal is not pressed, then check the APP SENSOR in the DATA LIST with the HDS.

   - If it is below 2 %, the APP sensor is OK.
   - If it is above 2 %, adjust the throttle cable (see page 11-317), then go to step 4.

4. Make sure the accelerator pedal is not pressed, then check the APP SENSOR in the DATA LIST with the HDS.

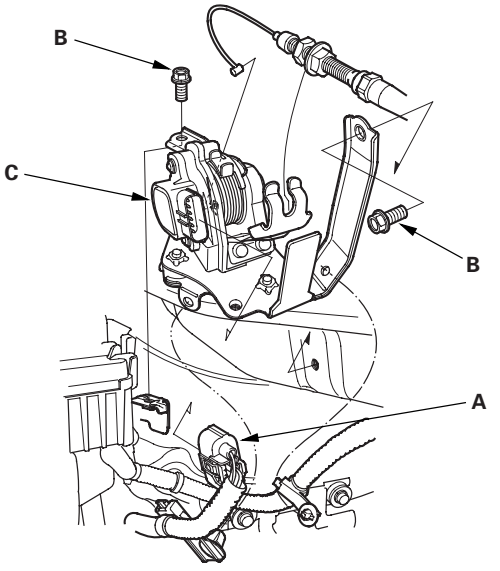
   - If it is below 2 %, the APP sensor is OK.
   - If it is above 2 %, update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then go to step 5.

5. Make sure the accelerator pedal is not pressed, then check the APP SENSOR in the DATA LIST with the HDS.

   - If it is below 2 %, the APP sensor is OK.
   - If it is above 2 %, replace the APP sensor (see page 11-249), then go to step 1.

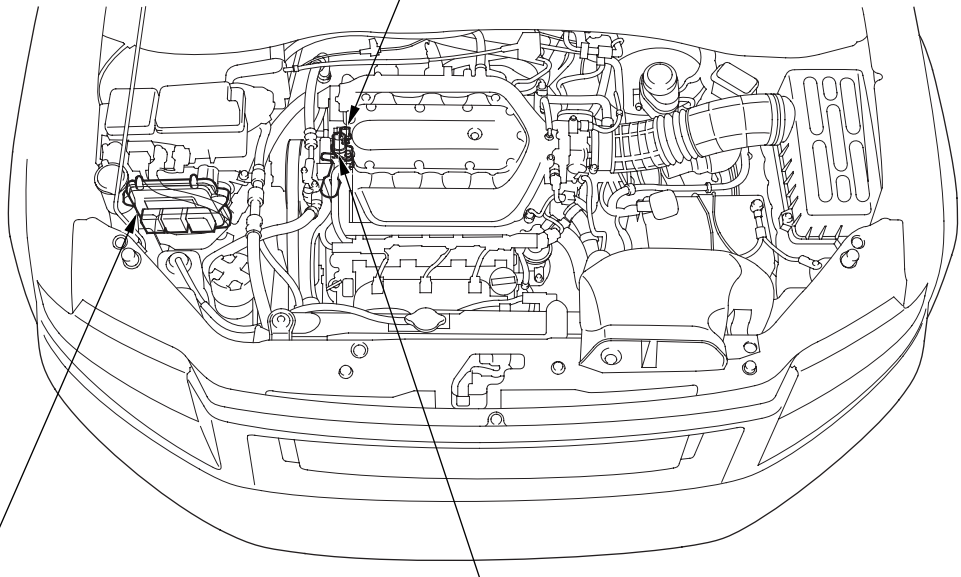
APP Sensor Replacement

1. Remove the throttle cable (see page 11-317).
2. Disconnect the accelerator pedal position (APP) sensor 6P connector (A).



3. Remove the bolts (B) and the APP sensor (C).
4. Install the parts in the reverse order of removal.

Component Location Index



DTC P2646: Rocker Arm Oil Pressure Switch (VTEC Oil Pressure Switch) Circuit Low Voltage

Special Tools Required
- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070301
- A/T pressure hose 07406-0020201
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure adapter 07MAJ-PY40120
- Oil pressure hose 07ZAJ-S5A0200

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check the engine oil level.

   Is the level OK?

   YES—Go to step 2.

   NO—Adjust the engine oil to the proper level, then go to step 20.

2. Turn the ignition switch ON (II).

3. Clear the DTC with the HDS.

4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch), the rocker arm oil control solenoid (VTEC solenoid valve), and the PCM. ■

   NO—Go to step 5.

5. Turn the ignition switch OFF.

6. Disconnect the rocker arm oil pressure switch (VTEC oil pressure switch) 2P connector.

7. Turn the ignition switch ON (II).

8. Check the VTEC PRES SW in the DATA LIST with the HDS.

   Is ON indicated?

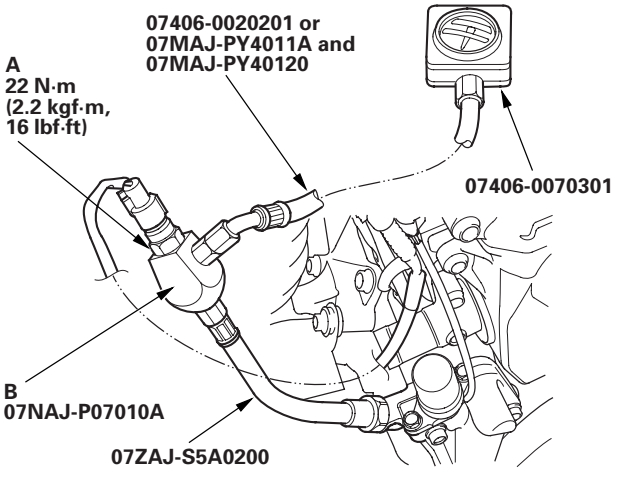
   YES—Go to step 15.

   NO—Go to step 9.

9. Turn the ignition switch OFF.

10. Remove the rocker arm oil pressure switch (VTEC oil pressure switch) (A), install the special tools as shown, then install the rocker arm oil pressure switch (VTEC oil pressure switch) on the oil pressure gauge adapter (B).

    NOTE: Install the parts in the reverse order of removal with a new O-ring.



11. Start the engine.

12. Do the VTEC TEST in the INSPECTION MENU with the HDS.

(cont'd)

DTC Troubleshooting (cont'd)

13. Check the VTEC oil pressure.

    Does the oil pressure increase to at least 392 kPa (4.0 kgf/cm², 56.9psi)?

    YES—Replace the rocker arm oil pressure switch (VTEC oil pressure switch) (see page 11-261), then go to step 19.

    NO—Go to step 14.

14. Check the engine oil pressure (see page 8-6).

    Is the engine oil pressure OK?

    YES—Replace the rocker arm oil control solenoid (VTEC solenoid valve) (see page 11-261), then go to step 19.

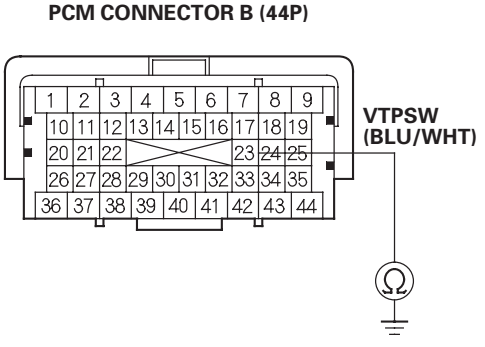
    NO—Repair the cause of the low oil pressure, and replace the rocker arm oil control solenoid (VTEC solenoid valve) (see page 11-261), then go to step 19.

15. Turn the ignition switch OFF.

16. Jump the SCS line with the HDS.

17. Disconnect PCM connector B (44P).

18. Check for continuity between PCM connector terminal B23 and body ground.



Terminal side of female terminals

    Is there continuity?

    YES—Repair short in the wire between the PCM (B23) and the rocker arm oil pressure switch (VTEC oil pressure switch), then go to step 19.

    NO—Go to step 26.

19. Reconnect all connectors.

20. Turn the ignition switch ON (II).

21. Reset the PCM with the HDS.

22. Do the PCM idle learn procedure (see page 11-273).

23. Do the VTEC TEST in the INSPECTION MENU with the HDS.

24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2646 indicated?

    YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch) and the PCM, then go to step 1.

    NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P2646 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

26. Reconnect all connectors.

27. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

28. Do the VTEC TEST in the INSPECTION MENU with the HDS.

29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2646 indicated?

    YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 30.

30. Monitor the OBD STATUS for DTC P2646 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 29, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC Troubleshooting (cont'd)

DTC P2647: Rocker Arm Oil Pressure Switch (VTEC Oil Pressure Switch) Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check the engine oil level.

   Is the level OK?

   YES—Go to step 2.

   NO—Adjust the engine oil to the proper level, then go to step 16.

2. Turn the ignition switch ON (II).

3. Clear the DTC with the HDS.

4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch) and the PCM. ■

   NO—Go to step 5.

5. Check the result of step 4.

   - VTEC Switch Failure
   - VTEC Switch Open
   - VTEC Switch SIG Line Open
   - VTEC Switch GND Line Open

   Is the test result any of the above?

   YES—Go to step 6.

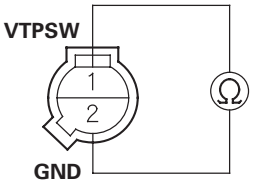
   NO—Check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch) and the PCM. If the connections are OK, replace the rocker arm oil control solenoid (VTEC solenoid valve) (see page 11-261), then go to step 15.

6. Turn the ignition switch OFF.

7. Disconnect the rocker arm oil pressure switch (VTEC oil pressure switch) 2P connector.

8. At the rocker arm oil pressure switch (VTEC oil pressure switch) side, check for continuity between rocker arm oil pressure switch (VTEC oil pressure switch) 2P connector terminals No. 1 and No. 2.

ROCKER ARM OIL PRESSURE SWITCH (VTEC OIL PRESSURE SWITCH) 2P CONNECTOR



Terminal side of male terminals

Is there continuity?

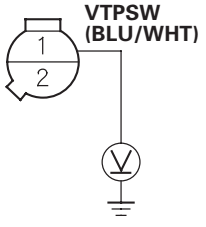
YES—Go to step 9.

NO—Replace the rocker arm oil pressure switch (VTEC oil pressure switch) (see page 11-261), then go to step 15.

9. Turn the ignition switch ON (II).

10. Measure voltage between rocker arm oil pressure switch (VTEC oil pressure switch) 2P connector terminal No. 1 and body ground.

ROCKER ARM OIL PRESSURE SWITCH (VTEC OIL PRESSURE SWITCH) 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Repair open in the wire between the rocker arm oil pressure switch (VTEC oil pressure switch) and G101, then go to step 15.

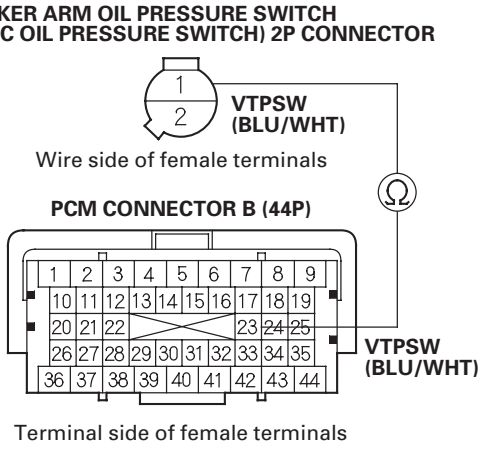
NO—Go to step 11.

11. Turn the ignition switch OFF.

12. Jump the SCS line with the HDS.

13. Disconnect PCM connector B (44P).

14. Check for continuity between PCM connector terminal B23 and rocker arm oil pressure switch (VTEC oil pressure switch) 2P connector terminal No. 1.



Is there continuity?

YES—Go to step 21.

NO—Repair open in the wire between the PCM (B23) and the rocker arm oil pressure switch (VTEC oil pressure switch), then go to step 15.

15. Reconnect all connectors.

16. Turn the ignition switch ON (II).

17. Reset the PCM with the HDS.

18. Do the PCM idle learn procedure (see page 11-273).

19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2647 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch) and the PCM, then go to step 1.

NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P2647 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

21. Reconnect all connectors.

22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

23. Do the VTEC TEST in the INSPECTION MENU with the HDS.

24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2647 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—Go to step 25.

(cont'd)

DTC Troubleshooting (cont'd)

25. Monitor the OBD STATUS for DTC P2647 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P2648: Rocker Arm Oil Control Solenoid (VTEC Solenoid Valve) Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

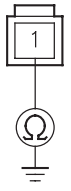
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VTEC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM. ■

   NO—Go to step 4.
4. Turn the ignition switch OFF.
5. Disconnect the rocker arm oil control solenoid (VTEC solenoid valve) 1P connector.
6. At the solenoid side, measure resistance between the rocker arm oil control solenoid (VTEC solenoid valve) 1P connector terminal and the solenoid valve body.

ROCKER ARM OIL CONTROL SOLENOID (VTEC SOLENOID VALVE) 1P CONNECTOR



Terminal side of male terminals

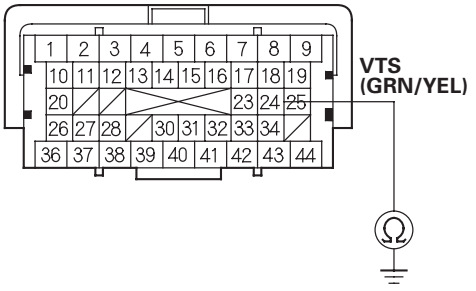
Is there 14—30 Ω at room temperature?

YES—Go to step 7.

NO—Go to step 10.

7. Jump the SCS line with the HDS.
8. Disconnect PCM connector C (44P).
9. Check for continuity between PCM connector terminal C24 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (C24) and the rocker arm oil control solenoid (VTEC solenoid valve), then go to step 11.

NO—Go to step 18.

10. Replace the rocker arm oil control solenoid (VTEC solenoid valve) (see page 11-261).
11. Reconnect all connectors.
12. Turn the ignition switch ON (II).
13. Reset the PCM with the HDS.
14. Do the PCM idle learn procedure (see page 11-273).
15. Do the VTEC TEST in the INSPECTION MENU with the HDS.
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2648 indicated?

    YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM, then go to step 1.

    NO—Go to step 17.

(cont'd)

DTC Troubleshooting (cont'd)

17. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

18. Reconnect all connectors.

19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

20. Do the VTEC TEST in the INSPECTION MENU with the HDS.

21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2648 indicated?

    YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 22.

22. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P2649: Rocker Arm Oil Control Solenoid (VTEC Solenoid Valve) Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

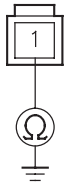
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2649 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM. ■
5. Turn the ignition switch OFF.
6. Disconnect the rocker arm oil control solenoid (VTEC solenoid valve) 1P connector.
7. At the solenoid side, measure resistance between the rocker arm oil control solenoid (VTEC solenoid valve) 1P connector terminal and the solenoid valve body.

ROCKER ARM OIL CONTROL SOLENOID (VTEC SOLENOID VALVE) 1P CONNECTOR



Terminal side of male terminals

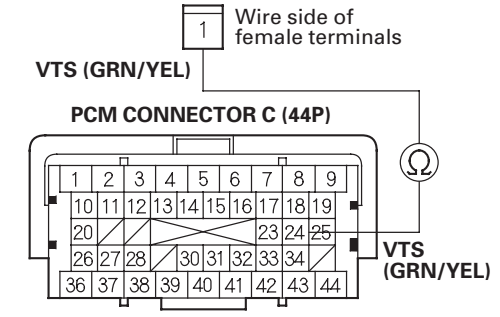
Is there 14—30 Ω at room temperature?

YES—Go to step 8.

NO—Go to step 11.

8. Jump the SCS line with the HDS.
9. Disconnect PCM connector C (44P).
10. Check for continuity between PCM connector terminal C24 and the rocker arm oil control solenoid (VTEC solenoid valve) 1P connector terminal.

ROCKER ARM OIL CONTROL SOLENOID (VTEC SOLENOID VALVE) 1P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the PCM (C24) and the rocker arm oil control solenoid (VTEC solenoid valve), then go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

11. Replace the rocker arm oil control solenoid (VTEC solenoid valve) (see page 11-261).

12. Reconnect all connectors.

13. Turn the ignition switch ON (II).

14. Reset the PCM with the HDS.

15. Do the PCM idle learn procedure (see page 11-273).

16. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2649 indicated?

    YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM, then go to step 1.

    NO—Go to step 18.

18. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 17, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

19. Reconnect all connectors.

20. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2649 indicated?

    YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 22.

22. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

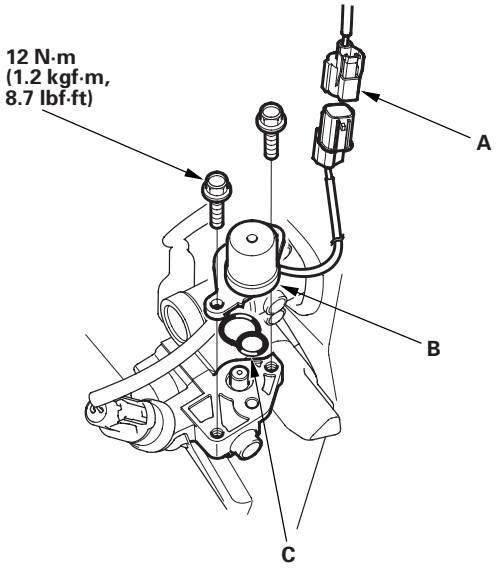
    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

Rocker Arm Oil Control Solenoid (VTEC Solenoid Valve) Replacement

1. Disconnect the rocker arm oil control solenoid (VTEC solenoid valve) connector (A).

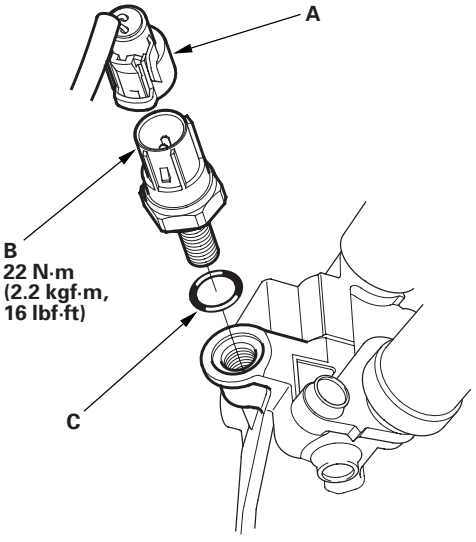


2. Remove the rocker arm oil control solenoid (VTEC solenoid valve) (B).

3. Install the parts in the reverse order of removal with a new O-ring (C).

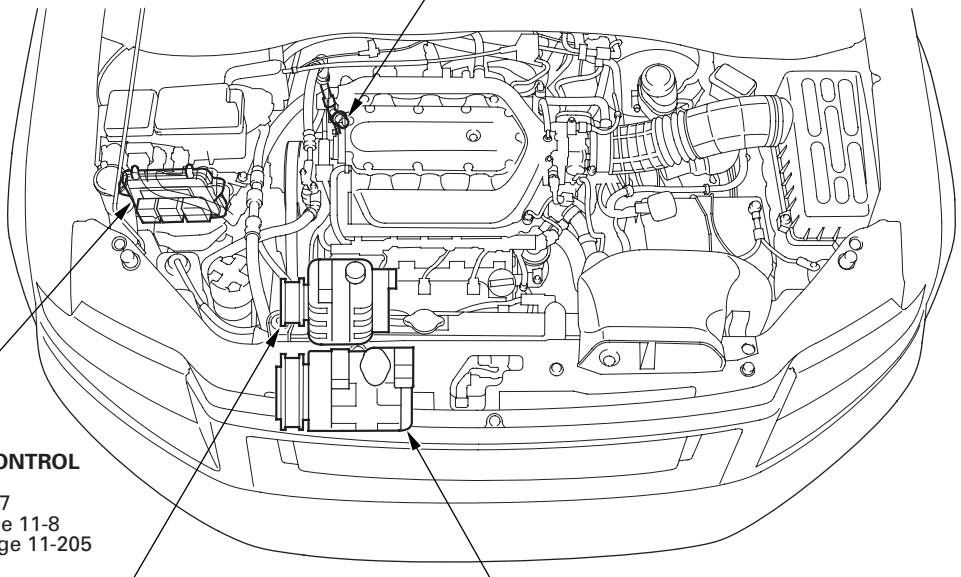
Rocker Arm Oil Pressure Switch (VTEC Oil Pressure Switch) Removal/Installation

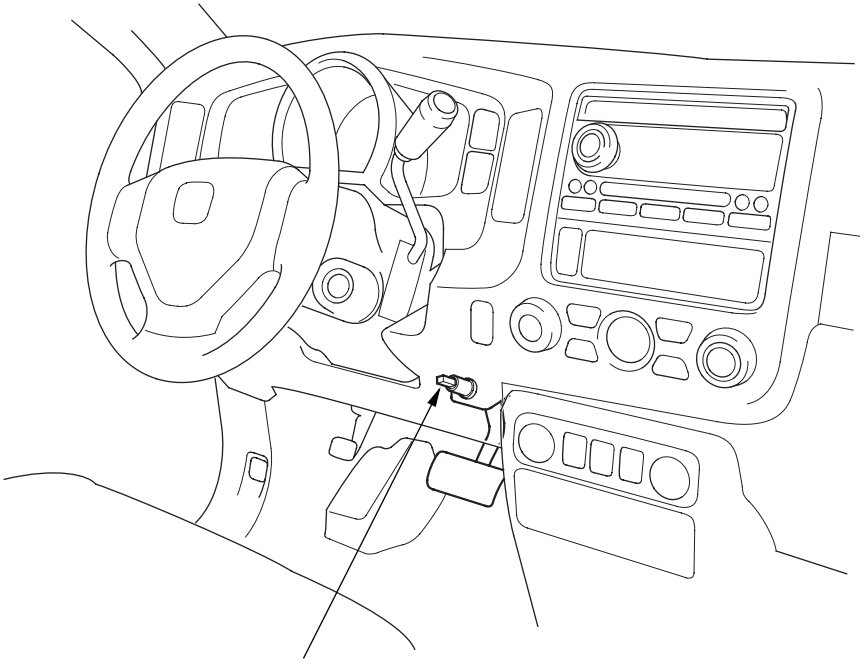
1. Disconnect the rocker arm oil pressure switch (VTEC oil pressure switch) connector (A), then remove the rocker arm oil pressure switch (VTEC oil pressure switch) (B).



2. Install the parts in the reverse order of removal with a new O-ring (C).

Component Location Index





DTC Troubleshooting

DTC P0506: Idle Control System RPM Lower Than Expected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check for these conditions in the DATA LIST with the HDS:
   - ECT SENSOR 1 above 158 ℉ (70 ℃)
   - IAT SENSOR above 32 ℉ (0 ℃)
   - Vehicle speed is 0 mph (0 km/h)
   - ST FUEL TRIM between 0.73 and 1.47
   - FSS is CLOSED
5. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 6.

   NO—If the screen indicates PASSED, go to step 8. If the screen indicates EXECUTING, let the engine idle until a result comes on. If the screen indicates OUT OF CONDITION, go to step 4 and recheck.
6. Remove the intake air duct from the throttle body.
7. Check for dirt, carbon, or damage in the throttle bore.

   Is there dirt, carbon, or damage in the throttle bore?

   YES—If there is dirt or carbon, clean the throttle body (see page 11-314). Also check for damage to the air cleaner element (see page 11-315), then go to step 13. If there is damage in the throttle bore, go to step 12.

   NO—Check the A/C system or power steering system, then go to step 10.
8. Remove the intake air duct from the throttle body.
9. Check for dirt, carbon, or damage in the throttle bore.

   Is there dirt, carbon, or damage in the throttle bore?

   YES—If there is dirt or carbon, clean the throttle body (see page 11-314). Also check for damage to the air cleaner element (see page 11-315), then go to step 13. If there is damage in the throttle bore, go to step 12.

   NO—Go to step 10.
10. Recheck with different load conditions (turn on the headlights, blower motor, or A/C; change the gear position, etc.).
11. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Intermittent failure, the system is OK at this time. ■

    NO—If the screen indicates FAILED, check the A/C system and/or power steering system, then go to step 1 and recheck. If the screen indicates EXECUTING, let the engine idle until a result comes on. If the screen indicates OUT OF CONDITION, go to step 10 and recheck.

(cont'd)

DTC Troubleshooting (cont'd)

12. Replace the throttle body (see page 11-319).

13. Reset the PCM with the HDS.

14. Do the PCM idle learn procedure (see page 11-273).

15. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

16. Check for these conditions in the DATA LIST with the HDS:

    - ECT SENSOR 1 above 158 ℉ (70 ℃)
    - IAT SENSOR above 32 ℉ (0 ℃)
    - Vehicle speed is 0 mph (0 km/h)
    - ST FUEL TRIM between 0.73 and 1.47
    - FSS is CLOSED

17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0506 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 18.

18. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 17, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

DTC P0507: Idle Control System RPM Higher Than Expected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 5.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates EXECUTING, let the engine idle until a result comes on. If the screen indicates OUT OF CONDITION, recheck with different load conditions (electrical, A/C, gear position, etc.), then go to step 3.

5. Check for vacuum leaks at these parts:

   - PCV valve
   - PCV hose
   - EVAP canister purge valve
   - Throttle body
   - Intake manifold
   - Brake booster hose

   Are there any leaks?

   YES—Repair or replace the leaking part(s), then go to step 6.

   NO—Go to step 6.

6. Turn the ignition switch ON (II).
7. Reset the PCM with the HDS.
8. Do the PCM idle learn procedure (see page 11-273).
9. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0507 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 11.

11. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 10, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

A/C Signal Circuit Troubleshooting

1. Start the engine.
2. Turn the blower switch on.
3. Turn the A/C switch on.
4. Check the A/C CLUTCH in the DATA LIST with the HDS.

   Does it indicate ON?

   YES—Go to step 5.

   NO—Do the A/C pressure switch circuit troubleshooting (see page 21-130).
5. Check the A/C system.

   Does the A/C system operate?

   YES—The air conditioning system circuit is OK. ■

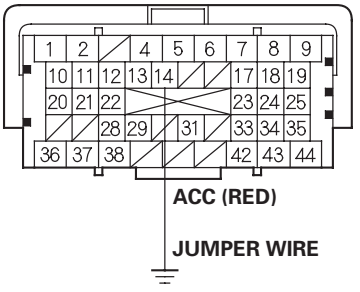
   NO—Go to step 6.
6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II).
8. Activate the A/C CLUTCH in the INSPECTION MENU with the HDS.

   Is there a clicking noise from the A/C compressor clutch?

   YES—Do the A/C system test (see page 21-77).

   NO—Go to step 9.
9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector A (44P).
12. Turn the ignition switch ON (II).
13. Momentarily connect PCM connector terminal A14 to body ground with a jumper wire several times.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there a clicking noise from the A/C compressor clutch?

YES—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-205). ■

NO—Check for poor connections or loose terminals at the A/C clutch relay and the PCM. If the connections are OK, check the A/C clutch relay (see page 22-75), repair open in the wire between the PCM (A14) and the A/C clutch relay and the other A/C systems.

Alternator FR Signal Circuit Troubleshooting

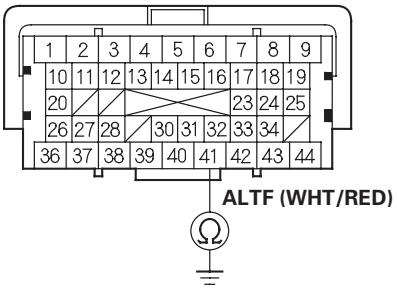
1. Start the engine, and let it idle.
2. Monitor the ALTERNATOR in the DATA LIST with the HDS.
3. Check if the indicated percentage varies when the headlight switch is turned on.

   Does the percentage vary?

   YES—The alternator signal circuit is OK. ■

   NO—Go to step 4.
4. Turn the headlight switch and ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect the alternator 4P connector.
7. Disconnect PCM connector C (44P).
8. Check for continuity between body ground and PCM connector terminal C41.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (C41) and the alternator. ■

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-205). ■

PSP Switch Signal Circuit Troubleshooting

1. Start the engine, and let it idle.
2. Align the steering wheel straight ahead.
3. Check the PSP SWITCH in the DATA LIST with the HDS.

   Does it indicate ON?

   YES—Go to step 4.

   NO—Go to step 14.
4. Turn the steering wheel to the full lock position.
5. Check the PSP SWITCH in the DATA LIST with the HDS.

   Does it change to OFF?

   YES—The PSP switch signal circuit is OK. ■

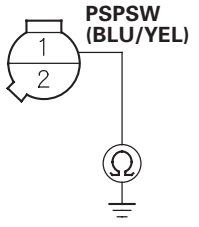
   NO—Go to step 6.
6. Turn the ignition switch OFF.
7. Disconnect the PSP switch 2P connector.
8. Start the engine.
9. Check the PSP SWITCH in the DATA LIST with the HDS.

   Does it change to OFF?

   YES—Replace the PSP switch. ■

   NO—Go to step 10.
10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector A (44P).
13. Check for continuity between PSP switch 2P connector terminal No. 1 and body ground.

PSP SWITCH 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A38) and the PSP switch. ■

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-205). ■

14. Turn the ignition switch OFF.
15. Disconnect the PSP switch 2P connector.
16. Connect PSP switch 2P connector terminals No. 1 and No. 2 with a jumper wire, then start the engine.

PSP SWITCH 2P CONNECTOR

Wire side of female terminals

17. Check the PSP SWITCH in the DATA LIST with the HDS.

    Does it change to ON?

    YES—Replace the PSP switch. ■

    NO—Go to step 18.

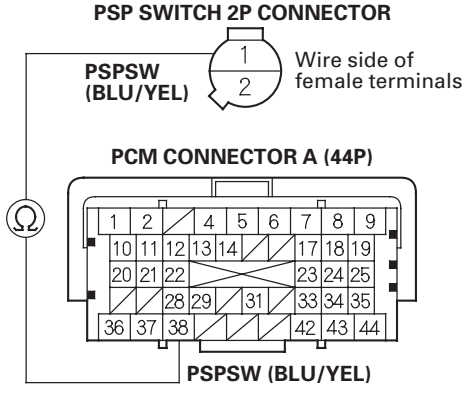
18. Turn the ignition switch OFF.

19. Remove the jumper wire from the PSP switch 2P connector.

20. Jump the SCS line with the HDS.

21. Disconnect PCM connector A (44P).

22. Check for continuity between PCM connector terminal A38 and PSP switch 2P connector terminal No. 1.



Terminal side of female terminals

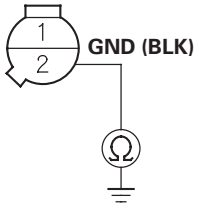
Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the PSP switch and the PCM (A38). ■

23. Check for continuity between PSP switch 2P connector terminal No. 2 and body ground.

PSP SWITCH 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-205). ■

NO—Repair open in the wire between the PSP switch and G202. ■

Brake Pedal Position Switch Signal Circuit Troubleshooting

1. Turn the ignition switch ON (II).
2. Check the BRAKE SWITCH in the DATA LIST with the HDS.

   Does it indicate OFF?

   YES—Go to step 3.

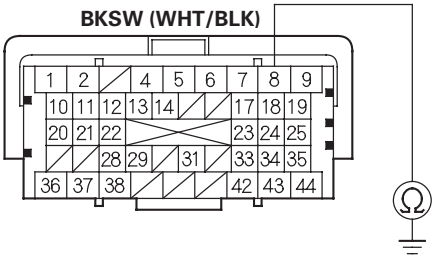
   NO—Inspect the brake pedal position switch (see page 19-6). ■
3. Press the brake pedal, and check the BRAKE SWITCH in the DATA LIST with the HDS.

   Does it change to ON?

   YES—The brake pedal position switch signal circuit (BKSW line) is OK. ■

   NO—Go to step 4.
4. Turn the ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect the brake pedal position switch 4P connector.
7. Disconnect PCM connector A (44P).
8. Check for continuity between PCM connector terminal A8 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

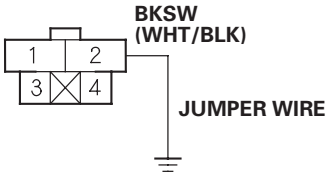
Is there continuity?

YES—Repair short in the wire between the PCM (A8) and the No. 13 HORN, STOP (20 A) fuse. Replace the No. 13 HORN, STOP (20 A) fuse. ■

NO—Go to step 9.

9. Connect brake pedal position switch 4P connector terminal No. 2 to body ground with a jumper wire.

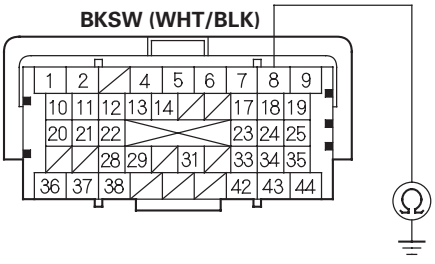
BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



Wire side of female terminals

10. Check for continuity between PCM connector terminal A8 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair open in the wire between the brake pedal position switch and the No. 13 HORN, STOP (20 A) fuse. Inspect the brake pedal position switch (see page 19-6). ■

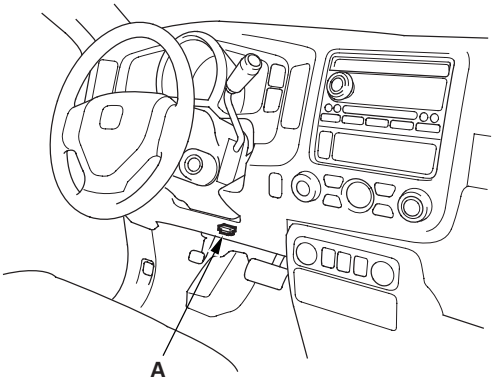
NO—Repair open in the wire between the PCM (A8) and the brake pedal position switch. ■

Idle Speed Inspection

NOTE:
- Before checking the idle speed, check these items:
  – The malfunction indicator lamp (MIL) has not been reported on, and there are no DTCs.
  – Ignition timing
  – Spark plugs
  – Air cleaner
  – PCV system
- Apply the parking brake.

1. Disconnect the evaporative emission (EVAP) canister purge valve connector.

2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

4. Check the idle speed without load conditions: headlights, blower fan, radiator fan, and air conditioner off.

   Idle speed should be:
   730±50 rpm (in Park or neutral)

5. Let the engine idle for 1 minute with high electric load (A/C switch ON, temperature set to Max Cool, blower fan on High, and headlights on high beam).

   Idle speed should be:
   730±50 rpm (in Park or neutral)

   NOTE: If the idle speed is not within specification, do the PCM idle learn procedure (see page 11-273). If the idle speed is still not within specification, go to symptom troubleshooting.

6. Reconnect the EVAP canister purge valve connector.

PCM Idle Learn Procedure

The idle learn procedure must be done so the PCM can learn the engine idle characteristics.

Do the idle learn procedure whenever you do any of these actions:

- Replace PCM.
- Reset PCM.
- Update PCM.
- Clean or replace the throttle body.

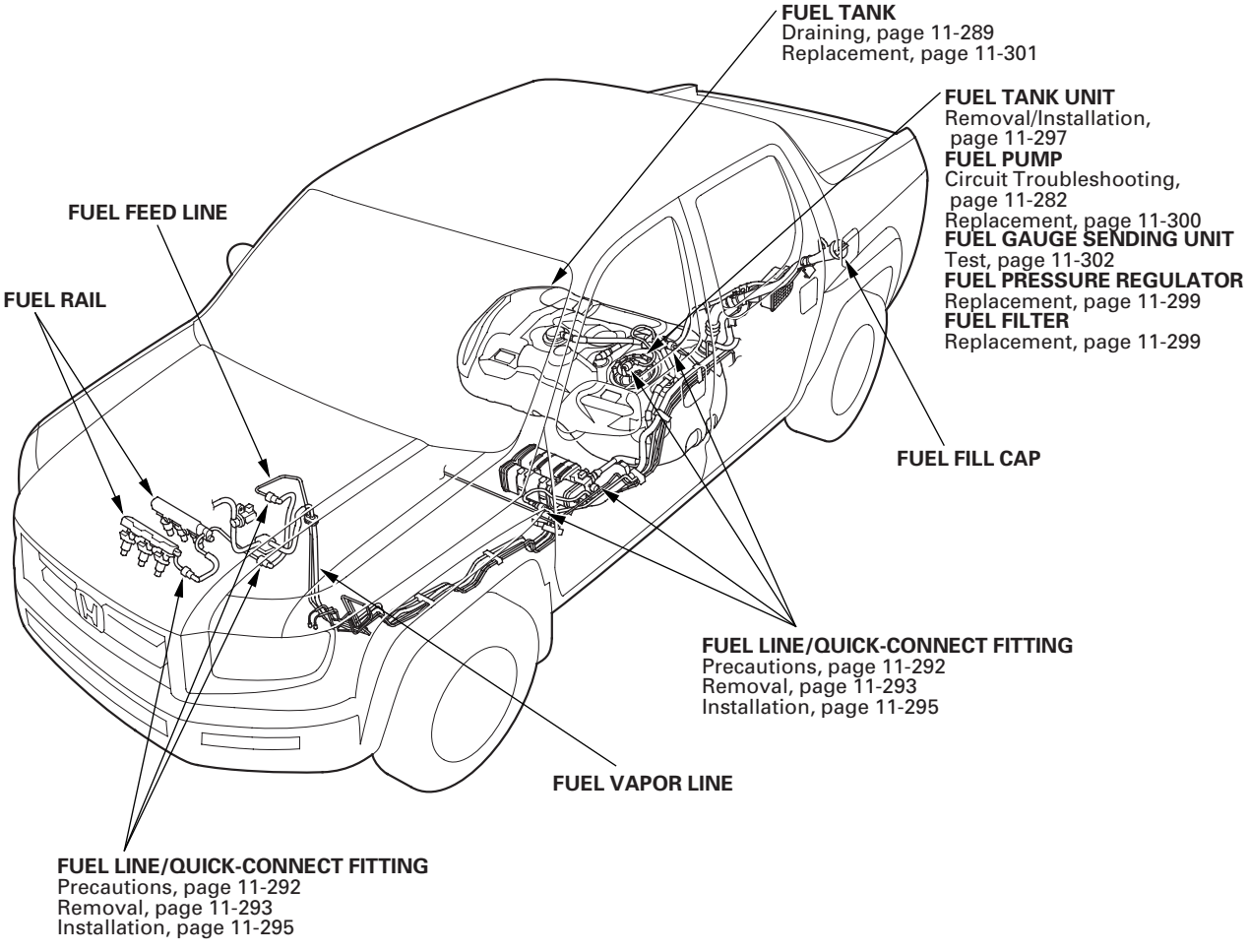
NOTE: Erasing DTCs with the HDS does not require you to do the idle learn procedure.

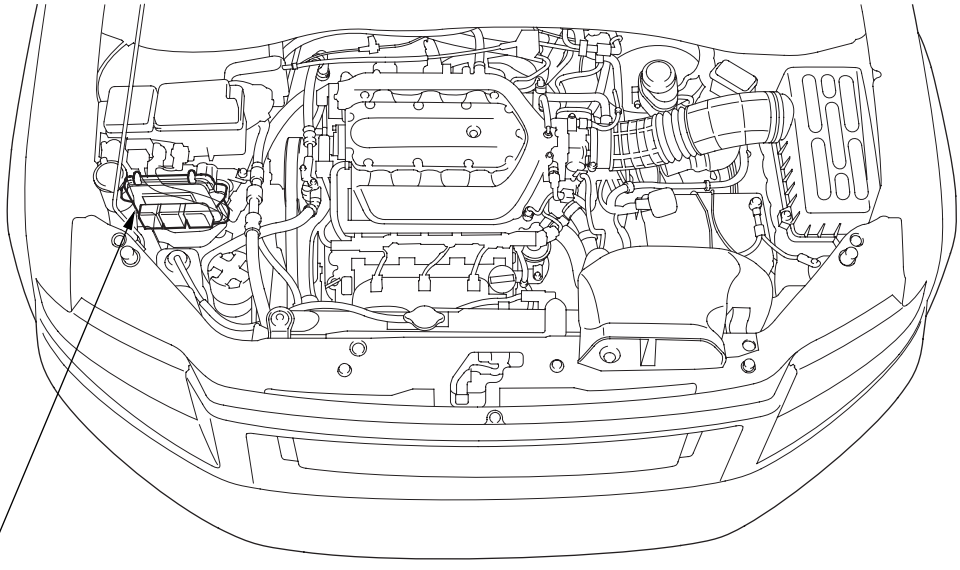
Procedure

1. Make sure all electrical items (A/C, audio, lights, etc.) are off.
2. Reset the PCM with the HDS.
3. Turn the ignition switch ON (II), and wait 2 seconds.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, or until the engine coolant temperature reaches 194 °F (90 °C).
5. Let the engine idle for about 5 minutes with the throttle fully closed.

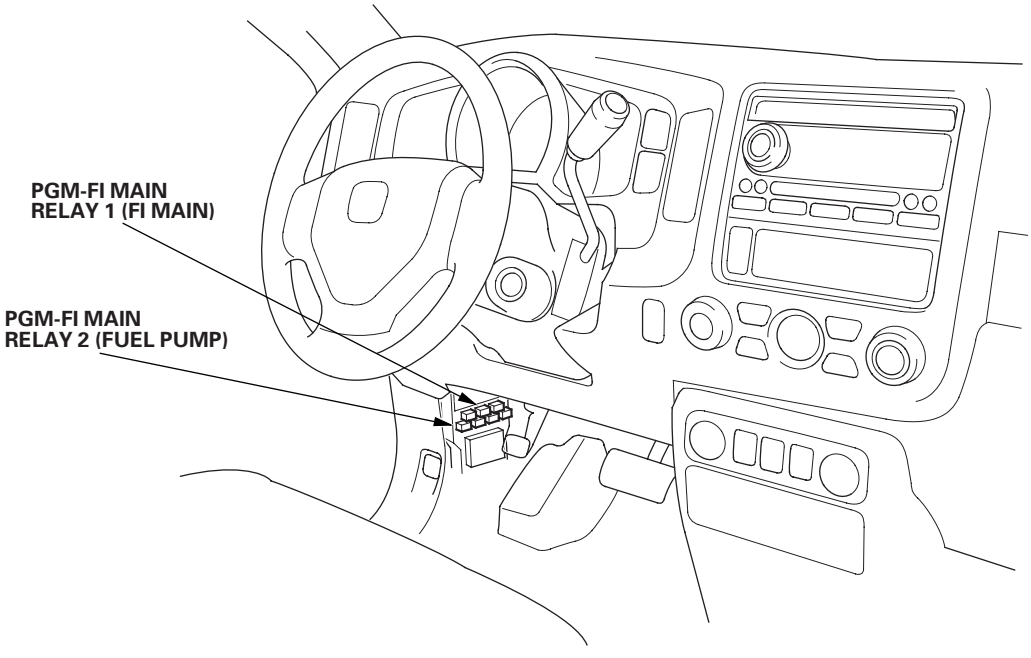
   NOTE: If the radiator fan comes on, do not include its running time in the 5 minutes.

Component Location Index





POWERTRAIN CONTROL MODULE (PCM)
Update, page 11-7
Substitution, page 11-8
Replacement, page 11-205



DTC Troubleshooting

DTC P0461: Fuel Level Sensor (Fuel Gauge Sending Unit) Range/Performance Problem

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Because it requires 162 miles (260 km) of driving without refueling to complete this diagnosis, this DTC P0461 cannot be duplicated during this troubleshooting.

1. Test the fuel gauge sending unit (see page 11-302).

   Is the fuel gauge sending unit OK?

   YES—Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module. ■

   NO—Replace the fuel gauge sending unit (see page 11-300), then go to step 2.

2. Turn the ignition switch ON (II).
3. Reset the PCM with the HDS.
4. Do the PCM idle learn procedure (see page 11-273).
5. Check for Temporary DTCs or DTCs with the HDS.

   Are any Temporary DTCs or DTCs indicated?

   YES—If DTC P0461 is indicated, check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

   NO—Troubleshooting is complete. ■

DTC P0462: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS, and wait 5 seconds.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC P0462 indicated?

   YES—Go to step 4.

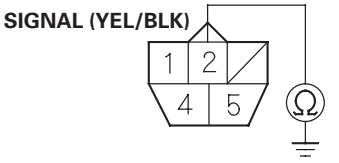
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module and the fuel gauge sending unit. ■
4. Turn the ignition switch OFF.
5. Remove the rear seat (see page 20-117).
6. Remove the access panel from the floor.
7. Disconnect the fuel tank unit 5P connector.
8. Turn the ignition switch ON (II).
9. Clear the DTC with the HDS, and wait 5 seconds.
10. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Is DTC P0463 indicated?

    YES—Replace the fuel gauge sending unit (see page 11-300), then go to step 22.

    NO—Go to step 11.
11. Turn the ignition switch OFF.
12. Remove the gauge control module (see page 22-263).
13. Disconnect the gauge control module 14P connector.
14. Check for continuity between fuel tank unit 5P connector terminal No. 2 and body ground.

FUEL TANK UNIT 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the gauge control module (signal line) and the fuel gauge sending unit, then go to step 23.

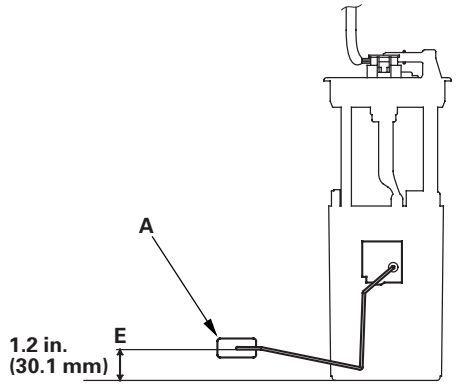
NO—Go to step 15.

15. Reconnect the gauge control module 14P connector.
16. Remove the fuel tank unit (see page 11-297).
17. Connect the fuel tank unit 5P connector.
18. Turn the ignition switch ON (II).
19. Clear the DTC with the HDS.

(cont'd)

DTC Troubleshooting (cont'd)

20. Set the float (A) to the E position.



21. Check the fuel gauge.

    Does the fuel gauge move to the empty position?

    YES—Go to step 33.

    NO—Replace the gauge control module (see page 22-263), then go to step 22.

22. Turn the ignition switch OFF.

23. Install the parts in the reverse order of removal.

24. Reconnect all connectors.

25. Turn the ignition switch ON (II).

26. Reset the PCM with the HDS.

27. Do the PCM idle learn procedure (see page 11-273).

28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0462 indicated?

    YES—Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

29. Turn the ignition switch OFF.

30. Install the parts in the reverse order of removal.

31. Reconnect all connectors.

32. Turn the ignition switch ON (II).

33. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

34. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0462 indicated?

    YES—Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0463: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

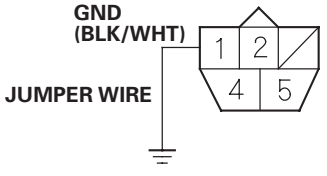
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS, and wait 5 seconds.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC P0463 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module and the fuel gauge sending unit. ■
4. Turn the ignition switch OFF.
5. Remove the rear seat (see page 20-117).
6. Remove the access panel from the floor.
7. Disconnect the fuel tank unit 5P connector.
8. Connect fuel tank unit 5P connector terminal No. 1 to body ground with a jumper wire.

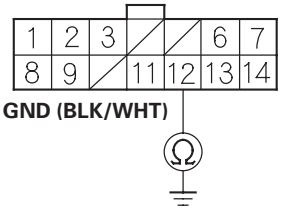
FUEL TANK UNIT 5P CONNECTOR



Wire side of female terminals

9. Remove the gauge control module (see page 22-263).
10. Disconnect the gauge control module 14P connector.
11. Check for continuity between gauge control module 14P connector terminal No. 12 and body ground.

GAUGE CONTROL MODULE 14P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

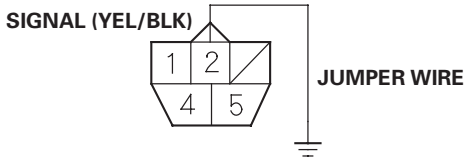
NO—Repair open in the wire between the gauge control module (GND line) and the fuel gauge sending unit, then go to step 24.

(cont'd)

DTC Troubleshooting (cont'd)

12. Connect fuel tank unit 5P connector terminal No. 2 to body ground with a jumper wire.

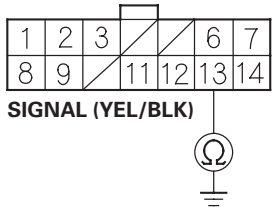
FUEL TANK UNIT 5P CONNECTOR



Wire side of female terminals

13. Check for continuity between gauge control module 14P connector terminal No. 13 and body ground.

GAUGE CONTROL MODULE 14P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the gauge control module (signal line) and the fuel gauge sending unit, then go to step 24.

14. Remove the jumper wire from the fuel tank unit 5P connector.

15. Remove the fuel tank unit (see page 11-297).

16. Test the fuel gauge sending unit (see page 11-302).

Is the fuel gauge sending unit OK?

YES—Go to step 17.

NO—Replace the fuel gauge sending unit (see page 11-300), then go to step 24.

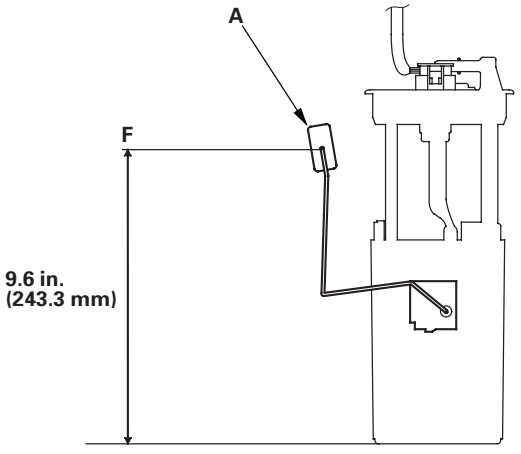
17. Connect the fuel tank unit 5P connector.

18. Reconnect the gauge control module 14P connector.

19. Turn the ignition switch ON (II).

20. Clear the DTC with the HDS.

21. Set the float (A) to the F position.



22. Check the fuel gauge.

Does the gauge move to the full position?

YES—Go to step 30.

NO—Replace the gauge control module (see page 22-263), then go to step 24.

23. Turn the ignition switch OFF.
24. Install the parts in the reverse order of removal.
25. Reconnect all connectors.
26. Turn the ignition switch ON (II).
27. Reset the PCM with the HDS.
28. Do the PCM idle learn procedure (see page 11-273).
29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0463 indicated?

    YES—Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
30. Turn the ignition switch OFF.
31. Install the parts in the reverse order of removal.
32. Reconnect all connectors.
33. Turn the ignition switch ON (II).
34. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
35. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0463 indicated?

    YES—Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

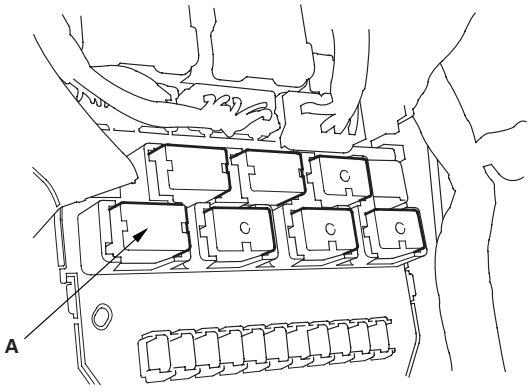
    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Fuel Pump Circuit Troubleshooting

If you suspect a problem with the fuel pump, check that the fuel pump actually runs; when it is on, you will hear some noise if you listen to the fuel fill port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned ON (II). If the fuel pump does not make noise, check as follows:

1. Turn the ignition switch OFF.

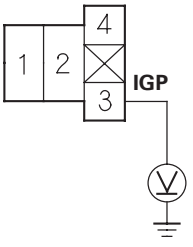
2. Remove the left kick panel (see page 20-60), then remove PGM-FI main relay 2 (FUEL PUMP) (A) from the under-dash fuse/relay box.



3. Turn the ignition switch ON (II).

4. Measure voltage between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 3 and body ground.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

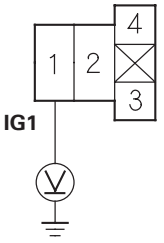
Is there battery voltage?

YES—Go to step 5.

NO—
- Replace PGM-FI main relay 1 (FI MAIN). ■
- If needed, replace the under-dash fuse/relay box. ■

5. Measure voltage between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 1 and body ground.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

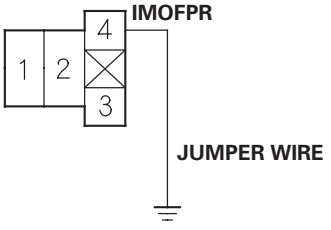
YES—Go to step 6.

NO—
- If needed, replace the No. 19 FUEL PUMP (15 A) fuse in the under-dash fuse/relay box. ■
- If needed, replace the under-dash fuse/relay box. ■

6. Turn the ignition switch OFF.

7. Connect PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 4 to body ground with a jumper wire.

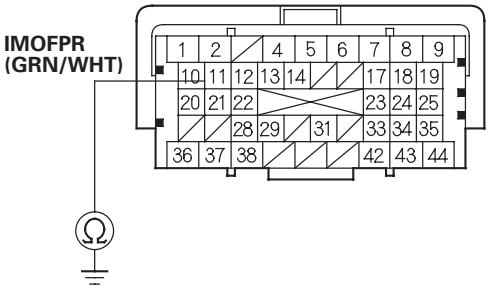
PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (44P).
10. Check for continuity between body ground and PCM connector terminal A11.

PCM CONNECTOR A (44P)



Terminal side of female terminals

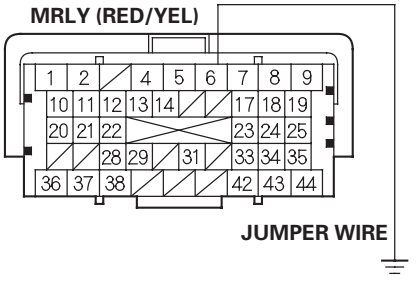
Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between PGM-FI main relay 2 (FUEL PUMP) and the PCM (A11). ■

11. Reinstall PGM-FI main relay 2 (FUEL PUMP).
12. Connect PCM connector terminal A6 to body ground with a jumper wire.

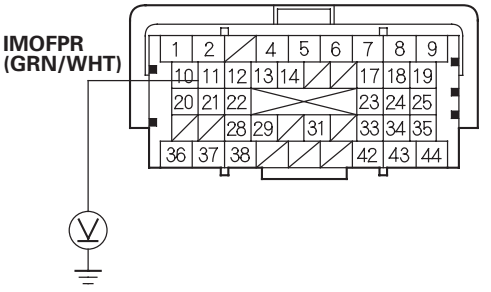
PCM CONNECTOR A (44P)



Terminal side of female terminals

13. Turn the ignition switch ON (II).
14. Measure voltage between PCM connector terminal A11 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 15.

NO—Replace PGM-FI main relay 2 (FUEL PUMP). ■

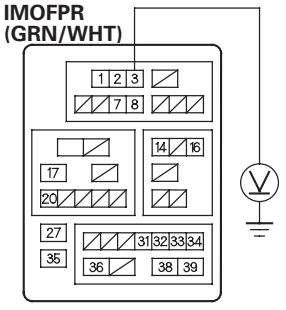
15. Turn the ignition switch OFF.
16. Reconnect PCM connector A (44P).
17. Exit the SCS mode with the HDS.
18. Turn the ignition switch OFF.

(cont'd)

Fuel Pump Circuit Troubleshooting (cont'd)

19. Turn the ignition switch ON (II), and measure voltage between under-dash fuse/relay box 39P connector terminal No. 3 and body ground within 2 seconds.

UNDER-DASH FUSE/RELAY BOX 39P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-205). ■

NO—Go to step 20.

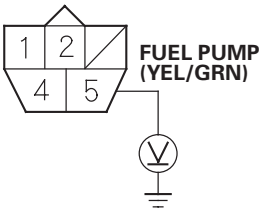
20. Turn the ignition switch OFF.

21. Remove the rear seat-backs (see page 20-119).

22. Remove the access panel from the floor.

23. Turn the ignition switch ON (II), and measure voltage between fuel pump 5P connector terminal No. 5 and body ground within 2 seconds.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 28.

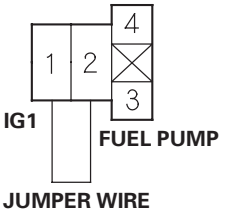
NO—Go to step 24.

24. Turn the ignition switch OFF.

25. Remove PGM-FI main relay 2 (FUEL PUMP).

26. Connect PGM-FI main relay 2 (FUEL PUMP) 4P connector terminals No. 1 and No. 2 with a jumper wire.

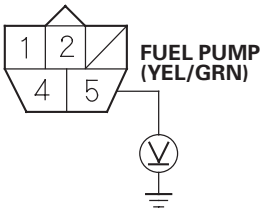
PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

27. Turn the ignition switch ON (II), and measure voltage between fuel tank unit 5P connector terminal No. 5 and body ground within 2 seconds.

FUEL TANK UNIT 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

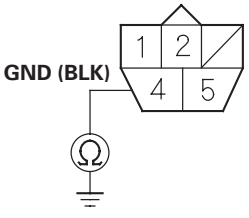
YES—Replace PGM-FI main relay 2 (FUEL PUMP). ■

NO—Repair open in the wire between PGM-FI main relay 2 (FUEL PUMP) and the fuel tank unit 5P connector. ■

28. Turn the ignition switch OFF.

29. Check for continuity between fuel tank unit 5P connector terminal No. 4 and body ground.

FUEL TANK UNIT 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the fuel pump. ■

NO—Repair open in the wire between the fuel tank unit 5P connector and G502. ■

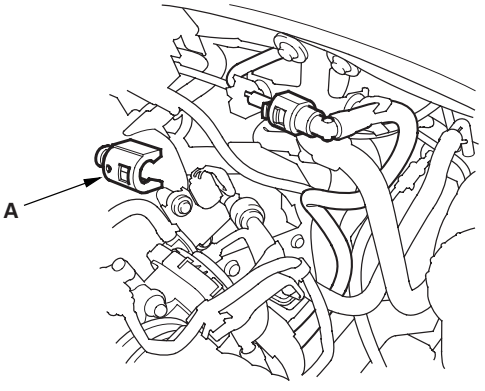
Fuel Pressure Relieving

Before disconnecting fuel lines or hoses, relieve pressure from the system by stopping the fuel pump and then disconnecting the fuel tube/quick connect fitting in the engine compartment.

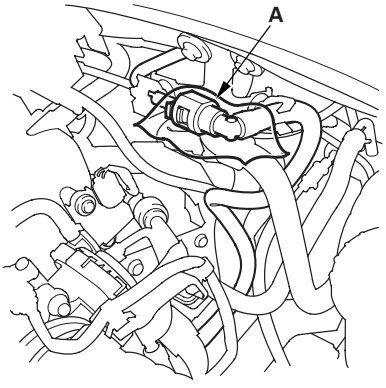
With the HDS

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
2. Remove the fuel fill cap, and relieve the pressure in the fuel tank.
3. Turn the ignition switch ON (II).
4. From the INSPECTION MENU of the HDS, select Fuel Pump OFF, then start the engine, and let it idle until it stalls.
5. Turn the ignition switch OFF.

   NOTE:
   - Do not allow the engine to idle above 1,000 rpm or the PCM will continue to operate the fuel pump.
   - A DTC or a Temporary DTC may be set during this procedure. Check for DTCs, and clear them as needed (see page 11-3).
6. Turn the ignition switch OFF.
7. Disconnect the negative cable from the battery.
8. Remove the quick-connect fitting cover (A).

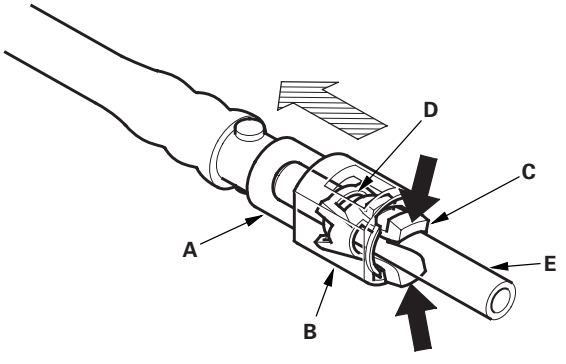


9. Check the fuel quick-connect fitting for dirt, and clean it if needed.
10. Place a rag or shop towel over the quick-connect fitting (A).



11. Disconnect the quick-connect fitting (A): Hold the connector (B) with one hand, and squeeze the retainer tabs (C) with the other hand to release them from the locking tabs (D). Pull the connector off.

    NOTE:
    - Be careful not to damage the line (E) or other parts.
    - Do not use tools.
    - If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
    - Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.



12. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 4 on page 11-293).

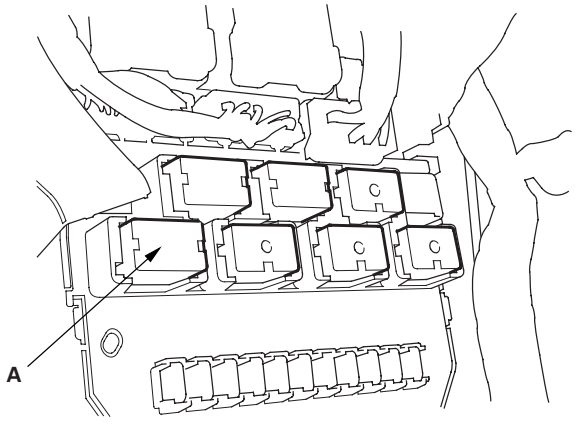
13. Reconnect the negative cable to the battery, then do this:

    - Do the power window control unit reset procedure (see page 22-209).
    - Enter the anti-theft codes for the radio and the navigation system (if equipped).
    - Set the clock.

Without the HDS

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).

2. Remove the left kick panel (see page 20-60), then remove PGM-FI main relay 2 (FUEL PUMP) (A) from the under-dash fuse/relay box.



3. Start the engine, and let it idle until it stalls.

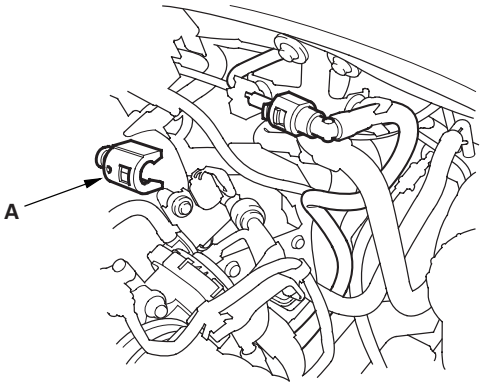
   NOTE: If any DTCs are stored, clear and ignore them.

4. Turn the ignition switch OFF.

5. Remove the fuel fill cap.

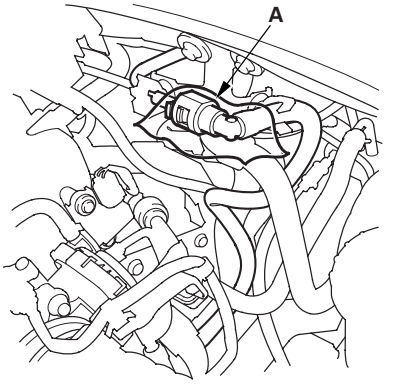
6. Disconnect the negative cable from the battery.

7. Remove the quick-connect fitting cover (A).



8. Check the fuel quick-connect fitting for dirt, and clean it if needed.

9. Place a rag or shop towel over the quick-connect fitting (A).

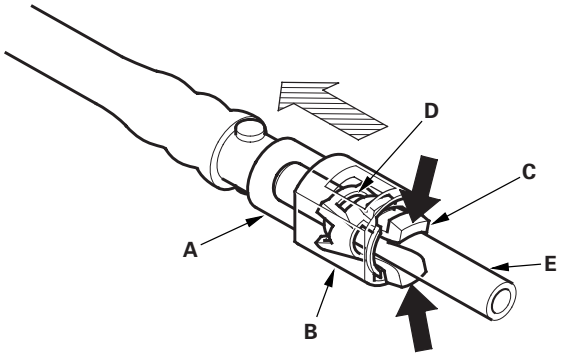


(cont'd)

Fuel Pressure Relieving (cont'd)

10. Disconnect the quick-connect fitting (A): Hold the connector (B) with one hand, and squeeze the retainer tabs (C) with the other hand to release them from the locking tabs (D). Pull the connector off.

    NOTE:
    - Be careful not to damage the line (E) or other parts.
    - Do not use tools.
    - If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
    - Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.



11. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 4 on page 11-293).

12. Reconnect the negative cable to the battery, then do this:

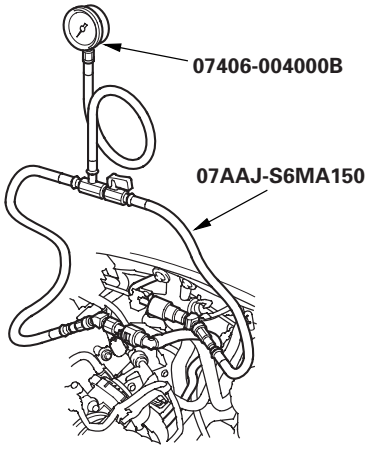
    - Power window control unit reset procedure (see page 22-209).
    - Enter the anti-theft codes for the audio system and the navigation system (if equipped).
    - Set the clock.

Fuel Pressure Test

Special Tools Required
- Fuel pressure gauge 07406-004000B
- Fuel pressure gauge attachment set 07AAJ-S6MA150

1. Relieve the fuel pressure (see page 11-286).

2. Disconnect the quick-connect fitting. Attach the fuel pressure gauge set and the fuel pressure gauge.



3. Start the engine, and let it idle.

    - If the engine starts, go to step 5.
    - If the engine does not start, go to step 4.

4. Check to see if the fuel pump is running: listen to the fuel filler port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on.

    - If the pump runs, go to step 5.
    - If the pump does not run, do the fuel pump circuit troubleshooting (see page 11-282).

5. Read the fuel pressure gauge. The pressure should be 390—440 kPa (4.0—4.5 kgf/cm^2, 57—64 psi).

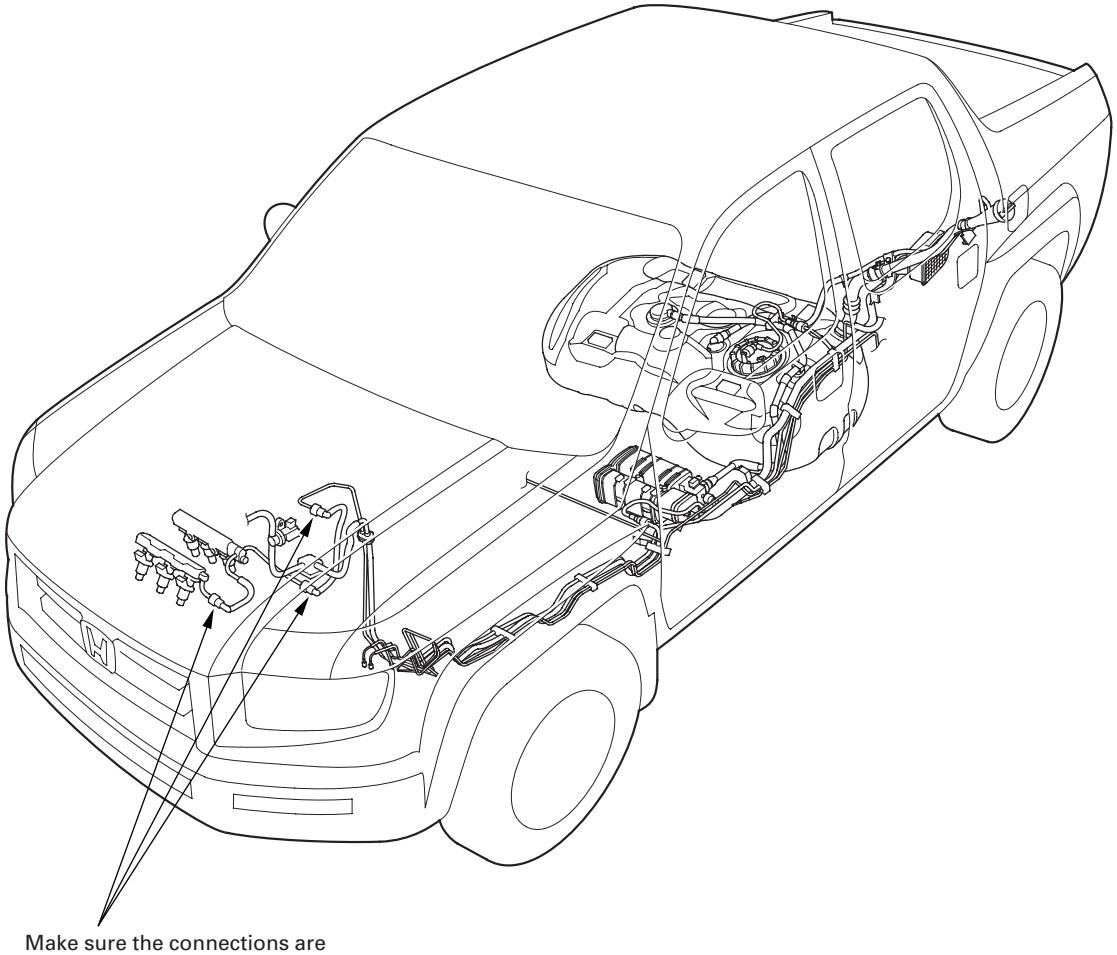
    - If the pressure is OK, the test is complete.
    - If the pressure is out of specification, replace the fuel pressure regulator (see page 11-299) and the fuel filter (see page 11-299), then recheck the fuel pressure.

Fuel Tank Draining

1. Remove the fuel tank unit (see page 11-297).
2. Using a hand pump, a hose, and a container suitable for fuel, draw the fuel from the fuel tank.
3. Reinstall the fuel tank unit (see page 11-298).

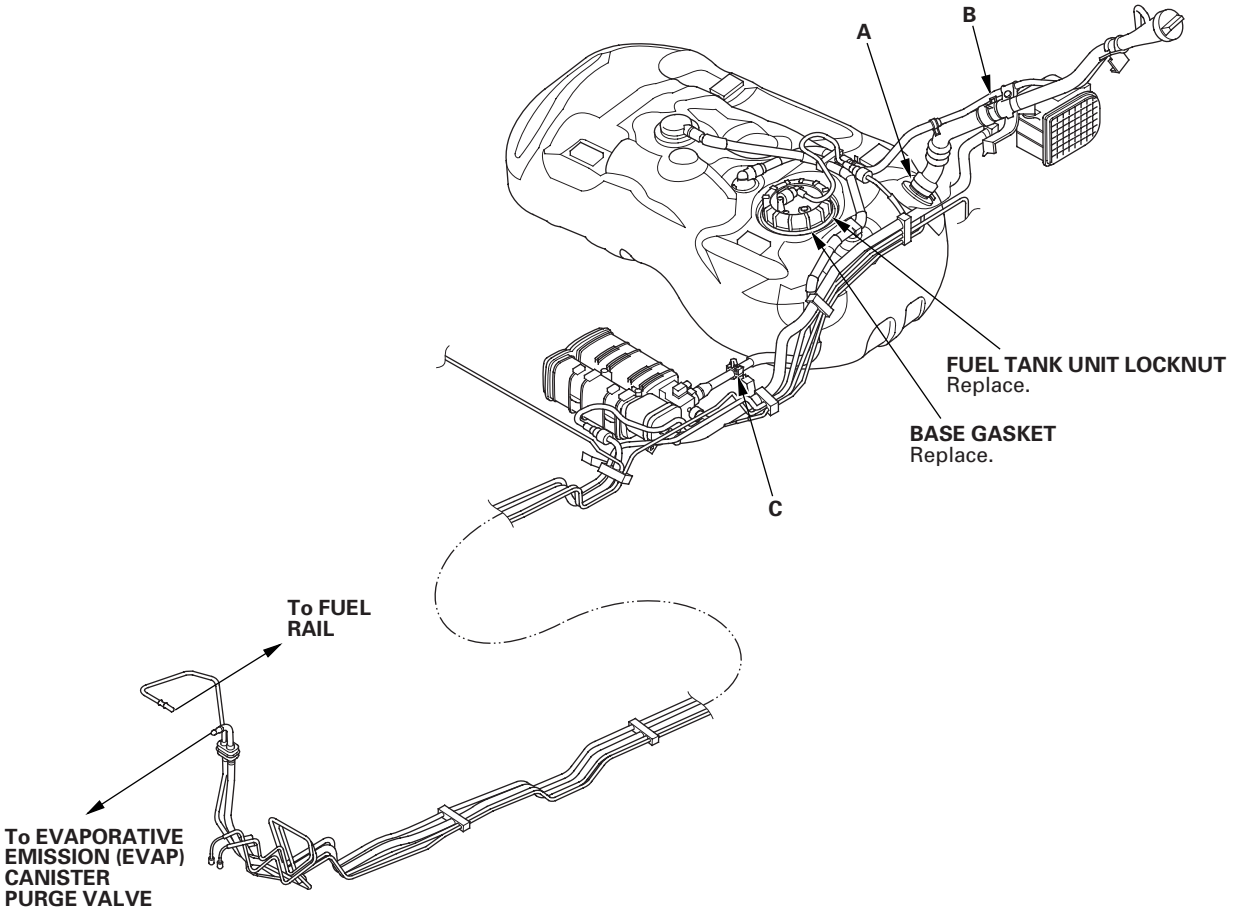
Fuel Line Inspection

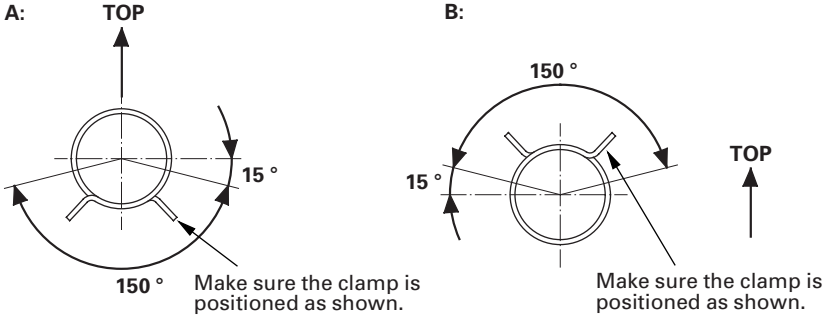
Check the fuel system lines and hoses for damage, leaks, and deterioration. Replace any damaged parts.

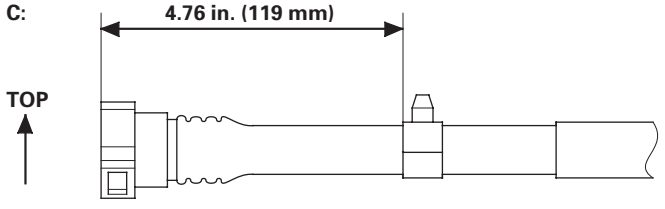


Make sure the connections are secure and the quick-connect fitting covers are firmly locked in place.

Check all clamps, and retighten if necessary.



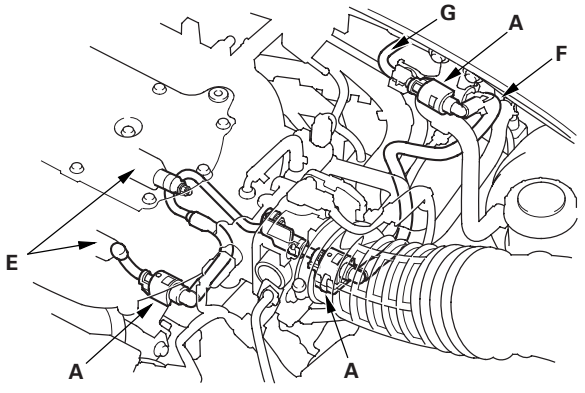


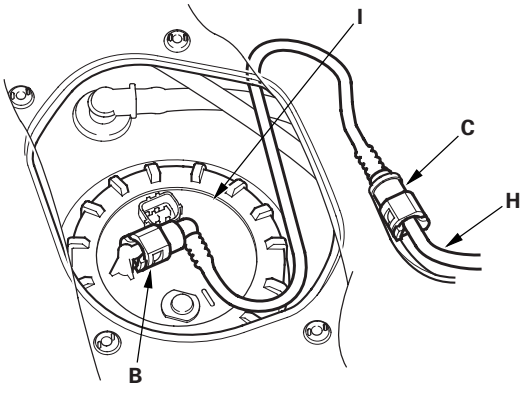


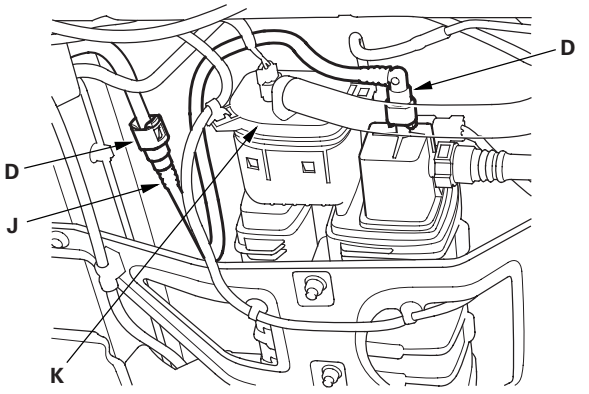
Fuel Line/Quick-Connect Fitting Precautions

The fuel line/quick-connect fittings (A), (B), (C), (D) connect the fuel rail (E) to the fuel feed hose (F), the fuel feed hose to the fuel line (G), the fuel line (H) to the fuel tank unit (I) and the fuel vapor line (J) to the EVAP canister (K). When removing or installing the fuel feed hose, fuel tank unit, or fuel tank, it is necessary to disconnect or connect the quick-connect fittings. Pay attention to the following:

- The fuel feed hoses, fuel line, and quick-connect fittings are not heat-resistant; be careful not to damage them during welding or other heat-generating procedures.
- The fuel feed hoses, fuel line, and quick-connect fittings are not acid-proof; do not touch them with a shop towel that was used for wiping battery electrolyte. Replace them if they come in contact with electrolyte or something similar.
- When connecting or disconnecting the fuel feed hoses, fuel line, and quick-connect fittings, be careful not to bend or twist them excessively. Replace them if they are damaged.







A disconnected quick-connect fitting can be reconnected, but the retainer on the mating line cannot be reused once it has been removed from the line. Replace the retainer when:

- replacing the fuel rail.
- replacing the fuel line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- replacing the EVAP purge line.
- replacing the EVAP canister.
- it has been removed from the line.
- it is damaged.

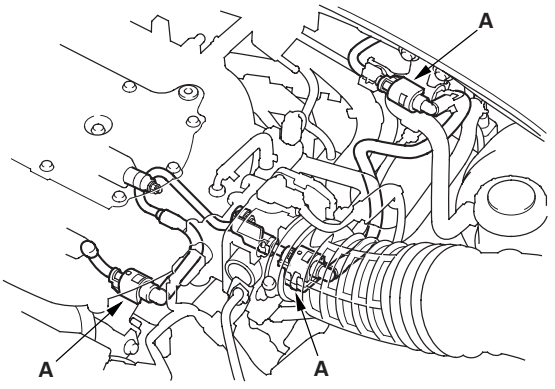
Location	Manufacturer	Retainer color	Line diameter
A	Tokai	Blue green	0.31 in. (8.0 mm)
B	Tokai	Orange	0.37 in. (9.5 mm)
C	Tokai	Blue green	0.31 in. (8.0 mm)
D	Tokai	Orange	0.37 in. (9.5 mm)

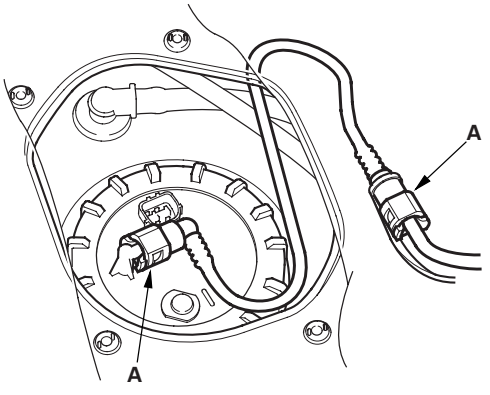
Fuel Line/Quick-Connect Fitting Removal

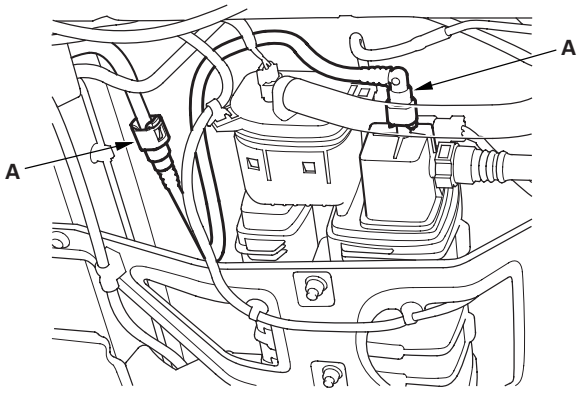
NOTE: Before you work on the fuel lines and fittings, read the ''Fuel Line/Quick-Connect Fitting Precautions'' (see page 11-292).

1. Relieve the fuel pressure (see page 11-286).

2. Check the fuel quick-connect fittings (A) for dirt, and clean them if needed.

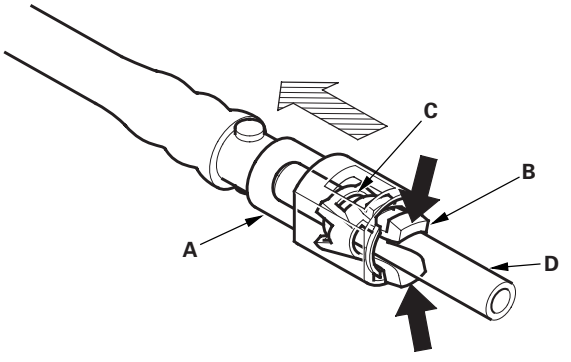






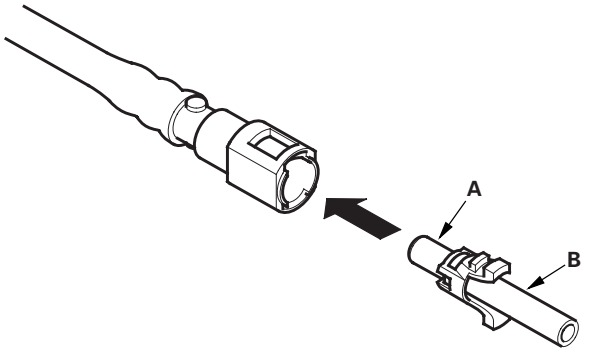
3. Place a rag or shop towel over the quick-connect fitting. Hold the connector (A) with one hand, and squeeze the retainer tabs (B) with the other hand to release them from the locking tabs (C). Pull the connector off.

   NOTE:
   - Be careful not to damage the line (D) or other parts. Do not use tools.
   - If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
   - Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.



4. Check the contact area (A) of the line (B) for dirt or damage.

   - If it is dirty, clean it.
   - If it is rusty or damaged, replace the fuel pump, fuel filter, or fuel feed line.



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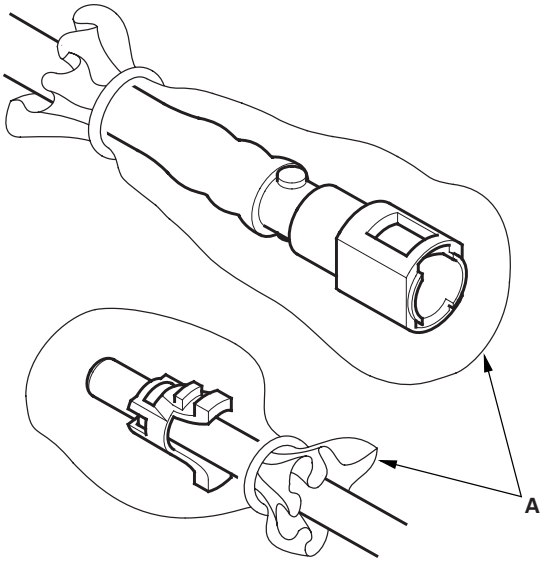
Fuel Line/Quick-Connect Fitting Removal (cont'd)

5. To prevent damage and keep foreign matter out, cover the disconnected connector and line ends with plastic bags (A).

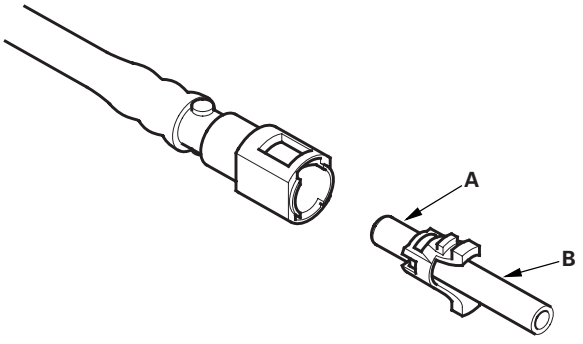
   NOTE: The retainer cannot be reused once it has been removed from the line.
   Replace the retainer when:
   - replacing the fuel rail.
   - replacing the fuel feed line.
   - replacing the fuel pump.
   - replacing the fuel filter.
   - replacing the fuel gauge sending unit.
   - replacing the EVAP purge pipe.
   - replacing the EVAP canister.
   - it has been removed from the line.
   - it is damaged.



Fuel Line/Quick-Connect Fitting Installation

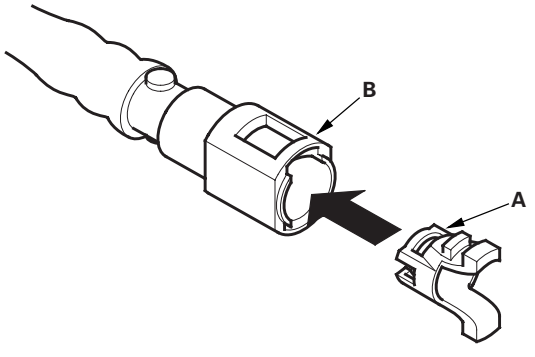
NOTE: Before you work on the fuel lines and fittings, read the ''Fuel Line/Quick-Connect Fitting Precautions'' (see page 11-292).

1. Check the contact area (A) of the line (B) for dirt or damage, and clean it if needed.

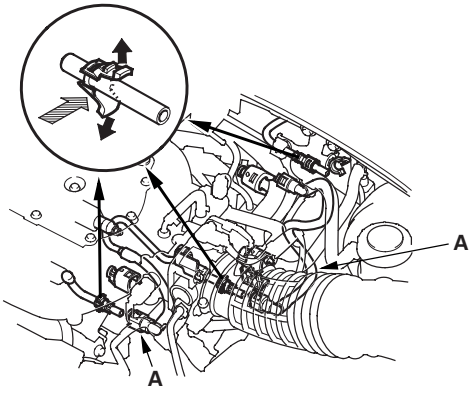


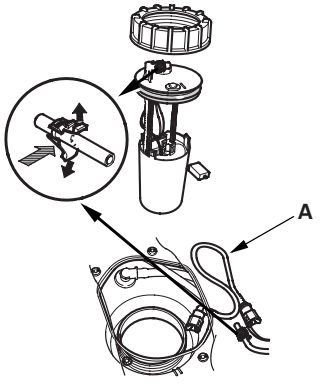
2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after:

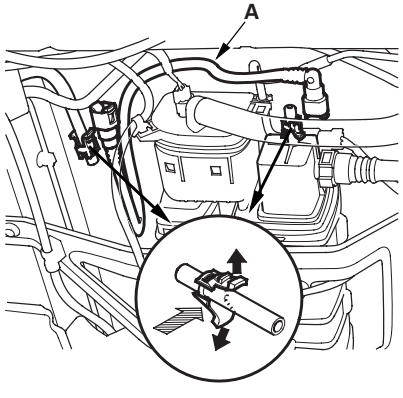
   - replacing the fuel rail.
   - replacing the fuel feed line.
   - replacing the fuel pump.
   - replacing the fuel filter.
   - replacing the fuel gauge sending unit.
   - replacing the EVAP purge pipe.
   - replacing the EVAP canister.
   - removing the retainer from the line.
   - Use the same manufacturer retainer and the same size retainer when the replacing the retainer (see page 11-292).



3. Before connecting a new fuel tube/quick-connect fitting assembly (A), remove the old retainer from the mating line.







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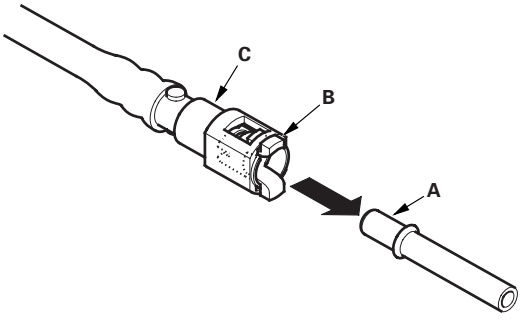
Fuel Line/Quick-Connect Fitting Installation (cont'd)

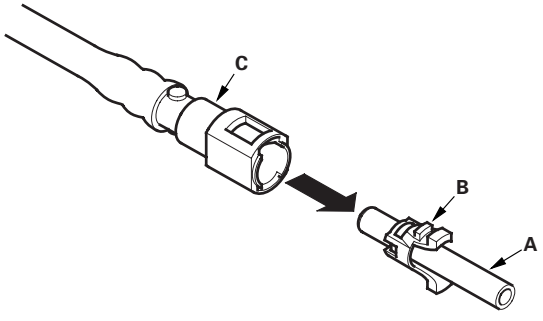
4. Align the quick-connect fittings with the line (A), and align the retainer locking tabs (B) with the connector grooves (C). Then press the quick-connect fittings onto the line until both retainer tabs lock with a clicking sound.

   NOTE: If it is hard to connect, put a small amount of new engine oil on the line end.

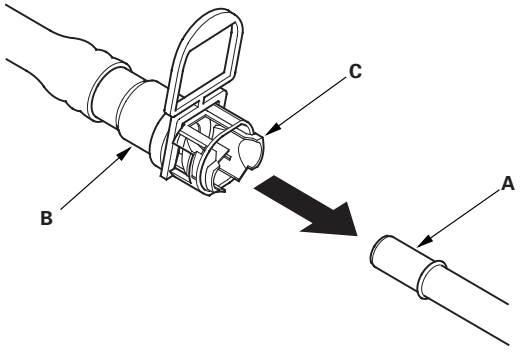
Connection with new retainer



Reconnection to existing retainer



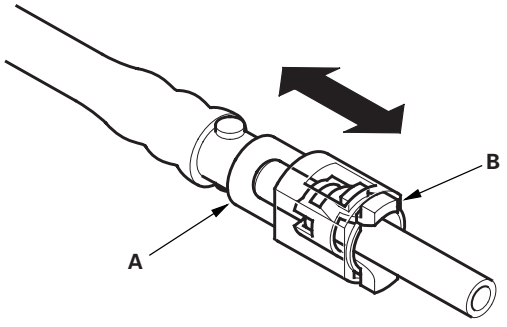
Connection to new fuel line



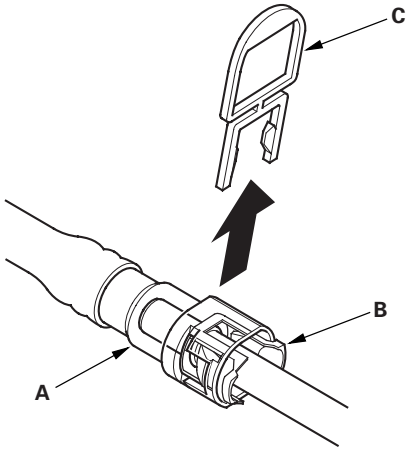
5. When you reconnect the connector with the old retainer, make sure the connection is secure and the tabs (A) are firmly locked into place; check visually and also by pulling the connector (B). When you replace the fuel line with a new one, make sure you remove the ring pull (C) upwards after you confirm the connection is secure.

   NOTE: Before you remove the ring pull, make sure the fuel line connection is secure. If the connection is not secure, the ring pull could break when you try to remove it.

Reconnection to existing retainer



Connection to new fuel line



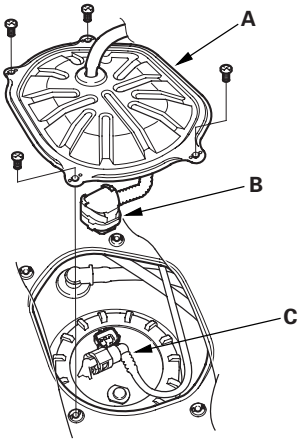
6. Reconnect the negative cable to the battery, and turn the ignition switch ON (II) (but do not operate the starter motor). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat this two or three times, and check that there is no leakage in the fuel supply system.

Fuel Tank Unit Removal and Installation

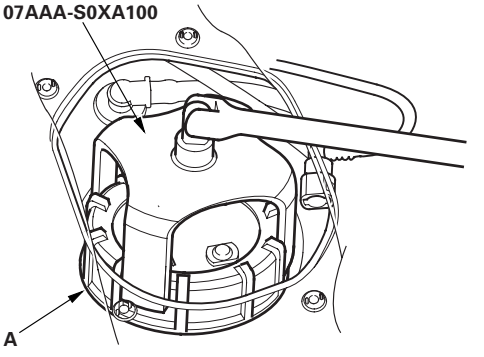
Special Tools Required
Fuel sender wrench 07AAA-S0XA100

Removal

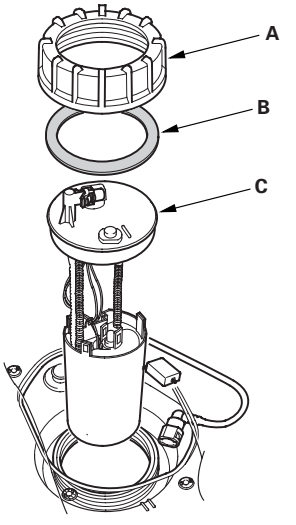
1. Relieve the fuel pressure (see page 11-286).
2. Remove the fuel fill cap.
3. Remove the rear seat-back (see page 20-119).
4. Remove the access panel (A) from the floor, then disconnect the fuel tank unit 5P connector (B).



5. Disconnect the quick-connect fitting (C) from the fuel tank unit.
6. Using the special tool, loosen the fuel tank unit locknut (A).



7. Remove the locknut (A), locknut plate (B), and the fuel tank unit (C).



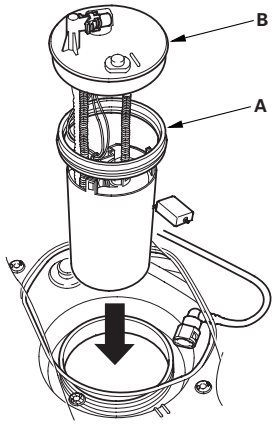
(cont'd)

Fuel Tank Unit Removal and Installation (cont'd)

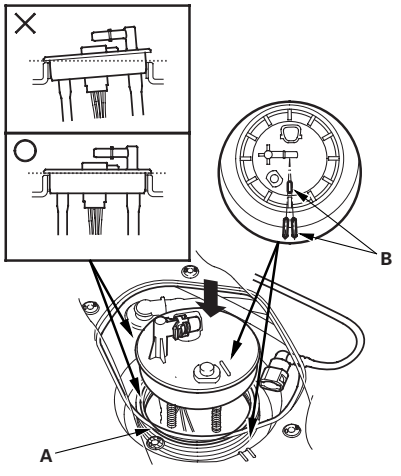
Installation

1. Temporarily attach a new base gasket (A) to the fuel tank unit (B), then insert the fuel tank unit partially into the fuel tank.

   NOTE:
   - Be careful not to damage the new base gasket.
   - Be careful not to bend the fuel gauge sending unit.
   - Do not coat the base gasket with oil.



2. Transfer the base gasket (A) from the fuel tank unit onto the fuel tank.

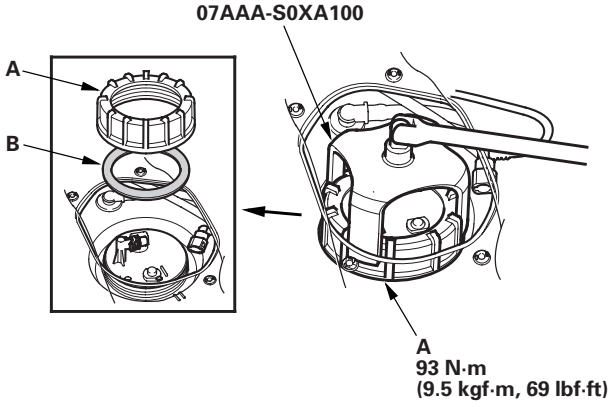


3. Align the marks (B) on the fuel tank and the fuel tank unit, then insert the fuel tank unit into the fuel tank until it sits on the base gasket.

   NOTE: To avoid a fuel leak, check the base gasket, visually or by hand, to make sure it is not pinched.

4. Using the special tool, tighten the new locknut (A) with a new locknut plate (B).

   NOTE:
   - After tightening, make sure the marks are still aligned.
   - After installation, check the base gasket, visually or by hand, to be sure it is not pinched.



5. Connect the fuel tank unit 5P connector, then connect the quick-connect fitting.

6. Reconnect the negative cable to the battery, and turn the ignition switch ON (II) (but do not operate the starter motor). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat this two or three times, then check that there is no leakage in the fuel supply system.

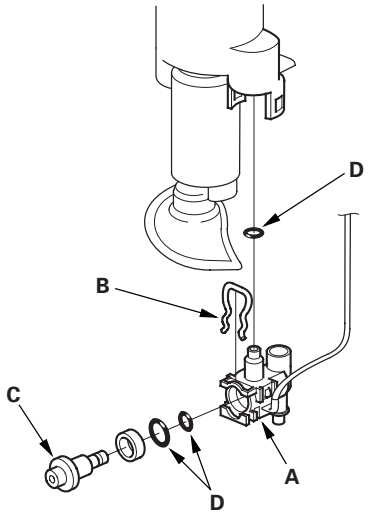
7. Install the access panel.

8. Install the rear seat-back (see page 20-119).

9. Install the fuel fill cap.

Fuel Pressure Regulator Replacement

1. Remove the fuel tank unit (see page 11-297).
2. Remove the bracket (A).



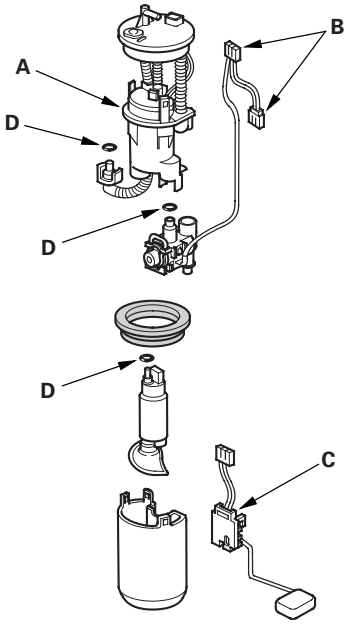
3. Remove the clip (B).
4. Remove the fuel pressure regulator (C).
5. Install the parts in the reverse order of removal with new O-rings (D).

   NOTE: Coat the O-rings with clean engine oil. Do not use any other type of oil or fluid.
   Do not pinch the O-rings during installation.

Fuel Filter Replacement

The fuel filter should be replaced whenever the fuel pressure drops below the specified value (see page 11-288), after making sure that the fuel pump and the fuel pressure regulator are OK.

1. Remove the fuel tank unit (see page 11-297).
2. Remove the fuel filter set (A).



3. Check these items before installing the fuel tank unit:

   - When connecting the wire harness, make sure the connection is secure and the connectors (B) are firmly locked into place.
   - When installing the fuel gauge sending unit (C), make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.

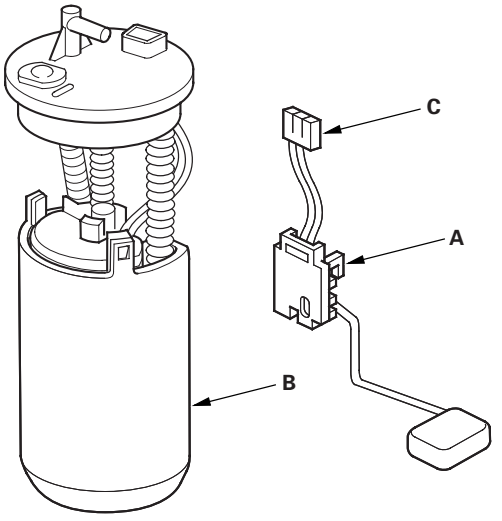
4. Install the parts in the reverse order of removal with new O-rings (D). When installing the fuel tank unit, align the marks on the unit and the fuel tank (see page 11-298).

   NOTE: Coat the O-rings with clean engine oil.

Fuel Pump/Fuel Gauge Sending Unit Replacement

1. Remove the fuel tank unit (see page 11-297).

2. Remove the fuel level sensor (fuel sending unit) (A) from the fuel tank unit (B).



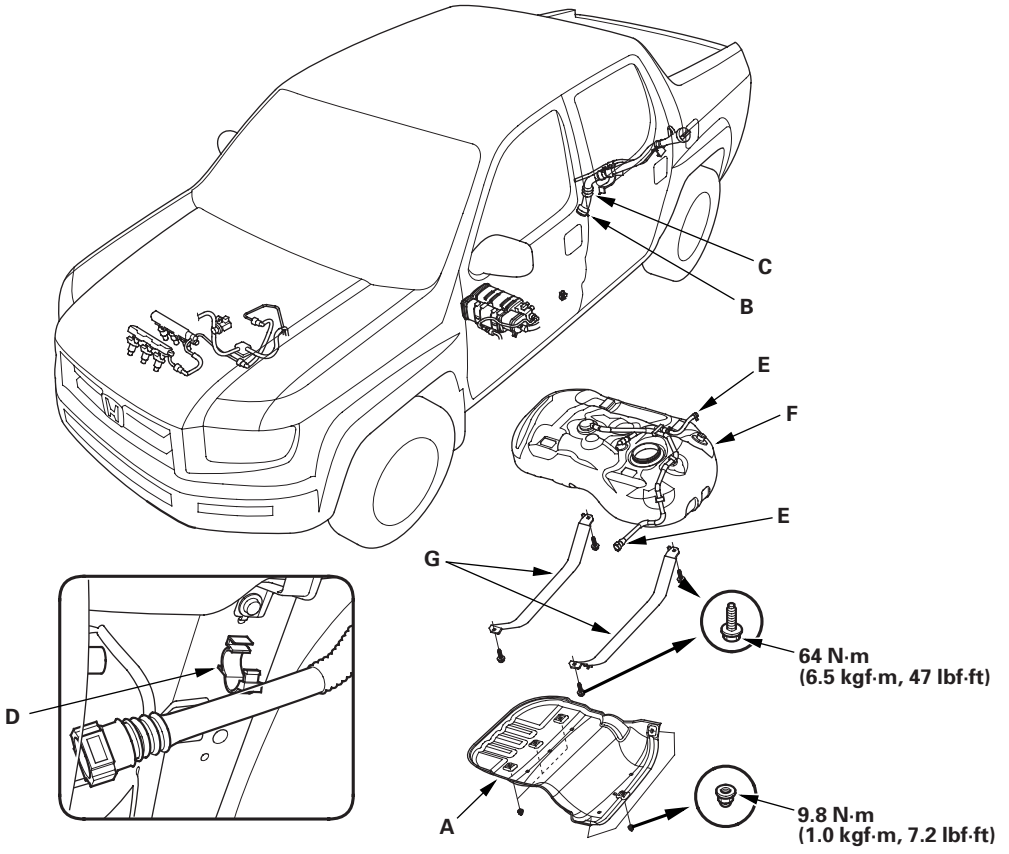
3. Check these items before installing the fuel tank.

   - When connecting the wire harness, make sure the connection is secure and the connectors (C) is firmly locked into place.
   - When installing the fuel gauge sending unit, make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.

4. Install the parts in the reverse order of removal. When installing the fuel tank unit, align the marks on the unit and the fuel tank (see page 11-298).

Fuel Tank Replacement

1. Drain the fuel tank (see page 11-289).
2. Jack up the vehicle, and support it with jackstands.
3. Remove the exhaust pipe (see page 9-7).
4. Remove the propeller shaft (see page 16-40), and support it with jackstands.
5. Remove the fuel tank protector (A).

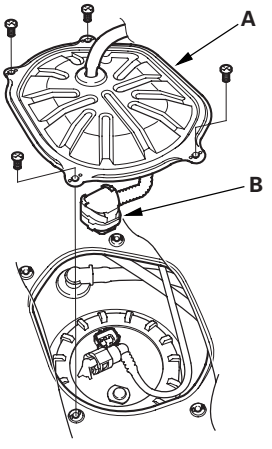


6. Loosen the clamp (B), and disconnect the tube (C).
7. Open the clamp (D).
8. Disconnect the hoses (E). Slide back the clamps, then twist the hoses as you pull to avoid damaging them.
9. Place a jack or other support under the tank (F).
10. Remove the strap bolts and the straps (G).
11. Remove the fuel tank.
12. Install the parts in the reverse order of removal.

Fuel Gauge Sending Unit Test

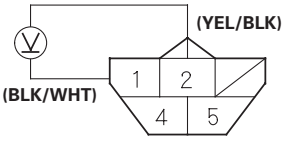
NOTE: For the fuel gauge system circuit diagram, refer to the Gauges Circuit Diagram (see page 22-247).

1. Check the No. 21 METER (7.5 A) fuse in the under-dash fuse/relay box before testing.
2. Do the B-CAN system diagnosis Test Mode A troubleshooting (see page 22-99).
   - If no problem is found, go to step 3.
   - If DTC B1175 (see page 22-260) is indicated, go to the indicated DTC's troubleshooting.
3. Turn the ignition switch OFF.
4. Remove the rear seat-back (see page 20-119).
5. Remove the access panel (A) from the floor.



6. Disconnect the fuel tank unit 5P connector (B).
7. Measure voltage between fuel tank unit 5P connector terminals No. 1 and No. 2 with the ignition switch ON (II). There should be battery voltage.
   - If the voltage is OK, go to step 8.
   - If the voltage is not as specified, check for:
     – a short in the YEL/BLK wire to ground.
     – an open in the YEL/BLK or BLK/WHT wire.

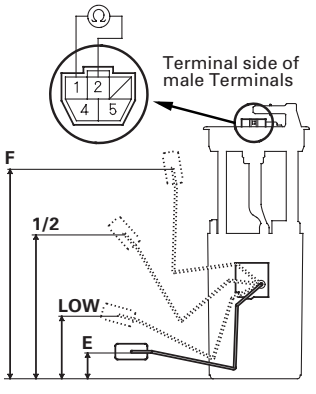
FUEL TANK UNIT 5P CONNECTOR



Wire side of female terminals

8. Turn the ignition switch OFF.
9. Remove the fuel tank unit from the fuel tank (see page 11-297).
10. Measure resistance between fuel tank unit 5P connector terminals No. 1 and No. 2 with the float at E (EMPTY), LOW (LOW FUEL INDICATOR), 1/2 (HALF FULL), and F (FULL) positions.
    If you do not get the following readings, replace the fuel gauge sending unit (see page 11-300).

Float Position	F 9.6 in. (243.3 mm)	1/2 6.6 in. (166.3 mm)	LOW 2.9 in. (72.5 mm)	E 1.2 in. (30.1 mm)
Resistance (Ω)	19 to 21	209.4 to 219.4	509 to 618.4	770 to 790



11. Reconnect the fuel tank unit 5P connector.

12. Remove the No. 15 BACK UP (40 A) fuse from the under-hood fuse/relay box for at least 10 seconds, then reinstall it.

13. Turn the ignition switch ON (II).

14. Check that the pointer of the fuel gauge indicates ''F'' with the float at F.

    • If the pointer of the fuel gauge does not indicate ''F'' replace the gauge control module.
    • If the gauge is OK, the test is complete.

    NOTE:
    • The pointer of the fuel gauge returns to the bottom of the gauge dial when the ignition switch is OFF, regardless of the fuel level.
    • Remove the No. 15 BACK UP (40 A) fuse from the under-hood fuse/relay box for at least 10 seconds after completing troubleshooting, otherwise it may take up to 20 minutes for the fuel gauge to indicate the correct fuel level.

Low Fuel Indicator Test

1. Do the gauge control module self-diagnostic function procedure (see page 22-244).

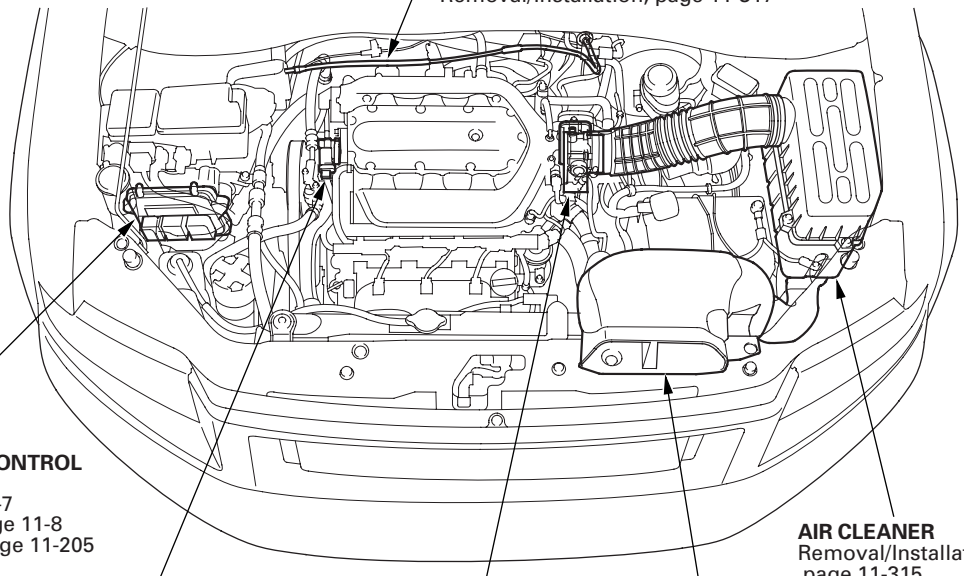
    • If the low fuel indicator flashes, go to step 2.
    • If the low fuel indicator does not flash, replace the gauge control module (see page 22-263).

2. Do the B-CAN system diagnosis Test Mode A troubleshooting (see page 22-99).

    • If any DTCs are indicated, do the indicated DTC's troubleshooting.
    • If no DTCs are indicated, go to step 3.

3. Do the fuel gauge sending unit test (see page 11-302).

Component Location Index



THROTTLE CABLE
Adjustment, page 11-317
Removal/Installation, page 11-317

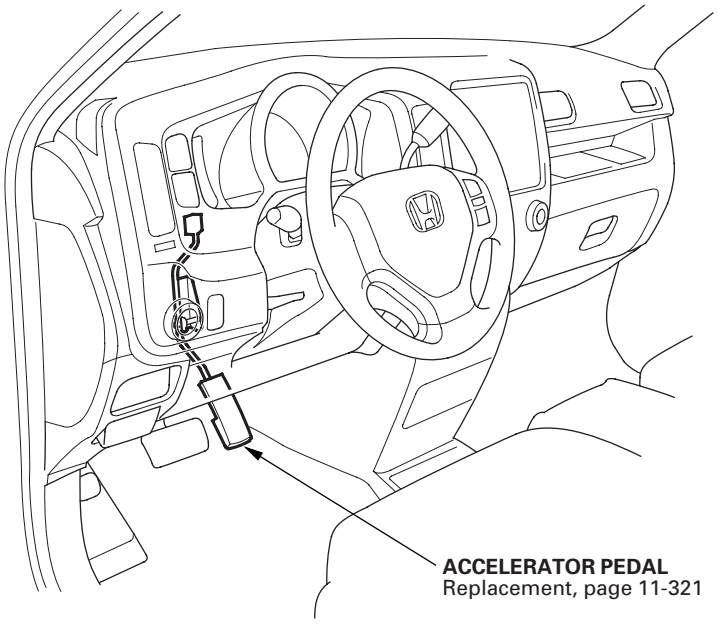
POWERTRAIN CONTROL MODULE (PCM)
Update, page 11-7
Substitution, page 11-8
Replacement, page 11-205

INTAKE MANIFOLD TUNING (IMT) ACTUATOR
Replacement, page 11-316

THROTTLE BODY
Test, page 11-314
Cleaning, page 11-314
Removal/Installation, page 11-319
Disassembly/Reassembly, page 11-320

AIR INTAKE DUCT
Removal/Installation, page 11-316

AIR CLEANER
Removal/Installation, page 11-315
Element Inspection/Replacement, page 11-315



ACCELERATOR PEDAL
Replacement, page 11-321

DTC P1077: IMT Valve Stuck in High RPM Position

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle.
4. Check the IMT VALVE CMD in the DATA LIST with the HDS.

   Is CLOSE indicated?

   YES—Go to step 5.

   NO—Go to step 31.
5. Check the IMT VALVE SW in the DATA LIST with the HDS.

   Is OPEN indicated?

   YES—Go to step 6.

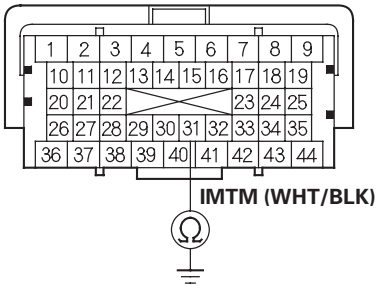
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IMT actuator and the PCM. ■
6. Turn the ignition switch OFF.
7. Disconnect the IMT actuator 5P connector.
8. Turn the ignition switch ON (II).
9. Check the IMT VALVE SW in the DATA LIST with the HDS.

   Is CLOSE indicated?

   YES—Go to step 14.

   NO—Go to step 10.
10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector B (44P).
13. Check for continuity between PCM connector terminal B31 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

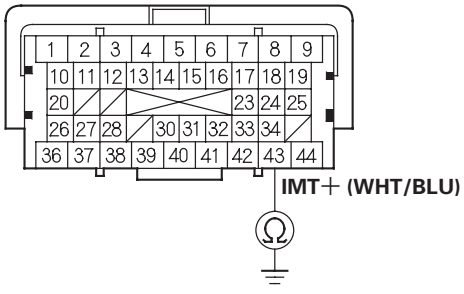
Is there continuity?

YES—Repair short in the wire between the PCM (B31) and the IMT actuator, then go to step 25.

NO—Go to step 31.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect PCM connector C (44P).
17. Check for continuity between PCM connector terminal C43 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (C43) and the IMT actuator, then go to step 25.

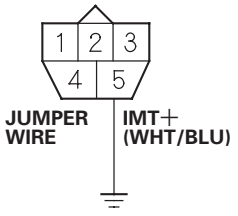
NO—Go to step 18.

(cont'd)

DTC Troubleshooting (cont'd)

18. Connect IMT actuator 5P connector terminal No. 5 to body ground with a jumper wire.

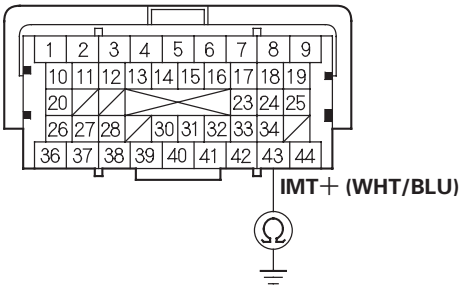
IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

19. Check for continuity between PCM connector terminal C43 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

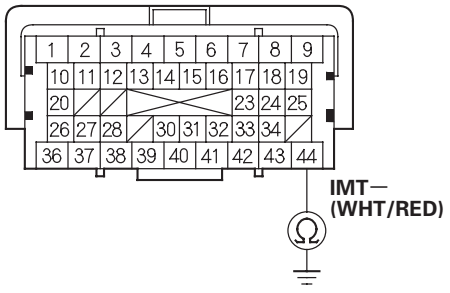
Is there continuity?

YES—Go to step 20.

NO—Repair open in the wire between the PCM (C43) and the IMT actuator, then go to step 25.

20. Check for continuity between PCM connector terminal C44 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

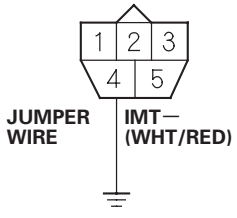
Is there continuity?

YES—Repair short in the wire between the PCM (C44) and the IMT actuator, then go to step 25.

NO—Go to step 21.

21. Connect IMT actuator 5P connector terminal No. 4 to body ground with a jumper wire.

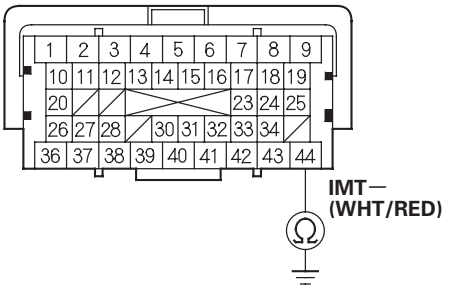
IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

22. Check for continuity between PCM connector terminal C44 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the PCM (C44) and the IMT actuator, then go to step 25.

23. Remove the IMT actuator (see page 11-316).

24. Move the IMT valve by hand.

Does it move smoothly?

YES—Substitute a known-good IMT actuator (see page 11-316), then go to step 25 and recheck. If DTC P1077 is not indicated, replace the IMT actuator (see page 11-316), then go to step 25. If DTC P1077 is indicated, go to step 31.

NO—Remove the intake manifold cover (see step 1 on page 9-3), and repair the stuck valve. If necessary, replace the intake manifold (see page 9-2), then go to step 25.

25. Reconnect all connectors.

26. Turn the ignition switch ON (II).

27. Reset the PCM with the HDS.

28. Do the PCM idle learn procedure (see page 11-273).

29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1077 indicated?

YES—Check for poor connections or loose terminals at the IMT actuator and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—Go to step 30.

30. Monitor the OBD STATUS for DTC P1077 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 29, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

31. Turn the ignition switch OFF.

32. Reconnect all connectors.

33. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

(cont'd)

DTC Troubleshooting (cont'd)

34. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1077 indicated?

    YES—Check for poor connections or loose terminals at the IMT actuator and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 35.

35. Monitor the OBD STATUS for DTC P1077 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 34, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P1078: IMT Valve Stuck in Low RPM Position

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and hold the engine speed above 4,000 rpm.
4. Check the IMT VALVE CMD in the DATA LIST with the HDS.

   Is OPEN indicated?

   YES—Go to step 5.

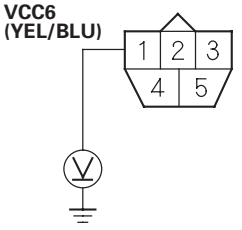
   NO—Go to step 37.
5. Check the IMT VALVE SW in the DATA LIST with the HDS.

   Is CLOSE indicated?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IMT actuator and the PCM. ■
6. Let the engine idle, then turn the ignition switch OFF.
7. Disconnect the IMT actuator 5P connector.
8. Turn the ignition switch ON (II).
9. Measure voltage between IMT actuator 5P connector terminal No. 1 and body ground.

IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

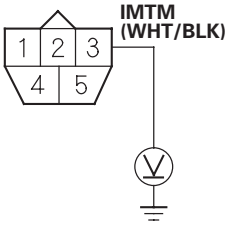
Is there about 5 V?

YES—Go to step 10.

NO—Repair open in the wire between the PCM (C12) and the IMT actuator, then go to step 29.

10. Measure voltage between IMT actuator 5P connector terminal No. 3 and body ground.

IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 11.

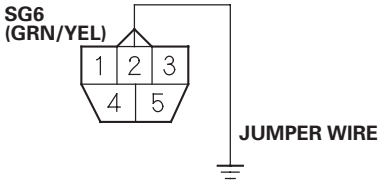
NO—Go to step 16.

(cont'd)

DTC Troubleshooting (cont'd)

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector C (44P).
14. Connect IMT actuator 5P connector terminal No. 2 to body ground with a jumper wire.

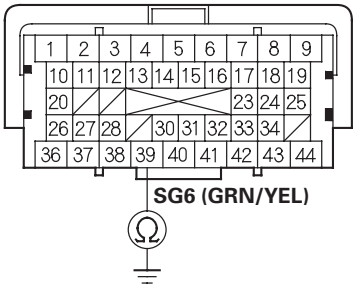
IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

15. Check for continuity between PCM connector terminal C39 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

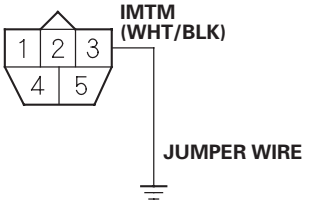
Is there continuity?

YES—Go to step 21.

NO—Repair open in the wire between the PCM (C39) and the IMT actuator, then go to step 29.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector B (44P).
19. Connect IMT actuator 5P connector terminal No. 3 to body ground with a jumper wire.

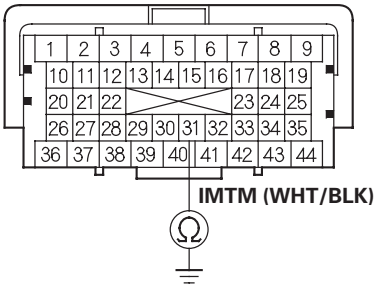
IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

20. Check for continuity between PCM connector terminal B31 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

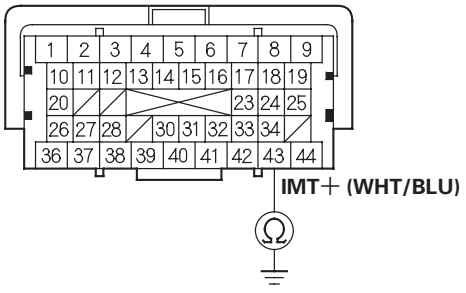
Is there continuity?

YES—Go to step 36.

NO—Repair open in the wire between the PCM (B31) and the IMT actuator, then go to step 29.

21. Check for continuity between PCM connector terminal C43 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

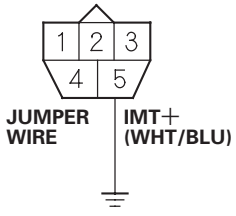
Is there continuity?

YES—Repair short in the wire between the PCM (C43) and the IMT actuator, then go to step 29.

NO—Go to step 22.

22. Connect IMT actuator 5P connector terminal No. 5 to body ground with a jumper wire.

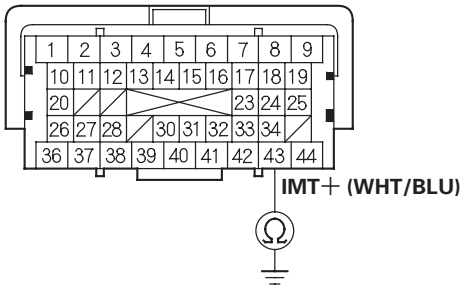
IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

23. Check for continuity between PCM connector terminal C43 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

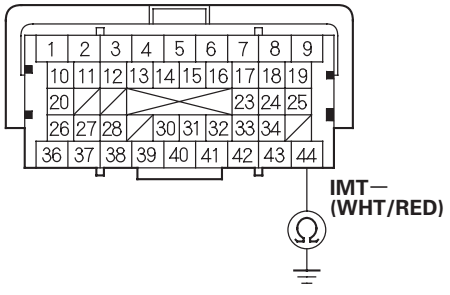
Is there continuity?

YES—Go to step 24.

NO—Repair open in the wire between the PCM (C43) and the IMT actuator, then go to step 29.

24. Check for continuity between PCM connector terminal C44 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (C44) and the IMT actuator, then go to step 29.

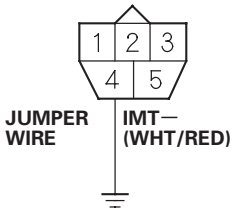
NO—Go to step 25.

(cont'd)

DTC Troubleshooting (cont'd)

25. Connect IMT actuator 5P connector terminal No. 4 to body ground with a jumper wire.

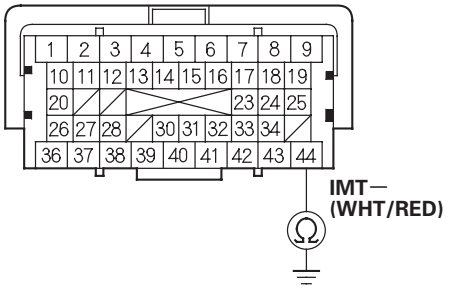
IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

26. Check for continuity between PCM connector terminal C44 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (C44) and the IMT actuator, then go to step 29.

27. Remove the IMT actuator (see page 11-316).

28. Move the IMT valve by hand.

Does it move smoothly?

YES—Substitute a known-good IMT actuator (see page 11-316), then go to step 29 and recheck. If DTC P1078 is not indicated, replace the IMT actuator (see page 11-316), then go to step 29. If DTC P1078 is indicated, go to step 36.

NO—Remove the intake manifold cover (see step 1 on page 9-3), and repair the stuck valve. If necessary, replace the intake manifold (see page 9-2), then go to step 29.

29. Reconnect all connectors.

30. Turn the ignition switch ON (II).

31. Reset the PCM with the HDS.

32. Do the PCM idle learn procedure (see page 11-273).

33. Start the engine, and hold the engine speed at 4,000 rpm for 10 seconds, then let it idle.

34. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1078 indicated?

YES—Check for poor connections or loose terminals at the IMT actuator and the PCM, then go to step 1.

NO—Go to step 35.

35. Monitor the OBD STATUS for DTC P1078 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 34, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

36. Reconnect all connectors.

37. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

38. Start the engine, and hold the engine speed at 4,000 rpm for 10 seconds, then let it idle.

39. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1078 indicated?

    YES—Check for poor connections or loose terminals at the IMT actuator and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 38. If the PCM was substituted, go to step 1.

    NO—Go to step 40.

40. Monitor the OBD STATUS for DTC P1078 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 39, go to the indicated DTC's troubleshooting. ■

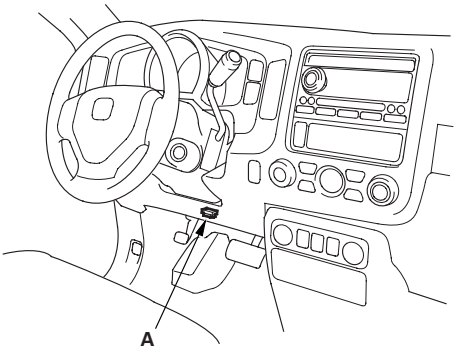
    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 38. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 38.

Throttle Body Test

Carbon Accumulation Check

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble codes (DTCs).

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



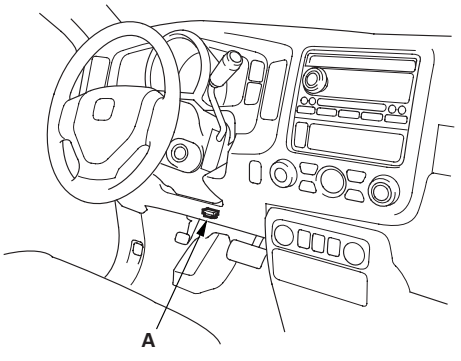
2. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

3. Check the REL TP SENSOR in the DATA LIST with the HDS. The reading should be below 2.54 deg. If it is not, clean the throttle body (see page 11-314).

Throttle Position Learning Check

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble codes (DTCs).

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Select the INSPECTION MENU with the HDS.

3. Do the TP POSITION CHECK in the ETCS TEST. If needed, clean the throttle body (see page 11-314).

Throttle Body Cleaning

⚠CAUTION

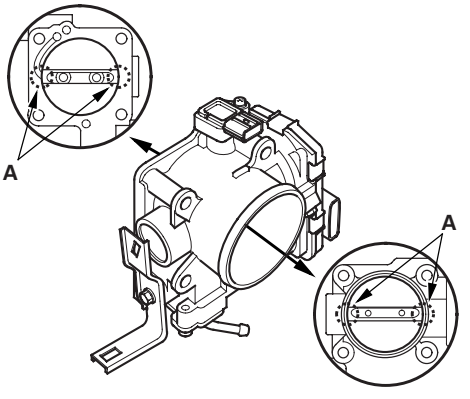
Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

1. Check for damage to the air cleaner. If the air cleaner is damaged, replace it (see page 11-315).

2. Remove the throttle body (see page 11-319).

3. Clean off the carbon from the throttle valve and inside the throttle body with a paper towel soaked in throttle plate and induction cleaner.

   NOTE:
   - Remove the throttle body to clean it.
   - Be careful not to pinch your fingers.
   - To avoid removing the molybdenum coating, do not clean the bearing area of the throttle shaft (A).
   - Do not spray throttle plate and induction cleaner directly on the throttle body.
   - Use Honda genuine throttle plate and induction cleaner.



4. Install the throttle body (see page 11-319).

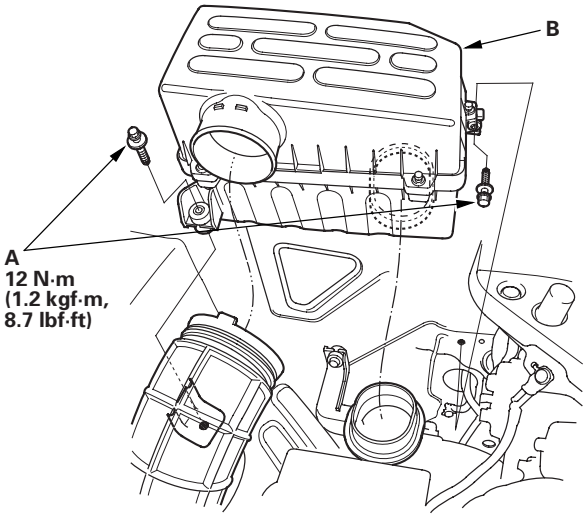
5. Reset the PCM with the HDS.

6. Turn the ignition switch ON (II), and wait 2 seconds.

7. Do the PCM idle learn procedure (see page 11-273).

Air Cleaner Removal/Installation

1. Remove the bolts (A).

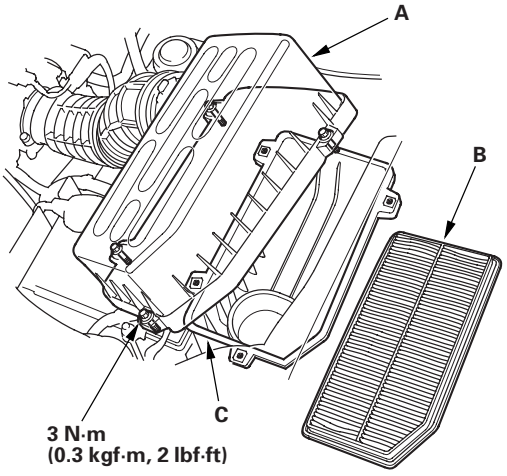


2. Remove the air cleaner (B).

3. Install the parts in the reverse order of removal.

Air Cleaner Element Inspection/ Replacement

1. Open the air cleaner housing cover (A).



2. Remove the air cleaner element (B) from the air cleaner housing (C).

3. Check the air cleaner element for damage or clogging. If there is damage or clogging, replace the air cleaner element.

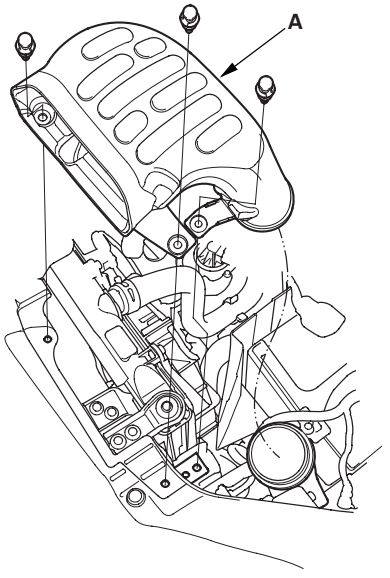
   NOTE: Do not use compressed air to clean the air cleaner element.

4. Install the parts in the reverse order of removal.

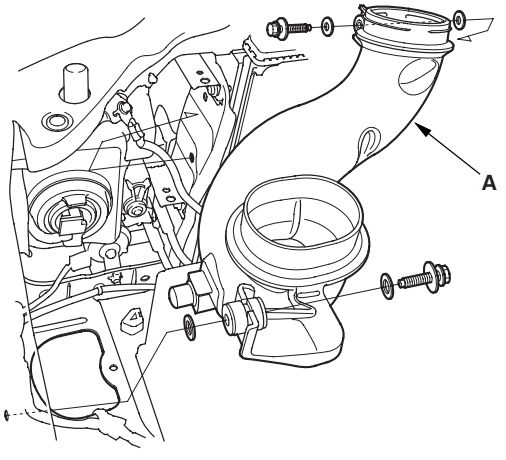
   NOTE: If the maintenance minder indicated the air cleaner element required replacement, check for other items that may also be displayed in the maintenance minder main items (see page 3-7) and the sub items (see page 3-8) before resetting the maintenance minder.

Air Intake Duct Removal/ Installation

1. Remove the air cleaner (see page 11-315).
2. Remove air intake duct B (A).



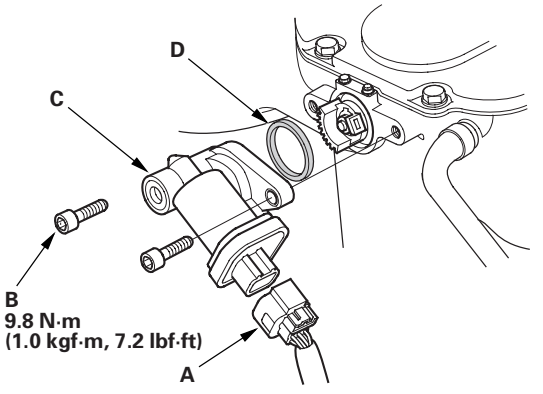
3. Remove air intake duct A (A).



4. Install the parts in the reverse order of removal.

IMT Actuator Replacement

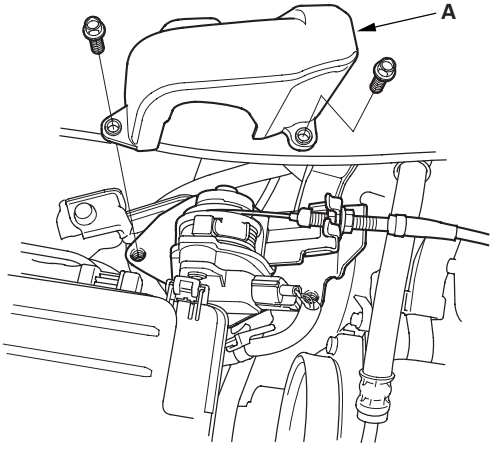
1. Remove the intake manifold cover (see step 1 on page 9-3).
2. Disconnect the IMT actuator 5P connector (A).



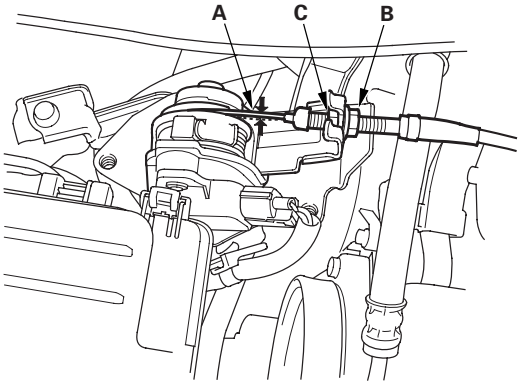
3. Remove the bolts (B) and the IMT actuator (C).
4. Install the parts in the reverse order of removal with a new O-ring (D).

Throttle Cable Adjustment

1. Remove the throttle cable cover (A).



2. Check cable free play at the throttle linkage. Cable free play (A) should be 10—12 mm (3/8—1/2 in.).



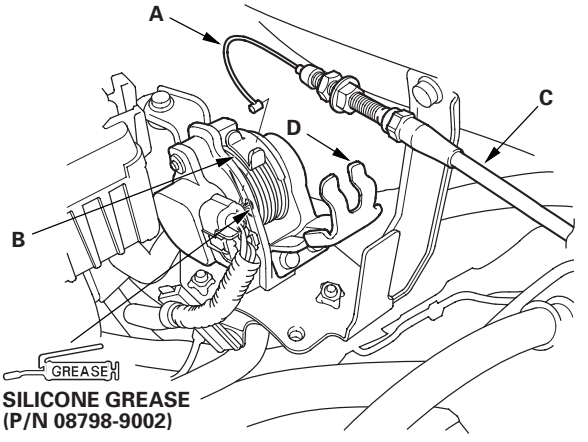
3. If the free play is not within spec (10—12 mm, 3/8—1/2 in.), loosen the locknut (B), turn the adjusting nut (C) until the free play is as specified, then retighten the locknut.

4. With the cable properly adjusted, check the throttle link to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle link to be sure it returns to the idle position whenever you release the accelerator pedal.

Throttle Cable Removal/Installation

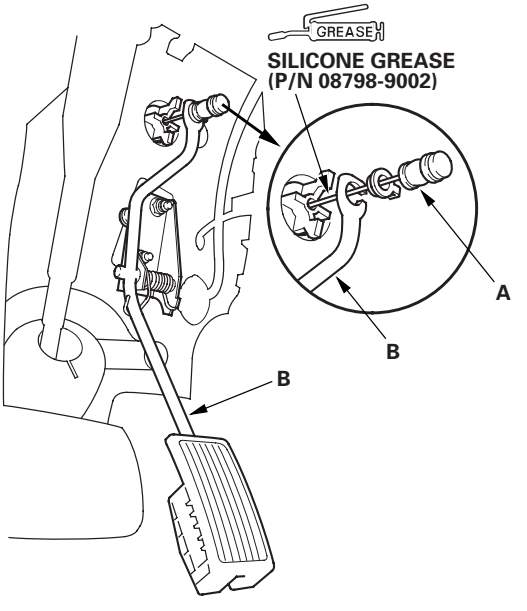
1. Remove the throttle cable cover (see page 11-317).

2. Fully open the throttle valve, then remove the throttle cable (A) from the throttle link (B).



3. Remove the cable housing (C) from the cable bracket (D).

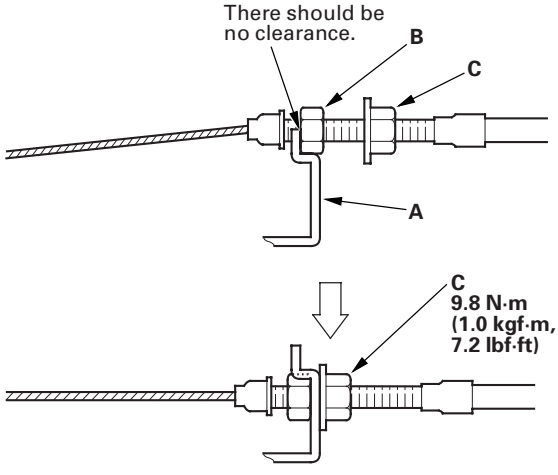
4. Remove the throttle cable (A) from the accelerator pedal (B).



(cont'd)

Throttle Cable Removal/Installation (cont'd)

5. Install the parts in the reverse order of removal.
6. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
7. Hold the cable, removing all slack from it.
8. Set the cable on the bracket (A).
   Turn the adjusting nut (B) until its free play is 0 mm.



9. Position the adjusting nut on the other side of the bracket, then tighten the locknut (C).
10. Check the throttle cable free play (see step 2 on page 11-317).
11. With the cable properly adjusted, check the throttle link to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle link to be sure it returns whenever you release the accelerator pedal.

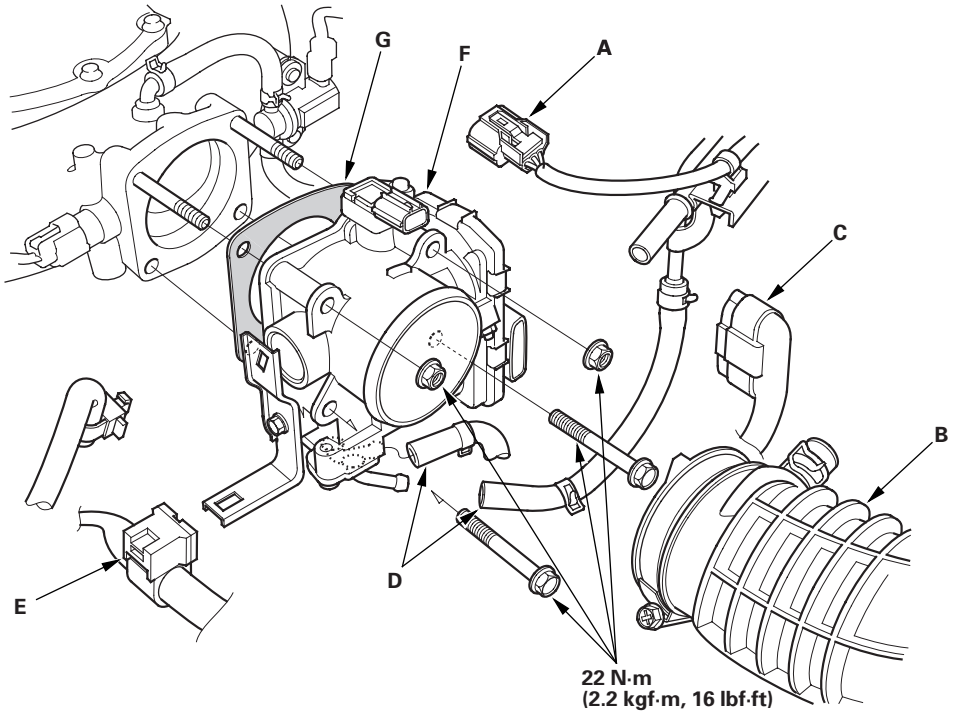
Throttle Body Removal/Installation

⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: If you are replacing the throttle body, begin at step 1. If you are removing the throttle body temporarily, begin at step 4.

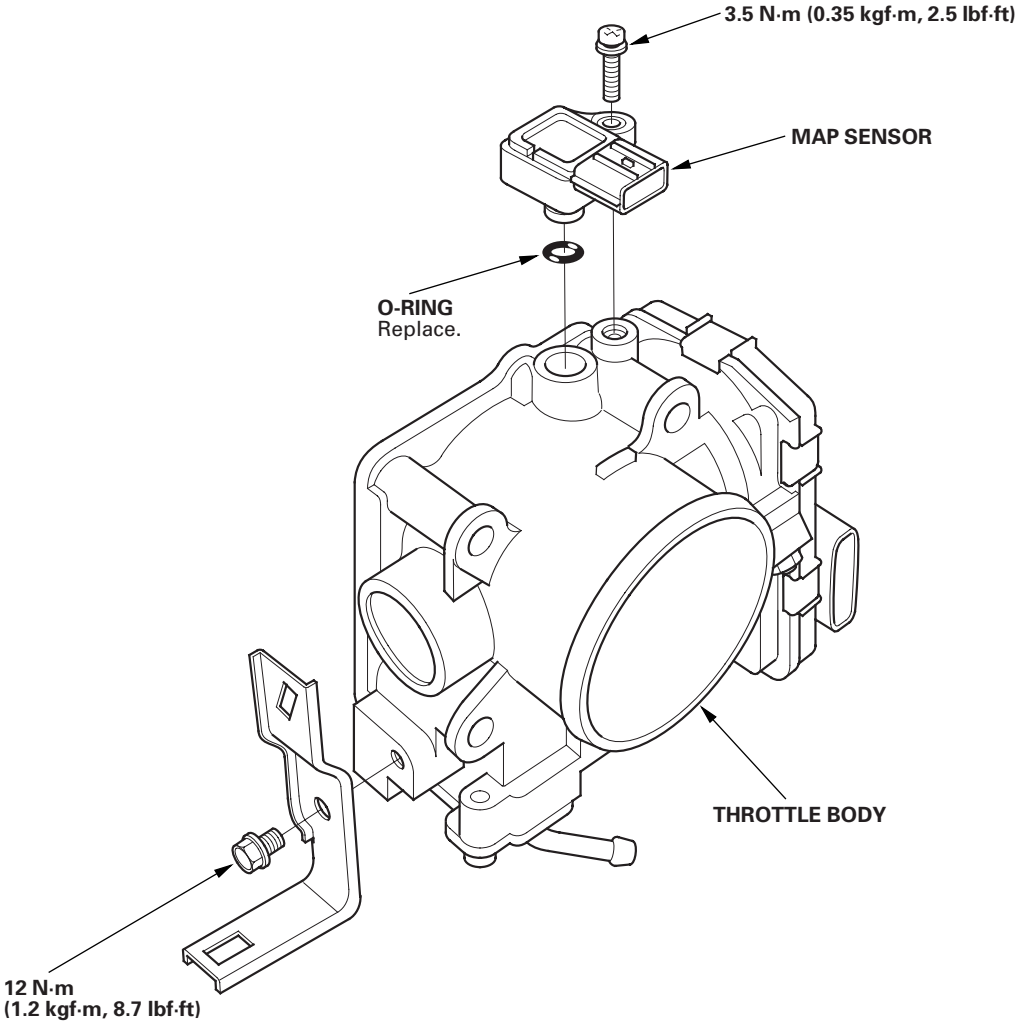
1. Connect the HDS while the engine is stopped.
2. Select the INSPECTION MENU with the HDS.
3. Do the TP LEARNING CHECK in the ETCS TEST.
4. Disconnect the MAP sensor connector (A).



5. Remove the intake air duct (B).
6. Disconnect the throttle body connector (C).
7. Disconnect and plug the water bypass hoses (D).
8. Remove the harness clip (E) and the throttle body (F).
9. Install the parts in the reverse order of removal with a new gasket (G).

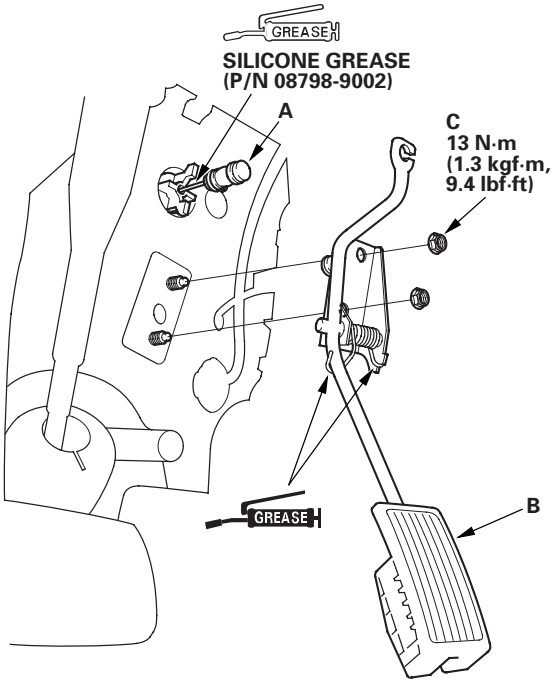
NOTE:
- Do the PCM idle learn procedure after the throttle body has been replaced (see page 11-273).
- Refill the radiator with engine coolant (see page 10-6).

Throttle Body Disassembly/Reassembly



Accelerator Pedal Replacement

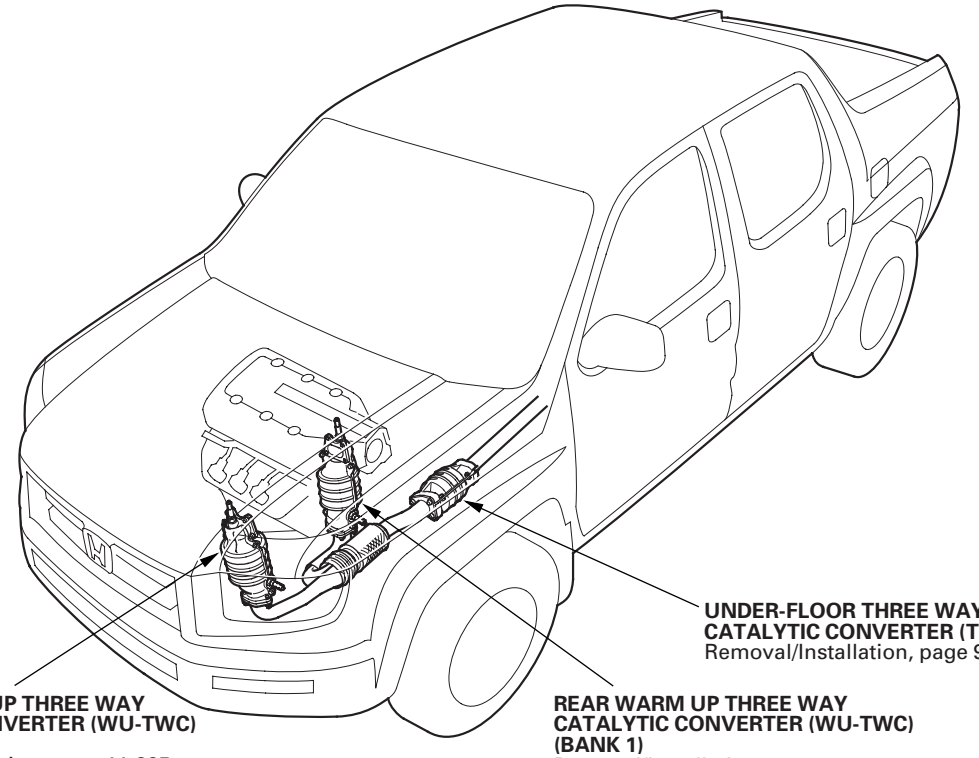
1. Remove the throttle cable (A) from the accelerator pedal (B).



2. Remove the nuts (C) and the accelerator pedal.
3. Install the parts in the reverse order of removal.

Catalytic Converter System

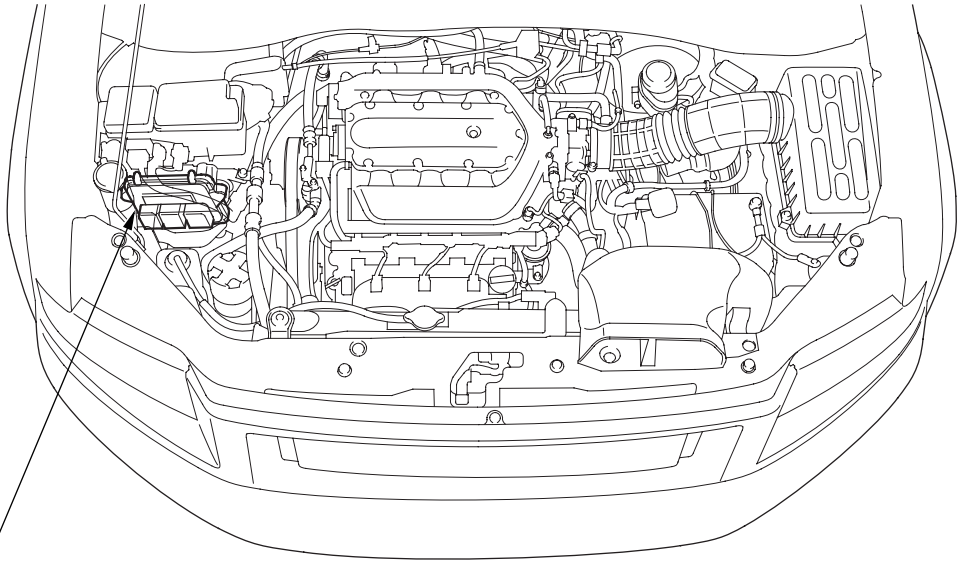
Component Location Index



UNDER-FLOOR THREE WAY CATALYTIC CONVERTER (TWC)
Removal/Installation, page 9-7

FRONT WARM UP THREE WAY CATALYTIC CONVERTER (WU-TWC) (BANK 2)
Removal/Installation, page 11-325

REAR WARM UP THREE WAY CATALYTIC CONVERTER (WU-TWC) (BANK 1)
Removal/Installation, page 11-325



POWERTRAIN CONTROL MODULE (PCM)
Update, page 11-7
Substitution, page 11-8
Replacement, page 11-205

DTC Troubleshooting

DTC P0420: Rear Bank Catalyst System Efficiency Below Threshold (Bank 1)

DTC P0430: Front Bank Catalyst System Efficiency Below Threshold (Bank 2)

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If some of the DTCs listed below are stored at the same time as DTC P0420 and/or P0430*, troubleshoot those DTCs first, then recheck for DTC P0420 and/or P0430*.
  P0137, P0138, P0157, P0158, P2270, P2271, P2272*, P2273*: Secondary HO2S (Sensor 2)
  P0141, P0161: Secondary HO2S (Sensor 2) heater
- Poor quality fuel can cause these DTCs.
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
   - Transmission in D position
   - Vehicle speed between 45—75 mph (72—120 km/h) for 5 minutes or more
   - Maintain the vehicle speed at 55 mph (88 km/h) for 5 minutes or more with cruise control set
5. Monitor the OBD STATUS for DTC P0420 and/or P0430* in the DTCs MENU with the HDS.

   Does the screen indicate EXECUTING?

   YES—Go to step 6.

   NO—Go to step 4 and recheck.
6. Continue test driving until a result comes on.
7. Monitor the OBD STATUS for DTC P0420 and/or P0430* in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 8.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 4 and recheck.
8. Turn the ignition switch OFF.
9. Replace the WU-TWC:
   - For DTC P0420, replace the rear WU-TWC (Bank 1) (see page 11-326),
   - For DTC P0430, replace the front WU-TWC (Bank 2) (see page 11-325),
10. Turn the ignition switch ON (II).
11. Reset the PCM with the HDS.
12. Do the PCM idle learn procedure (see page 11-273).

(cont'd)

DTC Troubleshooting (cont'd)

13. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

14. Test-drive for about 10 minutes, continually changing the vehicle speed.

15. Check the CATA MONITOR CONDITION B1 (B2)* in the DATA LIST with the HDS.

    Is the condition OK?

    YES—Go to step 16.

    NO—Go to step 13 and recheck.

16. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
    - Transmission in D position
    - Vehicle speed at 55 mph (88 km/h) for 5 minutes or more with cruise control set

17. Monitor the OBD STATUS for DTC P0420 and/or P0430* in the DTCs MENU with the HDS.

    Does the screen indicate EXECUTING?

    YES—Go to step 18.

    NO—Go to step 16 and recheck.

18. Continue test driving until a result comes on.

19. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0420 and/or P0430 indicated?*

    YES—Check for poor connections or loose terminals at the secondary HO2S (sensor 2) and the PCM, then go to step 1.

    NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P0420 and/or P0430* in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

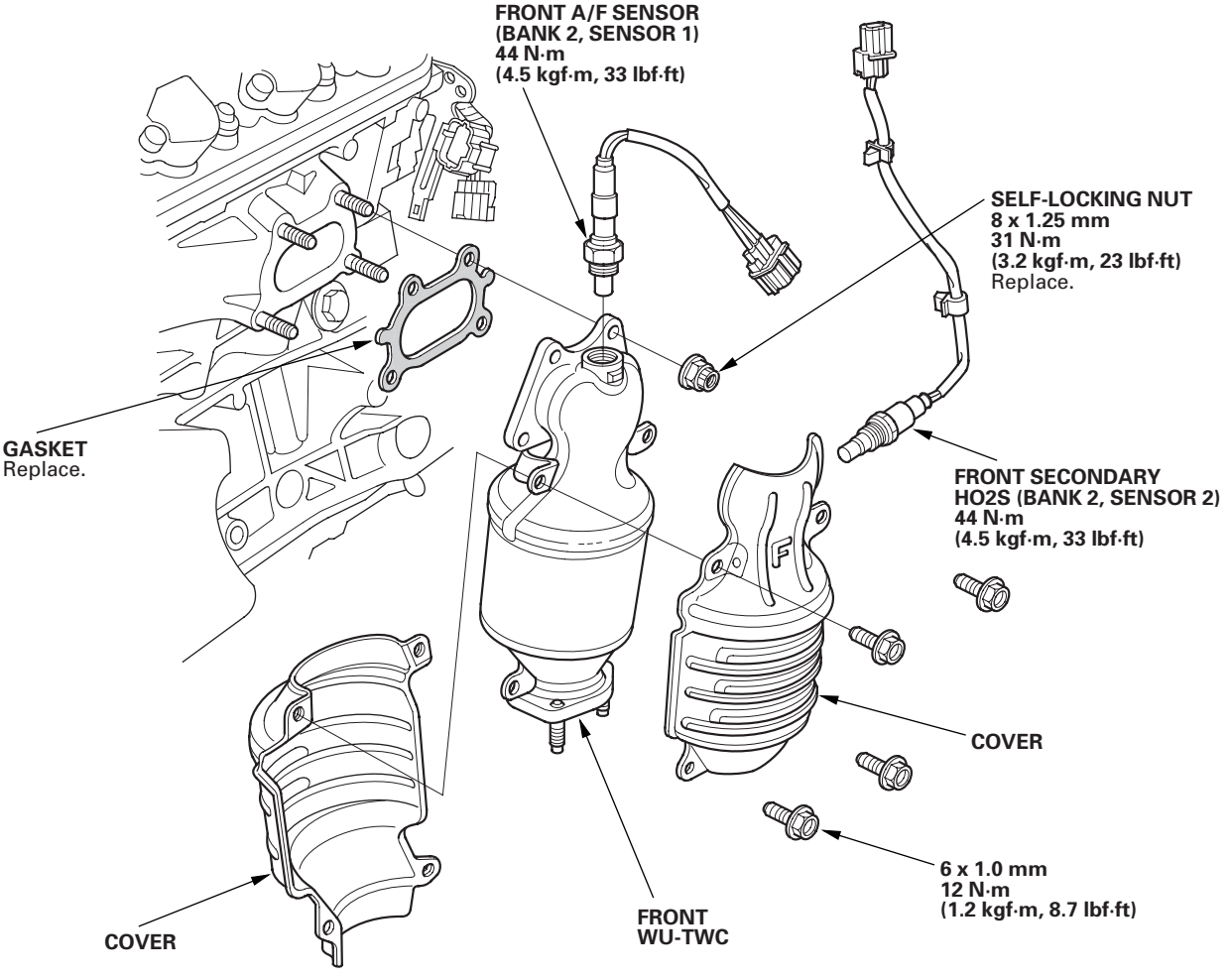
    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 16.

Warm Up TWC Removal/Installation

FRONT

1. Remove the radiator and A/C condenser fan assemblies (see page 10-12).
2. Disconnect the front air fuel ratio (A/F) sensor connector and front secondary heated oxygen sensor (secondary HO2S) connector.
3. Carefully remove the front WU-TWC.



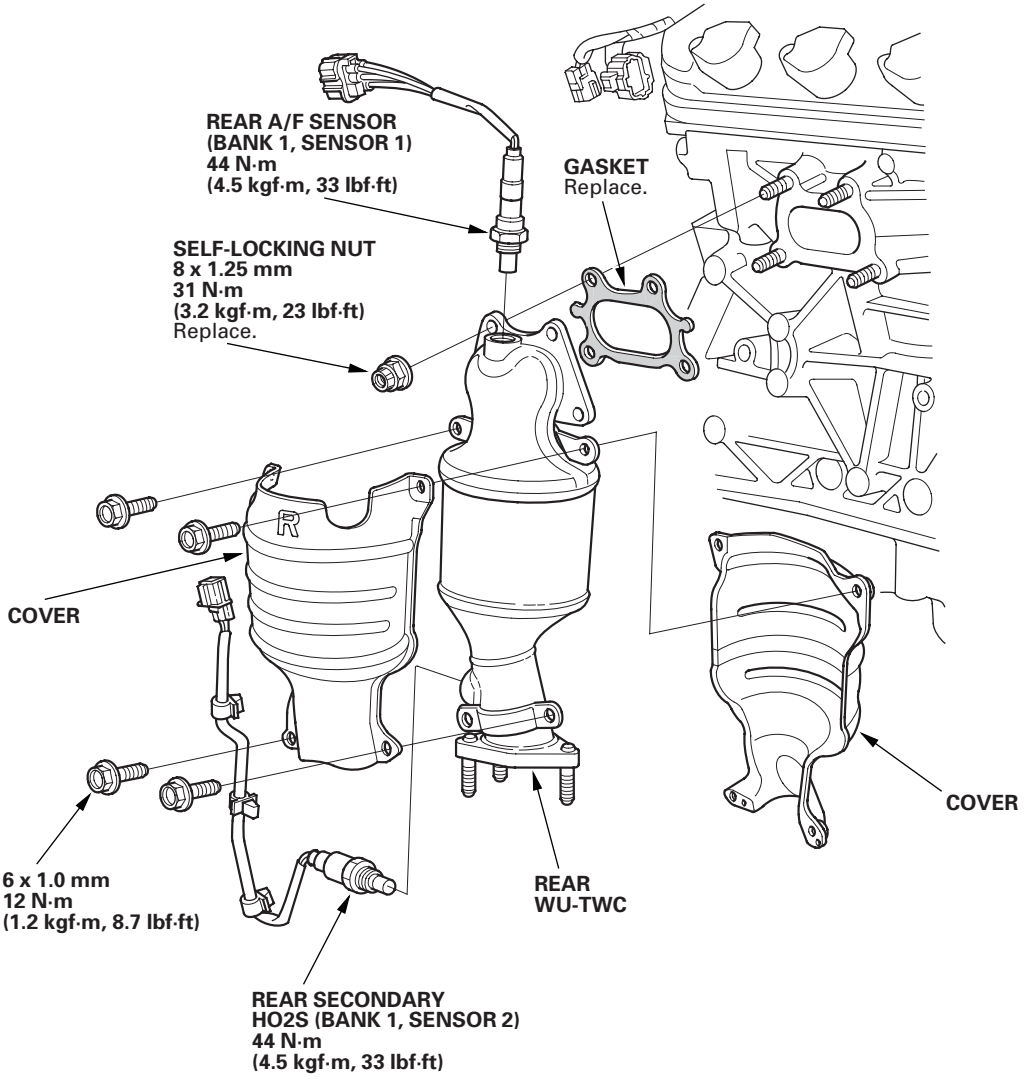
4. Carefully install the front WU-TWC, and tighten the nuts in a crisscross pattern in two or three steps.
5. Install the parts in the reverse order of removal.

(cont'd)

Warm Up TWC Removal/Installation (cont'd)

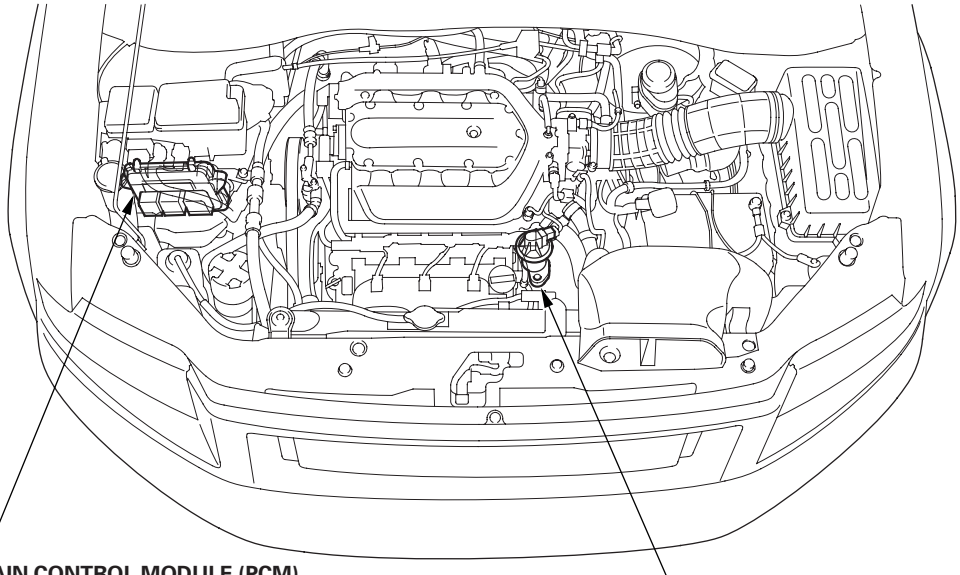
REAR

1. Remove exhaust pipe A (see page 9-7).
2. Remove the intermediate shaft (see page 16-19).
3. Disconnect the rear air fuel ratio (A/F) sensor connector and the rear secondary heated oxygen sensor (secondary HO2S) connector.
4. Remove the rear WU-TWC bracket, then remove the rear WU-TWC.



5. Install the rear WU-TWC, and tighten the nuts in a crisscross pattern in two or three steps.
6. Install the parts in the reverse order of removal.

Component Location Index



POWERTRAIN CONTROL MODULE (PCM)
Update, page 11-7
Substitution, page 11-8
Replacement, page 11-205

EXHAUST GAS RECIRCULATION (EGR) VALVE
Replacement, page 11-342

DTC Troubleshooting

DTC P0401: EGR Insufficient Flow

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Go to step 5.

   NO—Go to step 7.
5. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
   - Transmission in D position
   - Vehicle speed at 25 mph (40 km/h) or more, and engine speed between 1,100 rpm and 3,000 rpm
   - During the drive, decelerate (with the throttle fully closed) for 5 seconds
6. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Remove the intake manifold cover (see step 1 on page 9-3), clean the intake manifold, and EGR ports with throttle plate and induction cleaner, then go to step 9.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 5 and recheck.
7. Turn the ignition switch OFF.
8. Replace the EGR valve (see page 11-342).
9. Turn the ignition switch ON (II).
10. Reset the PCM with the HDS.
11. Do the PCM idle learn procedure (see page 11-273).
12. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
    - Transmission in D position
    - Vehicle speed at 25 mph (40 km/h) or more, and engine speed between 1,100 rpm and 3,000 rpm
    - During the drive, decelerate (with the throttle fully closed) for 5 seconds
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0401 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 15.

    NO—Go to step 14.
14. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 12.

15. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

16. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
    - Transmission in D position
    - Vehicle speed at 25 mph (40 km/h) or more, and engine speed between 1,100 rpm and 3,000 rpm
    - During the drive, decelerate (with the throttle fully closed) for 5 seconds

17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0401 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 16. If the PCM was substituted, go to step 1.

    NO—Go to step 18.

18. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 17, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 16. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 16.

DTC Troubleshooting (cont'd)

DTC P0404: EGR Control Circuit Range/ Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

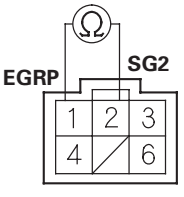
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, the system is OK at this time. Clean any carbon build-up on the EGR valve with throttle plate and induction cleaner. ■

   NO—Go to step 5.
5. Turn the ignition switch OFF.
6. Disconnect the EGR valve 6P connector.
7. At the sensor side, measure resistance between EGR valve 6P connector terminals No. 1 and No. 2.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

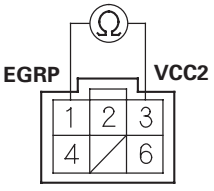
Is there 100 kΩ or more?

YES—Go to step 25.

NO—Go to step 8.

8. At the EGR valve side, measure resistance between EGR valve 6P connector terminals No. 1 and No. 3.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

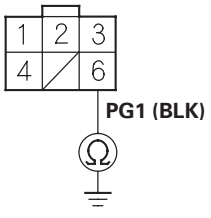
Is there 100 kΩ or more?

YES—Go to step 25.

NO—Go to step 9.

9. Check for continuity between EGR valve 6P connector terminal No. 6 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

Is there continuity?

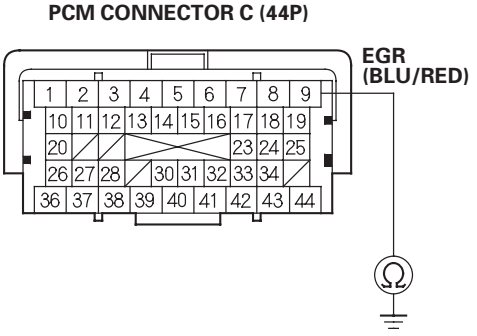
YES—Go to step 10.

NO—Repair open in the wire between the EGR valve and G101, then go to step 26.

10. Jump the SCS line with the HDS.

11. Disconnect PCM connector C (44P).

12. Check for continuity between PCM connector terminal C9 and body ground.



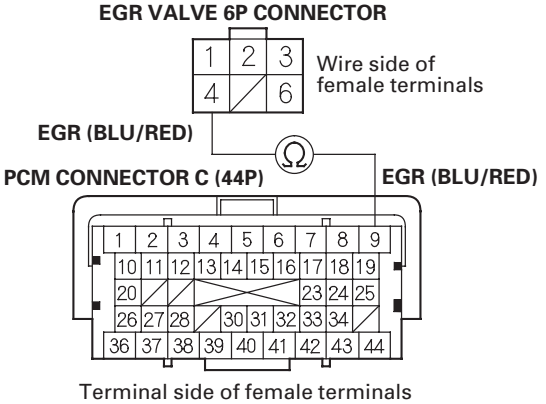
Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (C9) and the EGR valve, then go to step 26.

NO—Go to step 13.

13. Check for continuity between PCM connector terminal C9 and EGR valve 6P connector terminal No. 4.



Terminal side of female terminals

Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the PCM (C9) and the EGR valve, then go to step 26.

14. Remove the EGR valve (see page 11-342).

15. Clean the intake manifold EGR port and the passage inside the EGR valve with throttle plate and induction cleaner.

16. Install the EGR valve (see page 11-342).

17. Reconnect the EGR valve 6P connector.

18. Reconnect PCM connector C (44P).

19. Turn the ignition switch ON (II).

20. Reset the PCM with the HDS.

21. Do the PCM idle learn procedure (see page 11-273).

22. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

23. Do the EGR TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Go to step 32.

NO—Go to step 24.

24. Turn the ignition switch OFF.

25. Replace the EGR valve (see page 11-342).

26. Reconnect all connectors.

27. Turn the ignition switch ON (II).

28. Reset the PCM with the HDS.

29. Do the PCM idle learn procedure (see page 11-273).

30. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

31. Do the EGR TEST in the INSPECTION MENU with the HDS.

(cont'd)

DTC Troubleshooting (cont'd)

32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0404 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 34.

    NO—Go to step 33.

33. Monitor the OBD STATUS for DTC P0404 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 30.

34. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

35. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

36. Do the EGR TEST in the INSPECTION MENU with the HDS.

37. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0404 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 35. If the PCM was substituted, go to step 1.

    NO—Go to step 38.

38. Monitor the OBD STATUS for DTC P0404 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 37, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 35. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 35.

DTC P0406: EGR Valve Position Sensor Circuit High Voltage

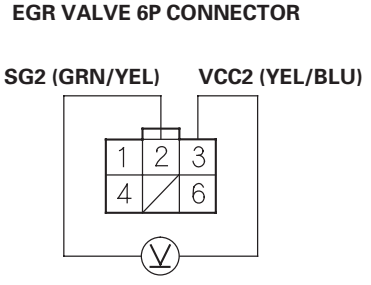
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check the EGR VLS in the DATA LIST with the HDS.

   Is 4.88 V or more indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the EGR valve 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between EGR valve 6P connector terminals No. 2 and No. 3.

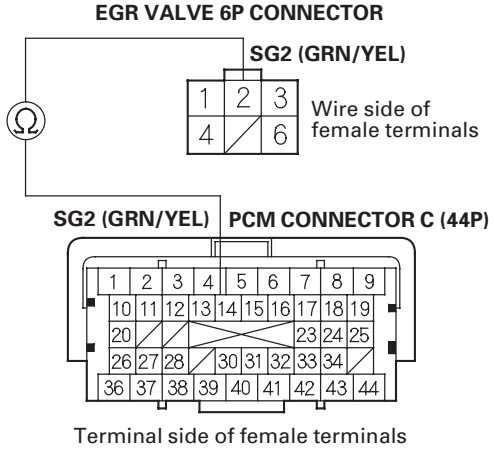


Wire side of female terminals

   Is there about 5 V?

   YES—Go to step 11.

   NO—Go to step 7.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector C (44P).
10. Check for continuity between PCM connector terminal C14 and EGR valve 6P connector terminal No. 2.



Terminal side of female terminals

   Is there continuity?

   YES—Go to step 18.

   NO—Repair open in the wire between the EGR valve and the PCM (C14), then go to step 13.
11. Turn the ignition switch OFF.
12. Replace the EGR valve (see page 11-342).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-273).

(cont'd)

DTC Troubleshooting (cont'd)

17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0406 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

18. Reconnect all connectors.

19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0406 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2413: EGR System Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the PCM. ■

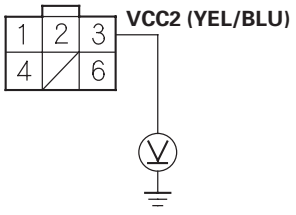
   NO—Go to step 5.
5. Turn the ignition switch OFF.
6. Turn the ignition switch ON (II).
7. Check the EGR VLS in the DATA LIST with the HDS.

   Is about 0 V indicated?

   YES—Go to step 8.

   NO—Go to step 21.
8. Turn the ignition switch OFF.
9. Disconnect the EGR valve 6P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between EGR valve 6P connector terminal No. 3 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

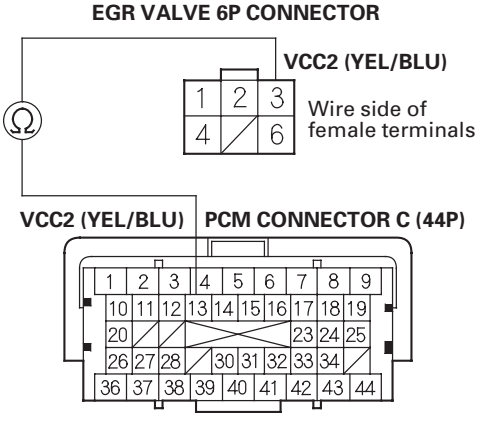
YES—Go to step 16.

NO—Go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (44P).
15. Check for continuity between PCM connector terminal C13 and EGR valve 6P connector terminal No. 3.



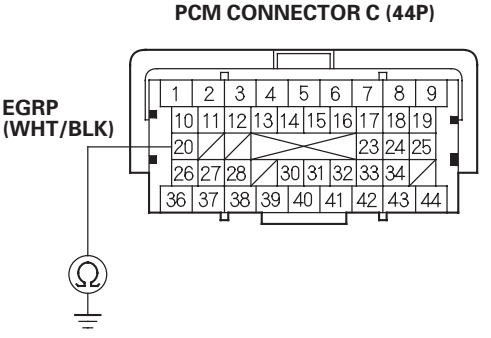
Terminal side of female terminals

Is there continuity?

YES—Go to step 51.

NO—Repair open in the wire between the EGR valve and the PCM (C13), then go to step 44.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector C (44P).
19. Check for continuity between PCM connector terminal C20 and body ground.



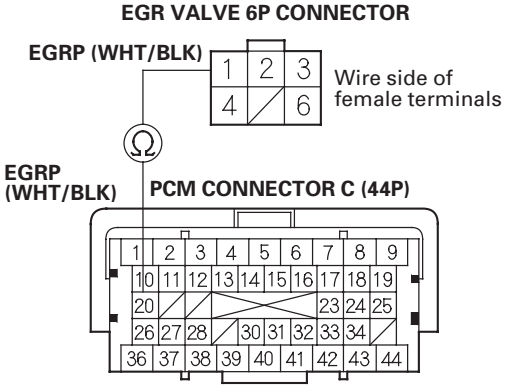
Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (C20) and the EGR valve, then go to step 44.

NO—Go to step 20.

20. Check for continuity between PCM connector terminal C20 and EGR valve 6P connector terminal No. 1.



Terminal side of female terminals

Is there continuity?

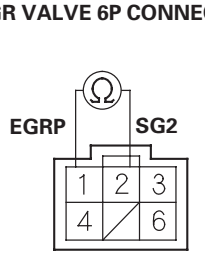
YES—Go to step 21.

NO—Repair open in the wire between the PCM (C20) and the EGR valve, then go to step 44.

21. Turn the ignition switch OFF.

22. Disconnect the EGR valve 6P connector.

23. At the EGR valve side, measure resistance between EGR valve 6P connector terminals No. 1 and No. 2.



Terminal side of male terminals

Is there continuity or resistance of 100 kΩ or more?

YES—Go to step 43.

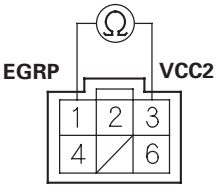
NO—Go to step 24.

(cont'd)

DTC Troubleshooting (cont'd)

24. At the EGR valve side, measure resistance between EGR valve 6P connector terminals No. 1 and No. 3.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

Is there 100 kΩ or more?

YES—Go to step 43.

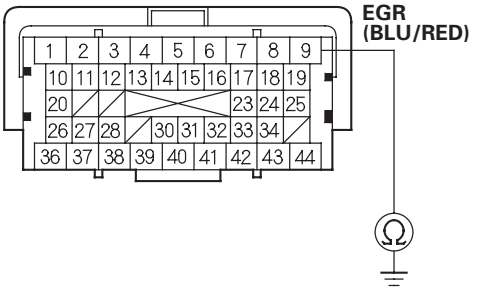
NO—Go to step 25.

25. Jump the SCS line with the HDS.

26. Disconnect PCM connector C (44P).

27. Check for continuity between PCM connector terminal C9 and body ground.

PCM CONNECTOR C (44P)



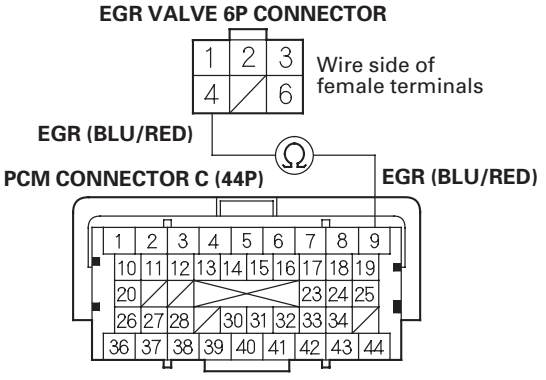
Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (C9) and the EGR valve, then go to step 44.

NO—Go to step 28.

28. Check for continuity between PCM connector terminal C9 and EGR valve 6P connector terminal No. 4.

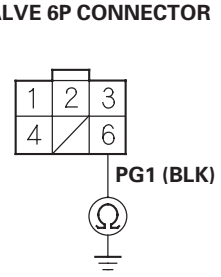


Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between the PCM (C9) and the EGR valve, then go to step 44.

29. Check for continuity between EGR valve 6P connector terminal No. 6 and body ground.



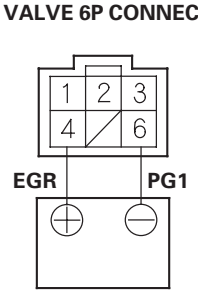
Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the EGR valve and G101, then go to step 44.

30. Reconnect PCM connector C (44P).

31. Connect the battery positive terminal to EGR valve 6P connector terminal No. 4 with a jumper wire.



(cont'd)

DTC Troubleshooting (cont'd)

32. Start the engine and let it idle, then connect the battery negative terminal to EGR valve 6P connector terminal No. 6 with a jumper wire.

    Does the engine stall or run rough?

    YES—Go to step 51.

    NO—Go to step 33.

33. Turn the ignition switch OFF.

34. Remove the EGR valve (see page 11-342).

35. Clean the intake manifold EGR port at the passage inside the EGR valve with throttle plate and induction cleaner.

36. Install the EGR valve (see page 11-342).

37. Reconnect all connectors.

38. Turn the ignition switch ON (II).

39. Reset the PCM with the HDS.

40. Do the PCM idle learn procedure (see page 11-273).

41. Do the EGR TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Go to step 49.

    NO—Go to step 42.

42. Turn the ignition switch OFF.

43. Replace the EGR valve (see page 11-342).

44. Reconnect all connectors.

45. Turn the ignition switch ON (II).

46. Reset the PCM with the HDS.

47. Do the PCM idle learn procedure (see page 11-273).

48. Do the EGR TEST in the INSPECTION MENU with the HDS.

49. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2413 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1.

    NO—Go to step 50.

50. Monitor the OBD STATUS for DTC P2413 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 49, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

51. Turn the ignition switch OFF.

52. Reconnect all connectors.

53. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

54. Do the EGR TEST in the INSPECTION MENU with the HDS.

55. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2413 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 56.

56. Monitor the OBD STATUS for DTC P2413 in the DTCs MENU with the HDS.

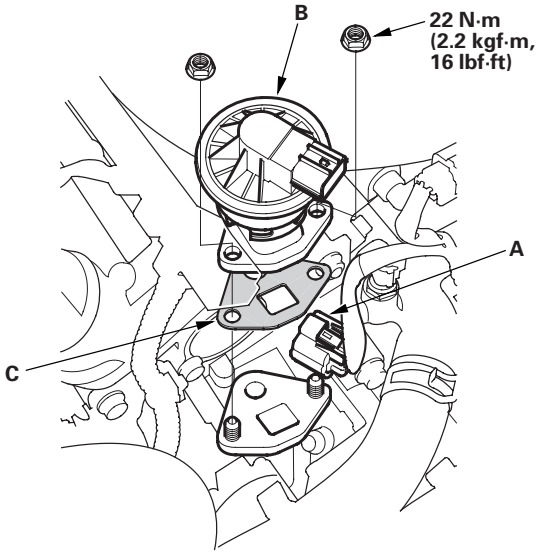
    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 51, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

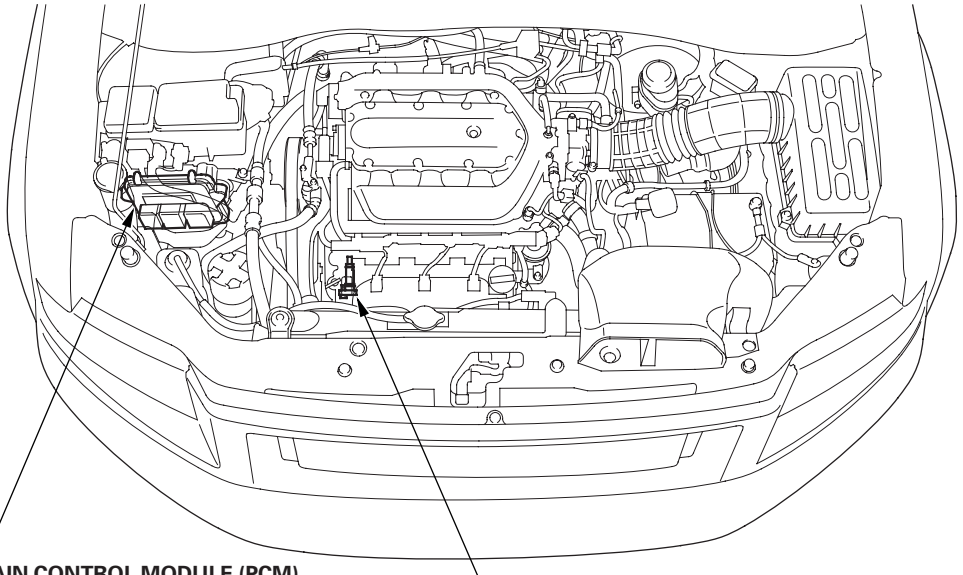
EGR Valve Replacement

1. Remove the intake manifold cover (see step 1 on page 9-3).
2. Disconnect the EGR valve 6P connector (A).



3. Remove the EGR valve (B).
4. Install the parts in the reverse order of removal with a new gasket (C).
5. Install the intake manifold cover (see step 10 on page 9-6).

Component Location Index



POWERTRAIN CONTROL MODULE (PCM)
Update, page 11-7
Substitution, page 11-8
Replacement, page 11-205

PCV VALVE
Inspection, page 11-345
Replacement, page 11-345

DTC Troubleshooting

DTC P2279: Intake Air System Leak

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0443 is stored at the same time as DTC P2279, troubleshoot DTC P0443 first, then recheck for DTC P2279.

1. Check for vacuum leaks at these parts:

   - PCV valve
   - PCV hose
   - Purge (PCS) line
   - Throttle body
   - Intake manifold
   - Brake booster hose

   Are the parts OK?

   YES—Go to step 2.

   NO—Repair or replace any damaged parts, then go to step 4.

2. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 1 minute.

3. Monitor the OBD STATUS for DTC P2279 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Check the camshaft timing (see page 6-16), then go to step 4.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 2 and recheck.

4. Reset the PCM with the HDS.

5. Do the PCM idle learn procedure (see page 11-273).

6. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 1 minute.

7. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2279 indicated?

   YES—Check for vacuum leaks at the PCV valve, the PCV hose, the purge (PCS) line, the throttle body, the intake manifold, and the brake booster hose, then go to step 1.

   NO—Go to step 8.

8. Monitor the OBD STATUS for DTC P2279 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

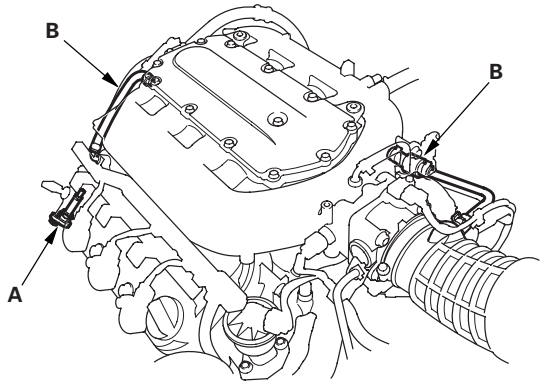
   YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the screen indicates FAILED, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

PCV Valve Inspection

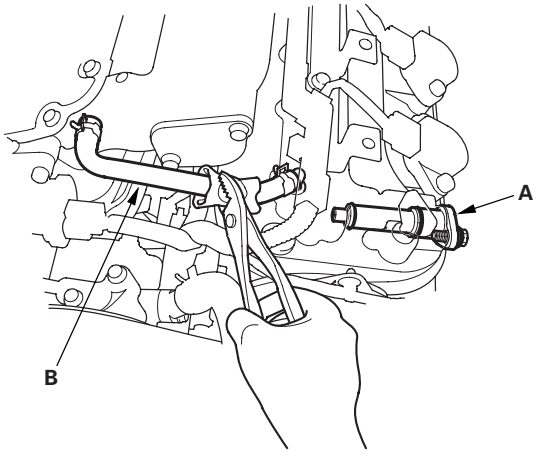
1. Remove the intake manifold cover (see step 1 on page 9-3).

2. Check the PCV valve (A), hoses (B), and connections for leaks or restrictions.



3. At idle, listen to the PCV valve (A) with a stethoscope as you lightly pinch the PCV hose (B) with your fingers or pliers several times. Each time the hose is pinched, the valve should click.

   If there is no clicking sound, check the PCV valve grommet for cracks or damage. If the grommet is OK, replace the PCV valve and recheck.

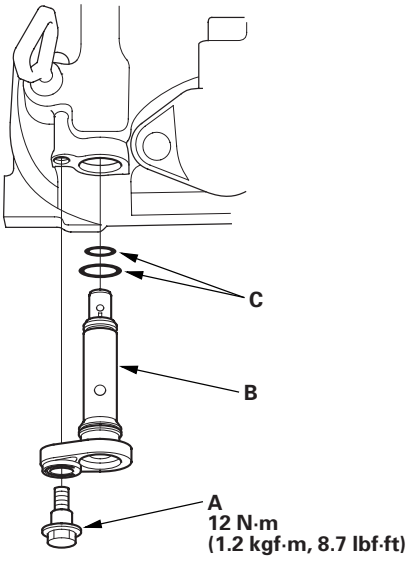


PCV Valve Replacement

1. Remove the intake manifold cover (see step 1 on page 9-3).

2. Remove the bolt (A).

   NOTE: Take care not to spill oil on the hot exhaust manifold.

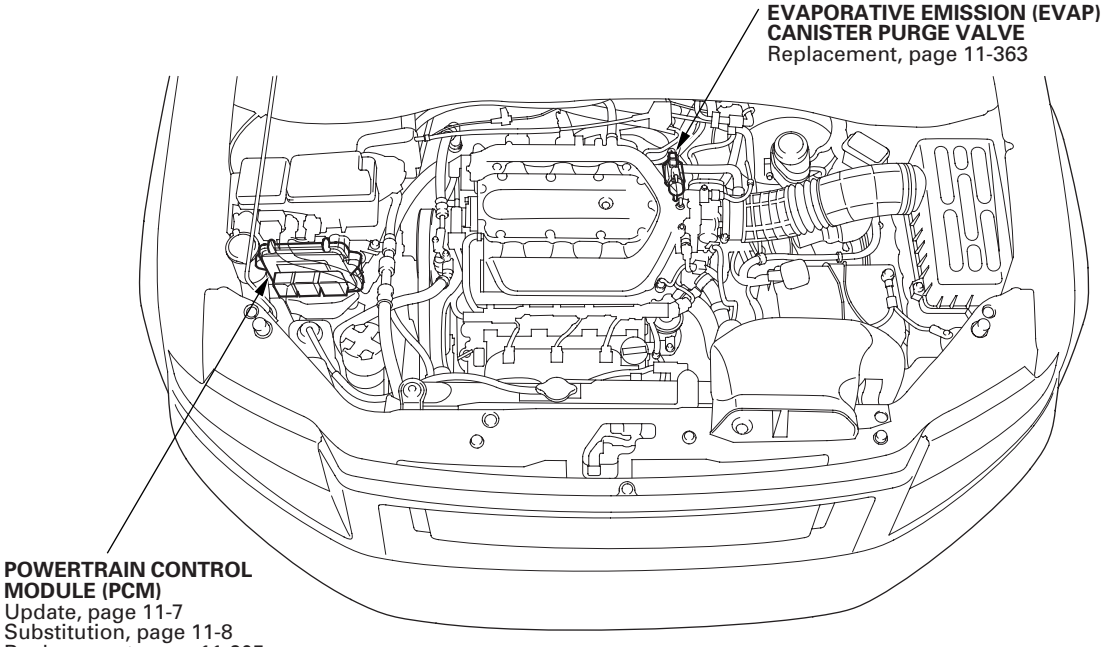


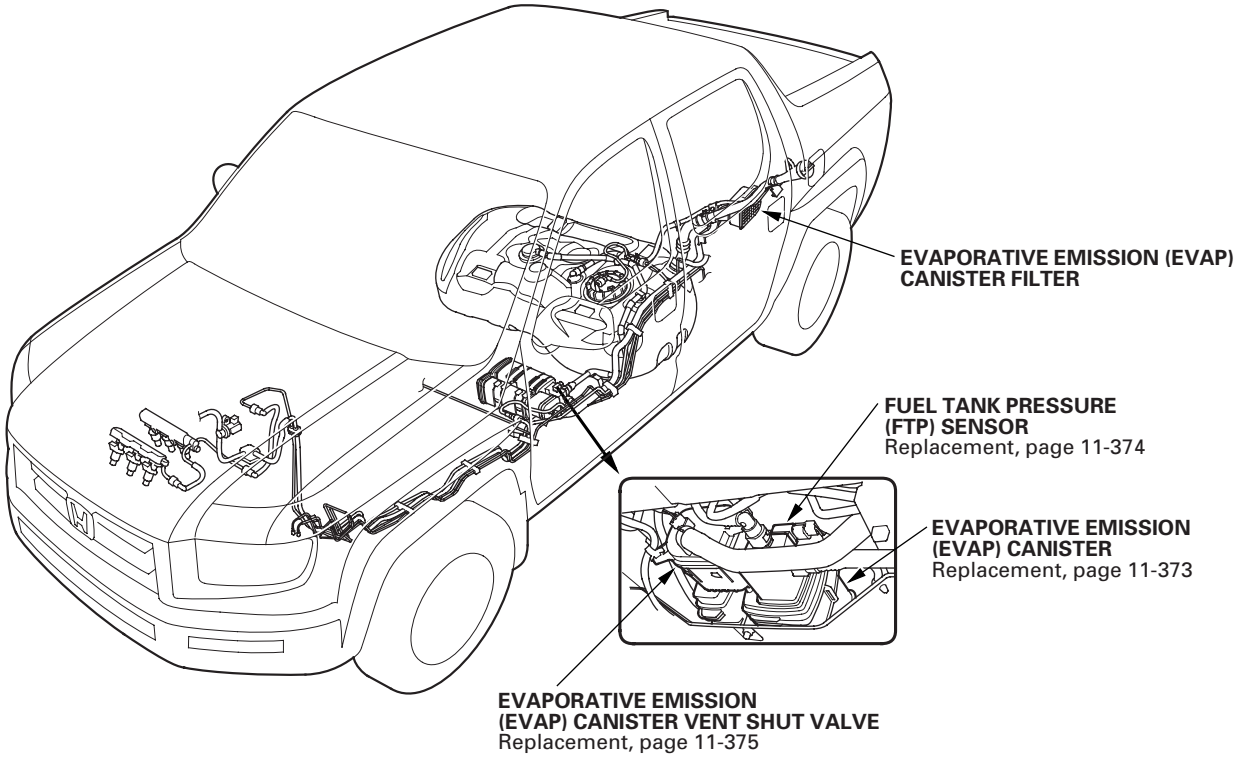
3. Remove the PCV valve (B).

4. Install the parts in the reverse order of removal.

   NOTE:
   - When installing a new PCV valve, make sure the O-rings (C) are in place.
   - When installing a used PCV valve, use new O-rings.

Component Location Index





DTC Troubleshooting

DTC P0443: Evap Canister Purge Valve Circuit Malfunction

Special Tools Required
Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available

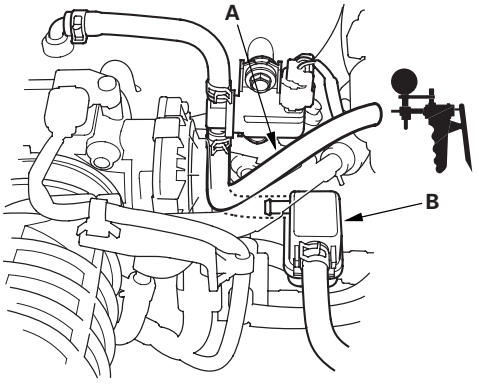
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0443 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister purge valve and the PCM. ■
5. Turn the ignition switch OFF, and allow the engine to cool below 140 ℉ (60 ℃).
6. Disconnect the vacuum hose (A) from the purge joint (B) in the engine compartment, and connect a vacuum pump/gauge, 0—30 in.Hg, to the hose.



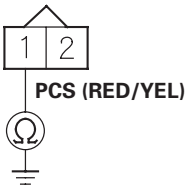
7. Start the engine, and let it idle.

   Is there vacuum?

   YES—Go to step 8.

   NO—Go to step 14.
8. Turn the ignition switch OFF.
9. Disconnect the EVAP canister purge valve 2P connector.
10. Check for continuity between EVAP canister purge valve 2P connector terminal No. 1 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 11.

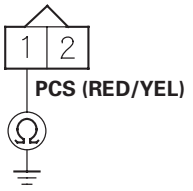
NO—Go to step 23.

(cont'd)

DTC Troubleshooting (cont'd)

11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (44P).
13. Check for continuity between EVAP canister purge valve 2P connector terminal No. 1 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

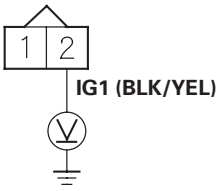
Is there continuity?

YES—Repair short in the wire between the EVAP canister purge valve and the PCM (C37), then go to step 24.

NO—Go to step 30.

14. Turn the ignition switch OFF.
15. Disconnect the EVAP canister purge valve 2P connector.
16. Turn the ignition switch ON (II).
17. Measure voltage between EVAP canister purge valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

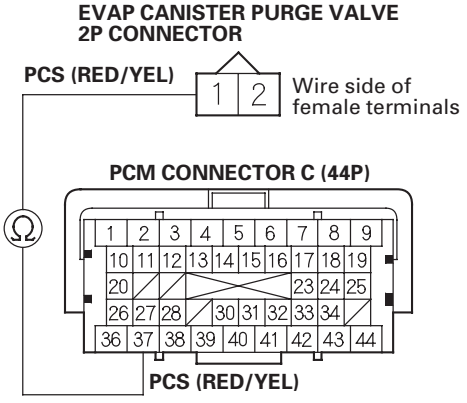
Is there battery voltage?

YES—Go to step 18.

NO—Repair open in the wire between the EVAP canister purge valve and the No. 18 IG ACG (15 A) fuse in the under-dash fuse/relay box, then go to step 24.

18. Turn the ignition switch OFF.
19. Jump the SCS line with the HDS.
20. Disconnect PCM connector C (44P).

21. Check for continuity between PCM connector terminal C37 and EVAP canister purge valve 2P connector terminal No. 1.



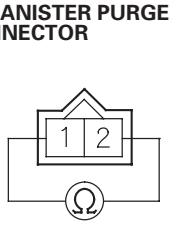
Terminal side of female terminals

Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between the EVAP canister purge valve and the PCM (C37), then go to step 24.

22. At the valve side, measure resistance between EVAP canister purge valve 2P connector terminals No. 1 and No. 2.



Terminal side of male terminals

Is there about 33 Ω at room temperature?

YES—Go to step 30.

NO—Go to step 23.

23. Replace the EVAP canister purge valve (see page 11-374).

24. Reconnect all connectors.

25. Turn the ignition switch ON (II).

26. Reset the PCM with the HDS.

27. Do the PCM idle learn procedure (see page 11-273).

28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0443 indicated?

YES—Check for poor connections or loose terminals at the EVAP canister purge valve and the PCM, then go to step 1.

NO—Go to step 29.

(cont'd)

DTC Troubleshooting (cont'd)

29. Monitor the OBD STATUS for DTC P0443 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister purge valve and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

30. Reconnect all connectors.

31. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0443 indicated?

    YES—Check for poor connections or loose terminals at the EVAP canister purge valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 32.

33. Monitor the OBD STATUS for DTC P0443 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister purge valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0451: FTP Sensor Circuit Range/ Performance Problem

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P2422 is stored at the same time as DTC P0451, troubleshoot DTC P2422 first, then recheck for DTC P0451.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle 1 minute.
4. Monitor the OBD STATUS for DTC P0451 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 5.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 3 and recheck.
5. Turn the ignition switch OFF.
6. Replace the FTP sensor (see page 11-374).
7. Turn the ignition switch ON (II).
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure (see page 11-273).
10. Start the engine, and let it idle 1 minute.
11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0451 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1.

    NO—Go to step 12.
12. Monitor the OBD STATUS for DTC P0451 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 10.

DTC Troubleshooting (cont'd)

DTC P0452: FTP Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap.
5. Turn the ignition switch ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is about −7.3 kPa (−2.16 in.Hg, −55 mmHg), or 0.3 V or less indicated?

   YES—Go to step 10.

   NO—Go to step 7.
7. Install the fuel fill cap.
8. Start the engine.
9. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 10.

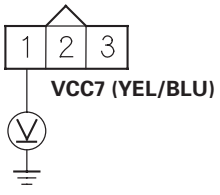
   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 5 and recheck.
10. Turn the ignition switch OFF.
11. Disconnect the FTP sensor 3P connector.
12. Turn the ignition switch ON (II).
13. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is about 7.3 kPa (2.15 in.Hg, 54.7 mmHg), or 4.90 V indicated?

    YES—Go to step 24.

    NO—Go to step 14.
14. Measure voltage between FTP sensor 3P connector terminal No. 1 and body ground.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

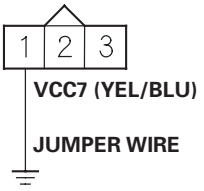
Is there about 5 V?

YES—Go to step 20.

NO—Go to step 15.

15. Turn the ignition switch OFF.
16. Jump the SCS line with the HDS.
17. Disconnect PCM connector A (44P).
18. Connect FTP sensor 3P connector terminal No. 1 to body ground with a jumper wire.

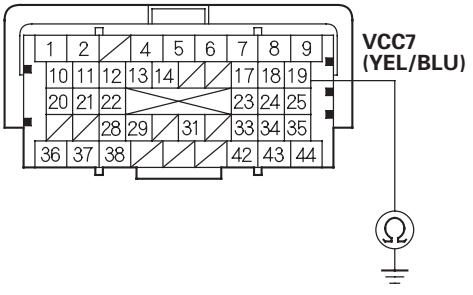
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

19. Check for continuity between PCM connector terminal A19 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

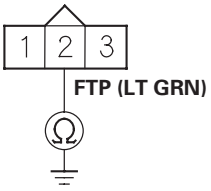
Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between the PCM (A19) and the FTP sensor, then go to step 26.

20. Turn the ignition switch OFF.
21. Jump the SCS line with the HDS.
22. Disconnect PCM connector A (44P).
23. Check for continuity between FTP sensor 3P connector terminal No. 2 and body ground.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A33) and the FTP sensor, then go to step 26.

NO—Go to step 32.

24. Turn the ignition switch OFF.
25. Replace the FTP sensor (see page 11-374).
26. Reconnect all connectors.
27. Turn the ignition switch ON (II).
28. Reset the PCM with the HDS.
29. Do the PCM idle learn procedure (see page 11-273).

(cont'd)

DTC Troubleshooting (cont'd)

30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0452 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1.

    NO—Go to step 31.

31. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

32. Reconnect all connectors.

33. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

34. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0452 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 34.

35. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 34, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0453: FTP Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap.
5. Turn the ignition switch ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is about 7.3 kPa (2.16 in.Hg, 55 mmHg), or 4.7 V or more indicated?

   YES—Go to step 10.

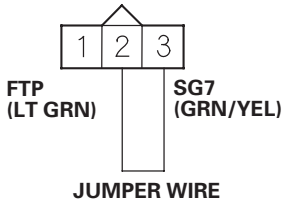
   NO—Go to step 7.
7. Install the fuel fill cap.
8. Start the engine.
9. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 10.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 6 and recheck.
10. Turn the ignition switch OFF.
11. Disconnect the FTP sensor 3P connector.
12. Connect FTP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

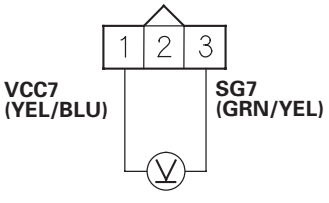
13. Turn the ignition switch ON (II).
14. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is about 7.3 kPa (2.16 in.Hg, 55 mmHg), or 4.7 V or more indicated?

    YES—Go to step 15.

    NO—Go to step 26.
15. Measure voltage between FTP sensor 3P connector terminals No. 1 and No. 3.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 21.

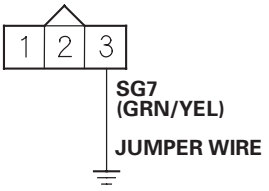
NO—Go to step 16.

(cont'd)

DTC Troubleshooting (cont'd)

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector A (44P).
19. Connect FTP sensor 3P connector terminal No. 3 to body ground with a jumper wire.

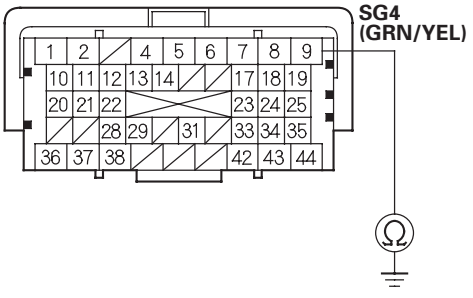
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

20. Check for continuity between PCM connector terminal A9 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

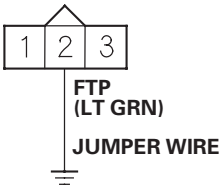
Is there continuity?

YES—Go to step 34.

NO—Repair open in the wire between the PCM (A9) and the FTP sensor, then go to step 28.

21. Turn the ignition switch OFF.
22. Jump the SCS line with the HDS.
23. Disconnect PCM connector A (44P).
24. Connect FTP sensor 3P connector terminal No. 2 to body ground with a jumper wire.

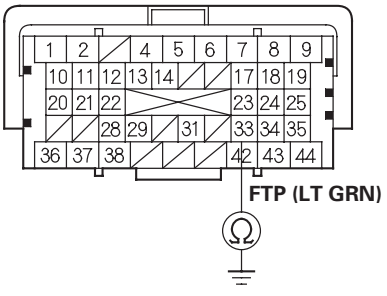
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

25. Check for continuity between PCM connector terminal A33 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 34.

NO—Repair open in the wire between the PCM (A33) and the FTP sensor, then go to step 28.

26. Turn the ignition switch OFF.

27. Replace the FTP sensor (see page 11-374).

28. Reconnect all connectors.

29. Turn the ignition switch ON (II).

30. Reset the PCM with the HDS.

31. Do the PCM idle learn procedure (see page 11-273).

32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0453 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1.

    NO—Go to step 33.

33. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

34. Reconnect all connectors.

35. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

36. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0453 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 36.

37. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated in step 36, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC Troubleshooting (cont'd)

DTC P0455: EVAP System Very Large Leak Detected

DTC P0456: EVAP System Very Small Leak Detected

NOTICE

The fuel system is designed to allow specified maximum vacuum and pressure conditions. Do not deviate from the vacuum and pressure tests as indicated in these procedures. Excessive pressure/vacuum would damage the EVAP components or cause eventual fuel tank failure.

Special Tools Required

- Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available
- Vacuum/pressure gauge, 0—4 in.Hg, 07JAZ-001000B

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Fresh fuel has a higher volatility that will create greater pressure/vacuum. The optimum condition for testing is less than a full tank of fresh fuel. If possible, to assist in leak detection, add 1 gallon of fresh fuel to the tank (as long as it will not fill the tank), just before starting these procedures.

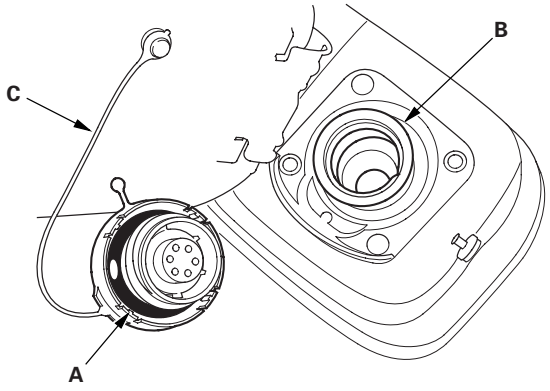
1. Check the fuel fill cap (the cap must say ''Tighten to click''). It should turn 1/4 turn after it's tight, then it clicks.

   Is the correct fuel fill cap installed and properly tightened?

   YES—Go to step 2.

   NO—Replace or tighten the cap, then go to step 22.

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.



   Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

   YES—Replace the fuel fill cap or the fuel fill pipe, then go to step 22.

   NO—Go to step 3.

3. Turn the ignition switch ON (II).

4. Clear the DTC with the HDS.

5. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve, and the PCM. ■

   NO—Go to step 6.

6. Turn the ignition switch OFF.

7. Turn the ignition switch ON (II).

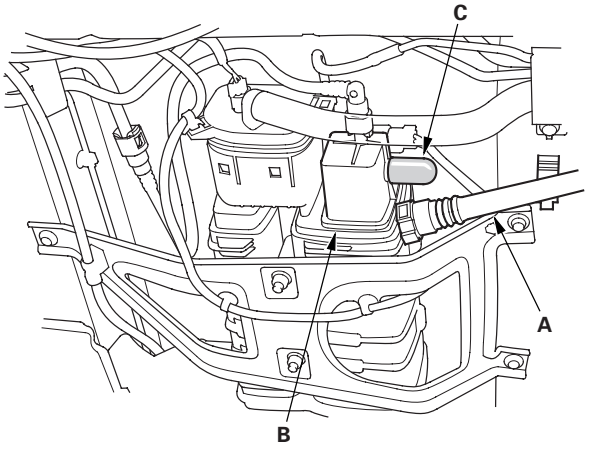
8. Check for a poor connection or damage at the fuel tank vapor recirculation tube.

   Is the tube OK?

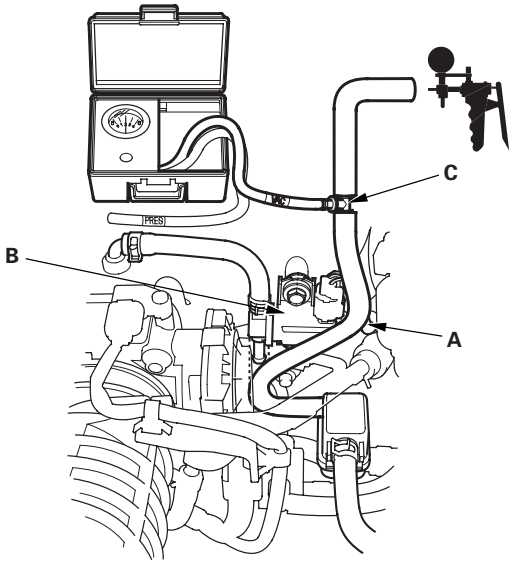
   YES—Go to step 9.

   NO—
   - Replace the fuel tank vapor recirculation tube, then go to step 22.
   - If necessary, replace the fuel tank (see page 11-301), then go to step 22.

9. Disconnect the fuel tank vapor recirculation tube (A) from the EVAP canister (B), and plug the EVAP canister port (C).



10. Disconnect the vacuum hose (purge line) (A) from the EVAP canister purge valve (B) in the engine compartment, and connect a T-fitting (C) from the vacuum gauge and the vacuum pump/gauge, 0—30 in.Hg, to the vacuum hose (A) as shown.



11. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

12. Apply vacuum to the hose until the FTP reads 1.90 V (—0.59 in.Hg, —15.1 mmHg).

13. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

    Does the voltage increase more than 0.2 V (0.1 in.Hg, 0.5 mmHg)?

    YES—Go to step 14.

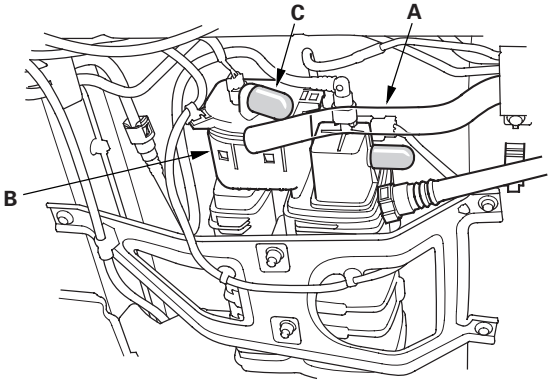
    NO—Go to step 19.

(cont'd)

DTC Troubleshooting (cont'd)

14. Select EVAP CVS OFF in the INSPECTION MENU with the HDS.

15. Disconnect the fresh air hose (A) from the EVAP canister vent shut valve (B), and plug the EVAP canister vent shut valve port (C).



16. Apply vacuum to the EVAP system until the FTP reads 1.90 V (—0.59 in.Hg, —15.1 mmHg).

17. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

    Does the voltage increase more than 0.2 V (0.1 in.Hg, 2.5 mmHg)?

    YES—Go to step 18.

    NO—Replace the EVAP canister vent shut valve, then go to step 21.

18. Check for a loose or damaged EVAP canister purge line between the EVAP canister and the EVAP canister purge valve.

    Is the line OK?

    YES—Replace these parts, then go to step 21:

    - FTP sensor O-ring
    - EVAP canister vent shut valve case and O-ring
    - EVAP canister

    NO—Reconnect or repair the EVAP canister purge hose, then go to step 21.

19. Select EVAP CVS OFF in the INSPECTION MENU with the HDS.

20. Check these parts for looseness or damage:

    - Fuel fill pipe
    - Fuel vapor return pipe

    Are the parts OK?

    YES—Check the fuel tank unit base gasket (see page 11-297), and check the fuel tank, then go to step 21.

    NO—Repair or replace the damaged parts, then go to step 21.

21. Reconnect all hoses and connectors.

22. Turn the ignition switch ON (II).

23. Reset the PCM with the HDS.

24. Do the PCM idle learn procedure (see page 11-273).

25. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Go to step 26.

    NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the PCM, then go to step 1.

26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0455 and/or P0456 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0457: EVAP System Leak Detected/Fuel Fill Cap Loose or Missing

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

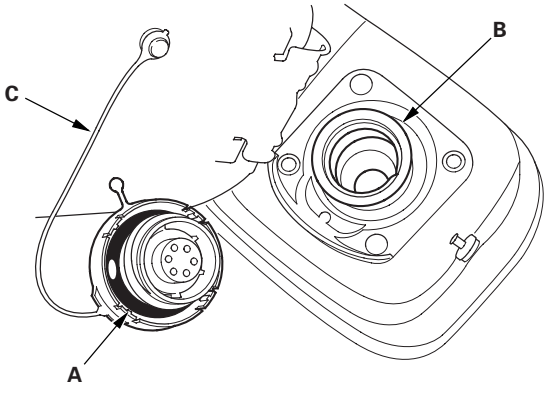
1. Check the fuel fill cap (the cap must say ''Tighten to click''). It should turn 1/4 turn after it's tight, then it clicks.

   Is the correct fuel fill cap installed and properly tightened?

   YES—Go to step 2.

   NO—Replace or tighten the cap, then go to step 19.

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.



   Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

   YES—Replace the fuel fill cap or the fuel fill pipe, then go to step 19.

   NO—Go to step 3.

3. Turn the ignition switch ON (II).

4. Clear the DTC with the HDS.

5. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the PCM. ■

   NO—Go to step 6.

6. Turn the ignition switch OFF.

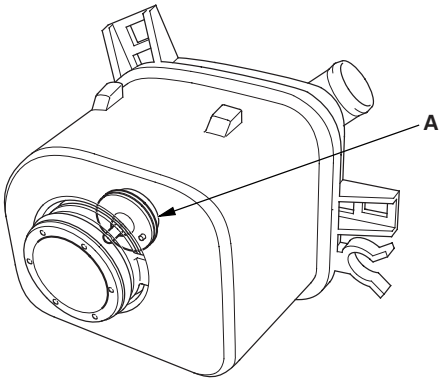
7. Remove the EVAP canister vent shut valve from the EVAP canister (see page 11-375).

8. Connect the 2P connector to the EVAP canister vent shut valve.

9. Turn the ignition switch ON (II).

10. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

11. Check the EVAP canister vent shut valve (A) operation.



    Does the valve operate?

    YES—Check the routing of the EVAP canister vent tube, then go to step 18.

    NO—Go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Replace the EVAP canister vent shut valve (see page 11-375).
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-273).
17. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Go to step 23.

    NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the PCM, then go to step 1.
18. Reinstall the EVAP canister vent shut valve.
19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Do the PCM idle learn procedure (see page 11-273).
22. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Go to step 23.

    NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the PCM, then go to step 1.
23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0457 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0496: EVAP System High Purge Flow

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the PCM. ■

   NO—Go to step 4.
4. Turn the ignition switch OFF.
5. Replace the EVAP canister purge valve (see page 11-374).
6. Turn the ignition switch ON (II).
7. Reset the PCM with the HDS.
8. Do the PCM idle learn procedure (see page 11-273).
9. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Go to step 10.

   NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the PCM, then go to step 1.
10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0496 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P0497: EVAP System Low Purge Flow

Special Tools Required
- Vacuum/pressure gauge, 0—4 in.Hg, 07JAZ-001000B
- Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check the fuel fill cap installation (The cap label must say ''Tighten to click''. The cap should tighten 1/4 turn after it is tight.).

   Is the fuel fill cap installed and properly tightened?

   YES—Go to step 2.

   NO—Properly install the fuel fill cap, then go to step 24.

2. Turn the ignition switch ON (II).

3. Clear the DTC with the HDS.

4. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve, and the PCM. ■

   NO—Go to step 5.

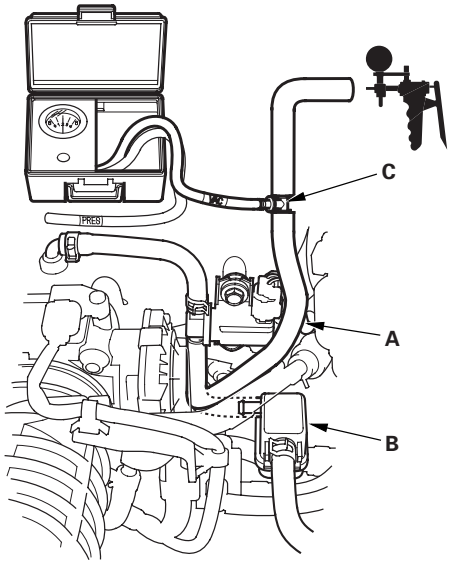
5. Check for a loose or damaged EVAP canister purge line between the intake manifold and the EVAP canister purge valve.

   Is the line OK?

   YES—Go to step 6.

   NO—Reconnect or repair the EVAP canister purge line, then go to step 24.

6. Disconnect the vacuum hose (A) from the EVAP canister purge valve joint (B) in the engine compartment, and connect a T-fitting (C) from the vacuum gauge and the vacuum pump/gauge, 0—30 in.Hg, to the vacuum hose as shown.



7. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

8. Slowly apply about 0.6 in.Hg (15 mmHg) of vacuum to the hose.

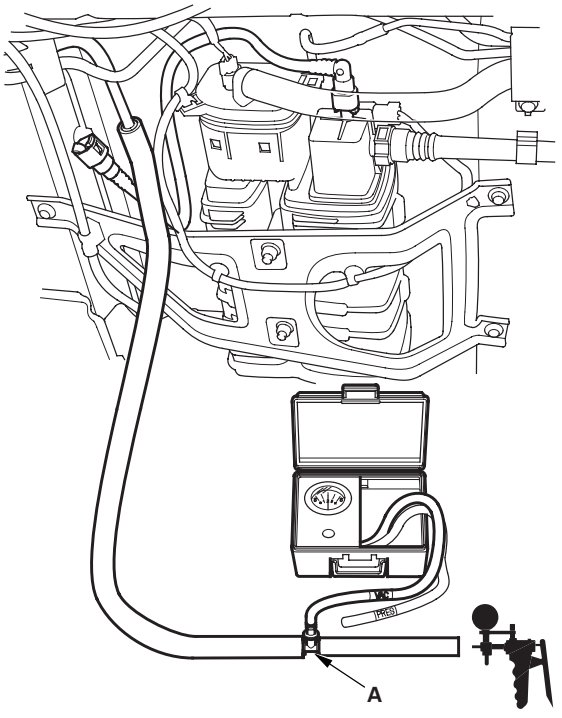
   Does it hold vacuum?

   YES—Replace the EVAP canister purge valve (see page 11-374), then go to step 23.

   NO—Go to step 9.

9. Reconnect the vacuum hose to the EVAP canister purge valve joint.

10. Disconnect the vacuum hose from the purge line (at the EVAP canister side), and connect a T-fitting (A) from the vacuum gauge and the vacuum pump/ gauge, 0—30 in.Hg, to the hose as shown.



11. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

12. Slowly apply about 2 kPa (0.6 in.Hg, 15 mmHg) of vacuum to the hose.

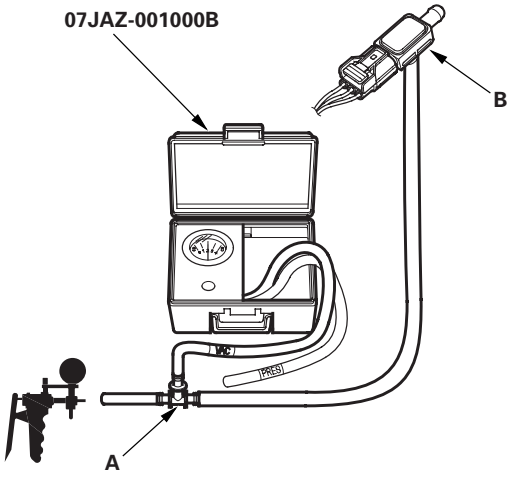
    Does it hold vacuum?

    YES—Check for a restricted EVAP canister purge line between the EVAP canister purge valve and the EVAP canister, then go to step 23.

    NO—Go to step 13.

13. Remove the FTP sensor with its connector connected (see page 11-374).

14. Connect a T-fitting (A) from the vacuum pump/ gauge, 0—30 in.Hg, and the vacuum pump to the FTP sensor (B) as shown.



15. Check and record the FTP SENSOR reading in the DATA LIST with the HDS.

16. Slowly apply about 1.3 kPa (0.4 in.Hg, 10 mmHg) of vacuum to the hose.

    NOTE: To avoid FTP sensor damage, do not apply more than 1.3 kPa of vacuum.

(cont'd)

DTC Troubleshooting (cont'd)

17. Check the FTP SENSOR in the DATA LIST with the HDS.

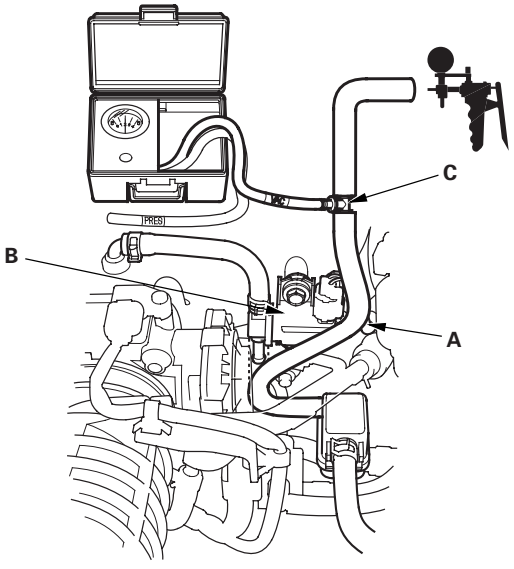
    Is the difference more than 1.1 kPa (0.31 in.Hg, 8 mmHg) before and after applying vacuum?

    YES—Go to step 18.

    NO—Go to step 22.

18. Reconnect the vacuum hoses to the EVAP canister purge line (EVAP canister side), and reinstall the FTP sensor.

19. Disconnect the vacuum hose (purge line) (A) from the EVAP canister purge valve (B), and connect a T-fitting (C) from the vacuum gauge and the vacuum pump/gauge, 0—30 in.Hg, to the hose as shown.



20. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

21. Slowly apply about 2 kPa (0.6 in.Hg, 15 mmHg) of vacuum to the hose.

    Does the hose hold vacuum?

    YES—Check for blockage at the EVAP canister port, then go to step 23.

    NO—Replace the EVAP canister vent shut valve (see page 11-375), then go to step 23.

22. Replace the FTP sensor (see page 11-374).

23. Reconnect all hoses.

24. Turn the ignition switch ON (II).

25. Reset the PCM with the HDS.

26. Do the PCM idle learn procedure (see page 11-273).

27. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Go to step 28.

    NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the PCM, then go to step 1.

28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0497 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0498: EVAP Canister Vent Shut Valve Control Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0498 indicated?

   YES—Go to step 6.

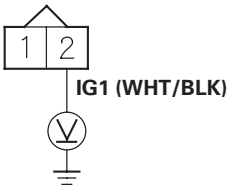
   NO—Go to step 4.
4. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0498 indicated?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM. ■
6. Turn the ignition switch OFF.
7. Disconnect the EVAP canister vent shut valve 2P connector.
8. Turn the ignition switch ON (II).
9. Measure voltage between EVAP canister vent shut valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



Wire side of female terminals

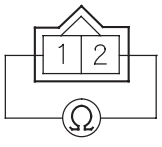
Is there battery voltage?

YES—Go to step 10.

NO—Repair open in the wire between the EVAP canister vent shut valve and the A/F sensor relay (LAF), then go to step 18.

10. Turn the ignition switch OFF.
11. At the valve side, measure resistance between EVAP canister vent shut valve 2P connector terminals No. 1 and No. 2.

EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



Terminal side of male terminals

Is there about 25—30 Ω at room temperature?

YES—Go to step 12.

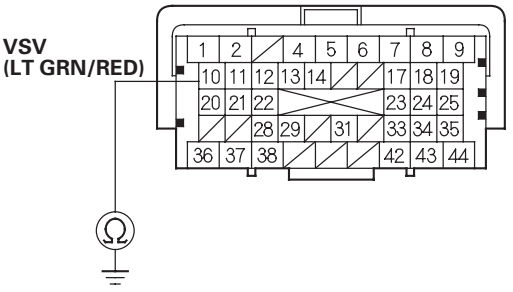
NO—Go to step 17.

(cont'd)

DTC Troubleshooting (cont'd)

12. Jump the SCS line with the HDS.
13. Disconnect PCM connector A (44P).
14. Check for continuity between PCM connector terminal A10 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

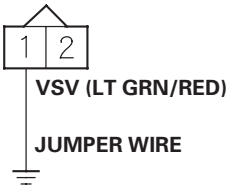
Is there continuity?

YES—Repair short in the wire between the EVAP canister vent shut valve and the PCM (A10), then go to step 18.

NO—Go to step 15.

15. Connect EVAP canister vent shut valve 2P connector terminal No. 1 to body ground with a jumper wire.

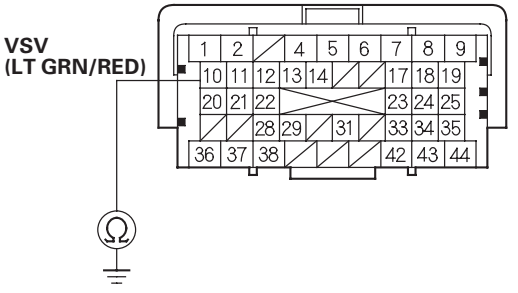
EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



Wire side of female terminals

16. Check for continuity between PCM connector terminal A10 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 24.

NO—Repair open in the wire between the EVAP canister vent shut valve and the PCM (A10), then go to step 18.

17. Replace the EVAP canister vent shut valve (see page 11-375).
18. Reconnect all connectors.

19. Turn the ignition switch ON (II).

20. Reset the PCM with the HDS.

21. Do the PCM idle learn procedure (see page 11-273).

22. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0498 indicated?

    YES—Check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

24. Reconnect all connectors.

25. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

26. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0498 indicated?

    YES—Check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P0499: EVAP Canister Vent Shut Valve Control Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0499 indicated?

   YES—Check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

   NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P1454: FTP Sensor Circuit Range/ Performance Problem

DTC P2422: EVAP Canister Vent Shut Valve Close Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap, and wait 1 minute.
5. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is it between −0.67 and 0.67 kPa (−0.2 and 0.2 in.Hg, −5 and 5 mmHg), or 2.4 and 2.6 V?

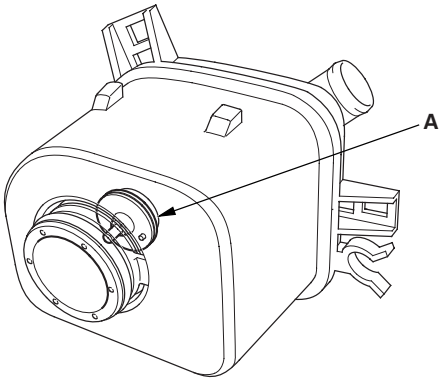
   YES—Go to step 6.

   NO—Go to step 17.
6. Install the fuel fill cap.
7. Clear the DTC with the HDS.
8. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park on neutral) until the radiator fan comes on, then let it idle.
9. Monitor the OBD STATUS for DTC P1454 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 10.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the PCM. If the screen indicates NOT COMPLETED, go to step 8 and recheck.
10. Clear the DTC with the HDS.
11. Turn the ignition switch OFF.
12. Remove the EVAP canister vent shut valve from the EVAP canister (see page 11-375).
13. Connect the 2P connector to the EVAP canister vent shut valve.
14. Turn the ignition switch ON (II).
15. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
16. Check the EVAP canister vent shut valve (A) operation.



Does the valve operate?

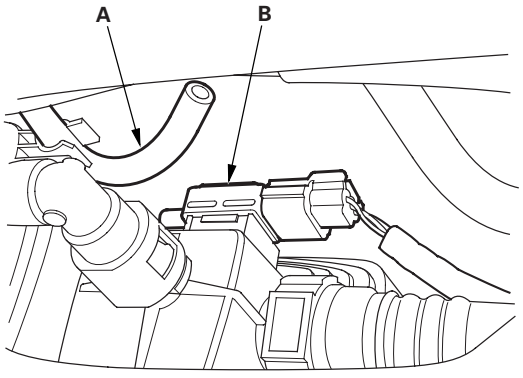
YES—Check for a blockage in the EVAP canister, canister filter, vent hoses, and drain joint, then install the EVAP canister vent shut valve, and go to step 23.

NO—Replace the EVAP canister vent shut valve (see page 11-375), then go to step 23.

(cont'd)

DTC Troubleshooting (cont'd)

17. Disconnect the air tube (A) from the FTP sensor (B).



18. Check the FTP SENSOR in the DATA LIST with the HDS.

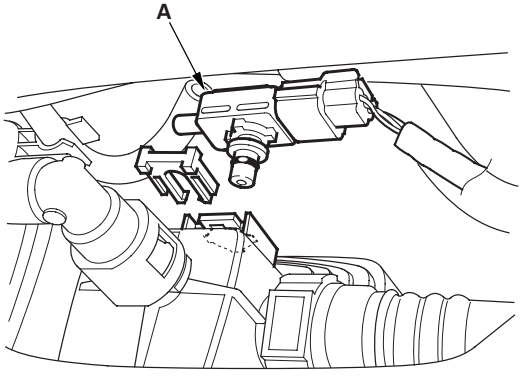
    Is it between −0.67 and 0.67 kPa (−0.2 and 0.2 in.Hg, −5 and 5 mmHg), or 2.4 and 2.6 V?

    YES—Check for a blockage in the FTP sensor air tube or vent, then go to step 23.

    NO—Go to step 19.

19. Turn the ignition switch OFF.

20. Remove the FTP sensor (A) from the EVAP canister with its connector connected (see page 11-374).



21. Turn the ignition switch ON (II).

22. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is it between −0.67 kPa and 0.67 kPa (−0.2 and 0.2 in.Hg, −5 and 5 mmHg), or 2.4 and 2.6 V?

    YES—Check for debris or clogging at the EVAP canister and the FTP sensor port, then go to step 23.

    NO—Replace the FTP sensor (see page 11-374), then go to step 23.

23. Turn the ignition switch ON (II).

24. Reset the PCM with the HDS.

25. Do the PCM idle learn procedure (see page 11-273).

26. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1454 and/or P2422 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the PCM, then go to step 1.

    NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P1454 and/or P2422 in the DTCs MENU with the HDS.

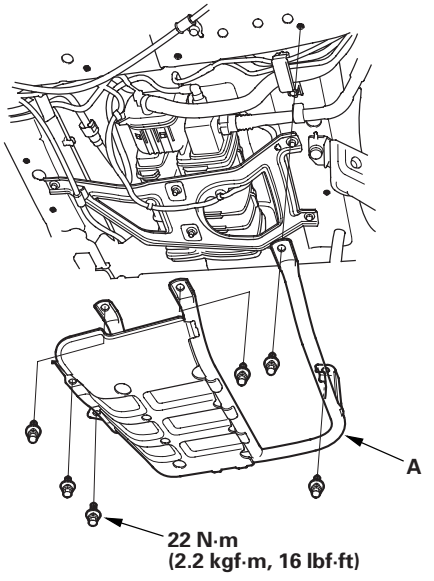
    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

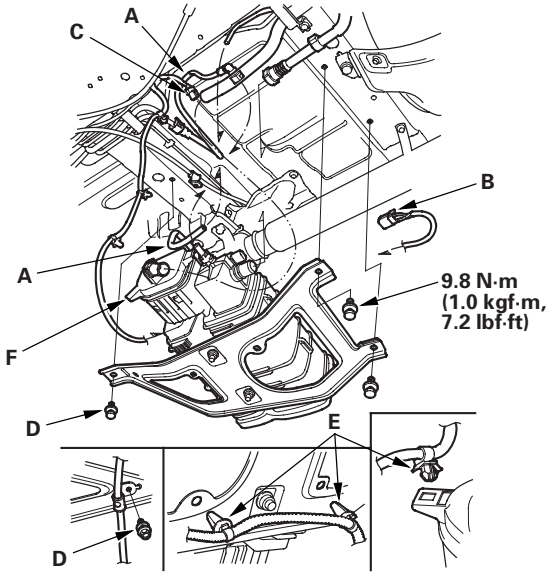
    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

EVAP Canister Replacement

1. Remove the fuel tank guard (A).



2. Remove the hoses (A), the FTP sensor 3P connector (B), and the EVAP canister vent shut valve 2P connector (C).

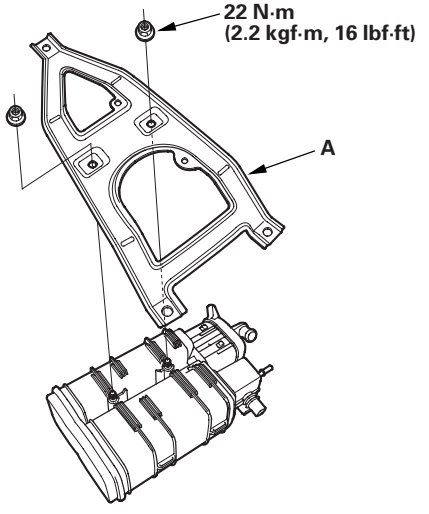


3. Remove the bolts (D) and clips (E).

4. Remove the EVAP canister assembly (F).

5. Remove the EVAP canister bracket (A).

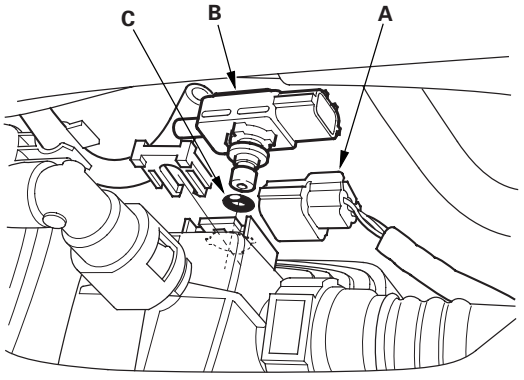
   NOTE: The canister filter remains on the bracket.



6. Install the parts in the reverse order of removal.

FTP Sensor Replacement

1. Disconnect the FTP sensor connector (A).

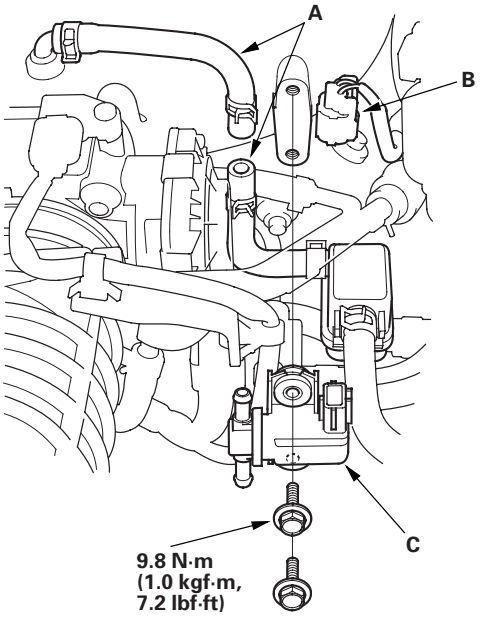


2. Remove the FTP sensor (B).

3. Install the parts in the reverse order of removal with a new O-ring (C).

EVAP Canister Purge Valve Replacement

1. Disconnect the hoses (A) and the EVAP canister purge valve 2P connector (B).



2. Remove the EVAP canister purge valve (C).

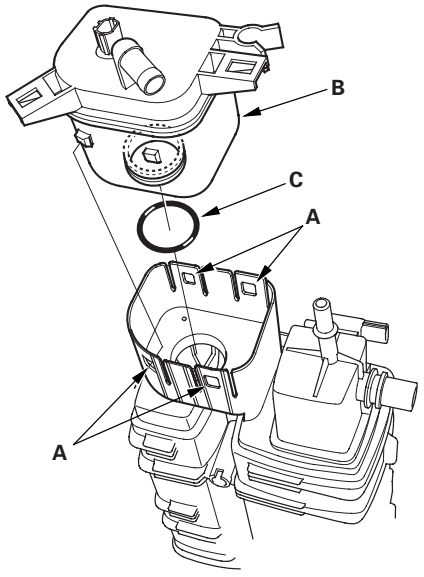
3. Install the parts in the reverse order of removal.

EVAP Canister Vent Shut Valve Replacement

1. Remove the EVAP canister (see page 11-373).

2. Pry the lock tabs outward (A), then remove the EVAP canister vent shut valve (B).

   NOTE: Be careful not to damage the lock tabs.



3. Install the parts in the reverse order of removal with a new O-ring (C).

   NOTE: Do not coat the O-ring with oil.

SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If automatic transmission maintenance is required)

The Ridgeline SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the sides of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items requires special precautions and tools, and should be done by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work should be done by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.

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Automatic Transmission

Automatic Transmission

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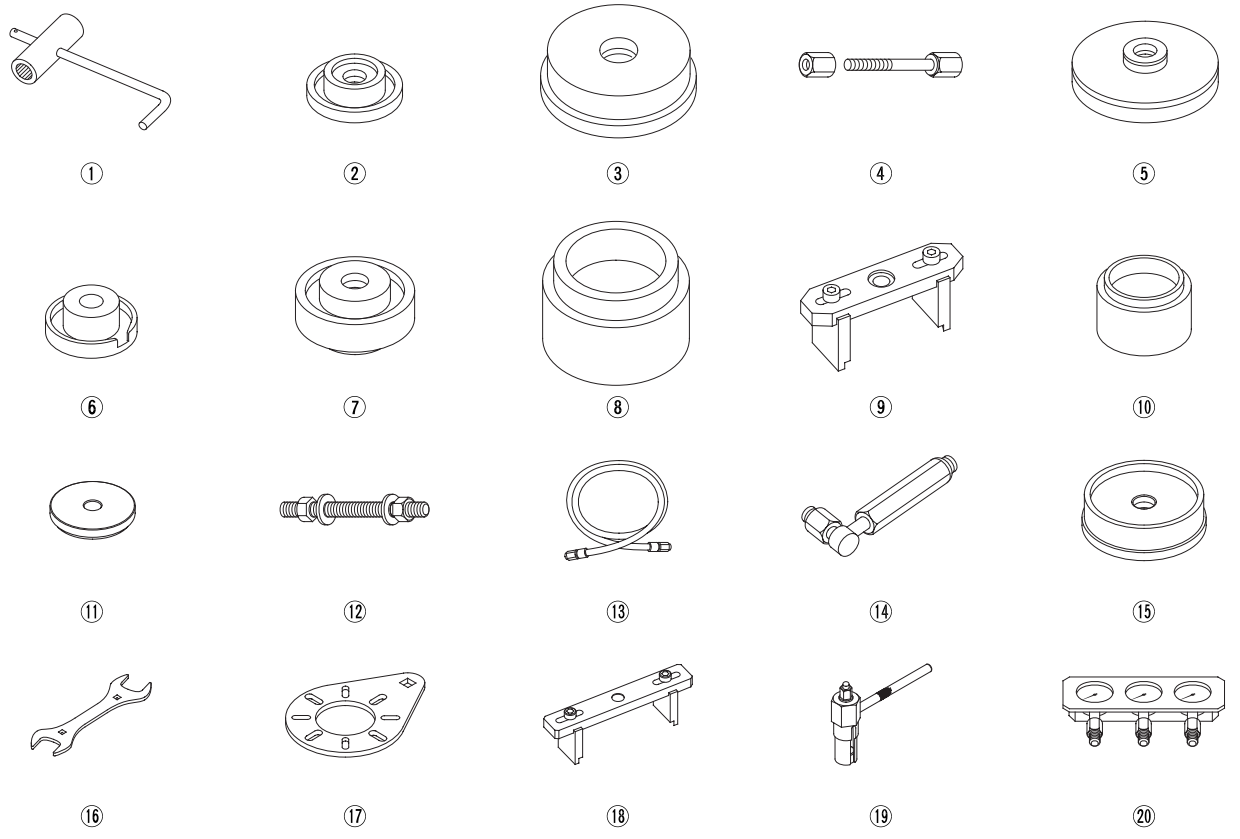
Special Tools

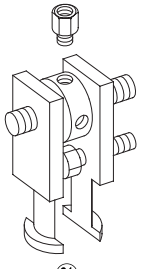
Ref. No.	Tool Number	Description	Qty
①	07GAB-PF50101 or 07GAB-PF50100	Mainshaft Holder	1
②	07GAD-PG40100 or 07GAD-PG40101	Oil Seal Driver Attachment	1
③	07GAD-SD40101	Attachment, 78 x 90 mm	1
④	07GAE-PG40200 or 07GAE-PG4020A	Clutch Spring Compressor Bolt Assembly	1
⑤	07HAD-SG00100	Attachment, 83 mm	1
⑥	07JAD-PH80101	Oil Seal Driver Attachment	1
⑦	07JAD-SH30100	Attachment, 65 mm	1
⑧	07LAD-PW50601	Attachment, 40 x 50 mm	1
⑨	07LAE-PX40100	Clutch Spring Compressor Attachment	2
⑩	07MAD-PR90100	Attachment, 45 x 55 mm	1
⑪	07MAF-SP0011A	Tapered Bearing Race Installer	1
⑫	07MAF-SP0013A	Installer Shaft	1
⑬	07MAJ-PY4011A	A/T Pressure Hose, 2,210 mm	4
⑭	07MAJ-PY40120	A/T Pressure Hose Adapter	4
⑮	07NAD-PX40100	Attachment, 78 x 80 mm	1
⑯	07XAA-002010A	Wrench, 40 x 42 mm	1
⑰	07XAB-0010101	Companion Flange Holder	1
⑱	07ZAE-PRP0100	Clutch Compressor Attachment	1
⑲	070AJ-0020101	Preload Inspection Tool	1
⑳	07406-0020400 or 07406-0020401	A/T Clutch Pressure Gauge Set/Panel	1

⑨: 07HAE-PL50101 may be used to substitute one of these tools.



Ref. No.	Tool Number	Description	Qty
㉑	07736-A01000B or 07736-A01000A	Adjustable Bearing Puller, 25—40 mm	1
㉒	07741-0010201	Sliding Hammer Weight	1
㉓	07746-0010200	Attachment, 37 x 40 mm	1
㉔	07746-0010300	Attachment, 42 x 47 mm	1
㉕	07746-0010400	Attachment, 52 x 55 mm	1
㉖	07746-0010500	Attachment, 62 x 68 mm	1
㉗	07746-0010600	Attachment, 72 x 75 mm	1
㉘	07746-0010800	Attachment, 22 x 24 mm	1
㉙	07746-0030100	Driver, 40 mm I.D.	1
㉚	07746-0030300	Attachment, 30 mm I.D.	1
㉛	07749-0010000	Driver	1
㉜	07936-1660101	Bearing Remover Shaft Set, 12 mm	1
㉝	07936-3710100	Bearing Remover Shaft Handle	1
㉞	07936-3710600	Bearing Remover Shaft Set, 20 mm	1
㉟	07936-8890300	Bearing Remover Shaft Set, 30 mm	1
㊱	07936-GE00100	Bearing Remover Shaft, 10 mm	1
㊲	07936-GE00200	Bearing Remover Head, 10 mm	1
㊳	07947-6340500	Driver Attachment	1

㉑: Must be used with commercially available 3/8 ″-16 slide hammer.



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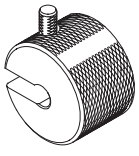

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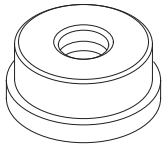

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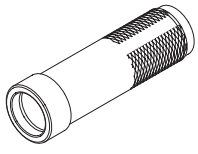

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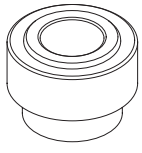

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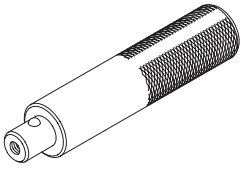

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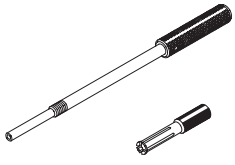

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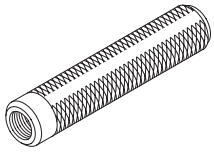

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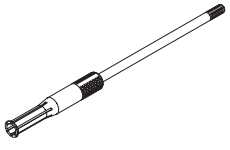

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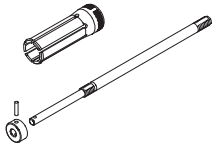

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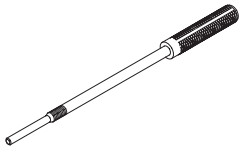

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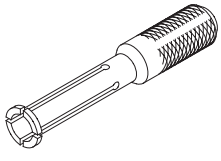

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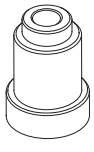

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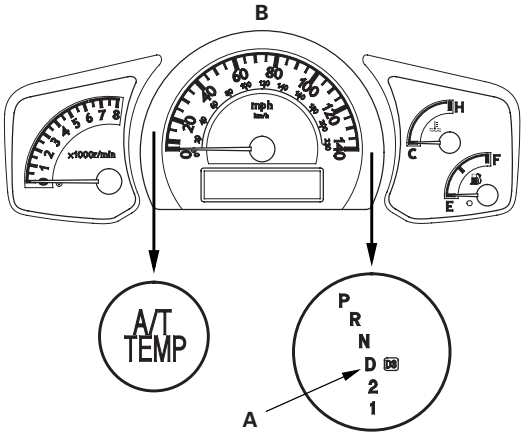
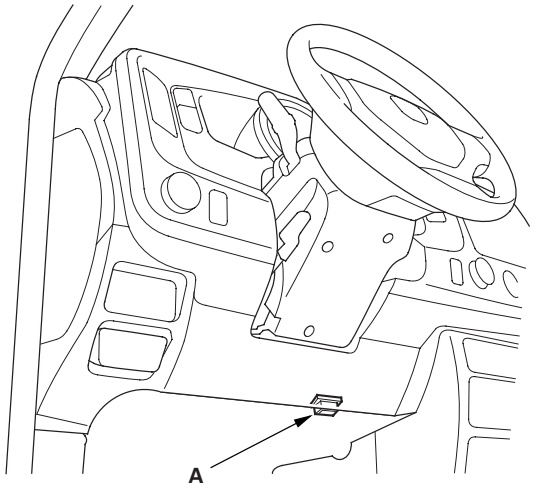
General Troubleshooting Information

How to Check for DTCs with the Honda Diagnostic System (HDS)

When the powertrain control module (PCM) senses an abnormality in the input or output system, the D indicator (A) in the gauge control module (B) will usually blink.



When the Honda Diagnostic System (HDS) is connected to the data link connector (DLC) (A) located behind the driver's dashboard lower cover, it will indicate the diagnostic trouble code (DTC) when the ignition switch is turned ON (II) and the appropriate menu is selected.



If the D indicator or malfunction indicator lamp (MIL) has been reported on, or if a driveability problem is suspected, do this:

1. Connect the HDS to the DLC. (See the HDS user's manual for specific instructions.)
2. Turn the ignition switch to ON (II), select A/T system, and observe the DTC in the DTCs MENU on the HDS screen.

   NOTE: If the HDS does not communicate with the PCM, troubleshoot the DLC circuit (see page 11-194).
3. Record the freeze data and on-board snapshots for all fuel and emissions DTCs and A/T DTCs.
4. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC (except for DTC P0700, which means there is one or more A/T DTCs, and no problems were detected in the fuel and emissions circuit of the PCM).
5. Clear the DTC and data.
6. Drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, and then recheck for a DTC. If the A/T DTC returns, go to the indicated DTC's troubleshooting. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight.

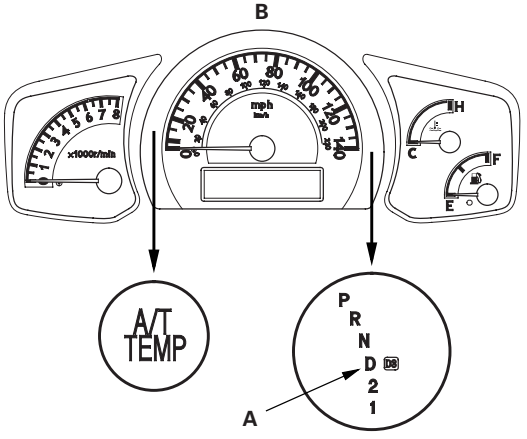
Symptom Troubleshooting Versus DTC Troubleshooting

Some symptoms will not trigger diagnostic trouble codes (DTCs) or cause the D indicator to blink. If the malfunction indicator lamp (MIL) was reported ON or the D indicator has been blinking, check for DTCs. If the vehicle has an abnormal symptom, and there are no DTCs stored, do the symptom troubleshooting. Check the list of probable cause(s) for the symptom, in the sequence listed, until you find the problem.

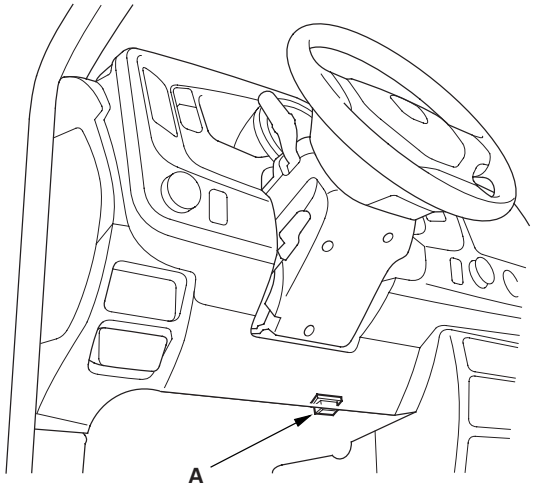
How to Check for DTCs with the SCS Mode (retrieving the flash codes)

NOTE: The preferred method is to use the HDS to retrieve the P-code.

When the PCM senses an abnormality in the input or output system, the D indicator (A) in the gauge control module (B) will usually blink.



When the D indicator has been reported on, connect the HDS to the DLC (A) located behind the driver's dashboard lower cover. Turn the ignition switch to ON (II), select SCS mode, then the D indicator will indicate flash the DTC.

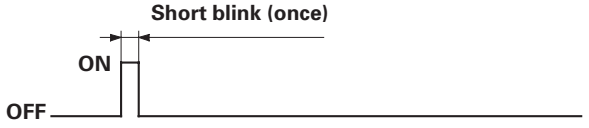


If the D indicator and the MIL come on at the same time, or if a driveability problem is suspected, do this:

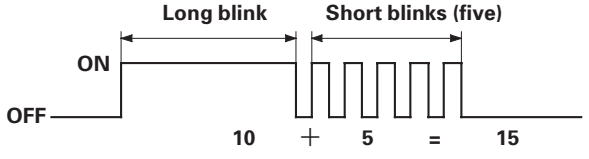
1. Connect the HDS to the DLC. (See the HDS user's manual for specific instructions.)

2. Turn the ignition switch to ON (II), select SCS mode, then observe the D indicator in the gauge control module. Codes 1 through 9 are indicated by individual short blinks. Code 10 and above are indicated by a series of long and short blinks. One long blink equals 10 short blinks. Add the long and short blinks together to determine the code.

Example: DTC 1-1



Example: DTC 15-5



3. Record all fuel and emissions DTCs and A/T DTCs.

4. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC (except DTC 70 which means there is one or more A/T DTCs, and no problems were detected in the fuel and emissions circuit of the PCM).

5. Clear the DTC and data.

6. Drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, and then recheck for DTC. If the A/T DTC returns, go to the indicated DTC's troubleshooting. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight.

(cont'd)

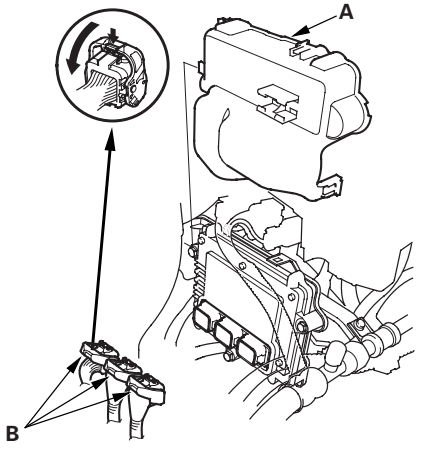
General Troubleshooting Information (cont'd)

How to Troubleshoot Circuits at the PCM Connectors

NOTE: The PCM overwrites data and monitors the EVAP system for up to 15 minutes after the ignition switch is turned OFF. Jumping the SCS line after turning the ignition switch OFF cancels this function. Disconnecting the PCM during this function, without jumping the SCS line first, can damage the PCM.

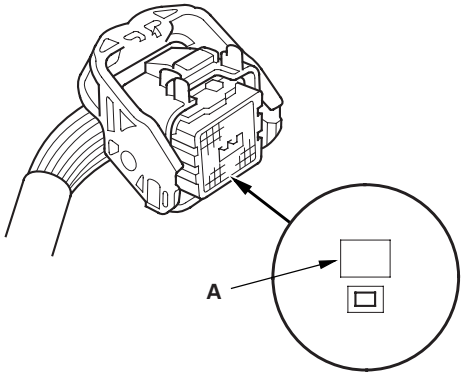
1. Jump the SCS line with the HDS.

2. Remove the PCM cover (A). Disconnect the PCM connectors (B), and probe the terminals from the terminal side of the connectors.

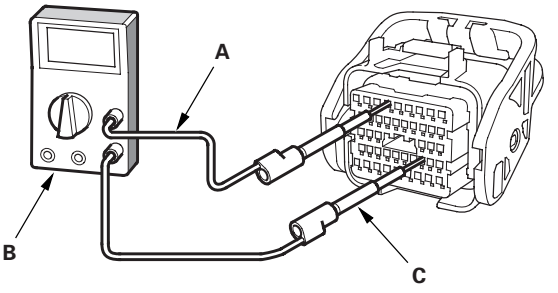


3. Check the connector terminal diameter, and select the suitable pin probe (male).

4. When diagnosis/troubleshooting is made at the PCM connector, use the measurement hole (A) above the terminal you need to check.



5. Connect one end of the patch cords (A) to a commercially available digital multimeter (B), and connect the other patch cord terminals to commercially available banana jacks (Pomona Electronics Tool No. 3563 or equivalent) (C).



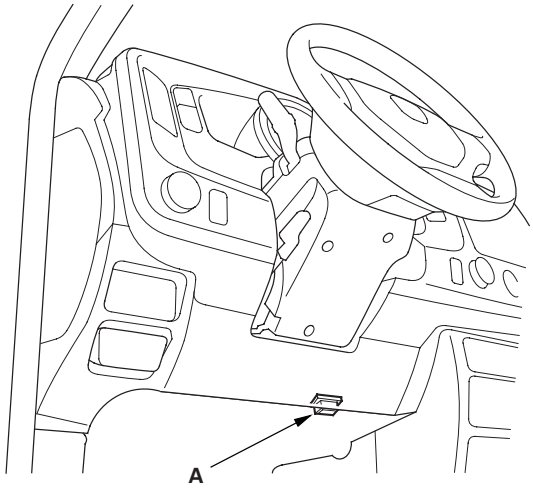
6. Gently slide the pin probe (male) at the connector terminals from the terminal side. Do not force the tips into the terminals.

NOTICE

- For accurate results, always use the pin probe (male).
- To prevent damage to the connector terminals, do not insert test equipment probes, paper clips, or other substitutes as they can damage the terminals. Damaged terminals cause a poor connection and an incorrect measurement.
- Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.

Clear A/T DTCs Procedure

1. Connect the HDS to the DLC (A) located behind the driver's dashboard lower cover.



2. Turn the ignition switch to ON (II).
3. Clear the DTC(s) on the HDS screen.

OBD Status

The OBD status shows the current system status of each DTC and all of the parameters. This function is used to see if the technician's repair was successfully completed. The results of diagnostic tests for the DTC are displayed as:

- PASSED: The on-board diagnosis is successfully finished.
- FAILED: The on-board diagnosis has finished but failed.
- NOT COMPLETED: The on-board diagnosis was running but is out of the enable conditions of the DTC.

How to End a Troubleshooting Session

This procedure must be done after any troubleshooting.

NOTE: Reset the PCM with the HDS while the engine is stopped.

1. Turn the ignition switch to LOCK (0).
2. Turn the ignition switch to ON (II), and wait for 30 seconds.
3. Turn the ignition switch to LOCK (0), and disconnect the HDS from the DLC.
4. Do the PCM idle learn procedure (see page 11-273).
5. Start the engine in P or N, and warm it to normal operating temperature (the radiator fan comes on).
6. To verify that the problem is repaired, test-drive the vehicle for several minutes at speeds over 30 mph (50 km/h) or under the same conditions as those indicated by the freeze date.

(cont'd)

General Troubleshooting Information (cont'd)

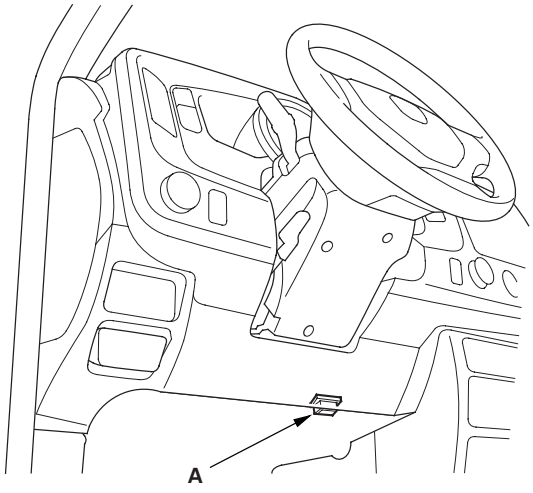
Updating the PCM

Special Tools Required
- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with HDS and CM update software
- HDS pocket tester
- GNA600 and an iN workstation with HDS and CM update software

NOTE:
- Use this procedure when you have to update the PCM during troubleshooting procedure.
- Make sure the HDS/HIM has the latest software version.
- Before you update the PCM, make sure the battery in the vehicle is fully changed.
- Never turn the ignition switch to LOCK (0) during the update. If there is a problem with the update, leave the ignition switch to ON (II).
- To prevent PCM damage, do not operate anything electrical (headlights, audio system, brakes, A/C, power windows, door locks, etc.) during the update.
- To ensure the latest program is installed, do a PCM update whenever the PCM is substituted or replaced.
- You cannot update a PCM with a program it already has. It will only accept a new program.
- High temperature in the engine compartment might cause the PCM to become too hot to run the update. If the engine has been running before this procedure, open the hood and cool the engine compartment.
- If you need to diagnose the Honda interface module (HIM) because the HIM's red (#3) lamp came on or was flashed during the update, leave the ignition switch in the ON (II) position when you disconnect the HIM from the data link connector (DLC). This will prevent the PCM damage.

1. Turn the ignition switch to ON (II), but do not start the engine.

2. Connect the HDS to the DLC (A) located behind the driver's dashboard lower cover.



3. Make sure the HDS communicates with the PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-194). If you are returning from the DLC circuit troubleshooting, skip steps 4 to 5 and clean the throttle body after updating the PCM (see page 11-314).

4. Select the INSPECTION MENU with the HDS.

5. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the HDS screen prompts.

   NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.

6. Exit the HDS diagnostic system, then select the CM update, and follow the screen prompts to update the PCM.

7. If the software in the PCM is the latest, disconnect the HDS/HIM from the DLC, and go back to the procedure that you were doing. If the software in the PCM is not the latest, follow the instructions on the screen. If prompted to choose the PGM-FI system or the A/T system, make sure you update both.

   NOTE: If the PCM update procedure requires you to cool the PCM, follow the instructions on screen. If you run into a problem during the update procedure, (programming takes over 15 minutes, status bar goes over 100 %, D or immobilizer light flashes, HDS tablet freezes, etc.), follow these steps to minimize the chance of damaging the PCM:
   - Leave the ignition switch in the ON (II) position.
   - Connect a jumper battery (do not connect a battery charger).
   - Shut down the HDS.
   - Disconnect the HDS from the DLC.
   - Reboot the HDS.
   - Reconnect the HDS to the DLC, and try the update procedure again.

8. If the TP POSITION CHECK failed in step 6, clean the throttle body (see page 11-314).

9. Do the PCM idle learn procedure (see page 11-273).

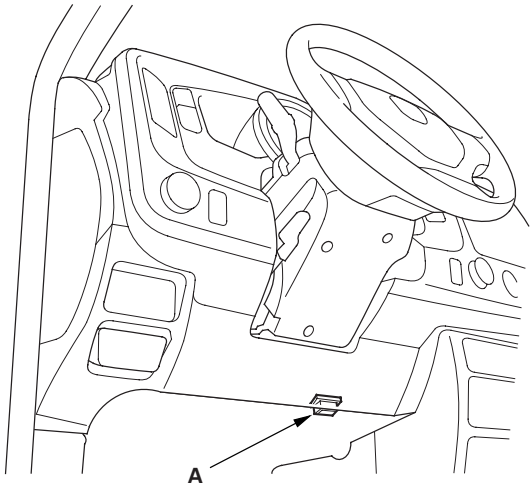
10. Do the CKP pattern learn procedure (see page 11-4).

Substituting the PCM

Special Tools Required
- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with HDS and CM update software
- HDS pocket tester
- GNA600 and an iN workstation with HDS and CM update software

NOTE: Use this procedure when you have to substitute a known-good PCM during troubleshooting procedure.

1. Connect the HDS to the DLC (A) located behind the driver's dashboard lower cover.



2. Turn the ignition switch to ON (II).

3. Make sure the HDS communicates with the PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-194). If you are returning from DLC circuit troubleshooting, skip steps 5 to 10, and clean the throttle body after substituting the PCM (see page 11-314).

4. Select the INSPECTION MENU with the HDS.

5. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the HDS screen prompts.

   NOTE: If the TP POSITION CHECK indicates FAILED, continue to the end of this procedure.

6. Jump the SCS line with the HDS.

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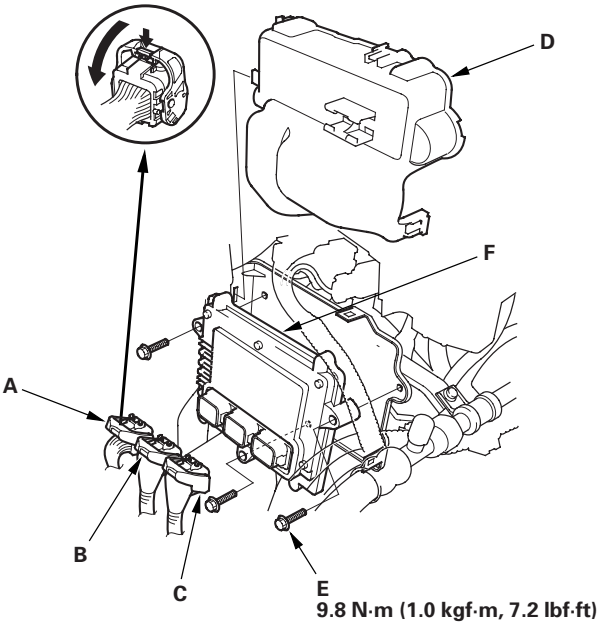
General Troubleshooting Information (cont'd)

7. Remove the PCM cover (D).



8. Disconnect PCM connectors A, B, and C.

   NOTE: PCM connectors A, B, and C have symbols (A=□, B=○, C=△) embossed on them for identification.

9. Remove the bolts (E), and remove the PCM (F).

10. Install a known-good PCM in the reverse order of removal.

11. Open the SCS with the HDS.

12. Turn the ignition switch to ON (II).

    NOTE: DTC P0630 ''VIN Not Programmed or Mismatch'' may be stored because the VIN has not been programmed into the PCM; ignore it, and continue this procedure.

13. Manually input the VIN to the PCM with the HDS.

14. Update the PCM if it does not have the latest software.

15. Select the IMMOBI SYSTEM with the HDS.

16. Enter the immobilizer code using the PCM replacement procedure in the HDS; this allows you to start the engine.

17. Reset the PCM with the HDS.

18. If the TP POSITION CHECK failed in step 6, clean the throttle body (see page 11-314).

19. Do the PCM idle learn procedure (see page 11-273).

20. Do the CKP pattern learn procedure (see page 11-4).

DTC Troubleshooting Index

NOTE: Before you troubleshoot, record all freeze data and review General Troubleshooting Information (see page 14-4).

DTC * (1)	D Indicator	MIL	Detection Item	Page
P0705 (5-2) * (2)	Blinks	ON	Short in Transmission Range Switch Circuit (Multiple Shift-position Input)	(see page 14-77)
P0706 (6-2) * (2)	OFF	ON	Open in Transmission Range Switch Circuit	(see page 14-86)
P0711 (28-5) * (2)	Blinks	OFF	Problem in ATF Temperature Sensor Circuit	(see page 14-90)
P0712 (28-3) * (2)	Blinks	OFF	Short in ATF Temperature Sensor Circuit	(see page 14-91)
P0713 (28-4) * (2)	Blinks	OFF	Open in ATF Temperature Sensor Circuit	(see page 14-93)
P0716 (15-5) * (2)	Blinks	ON	Problem in Input Shaft (Mainshaft) Speed Sensor Circuit	(see page 14-96)
P0717 (15-3) * (2)	Blinks	ON	Problem in Input Shaft (Mainshaft) Speed Sensor Circuit (No Signal Input)	(see page 14-96)
P0718 (15-6) * (2)	Blinks	ON	Input Shaft (Mainshaft) Speed Sensor Intermittent Failure	(see page 14-102)
P0721 (9-5) * (2)	Blinks	ON	Problem in Output Shaft (Countershaft) Speed Sensor Circuit	(see page 14-105)
P0722 (9-3) * (2)	Blinks	ON	Problem in Output Shaft (Countershaft) Speed Sensor Circuit (No Signal Input)	(see page 14-105)
P0723 (9-6) * (2)	Blinks	ON	Output Shaft (Countershaft) Speed Sensor Intermittent Failure	(see page 14-111)
P0731 (64-1)	Blinks	OFF	Problem in 1st Clutch and 1st Clutch Hydraulic Circuit (1st gear incorrect ratio)	(see page 14-114)
P0732 (64-2)	Blinks	OFF	Problem in 2nd Clutch and 2nd Clutch Hydraulic Circuit (2nd gear incorrect ratio)	(see page 14-116)
P0733 (64-3)	Blinks	OFF	Problem in 3rd Clutch and 3rd Clutch Hydraulic Circuit (3rd gear incorrect ratio)	(see page 14-118)
P0734 (64-4)	Blinks	OFF	Problem in 4th Clutch and 4th Clutch Hydraulic Circuit (4th gear incorrect ratio)	(see page 14-119)
P0735 (64-5)	Blinks	OFF	Problem in 5th Clutch and 5th Clutch Hydraulic Circuit (5th gear incorrect ratio)	(see page 14-120)
P0741 (40-3)	OFF	ON	Torque Converter Clutch Hydraulic Circuit Stuck OFF	(see page 14-121)
P0746 (76-3)	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve A Stuck OFF	(see page 14-122)
P0747 (76-4)	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve A Stuck ON	(see page 14-122)
P0751 (70-3)	Blinks	ON	Shift Solenoid Valve A Stuck OFF	(see page 14-124)
P0752 (70-4)	Blinks	ON	Shift Solenoid Valve A Stuck ON	(see page 14-124)
P0756 (71-3)	Blinks	ON	Shift Solenoid Valve B Stuck OFF	(see page 14-125)
P0757 (71-4)	Blinks	ON	Shift Solenoid Valve B Stuck ON	(see page 14-125)
P0761 (72-3)	Blinks	ON	Shift Solenoid Valve C Stuck OFF	(see page 14-126)
P0762 (72-4)	Blinks	ON	Shift Solenoid Valve C Stuck ON	(see page 14-126)

NOTE:

* (1): The DTC in parentheses is the Honda code that you will see when you use the SCS mode. The first number(s) before the - (hyphen) is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.
* (2): This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

(cont'd)

DTC Troubleshooting Index (cont'd)

NOTE: Before you troubleshoot, record all freeze data and review General Troubleshooting Information (see page 14-4).

DTC * (1)	D Indicator	MIL	Detection Item	Page
P0776 (77-3)	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve B Stuck OFF	(see page 14-127)
P0777 (77-4)	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve B Stuck ON	(see page 14-127)
P0780 (45-1)	Blinks	ON	Problem in Shift Control System	(see page 14-128)
P0847 (26-3) * (2)	Blinks	OFF	Short in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck ON	(see page 14-129)
P0848 (26-4) * (2)	Blinks	OFF	Open in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck OFF	(see page 14-131)
P0872 (27-3)	Blinks	OFF	Short in 4th Clutch Transmission Fluid Pressure Switch Circuit, or 4th Clutch Transmission Fluid Pressure Switch Stuck ON	(see page 14-134)
P0873 (27-4)	Blinks	OFF	Open in 4th Clutch Transmission Fluid Pressure Switch Circuit, or 4th Clutch Transmission Fluid Pressure Switch Stuck OFF	(see page 14-136)
P0962 (16-3) * (2)	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve A Circuit	(see page 14-139)
P0963 (16-4) * (2)	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve A	(see page 14-142)
P0966 (23-3) * (2)	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit	(see page 14-145)
P0967 (23-4) * (2)	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve B	(see page 14-148)
P0970 (29-3) * (2)	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve C Circuit	(see page 14-151)
P0971 (29-4) * (2)	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve C	(see page 14-154)
P0973 (7-3) * (2)	Blinks	ON	Short in Shift Solenoid Valve A Circuit	(see page 14-157)
P0974 (7-4) * (2)	Blinks	ON	Open in Shift Solenoid Valve A Circuit	(see page 14-160)
P0976 (8-3) * (2)	Blinks	ON	Short in Shift Solenoid Valve B Circuit	(see page 14-163)
P0977 (8-4) * (2)	Blinks	ON	Open in Shift Solenoid Valve B Circuit	(see page 14-166)
P0979 (22-3) * (2)	Blinks	ON	Short in Shift Solenoid Valve C Circuit	(see page 14-169)
P0980 (22-4) * (2)	Blinks	ON	Open in Shift Solenoid Valve C Circuit	(see page 14-172)
P2769 (1-3) * (2)	Blinks	ON	Short in Torque Converter Clutch Solenoid Valve Circuit	(see page 14-175)
P2770 (1-4) * (2)	Blinks	ON	Open in Torque Converter Clutch Solenoid Valve Circuit	(see page 14-178)

NOTE:

* (1): The DTC in parentheses is the Honda code that you will see when you use the SCS mode. The first number(s) before the - (hyphen) is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.
* (2): This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

Symptom Troubleshooting Index

Symptom	Probable cause(s)	Notes
When you turn the ignition switch to ON (II), the D indicator comes on and stays on in all shift lever positions, or it never comes on at all	• F-CAN communication line error • Gauge control module defective • PCM defective	• Check the F-CAN communication line for a DTC (see page 11-3). • Check the indicator drive circuit in the gauge control module by using the gauge control module self-diagnostic function (see page 22-245).
A/T gear position indicator does not come on while the shift lever is in that position	• F-CAN communication line error • Gauge control module defective • PCM defective • Transmission range switch defective	• Check the F-CAN communication line for a DTC (see page 11-3). • Check the indicator drive circuit in the gauge control module by using the gauge control module self-diagnostic function (see page 22-245). • Inspect the transmission range switch (see page 14-272).
Transmission still shifts into 4th or 5th gear in D even though the D3 switch is pushed	A problem in the D3 switch circuit	• Check the D3 switch circuit (see page 14-270). • Check the D3 switch (see page 14-276).
Shift lever cannot be moved from P while you are pressing on the brake pedal	• Accelerator pedal position sensor circuit • Accelerator pedal position sensor defective • Brake pedal position switch circuit • Brake pedal position switch defective • Shift lock solenoid defective • Shift lock solenoid control circuit • Shift lock mechanism defective • Throttle body defective • Transmission range switch ATP P switch stuck OFF • Transmission range switch ATP P switch line opened	• Inspect the APP sensor signal (see page 11-248). • Troubleshoot the shift lock system circuit (see page 14-282). • Test the shift lock solenoid (see page 14-286). • Inspect the transmission range switch (see page 14-272).
Ignition switch cannot be moved from ACC (I) to LOCK (0) (key is pushed in, shift lever in P)	A problem in the key interlock system of the interlock system	Check the interlock system - key interlock system circuit (see page 14-285).
When you turn the ignition switch to ON (II), the D3 indicator comes on and stays on in all shift lever positions, or it never comes on at all	• Gauge control module defective • PCM defective • F-CAN circuit defective	• Check the indicator drive circuit in the gauge control module by using the gauge control module self-diagnostic function (see page 22-245). • Check for a short or an open in F-CAN wires between PCM and gauge control module.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
When you turn the ignition switch to ON (II), the A/T TEMP indicator comes on and stays on or never comes on at all	• Gauge control module defective • PCM defective • F-CAN circuit defective	• Check the indicator drive circuit in the gauge control module by using the gauge control module self-diagnostic function (see page 22-245). • Check for a short or an open in F-CAN wires between PCM and gauge control module.
Engine runs, but vehicle does not move in any gear	1. Low ATF level 2. Shift cable broken or out of adjustment 3. Connection between shift cable and transmission or body worn 4. ATF pump worn or binding 5. Regulator valve stuck or spring worn 6. ATF strainer clogged 7. Mainshaft worn or damaged 8. Final gears worn or damaged 9. Park mechanism defective 10. Transmission-to-engine assembly error 11. Axle disengaged	• Check the ATF level and check the ATF cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines. • Check for a loose shift cable at the shift lever and the transmission control lever. • Improper alignment of the ATF pump and the torque converter housing may cause the ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Check the line pressure. • Check the ATF strainer for debris. If the strainer is clogged, find the damaged components that caused the debris. • Inspect the differential pinion gears for wear. If the differential pinion gears are worn, replace the differential assembly, replace the ATF strainer, thoroughly clean the transmission, and clean the cooler and lines. Replace the torque converter. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in the ATF pump seizure. • Install the main seal flush with the torque converter housing. If you push it into the torque converter housing until it bottoms out, it will block the fluid return passage and result in damage.
Vehicle moves in R, but not in D, 2, or 1	1. 1st accumulator defective 2. Idler gears worn or damaged 3. 1st clutch defective	• Check the 1st clutch pressure. • Inspect the secondary shaft and 1st/1st-hold clutch assembly for wear and damage. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If they are OK, adjust the clearance with the clutch end-plate.

Symptom	Probable cause(s)	Notes
Vehicle moves in 2 and R, but not in D or 1	1. 1st gear one-way clutch defective 2. 1st gears worn or damaged 3. 1st clutch defective	• Check the 1st clutch pressure. • Inspect the secondary shaft and 1st/1st-hold clutch assembly for wear and damage. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If they are OK, adjust the clearance with the clutch end-plate.
Vehicle moves in D, 2, and R, but not in 1	1. 1st-hold accumulator defective 2. 1st-hold clutch defective	• Check the 1st-hold clutch pressure. • Inspect the secondary shaft and 1st/1st-hold clutch assembly for wear and damage. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the 1st-hold clutch plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate.
Vehicle moves in D, 1, and R, but not in 2	1. 2nd accumulator defective 2. 2nd clutch defective	• Check the 2nd clutch pressure. • Inspect the secondary shaft and 2nd clutch assembly for wear and damage. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Vehicle moves in D, 2, and 1, but not in R (or moves forward in R)	1. Shift fork shaft stuck 2. Modulator valve defective 3. Reverse CPC valve defective 4. 5th accumulator defective 5. 5th clutch defective 6. Reverse gears worn or damaged	• Check the line pressure and 5th clutch pressure. • Check for a missing shift fork bolt on the shift fork shaft. • Check the ATF strainer for debris. If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for the contamination is found, replace the torque converter. • Inspect the reverse selector gear teeth chamfers, and inspect the engagement teeth chamfers of the countershaft 5th gear and reverse gear. Replace the reverse gears and the reverse selector if they are worn or damaged. If the transmission makes clicking, grinding, or whirring noises, also replace the mainshaft 5th gear, reverse idler gear, and countershaft 5th gear. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.
Poor acceleration; flares when starting off in D and R	1. Low ATF level 2. Shift cable broken or out of adjustment 3. ATF pump worn or binding 4. Regulator valve stuck or spring worn 5. ATF strainer clogged 6. Torque converter check valve defective	• Check the ATF level and check the ATF cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines. • Check for a loose shift cable at the shift lever and the transmission control lever. • Check the line pressure. • Check the ATF strainer for debris. If the strainer is clogged, find the damaged components that caused the debris. • Improper alignment of the ATF pump and the torque converter housing may cause the ATF pump seizure. The symptom is mostly an rpm-ticking noise or a high pitched squeak. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in the ATF pump seizure if not detected. Use the proper tools.

Symptom	Probable cause(s)	Notes
Poor acceleration; flares when starting off in D and R; stall speed high in D, 2, and 1	1. One-way check ball defective 2. 1st clutch defective	• Check the 1st clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If they are OK, adjust the clearance with the clutch end-plate.
Poor acceleration; flares when starting off in D and R; stall speed high in 2	1. 2nd accumulator defective 2. 2nd clutch defective	• Check the 2nd clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.
Poor acceleration; flares when starting off in D and R; stall speed high in R	1. Shift solenoid valve C defective 2. Shift cable broken or out of adjustment 3. Reverse CPC valve defective 4. 5th accumulator defective 5. 5th clutch defective	• Check for a stored DTC, and check for loose connectors. • Inspect the O-ring, and check the shift solenoid valve seizure. • Check for a loose shift cable at the shift lever and the transmission control lever. • Check the 5th clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Poor acceleration; flares when starting off in D and R; stall speed low	1. Torque converter clutch solenoid valve defective 2. Torque converter one-way clutch defective 3. Engine output low 4. Torque converter clutch piston defective 5. Lock-up shift valve defective	• Check for a stored DTC, and check for loose connectors. • Inspect the O-ring, and check the solenoid valve seizure. • Replace torque converter. • Check for a stuck lock-up valve in the valve body.
Engine idle vibration	1. Low ATF level 2. Torque converter clutch solenoid valve defective 3. Drive plate defective or transmission misassembled 4. Engine output low 5. Torque converter clutch piston defective 6. ATF pump worn or binding 7. Lock-up shift valve defective	• Set the idle rpm in gear to the specified idle speed. If still no good, adjust the engine and transmission mounts. • Check the ATF level and check the ATF cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines. • Improper alignment of the ATF pump and the torque converter housing may cause the ATF pump seizure. The symptom is mostly an rpm-related ticking noise or a high pitched squeak. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in the ATF pump seizure if not detected. Use the proper tools.
Vehicle moves in N	1. Excessive ATF 2. Foreign material in separator plate orifice 3. Relief valve defective 4. Lubrication control valve defective 5. 1st-hold clutch defective 6. 1st clutch defective 7. 2nd clutch defective 8. 3rd clutch defective 9. 4th clutch defective 10. 5th clutch defective 11. Clutch end plate clearance incorrect 12. Needle bearing seized, worn, or damaged 13. Thrust washer seized, worn, or damaged	• Check the ATF level, and drain the ATF if it is overfilled. • Check all clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.

Symptom	Probable cause(s)	Notes
Late shift after shifting from N to D, or excessive shock when shifting	1. Shift solenoid valve C defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. A/T clutch pressure control solenoid valve C defective 5. Shift cable broken or out of adjustment 6. Connection between shift cable and transmission or body worn 7. Input shaft (mainshaft) speed sensor defective 8. Output shaft (countershaft) speed sensor defective 9. ATF temperature sensor defective 10. CPC valve C defective 11. Foreign material in separator plate orifice 12. Shift valve C defective 13. Shift valve E defective 14. Servo control valve defective 15. 1st accumulator defective 16. 1st check ball stuck 17. One-way check ball defective 18. 1st clutch defective	• Check for a stored DTC, and check for loose connectors. • Inspect the O-ring, and check the shift solenoid valve for seizure. • Inspect the A/T clutch pressure control solenoid valve body gasket and the ATF feed pipes for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves. • Check for a loose shift cable at the shift lever and the transmission control lever. • Check the 1st clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If they are OK, adjust the clearance with the clutch end-plate.
Late shift after shifting from N to R, or excessive shock when shifting	1. Shift solenoid valve C defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. A/T clutch pressure control solenoid valve C defective 5. Shift cable broken or out of adjustment 6. Connection between shift cable and transmission or body worn 7. Input shaft (mainshaft) speed sensor defective 8. Output shaft (countershaft) speed sensor defective 9. ATF temperature sensor defective 10. Shift fork shaft stuck 11. CPC valve C defective 12. Reverse CPC valve defective 13. Foreign material in separator plate orifice 14. Shift valve E defective 15. 5th accumulator defective 16. 5th clutch defective	• Check for a stored DTC, and check for loose connectors. • Inspect the O-ring, and check the shift solenoid valve for seizure. • Inspect the A/T clutch pressure control solenoid valve body gasket and ATF feed pipes for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves. • Check for a loose shift cable at the shift lever and the transmission control lever. • Check the 5th clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Transmission does not shift	1. Input shaft (mainshaft) speed sensor defective 2. Output shaft (countershaft) speed sensor defective 3. Modulator valve defective	• Check for a stored DTC, and check for loose connectors. • Check the line pressure.
Erratic shifting: fails to shift in D; starts off in 5th	1. Shift solenoid valve B defective 2. Shift valve B defective	• Check for a stored DTC, and check for loose connectors. • Inspect the O-ring, and check the shift solenoid valve for seizure.
Erratic shifting: fails to shift in 2; starts off in 4th	1. Shift solenoid valve B defective 2. Shift valve B defective	• Check for a stored DTC, and check for loose connectors. • Inspect the O-ring, and check the shift solenoid valve for seizure.
Erratic shifting: fails to shift in D; starts off in 3rd	1. Shift solenoid valve A defective 2. Shift valve A defective	• Check for a stored DTC, and check for loose connectors. • Inspect the O-ring, and check the shift solenoid valve for seizure.
Erratic shifting: fails to shift in 2; starts off in 1st	1. Shift solenoid valve A defective 2. Shift valve A defective	• Check for a stored DTC, and check for loose connectors. • Inspect the O-ring, and check the shift solenoid valve for seizure.
Excessive shock or flares on all upshifts and downshifts	1. A/T clutch pressure control solenoid valve A defective 2. A/T clutch pressure control solenoid valve B defective 3. Input shaft (mainshaft) speed sensor defective 4. Output shaft (countershaft) speed sensor defective 5. ATF temperature sensor defective 6. CPC valve A defective 7. Foreign material in separator plate orifice	• Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve body gasket and the ATF feed pipes for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves. • Inspect the sensor O-rings.
Excessive shock or flares on 1-2 upshift or 2-1 downshift	1. Foreign material in separator plate orifice 2. 2nd accumulator defective 3. 2nd check ball stuck 4. 2nd clutch defective	• Check the 1st and 2nd clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.

Symptom	Probable cause(s)	Notes
Excessive shock or flares on 2-3 upshift or 3-2 downshift	1. Shift solenoid valve C defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. 3rd clutch transmission fluid pressure switch defective 5. CPC valve B defective 6. Foreign material in separator plate orifice 7. Shift valve C defective 8. 2nd accumulator defective 9. 3rd accumulator defective 10. 2nd check ball stuck 11. 2nd clutch defective 12. 3rd clutch defective	• Check for a stored DTC, and check for loose connectors. • Inspect the O-rings, and check the shift solenoid valve for seizure. • Check for clogged orifice in the transmission fluid pressure switch connector. If the orifice is clogged, remove it and clean the connector. • Check the 2nd and 3rd clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.
Excessive shock or flares on 3-4 upshift or 4-3 downshift	1. Shift solenoid valve C defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. 4th clutch transmission fluid pressure switch defective 5. CPC valve B defective 6. Foreign material in separator plate orifice 7. Shift valve C defective 8. 3rd accumulator defective 9. 4th accumulator defective 10. 3rd clutch defective 11. 4th clutch defective	• Check for a stored DTC, and check for loose connectors. • Inspect the O-rings, and check the shift solenoid valve for seizure. • Check for clogged orifice in the transmission fluid pressure switch connector. If the orifice is clogged, remove it and clean the connector. • Check the 3rd and 4th clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.

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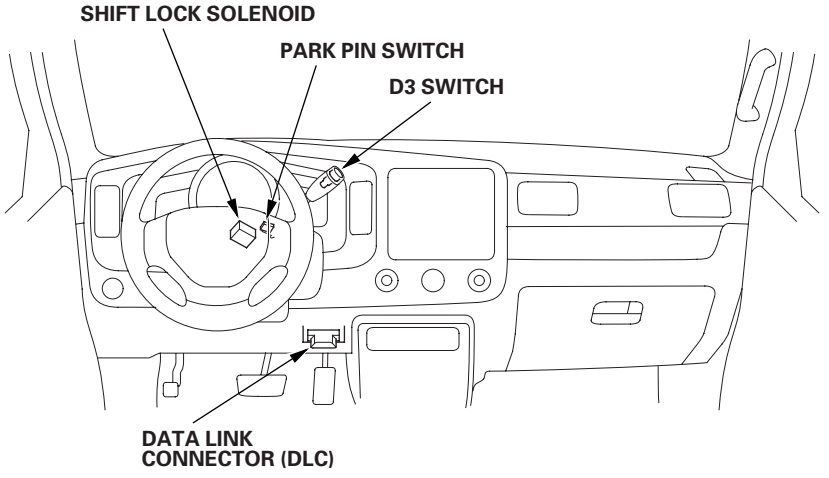
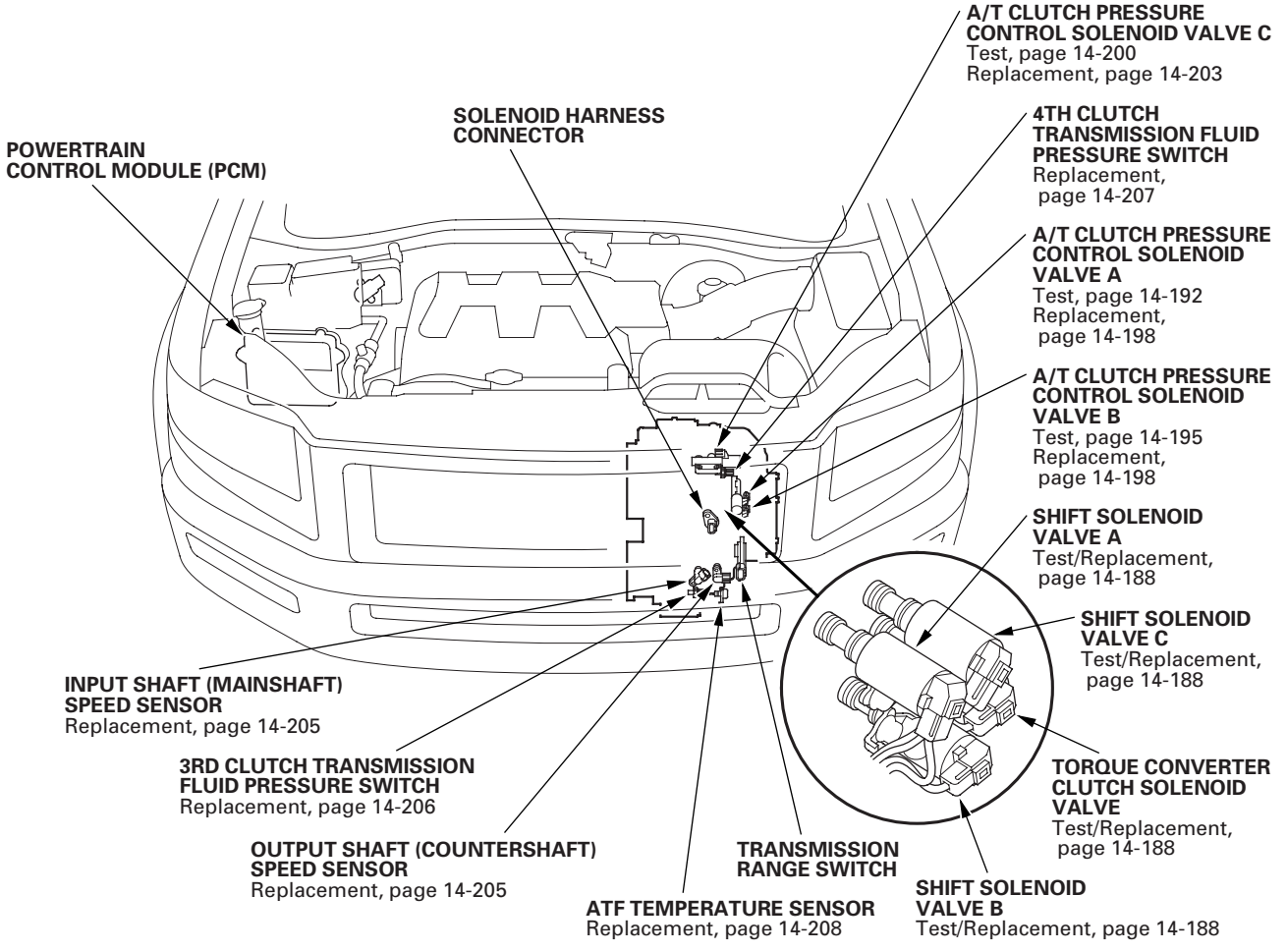
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Excessive shock or flares on 4-5 upshift or 5-4 downshift	1. Shift solenoid valve C defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. A/T clutch pressure control solenoid valve C defective 5. CPC valve B defective 6. CPC valve C defective 7. Foreign material in separator plate orifice 8. Shift valve C defective 9. Shift valve E defective 10. Kick-down valve or kick-down short valve defective 11. 4th accumulator defective 12. 5th accumulator defective 13. 4th clutch defective 14. 5th clutch defective	• Check for a stored DTC, and check for loose connectors. • Inspect the O-rings, and check the shift solenoid valve for seizure. • Check the 4th and 5th clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.
Noise from transmission in all shift lever positions	1. ATF pump worn or binding 2. Idler gears worn or damaged 3. Thrust washer seized, worn, or damaged	Improper alignment of the ATF pump and torque converter housing may cause the ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak.
Vehicle does not accelerate above 31 mph (50 km/h)	Torque converter one-way clutch defective	Replace the torque converter.
Vibration in all shift lever positions	Drive plate defective or transmission misassembled	Check the stall speed.
Shift lever does not operate smoothly	1. Transmission range switch defective or out of adjustment 2. Shift cable broken or out of adjustment 3. Connection between shift cable and transmission or body worn	• Check for a stored DTC, and check for loose connectors. • Inspect the transmission range switch. If the transmission range switch is faulty, replace it. If the transmission range switch is out of adjustment, adjust it and the shift cable. • Check for a loose shift cable at the shift lever and the transmission control lever.
Transmission does not shift into P	1. Shift cable broken or out of adjustment 2. Connection between shift cable and transmission or body worn 3. Park mechanism defective	• Check for a loose shift cable at the shift lever and the transmission control lever. • Check the park pawl, control shaft, and park lever link for wear and damage. Check if the control shaft lever pin is disengaged from the manual valve guide.

Symptom	Probable cause(s)	Notes
Torque converter clutch does not disengage	1. Torque converter clutch solenoid valve defective 2. A/T clutch pressure control solenoid valve C defective 3. Torque converter clutch piston defective 4. Lock-up shift valve defective 5. Lock-up control valve defective 6. Lock-up timing valve defective	• Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve C body gasket for wear and damage. If A/T clutch pressure control solenoid valve C is stuck, inspect the CPC valves.
Torque converter clutch does not operate smoothly	1. Torque converter clutch solenoid valve defective 2. A/T clutch pressure control solenoid valve C defective 3. Torque converter clutch piston defective 4. Torque converter check valve defective 5. Lock-up shift valve defective 6. Lock-up control valve defective 7. Lock-up timing valve defective	• Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve C body gasket for wear and damage. If A/T clutch pressure control solenoid valve C is stuck, inspect the CPC valves. • Center all engine mounts.
Torque converter clutch does not engage	1. Torque converter clutch solenoid valve defective 2. A/T clutch pressure control solenoid valve C defective 3. Input shaft (mainshaft) speed sensor defective 4. Output shaft (countershaft) speed sensor defective 5. Torque converter clutch piston defective 6. Torque converter check valve defective 7. Lock-up shift valve defective 8. Lock-up control valve defective	• Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve C body gasket for wear and damage. If A/T clutch pressure control solenoid valve C is stuck, inspect the CPC valves.
A/T gear position indicator does not indicate shift lever positions	1. Transmission range switch defective or out of adjustment 2. Shift cable broken or out of adjustment 3. Connection between shift cable and transmission or body worn	• Check for a stored DTC, and check for loose connectors. • Inspect the transmission range switch. If the transmission range switch is faulty, replace it. If the transmission range switch is out of adjustment, adjust it and the shift cable. • Check for a loose shift cable at the shift lever and the transmission control lever.
Speedometer and odometer do not work	Output shaft (countershaft) speed sensor defective	Check for a stored DTC, and check for loose connectors.
Engine does not rev to high rpm, and the transmission upshifts at low rpm (engine at normal operating temperature)	VTEC rocker arms defective	Check the engine rocker arms.

Component Location Index





System Description

General Operation

The automatic transmission is a combination of a three-element torque converter and a four-shaft electronically controlled unit which provides five forward and one in reverse. The entire unit is positioned in line with the engine.

Torque Converter, Shafts, Gears, and Clutches
The torque converter consists of a pump, turbine, and stator assembly in a single unit. The converter housing (pump) is connected to the engine crankshaft and turns as the engine turns. Around the outside of the torque converter is a ring gear which meshes with the starter pinion when the engine is being started. The entire torque converter assembly serves as a flywheel, transmitting power to the transmission mainshaft. The transmission has four parallel shafts; the mainshaft, the countershaft, the secondary shaft, and the intermediary shaft. The mainshaft is in line with the engine crankshaft. The mainshaft includes the 4th and 5th clutches, and gears for 3rd, 4th, 5th and reverse (reverse gear is integral with 5th gear). The countershaft includes gears for the final drive, 2nd, idler, 1st, 4th, 5th, and reverse (the final drive gear is integral with the countershaft). The secondary shaft includes the 1st, 1st-hold, and 2nd clutches, and gears for park, 2nd, idler, and 1st. The intermediary shaft includes the 3rd clutch, and gears for 3rd and 4th. The countershaft 5th gear and the countershaft reverse gear can be locked to the countershaft at its left end, providing 5th gear or reverse, depending with which way the selector is moved. The gears on the mainshaft, secondary shaft, and intermediary shaft are in constant mesh with those on the countershaft. When certain conditions of gears in the transmission are engaged by the clutches, power is transmitted through the mainshaft, and/or to the secondary shaft, intermediary shaft, then to the countershaft to provide drive.

Electronic Control
The electronic control system consists of the powertrain control module (PCM), sensors, and seven solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions. The PCM is located in the engine compartment.

Hydraulic Control
The valve bodies include the main valve body, the secondary valve body, the regulator valve body, and the accumulator body. They are bolted to the torque converter housing. The main valve body contains the manual valve, the modulator valve, the torque converter check valve, shift valves A, B, D, and E, CPC valve C, the cooler check valve, the relief valve, the lock-up shift valve, the lock-up timing valve, the lubrication control valve, the lubrication check valve, and the ATF pump gears. The secondary valve body contains shift valve C, CPC valves A and B, the reverse CPC valve, the servo control valve, and the kick-down valve. The regulator valve body contains the regulator valve, the lock-up control valve, and the 3rd accumulator. The accumulator body contains the 1st, 1st-hold, 2nd, 4th, and 5th accumulators, shift solenoid valves A, B, and C, and the torque converter clutch solenoid valve. Fluid from the regulator passes through the manual valve to the various control valves. All the clutches receive fluid from the internal hydraulic circuit.

Shift Control Mechanism
To shift gears, the PCM controls shift solenoid valves A, B, and C, and automatic transaxle (A/T) clutch pressure control solenoid valves A and B, while receiving input signals from various sensors and switches located throughout the vehicle. The shift solenoid valves shift the positions of the shift valves to switch the port to send hydraulic pressure to the clutches. The A/T clutch pressure control solenoid valves A and B control the CPC valves A and B to shift smoothly between lower gear and higher gear. This pressurizes a line to one of the clutches, engaging the clutch and its corresponding gear.

(cont'd)

System Description (cont'd)

General Operation (cont'd)

Lock-up Mechanism
The lock-up mechanism operates in the D position (2nd, 3rd, 4th, and 5th), and D position D3 driving mode (2nd and 3rd). The pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the torque converter clutch piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft. Together with hydraulic control, the PCM optimizes the timing of the lock-up mechanism. When the torque converter clutch solenoid valve activates, modulator pressure changes to switch lock-up on and off. The lock-up control valve and the lock-up timing valve control the range of lock-up according to A/T clutch pressure control solenoid valve C. The torque converter clutch solenoid valve is located on the accumulator body in the transmission, and A/T clutch pressure control solenoid valve C is mounted on the transmission housing. They are all controlled by the PCM.

Gear Selection
The shift lever has six positions; P: PARK, R: REVERSE, N: NEUTRAL, D: DRIVE 1st through 5th gear ranges, and 1st through 3rd gear ranges with D3 driving mode, 2: 2nd gear, and 1: 1st gear.

Position	Description
P: PARK	Front wheels locked; park pawl engaged with park gear on secondary shaft. All clutches are released.
R: REVERSE	Reverse; reverse selector engaged with countershaft reverse gear and 5th clutch locked.
N: NEUTRAL	All clutches are released.
D: DRIVE (1st through 5th)	General driving; starts off in 1st, shifts automatically to 2nd, 3rd, 4th, then 5th, depending on vehicle speed and accelerator pedal position. Downshifts through 4th, 3rd, 2nd, and 1st on deceleration to stop. The lock-up mechanism operates in 2nd, 3rd, 4th, and 5th gear.
D: DRIVE with D3 driving mode (1st through 3rd)	Used for rapid acceleration at highway speeds and general driving; up-hill and down-hill driving; starts off in 1st, shifts automatically to 2nd, then 3rd, depending on vehicle speed and accelerator pedal position. Downshifts through 2nd to 1st on deceleration to stop. The lock-up mechanism operates in 2nd and 3rd gear.
2: SECOND	Used for engine braking or better traction starting off on loose or slippery surfaces; stays in 2nd gear; does not shift up or down.
1: FIRST	Used for engine braking; stays in 1st gear; does not shift up.

Starting is possible only in the P and N positions because of a slide-type neutral-safety switch.

Automatic Transaxle (A/T) Gear Position Indicator
The A/T gear position indicator in the instrument panel shows which shift lever position has been selected.

Transfer Mechanism
The transfer mechanism consists of the transfer drive gear on the differential, the transfer output shaft in the transmission, the transfer drive gear (hypoid gear), the transfer shaft, the transfer output shaft (hypoid gear), and the companion flange. The transfer mechanism assembly is on the rear side of the transmission, beside the differential. The transfer drive gear on the differential drives the transfer output shaft in the transmission. The transfer output shaft in the transmission is connected to the transfer drive gear (hypoid gear) by splines. Power is transmitted from the transfer drive gear on the differential to the rear differential via the transfer and the propeller shaft.

Clutches

The five-speed automatic transmission uses hydraulically-actuated clutches to engage or disengage the transmission gears. When hydraulic pressure is introduced into the clutch drum, the clutch piston moves. This presses the friction discs and steel plates together, locking them so they do not slip. Power is then transmitted through the engaged clutch pack to its hub-mounted gear. Likewise, when the hydraulic pressure is bled from the clutch pack, the piston releases the friction discs and the steel plates, and they are free to slide past each other. This allows the gear to spin independently on its shaft, transmitting no power.

1st Clutch
The 1st clutch engages/disengages 1st gear, and is located at the left end of the secondary shaft. The 1st clutch is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

1st-hold Clutch
The 1st-hold clutch engages/disengages 1st-hold in 1 position, and is located in the 1st clutch drum. The 1st-hold clutch is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

2nd Clutch
The 2nd clutch engages/disengages 2nd gear, and is located at the right end of the secondary shaft. The 2nd clutch is supplied hydraulic pressure through the secondary shaft by a circuit connected to the internal hydraulic circuit.

3rd Clutch
The 3rd clutch engages/disengages 3rd gear, and is located at the end of the intermediary shaft. The 3rd clutch is supplied hydraulic pressure through the intermediary shaft by a circuit connected to the internal hydraulic circuit.

4th Clutch
The 4th clutch engages/disengages 4th gear, and is located at the middle of the mainshaft. The 4th clutch is joined back-to-back to the 5th clutch. The 4th clutch is supplied hydraulic pressure through the mainshaft by a circuit connected to the internal hydraulic circuit.

5th Clutch
The 5th clutch engages/disengages 5th gear, as well as reverse gear, and is located at the middle of the mainshaft. The 5th clutch is joined back-to-back to the 4th clutch. The 5th clutch is supplied hydraulic pressure through the mainshaft by a circuit connected to the internal hydraulic circuit.

One-way Clutch
The one-way clutch is positioned between the 1st clutch hub and the secondary shaft 1st gear. The secondary shaft 1st gear is splined to the 1st-hold clutch hub, with the 1st-hold clutch hub splined to the secondary shaft. The secondary shaft 1st gear provides the outer race surface, and the 1st clutch hub provides the inner race surface. The one-way clutch locks when power is transmitted from the secondary shaft 1st gear to the countershaft 1st gear. The 1st clutch and gears remain engaged in the 1st, 2nd, 3rd, 4th, and 5th gear ranges in D or 2.
However, the one-way clutch disengages when the 2nd, 3rd, 4th, or 5th clutches and gears are applied in D or 2. This is because the increased rotational speed of the gears on the secondary shaft causes the one-way clutch to free-wheel with the 1st clutch still engaged.

System Description (cont'd)

Power Flow

Gear Operation

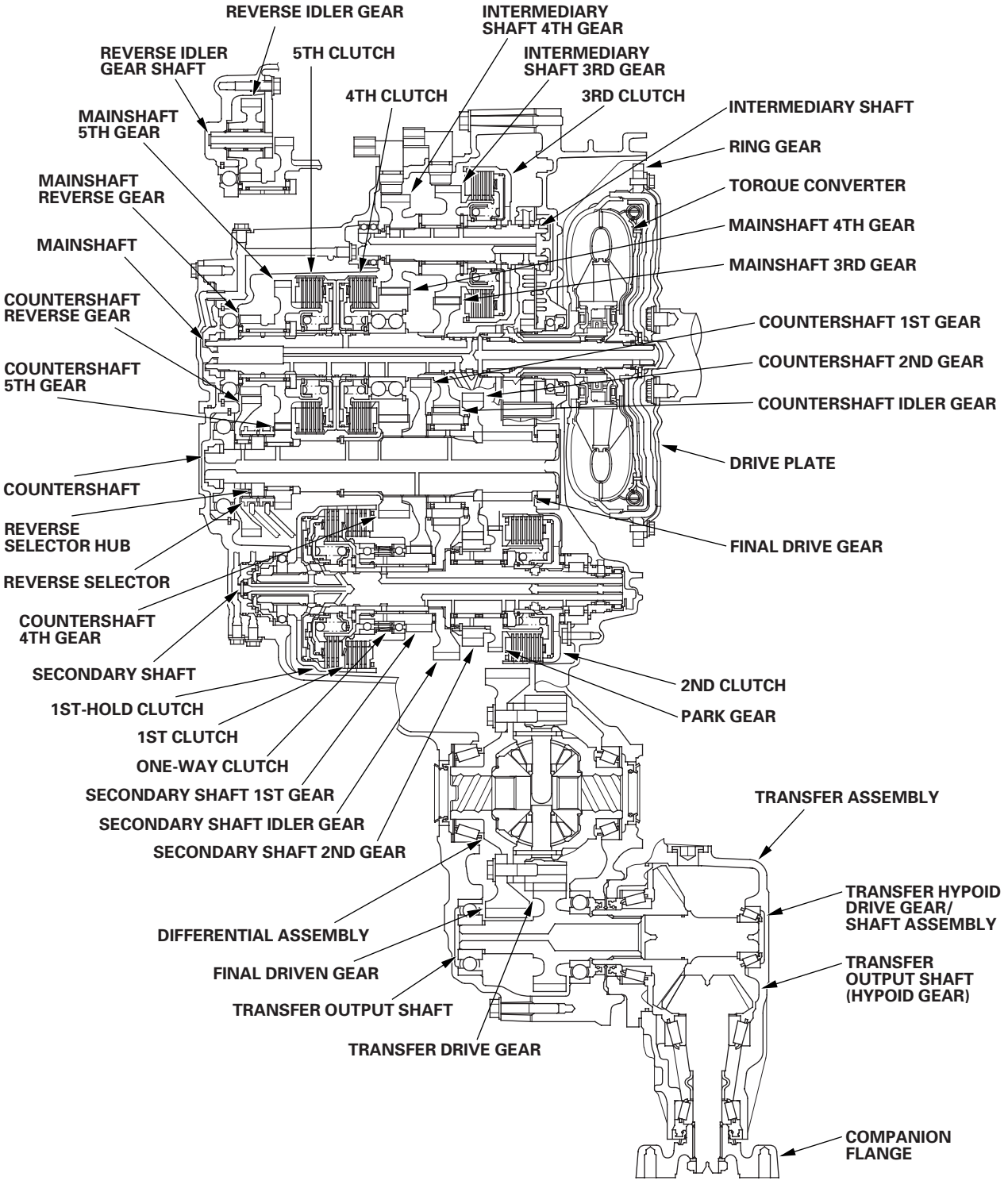
Gears on the mainshaft:
- 4th gear is engaged/disengaged with the mainshaft by the 4th clutch.
- 5th gear is engaged/disengaged with the mainshaft by the 5th clutch.
- Reverse gear is engaged/disengaged with the mainshaft by the 5th clutch.
- 3rd gear is splined with the mainshaft and rotates with the mainshaft.

Gears on the countershaft:
- Final gear is integral with the countershaft.
- 1st gear, 2nd gear, and 4th gear are splined with the countershaft, and rotate with the countershaft.
- 5th gear and reverse gear rotate freely from the countershaft. The reverse selector engages 5th gear and reverse gear with the reverse selector hub. The reverse selector hub is splined to the countershaft so 5th gear and reverse gear engage with the countershaft.
- Idler gear is located over the 2nd gear, and rotates freely from the countershaft.

Gears on the secondary shaft:
- 1st gear is engaged/disengaged with the secondary shaft by the 1st clutch. 1st gear is engaged with the secondary shaft by the one-way clutch and the 1st-hold clutch when decelerating for engine braking.
- 2nd gear is engaged/disengaged with the secondary shaft by the 2nd clutch.
- Idler gear is splined with the secondary shaft, and rotates with the secondary shaft.
- Park gear is integral with the 2nd gear.

Gears on the intermediary shaft:
- 3rd gear is engaged/disengaged with the intermediary shaft by the 3rd clutch.
- 4th gear is splined with the intermediary shaft.

Transmission Cutaway View



(cont'd)

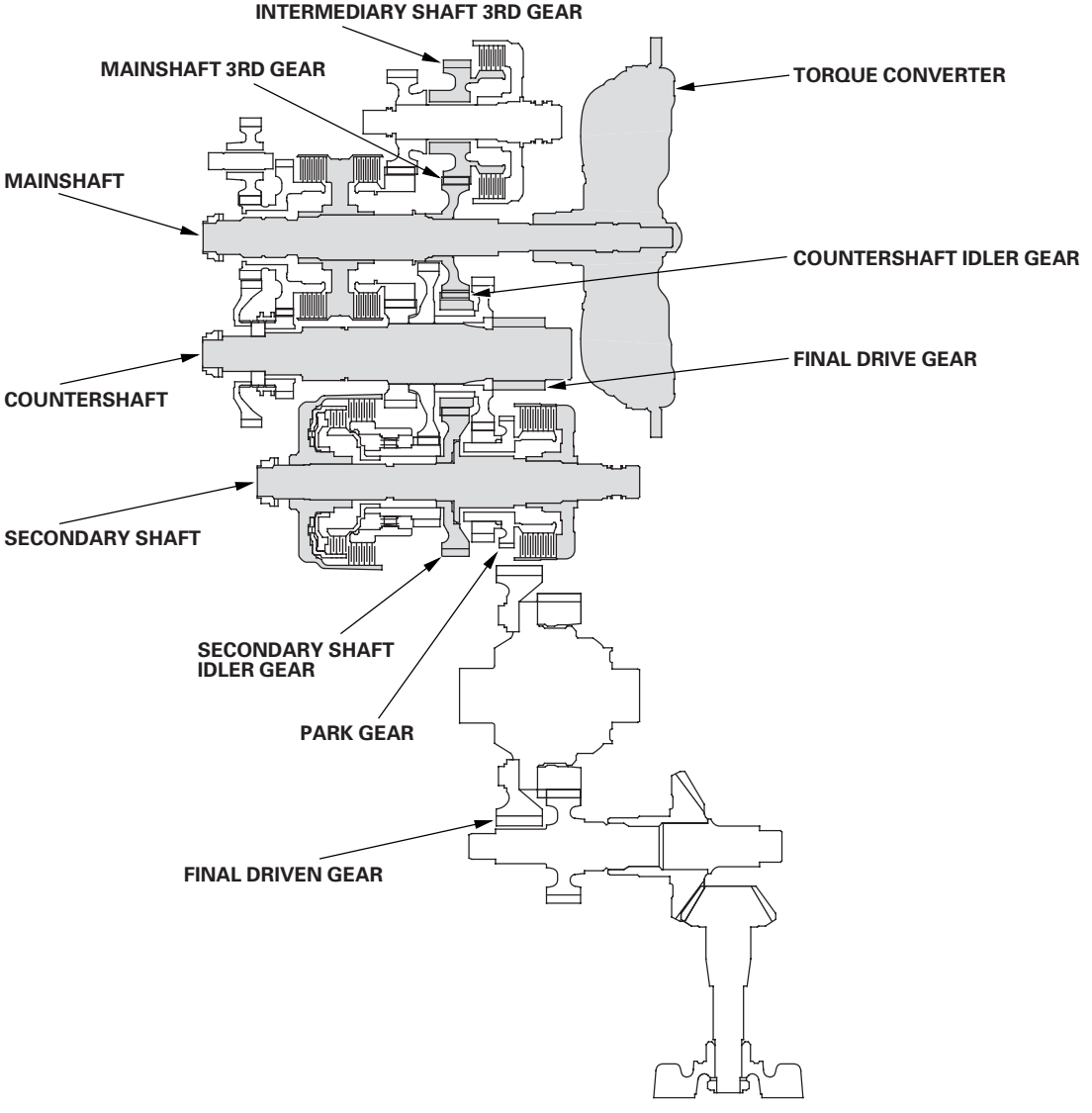
System Description (cont'd)

Power Flow (cont'd)

P Position
Hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft. The countershaft is locked by the park pawl interlocking the park gear.

N Position
Engine power transmitted from the mainshaft drives the mainshaft 3rd gear, the intermediary shaft 3rd gear, but hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft. In this position, the position of the reverse selector differs according to whether the shift lever shifted from D or R:

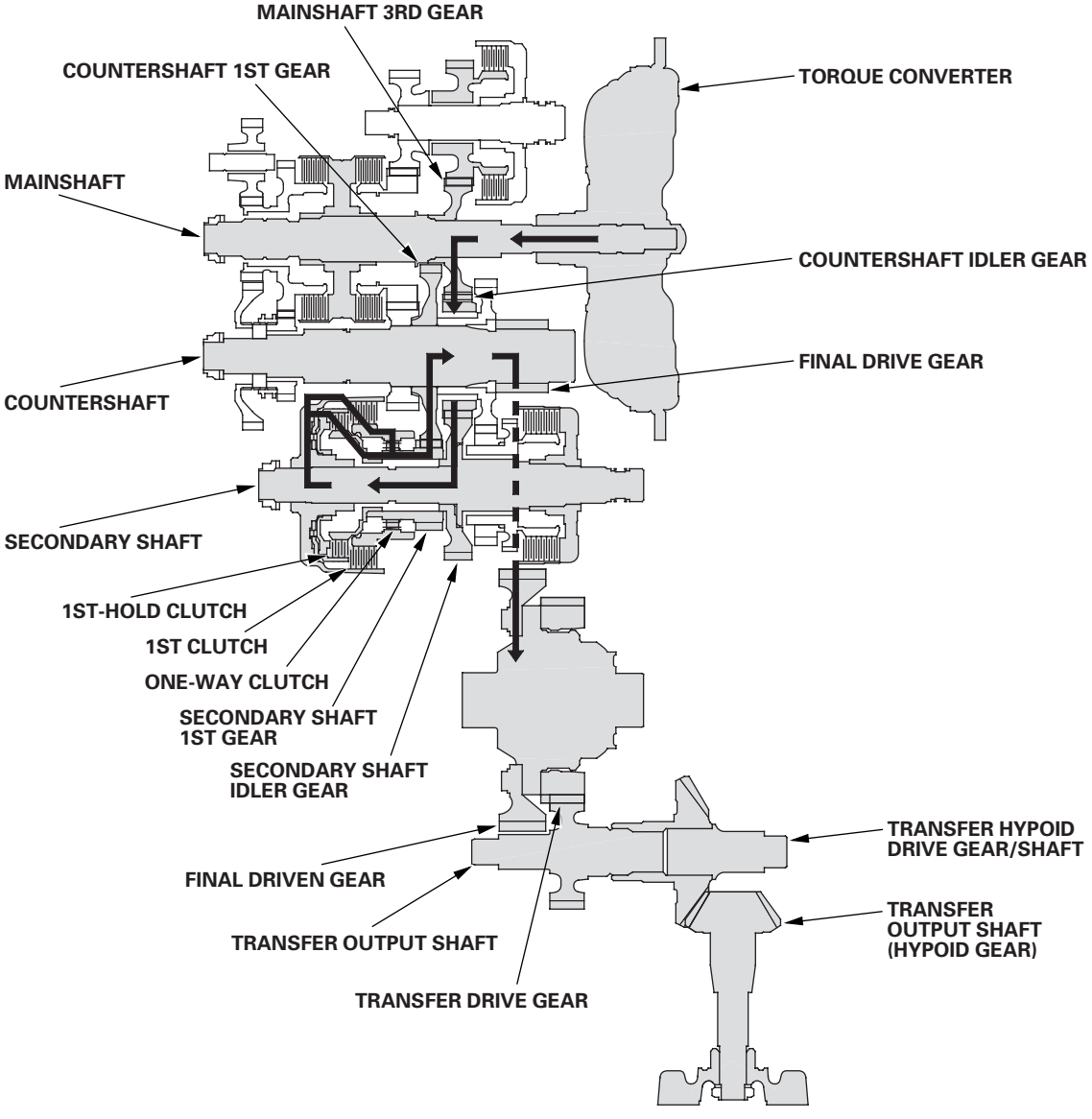
- When shifted from D, the reverse selector engages with the countershaft 5th gear and the reverse selector hub, and the 5th gear engages with the countershaft.
- When shifted from R, the reverse selector engages with the countershaft reverse gear and the reverse selector hub, and the reverse gear engages with the countershaft.



1 Position (Acceleration)

In the 1 position under an acceleration, hydraulic pressure is applied to the 1st clutch and the 1st-hold clutch. The power flow when accelerating is as follows:

- Hydraulic pressure is applied to the 1st clutch, then the 1st clutch engages the secondary shaft 1st gear with the secondary shaft by the one-way clutch.
- The mainshaft 3rd gear drives the secondary shaft via the countershaft idler gear and secondary shaft idler gear.
- The secondary shaft 1st gear drives the countershaft 1st gear and the countershaft.
- Hydraulic pressure is also applied to the 1st-hold clutch, and the 1st-hold clutch engages the secondary shaft 1st gear with the secondary shaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear and the transfer drive gear.
- The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).



(cont'd)

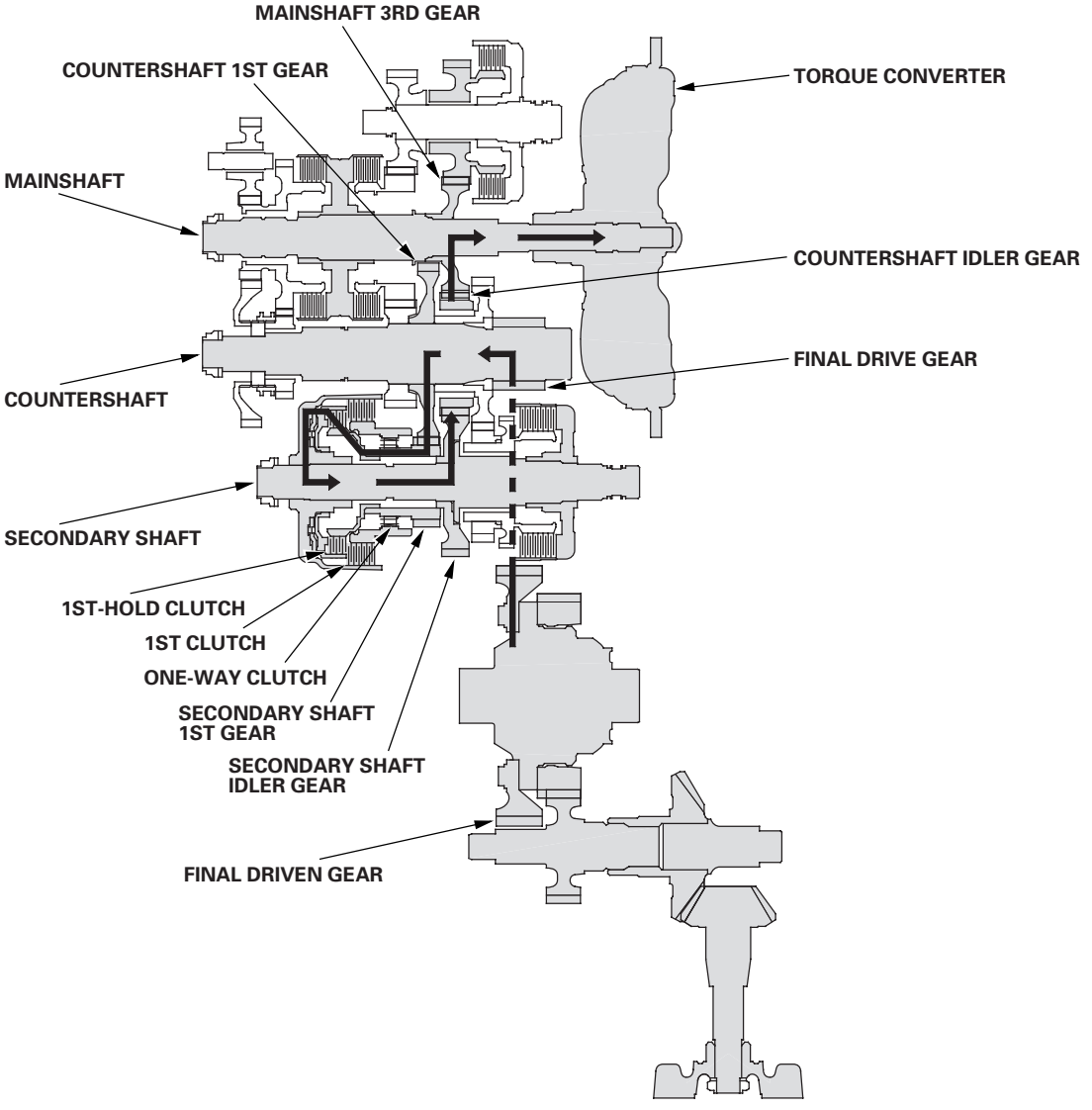
System Description (cont'd)

Power Flow (cont'd)

1 Position (Deceleration)

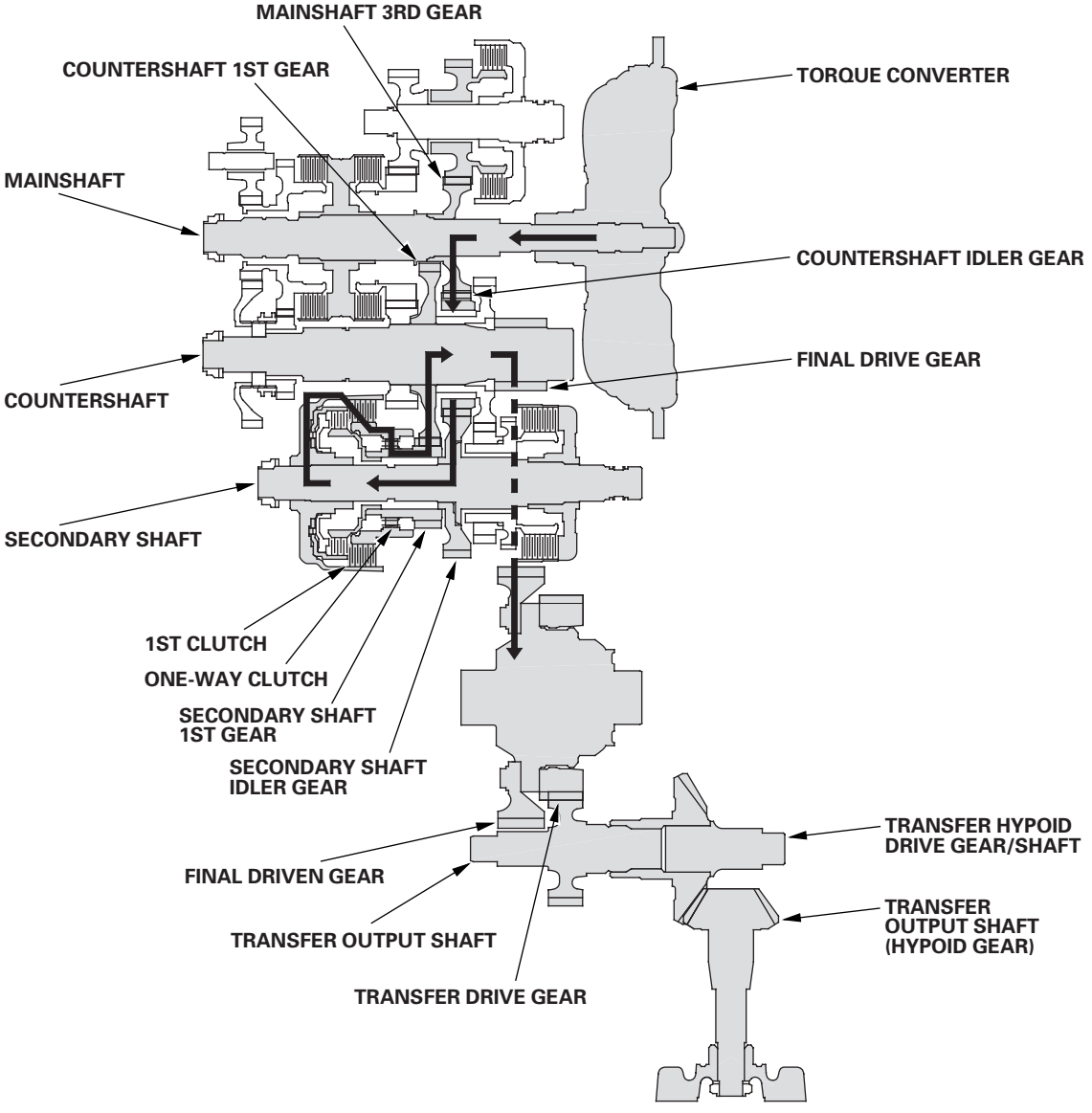
The power flow in the 1 position when decelerating is as follows:

- Hydraulic pressure is applied to the 1st clutch and the 1st-hold clutch.
- Rolling resistance from the road surface goes through the front wheels to the final driven gear, then to the countershaft idler gear.
- The one-way clutch disengages because the application of torque is reversed.
- The force conveyed to the secondary shaft idler gear turns the mainshaft 3rd gear via the countershaft idler gear. As a result, engine braking can be obtained with 1st gear.



D Position
In D, the optimum gear is automatically selected from the 1st, 2nd, 3rd, 4th, and 5th gears (in D); 1st, 2nd, and 3rd gears (in D in the D3 driving mode) according to conditions such as the balance between the throttle opening (engine loading) and vehicle speed.

In 1st gear
- Hydraulic pressure is applied to the 1st clutch, then the 1st clutch engages the secondary shaft 1st gear with the secondary shaft by the one-way clutch.
- The mainshaft 3rd gear drives the secondary shaft via the countershaft idler gear and secondary shaft idler gear.
- The secondary shaft 1st gear drives the countershaft 1st gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear and the transfer drive gear.
- The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).



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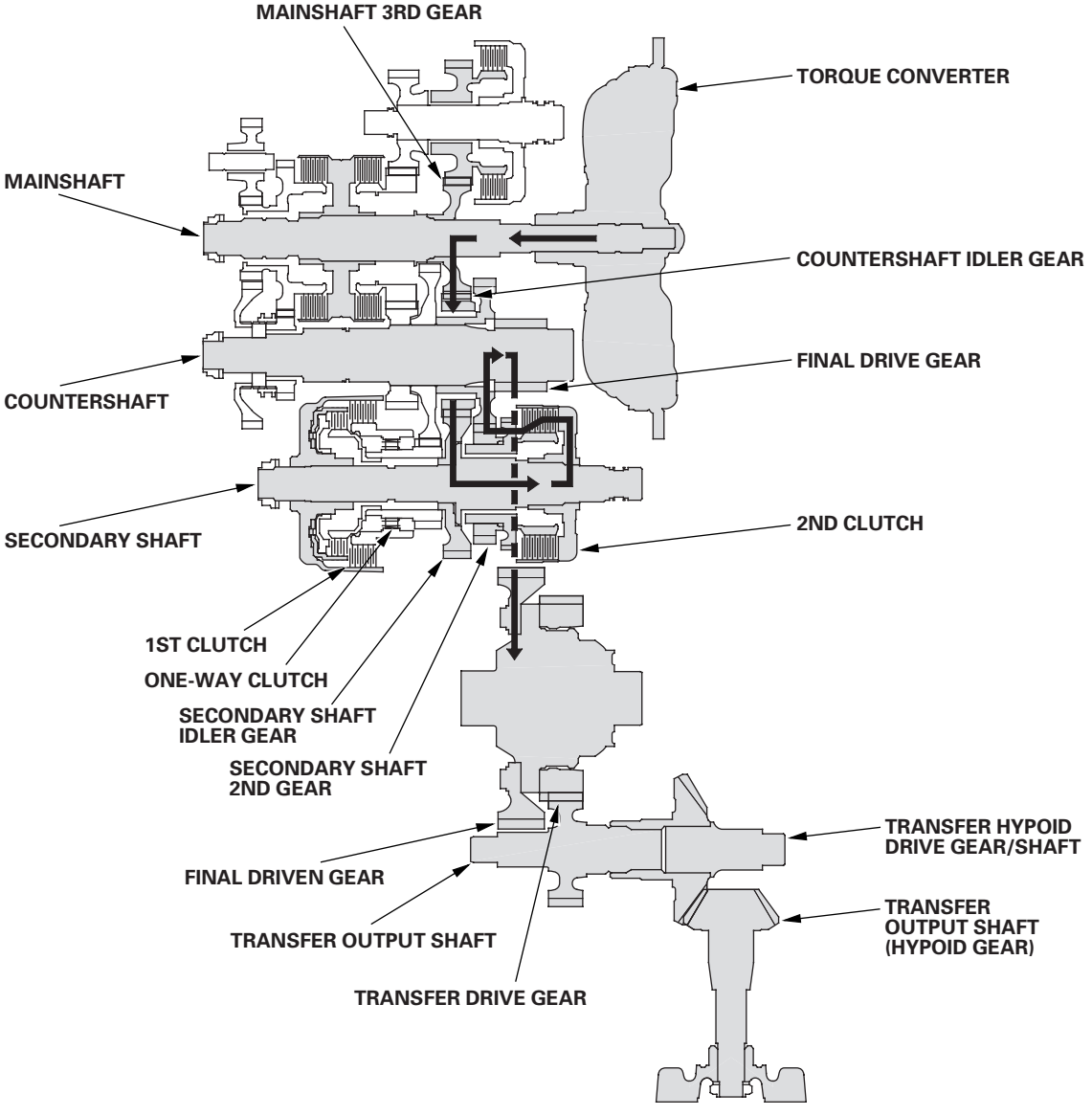
System Description (cont'd)

Power Flow (cont'd)

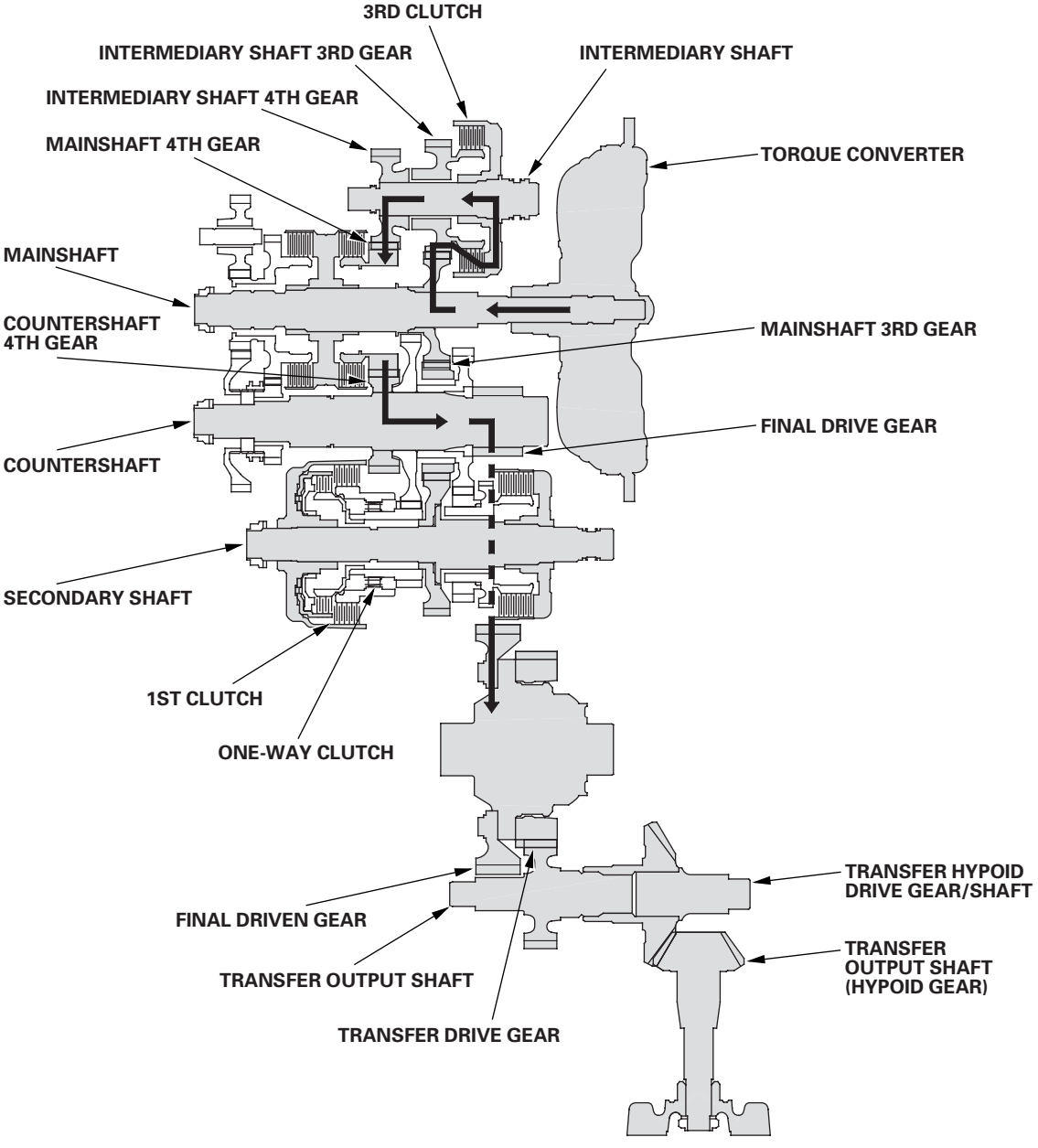
In 2nd gear and 2 Position

- Hydraulic pressure is applied to the 2nd clutch, then the 2nd clutch engages the secondary shaft 2nd gear with the secondary shaft.
- The mainshaft 3rd gear drives the secondary shaft via the countershaft idler gear and secondary shaft idler gear.
- The secondary shaft 2nd gear drives the countershaft 2nd gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear and the transfer drive gear.
- The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 2nd gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.



In 3rd gear

- Hydraulic pressure is applied to the 3rd clutch, then the 3rd clutch engages the intermediary shaft 3rd gear with the intermediary shaft.
- The mainshaft 3rd gear drives the intermediary shaft 4th gear via the intermediary shaft 3rd gear and the 3rd clutch.
- The intermediary shaft 4th gear drives the countershaft 4th gear and the countershaft via the mainshaft 4th gear.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear and the transfer drive gear.
- The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 3rd gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.



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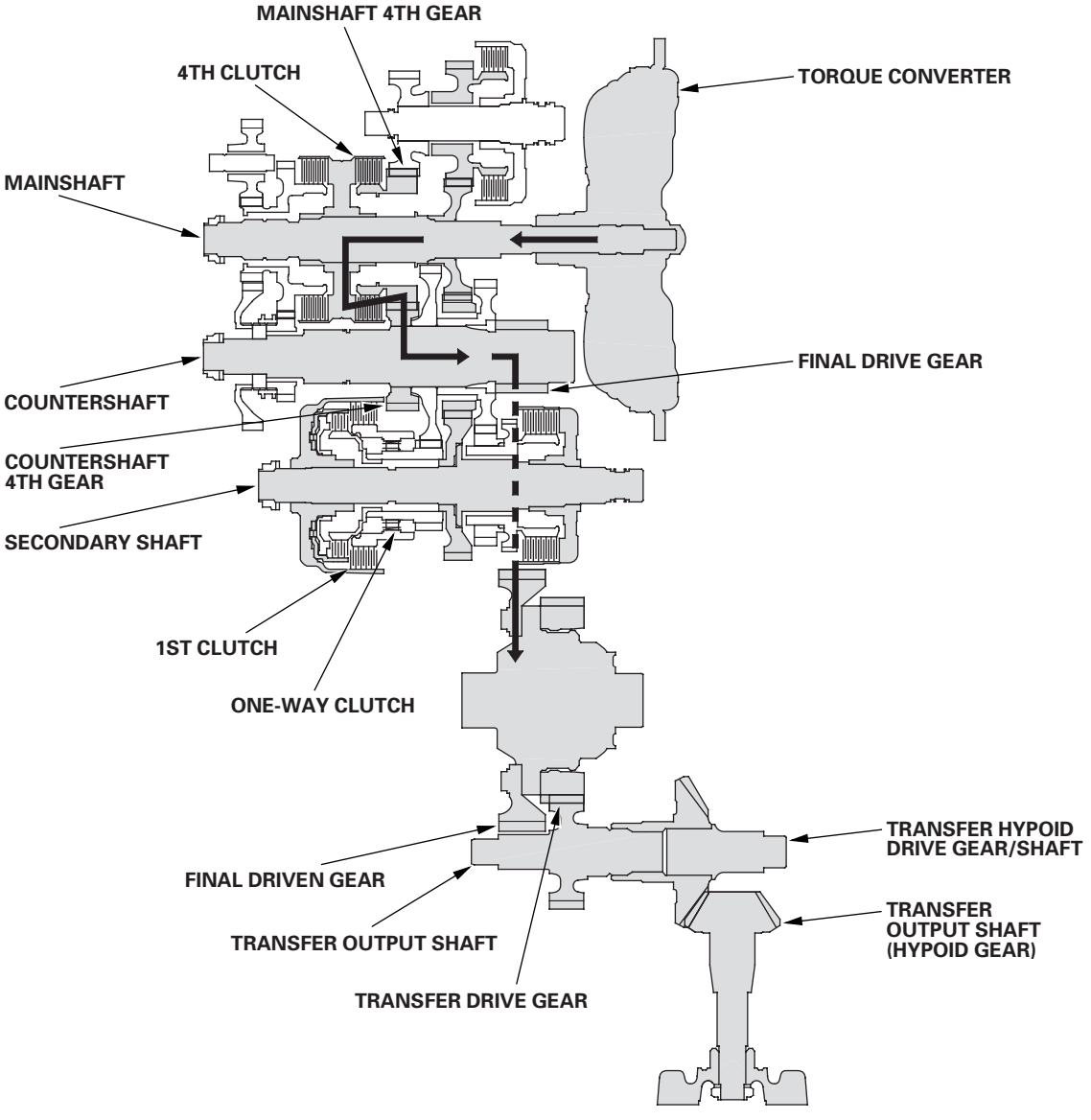
System Description (cont'd)

Power Flow (cont'd)

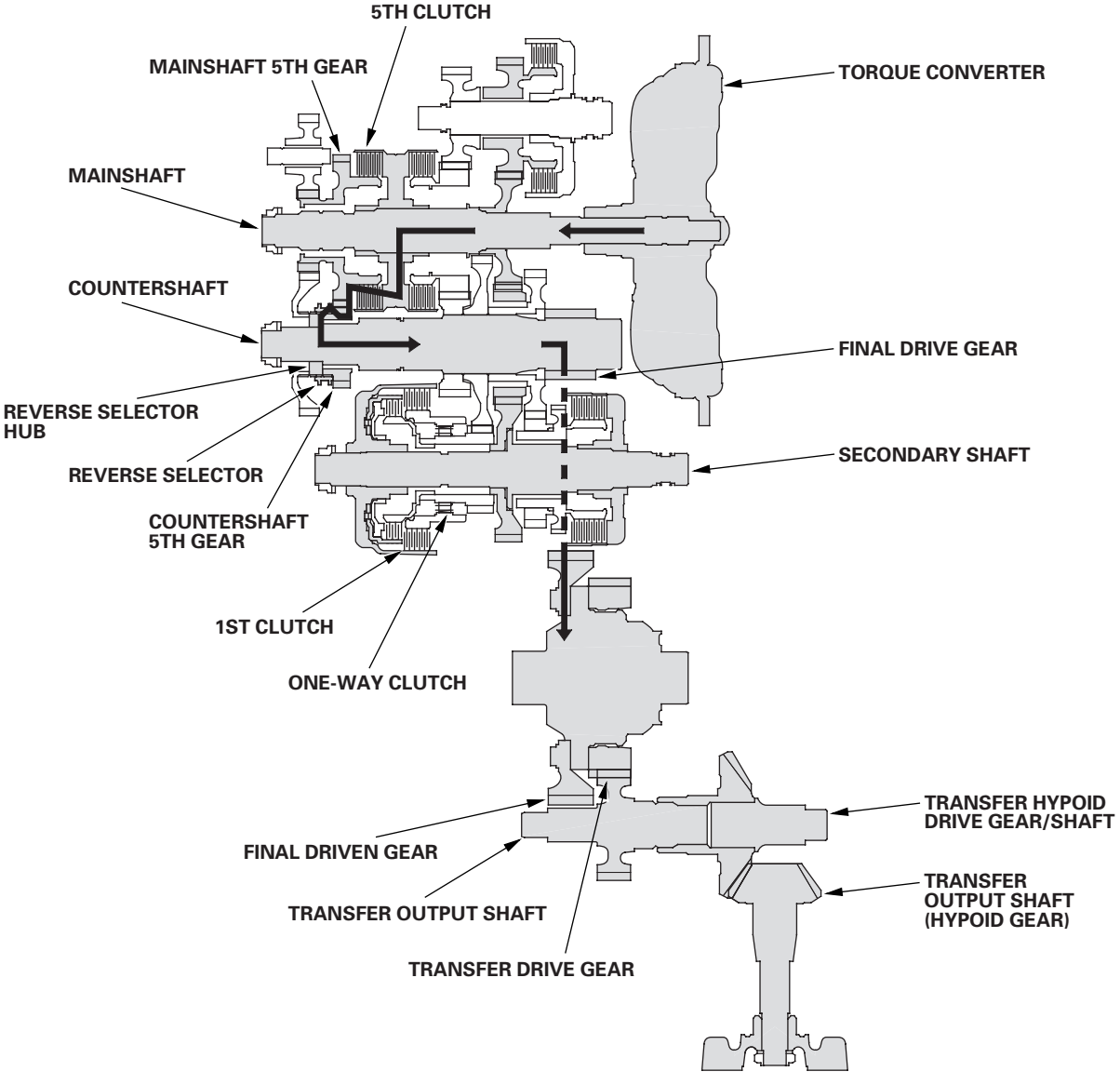
In 4th gear

- Hydraulic pressure is applied to the 4th clutch, then the 4th clutch engages the mainshaft 4th gear with the mainshaft.
- The mainshaft 4th gear drives the countershaft 4th gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear and the transfer drive gear.
- The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 4th gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.



In 5th gear

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft 5th gear when the shift lever is in a forward range (D, 2, and 1).
- Hydraulic pressure is applied to the 5th clutch, then the 5th clutch engages the mainshaft 5th gear with the mainshaft.
- The mainshaft 5th gear drives the countershaft 5th gear, which drives the reverse selector hub and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear and the transfer drive gear.
- The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 5th gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.



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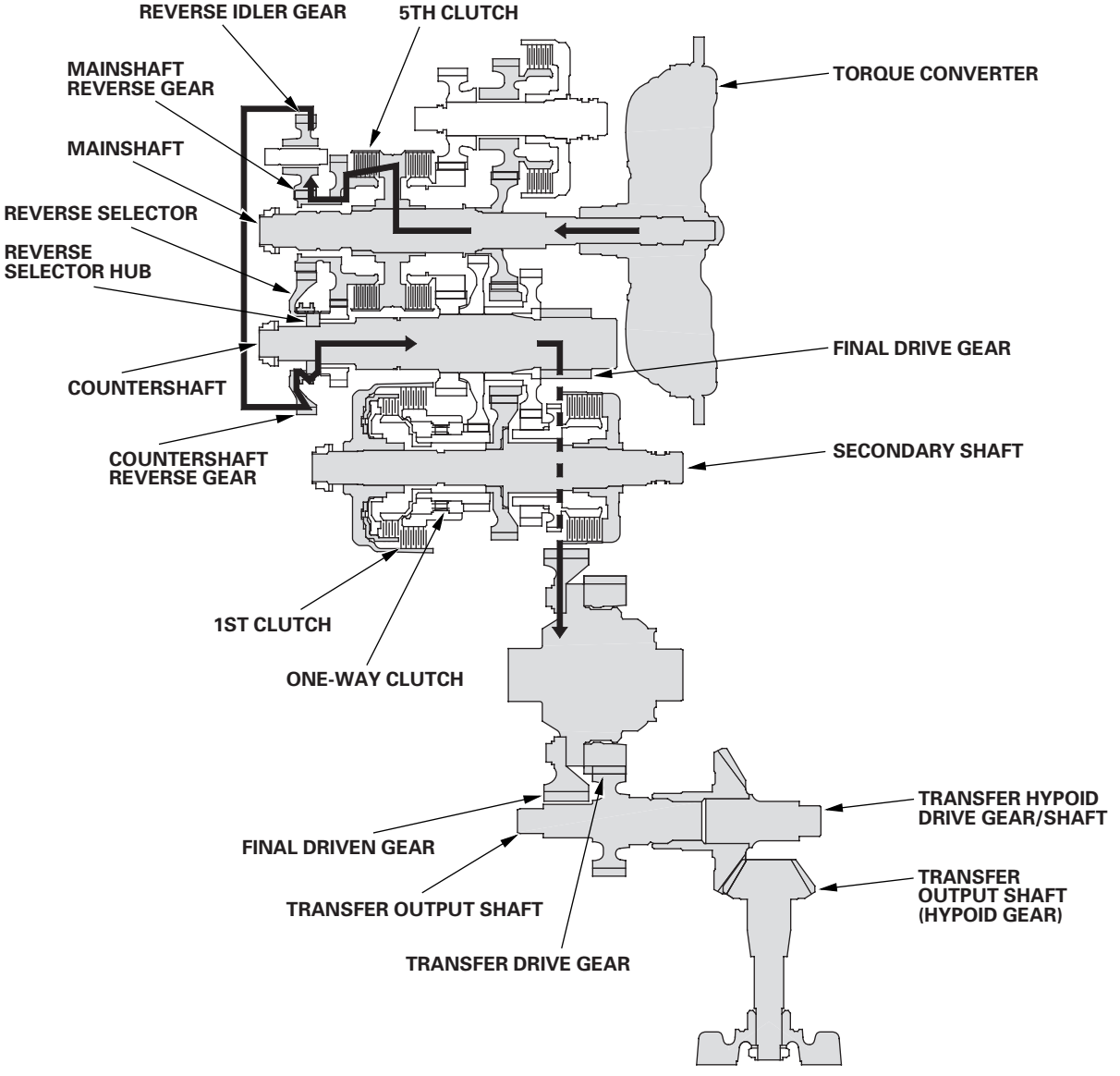
System Description (cont'd)

Power Flow (cont'd)

R Position

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft reverse gear when the shift lever is in R.
- Hydraulic pressure is applied to the 5th clutch, then the 5th clutch engages the mainshaft reverse gear with the mainshaft.
- The mainshaft reverse gear drives the countershaft reverse gear via the reverse idler gear.
- The countershaft reverse gear drives the countershaft via the reverse selector which drives the reverse selector hub.
- The rotation direction of the countershaft is changed by the reverse idler gear.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear and the transfer drive gear.
- The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).

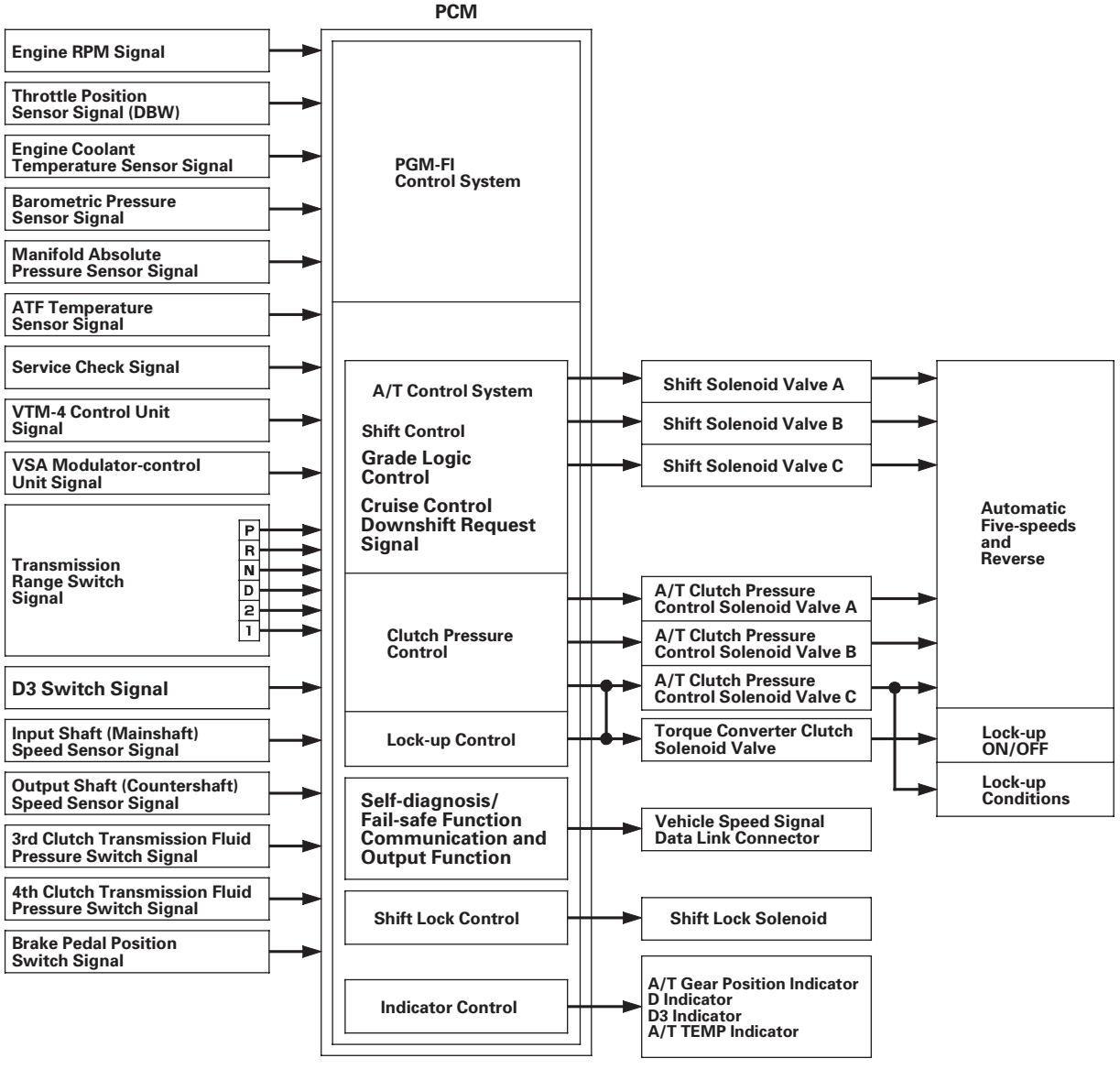


Electronic Control System

Functional Diagram

The electronic control system consists of the powertrain control module (PCM), sensors, and solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions.

The PCM receives input signals from the sensors, switches, and other control units, processes data, and outputs signals for the engine control system and A/T control system. The A/T control system includes shift control, grade logic control, clutch pressure control, and lock-up control. The PCM switches the shift solenoid valves and the A/T clutch pressure control solenoid valves to control shifting transmission gears and lock-up torque converter clutch.



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System Description (cont'd)

Electronic Control System (cont'd)

Shift Control
The PCM instantly determines which gear should be selected by various signals sent from the sensors and the switches, and it actuates shift solenoid valves A, B, and C to control shifting transmission gear.

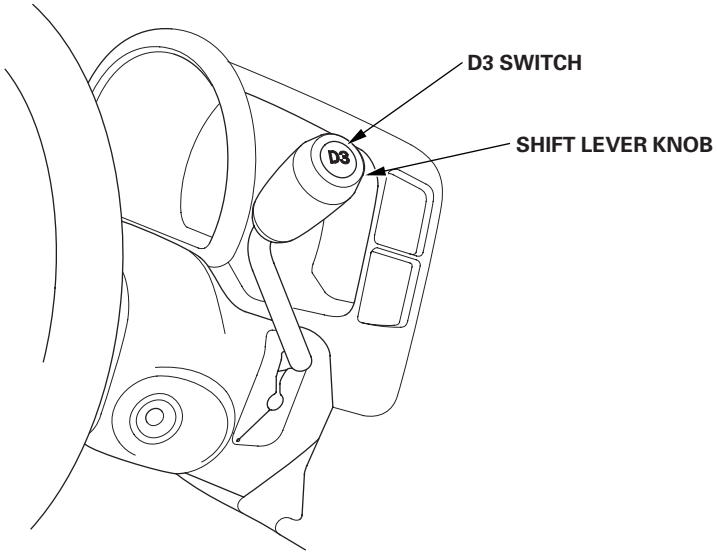
The shift solenoid valves use ON-CLOSE/OFF-OPEN type; the shift solenoid valve closes the port of shift solenoid valve pressure while the shift solenoid valve is turned ON by the PCM, and opens the port when the shift solenoid valve is OFF.

The combination of driving signals to shift solenoid valves A, B, and C are shown in the table.

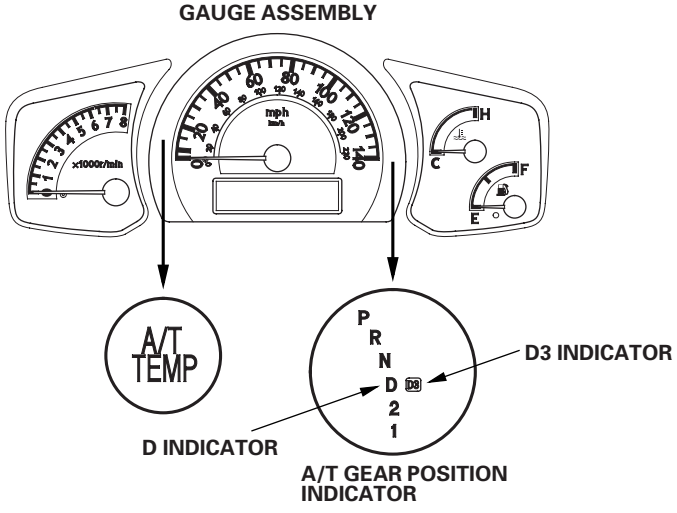
Position	Gear Position	Shift Solenoid Valves		
		A	B	C
D	Shifting from the N position	OFF	ON	OFF
	Stays in 1st	ON	ON	ON
	Shifting gears between 1st and 2nd	ON	ON	ON
	Stays in 2nd	ON	ON	OFF
	Shifting gears between 2nd and 3rd	OFF	ON	OFF
	Stays in 3rd	OFF	ON	ON
	Shifting gears between 3rd and 4th	OFF	OFF	ON
	Stays in 4th	OFF	OFF	OFF
	Shifting gears between 4th and 5th	ON	OFF	OFF
	Stays in 5th	ON	OFF	ON
2	2nd	ON	ON	OFF
1	1st	ON	ON	ON
N	Neutral	OFF	ON	OFF
R	Shifting from the P and N positions	OFF	ON	ON
	Stays in reverse	OFF	ON	OFF
	Reverse inhibit control	ON	ON	ON
P	Park	OFF	ON	OFF

D position D3 Driving Mode Control

This automatic transmission is equipped with the D3 driving mode in D. The D position has two modes; general driving mode (shifts gears automatically 1st through 5th), and the D3 driving mode (shifts gears automatically 1st through 3rd). The transmission switches the mode when the D3 switch on the end of the shift lever knob is pressed with the transmission in D.



When the transmission is switched into the D3 driving mode, the D3 indicator next to the D indicator in the gauge assembly comes on. In the D3 driving mode, the D3 driving mode is cancelled by pressing the D3 switch, and the D3 indicator goes off. Also, the D3 driving mode is cancelled when the ignition switch is turned to LOCK (0). When the shift lever is moved out of D in the D3 driving mode, the D3 indicator goes off, but the transmission returns to the D3 driving mode when the shift lever is returned to D, and the D3 indicator comes on again.



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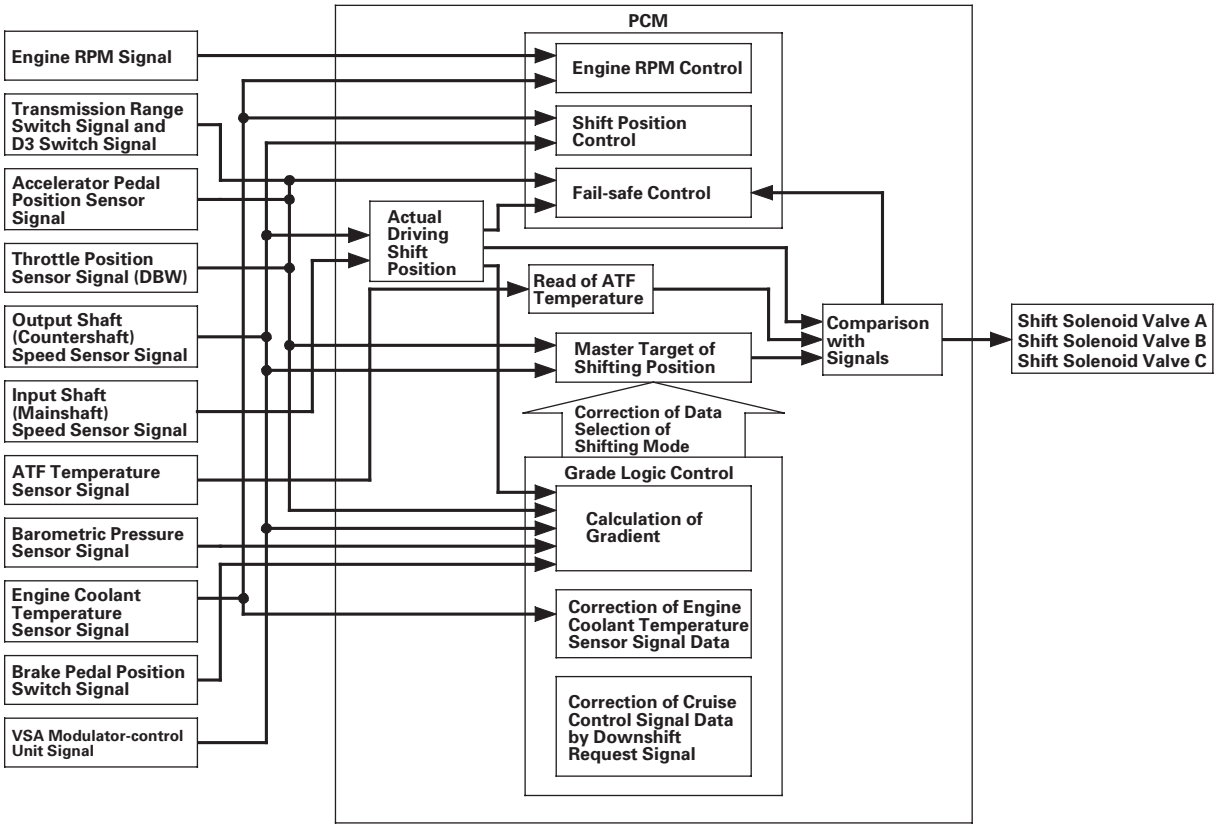
System Description (cont'd)

Electronic Control System (cont'd)

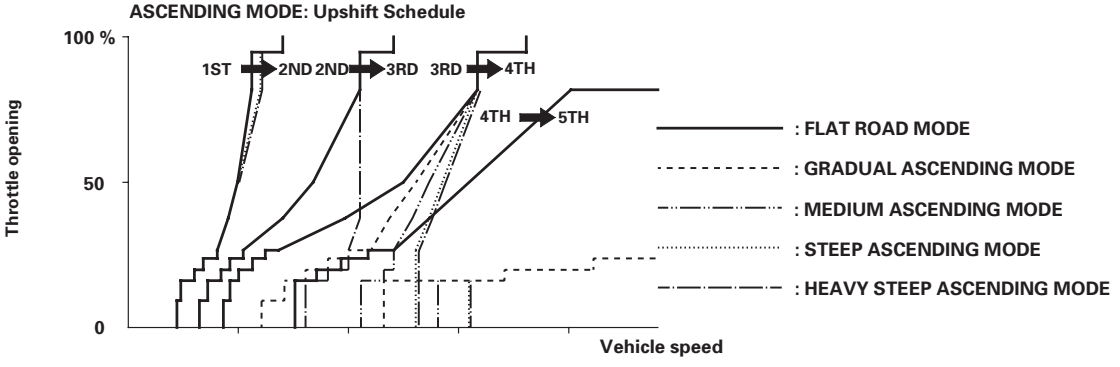
Shift Control - Grade Logic Control

The grade logic control system is used to control shifting in D. The PCM compares actual driving conditions with programmed driving conditions, based on the input from the throttle position sensor, the engine coolant temperature sensor, the barometric pressure sensor, the brake pedal position switch signal, and the shift lever position signal, to control shifting while the vehicle is ascending or descending a slope.

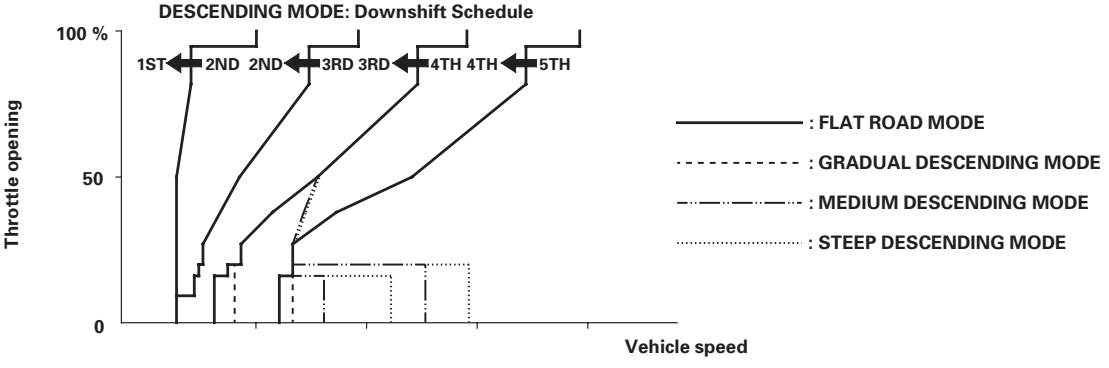


Grade Logic Control: Ascending Control
When the PCM determines that the vehicle is climbing a hill in the D position, the system extends the engagement area of 2nd gear, 3rd gear, and 4th gear to prevent the transmission from frequently shifting between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears, so the vehicle can run smooth and have more power when needed.

NOTE: Shift commands stored in the PCM between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears, enable the PCM to automatically select the most suitable gear according to the magnitude of a gradient.



Grade Logic Control: Descending Control
When the PCM determines that the vehicle is going down a hill in the D position, the shift-up speed from 4th to 5th gear, 3rd to 4th gear, and from 2nd to 3rd (when the throttle is closed) becomes faster than the set speed for flat road driving to extend the 4th gear, 3rd gear, and 2nd gear driving areas. This, in combination with engine braking from the deceleration lock-up, achieves smooth driving when the vehicle is descending. There are three descending modes with different 4th gear driving areas, 3rd gear driving areas and 2nd gear driving areas according to the magnitude of a gradient stored in the PCM. When the vehicle is in 5th or 4th gear and you are decelerating while applying the brakes on a steep hill, the transmission will downshift to a lower gear. When you accelerate, the transmission will then return to a higher gear.



Deceleration Control
When the vehicle goes around a corner and needs to decelerate first and then accelerate, the PCM sets the data for deceleration control to reduce the number of times the transmission shifts. When the vehicle is decelerating from speeds above 27 mph (43 km/h), the PCM shifts the transmission from 5th or 4th to 2nd earlier than normal to cope with upcoming acceleration.

(cont'd)

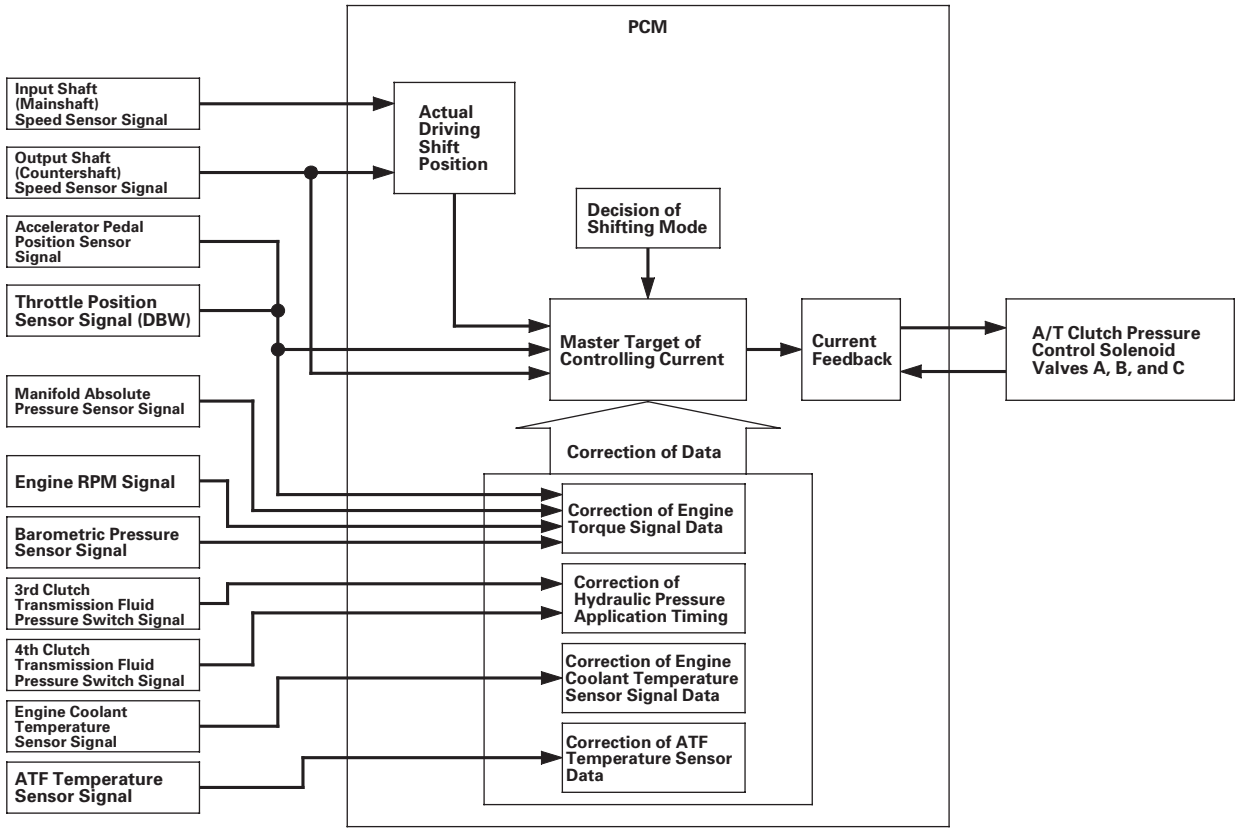
System Description (cont'd)

Electronic Control System (cont'd)

Clutch Pressure Control

The PCM actuates A/T clutch pressure control solenoid valves A, B, and C to control the clutch pressure. When shifting between lower and higher gears, the clutch pressure regulated by A/T clutch pressure control solenoid valves A, B, and C engages and disengages the clutch smoothly.

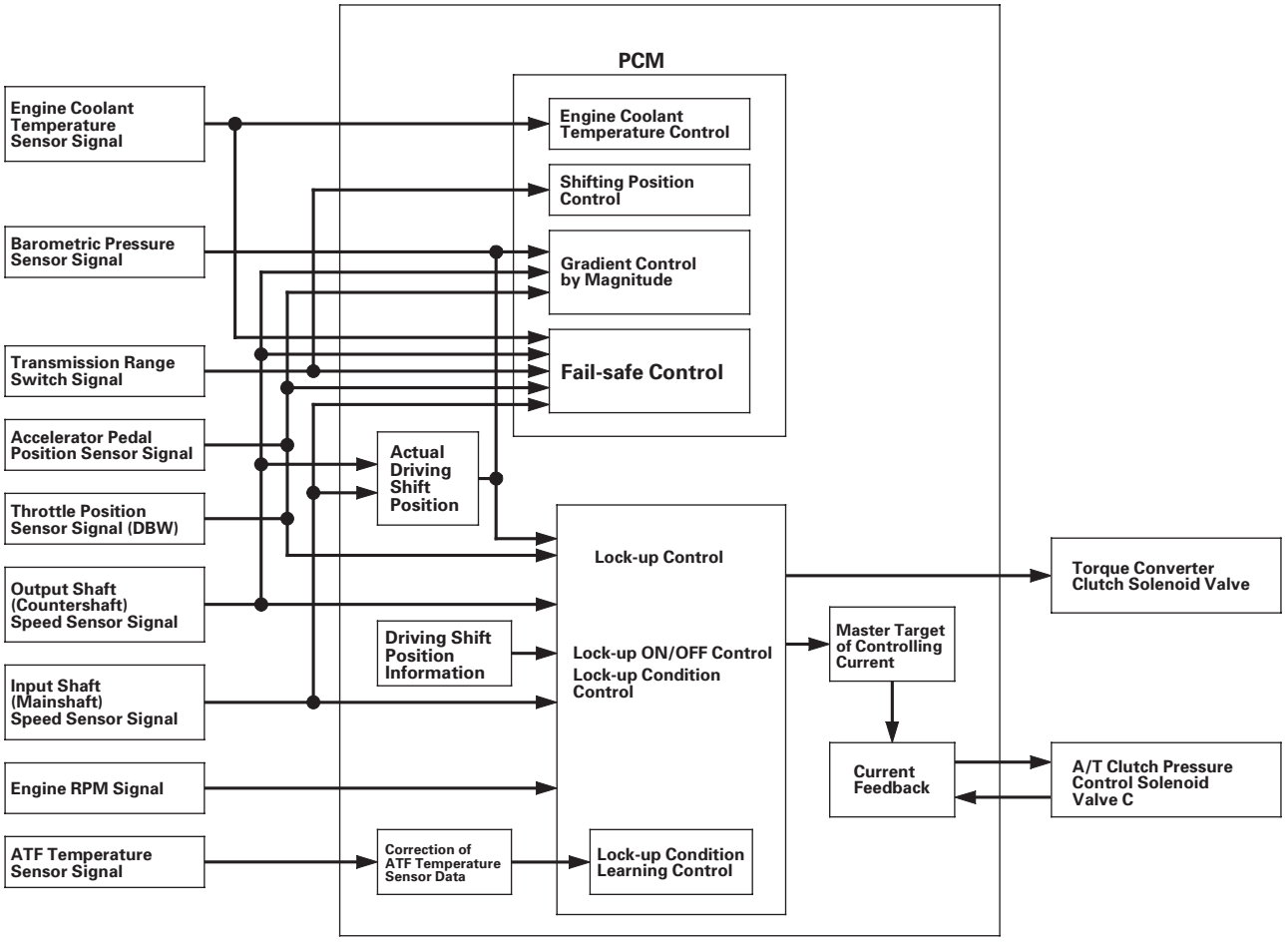
The PCM receives input signals from the various sensors and switches, processes the data, and outputs current to A/T clutch pressure control solenoid valves A, B, and C.



Lock-up Control

The torque converter clutch solenoid valve controls the hydraulic pressure to switch the lock-up shift valve and lock-up ON and OFF. The PCM actuates the torque converter clutch solenoid valve and the A/T clutch pressure control solenoid valve ON, the condition of the lock-up starts. A/T clutch pressure control solenoid valve C regulates and applies the hydraulic pressure to the lock-up control valve to control the amount of lock-up.

The lock-up mechanism operates in the D position (2nd, 3rd, 4th, and 5th), and in the D position D3 driving mode (2nd and 3rd).

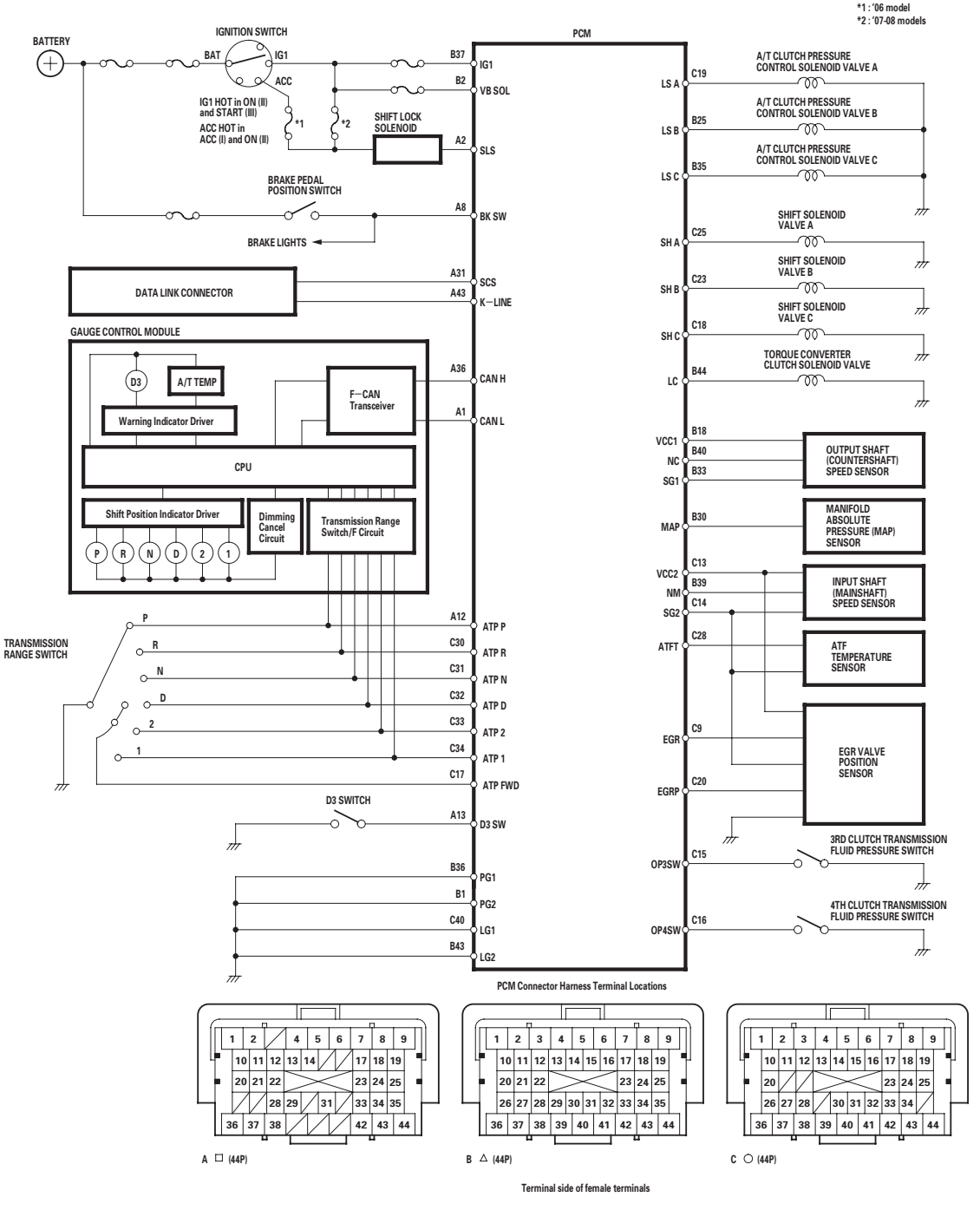


(cont'd)

System Description (cont'd)

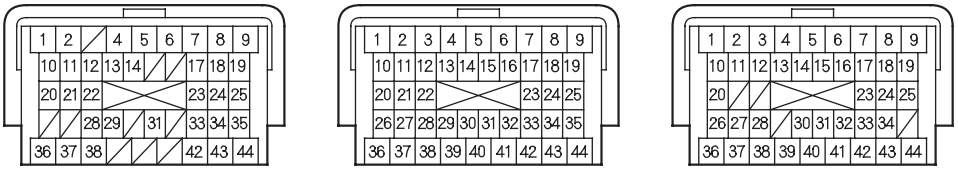
Electronic Control System (cont'd)

PCM A/T Control System Electrical Connections



PCM A/T Control System Inputs and Outputs

PCM Connector Harness Terminal Locations



A □ (44P) **B △ (44P)** **C ○ (44P)**

Terminal side of female terminals

PCM CONNECTOR A □ (44P)

Terminal number	Wire color	Signal	Description	Measuring conditions/Terminal voltage
A1	RED	CAN L	Sends communication signal	With ignition switch to ON (II): About 2.5 V (pulses)
A2	YEL/BLK	SLS	Drives shift lock solenoid	With ignition switch to ON (II), in P, brake pedal pressed, and accelerator released: About 0 V
A8	WHT/BLK	BK SW	Brake pedal position switch signal input	Brake pedal pressed: Battery voltage Brake pedal released: About 0 V
A12	BLU/BLK	ATP P	Transmission range switch P position signal input	In P: About 0 V In other than P: Battery voltage
A13	GRN	D3 SW	D3 switch signal input	With D3 switch released: Battery voltage With D3 switch pressed: About 0 V
A17	ORN	APSA	Detects accelerator pedal position sensor A signal	With ignition switch to ON (II) and accelerator pedal pressed: About 4.65 V With ignition switch to ON (II) and accelerator pedal released: About 0.5 V
A18	YEL	APSB	Detects accelerator pedal position sensor B signal	With ignition switch to ON (II) and accelerator pedal pressed: About 2.325 V With ignition switch to ON (II) and accelerator pedal released: About 0.25 V
A24	GRN	VCC3	Power supply for sensors	With ignition switch to ON (II): About 5.0 V With ignition switch to LOCK (0): About 0 V
A25	WHT	VCC4	Power supply for sensors	With ignition switch to ON (II): About 5.0 V With ignition switch to LOCK (0): About 0 V
A31	BRN	SCS	Detects service check signal	With the SCS shorted with the HDS: About 0 V With the SCS open: About 5.0 V
A34	BLK	SG3	Sensor ground	Less than 1.0 V at all times
A35	RED	SG4	Sensor ground	Less than 1.0 V at all times
A36	WHT	CAN H	Communication signal outputs	With ignition switch to ON (II): About 2.5 V (pulses)
A43	LT BLU	K-LINE	Communication line PCM-to-DLC	With ignition switch to ON (II) and HDS disconnected: About 10.0 V

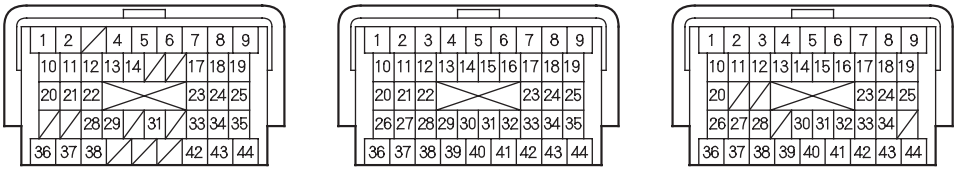
(cont'd)

System Description (cont'd)

Electronic Control System (cont'd)

PCM A/T Control System Inputs and Outputs (cont'd)

PCM Connector Harness Terminal Locations



A □ (44P) **B △ (44P)** **C ○ (44P)**

Terminal side of female terminals

PCM CONNECTOR B △ (44P)

Terminal number	Wire color	Signal	Description	Measuring conditions/Terminal voltage
B1	BLK	PG2	Ground	Less than 1.0 V at all times
B2	BLK/YEL	VB SOL	Power supply circuit for solenoid valves	With ignition switch to ON (II): Battery voltage With ignition switch to LOCK (0): About 0 V
B18	YEL/RED	VCC1	Power supply circuit	With ignition switch to ON (II): About 5.0 V
B25	BRN/WHT	LS B	A/T clutch pressure control solenoid valve B control	With ignition switch to ON (II): Duty controlled
B30	GRN/RED	MAP	Detects manifold absolute pressure sensor signal	With ignition switch to ON (II): About 3.0 V At idle: About 1.0 V depending on engine speed
B33	GRN/WHT	SG1	Sensor ground	Less than 1.0 V at all times
B35	GRN/RED	LS C	A/T clutch pressure control solenoid valve C control	With ignition switch to ON (II): Duty controlled
B36	BLK	PG1	Ground	Less than 1.0 V at all times
B37	BLK/YEL	IG1	Power supply circuit	With ignition switch to ON (II): Battery voltage With ignition switch to LOCK (0): About 0 V
B39	RED	NM	Input shaft (mainshaft) speed sensor signal input	With ignition switch to ON (II): About 0 V or about 5.0 V With engine at idle in N: About 2.5 V (pulses)
B40	BLU	NC	Output shaft (countershaft) speed sensor signal input	With ignition switch to ON (II): About 0 V or about 5.0 V With vehicle moving: About 2.5 V (pulses)
B43	BRN/YEL	LG2	Ground	Less than 1.0 V at all times
B44	YEL	LC	Torque converter clutch solenoid valve control	During lock-up condition: Battery voltage During no lock-up condition: About 0 V

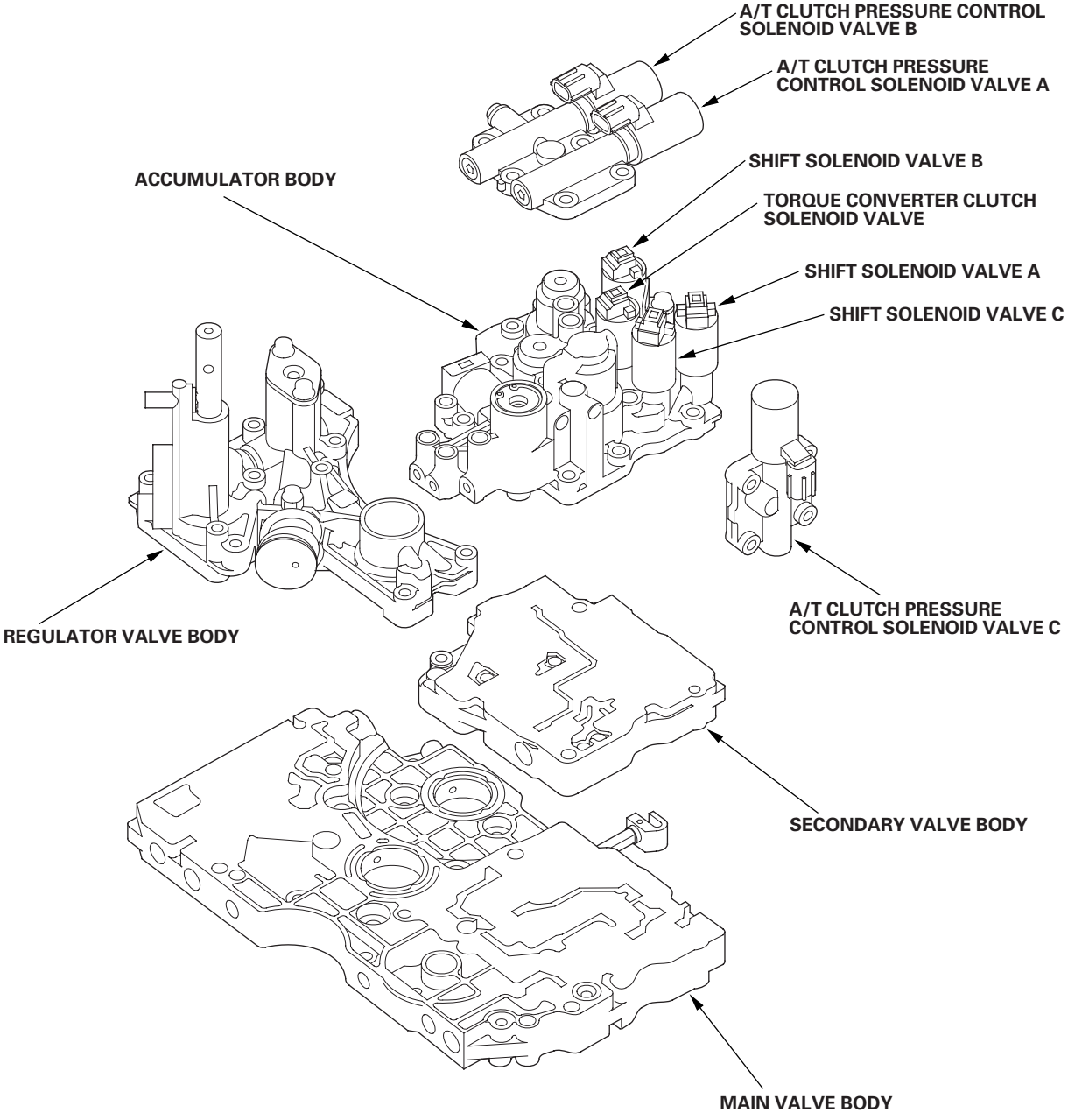
PCM CONNECTOR C ○ (44P)

Terminal number	Wire color	Signal	Description	Measuring conditions/Terminal voltage
C9	BLU/RED	EGR	Drives EGR valve	With EGR operating: Duty controlled With EGR not operation: About 0 V
C13	YEL/BLU	VCC2	Power supply for sensors	With ignition switch to ON (II): About 5.0 V With ignition switch to LOCK (0): About 0 V
C14	GRN/YEL	SG2	Sensor ground	Less than 1.0 V at all times
C15	BLU/WHT	OP3SW	3rd clutch transmission fluid pressure switch signal input	With ignition switch to ON (II): • Without 3rd clutch pressure: About 5.0 V • With 3rd clutch pressure: About 0 V
C16	BLU/YEL	OP4SW	4th clutch transmission fluid pressure switch signal input	With ignition switch to ON (II): • Without 4th clutch pressure: About 5.0 V • With 4th clutch pressure: About 0 V
C17	BLU/YEL	ATP FWD	Transmission range switch D and 2 positions signal input	In D and 2: About 0 V In any other positions: Battery voltage
C18	GRN	SH C	Shift solenoid valve C control	With the engine running in 1, and D in 1st, 3rd, and 5th gears: Battery voltage In P, R, N, 2, and D in 2nd gear: About 0 V
C19	RED	LS A	A/T clutch pressure control solenoid valve A control	With ignition switch to ON (II): Duty controlled
C20	WHT/BLK	EGRP	Detects EGR valve position sensor signal	With engine running: About 1.2—3.0 V depending on EGR valve lift
C23	GRN/WHT	SH B	Shift solenoid valve B control	With the engine running in P, R, N, 2, and 1, and D in 1st, 2nd, and 3rd gears: Battery voltage In D in 4th and 5th gears: About 0 V
C25	BLU/YEL	SH A	Shift solenoid valve A control	With the engine running in 2 and 1, and D in 1st, 2nd, and 5th gears: Battery voltage In P, R, N, and D in 3rd and 4th gears: About 0 V
C28	BLU/YEL	ATFT	ATF temperature sensor signal input	With ignition switch to ON (II): About 0.2—4.0 V (About 1.8 V at normal operating temperature) With ignition switch to LOCK (0): About 0 V
C30	WHT	ATP R	Transmission range switch R position input	In R: About 0 V In other than R: Battery voltage
C31	RED/BLK	ATP N	Transmission range switch N position input	In N: About 0 V In other than N: Battery voltage
C32	YEL/GRN	ATP D	Transmission range switch D position input	In D: About 0 V In other than D: Battery voltage
C33	BLU	ATP 2	Transmission range switch 2 position input	In 2: About 0 V In other than 2: Battery voltage
C34	BRN	ATP 1	Transmission range switch 1 position input	In 1: About 0 V In other than 1: Battery voltage
C40	BRN/YEL	LG1	Ground	Less than 1.0 V at all times

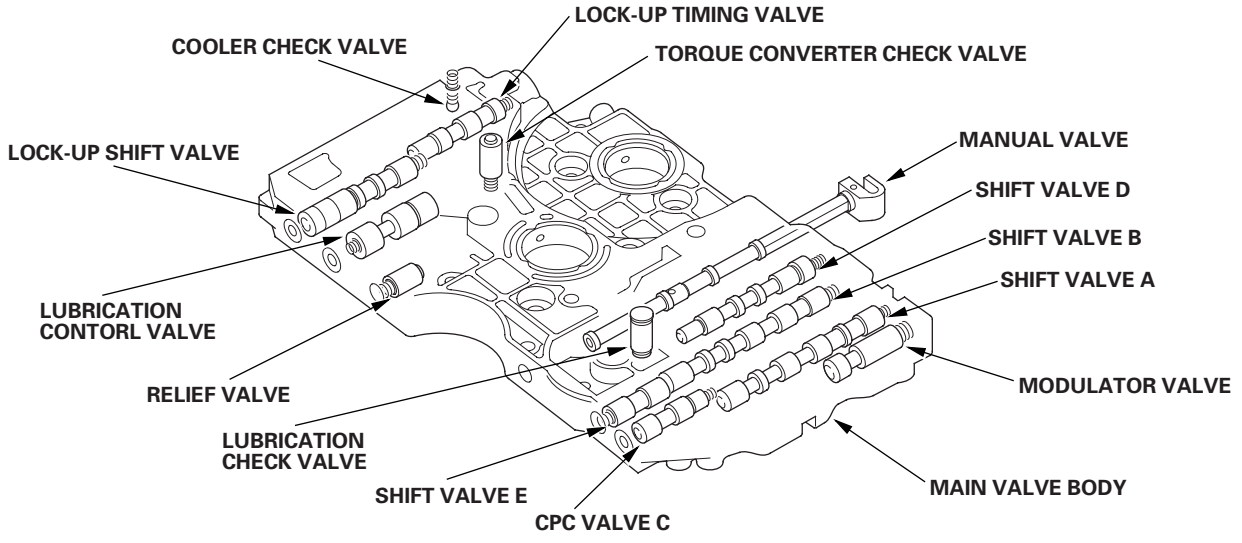
System Description (cont'd)

Hydraulic Controls

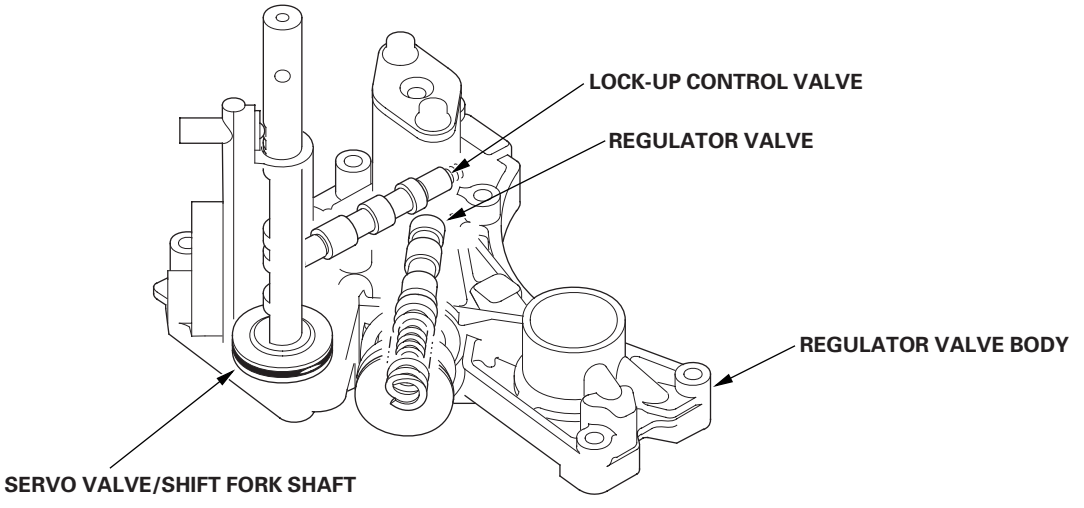
The valve body includes the main valve body, the regulator valve body, the secondary valve body, and the accumulator body. The ATF pump is driven by splines on the end of the torque converter which is attached to the engine. Fluid flows through the regulator valve to maintain specified pressure through the main valve body to the manual valve, directing pressure to each of the clutches. Shift solenoid valves A, B, and C, and the torque converter clutch solenoid valve are mounted on the accumulator body. A/T clutch pressure control solenoid valves A, B, and C are mounted on the transmission housing.



Main Valve Body
The main valve body contains the manual valve, the modulator valve, the torque converter check valve, shift valve A, shift valve B, shift valve D, shift valve E, CPC valve C, the cooler check valve, the relief valve, the lock-up shift valve, the lock-up timing valve, the lubrication control valve, the lubrication check valve, and the ATF pump gears. The primary function of the main valve body is to switch fluid pressure on and off to control hydraulic pressure going to the hydraulic control system.



Regulator Valve Body
The regulator valve body is located on the main valve body. The regulator valve body contains the regulator valve, the lock-up control valve, the servo valve, and the 3rd accumulator.



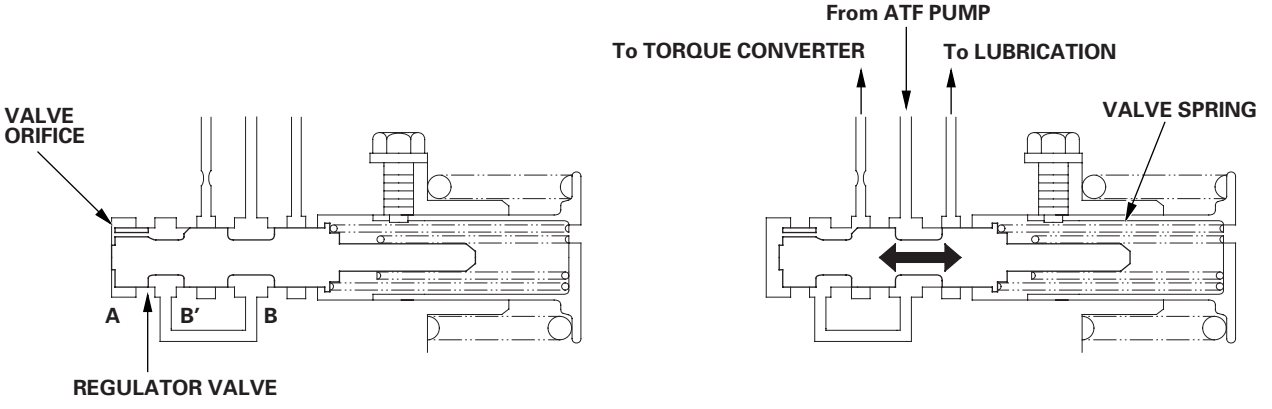
(cont'd)

System Description (cont'd)

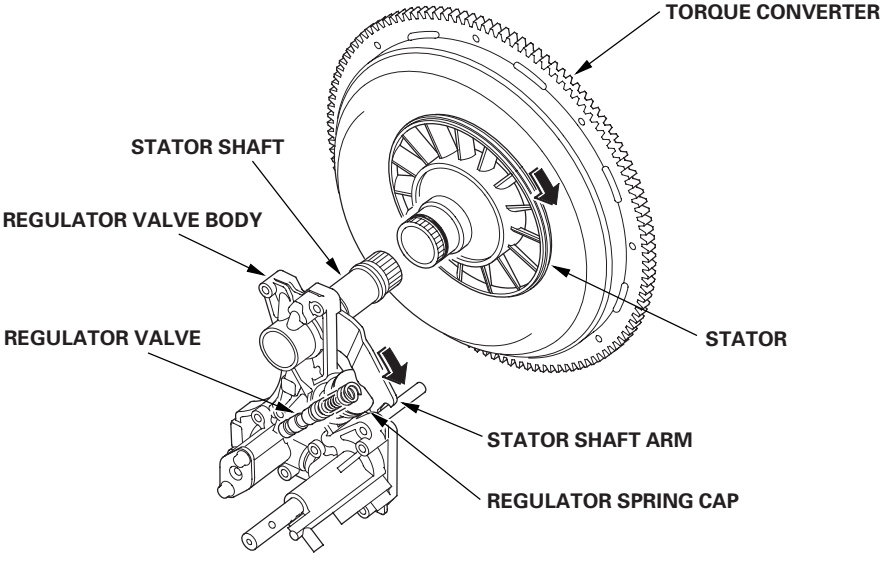
Hydraulic Controls (cont'd)

Regulator Valve

The regulator valve maintains constant hydraulic pressure from the ATF pump to the hydraulic control system, while also furnishing fluid to the lubricating system and torque converter. Fluid from the ATF pump flows through B and B'. Fluid entering from B flows through the valve orifice to the A cavity. This pressure of the A cavity pushes the regulator valve to the spring side, and this movement of the regulator valve uncovers the fluid port to the torque converter and the relief valve. The fluid flows out to the torque converter and the relief valve, and the regulator valve returns under spring force. According to the level of the hydraulic pressure through B, the position of the regulator valve changes, and the amount of fluid from B' through the torque converter changes. This operation is continued, maintaining the line pressure.

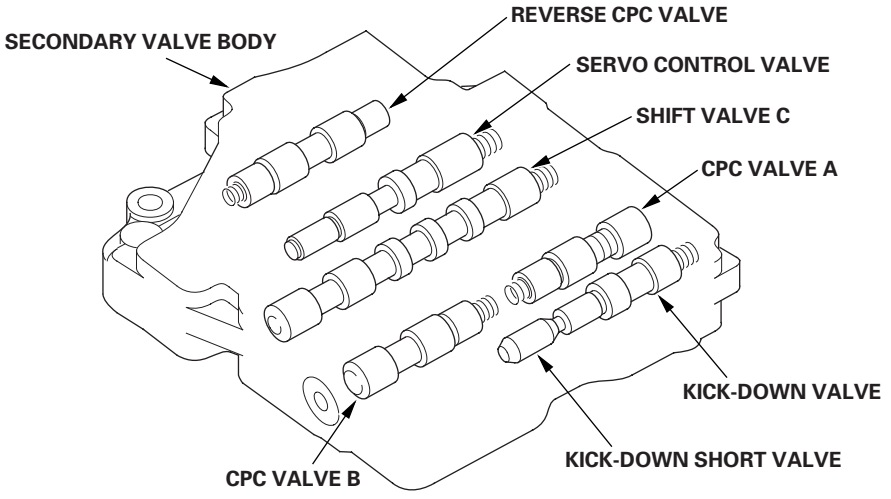


Increases in hydraulic pressure according to torque are regulated by the regulator valve using the stator torque reaction. The stator shaft is splined to the stator in the torque converter, and its arm end contacts the regulator spring cap. When the vehicle is accelerating or climbing (torque converter range), the stator torque reaction acts on the stator shaft, and the stator arm pushes the regulator spring cap in the direction of the arrow in proportion to the reaction. The stator reaction spring compresses, and the regulator valve moves to increase the line pressure which is regulated by the regulator valve. The line pressure reaches its maximum when the stator torque reaction reaches its maximum.



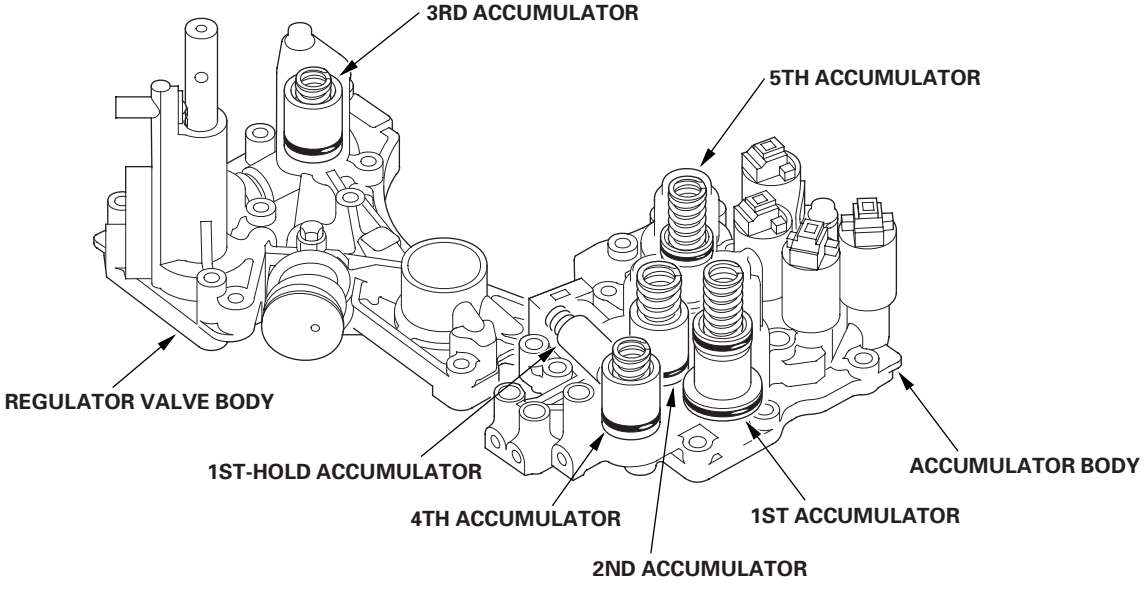
Secondary Valve Body

The secondary valve body is on the main valve body. The secondary valve body contains shift valve C, CPC valve A, CPC valve B, the reverse CPC valve, the servo control valve, the kick-down valve, and the kick-down short valve.



Accumulator Body

The accumulator body is on the secondary valve body, and contains the 1st, 1st-hold, 2nd, 4th, and 5th accumulators. The 3rd accumulator is in the regulator valve body.



System Description (cont'd)

Hydraulic Flow

Distribution of Hydraulic Pressure

As the engine turns, the ATF pump starts to operate. Automatic transmission fluid (ATF) is drawn through the ATF strainer (filter) and discharged into the hydraulic circuit. Then, ATF flowing from the ATF pump becomes line pressure that's regulated by the regulator valve. Torque converter pressure from the regulator valve enters the torque converter through the lock-up shift valve and it is discharged from the torque converter. The torque converter check valve prevents torque converter pressure from rising.

The PCM controls the shift solenoid valves ON and OFF, and the shift solenoid valves control shift solenoid pressure to the shift valves. Applying shift solenoid pressure to the shift valves moves the position of the shift valve, and switches the port of hydraulic pressure. The PCM also controls A/T clutch pressure control solenoid valves A and B. The A/T clutch pressure control solenoid valves A and B regulate the A/T clutch pressure control solenoid pressure and apply the A/T clutch pressure control solenoid pressure to CPC valves A and B.

When shifting gears, the clutches are engaged by pressure from the CPC pressure mode. The PCM controls one of the shift solenoid valves to move the position of the shift valve. This movement switches the port of the CPC and line pressure. Line pressure is then applied to the clutch, and the CPC pressure is intercepted. Engaging the clutch with line pressure happens when shifting is completed.

Hydraulic pressure at the ports:

Port No.	Hydraulic Pressure	Port No.	Hydraulic Pressure	Port No.	Hydraulic Pressure
1	LINE	5N	CPC A or LINE	56	LS A
2	LINE	5D	CPC B or LINE	57	LS B
3	LINE	5G	CPC B or LINE	58	LS C
3'	REVERSE CPC or LINE	5K	CPC B or LINE	90	TORQUE CONVERTER
3''	REVERSE CPC or LINE	6	MODULATE	90'	TORQUE CONVERTER
4	LINE	SA	SH A	91	TORQUE CONVERTER
4'	LINE	SB	SH B	91'	TORQUE CONVERTER
4''	LINE	SC	SH C	92	TORQUE CONVERTER
4A	CPC A	LA	LC A	93	ATF COOLER
4B	CPC B	9	LINE	94	TORQUE CONVERTER
4C	CPC C	10	1ST CLUTCH	95	LUBRICATION
5B	CPC A	15	1ST-HOLD CLUTCH	95'	LUBRICATION
5C	CPC B	20	2ND CLUTCH	96	TORQUE CONVERTER
5H	CPC B	25	LINE	97	TORQUE CONVERTER
5J	CPC B	30	3RD CLUTCH	99	SUCTION
5A	CPC A or LINE	40	4TH CLUTCH	X	DRAIN
5E	CPC A or LINE	50	5TH CLUTCH	HX	HIGH POSITION DRAIN
5F	CPC A or LINE	51	5TH CLUTCH	hX	HIGH POSITION DRAIN
5M	CPC A or LINE	55	CPC C or LINE	AX	AIR DRAIN

NOTE:

- CPC: Clutch Pressure Control pressure
- SH: Shift Solenoid pressure
- LS A: A/T Clutch Pressure Control Solenoid A pressure
- LS B: A/T Clutch Pressure Control Solenoid B pressure
- LS C: A/T Clutch Pressure Control Solenoid C pressure
- LC: Torque Converter Clutch Solenoid pressure

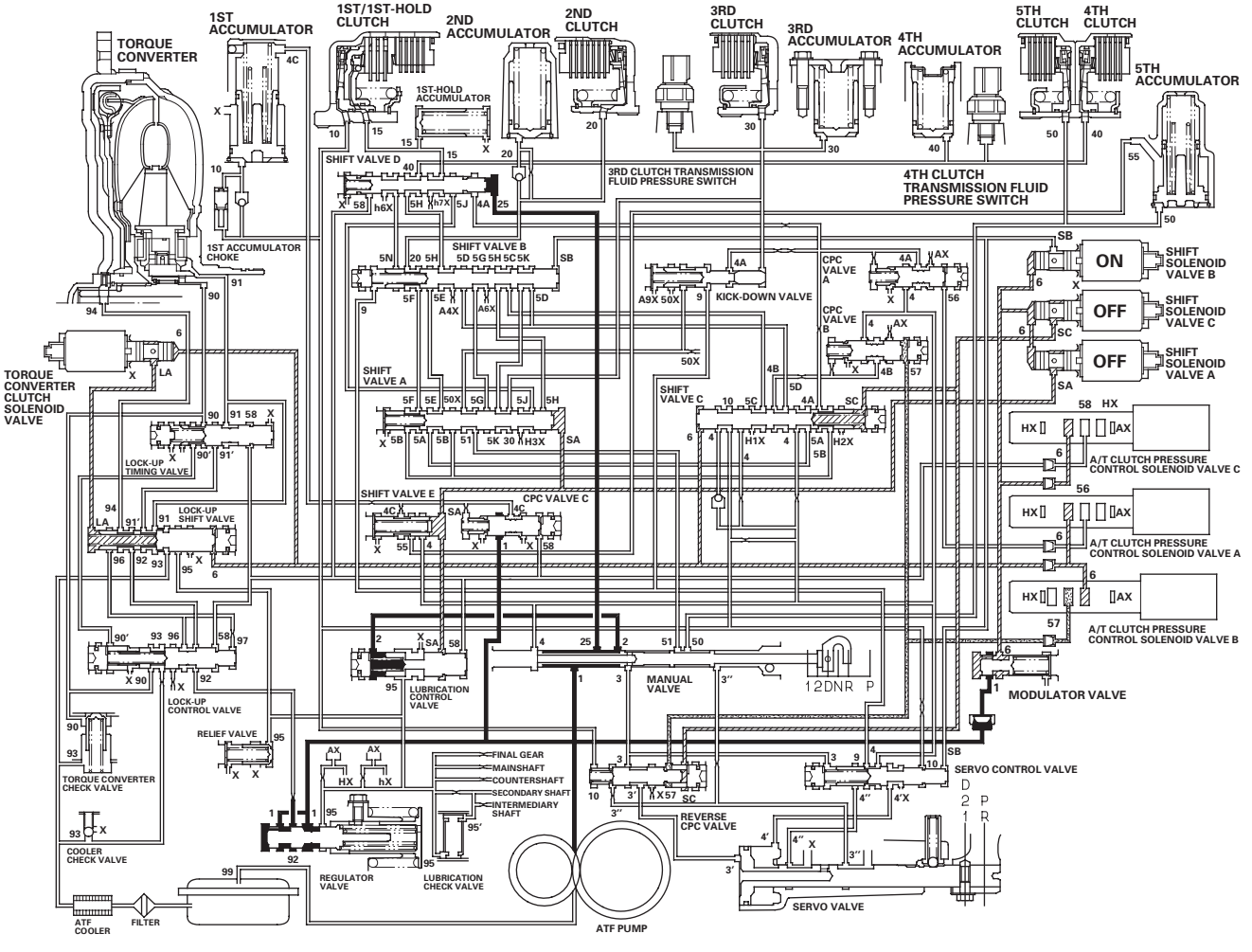
N Position

The PCM controls the shift solenoid valves. The conditions of the shift solenoid valves and the positions of the shift valves are as follows:

- Shift solenoid valve A is turned OFF, and shift valve A moves to the left side.
- Shift solenoid valve B is turned ON, and shift valve B stays on the right side.
- Shift solenoid valve C is turned OFF, and shift valve C stays on the left side.

Line pressure (1) passes through the manual valve and becomes line pressure (25). Line pressure (25) stops at shift valve D. Line pressure (1) also flows to the modulator valve and becomes modulator pressure (6). Modulator pressure (6) flows to the shift solenoid valves, A/T clutch pressure control solenoid valves A and B, and A/T clutch pressure control solenoid valve C. Under this condition, hydraulic pressure is not applied to the clutches.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



(cont'd)

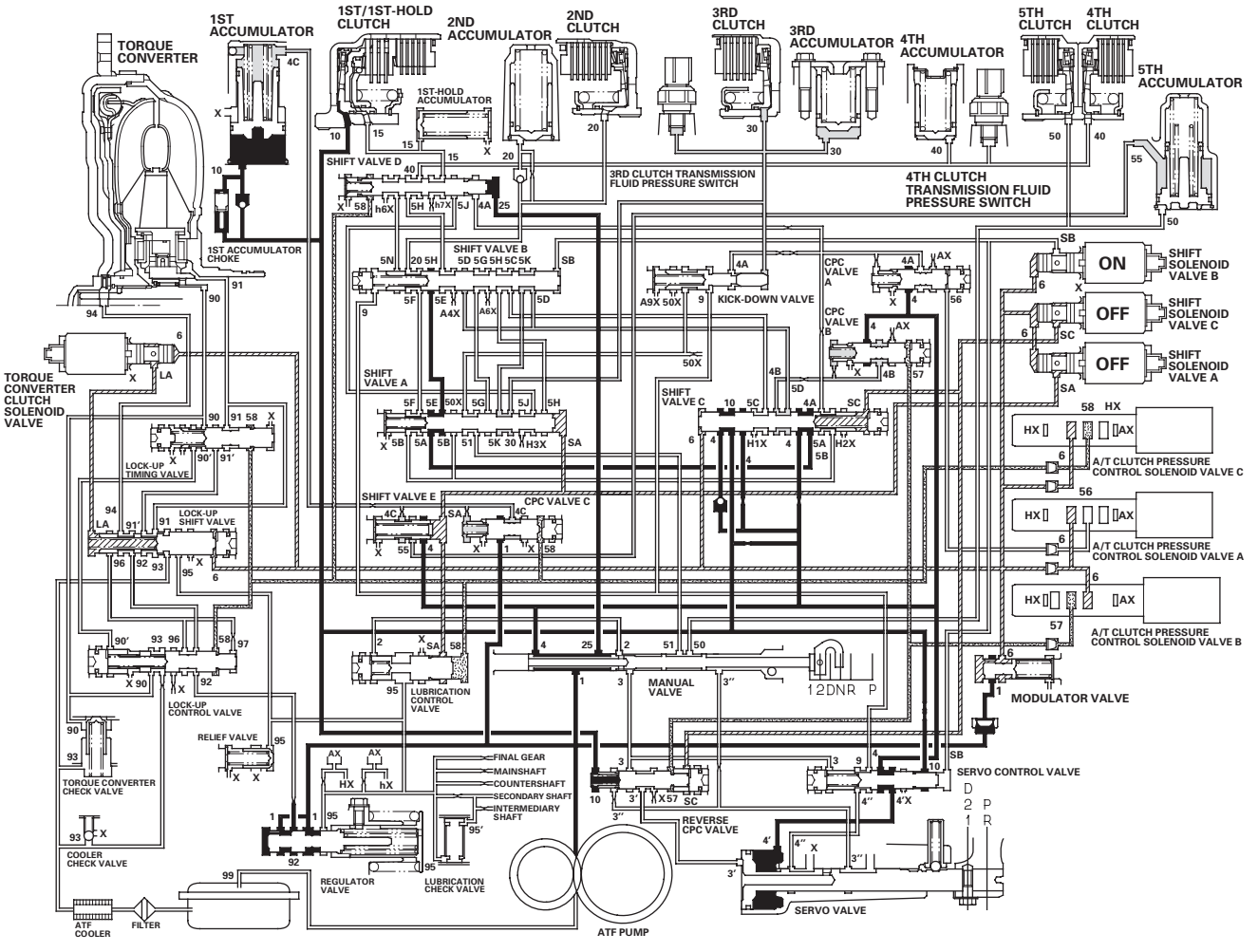
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: 1st gear shifting from the N position

When shifting to D from N, the condition of the shift solenoid valves remain the same as in N. The manual valve moves to D and switches the port of line pressure (4) leading to shift valve C and CPC valve B. Line pressure (4) flows to the 1st clutch via shift valve C. Line pressure (1) becomes CPC C pressure (4C) at CPC valve C, then goes to the 1st accumulator back side. Line pressure (4) also becomes CPC B pressure (4B) at the CPC B valve. CPC B pressure goes to the 3rd clutch, via shift valves C, B, and A, and the 3rd clutch is engaged. The 1st clutch is engaged gently when shifting to D from N.

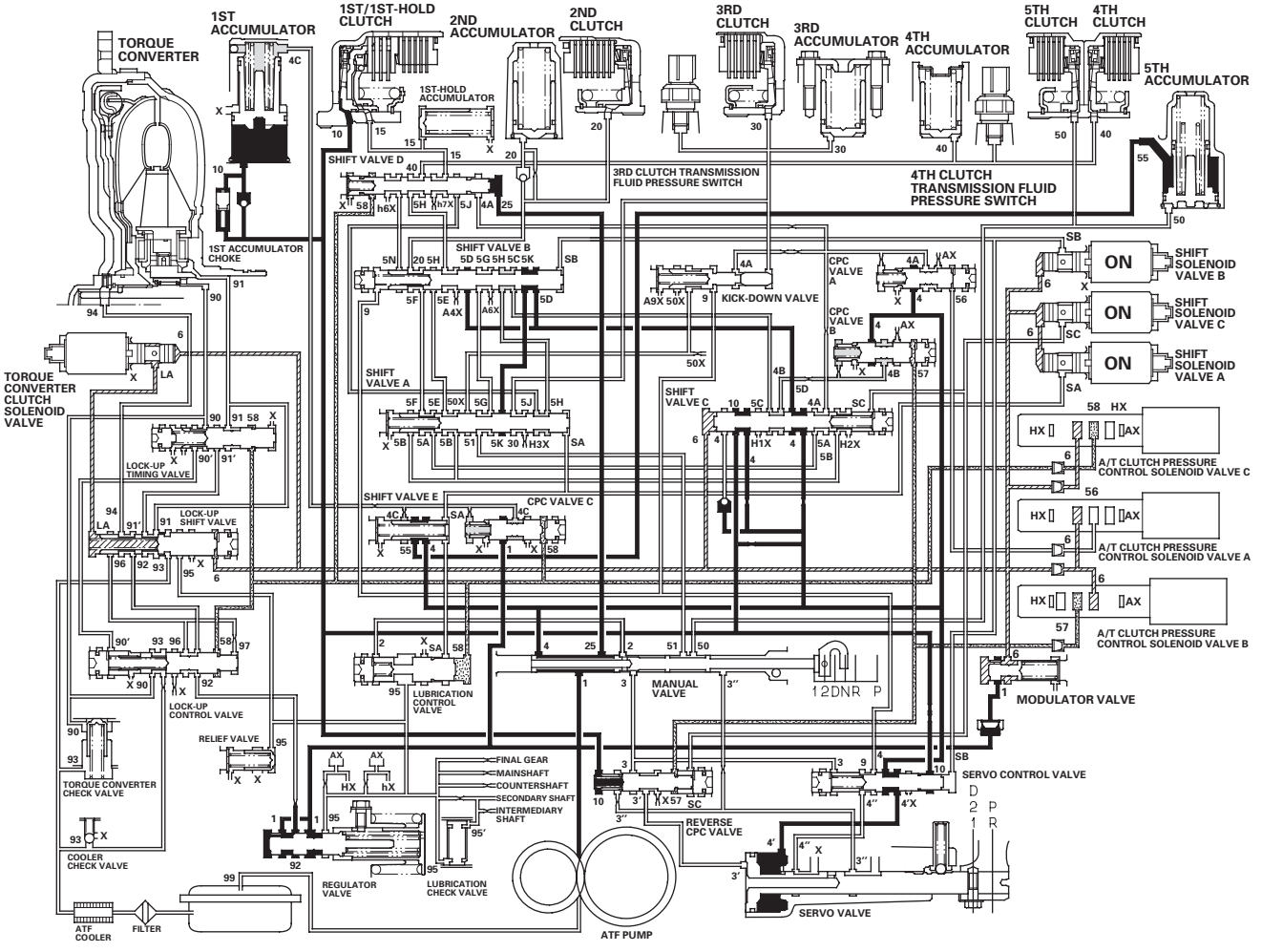
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



D Position: Driving in 1st gear

The PCM turns shift solenoid valves A and C ON, and shift solenoid valve B remains ON. SH A pressure (SA) in the right side of shift valves A and E is released, and shift valves A and E are moved to the right side. SH C pressure (SC) in the right side of shift valve C is released, and modulator pressure (6) is applied to the left side of shift valve C. Shift valve C is moved to the right side. These valve movements release CPC C pressure (4C) from the back of the 1st accumulator and the 3rd clutch, and the 1st clutch is engaged securely.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



(cont'd)

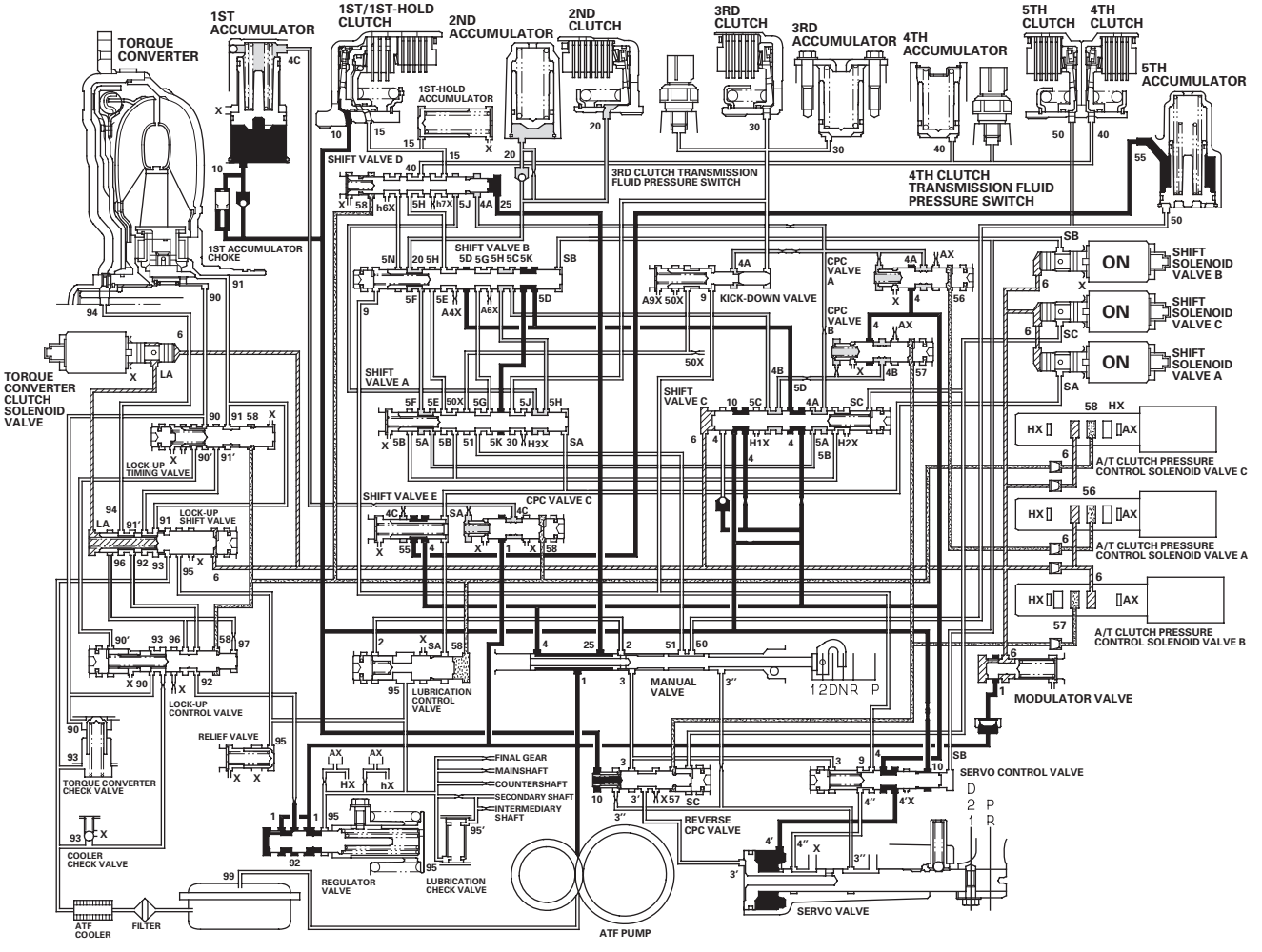
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: Shifting between 1st gear and 2nd gear

As the speed of the vehicle reaches the prescribed value, the PCM controls A/T clutch pressure control solenoid valves A and B. LS B pressure (57) in the right side of CPC valve B is released, and LS A pressure (56) is applied to the right side of CPC valve A. Line pressure (4) becomes CPC A pressure (4A) at CPC valve A, and CPC A pressure passes through shift valves C, A, and B, to become 2nd clutch pressure. The 2nd clutch is engaged with CPC pressure, and the 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

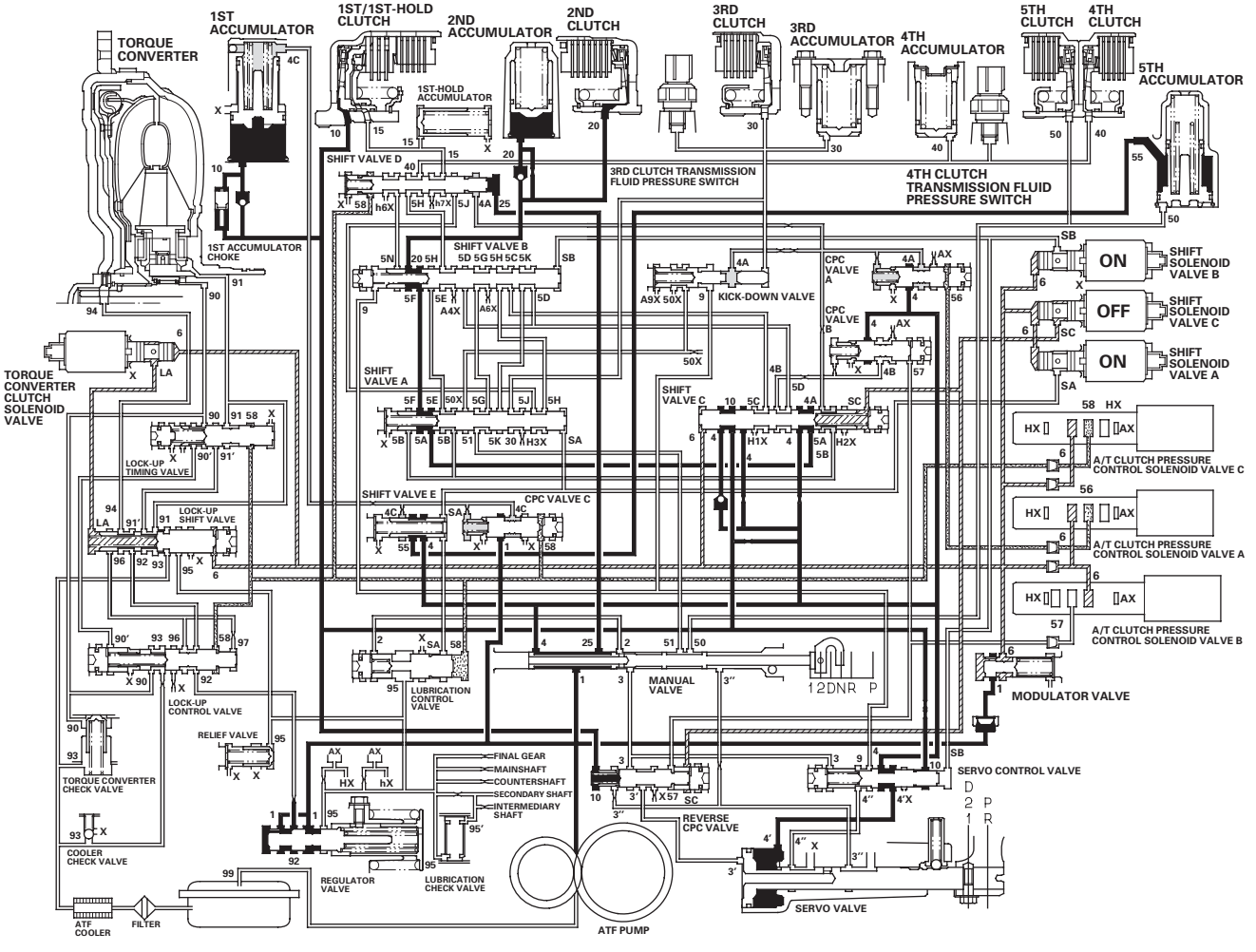
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



D Position: Driving in 2nd gear

The PCM turns shift solenoid valve C OFF, and shift solenoid valves A and B remain ON. Shift solenoid valve C is turned OFF, and SH C pressure (SC) is applied to the right side of shift valve C. Then shift valve C is moved to the left side to switch the port of line pressure and CPC pressure. The 2nd clutch pressure is changed to line pressure mode, and the 2nd clutch is engaged securely. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



(cont'd)

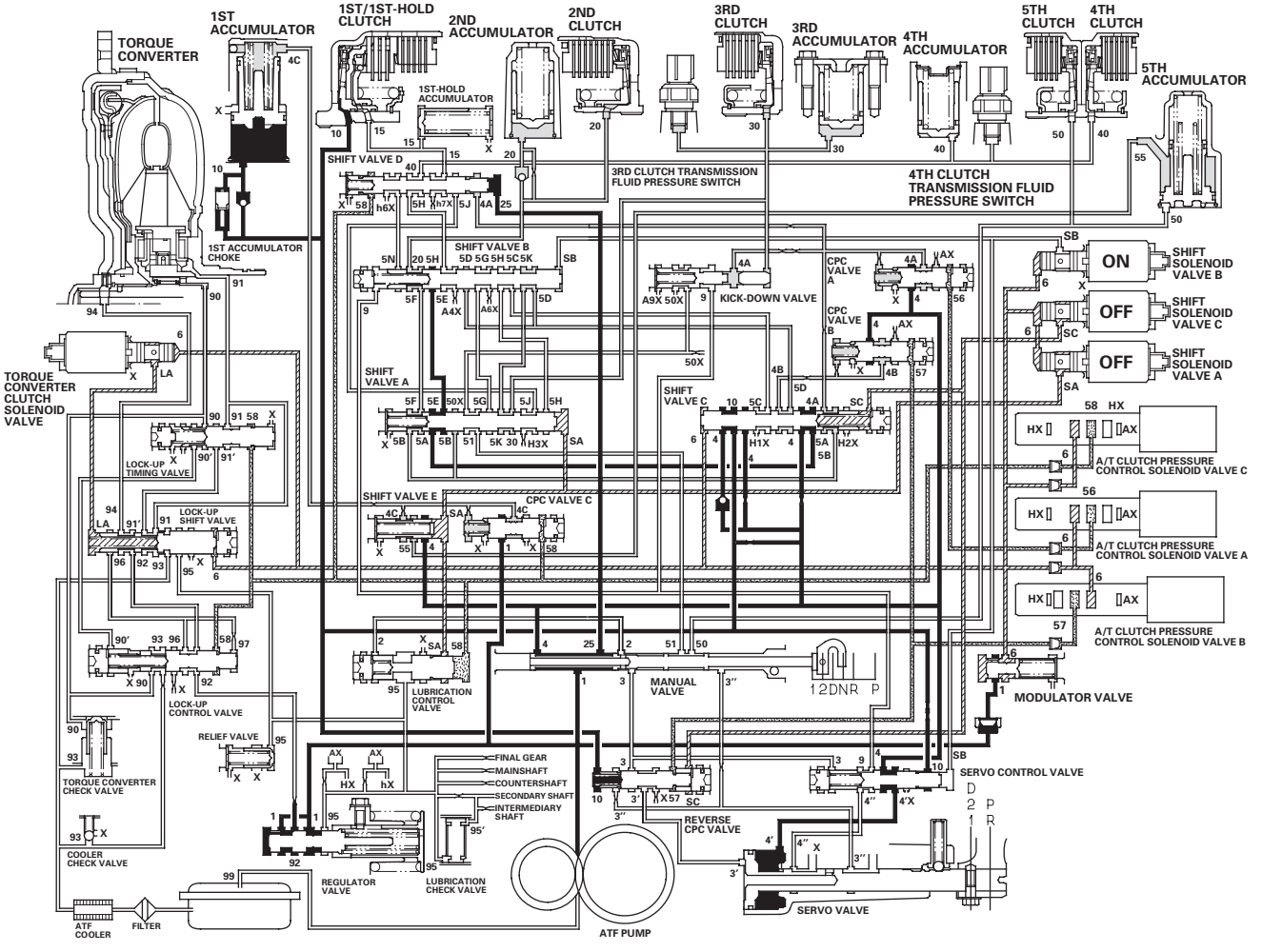
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: Shifting between 2nd gear and 3rd gear

As the speed of the vehicle reaches the prescribed value, the PCM turns shift solenoid valve A OFF. The PCM also controls A/T clutch pressure control solenoid valve B to apply LS B pressure (57) to CPC valve B. Shift solenoid valve B stays ON, and shift solenoid valve C remains OFF. Shift solenoid valve A is turned OFF, and SH A pressure (SA) is applied to the right side of shift valves A and E. Then shift valves A and E are moved to the left side to switch the port of line pressure and CPC pressure. Line pressure (4) becomes CPC A pressure (4A) at CPC valve A, and becomes CPC B pressure (4B) at CPC valve B. CPC B pressure (4B) becomes 3rd clutch pressure (30) at shift valve A via shift valves C and B, and flows to the 3rd clutch. The 2nd clutch pressure is changed to CPC pressure mode by switching the position of shift valve A. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

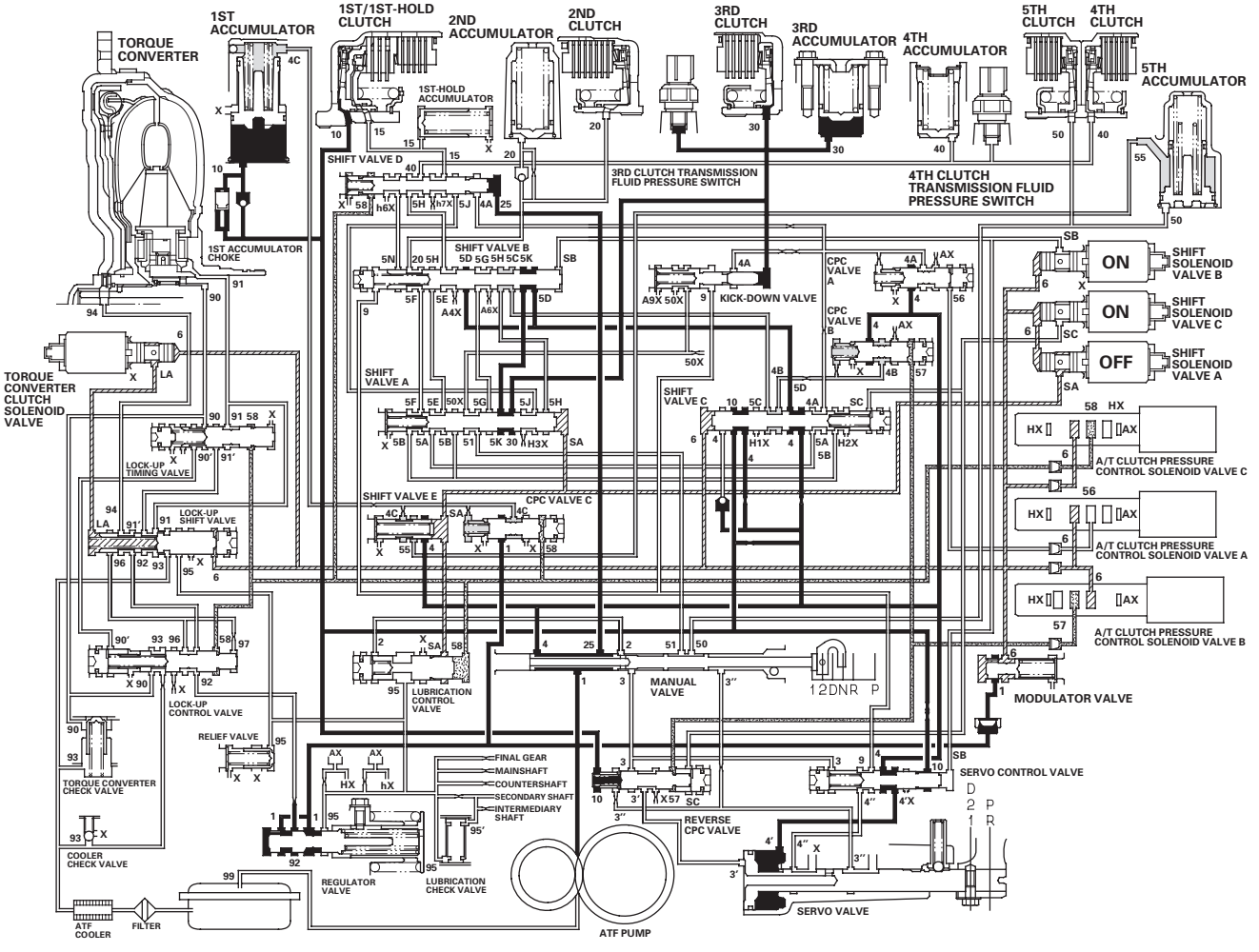
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



D Position: Driving in 3rd gear

The PCM turns shift solenoid valve C ON, and controls A/T clutch pressure control solenoid valve A to release LS A pressure (56) in CPC valve A. Shift solenoid valve A remains OFF, and shift solenoid valve B remains ON. Releasing LS A pressure (56) in CPC valve A releases CPC A pressure in the 2nd clutch pressure circuit. Shift solenoid valve C is turned ON, and SH C pressure (SC) in the right side of shift valve C is released. Then shift valve C is moved to the right side to switch the port of line pressure and CPC pressure. The 3rd clutch pressure is changed to line pressure mode, and the 3rd clutch is engaged securely. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



(cont'd)

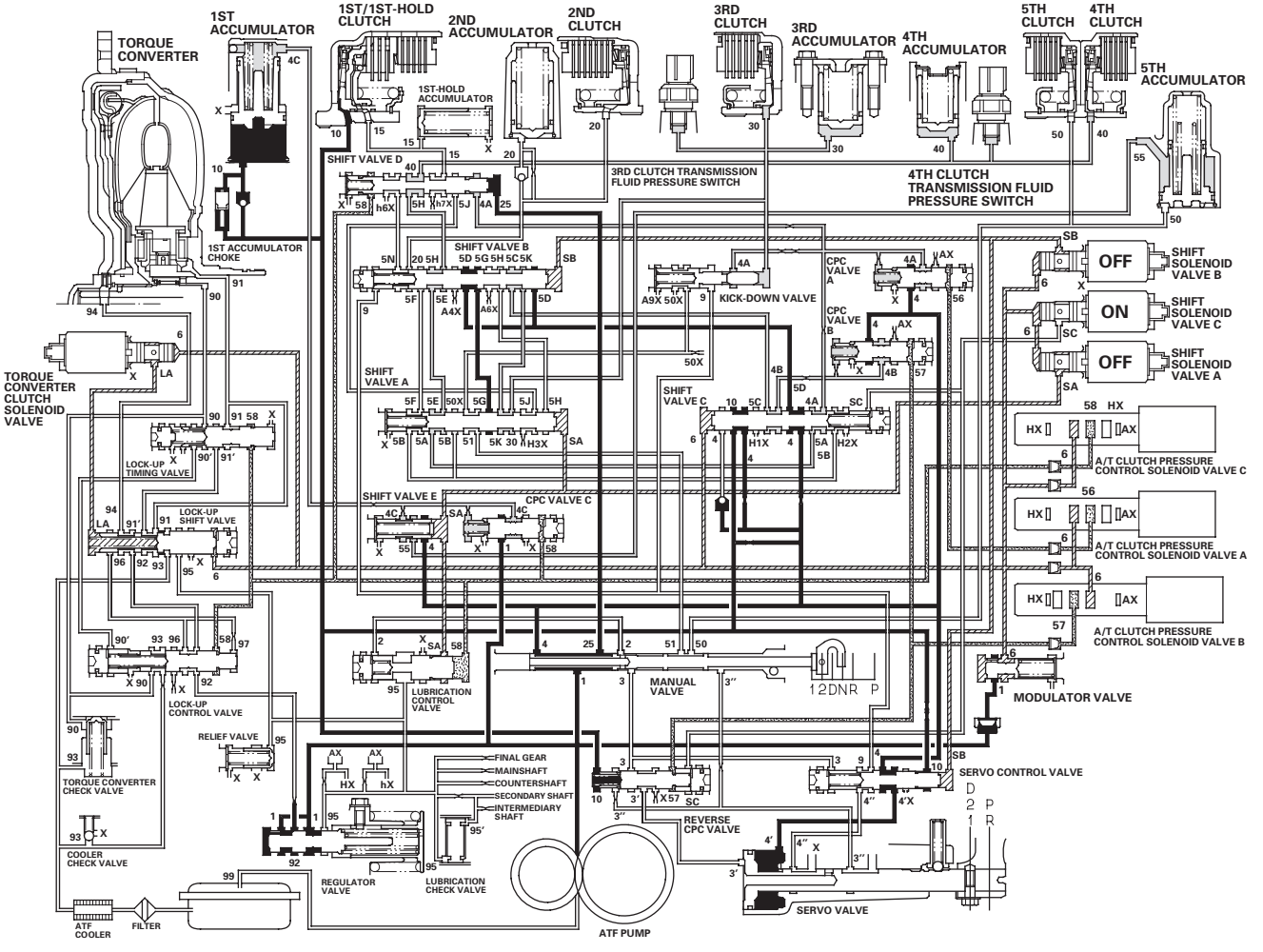
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: Shifting between 3rd gear and 4th gear

As the speed of the vehicle reaches the prescribed value, the PCM turns shift solenoid valve B OFF. The PCM also controls A/T clutch pressure control solenoid valve A to apply LS A pressure (56) to CPC valve A. Shift solenoid valve A remains OFF, and shift solenoid valve C remains ON. Shift solenoid valve B is turned OFF, and SH B pressure (SB) is applied to the right side of shift valve B. Then shift valve B is moved to the left side to switch the port of line pressure and CPC pressure. Line pressure (4) becomes CPC A pressure (4A) at CPC valve A, and becomes CPC B pressure (4B) at CPC valve B. CPC A pressure (4A) becomes 4th clutch pressure (40) at shift valve D via shift valves C, A, and B, and flows to the 4th clutch. The 3rd clutch pressure is changed to CPC pressure mode by switching the position of shift valve B. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

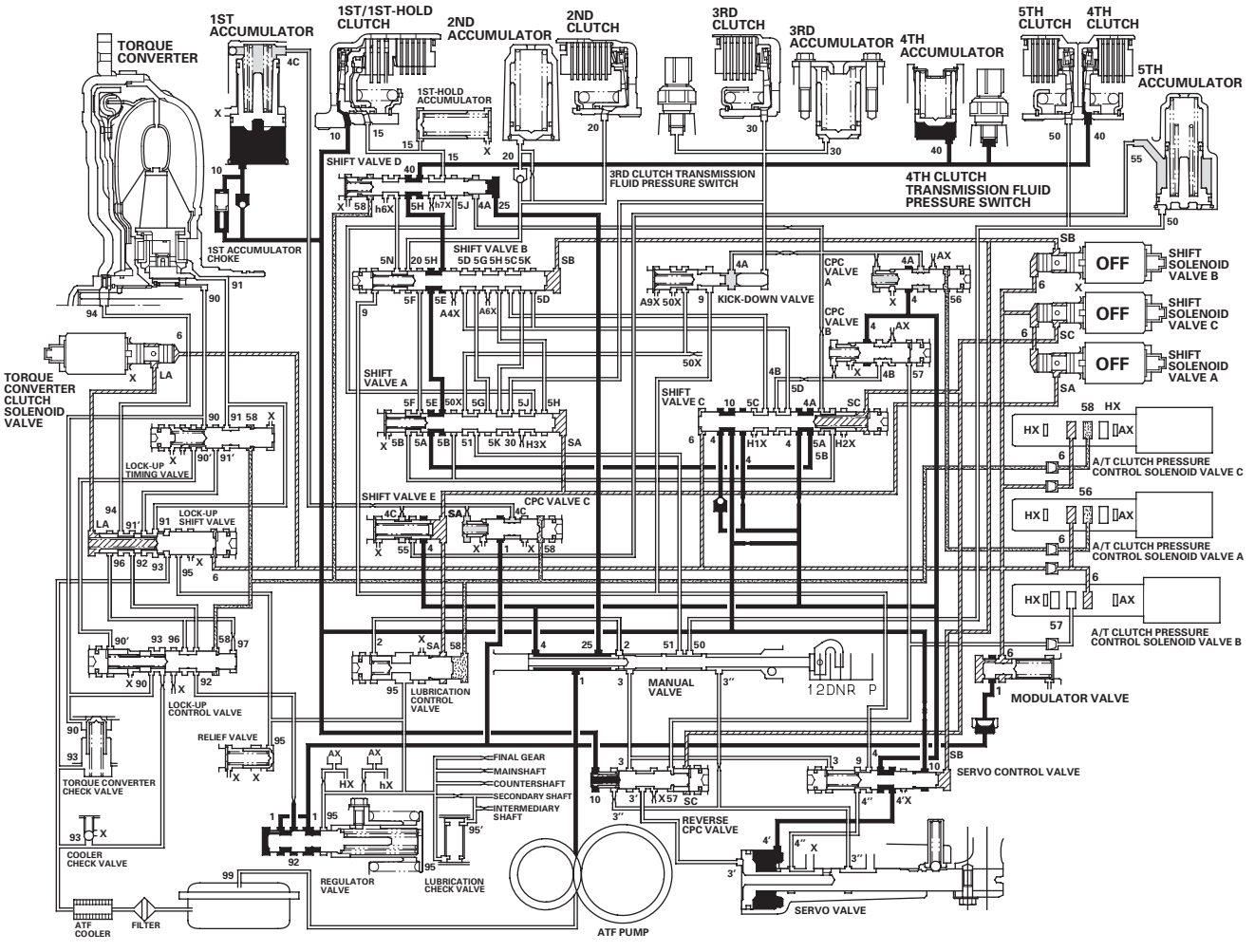
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



D Position: Driving in 4th gear

The PCM turns shift solenoid valve C OFF, and controls A/T clutch pressure control solenoid valve B to release LS B pressure (57) in CPC valve B. Shift solenoid valves A and B remain OFF. Releasing LS B pressure (57) in CPC valve B releases CPC B pressure in the 3rd clutch pressure circuit. Shift solenoid valve C is turned OFF, and SH C pressure (SC) is applied to the right side of shift valve C. Then shift valve C is moved to the left side to switch the port of line pressure and CPC pressure. Line pressure (4) from the manual valve becomes 4th clutch pressure (40) at shift valve D via shift valves C, A, and B, and flows to the 4th clutch. The 4th clutch pressure is changed to line pressure mode by switching the position of shift valve C, and the 4th clutch is engaged securely. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



(cont'd)

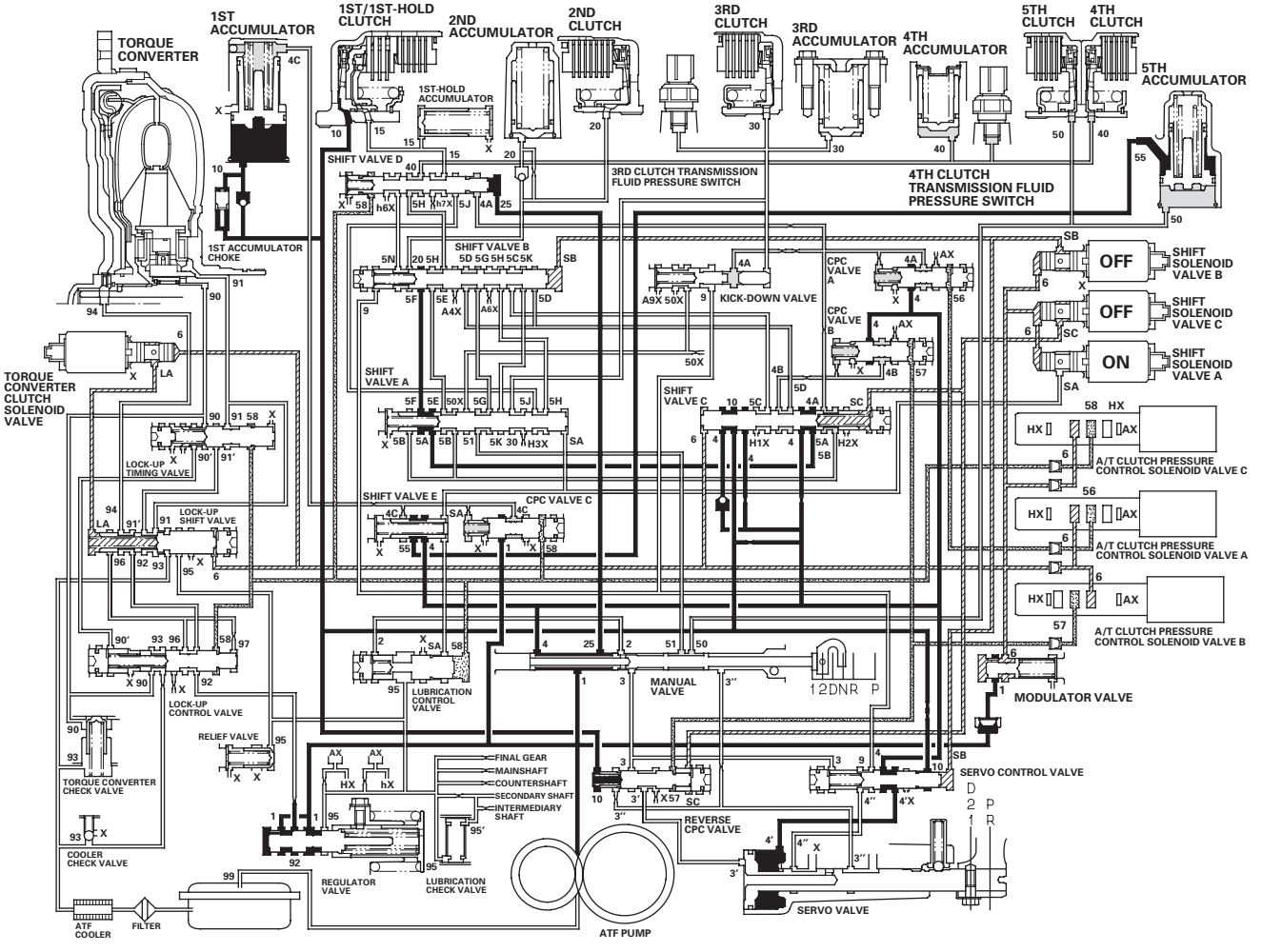
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: Shifting between 4th gear and 5th gear

As the speed of the vehicle reaches the prescribed value, the PCM turns shift solenoid valve A ON. The PCM also controls A/T clutch pressure control solenoid valve B to apply LS B pressure (57) to CPC valve B. Shift solenoid valves B and C remain OFF. Shift solenoid valve A is turn ON, and SH A pressure (SA) in the right side of shift valves A and E is released. Then shift valves A and E are moved to the left side to switch the port of line pressure and CPC pressure. Line pressure (4) becomes CPC A pressure (4A) at CPC valve A, and becomes CPC B pressure (4B) at CPC valve B. CPC B pressure (4B) becomes 5th clutch pressure (50) at shift valve C, and flows to the 5th clutch via shift valves B and A and the manual valve. The 4th clutch pressure is changed to CPC pressure mode by switching the position of shift valve A. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

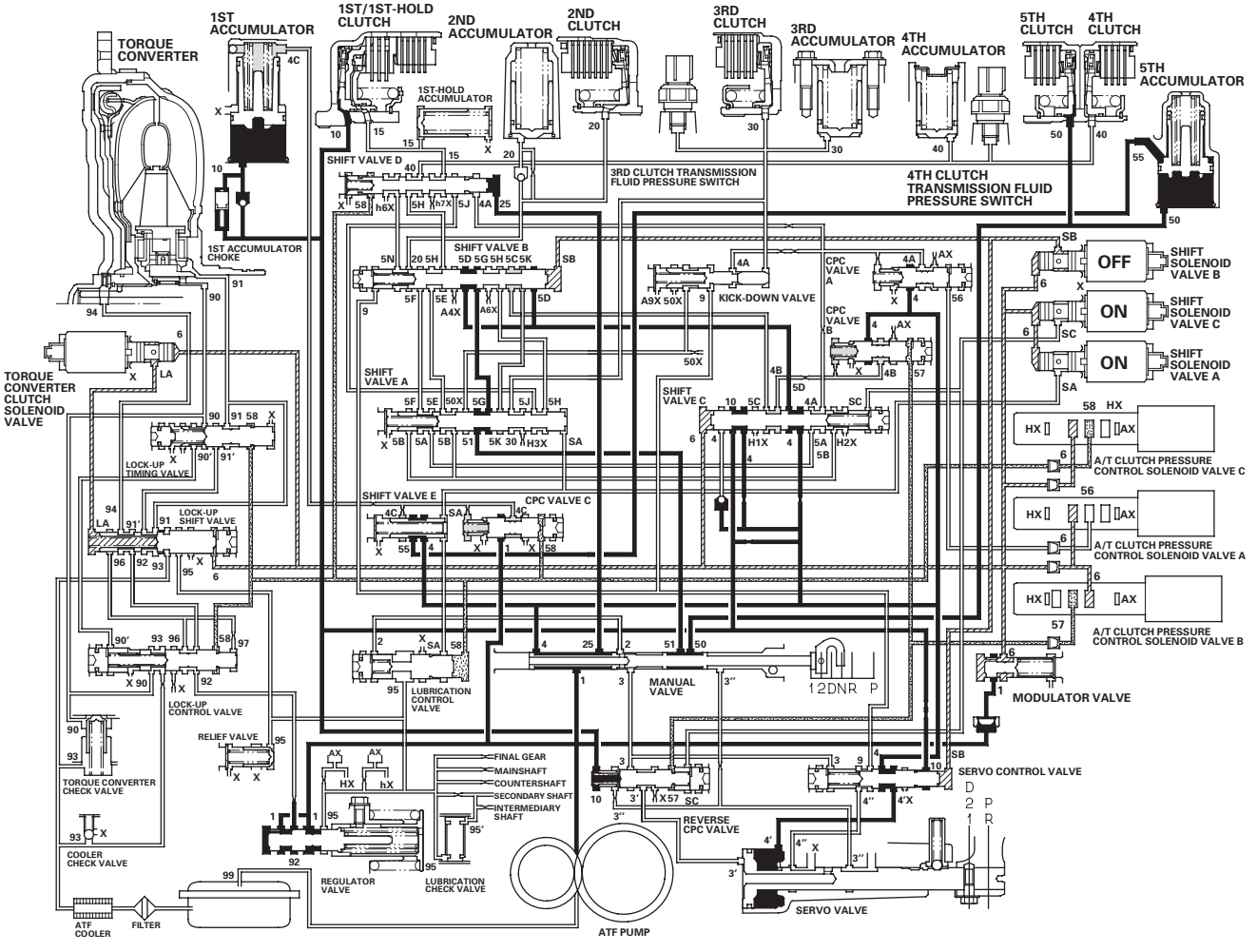
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



D Position: Driving in 5th gear

The PCM turns shift solenoid valve C ON, and controls A/T clutch pressure control solenoid valve A to release LS A pressure (56) in CPC valve A. Shift solenoid valve A remains ON, and shift solenoid valve B remains OFF. Releasing LS A pressure (56) in CPC valve A releases CPC A pressure in the 4th clutch pressure circuit. Shift solenoid valve C is turned ON, and SH C pressure (SC) in the right side of shift valve C is released. Then shift valve C is moved to the right side to switch the port of line pressure and CPC pressure. Line pressure (4) from the manual valve becomes 5th clutch pressure (50) at the manual valve, via shift valves C, B, and A, and flows to the 5th clutch. The 5th clutch pressure is changed to line pressure mode by switching the position of shift valve C. The 5th clutch is engaged securely, and the 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



(cont'd)

System Description (cont'd)

Hydraulic Flow (cont'd)

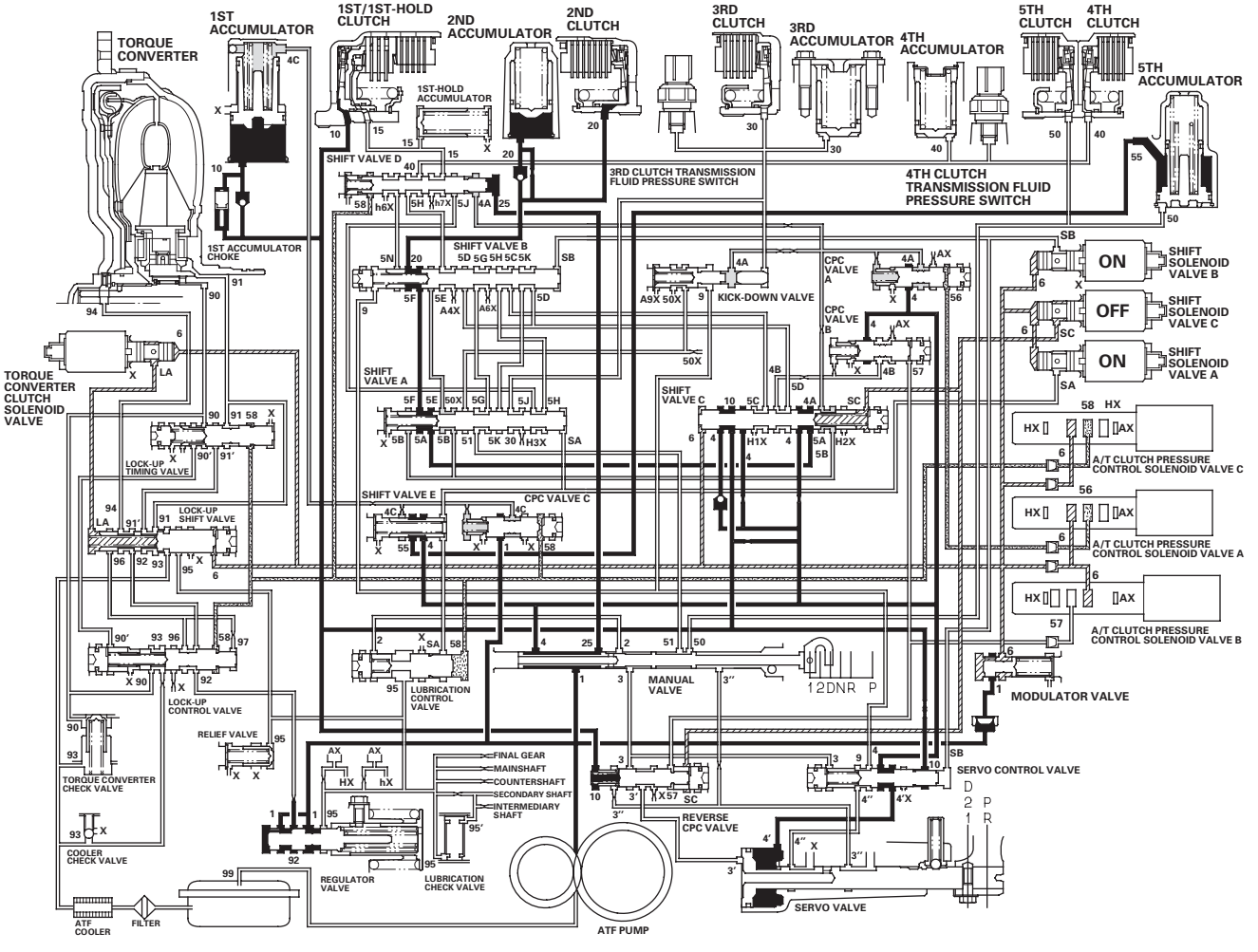
2 Position

The PCM controls the shift solenoid valves and A/T clutch pressure control solenoid valves A and B. The conditions of the shift solenoid valves and the position of the shift valves are as follows:

- Shift solenoid valve A is turned ON, and shift valve A is in the right side.
- Shift solenoid valve B is turned ON, and shift valve B is in the right side.
- Shift solenoid valve C is turned OFF, and shift valve C is in the left side.

The PCM also controls A/T clutch pressure control solenoid valve A to apply LS A pressure (56) to CPC valve A. Line pressure (4) from the manual valve becomes 2nd clutch pressure (20) at shift valve B, via shift valves C and A. 2nd clutch pressure (20) is applied to the 2nd clutch, and the 2nd clutch is engaged. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



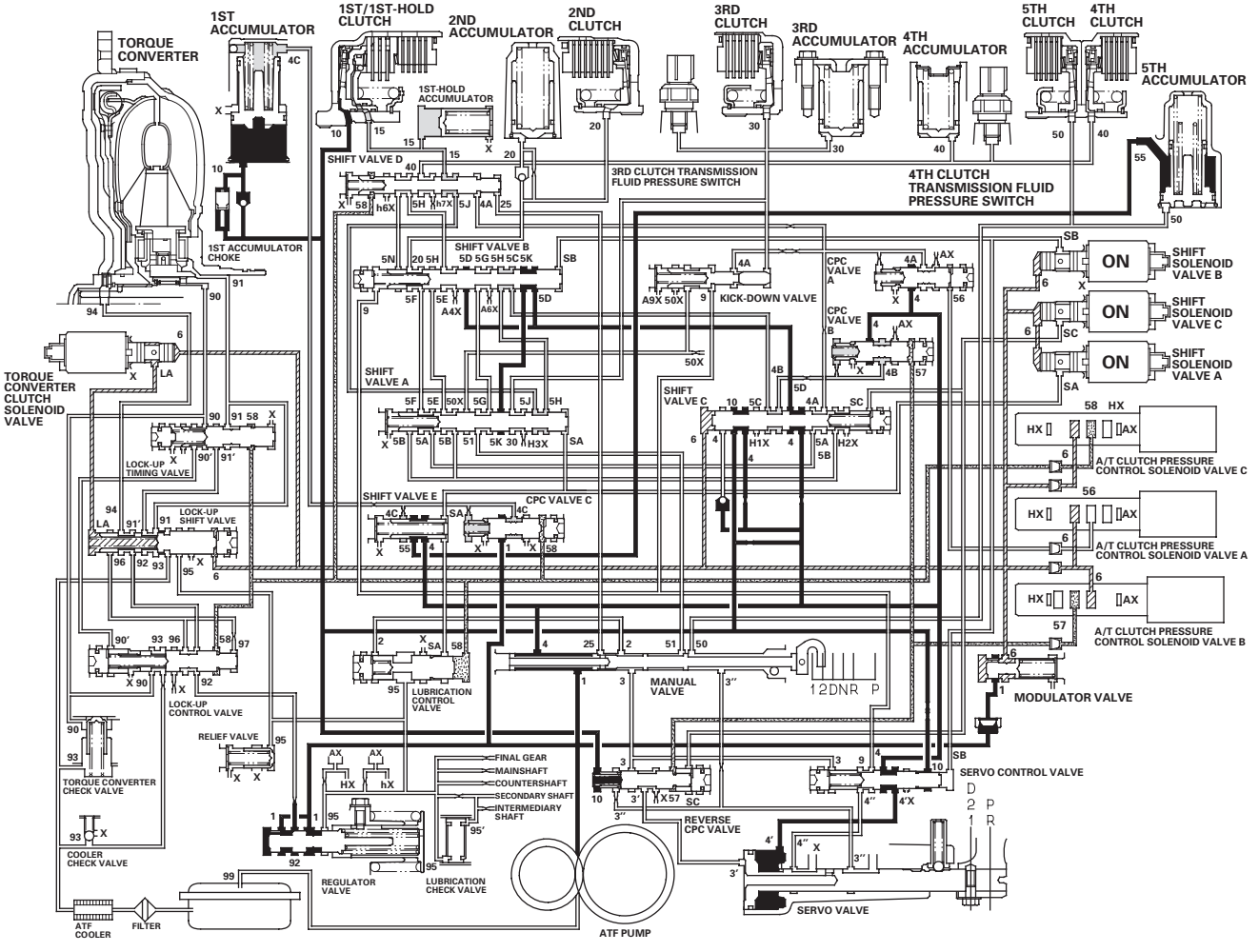
1 Position

The PCM controls the shift solenoid valves and A/T clutch pressure control solenoid valves A and B. The conditions of the shift solenoid valves and the position of the shift valves are as follows:

- Shift solenoid valve A is turned ON, and shift valve A is in the right side.
- Shift solenoid valve B is turned ON, and shift valve B is in the right side.
- Shift solenoid valve C is turned ON, and shift valve C moves to the right side by modulator pressure (6).

The PCM also controls A/T clutch pressure control solenoid valve B to apply LS B pressure (57) to CPC valve B. Line pressure (4) from the manual valve becomes 1st clutch pressure (10) at shift valve C. 1st clutch pressure (10) is applied to the 1st clutch, and the 1st clutch is engaged. Line pressure (4) also flows to CPC valve B, and becomes CPC B pressure (4B). CPC B pressure (4B) becomes 1st-hold clutch pressure (15) at shift valve D, via shift valves C, B, and A. 1st-hold clutch pressure (15) is applied to the 1st-hold clutch, and the 1st-hold clutch is engaged.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



(cont'd)

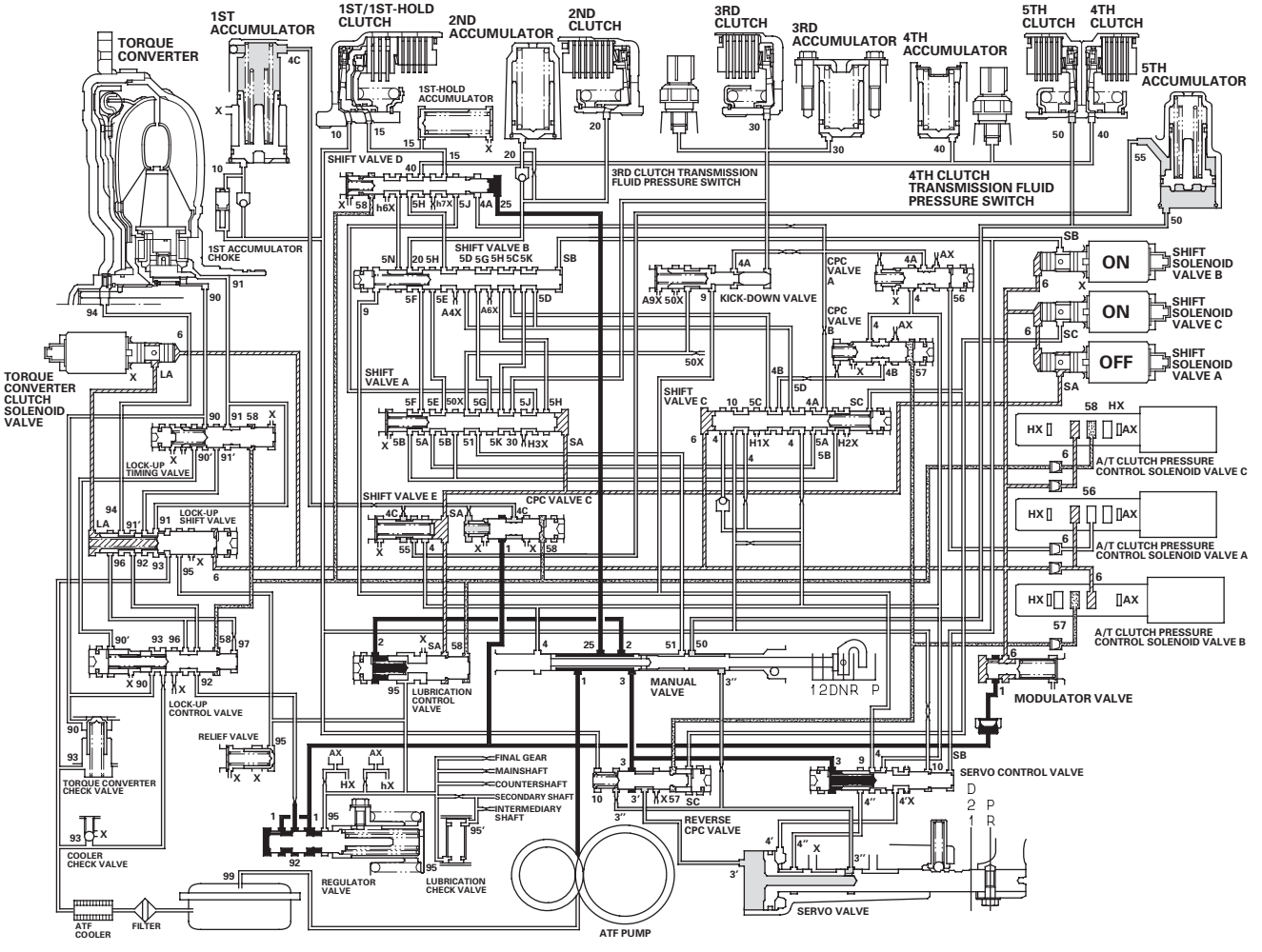
System Description (cont'd)

Hydraulic Flow (cont'd)

R Position: Shifting to the R position from the P or N position

Line pressure (1) becomes line pressure (3) at the manual valve, and flows to the reverse CPC valve. Line pressure (3) is regulated by the reverse CPC valve and becomes reverse CPC pressure (3'). Reverse CPC pressure (3') pushes the servo valve to the reverse position, passes through the servo valve, and flows to the manual valve. Reverse CPC pressure (3'') becomes 5th clutch pressure (50) at the manual valve. 5th clutch pressure (50) is applied to 5th clutch, and 5th clutch is engaged with reverse CPC pressure.

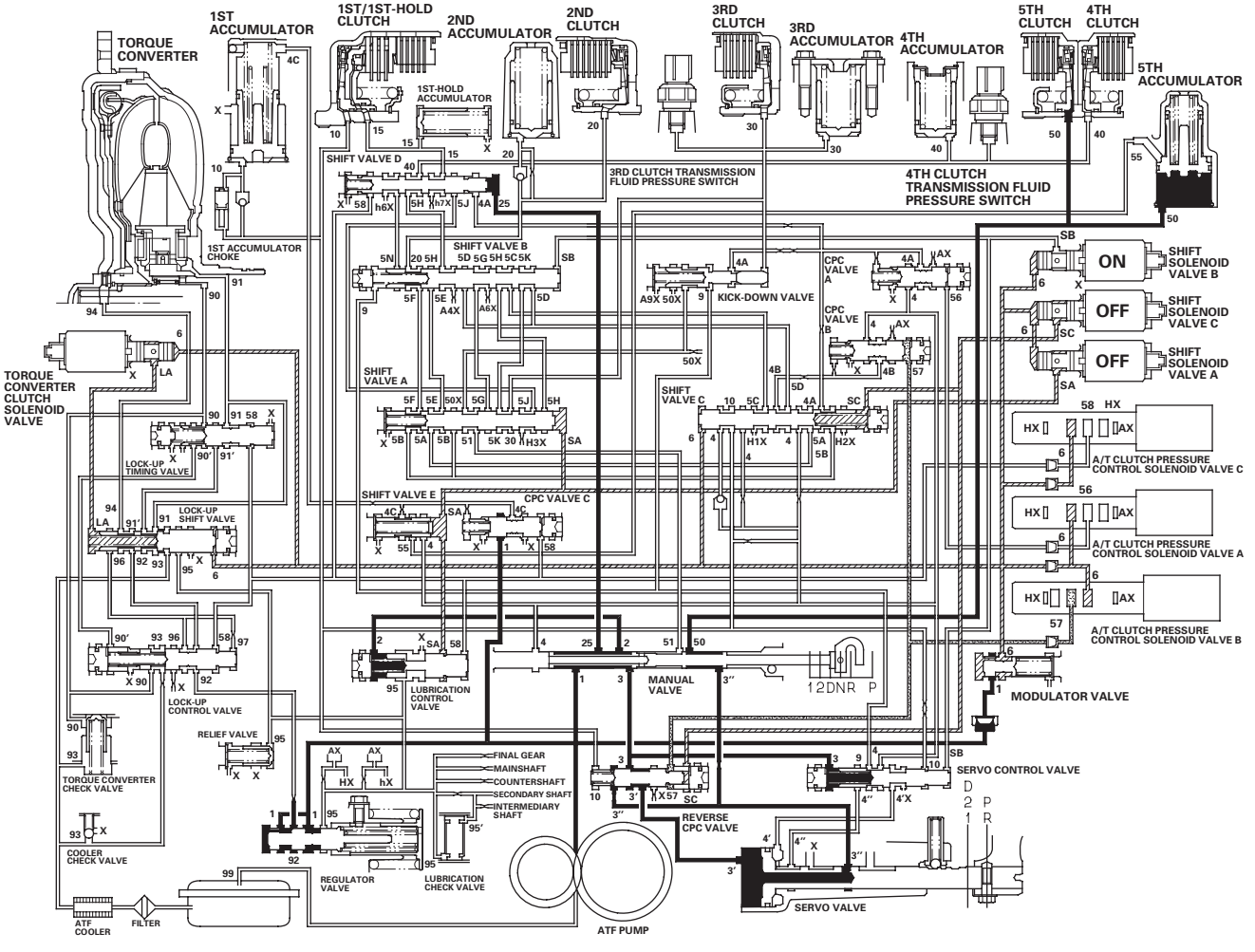
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



R Position: Driving in reverse gear
The PCM turns shift solenoid valve C OFF. Shift solenoid valve A remains OFF, and shift solenoid valve B remains ON. Shift solenoid valve C is turned OFF, and SH C pressure (SC) is applied to the right side of the reverse CPC valve. Then the reverse CPC valve moves to the left side, creating full line pressure. Line pressure to the 5th clutch is the same as when shifting to the R position, and 5th clutch pressure increases. The 5th clutch is engaged with line pressure mode.

Reverse Inhibitor Control
When the R position is selected while the vehicle is moving forward at speeds over 6 mph (10 km/h), the PCM turns shift solenoid valves A and C ON, and shift solenoid valve B remains ON. The reverse CPC valve is moved to right side and covers the port to stop the line pressure (3') to the servo valve. The line pressure (3') is not applied to the servo valve, and the 5th clutch pressure (50) is not applied to the 5th clutch, as a result, power is not transmitted to the reverse direction.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



(cont'd)

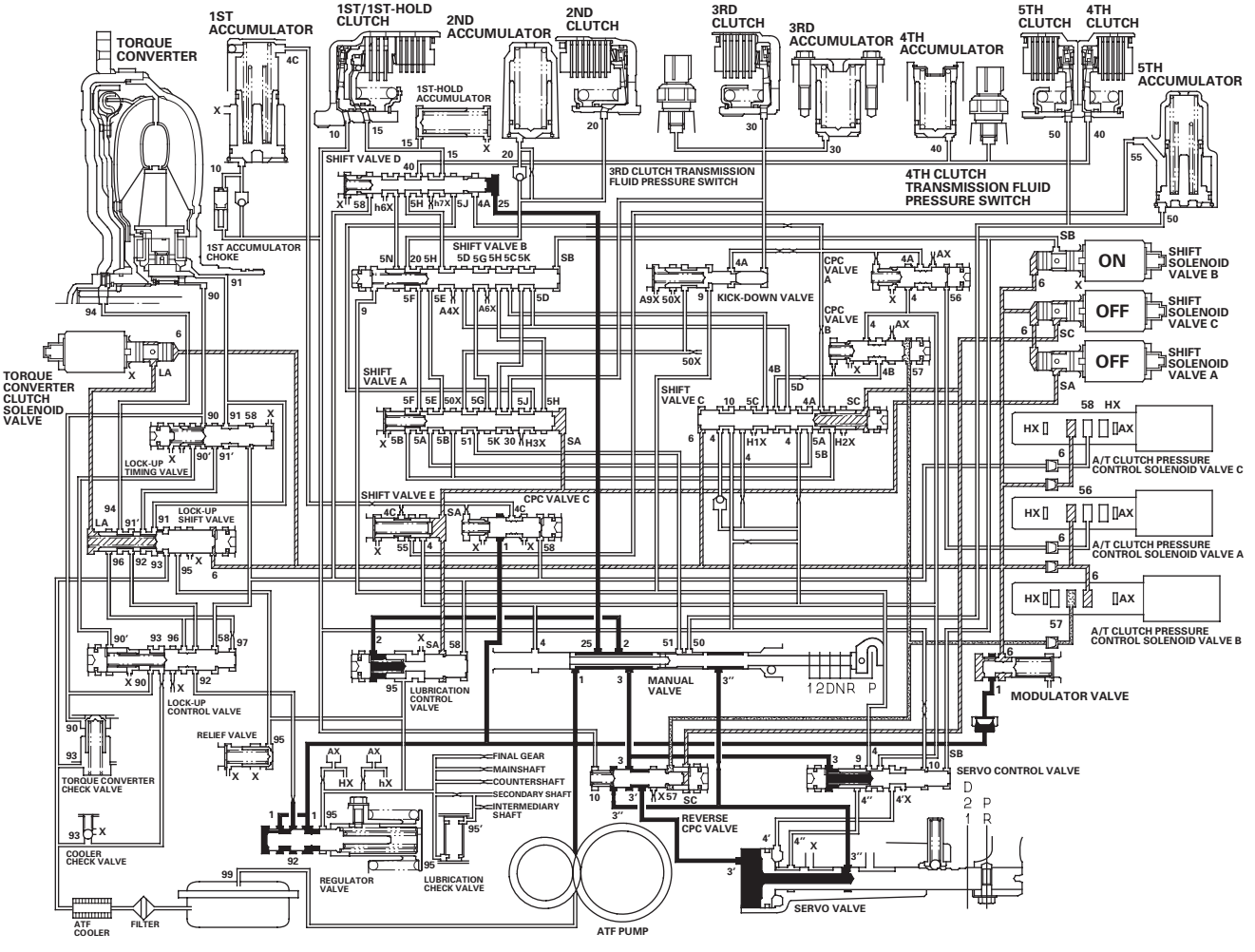
System Description (cont'd)

Hydraulic Flow (cont'd)

P Position

Shift solenoid valve C is turned OFF by the PCM, and SH C pressure (SC) is applied to the right side of the reverse CPC valve. Then the reverse CPC valve is moved to the left side to uncover the port leading line pressure (3) to the servo valve. Line pressure (3') passes through the servo valve and flows to the manual valve. Line pressure (3'') is intercepted at the manual valve, and is not applied to the clutches.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



Lock-up System

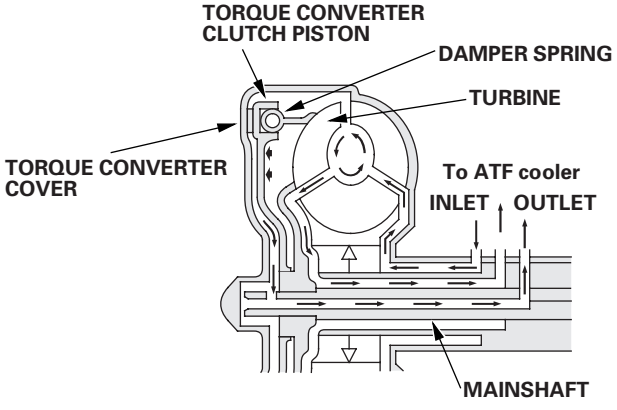
The lock-up mechanism of the torque converter clutch operates in D (2nd, 3rd, 4th, and 5th), and D in the D3 driving mode (2nd and 3rd). The pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the torque converter clutch piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft. Together with the hydraulic control, the PCM optimizes the timing and amount of the lock-up mechanism. When torque converter clutch solenoid valve is turned on by the PCM, the torque converter clutch solenoid valve pressure switches the lock-up shift valve lock-up on and off. A/T clutch pressure control solenoid valve C, the lock-up control valve, and lock-up timing valve control the amount of lock-up.

Torque Converter Clutch Lock-up ON (Engaging Torque Converter Clutch)
Fluid in the chamber between the torque converter cover and the torque converter clutch piston is drained off, and fluid entering from the chamber between the pump and stator exerts pressure through the torque converter clutch piston against the torque converter cover. The torque converter clutch piston engages with the torque converter cover; the torque converter clutch lock-up is ON, and the mainshaft rotates at the same speed as the engine.

Power flow

The power flows by way of:

Engine
↓
Drive plate
↓
Torque converter cover
↓
Torque converter clutch piston
↓
Damper spring
↓
Turbine
↓
Mainshaft

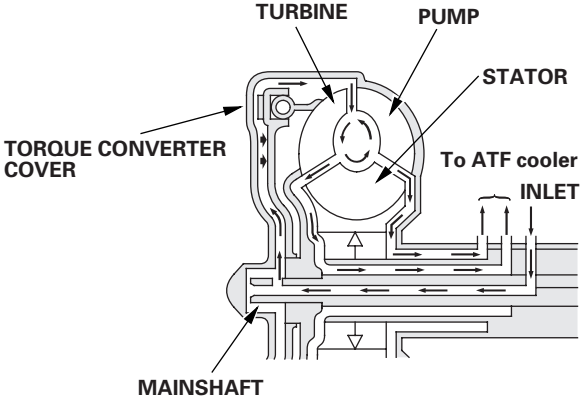


Torque Converter Clutch Lock-up OFF (Disengaging Torque Converter Clutch)
Fluid entered from the chamber between the torque converter cover and the torque converter clutch piston passes through the torque converter and goes out from the chambers between the turbine and the stator, and between the pump and the stator. As a result, the torque converter clutch piston moves away from the torque converter cover, and the torque converter clutch lock-up is released; the torque converter clutch lock-up is OFF.

Power flow

The power flows by way of:

Engine
↓
Drive plate
↓
Torque converter cover
↓
Pump
↓
Turbine
↓
Mainshaft



(cont'd)

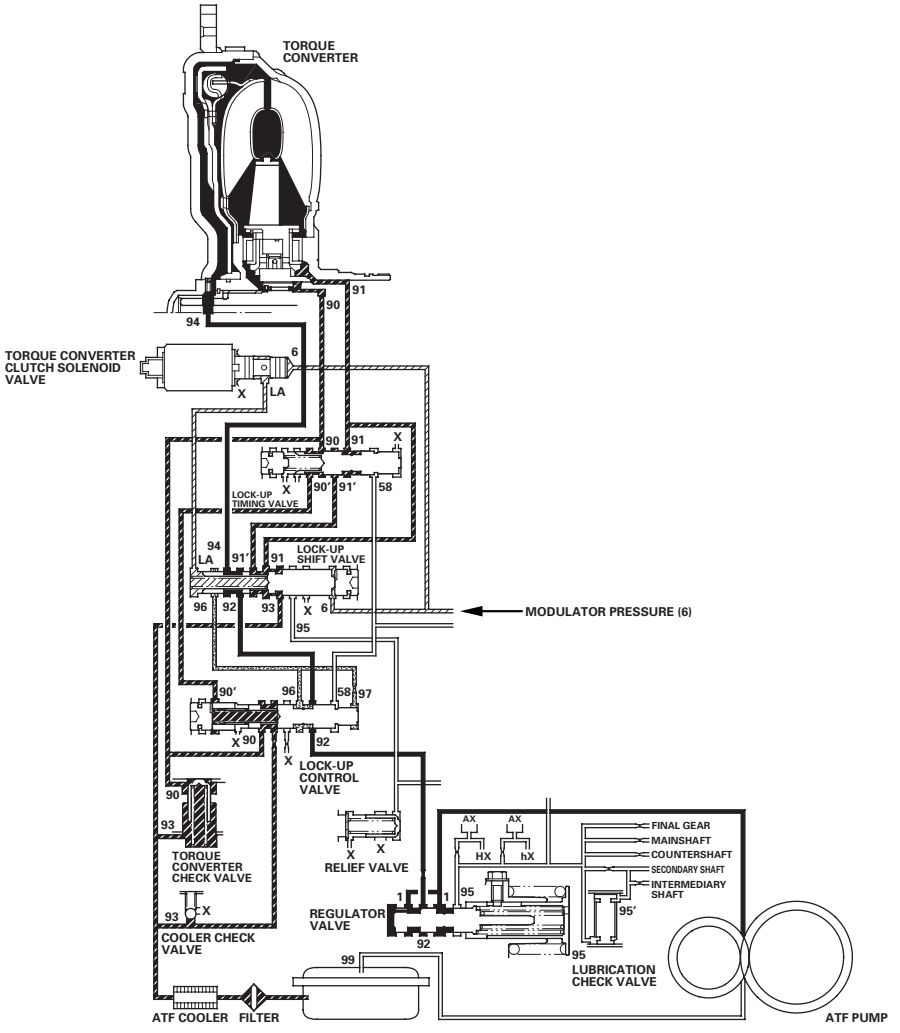
System Description (cont'd)

Lock-up System (cont'd)

No Lock-up

The torque converter clutch solenoid valve is turned OFF by the PCM. The lock-up shift valve receives LC pressure (LA) on the left side, and modulator pressure (6) on the right side. The lock-up shift valve is in the right side to uncover the port leading torque converter pressure (92) to the left side of the torque converter. Torque converter pressure (92) becomes torque converter pressure (94), and enters into the left side of the torque converter to disengage the torque converter clutch. The torque converter clutch is OFF.

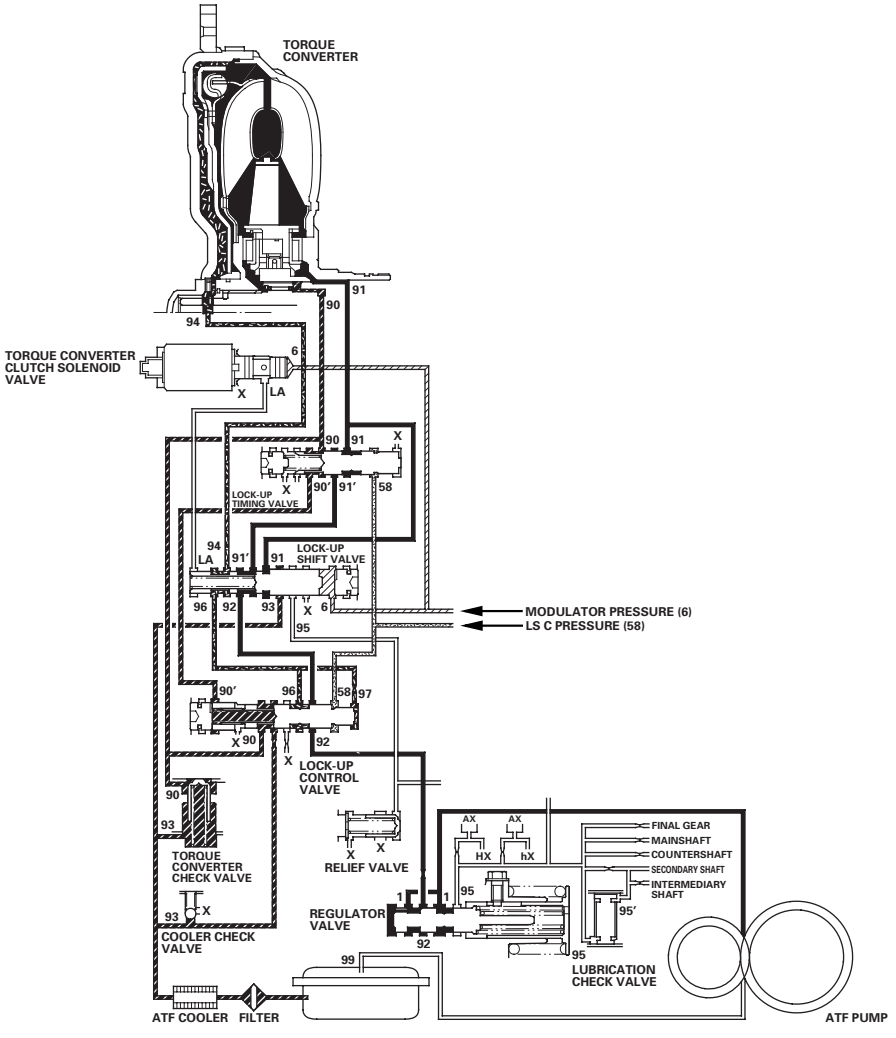
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



Partial Lock-up

As the speed of the vehicle reaches the prescribed value, the torque converter clutch solenoid valve is turned ON by the PCM to release LC pressure (LA) in the left cavity of the lock-up shift valve. Modulator pressure (6) is applied to the right side of the lock-up shift valve, then the lock-up shift valve is moved in the left side to switch the port leading torque converter pressure to the right side of the torque converter. Torque converter pressure (91) is applied to the right side of the torque converter to engage the lock-up clutch. The PCM also controls A/T clutch pressure control solenoid valve C, and LS C pressure (58) is applied to the lock-up control valve and the lock-up timing valve. When LS C pressure (58) is lower, torque converter pressure (91) from the lock-up timing valve is lower. The torque converter clutch is engaged partially. LS C pressure (58) increases, and the lock-up timing valve is moved to the left side to uncover the port leading torque converter pressure to high. The torque converter clutch is then engaged securely. Under this condition, the torque converter clutch is engaged by pressure from the right side of the torque converter; this condition is partial lock-up.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



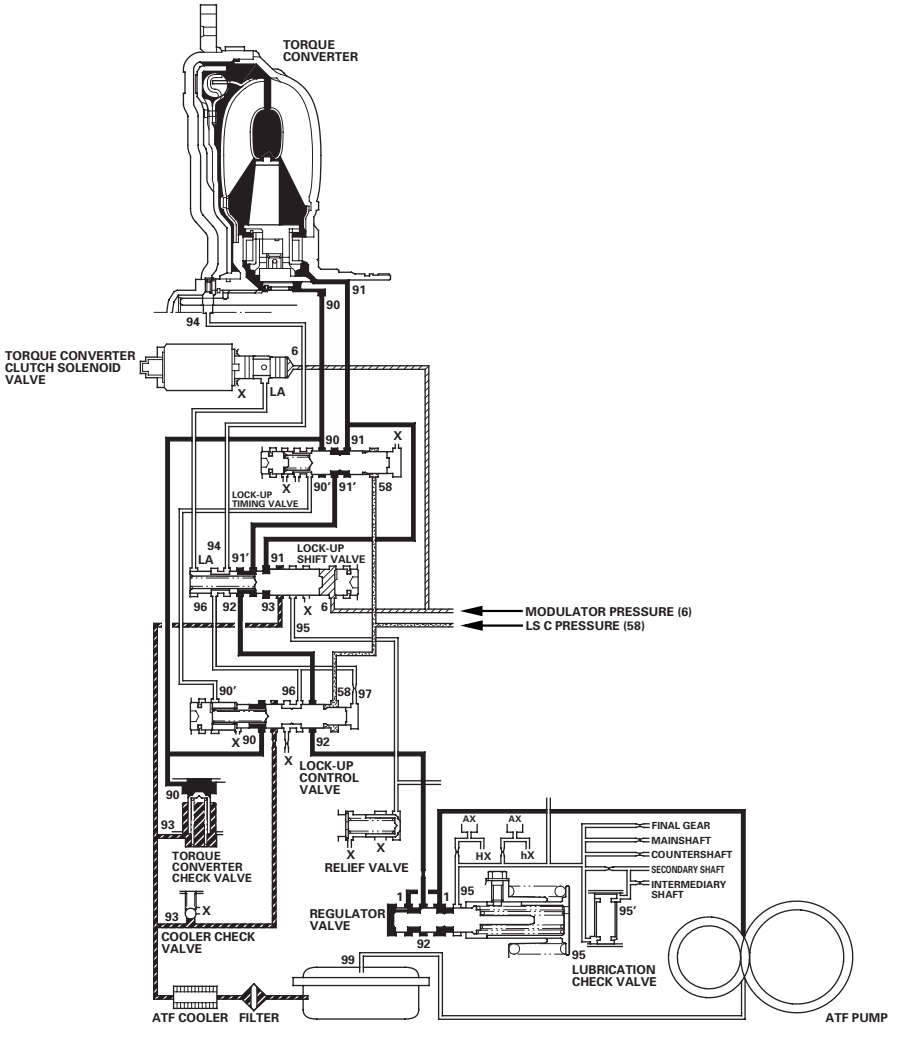
(cont'd)

System Description (cont'd)

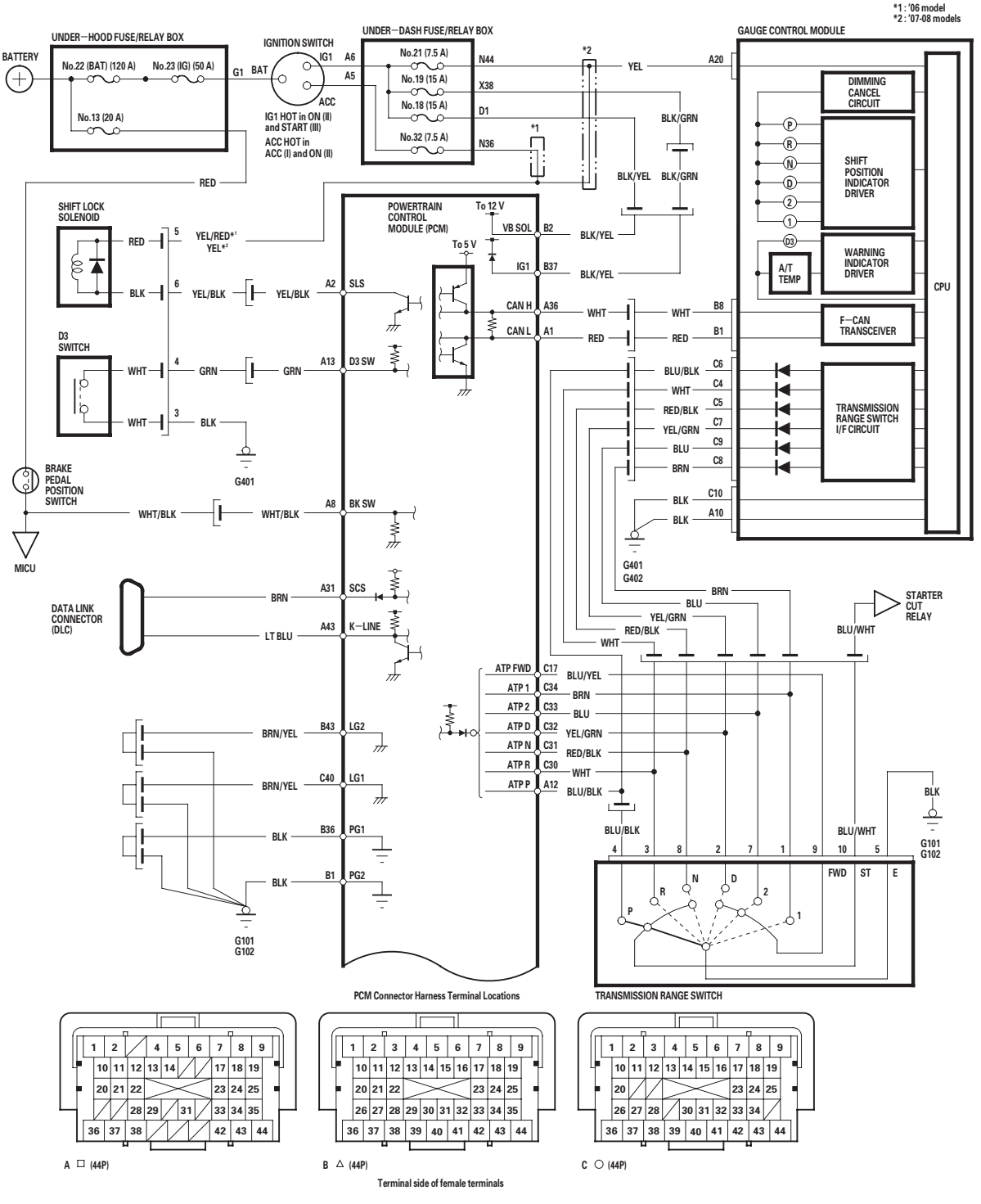
Lock-up System (cont'd)

Full Lock-up
When the vehicle speed further increases, the PCM controls A/T clutch pressure control solenoid valve C to increase LS C pressure (58). The LS C pressure (58) is applied to the lock-up control valve and the lock-up timing valve, and moves them to the left side. Under this condition, torque converter back pressure is released fully, causing the torque converter clutch to be fully engaged.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



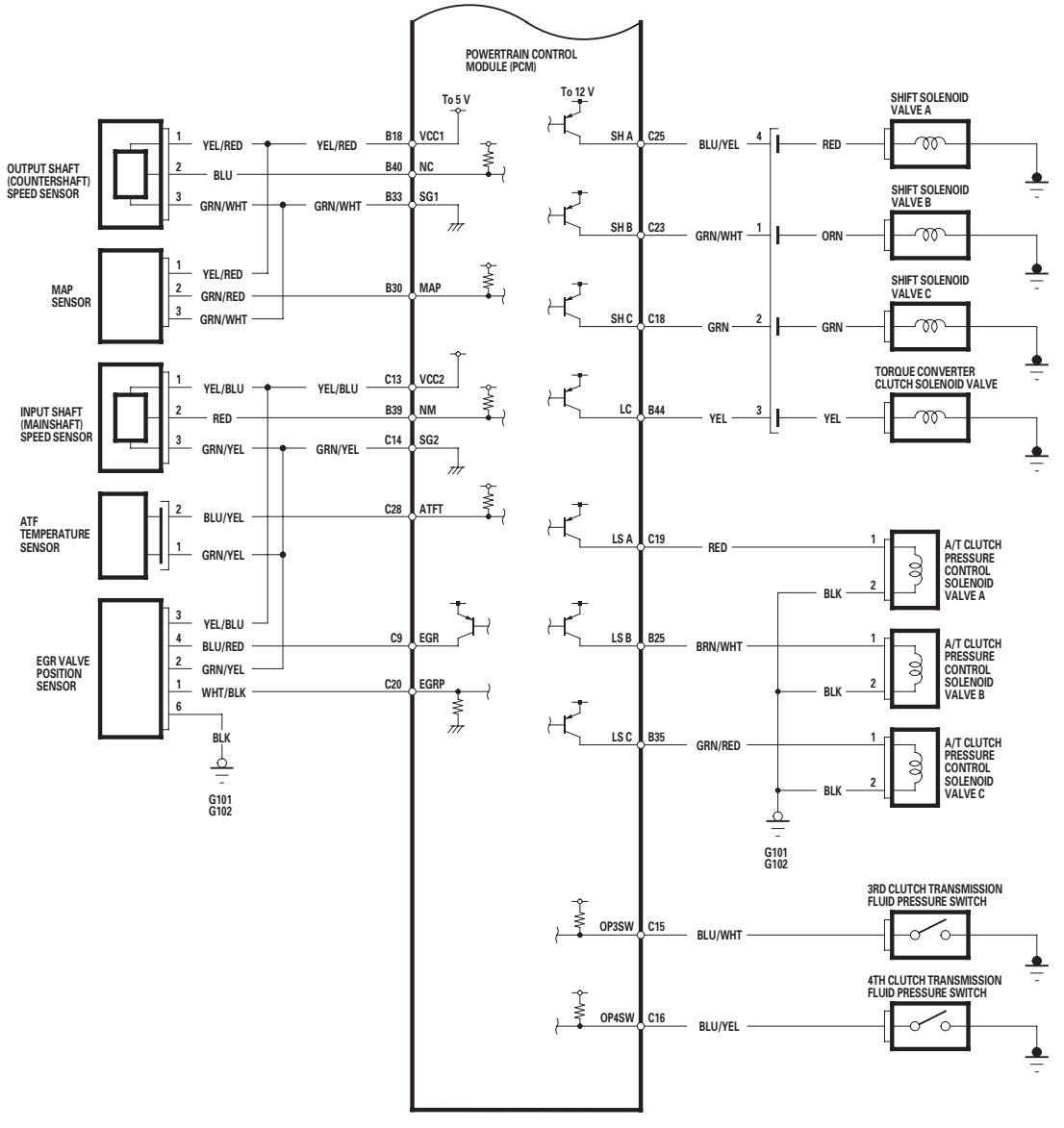
Circuit Diagram - PCM A/T Control System



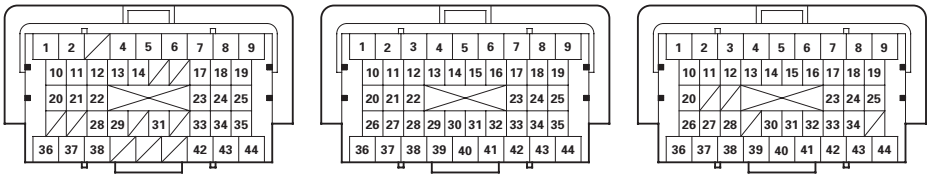
(cont'd)

System Description (cont'd)

Circuit Diagram - PCM A/T Control System (cont'd)



PCM Connector Harness Terminal Locations



A □ (44P) B △ (44P) C ○ (44P)

Terminal side of female terminals

DTC Troubleshooting

DTC P0705: Short in Transmission Range Switch Circuit (Multiple Shift-position Input)

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Start the engine.
3. With the brake pedal pressed, move the shift lever through all positions. Stop for at least 1 second in each position.
4. Monitor the OBD STATUS for P0705 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

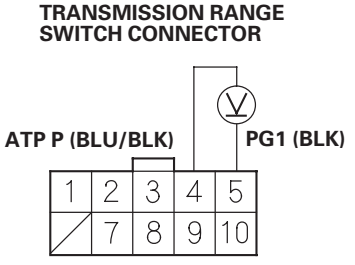
   YES—Intermittent failure, the system is OK at this time. Check for an intermittent short in the wire between the transmission range switch and the PCM. ■

   NO—If the screen indicates FAILED, go to step 5. If the screen indicates NOT COMPLETED, return to step 3 and recheck.
5. Turn the ignition switch to LOCK (0).
6. Inspect the transmission range switch (see page 14-272).

   Is the switch OK?

   YES—Disconnect the switch connector, then go to step 7.

   NO—Go to step 44.
7. Turn the ignition switch to ON (II).
8. Measure the voltage between transmission range switch connector terminals No. 4 and No. 5.



Wire side of female terminals

Is there battery voltage?

YES—Go to step 14.

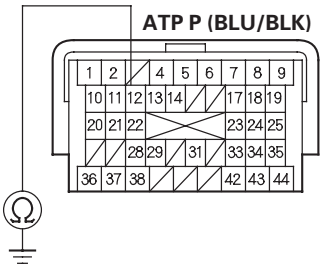
NO—Go to step 9.

(cont'd)

DTC Troubleshooting (cont'd)

9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector A (44P).
12. Check for continuity between PCM connector terminal A12 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

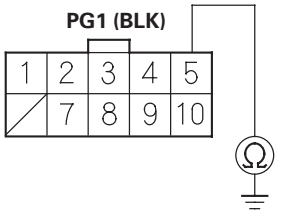
Is there continuity?

YES—Repair a short to body ground in the wire between PCM connector terminal A12 and the transmission range switch, then go to step 45.

NO—Go to step 13.

13. Check for continuity between transmission range switch connector terminal No. 5 and body ground.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

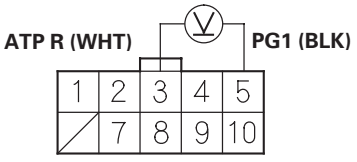
Is there continuity?

YES—Go to step 51.

NO—Repair an open in the wire between transmission range switch connector terminal No. 5 and ground (G101, G102), or repair poor ground (G101, G102), then go to step 45.

14. Measure the voltage between transmission range switch connector terminals No. 3 and No. 5.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 19.

NO—Go to step 15.

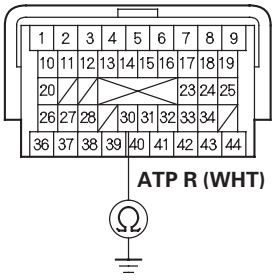
15. Turn the ignition switch to LOCK (0).

16. Jump the SCS line with the HDS.

17. Disconnect PCM connector C (44P).

18. Check for continuity between PCM connector terminal C30 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair a short to body ground in the wire between PCM connector terminal C30 and the transmission range switch, then go to step 45.

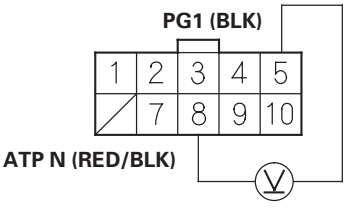
NO—Go to step 51.

(cont'd)

DTC Troubleshooting (cont'd)

19. Measure the voltage between transmission range switch connector terminals No. 5 and No. 8.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 24.

NO—Go to step 20.

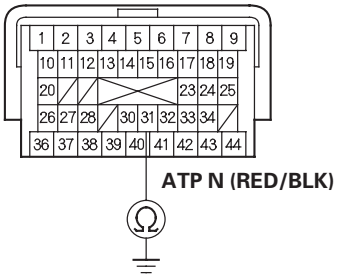
20. Turn the ignition switch to LOCK (0).

21. Jump the SCS line with the HDS.

22. Disconnect PCM connector C (44P).

23. Check for continuity between PCM connector terminal C31 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

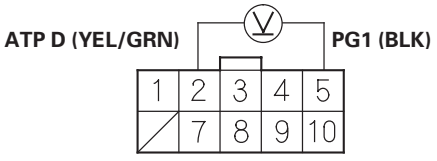
Is there continuity?

YES—Repair a short to body ground in the wire between PCM connector terminal C31 and the transmission range switch, then go to step 45.

NO—Go to step 51.

24. Measure the voltage between transmission range switch connector terminals No. 2 and No. 5.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 29.

NO—Go to step 25.

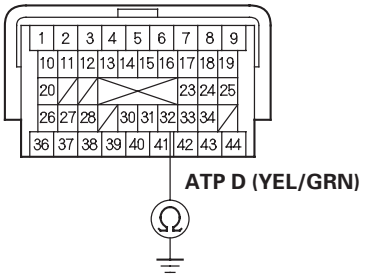
25. Turn the ignition switch to LOCK (0).

26. Jump the SCS line with the HDS.

27. Disconnect PCM connector C (44P).

28. Check for continuity between PCM connector terminal C32 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair a short to body ground in the wire between PCM connector terminal C32 and the transmission range switch, then go to step 45.

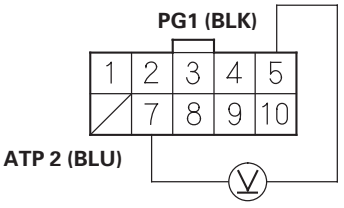
NO—Go to step 51.

(cont'd)

DTC Troubleshooting (cont'd)

29. Measure the voltage between transmission range switch connector terminals No. 5 and No. 7.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 34.

NO—Go to step 30.

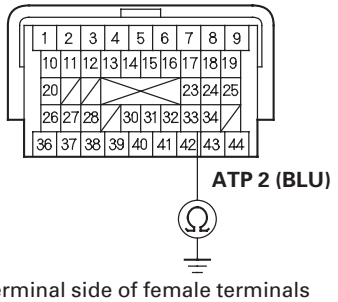
30. Turn the ignition switch to LOCK (0).

31. Jump the SCS line with the HDS.

32. Disconnect PCM connector C (44P).

33. Check for continuity between PCM connector terminal C33 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

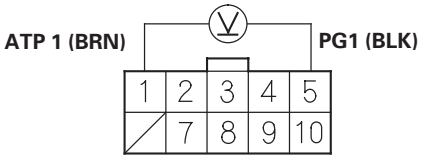
Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal C33 and the transmission range switch, then go to step 45.

NO—Go to step 51.

34. Measure the voltage between transmission range switch connector terminals No. 1 and No. 5.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 39.

NO—Go to step 35.

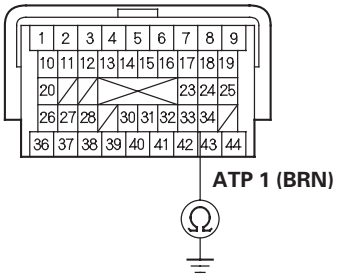
35. Turn the ignition switch to LOCK (0).

36. Jump the SCS line with the HDS.

37. Disconnect PCM connector C (44P).

38. Check for continuity between PCM connector terminal C34 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal C34 and the transmission range switch, then go to step 45.

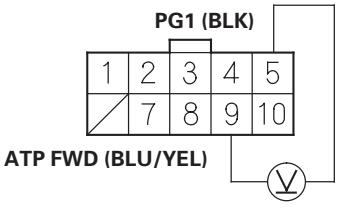
NO—Go to step 51.

(cont'd)

DTC Troubleshooting (cont'd)

39. Measure the voltage between transmission range switch connector terminals No. 5 and No. 9.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 51.

NO—Go to step 40.

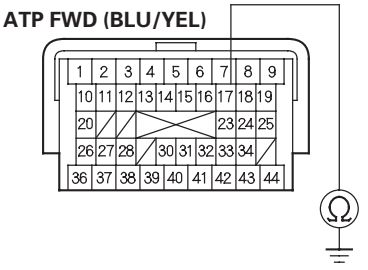
40. Turn the ignition switch to LOCK (0).

41. Jump the SCS line with the HDS.

42. Disconnect PCM connector C (44P).

43. Check for continuity between PCM connector terminal C17 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal C17 and the transmission range switch, then go to step 45.

NO—Go to step 51.

44. Replace the transmission range switch (see page 14-273).

45. Reconnect all connectors.

46. Turn the ignition switch to ON (II).

47. Clear the DTC with the HDS.

48. With the brake pedal pressed, move the shift lever through all positions. Stop for at least 1 second in each position.

49. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0705 indicated?

    YES—Check for poor connections or loose terminals at the transmission range switch and the PCM, then go to step 1.

    NO—If Temporary DTC or DTC P0705 is not indicated, or if any other Temporary DTCs are indicated, go to step 50.

50. Monitor the OBD STATUS for P0705 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 49, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the transmission range switch and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 48.

51. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

52. With the brake pedal pressed, move the shift lever through all positions. Stop for at least 1 second in each position.

53. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0705 indicated?

    YES—Check for poor connections or loose terminals at the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 52. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0705 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 54.

54. Monitor the OBD STATUS for P0705 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 53, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 52. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 52.

DTC Troubleshooting (cont'd)

DTC P0706: Open in Transmission Range Switch Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Raise the vehicle on a lift, make sure it is supported securely (see page 1-10), and allow all four wheels to rotate freely.
3. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle in D until the vehicle speed reaches 30 mph (48 km/h), then slow down and stop the wheels.
4. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 3.
5. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the transmission range switch and the PCM. ■

   NO—If the screen indicates FAILED, go to step 6. If the screen indicates NOT COMPLETED, return to step 3 and recheck.
6. Turn the ignition switch to LOCK (0).
7. Inspect the transmission range switch (see page 14-272).

   Is the switch OK?

   YES—Go to step 8.

   NO—Go to step 29.
8. Adjust the shift cable (see page 14-265).
9. Clear the DTC with the HDS.
10. Turn the ignition switch to LOCK (0).
11. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle in D hold the vehicle speed reaches 30 mph (48 km/h), then slow down and stop the wheels.
12. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 11.
13. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Intermittent failure, the system is OK at this time. Check for an intermittent short in the wire between the transmission range switch and the PCM. ■

    NO—If the screen indicates FAILED, go to step 14. If the screen indicates NOT COMPLETED, go to step 11.
14. Clear the DTC with the HDS.
15. Move the shift lever into D, and verify the ATP FWD and ATP D inputs with the HDS in the A/T data list.

    Are ATP FWD and ATP D ON?

    YES—Go to step 16.

    NO—Go to step 22.
16. Shift to 2, and verify the ATP FWD and ATP 2 inputs with the HDS in the A/T data list.

    Are ATP FWD and ATP 2 ON?

    YES—Go to step 17.

    NO—Go to step 22.
17. Clear the DTC with the HDS.

18. Turn the ignition switch to LOCK (0).

19. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle in D until the vehicle speed reaches 30 mph (48 km/h), then slow down and stop the wheels.

20. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 21.

21. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the transmission range switch and the PCM. ■

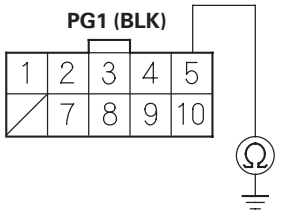
    NO—If the screen indicates FAILED, go to step 22. If the screen indicates NOT COMPLETED, return to step 19 and recheck.

22. Turn the ignition switch to LOCK (0).

23. Disconnect the transmission range switch connector.

24. Check for continuity between transmission range switch connector terminal No. 5 and body ground.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there continuity?

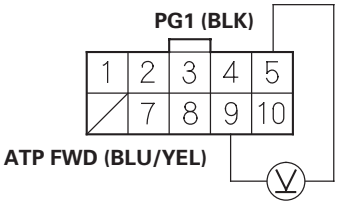
YES—Go to step 25.

NO—Repair an open in the wire between the transmission range switch and ground (G101, G102), or repair poor ground (G101, G102), then go to step 30.

25. Turn the ignition switch to ON (II).

26. Measure the voltage between transmission range switch connector terminals No. 5 and No. 9.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

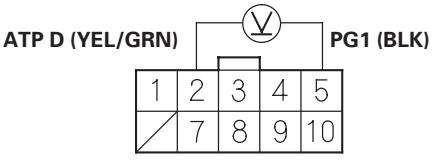
Is there voltage?

YES—Go to step 27.

NO—Repair an open in the wire between the transmission range switch and PCM connector terminal C17, then go to step 30.

27. Measure the voltage between transmission range switch connector terminals No. 2 and No. 5.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there voltage?

YES—Go to step 28.

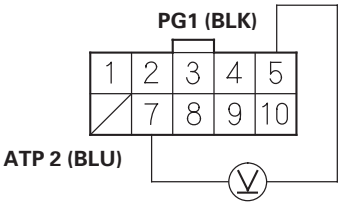
NO—Repair an open in the wire between the transmission range switch and PCM connector terminal C32, then go to step 30.

(cont'd)

DTC Troubleshooting (cont'd)

28. Measure the voltage between transmission range switch connector terminals No. 5 and No. 7.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there voltage?

YES—Go to step 38.

NO—Repair an open in the wire between the transmission range switch and PCM connector terminal C33, then go to step 30.

29. Replace the transmission range switch (see page 14-273).

30. Reconnect all connectors.

31. Turn the ignition switch to ON (II).

32. Clear the DTC with the HDS.

33. Raise the vehicle on a lift, make sure it is securely supported, and allow all four wheels to rotate freely.

34. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle in D hold the vehicle speed reaches 30 mph (48 km/h), then slow down and stop the wheels.

35. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 34.

36. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0706 indicated?

    YES—Check for poor connections or loose terminals at the transmission range switch and the PCM, then go to step 1.

    NO—If Temporary DTC or DTC P0706 is not indicated, or if any other Temporary DTCs are indicated, go to step 37.

37. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 36, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the transmission range switch and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 33.

38. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

39. Raise the vehicle on a lift, make sure it is supported securely (see page 1-10), and allow all four wheels to rotate freely.

40. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle in D hold the vehicle speed reaches 30 mph (48 km/h), then slow down and stop the wheels.

41. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 40.

42. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0706 indicated?

    YES—Check for poor connections or loose terminals at the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 39. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0706 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 43.

43. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 42, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 39. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 39.

DTC Troubleshooting (cont'd)

DTC P0711: Problem in ATF Temperature Sensor Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Check the ATF TEMP SENSOR in the DATA LIST with the HDS.

   Does the ATF temperature exceed the ambient air temperature?

   YES—Record the ATF temperature. Leave the engine off for at least 30 minutes, then go to step 2.

   NO—Record the ATF temperature. Test the stall speed RPM (see page 14-183) three times. Go to step 2 after stall speed testing.

2. Check the ATF TEMP SENSOR in the DATA LIST with the HDS.

   Did the ATF temperature change?

   YES—Leave the engine off for at least 30 minutes, then go to step 3.

   NO—Replace the ATF temperature sensor (see page 14-208), then go to step 5.

3. Check the ECT SENSOR in the DATA LIST with the HDS.

   Does the ECT SENSOR read about the same as the ambient air temperature?

   YES—Go to step 4.

   NO—Leave the engine off until the ECT sensor equals the ambient-air temperature, then go to step 4.

4. Check the ATF TEMP SENSOR in the DATA LIST with the HDS.

   Does the ATF temperature read about the same as the ECT SENSOR?
   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ATF temperature sensor and the PCM. ■
   NO—Go to step 5.

5. Replace the ATF temperature sensor (see page 14-208).

6. Reconnect all connectors.

7. Turn the ignition switch to ON (II).

8. Clear the DTC with the HDS.

9. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

10. Turn the ignition switch to LOCK (0), and allow the engine coolant temperature to cool to the ambient air temperature.

11. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Wait for at least 20 seconds, then drive the vehicle at speeds over 19 mph (31 km/h) for at least 5 minutes.

12. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0711 indicated?
    YES—Check for poor connections or loose terminals at the ATF temperature sensor and the PCM, then go to step 1.
    NO—If Temporary DTC or DTC P0711 is not indicated, or if any other Temporary DTCs are indicated, go to step 11.

13. Monitor the OBD STATUS for P0711 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?
    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 10, go to the indicated DTCs troubleshooting. ■
    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the ATF temperature sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 9.

DTC P0712: Short in ATF Temperature Sensor Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Check the ATF TEMP SENSOR voltage in the DATA LIST with the HDS.

   Is the ATF TEMP SENSOR voltage 0.07 V or less?

   YES—Go to step 2.

   NO—Intermittent failure, the system is OK at this time. Check for an intermittent short in the ATFT wire between the ATF temperature sensor and the PCM. ■

2. Disconnect the ATF temperature sensor connector at the transmission end cover.

3. Check the ATF TEMP SENSOR voltage with the HDS.

   Is the ATF TEMP SENSOR voltage 0.07 V or less?

   YES—Go to step 4.

   NO—Go to step 8.

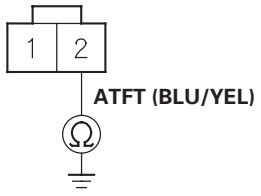
4. Turn the ignition switch to LOCK (0).

5. Jump the SCS line with the HDS.

6. Disconnect PCM connector C (44P).

7. Check for continuity between ATF temperature sensor connector terminal No. 2 and body ground.

ATF TEMPERATURE SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal C28 and the ATF temperature sensor connector No. 2 terminal, then go to step 9.

NO—Go to step 13.

(cont'd)

DTC Troubleshooting (cont'd)

8. Replace the ATF temperature sensor (see page 14-208).

9. Reconnect all connectors.

10. Turn the ignition switch to ON (II).

11. Clear the DTC with the HDS.

12. Start the engine in P, and let it run for at least 20 seconds.

13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0712 indicated?

    YES—Check for poor connections or loose terminals at the ATF temperature sensor and the PCM, then go to step 1.

    NO—Go to step 14.

14. Monitor the OBD STATUS for P0712 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 13, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the ATF temperature sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 12.

15. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

16. Start the engine in P, and let it run for at least 20 seconds.

17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0712 indicated?

    YES—Check for poor connections or loose terminals at the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 16. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0712 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 18.

18. Monitor the OBD STATUS for P0712 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 17, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 16. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 16.

DTC P0713: Open in ATF Temperature Sensor Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Check the ATF TEMP SENSOR voltage in the DATA LIST with the HDS.

   Does the ATF TEMP SENSOR voltage exceed 4.93 V?

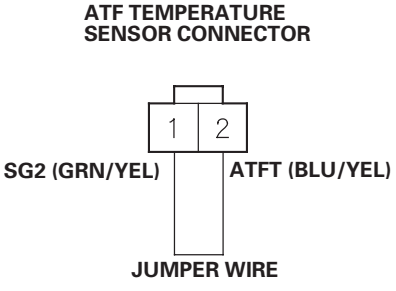
   YES—Go to step 2.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ATF temperature sensor and the PCM. ■

2. Turn the ignition switch to LOCK (0).

3. Disconnect the shift solenoid harness connector.

4. Connect ATF temperature sensor connector terminals No. 1 and No. 2 with a jumper wire.



Wire side of female terminals

5. Turn the ignition switch to ON (II).

6. Check the ATF TEMP SENSOR voltage in the DATA LIST with the HDS.

   Does the ATF TEMP SENSOR voltage exceed 4.93 V?

   YES—Go to step 7.

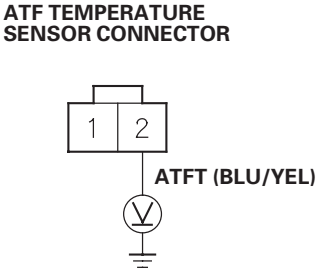
   NO—Go to step 22.

7. Turn the ignition switch to LOCK (0).

8. Remove the jumper wire from the shift solenoid harness connector.

9. Turn the ignition switch to ON (II).

10. Measure the voltage between ATF temperature sensor connector terminal No. 2 and body ground.



Wire side of female terminals

   Is there about 5 V?

   YES—Go to step 16.

   NO—Go to step 11.

11. Turn the ignition switch to LOCK (0).

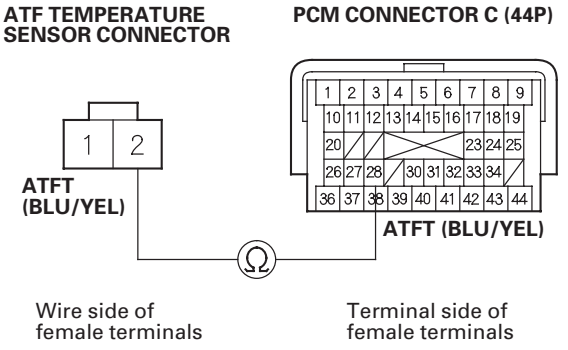
12. Jump the SCS line with the HDS.

13. Disconnect PCM connector C (44P).

(cont'd)

DTC Troubleshooting (cont'd)

14. Check for continuity between PCM connector terminal C28 and ATF temperature sensor connector terminal No. 2.



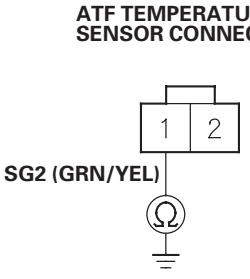
Is there continuity?

YES—Go to step 30.

NO—Repair an open in the wire between PCM connector terminal C28 and the ATF temperature sensor connector, then go to step 23.

15. Connect PCM connector C (44P).

16. Check for continuity ATF temperature sensor connector terminal No. 1 and body ground.



Is there continuity?

YES—Go to step 29.

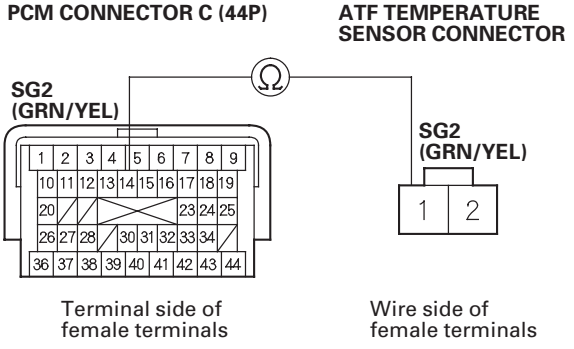
NO—Go to step 17.

17. Turn the ignition switch to LOCK (0).

18. Jump the SCS line with the HDS.

19. Disconnect PCM connector C (44P).

20. Check for continuity between PCM connector terminal C14 and ATF temperature sensor connector terminal No. 1.



Is there continuity?

YES—Go to step 29.

NO—Repair an open in the wire between PCM connector terminal C28 and the ATF temperature sensor connector, then go to step 23.

21. Turn the ignition switch to LOCK (0).

22. Replace the ATF temperature sensor (see page 14-208).

23. Reconnect all connectors.

24. Turn the ignition switch to ON (II).

25. Clear the DTC with the HDS.

26. Start the engine in P, and let it run for at least 20 seconds.

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0713 indicated?

    YES—Check for poor connections or loose terminals at the ATF temperature sensor and the PCM, then go to step 1.

    NO—If Temporary DTC or DTC P0713 is not indicated, or if any other Temporary DTCs are indicated, go to step 28.

28. Monitor the OBD STATUS for P0713 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated on step 27, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connection or loose terminals at the ATF temperature sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 26.

29. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

30. Start the engine in P, and let it run for at least 20 seconds.

31. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0713 indicated?

    YES—Check for poor connections or loose terminals at the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 30. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0713 is not indicated, or another Temporary DTCs are indicated, go to step 32.

32. Monitor the OBD STATUS for P0713 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTC or DTCs were indicated on step 31, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 30. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 30.

DTC Troubleshooting (cont'd)

DTC P0716: Problem in Input Shaft (Mainshaft) Speed Sensor Circuit

DTC P0717: Problem in Input Shaft (Mainshaft) Speed Sensor Circuit (No Signal Input)

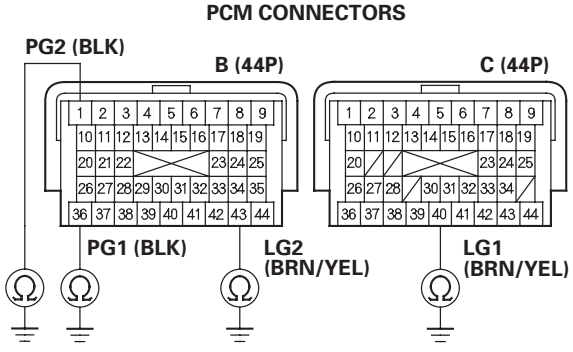
NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Check for proper input shaft (mainshaft) speed sensor installation (see page 14-205).
3. Raise the vehicle on a lift, make sure it is supported securely (see page 1-10), and allow all four wheels to rotate freely.
4. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle in D, and hold the vehicle at speeds over 12 mph (20 km/h) for at least 10 seconds when the transmission is not shifting. Slow down and stop the wheels.
5. Monitor the OBD STATUS for P0716 or P0717 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for loose or poor connections at the PCM and input shaft (mainshaft) speed sensor connectors. ■

   NO—If the screen indicates FAILED, go to step 6. If the screen indicates NOT COMPLETED, return to step 4 and recheck.
6. Turn the ignition switch to LOCK (0).
7. Jump the SCS line with the HDS.
8. Disconnect PCM connectors B (44P), C (44P).
9. Disconnect the input shaft (mainshaft) speed sensor connector.
10. Check for continuity between PCM connector terminals B1, B36, B43, and C40 and body ground individually.



Terminal side of female terminals

Is there continuity?

YES—Go to step 11.

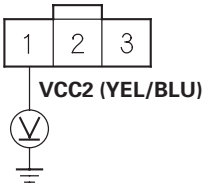
NO—Repair an open in the wires between PCM connector terminals B1, B36, B43, C40, and ground (G101, G102), or repair a poor ground (G101, G102), then go to step 37.

11. Connect PCM connectors B (44P) and C (44P).

12. Turn the ignition switch to ON (II).

13. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 1 and body ground.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 19.

NO—Go to step 14.

14. Turn the ignition switch to LOCK (0).

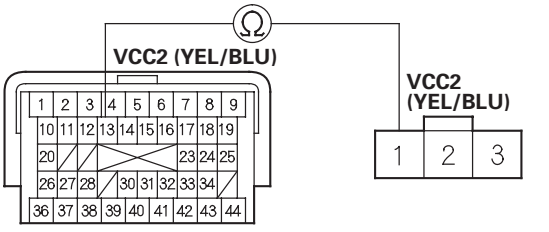
15. Jump the SCS line with the HDS.

16. Disconnect PCM connector C (44P).

17. Check for continuity between PCM connector terminal C13 and input shaft (mainshaft) speed sensor connector terminal No. 1.

PCM CONNECTOR C (44P)

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Terminal side of female terminals

Wire side of female terminals

Is there continuity?

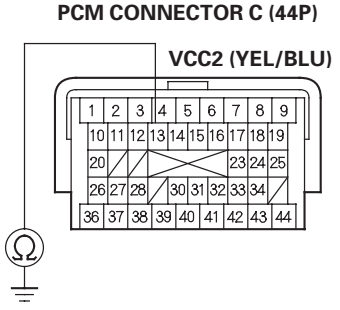
YES—Go to step 18.

NO—Repair an open in the wire between PCM connector terminal C13 and the input shaft (mainshaft) speed sensor, then go to step 37.

(cont'd)

DTC Troubleshooting (cont'd)

18. Check for continuity between PCM connector terminal C13 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal C13 and the input shaft (mainshaft) speed sensor, then go to step 37.

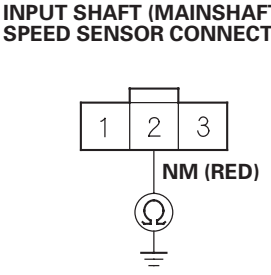
NO—Go to step 44.

19. Turn the ignition switch to LOCK (0).

20. Jump the SCS line with the HDS.

21. Disconnect PCM connector B (44P).

22. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.



Wire side of female terminals

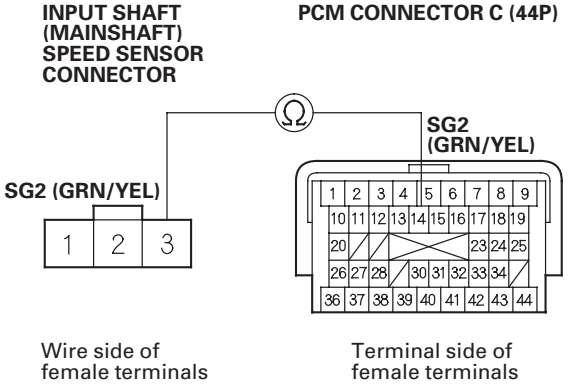
Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal B39 and the input shaft (mainshaft) speed sensor connector, then go to step 37.

NO—Go to step 23.

23. Disconnect PCM connector C (44P).

24. Check for continuity between PCM connector terminal C14 and input shaft (mainshaft) speed sensor connector terminal No. 3.



Is there continuity?

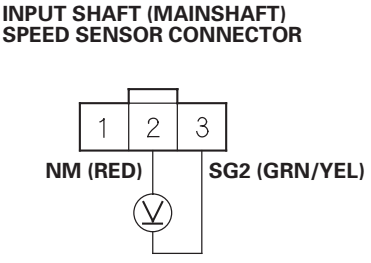
YES—Go to step 25.

NO—Repair an open in the wire between the input shaft (mainshaft) speed sensor connector and PCM connector terminal C14, then go to step 37.

25. Connect PCM connectors B (44P) and C (44P).

26. Turn the ignition switch to ON (II).

27. Measure the voltage between input shaft (mainshaft) speed sensor connector terminals No. 2 and No. 3.



Is there about 5 V?

YES—Go to step 32.

NO—Go to step 28.

(cont'd)

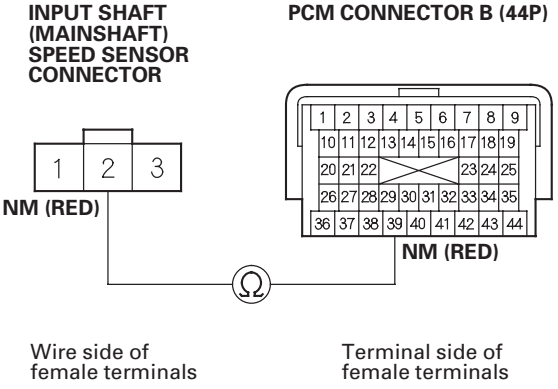
DTC Troubleshooting (cont'd)

28. Turn the ignition switch to LOCK (0).

29. Jump the SCS line with the HDS.

30. Disconnect PCM connector B (44P).

31. Check for continuity between PCM connector terminal B39 and input shaft (mainshaft) speed sensor connector terminal No. 2.



Is there continuity?

YES—Go to step 44.

NO—Repair an open in the wire between PCM connector terminal B39 and the input shaft (mainshaft) speed sensor, then go to step 37.

32. Connect the input shaft (mainshaft) speed sensor connector.

33. Clear the DTC with the HDS.

34. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle in D, and hold the vehicle at speeds over 12 mph (20 km/h) for at least 10 seconds when the transmission is not shifting, then slow down and stop the wheels.

35. Monitor the OBD STATUS for P0716 or P0717 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 36.

NO—Go to step 44.

36. Replace the input shaft (mainshaft) speed sensor (see page 14-205).

37. Reconnect all connectors.

38. Turn the ignition switch to ON (II).

39. Clear the DTC with the HDS.

40. Raise the vehicle on a lift, make sure it is supported securely (see page 1-10), and allow all four wheels to rotate freely.

41. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle in D hold the vehicle speed reaches 12 mph (20 km/h), for at least 10 seconds when the transmission is not shifting, then slow down and stop the wheels.

42. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0716 or P0717 indicated?

    YES—Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the PCM, then go to step 1.

    NO—Go to step 43.

43. Monitor the OBD STATUS for P0716 or P0717 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 42, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 41.

44. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

45. Raise the vehicle on a lift, make sure it is supported securely (see page 1-10), and allow all four wheels to rotate freely.

46. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle in D hold the vehicle speed reaches 12 mph (20 km/h), for at least 10 seconds when the transmission is not shifting, then slow down and stop the wheels.

47. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0716 or P0717 indicated?

    YES—Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 46. If the PCM was substituted, go to step 1.

    NO—Go to step 48.

48. Monitor the OBD STATUS for P0716 or P0717 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 47, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 46. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 46.

DTC Troubleshooting (cont'd)

DTC P0718: Input Shaft (Mainshaft) Speed Sensor Intermittent Failure

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Test-drive the vehicle at speeds over 12 mph (20 km/h) in D through all five gears.
3. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 2.
4. Monitor the OBD STATUS for P0718 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the PCM. ■

   NO—If the screen indicates FAILED, go to step 5. If the screen indicates NOT COMPLETED, return to step 2 and recheck.
5. Turn the ignition switch to LOCK (0).
6. Disconnect the input shaft (mainshaft) speed sensor connector, and inspect the connector and the connector terminals to be sure they are making good contact.

   Are the connector terminals OK?

   YES—Go to step 7.

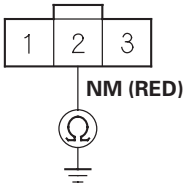
   NO—Repair the connector terminals, then go to step 7.
7. Connect the input shaft (mainshaft) speed sensor connector.
8. Test-drive the vehicle at speeds over 12 mph (20 km/h) in D through all five gears.
9. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 8.
10. Monitor the OBD STATUS for P0718 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—The problem has been corrected. ■

    NO—If the screen indicates FAILED, go to step 11. If the screen indicates NOT COMPLETED, return to step 8 and recheck.
11. Turn the ignition switch to LOCK (0).
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (44P).
14. Disconnect the input shaft (mainshaft) speed sensor connector.
15. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal B39 and the input shaft (mainshaft) speed sensor connector, then go to step 24.

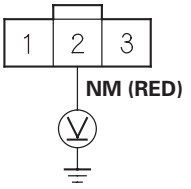
NO—Go to step 16.

16. Connect PCM connector B (44P).

17. Turn the ignition switch to ON (II).

18. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 23.

NO—Go to step 19.

19. Turn the ignition switch to LOCK (0).

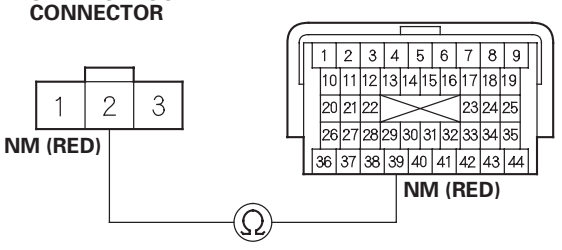
20. Jump the SCS line with the HDS.

21. Disconnect PCM connector B (44P).

22. Check for continuity between PCM connector terminal B39 and input shaft (mainshaft) speed sensor connector terminal No. 2.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR

PCM CONNECTOR B (44P)



Wire side of female terminals

Terminal side of female terminals

Is there continuity?

YES—Go to step 31.

NO—Repair an open in the wire between PCM connector terminal B39 and the input shaft (mainshaft) speed sensor, then go to step 24.

(cont'd)

DTC Troubleshooting (cont'd)

23. Replace the input shaft (mainshaft) speed sensor (see page 14-205).

24. Reconnect all connectors.

25. Turn the ignition switch to ON (II).

26. Clear the DTC with the HDS.

27. Test-drive the vehicle at speeds over 12 mph (20 km/h) in D through all five gears.

28. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 27.

29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0718 indicated?

    YES—Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the PCM, then go to step 1.

    NO—If Temporary DTC or DTC P0718 is not indicated, or if any other Temporary DTCs are indicated, go to step 30.

30. Monitor the OBD STATUS for P0718 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 29, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 27.

31. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

32. Test-drive the vehicle at speeds over 12 mph (20 km/h) in D through all five gears.

33. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 32.

34. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0718 indicated?

    YES—Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 32. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0718 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 35.

35. Monitor the OBD STATUS for P0718 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 30, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 32. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 32.

DTC P0721: Problem in Output Shaft (Countershaft) Speed Sensor Circuit

DTC P0722: Problem in Output Shaft (Countershaft) Speed Sensor Circuit (No Signal Input)

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.

2. Check for proper output shaft (countershaft) speed sensor installation (see page 14-205).

3. Raise the vehicle on a lift, make sure it is supported securely (see page 1-10), and allow all four wheels to rotate freely.

4. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle in D, and hold the vehicle at speeds over 12 mph (20 km/h) for at least 10 seconds when the transmission is not shifting. Slow down and stop the wheels.

5. Monitor the OBD STATUS for P0721 or P0722 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for loose or poor connections at the PCM and the output shaft (countershaft) speed sensor connectors. ■

   NO—If the screen indicates FAILED, go to step 6. If the screen indicates NOT COMPLETED, return to step 4 and recheck.

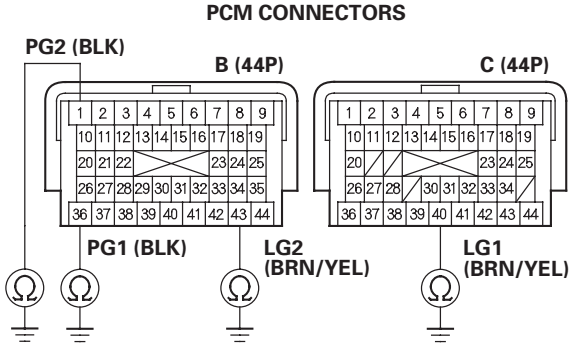
6. Turn the ignition switch to LOCK (0).

7. Jump the SCS line with the HDS.

8. Disconnect PCM connectors B (44P), C (44P).

9. Disconnect the output shaft (countershaft) speed sensor connector.

10. Check for continuity between PCM connector terminals B1, B36, B43, and C40 and body ground individually.



Terminal side of female terminals

Is there continuity?

YES—Go to step 11.

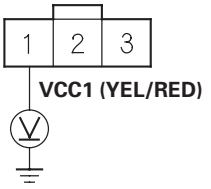
NO—Repair an open in the wires between PCM connector terminals B1, B36, B43, C40, and ground (G101, G102), or repair poor ground (G101, G102), then go to step 36.

(cont'd)

DTC Troubleshooting (cont'd)

11. Connect PCM connectors B (44P) and C (44P).
12. Turn the ignition switch to ON (II).
13. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 1 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

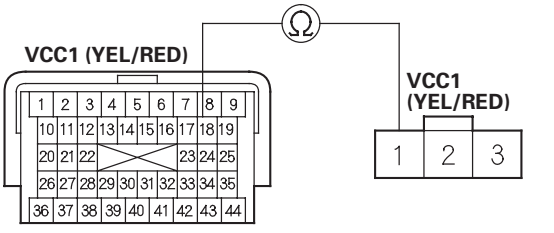
YES—Go to step 19.

NO—Go to step 14.

14. Turn the ignition switch to LOCK (0).
15. Jump the SCS line with the HDS.
16. Disconnect PCM connector B (44P).
17. Check for continuity between PCM connector terminal B18 and output shaft (countershaft) speed sensor connector terminal No. 1.

PCM CONNECTOR B (44P)

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Terminal side of female terminals

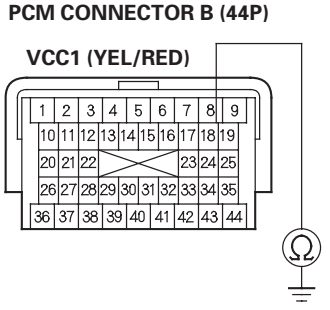
Wire side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair an open in the wire between PCM connector terminal B18 and the output shaft (countershaft) speed sensor, then go to step 36.

18. Check for continuity between PCM connector terminal B18 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal B18 and the output shaft (countershaft) speed sensor, then go to step 36.

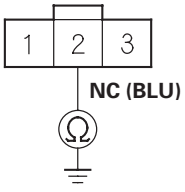
NO—Go to step 43.

19. Turn the ignition switch to LOCK (0).

20. Jump the SCS line with the HDS.

21. Disconnect PCM connector B (44P).

22. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.



Wire side of female terminals

Is there continuity?

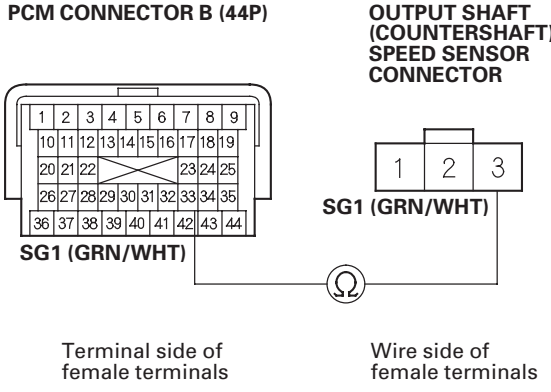
YES—Repair a short to ground in the wire between PCM connector terminal B40 and the output shaft (countershaft) speed sensor connector, then go to step 36.

NO—Go to step 23.

(cont'd)

DTC Troubleshooting (cont'd)

23. Check for continuity between PCM connector terminal B33 and output shaft (countershaft) speed sensor connector terminal No. 3.



Is there continuity?

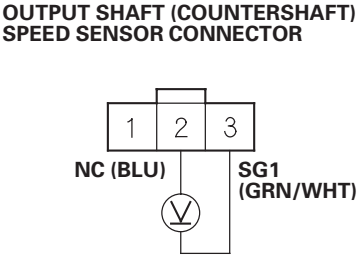
YES—Go to step 24.

NO—Repair an open in the wire between the output shaft (countershaft) speed sensor connector and PCM connector terminal B33, then go to step 36.

24. Connect PCM connector B (44P).

25. Turn the ignition switch to ON (II).

26. Measure the voltage between output shaft (countershaft) speed sensor connector terminals No. 2 and No. 3.



Is there about 5 V?

YES—Go to step 31.

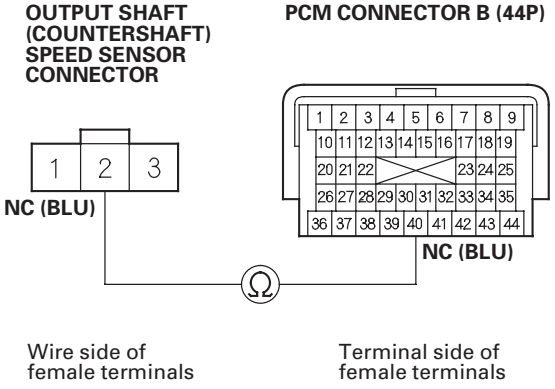
NO—Go to step 27.

27. Turn the ignition switch to LOCK (0).

28. Jump the SCS line with the HDS.

29. Disconnect PCM connector B (44P).

30. Check for continuity between PCM connector terminal B40 and output shaft (countershaft) speed sensor connector terminal No. 2.



Is there continuity?

YES—Go to step 43.

NO—Repair an open in the wire between PCM connector terminal B40 and the output shaft (countershaft) speed sensor, then go to step 36.

31. Connect the output shaft (countershaft) speed sensor connector.

32. Clear the DTC with the HDS.

33. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle in D, and hold the vehicle at speeds over 12 mph (20 km/h) for at least 10 seconds when the transmission is not shifting. Slow down and stop the wheels.

34. Monitor the OBD STATUS for P0721 or P0722 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Go to step 43.

NO—Go to step 35.

(cont'd)

DTC Troubleshooting (cont'd)

35. Replace the output shaft (countershaft) speed sensor (see page 14-205).

36. Reconnect all connectors.

37. Turn the ignition switch to ON (II).

38. Clear the DTC with the HDS.

39. Raise the vehicle on a lift, make sure it is supported securely (see page 1-10), and allow all four wheels to rotate freely.

40. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle in D, and hold the vehicle at speeds over 12 mph (20 km/h) for at least 10 seconds when the transmission is not shifting, then slow down and stop the wheels.

41. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0721 or P0722 indicated?

    YES—Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the PCM, then go to step 1.

    NO—Go to step 42.

42. Monitor the OBD STATUS for P0721 or P0722 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 41, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 40.

43. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

44. Raise the vehicle on a lift, make sure it is supported securely (see page 1-10), and allow all four wheels to rotate freely.

45. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle in D, and hold the vehicle at speeds over 12 mph (20 km/h) for at least 10 seconds when the transmission is not shifting, then slow down and stop the wheels.

46. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0721 or P0722 indicated?

    YES—Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 45. If the PCM was substituted, go to step 1.

    NO—Go to step 47.

47. Monitor the OBD STATUS for P0721 or P0722 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 46, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 45. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 45.

DTC P0723: Output Shaft (Countershaft) Speed Sensor Intermittent Failure

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Record all freeze data, and clear the DTC with the HDS.

2. Test-drive the vehicle for several minutes in D through all five gears under the same conditions as those indicated by the freeze data. Slow down and stop the wheels.

3. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 2.

4. Monitor the OBD STATUS for P0723 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections and loose terminals at the output shaft (countershaft) speed sensor and the PCM. ■

   NO—If the screen indicates FAILED, go to step 5. If the screen indicates NOT COMPLETED, return to step 2 and recheck.

5. Turn the ignition switch to LOCK (0).

6. Disconnect the output shaft (countershaft) speed sensor connector, and inspect the connector and the connector terminals to be sure they are making good contact.

   Are the connector terminals OK?

   YES—Go to step 7.

   NO—Repair the connector terminals, then go to step 7.

7. Connect the output shaft (countershaft) speed sensor connector.

8. Test-drive the vehicle for several minutes in D through all five gears under the same conditions as those indicated by the freeze data. Slow down and stop the wheels.

9. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 8.

10. Monitor the OBD STATUS for P0723 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—The problem has been corrected. ■

    NO—If the screen indicates FAILED, go to step 11. If the screen indicates NOT COMPLETE, return to step 8 and recheck.

11. Turn the ignition switch to LOCK (0).

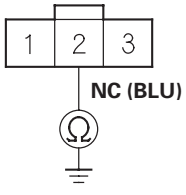
12. Jump the SCS line with the HDS.

13. Disconnect PCM connector B (44P).

14. Disconnect the output shaft (countershaft) speed sensor connector.

15. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal B40 and the output shaft (countershaft) speed sensor connector, then go to step 24.

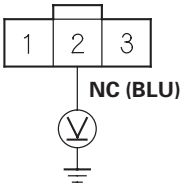
NO—Go to step 16.

(cont'd)

DTC Troubleshooting (cont'd)

16. Connect PCM connector B (44P).
17. Turn the ignition switch to ON (II).
18. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

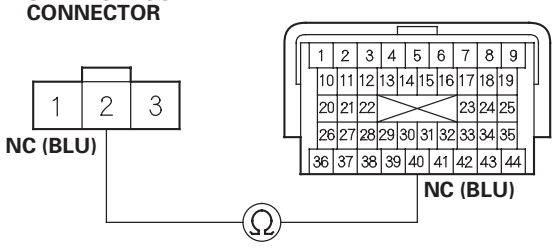
YES—Go to step 23.

NO—Go to step 19.

19. Turn the ignition switch to LOCK (0).
20. Jump the SCS line with the HDS.
21. Disconnect PCM connector B (44P).
22. Check for continuity between PCM connector terminal B40 and output shaft (countershaft) speed sensor connector terminal No. 2.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR

PCM CONNECTOR B (44P)



Wire side of female terminals

Terminal side of female terminals

Is there continuity?

YES—Go to step 31.

NO—Repair an open in the wire between PCM connector terminal B40 and the output shaft (countershaft) speed sensor, then go to step 24.

23. Replace the output shaft (countershaft) speed sensor (see page 14-205).

24. Reconnect all connectors.

25. Turn the ignition switch to ON (II).

26. Clear the DTC with the HDS.

27. Test-drive the vehicle at speeds over 12 mph (20 km/h) in D through all five gears.

28. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 27.

29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0723 indicated?

    YES—Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the PCM, then go to step 1.

    NO—If Temporary DTC or DTC P0723 is not indicated, or if any other Temporary DTCs are indicated, go to step 30.

30. Monitor the OBD STATUS for P0723 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 29, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 27.

31. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

32. Test-drive the vehicle at speeds over 12 mph (20 km/h) in D through all five gears.

33. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 32.

34. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0723 indicated?

    YES—Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 32. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0723 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 35.

35. Monitor the OBD STATUS for P0723 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 34, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 32. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 32.

DTC Troubleshooting (cont'd)

DTC P0731: Problem in 1st Clutch and 1st Clutch Hydraulic Circuit (1st gear incorrect ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-210) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 11.

   NO—Replace the ATF (see step 5 on page 14-210), then go to step 4.
4. Measure the line pressure (see page 14-184).

   Is the line pressure within the service limits?

   YES—Go to step 5.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 11.
5. Measure the 1st clutch pressure (see page 14-184).

   Is the 1st clutch pressure within the service limits?

   YES—Go to step 6.

   NO—Shift valves B and C are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 11.
6. Test stall speed in the 1 position (see page 14-183).

   Is the stall speed within the service limits?

   YES—Go to step 7.

   NO—Shift valves A and D are stuck. Repair these valves and the hydraulic circuit, or replace the transmission. ■
7. Clear the DTC with the HDS.
8. Test-drive the vehicle in 1st gear in D for at least 12 seconds.
9. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 8.
10. Monitor the OBD STATUS for P0731 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Intermittent failure, the system is OK at this time. ■

    NO—If the screen indicates FAILED, repair the 1st clutch, or replace the transmission, then go to step 11. If the screen indicates NOT COMPLETED, return to step 8 and recheck.

11. Reconnect all connectors.
12. Turn the ignition switch to ON (II).
13. Clear the DTC with the HDS.
14. Test-drive the vehicle in 1st gear in D for at least 12 seconds.
15. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 14.
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0731 indicated?

    YES—Go to step 4.

    NO—If Temporary DTC or DTC P0731 is not indicated, or if any other Temporary DTCs are indicated, go to step 17.
17. Monitor the OBD STATUS for P0731 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 16, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, then go to step 4. If the screen indicates NOT COMPLETED, go to step 14.

DTC Troubleshooting (cont'd)

DTC P0732: Problem in 2nd Clutch and 2nd Clutch Hydraulic Circuit (2nd gear incorrect ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-210) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 11.

   NO—Replace the ATF (see step 5 on page 14-210), then go to step 4.

4. Measure the line pressure (see page 14-184).

   Is the line pressure within the service limits?

   YES—Go to step 5.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 11.

5. Measure the 2nd clutch pressure (see page 14-184).

   Is the 2nd clutch pressure within the service limits?

   YES—Go to step 6.

   NO—Shift valves A and B are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 11.

6. Test stall speed in the 2 position (see page 14-183).

   Is the stall speed within the service limits?

   YES—Go to step 7.

   NO—Shift valve C is stuck. Repair shift valve C and the hydraulic circuit, or replace the transmission, then go to step 11.

7. Clear the DTC with the HDS.

8. Test-drive the vehicle in 2nd gear in D for at least 12 seconds.

9. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 8.

10. Monitor the OBD STATUS for P0732 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Intermittent failure, the system is OK at this time. ■

    NO—If the screen indicates FAILED, repair the 2nd clutch, or replace the transmission, then go to step 11. If the screen indicates NOT COMPLETED, return to step 8 and recheck.

11. Reconnect all connectors.

12. Turn the ignition switch to ON (II).

13. Clear the DTC with the HDS.

14. Test-drive the vehicle in 2nd gear in D for at least 12 seconds.

15. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 14.

16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0732 indicated?

    YES—Go to step 4.

    NO—If Temporary DTC or DTC P0732 is not indicated, or if any other Temporary DTCs are indicated, go to step 17.

17. Monitor the OBD STATUS for P0732 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 16, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, then go to step 4. If the screen indicates NOT COMPLETED, go to step 14.

DTC Troubleshooting (cont'd)

DTC P0733: Problem in 3rd Clutch and 3rd Clutch Hydraulic Circuit (3rd gear incorrect ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-210) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 10.

   NO—Replace the ATF (see step 5 on page 14-210), then go to step 4.
4. Measure the line pressure (see page 14-184).

   Is the line pressure within the service limit?

   YES—Go to step 5.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 10.
5. Measure the 3rd clutch pressure (see page 14-184).

   Is the 3rd clutch pressure within service limit?

   YES—Go to step 6.

   NO—Shift valves A, B, and C are stuck. Repair the shift valves and the hydraulic circuit, or replace the transmission, then go to step 10.
6. Clear the DTC with the HDS.
7. Test-drive the vehicle in 3rd gear in D for at least 12 seconds.
8. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 7.
9. Monitor the OBD STATUS for P0733 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—If the screen indicates FAILED, repair the 3rd clutch, or replace the transmission, then go to step 10. If the screen indicates NOT COMPLETED, return to step 7 and recheck.
10. Turn the ignition switch to ON (II).
11. Clear the DTC with the HDS.
12. Test-drive the vehicle in 3rd gear in D for at least 12 seconds.
13. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 12.
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0733 indicated?

    YES—Go to step 4.

    NO—If Temporary DTC or DTC P0733 is not indicated, or if any other Temporary DTCs are indicated, go to step 15.
15. Monitor the OBD STATUS for P0733 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 14, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, then go to step 4. If the screen indicates NOT COMPLETED, go to step 12.

DTC P0734: Problem in 4th Clutch and 4th Clutch Hydraulic Circuit (4th gear incorrect ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-210) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 10.

   NO—Replace the ATF (see step 5 on page 14-210), then go to step 4.
4. Measure the line pressure (see page 14-184).

   Is the line pressure within the service limit?

   YES—Go to step 5.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 10.
5. Measure the 4th clutch pressure (see page 14-184).

   Is the 4th clutch pressure within the service limit?

   YES—Go to step 6.

   NO—Shift valves A, B, C, and D are stuck. Repair the shift valves and the hydraulic circuit, or replace the transmission, then go to step 10.
6. Clear the DTC with the HDS.
7. Test-drive the vehicle in 4th gear in D for at least 12 seconds.
8. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 7.
9. Monitor the OBD STATUS for P0734 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—If the screen indicates FAILED, repair the 4th clutch, or replace the transmission, then go to step 10. If the screen indicates NOT COMPLETED, return to step 7 and recheck.
10. Turn the ignition switch to ON (II).
11. Clear the DTC with the HDS.
12. Test-drive the vehicle in 4th gear in D for at least 12 seconds.
13. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 12.
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0734 indicated?

    YES—Go to step 4.

    NO—If Temporary DTC or DTC P0734 is not indicated, or if any other Temporary DTCs are indicated, go to step 15.
15. Monitor the OBD STATUS for P0734 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 14, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, then go to step 4. If the screen indicates NOT COMPLETED, go to step 12.

DTC Troubleshooting (cont'd)

DTC P0735: Problem in 5th Clutch and 5th Clutch Hydraulic Circuit (5th gear incorrect ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-210) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 10.

   NO—Replace the ATF (see step 5 on page 14-210), then go to step 4.
4. Measure the line pressure (see page 14-184).

   Is the line pressure within the service limit?

   YES—Go to step 5.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 10.
5. Measure the 5th clutch pressure (see page 14-184).

   Is the 5th clutch pressure within the service limit?

   YES—Go to step 6.

   NO—Shift valves A, B, C, and D are stuck. Repair the shift valves and the hydraulic circuit, or replace the transmission, then go to step 10.
6. Clear the DTC with the HDS.
7. Test-drive the vehicle in 5th gear in D for at least 12 seconds.
8. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 7.
9. Monitor the OBD STATUS for P0735 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—If the screen indicates FAILED, repair the 5th clutch, or replace the transmission, then go to step 10. If the screen indicates NOT COMPLETED, return to step 7 and recheck.
10. Turn the ignition switch to ON (II).
11. Clear the DTC with the HDS.
12. Test-drive the vehicle in 5th gear in D for at least 12 seconds.
13. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 12.
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0735 indicated?

    YES—Go to step 4.

    NO—If Temporary DTC or DTC P0735 is not indicated, or if any other Temporary DTCs are indicated, go to step 15.
15. Monitor the OBD STATUS for P0735 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 14, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, then go to step 4. If the screen indicates NOT COMPLETED, go to step 12.

DTC P0741: Torque Converter Clutch Hydraulic Circuit Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-210) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 11.

   NO—Replace the ATF (see step 5 on page 14-210), then go to step 4.

4. Clear the DTC with the HDS.

5. Select LOCKUP SOLENOID TEST in MISCELLANEOUS TEST MENU, and check that the TORQUE CONVERTER CLUTCH SOLENOID VALVE operates with the HDS.

   Do you hear clicking?

   YES—Go to step 6.

   NO—Replace the torque converter clutch solenoid valve (see page 14-188), then go to step 11.

6. Run the engine until the engine coolant temperature reaches 176 ℉ (80 ℃).

7. Select CLUTCH PRESSURE CONTROL (LINEAR) SOLENOID C in MISCELLANEOUS TEST MENU, and test A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C with the HDS.

   Is the system OK?

   YES—Go to step 8.

   NO—Follow the instructions indicated on the HDS for the test result. Go to step 11 if any part is replaced.

8. Test-drive the vehicle at a constant speed of 60 mph (96 km/h) for at least 22 seconds.

9. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 8.

10. Monitor the OBD STATUS for P0741 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Intermittent failure, the system is OK at this time. ■
    NO—If the screen indicates FAILED, repair the faulty torque converter clutch mechanism, torque converter clutch hydraulic circuit, lock-up shift valve, or lock-up control valve, or replace the transmission, then go to step 11. If the screen indicates NOT COMPLETED, return to step 8 and recheck.

11. Reconnect all connectors.

12. Turn the ignition switch to ON (II).

13. Clear the DTC with the HDS.

14. Test-drive the vehicle at a constant speed of 60 mph (96 km/h) for at least 22 seconds.

15. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 14.

16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0741 indicated?

    YES—Go to step 4.
    NO—If Temporary DTC or DTC P0741 is not indicated, or if any other Temporary DTCs are indicated, go to step 17.

17. Monitor the OBD STATUS for P0741 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 16, go to the indicated DTCs troubleshooting. ■
    NO—If the screen indicates FAILED, then go to step 4. If the screen indicates NOT COMPLETED, go to step 14.

DTC Troubleshooting (cont'd)

DTC P0746: A/T Clutch Pressure Control Solenoid Valve A Stuck OFF

DTC P0747: A/T Clutch Pressure Control Solenoid Valve A Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-210) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 11.

   NO—Replace the ATF (see step 5 on page 14-210), then go to step 4.
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in D through all five gears.
6. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 5.
7. Monitor the OBD STATUS for P0746 or P0747 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—If the screen indicates FAILED, go to step 8. If the screen indicates NOT COMPLETED, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Select CLUTCH PRESSURE CONTROL (LINEAR) SOLENOID A in MISCELLANEOUS TEST MENU, and test A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A with the HDS.

   Does the screen indicate NORMAL?

   YES—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, retest A/T clutch pressure control solenoid valve A with the HDS. ■

   NO—Follow the instructions indicated on the HDS test result, but if the tester has not determined the cause of the failure, go to step 10. If any part is replaced, go to step 11.
10. Inspect A/T clutch pressure control solenoid valve A (see page 14-192).

    Does A/T clutch pressure control solenoid valve A work properly?

    YES—Repair the hydraulic system related to shift valve A, or replace the transmission, then go to step 11.

    NO—Replace A/T clutch pressure control solenoid valve A (see page 14-198), then go to step 11.

11. Reconnect all connectors.
12. Turn the ignition switch to ON (II).
13. Clear the DTC with the HDS.
14. Test-drive the vehicle in D through all five gears.
15. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 14.
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0746 or P0747 indicated?

    YES—Go to step 8.

    NO—If Temporary DTC or DTC P0746 or P0747 is not indicated, or if any other Temporary DTCs are indicated, go to step 17.

17. Monitor the OBD STATUS for P0746 or P0747 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 16, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, then go to step 8. If the screen indicates NOT COMPLETED, go to step 14.

DTC Troubleshooting (cont'd)

DTC P0751: Shift Solenoid Valve A Stuck OFF

DTC P0752: Shift Solenoid Valve A Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-210) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 9.

   NO—Replace the ATF (see step 5 on page 14-210), then go to step 4.
4. Clear the DTC with the HDS.
5. Select SHIFT SOLENOID A in MISCELLANEOUS TEST MENU, and check that SHIFT SOLENOID VALVE A operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 6.

   NO—Replace shift solenoid valve A (see page 14-198), then go to step 9.
6. Test-drive the vehicle in D through all five gears.
7. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 6.
8. Monitor the OBD STATUS for P0751 or P0752 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—If the screen indicates FAILED, repair shift valve A, or replace the transmission, then go to step 9. If the screen indicates NOT COMPLETED, return to step 6 and recheck.
9. Reconnect all connectors.
10. Turn the ignition switch to ON (II).
11. Clear the DTC with the HDS.
12. Test-drive the vehicle in D through all five gears.
13. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 12.
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0751 or P0752 indicated?

    YES—Go to step 4.

    NO—If Temporary DTC or DTC P0751 or P0752 is not indicated, or if any other Temporary DTCs are indicated, go to step 15.
15. Monitor the OBD STATUS for P0751 or P0752 is the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 14, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, then go to step 4. If the screen indicates NOT COMPLETED, go to step 12.

DTC P0756: Shift Solenoid Valve B Stuck OFF

DTC P0757: Shift Solenoid Valve B Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-210) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 9.

   NO—Replace the ATF (see step 5 on page 14-210), then go to step 4.
4. Clear the DTC with the HDS.
5. Select SHIFT SOLENOID B in MISCELLANEOUS TEST MENU, and check that SHIFT SOLENOID VALVE B operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 6.

   NO—Replace shift solenoid valve B (see page 14-198), then go to step 9.
6. Test-drive the vehicle in D through all five gears.
7. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 6.
8. Monitor the OBD STATUS for P0756 or P0757 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—If the screen indicates FAILED, repair shift valve B, or replace the transmission, then go to step 9. If the screen indicates NOT COMPLETED, return to step 6 and recheck.
9. Reconnect all connectors.
10. Turn the ignition switch to ON (II).
11. Clear the DTC with the HDS.
12. Test-drive the vehicle in D through all five gears.
13. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 12.
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0756 or P0757 indicated?

    YES—Go to step 4.

    NO—If Temporary DTC or DTC P0756 or P0757 is not indicated, or if any other Temporary DTCs are indicated, go to step 15.
15. Monitor the OBD STATUS for P0756 or P0757 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 14, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, then go to step 4. If the screen indicates NOT COMPLETED, go to step 12.

DTC Troubleshooting (cont'd)

DTC P0761: Shift Solenoid Valve C Stuck OFF

DTC P0762: Shift Solenoid Valve C Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-210) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 9.

   NO—Replace the ATF (see step 5 on page 14-210), then go to step 4.
4. Clear the DTC with the HDS.
5. Select SHIFT SOLENOID C in MISCELLANEOUS TEST MENU, and check that SHIFT SOLENOID VALVE C operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 6.

   NO—Replace shift solenoid valve C (see page 14-203), then go to step 9.
6. Test-drive the vehicle in D through all five gears.
7. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 6.
8. Monitor the OBD STATUS for P0761 or P0762 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—If the screen indicates FAILED, repair shift valve C, or replace the transmission, then go to step 9. If the screen indicates NOT COMPLETED, return to step 6 and recheck.
9. Reconnect all connectors.
10. Turn the ignition switch to ON (II).
11. Clear the DTC with the HDS.
12. Test-drive the vehicle in D through all five gears.
13. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 12.
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0761 or P0762 indicated?

    YES—Go to step 4.

    NO—If Temporary DTC or DTC P0761 or P0762 is not indicated, or if any other Temporary DTCs are indicated, go to step 15.
15. Monitor the OBD STATUS for P0761 or P0762 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 14, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, then go to step 4. If the screen indicates NOT COMPLETED, go to step 12.

DTC P0776: A/T Clutch Pressure Control Solenoid Valve B Stuck OFF

DTC P0777: A/T Clutch Pressure Control Solenoid Valve B Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-210) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 7.

   NO—Replace the ATF (see step 5 on page 14-210), then go to step 4.

4. Clear the DTC with the HDS.

5. Select CLUTCH PRESSURE CONTROL (LINEAR) SOLENOID B in MISCELLANEOUS TEST MENU, and test A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B with the HDS.

   Does the screen indicate NORMAL?

   YES—Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, retest A/T clutch pressure control solenoid valve B with the HDS. ■

   NO—Follow the instructions indicated on the HDS for the test result, but if the HDS has not determined the cause of the failure, go to step 6. If any part is replaced, go to step 7.

6. Inspect A/T clutch pressure control solenoid valve B (see page 14-195).

   Does A/T clutch pressure control solenoid valve B work properly?

   YES—Repair the hydraulic system related to shift valve B, or replace the transmission, then go to step 7.

   NO—Replace A/T clutch pressure control solenoid valve B (see page 14-198), then go to step 7.

7. Reconnect all connectors.

8. Turn the ignition switch to ON (II).

9. Clear the DTC with the HDS.

10. Test-drive the vehicle in D through all five gears.

11. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 10.

12. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0776 or P0777 indicated?

    YES—Go to step 4.

    NO—If Temporary DTC or DTC P0776 or P0777 is not indicated, or if any other Temporary DTCs are indicated, go to step 13.

13. Monitor the OBD STATUS for P0776 or P0777 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 12, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, then go to step 4. If the screen indicates NOT COMPLETED, go to step 10.

DTC Troubleshooting (cont'd)

DTC P0780: Problem in Shift Control System

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-210) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 13.

   NO—Replace the ATF (see step 5 on page 14-210), then go to step 4.
4. Clear the DTC with the HDS.
5. Test-drive the vehicle in D through all five gears.
6. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 5.
7. Monitor the OBD STATUS for P0780 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—If the screen indicates FAILED, go to step 8. If the screen indicates NOT COMPLETED, return to step 5 and recheck.
8. Clear the DTC with the HDS.
9. Run the engine until the engine coolant temperature reaches 176 °F (80 °C).
10. Test-drive the vehicle in D through all five gears.
11. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 10.
12. Monitor the OBD STATUS for P0780 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Intermittent failure, the system is OK at this time. ■

    NO—If the screen indicates FAILED, repair shift valve D, or replace the transmission, then go to step 13. If the screen indicates NOT COMPLETED, return to step 1 and recheck.
13. Turn the ignition switch to ON (II).
14. Clear the DTC with the HDS.
15. Test-drive the vehicle in D through all five gears.
16. Turn the ignition switch to LOCK (0), and repeat the test-drive in step 15.
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0780 indicated?

    YES—Go to step 8.

    NO—If Temporary DTC or DTC P0780 is not indicated, or if any other Temporary DTCs are indicated, go to step 15.
18. Monitor the OBD STATUS for P0780 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 17, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, then go to step 5. If the screen indicates NOT COMPLETED, go to step 15.

DTC P0847: Short in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck ON

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Check the 3RD PRESSURE SWITCH SIGNAL with the HDS in the A/T data list when not in 3rd gear.

   Is the 3RD PRESSURE SWITCH OFF?

   YES—Go to step 3.

   NO—Go to step 6.
3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
4. Drive the vehicle in 3rd gear in D in the D3 driving mode for at least 2 seconds, then release the D3 driving mode by pressing the D3 switch, and drive in 4th gear for at least 2 seconds. Slow down and stop the wheels.
5. Monitor the OBD STATUS for P0847 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

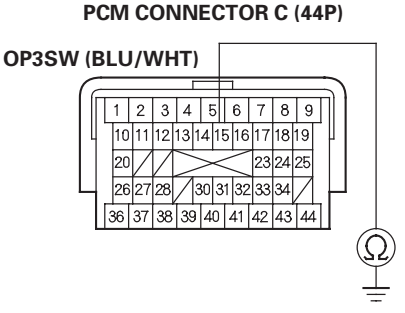
   YES—Intermittent failure, the system is OK at this time. Check the OP3SW (BLU/WHT) wire for an intermittent short to ground between the 3rd clutch transmission fluid pressure switch and the PCM.■

   NO—If the screen indicates FAILED, go to step 6. If the screen indicates NOT COMPLETED, return to step 3 and recheck.
6. Turn the ignition switch to LOCK (0).
7. Disconnect the 3rd clutch transmission fluid pressure switch connector.
8. Turn the ignition switch to ON (II).
9. Check the 3RD PRESSURE SWITCH SIGNAL with the HDS in the A/T data list.

   Is the 3RD PRESSURE SWITCH OFF?

   YES—Go to step 14.

   NO—Go to step 10.
10. Turn the ignition switch to LOCK (0).
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (44P).
13. Check for continuity between PCM connector terminal C15 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal C15 and the 3rd clutch transmission fluid pressure switch, then go to step 15.

NO—Go to step 22.

(cont'd)

DTC Troubleshooting (cont'd)

14. Replace the 3rd clutch transmission fluid pressure switch (see page 14-206).

15. Reconnect all connectors.

16. Turn the ignition switch to ON (II).

17. Clear the DTC with the HDS.

18. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

19. Drive the vehicle in 3rd gear in D in the D3 driving mode for at least 2 seconds, then release the D3 driving mode by pressing the D3 switch, and drive in 4th gear for at least 2 seconds. Slow down and stop the wheels.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0847 indicated?

    YES—Check for poor connections or loose terminals at the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO—If Temporary DTC or DTC P0847 is not indicated, or if any other Temporary DTCs are indicated, go to step 21.

21. Monitor the OBD STATUS for P0847 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTC s were indicated on step 20, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18.

22. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

23. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

24. Drive the vehicle in 3rd gear in D in the D3 driving mode for at least 2 seconds, then release the D3 driving mode by pressing the D3 switch, and drive in 4th gear for at least 2 seconds. Slow down and stop the wheels.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0847 indicated?

    YES—Check for poor connections or loose terminals at the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 23. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0847 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 26.

26. Monitor the OBD STATUS for P0847 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 25, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 23. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 23.

DTC P0848: Open in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck OFF

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
3. Drive the vehicle in 3rd gear in D in the D3 driving mode, and verify with the HDS in the A/T data list that the SHIFT MAP NUMBER indicates 3rd.
4. Check the 3RD PRESSURE SWITCH SIGNAL with the HDS in the A/T data list.

   Is the 3RD PRESSURE SWITCH ON?

   YES—Go to step 5.

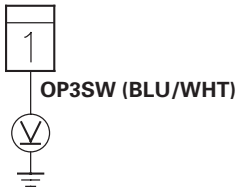
   NO—Go to step 7.
5. Drive the vehicle in 3rd gear in D in the D3 driving mode for at least 2 seconds, then release the D3 driving mode by pressing the D3 switch, and drive in 4th gear for at least 2 seconds. Slow down and stop the wheels.
6. Monitor the OBD STATUS for P0848 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the 3rd clutch transmission fluid pressure switch and the PCM. ■

   NO—If the screen indicates FAILED, go to step 7. If the screen indicates NOT COMPLETED, return to step 5 and recheck.
7. Turn the ignition switch to LOCK (0).
8. Disconnect the 3rd clutch transmission fluid pressure switch connector.
9. Turn the ignition switch to ON (II).
10. Measure the voltage between the 3rd clutch transmission fluid pressure switch connector terminal and body ground.

3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTOR



Wire side of female terminals

Is there about 5 V?

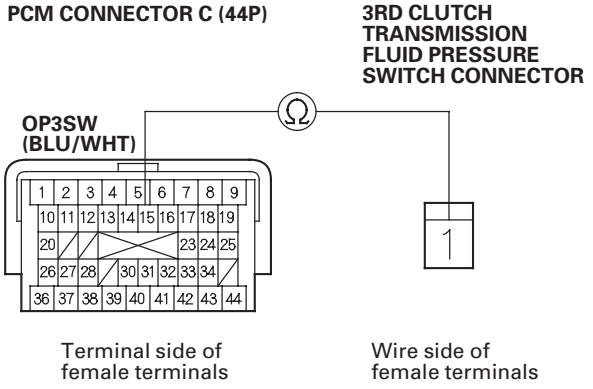
YES—Go to step 15.

NO—Go to step 11.

(cont'd)

DTC Troubleshooting (cont'd)

11. Turn the ignition switch to LOCK (0).
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector C (44P).
14. Check for continuity between PCM connector terminal C15 and the 3rd clutch transmission fluid pressure switch connector terminal.



Is there continuity?

YES—Go to step 23.

NO—Repair an open in the wire between PCM connector terminal C15 and the 3rd clutch transmission fluid pressure switch, then go to step 16.

15. Replace the 3rd clutch transmission fluid pressure switch (see page 14-206).
16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
20. Drive the vehicle in 3rd gear in D in the D3 driving mode for at least 2 seconds, then release the D3 driving mode by pressing the D3 switch, and drive in 4th gear for at least 2 seconds. Slow down and stop the wheels.
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0848 indicated?

    YES—Check for poor connections or loose terminals at the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO—If Temporary DTC or DTC P0848 is not indicated, or if any other Temporary DTCs are indicated, go to step 22.

22. Monitor the OBD STATUS for P0848 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 21, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 19.

23. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

24. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

25. Drive the vehicle in 3rd gear in D in the D3 driving mode for at least 2 seconds, then release the D3 driving mode by pressing the D3 switch, and drive in 4th gear for at least 2 seconds. Slow down and stop the wheels.

26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0848 indicated?

    YES—Check for poor connections or loose terminals at the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 24. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0848 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 27.

27. Monitor the OBD STATUS for P0848 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 26, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 24. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 24.

DTC Troubleshooting (cont'd)

DTC P0872: Short in 4th Clutch Transmission Fluid Pressure Switch Circuit, or 4th Clutch Transmission Fluid Pressure Switch Stuck ON

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Check the 4TH PRESSURE SWITCH SIGNAL with the HDS in the A/T data list when not in 4th gear.

   Is the 4TH PRESSURE SWITCH OFF?

   YES—Go to step 3.

   NO—Go to step 6.
3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
4. Drive the vehicle in 4th gear in D for at least 2 seconds, and drive in 5th gear for at least 2 seconds. Slow down and stop the wheels.
5. Monitor the OBD STATUS for P0872 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

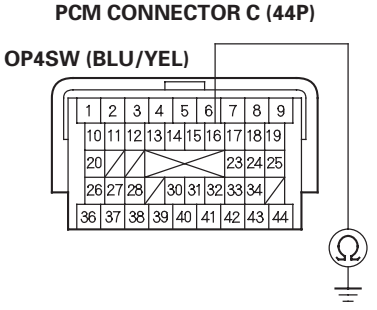
   YES—Intermittent failure, the system is OK at this time. Check the OP4SW (BLU/YEL) wire for an intermittent short to ground between the 4th clutch transmission fluid pressure switch and the PCM. ■

   NO—If the screen indicates FAILED, go to step 6. If the screen indicates NOT COMPLETED, return to step 3 and recheck.
6. Turn the ignition switch to LOCK (0).
7. Disconnect the 4th clutch transmission fluid pressure switch connector.
8. Turn the ignition switch to ON (II).
9. Check the 4TH PRESSURE SWITCH SIGNAL in the DATA LIST with the HDS.

   Is the 4TH PRESSURE SWITCH OFF?

   YES—Go to step 14.

   NO—Go to step 10.
10. Turn the ignition switch to LOCK (0).
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (44P).
13. Check for continuity between PCM connector terminal C16 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal C16 and the 4th clutch transmission fluid pressure switch, then go to step 15.

NO—Go to step 22.

14. Replace the 4th clutch transmission fluid pressure switch (see page 14-207).

15. Reconnect all connectors.

16. Turn the ignition switch to ON (II).

17. Clear the DTC with the HDS.

18. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

19. Drive the vehicle in 4th gear in D for at least 2 seconds, and drive in 5th gear for at least 2 seconds. Slow down and stop the wheels.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0872 indicated?

    YES—Check for poor connections or loose terminals at the 4th clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO—If Temporary DTC or DTC P0872 is not indicated, or if any other Temporary DTCs are indicated, go to step 21.

21. Monitor the OBD STATUS for P0872 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 20, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the 4th clutch transmission fluid pressure switch and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18.

22. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

23. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

24. Driver the vehicle in 4th gear in D for at least 2 seconds, and drive in 5th gear for at least 2 seconds. Slow down and stop the wheels.

25. Check for Temporary DTC or DTCs with the HDS.

    Is DTC P0872 indicated?

    YES—Check for poor connections or loose terminals at the 4th clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 23. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0872 is not indicated, or if any other Temporary DTC or DTCs are indicated, go to step 26.

26. Monitor the OBD STATUS for P0872 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTC or DTCs were indicated on step 25, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the 4th clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 23. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 23.

DTC Troubleshooting (cont'd)

DTC P0873: Open in 4th Clutch Transmission Fluid Pressure Switch Circuit, or 4th Clutch Transmission Fluid Pressure Switch Stuck OFF

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
3. Drive the vehicle in 4th gear in D for at least 2 seconds, then drive in 5th gear for at least 2 seconds.
4. Check the 4TH PRESSURE SWITCH SIGNAL in the DATA LIST with the HDS.

   Is the 4TH PRESSURE SWITCH ON?

   YES—Go to step 5.

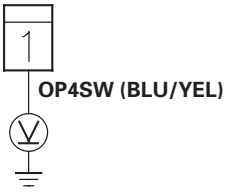
   NO—Go to step 7.
5. Drive the vehicle in 4th gear in D for at least 2 seconds, then drive in 5th gear for at least 2 seconds.
6. Monitor the OBD STATUS for P0873 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the 4th clutch transmission fluid pressure switch and the PCM. ■

   NO—If the screen indicates NOT COMPLETED, return to step 5 and recheck.
7. Turn the ignition switch to LOCK (0).
8. Disconnect the 4th clutch transmission fluid pressure switch connector.
9. Turn the ignition switch to ON (II).
10. Measure the voltage between the 4th clutch transmission fluid pressure switch connector terminal and body ground.

4TH CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 15.

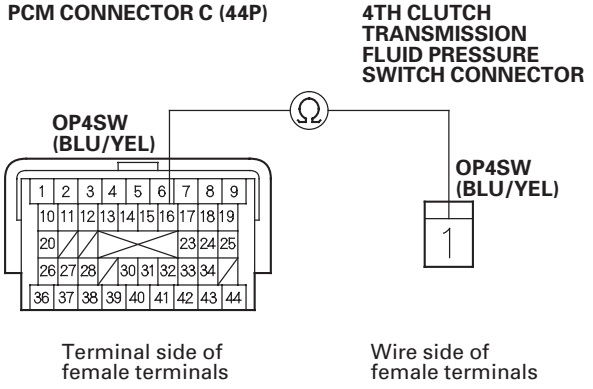
NO—Go to step 11.

11. Turn the ignition switch to LOCK (0).

12. Jump the SCS line with the HDS.

13. Disconnect PCM connector C (44P).

14. Check for continuity between PCM connector terminal C16 and 4th clutch transmission fluid pressure switch connector terminal.



Is there continuity?

YES—Go to step 23.

NO—Repair an open in the wire between PCM connector terminal C16 and the 4th clutch transmission fluid pressure switch, then go to step 16.

15. Replace the 4th clutch transmission fluid pressure switch (see page 14-207).

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with HDS.

19. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

20. Drive the vehicle in 4th gear in D for at least 2 seconds, then drive in 5th gear for at least 2 seconds.

21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0873 indicated?

    YES—Check for poor connections or loose terminals at the 4th clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO—If Temporary DTC or DTC P0873 is not indicated, or if any other Temporary DTCs are indicated, go to step 22.

22. Monitor the OBD STATUS for P0873 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 21, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the 4th clutch transmission fluid pressure switch and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 19.

(cont'd)

DTC Troubleshooting (cont'd)

23. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

24. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

25. Drive the vehicle in 4th gear in D for at least 2 seconds, then drive in 5th gear for at least 2 seconds.

26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0873 indicated?

    YES—Check for poor connections or loose terminals at the 4th clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 24. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0873 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 27.

27. Monitor the OBD STATUS for P0873 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 26, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the 4th clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 24. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 24.

DTC P0962: Problem in A/T Clutch Pressure Control Solenoid Valve A Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Start the engine, and wait for at least 1 second.
3. Check that DTC P0962 recurs.

   Is DTC P0962 indicated?

   YES—Go to step 7.

   NO—Go to step 4.
4. Select CLUTCH PRESSURE CONTROL SOLENOID A in MISCELLANEOUS TEST MENU, and test A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A with the HDS.

   Does the screen indicate NORMAL?

   YES—Go to step 5.

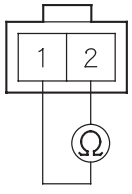
   NO—Go to step 7.
5. Command A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A at 1.0 A in CLUTCH PRESSURE CONTROL SOLENOID CONTROL MENU with the HDS.
6. Monitor the OBD STATUS for P0962 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve A and the PCM. ■

   NO—If the screen indicates FAILED, go to step 7. If the screen indicates NOT COMPLETED, return to step 4 and recheck.
7. Turn the ignition switch to LOCK (0).
8. Disconnect the A/T clutch pressure control solenoid valve A connector.
9. Measure the resistance between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Terminal side of male terminals

Is there 3— 10 Ω ?

YES—Go to step 10.

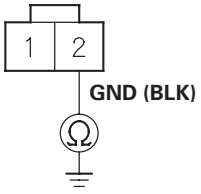
NO—Go to step 13.

(cont'd)

DTC Troubleshooting (cont'd)

10. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

Is there continuity?

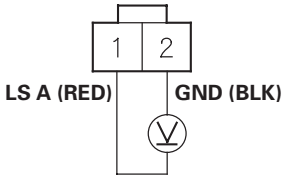
YES—Go to step 11.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve A and ground (G101, G102) (see page 22-18), or repair poor ground (G101, G102), then go to step 14.

11. Turn the ignition switch to ON (II).

12. Measure the voltage between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 20.

NO—Repair open or short in the wire between PCM connector terminal C19 and A/T clutch pressure control solenoid valve A, then go to step 14.

13. Replace A/T clutch pressure control solenoid valve A (see page 14-198).

14. Reconnect all connectors.

15. Turn the ignition switch to ON (II).

16. Clear the DTC with the HDS.

17. Start the engine, and wait for at least 1 second.

18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0962 indicated?

    YES—Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve A and the PCM, then go to step 1.

    NO—If Temporary DTC or DTC P0962 is not indicated, or if any other Temporary DTCs are indicated, go to step 19.

19. Monitor the OBD STATUS for P0962 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 18, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at A/T clutch pressure control solenoid valve A and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 17.

20. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

21. Start the engine, and wait for at least 1 second.

22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0962 indicated?

    YES—Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 21. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0962 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 23.

23. Monitor the OBD STATUS for P0962 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 22, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 21. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 21.

DTC Troubleshooting (cont'd)

DTC P0963: Problem in A/T Clutch Pressure Control Solenoid Valve A

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Start the engine, and wait for at least 1 second.
3. Check that DTC P0963 recurs.

   Is DTC P0963 indicated?

   YES—Go to step 7.

   NO—Go to step 4.
4. Select CLUTCH PRESSURE CONTROL SOLENOID A in MISCELLANEOUS TEST MENU, and test A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A with the HDS.

   Does the screen indicate NORMAL?

   YES—Go to step 5.

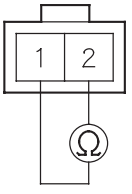
   NO—Go to step 7.
5. Command A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A at 0.2 A in CLUTCH PRESSURE CONTROL SOLENOID CONTROL MENU with the HDS.
6. Monitor the OBD STATUS for P0963 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve A and the PCM. ■

   NO—If the screen indicates FAILED, go to step 7. If the HDS indicates NOT COMPLETED, return to step 4 and recheck.
7. Turn the ignition switch to LOCK (0).
8. Disconnect the A/T clutch pressure control solenoid valve A connector.
9. Measure the resistance between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Terminal side of male terminals

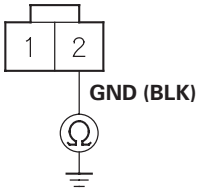
Is there 3— 10 Ω ?

YES—Go to step 10.

NO—Go to step 11.

10. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve A and ground (G101, G102) (see page 22-18), or repair poor ground (G101, G102), then go to step 12.

11. Replace A/T clutch pressure control solenoid valve A (see page 14-198).

12. Reconnect all connectors.

13. Turn the ignition switch to ON (II).

14. Clear the DTC with the HDS.

15. Start the engine, and wait for at least 1 second.

16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0963 indicated?

    YES—Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve A and the PCM, then go to step 1.

    NO—If Temporary DTC or DTC P0963 is not indicated, or if any other Temporary DTCs are indicated, go to step 17.

17. Monitor the OBD STATUS for P0963 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 16, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at A/T clutch pressure control solenoid valve A and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 15.

(cont'd)

DTC Troubleshooting (cont'd)

18. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

19. Start the engine, and wait for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0963 indicated?

    YES—Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 19. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0963 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 21.

21. Monitor the OBD STATUS for P0963 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 20, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 19. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 19.

DTC P0966: Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.

2. Start the engine, and wait for at least 1 second.

3. Check that DTC P0966 recurs.

   Is DTC P0966 indicated?

   YES—Go to step 7.

   NO—Go to step 4.

4. Select CLUTCH PRESSURE CONTROL SOLENOID B in MISCELLANEOUS TEST MENU, and test A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B with the HDS.

   Does the screen indicate NORMAL?

   YES—Go to step 5.

   NO—Go to step 7.

5. Command A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B at 1.0 A in CLUTCH PRESSURE CONTROL SOLENOID CONTROL MENU with the HDS.

6. Monitor the OBD STATUS for P0966 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve B and the PCM. ■

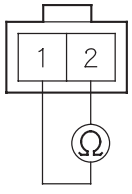
   NO—If the screen indicates FAILED, go to step 7. If the screen indicates NOT COMPLETED, return to step 4 and recheck.

7. Turn the ignition switch to LOCK (0).

8. Disconnect the A/T clutch pressure control solenoid valve B connector.

9. Measure the resistance between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Terminal side of male terminals

Is there 3— 10 Ω ?

YES—Go to step 10.

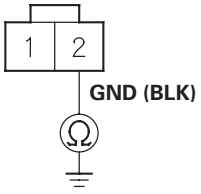
NO—Go to step 13.

(cont'd)

DTC Troubleshooting (cont'd)

10. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Wire side of female terminals

Is there continuity?

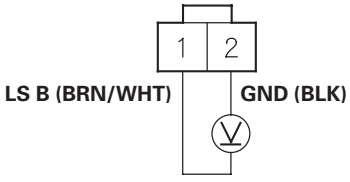
YES—Go to step 11.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve B and ground (G101, G102) (see page 22-18), or repair poor ground (G101, G102), then go to step 14.

11. Turn the ignition switch to ON (II).

12. Measure the voltage between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Wire side of female terminals

Is there voltage?

YES—Go to step 20.

NO—Repair open or short in the wire between PCM connector terminal B25 and A/T clutch pressure control solenoid valve B, then go to step 14.

13. Replace A/T clutch pressure control solenoid valve B (see page 14-198).

14. Reconnect all connectors.

15. Turn the ignition switch to ON (II).

16. Clear the DTC with the HDS.

17. Start the engine, and wait for at least 1 second.

18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0966 indicated?

    YES—Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve B and the PCM, then go to step 1.

    NO—If Temporary DTC or DTC P0966 is not indicated, or if any other Temporary DTCs are indicated, go to step 19.

19. Monitor the OBD STATUS for P0966 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 18, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at A/T clutch pressure control solenoid valve B and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 17.

20. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

21. Start the engine, and wait for at least 1 second.

22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0966 indicated?

    YES—Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 21. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0966 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 23.

23. Monitor the OBD STATUS for P0966 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 22, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 21. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 21.

DTC Troubleshooting (cont'd)

DTC P0967: Problem in A/T Clutch Pressure Control Solenoid Valve B

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Start the engine, and wait for at least 1 second.
3. Check that DTC P0967 recurs.

   Is DTC P0967 indicated?

   YES—Go to step 7.

   NO—Go to step 4.
4. Select CLUTCH PRESSURE CONTROL SOLENOID B in MISCELLANEOUS TEST MENU, and test A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B with the HDS.

   Does the screen indicate NORMAL?

   YES—Go to step 5.

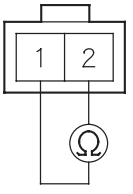
   NO—Go to step 7.
5. Command A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B at 0.2 A in CLUTCH PRESSURE CONTROL SOLENOID CONTROL MENU with the HDS.
6. Monitor the OBD STATUS for P0967 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve B and the PCM. ■

   NO—If the screen indicates FAILED, go to step 7. If the screen indicates NOT COMPLETED, return to step 4 and recheck.
7. Turn the ignition switch to LOCK (0).
8. Disconnect the A/T clutch pressure control solenoid valve B connector.
9. Measure the resistance between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Terminal side of male terminals

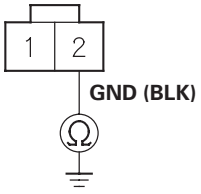
Is there 3— 10 Ω ?

YES—Go to step 10.

NO—Go to step 11.

10. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve B and ground (G101, G102) (see page 22-18), or repair poor ground (G101, G102), then go to step 12.

11. Replace A/T clutch pressure control solenoid valve B (see page 14-198).

12. Reconnect all connectors.

13. Turn the ignition switch to ON (II).

14. Clear the DTC with the HDS.

15. Start the engine, and wait for at least 1 second.

16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0967 indicated?

    YES—Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve B and the PCM, then go to step 1.

    NO—If Temporary DTC or DTC P0967 is not indicated, or if any other Temporary DTCs are indicated, go to step 17.

17. Monitor the OBD STATUS for P0967 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 16, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at A/T clutch pressure control solenoid valve B and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 15.

(cont'd)

DTC Troubleshooting (cont'd)

18. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

19. Start the engine, and wait for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0967 indicated?

    YES—Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 19. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0967 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 21.

21. Monitor the OBD STATUS for P0967 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 20, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 19. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 19.

DTC P0970: Problem in A/T Clutch Pressure Control Solenoid Valve C Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.

2. Start the engine, and wait for at least 1 second.

3. Check that DTC P0970 recurs.

   Is DTC P0970 indicated?

   YES—Go to step 7.

   NO—Go to step 4.

4. Select CLUTCH PRESSURE CONTROL SOLENOID C in MISCELLANEOUS TEST MENU, and test A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C with the HDS.

   Does the screen indicate NORMAL?

   YES—Go to step 5.

   NO—Go to step 7.

5. Command A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C at 1.0 A in CLUTCH PRESSURE CONTROL SOLENOID CONTROL MENU with the HDS.

6. Monitor the OBD STATUS for P0970 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve C and the PCM. ■

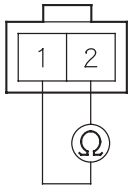
   NO—If the screen indicates FAILED, go to step 7. If the screen indicates NOT COMPLETED, return to step 4 and recheck.

7. Turn the ignition switch to LOCK (0).

8. Disconnect the A/T clutch pressure control solenoid valve C connector.

9. Measure the resistance between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Terminal side of male terminals

Is there 3— 10 Ω ?

YES—Go to step 10.

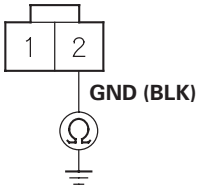
NO—Go to step 13.

(cont'd)

DTC Troubleshooting (cont'd)

10. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

Is there continuity?

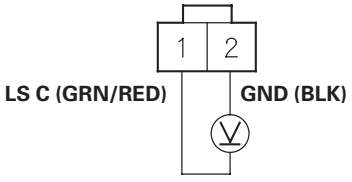
YES—Go to step 11.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve C and ground (G101, G102) (see page 22-18), or repair poor ground (G101, G102), then go to step 14.

11. Turn the ignition switch to ON (II).

12. Measure the voltage between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

Is there voltage?

YES—Go to step 20.

NO—Repair open or short in the wire between PCM connector terminal B35 and A/T clutch pressure control solenoid valve C, then go to step 14.

13. Replace A/T clutch pressure control solenoid valve C (see page 14-203).

14. Reconnect all connectors.

15. Turn the ignition switch to ON (II).

16. Clear the DTC with the HDS.

17. Start the engine, and wait for at least 1 second.

18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0970 indicated?

    YES—Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve C and the PCM, then go to step 1.

    NO—If Temporary DTC or DTC P0970 is not indicated, or if any other Temporary DTCs are indicated, go to step 19.

19. Monitor the OBD STATUS for P0970 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 18, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at A/T clutch pressure control solenoid valve C and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 17.

20. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

21. Start the engine, and wait for at least 1 second.

22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0970 indicated?

    YES—Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 21. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0970 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 23.

23. Monitor the OBD STATUS for P0970 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 22, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 21. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 21.

DTC Troubleshooting (cont'd)

DTC P0971: Problem in A/T Clutch Pressure Control Solenoid Valve C

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Start the engine, and wait for at least 1 second.
3. Check that DTC P0971 recurs.

   Is DTC P0971 indicated?

   YES—Go to step 7.

   NO—Go to step 4.
4. Select CLUTCH PRESSURE CONTROL SOLENOID C in MISCELLANEOUS TEST MENU, and test A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C with the HDS.

   Does the screen indicate NORMAL?

   YES—Go to step 5.

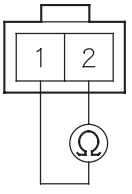
   NO—Go to step 7.
5. Command A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C at 0.2 A in CLUTCH PRESSURE CONTROL SOLENOID CONTROL MENU with the HDS.
6. Monitor the OBD STATUS for P0971 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve C and the PCM. ■

   NO—If the screen indicates FAILED, go to step 7. If the screen indicates NOT COMPLETED, return to step 4 and recheck.
7. Turn the ignition switch to LOCK (0).
8. Disconnect the A/T clutch pressure control solenoid valve C connector.
9. Measure the resistance between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Terminal side of male terminals

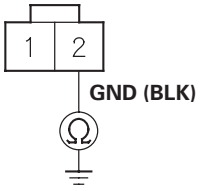
Is there 3— 10 Ω ?

YES—Go to step 10.

NO—Go to step 11.

10. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve C and ground (G101, G102) (see page 22-18), or repair poor ground (G101, G102), then go to step 12.

11. Replace A/T clutch pressure control solenoid valve C (see page 14-203).

12. Reconnect all connectors.

13. Turn the ignition switch to ON (II).

14. Clear the DTC with the HDS.

15. Start the engine, and wait for at least 1 second.

16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0971 indicated?

    YES—Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve C and the PCM, then go to step 1.

    NO—If Temporary DTC or DTC P0971 is not indicated, or if any other Temporary DTCs are indicated, go to step 17.

17. Monitor the OBD STATUS for P0971 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 16, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at A/T clutch pressure control solenoid valve C and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 15.

(cont'd)

DTC Troubleshooting (cont'd)

18. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

19. Start the engine, and wait for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0971 indicated?

    YES—Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 19. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0971 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 21.

21. Monitor the OBD STATUS for P0971 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 20, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 19. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 19.

DTC P0973: Short in Shift Solenoid Valve A Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Start the engine in P, and wait for at least 1 second.
3. Test-drive the vehicle in 1st gear in D for at least 1 second.
4. Check that DTC P0973 recurs.

   Is DTC P0973 indicated?

   YES—Go to step 9.

   NO—Go to step 5.
5. Select SHIFT SOLENOID A in MISCELLANEOUS TEST MENU, and test SHIFT SOLENOID VALVE A with the HDS.

   Is a clicking sound heard?

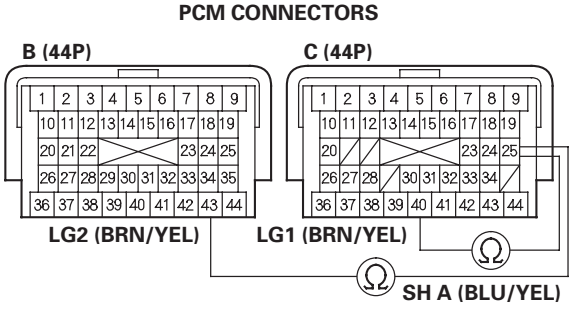
   YES—Go to step 6.

   NO—Go to step 9.
6. Start the engine in P, and wait for at least 1 second.
7. Test-drive the vehicle in 1st gear in D for at least 1 second.
8. Monitor the OBD STATUS for P0973 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for an intermittent short to ground in the wire between shift solenoid valve A and the PCM. ■

   NO—If the screen indicates FAILED, go to step 9. If the screen indicates NOT COMPLETED, return to step 5 and recheck.
9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect PCM connectors B (44P) and C (44P).
12. Measure the resistance between PCM connector terminals C25 and C40 or B43.



Terminal side of female terminals

Is there less than 12 Ω ?

YES—Go to step 13.

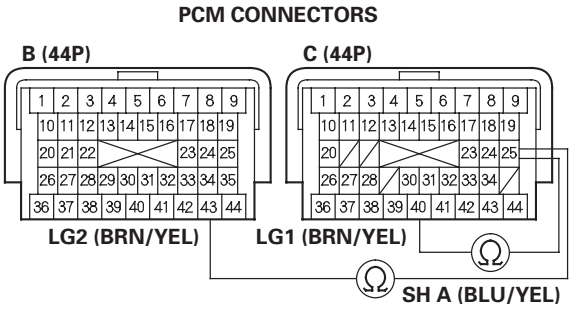
NO—Go to step 14.

(cont'd)

DTC Troubleshooting (cont'd)

13. Disconnect the shift solenoid harness connector.

14. Check for continuity between PCM connector terminals C25 and C40 or B43.



Terminal side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between PCM connector terminal C25 and the shift solenoid harness connector, then go to step 17.

NO—Go to step 15.

15. Inspect shift solenoid valve A and the shift solenoid harness (see page 14-188).

Is shift solenoid valve A and the harness OK?

YES—Go to step 24.

NO—Go to step 16.

16. Replace shift solenoid valve A or the shift solenoid harness (see page 14-188).

17. Reconnect all connectors.

18. Turn the ignition switch to ON (II).

19. Clear the DTC with the HDS.

20. Start the engine in P, and wait for at least 1 second.

21. Test-drive the vehicle in 1st gear in D for at least 1 second.

22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0973 indicated?

YES—Check for poor connections or loose terminals at shift solenoid valve A and the PCM, then go to step 1.

NO—If Temporary DTC or DTC P0973 is not indicated, or if any other Temporary DTCs are indicated, go to step 23.

23. Monitor the OBD STATUS for P0973 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 22, go to the indicated DTCs troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at shift solenoid valve A and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 21.

24. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

25. Start the engine in P, and wait for at least 1 second.

26. Test-drive the vehicle in 1st gear in D for at least 1 second.

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0973 indicated?

    YES—Check for poor connections or loose terminals at shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0973 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 28.

28. Monitor the OBD STATUS for P0973 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 27, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 26.

DTC Troubleshooting (cont'd)

DTC P0974: Open in Shift Solenoid Valve A Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Start the engine in P, and wait for at least 1 second.
3. Test-drive the vehicle in 1st gear in D for at least 1 second.
4. Check that DTC P0974 recurs.

   Is DTC P0974 indicated?

   YES—Go to step 9.

   NO—Go to step 5.
5. Select SHIFT SOLENOID A in MISCELLANEOUS TEST MENU, and test SHIFT SOLENOID VALVE A with the HDS.

   Is a clicking sound heard?

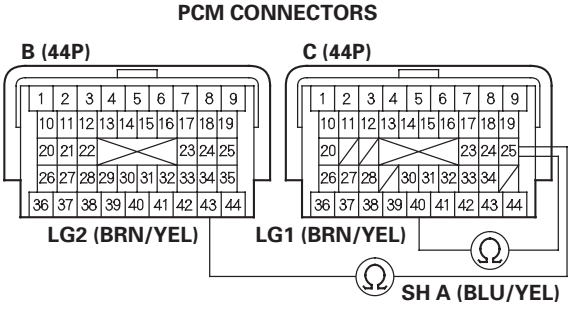
   YES—Go to step 6.

   NO—Go to step 9.
6. Start the engine in P, and wait for at least 1 second.
7. Test-drive the vehicle in 1st gear in D for at least 1 second.
8. Monitor the OBD STATUS for P0974 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at shift solenoid valve A, the shift solenoid harness connector, and the PCM. ■

   NO—If the screen indicates FAILED, go to step 9. If the screen indicates NOT COMPLETED, return to step 5 and recheck.
9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect PCM connectors B (44P) and C (44P).
12. Measure the resistance between PCM connector terminals C25 and C40 or B43.



Terminal side of female terminals

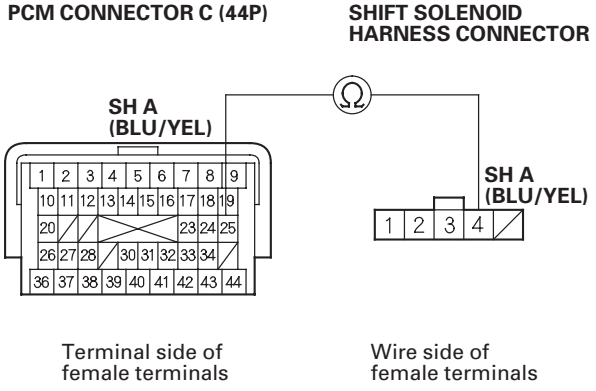
Is there 12—25 Ω ?

YES—Go to step 24.

NO—Go to step 13.

13. Disconnect the shift solenoid harness connector.

14. Check for continuity between PCM connector terminal C25 and shift solenoid harness connector terminal No. 4.



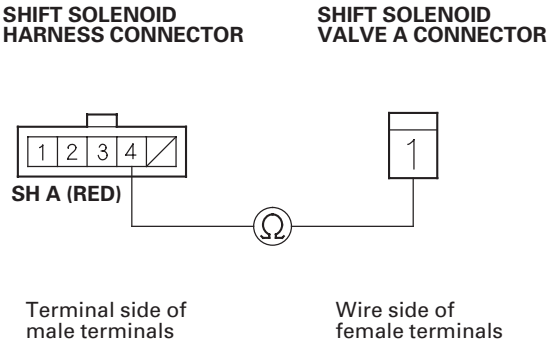
Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between PCM connector terminal C25 and the shift solenoid harness connector, then go to step 17.

15. Remove the shift solenoid harness (see page 14-188).

16. Check for continuity between shift solenoid harness connector terminal No. 4 and the shift solenoid valve A connector terminal.



Is there continuity?

YES—Replace shift solenoid valve A (see page 14-188), then go to step 17.

NO—Replace the shift solenoid harness (see page 14-188), then go to step 17.

(cont'd)

DTC Troubleshooting (cont'd)

17. Reconnect all connectors.
18. Turn the ignition switch to ON (II).
19. Clear the DTC with the HDS.
20. Start the engine in P, and wait for at least than 1 second.
21. Test-drive the vehicle in 1st gear in D for at least 1 second.
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0974 indicated?

    YES—Check for poor connections or loose terminals at shift solenoid valve A, the shift solenoid harness, and the PCM, then go to step 1.

    NO—If Temporary DTC or DTC P0974 is not indicated, or if any other Temporary DTCs are indicated, go to step 23.

23. Monitor the OBD STATUS for P0974 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 22, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at shift solenoid valve A, the shift solenoid harness, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 20.

24. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
25. Start the engine in P, and wait for at least 1 second.
26. Test-drive the vehicle in 1st gear in D for at least 1 second.
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0974 indicated?

    YES—Check for poor connections or loose terminals at shift solenoid valve A, the shift solenoid harness, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 25. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0974 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 28.

28. Monitor the OBD STATUS for P0974 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 27, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at shift solenoid valve A, the shift solenoid harness, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 25. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 25.

DTC P0976: Short in Shift Solenoid Valve B Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Start the engine in P, and wait for at least 1 second.
3. Test-drive the vehicle so that it shifts from 1st to 4th gear in D, then drive the vehicle in 4th gear for at least 1 second.
4. Check that DTC P0976 recurs.

   Is DTC P0976 indicated?

   YES—Go to step 9.

   NO—Go to step 5.
5. Select SHIFT SOLENOID B in MISCELLANEOUS TEST MENU, and test SHIFT SOLENOID VALVE B with the HDS.

   Is a clicking sound heard?

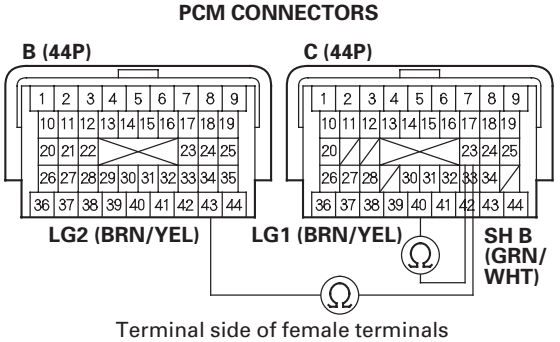
   YES—Go to step 6.

   NO—Go to step 9.
6. Start the engine in P, and wait for at least 1 second.
7. Test-drive the vehicle so that it shifts from 1st to 4th gear in D, then drive the vehicle in 4th gear for at least 1 second.
8. Monitor the OBD STATUS for P0976 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for an intermittent short to ground in the wire between shift solenoid valve B and the PCM. ■

   NO—If the screen indicates FAILED, go to step 9. If the screen indicates NOT COMPLETED, return to step 5 and recheck.
9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect PCM connectors B (44P) and C (44P).
12. Measure the resistance between PCM connector terminals C23 and C40 or B43.



   Is there less than 12 Ω ?

   YES—Go to step 13.

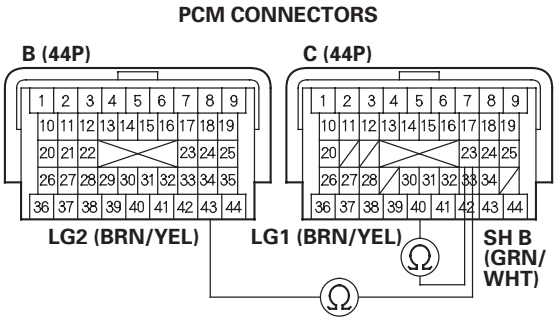
   NO—Go to step 24.

(cont'd)

DTC Troubleshooting (cont'd)

13. Disconnect the shift solenoid harness connector.

14. Check for continuity between PCM connector terminals C23 and C40 or B43.



Is there continuity?

YES—Repair short to ground in the wire between PCM connector terminal C23 and the shift solenoid harness connector, then go to step 17.

NO—Go to step 15.

15. Inspect shift solenoid valve B and the shift solenoid harness (see page 14-188).

Is shift solenoid valve B and the harness OK?

YES—Go to step 24.

NO—Go to step 16.

16. Replace shift solenoid valve B or the shift solenoid harness (see page 14-188).

17. Reconnect all connectors.

18. Turn the ignition switch to ON (II).

19. Clear the DTC with the HDS.

20. Start the engine in P, and wait for at least 1 second.

21. Test-drive the vehicle so that it shifts from 1st to 4th gear in D, then drive the vehicle in 4th gear for at least 1 second.

22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0976 indicated?

YES—Check for poor connections or loose terminals at shift solenoid valve B, the shift solenoid harness, and the PCM, then go to step 1.

NO—If Temporary DTC or DTC P0976 is not indicated, or if any other Temporary DTCs are indicated, go to step 23.

23. Monitor the OBD STATUS for P0976 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 22, go to the indicated DTCs troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at shift solenoid valve B, the shift solenoid harness, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 20.

24. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

25. Start the engine in P, and wait for at least 1 second.

26. Test-drive the vehicle so that it shifts from 1st to 4th gear in D, then drive the vehicle in 4th gear for at least 1 second.

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0976 indicated?

    YES—Check for poor connections or loose terminals at shift solenoid valve B, the shift solenoid harness, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 25. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0976 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 28.

28. Monitor the OBD STATUS for P0976 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 27, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at shift solenoid valve B, the shift solenoid harness, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 25. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 25.

DTC Troubleshooting (cont'd)

DTC P0977: Open in Shift Solenoid Valve B Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Start the engine in P, and wait for at least 1 second.
3. Test-drive the vehicle so that it shifts from 1st to 4th gear in D, then drive the vehicle in 4th gear for at least 1 second.
4. Check that DTC P0977 recurs.

   Is DTC P0977 indicated?

   YES—Go to step 9.

   NO—Go to step 5.
5. Select SHIFT SOLENOID B in MISCELLANEOUS TEST MENU, and test SHIFT SOLENOID VALVE B with the HDS.

   Is a clicking sound heard?

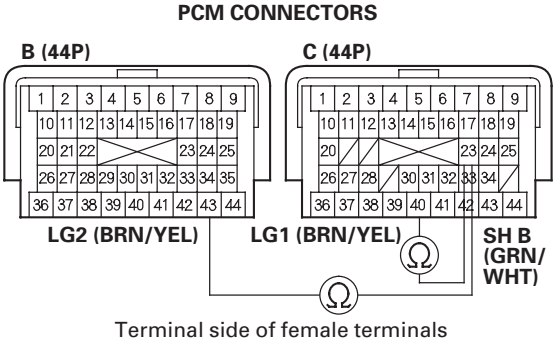
   YES—Go to step 7.

   NO—Go to step 9.
6. Start the engine in P, and wait for at least 1 second.
7. Test-drive the vehicle so that it shifts from 1st to 4th gear in D, then drive the vehicle in 4th gear for at least 1 second.
8. Monitor the OBD STATUS for P0977 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at shift solenoid valve B, the shift solenoid harness connector, and the PCM. ■

   NO—If the screen indicates FAILED, go to step 9. If the screen indicates NOT COMPLETED, return to step 5 and recheck.
9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect PCM connectors B (44P) and C (44P).
12. Measure the resistance between PCM connector terminals C23 and C40 or B43.



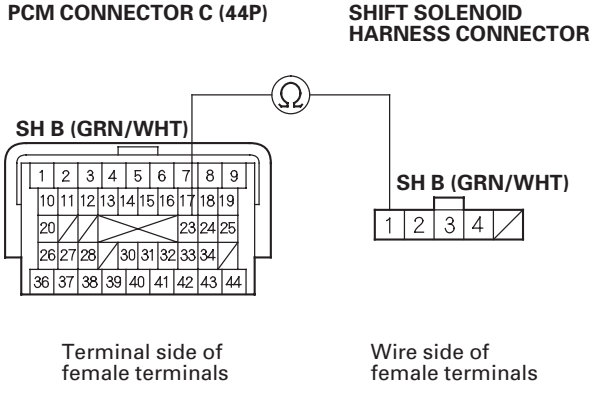
Is there 12—25 Ω?

YES—Go to step 24.

NO—Go to step 13.

13. Disconnect the shift solenoid harness connector.

14. Check for continuity between PCM connector terminal C23 and shift solenoid harness connector terminal No. 1.



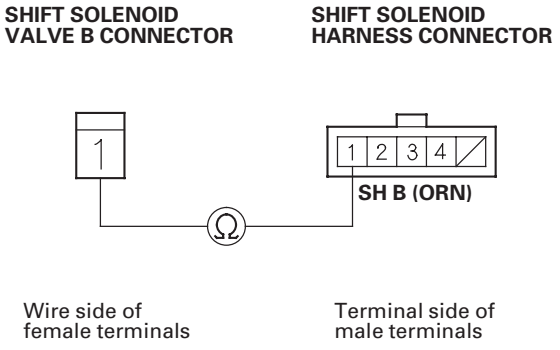
Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between PCM connector terminal C23 and the shift solenoid harness connector, then go to step 17.

15. Remove the shift solenoid harness (see page 14-188).

16. Check for continuity between shift solenoid harness connector terminal No. 1 and the shift solenoid valve B connector terminal.



Is there continuity?

YES—Replace shift solenoid valve B (see page 14-188), then go to step 17.

NO—Replace the shift solenoid harness (see page 14-188), then go to step 17.

(cont'd)

DTC Troubleshooting (cont'd)

17. Reconnect all connectors.
18. Turn the ignition switch to ON (II).
19. Clear the DTC with the HDS.
20. Start the engine in P, and wait for at least 1 second.
21. Test-drive the vehicle so that it shifts from 1st to 4th gear in D, then drive the vehicle in 4th gear for at least 1 second.
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0977 indicated?

    YES—Check for poor connections or loose terminals at shift solenoid valve B, the shift solenoid harness, and the PCM, then go to step 1.

    NO—If Temporary DTC or DTC P0977 is not indicated, or if any other Temporary DTCs are indicated, go to step 23.

23. Monitor the OBD STATUS for P0977 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 22, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at shift solenoid valve B, the shift solenoid harness, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 21.

24. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
25. Start the engine in P, and wait for at least 1 second.
26. Test-drive the vehicle so that it shifts from 1st to 4th gear in D, then drive the vehicle in 4th gear for at least 1 second.
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0977 indicated?

    YES—Check for poor connections or loose terminals at shift solenoid valve B, the shift solenoid harness, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0977 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 28.

28. Monitor the OBD STATUS for P0977 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 27, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at shift solenoid valve B, the shift solenoid harness, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 26.

DTC P0979: Short in Shift Solenoid Valve C Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Start the engine in P, and wait for at least 1 second.
3. Test-drive the vehicle in 1st gear in D for at least 1 second.
4. Check that DTC P0979 recurs.

   Is DTC P0979 indicated?

   YES—Go to step 9.

   NO—Go to step 5.
5. Select SHIFT SOLENOID C in MISCELLANEOUS TEST MENU, and test SHIFT SOLENOID VALVE C with the HDS.

   Is a clicking sound heard?

   YES—Go to step 7.

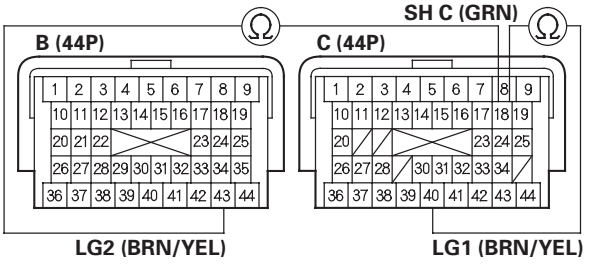
   NO—Go to step 9.
6. Start the engine in P, and wait for at least 1 second.
7. Test-drive the vehicle in 1st gear in D for at least 1 second.
8. Monitor the OBD STATUS for P0979 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for an intermittent short to ground in the wire between shift solenoid valve C and the PCM. ■

   NO—If the screen indicates FAILED, go to step 9. If the screen indicates NOT COMPLETED, return to step 5 and recheck.
9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect PCM connectors B (44P) and C (44P).
12. Measure the resistance between PCM connector terminals C18 and C40 or B43.

PCM CONNECTORS



Terminal side of female terminals

Is there less than 12 Ω ?

YES—Go to step 13.

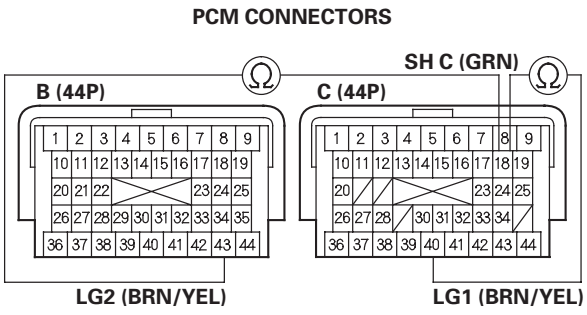
NO—Go to step 24.

(cont'd)

DTC Troubleshooting (cont'd)

13. Disconnect the shift solenoid harness connector.

14. Check for continuity between PCM connector terminals C18 and C40 or B43.



Terminal side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between PCM connector terminal C18 and the shift solenoid harness connector, then go to step 17.

NO—Go to step 15.

15. Inspect shift solenoid valve C and the shift solenoid harness (see page 14-188).

Is shift solenoid valve C and the harness OK?

YES—Go to step 24.

NO—Go to step 16.

16. Replace shift solenoid valve C or the shift solenoid harness (see page 14-188).

17. Reconnect all connectors.

18. Turn the ignition switch to ON (II).

19. Clear the DTC with the HDS.

20. Start the engine in P, and wait for at least 1 second.

21. Test-drive the vehicle in 1st gear in D for at least 1 second.

22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0979 indicated?

YES—Check for poor connections or loose terminals at shift solenoid valve C, the shift solenoid harness, and the PCM, then go to step 1.

NO—If Temporary DTC or DTC P0979 is not indicated, or if any other Temporary DTCs are indicated, go to step 23.

23. Monitor the OBD STATUS for P0979 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 22, go to the indicated DTCs troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at shift solenoid valve C, the shift solenoid harness, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 21.

24. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

25. Start the engine in P, and wait for at least 1 second.

26. Test-drive the vehicle in 1st gear in D for at least 1 second.

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0979 indicated?

    YES—Check for poor connections or loose terminals at shift solenoid valve C, the shift solenoid harness, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0979 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 28.

28. Monitor the OBD STATUS for P0979 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 27, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at shift solenoid valve C, the shift solenoid harness, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 26.

DTC Troubleshooting (cont'd)

DTC P0980: Open in Shift Solenoid Valve C Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Start the engine in P, and wait for at least 1 second.
3. Test-drive the vehicle in 1st gear in D for at least 1 second.
4. Check that DTC P0980 recurs.

   Is DTC P0980 indicated?

   YES—Go to step 9.

   NO—Go to step 5.
5. Select SHIFT SOLENOID C in MISCELLANEOUS TEST MENU, and test SHIFT SOLENOID VALVE C with the HDS.

   Is a clicking sound heard?

   YES—Go to step 6.

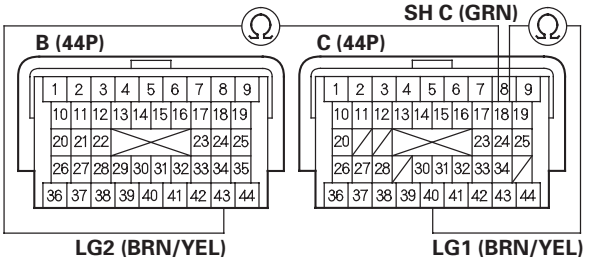
   NO—Go to step 9.
6. Start the engine in P, and wait for at least 1 second.
7. Test-drive the vehicle in 1st gear in D for at least 1 second.
8. Monitor the OBD STATUS for P0980 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at shift solenoid valve C, the shift solenoid harness connector and the PCM.■

   NO—If the screen indicates FAILED, go to step 9. If the screen indicates NOT COMPLETED, return to step 5 and recheck.
9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect PCM connectors B (44P) and C (44P).
12. Measure the resistance between PCM connector terminals C18 and C40 or B43.

PCM CONNECTORS



Terminal side of female terminals

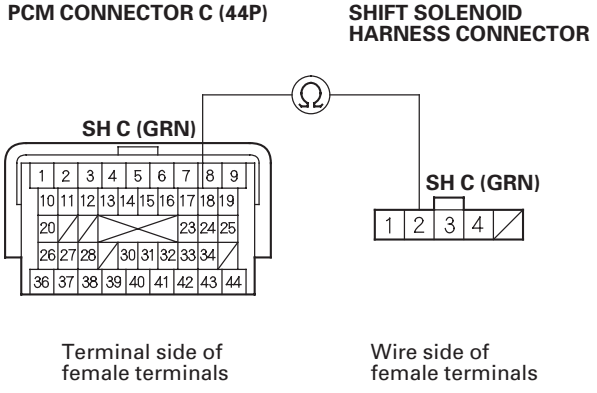
Is there 12—25 Ω ?

YES—Go to step 24.

NO—Go to step 13.

13. Disconnect the shift solenoid harness connector.

14. Check for continuity between PCM connector terminal C18 and shift solenoid harness connector terminal No. 2.



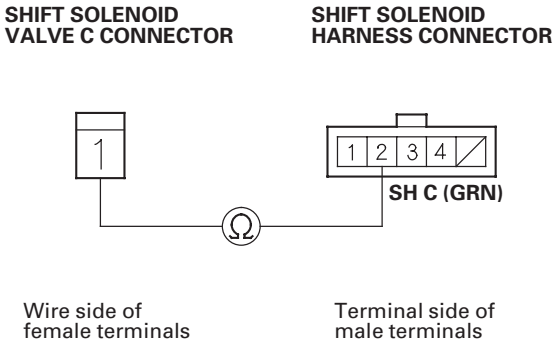
Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between PCM connector terminal C18 and the shift solenoid harness connector, then go to step 17.

15. Remove the shift solenoid harness (see page 14-188).

16. Check for continuity between shift solenoid harness connector terminal No. 2 and the shift solenoid valve C connector terminal.



Is there continuity?

YES—Replace shift solenoid valve C (see page 14-188), then go to step 17.

NO—Replace the shift solenoid harness (see page 14-188), then go to step 17.

(cont'd)

DTC Troubleshooting (cont'd)

17. Reconnect all connectors.
18. Turn the ignition switch to ON (II).
19. Clear the DTC with the HDS.
20. Start the engine in P, and wait for at least 1 second.
21. Test-drive the vehicle in 1st gear in D for at least 1 second.
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0980 indicated?

    YES—Check for poor connections or loose terminals at shift solenoid valve C, the shift solenoid harness, and the PCM, then go to step 1.

    NO—If Temporary DTC or DTC P0980 is not indicated, or if any other Temporary DTCs are indicated, go to step 23.

23. Monitor the OBD STATUS for P0980 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 22, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at shift solenoid valve C, the shift solenoid harness, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 20.

24. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
25. Start the engine in P, and wait for at least 1 second.
26. Test-drive the vehicle in 1st gear in D for at least 1 second.
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0980 indicated?

    YES—Check for poor connections or loose terminals at shift solenoid valve C, the shift solenoid harness, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 25. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P0980 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 28.

28. Monitor the OBD STATUS for P0980 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substitute, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 27, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at shift solenoid valve C, the shift solenoid harness, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 25. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 25.

DTC P2769: Short in Torque Converter Clutch Solenoid Valve Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.

2. Start the engine in P, and warm it up to normal operating temperature (the radiator fan comes on). Test-drive the vehicle at a constant speed of 37 mph (60 km/h) in D, in 5th gear for at least 1 second.

3. Check that DTC P2769 recurs.

   Is DTC P2769 indicated?

   YES—Go to step 7.

   NO—Go to step 4.

4. Select LOCKUP SOLENOID TEST in MISCELLANEOUS TEST MENU, and test TORQUE CONVERTER CLUTCH SOLENOID VALVE with the HDS.

   Does the screen indicate NORMAL?

   YES—Go to step 5.

   NO—Go to step 7.

5. Start the engine in P, and warm it up to normal operating temperature (the radiator fan comes on). Test-drive the vehicle at a constant speed of 37 mph (60 km/h) in D, in 5th gear for at least 1 second.

6. Monitor the OBD STATUS for P2769 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check LC (YEL) wire for an intermittent short to ground between torque converter clutch solenoid valve and the PCM. ■

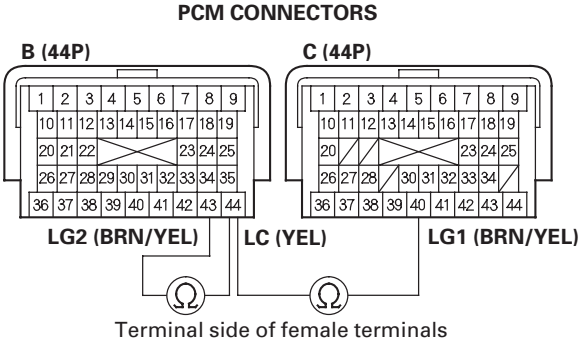
   NO—If the screen indicates FAILED, go to step 7. If the screen indicates NOT COMPLETED, return to step 4 and recheck.

7. Turn the ignition switch to LOCK (0).

8. Jump the SCS line with the HDS.

9. Disconnect PCM connectors B (44P) and C (44P).

10. Measure the resistance between PCM connector terminals B44 and B43 or C40.



   Is there less than 12 Ω ?

   YES—Go to step 11.

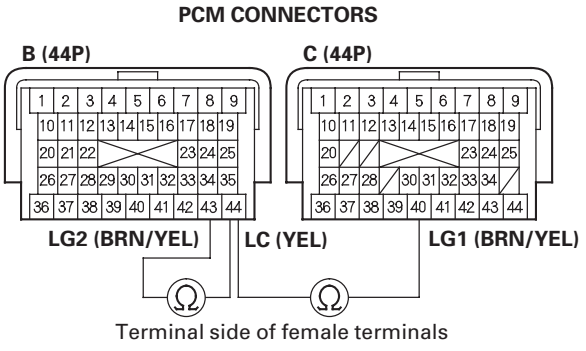
   NO—Go to step 21.

(cont'd)

DTC Troubleshooting (cont'd)

11. Disconnect the shift solenoid harness connector.

12. Check for continuity between PCM connector terminals B44 and B43 or C40.



Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal B44 and the shift solenoid harness connector, then go to step 15.

NO—Go to step 13.

13. Inspect the torque converter clutch solenoid valve and the shift solenoid harness (see page 14-188).

Are torque converter clutch solenoid valve and the harness OK?

YES—Go to step 21.

NO—Go to step 14.

14. Replace the torque converter clutch solenoid valve or the shift solenoid harness (see page 14-188).

15. Reconnect all connectors.

16. Turn the ignition switch to ON (II).

17. Clear the DTC with the HDS.

18. Start the engine in P, and warm it up to normal operating temperature (the radiator fan comes on). Test-drive the vehicle at a constant speed of 37 mph (60 km/h) in D, in 5th gear for at least 1 second.

19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2769 indicated?

YES—Check for poor connections or loose terminals at the torque converter clutch solenoid valve, the shift solenoid harness, and the PCM, then go to step 1.

NO—If Temporary DTC or DTC P2769 is not indicated, or if any other Temporary DTCs are indicated, go to step 20.

20. Monitor the OBD STATUS for P2769 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 19, go to the indicated DTCs troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the torque converter clutch solenoid valve, the shift solenoid harness, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18.

21. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

22. Start the engine in P, and warm it up to normal operating temperature (the radiator fan comes on). Test-drive the vehicle at a constant speed of 37 mph (60 km/h) in D, in 5th gear for at least 1 second.

23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2769 indicated?

    YES—Check for poor connections or loose terminals at the torque converter clutch solenoid valve, the shift solenoid harness, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 22. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P2769 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 24.

24. Monitor the OBD STATUS for P2769 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 23, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the torque converter clutch solenoid valve, the shift solenoid harness, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 22. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

DTC Troubleshooting (cont'd)

DTC P2770: Open in Torque Converter Clutch Solenoid Valve Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Start the engine in P, and warm it up to normal operating temperature (the radiator fan comes on). Test-drive the vehicle at a constant speed of 37 mph (60 km/h) in D, in 5th gear for at least 1 second.
3. Check that DTC P2770 recurs.

   Is DTC P2770 indicated?

   YES—Go to step 7.

   NO—Go to step 4.
4. Select LOCKUP SOLENOID TEST in MISCELLANEOUS TEST MENU, and test TORQUE CONVERTER CLUTCH SOLENOID VALVE with the HDS.

   Does the screen indicated NORMAL?

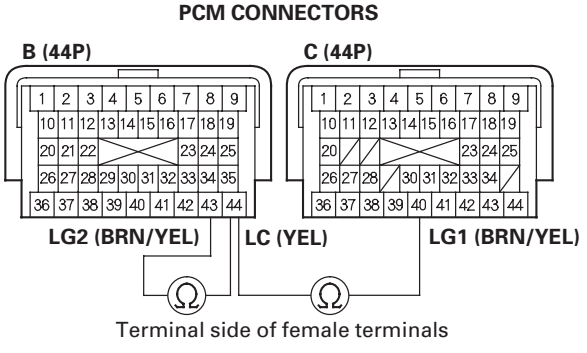
   YES—Go to step 5.

   NO—Go to step 7.
5. Start the engine in P, and warm it up to normal operating temperature (the radiator fan comes on). Test-drive the vehicle at a constant speed of 37 mph (60 km/h) in D, in 5th gear for at least 1 second.
6. Monitor the OBD STATUS for P2770 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the torque converter clutch solenoid valve, the shift solenoid harness connector, and the PCM. ■

   NO—If the screen indicates FAILED, go to step 7. If the screen indicates NOT COMPLETED, return to step 4 and recheck.
7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors B (44P) and C (44P).
10. Measure the resistance between PCM connector terminals B44 and B43 or C40.



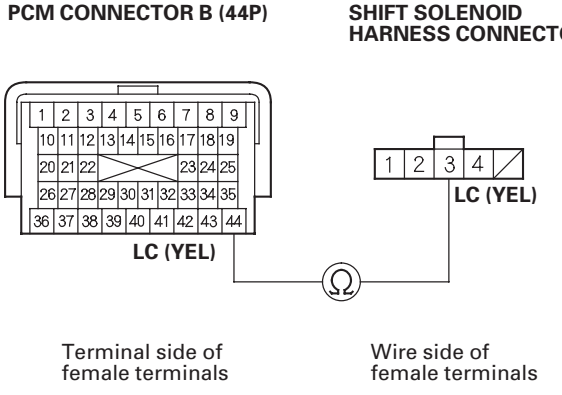
Is there 12—25 Ω ?

YES—Go to step 21.

NO—Go to step 11.

11. Disconnect the shift solenoid harness connector.

12. Check for continuity between PCM connector terminal B44 and shift solenoid harness connector terminal No. 3.



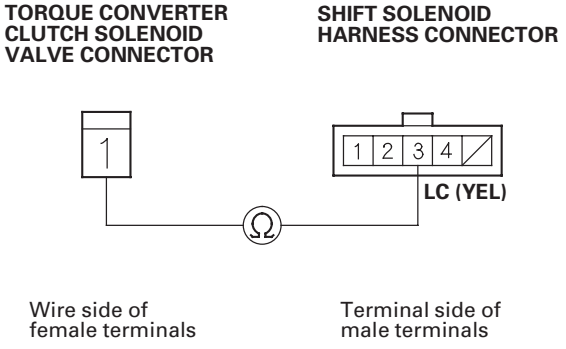
Is there continuity?

YES—Go to step 13.

NO—Repair an open in the wire between PCM connector terminal B44 and the shift solenoid harness connector, then go to step 15.

13. Remove the shift solenoid harness connector (see page 14-188).

14. Check for continuity between shift solenoid harness connector terminal No. 3 and the torque converter clutch solenoid valve connector terminal.



Is there continuity?

YES—Replace torque converter clutch solenoid valve (see page 14-188), then go to step 15.

NO—Replace the shift solenoid harness (see page 14-188), then go to step 15.

(cont'd)

DTC Troubleshooting (cont'd)

15. Reconnect all connectors.

16. Turn the ignition switch to ON (II).

17. Clear the DTC with the HDS.

18. Start the engine in P, and warm it up to normal operating temperature (the radiator fan comes on). Test-drive the vehicle at a constant speed of 37 mph (60 km/h) in D, in 5th gear for at least 1 second.

19. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2770 indicated?

    YES—Check for poor connections or loose terminals at the torque converter clutch solenoid valve, the shift solenoid harness, and the PCM, then go to step 1.

    NO—If Temporary DTC or DTC P2770 is not indicated, or if any other Temporary DTCs are indicated, go to step 20.

20. Monitor the OBD STATUS for P2770 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTC or DTCs were indicated on step 19, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the torque converter clutch solenoid valve, the shift solenoid harness, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18.

21. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

22. Start the engine in P, and warm it up to normal operating temperature (the radiator fan comes on). Test-drive the vehicle at a constant speed of 37 mph (60 km/h) in D, in 5th gear for at least 1 second.

23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2770 indicated?

    YES—Check for poor connections or loose terminals at the torque converter clutch solenoid valve, the shift solenoid harness, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 22. If the PCM was substituted, go to step 1.

    NO—If Temporary DTC or DTC P2770 is not indicated, or if any other Temporary DTCs or DTCs are indicated, go to step 24.

24. Monitor the OBD STATUS for P2770 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). If any other Temporary DTCs or DTCs were indicated on step 23, go to the indicated DTCs troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the torque converter clutch solenoid valve, the shift solenoid harness, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 22. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

Road Test

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

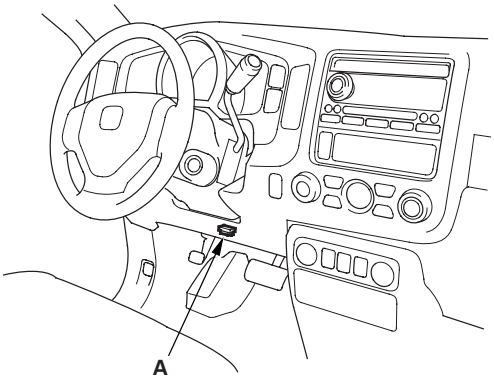
2. Apply the parking brake, and block both rear wheels.

3. Start the engine, then shift to D while pressing the brake pedal. Press the accelerator pedal, and release it suddenly. The engine should not stall.

4. Repeat step 3 in all shift lever positions.

5. Connect the HDS to the DLC (A), and go to the A/T Mode Menu.

   NOTE: If the HDS does not communicate with the PCM, troubleshoot the DLC circuit (see page 11-194).



6. Prepare the HDS to take a HIGH SPEED SNAPSHOT (Refer to the HDS user's guide for more details if needed):

   - Select High Speed icon.
   - Select these parameters:
     – VSS veh speed
     – Output Shaft (Countershaft) Speed
     – Input Shaft (Mainshaft) Speed (rpm)
     – RPM engine speed
     – Relative TP Sensor
     – APP Sensor A
     – ATF Temp sensor
     – Battery voltage
     – Shift control
     – Brake Switch
   - Set the Trigger Type to Parameter.
   - Adjust the Parameter setting to APP Sensor A above 1.0 V.
   - Set the recording time to 60 seconds.
   - Set the Trigger point to —30 seconds.

7. Find a suitable level road. When you are ready to do the test, press OK on the HDS.

8. Monitor the HDS, and accelerate quickly until the APP Sensor B reads 1.0 V. Maintain a steady throttle until the transmission shifts to 5th gear, then slow the vehicle and come to a stop.

9. Save the snapshot if the entire event was recorded, or increase the recording time setting as necessary, and repeat step 8.

10. Adjust the Parameter setting to 2.5 V. Retest-drive the vehicle. While monitoring the HDS accelerate quickly until the APP Sensor B reads 2.5 V. Maintain a steady throttle until the transmission shifts to 5th gear (or reasonable speed), then slow the vehicle and come to a stop.

11. Save the snapshot if the entire event was recorded, or increase the recording time setting as necessary, and repeat step 10.

12. Accelerate quickly until the accelerator pedal is to the floor. Maintain a steady pedal until the transmission shifts to 3rd gear, then slow to a stop, and save the snapshot.

(cont'd)

Road Test (cont'd)

13. Review each snapshot individually, and compare the Shift control, Accelerator pedal position sensor B voltage, and VSS veh speed to the table below.

Upshift: D Position

Accelerator pedal position sensor voltage: 0.75 V	
1st→2nd	12—13 mph (19—21 km/h)
2nd→3rd	19—21 mph (31—33 km/h)
3rd→4th	25—29 mph (40—46 km/h)
4th→5th	45—49 mph (72—78 km/h)
Lock-up ON	47—50 mph (76—80 km/h)
Accelerator pedal position sensor voltage: 2.5 V	
1st→2nd	29—32 mph (47—51 km/h)
2nd→3rd	50—54 mph (80—86 km/h)
3rd→4th	76—80 mph (121—127 km/h)
4th→5th	94—98 mph (151—157 km/h)
Lock-up ON	102—106 mph (164—170 km/h)
Fully-opened throttle Accelerator pedal position sensor voltage: 4.5 V	
1st→2nd	36—40 mph (58—64 km/h)
2nd→3rd	64—68 mph (102—108 km/h)
3rd→4th	100—104 mph (160—166 km/h)

Downshift: D Position

Accelerator pedal position sensor voltage: 0.75 V	
Lock-up OFF	44—48 mph (70—77 km/h)
5th→4th	39—41 mph (62—66 km/h)
4th→3rd	18—21 mph (29—33 km/h)
2nd→1st	9—11 mph (14—18 km/h)
Accelerator pedal position sensor voltage: 2.5 V	
Lock-up OFF	90—94 mph (145—151 km/h)
5th→4th	73—76 mph (118—122 km/h)
4th→3rd	53—56 mph (86—90 km/h)
3rd→2nd	25—29 mph (40—46 km/h)
2nd→1st	9—11 mph (14—18 km/h)
Fully-opened throttle Accelerator pedal position sensor voltage: 4.5 V	
4th→3rd	89—93 mph (142—148 km/h)
3rd→2nd	58—62 mph (93—99 km/h)
2nd→1st	32—34 mph (51—55 km/h)

14. Drive the vehicle in 4th or 5th gear in D, then shift to 2. The vehicle should immediately begin to slow down from engine braking.

15. Shift to 1, accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage. Upshifts should not occur in this position.

16. Shift to 2, accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage. Upshifts and downshifts should not occur in this position.

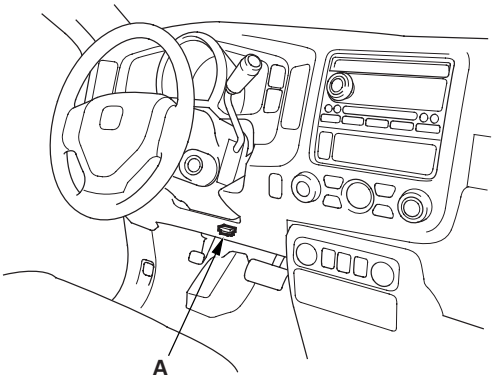
17. Shift to R, accelerate from a stop at full throttle momentarily, and check for abnormal noise and clutch slippage.

18. Park the vehicle on a slope (about 16 degrees), apply the brake, and shift into P. Release the brake; the vehicle should not move.

    NOTE: Always use the parking brake to hold the vehicle when stopped on an incline in gear. Depending on the grade of the incline, the vehicle could roll backwards if the brake is released.

Stall Speed Test

1. Apply the parking brake, and block all four wheels.
2. Connect the HDS to the DLC (A), and go to the A/T data list.



3. Make sure the A/C switch OFF.
4. After the engine has warmed up to normal operating temperature (the radiator fan comes on), shift to the 2 position.
5. Firmly press the brake pedal, then fully press the accelerator pedal for 6 to 8 seconds, and note engine speed. Do not move the shift lever while raising engine speed.
6. Allow 2 minutes for cooling, then repeat the test in D, 1, and R.

   NOTE:
   - Do not test stall speed for more than 10 seconds at a time.
   - Stall speed tests should be used for diagnostic purposes only.
   - Stall speed tests should be the same in D, 2, 1, and R.
   - Do not test stall speed with the A/T pressure gauges installed.

   Stall Speed rpm
   Specification: 1,950 rpm
   Service Limit: 1,800—2,100 rpm

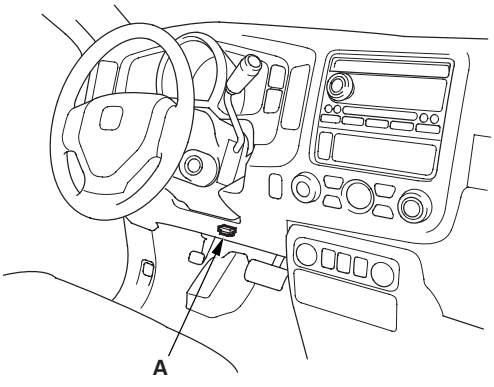
7. If any of the stall speeds are out of the service limit, problems and probable causes are listed in the table.

Problem	Probable causes
Stall speed rpm high in D, 2, 1, and R	• Low fluid level • ATF pump output low • Clogged ATF strainer • Regulator valve stuck • Slipping clutch
Stall speed rpm high in 1	• Slippage of 1st clutch • Slippage of 1st gear one-way clutch
Stall speed rpm high in 2	Slippage of 2nd clutch
Stall speed rpm high in R	Slippage of 5th clutch
Stall speed rpm low in D, 2, 1, and R	• Engine output low • Engine throttle valve closed • Torque converter one-way clutch slipping

Pressure Test

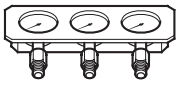
Special Tools Required
- A/T clutch pressure gauge set 07406-0020400 or 07406-0020401
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure hose adapter 07MAJ-PY40120

1. Before testing, make sure the transmission fluid is filled to the proper level.
2. Raise the vehicle on a lift, and make sure it is securely supported.
3. Allow the all four wheels to rotate freely.
4. Remove the splash shield (see page 20-179).
5. Warm up the engine (the radiator fan comes on). Turn off the engine, and connect the HDS to the DLC (A).



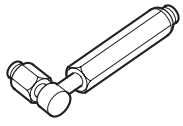
6. Connect the oil pressure gauge to the line pressure inspection port (A). Do not allow dust or other foreign particles to enter the hole while connecting the gauge.

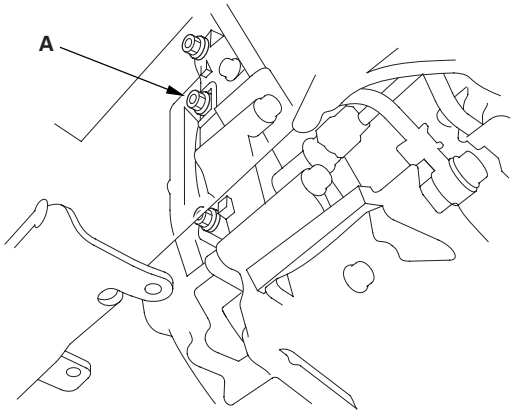
A/T OIL PRESSURE GAUGE SET W/PANEL 07406-0020400 or 07406-0020401



A/T PRESSURE HOSE, 2,210 mm 07MAJ-PY4011A (4 required)

A/T PRESSURE HOSE ADAPTER 07MAJ-PY40120 (4 required)





7. Start the engine, and run it at 2,000 rpm in P or N.
8. Measure the line pressure at the line pressure inspection hole (A).

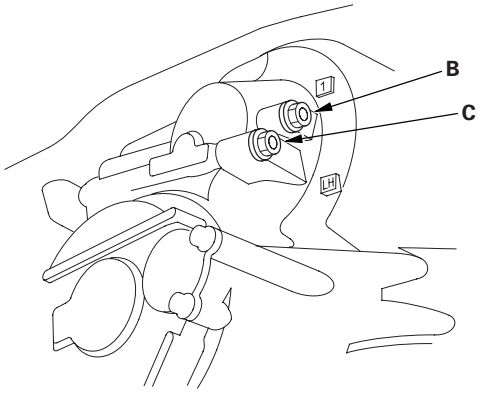
   NOTE: Higher pressure may be indicated if measurements are made in shift lever positions other than P or N.

Pressure	Fluid Pressure	
	Standard	Service Limit
Line (A)	950—1,010 kPa (9.7—10.3 kgf/cm^2, 140—146 psi)	900 kPa (9.2 kgf/cm^2, 130 psi)

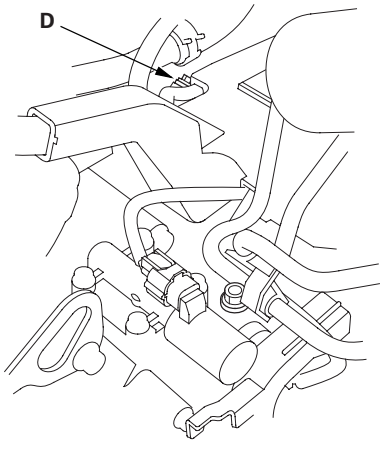
9. Turn the engine off, then disconnect the oil pressure gauge from the line pressure inspection port.

10. Install the sealing bolt to the line pressure inspection port with the new sealing washer, and tighten the bolts to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse the old sealing washer.

11. Connect the oil pressure gauge to the 1st clutch pressure inspection hole (B) and the 1st-hold clutch pressure inspection hole (C).



12. Remove the intake manifold cover and intake air duct, and connect the oil pressure gauge to the 2nd clutch pressure inspection port (D). Then temporarily install the intake air duct.



13. Start the engine in P.

14. Shift into 1, and measure the 1st clutch pressure at the 1st clutch pressure inspection port (B) and the 1st-hold clutch pressure at the 1st-hold clutch pressure inspection port (C) while holding the engine speed at 2,000 rpm.

15. Up shift to 2 by pushing the shift lever, and measure the 2nd clutch pressure at the 2nd clutch pressure inspection hole (D) while holding the engine speed at 2,000 rpm.

Pressure	Fluid Pressure	
	Standard	Service Limit
1st clutch (B) 2nd clutch (D)	950—1,010 kPa (9.7—10.3 kgf/cm^2, 140—146 psi)	890 kPa (9.1 kgf/cm^2, 130 psi)
1st-hold clutch (C)	800—880 kPa (8.2—9.0 kgf/cm^2, 120—130 psi)	760 kPa (7.7 kgf/cm^2, 110 psi)

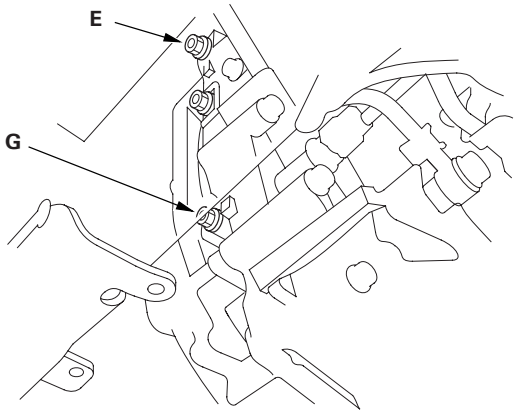
16. Turn the engine off, then disconnect the oil pressure gauges from the 1st clutch pressure, 1st-hold clutch pressure, and 2nd clutch pressure inspection ports.

17. Install the sealing bolts in the 1st clutch pressure, 1st-clutch hold clutch pressure, and 2nd clutch pressure inspection ports with the new sealing washers, and tighten the bolts to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse the old sealing washers.

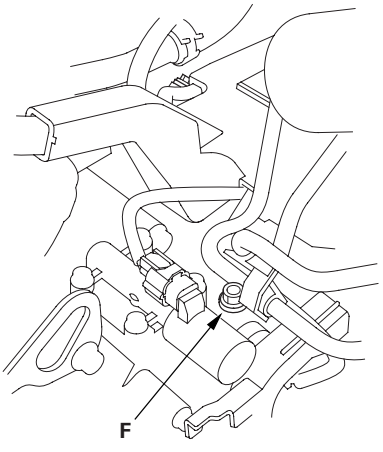
(cont'd)

Pressure Test (cont'd)

18. Connect the oil pressure gauge to the 3rd clutch pressure inspection port (E) and the 5th clutch pressure inspection port (G).



19. Connect the oil pressure gauge to the 4th clutch pressure inspection port (F).



20. Start the engine with the transmission in P while pressing the brake pedal.

21. Shift to D, and select the D3 driving mode by pressing the D3 switch. Release the brake pedal; the transmission is in 1st gear.

22. Press the accelerator pedal to increase the engine speed to 2,500 rpm; the transmission shifts into 2nd gear.

23. Release the accelerator pedal; the engine speed decreases to 1,000 rpm with the transmission in 2nd gear.

24. Press the accelerator pedal very slowly so that the engine speed increases to 2,000 rpm on 5 seconds, then hold the accelerator; the transmission shifts into 3rd gear. Measure the 3rd clutch pressure at the 3rd clutch pressure inspection port (E) while holding the engine speed at 2,000 rpm.

25. Release the D3 driving mode by pressing the D3 switch; the transmission shifts into 4th gear, then 5th gear. Measure the 4th clutch pressure at the 4th clutch pressure inspection port (F) and the 5th clutch pressure at the 5th clutch pressure inspection hole (G) while holding the engine speed at 2,000 rpm.

Pressure	Fluid Pressure	
	Standard	Service Limit
3rd clutch (E) 4th clutch (F) 5th clutch (G)	950—1,010 kPa (9.7—10.3 kgf/cm^2, 140—146 psi)	890 kPa (9.1 kgf/cm^2, 130 psi)

26. Bring the engine back to an idle, then apply the brake pedal to stop the wheels from rotating.

27. Shift to R, then release the brake pedal. Raise the engine speed to 2,000 rpm, and measure the 5th clutch pressure at the 5th clutch pressure inspection port (G).

Pressure	Fluid Pressure	
	Standard	Service Limit
5th clutch (G) in R	950—1,010 kPa (9.7—10.3 kgf/cm^2, 140—146 psi)	890 kPa (9.1 kgf/cm^2, 130 psi)

28. Turn the engine off, then disconnect the oil pressure gauges from the 3rd, 4th, and 5th clutch pressure inspection ports.

29. Install the sealing bolts in the 3rd, 4th, and 5th clutch pressure inspection ports with the new sealing washers, and tighten the bolts to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse the old sealing washers.

30. If any of the pressures are out of the service limit, problems and probable causes are listed in the table.

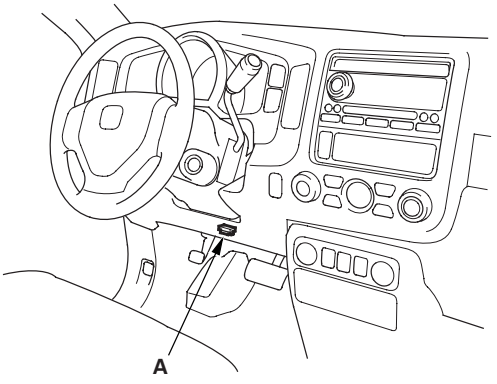
Problem	Probable causes
No or low line pressure	• Torque converter • ATF pump • Regulator valve • Torque converter check valve • Low fluid level • Clogged ATF strainer
No or low 1st clutch pressure	• 1st clutch • O-rings
No or low 2nd clutch pressure	• 2nd clutch • O-rings
No or low 3rd clutch pressure	• 3rd clutch • O-rings
No or low 4th clutch pressure	• 4th clutch • O-rings
No or low 5th clutch pressure	• 5th clutch • O-rings
No or low 5th clutch pressure in the R position	• Servo valve • 5th clutch • O-rings
No or low 1st-hold clutch pressure	• 1st-hold clutch • O-rings

31. Install the intake air duct and the intake manifold cover.

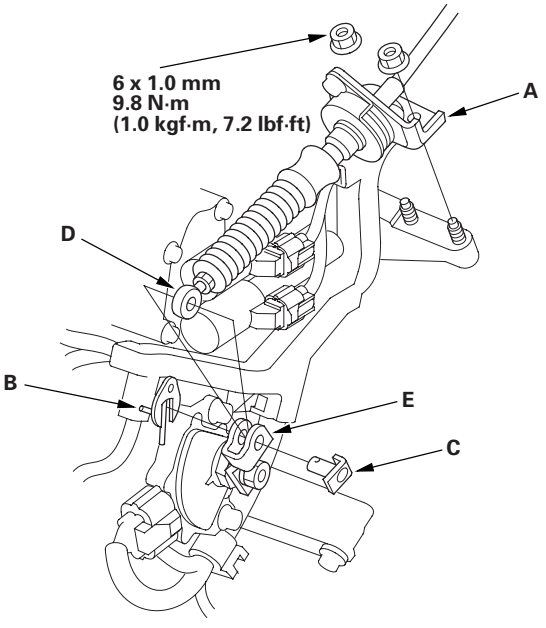
32. Install the splash shield (see page 20-179).

Shift Solenoid Valve, Torque Converter Clutch Solenoid Valve Test/ Replacement

1. Connect the HDS to the DLC (A).

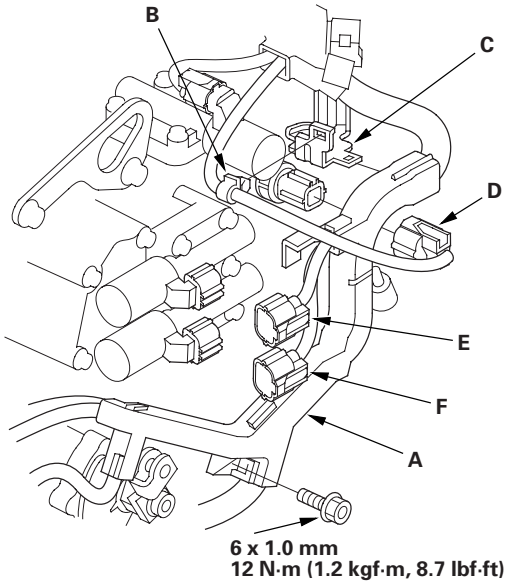


2. Select Shift Solenoid A, B, C, and Lockup Solenoid Test in the Miscellaneous Test Menu on the HDS.
3. Check that shift solenoid valves A, B, and C, and the torque converter clutch solenoid valve operate with the HDS. A clicking sound should be heard.
   - If a clicking sound is heard, the valves are OK.
   - If no clicking sound is heard, go to step 4.
4. The solenoid test is finished if the tests are OK. If no sound is heard, remove the solenoid valve, and test the solenoid valve.
5. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
6. Disconnect the negative cable from the battery, then disconnect the positive cable.
7. Remove the battery hold-down bracket, and remove the battery and the battery tray.
8. Remove the intake manifold cover, the intake air duct, the resonator, and the air cleaner housing.
9. Remove the battery base and the battery base bracket.
10. Remove the nuts securing the shift cable bracket (A).



11. Remove the spring clip/washer (B) and the control pin (C), then separate the shift cable end (D) from the control lever (E).

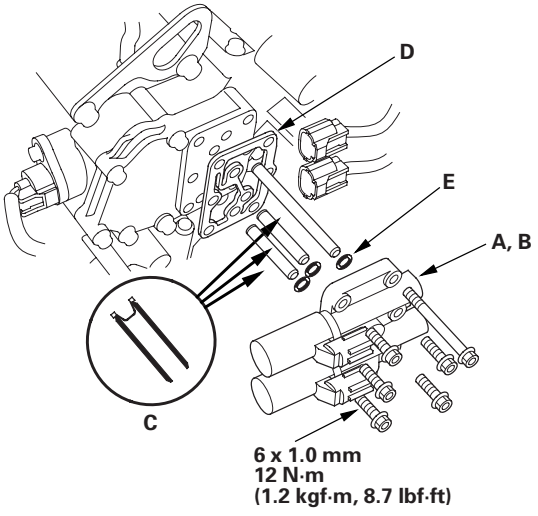
12. Remove the bolt securing the harness cover (A).



13. Remove the harness clamp (B) from the harness cover/clamp bracket (C), disconnect the 4th clutch transmission fluid pressure switch connector (D), then remove the harness cover from the bracket.

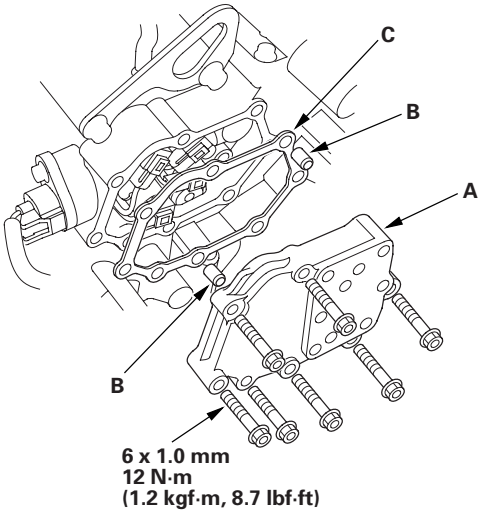
14. Disconnect the A/T clutch pressure control solenoid valve A connector (E), the A/T clutch pressure control solenoid valve B connector (F), the solenoid harness connector, the transmission range switch connector, the ATF temperature sensor connector, the output shaft (countershaft) speed sensor connector, the input shaft (mainshaft) speed sensor connector, and the 3rd clutch transmission fluid pressure switch connector.

15. Remove A/T clutch pressure control solenoid valves A and B, ATF pipes (C), and gasket (D).



16. Replace the gasket and O-rings (E) with new ones when installing A/T clutch pressure control solenoid valves A and B.

17. Remove the solenoid valve cover (A), dowel pins (B), and gasket (C).

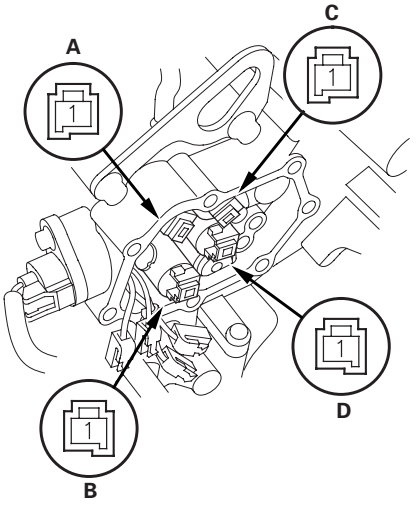


18. Replace the gasket with a new one when installing the solenoid cover.

(cont'd)

Shift Solenoid Valve, Torque Converter Clutch Solenoid Valve Test/ Replacement (cont'd)

19. Disconnect shift solenoid valve A connector (A), shift solenoid valve B connector (B), shift solenoid valve C connector (C), and torque converter clutch solenoid valve connector (D).



20. Measure the resistance of each solenoid valve between the connector terminal and body ground.

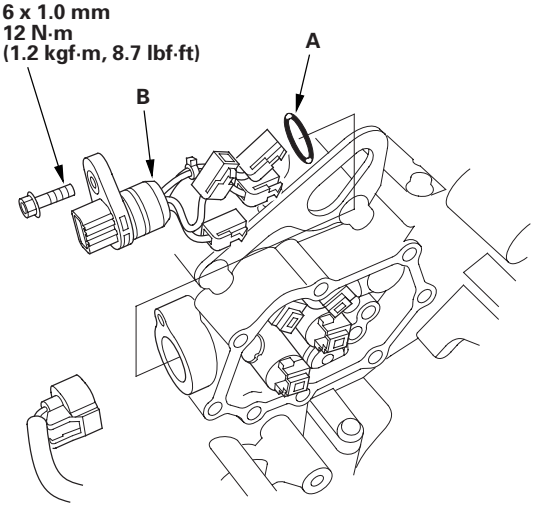
    Standard: 12—25 Ω

    - Replace the solenoid valve if the resistance is out of standard.
    - If the resistance is within the standard, go to step 21.

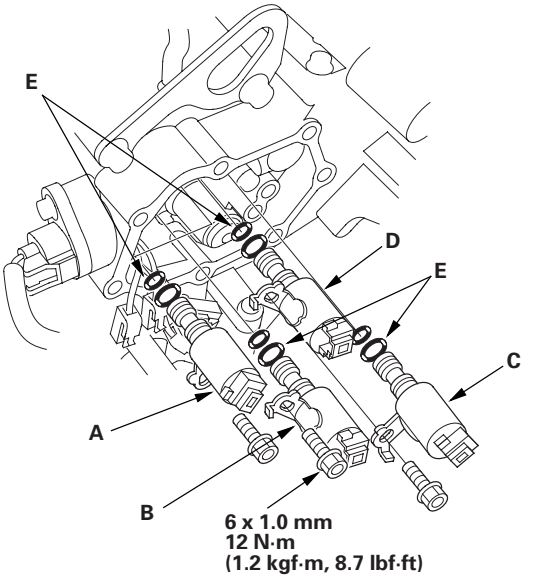
21. Reconnect the positive cable to the battery, then connect the negative cable to each solenoid valve terminal individually.

    - If a clicking sound is heard, go to step 22 and replace the solenoid harness.
    - If no clicking sound is heard, go to step 23 and replace the shift solenoid valve.

22. Remove the solenoid harness, and install a new O-ring (A) on the solenoid harness connector (B), and install the connector in the transmission housing.



23. Remove the mounting bolts, then remove the solenoid valves.



24. Install new O-rings (two O-rings per solenoid valve) (E) on each reused solenoid valves.

    NOTE: A new solenoid valve comes with new O-rings. If you install a new solenoid valve, use the O-rings provided on it.

25. Install shift solenoid valve B (black connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the accumulator body.

    NOTE: Do not hold the solenoid valve connector to install the solenoid valve. Be sure to hold the solenoid valve body.

26. Install torque converter clutch solenoid valve (D) (black connector) by holding the solenoid valve body; make sure the mounting bracket contacts the accumulator body.

27. Install shift solenoid valve C (brown connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the bracket of torque converter clutch solenoid valve.

    NOTE: Do not install shift solenoid valve C before installing the torque converter clutch solenoid valve. If shift solenoid valve C is installed before installing the torque converter clutch solenoid valve, it may damage to hydraulic control system.

28. Install shift solenoid valve A (brown connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the accumulator body.

29. Connect the harness terminals to the solenoid:

    - RED wire connector to shift solenoid A
    - ORN wire connector to shift solenoid B
    - GRN wire connector to shift solenoid C
    - YEL wire connector to the torque converter clutch solenoid valve

30. Install the shift solenoid valve cover, dowel pins, and a new gasket.

31. Install the new solenoid valve body gasket on the solenoid valve cover, and install the ATF pipes with the filter end in the transmission housing. Install new O-rings over the ATF pipes.

32. Install A/T clutch pressure control solenoid valves A and B.

33. Install the harness cover on the cover bracket, and secure it with the bolt.

34. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely. Install the harness clamp on the bracket.

35. Attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.

36. Secure the shift cable bracket with the nuts.

37. Install the battery base bracket and the battery base.

38. Install the air cleaner housing, the resonator, the intake air duct, and the intake manifold cover.

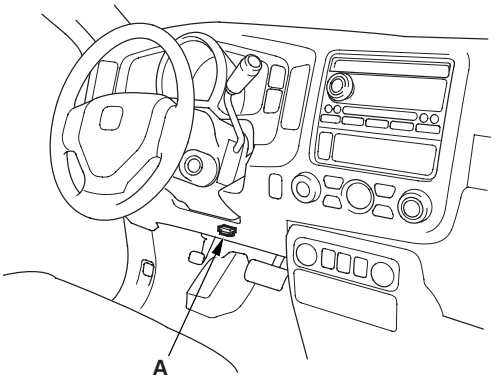
39. Install the battery tray, the battery, and the battery hold-down bracket, then reconnect the battery cables.

40. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock (on vehicles without navigation).

41. Do the power window control unit reset procedure (see page 22-209).

A/T Clutch Pressure Control Solenoid Valve A Test

1. Connect the HDS to the DLC (A).



2. Select Clutch Pressure Control (Linear) Solenoid A in the Miscellaneous Test Menu on the HDS.

3. Test A/T clutch pressure control solenoid valve A with the HDS.

   - If the valve tests OK, the test is complete. Disconnect the HDS.
   - If the valve does not test OK, follow the instructions on the HDS.
   - If the valve does not test OK, and the HDS does not determine the cause, go to step 4.

4. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).

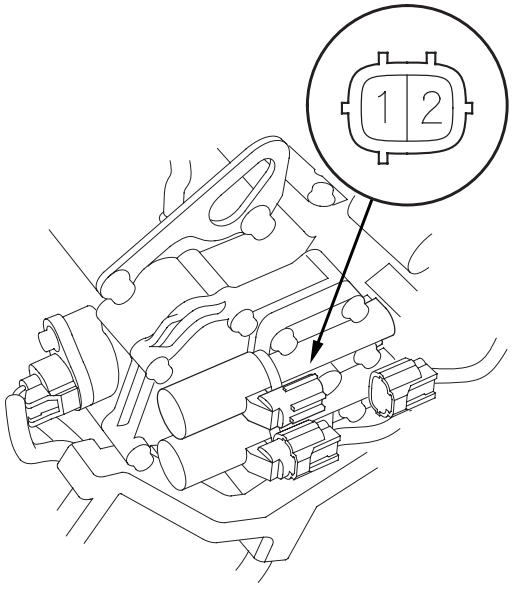
5. Disconnect the negative cable from the battery, then disconnect the positive cable.

6. Remove the battery hold-down bracket, and remove the battery and the battery tray.

7. Remove the intake manifold cover, the intake air duct, the resonator, and the air cleaner housing.

8. Remove the battery base and the battery base bracket.

9. Disconnect the A/T clutch pressure control solenoid valve A connector.



10. Measure A/T clutch pressure control solenoid valve A resistance at the connector terminals.

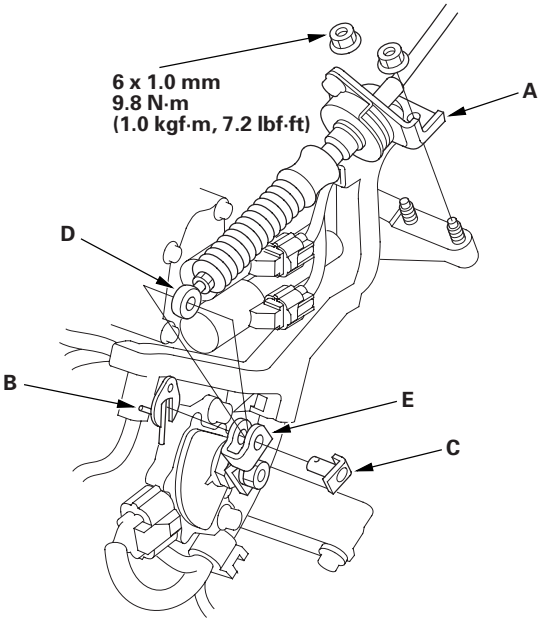
    Standard: 3—10 Ω

    - If the resistance is out of standard, replace A/T clutch pressure control solenoid valve A (see page 14-198).
    - If the resistance is within the standard, go to step 11.

11. Connect the negative battery terminal to solenoid valve A connector terminal No. 2, and connect the positive battery terminal to connector terminal No. 1.

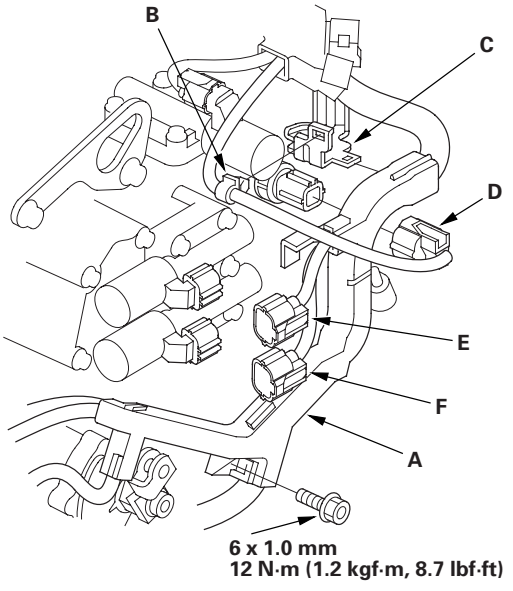
    - If a clicking sound is heard, the valve is OK. Reconnect the connector, and install all removed parts.
    - If no clicking sound is heard, go to step 12.

12. Remove the nuts securing the shift cable bracket (A).



13. Remove the spring clip/washer (B) and control pin (C), then separate the shift cable end (D) from the control lever (E).

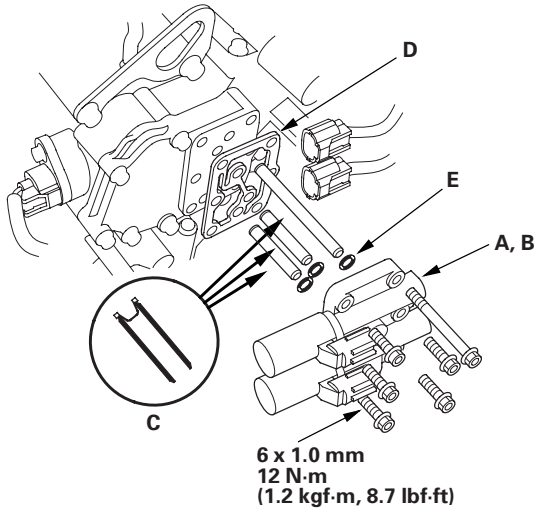
14. Remove the bolt securing the harness cover (A).



15. Remove the harness clamp (B) from the harness cover/clamp bracket (C), disconnect the 4th clutch transmission fluid pressure switch connector (D), then remove the harness cover from the bracket.

16. Disconnect the A/T clutch pressure control solenoid valve A connector (E), the A/T clutch pressure control solenoid valve B connector (F), the solenoid harness connector, the transmission range switch connector, the ATF temperature sensor connector, the output shaft (countershaft) speed sensor connector, the input shaft (mainshaft) speed sensor connector, and the 3rd clutch transmission fluid pressure switch connector.

17. Remove A/T clutch pressure control solenoid valves A and B, ATF pipes (C), gasket (D), and O-rings (E).

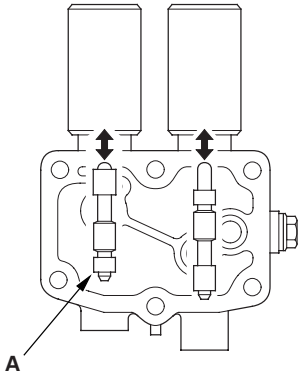


18. Check the fluid passage of the solenoid valve for contamination.

(cont'd)

A/T Clutch Pressure Control Solenoid Valve A Test (cont'd)

19. Connect the negative battery terminal to A/T clutch pressure control solenoid valve A connector terminal No. 2, and connect the positive battery terminal to connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve A moves.



20. Disconnect one of the battery terminals, and check valve movement at the fluid passage in the valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valves A and B.

21. Clean the mounting surfaces and fluid passages of the solenoid valve body and the solenoid valve cover.

22. Install a new solenoid valve body gasket on the solenoid valve cover, and install the ATF pipes with the filter end in the transmission housing. Install new O-rings over the ATF pipes.

23. Install A/T clutch pressure control solenoid valves A and B.

24. Install the harness cover on the cover bracket, and secure it with the bolt.

25. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely. Install the harness clamp on the bracket.

26. Attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.

27. Secure the shift cable bracket with the nuts.

28. Install the battery base bracket and the battery base.

29. Install the air cleaner housing, the resonator, the intake air duct, and the intake manifold cover.

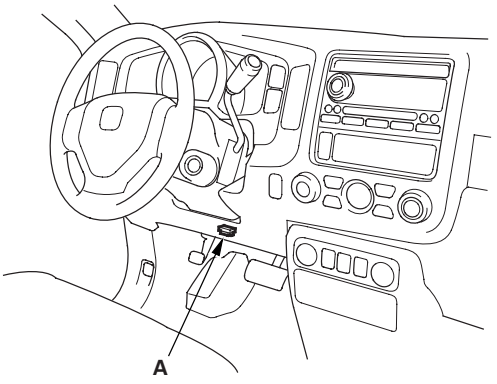
30. Install the battery tray, the battery, and the battery hold-down bracket, then reconnect the battery cables.

31. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock (on vehicles without navigation).

32. Do the power window control unit reset procedure (see page 22-209).

A/T Clutch Pressure Control Solenoid Valve B Test

1. Connect the HDS to the DLC (A).



2. Select Clutch Pressure Control (Linear) Solenoid B in Miscellaneous Test Menu on the HDS.

3. Test A/T clutch pressure control solenoid valve B with the HDS.

   - If the valve tests OK, the test is complete. Disconnect the HDS.
   - If the valve does not test OK, follow the instructions on the HDS.
   - If the valve does not test OK, and the HDS does not determine the cause, go to step 4.

4. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).

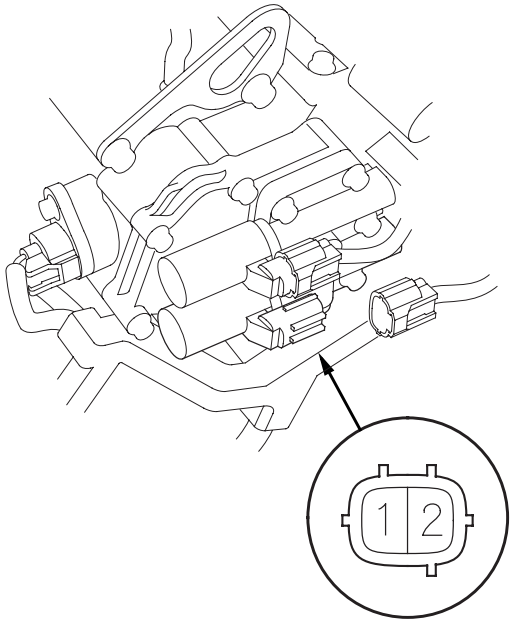
5. Disconnect the negative cable from the battery, then disconnect the positive cable.

6. Remove the battery hold-down bracket, and remove the battery and the battery tray.

7. Remove the intake manifold cover, the intake air duct, the resonator, and the air cleaner housing.

8. Remove the battery base and the battery base bracket.

9. Disconnect the A/T clutch pressure control solenoid valve B connector.



10. Measure A/T clutch pressure control solenoid valve B resistance at the connector terminals.

    Standard: 3—10 Ω

    - If the resistance is out of standard, replace A/T clutch pressure control solenoid valve B (see page 14-198).
    - If the resistance is within the standard, go to step 11.

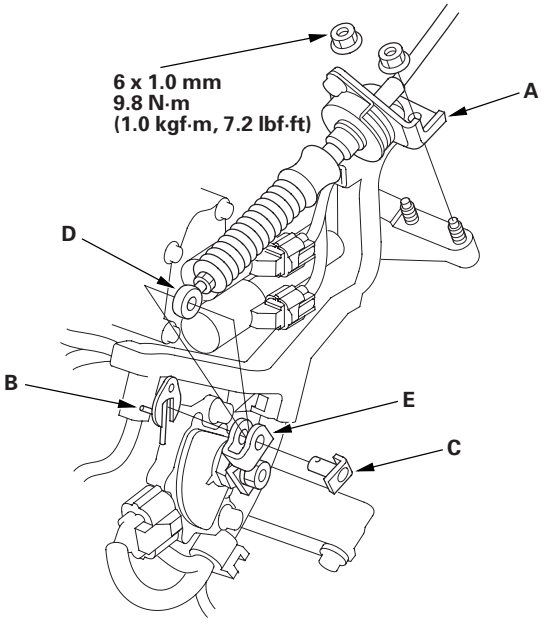
11. Connect the negative battery terminal to solenoid valve B connector terminal No. 2, and connect the positive battery terminal to connector terminal No. 1.

    - If a clicking sound is heard, the valve is OK. Reconnect the connector, and install all removed parts.
    - If no clicking sound is heard, go to step 12.

(cont'd)

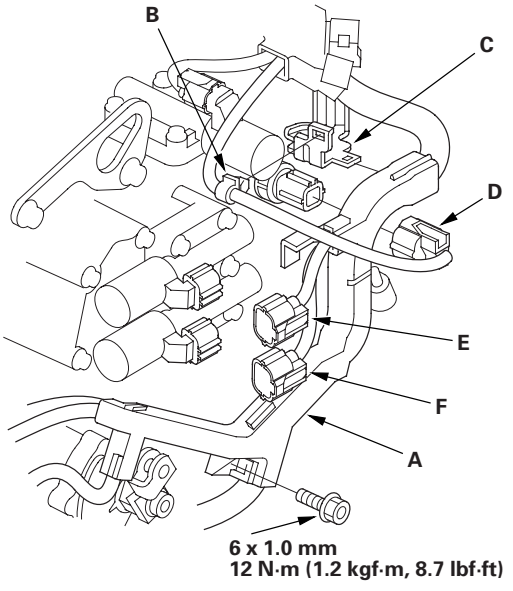
A/T Clutch Pressure Control Solenoid Valve B Test (cont'd)

12. Remove the nuts securing the shift cable bracket (A).



13. Remove the spring clip/washer (B) and control pin (C), then separate the shift cable end (D) from the control lever (E).

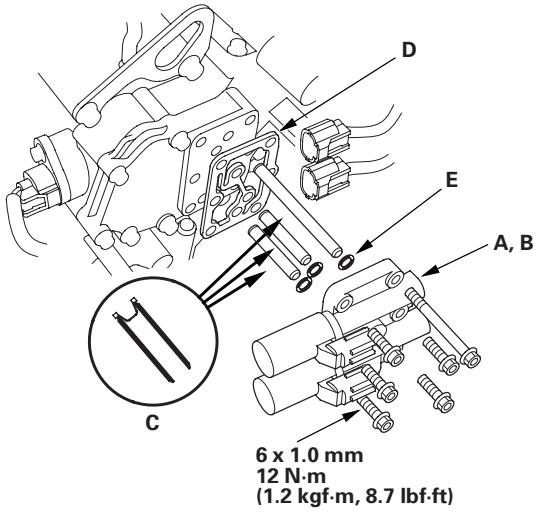
14. Remove the bolt securing the harness cover (A).



15. Remove the harness clamp (B) from the harness cover/clamp bracket (C), disconnect the 4th clutch transmission fluid pressure switch connector (D), then remove the harness cover from the bracket.

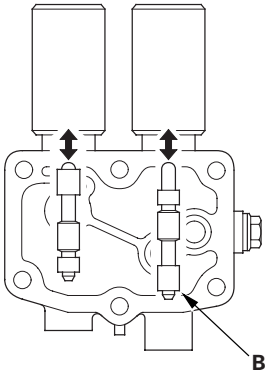
16. Disconnect the A/T clutch pressure control solenoid valve A connector (E), the A/T clutch pressure control solenoid valve B connector (F), the solenoid harness connector, the transmission range switch connector, the ATF temperature sensor connector, the output shaft (countershaft) speed sensor connector, the input shaft (mainshaft) speed sensor connector, and the 3rd clutch transmission fluid pressure switch connector.

17. Remove A/T clutch pressure control solenoid valves A and B, ATF pipes (C), gasket (D), and O-rings (E).



18. Check the fluid passage of the solenoid valve for contamination.

19. Connect the negative battery terminal to A/T clutch pressure control solenoid valve B connector terminal No. 2, and connect the positive battery terminal to connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve B moves.



20. Disconnect one of the battery terminals, and check valve movement at the fluid passage in the valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valves A and B.

21. Clean the mounting surfaces and fluid passages of the solenoid valve body and solenoid valve cover.

22. Install a new solenoid valve body gasket on the solenoid valve cover, and install the ATF pipes with the filter end in the transmission housing. Install new O-rings over the ATF pipes.

23. Install A/T clutch pressure control solenoid valves A and B.

24. Install the harness cover on the cover bracket, and secure it with the bolt.

25. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely. Install the harness clamp on the bracket.

26. Attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.

27. Secure the shift cable bracket with the nuts.

28. Install the battery base bracket and the battery base.

29. Install the air cleaner housing, the resonator, the intake air duct, and the intake manifold cover.

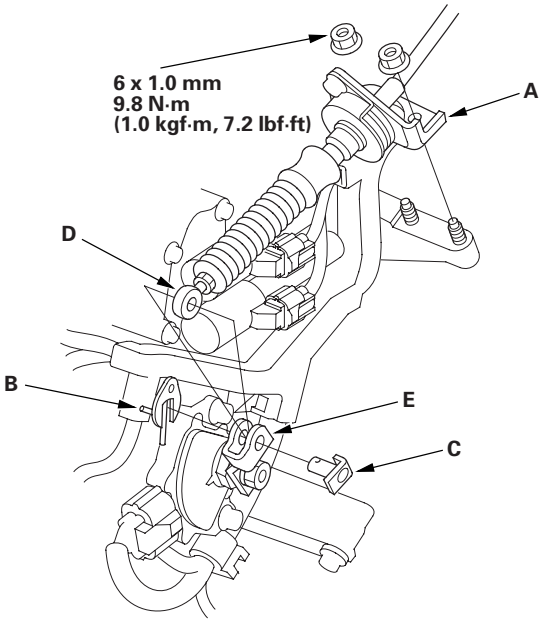
30. Install the battery tray, the battery, and the battery hold-down bracket, then connect the battery cables.

31. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock (on vehicles without navigation).

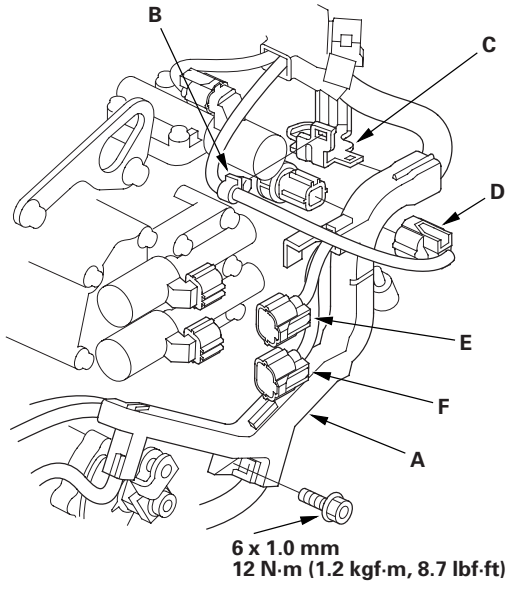
32. Do the power window control unit reset procedure (see page 22-209).

A/T Clutch Pressure Control Solenoid Valve A and B Replacement

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
2. Disconnect the negative cable from the battery, then disconnect the positive cable.
3. Remove the battery hold-down bracket, and remove the battery and the battery tray.
4. Remove the intake manifold cover, the intake air duct, the resonator, and the air cleaner housing.
5. Remove the battery base and the battery base bracket.
6. Remove the nuts securing the shift cable bracket (A).

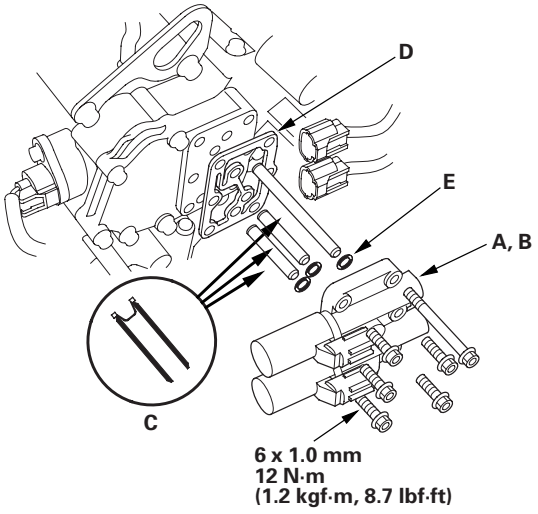


7. Remove the spring clip/washer (B) and control pin (C), then separate the shift cable end (D) from the control lever (E).
8. Remove the bolt securing the harness cover (A).



9. Remove the harness clamp (B) from the harness cover/clamp bracket (C), disconnect the 4th clutch transmission fluid pressure switch connector (D), then remove the harness cover from the bracket.
10. Disconnect the A/T clutch pressure control solenoid valve A connector (E), the A/T clutch pressure control solenoid valve B connector (F), the solenoid harness connector, the transmission range switch connector, the ATF temperature sensor connector, the output shaft (countershaft) speed sensor connector, the input shaft (mainshaft) speed sensor connector, and the 3rd clutch transmission fluid pressure switch connector.

11. Remove A/T clutch pressure control solenoid valves A and B, ATF pipes (C), gasket (D), and O-rings (E).



12. Check the fluid passage of the A/T clutch pressure control solenoid valve for dust and dirt, and clean the passage if necessary.

13. Install the new solenoid valve body gasket on the solenoid valve cover, and install the ATF pipes with the filter end in the transmission housing. Install new O-rings over the ATF pipes.

14. Install A/T clutch pressure control solenoid valves A and B.

15. Install the harness cover on the cover bracket, and secure it with the bolt.

16. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely. Install the harness clamp on the bracket.

17. Attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.

18. Secure the shift cable bracket with the nuts.

19. Install the battery base bracket and the battery base.

20. Install the air cleaner housing, the resonator, the intake air duct, and the intake manifold cover.

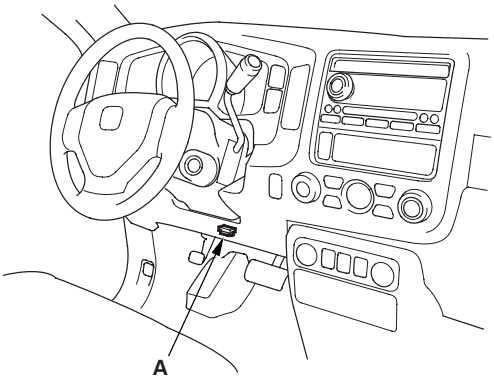
21. Install the battery tray, the battery, and the battery hold-down bracket, then reconnect the battery cables.

22. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock (on vehicles without navigation).

23. Do the power window control unit reset procedure (see page 22-209).

A/T Clutch Pressure Control Solenoid Valve C Test

1. Connect the HDS to the DLC (A).



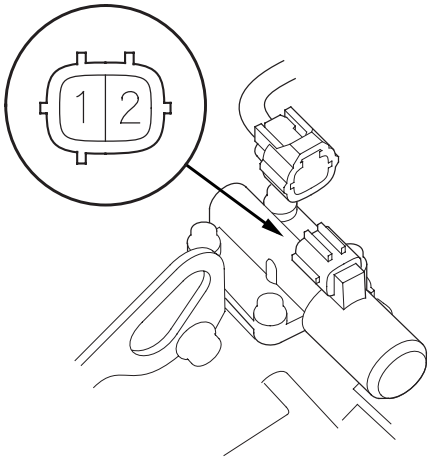
2. Select Clutch Pressure Control (Linear) Solenoid C in the Miscellaneous Test Menu on the HDS.

3. Test A/T clutch pressure control solenoid valve C with the HDS.

   - If the valve tests OK, the test is complete. Disconnect the HDS.
   - If the valve does not test OK, follow the instructions on the HDS.
   - If the valve does not test OK, and the HDS does not determine the cause, go to step 4.

4. Remove the intake manifold cover and the intake air duct.

5. Disconnect the A/T clutch pressure control solenoid valve C connector.



6. Measure A/T clutch pressure control solenoid valve C resistance at the connector terminals.

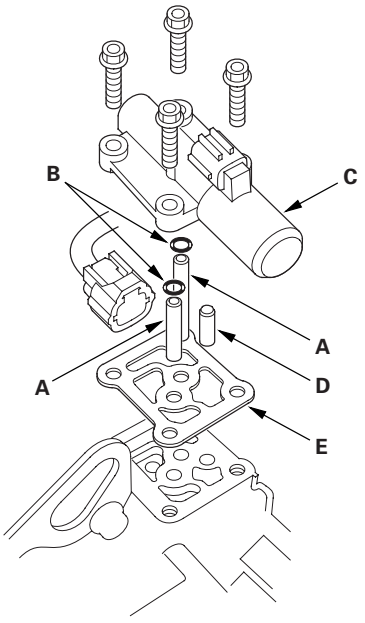
   Standard: 3—10 Ω

   - If the resistance is out of standard, replace A/T clutch pressure control solenoid valve C (see page 14-203).
   - If the resistance is within the standard, go to step 7.

7. Connect the negative battery terminal to solenoid valve C connector terminal No. 2, and connect the positive battery terminal to connector terminal No. 1.

   - If a clicking sound is heard, the valve is OK. Reconnect the connector, and install all removed parts.
   - If no clicking sound is heard, go to step 8.

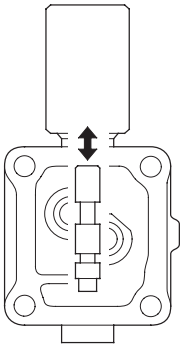
8. Remove A/T clutch pressure control solenoid valve C.



9. Remove the ATF joint pipes (A), the O-rings (B), the ATF pipe (D), and the gasket (E).

10. Check the fluid passage of the solenoid valve for contamination.

11. Connect the negative battery terminal to A/T clutch pressure control solenoid valve C connector terminal No. 2, and connect the positive battery terminal to connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve C moves.



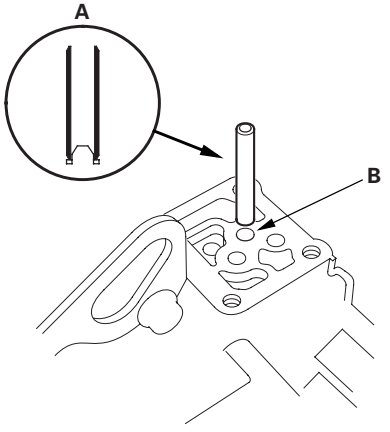
12. Disconnect one of the battery terminals, and check the valve movement at the fluid passage in valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valve C.

13. Clean the mounting surfaces and fluid passages of the solenoid valve body and the transmission housing.

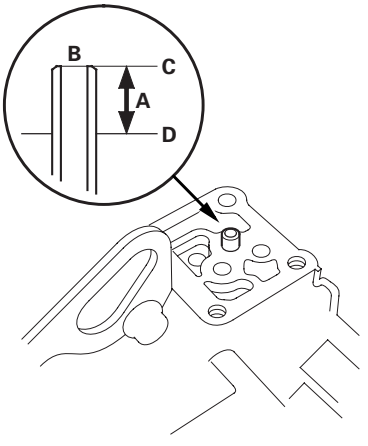
(cont'd)

A/T Clutch Pressure Control Solenoid Valve C Test (cont'd)

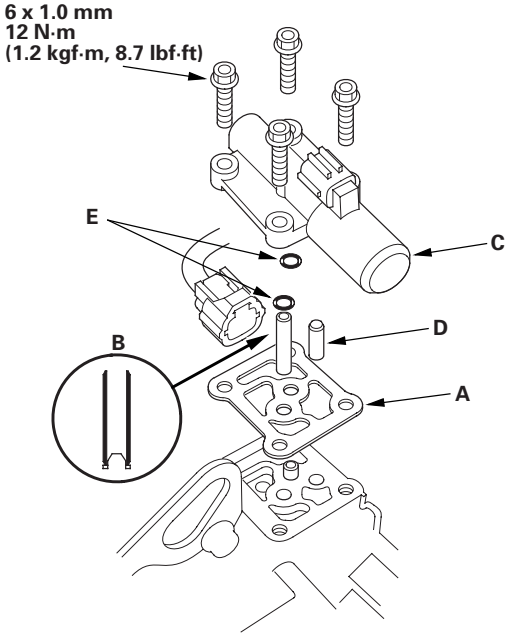
14. Install the 8 x 53 mm ATF joint pipe (A) with the filter end into its mounting hole (B).



15. Check the height (A) of the 8 x 53 mm ATF joint pipe (B) between the top (C) of the pipe and the solenoid valve body mounting surface (D). The height is about 7 mm (0.3 in.). If the height is over 7 mm (0.3 in.), push the pipe until it bottoms in the accumulator body.



16. Install a new gasket (A) on the transmission housing, and install the 8 x 34.5 mm ATF joint pipe (B) with the filter end in the transmission housing and 8 x 25.2 mm ATF pipe (D).



17. Install new O-rings (E) over the ATF joint pipes.

18. Install A/T clutch pressure control solenoid valve C.

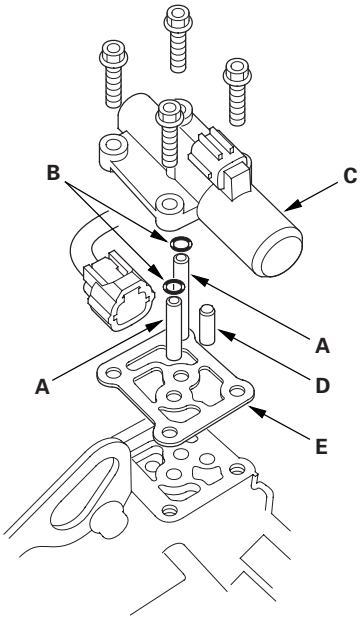
19. Install the intake air duct and the intake manifold cover.

A/T Clutch Pressure Control Solenoid Valve C Replacement

1. Remove the intake manifold cover and the intake air duct.

2. Disconnect the A/T clutch pressure control solenoid valve C connector.

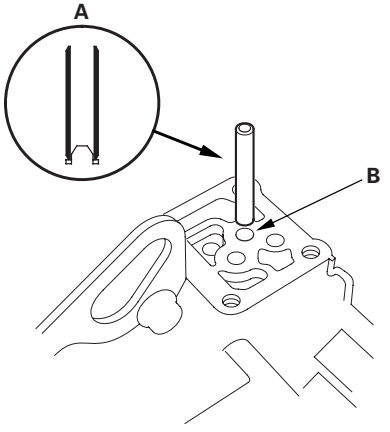
3. Remove A/T clutch pressure control solenoid valve C.



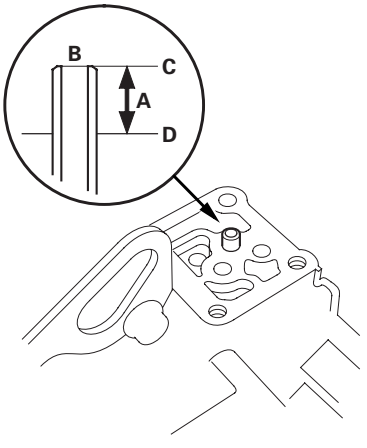
4. Remove the ATF joint pipes (A), the O-rings (B), the ATF pipe (D), and the gasket (E).

5. Clean the mounting surfaces and fluid passages of the solenoid valve body and the transmission housing.

6. Install the 8 x 53 mm ATF joint pipe (A) with the filter end into its mounting hole (B).



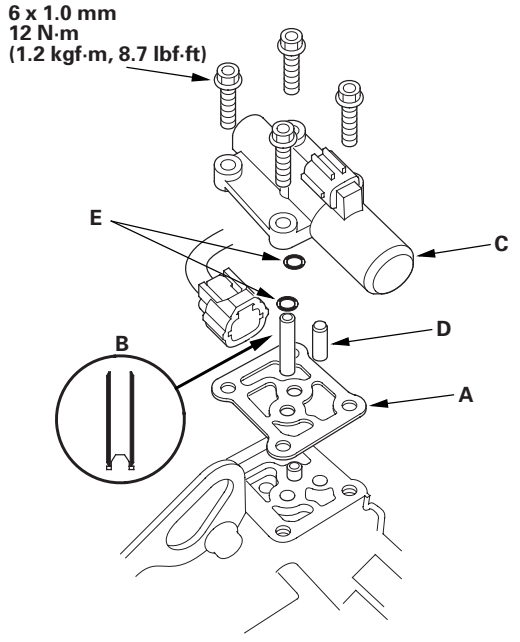
7. Check the height (A) of the 8 x 53 mm ATF joint pipe (B) between the top (C) of the pipe and the solenoid valve body mounting surface (D). The height is about 7 mm (0.3 in.). If the height is over 7 mm (0.3 in.), push the pipe until it bottoms in the accumulator body.



(cont'd)

A/T Clutch Pressure Control Solenoid Valve C Replacement (cont'd)

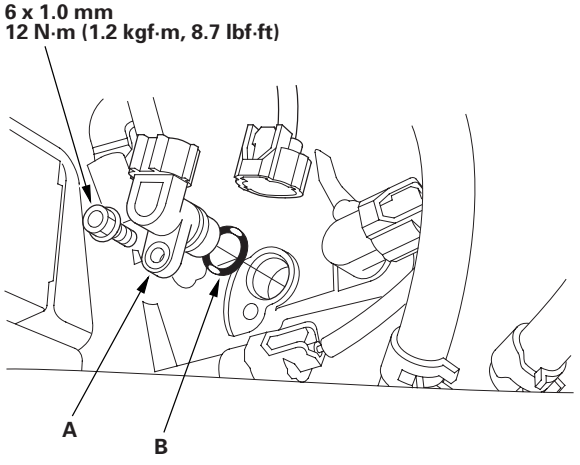
8. Install the new gasket (A) on the transmission housing, and install the 8 x 34.5 mm ATF joint pipe (B) with the filter end in the transmission housing and 8 x 25.2 mm ATF pipe (D).



9. Install new O-rings (E) over the ATF joint pipes.
10. Install A/T clutch pressure control solenoid valve C.
11. Install the intake air duct and the intake manifold cover.

Input Shaft (Mainshaft) Speed Sensor Replacement

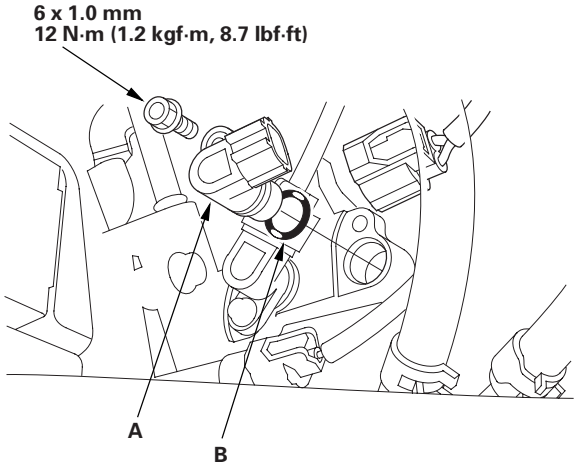
1. Remove the splash shield (see page 20-179).
2. Disconnect the input shaft (mainshaft) speed sensor connector, and remove the input shaft (mainshaft) speed sensor (A).



3. Install the new O-ring (B) on the new input shaft (mainshaft) speed sensor, then install the input shaft (mainshaft) speed sensor in the transmission housing.
4. Check the connector for rust, dirt, or oil, then connect the connector securely.
5. Install the splash shield (see page 20-179).

Output Shaft (Countershaft) Speed Sensor Replacement

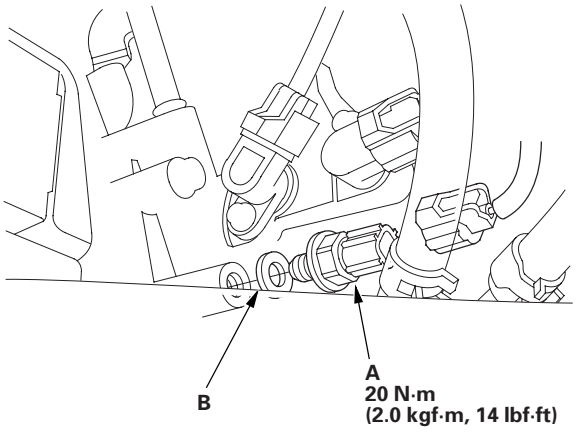
1. Remove the splash shield (see page 20-179).
2. Disconnect the output shaft (countershaft) speed sensor connector, and remove the output shaft (countershaft) speed sensor (A).



3. Install a new O-ring (B) on the new output shaft (countershaft) speed sensor, then install the output shaft (countershaft) speed sensor in the transmission housing.
4. Check the connector for rust, dirt, or oil, then connect the connector securely.
5. Install the splash shield (see page 20-179).

3rd Clutch Transmission Fluid Pressure Switch Replacement

1. Remove the splash shield (see page 20-179).
2. Disconnect the 3rd clutch transmission fluid pressure switch connector, and remove the 3rd clutch transmission fluid pressure switch (A).

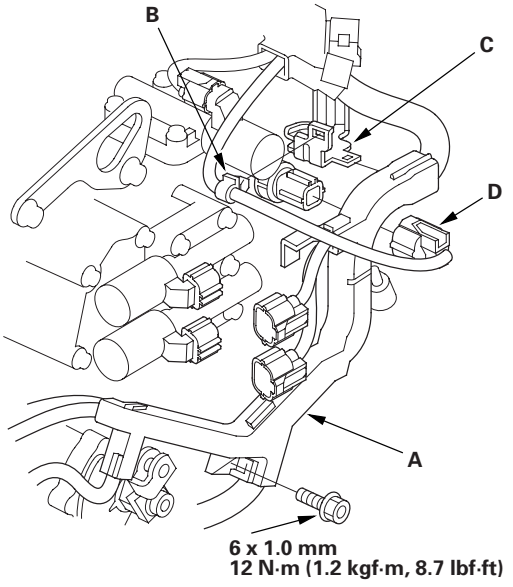


3. Make sure there is no water, oil, dust, or foreign particles inside the connector.
4. Install a new 3rd clutch transmission fluid pressure switch and a new sealing washer (B), and tighten the switch.
5. Connect the connector securely.
6. Install the splash shield (see page 20-179).

4th Clutch Transmission Fluid Pressure Switch Replacement

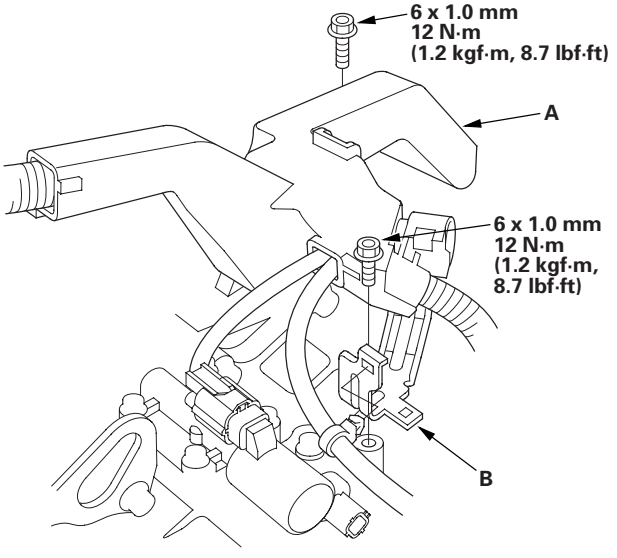
1. Remove the intake manifold cover and the intake air duct.

2. Remove the bolt securing the harness cover (A).

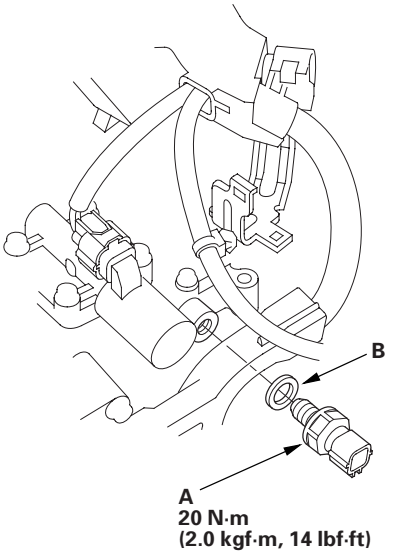


3. Remove the harness clamp (B) from the harness cover/clamp bracket (C), disconnect the 4th clutch transmission fluid pressure switch connector (D), then remove the harness cover from the bracket.

4. Remove the bolts securing the harness cover (A) and the harness cover/clamp bracket (B).



5. Remove the 4th clutch transmission fluid pressure switch (A).



6. Make sure there is no water, oil, dust, or foreign particles inside the connector.

7. Install a new 4th clutch transmission fluid pressure switch and a new sealing washer (B), and tighten the switch.

8. Secure the harness cover and harness cover/clamp bracket with the bolts, and install the harness clamp on the bracket.

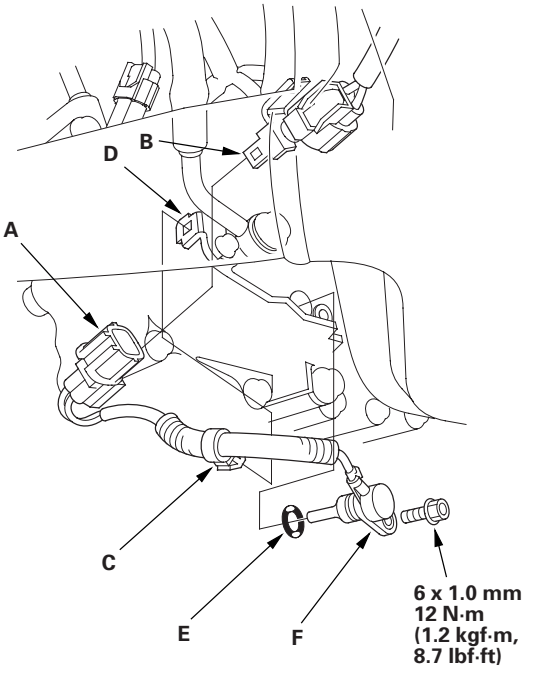
9. Install the harness cover on the cover bracket, and secure it with the bolt.

10. Connect the connector securely.

11. Install the intake air duct and the intake manifold cover.

ATF Temperature Sensor Replacement

1. Remove the splash shield (see page 20-179).
2. Drain the automatic transmission fluid (ATF) (see step 3 on page 14-210).
3. Disconnect the ATF temperature sensor connector (A), then remove the connector from the connector bracket (B).



4. Remove the harness clamp (C) from its bracket (D).
5. Remove the ATF temperature sensor.
6. Install a new O-ring (E) on the new ATF temperature sensor (F).
7. Install the ATF temperature sensor connector to the connector bracket, then connect the connector securely.
8. Install the harness clamp on its bracket.
9. Refill the transmission with the ATF (see step 5 on page 14-210).
10. Install the splash shield (see page 20-179).

ATF Level Check

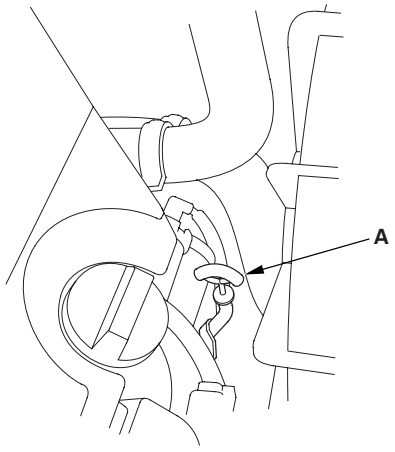
NOTE: Keep all foreign particles out of the transmission.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Park the vehicle on the level ground, and turn the engine off.

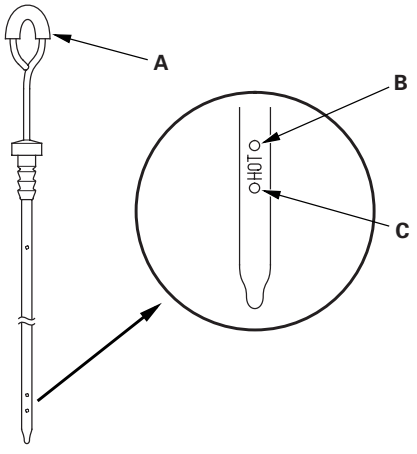
   NOTE: Check the fluid level within 60—90 seconds after turning the engine off.

3. Remove the dipstick (yellow loop) (A) from the dipstick tube, and wipe it with a clean cloth.



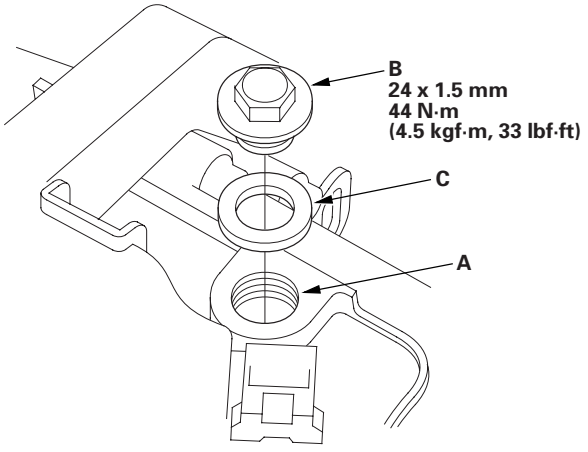
4. Insert the dipstick into the tube.

5. Remove the dipstick (A) and check the fluid level. It should be between the upper mark (B) and the lower mark (C).



6. If the level is below the lower mark, check for fluid leaks at the transmission, hose and line joints, and cooler lines. If a problem is found, fix it before filling the transmission. If the level is above the upper mark, drain the ATF to proper level (see step 3 on page 14-210).

7. If necessary fill the transmission with the recommended fluid through the filler hole (A) to the upper mark on the dipstick. Always use Honda ATF-Z1 Automatic Transmission Fluid (ATF). Using a non-Honda ATF can affect shift quality.



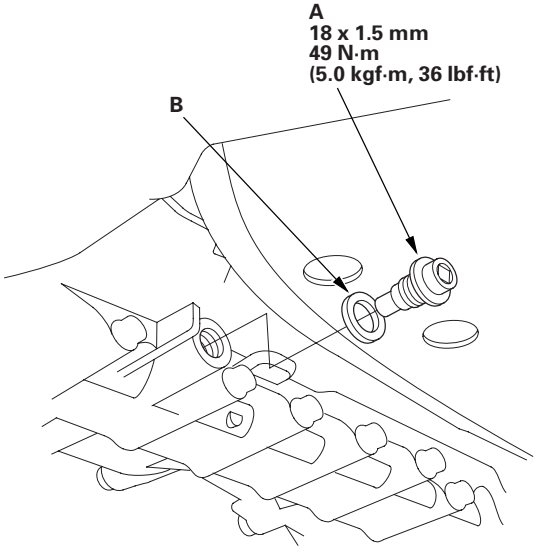
8. Install the ATF filler bolt (B) and a new sealing washer (C).

ATF Replacement

NOTE: Keep all foreign particles out of the transmission.

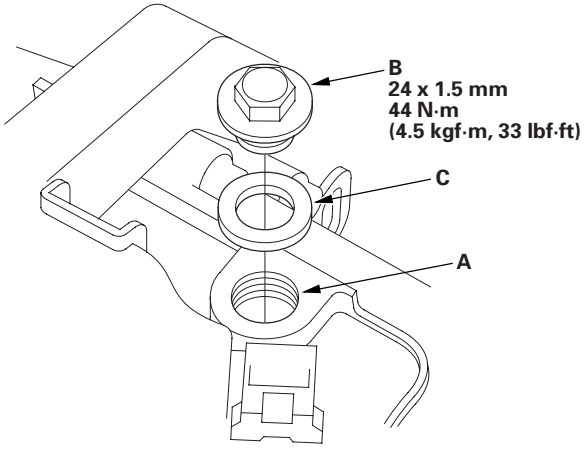
1. Bring the transmission up to normal operating temperature (the radiator fan comes on).
2. Park the vehicle on level ground.
3. Remove the ATF filler bolt and the drain plug (A), and drain the automatic transmission fluid (ATF).

   NOTE: If a cooler cleaning is done, refer to ATF Cooler Cleaning (see page 14-239).



4. Reinstall the drain plug with a new sealing washer (B).
5. Refill the transmission with the recommended fluid through the filler hole (A) to the upper mark on the dipstick. Always use Honda ATF-Z1 Automatic Transmission Fluid (ATF). Using a non-Honda ATF can affect shift quality.

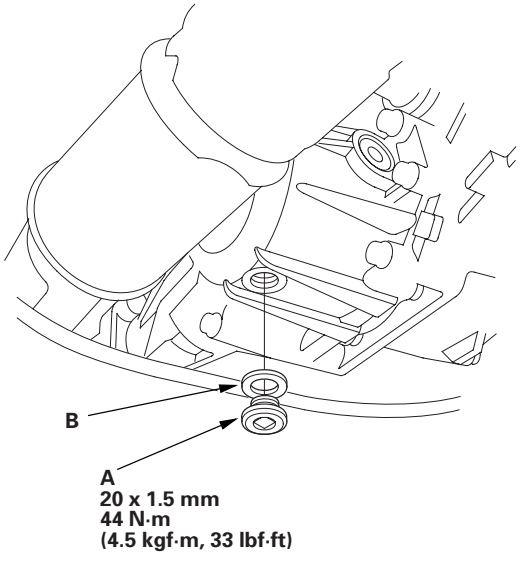
   Automatic Transmission Fluid Capacity:
   3.1 L (3.3 US qt) at change
   8.1 L (8.6 US qt) at overhaul ('06 model)
   8.0 L (8.4 US qt) at overhaul ('07-08 models)



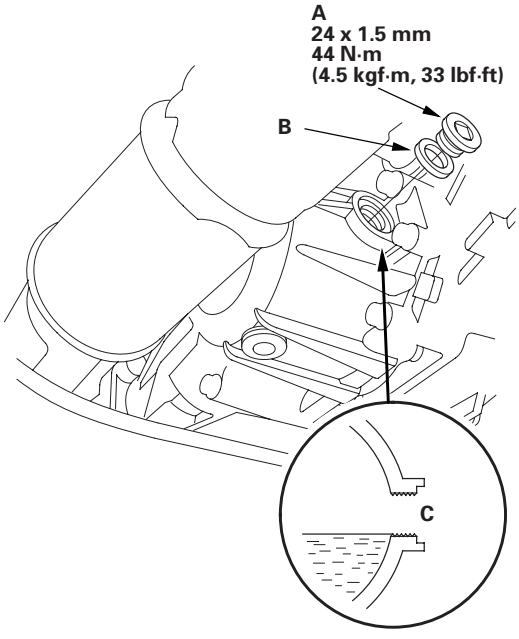
6. Install the ATF filler bolt (B) and a new sealing washer (C).

Transfer Assembly Fluid Replacement

1. Bring the transmission up to normal operating temperature (the radiator fan comes on).
2. Park the vehicle on level ground, and turn the engine off.
3. Remove the drain plug (A), and drain the transfer fluid (hypoid gear oil).



4. Reinstall the drain plug with a new sealing washer (B).
5. Remove the filler plug (A) and the sealing washer (B).



6. Refill the transfer assembly with the recommended fluid (hypoid gear oil) through the filler hole (C) until the fluid flows out. Use a SAE 90 or SAE 80W-90 viscosity hypoid gear oil, API classified GL4 or GL5 only.

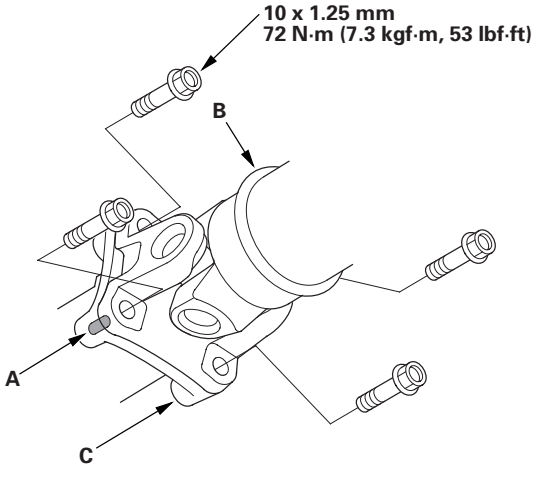
   Viscosity
   SAE 90: Above 0 ℉ (—18 ℃)
   SAE 80W-90: Below 0 ℉ (—18 ℃)

   Transfer Fluid (Hypoid Gear Oil) Capacity:
   0.43 L (0.45 US qt) at fluid change

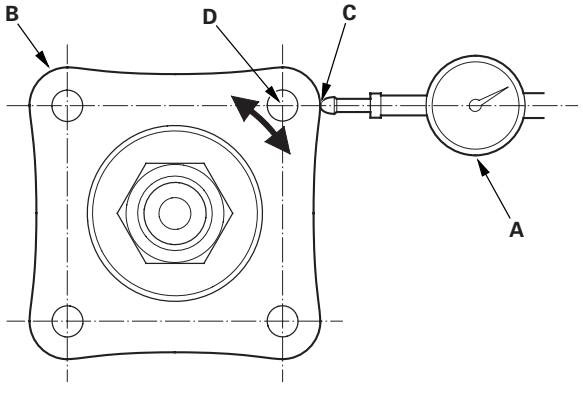
7. Install the filler plug and a new sealing washer.

Transfer Assembly Inspection

1. Raise the vehicle on a lift, and make sure it is supported securely (see page 1-10).
2. Shift the transmission into the N position.
3. Make a reference mark (A) across the propeller shaft (B) and the transfer companion flange (C).



4. Separate the propeller shaft from the transfer companion flange.
5. Set a dial indicator (A) on the transfer companion flange (B); position dial indicator tip (C) on the direct extension of the bolt hole center (D).



6. Measure the transfer gear backlash.

   Standard: 0.06—0.17 mm (0.002—0.007 in.)

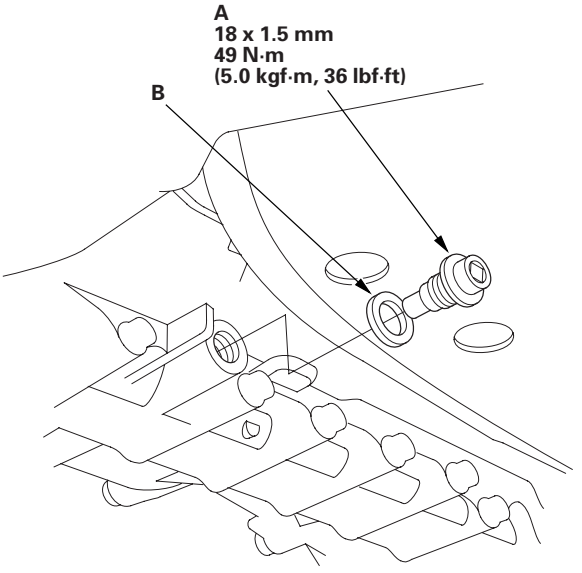
7. If the backlash is out of standard, remove the transfer assembly, and adjust the transfer gear backlash (see page 14-395).
8. Check for fluid leaks between the mating faces of the transfer assembly and the transmission.
9. If there is a leak, remove the transfer assembly, remove the transfer cover, and replace the O-ring.
10. Check for fluid leaks between the transfer companion flange and the transfer oil seal.
11. If there is a leak, remove the transfer assembly from the transmission, and replace the transfer oil seal and O-ring on the transfer output shaft (hypoid gear). If an oil seal and O-ring replacement is required, you will need to check and adjust the transfer gear tooth contact, transfer gear backlash, the tapered roller bearing starting torque, and the total starting torque (see page 14-395). Do not replace the oil seal with the transfer assembly on the transmission.

Transfer Assembly Removal

1. Raise the vehicle on a lift, and make sure it is supported securely (see page 1-10).

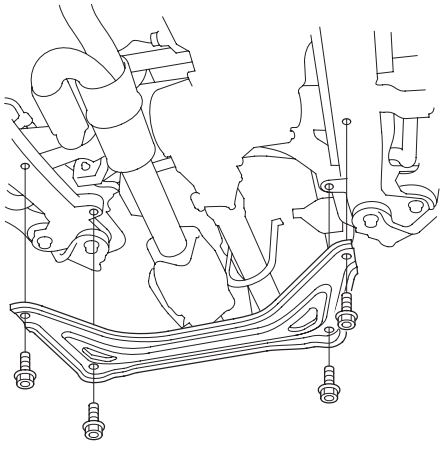
2. Shift the transmission into the N position.

3. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).

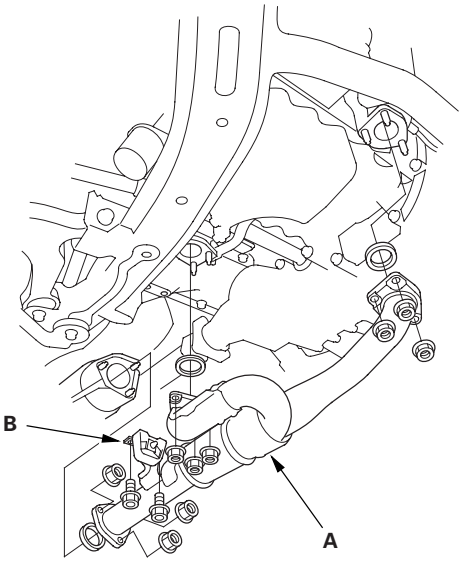


4. Reinstall the drain plug with a new sealing washer (B).

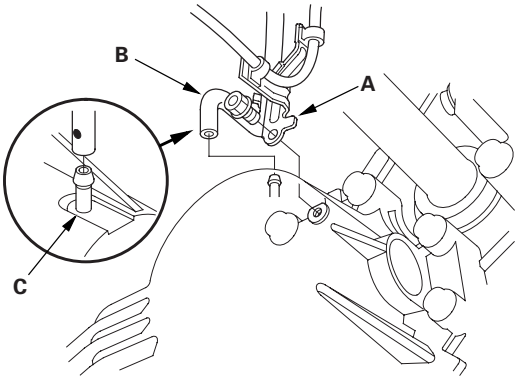
5. Remove the front subframe stiffener.



6. Remove exhaust pipe A and its mount (B).



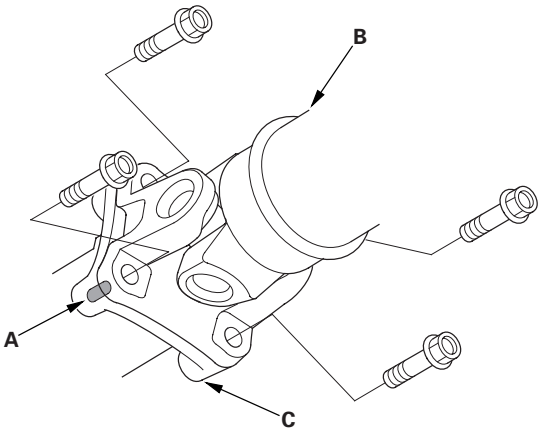
7. Remove the bolt securing the transfer breather hose bracket (A), and disconnect the breather hose (B) from the breather pipe (C) on the transfer assembly.



(cont'd)

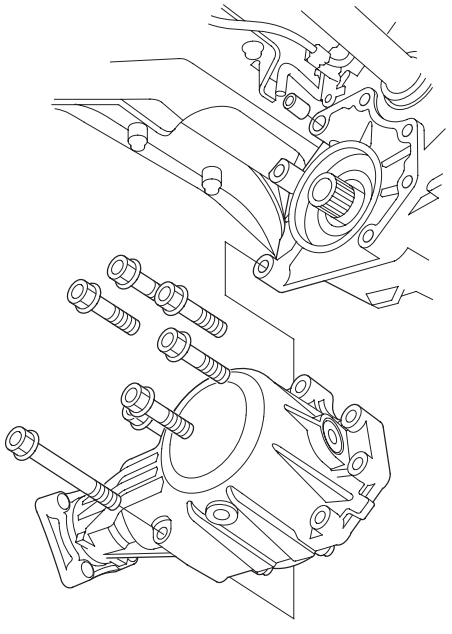
Transfer Assembly Removal (cont'd)

8. Make a reference mark (A) across the propeller shaft (B) and the transfer companion flange (C).



9. Separate the propeller shaft from the transfer companion flange.

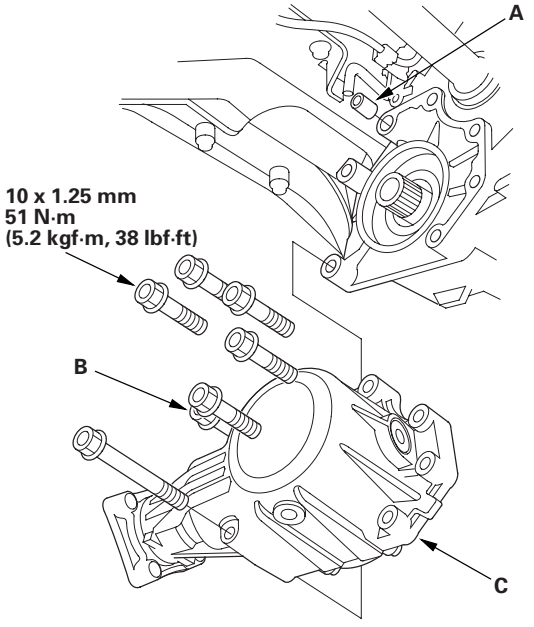
10. Remove the transfer assembly from the transmission.



Transfer Assembly Installation

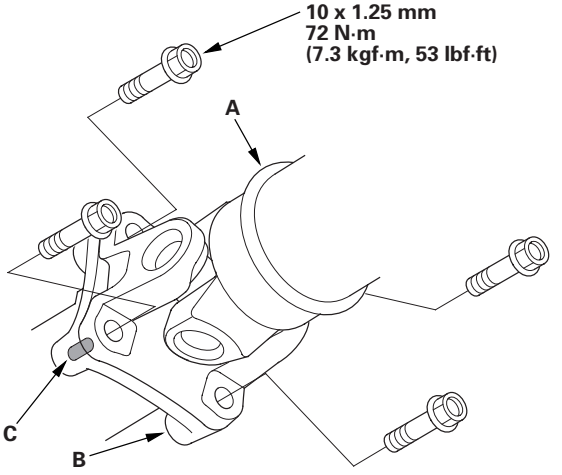
1. Clean the areas where the transfer assembly contacts the transmission with solvent or carburetor cleaner, and dry with compressed air. Then apply transmission fluid to the contact area.

2. Install the dowel pin (A) in the transmission.

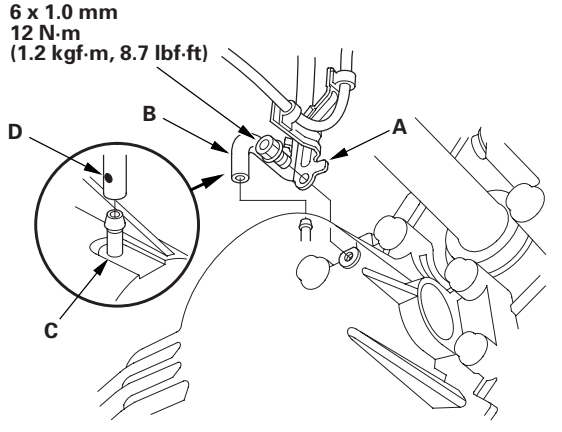


3. Insert the one 10 x 1.25 mm bolt (length: 105 mm) (B) in the rear upper of the transfer housing, then install the transfer assembly (C) on the transmission.

4. Install the propeller shaft (A) to the transfer companion flange (B) by aligning the reference mark (C).



5. Secure the transfer breather hose bracket (A) on the transfer assembly with the bolt, and install the breather hose (B) over the breather pipe (C) with the dot (D) on the hose facing out.



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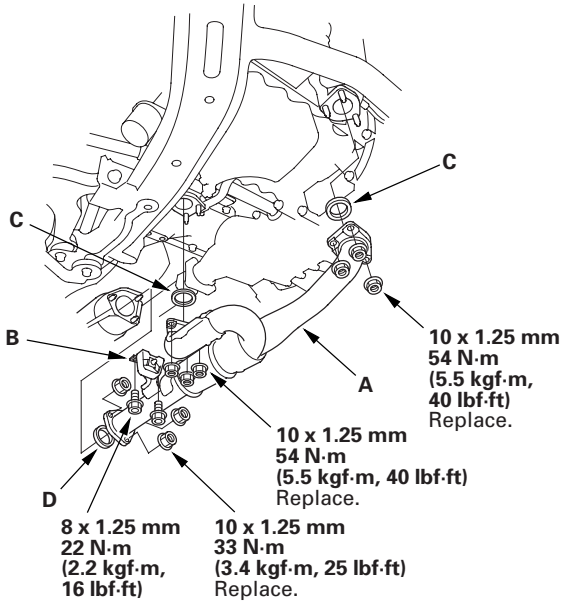
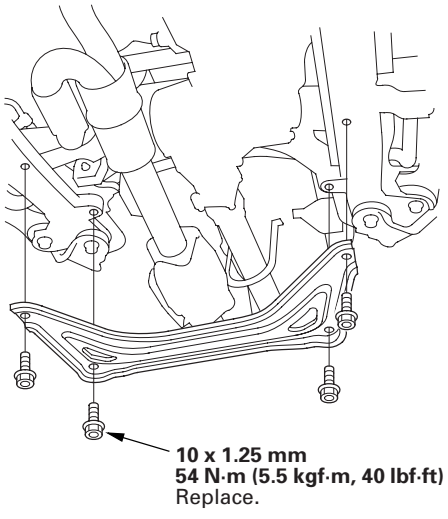
Transfer Assembly Installation (cont'd)

6. Install exhaust pipe A with the new self-locking nuts, its mount (B), and new gaskets (C) (D).



7. Install the front subframe stiffener with new mounting bolts.

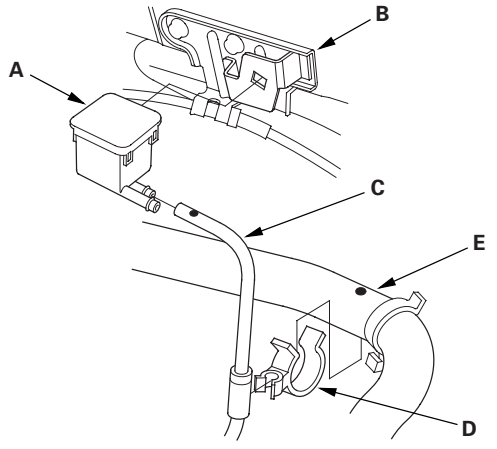


8. Refill the transfer assembly with transfer fluid (hypoid gear oil), if necessary (see page 14-211).

9. Refill the transmission with ATF (see step 5 on page 14-210).

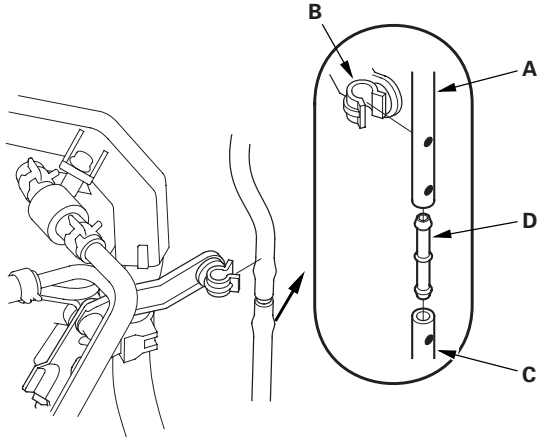
Transfer Breather Hose Replacement

1. Remove the transfer breather (A) from the throttle cable bracket (B), and disconnect the breather hose (C) from the breather.



2. Remove the transfer breather hose clamp (D) from the heater hose (E), and remove the clamp from the breather hose.

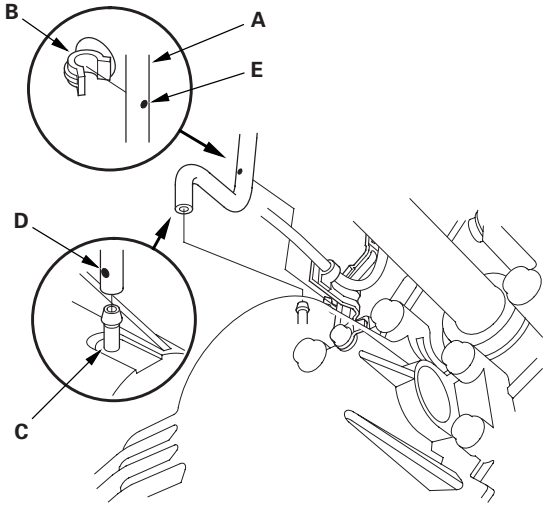
3. Remove the breather hose (upper) (A) from the hose clamp (B).



4. Separate the breather hoses upper and lower (C), and remove the hose joint (D).
   If the only upper hose is replaced, remove the upper hose from the hose joint, and go to step 9.

5. Raise the vehicle on a lift, and make sure it is supported securely (see page 1-10).

6. Remove the breather hose (A) from the hose clamp (B), and disconnect the hose from the transfer breather pipe (C) on the transfer assembly.



7. Install the breather hose over the transfer breather pipe with the dot (D) on the hose facing out, and install the hose in the clamp at the dot (E) on the hose with facing out.

8. Install the hose joint in the lower hose.

9. Install the upper hose over the hose joint by aligning the upper hose dot with the lower hose dot.

10. Install the upper hose in the clamp at the dot on the upper hose with facing out.

11. Install the transfer breather hose clamp at the covering hose, and install the clamp on the heater hose, centering the heater hose dot in the clamp opening.

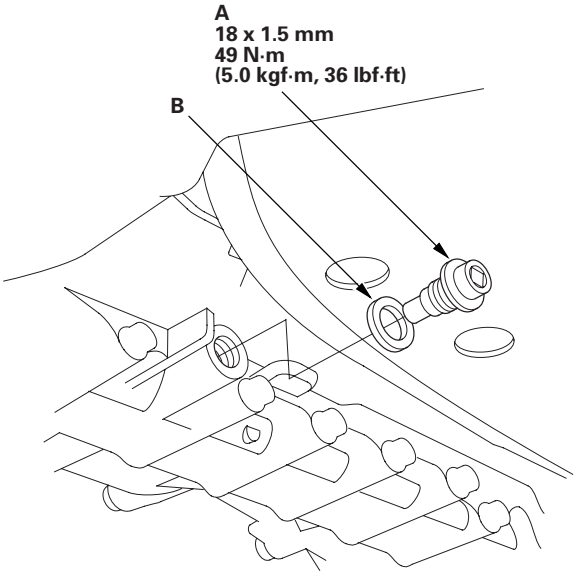
12. Install the upper hose end over the breather pipe with the dot on the hose facing up, and install the breather on the throttle cable bracket.

Transmission Removal

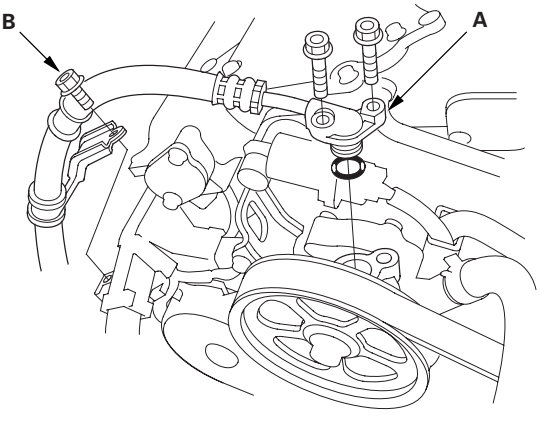
Special Tools Required
• Engine support hanger, A and Reds AAR-T-12566
• Engine hanger balance bar VSB02C000019
• Engine hanger adapter set VSB02C000024
• Front subframe adapter VSB02BMDXSB0
These special tools are available through the Honda Tool and Equipment Program 1-888-424-6857.

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- Special tool Reds engine support hanger AAR-T-12566 must be used with the side engine mount installed.

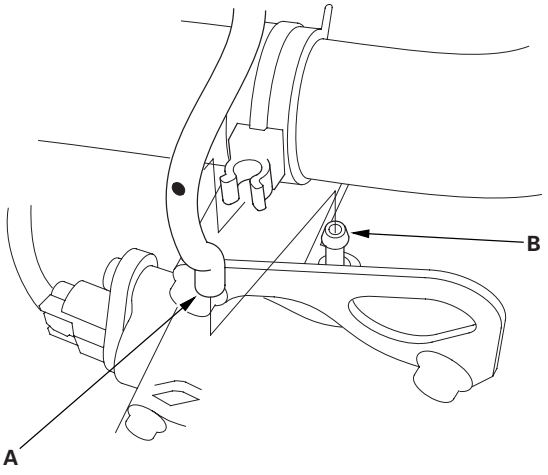
1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
2. Secure the hood in the wide open position (position the support rod in the lower hole).
3. Set the wheels in the straight ahead position, and lock the steering wheel.
4. Drain the power steering system fluid from the reservoir (see page 17-12).
5. Make sure the ignition switch is LOCK (0). Disconnect the negative cable from the battery, then disconnect the positive cable.
6. Remove the battery hold-down bracket, and remove the battery and the battery tray.
7. Remove the intake manifold cover, the intake air duct, the resonator, and the air cleaner housing.
8. Remove the battery base and the battery base bracket.
9. Remove the front bulkhead cover (see page 20-171).
10. Raise the vehicle on a lift, and make sure it is supported securely (see page 1-10). Remove the splash shield (see page 20-179).
11. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



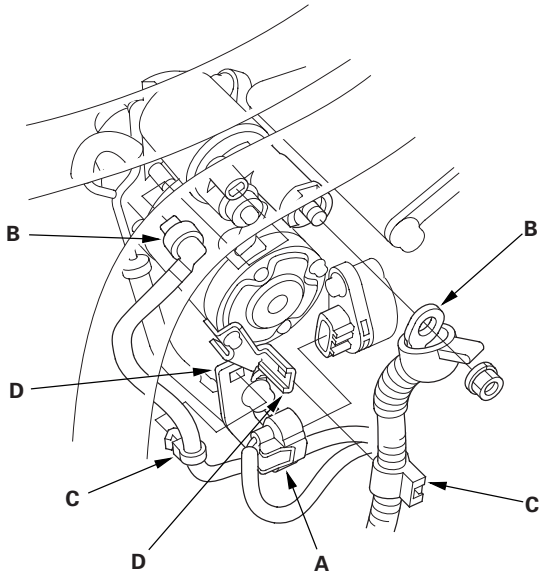
12. Reinstall the drain plug with a new sealing washer (B).
13. Disconnect the steering joint (see page 17-24).
14. Remove the power steering pump outlet line (A) from the power steering pump, and remove the hose clamp bolt (B).



15. Remove the transmission breather hose (A) from the breather pipe (B) at the transmission housing.

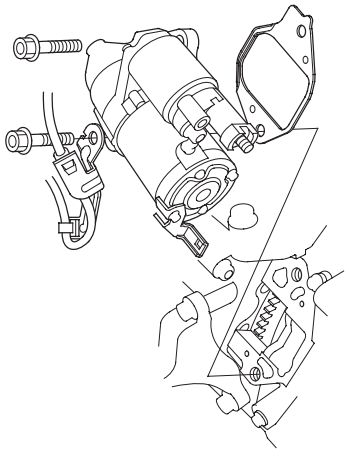


16. Disconnect the solenoid harness connector (A).

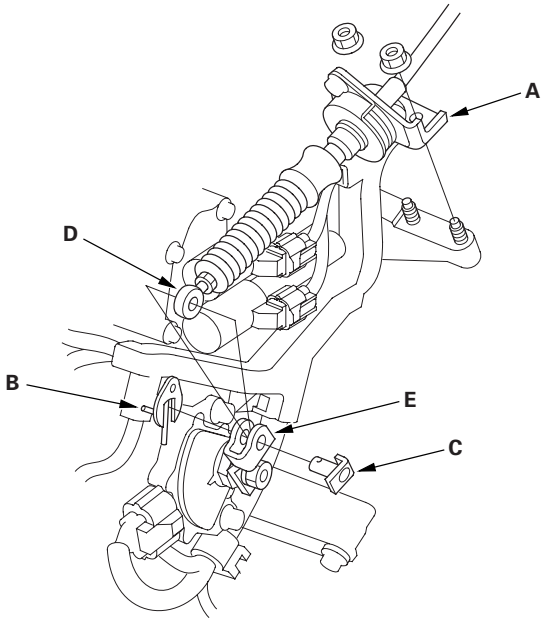


17. Remove the starter cables (B) from the starter, and remove the harness clamps (C) from the clamp brackets (D).

18. Remove the dipstick, then remove the starter and gasket.



19. Remove the nuts securing the shift cable bracket (A).



20. Remove the spring clip/washer (B) and the control pin (C), then separate the shift cable end (D) from the control lever (E).

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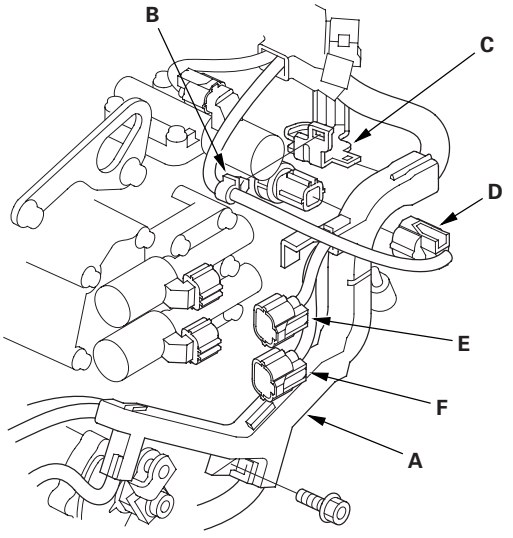
Transmission Removal (cont'd)

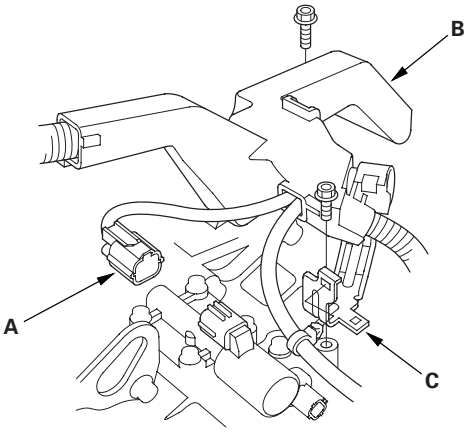
21. Remove the bolt securing the harness cover (A).



22. Remove the harness clamp (B) from the harness cover/clamp bracket (C), disconnect the 4th clutch transmission fluid pressure switch connector (D), then remove the harness cover from the bracket.

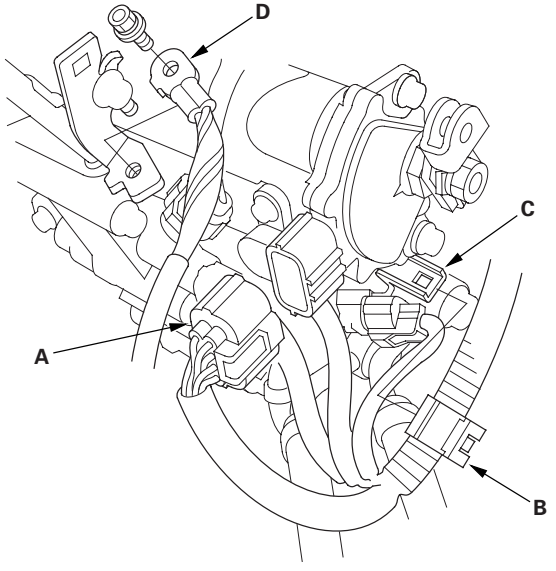
23. Disconnect the A/T clutch pressure control solenoid valve A connector (E) and the A/T clutch pressure control solenoid valve B connector (F).

24. Disconnect the A/T clutch pressure control solenoid valve C connector (A).



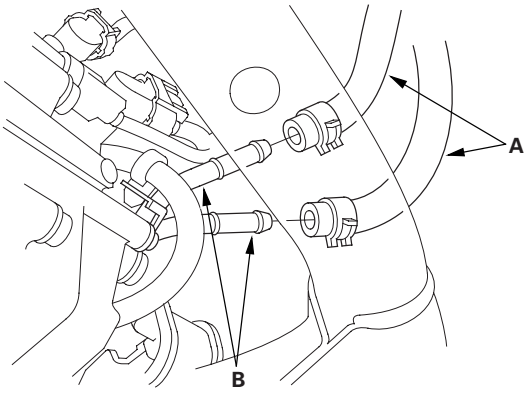
25. Remove the bolts securing the harness cover (B) and harness cover/clamp bracket (C).

26. Disconnect the transmission range switch connector (A), and remove the harness clamp (B) from the clamp bracket (C).



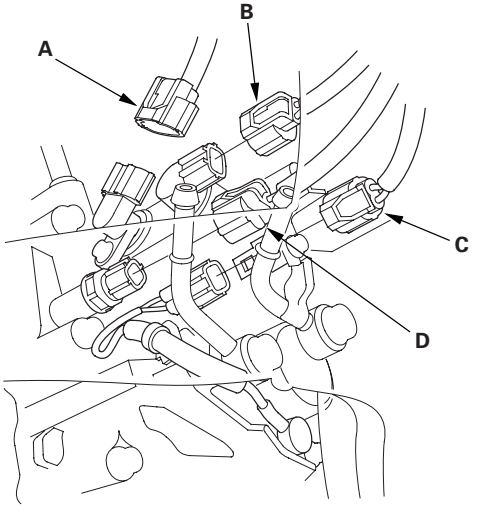
27. Remove the transmission ground cable (D).

28. Remove the ATF cooler hoses (A) from the ATF cooler lines (B). Turn the ends of the cooler hoses up to prevent ATF from flowing out, then plug the cooler hoses and lines.

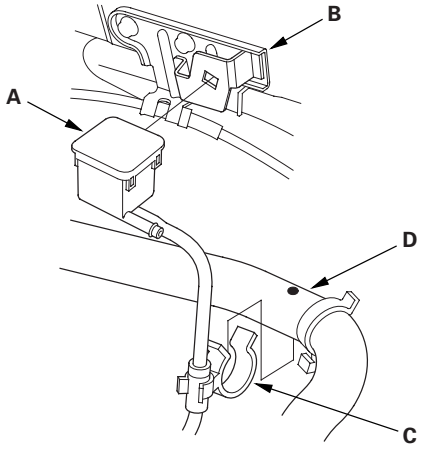


29. Check for any signs of leakage at the hose joints.

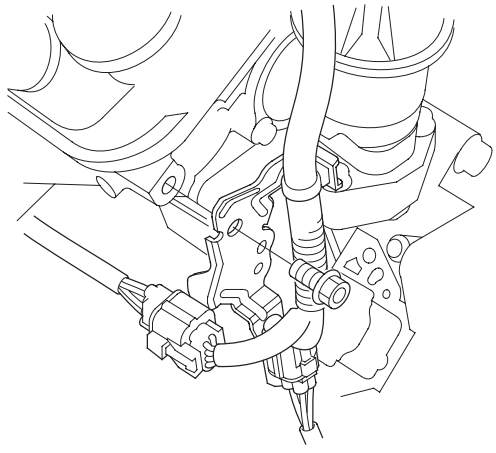
30. Disconnect the input shaft (mainshaft) speed sensor connector (A), the output shaft (countershaft) speed sensor connector (B), the ATF temperature sensor connector (C), and the 3rd clutch transmission fluid pressure switch connector (D).



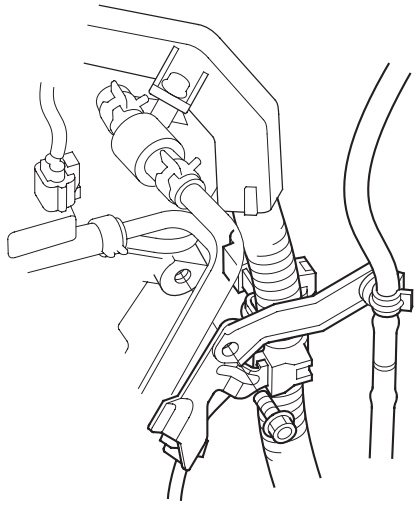
31. Remove the transfer breather (A) from the throttle cable bracket (B), and remove the transfer breather hose clamp (C) from the heater hose (D).



32. Remove the connector bracket from the engine front cylinder head; use the bracket bolt hole to attach the engine hanger balancer bar front arm.



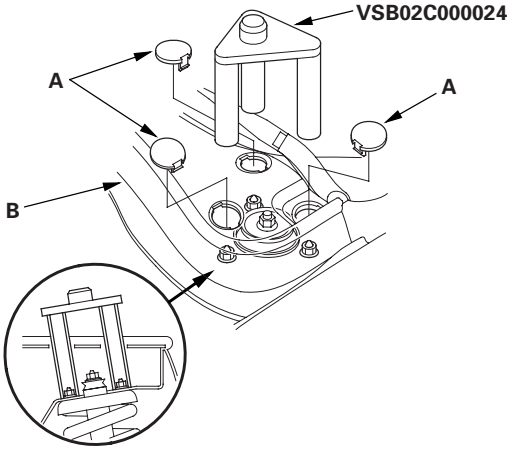
33. Remove the harness clamp bracket from the engine rear cylinder head; use the bracket bolt hole to attach the engine hanger balancer bar rear arm.



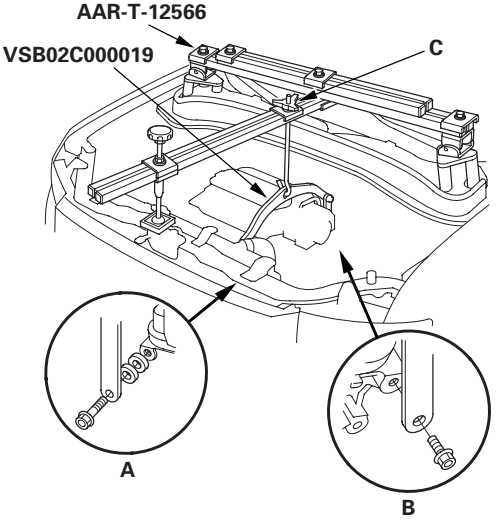
(cont'd)

Transmission Removal (cont'd)

34. Remove the service caps (A) for the front damper flange nuts from the cowl cover (B). Position the engine hanger adapters (VSB02C000024) with the ''FRONT'' mark facing forward over the damper flange nuts.

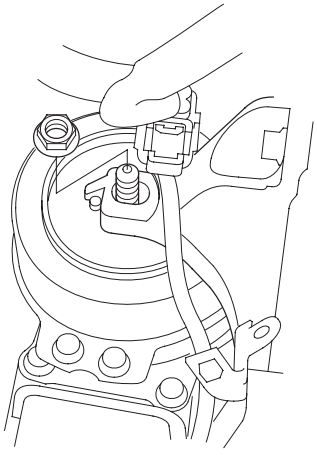


35. Install the engine balance bar (VSB02C000019); attach the front arm (A) to the front cylinder head with a spacer and the 10 mm bolt, and attach the rear arm (B) to the rear cylinder head with the 8 mm bolt.

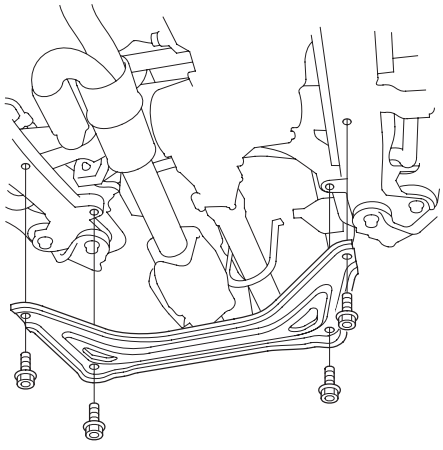


36. Install the engine support hanger (AAR-T-12566) to the vehicle, and attach the hook to slotted hold in the engine balance bar. Tighten the wing nut (C) by hand, and to lift and support the engine.

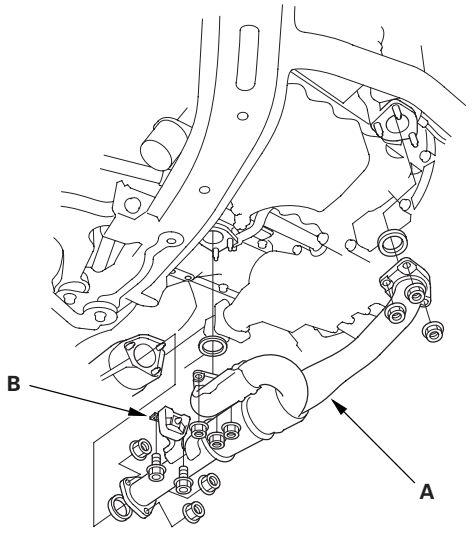
37. Remove the front mount nut.



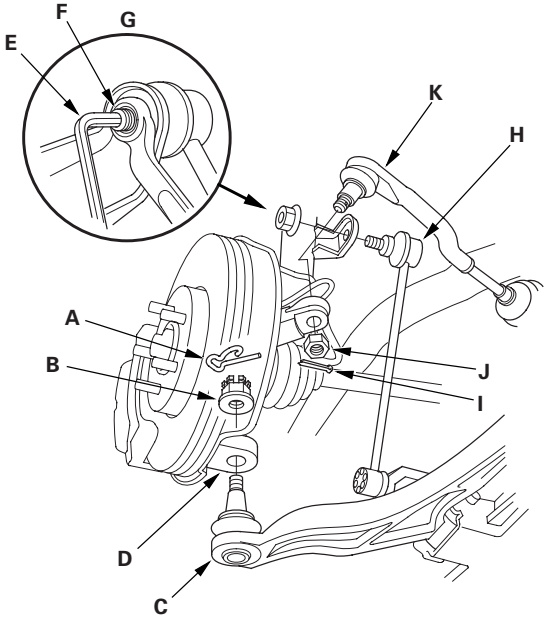
38. Remove the front subframe stiffener.



39. Remove exhaust pipe A and its mount (B).



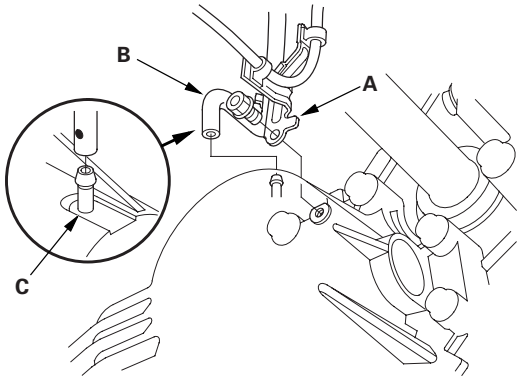
40. Remove the lock pins (A) and the castle nuts (B), and separate the lower arms (C) from the knuckles (D) (see page 18-12).



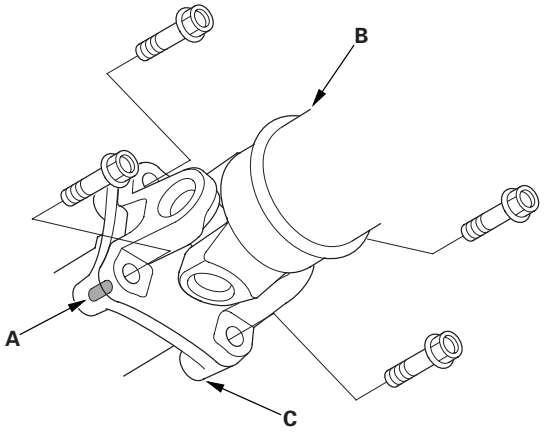
41. Insert a 6 mm Allen wrench (E) in the top of the ball joint pin (F), and remove the nuts (G), then separate the stabilizer link (H).

42. Remove the cotter pins (I) and nuts (J), and separate the tie-rod end ball joints (K) from the knuckles (see step 9 on page 18-15).

43. Remove the bolt securing the transfer breather hose bracket (A), and disconnect the breather hose (B) from the breather pipe (C) on the transfer assembly.



44. Make a reference mark (A) across the propeller shaft (B) and the transfer companion flange (C).



45. Separate the propeller shaft from the transfer companion flange.

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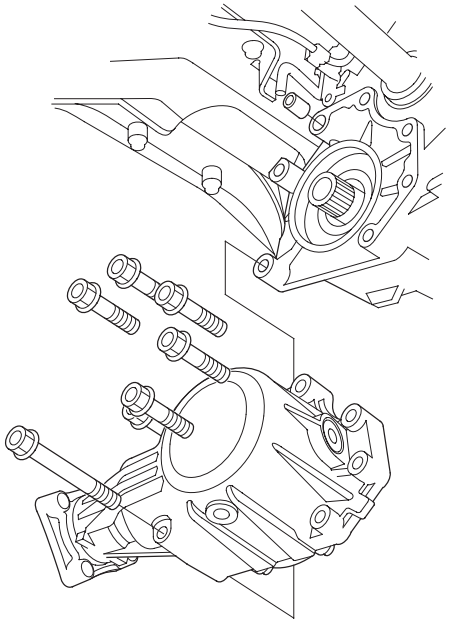
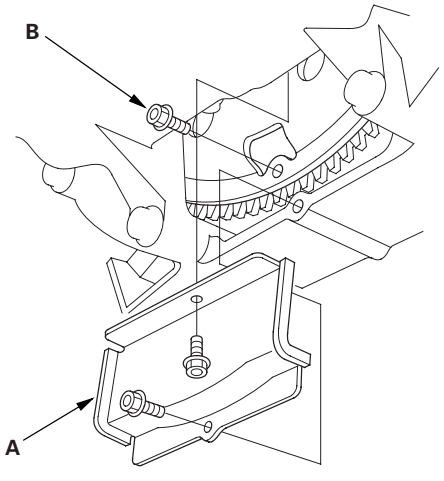
Transmission Removal (cont'd)

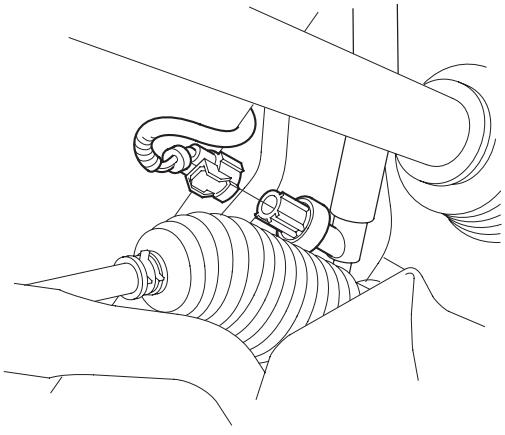
46. Remove the transfer assembly from the transmission.



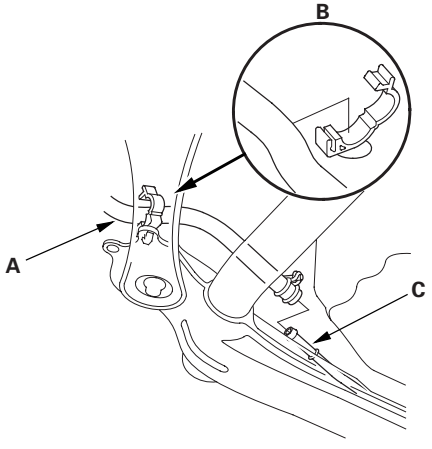
47. Remove the torque converter cover (A), and remove the drive plate bolts (B) (8) while rotating the crankshaft pulley.



48. Disconnect the power steering pressure switch connector.

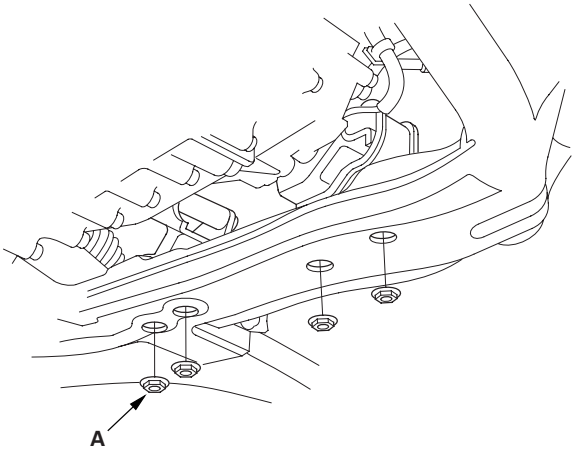


49. Remove the power steering fluid hose (A) from the hose clamp (B) at the right front of the subframe.

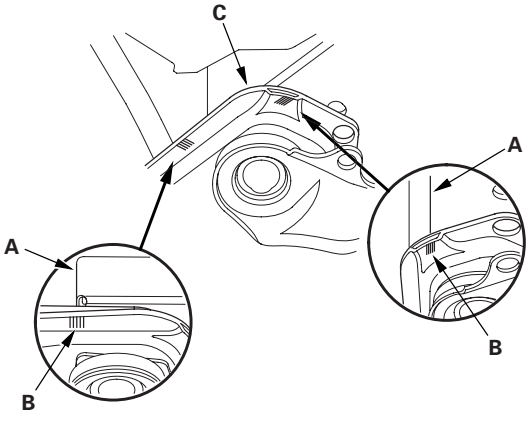


50. Loosen the hose clamp bolt, then disconnect the power steering fluid hose from the fluid line (C).

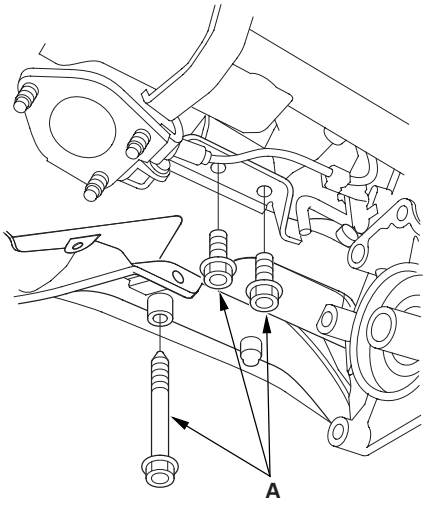
51. Remove the four transmission lower mount nuts (A).



52. Make reference marks (A) on the body across the marks (B) on the edge of the front subframe (C).

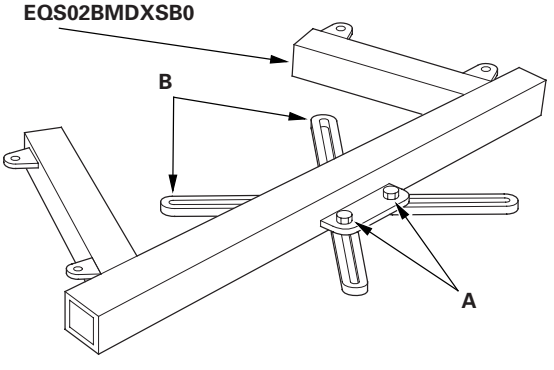


53. Remove the three rear mount bracket bolts (A).



54. Loosen the four bolts (A) holding the adjustable arms (B) of the front subframe adapter (EQS02BMDXSB0) to its center plate.

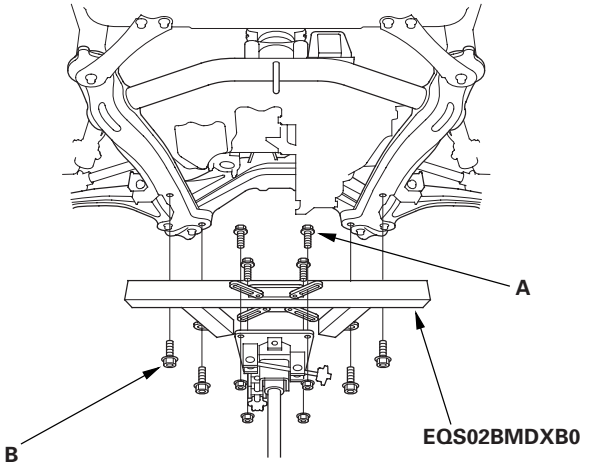
NOTE: The adapter is designed to be used the Honda transmission jack (model number LSL-W93714) or powertrain lift (model number OTC-1585), both available through the Honda Tool and Equipment Program. It will also work with most commercially available transmission jacks.



(cont'd)

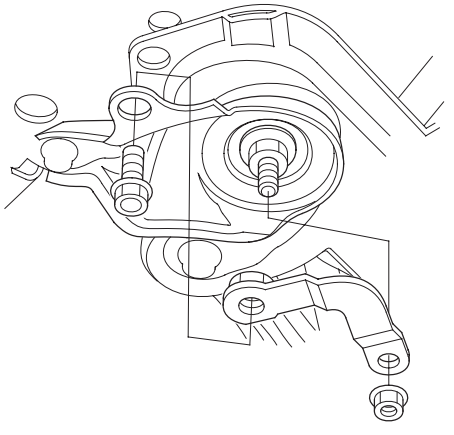
Transmission Removal (cont'd)

55. Line up the slots in the arms with the bolt holes on the corner of the jack base, then attach the adapter to the jack base with the bolts (A) that came with the jack. Tighten the bolts securely.

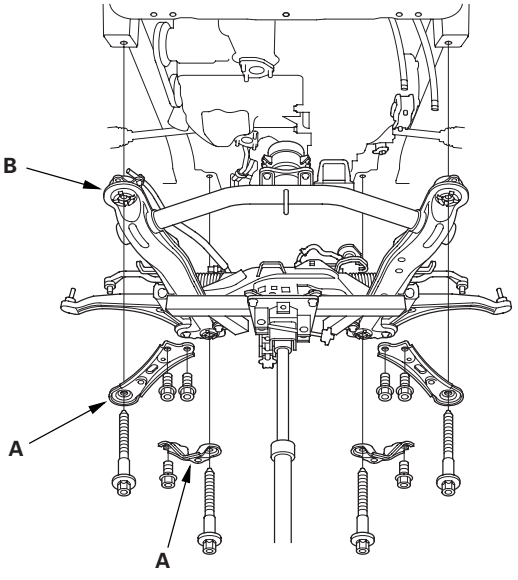


56. Raise the jack to the vehicle height, then attach the adapter to the front subframe using the subframe stiffener mounting bolts (B) and bolt holes.

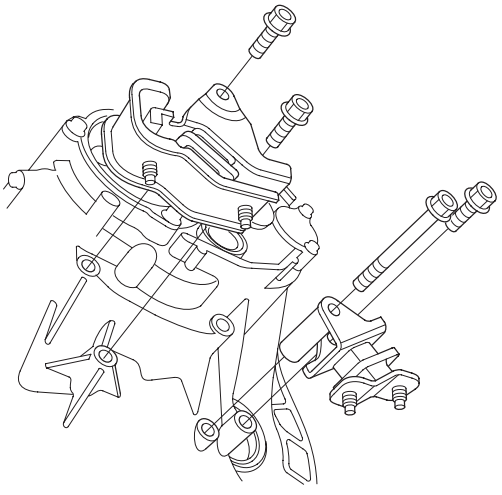
57. For '07-08 models: Remove both retainers securing the rear mounting bolts of the front subframe.



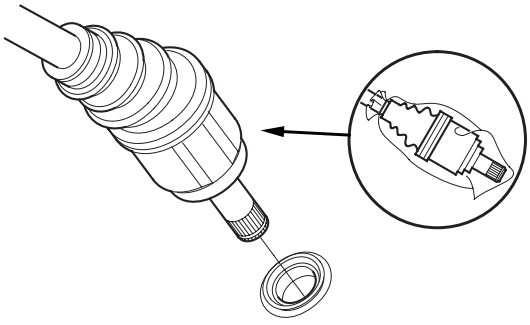
58. Remove the six bolts securing the stiffeners (A) and the four bolts securing the front subframe (B), and lower the front subframe.



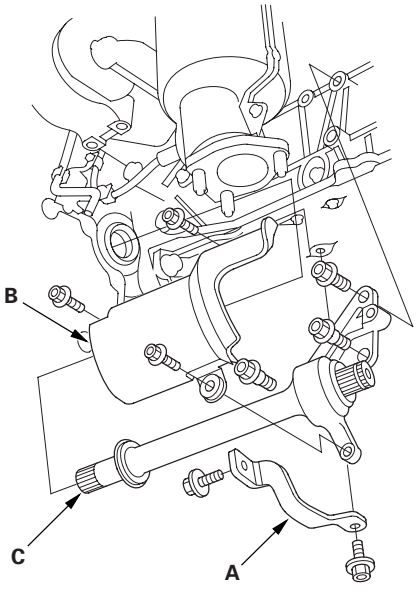
59. Remove the transmission lower mounts.



60. Remove the driveshafts from the differential and the intermediate shaft. Coat all precision machined surfaces with clean engine oil, then put plastic bags over the driveshaft ends.

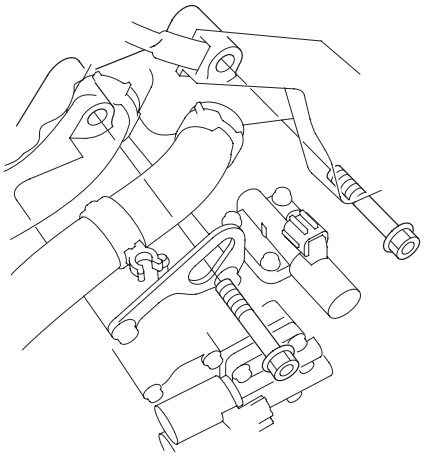


61. Remove the exhaust manifold bracket (A) and the heat shield (B).

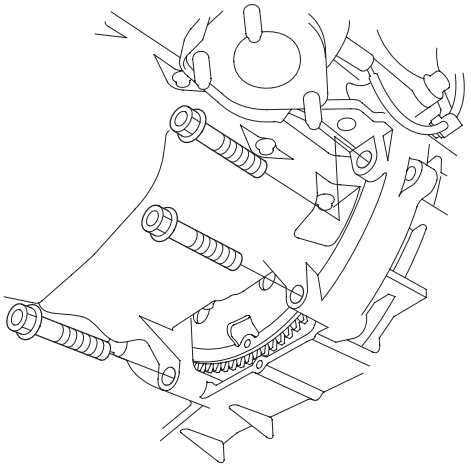


62. Remove the intermediate shaft (C). Coat all precision machined surfaces with clean engine oil, then put the plastic bags over the intermediate shaft ends.

63. Remove the transmission housing mounting bolts.



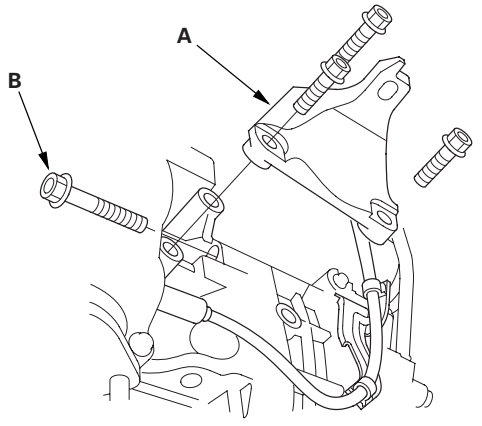
64. Remove the transmission housing mounting bolts.



(cont'd)

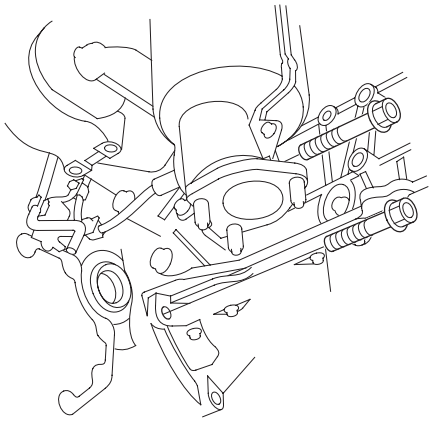
Transmission Removal (cont'd)

65. Remove the front mount bracket (A).



66. Remove the transmission housing mounting bolt (B) using a socket 22 mm in length.

67. Remove the transmission housing mounting bolts.

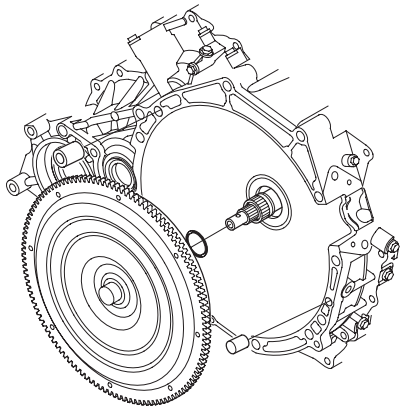


68. Lower the transmission by loosening the wing nut of the engine support hanger, and tilt the engine just enough for the transmission end to clear the side frame.

69. Place a jack under the transmission.

70. Slide the transmission away from the engine to remove it from the vehicle.

71. Remove the torque converter and the dowel pins.



72. Inspect the drive plate, and replace if it's damaged.

Transmission Installation

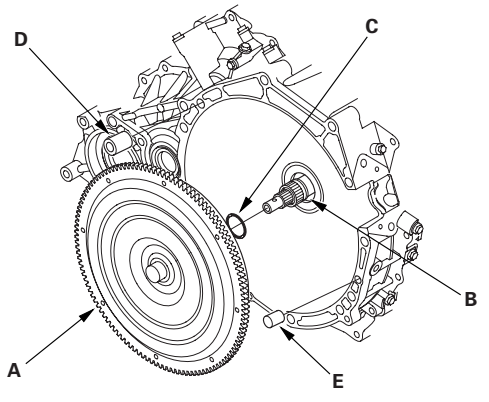
Special Tools Required
- Engine support hanger, A and Reds AAR-T-12566
- Engine hanger balance bar VSB02C000019
- Engine hanger adapter set VSB02C000024
- Front subframe adapter VSB02BMDXSB0

These special tools are available through the Honda Tool and Equipment Program 1-888-424-6857.

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- Special tool Reds engine support hanger AAR-T-12566 must be used with the side engine mount installed.

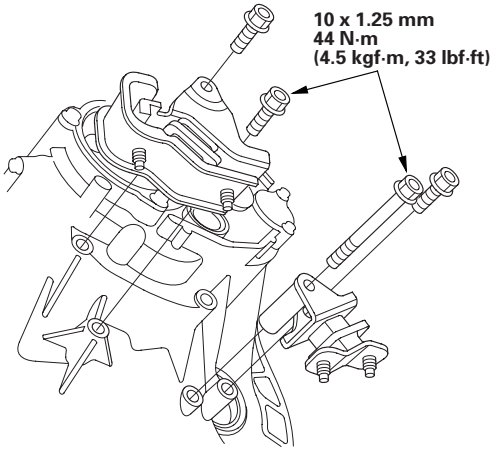
1. Clean the ATF cooler (see page 14-239).

2. Install the torque converter (A) on the mainshaft (B) with a new O-ring (C).



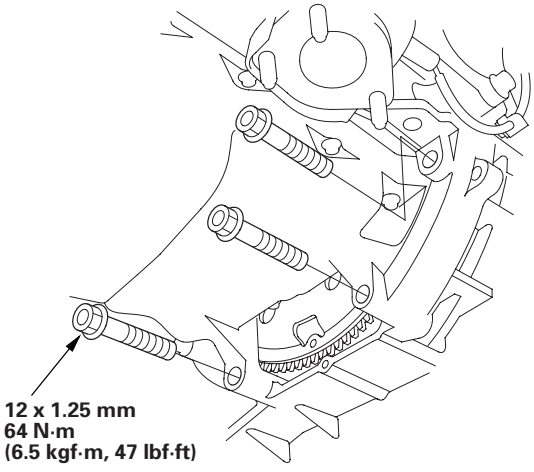
3. Install the 14 mm dowel pin (D) and the 10 mm dowel pin (E) in the torque converter housing.

4. Install the transmission lower mounts.

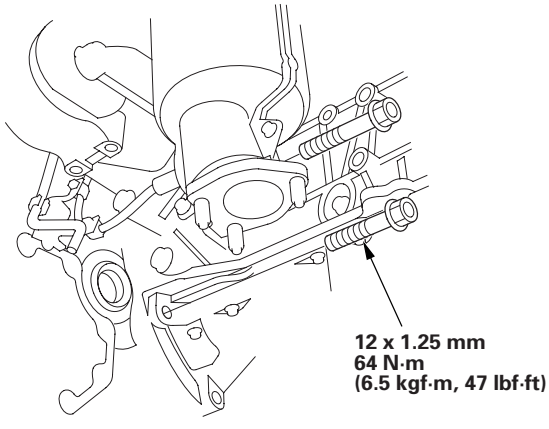


5. Place the transmission on the jack, and raise it to engine level.

6. Attach the transmission to the engine, and install the transmission housing mounting bolts.



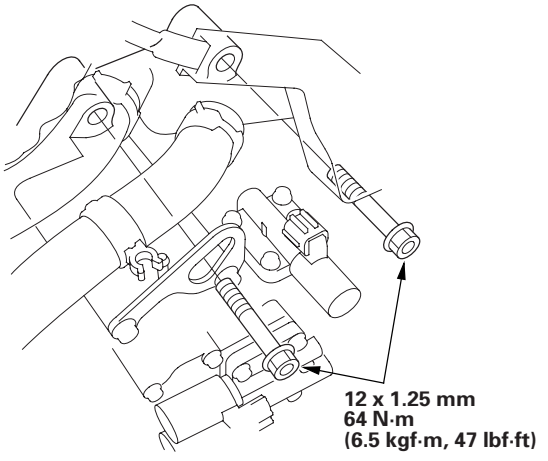
7. Install the transmission housing mounting bolts.



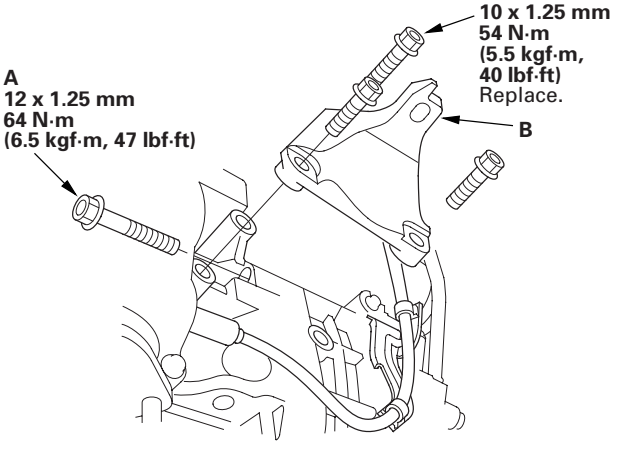
(cont'd)

Transmission Installation (cont'd)

8. Install the transmission housing mounting bolts.

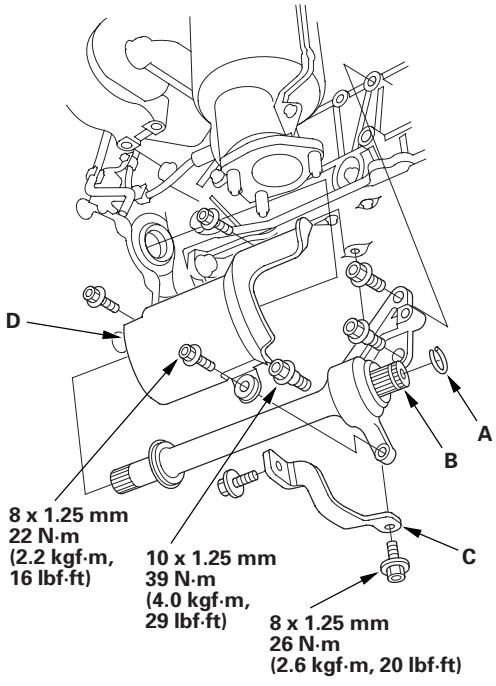


9. Install the transmission housing mounting bolt (A).



10. Install the front mount bracket (B) with new mounting bolts.

11. Install a new set ring (A) on the intermediate shaft (B), and install the intermediate shaft in the differential. While installing the intermediate shaft in the differential, be sure not to allow dust or other foreign particles to enter the transmission.

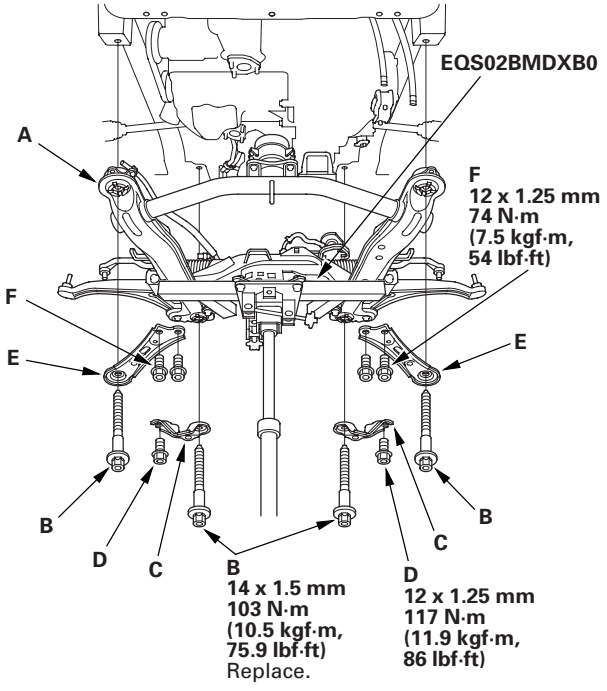


12. Install the exhaust manifold bracket (C) and the heat shield (D).

13. Install a new set ring on the left driveshaft, then install the left driveshaft in the differential (see page 16-17). While installing the driveshaft in the differential, be sure not to allow dust or other foreign particles to enter the transmission. Install the right driveshaft over the intermediate shaft.

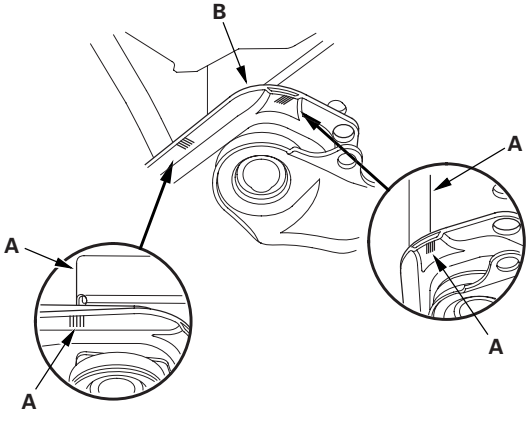
    NOTE: Turn the right and left steering knuckle fully outward, and slide the driveshafts into the differential and over the intermediate shaft until you feel the set ring engage.

14. Support the front subframe (A) with the front subframe adapter (EQS02BMDXB0) and a jack, and lift it up to the body.



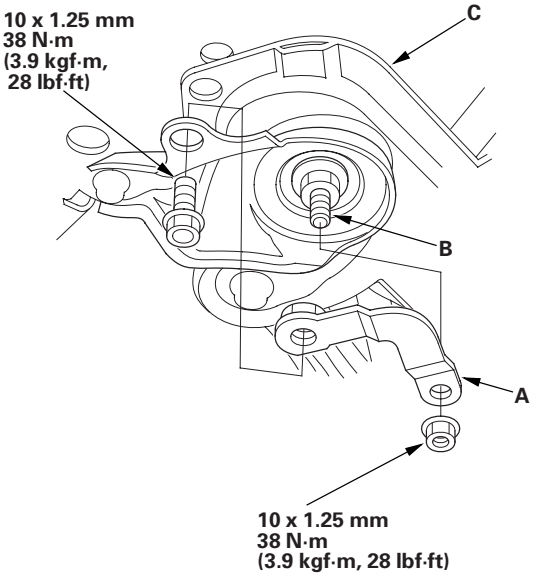
15. Loosely install new subframe mounting bolts (B), rear stiffeners (C) and mounting bolts (D), and front stiffeners (E) and mounting bolts (F).

16. Align all reference marks (A) on the front subframe (B) with the body, then tighten the bolts on the front subframe to the specified torque.

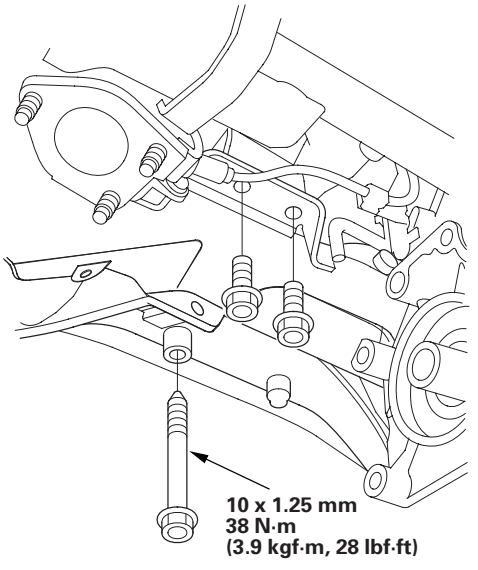


17. Remove the jack and the front subframe adapter.

18. For '07-08 models: Install both bolt retainers (A) on both rear mounting bolts (B) of the front subframe (C).



19. Install the rear mount bracket bolts.



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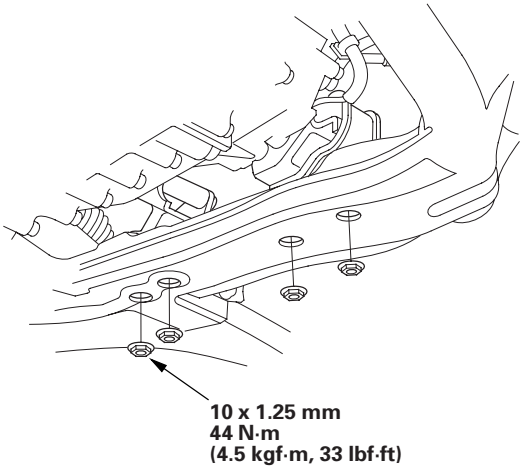
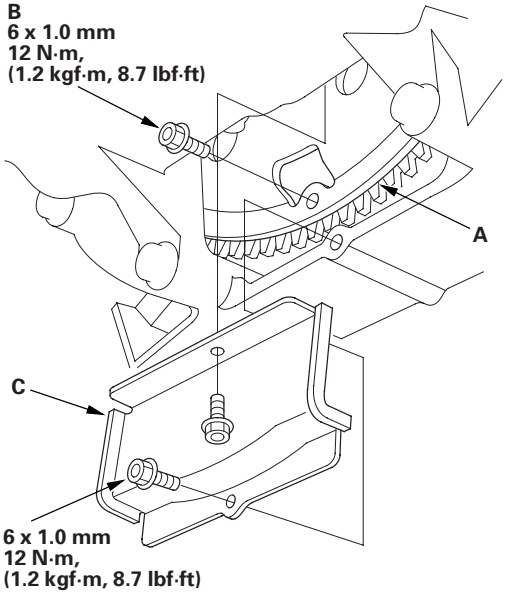
Transmission Installation (cont'd)

20. Install the transmission lower mount nuts.

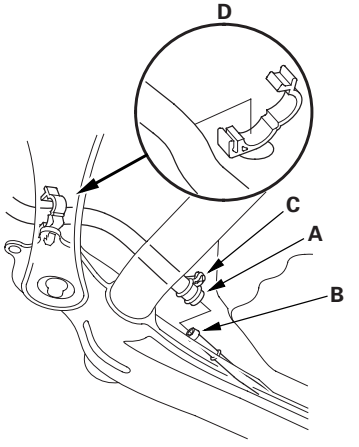


21. Attach the torque converter to the drive plate (A) with eight bolts (B). Rotate the crankshaft pulley as necessary to tighten the bolt to 1/2 of the specified torque, then to the final torque, in a crisscross pattern. After tightening the last bolt, check that the crankshaft rotates freely.



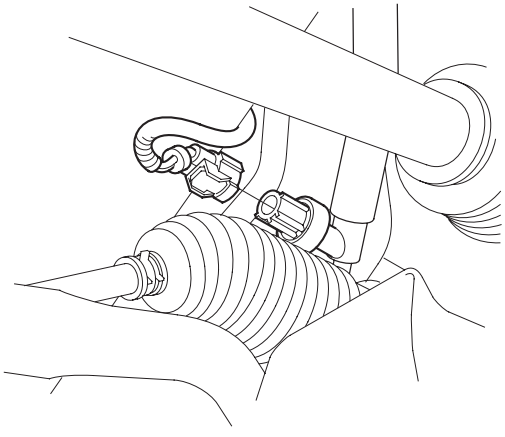
22. Install the torque converter cover (C).

23. Connect the power steering fluid hose (A) to the line (B), and secure the hose with its hose clamp (C).

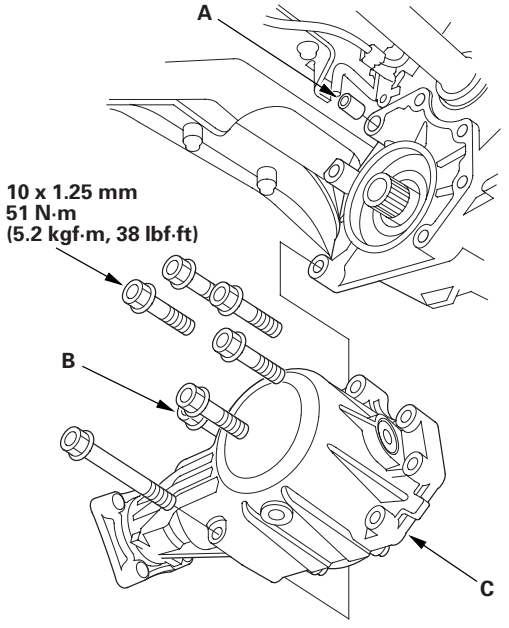


24. Secure the hose with the hose clamp (D).

25. Connect the power steering pressure switch connector.

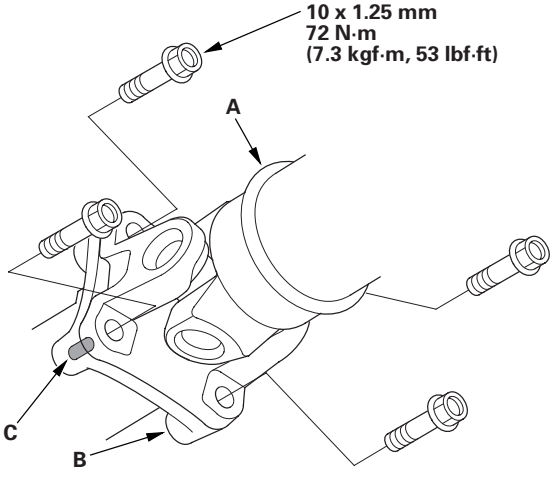


26. Install the dowel pin (A) in the transmission.

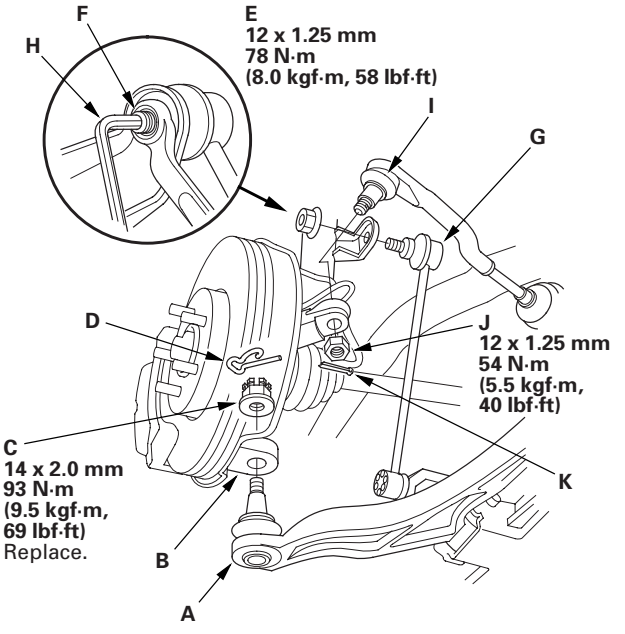


27. Insert the one 10 x 1.25 mm bolt (length: 105 mm) (B) in the rear upper of the transfer housing, then install the transfer assembly (C) on the transmission.

28. Install the propeller shaft (A) to the transfer companion flange (B) by aligning the reference mark (C).



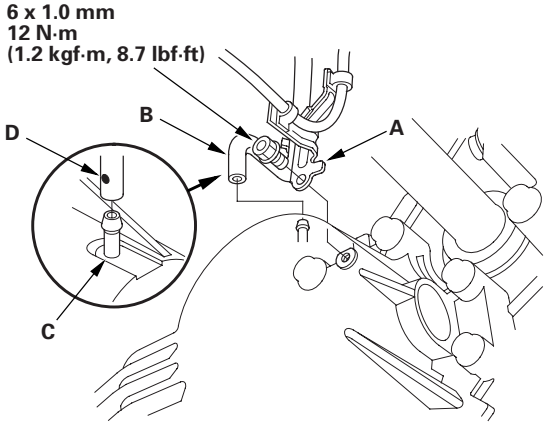
29. Install the ball joints on each lower arm (A) to each knuckle (B) with new castle nuts (C), and secure the castle nuts with the lock pins (D).



30. Install the nuts (E) to the ball joint pins (F) on each stabilizer link (G). Insert a 6 mm Allen wrench (H) in the top of the ball joint pins, and tighten the nuts to the specified torque.

31. Install the tie-rod end ball joints (I) to each knuckle with the nuts (J) and new cotter pins (K).

32. Secure the transfer breather hose bracket (A) on the transfer assembly with the bolt, and install the breather hose (B) over the breather pipe (C) with the dot (D) on the hose facing out.



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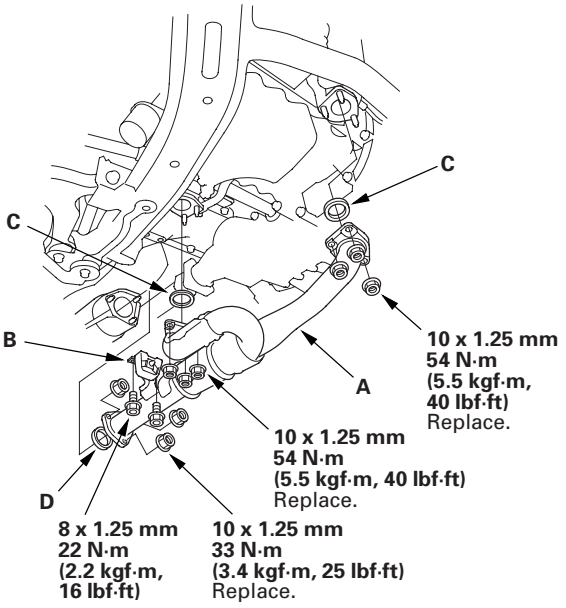
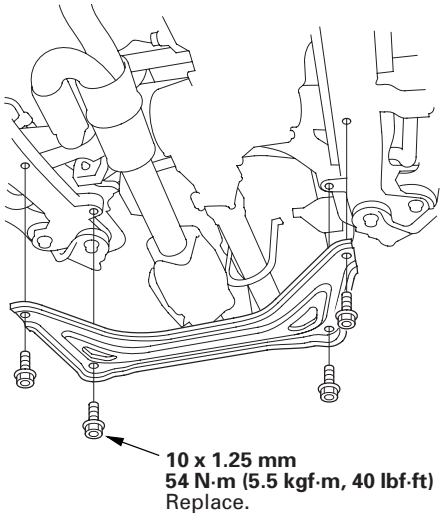
Transmission Installation (cont'd)

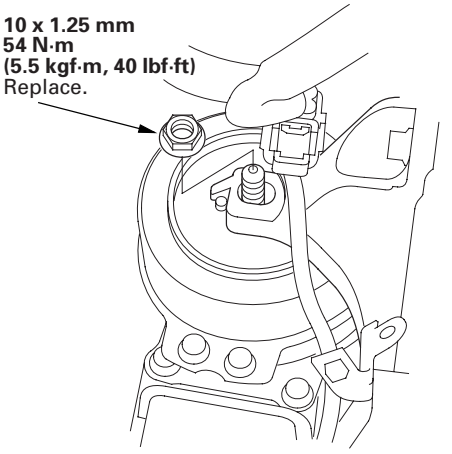
33. Install exhaust pipe A with the new self-locking nuts, its mount (B), and new gaskets (C) (D).



34. Install the front subframe stiffener with new mounting bolts.

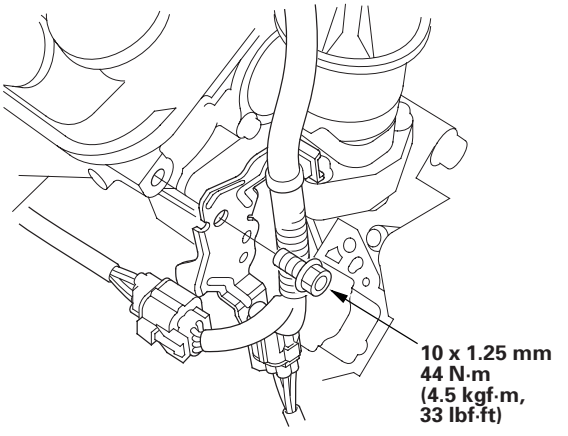


35. Install a new front mount nut, and tighten it.

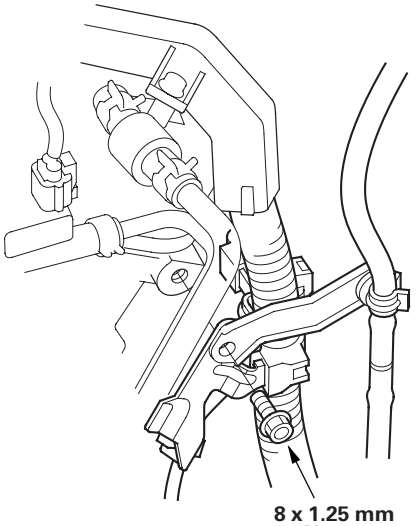


36. Remove the engine support hanger, the engine hanger adapters, and the engine balance bar.

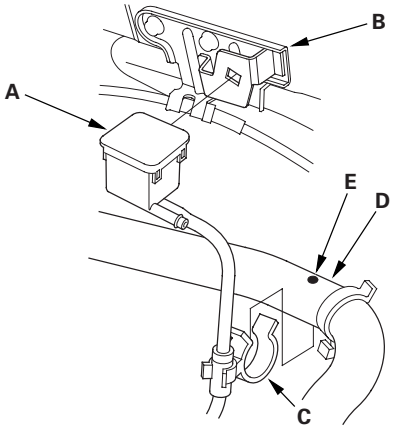
37. Install the connector bracket on the engine front cylinder head.



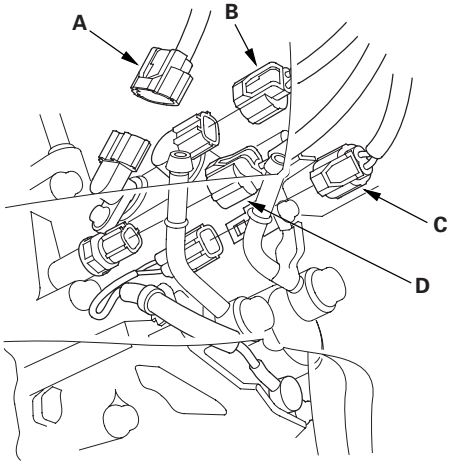
38. Install the harness clamp brackets on the engine rear cylinder head.



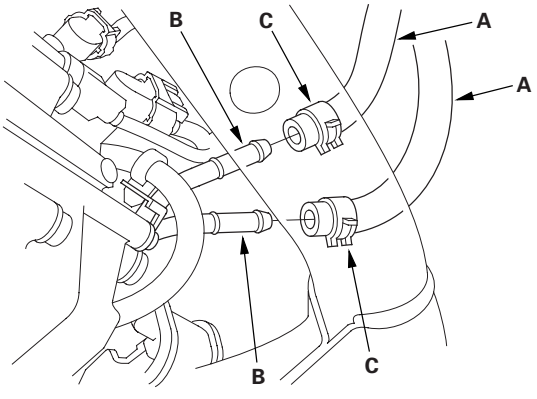
39. Install the transfer breather (A) on the throttle cable bracket (B). Install the transfer breather hose clamp (C) on the heater hose (D), centering the heater hose dot (E) in the clamp opening.



40. Connect the input shaft (mainshaft) speed sensor connector (A), the output shaft (countershaft) speed sensor connector (B), the ATF temperature sensor connector (C), and the 3rd clutch transmission fluid pressure switch connector (D). Do not allow water, fluid, oil, dust, or other foreign particles to enter any of the connectors.



41. Connect the ATF cooler hoses (A) to the ATF cooler lines (B), and secure the hoses with the clips (C) (see page 14-241).



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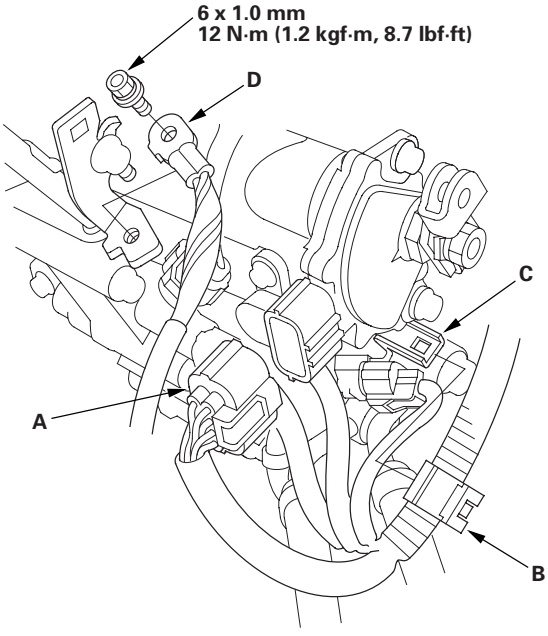
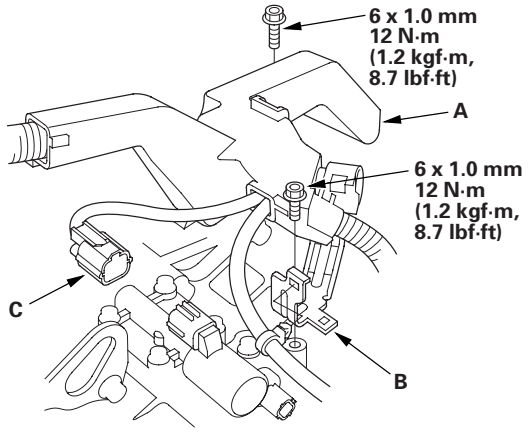
Transmission Installation (cont'd)

42. Connect the transmission range switch connector (A), and install the harness clamp (B) on the clamp bracket (C).



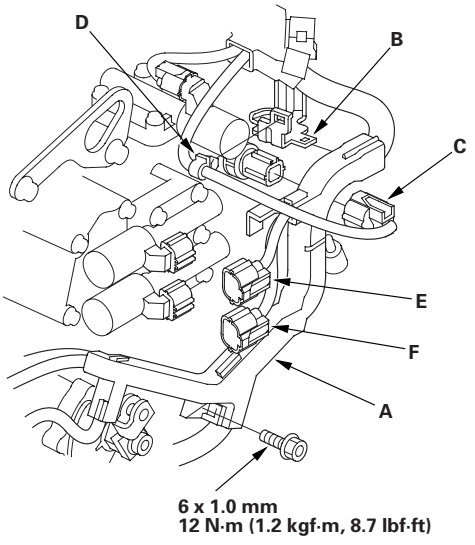
43. Install the transmission ground cable (D).

44. Secure the harness cover (A) and the harness cover /clamp bracket (B) with the bolts.



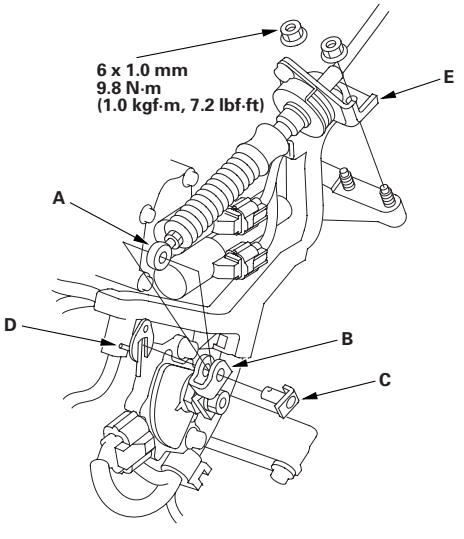
45. Connect the A/T clutch pressure control solenoid valve C connector (C).

46. Install the harness cover (A) on the harness cover/ clamp bracket (B), and secure it with the bolt.



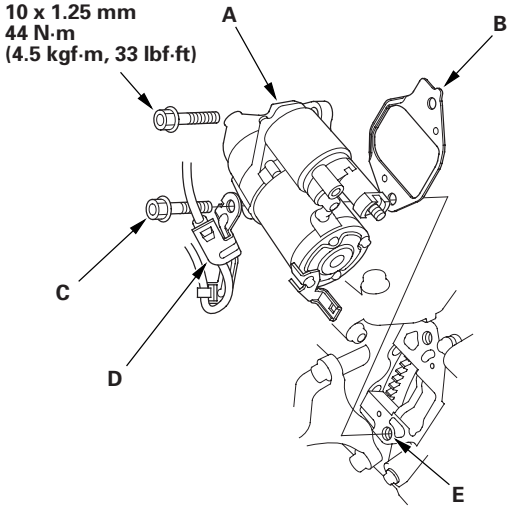
47. Connect the 4th clutch transmission fluid pressure switch connector (C), and install the harness clamp (D) on the bracket. Connect the A/T clutch pressure control solenoid valve A connector (E), and the A/T clutch pressure control solenoid valve B connector (F).

48. Attach the shift cable end (A) to the control lever (B), then insert the control pin (C) into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer (D).

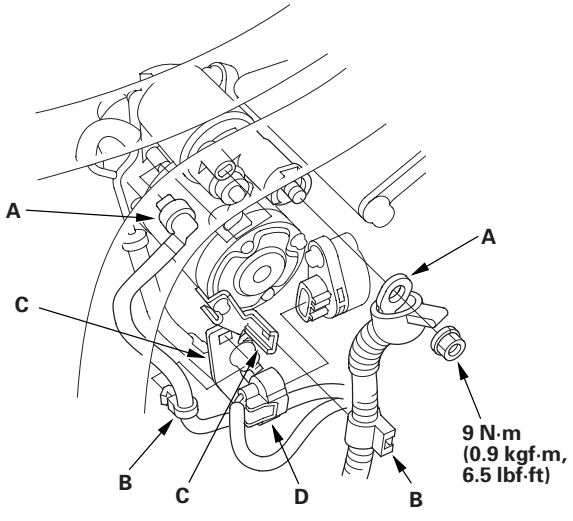


49. Secure the shift cable bracket (E) with the nuts.

50. Install the starter (A) and a new gasket (B) (see page 4-10). Install the mounting bolt (C) through the harness clamp bracket hole (D), and into the lower mounting bolt thread hole (E).

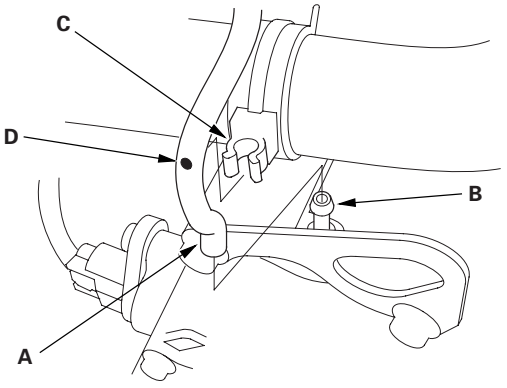


51. Install the starter cables (A), and install the harness clamps (B) on the clamp brackets (C).

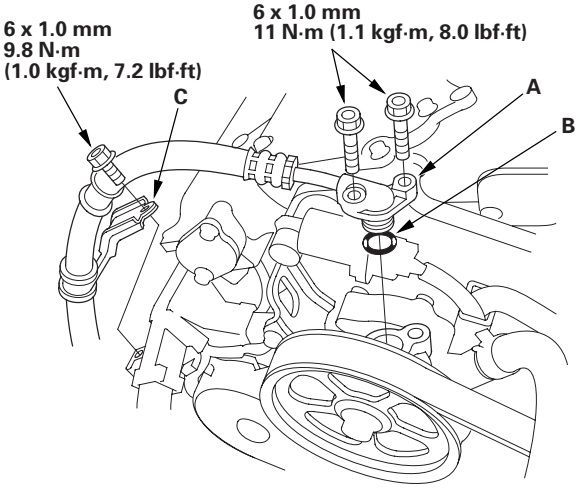


52. Connect the solenoid harness connector (D).

53. Install the transmission breather hose (A) over the breather pipe (B) at the transmission housing, and install the hose in the clamp (C) at the dot (D) on the hose with facing out.



54. Install the power steering pump outlet line (A) with a new O-ring (B) to the pump, and secure the hose clamp (C) with the bolt.



55. Connect the steering joint (see page 17-26).

56. Refill the power steering fluid reservoir with fluid to the upper level line.

57. Refill the transmission with the ATF (see step 5 on page 14-210).

58. Install the battery base bracket and the battery base.

59. Install the air cleaner housing, the resonator, the intake air duct, and the intake manifold cover.

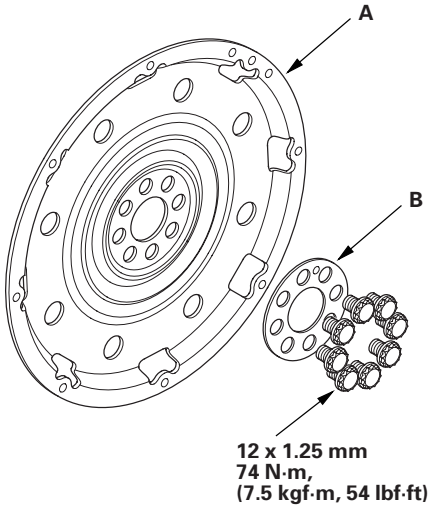
(cont'd)

Transmission Installation (cont'd)

60. Install the battery tray, the battery, and the battery hold-down bracket, then connect the battery cables.
61. Install the splash shield (see page 20-179).
62. Install the service caps on the cowl cover.
63. Set the parking brake, run the engine at fast idle, and turn the steering wheel from lock-to-lock several times to bleed air from the system. Recheck the fluid level, and refill if necessary.
64. Set the parking brake. Start the engine, and shift the transmission through all positions three times. Check the shift lever operation, A/T gear position indicator operation, and shift cable adjustment.
65. Check and adjust the front wheel alignment (see page 18-5).
66. Start the engine in the P or N position, and warm it up to normal operating temperature (the radiator fan comes on).
67. Turn off the engine, and check the ATF level (see page 14-209).
68. Do the road test (see page 14-181).
69. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock (on vehicles without navigation).
70. Do the power window control unit reset procedure (see page 22-209).

Drive Plate Removal and Installation

1. Remove the transmission assembly (see page 14-218).
2. Remove the drive plate (A) and the washer (B) from the engine crankshaft.



3. Install the drive plate and the washer on the engine crankshaft, and tighten the eight bolts in a crisscross pattern in two or more steps.
4. Install the transmission assembly (see page 14-229).

ATF Cooler Cleaning

Special Tools Required
• ATF cooler cleaner GHTTTCF6H
• Magnetic nonbypass spin-on filter GTHGNBP2
These special tools are available through the Honda Tool and Equipment Program 1-888-424-6857.

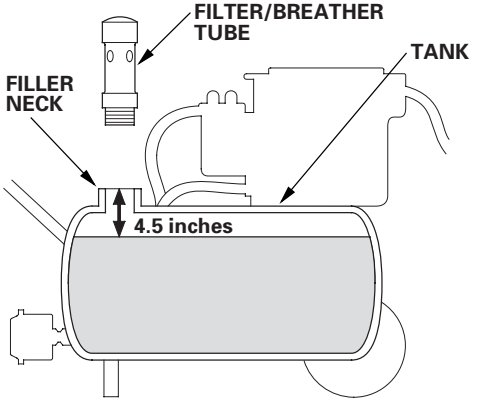
Before installing an overhauled or remanufactured automatic transmission, you must thoroughly clean the ATF cooler to prevent system contamination. Failure to do so could cause a repeat automatic transmission failure.

The cleaning procedure involves heated ATF-Z1 delivered under high pressure (100 psi). Check the security of all hoses and connections. Always wear safety glasses or a face shield, along with gloves and protective clothing. If you get ATF in your eyes or on your skin, rinse with water immediately.

⚠ WARNING

- Improper use of the ATF cooler cleaner can result in burns and other serious injuries.
- Always wear eye protection and protective clothing, and follow this procedure.

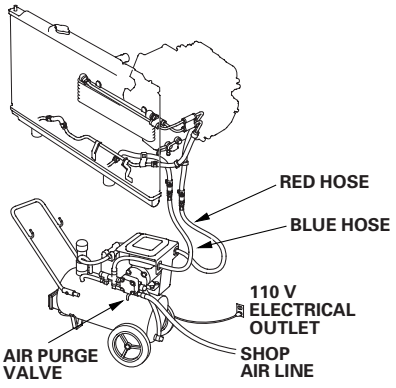
1. Check the fluid in the cooler cleaner tank. (The fluid level should be 4.5 inches from the top of the filler neck.) Adjust the level if needed; do not overfill. Use only Honda ATF-Z1; do not use any additives.



2. Plug the cooler cleaner into a 110 V grounded electrical outlet.

NOTICE

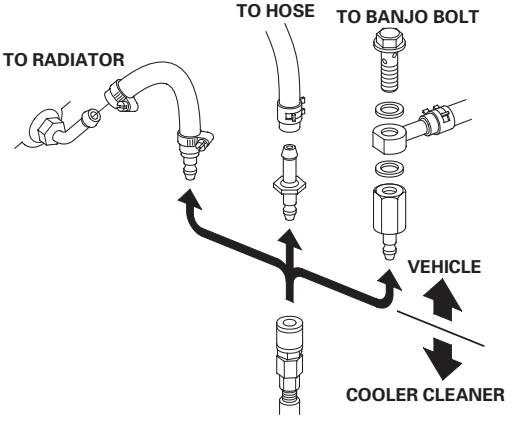
Make sure the outlet has no other appliances (light fixtures, drop lights, extension cords) plugged into it. Also, never plug the cooler cleaner into an extension cord or drop light; you could damage the unit.



3. Flip the HEAT toggle switch to ON; the green indicator above the toggle switch comes on. Wait 1 hour for the cooler cleaner to reach its operating temperature. (The cooler cleaner is ready to use when the temperature gauge reads 140 °to 150 °F.)

   NOTE: If the red indicator above the HEAT toggle switch comes on, the fluid level in the tank is too low for the tank heater to work (see step 1 of this procedure).

4. Select the appropriate pair of fittings, and attach them to the radiator, to the hoses, or to the banjo bolts for flow through the ATF cooler cleaner.



(cont'd)

ATF Cooler Cleaning (cont'd)

5. Connect the red hose to the cooler outlet line (the line that normally goes to the external filter on the transmission).

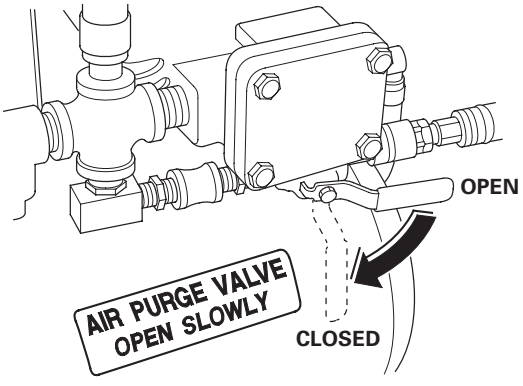
6. Connect the blue hose to the cooler inlet line.

7. Connect a shop air hose (regulated to 100 to 125 psi) to the air purge valve.

   NOTICE
   The quick-connect fitting has a one-way check valve to keep ATF from entering your shop's air system. Do not remove or replace the fitting. Attach the coupler provided with the cooler cleaner to your shop air line if your coupler is not compatible.

8. Flip the MOTOR toggle switch to ON; the green indicator above the toggle switch comes on. Let the pump run for 5 minutes. While the pump is running, open and close the air purge valve periodically to cause agitation and improve the cleaning process. Always open the valve slowly. At the end of the 5-minute cleaning period, leave the air purge valve open.

   NOTE: While the pump is running with the air purge valve open, it is normal to see vapor coming from the filler/breather tube vents.



9. With the air purge valve open, flip the MOTOR toggle switch to OFF; the green indicator goes off. Leave the air purge valve open for at least 15 seconds to purge the lines and hoses of residual ATF, then close the valve.

10. Disconnect the red and blue hoses from the ATF cooler. Now connect the red hose to the cooler inlet line.

11. Now connect the blue hose to the cooler outlet line.

12. Flip the MOTOR toggle switch to ON, and let the pump run for 5 minutes. While the pump is running, open and close the air purge valve periodically. Always open the valve slowly. At the end of the 5-minute cleaning period, leave the air purge valve open.

    NOTE: While the pump is running with the air purge valve open, it is normal to see vapor coming from the filler/breather tube vents.

13. With the air purge valve open, flip the MOTOR toggle switch to OFF. Leave the air purge valve open for at least 15 seconds to purge the lines and hoses of residual ATF, then close the valve.

14. Disconnect the red and blue hoses from the ATF cooler lines.

15. Connect the red and blue hoses to each other.

16. Disconnect the shop air from the air purge valve. Disconnect and stow the coupler if used.

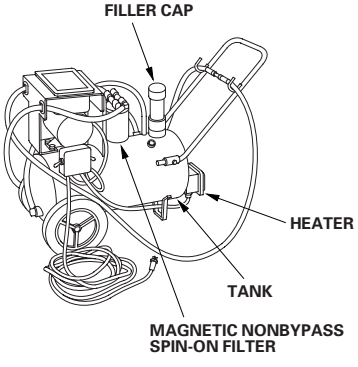
17. Disconnect and stow the fittings from the ATF cooler inlet and outlet lines.

18. Unplug the cooler cleaner from the 110 V outlet.

Tool Maintenance

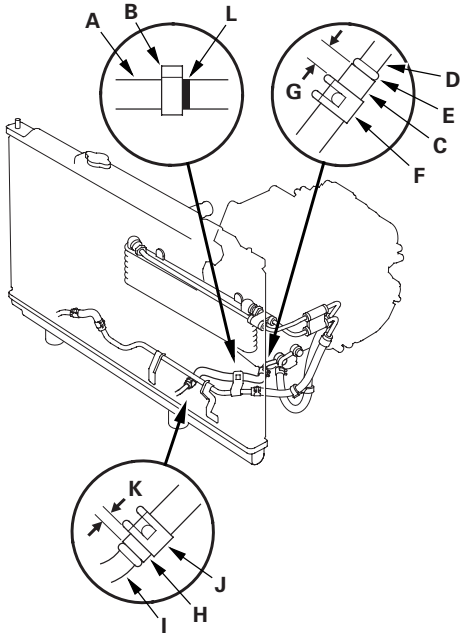
Follow these instructions to keep the ATF cooler cleaner working properly:

- Replace the two magnetic nonbypass spin-on filters once a year or when you notice a restriction in the ATF flow.
- Check the level and condition of the fluid in the tank before each use.
- Replace the ATF in the tank when it looks dark or dirty.



ATF Cooler Outlet Hose Replacement

1. Remove the ATF cooler outlet hose (A) from the hose clamp (B), then disconnect the hose ends from the ATF cooler lines.



2. Slide the ATF cooler outlet hose with the yellow paint end (C) over the ATF cooler line (D) on the transmission until the hose end contacts with the bulge (E).

3. Secure the hose with the clip (F) at 6—8 mm (0.2—0.3 in.) (G) from the hose end.

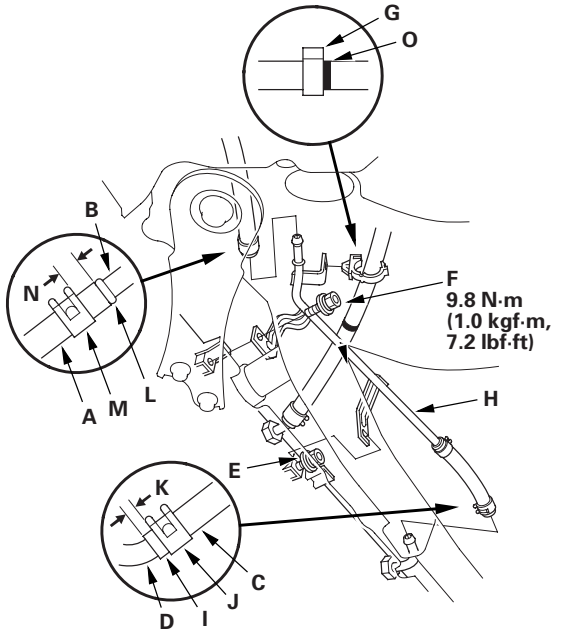
4. Slide the hose end (H) over the cooler line (I) on the ATF cooler under the radiator until the hose end contacts the bend in the line.

5. Secure the hose with the clip (J) at 2—4 mm (0.1—0.2 in.) (K) from the hose end.

6. Install the hose in the clamp at the mark (L).

ATF Cooler Line and Hose Assembly Replacement

1. Disconnect the ATF cooler hose (A) from the ATF cooler line (B).



2. Disconnect the ATF cooler hose (C) from the ATF cooler line (D).

3. Loosen the bolt (E) securing the cooler line bracket, and remove the bolt (F) securing the cooler line bracket.

4. Remove the cooler hose clamp (G) from the clamp bracket.

5. Install a new ATF cooler line and hose assembly (H).

6. Slide the hose end (I) over the cooler line on the ATF cooler under the radiator until the hose end contacts the bend in the line.

7. Secure the hose with the clip (J) at 2—4 mm (0.1—0.2 in.) (K) from the hose end.

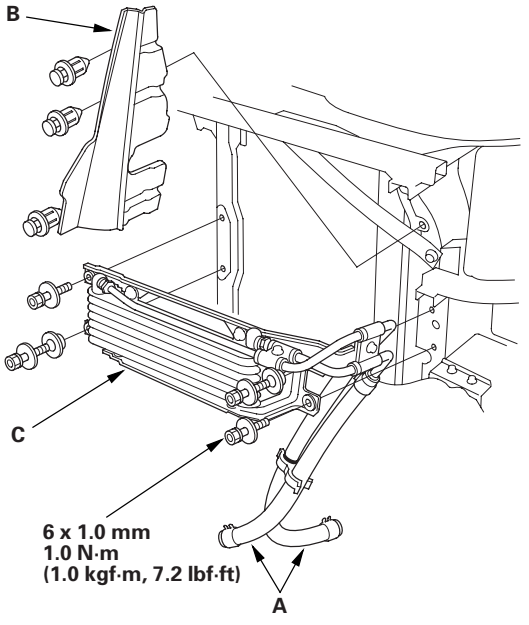
8. Slide the ATF cooler hose over the ATF cooler line until the hose end contacts with the bulge (L).

9. Secure the hose with the clip (M) at 6—8 mm (0.2—0.3 in.) (N) from the hose end.

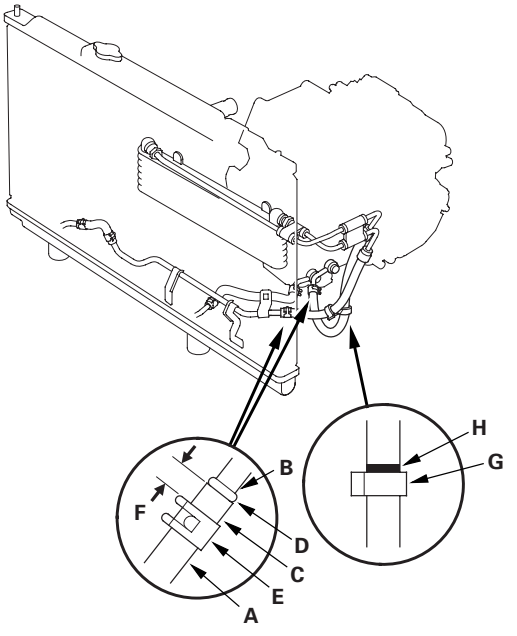
10. Install the cooler hose clamp at the mark (O), then install the clamp on the clamp bracket.

ATF Cooler Replacement

1. Remove the front bulkhead cover (see page 20-171).
2. Remove the front bumper (see page 20-132).
3. Disconnect the ATF cooler hoses (A) from the ATF cooler lines.



4. Remove the splash shield (B), and remove the ATF cooler and cooler hoses assembly (C).
5. Install a new ATF cooler and cooler hoses assembly.
6. Slide the cooler hoses (A) over the ATF cooler lines (B) until the hose ends (C) contact with the bulge (D), and secure the hoses with the clips (E) at 6—8 mm (0.2—0.3 in.) (F) from the hose end.



7. Make sure that the hose clamp (G) is installed at the mark (H).
8. Install the splash shield on the bulkhead bracket.
9. Install the bumper (see page 20-132).
10. Install the bulkhead cover (see page 20-171).

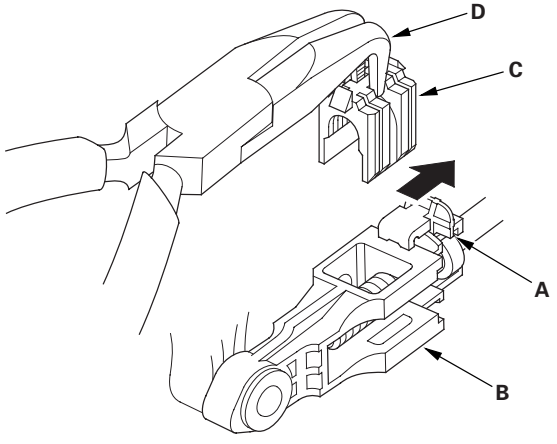
Shift Lever Removal

1. Remove the driver's dashboard lower cover (see page 20-83).

2. Remove the steering column covers (see page 17-24), and lower the steering column.

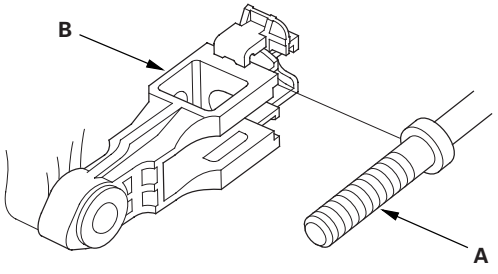
3. Shift the transmission into the R position.

4. Slide the lock tab (A) on the shift cable end holder (B) toward the shift cable socket holder.

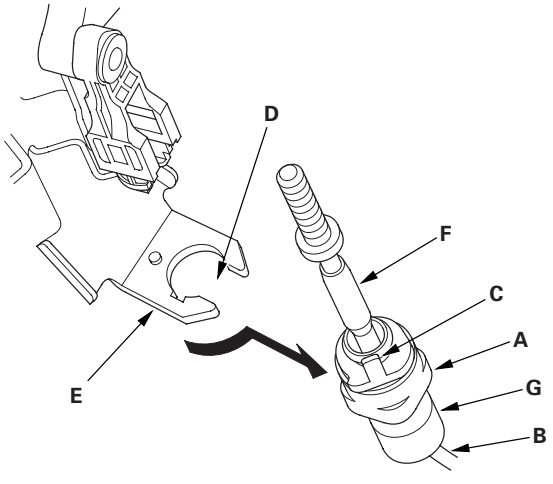


5. Grasp the shift cable lock (C) in the middle with angle-jaw needle-nose pliers (D), and remove it from the shift cable end and the shift cable end holder. Do not pry the shift cable lock with a screwdriver, it may damage the shift cable end holder.

6. Separate the shift cable end (A) from the shift cable end holder (B).



7. Rotate the socket holder (A) on the shift cable (B) a quarter turn; the tab (C) on the socket holder will be in the opening (D) of the socket holder bracket (E). Then slide the holder to remove the shift cable from the socket holder bracket. Do not remove the shift cable by twisting the shift cable guide (F) and damper (G).



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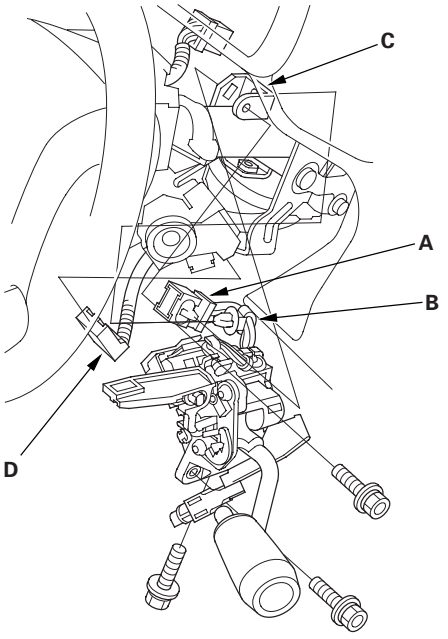
Shift Lever Removal (cont'd)

8. Disconnect the D3 switch/shift lock solenoid/park pin switch connector (A).



9. Remove the connector clamp and the harness clamp (B) from the bracket (C) on the steering column.

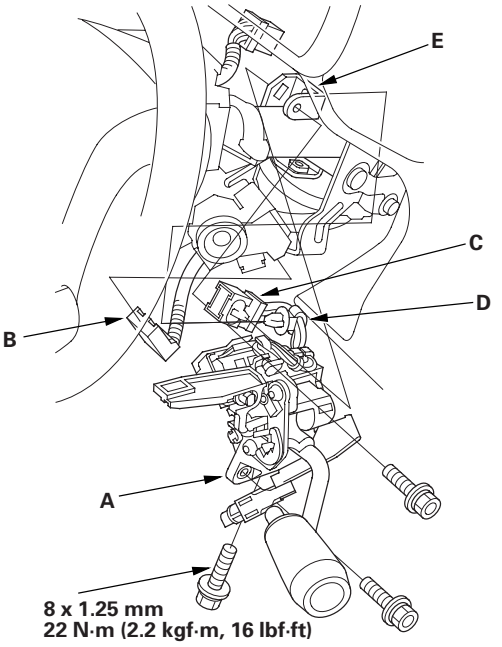
10. Disconnect the 7P connector (D) from the immobilizer control unit-receiver.

11. Cover the area around the opening in the dashboard with tape to prevent damage to the dashboard.

12. Remove the shift lever mounting bolts, and remove the shift lever assembly.

Shift Lever Installation

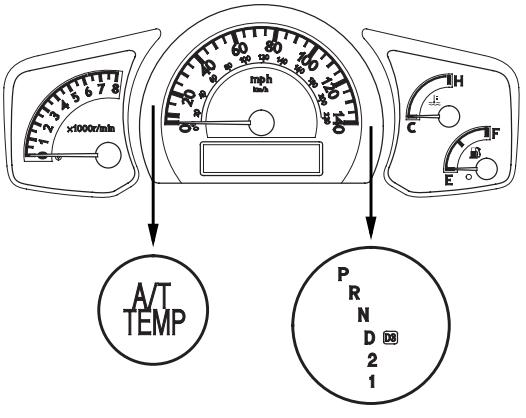
1. Install the shift lever assembly (A) on the steering column.



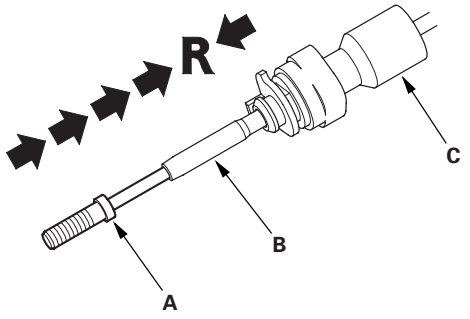
2. Connect the 7P connector (B) to the immobilizer control unit-receiver.

3. Connect the D3 switch/shift lock solenoid/park pin switch connector (C), and install the harness clamp (D) and connector clamp on the bracket (E).

4. Turn the ignition switch to ON (II), and check that the R position indicator comes on.

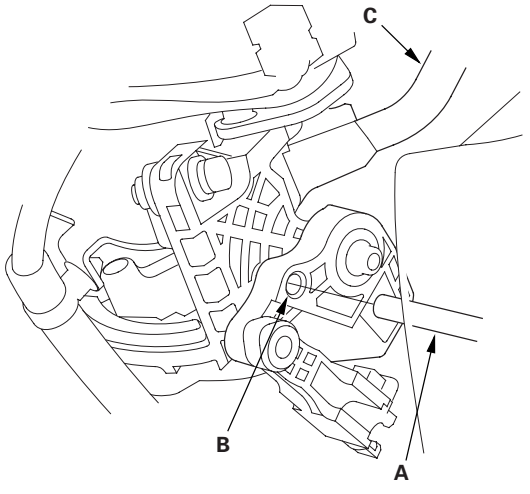


5. If necessary, push the shift cable (A) until it stops, then release it. Pull the shift cable back one step so that the shift position is in R. Do not hold the shift cable guide (B) and the damper (C) to adjust the shift cable.



6. Turn the ignition switch to LOCK (0).

7. Place the shift lever in R, then insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the shift lever link, and into the positioning hole on the shift lever bracket. The shift lever (C) is secured in R.



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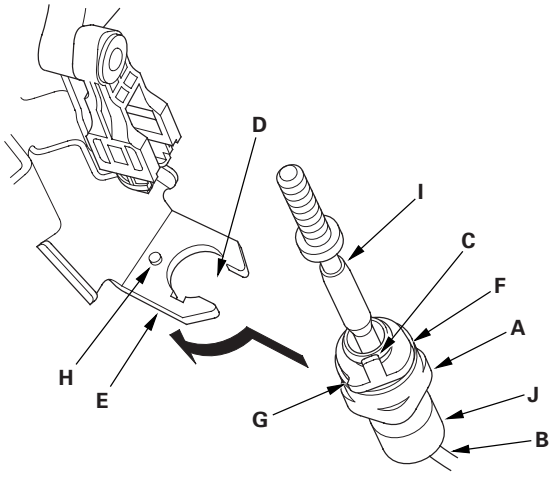
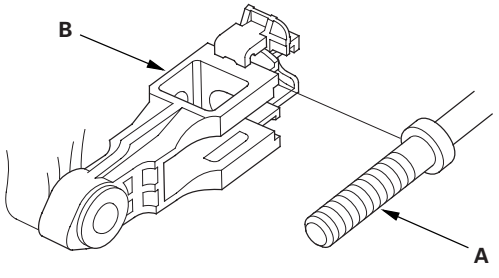
Shift Lever Installation (cont'd)

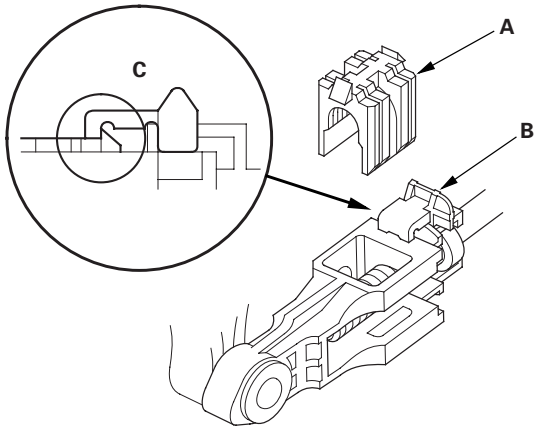
8. Rotate the socket holder (A) on the shift cable (B) to place the tab (C) on the holder opposite to the opening (D) in the socket holder bracket (E). Align the holder with the opening (F) in the bracket, then slide the holder into the bracket. Rotate the holder a quarter turn until the holder lock (G) stops at the projection (H) to secure the shift cable. Do not install the shift cable by twisting the shift cable guide (I) and the damper (J).



9. Install the shift cable end (A) in the shift cable end holder (B). Keep the shift cable end and end holder free of grease.



10. Install the new shift cable lock (A) to secure the shift cable end and shift cable end holder, then slide the lock tab (B) toward the shift lever link until it stops to lock the joint (C).



11. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.

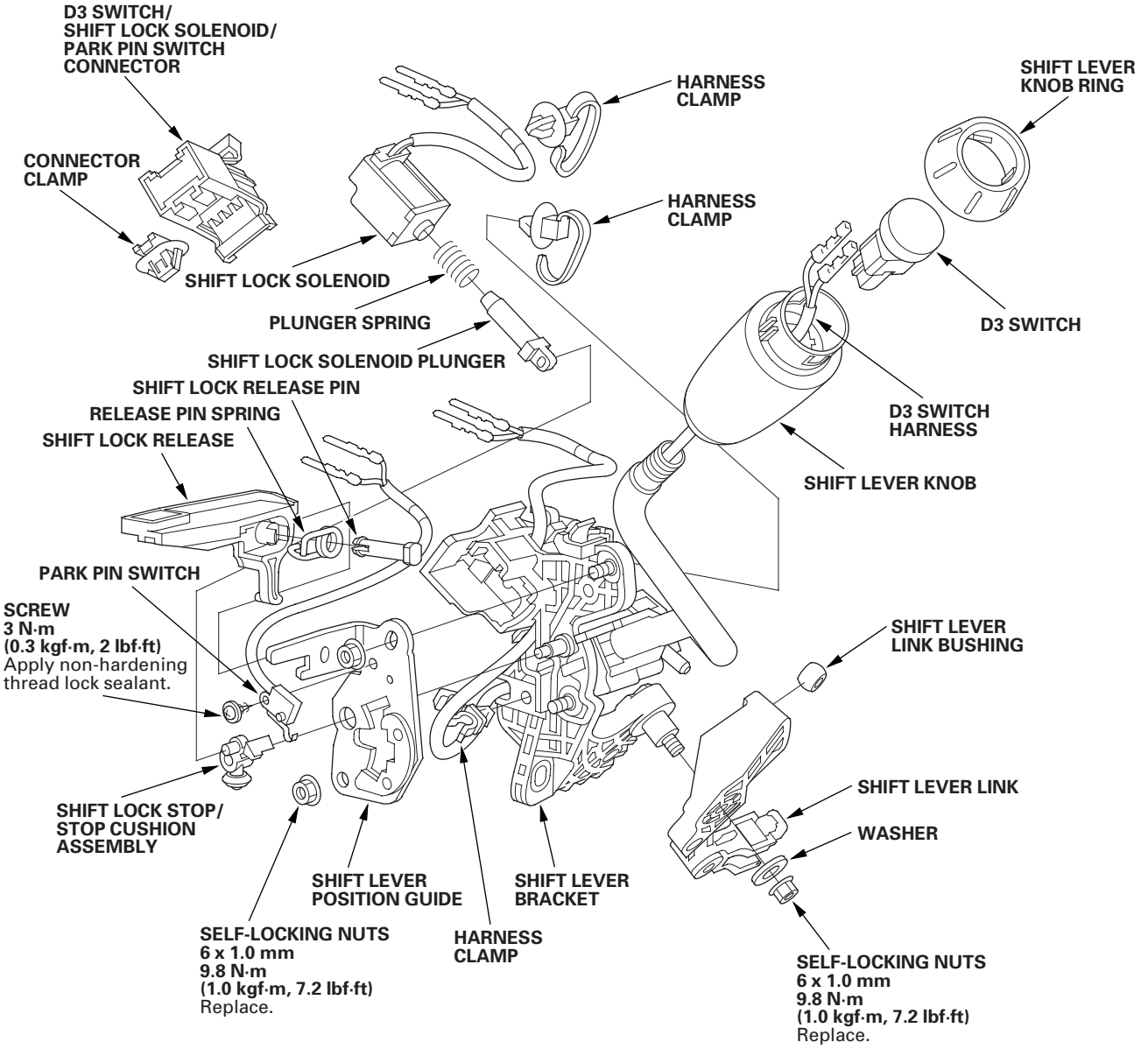
12. Move the shift lever to each position, and check that the A/T gear position indicator follows the transmission range switch.

13. Install the steering column covers (see page 17-26).

14. Install the driver's dashboard lower cover (see page 20-83).

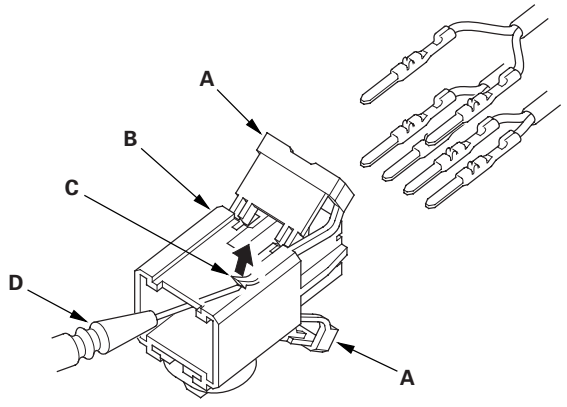
Shift Lever Disassembly/Reassembly

Apply silicon grease to movable joints.

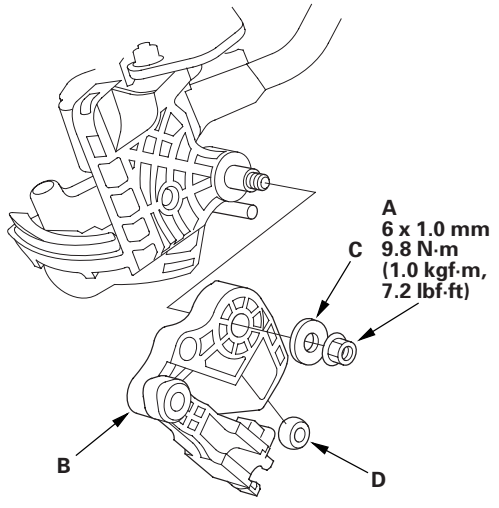


Shift Lever Bracket Assembly Replacement

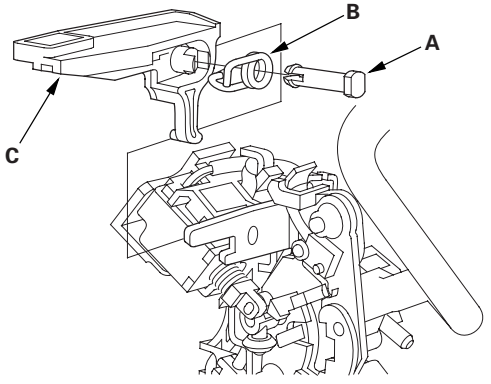
1. Remove the shift lever assembly (see page 14-243).
2. Remove the harness clamps from the shift lever bracket, and remove the harnesses from the harness clamps.
3. Pry up the lock covers (A) of the D3 switch/shift lock solenoid/park pin switch connector (B).



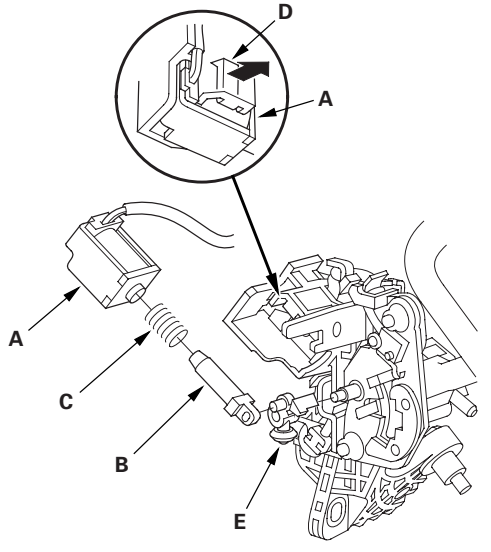
4. Remove the terminal from the connector by pushing the lock tab (C) up in the connector using a thin blade screwdriver (D). Remove all six terminals, and replace the connector.
5. Remove the self-locking nut (A) securing the shift lever link (B) and washer (C), and remove the shift lever link. Do not drop and lose the shift lever link bushing (D).



6. Remove the shift lock release pin (A), spring (B), and shift lock release (C).

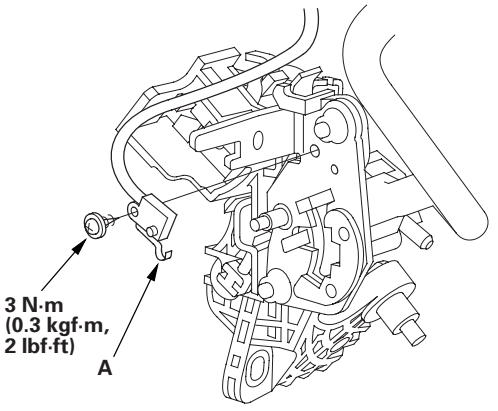


7. Remove the shift lock the solenoid (A), the solenoid plunger (B), and the plunger spring (C) while prying up the solenoid lock (D).

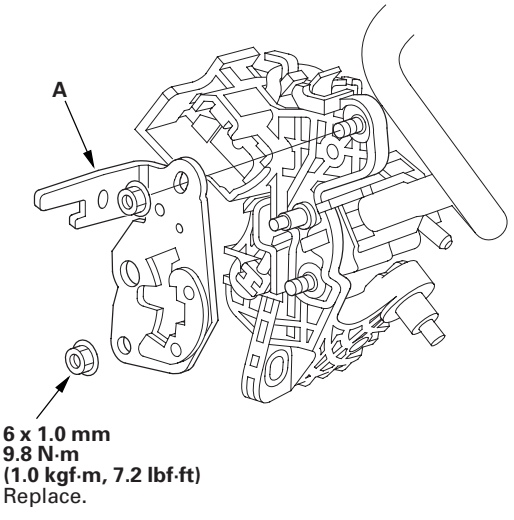


8. Remove the shift lock the stop and the stop cushion assembly (E).

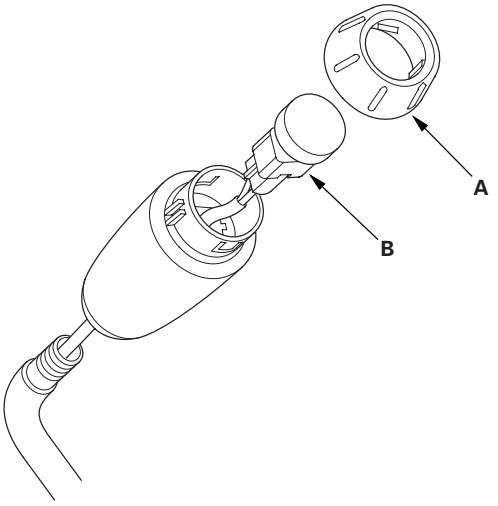
9. Remove the park pin switch (A).



10. Remove the self-locking nuts, and remove the shift lever position guide (A) from the shift lever bracket.

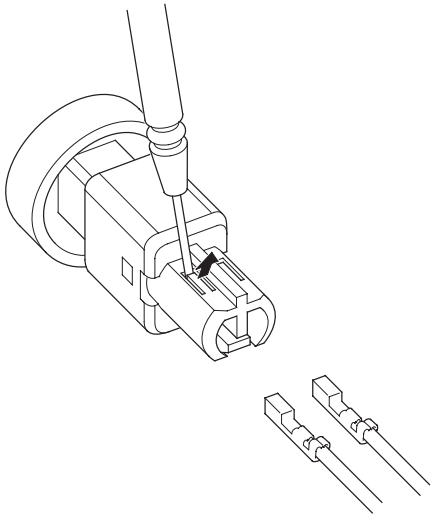


11. Pry off the shift lever knob ring (A), and remove it.



12. Unlatch the D3 switch harness clamp on the shift lever bracket, pry out the D3 switch (B), and pull it from the knob.

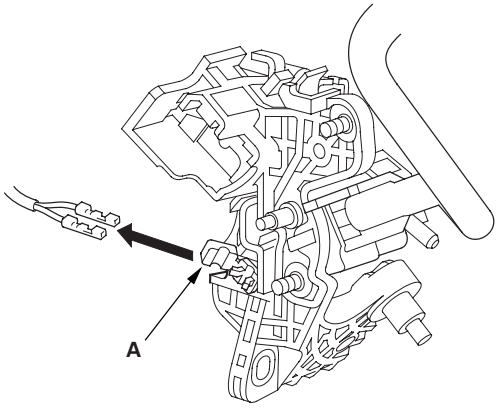
13. Remove the D3 switch harness terminals by prying the lock tabs up with a thin blade screwdriver.



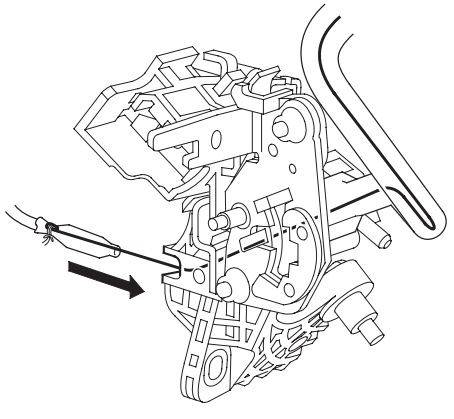
(cont'd)

Shift Lever Bracket Assembly Replacement (cont'd)

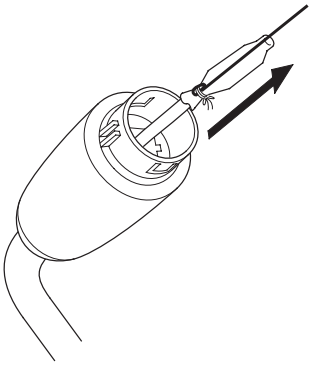
14. Pull the D3 switch harness wires gently from shift lever bracket side, and remove the harness wires and tube. Remove the D3 switch harness clamp (A).



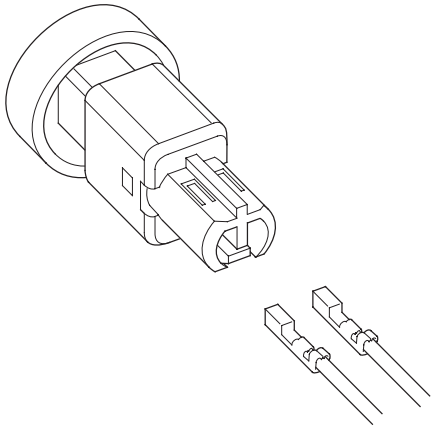
15. Remove the shift lever knob from the shift lever.
16. Replace the shift lever bracket.
17. Install the shift lever knob on a new shift lever.
18. Apply silicone grease to the opening detent of the shift lever position guide, and install the shift lever position guide with new self-locking nuts on the shift lever bracket.
19. Shift the shift lever into P.
20. Insert a wire into the shift lever end, pass it through the shift lever, then pull the wire out.
21. Wrap the D3 switch terminals with tape, and tie a string around the switch terminals.



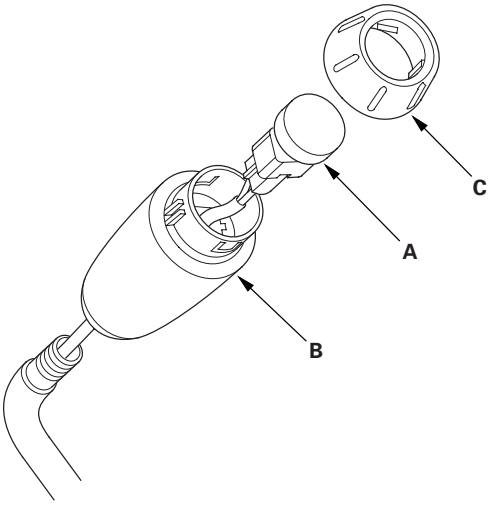
22. Pull the wire from the shift lever end, and pull the D3 switch harness terminals out of the shift lever end.



23. Remove the wire and tape.
24. Install the D3 switch harness terminals in the D3 switch. Either harness terminal can be installed in either cavity.



25. Install the D3 switch (A) in the shift lever knob (B).



26. Install the shift lever knob ring (C).

27. Insert the D3 switch harness wires (connector side) through the shift lever into the hole behind the shift lock solenoid.

28. Install the park pin switch by aligning the tab with the positioning hole on the shift lever position guide. Apply non-hardening thread lock sealant to the screw, then secure the park pin switch with the screw.

29. Apply silicone grease to the pin on the shift lever bracket, and install the shift lock stop over the pin.

30. Install the shift lock solenoid plunger and the plunger spring in the shift lock solenoid.

31. Apply silicone grease to the tip of the shift lock stop, and install the shift lock solenoid by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop.

32. Apply silicone grease to the shift lock release pin and spring, and install the shift lock release, spring, and pin.

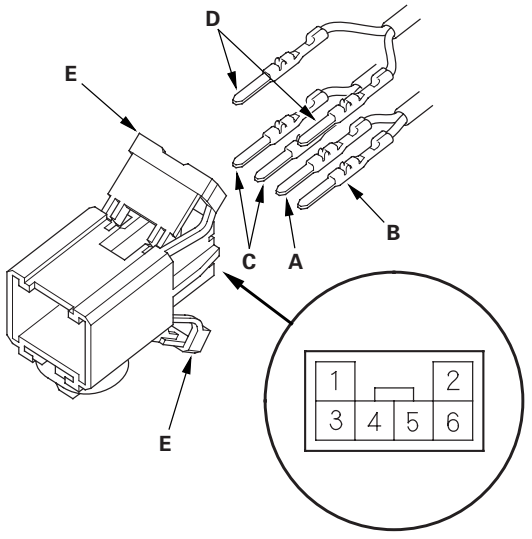
33. Apply silicone grease to the sliding areas between the shift lever link and the shift lever bracket.

34. Apply silicone grease to the shift lever link bushing, and install the bushing in the shift lever link.

35. Install the shift lever link with installing the shift lever pin into the shift lever link bushing.

36. Apply silicone grease to seating area of the washer on the shift lever link, and install the washer and the new self-locking nut.

37. Install the RED harness terminal (A) of the shift lock solenoid in the No. 5 cavity, and the BLK harness terminal (B) in the No. 6 cavity.



Terminal side of male terminals

38. Install the D3 switch harness terminals (WHT) (C) in the No. 3 and No. 4 cavities. Either D3 switch harness terminal can be installed in the No. 3 and No. 4 cavities.

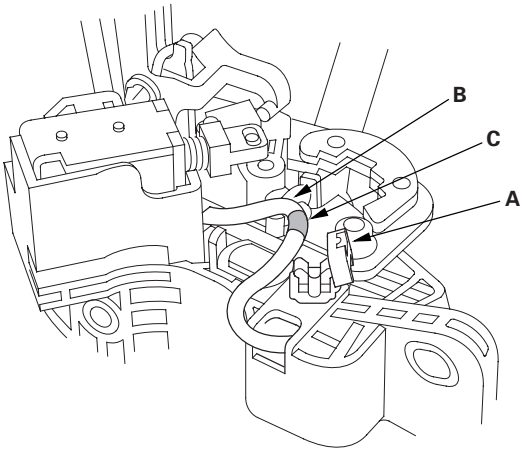
39. Install the park pin switch harness terminals (BLK) (D) in the No. 1 and No. 2 cavities. Either park pin switch harness terminal can be installed in the No. 1 and No. 2 cavities.

40. Make sure that all six terminals lock securely, then install the lock covers (E) securely in place.

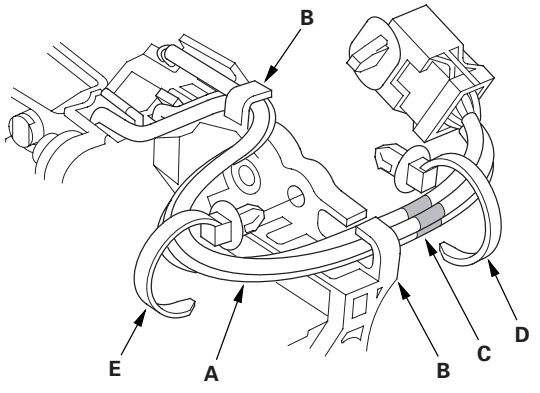
(cont'd)

Shift Lever Bracket Assembly Replacement (cont'd)

41. Install the D3 switch harness clamp (A), then install the harness (B) in the clamp at the mark (C).



42. Route the harnesses (A) through the guides (B).



43. Align the marks (C) on each harness, and tie the harness together into bundle with a new harness clamp (D) over the marks.

44. Tie the harness together into bundle with a new harness clamp, then install the harness clamp (E) on the shift lever bracket.

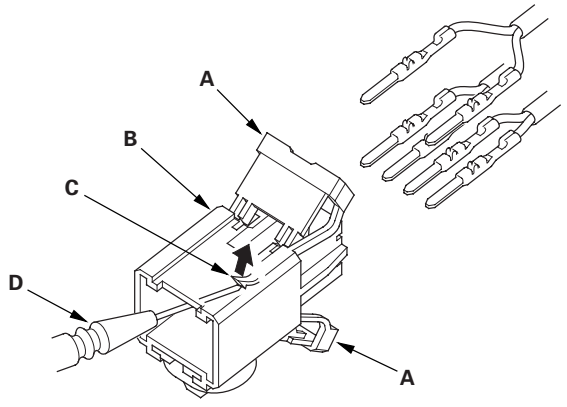
45. Install the shift lever assembly (see page 14-245).

Shift Lever Knob Replacement

1. Remove the shift lever assembly (see page 14-243).

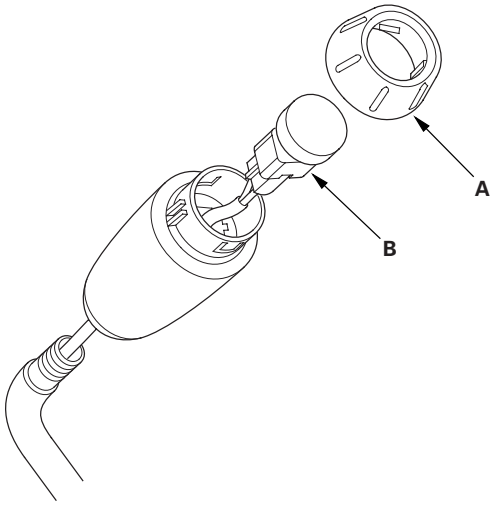
2. Remove the harness clamps from the shift lever bracket, and remove the harnesses from the harness clamps.

3. Pry up the lock covers (A) of the D3 switch/shift lock solenoid/park pin switch connector (B).



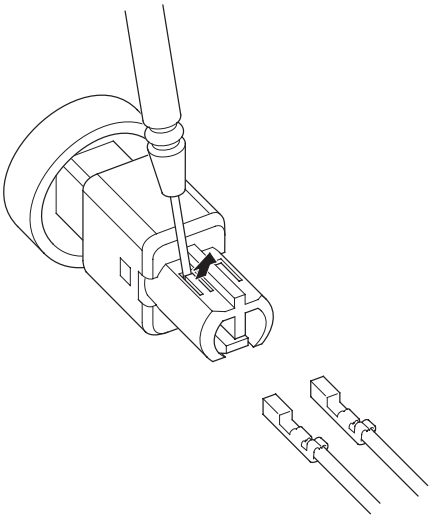
4. Remove the terminal from the connector by pushing the lock tab (C) up in the connector using a thin blade screwdriver (D). Remove all six terminals, and replace the connector.

5. Pry off the shift lever knob ring (A), and remove it.

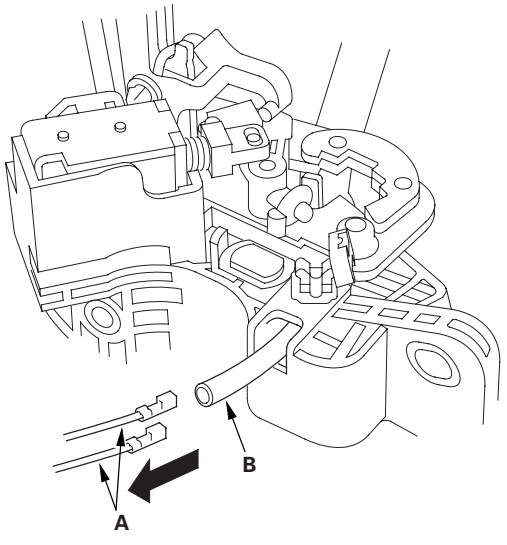


6. Unlatch the D3 switch harness clamp on the shift lever bracket, pry out the D3 switch (B), and pull it from the knob.

7. Remove the D3 switch harness terminals by prying the lock tabs up with a thin blade screwdriver.



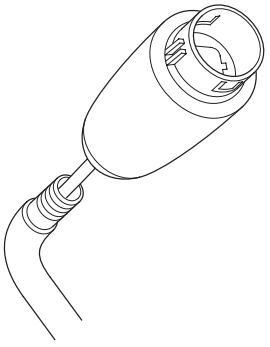
8. Pull the D3 switch harness wires (A) from shift lever bracket side, and remove the harness wires. Leave the harness tube (B) and remove only the wires.



(cont'd)

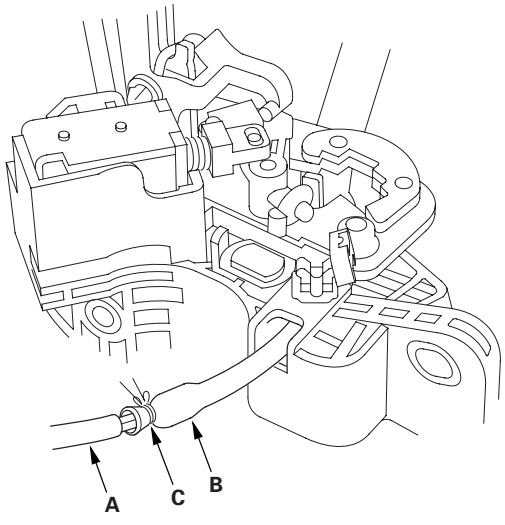
Shift Lever Knob Replacement (cont'd)

9. Remove the shift lever knob from the shift lever.

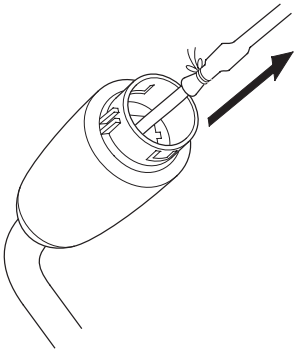


10. Install a new shift lever knob on the shift lever.

11. Insert the new D3 switch harness wires (A) in the original harness tube (B), then tie a string (C) around the tube to secure the terminals in the tube.

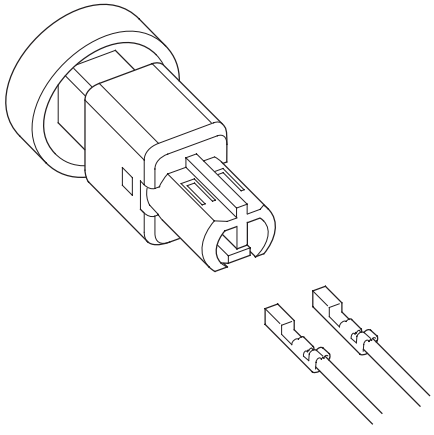


12. Pull the old tube out of the shift lever knob side to install the D3 switch harness wires.

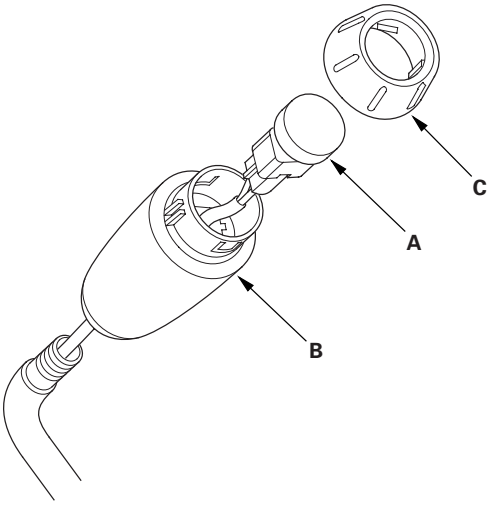


13. Remove the old harness tube from the D3 switch harness terminals.

14. Install the D3 switch harness terminals in the new D3 switch. Either harness terminal can be installed in either cavity.

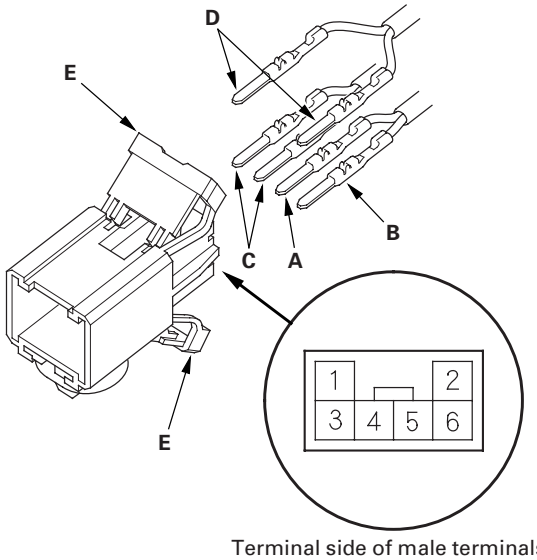


15. Install the D3 switch (A) in the shift lever knob (B).



16. Install the new shift lever knob ring (C).

17. Install the RED harness terminal (A) of the shift lock solenoid in the No. 5 cavity, and the BLK harness terminal (B) in the No. 6 cavity.



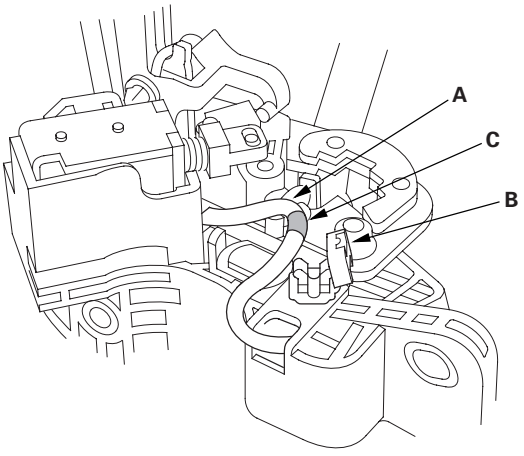
Terminal side of male terminals

18. Install the D3 switch harness terminals (WHT) (C) in the No. 3 and No. 4 cavities. Either D3 switch harness terminal can be installed in the No. 3 and No. 4 cavities.

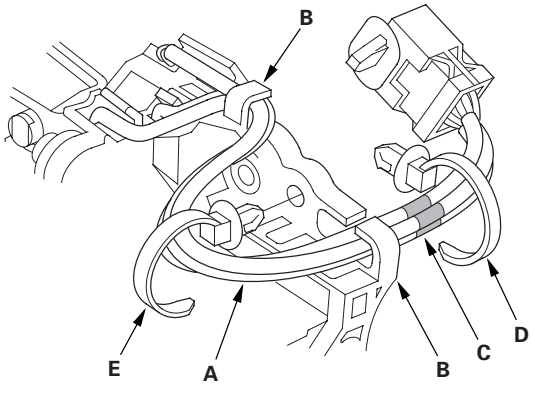
19. Install the park pin switch harness terminals (BLK) (D) in the No. 1 and No. 2 cavities. Either park pin switch harness terminal can be installed in the No. 1 and No. 2 cavities.

20. Make sure that all six terminals lock securely, then install the lock covers (E) securely in place.

21. Install the D3 switch harness (A) in the harness clamp (B) at the mark (C).



22. Route the harnesses (A) through the guides (B).



23. Align the marks (C) on each harness, and tie the harness together into bundle with a new harness clamp (D) over the marks.

24. Tie the harness together into bundle with a new harness clamp, then install the harness clamp (E) on the shift lever bracket.

25. Install the shift lever assembly (see page 14-245).

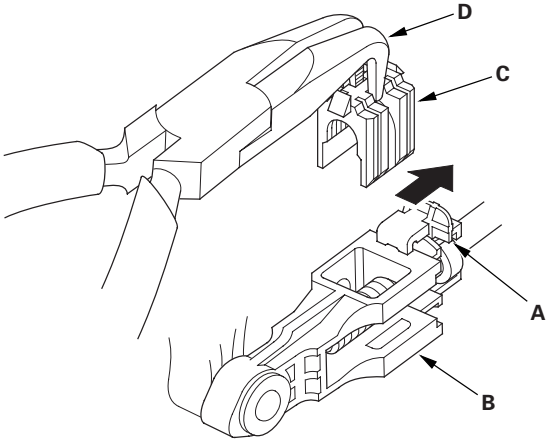
26. Check that the D3 switch operates.

Shift Lever Link Replacement

1. Remove the driver's dashboard lower cover (see page 20-83).

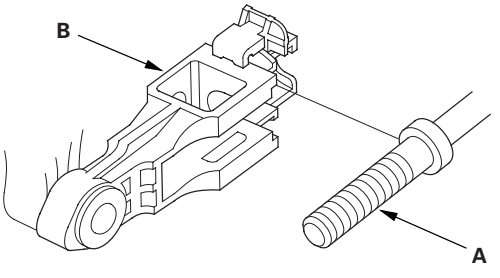
2. Shift the transmission into the R position.

3. Slide the lock tab (A) on the shift cable end holder (B) toward the shift cable socket holder.

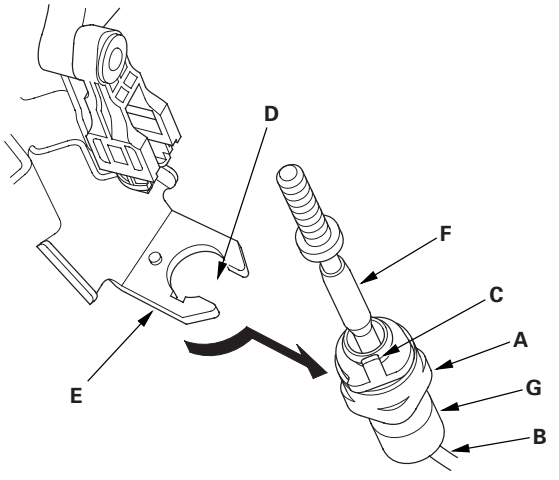


4. Grasp the shift cable lock (C) in the middle with angle-jaw needle-nose pliers (D), and remove it from the shift cable end and shift cable end holder. Do not pry the shift cable lock with a screwdriver, it may damage the shift cable end holder.

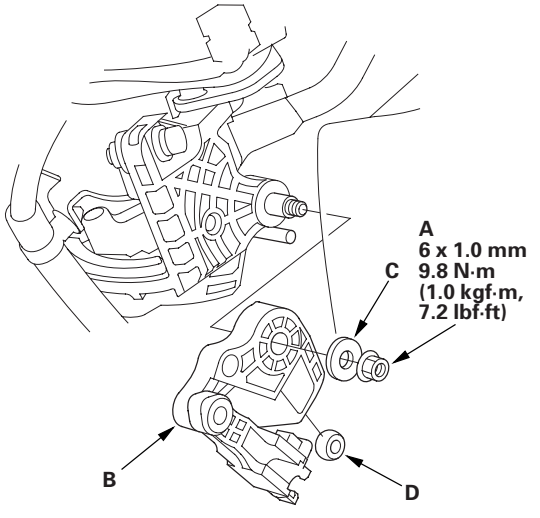
5. Separate the shift cable end (A) from the shift cable end holder (B).



6. Rotate the socket holder (A) on the shift cable (B) a quarter turn; the tab (C) on the socket holder will be in the opening (D) of the socket holder bracket (E). Then slide the holder to remove the shift cable from the socket holder bracket. Do not remove the shift cable by twisting the shift cable guide (F) and damper (G).



7. Remove the self-locking nut (A) securing the shift lever link (B) and washer (C), and remove the shift lever link. Do not drop and lose the shift lever link bushing (D).



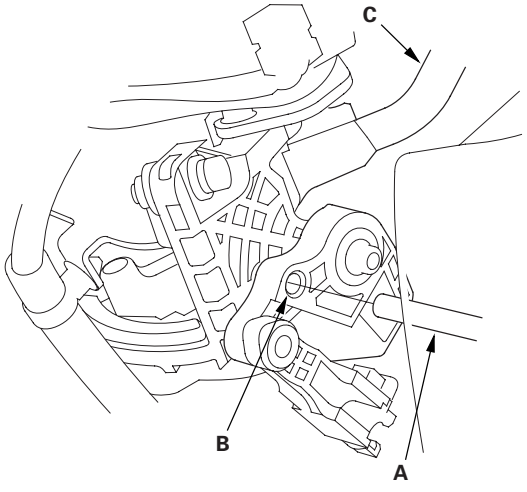
8. Apply silicone grease to the sliding areas between the shift lever link and shift lever bracket.

9. Apply silicone grease to the shift lever link bushing, and install the bushing in the new shift lever link.

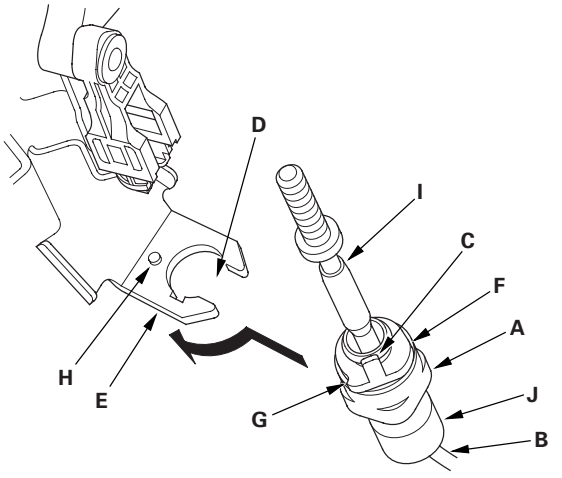
10. Install a new shift lever link with installing the shift lever pin into the shift lever link bushing.

11. Apply silicone grease to seating area of the washer on the shift lever link, and install the washer and the new self-locking nut.

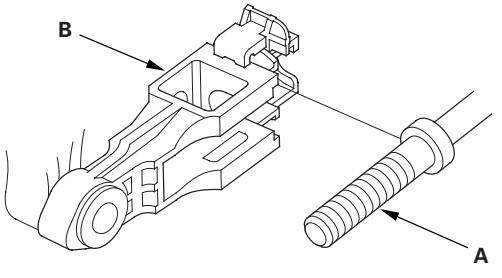
12. Place the shift lever in R, then insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the shift lever link, and into the positioning hole on the shift lever bracket. The shift lever (C) is secured in R.



13. Rotate the socket holder (A) on the shift cable (B) to place the tab (C) on the holder opposite to the opening (D) in the socket holder bracket (E). Align the holder with the opening (F) in the bracket, then slide the holder into the bracket. Rotate the holder a quarter turn until the holder lock (G) stops at the projection (H) to secure the shift cable. Do not install the shift cable by twisting the shift cable guide (I) and damper (J).



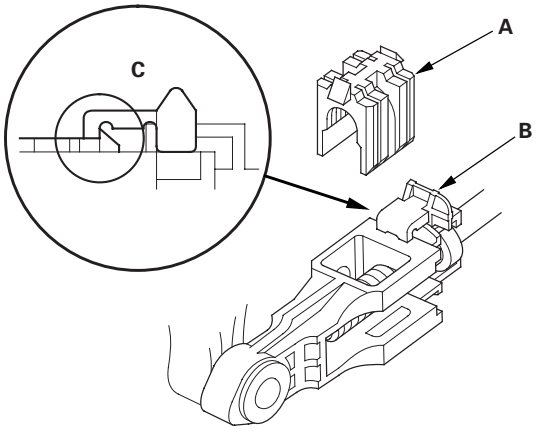
14. Install the shift cable end (A) in the shift cable end holder (B). Keep the shift cable end and end holder free of grease.



(cont'd)

Shift Lever Link Replacement (cont'd)

15. Install a new shift cable lock (A) to secure the shift cable end and shift cable end holder, then slide the lock tab (B) toward the shift lever link until it stops to lock the joint (C).



16. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.

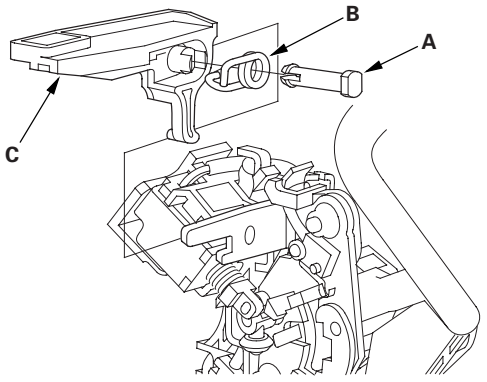
17. Move the shift lever to each position, and verify that the A/T gear position indicator follows the transmission range switch.

18. Install the driver's dashboard lower cover (see page 20-83).

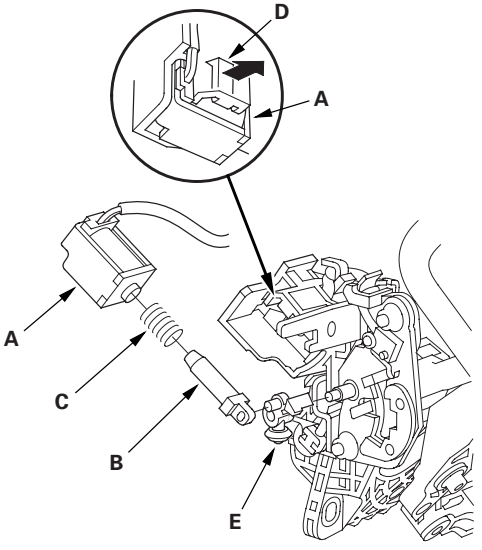
Shift Lever Position Guide Replacement

1. Remove the shift lever assembly (see page 14-243).

2. Remove the shift lock release pin (A), spring (B), and the shift lock release (C).

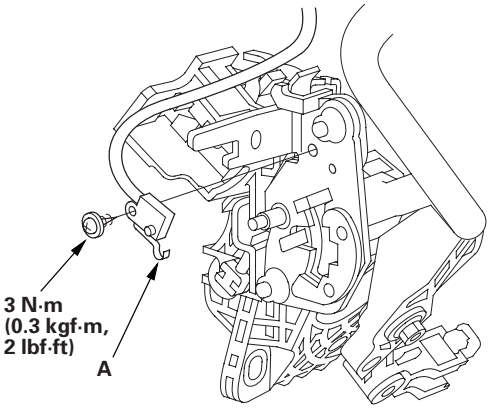


3. Remove the shift lock solenoid (A), the solenoid plunger (B), and the plunger spring (C) while prying up the solenoid lock (D).

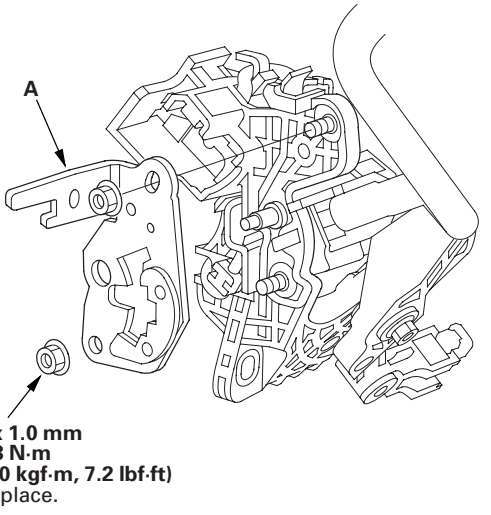


4. Remove the shift lock stop and the stop cushion assembly (E).

5. Remove the park pin switch (A).



6. Remove the self-locking nuts, and remove the shift lever position guide (A) from the shift lever bracket.



7. Apply silicone grease to the opening detent of the shift lever position guide, and install the new shift lever position guide with new self-locking nuts on the shift lever bracket.

(cont'd)

Shift Lever Position Guide Replacement (cont'd)

8. Install the park pin switch by aligning the tab with the positioning hole on the shift lever position guide. Apply non-hardening thread lock sealant to the screw, then secure the park pin switch with the screw.

9. Apply silicone grease to the pin on the shift lever bracket, and install the shift lock stop over the pin.

10. Install the shift lock solenoid plunger and the plunger spring in the shift lock solenoid.

11. Apply silicone grease to the tip of the shift lock stop, and install the shift lock solenoid by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop.

12. Apply silicone grease to the shift lock release pin and spring, and install the shift lock release, spring, and pin.

13. Install the shift lever assembly (see page 14-245).

Shift Cable Replacement

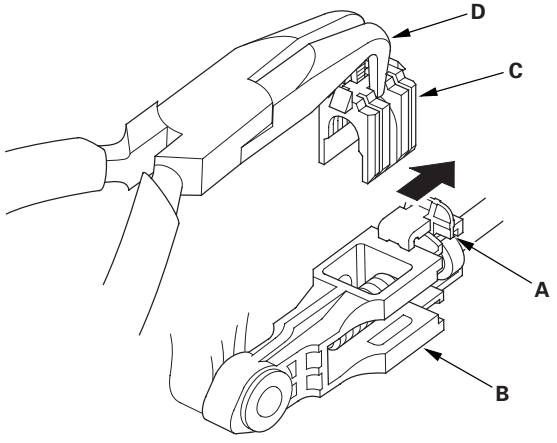
1. Raise the vehicle on a lift, and make sure it is supported securely (see page 1-10).

2. Remove the driver's dashboard lower cover (see page 20-83).

3. Remove the steering column covers (see page 17-24), and lower the steering column.

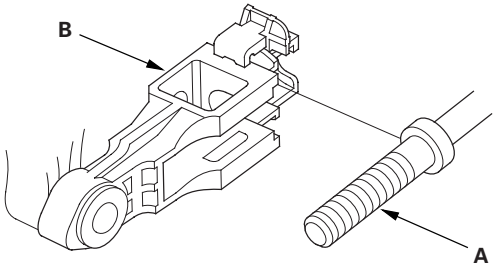
4. Shift the transmission into the R position.

5. Slide the lock tab (A) on the shift cable end holder (B) toward the shift cable socket holder.

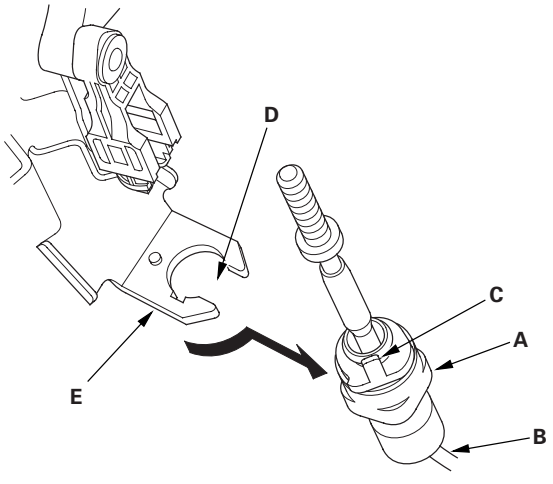


6. Grasp the shift cable lock (C) in the middle with angle-jaw needle-nose pliers (D), and remove it from the shift cable end and the shift cable end holder. Do not pry the shift cable lock with a screwdriver, it may damage the shift cable end holder.

7. Separate the shift cable end (A) from the shift cable end holder (B).



8. Rotate the socket holder (A) on the shift cable (B) a quarter turn; the tab (C) on the socket holder will be in the opening (D) of the socket holder bracket (E). Then slide the holder to remove the shift cable from the socket holder bracket.



9. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).

10. Disconnect the negative cable from the battery, then disconnect the positive cable.

11. Remove the battery hold-down bracket, and remove the battery and the battery tray.

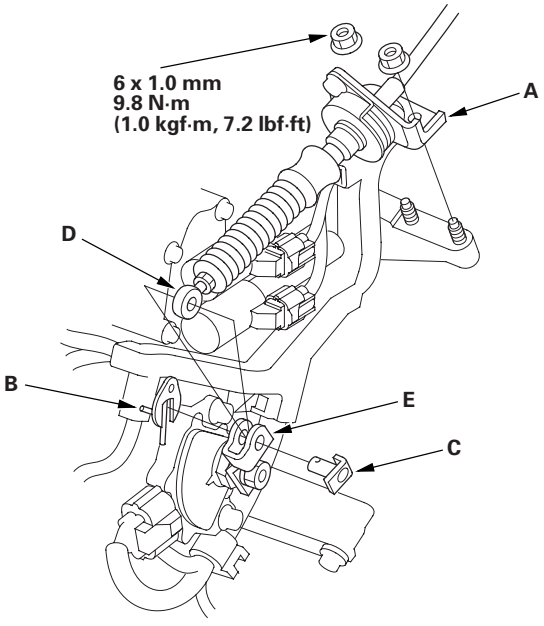
(cont'd)

Shift Cable Replacement (cont'd)

12. Remove the intake manifold cover, the intake air duct, the resonator, and the air cleaner housing.

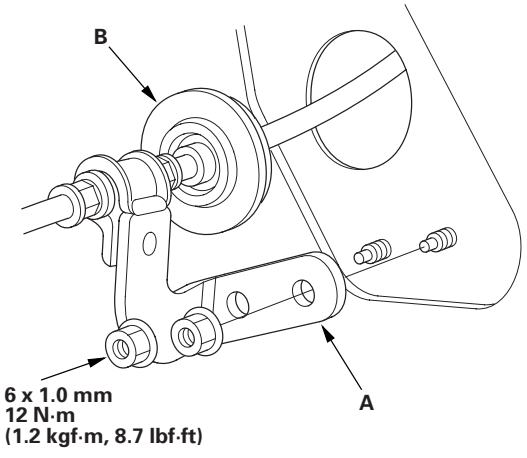
13. Remove the battery base and the battery base bracket.

14. Remove the nuts securing the shift cable bracket (A).



15. Remove the spring clip/washer (B) and the control pin (C), then separate the shift cable end (D) from the control lever (E).

16. Remove the nuts securing the shift cable bracket (A).



17. Remove the shift cable grommet (B), and pull out the shift cable.

18. Insert a new shift cable through the grommet hole, and install the grommet in its hole. Do not bend the shift cable excessively.

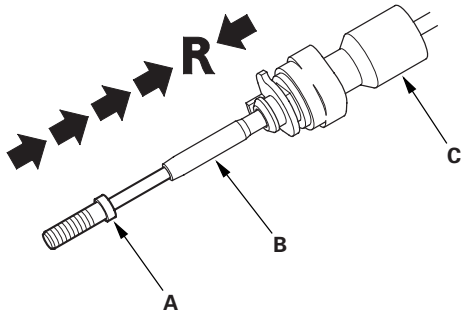
19. Secure the shift cable bracket with the nuts.

20. Attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.

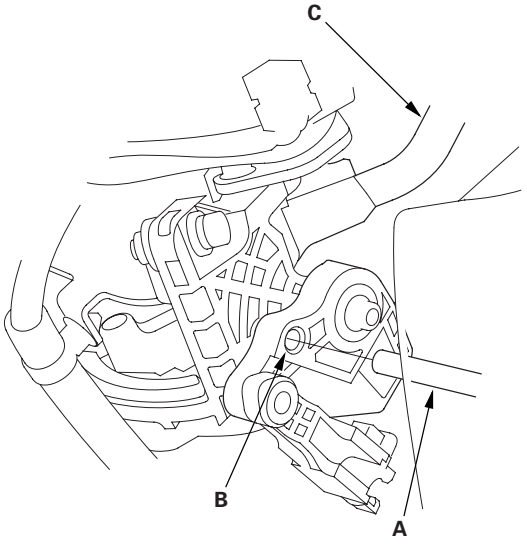
21. Secure the shift cable bracket with the nuts on the transmission housing.

22. Verify that the transmission is in the R position at the control lever on the transmission range switch.

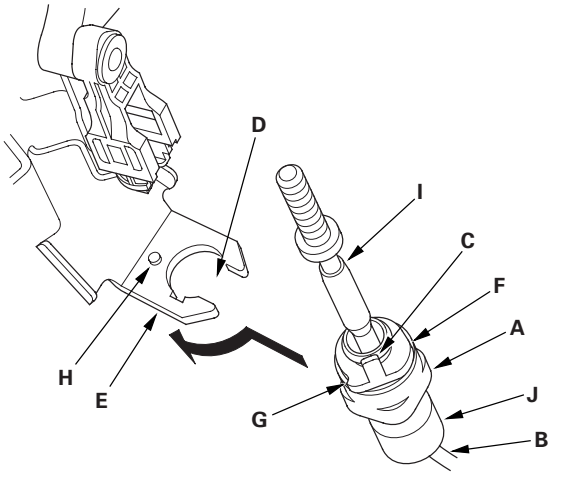
23. If necessary, push the shift cable (A) until it stops, then release it. Pull the shift cable back one step so that the shift position is in R. Do not hold the shift cable guide (B) and the damper (C) to adjust the shift cable.



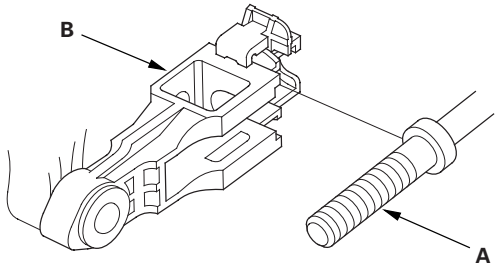
24. Place the shift lever in R, then insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the shift lever link, and into the positioning hole on the shift lever bracket. The shift lever (C) is secured in the R position.



25. Rotate the socket holder (A) on the shift cable (B) to place the tab (C) on the holder opposite to the opening (D) in the socket holder bracket (E). Align the holder with the opening (F) in the bracket, then slide the holder into the bracket. Rotate the holder a quarter turn until the holder lock (G) stops at the projection (H) to secure the shift cable. Do not install the shift cable by twisting the shift cable guide (I) and the damper (J).



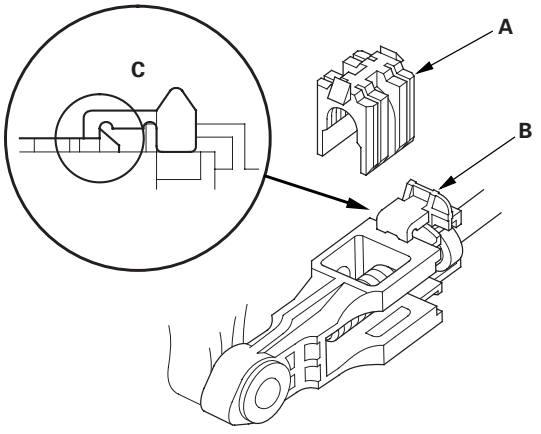
26. Install the shift cable end (A) in the shift cable end holder (B). Keep the shift cable end and end holder free of grease.



(cont'd)

Shift Cable Replacement (cont'd)

27. Install the new shift cable lock (A) to secure the shift cable end and shift cable end holder, then slide the lock tab (B) toward the shift lever link until it stops to lock the joint (C).



28. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.

29. Install the battery base bracket and the battery base.

30. Install the air cleaner housing, the resonator, the intake air duct, and the intake manifold cover.

31. Install the battery tray, the battery, and the battery hold-down bracket, then connect the battery cables.

32. Move the shift lever to each position, and check that the A/T gear position indicator follows the transmission range switch.

33. Raise the vehicle on a lift, and allow all the wheels to rotate freely.

34. Start the engine, and check the shift lever operation in all gears.

35. Push the shift lock release, and verify that the shift lever releases.

36. Install the steering column covers (see page 17-26).

37. Install the driver's dashboard lower cover (see page 20-83).

38. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock (on vehicles without navigation).

39. Do the power window control unit reset procedure (see page 22-209).

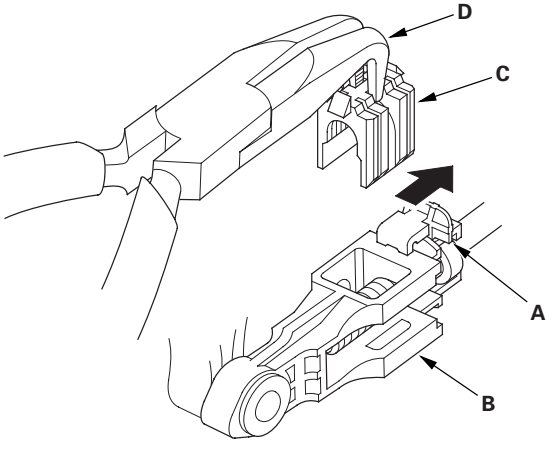
Shift Cable Adjustment

1. Remove the driver's dashboard lower cover (see page 20-83).

2. Remove the steering column covers (see page 17-24), and lower the steering column.

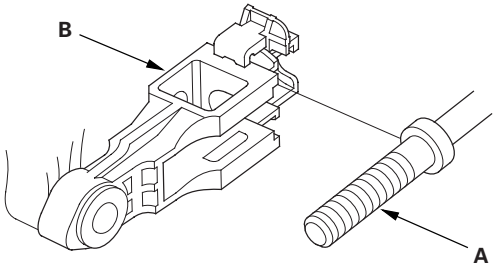
3. Shift the transmission into R.

4. Slide the lock tab (A) on the shift cable end holder (B) toward the shift cable socket holder.

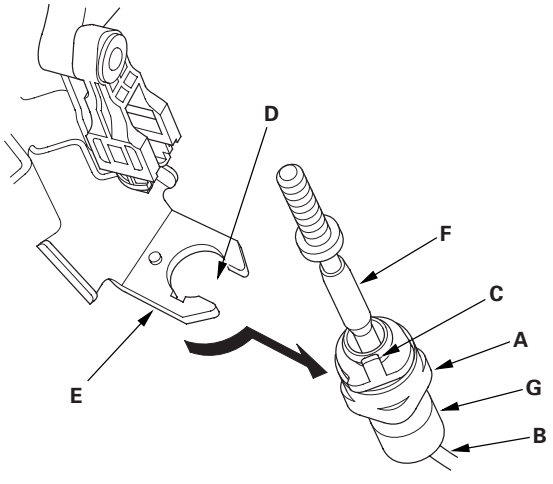


5. Grasp the shift cable lock (C) in the middle with angle-jaw needle-nose pliers (D), and remove it from the shift cable end and the shift cable end holder. Do not pry the shift cable lock with a screwdriver, it may damage the shift cable end holder.

6. Separate the shift cable end (A) from the shift cable end holder (B).



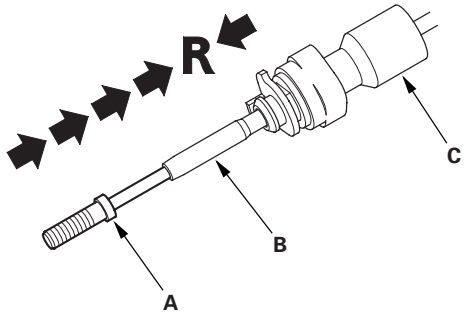
7. Rotate the socket holder (A) on the shift cable (B) a quarter turn; the tab (C) on the socket holder will be in the opening (D) of the socket holder bracket (E). Then slide the holder to remove the shift cable from the socket holder bracket. Do not remove the shift cable by twisting the shift cable guide (F) and the damper (G).



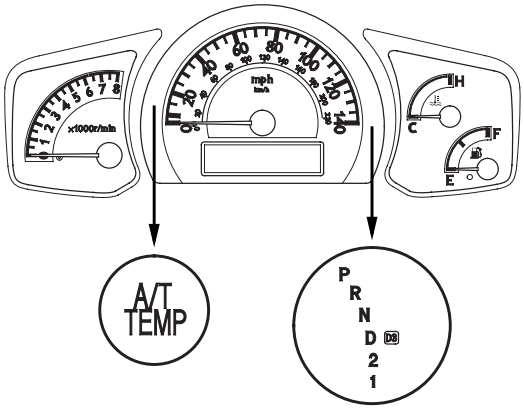
(cont'd)

Shift Cable Adjustment (cont'd)

8. Push the shift cable (A) until it stops, then release it. Pull the shift cable back one step so that the shift position is in R. Do not hold the shift cable guide (B) and the damper (C) to adjust the shift cable.

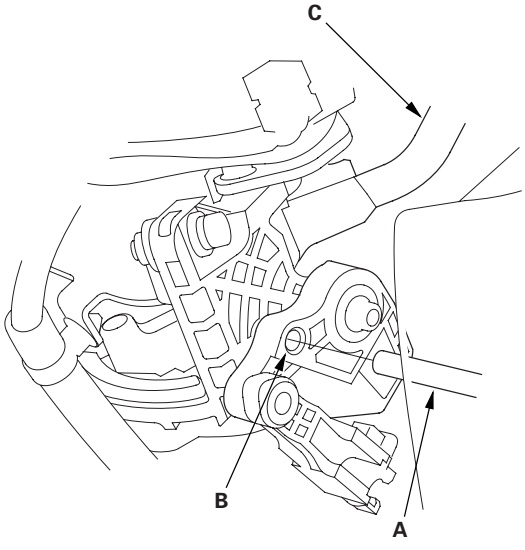


9. Turn the ignition switch to ON (II), and check that the R position indicator comes on.

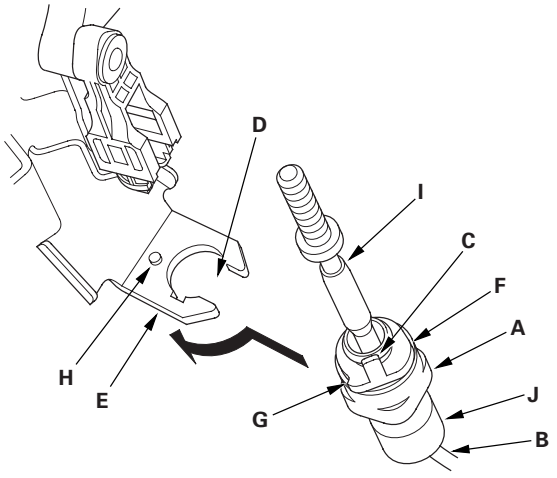


10. Turn the ignition switch to LOCK (0).

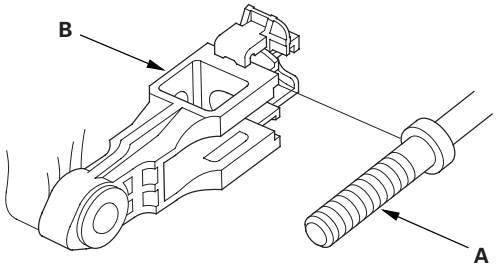
11. Place the shift lever in R, then insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the shift lever link, and into the positioning hole on the shift lever bracket. The shift lever (C) is secured in R.



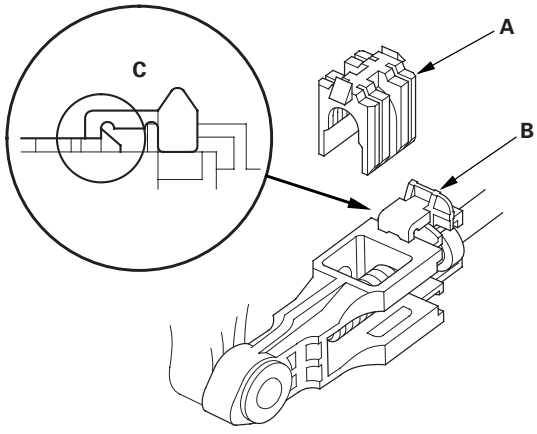
12. Rotate the socket holder (A) on the shift cable (B) to place the tab (C) on the holder opposite to the opening (D) in the socket holder bracket (E). Align the holder with the opening (F) in the bracket, then slide the holder into the bracket. Rotate the holder a quarter turn until the holder lock (G) stops at the projection (H) to secure the shift cable. Do not install the shift cable by twisting the shift cable guide (I) and the damper (J).



13. Install the shift cable end (A) in the shift cable end holder (B). Keep the shift cable end and end holder free of grease.



14. Install the new shift cable lock (A) to secure the shift cable end and the shift cable end holder, then slide the lock tab (B) toward the shift lever link until it stops to lock the joint (C).



15. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.

16. Move the shift lever to each position, and check that the A/T gear position indicator follows the transmission range switch.

17. Raise the vehicle on a lift, and allow all the wheels to rotate freely.

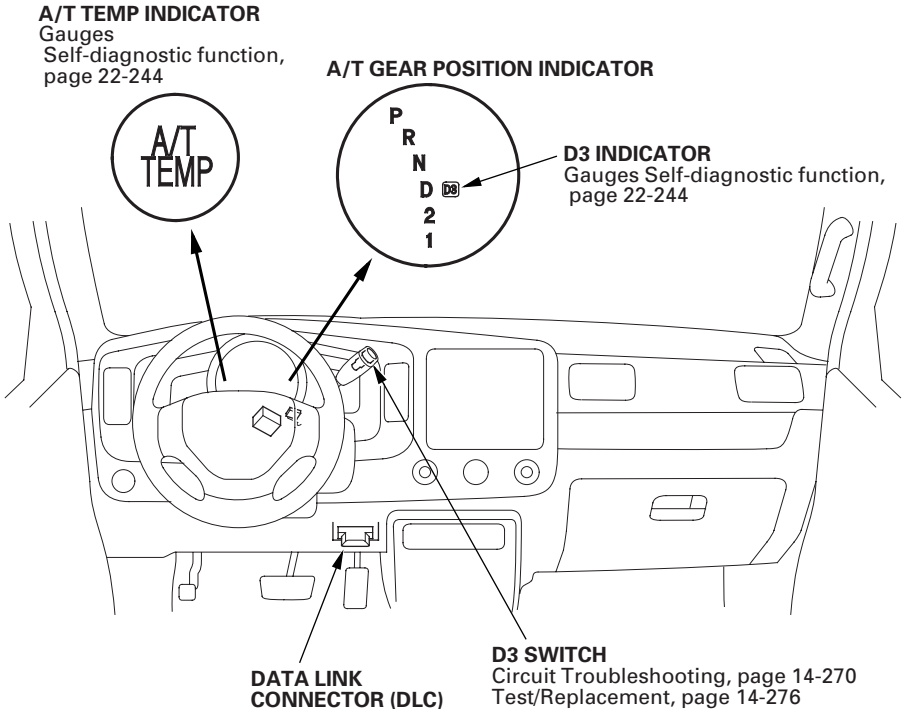
18. Start the engine, and check the shift lever operation in all gears.

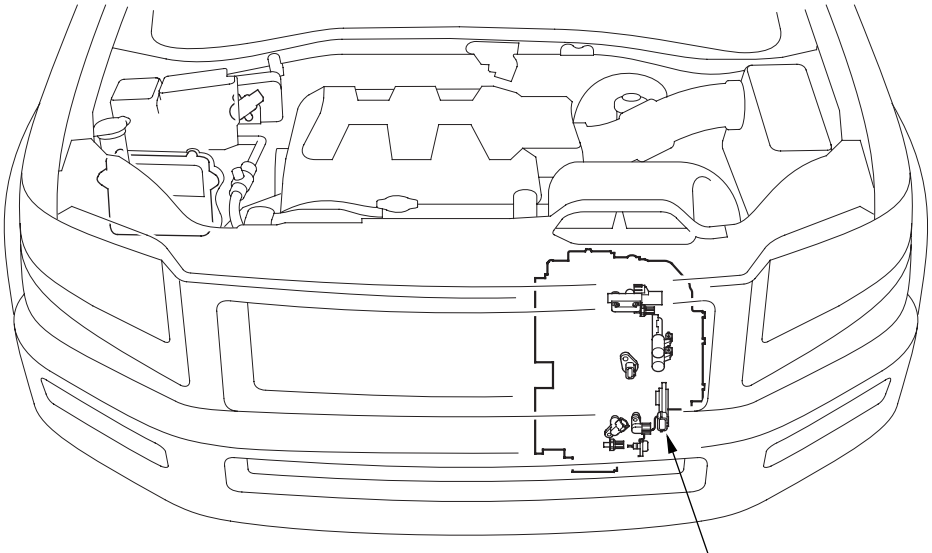
19. Install the steering column covers (see page 17-26).

20. Install the driver's dashboard lower cover (see page 20-83).

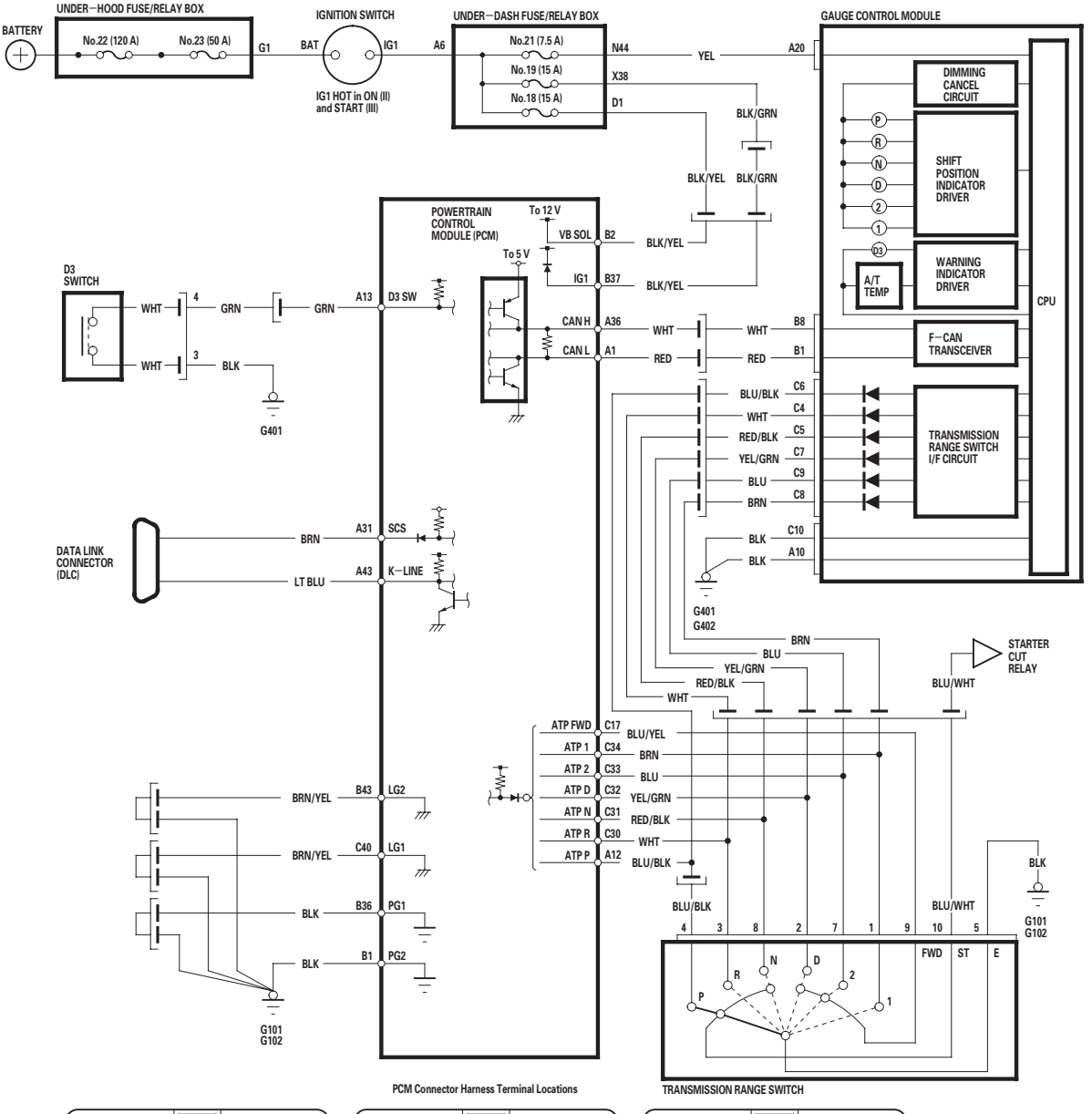
A/T Gear Position Indicator

Component Location Index





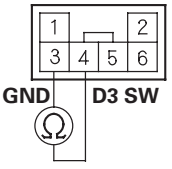
Circuit Diagram



D3 Switch Circuit Troubleshooting

1. Turn the ignition switch to LOCK (0).
2. Remove the shift lever, and disconnect the D3 switch/shift lock solenoid/park pin switch connector (see page 14-243).
3. Check for continuity between D3 switch/shift lock solenoid/park pin switch connector terminals No. 3 and No. 4 while pressing the D3 switch and when the switch is released.

D3 SWITCH/SHIFT LOCK SOLENOID/ PARK PIN SWITCH CONNECTOR



Terminal side of male terminals

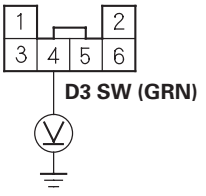
Is there continuity while pressing the D3 switch, and no continuity when the switch is released?

YES—Go to step 4.

NO—Replace the D3 switch (see page 14-276). ■

4. Turn the ignition switch to ON (II).
5. Shift to D.
6. Measure the voltage between D3 switch/shift lock solenoid/park pin switch connector terminal No. 4 and body ground.

D3 SWITCH/SHIFT LOCK SOLENOID/ PARK PIN SWITCH CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Repair an open in the wire between D3 switch/shift lock solenoid/park pin switch connector terminal No. 3 and ground (G401), or repair poor ground (G401). ■

NO—Go to step 7.

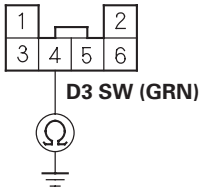
7. Turn the ignition switch to LOCK (0).

8. Jump the SCS line with the HDS.

9. Disconnect PCM connector A (44P).

10. Check for continuity between D3 switch/shift lock solenoid/park pin switch connector terminal No. 4 and body ground.

D3 SWITCH/SHIFT LOCK SOLENOID/ PARK PIN SWITCH CONNECTOR



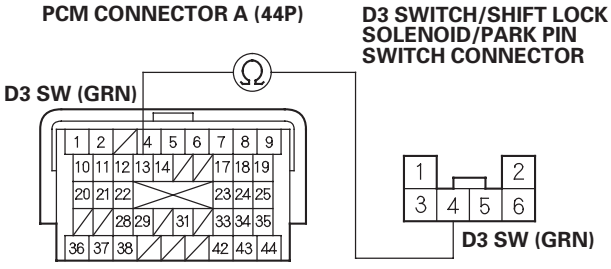
Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire between PCM connector terminal A13 and the D3 switch/shift lock solenoid/park pin switch connector. ■

NO—Go to step 11.

11. Check for continuity between D3 switch/shift lock solenoid/park pin switch connector terminal No. 4 and PCM connector terminal A13.



Terminal side of female terminals

Wire side of female terminals

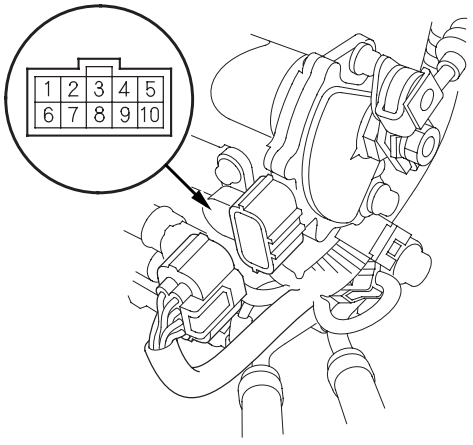
Is there continuity?

YES—Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM (see page 14-9) and recheck. ■

NO—Repair an open in the wire between PCM connector terminal A13 and the D3 switch/shift lock solenoid/park pin switch connector. ■

Transmission Range Switch Test

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
2. Disconnect the negative cable from the battery, then disconnect the positive cable.
3. Remove the battery hold-down bracket, and remove the battery and the battery tray.
4. Remove the intake manifold cover, the intake air duct, the resonator, and the air cleaner housing.
5. Remove the battery base.
6. Disconnect the transmission range switch connector.



7. Check for continuity between terminals at the switch connector. There should be continuity between the terminals in the following table for each switch position.

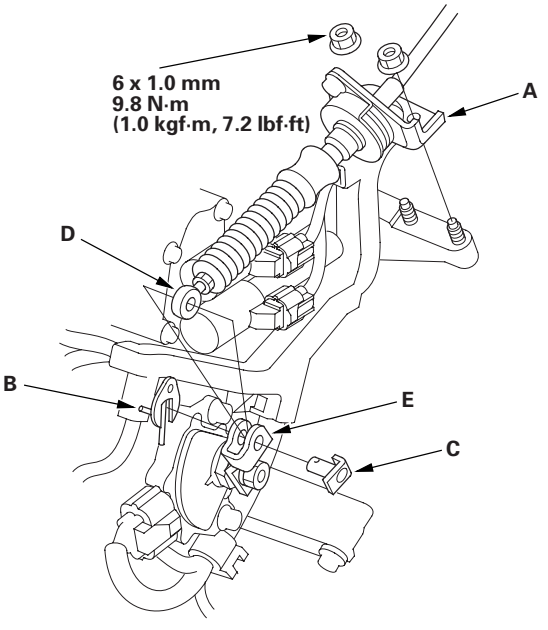
Transmission Range Switch Connector

Position	Connector Terminal/Signal									
	1	2	3	4	5	6	7	8	9	10
	1	D	R	P	GND	-	2	N	ATP FWD	ATP NP
P				○	○					○
R			○		○					
N					○			○		○
D		○			○				○	
2					○		○		○	
1	○				○					

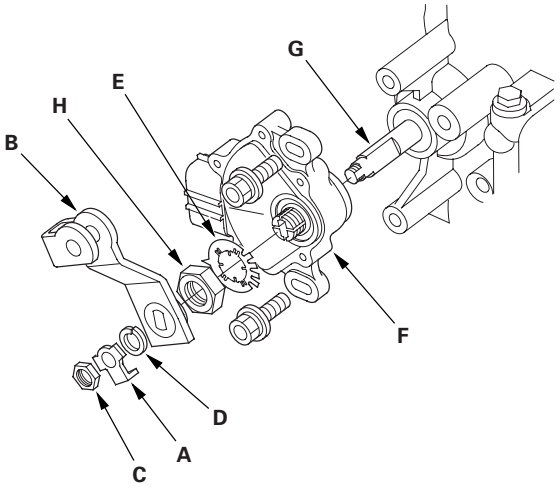
8. The transmission range switch test is finished if the test results are OK.
   If there is no continuity between any terminals, check the transmission range switch installation. If the switch installation is OK, replace the switch (see page 14-273).

Transmission Range Switch Replacement

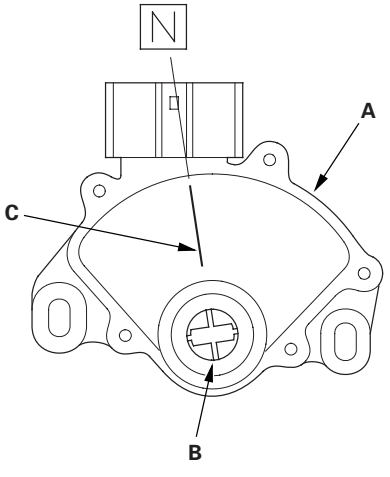
1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
2. Disconnect the negative cable from the battery, then disconnect the positive cable.
3. Remove the battery hold-down bracket, and remove the battery and the battery tray.
4. Remove the intake manifold cover, the intake air duct, the resonator, and the air cleaner housing.
5. Remove the battery base and the battery base bracket.
6. Remove the nuts securing the shift cable bracket (A).



7. Remove the spring clip/washer (B) and the control pin (C), then separate the shift cable end (D) from the control lever (E).
8. Disconnect the transmission range switch connector.
9. Pry the lock tab of the lock washer (A) on the control lever (B), and remove the nut (C), the lock washer, the spring washer (D), and the control lever.



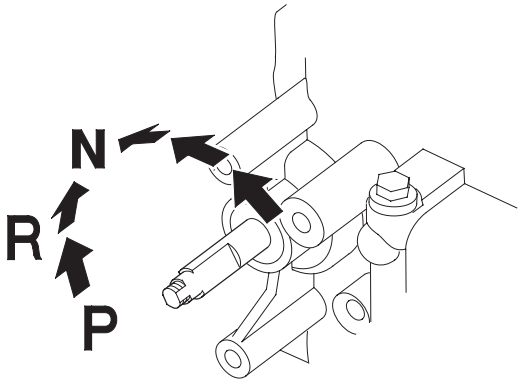
10. Pry the lock tabs of the lock washer (E) on the transmission range switch (F), hold the selector control shaft (G) with a 6.0 mm wrench, and loosen the locknut (H).
11. Remove the locknut and lock washer, then remove the transmission range switch (two bolts).
12. Set the new transmission range switch (A) to the N position. The transmission range switch clicks in the N position, and the control shaft hole (B) aligns with the N position line (C).



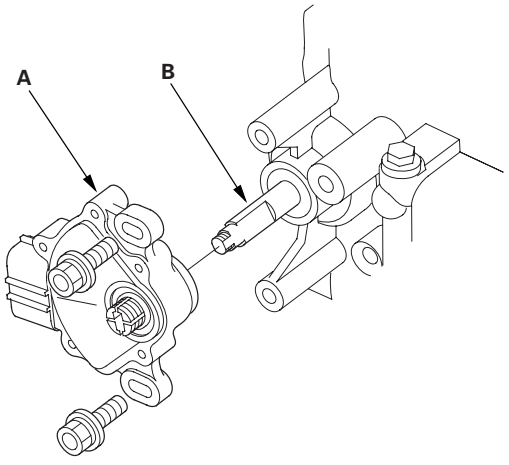
(cont'd)

Transmission Range Switch Replacement (cont'd)

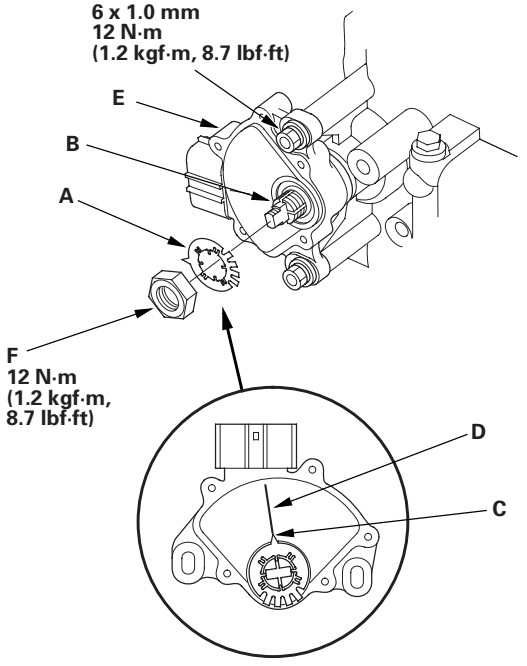
13. With a 6.0 mm wrench, turn the control shaft fully counterclockwise (view from shaft end) to P. Turn the control shaft back two click-stopped position so that the shift position is in N.



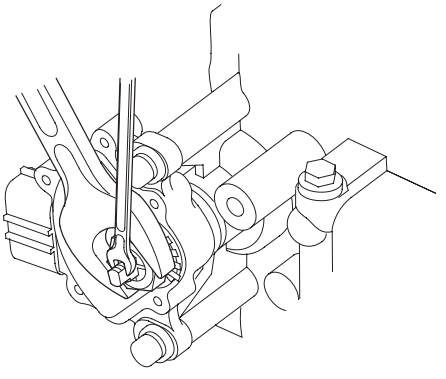
14. Install the transmission range switch (A) gently over the selector control shaft (B), and install the bolts loosely.



15. Install the new lock washer (A) over the selector control shaft (B) while aligning the projection (C) of the lock washer with the N positioning line (D) on the transmission range switch (E), and install the locknut (F).

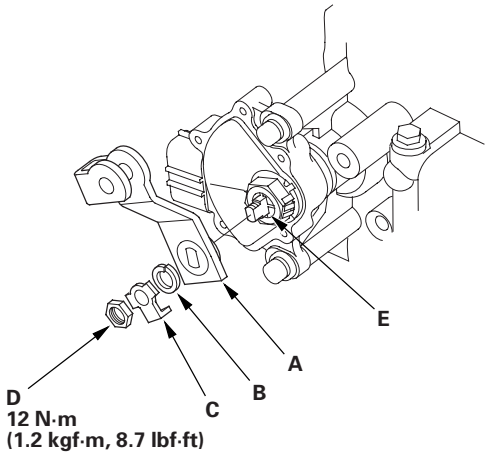


16. Push the locknut against the transmission housing to seat the transmission range switch into the control shaft, and tighten the locknut to 12 N·m (1.2 kgf·m, 8.7 lbf·ft) while holding the control shaft with a 6.0 mm wrench, then bend the lock tabs against the locknut.



17. Tighten the bolts to 12 N·m (1.2 kgf·m, 8.7 lbf·ft) securing the transmission range switch.

18. Install the control lever (A), the spring washer (B), the lock washer (C), and the locknut (D) on the selector control shaft (E).



19. Tighten the locknut to the specified torque, then bend the lock tab of the lock washer against the locknut.

20. Attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.

21. Secure the shift cable bracket.

22. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connector securely.

23. Install the battery base bracket and the battery base.

24. Install the air cleaner housing, the resonator, the intake air duct, and the intake manifold cover.

25. Install the battery tray, the battery, and the battery hold-down bracket, then connect the battery cables.

26. Turn the ignition switch to ON (II). Move the shift lever through all positions, and check the transmission range switch synchronization with the A/T gear position indicator.

27. Check that the engine will start in the P and N positions, and will not start in any other shift lever position.

28. Check that the back-up lights come on when the shift lever is in the R position.

29. Raise the vehicle on a lift, allow all four wheels to rotate freely, then start the engine, and check the shift lever operation.

30. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock (on vehicles without navigation).

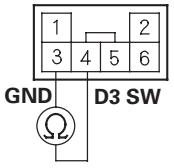
31. Do the power window control unit reset procedure (see page 22-209).

D3 Switch Test/Replacement

1. Remove the shift lever assembly (see page 14-243).

2. Check for continuity between D3 switch/shift lock solenoid/park pin switch connector terminals No. 3 and No. 4 while pressing the D3 switch and when the switch is released.

D3 SWITCH/SHIFT LOCK SOLENOID/ PARK PIN SWITCH CONNECTOR



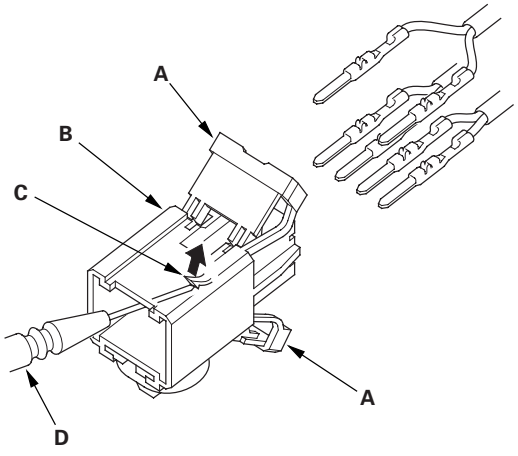
Terminal side of male terminals

3. There should be continuity while pressing the D3 switch, and there should be no continuity when the D3 switch is released.

4. If the D3 switch tests OK, install the shift lever assembly (see page 14-245).
If the switch is faulty, go to step 5, and replace the D3 switch.

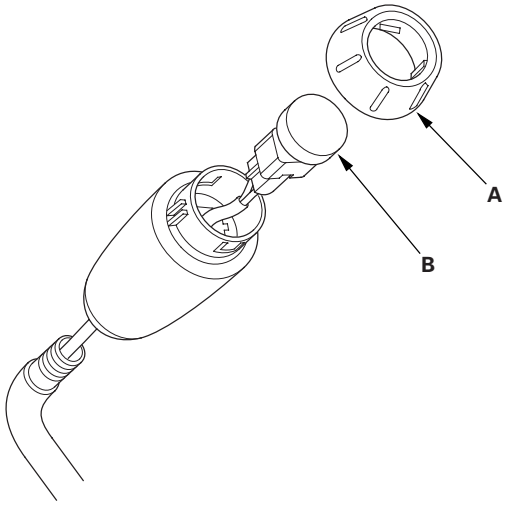
5. Remove the harness clamps from the shift lever bracket, and remove the harnesses from the harness clamps.

6. Pry up the lock covers (A) of the D3 switch/shift lock solenoid/park pin switch connector (B).



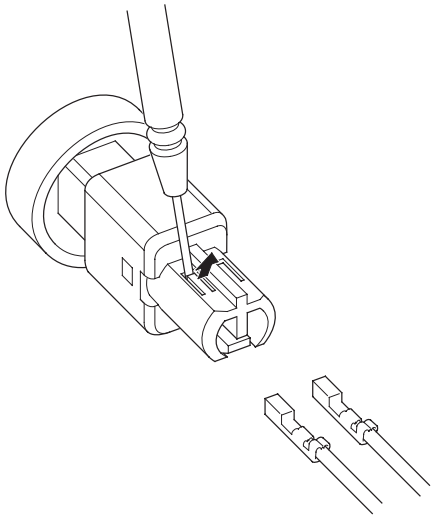
7. Remove the terminal (C) from the connector by pushing the lock tab up in the connector using a thin blade screwdriver (D). Remove all six terminals, and replace the connector.

8. Pry off the shift lever knob ring (A), and remove it.

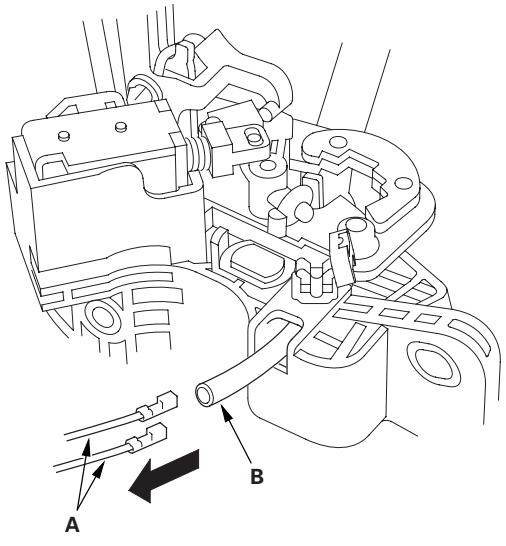


9. Unlatch the D3 switch harness clamp on the shift lever bracket, pry out the D3 switch (B), and pull it from the knob.

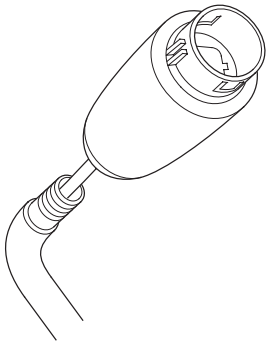
10. Remove the D3 switch harness terminals by prying the lock tabs up with a thin blade screwdriver.



11. Pull the D3 switch harness wires (A) from shift lever bracket side, and remove the harness wires. Leave the harness tube (B) and remove only the wires.

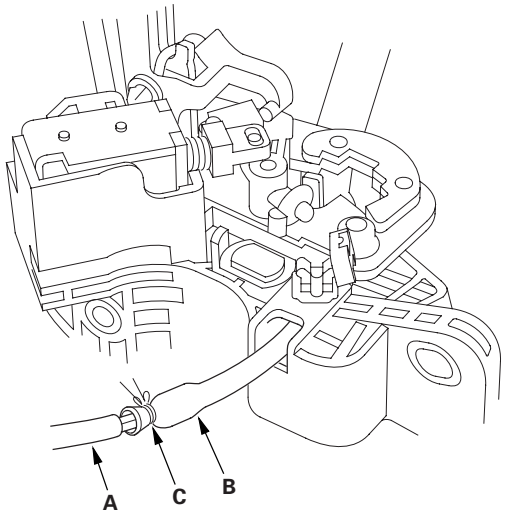


12. Remove the shift lever knob from the shift lever.



13. Install a new shift lever knob on the shift lever.

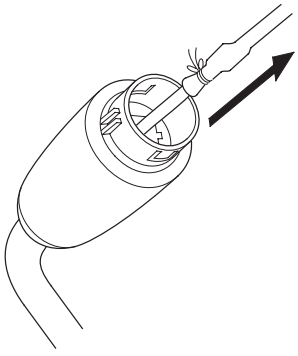
14. Insert the new D3 switch harness wires (A) in the original harness tube (B), then tie a string (C) around the tube to secure the terminals in the tube.



(cont'd)

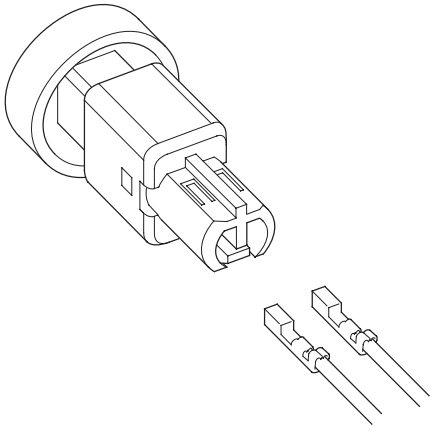
D3 Switch Test/Replacement (cont'd)

15. Pull the old tube out of the shift lever knob side to install the D3 switch harness wires.

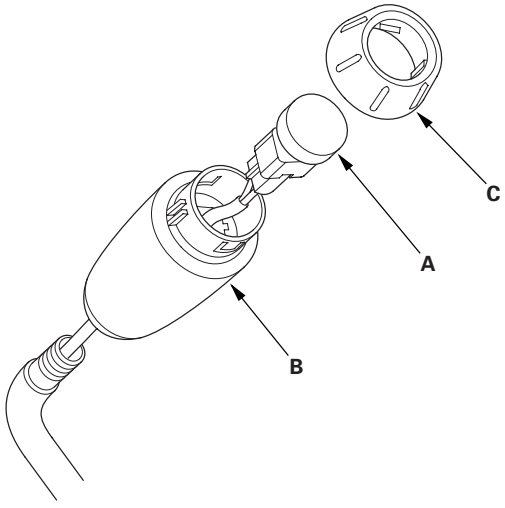


16. Remove the old harness tube from the D3 switch harness terminals.

17. Install the D3 switch harness terminals in the new D3 switch. Either harness terminal can be installed in either cavity.

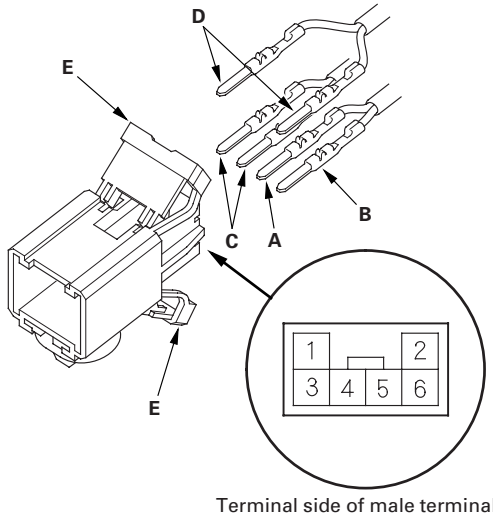


18. Install the D3 switch (A) in the shift lever knob (B).



19. Install the new shift lever knob ring (C).

20. Install the RED harness terminal (A) of the shift lock solenoid in the No. 5 cavity, and the BLK harness terminal (B) in the No. 6 cavity.



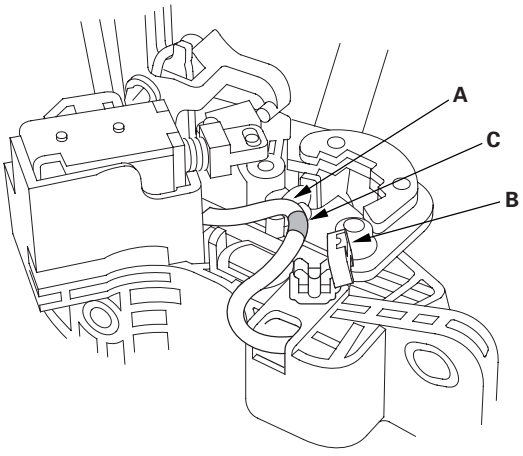
Terminal side of male terminals

21. Install the D3 switch harness terminals (WHT) (C) in the No. 3 and No. 4 cavities. Either D3 switch harness terminal can be installed in the No. 3 and No. 4 cavities.

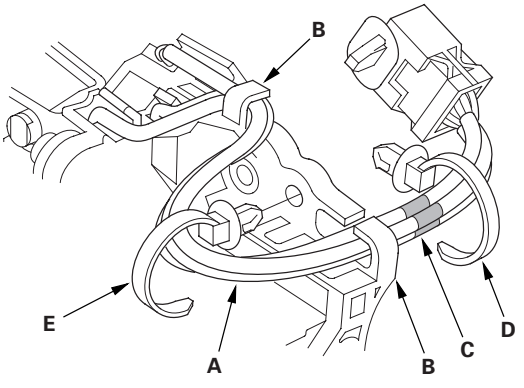
22. Install the park pin switch harness terminals (BLK) (D) in the No. 1 and No. 2 cavities. Either park pin switch harness terminal can be installed in the No. 1 and No. 2 cavities.

23. Make sure that all six terminals lock securely, then install the lock covers (E) securely in place.

24. Install the D3 switch harness (A) in the harness clamp (B) at the mark (C).



25. Route the harnesses (A) through the guides (B).



26. Align the marks (C) on each harness, and tie the harness together into bundle with a new harness clamp (D) over the marks.

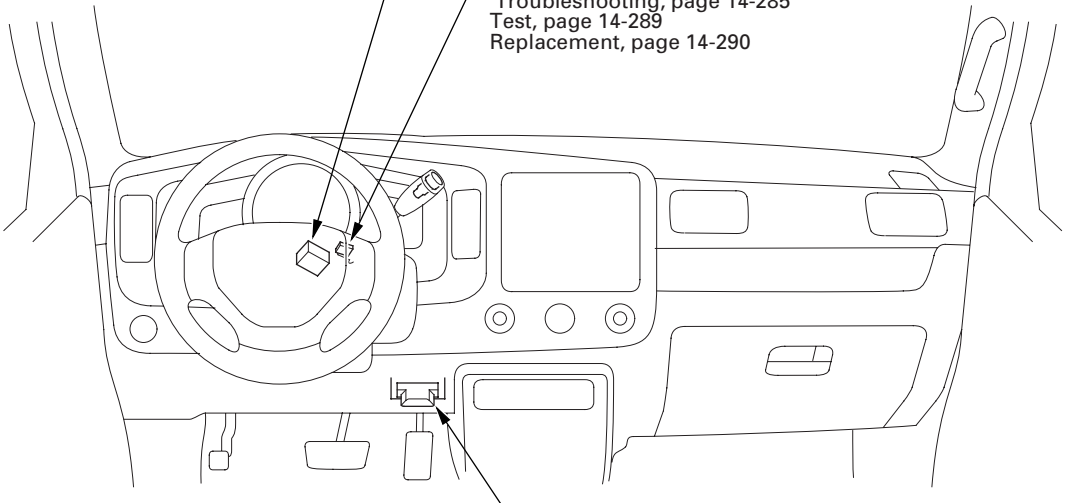
27. Tie the harness together into bundle with a new harness clamp, then install the harness clamp (E) on the shift lever bracket.

28. Install the shift lever assembly (see page 14-245).

29. Check that the D3 switch operates.

A/T Interlock System

Component Location Index



SHIFT LOCK SOLENOID
Shift Lock System Circuit
Troubleshooting, page 14-282
Test, page 14-286
Replacement, page 14-287

PARK PIN SWITCH
Key Interlock System Circuit
Troubleshooting, page 14-285
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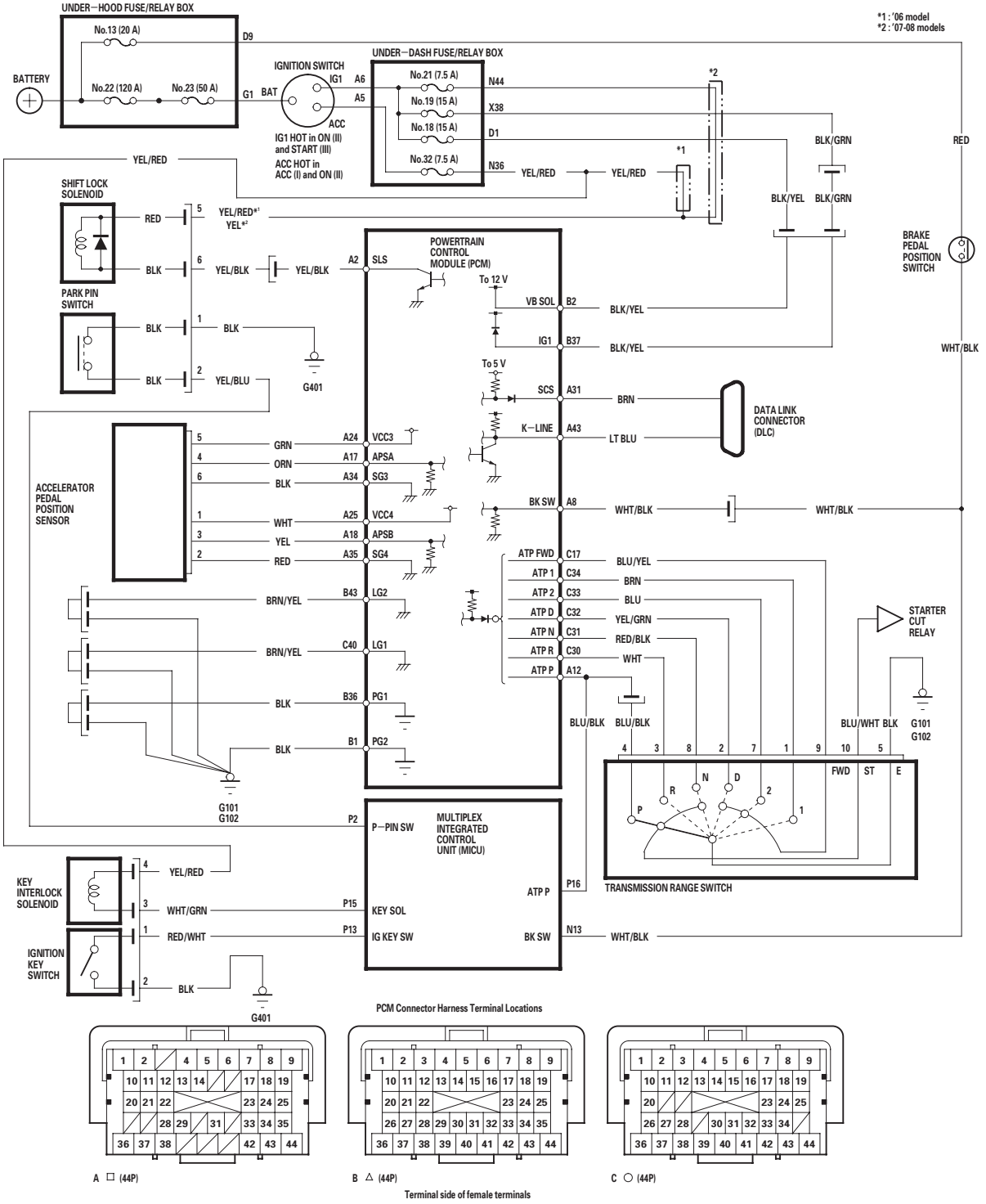
STEERING LOCK ASSEMBLY
KEY INTERLOCK SOLENOID
Key Interlock System Circuit
Troubleshooting, page 14-285
Test, page 14-286

DATA LINK
CONNECTOR
(DLC)

Circuit Diagram



Shift Lock System Circuit Troubleshooting

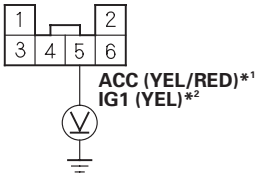
1. Connect the HDS to the DLC.
2. Select Shift Lock Solenoid Test in the Miscellaneous Test Menu, and check that the shift lock solenoid operates with the HDS.

   Does the shift lock solenoid work properly?

   YES—Go to step 16.

   NO—Go to step 3.
3. Turn the ignition switch to LOCK (0).
4. Remove the driver's dashboard lower cover (see page 20-83).
5. Remove the steering column covers (see page 17-24), and lower the steering column.
6. Disconnect the D3 switch/shift lock solenoid/park pin switch connector.
7. Turn the ignition switch to ON (II).
8. Measure the voltage between D3 switch/shift lock solenoid/park pin switch connector terminal No. 5 and body ground.

D3 SWITCH/SHIFT LOCK SOLENOID/ PARK PIN SWITCH CONNECTOR



Wire side of female terminals

Is there battery voltage?

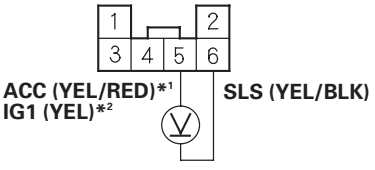
YES—Go to step 9.

NO—Check for a blown No. 32 (7.5 A)*1 No. 21 (7.5 A)*2 fuse in the under-dash fuse/relay box. If the fuse is OK, repair an open or a short in the wire between the D3 switch/shift lock solenoid/park pin switch connector and the under-dash fuse/relay box. ■

* 1: '06 model
* 2: '07-08 models

9. Shift the shift lever into P, and press the brake pedal. Do not press the accelerator.
10. Measure the voltage between D3 switch/shift lock solenoid/park pin switch connector terminals No. 5 and No. 6 while pressing the brake pedal.

D3 SWITCH/SHIFT LOCK SOLENOID/ PARK PIN SWITCH CONNECTOR



Wire side of female terminals

Is there battery voltage?

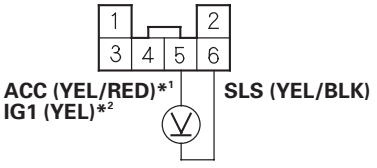
YES—Go to step 11.

NO—Go to step 12.

* 1: '06 model
* 2: '07-08 models

11. Release the brake pedal, and measure the voltage between D3 switch/shift lock solenoid/park pin switch connector terminals No. 5 and No. 6. The shift lever must be in P.

D3 SWITCH/SHIFT LOCK SOLENOID/ PARK PIN SWITCH CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Repair a short to ground in the wire between PCM connector terminal A2 and the D3 switch/shift lock solenoid/park pin switch connector. ■

NO—Check the shift lock mechanism. If the mechanism is OK, replace the shift lock solenoid (see page 14-287). ■

* 1: '06 model
* 2: '07-08 models

12. Turn the ignition switch to LOCK (0).

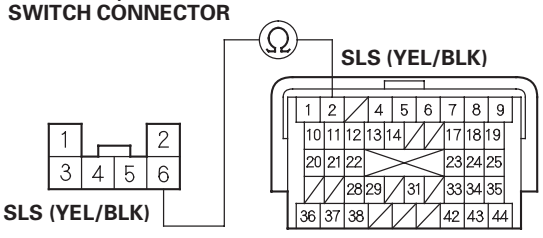
13. Jump the SCS line with the HDS.

14. Disconnect PCM connector A (44P).

15. Check for continuity between PCM connector terminal A2 and D3 switch/shift lock solenoid/park pin switch connector terminal No. 6.

D3 SWITCH/SHIFT LOCK SOLENOID/PARK PIN SWITCH CONNECTOR

PCM CONNECTOR A (44P)



Wire side of female terminals

Terminal side of female terminals

Is there continuity?

YES—Substitute a known-good PCM (see page 14-9) and recheck. ■

NO—Repair an open in the wire between PCM connector terminal A2 and the D3 switch/shift lock solenoid/park pin switch connector. ■

(cont'd)

Shift Lock System Circuit Troubleshooting (cont'd)

16. Press the brake pedal.

    Are the brake lights ON?

    YES—Go to step 17.

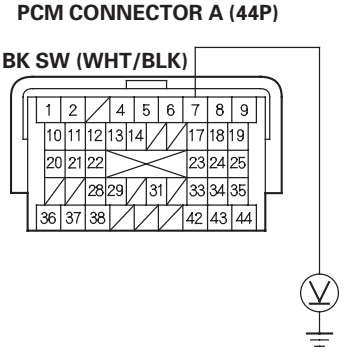
    NO—Repair faulty brake light circuit. ■

17. Turn the ignition switch to LOCK (0).

18. Jump the SCS line with the HDS.

19. Disconnect PCM connector A (44P).

20. Measure the voltage between PCM connector terminal A8 and body ground while pressing the brake pedal and when the brake pedal is released.



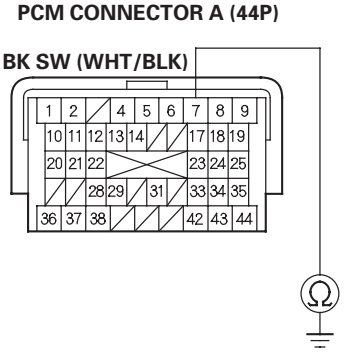
Terminal side of female terminals

    Is there battery voltage while the brake pedal is pressed, and no voltage when the pedal is released?

    YES—Go to step 22.

    NO—Go to step 21.

21. Check for continuity between PCM connector terminal A8 and body ground.



Terminal side of female terminals

    Is there continuity?

    YES—Repair a short to ground in the wire between PCM connector terminal A8 and the brake pedal position switch. ■

    NO—Repair an open in the wire between PCM connector terminal A8 and the brake pedal position switch. ■

22. Connect PCM connector A (44P).

23. Connect the HDS to the DLC.

24. Start the engine.

25. Check the engine speed and the accelerator pedal position in the DATA LIST with the HDS.

    Is the engine speed at a normal idle, APSA about 0.5 V, and APSB about 0.25 V?

    YES—Go to step 26.

    NO—Substitute a known-good PCM (see page 14-9) and recheck. ■

26. Check the throttle cable adjustment (see page 11-317).

    Is the throttle cable adjusted properly?

    YES—Check the throttle body (see page 11-314). ■

    NO—Adjust the throttle cable (see page 11-317). ■

Key Interlock System Circuit Troubleshooting

SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

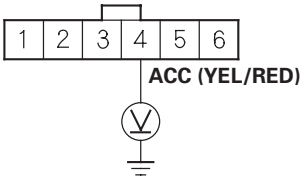
1. Turn the ignition switch to ACC (I). The shift lever must be in the P position.
2. Disconnect the steering lock assembly connector.
3. Check if the ignition switch can be turned to the LOCK (0) position.

   Can the ignition switch be turned the LOCK (0) position?

   YES—Go to step 4.

   NO—Replace the ignition key cylinder/steering lock assembly (see page 17-28). ■
4. Turn the ignition switch to ACC (I) or ON (II), and shift to N.
5. Measure the voltage between steering lock assembly connector terminal No. 4 and body ground.

STEERING LOCK ASSEMBLY CONNECTOR



Wire side of female terminals

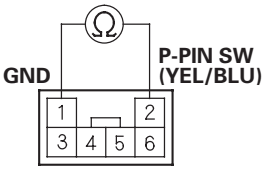
Is there battery voltage?

YES—Go to step 6.

NO—Check for a blown No. 32 (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair an open in the wire between the under-dash fuse/relay box and the steering lock assembly connector. ■

6. Turn the ignition switch to ACC (I), and shift to P.
7. Remove the shift lever assembly (see page 14-243).
8. Check for continuity between D3 switch/shift lock solenoid/park pin switch connector terminals No. 1 and No. 2 while the shift lever is in the P position, and when the shift lever is out of the P position.

D3 SWITCH/SHIFT LOCK SOLENOID/ PARK PIN SWITCH CONNECTOR



Terminal side of male terminals

Is there continuity when the shift lever is in any position other than P, and no continuity when the shift lever is in P?

YES—Check for an open in the wire between the multiplex integrated control unit and the D3 switch/ shift lock solenoid/park pin switch connector. If the wire is OK, substitute a known-good multiplex integrated control unit, then recheck. ■

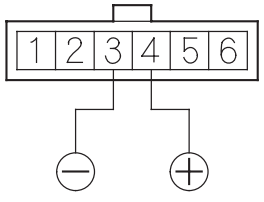
NO—Replace the park pin switch (see page 14-290). ■

Key Interlock Solenoid Test

SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

1. Remove the driver's dashboard lower cover (see page 20-83).
2. Disconnect the steering lock assembly connector.
3. Insert the ignition key in the key cylinder, then turn the ignition key to ACC (I).
4. Connect the battery positive terminal to steering lock assembly connector terminal No. 4, and connect the battery negative terminal to steering lock assembly connector terminal No. 3 using jumper wires. Make sure that the ignition key cannot be turned to LOCK (0) position. Release the battery terminals, and make sure that the key can be turned to LOCK (0) position and removed from the cylinder.

STEERING LOCK ASSEMBLY CONNECTOR

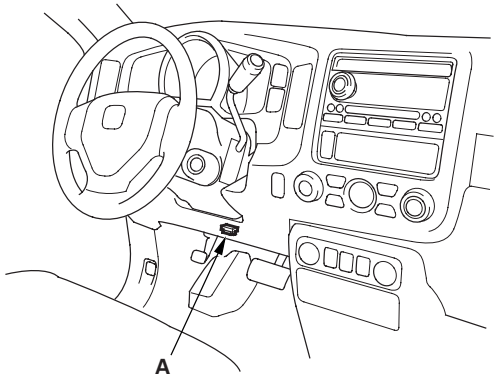


Terminal side of male terminals

5. If the key interlock solenoid works improperly, replace the ignition key cylinder/steering lock assembly (see page 17-28).

Shift Lock Solenoid Test

1. Connect the HDS to the DLC (A).



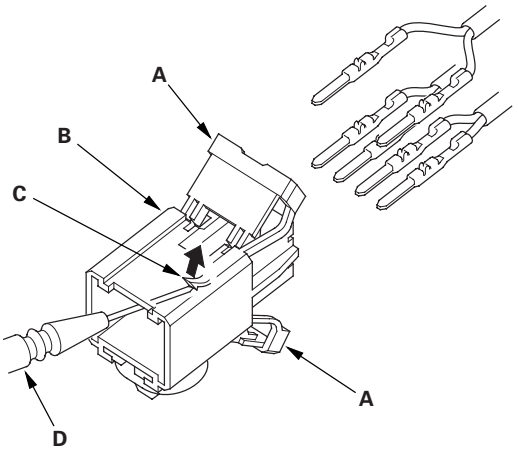
2. Select Shift Lock Solenoid Test in the Miscellaneous Test Menu, and check that the shift lock solenoid operates with the HDS.
3. Check that the shift lever can be moved out of P with Shift Lock Solenoid: ON. Move the shift lever back in the P position, and make sure it locks with Shift Lock Solenoid: OFF.
4. Check that the shift lock releases when the shift lock release is pushed, and check that it locks when the shift lock release is released.
5. If the shift lock solenoid works improperly, do the shift lock system troubleshooting (see page 14-282).

Shift Lock Solenoid/Shift Lock Stop/Shift Lock Stop Cushion Replacement

1. Remove the shift lever assembly (see page 14-243).

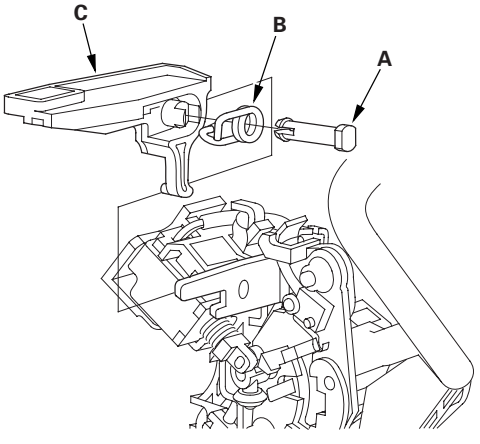
2. Remove the harness clamps from the shift lever bracket, and remove the harnesses from the harness clamps.

3. Pry up the lock covers (A) of the D3 switch/shift lock solenoid/park pin switch connector (B).

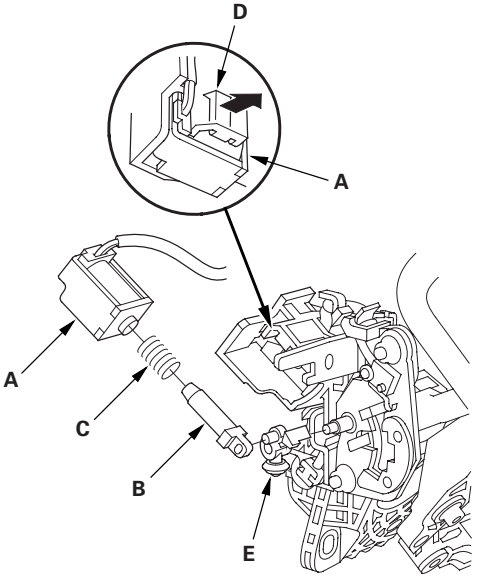


4. Remove the terminal from the connector by pushing the lock tab (C) up in the connector using a thin blade screwdriver (D). Remove all six terminals, and replace the connector.

5. Remove the shift lock release pin (A), spring (B), and the shift lock release (C).



6. Remove the shift lock solenoid (A), the solenoid plunger (B), and the plunger spring (C) while prying up the solenoid lock (D).



7. If replacing the shift lock stop or the shift lock stop cushion, remove the shift lock stop and the shift lock stop cushion assembly (E), and replace them as a set.

   NOTE: The new shift lock stop comes with the new shift lock stop cushion.

8. Replace the shift lock solenoid.

9. Apply silicone grease to the pin on the shift lever bracket, and install the shift lock stop over the pin.

10. Install the shift lock solenoid plunger and plunger spring in the shift lock solenoid.

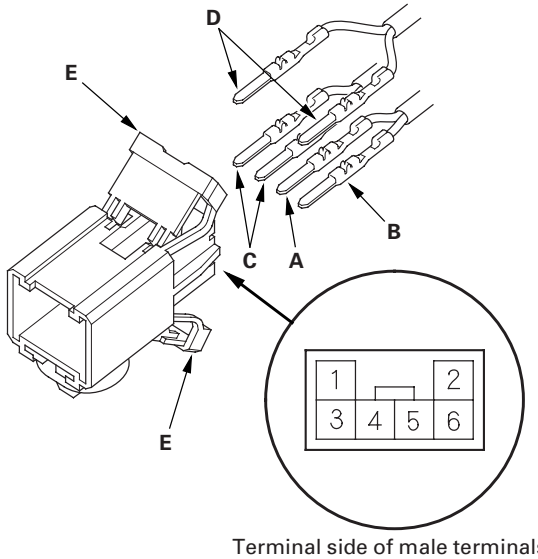
11. Apply silicone grease to the tip of the shift lock stop, and install the shift lock solenoid by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop.

12. Apply silicone grease to the shift lock release pin and spring, and install the shift lock release, spring, and pin.

(cont'd)

Shift Lock Solenoid/Shift Lock Stop/Shift Lock Stop Cushion Replacement (cont'd)

13. Install the RED harness terminal (A) of the shift lock solenoid in the No. 5 cavity, and the BLK harness terminal (B) in the No. 6 cavity.



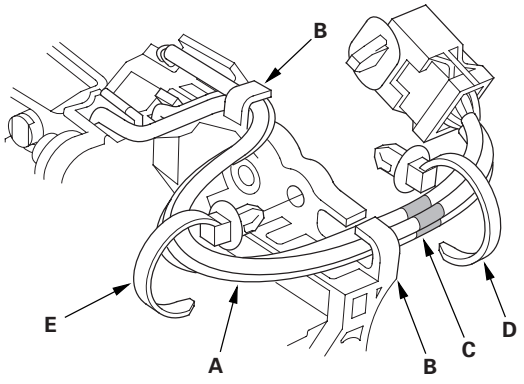
Terminal side of male terminals

14. Install the D3 switch harness terminals (WHT) (C) in the No. 3 and No. 4 cavities. Either D3 switch harness terminal can be installed in the No. 3 and No. 4 cavities.

15. Install the park pin switch harness terminals (BLK) (D) in the No. 1 and No. 2 cavities. Either park pin switch harness terminal can be installed in the No. 1 and No. 2 cavities.

16. Make sure that all six terminals lock securely, then install the lock covers (E) securely in place.

17. Route the harnesses (A) through the guides (B).



18. Align the marks (C) on each harness, and tie the harness together into bundle with new harness clamp (D) over the marks.

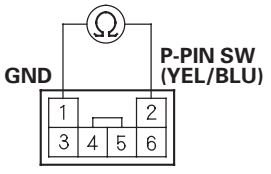
19. Tie the harness together into bundle with new harness clamp, then install the harness clamp (E) on the shift lever bracket.

20. Install the shift lever assembly (see page 14-245).

Park Pin Switch Test

1. Remove the shift lever assembly (see page 14-243).
2. Disconnect the D3 switch/shift lock solenoid/park pin switch connector.

D3 SWITCH/SHIFT LOCK SOLENOID/ PARK PIN SWITCH CONNECTOR

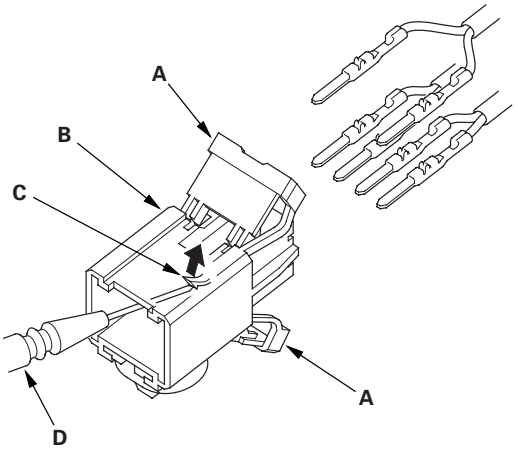


Terminal side of male terminals

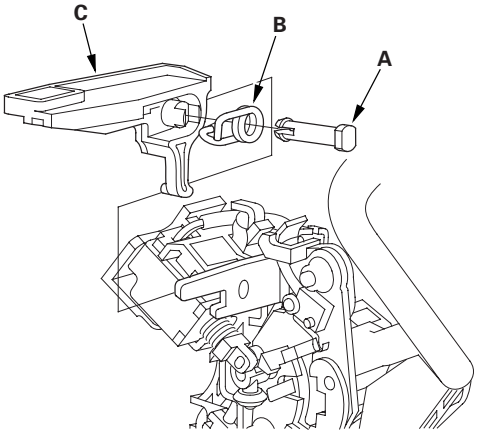
3. Move the shift lever into P, then check for continuity between D3 switch/shift lock solenoid/ park pin switch connector terminals No. 1 and No. 2. There should be no continuity.
4. Move the shift lever out of P, and check for continuity between terminals No. 1 and No. 2. There should be continuity.
5. If the park pin switch is faulty, replace it (see page 14-290).
6. Install the shift lever assembly (see page 14-245).

Park Pin Switch Replacement

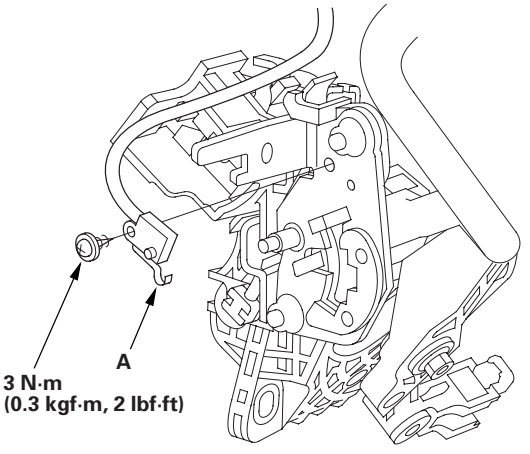
1. Remove the shift lever assembly (see page 14-243).
2. Remove the harness clamps from the shift lever bracket, and remove the harnesses from the harness clamps.
3. Pry up the lock covers (A) of the D3 switch/shift lock solenoid/park pin switch connector (B).



4. Remove the terminal from the connector by pushing the lock tab (C) up in the connector using a thin blade screwdriver (D). Remove all six terminals, and replace the connector.
5. Remove the shift lock release pin (A), spring (B), and the shift lock release (C).

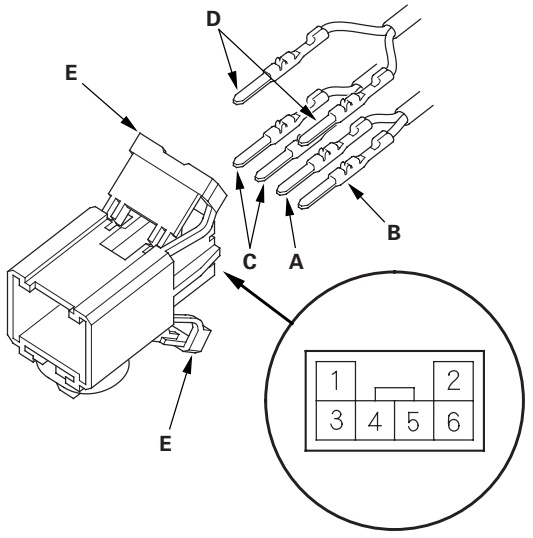


6. Remove the park pin switch (A).



7. Install a new park pin switch by aligning the tab with the positioning hole on the shift lever position guide. Apply non-hardening thread lock sealant to the screw, then secure the park pin switch with the screw.
8. Apply silicone grease to the shift lock release pin and spring, and install the shift lock release, spring, and pin.

9. Install the RED harness terminal (A) of the shift lock solenoid in the No. 5 cavity, and the BLK harness terminal (B) in the No. 6 cavity.



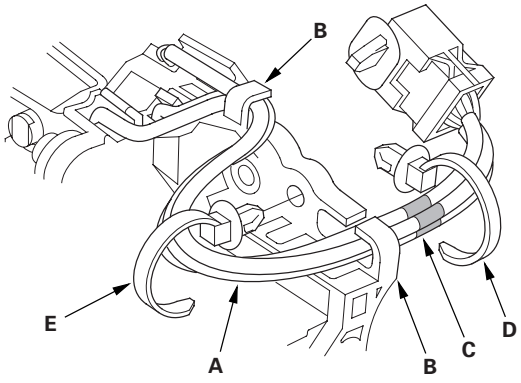
Terminal side of male terminals

10. Install the D3 switch harness terminals (WHT) (C) in the No. 3 and No. 4 cavities. Either D3 switch harness terminal can be installed in the No. 3 and No. 4 cavities.

11. Install the park pin switch harness terminals (BLK) (D) in the No. 1 and No. 2 cavities. Either park pin switch harness terminal can be installed in the No. 1 and No. 2 cavities.

12. Make sure that all six terminals lock securely, then install the lock covers (E) in place securely.

13. Route the harnesses (A) through the guides (B).



14. Align the marks (C) on each harness, and tie the harness together into bundle with a new harness clamp (D) over the marks.

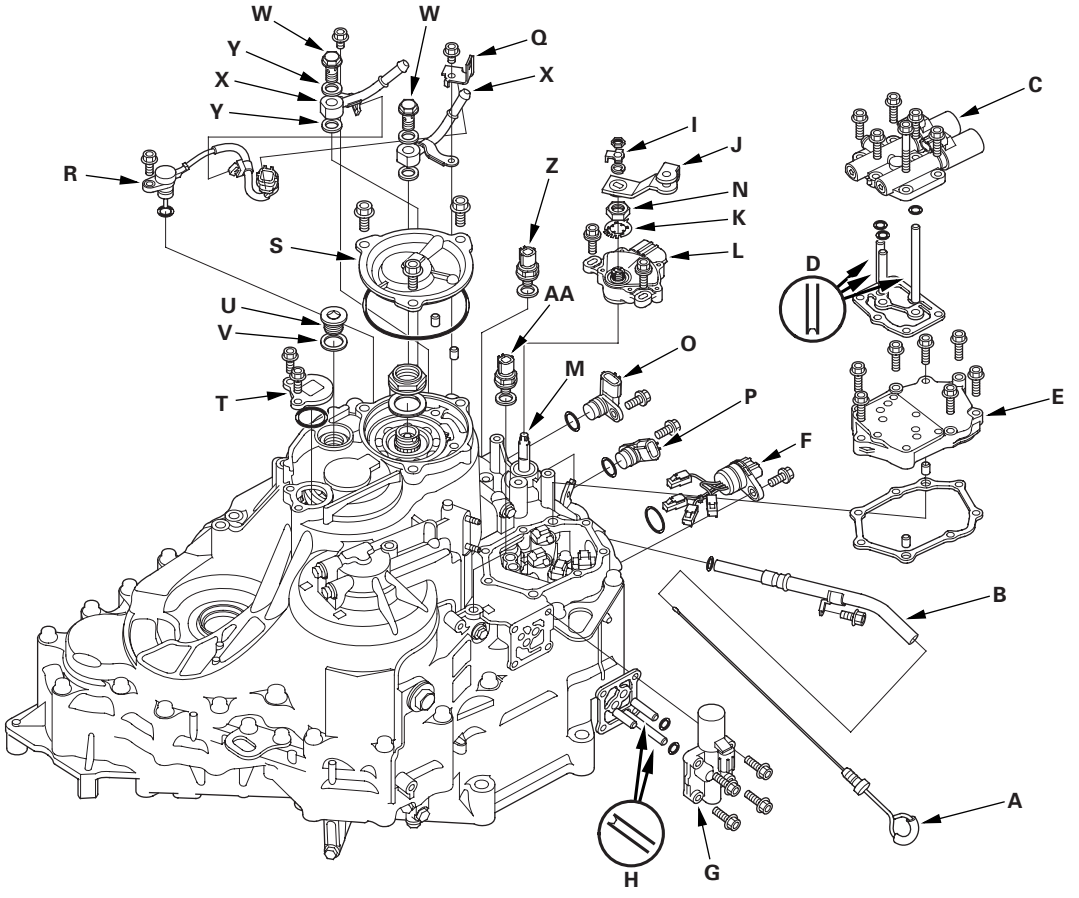
15. Tie the harness together into bundle with a new harness clamp, then install the harness clamp (E) on the shift lever bracket.

16. Install the shift lever assembly (see page 14-245).

Transmission Disassembly

Special Tools Required
Mainshaft holder 07GAB-PF50101 or 07GAB-PF50100

1. Remove the ATF dipstick (A) and the dipstick tube (B).



2. Remove A/T clutch pressure control solenoid valves A and B (C) (six bolts), the ATF feed pipes (D) (three), the O-rings (three), and the gasket.

3. Remove the solenoid valve cover (E) (seven bolts), the dowel pins (two), and the gasket.

4. Disconnect the solenoid valve connectors, then remove the solenoid harness connector (F).

5. Remove A/T clutch pressure control solenoid valve C (G) (four bolts), the ATF feed pipes (H) (three), the O-rings (two), and the gasket.

6. Pry the lock tab of the lock washer (I) on the control lever (J), and remove the nut, the lock washer, the spring washer, and the control lever.

7. Pry the lock tabs of the lock washer (K) on the transmission range switch (L), hold the selector control shaft (M) with a 6.0 mm wrench, and loosen the locknut (N).

8. Remove the locknut and the lock washer, then remove the transmission range switch (two bolts).

9. Remove the output shaft (countershaft) speed sensor (O) and the input shaft (mainshaft) speed sensor (P).

10. Remove the ATF temperature sensor connector from the connector bracket (Q) and the harness clamp from clamp bracket, then remove the ATF temperature sensor (R).

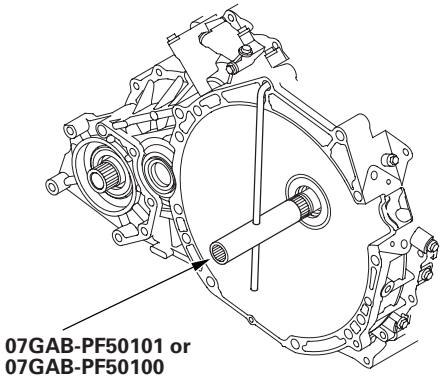
11. Remove the end cover (S) (three bolts), the snap ring cap (T) (two bolts), the sealing plug (U), and the washer (V).

12. Remove the line bolts (W), the ATF cooler lines (X), and the sealing washers (Y).

13. Remove the 3rd clutch transmission fluid pressure switch (Z) and the sealing washer.

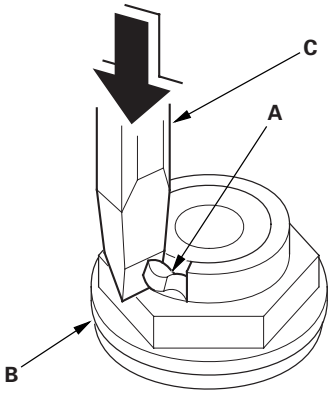
14. Remove the 4th clutch transmission fluid pressure switch (AA) and the sealing washer.

15. Slip the mainshaft holder onto the mainshaft.

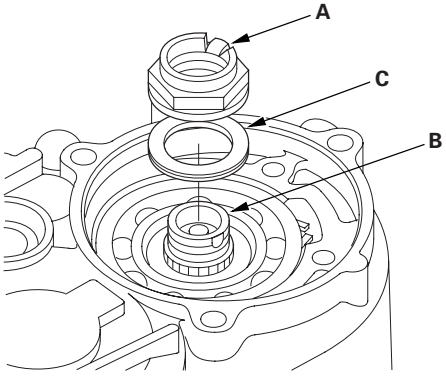


16. Cut the lock tab (A) of the mainshaft locknut (B) using a chisel (C).

    NOTE: Keep all of the chiseled particles out of the transmission.



17. Remove the locknut (A) from the mainshaft (B).

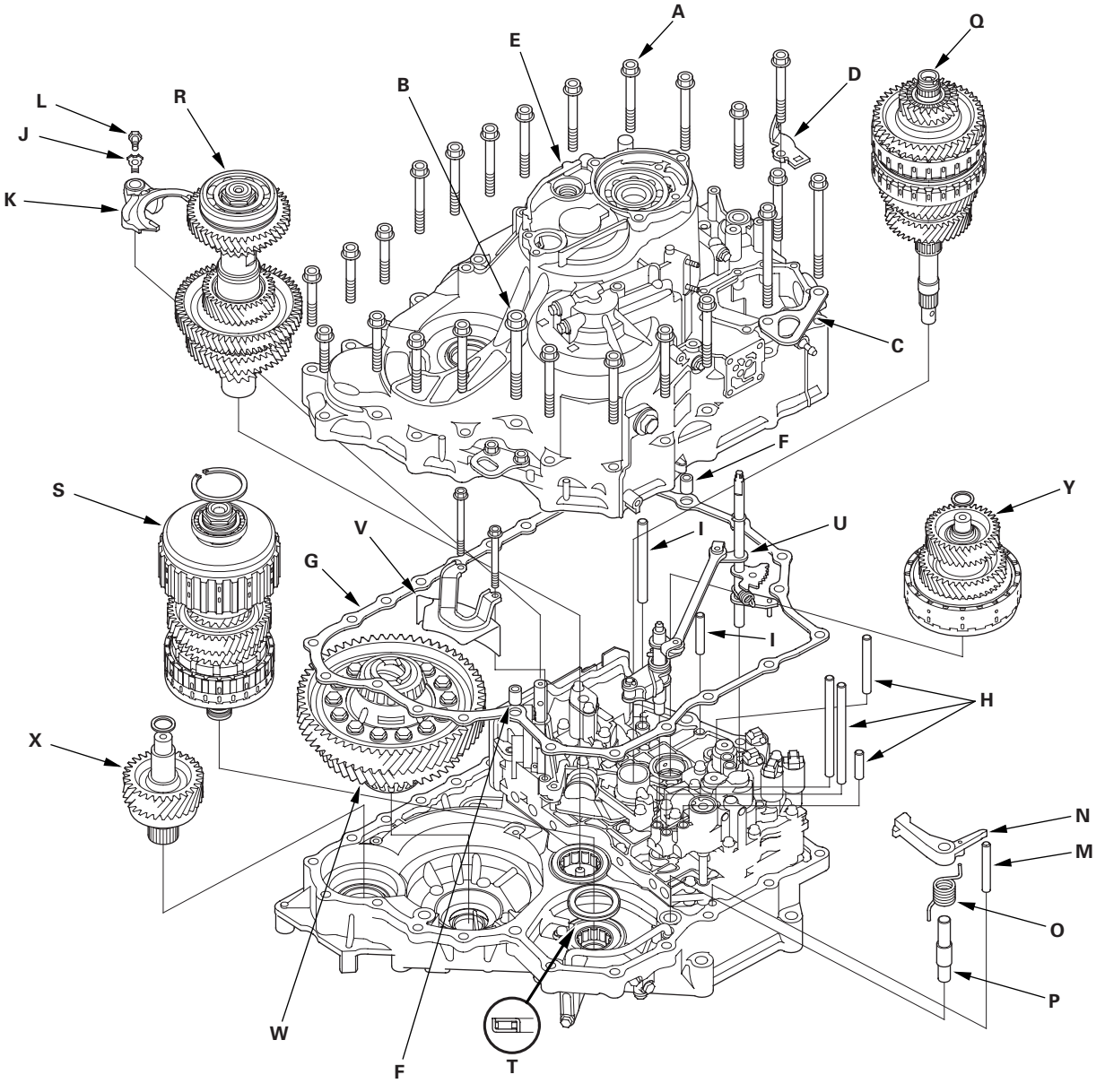


18. Pry the lock washer (C), and remove it.

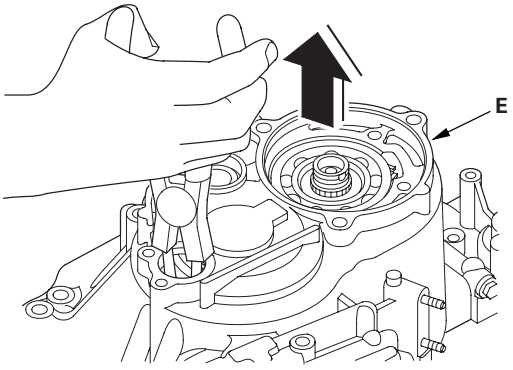
(cont'd)

Transmission Disassembly (cont'd)

19. Remove the transmission housing mounting bolts (10 x 1.25 mm) (A) (23 bolts), the 12 x 1.25 mm bolt (B), the transmission hanger (C), and the ground terminal bracket (D).



20. While expanding the snap ring of the countershaft with snap ring pliers, lift the transmission housing (E).



21. Release the pliers, and remove the transmission housing, the two dowel pins (F), and the gasket (G).

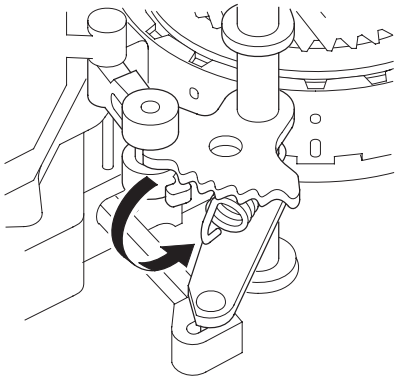
22. Remove the ATF feed pipes (H) (four) from the accumulator body.

23. Remove the ATF feed pipes (I) (two) from the torque converter housing.

24. Remove the mainshaft holder from the mainshaft.

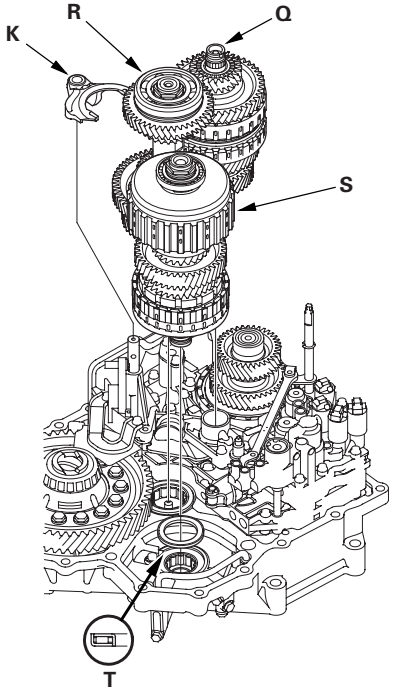
25. Pry the lock tab of the lock washer (J) on the shift fork (K), then remove the bolt (L) and the lock washer.

26. Unhook the detent spring from the detent spring arm.



27. Remove the park pawl stop (M), the park pawl (N), the pawl spring (O), and the pawl shaft (P).

28. Remove the mainshaft (Q), the countershaft (R), the shift fork, and the secondary shaft (S) together, and remove the needle bearing (T) from the torque converter housing.



29. Remove the selector control shaft and the park lever link (U).

30. Remove the baffle plate (V).

31. Remove the differential assembly (W).

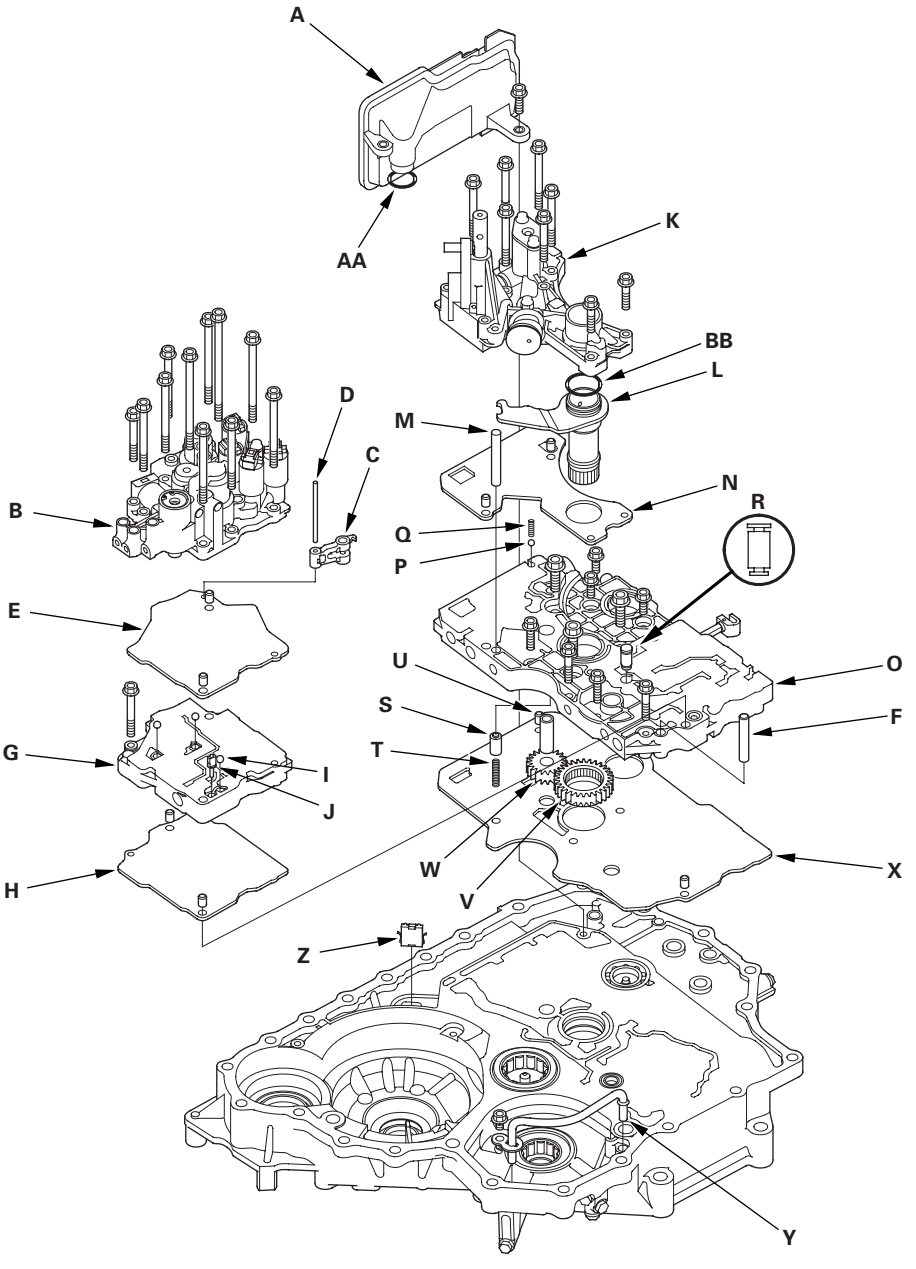
32. Remove the transfer output shaft (X).

33. Remove the intermediary shaft (Y).

(cont'd)

Transmission Disassembly (cont'd)

34. Remove the ATF strainer (A) (one bolt).



35. Remove the accumulator body (B) (11 bolts), the dowel pins (two), the detent spring arm (C), the arm shaft (D), and the separator plate (E).

36. Remove the ATF feed pipe (F) from the main valve body.

37. Remove the secondary valve body (G) (one bolt), the dowel pins (two), and the separator plate (H). Do not let the check balls (I) (three) and the choke (J) fall out.

38. Remove the regulator valve body (K) (eight bolts), the stator shaft (L), the stator shaft stop (M), the dowel pins (two), and the separator plate (N).

39. Remove the main valve body (O) (8 mm: three bolts, 6 mm: seven bolts). Do not let the cooler check valve (ball) (P), spring (Q), and the lubrication check valve (R) fall out.

40. Remove the torque converter check valve (S) and the valve spring (T).

41. Remove the ATF pump driven gear shaft (U), then remove the ATF pump drive gear (V) and the driven gear (W).

42. Remove the dowel pins (two) and the main separator plate (X).

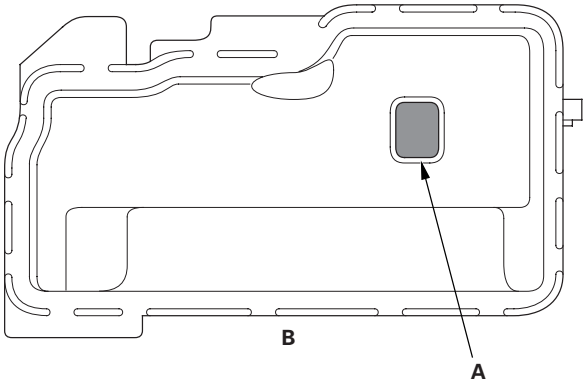
43. Remove the ATF passage pipe (Y).

44. Remove the ATF magnet (Z), clean it, then reinstall.

45. Remove the O-ring (AA) from the ATF strainer, and replace the new O-ring when reassembling the transmission.

46. Remove the O-ring (BB) from the stator shaft, and replace the new O-ring when reassembling the transmission.

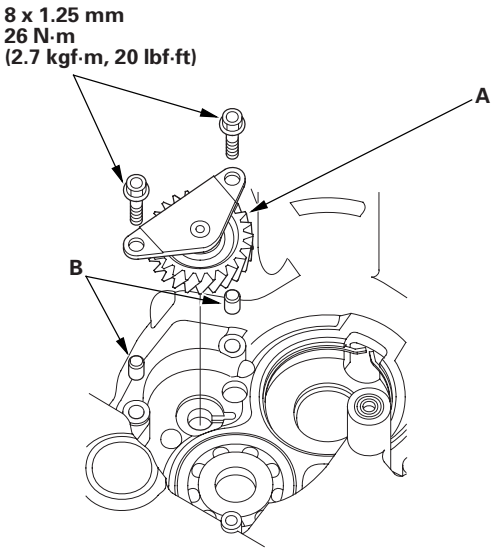
47. Clean the inlet opening (A) of the ATF strainer (B) thoroughly with compressed air, then check that it is good condition and that inlet opening is not clogged.



48. Test the ATF strainer by pouring clean ATF through the inlet opening, and replace if it is clogged or damaged.

Reverse Idler Gear Removal/ Installation

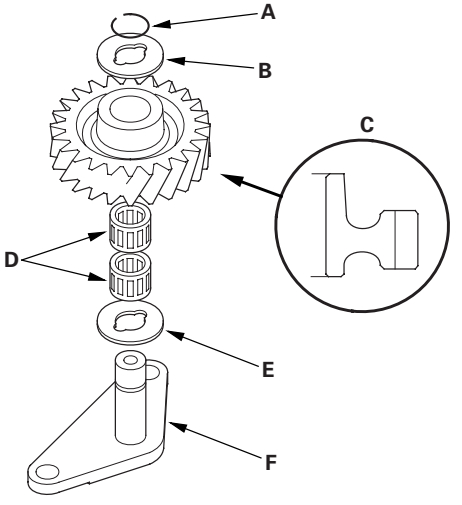
1. Remove the reverse idler gear assembly (A) from the transmission housing.



2. Install the reverse idler gear assembly with the two dowel pins (B) in the transmission housing.

Reverse Idler Gear Disassembly/ Inspection/Reassembly

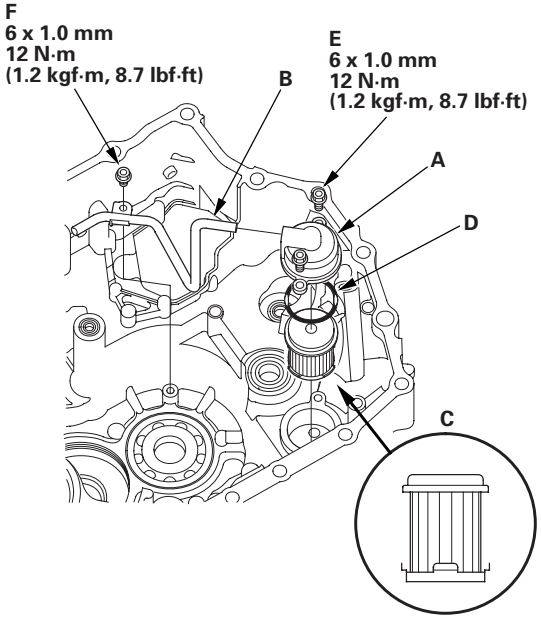
1. Remove the snap ring (A), then remove the thrust washer (B), reverse idler gear (C), needle bearings (D), and thrust washer (E) from the reverse idler gear shaft/holder (F).



2. Inspect the reverse idler gear and gear shaft for excessive wear and damage.
3. Inspect the needle bearings for galling and rough movement.
4. Install the thrust washer and needle bearings over the gear shaft.
5. Install the reverse idler gear in the direction shown.
6. Install the thrust washer, then install the snap ring to secure the idler gear.

ATF Filter Removal/Inspection/Installation

1. Remove the three 6.0 mm bolts securing the ATF filter cover (A) and the ATF pipe (B).



2. Remove the ATF pipe from the ATF filter cover, and remove the ATF filter (C) from the cover.

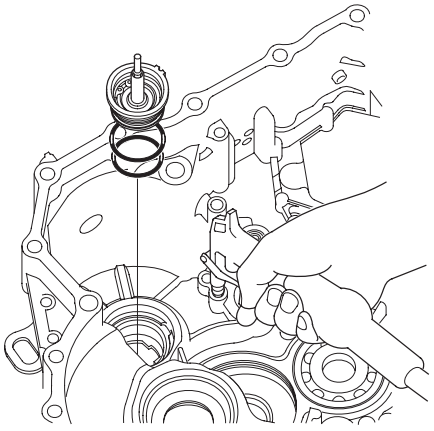
3. Clean the ATF filter, then check that it is in good condition, and is not clogged. Replace the ATF filter if it is clogged or damaged.

4. Install the ATF filter with the new O-ring (D) in the filter cover, and install the ATF pipe in the cover, then install them in the transmission housing.

5. Secure the ATF filter cover with the two bolts (E), then secure the ATF pipe with the bolt (F).

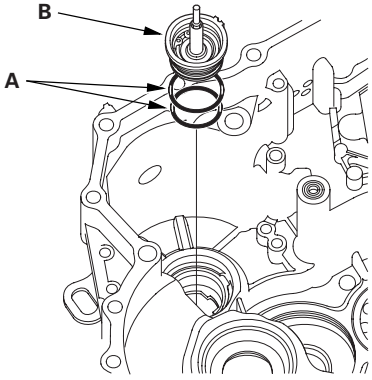
Secondary Shaft ATF Feed Pipe Cap Removal

1. Cover the tip of the 1st-hold clutch ATF feed pipe with a shop rag.
2. Apply air pressure to the ATF feed pipe hole of the 1st-hold clutch pressure circuit, and remove the ATF feed pipe cap from the transmission housing.



Secondary Shaft ATF Feed Pipe Cap Installation

1. Install the new O-rings (A) on the ATF feed pipe cap (B).

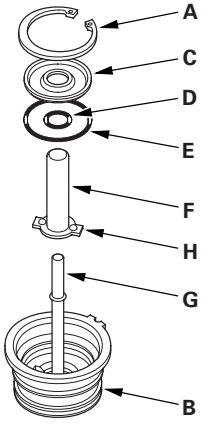


2. Install the ATF feed pipe cap in the transmission housing. Do not pinch the O-ring.

Secondary Shaft ATF Feed Pipe Cap, Feed Pipe Replacement

1. Remove the ATF feed pipe cap from the transmission housing (see page 14-300).

2. Remove the snap ring (A) from the feed pipe cap (B), then remove the feed pipe guide (C), the O-rings (D) (E), and the 1st clutch ATF feed pipe (F).



3. Replace the 1st clutch ATF feed pipe or the 1st-hold clutch ATF feed pipe/ATF feed pipe cap assembly. The 1st-hold clutch ATF feed pipe/ATF feed pipe cap is not available separately.

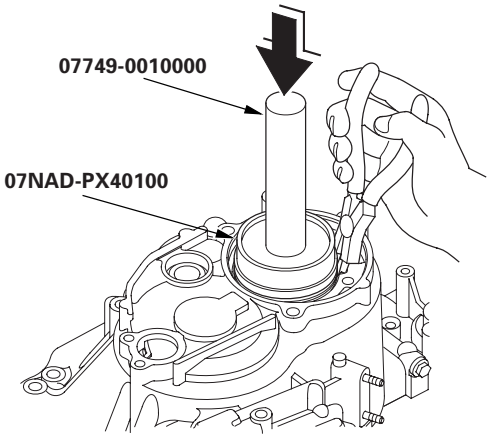
4. Install the new O-ring (D) over the 1st clutch ATF feed pipe, then install the feed pipe over the 1st-hold clutch ATF feed pipe (G) while aligning the feed pipe tabs (H) with the guide in the cap.

5. Install the new O-ring (E) in the cap and feed pipe guide, then secure the guide with the snap ring.

Mainshaft Bearing Removal

Special Tools Required
- Driver 07749-0010000
- Attachment, 78 x 80 mm 07NAD-PX40100

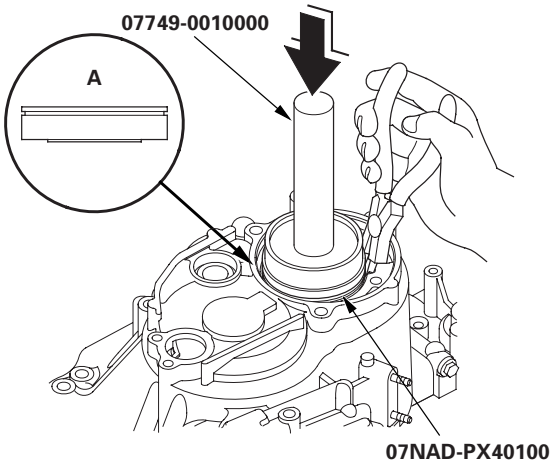
1. To remove the mainshaft bearing, expand the snap ring with snap ring pliers, then push the bearing out. Do not remove the snap ring unless it's necessary to clean the groove in the housing.



Mainshaft Bearing Installation

Special Tools Required
- Driver 07749-0010000
- Attachment, 78 x 80 mm 07NAD-PX40100

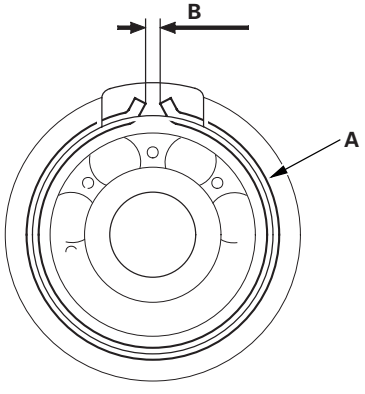
1. Install the bearing (A) in the direction shown.



2. Expand the snap ring with snap ring pliers, and insert the bearing part-way into the housing.

3. Release the pliers, then push the bearing down into the housing until the snap ring snaps in place around it.

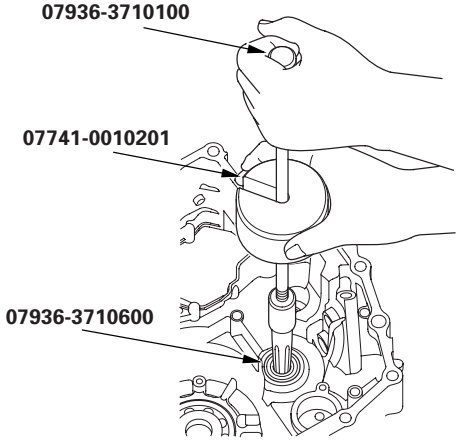
4. After installing the bearing, check that the snap ring (A) is seated in the bearing and housing groove, and that the ring end gap (B) is 0—7 mm (0—0.28 in.).



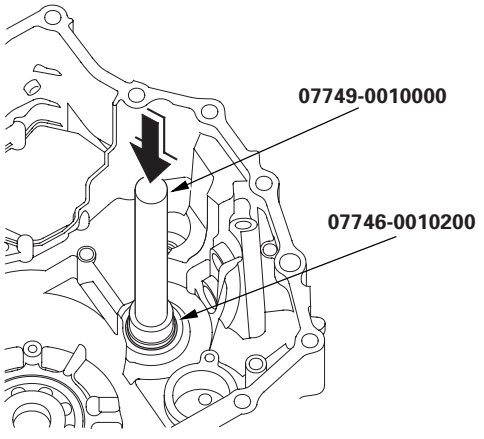
Intermediary Shaft Bearing Replacement

Special Tools Required
- Bearing remover shaft set, 20 mm 07936-3710600
- Bearing remover shaft handle 07936-3710100
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 37 x 40 mm 07746-0010200

1. Remove the intermediary shaft bearing from the transmission housing with the bearing remover shaft set (20 mm), sliding hammer weight, and bearing remover shaft handle.



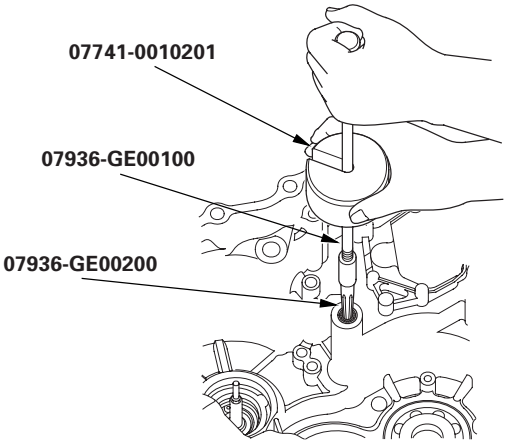
2. Install the new bearing until it bottoms in the transmission housing with the driver and attachment (37 x 40 mm).



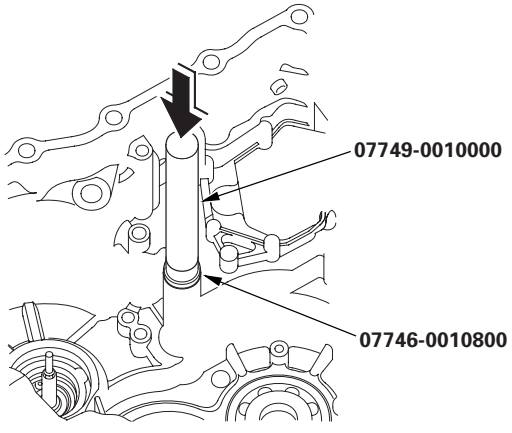
Park Lever Shaft Bearing Replacement

Special Tools Required
- Bearing remover shaft, 10 mm 07936-GE00100
- Bearing remover head, 10 mm 07936-GE00200
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the park lever shaft bearing from the transmission housing with the bearing remover head (10 mm), bearing remover shaft (10 mm), and sliding hammer weight.



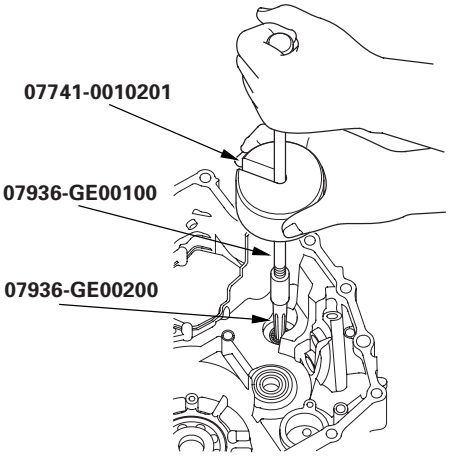
2. Install the new bearing until it bottoms in the transmission housing with the driver and attachment (22 x 24 mm).



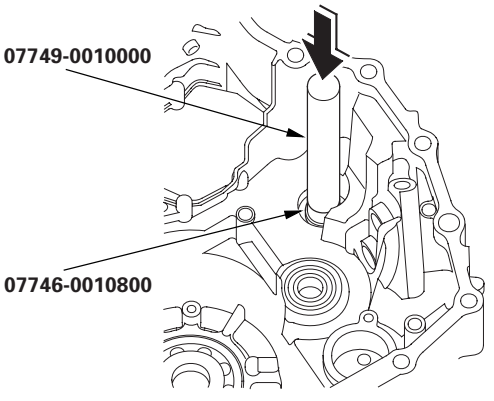
Selector Control Shaft Bearing Replacement

Special Tools Required
- Bearing remover shaft, 10 mm 07936-GE00100
- Bearing remover head, 10 mm 07936-GE00200
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the control shaft bearing from the transmission housing with the bearing remover head (10 mm), bearing remover shaft (10 mm), and sliding hammer weight.



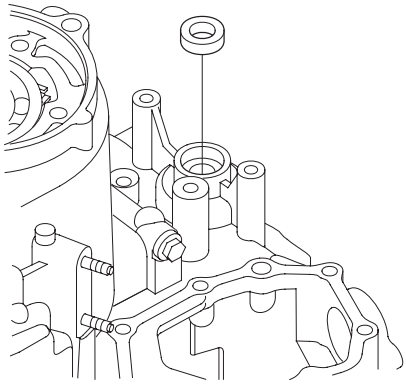
2. Install the new bearing until it bottoms in the transmission housing with the driver and attachment (22 x 24 mm).



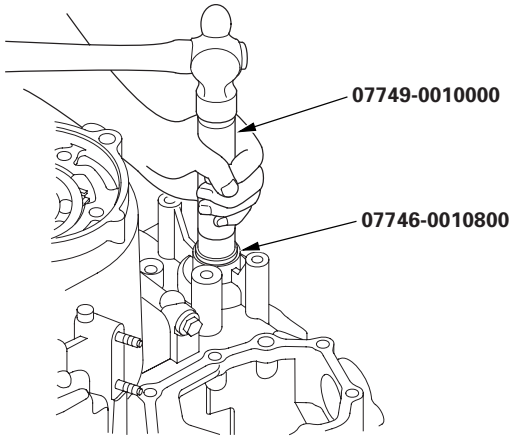
Selector Control Shaft Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the oil seal from the transmission housing.



2. Install the new oil seal in the transmission housing with the driver and attachment (22 x 24 mm).

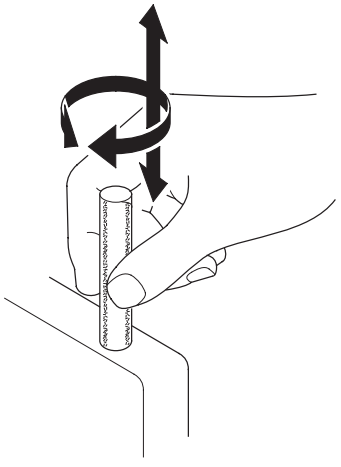


Valve Body Repair

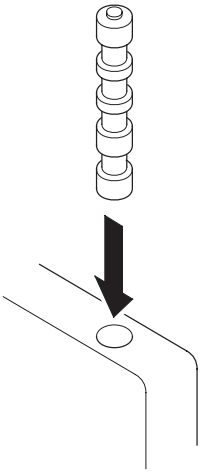
NOTE: Valve body repair is only necessary if one or more of the valves in a valve body do not slide smoothly in their bores. Use this procedure to free the valves.

1. Soak a sheet of #600 abrasive paper in ATF for about 30 minutes.
2. Carefully tap the valve body so the sticking valve drops out of its bore. It may be necessary to use a small screwdriver to pry the valve free. Be careful not to scratch the bore with the screwdriver.
3. Inspect the valve for any scuff marks. Use the ATF-soaked #600 paper to polish off any burrs that are on the valve, then wash the valve in solvent and dry it with compressed air.
4. Roll up half of the ATF-soaked #600 paper and insert it in the valve bore of the sticking valve. Twist the paper slightly, so that it unrolls and fits the bore tightly, then polish the bore by twisting the paper as you push it in and out.

   NOTE: The valve body is aluminum and doesn't require much polishing to remove any burrs.



5. Remove the #600 paper. Thoroughly wash the entire valve body in solvent, then dry it with compressed air.
6. Coat the valve with ATF, then drop it into its bore. It should drop to the bottom of the bore under its own weight. If not, repeat steps 4 and 5, then retest. If the valve still sticks, replace the valve body.

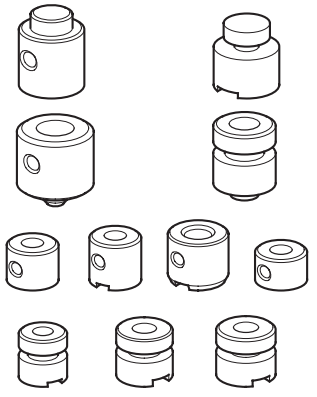


7. Remove the valve, and thoroughly clean it and the valve body with solvent. Dry all parts with compressed air, then reassemble using ATF as a lubricant.

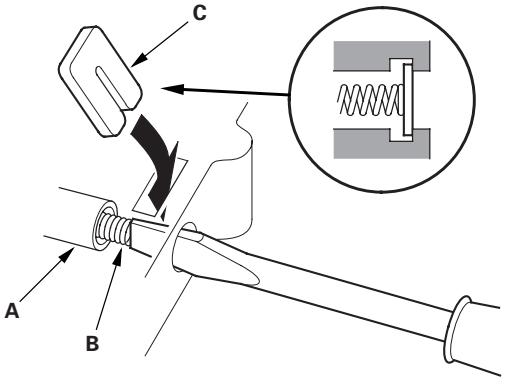
Valve Body Valve Installation

1. Coat all parts with ATF before assembly.

2. Install the valves and springs in the sequence shown for the main valve body (see page 14-307), the secondary valve body (see page 14-309), the regulator valve body (see page 14-310), and the accumulator body (see page 14-311). Refer to the following valve cap illustrations, and install each valve cap so the end shown facing up will be facing the outside of the valve body, then secure the valve cap with the valve cap clip.

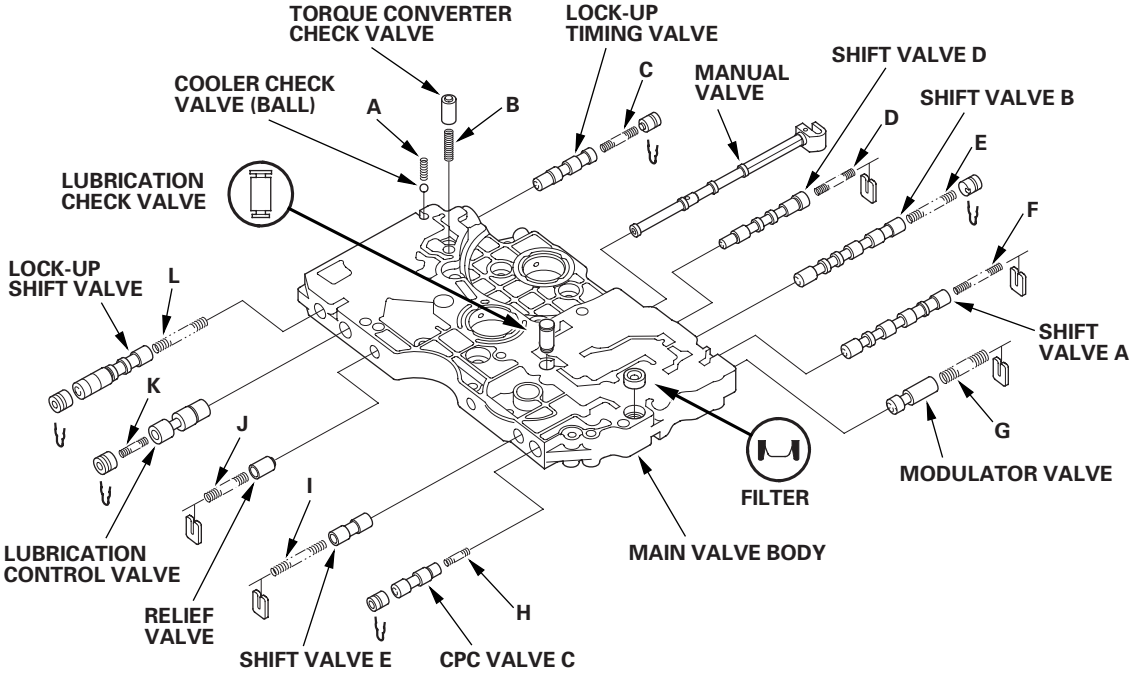


3. Install the valve (A) and the valve spring (B) in the valve body. Push the valve spring in with a screwdriver, then install the spring seat (C).



Main Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages.
2. Do not use a magnet to remove the cooler check valve, it may magnetize the check valve (ball).
3. Inspect the main valve body for scoring and damage.
4. Check all valves for free movement. If any fail to slide freely, refer to valve body repair (see page 14-305).
5. Coat all parts with ATF during assembly.
6. Replace the filter with a new one, and install it and the lubrication check valve in the direction shown.

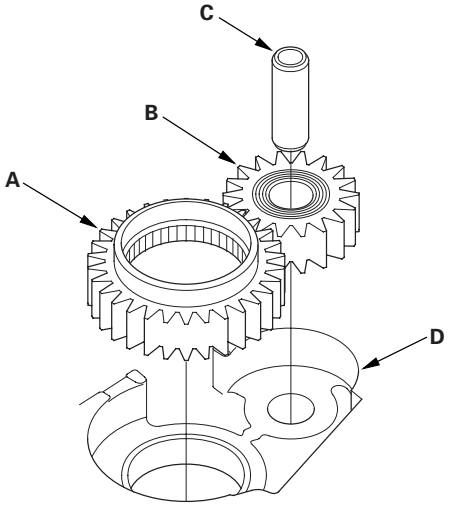


VALVE SPRING SPECIFICATIONS

Valve Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Cooler check valve spring	0.6 (0.024)	5.8 (0.228)	14.5 (0.571)	6.8
B	Torque converter check valve spring	1.1 (0.043)	8.6 (0.339)	35.0 (1.378)	12.6
C	Lock-up timing valve spring	0.65 (0.026)	6.6 (0.260)	34.8 (1.370)	15.6
D	Shift valve D spring	0.7 (0.028)	6.6 (0.260)	32.2 (1.268)	13.4
E	Shift valve B spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7
F	Shift valve A spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7
G	Modulator valve spring	1.6 (0.063)	10.4 (0.409)	33.5 (1.319)	9.8
H	CPC valve C spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9
I	Shift valve E spring	0.8 (0.031)	7.1 (0.280)	49.0 (1.929)	17.2
J	Relief valve spring	1.1 (0.043)	8.6 (0.339)	32.1 (1.264)	11.2
K	Lubrication control valve spring	0.7 (0.028)	7.7 (0.303)	28.8 (1.134)	10.4
L	Lock-up shift valve spring	0.9 (0.035)	7.6 (0.299)	63.0 (2.480)	22.4

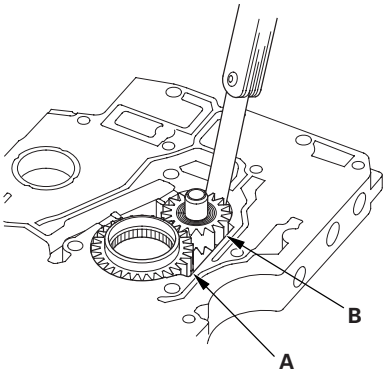
ATF Pump Inspection

1. Install the ATF pump drive gear (A), the driven gear (B), and the ATF pump driven gear shaft (C) in the main valve body (D). Lubricate all parts with ATF, and install the ATF pump driven gear with its grooved and chamfered side facing up.



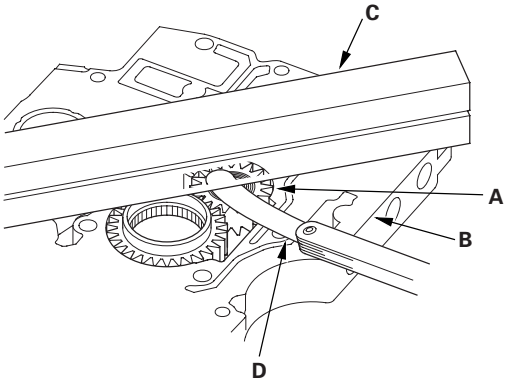
2. Measure the side clearance of the ATF pump drive gear (A) and the driven gear (B).

ATF Pump Gears Side (Radial) Clearance
Standard (New):
ATF Pump Drive Gear:
0.210—0.265 mm (0.0083—0.00104 in.)
ATF Pump Driven Gear:
0.070—0.125 mm (0.0028—0.0050 in.)



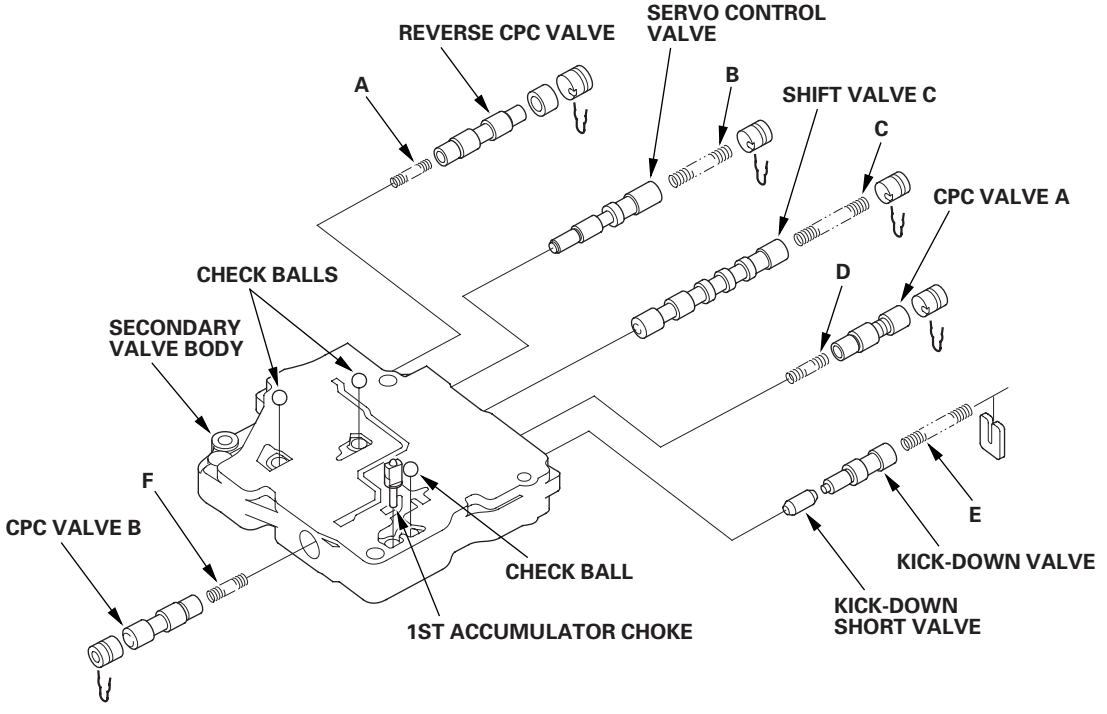
3. Remove the ATF pump driven gear shaft. Measure the thrust clearance between the ATF pump driven gear (A) and the valve body (B) with a straight edge (C) and a feeler gauge (D).

ATF Pump Drive/Driven Gear Thrust (Axial) Clearance:
Standard (New): 0.03—0.06 mm (0.001—0.002 in.)
Service Limit: 0.07 mm (0.003 in.)



Secondary Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages.
2. Do not use a magnet to remove the check balls, it may magnetize the check balls.
3. Inspect the secondary valve body for scoring and damage.
4. Check all valves for free movement. If any fail to slide freely, refer to valve body repair (see page 14-305).
5. Coat all parts with ATF during assembly.
6. Install the 1st accumulator choke in the direction shown.

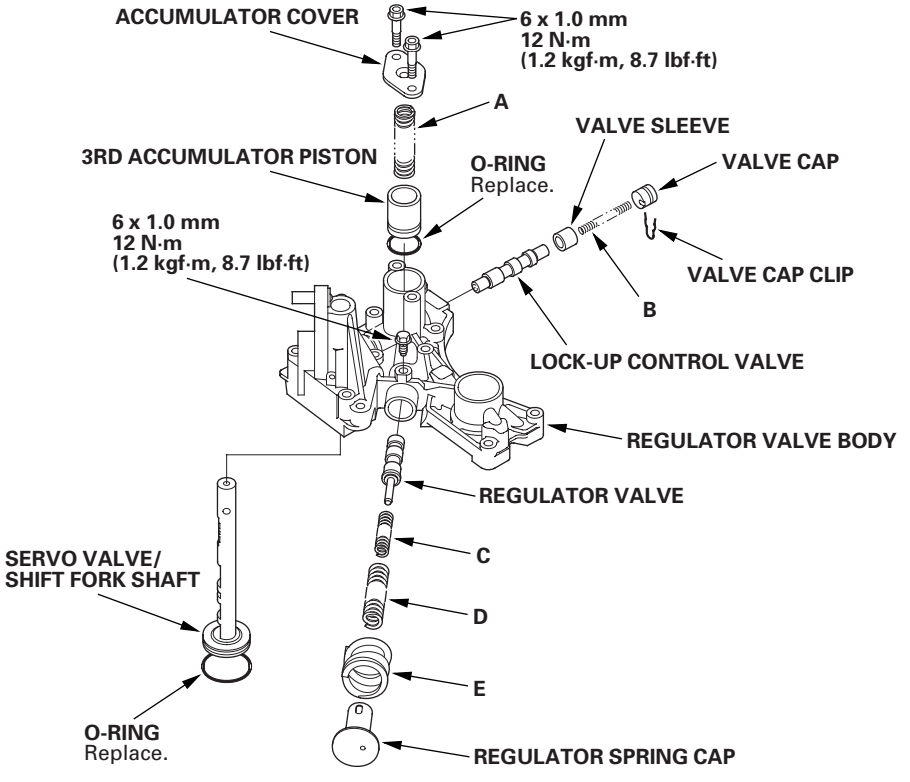


VALVE SPRING SPECIFICATIONS

Valve Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Reverse CPC valve spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9
B	Servo control valve spring	0.7 (0.028)	6.6 (0.260)	35.7 (1.406)	17.2
C	Shift valve C spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7
D	CPC valve A spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9
E	Kick-down valve spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7
F	CPC valve B spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9

Regulator Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages.
2. Inspect the regulator valve body for scoring and damage.
3. Hold the regulator spring cap in place while removing the stop bolt. The regulator spring cap is spring loaded. Once the stop bolt is removed, release the spring cap slowly so it does not pop out.
4. Check all valves for free movement. If any fail to slide freely, refer to valve body repair (see page 14-305).
5. Coat all parts with ATF during assembly.
6. Align the hole in the regulator spring cap with the stop bolt hole, then press the spring cap into the valve body, and tighten the stop bolt.
7. Install the servo valve with the new O-ring, and the 3rd accumulator piston with the new O-ring.

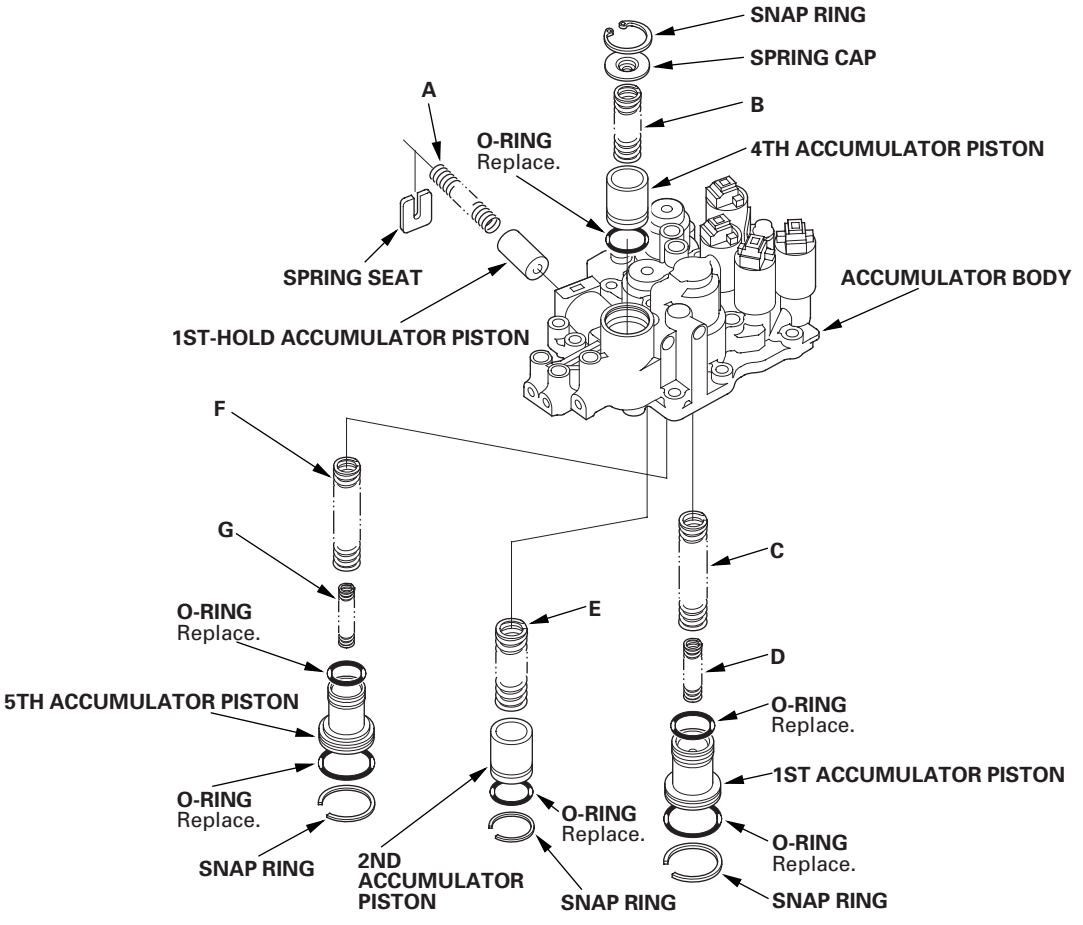


VALVE SPRING SPECIFICATIONS

Valve Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	3rd accumulator spring	3.1 (0.122)	19.6 (0.772)	41.4 (1.630)	5.5
B	Lock-up control valve spring	0.7 (0.028)	6.6 (0.260)	42.9 (1.689)	14.2
		0.8 (0.031)	6.6 (0.260)	44.3 (1.744)	25.5
C	Regulator valve spring B	1.4 (0.055)	8.8 (0.346)	44.0 (1.732)	12.0
D	Regulator valve spring A	1.85 (0.073)	14.7 (0.579)	86.9 (3.421)	16.2
E	Stator reaction spring	5.5 (0.217)	37.4 (1.472)	30.3 (1.193)	2.1

Accumulator Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages.
2. Inspect the accumulator body for scoring and damage.
3. Coat all parts with ATF during assembly.
4. Replace the O-rings with new ones.



VALVE SPRING SPECIFICATIONS

Valve Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	1st-hold accumulator spring	2.0 (0.079)	13.1 (0.516)	42.9 (1.689)	9.8
B	4th accumulator spring	3.0 (0.118)	19.6 (0.772)	45.3 (1.783)	6.4
C	1st accumulator spring A	2.2 (0.087)	17.7 (0.697)	77.6 (3.055)	12.1
D	1st accumulator spring B	2.0 (0.079)	11.1 (0.437)	49.0 (1.929)	10.0
E	2nd accumulator spring	3.1 (0.122)	19.6 (0.772)	53.4 (2.102)	7.5
F	5th accumulator spring A	2.2 (0.087)	16.4 (0.646)	75.7 (2.980)	14.2
G	5th accumulator spring B	2.0 (0.079)	10.0 (0.394)	45.5 (1.791)	11.6

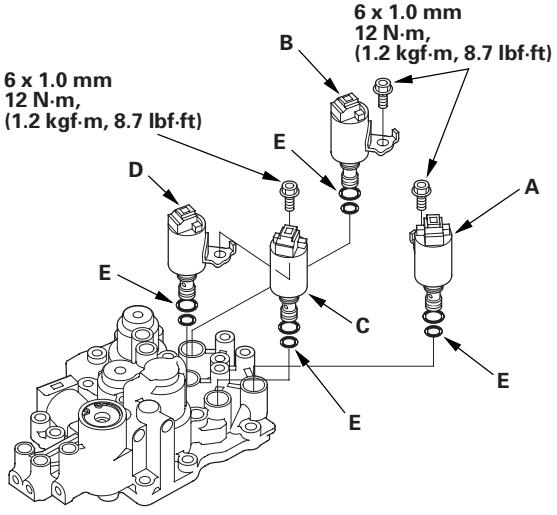
Shift Solenoid Valve, Torque Converter Clutch Solenoid Valve Removal and Installation

NOTE: Do not hold the solenoid valve connector to remove and install the solenoid valve. Be sure to hold the solenoid valve body.

1. Remove the mounting bolts, then remove the solenoid valves by holding the solenoid valve bodies.

2. Install the new O-rings (E) on each solenoid valves.

   NOTE: The new solenoid valve comes with new O-rings. If you install a new solenoid valve, use the O-rings provided on it.



3. Install shift solenoid valve A by holding the shift solenoid valve body; be sure to install mounting bracket contacts to the accumulator body.

4. Install the torque converter clutch solenoid valve by holding the solenoid valve body; be sure to install mounting bracket contacts to the accumulator body.

5. Install shift solenoid valve C by holding the shift solenoid valve body; be sure to install mounting bracket contacts to the bracket of torque converter clutch solenoid valve.

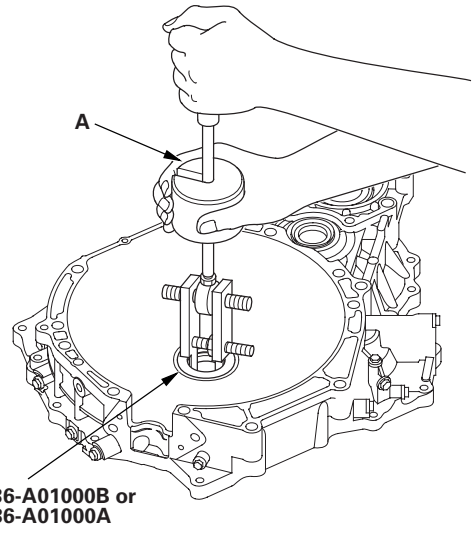
   NOTE: Do not install shift solenoid valve C before installing the torque converter clutch solenoid valve (D). If solenoid valve C is installed before torque converter clutch solenoid valve, it may damage to hydraulic control system.

6. Install shift solenoid valve B by holding the shift solenoid valve body; be sure to install mounting bracket contacts to the accumulator body.

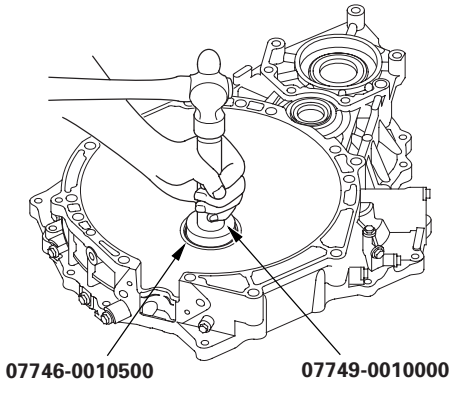
Mainshaft Bearing and Oil Seal Replacement

Special Tools Required
- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500
- Attachment, 72 x 75 mm 07746-0010600

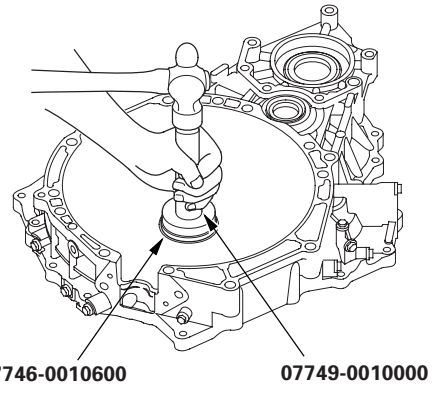
1. Remove the mainshaft bearing and oil seal with the adjustable bearing puller and a commercially available 3/8 ''-16 slide hammer (A).



2. Install the new mainshaft bearing until it bottoms in the housing with the driver and attachment (62 x 68 mm).



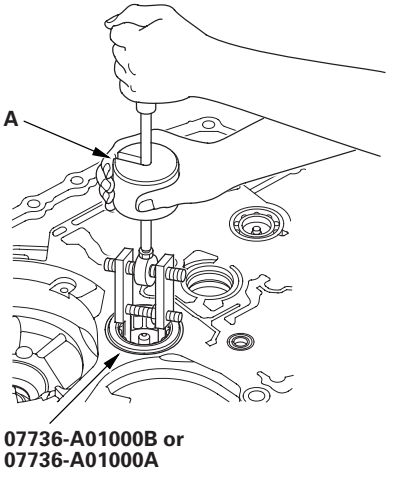
3. Install the new oil seal flush to the housing with the driver and attachment (72 x 75 mm).



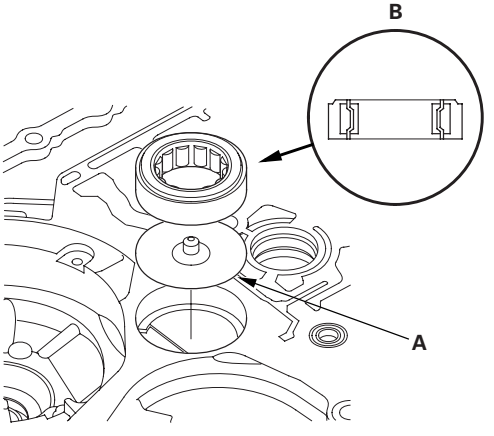
Countershaft Bearing Replacement

Special Tools Required
- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 78 x 80 mm 07NAD-PX40100

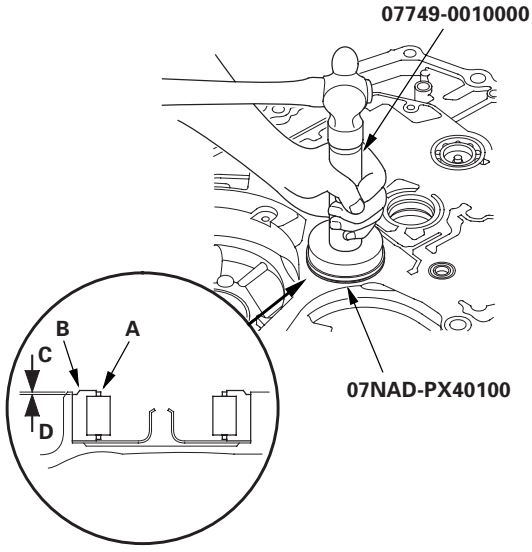
1. Remove the countershaft bearing from the torque converter housing with the adjustable bearing puller and a commercially available 3/8 ''-16 slide hammer (A).



2. Install the ATF guide plate (A) into the housing, then install the new bearing (B) in the direction shown.



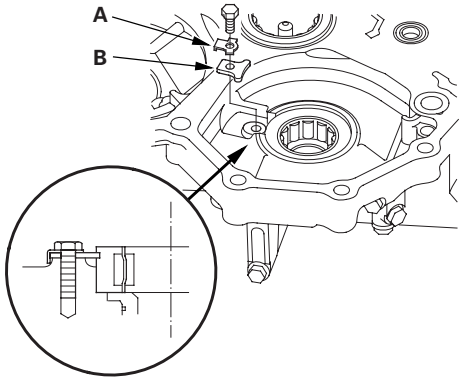
3. Install the bearing (A) in the housing with the driver and attachment (78 x 80 mm); install bearing outer race notch-cut (B) to a depth (C) of 0—0.03 mm (0—0.001 in.) below the housing surface (D).



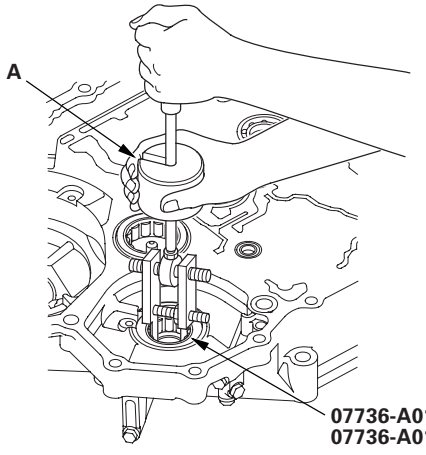
Secondary Shaft Bearing Replacement

Special Tools Required
- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A
- Bearing remover shaft set, 30 mm 07936-8890300
- Bearing remover shaft handle 07936-3710100
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 37 x 40 mm 07746-0010200
- Attachment, 62 x 68 mm 07746-0010500

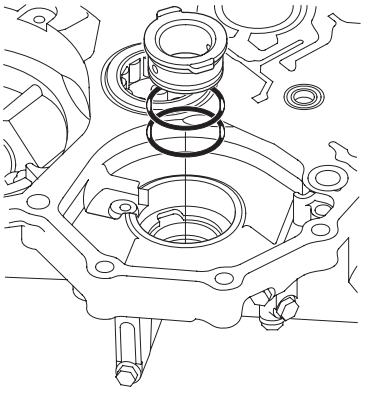
1. Remove the bolt, then remove the lock washer (A) and bearing set plate (B).



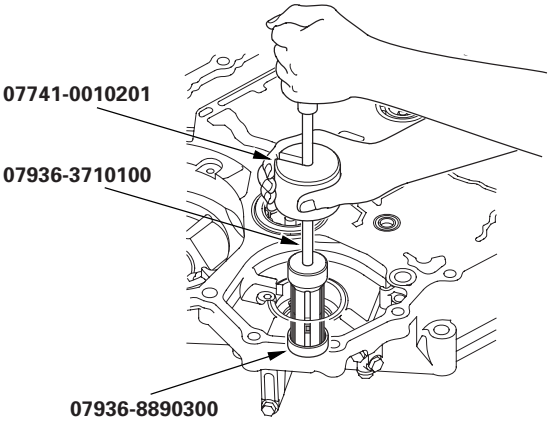
2. Remove the secondary shaft bearing from the torque converter housing with the adjustable bearing puller (25—40 mm), and a commercially available 3/8 ''-16 slide hammer (A).



3. Remove the ATF guide collar from the torque converter housing.



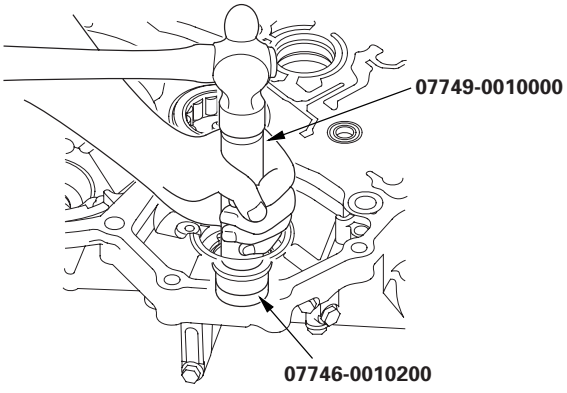
4. Remove the 29 x 39 x 9.5 mm secondary shaft bearing from the torque converter housing with the bearing remover shaft set (30 mm), bearing remover shaft handle, and sliding hammer weight.



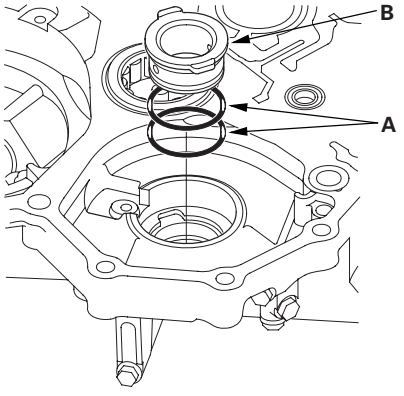
(cont'd)

Secondary Shaft Bearing Replacement (cont'd)

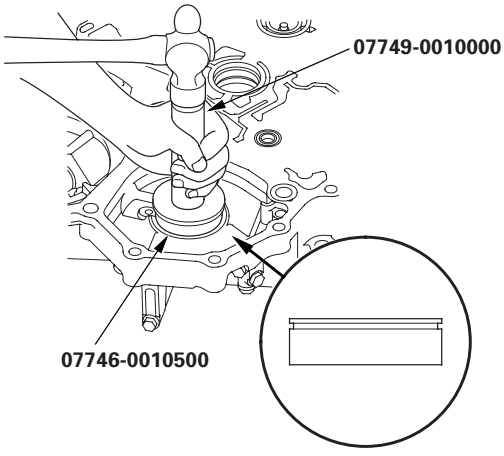
5. Install the 29 x 39 x 9.5 mm bearing into the torque converter housing with the driver and attachment (37 x 40 mm).



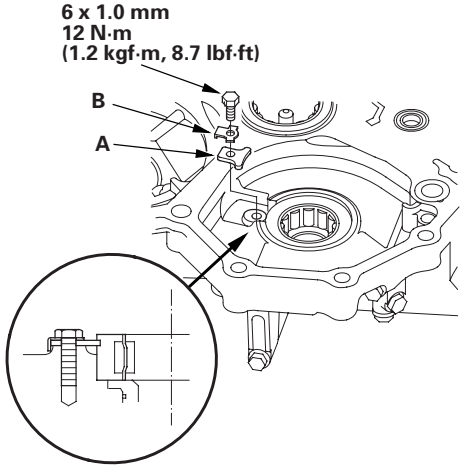
6. Install the new O-rings (A) on the ATF guide collar (B), then install the guide collar in the torque converter housing.



7. Install the bearing in the direction shown in the housing with the driver and attachment (62 x 68 mm).



8. Check that the bearing groove aligns with the set plate mounting surface, then install the set plate (A) by aligning it with the bearing groove.

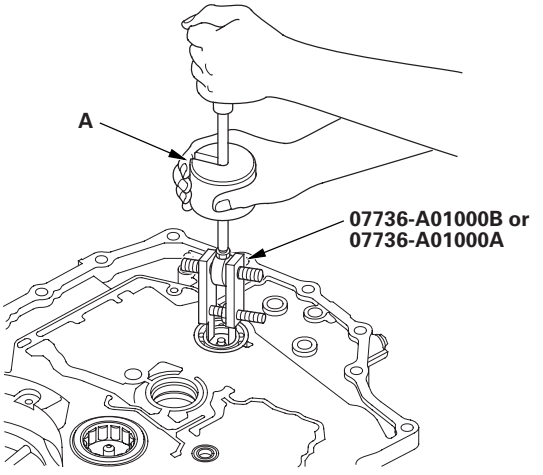


9. Install the new lock washer (B) and bolt, then bend the lock tab of the lock washer against the bolt head.

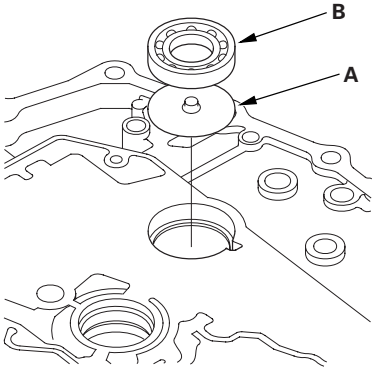
Intermediary Shaft Bearing Replacement

Special Tools Required
- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400

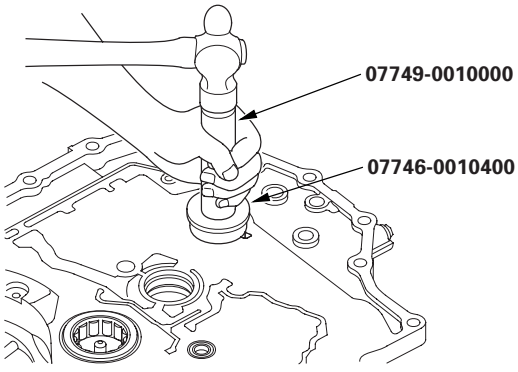
1. Remove the intermediary shaft bearing from the torque converter housing with the adjustable bearing puller (25—40 mm), and a commercially available 3/8 ''-16 slide hammer (A).



2. Install the ATF guide plate (A), then install the new bearing (B) in the housing.



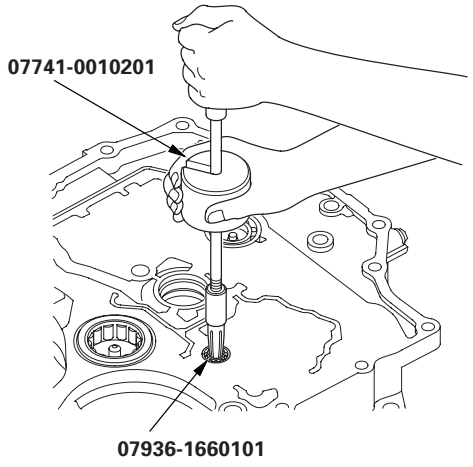
3. Drive the bearing into the housing with the driver and attachment (52 x 55 mm).



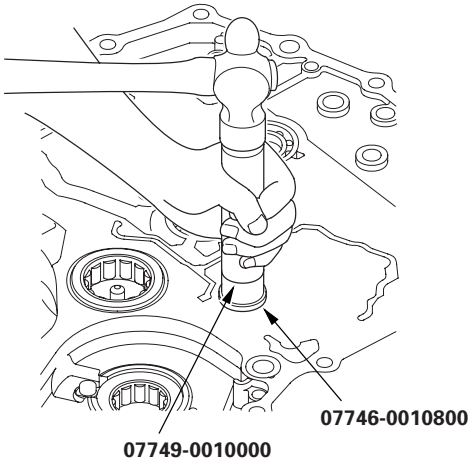
Park Lever Shaft Bearing Replacement

Special Tools Required
- Bearing remover shaft set, 12 mm 07936-1660101
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the park lever shaft bearing from the torque converter housing with the bearing remover shaft set (12 mm), and sliding hammer weight.

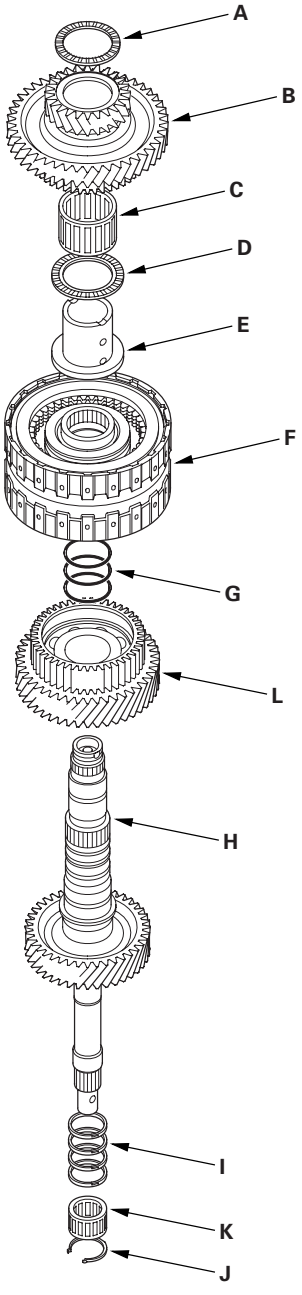


2. Install the new bearing until it bottoms in the housing with the driver and attachment (22 x 24 mm).



Mainshaft Disassembly, Inspection, and Reassembly

1. Remove the thrust needle bearing (A), the mainshaft 5th gear (B), the needle bearing (C), the thrust needle bearing (D), the mainshaft 5th gear collar (E), the 4th/5th clutch (F), and the O-rings (G) from the mainshaft (H).

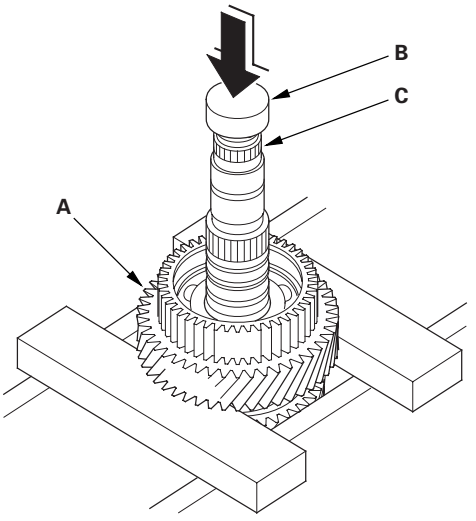


2. Inspect the condition of the sealing rings (I). If the sealing rings are worn, distorted, or damaged, remove the set ring (J) and the needles bearing (K), and replace the sealing rings with new ones.
3. Inspect the thrust needle bearing and needle bearing for wear and rough movement.
4. Inspect the splines for excessive wear and damage.
5. Inspect the 4th gear for wear and damage, and inspect the 4th gear bearing for wear and rough rotation.
6. Replace the mainshaft 4th gear (L) if the 4th gear is worn or damaged, or the bearing is worn or damaged.
7. Check the shaft bearing surfaces for scoring and excessive wear.
8. Lubricate all parts with ATF during reassembly.
9. Wrap the shaft splines with tape to prevent O-ring damage, install the new O-rings on the mainshaft, then remove the tape.
10. Install the 4th/5th clutch.
11. Install the mainshaft 5th gear collar, the thrust needle bearing, the needle bearing, the mainshaft 5th gear, and the thrust needle bearing.

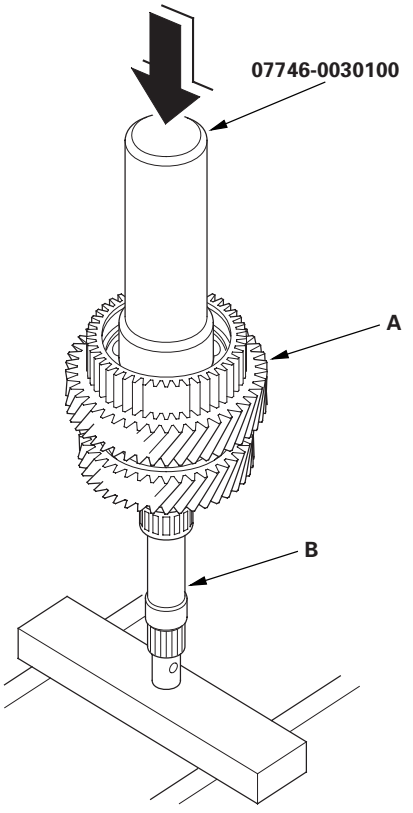
Mainshaft 4th Gear Replacement

Special Tools Required
Driver, 40 mm I.D. 07746-0030100

1. Remove the mainshaft 4th gear (A) with a press. Place a shaft protector (B) between the press and mainshaft (C) to prevent damaging the mainshaft.

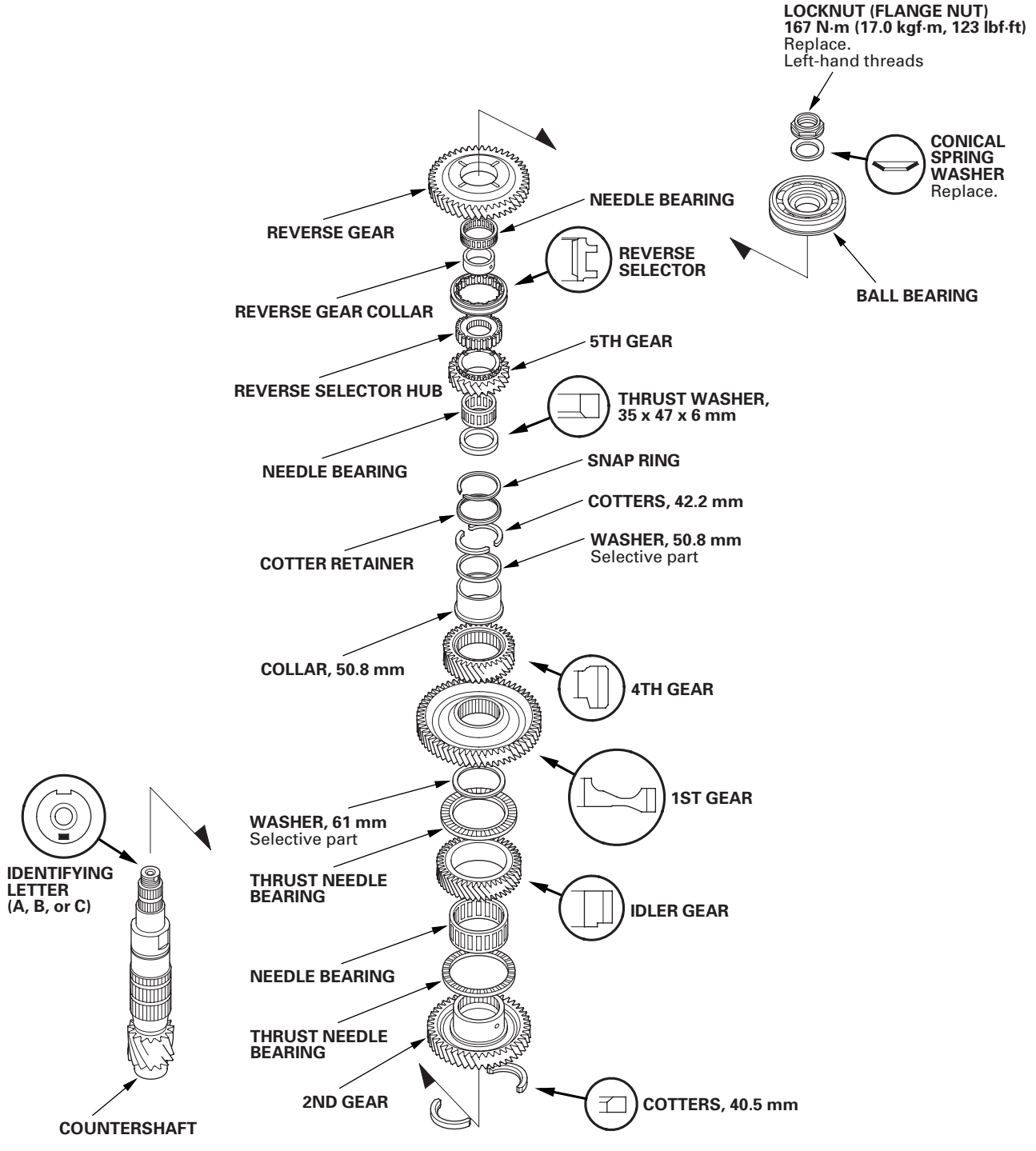


2. Slide the new mainshaft 4th gear (A) over the mainshaft (B), then press it into place with the driver (40 mm I.D.), and the press.



Countershaft Disassembly

Exploded View



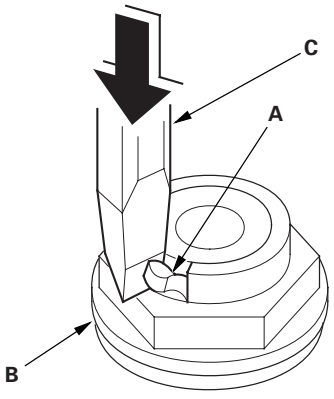
(cont'd)

Countershaft Disassembly (cont'd)

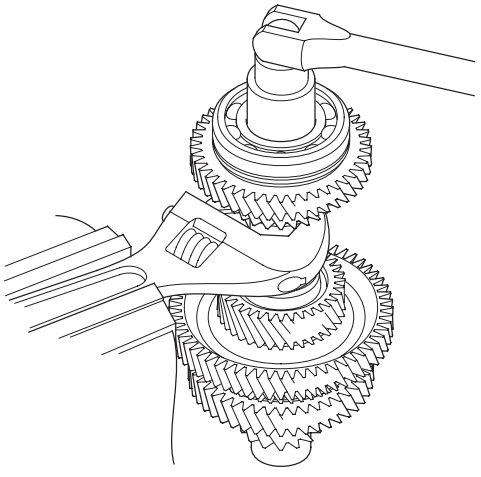
NOTE: Refer to the Exploded View as needed during the following procedure.

1. Cut the lock tab (A) of the countershaft locknut (B) using a chisel (C).

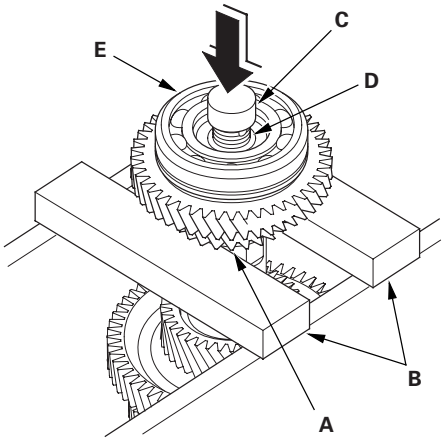
   NOTE: Keep all of the chiseled particles out of the countershaft.



2. Hold the countershaft with a wrench and a vise securely, loosen the locknut, and remove it. The locknut has left-hand threads.



3. Place the countershaft 5th gear (A) on press bases (B), and place a shaft protector (C) between the countershaft (D) and a press to prevent damaging the countershaft.



4. Press the countershaft out of the press-fitted bearing (E) and the press-fitted reverse selector hub, and remove the countershaft while holding the underside of the countershaft. The countershaft falls down when pressing the countershaft out of the press-fitted reverse selector hub. Some reverse selector hubs are not press-fitted, and the countershaft falls down when pressing the countershaft out of press-fitted bearing.

5. Remove the remaining parts from the countershaft.

6. Inspect the bearing for galling and rough movement.

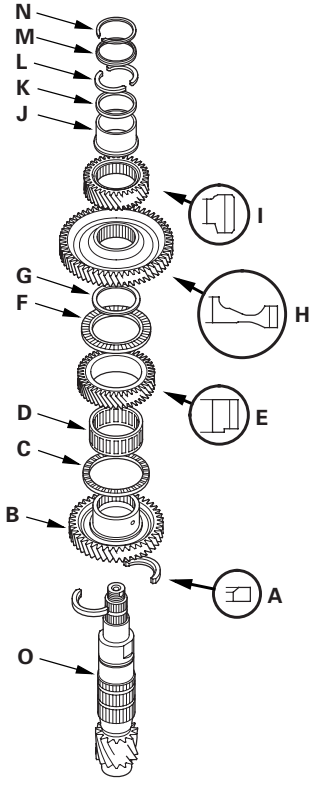
7. Check the shaft bearing surfaces for scoring and excessive wear, and check the shaft splines for excessive wear and damage.

   NOTE: If the countershaft is worn or damaged, replace the countershaft with the same letter (A, B, or C) for identification as the identifying letter on the final driven gear.

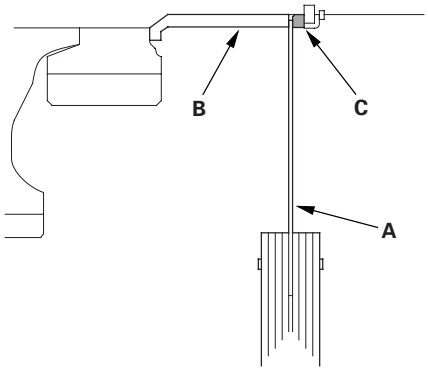
8. Check the idler gear axial clearance and the 4th gear axial clearance (see page 14-323).

Countershaft Idler Gear and 4th Gear Axial Clearance Inspection

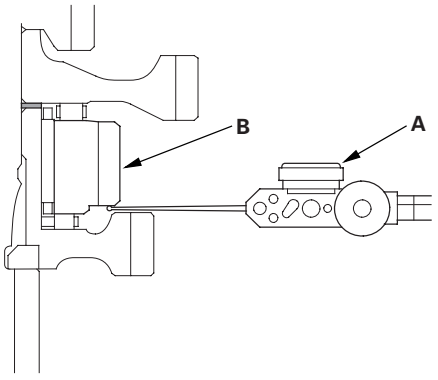
1. Install the 40.5 mm cotters (A), 2nd gear (B), thrust needle bearing (C), needle bearing (D), idler gear (E), thrust needle bearing (F), 61 mm washer (G), 1st gear (H), 4th gear (I), 50.8 mm collar (J), 50.8 mm washer (K), 42.2 mm cotters (L), cotter retainer (M), and snap ring (N) on the countershaft (O). Install the 40.5 mm cotters, idler gear, 1st gear, and 4th gear in the direction shown.



2. Insert a feeler gauge blade (A) as thick as possible between the 50.8 mm collar (B) and 50.8 mm washer (C).

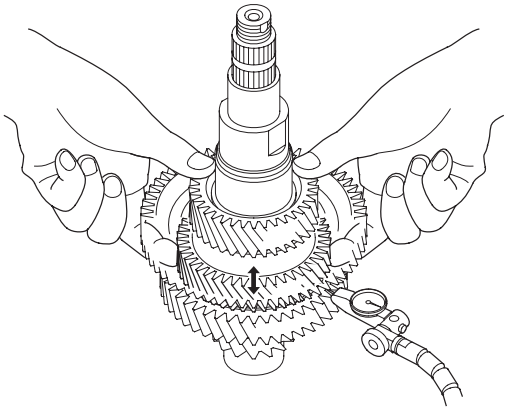


3. Set the dial indicator (A) on the idler gear (B).



4. Measure the idler gear axial clearance in at least three places while moving the idler gear. Use the average as the actual clearance.

Standard: 0.005—0.040 mm (0.0002—0.0016 in.)



5. If the measurement is out of standard, remove the 61 mm washer and measure its thickness.

(cont'd)

Countershaft Idler Gear and 4th Gear Axial Clearance Inspection (cont'd)

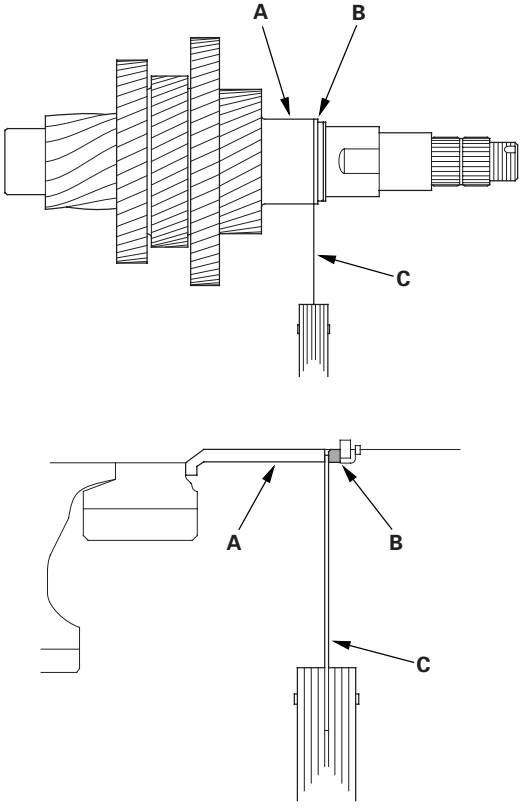
6. Select and install a new washer, then recheck the clearance.

WASHER, 61 mm

No.	Part Number	Thickness
A	90582-RJF-T00	1.525 mm (0.0600 in.)
B	90583-RJF-T00	1.505 mm (0.0593 in.)
C	90584-RJF-T00	1.485 mm (0.0585 in.)
D	90585-RJF-T00	1.465 mm (0.0577 in.)
E	90586-RJF-T00	1.445 mm (0.0569 in.)
F	90587-RJF-T00	1.425 mm (0.0561 in.)
G	90588-RJF-T00	1.405 mm (0.0553 in.)

7. Measure the clearance between the 50.8 mm collar (A) and the 50.8 mm washer (B) with a feeler gauge (C) in at least three places. Use the average as the actual clearance.

Standard: 0.005—0.040 mm (0.0002—0.0016 in.)



8. If the measurement is out of standard, remove the 50.8 mm washer and measure its thickness.

9. Select and install a new washer, then recheck the clearance.

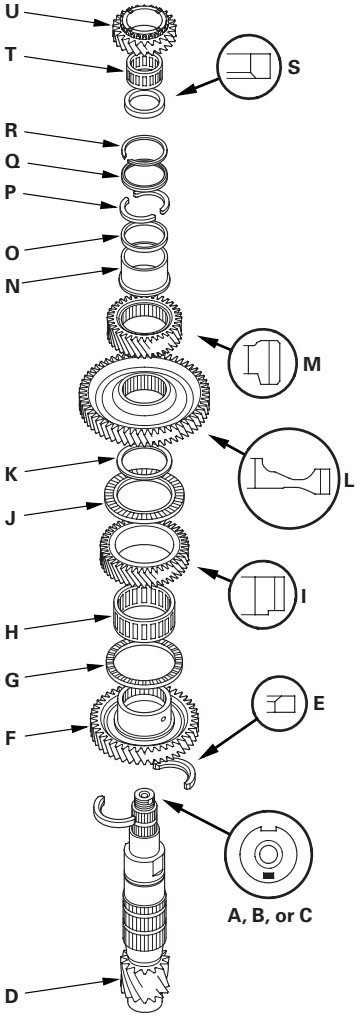
WASHER, 50.8 mm

No.	Part Number	Thickness
A	90519-RJF-T00	1.91 mm (0.0752 in.)
B	90520-RJF-T00	1.93 mm (0.0760 in.)
C	90521-RJF-T00	1.95 mm (0.0768 in.)
D	90522-RJF-T00	1.97 mm (0.0776 in.)
E	90523-RJF-T00	1.99 mm (0.0783 in.)
F	90524-RJF-T00	2.01 mm (0.0791 in.)
G	90525-RJF-T00	2.03 mm (0.0799 in.)
H	90526-RJF-T00	2.05 mm (0.0807 in.)
I	90527-RJF-T00	2.07 mm (0.0815 in.)
J	90528-RJF-T00	2.09 mm (0.0823 in.)
K	90529-RJF-T00	2.11 mm (0.0831 in.)
L	90530-RJF-T00	2.13 mm (0.0839 in.)
M	90531-RJF-T00	2.15 mm (0.0846 in.)
N	90532-RJF-T00	2.17 mm (0.0854 in.)
O	90533-RJF-T00	2.19 mm (0.0862 in.)
P	90534-RJF-T00	2.21 mm (0.0870 in.)
Q	90535-RJF-T00	2.23 mm (0.0878 in.)
R	90536-RJF-T00	2.25 mm (0.0886 in.)
S	90537-RJF-T00	2.27 mm (0.0894 in.)
T	90538-RJF-T00	2.29 mm (0.0902 in.)
U	90539-RJF-T00	2.31 mm (0.0909 in.)
V	90540-RJF-T00	2.33 mm (0.0917 in.)
W	90541-RJF-T00	2.35 mm (0.0925 in.)
X	90542-RJF-T00	2.37 mm (0.0933 in.)
Y	90543-RJF-T00	2.39 mm (0.0941 in.)
Z	90544-RJF-T00	2.41 mm (0.0949 in.)
AA	90545-RJF-T00	2.43 mm (0.0957 in.)
AB	90546-RJF-T00	2.45 mm (0.0965 in.)

Countershaft Reassembly

Special Tools Required
Driver, 40 mm I.D. 07746-0030100

1. Verify that the identifying letter (A, B, or C) on the top of the countershaft (D) matches the letter on the final driven gear. The identifying letters should be same.

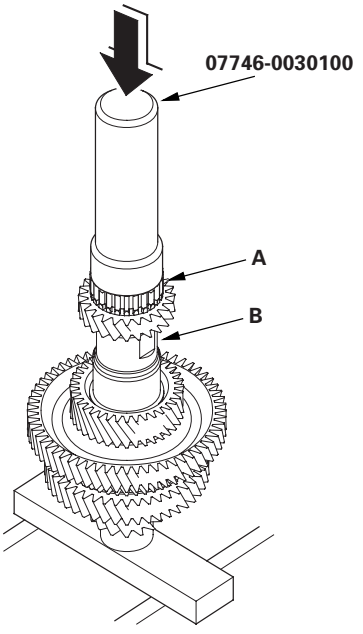


2. Install the 40.5 mm cotters (E), 2nd gear (F), thrust needle bearing (G), needle bearing (H), idler gear (I), thrust needle bearing (J), 61 mm washer (K), 1st gear (L), 4th gear (M), 50.8 mm collar (N), 50.8 mm washer (O), 42.2 mm cotters (P), cotter retainer (Q), and snap ring (R) on the countershaft. Install the 40.5 mm cotters, idler gear, 1st gear, and 4th gear in the direction shown.

3. Install the 35 x 47 x 6 mm thrust washer (S) in the direction shown, then install the needle bearing (T) and the 5th gear (U).

4. Slide the reverse selector hub (A) over the countershaft (B), then press it into place with the driver (40 mm I.D.) and a press.

   NOTE: Some reverse selector hubs are not press-fitted, and can be installed without using the driver (40 mm I.D.), and a press.

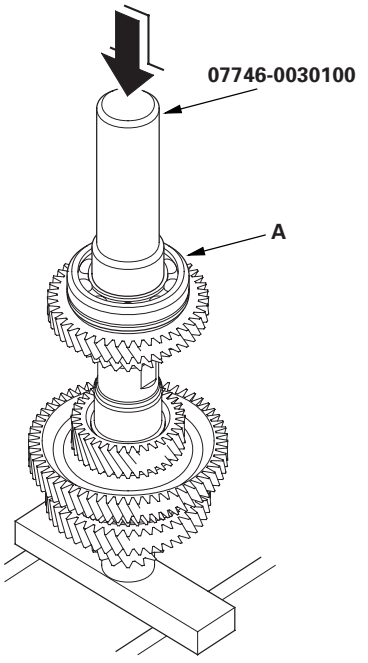


5. Install the reverse selector, the reverse gear collar, the needle bearing, and the reverse gear over the reverse selector hub.

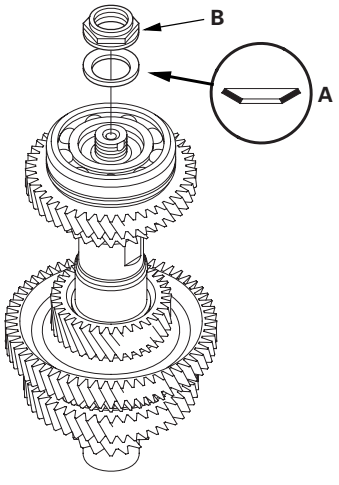
(cont'd)

Countershaft Reassembly (cont'd)

6. Install the ball bearing (A) over the countershaft, then press it into place with the driver (40 mm I.D.), and the press.

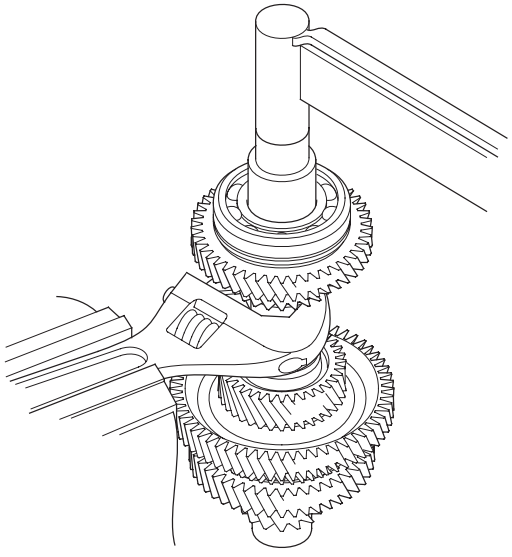


7. Install the conical spring washer (A) in the direction shown, and install the new locknut (B).

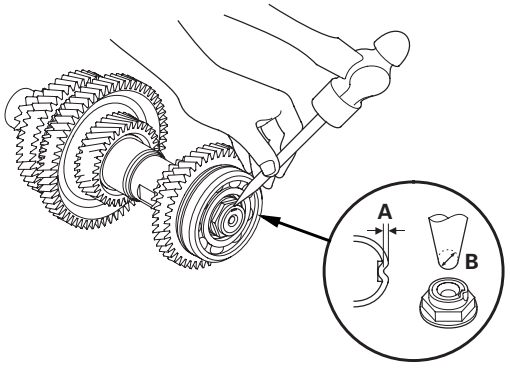


8. Hold the countershaft securely with a wrench and a vise, and tighten the locknut to 167 N·m (17.0 kgf·m, 123 lbf·ft).

   NOTE:
   - Use a torque wrench to tighten the locknut. Do not use an impact wrench.
   - The locknut has left-hand threads.

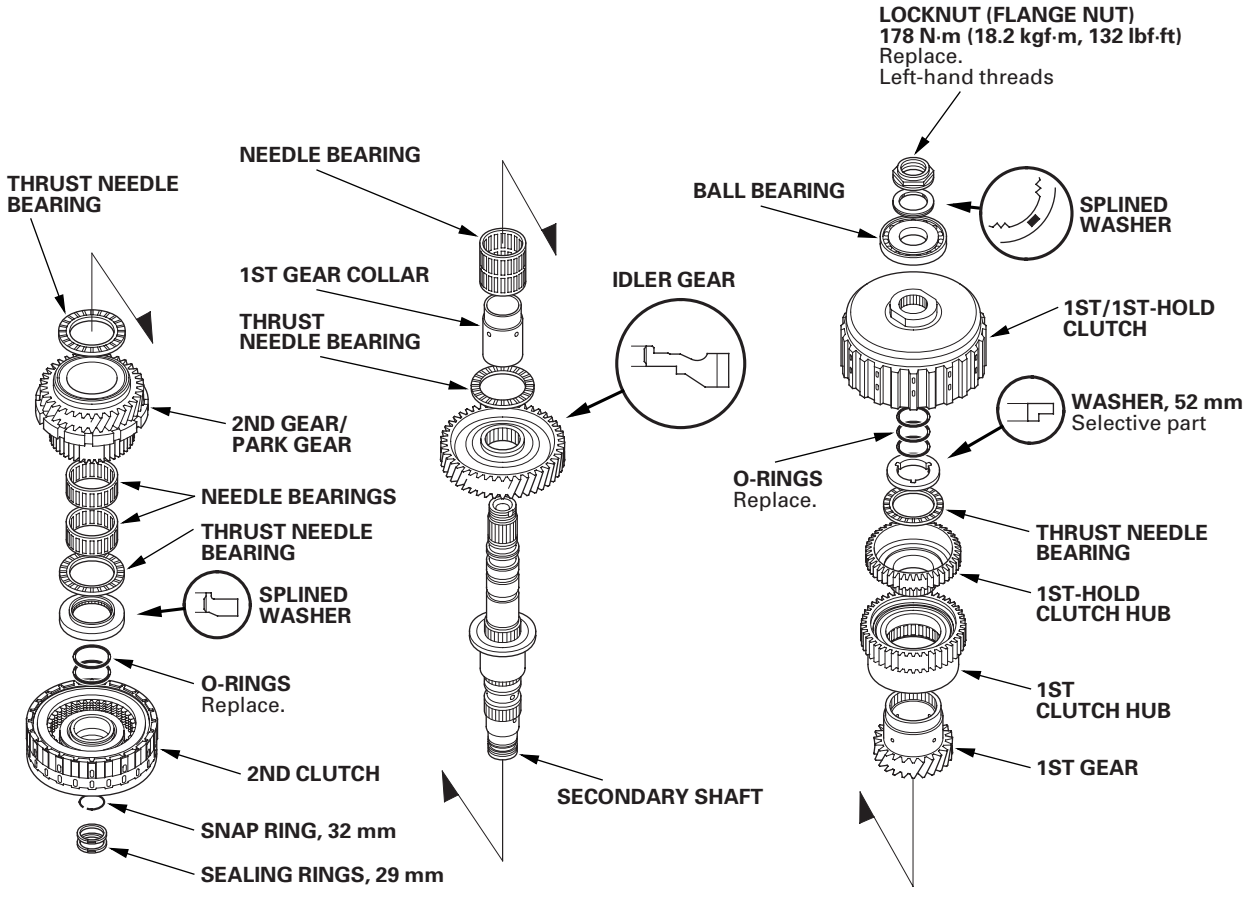


9. Stake the locknut into its shaft in depth (A) of 0.7—1.3 mm (0.03—0.05 in.) using a 3.5 mm punch (B).



Secondary Shaft Disassembly

Exploded View



(cont'd)

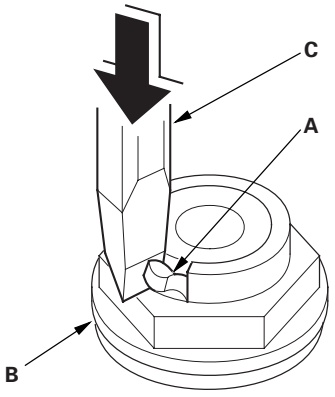
Secondary Shaft Disassembly (cont'd)

Special Tools Required
Wrench, 40 x 42 mm 07XAA-002010A

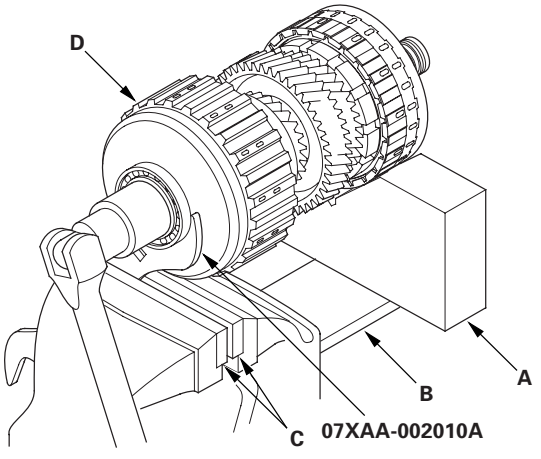
NOTE: Refer to the Exploded View as needed during the following procedure.

1. Cut the lock tab (A) of the secondary shaft locknut (B) using a chisel (C).

   NOTE: Keep all of the chiseled particles out of the secondary shaft.

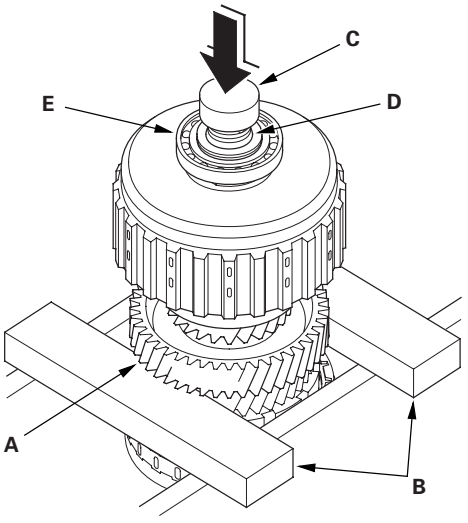


2. Place a V-block (A) on the back of a vise (B), and clamp the wrench (40 x 42 mm), in the vise jaws (C).



3. Place the secondary shaft on the block, and attach the 1st clutch guide (D) to the wrench (40 x 42 mm). Loosen the locknut, and remove it. Remove any burrs from the splines on the shaft and the spline, the washer.

4. Place the idler gear (A) on press bases (B), and place a shaft protector (C) between the secondary shaft (D) and a press to prevent damaging the secondary shaft.



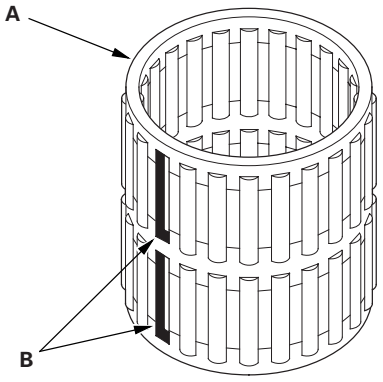
5. Press the secondary shaft out of the press-fitted bearing (E), and remove the secondary shaft while holding the underside of the secondary shaft. The secondary shaft falls down when pressing the secondary shaft out of the press-fitted bearing.

6. Remove the 1st/1st-hold clutch, 52 mm washer, thrust needle bearing, 1st gear assembly, needle bearing, 1st gear collar, thrust needle bearing, and idler gear.

7. Remove the 32 mm snap ring, and remove the 2nd clutch, splined washer, thrust needle bearing, needle bearing, 2nd gear/park gear, and thrust needle bearing.

8. Inspect the bearings for galling and rough movement.

   NOTE: The needle bearing (A) on the 1st gear collar should have only two cavities with no rollers (B); this is function in its normal.



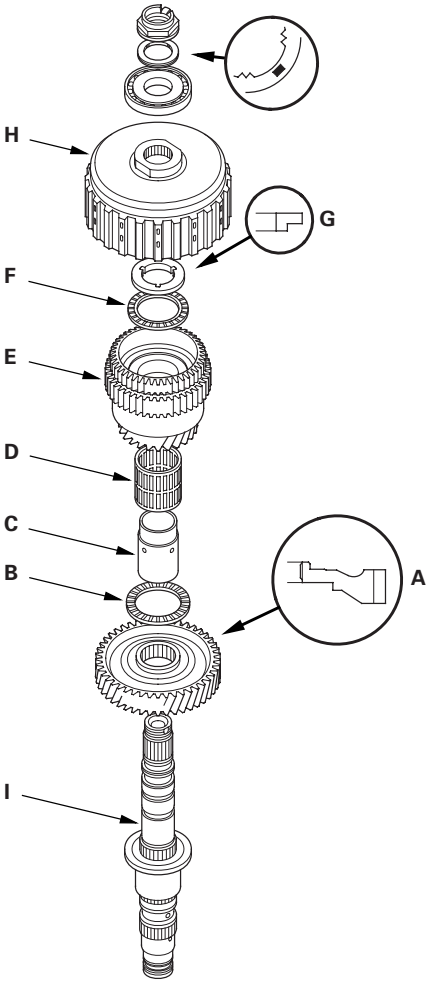
9. Check the shaft bearing surfaces for scoring and excessive wear, and check the shaft splines for excessive wear and damage.

10. Check the 1st gear axial clearance (see page 14-330), 1st gear one-way clutch (see page 14-332), and secondary shaft installation height (see page 14-337).

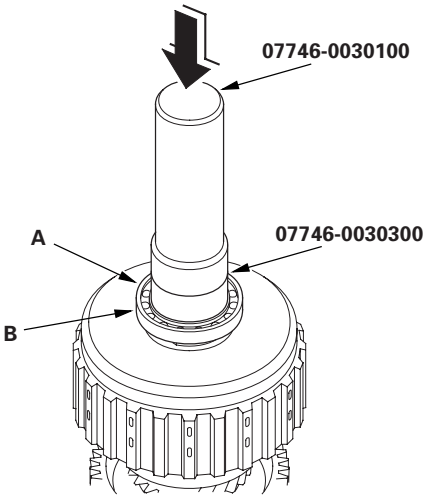
Secondary Shaft 1st Gear Axial Clearance Inspection

Special Tools Required
- Driver, 40 mm I.D. 07746-0030100
- Attachment, 30 mm I.D. 07746-0030300

1. Install the idler gear (A), thrust needle bearing (B), 1st gear collar (C), needle bearing (D), 1st gear assembly (E), thrust needle bearing (F), 52 mm washer (G), and 1st/1st-hold clutch (H) on the secondary shaft (I). Install the idler gear and 52 mm washer in the direction shown. Do not install the O-rings during inspection.



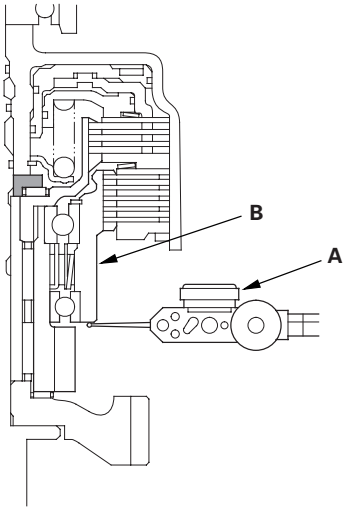
2. Install the ball bearing (A) over the 1st/1st-hold clutch guide with the driver (40 mm I.D.), attachment (30 mm I.D.), and a press.



3. Install the splined washer with the marked side up over the ball bearing in the same manner as installing the ball bearing with the driver (40 mm I.D.), attachment (30 mm I.D.), and the press.

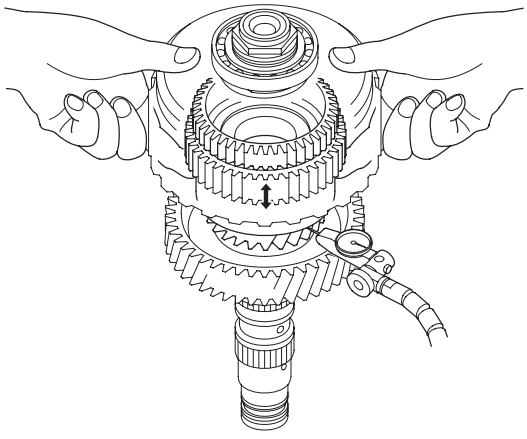
4. Install the old locknut and tighten it to 29 N·m (3.0 kgf·m, 22 lbf·ft).

5. Set the dial indicator (A) on the 1st clutch hub (B).

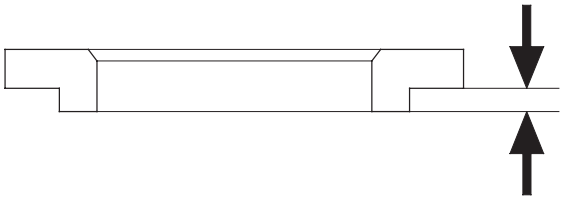


6. Measure the 1st gear axial clearance in at least three places while moving the 1st gear. Use the average as the actual clearance.

Standard: 0.100—0.130 mm (0.004—0.05 in.)



7. If the clearance is out of standard, remove the washer and measure its height difference.



8. Select and install a new washer, then recheck the clearance.

WASHER, 52 mm ('06 model)

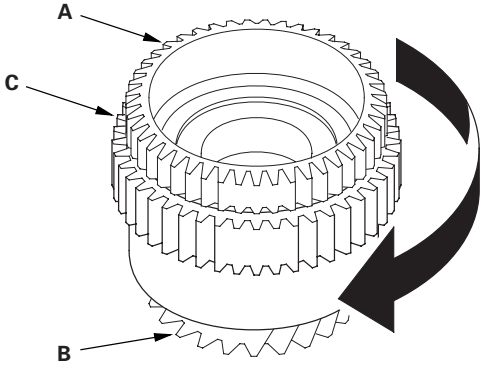
No.	Part Number	Thickness
A	90502-RDK-010	2.705 mm (0.107 in.)
B	90503-RDK-010	2.680 mm (0.106 in.)
C	90504-RDK-010	2.655 mm (0.105 in.)
D	90505-RDK-010	2.630 mm (0.104 in.)
E	90506-RDK-010	2.605 mm (0.103 in.)
F	90507-RDK-010	2.580 mm (0.102 in.)
G	90508-RDK-010	2.555 mm (0.101 in.)
H	90509-RDK-010	2.530 mm (0.100 in.)
I	90510-RDK-010	2.505 mm (0.099 in.)
J	90511-RDK-010	2.480 mm (0.098 in.)
K	90512-RDK-000	2.455 mm (0.097 in.)
L	90513-RDK-000	2.430 mm (0.096 in.)
M	90514-RDK-000	2.405 mm (0.095 in.)

WASHER, 52 mm ('07-08 models)

No.	Part Number	Thickness
A	90502-RJF-T00	2.705 mm (0.107 in.)
B	90503-RJF-T00	2.680 mm (0.106 in.)
C	90504-RJF-T00	2.655 mm (0.105 in.)
D	90505-RJF-T00	2.630 mm (0.104 in.)
E	90506-RJF-T00	2.605 mm (0.103 in.)
F	90507-RJF-T00	2.580 mm (0.102 in.)
G	90508-RJF-T00	2.555 mm (0.101 in.)
H	90509-RJF-T00	2.530 mm (0.100 in.)
I	90510-RJF-T00	2.505 mm (0.099 in.)
J	90511-RJF-T00	2.480 mm (0.098 in.)
K	90512-RJF-T00	2.455 mm (0.097 in.)
L	90513-RJF-T00	2.430 mm (0.096 in.)
M	90514-RJF-T00	2.405 mm (0.095 in.)

1st Gear One-way Clutch Inspection

1. Hold the 1st-hold clutch hub (A), and turn the 1st gear (B) in the direction shown to be sure it turns freely. Also make sure the 1st gear locks in the opposite direction.



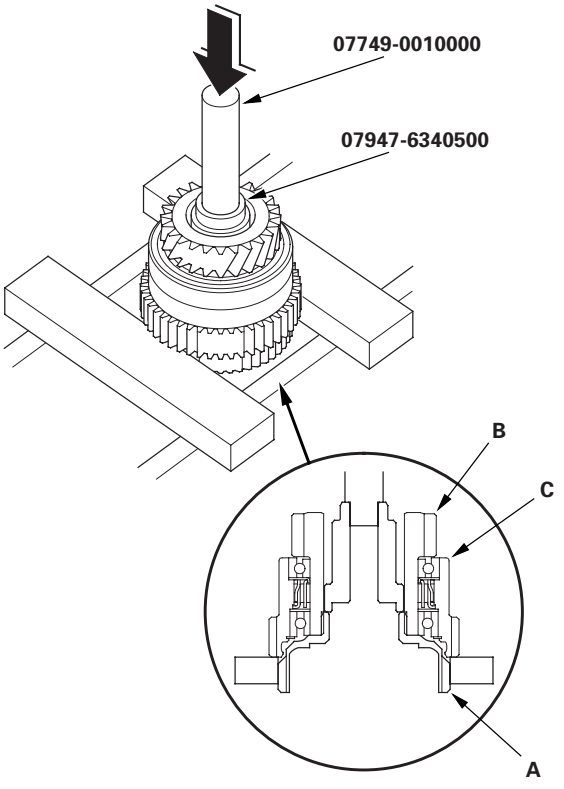
2. If any problem occurs on the 1st gear one-way clutch, replace the 1st clutch hub (C). The 1st gear one-way clutch is not available separately from the 1st clutch hub.

3. Also check the 1st gear and the 1st-hold clutch hub for wear and damage. If the 1st gear and 1st-hold clutch hub are worn or damaged, replace the damaged part, refer to 1st Clutch Hub Replacement (see page 14-333).

1st Clutch Hub Replacement

Special Tools Required
- Driver 07749-0010000
- Driver attachment 07947-6340500
- Attachment, 78 x 80 mm 07GAD-SD40101

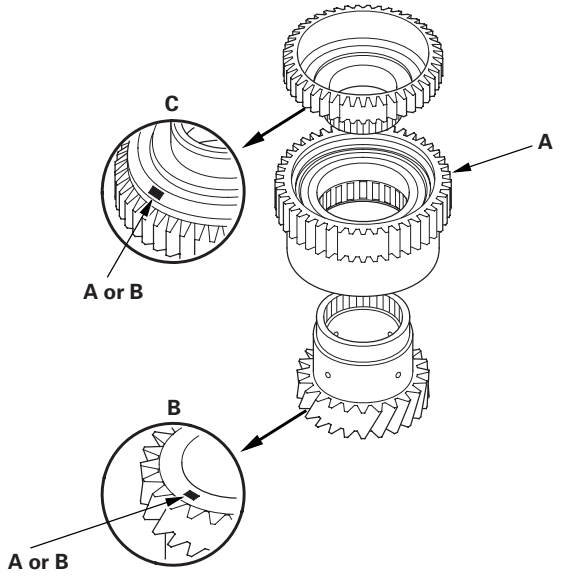
1. Remove the 1st-hold clutch hub (A) from the 1st gear (B) with the driver, driver attachment, and a press.



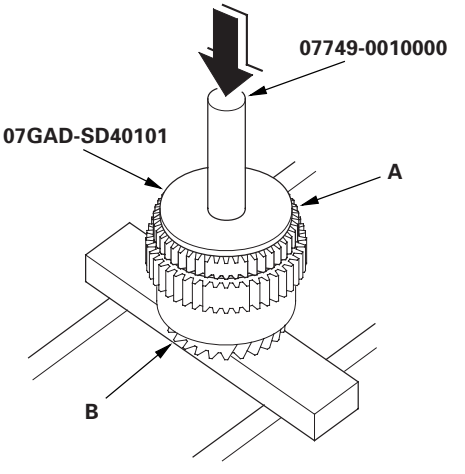
2. Remove the 1st clutch hub (C) from the 1st gear.

3. Install the new 1st clutch hub (A) over the 1st gear (B), and install the 1st-hold clutch hub (C) in the 1st gear.

   NOTE: If the 1st gear and the 1st-hold clutch hub are replaced, use the 1st gear and the 1st-hold clutch hub with the same identifying letters (A or B).



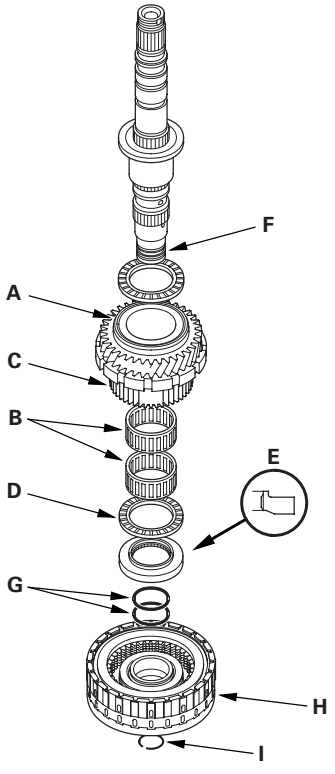
4. Install the 1st-hold clutch hub (A) in the 1st gear (B) with the driver, attachment (78 x 80 mm), and the press.



Secondary Shaft Reassembly

Special Tools Required
- Driver, 40 mm I.D. 07746-0030100
- Attachment, 30 mm I.D. 07746-0030300
- Wrench, 40 x 42 mm 07XAA-002010A

1. Install the thrust needle bearing (A), the needle bearings (B), the 2nd gear/park gear (C), the thrust needle bearing (D), and the splined washer (E) in the direction shown on the secondary shaft (F).



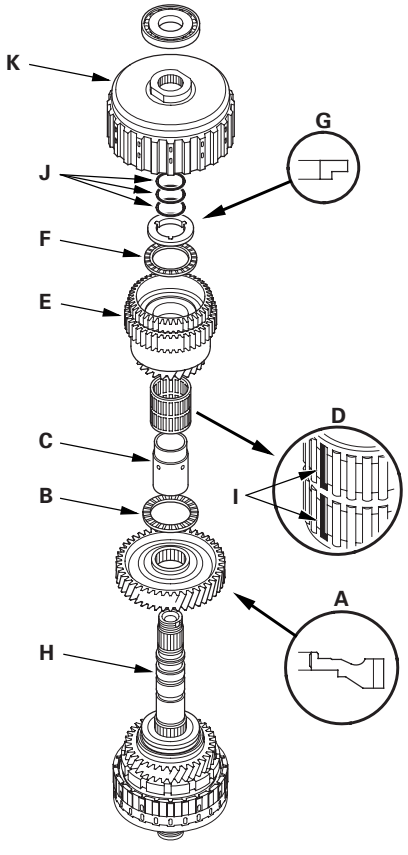
2. Wrap the shaft splines with tape, and install new O-rings (G) in the 2nd clutch O-ring grooves, then remove the tape.

   NOTE: To prevent damage to the O-rings, be sure to install the O-rings after installing the splined washer.

3. Install the 2nd clutch (H) on the secondary shaft, and secure the 2nd clutch with the snap ring (I).

4. Install the idler gear (A) in the direction shown, the thrust needle bearing (B), the 1st gear collar (C), the needle bearing (D), the 1st gear assembly (E), the thrust needle bearing (F), and the 52 mm washer (G) in the direction shown on the secondary shaft (H).

   NOTE: It is normal for the needle bearing (D) to have two cavities (I) without rollers.

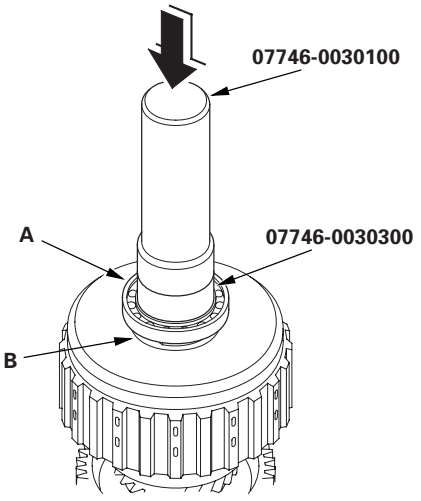


5. Wrap the shaft splines with tape, and install new O-rings (J) in the 1st/1st-hold clutch O-ring grooves, then remove the tape.

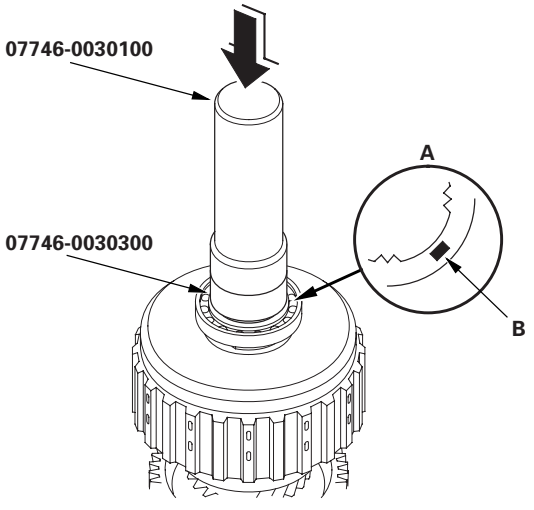
   NOTE: To prevent damage to the O-rings, be sure to install the O-rings after installing the 1st gear collar and the 52 mm washer.

6. Install the 1st/1st-hold clutch (K).

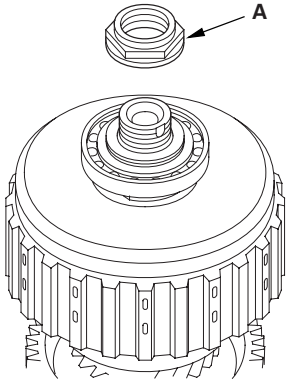
7. Install the ball bearing (A) over the 1st/1st-hold clutch guide (B) with the driver (40 mm I.D.), attachment (30 mm I.D.), and a press.



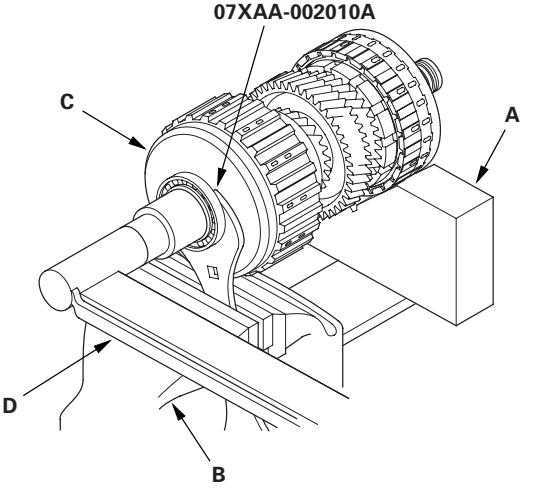
8. Install the new splined washer (A) with the marked side (B) up over the ball bearing with the driver (40 mm I.D.), attachment (30 mm I.D.), and the press.



9. Install the new locknut (A).



10. Place a V-block (A) on a vise (B), and put the secondary shaft (C) on the V-block and vise.



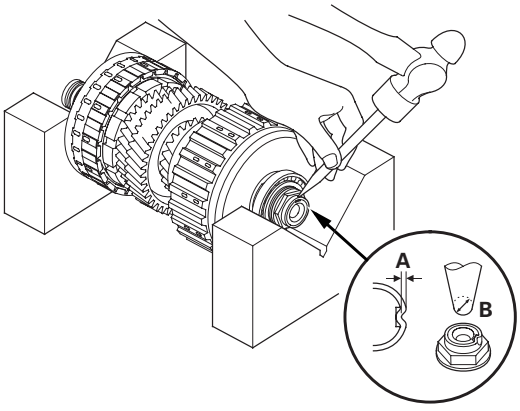
11. Attach the wrench (40 x 42 mm), onto the top of the 1st clutch guide, and secure the wrench (40 x 42 mm), with the vise to hold the secondary shaft. Tighten the locknut to 178 N·m (18.2 kgf·m, 132 lbf·ft) with the torque wrench (D).

    NOTE:
    - Use a torque wrench to tighten the locknut. Do not use an impact wrench.
    - The locknut has left-hand threads.

(cont'd)

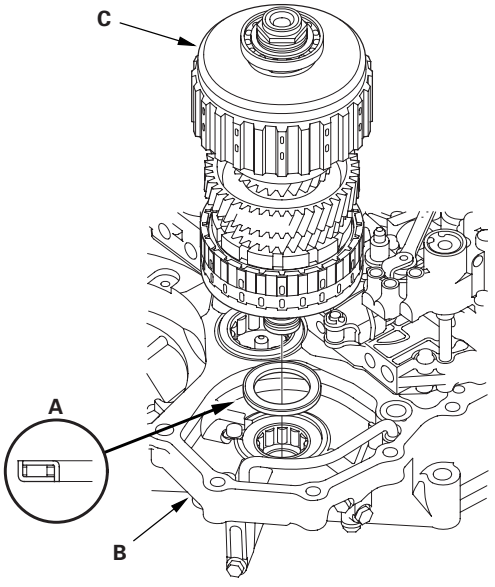
Secondary Shaft Reassembly (cont'd)

12. Stake the locknut into the shaft to a depth (A) of 0.7—1.3 mm (0.03—0.05 in.) using a 3.5 mm punch (B).

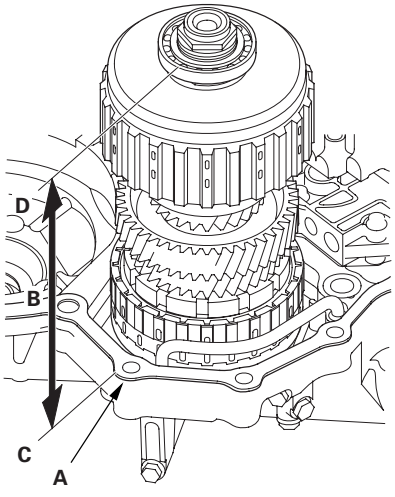


Secondary Shaft Installation Height Inspection/Adjustment

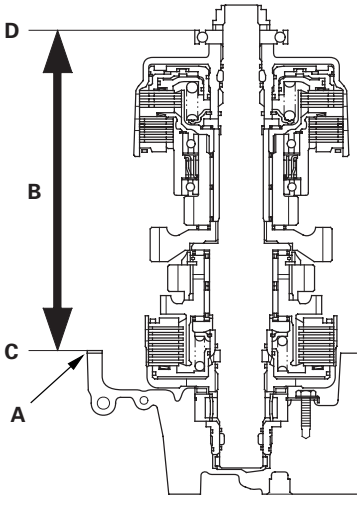
1. Install the thrust needle bearing (A) in the torque converter housing (B) in the direction shown, and install the secondary shaft assembly (C).



2. Install the new gasket (A) on the torque converter housing.



Secondary Shaft Cutaway View

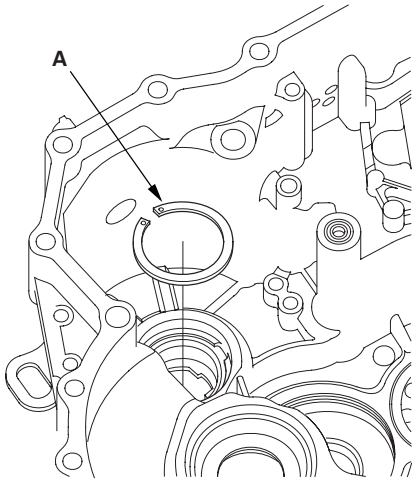


3. Measure the height (B) of the secondary shaft installation between the surface (C) of the gasket and the top of the ball bearing outer race (D), then note the measurement.

(cont'd)

Secondary Shaft Installation Height Inspection/Adjustment (cont'd)

4. Remove the 65 mm thrust shim (A) from the transmission housing, and measure its thickness.



5. Calculate the thickness of the 65 mm thrust shim using the formula.

Formula:
65 mm Thrust Shim Thickness
= Secondary Shaft Installation Height Standard
— Measurement

Secondary Shaft Installation Height Standard:
228.04—228.13 mm (8.9779—8.9815 in.)

6. Select the 65 mm thrust shim from the following table.

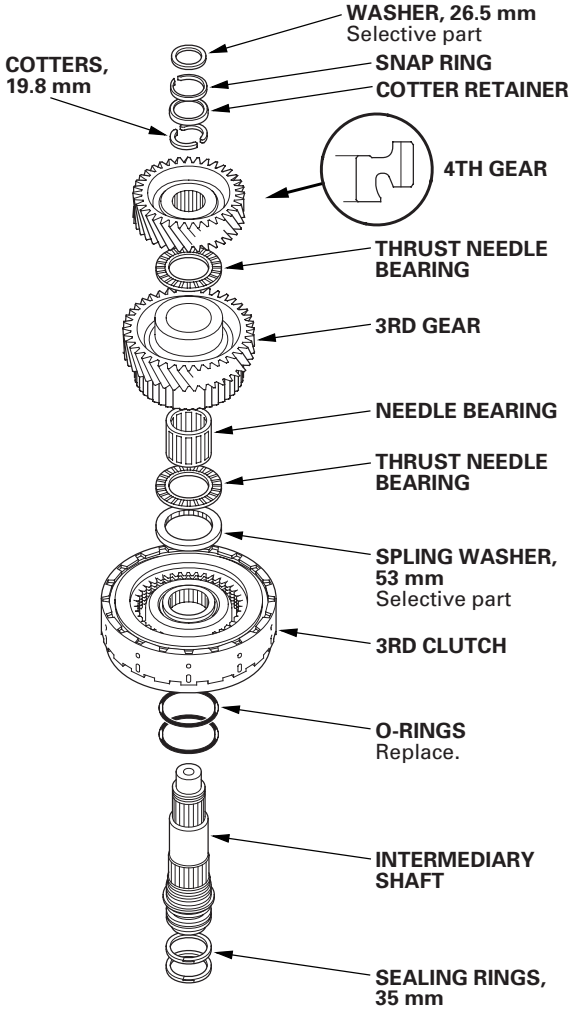
THRUST SHIM, 65 mm

No.	Part Number	Thickness
0A	90460-RDK-000	0.80 mm (0.031 in.)
A	90461-RDK-010	0.84 mm (0.033 in.)
B	90462-RDK-010	0.88 mm (0.035 in.)
C	90463-RDK-010	0.92 mm (0.036 in.)
D	90464-RDK-010	0.96 mm (0.038 in.)
E	90465-RDK-010	1.00 mm (0.039 in.)
F	90466-RDK-010	1.04 mm (0.041 in.)
G	90467-RDK-010	1.08 mm (0.043 in.)
H	90468-RDK-010	1.12 mm (0.044 in.)
I	90469-RDK-010	1.16 mm (0.046 in.)
J	90470-RDK-010	1.20 mm (0.047 in.)
K	90471-RDK-010	1.24 mm (0.049 in.)
L	90472-RDK-010	1.28 mm (0.050 in.)
M	90473-RDK-010	1.32 mm (0.052 in.)
N	90474-RDK-010	1.36 mm (0.054 in.)
O	90475-RDK-010	1.40 mm (0.055 in.)
P	90476-RDK-010	1.44 mm (0.057 in.)
Q	90477-RDK-010	1.48 mm (0.058 in.)
R	90478-RDK-010	1.52 mm (0.060 in.)
S	90479-RDK-010	1.56 mm (0.061 in.)
T	90480-RDK-010	1.60 mm (0.063 in.)
U	90481-RDK-000	1.64 mm (0.065 in.)
V	90482-RDK-000	1.68 mm (0.066 in.)
W	90483-RDK-000	1.72 mm (0.068 in.)
X	90484-RDK-000	1.76 mm (0.069 in.)
Y	90485-RDK-000	1.80 mm (0.071 in.)
Z	90486-RDK-000	1.84 mm (0.072 in.)
AA	90487-RDK-000	1.88 mm (0.074 in.)
AB	90488-RDK-000	1.92 mm (0.076 in.)
AC	90489-RDK-000	1.96 mm (0.077 in.)
AD	90490-RDK-000	2.00 mm (0.079 in.)
AE	90491-RDK-000	2.04 mm (0.080 in.)
AF	90492-RDK-000	2.08 mm (0.082 in.)
AG	90493-RDK-000	2.12 mm (0.083 in.)
AH	90494-RDK-000	2.16 mm (0.085 in.)
AI	90495-RDK-000	2.20 mm (0.087 in.)
AJ	90496-RDK-000	2.24 mm (0.088 in.)
AK	90497-RDK-000	2.28 mm (0.090 in.)
AL	90498-RDK-000	2.32 mm (0.091 in.)

7. Install the thrust shim in the transmission housing.

Intermediary Shaft Disassembly, Inspection, and Reassembly

1. Remove the 26.5 mm washer, the snap ring, the cotter retainer, and the cotters from the third shaft.



2. Remove the intermediary shaft 4th gear using a press (see page 14-340), and disassemble the shaft and gears.

3. Inspect the bearings for galling and rough movement.

4. Check the shaft bearing surfaces for scoring and excessive wear, and check the shaft splines for excessive wear and damage.

5. Check the sealing rings for excessive wear and damage.

6. Check the 3rd gear axial clearance (see page 14-341), and the intermediary shaft installation height (see page 14-343).

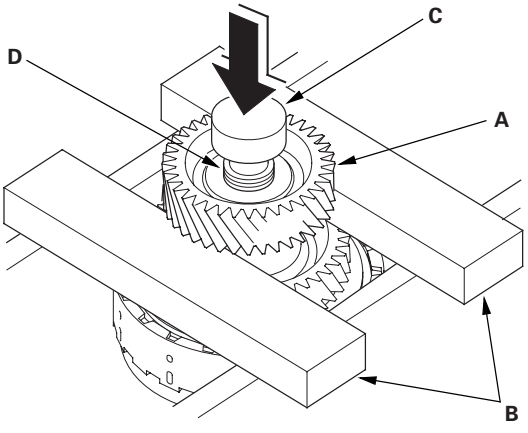
7. Before installing the O-rings, wrap the shaft splines with tape to prevent damage to the O-rings.

8. Lubricate all parts with ATF, and reassemble the shaft and gears.

9. Install the press-fitted 4th gear with the driver (40 mm I.D.) and a press (see page 14-340) in the direction shown.

Intermediary Shaft 4th Gear Removal

1. Place the 4th gear (A) on the press bases (B), and place a shaft protector (C) between the intermediary shaft (D) and a press to prevent damaging the intermediary shaft.



2. Press the intermediary shaft out of the press-fitted 4th gear, and remove the intermediary shaft while holding the underside the intermediary shaft. The intermediary shaft falls down when pressing the intermediary shaft out of the press-fitted gear.

3. Remove the remaining parts from the intermediary shaft.

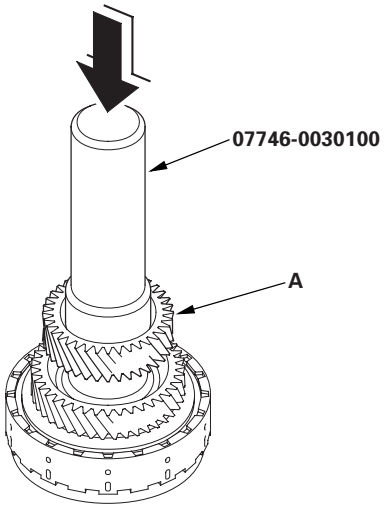
Intermediary Shaft 4th Gear Installation

Special Tools Required
Driver, 40 mm I.D. 07746-0030100

1. Wrap the shaft splines with tape, and install new O-rings in the 3rd clutch O-ring grooves, then remove the tape.

2. Install the 3rd clutch, 53 mm splined washer, the thrust needle bearing, the needle bearing, the 3rd gear, the thrust needle bearing on the intermediary shaft.

3. Install the 4th gear (A) with the driver (40 mm I.D.), and a press.



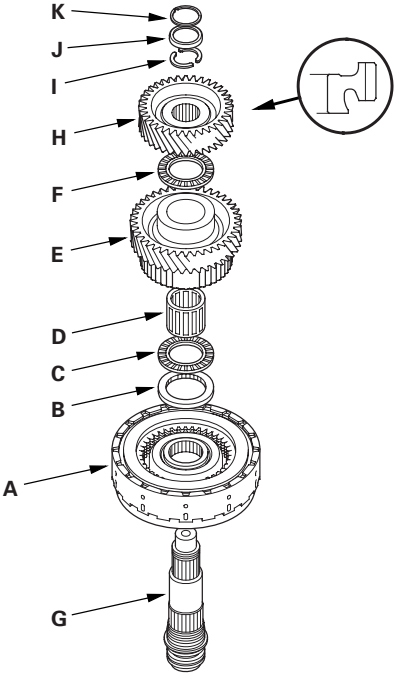
4. Install the 19.8 mm cotters, cotter retainer, and snap ring.

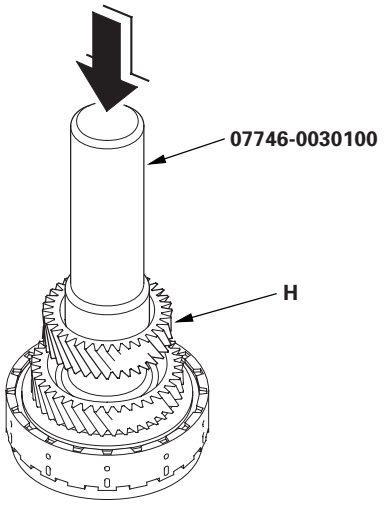
5. Install the 26.5 mm washer on the top of the intermediary shaft.

Intermediary Shaft 3rd Gear Axial Clearance Inspection

Special Tools Required
Driver, 40 mm I.D. 07746-0030100

1. Install the 3rd clutch (A), the 53 mm splined washer (B), the thrust needle bearing (C), the needle bearing (D), the 3rd gear (E), and the thrust needle bearing (F) on the Intermediary shaft (G). Do not install the O-rings during inspection.

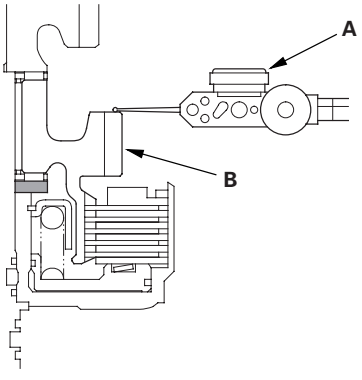




2. Install the 4th gear (H) with the driver (40 mm I.D.), and a press.

3. Install the cotters (I), the cotter retainer (J), and the snap ring (K).

4. Set the dial indicator (A) on the 3rd gear (B).

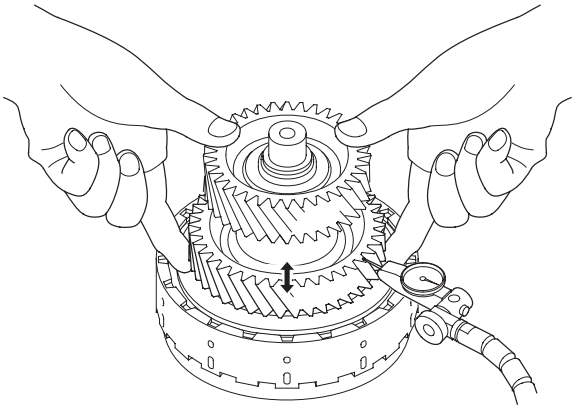


(cont'd)

Intermediary Shaft 3rd Gear Axial Clearance Inspection (cont'd)

5. Measure the 3rd gear axial clearance in at least three places while moving the 3rd gear. Use the average as the actual clearance.

   Standard: 0.005—0.045 mm (0.0002—0.0018 in.)



6. If the clearance is out of standard, remove the splined washer and measure its thickness.

7. Select and install a new splined washer, then recheck the clearance.

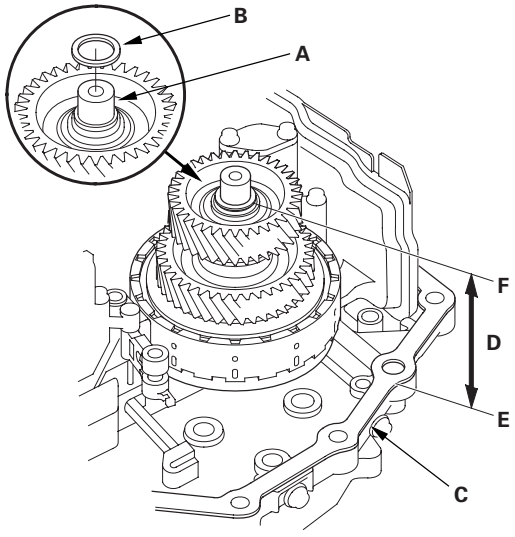
SPLINED WASHER, 53 mm

No.	Part Number	Thickness
A	90546-RDK-000	3.995 mm (0.1573 in.)
B	90547-RDK-000	4.015 mm (0.1581 in.)
C	90548-RDK-000	4.035 mm (0.1589 in.)
D	90549-RDK-000	4.055 mm (0.1596 in.)
E	90550-RDK-000	4.075 mm (0.1604 in.)
F	90551-RDK-000	4.095 mm (0.1612 in.)
G	90552-RDK-000	4.115 mm (0.1620 in.)
H	90553-RDK-000	4.135 mm (0.1628 in.)
I	90554-RDK-000	4.155 mm (0.1636 in.)
J	90555-RDK-000	4.175 mm (0.1644 in.)
K	90556-RDK-000	4.195 mm (0.1652 in.)
L	90557-RDK-000	4.215 mm (0.1659 in.)
M	90558-RDK-000	4.235 mm (0.1667 in.)
N	90559-RDK-000	4.255 mm (0.1675 in.)

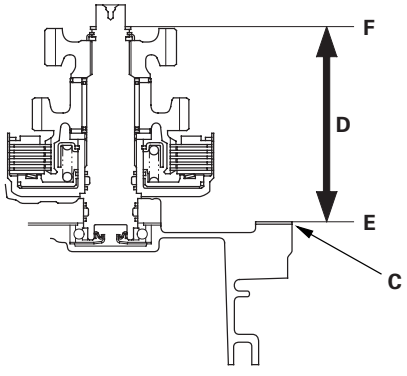
Intermediary Shaft Installation Height Inspection/Adjustment

1. Install the intermediary shaft (A) in the torque converter housing, and install the 26.5 mm washer (B) on the intermediary shaft.

   Intermediary Shaft Installation Height Standard:
   137.285—137.385 mm (5.40491—5.40885 in.)



Intermediary Shaft Cutaway View



2. Install the new gasket (C) on the torque converter housing.

3. Measure the height (D) of the intermediary shaft installation between the surface (E) of the gasket and the surface of the 26.5 mm washer (F).

4. If the measurement is out of standard, remove the 26.5 mm washer and measure its thickness.

5. Select and install a new washer, then recheck the installation height.

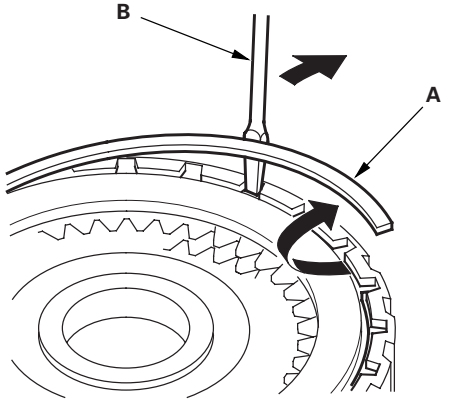
WASHER, 26.5 mm

No.	Part Number	Thickness
A	90564-RDK-000	1.05 mm (0.041 in.)
B	90565-RDK-000	1.13 mm (0.044 in.)
C	90566-RDK-000	1.21 mm (0.048 in.)
D	90567-RDK-000	1.29 mm (0.051 in.)
E	90568-RDK-000	1.37 mm (0.054 in.)
F	90569-RDK-000	1.45 mm (0.057 in.)
G	90570-RDK-000	1.53 mm (0.060 in.)
H	90571-RDK-000	1.61 mm (0.063 in.)
I	90572-RDK-000	1.69 mm (0.067 in.)
J	90573-RDK-000	1.77 mm (0.070 in.)
K	90574-RDK-000	1.85 mm (0.073 in.)
L	90575-RDK-000	1.93 mm (0.076 in.)
M	90576-RDK-000	2.01 mm (0.079 in.)
N	90577-RDK-000	2.09 mm (0.082 in.)

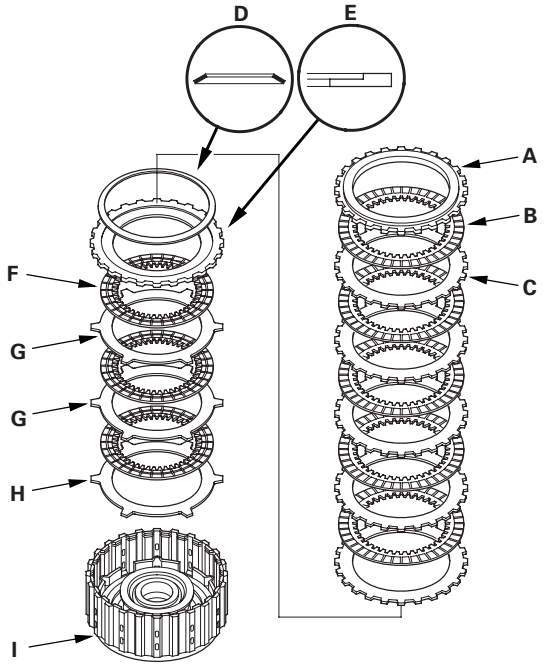
Clutch Disassembly

Special Tools Required
- Clutch spring compressor attachment 07LAE-PX40100 or 07HAE-PL50101
- Clutch spring compressor bolt assembly 07GAE-PG40200 or 07GAE-PG4020A

1. Remove the snap ring (A), with a screwdriver (B).

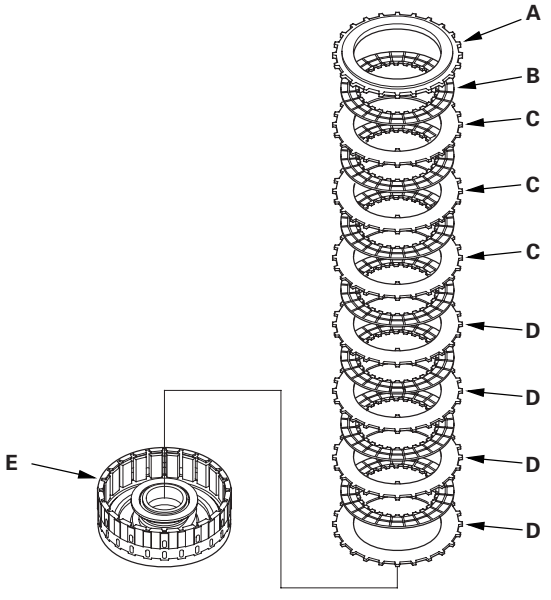


2. Remove the 1st clutch end-plate (A), the 1st clutch discs (B) (5), the 1st clutch wave-plates (C) (5), the disc spring (D), the 1st-hold clutch plate B (E), the 1st-hold clutch discs (F) (3), the 1st-hold clutch wave-plates (G) (2), and the 1st-hold clutch flat-plate (H) from the 1st/1st-hold clutch drum (I).



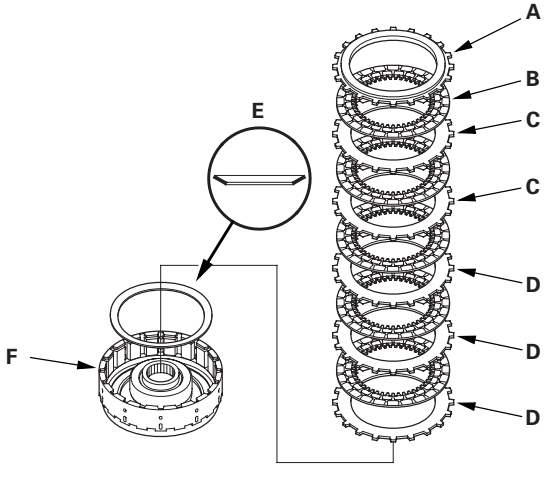
3. Make reference marks on the clutch wave-plates.

4. Remove the clutch end-plate (A), the clutch discs (B) (7), the clutch wave-plates (C) (3), and the clutch flat-plates (D) (4) from the 2nd clutch drum (E).



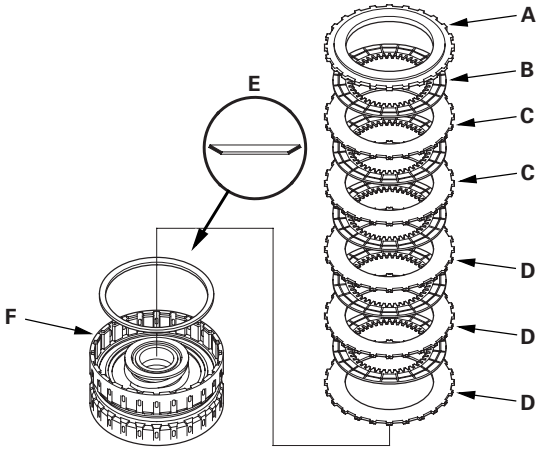
5. Make reference marks on the clutch wave-plates.

6. Remove the clutch end-plate (A), the clutch discs (B) (5), the clutch wave-plates (C) (2), the clutch flat-plates (D) (3), and the disc spring (E) from the 3rd clutch drum (F).



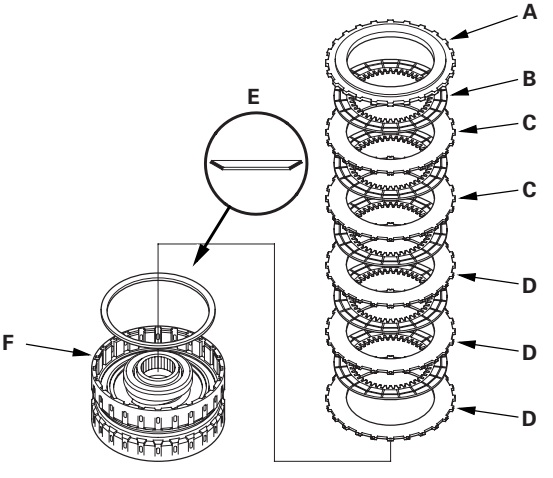
7. Make reference marks on the clutch wave-plates.

8. Remove the clutch end-plate (A), the clutch discs (B) (5), the clutch wave-plates (C) (2), the clutch flat-plates (D) (3), and the disc spring (E) from the 4th clutch drum (F).



9. Make reference marks on the clutch wave-plates.

10. Remove the clutch end-plate (A), the clutch discs (B) (5), the clutch wave-plates (C) (2), the clutch flat-plates (D) (3), and the disc spring (E) from the 5th clutch drum (F).

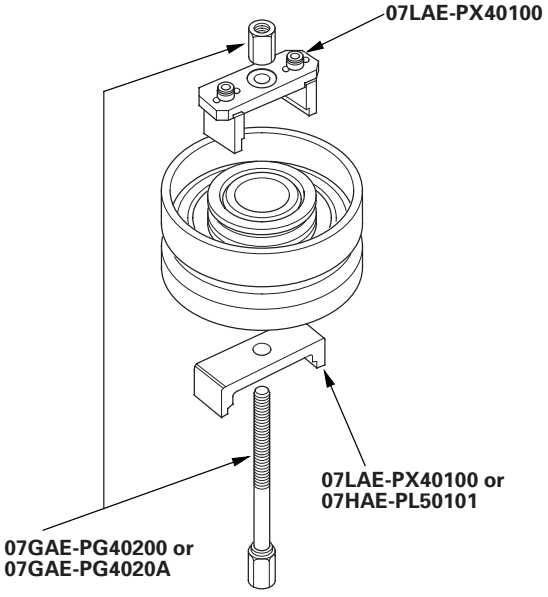


11. Make reference marks on the clutch wave-plates.

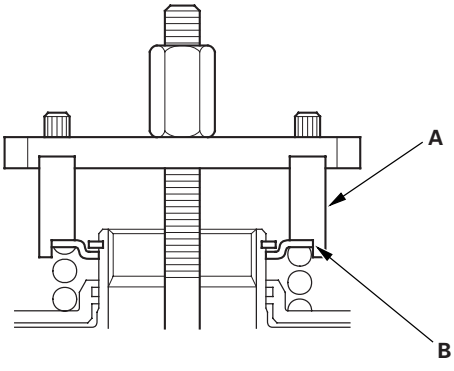
(cont'd)

Clutch Disassembly (cont'd)

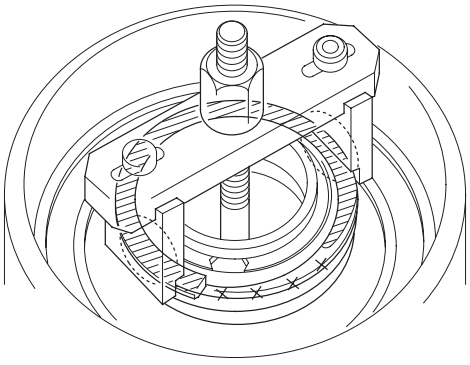
12. Install the clutch spring compressor attachment and the clutch spring compressor bolt assembly.



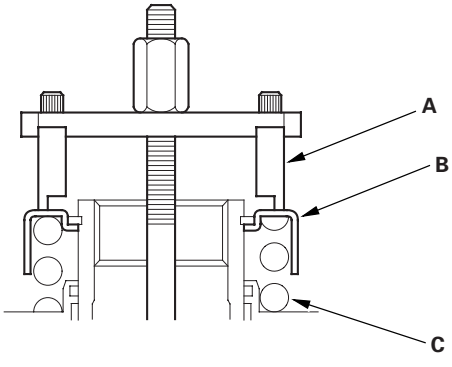
13. Be sure the clutch spring compressor attachment (A) is adjusted to have full contact with the spring retainer (B) on the 1st, 2nd, and 4th clutches.



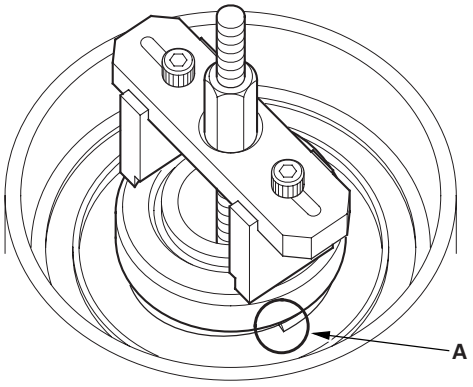
14. If either end of the clutch spring compressor attachment is set over an area of the spring retainer that is unsupported by the return spring, the retainer may be damaged.



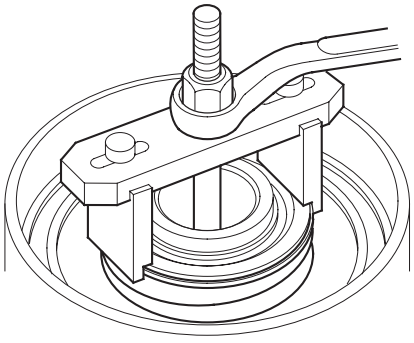
15. Set the clutch spring compressor attachment (A) on the spring retainer (B) of the 3rd and 5th clutches so the special tool works on the clutch return spring (C).



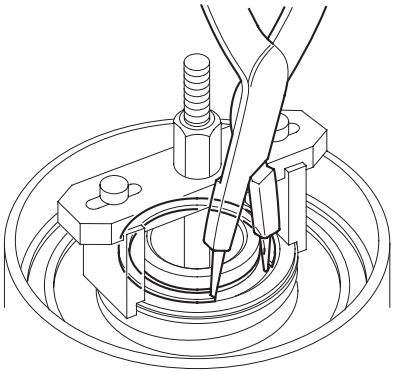
16. If either end of the clutch spring compressor attachment is not set over the clutch return spring end (A), the retainer may be damaged.



17. Compress the return spring until the snap ring can be removed.

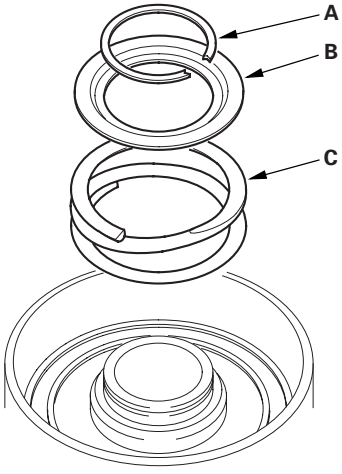


18. Remove the snap ring with the snap ring pliers.



19. Remove the clutch spring compressor attachment and the clutch spring compressor bolt assembly.

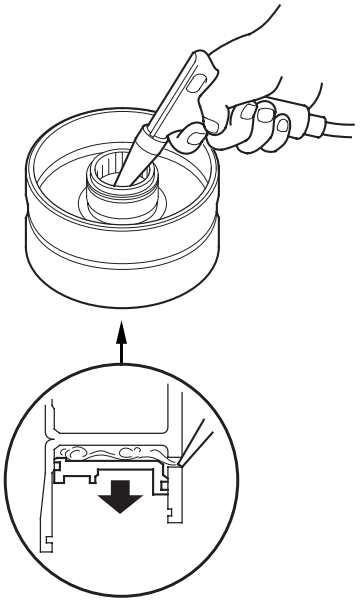
20. Remove the snap ring (A), the spring retainer (B), and the return spring (C).



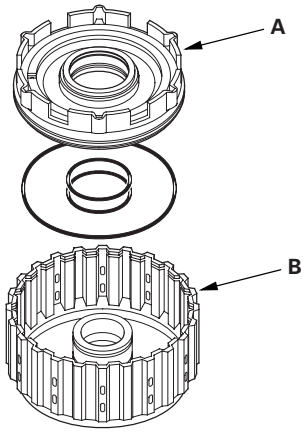
(cont'd)

Clutch Disassembly (cont'd)

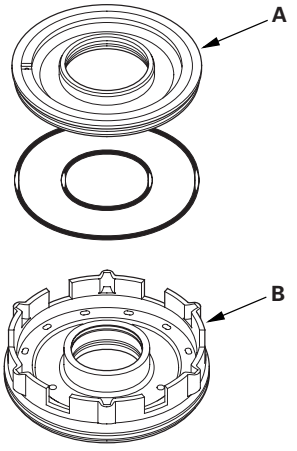
21. Wrap a shop rag around the clutch drum, and apply air pressure to the fluid passage to remove the piston. Place a finger tip on the other passage while applying air pressure.



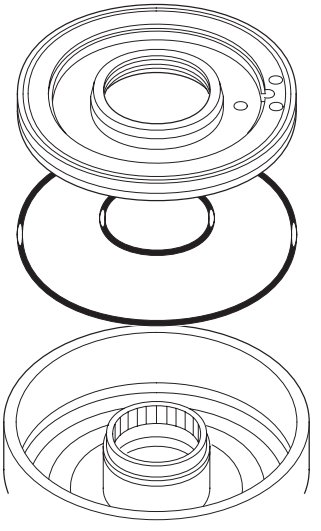
22. Remove the 1st/1st-hold clutch piston (A) from the clutch drum (B), and remove the O-rings from the 1st clutch piston.



23. Remove the 1st-hold clutch piston (A) from the 1st clutch piston (B), and remove the O-rings from the 1st-hold clutch piston.

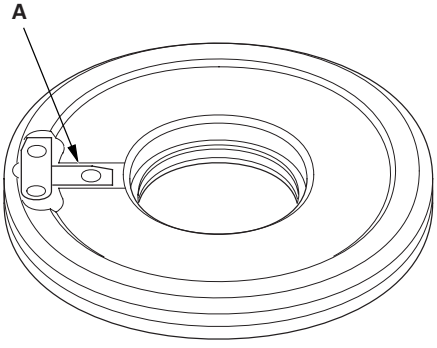


24. Remove the clutch piston, and remove the O-rings from the 2nd, 3rd, 4th, and 5th clutch pistons.



Clutch Inspection

1. Inspect the clutch pistons and the clutch piston check valves (A).



2. If the clutch piston check valve is loose or damaged, replace the clutch piston.

3. Check the spring retainer for wear and damage.

4. If the spring retainer is worn or damaged, replace it.

5. Inspect the clutch discs, clutch plates, and clutch end plate for wear, damage, and discoloration.

   Clutch Discs
   Standard Thickness: 1.94 mm (0.076 in.)

   Clutch Flat-plates and Clutch Wave-plates
   Standard Thickness

1st Clutch:	**1.6 mm (0.063 in.)**
1st-hold Clutch:	**1.8 mm (0.071 in.)**
2nd Clutch:	**1.8 mm (0.071 in.)**
3rd Clutch:	**2.0 mm (0.079 in.)**
4th Clutch:	**1.6 mm (0.063 in.)**
5th Clutch:	**1.6 mm (0.063 in.)**

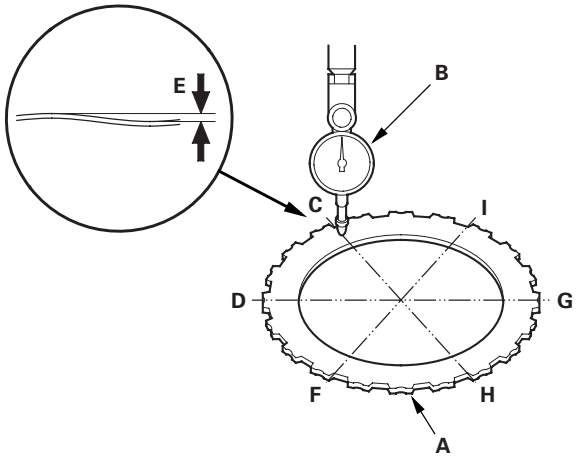
6. If the clutch discs are worn or damaged, replace them as a set. If the clutch discs are replaced, inspect the clearance between the clutch end-plate and the top disc.

7. If any plate is worn, damaged, or discolored, replace the damaged plate with a new plate, and inspect the other wave-plates for a phase difference. If the clutch plate is replaced, inspect the clearance between the clutch end-plate and the top disc.

8. If the clutch end plate is worn, damaged, or discolored, inspect the clearance between the clutch end-plate and the top disc, then replace the clutch end plate.

Clutch Wave-plate Phase Difference Inspection

1. Place the clutch wave-plate (A) on a surface plate, and set a dial indicator (B) on the wave-plate.



2. Find the bottom (C) of a phase difference of the wave-plate, zero the dial indicator and make a reference mark on the bottom of the wave-plate.

3. Rotate the clutch wave-plate of the 1st, 1st-hold, 2nd, 4th, and 5th clutches about 60-degrees apart from the bottom while holding the wave-plate by its circumference, and rotate the 3rd clutch wave-plate about 72-degrees or 54-degrees apart from the bottom while holding the wave-plate by its circumference. The dial indicator should be at the top (D) of a phase difference. Do not rotate the wave-plate while holding its surface, always rotate it by holding its circumference.

4. Read the dial indicator. The dial indicator reads the phase difference (E) of the wave-plate between the bottom and top.

Standard Phase Difference

1st Clutch:	**0.17—0.30 mm (0.007—0.012 in.)**
1st-hold Clutch:	**0.07—0.20 mm (0.003—0.008 in.)**
2nd Clutch:	**0.07—0.20 mm (0.003—0.008 in.)**
3rd Clutch:	**0.07—0.20 mm (0.003—0.008 in.)**
4th Clutch:	**0.07—0.20 mm (0.003—0.008 in.)**
5th Clutch:	**0.07—0.20 mm (0.003—0.008 in.)**

5. Rotate the wave-plate of the 1st, 1st-hold, 2nd, 4th, and 5th clutches about 60-degrees, and the 3rd clutch wave-plate about 54-degrees or 72-degrees. The dial indicator should be at the bottom of a phase difference (F and G), and zero the dial indicator.

6. Measure the phase difference at the other two tops (H and I) of the wave-plate by following steps 3 thru 5.

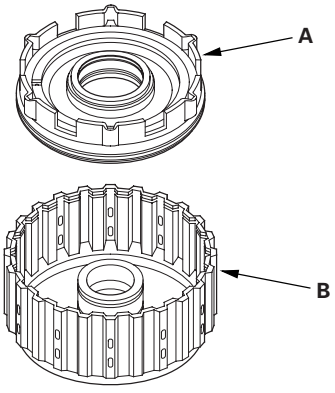
7. If the two values of the three measurements are within the standard, the wave-plate is OK. If the two values of the three measurements are out of the standard, replace the wave-plate.

Clutch Clearance Inspection

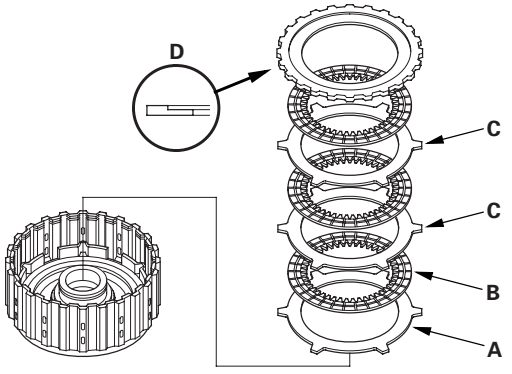
Special Tools Required
Clutch compressor attachment 07ZAE-PRP0100

1. Inspect the clutch piston, discs, plates, and the end plate for wear and damage (see page 14-349), and inspect the clutch wave-plate phase difference (see page 14-350), if necessary.

2. Install the 1st-hold clutch piston in the 1st clutch piston, and install 1st/1st-hold clutch piston (A) in the 1st/1st-hold clutch drum (B). Do not install the O-rings on the clutch pistons during inspection.

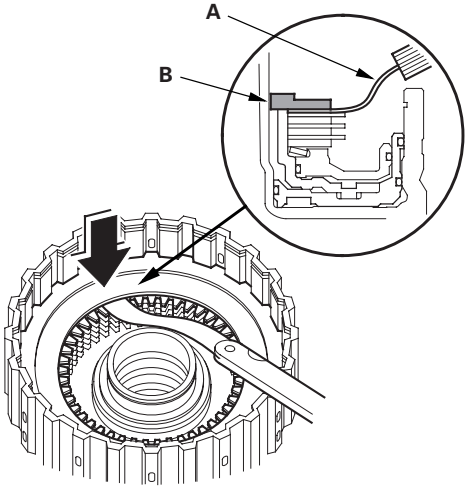


3. Install the 1st-hold clutch flat-plate (A), alternately install the clutch discs (B) (3) and the 1st-hold clutch wave-plates (C) (2), then install the 1st-hold clutch plate B (D) with the flat side down in the direction shown.



4. Measure the clearance between 1st-hold clutch plate B and the top disc with a feeler gauge (A) while pressing the 1st-hold clutch plate B down. Take measurements in at least three places, and use the average as the actual clearance.

1st-hold Clutch Plate B-to-Top Disc Clearance
Service Limit: 0.6—1.0 mm (0.024—0.039 in.)

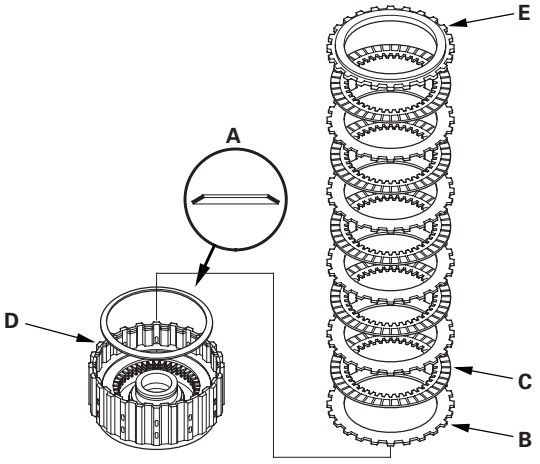


5. If the clearance is out of standard, replace the 1st-hold clutch plates and discs as a set, and recheck.

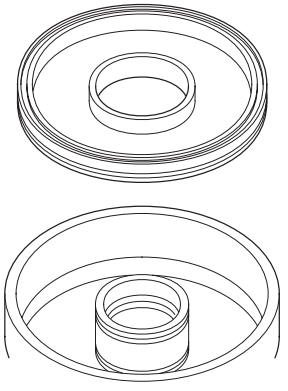
(cont'd)

Clutch Clearance Inspection (cont'd)

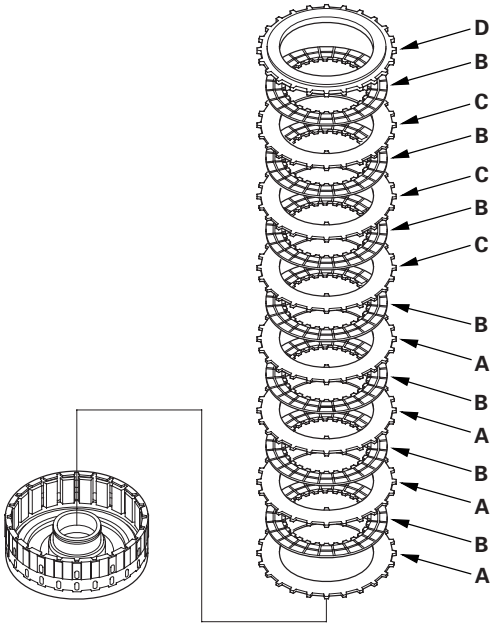
6. Install the disc spring (A) on the 1st-hold clutch plate B in the direction shown. Starting with the 1st clutch wave-plate, alternately install the wave-plates (B) (5) and discs (C) (5) in the 1st clutch drum (D), then install the clutch end-plate (E) with the flat side down.



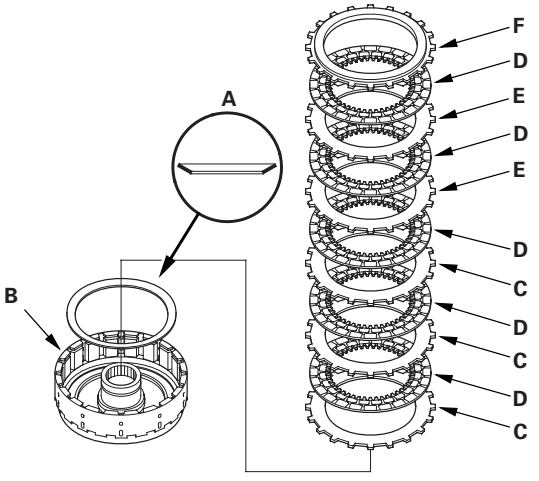
7. Install the clutch pistons in the 2nd, 3rd, 4th, and 5th clutch drums. Do not install the O-rings on the clutch pistons during inspection.



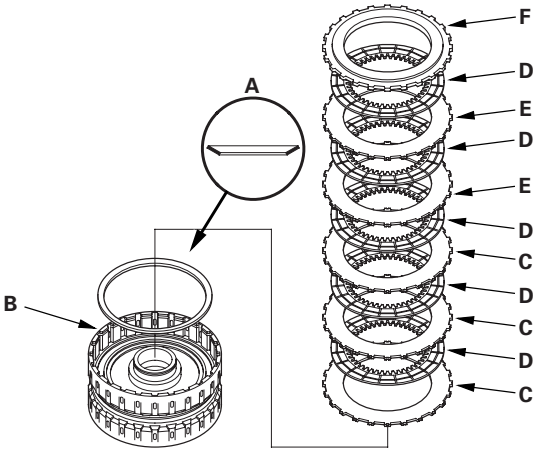
8. Starting with the 2nd clutch flat-plate, alternately install the flat-plates (A) (4) and discs (B) (4), and alternately install the wave-plates (C) (3) and discs (B) (3). Install the clutch end-plate (D) with the flat side down on the top disc.



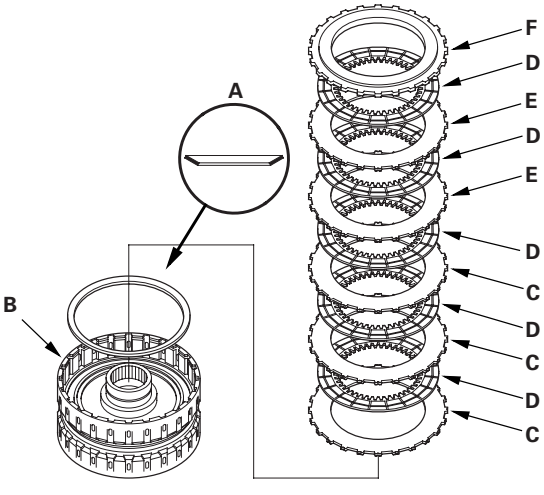
9. Install the disc spring (A) in the 3rd clutch drum (B) in the direction shown. Starting with the 3rd clutch flat-plate, alternately install the flat-plates (C) (3) and discs (D) (3), and alternately install the wave-plates (E) (2) and discs (D) (2). Install the clutch end-plate (F) with the flat side down on the top disc.



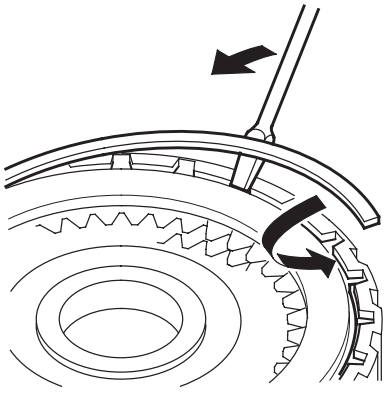
10. Install the disc spring (A) in the 4th clutch drum (B) in the direction shown. Starting with the 4th clutch flat-plate, alternately install the flat-plates (C) (3) and discs (D) (3), and alternately install the wave-plates (E) (2) and discs (D) (2). Install the clutch end-plate (F) with the flat side down on the top disc.



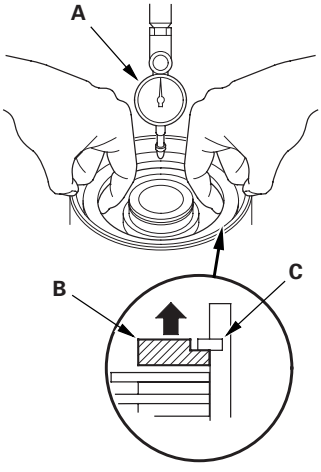
11. Install the disc spring (A) in the 5th clutch drum (B) in the direction shown. Starting with the 5th clutch flat-plate, alternately install the flat-plates (C) (3) and discs (D) (3), and alternately install the wave-plates (E) (2) and discs (D) (2). Install the clutch end-plate (F) with the flat side down on the top disc.



12. Install the snap ring with a screwdriver to secure the clutch end-plate.



13. Set a dial indicator (A) on the clutch-end-plate (B).

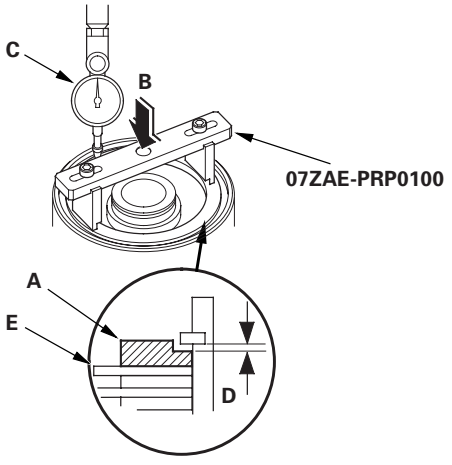


14. Zero the dial indicator with the clutch end-plate lifted up to the snap ring (C).

(cont'd)

Clutch Clearance Inspection (cont'd)

15. Release the clutch end-plate to lower the clutch-end-plate, then put the clutch compressor attachment on the end-plate (A).

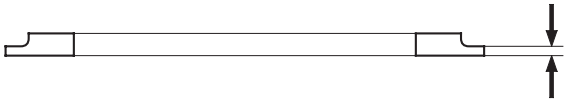


16. Press the special tool down with 150—160 N (15—16 kgf, 33—35 lbf) (B) using a force gauge, and read the dial indicator (C).

17. The dial indicator reads the clearance (D) between the clutch end-plate and top disc (E). Take measurements in at least three places, and use the average as the actual clearance.

Clearance between Clutch End-Plate and Top Disc
Service Limit:
1st Clutch: 1.15—1.35 mm (0.045—0.053 in.)
2nd Clutch: 1.05—1.25 mm (0.041—0.049 in.)
3rd Clutch: 0.8—1.0 mm (0.031—0.039 in.)
4th Clutch: 0.75—0.95 mm (0.030—0.037 in.)
5th Clutch: 0.75—0.95 mm (0.030—0.037 in.)

18. If the clearance is out of the service limit, select a new clutch-end-plate from the following table.



1ST CLUTCH END-PLATES

Plate No.	Part Number	Thickness
1	22551-RDK-003	3.1 mm (0.122 in.)
2	22552-RDK-003	3.2 mm (0.126 in.)
3	22553-RDK-003	3.3 mm (0.130 in.)
4	22554-RDK-003	3.4 mm (0.134 in.)
5	22555-RDK-003	3.5 mm (0.138 in.)
6	22556-RDK-003	3.6 mm (0.142 in.)
7	22557-RDK-003	3.7 mm (0.146 in.)
8	22558-RDK-003	3.8 mm (0.150 in.)
9	22559-RDK-003	3.9 mm (0.154 in.)

2ND CLUTCH END-PLATES

Plate No.	Part Number	Thickness
1	22561-RDK-003	2.1 mm (0.083 in.)
2	22562-RDK-003	2.2 mm (0.087 in.)
3	22563-RDK-003	2.3 mm (0.091 in.)
4	22564-RDK-003	2.4 mm (0.094 in.)
5	22565-RDK-003	2.5 mm (0.098 in.)
6	22566-RDK-003	2.6 mm (0.102 in.)
7	22567-RDK-003	2.7 mm (0.106 in.)
8	22568-RDK-003	2.8 mm (0.110 in.)
9	22569-RDK-003	2.9 mm (0.114 in.)

3RD CLUTCH END-PLATES

Plate No.	Part Number	Thickness
1	22591-RDK-A01	2.1 mm (0.083 in.)
2	22592-RDK-A01	2.2 mm (0.087 in.)
3	22593-RDK-A01	2.3 mm (0.091 in.)
4	22594-RDK-A01	2.4 mm (0.094 in.)
5	22595-RDK-A01	2.5 mm (0.098 in.)
6	22596-RDK-A01	2.6 mm (0.102 in.)
7	22597-RDK-A01	2.7 mm (0.106 in.)
8	22598-RDK-A01	2.8 mm (0.110 in.)
9	22599-RDK-A01	2.9 mm (0.114 in.)

4TH and 5TH CLUTCH END-PLATES

Plate No.	Part Number	Thickness
1	22571-RJB-003	2.1 mm (0.083 in.)
2	22572-RJB-003	2.2 mm (0.087 in.)
3	22573-RJB-003	2.3 mm (0.091 in.)
4	22574-RJB-003	2.4 mm (0.094 in.)
5	22575-RJB-003	2.5 mm (0.098 in.)
6	22576-RJB-003	2.6 mm (0.102 in.)
7	22577-RJB-003	2.7 mm (0.106 in.)
8	22578-RJB-003	2.8 mm (0.110 in.)
9	22579-RJB-003	2.9 mm (0.114 in.)

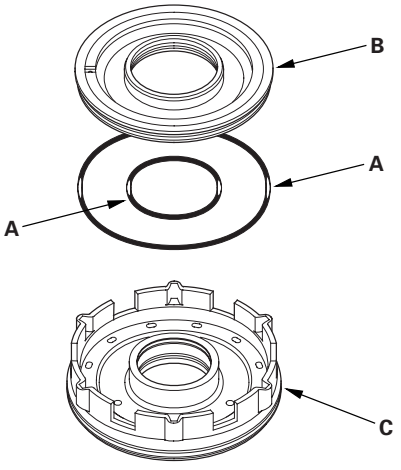
19. Install the new clutch end-plate, and recheck the clearance. If the thickest clutch end-plate is installed, but the clearance is still over the service limit, replace the clutch discs and plates.

Clutch Reassembly

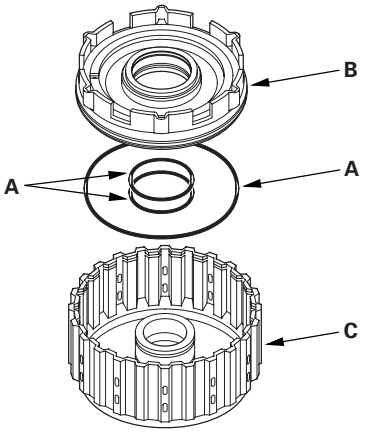
Special Tools Required
- Clutch spring compressor attachment 07LAE-PX40100 or 07HAE-PL50101
- Clutch spring compressor bolt assembly 07GAE-PG40200 or 07GAE-PG4020A

1. Soak the clutch discs thoroughly in ATF for a minimum of 30 minutes.

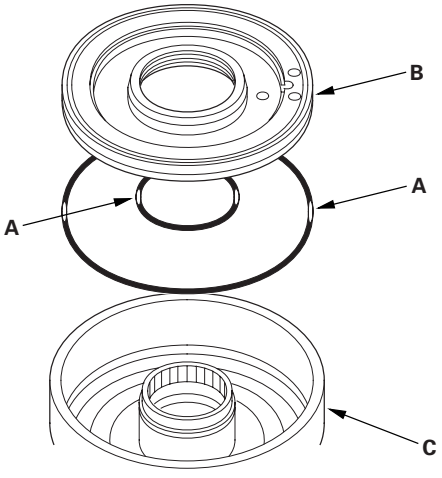
2. Install the new O-rings (A) on the 1st-hold clutch piston (B), and install the 1st-hold clutch piston in the 1st clutch piston (C).



3. Install the new O-rings (A) on the 1st clutch piston (B), and install the 1st/1st-hold clutch piston in the 1st/1st-hold clutch drum (C) while applying pressure and rotating to ensure proper seating. Do not pinch the O-rings.

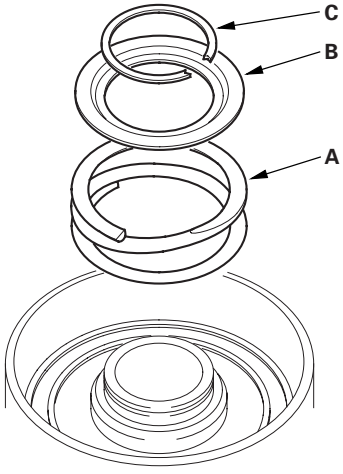


4. Install the O-rings (A) on the 2nd, 3rd, 4th and 5th clutch piston (B).

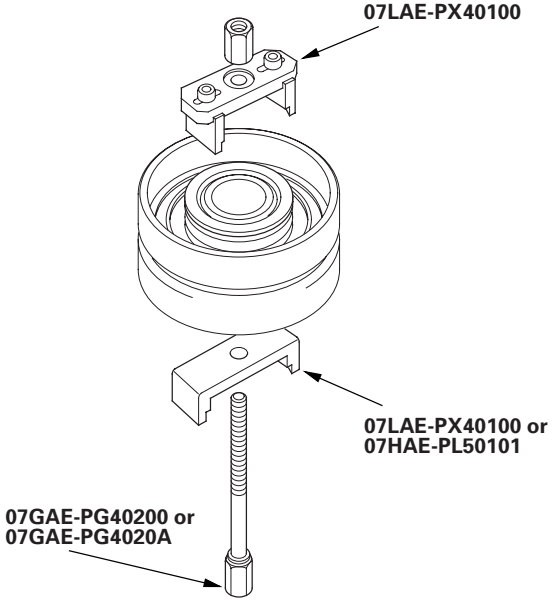


5. Install the clutch pistons in the clutch drums (C) while applying pressure and rotating to ensure proper seating. Do not pinch the O-ring.

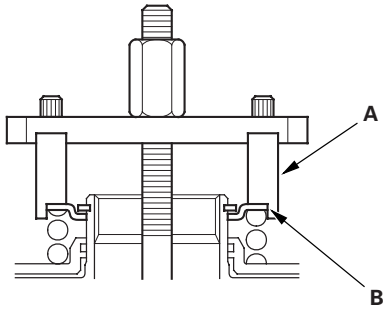
6. Install the return spring (A) and the spring retainer (B), and position the snap ring (C) on the spring retainer.



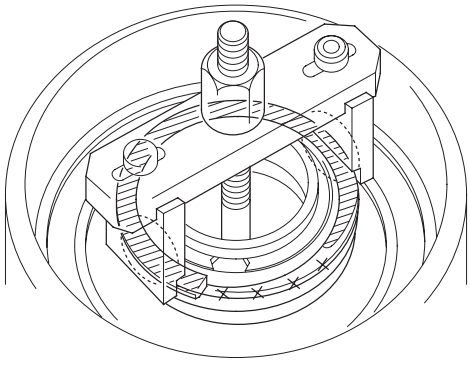
7. Install the clutch spring compressor attachment and the clutch spring compressor bolt assembly.



8. Be sure the clutch spring compressor attachment (A) is adjusted to have full contact with the spring retainer (B) on the 1st, 2nd, and 4th clutches.



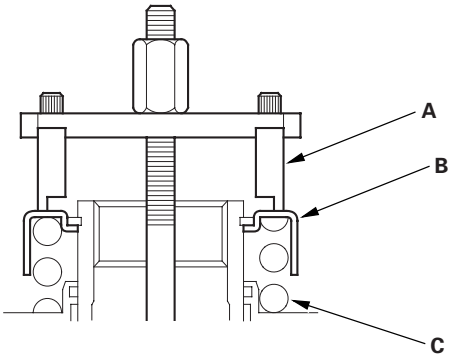
9. If either end of the clutch spring compressor attachment is set over an area of the spring retainer that is unsupported by the return spring, the retainer may be damaged.



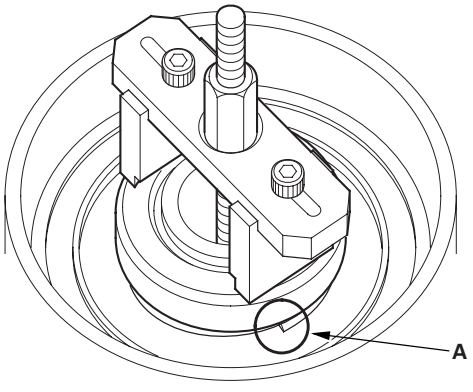
(cont'd)

Clutch Reassembly (cont'd)

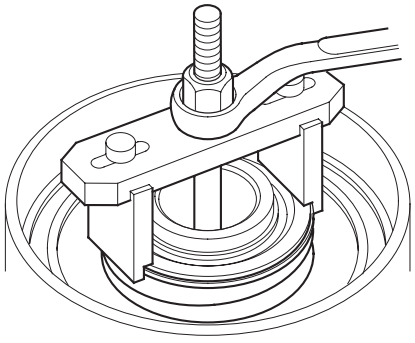
10. Set the clutch spring compressor attachment (A) on the spring retainer (B) of the 3rd and 5th clutches so the clutch spring compressor attachment works on the clutch return spring (C).



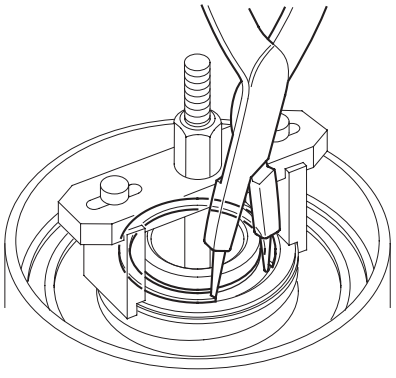
11. If either end of the clutch spring compressor attachment is not set over the clutch return spring end (A), the retainer may be damaged.



12. Compress the return spring until the snap ring can be installed.

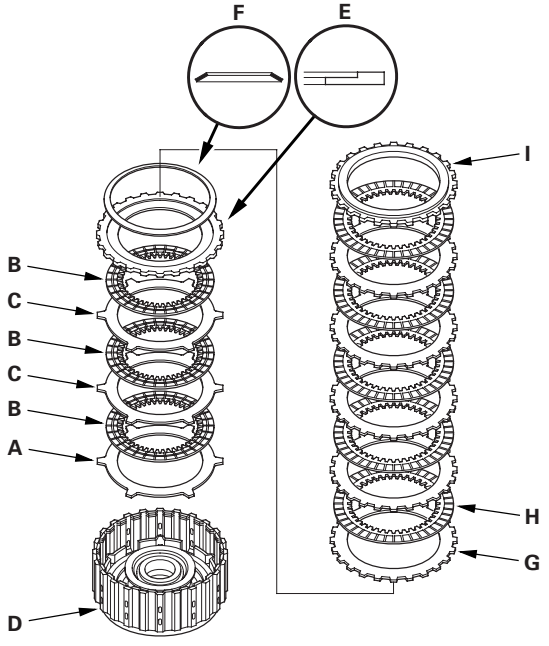


13. Install the snap ring with the snap ring pliers.



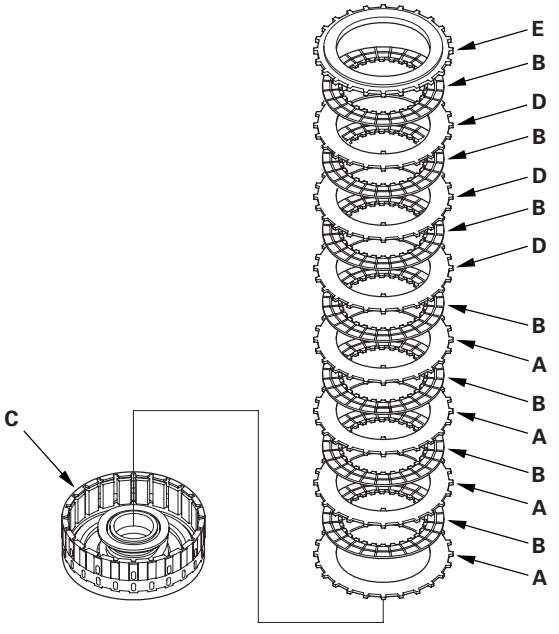
14. Remove the clutch spring compressor attachment and the clutch spring compressor bolt assembly.

15. Install the 1st-hold clutch flat-plate (A), alternately install the clutch discs (B) (3) and the 1st-hold clutch wave-plates (C) (2) in the 1st/1st-hold clutch drum (D), then install the 1st-hold clutch plate B (E) with the flat side down in the direction shown.

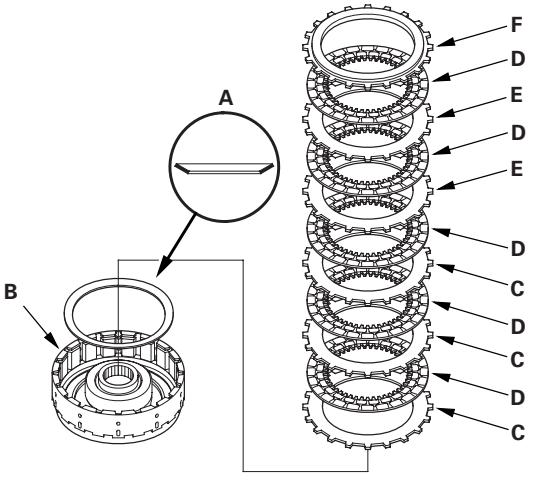


16. Install the disc spring (F) on the 1st-hold clutch plate B in the direction shown. Starting with the 1st clutch wave-plate, alternately install the wave-plates (G) (5) and discs (H) (5), then install the clutch end-plate (I) with the flat side down on the top disc.

17. Starting with the 2nd clutch flat-plate, alternately install the flat-plates (A) (4) and discs (B) (4) in the 2nd clutch drum (C), and alternately install the wave-plates (D) (3) and discs (B) (3). Install the clutch end-plate (E) with the flat side down on the top disc.



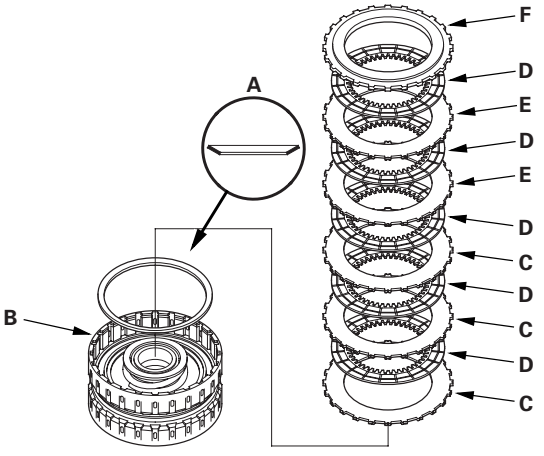
18. Install the disc spring (A) in the 3rd clutch drum (B) in the direction shown. Starting with the 3rd clutch flat-plate, alternately install the flat-plates (C) (3) and discs (D) (3), and alternately install the wave-plates (E) (2) and discs (D) (2). Install the clutch end-plate (F) with the flat side down on the top disc.



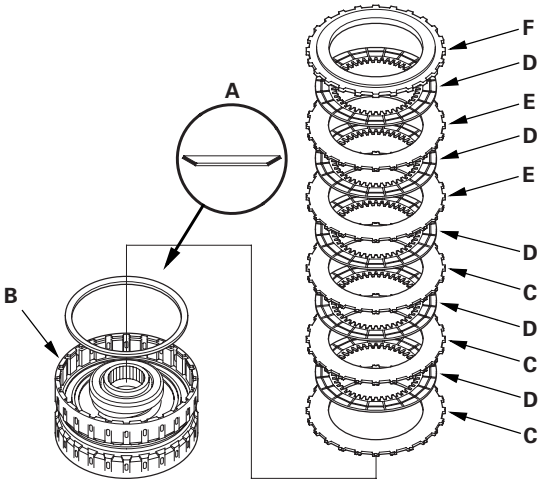
(cont'd)

Clutch Reassembly (cont'd)

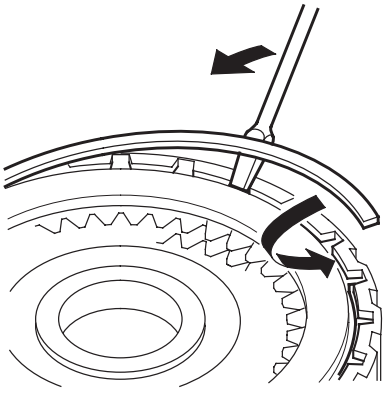
19. Install the disc spring (A) in the 4th clutch drum (B) in the direction shown. Starting with the 4th clutch flat-plate, alternately install the flat-plates (C) (3) and discs (D) (3), and alternately install the wave-plates (E) (2) and discs (D) (2). Install the clutch end-plate (F) with the flat side down on the top disc.



20. Install the disc spring (A) in the 5th clutch drum (B) in the direction shown. Starting with the 5th clutch flat-plate, alternately install the flat-plates (C) (3) and discs (D) (3), and alternately install the wave-plates (E) (2) and discs (D) (2). Install the clutch end-plate (F) with the flat side down on the top disc.



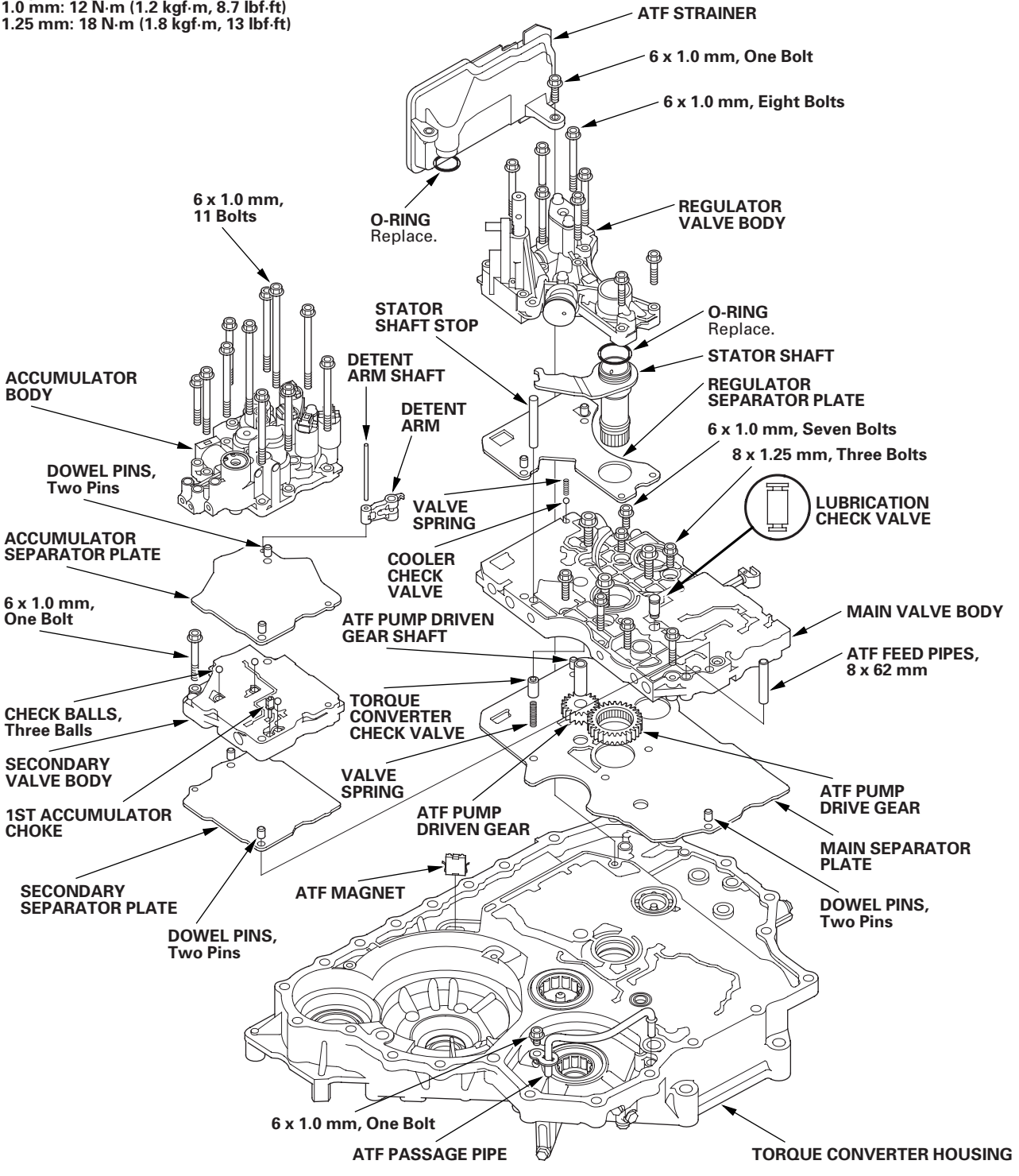
21. Install the snap ring with a screwdriver to secure the clutch end-plate.



Transmission Reassembly

Exploded View

Bolt Tightening Torque:
6 x 1.0 mm: 12 N·m (1.2 kgf·m, 8.7 lbf·ft)
8 x 1.25 mm: 18 N·m (1.8 kgf·m, 13 lbf·ft)



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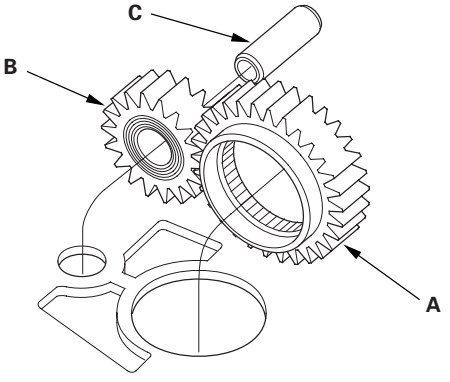
Transmission Reassembly (cont'd)

Special Tools Required
Mainshaft holder 07GAB-PF50101 or 07GAB-PF50100

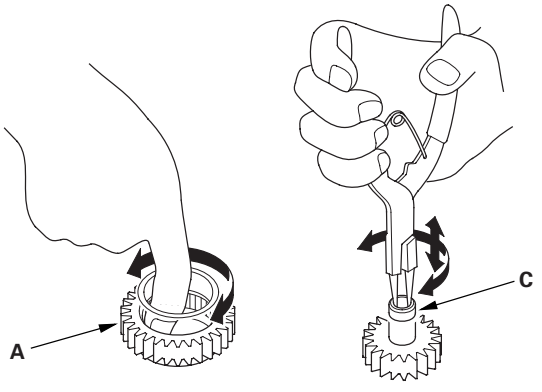
1. Make sure that the ATF magnet is cleaned and installed in the torque converter housing. Clean and install the ATF magnet, if necessary.

2. Install the main separator plate and the two dowel pins on the torque converter housing. Then install the ATF pump drive gear (A), driven gear (B), and the ATF pump driven gear shaft (C). Install the ATF pump driven gear with its grooved and chamfered side facing down.



3. Install the torque converter check valve spring and the valve in the torque converter housing.

4. Install the main valve body (seven 6 mm bolt and three 8 mm bolts). Make sure the ATF pump drive gear (A) rotates smoothly in the normal operating direction, and the ATF pump driven gear shaft (C) moves smoothly in the axial and normal operating direction.



5. If the ATF pump drive gear and ATF pump driven gear shaft do not move smoothly, loosen the main valve body bolts. Realign the ATF pump driven gear shaft, and retighten the bolts to the specified torques, then recheck. Failure to align the ATF pump driven gear shaft correctly will result in a seized ATF pump drive gear or ATF pump driven gear shaft.

6. Install the lubrication check valve, cooler check valve and cooler check valve spring in the main valve body. Install the lubrication check valve in the direction shown in the exploded view.

7. Install the secondary separator plate and the two dowel pins on the main valve body, and install the secondary valve body (one bolt).

8. Install the three check balls and choke in the secondary valve body.

9. Install the accumulator separator plate and the two dowel pins on the secondary valve body.

10. Position the detent arm on the accumulator separator plate, and install the detent arm shaft into the detent arm through the separator plates to the main valve body.

11. Install the 8 x 62 mm ATF feed pipe in the main valve body, and install the accumulator body (11 bolts).

12. Install the regulator separator plate and the two dowel pins on the main valve body.

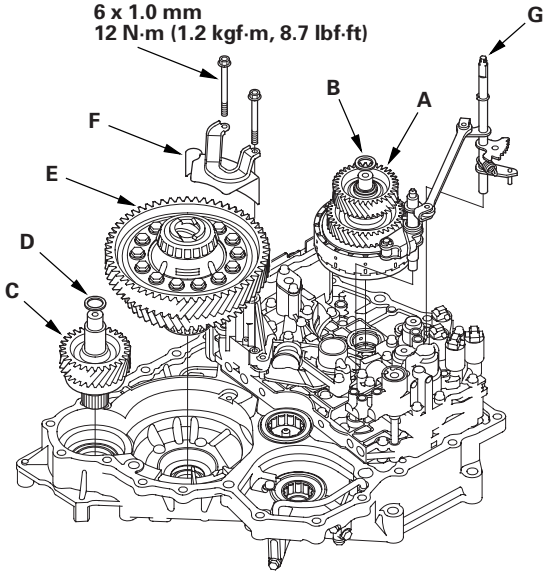
13. Install the new O-ring on the stator shaft, and install the stator shaft and the regulator valve body (eight bolts).

14. Install the stator shaft stop in the main valve body.

15. Install the new O-ring on the ATF strainer, and install the ATF strainer with the one bolt. Install the baffle plate with the one bolt through the ATF bolt hole in step 20.

16. Install the ATF passage pipe (one bolt) in the torque converter housing.

17. Install the intermediary shaft (A) into the main valve body, and install the 26.5 mm washer (B) on the top of the intermediary shaft.



18. Install the transfer output shaft (C) in the torque converter housing, and install the thrust shim (D) on the top of the transfer output shaft.

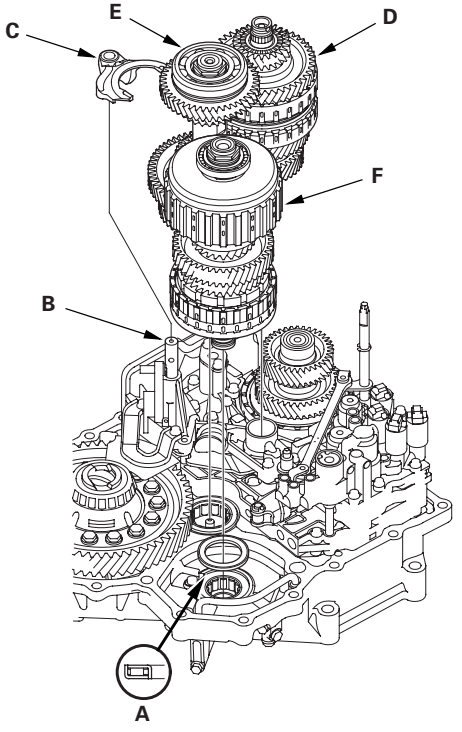
19. Install the differential assembly (E) in the torque converter housing.

20. Install the baffle plate (F), and make sure if the differential is clear of the baffle plate.

21. Install the selector control shaft and the park lever link (G).

22. Assemble the mainshaft, the countershaft, and the secondary shaft.

23. Install the needle bearing (A) on the secondary shaft roller bearing in the torque converter housing.



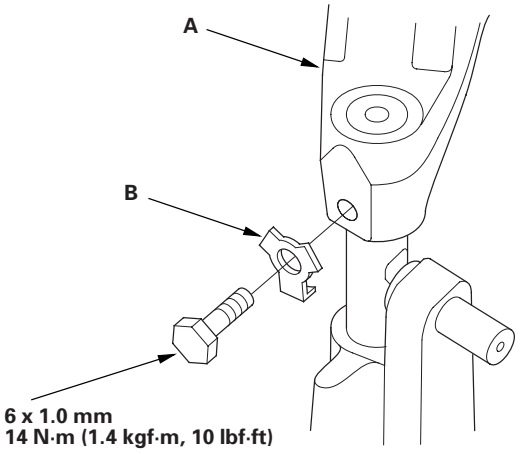
24. Turn the shift fork shaft (B) so the large chamfered hole is facing the fork bolt hole of the shift fork.

25. Engage the shift fork (C) with the reverse selector on the countershaft, and join the mainshaft (D), countershaft (E), and the secondary shaft (F), then install them in the torque converter housing and shift fork on the shift fork shaft.

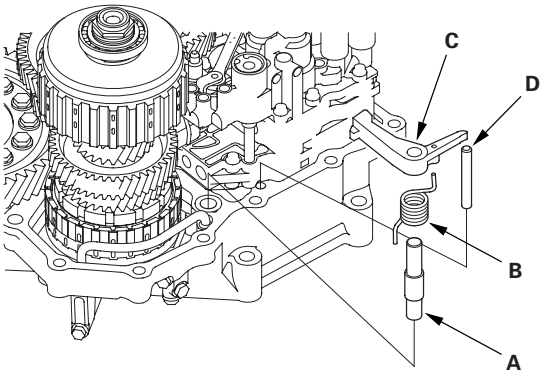
(cont'd)

Transmission Reassembly (cont'd)

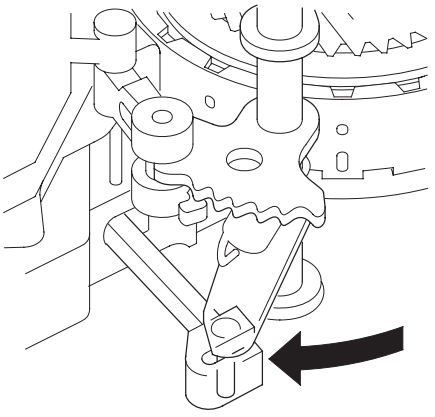
26. Secure the shift fork (A) to the shift fork shaft with the lock bolt and a new lock washer (B), then bend the lock tab of the lock washer against the bolt head.



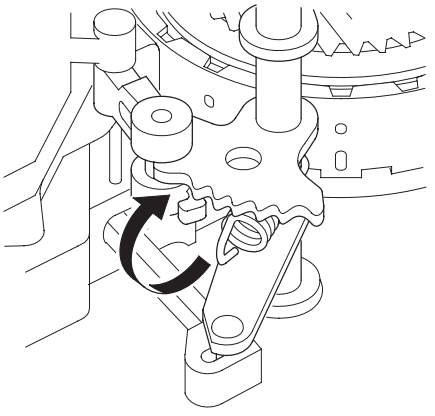
27. Install the park pawl shaft (A), the pawl spring (B), the park pawl (C), and the park pawl stop (D).



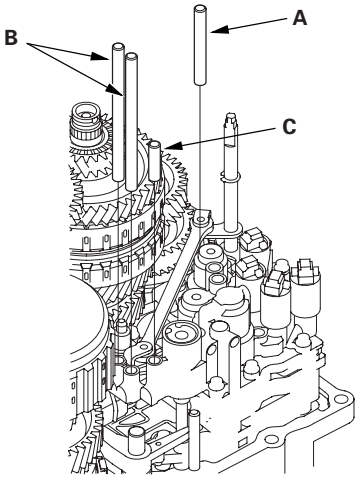
28. Align the control lever pin with the manual valve guide.



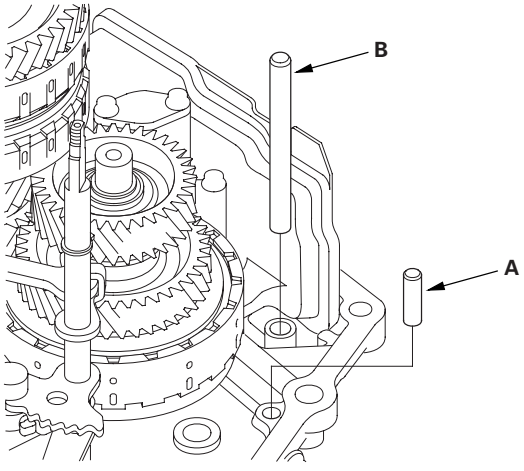
29. Hook the detent arm spring to the detent arm.



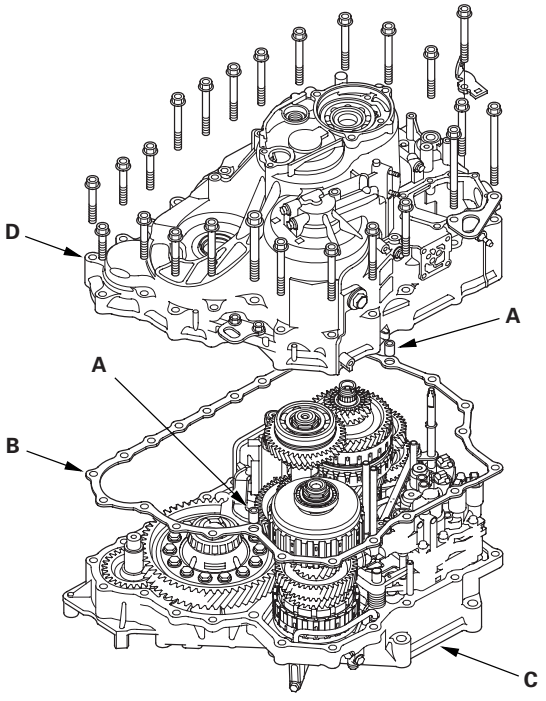
30. Install the 8 x 85 mm ATF feed pipe (A), the 8 x 151.5 mm pipes (B), and the 8 x 40 mm pipe (C) in the accumulator body.



31. Install the 8 x 57.6 mm ATF feed pipe (A) and the 10 x 123 mm pipe (B) in the torque converter housing.



32. Install the two dowel pins (A) and the new gasket (B) on the torque converter housing (C).



33. Place the transmission housing (D) on the torque converter housing.

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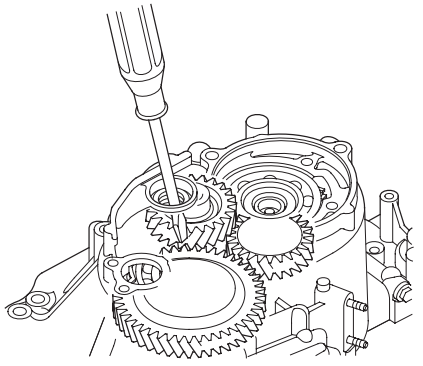
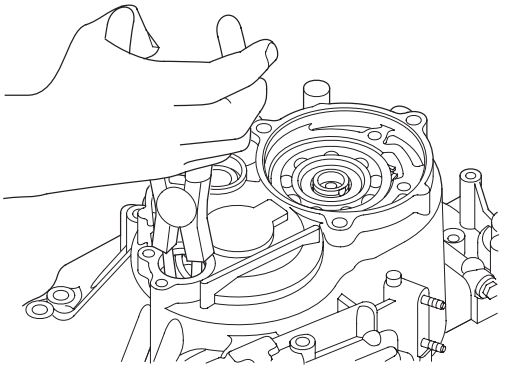
Transmission Reassembly (cont'd)

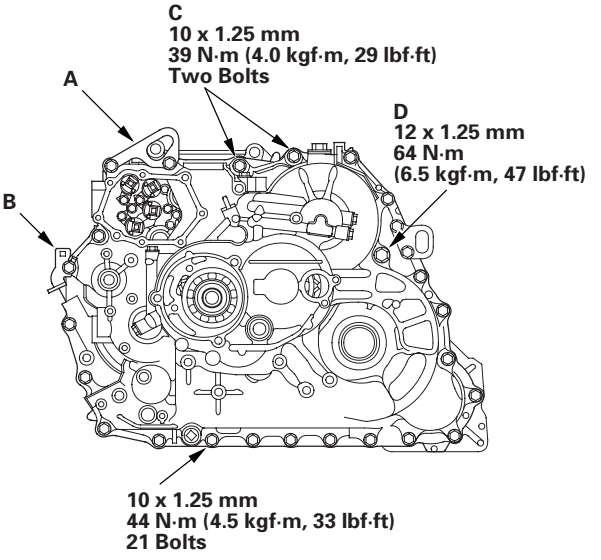
34. Wrap the screwdriver tip with tape to prevent damage to the reverse idler gear teeth. Engage the reverse idler gear with reverse gears by rotating the idler gear using the screwdriver.



35. While expanding the snap ring of the countershaft bearing with snap ring pliers, install the transmission housing onto the bearing part-way. Then release the snap ring pliers, and push down on the housing until it bottoms and the snap ring snaps into place in the transmission housing snap ring groove.



36. Install the transmission housing mounting bolts (10 x 1.25 mm) (23 bolts) along with the transmission hanger (A) and the transmission ground terminal bracket (B).

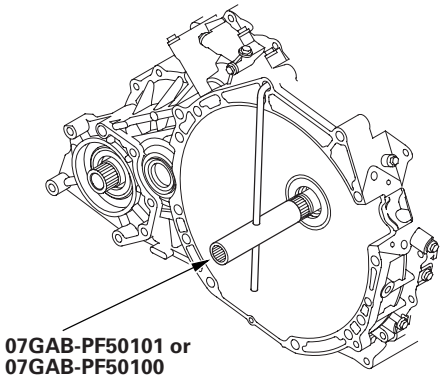


37. Tighten the 21 bolts to 44 N·m (4.5 kgf·m, 33 lbf·ft) in two or more steps in crisscross pattern.

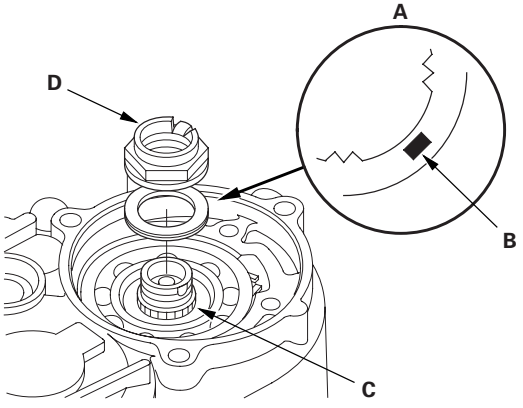
38. Tighten the two bolts (C) to 39 N·m (4.0 kgf·m, 29 lbf·ft). Keep the bolts free of grease or oil.

39. Install and tighten the 12 x 1.25 mm bolt (D) to 64 N·m (6.5 kgf·m, 47 lbf·ft).

40. Install the mainshaft holder onto the mainshaft.

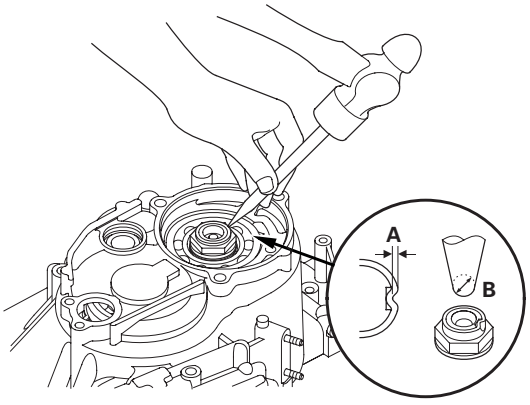


41. Install the new lock washer (A) with the marked side (B) up over the mainshaft (C), and apply the surface of the lock washer and old locknut (D) with ATF.

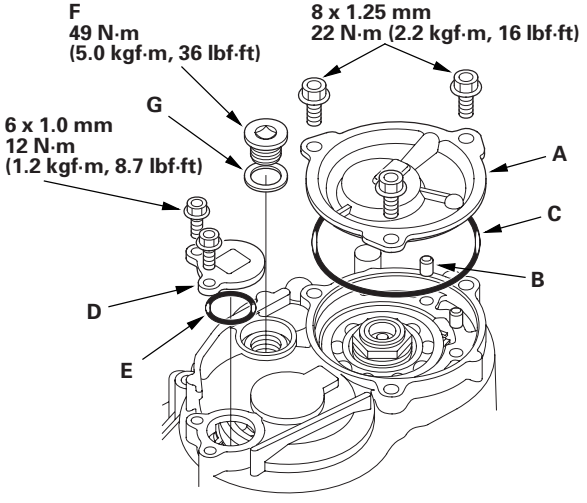


42. Install the old locknut, and tighten it to seat the lock washer to 178 N·m (18.2 kgf·m, 132 lbf·ft), then remove the old locknut.

43. Install the new locknut and tighten it to 176 N·m (18.2 kgf·m, 132 lbf·ft), then stake the locknut into its shaft in depth (A) of 0.7—1.3 mm (0.03—0.05 in.) using a 3.5 mm punch (B).



44. Install the end cover (A), the dowel pin (B), and a new O-ring (C).



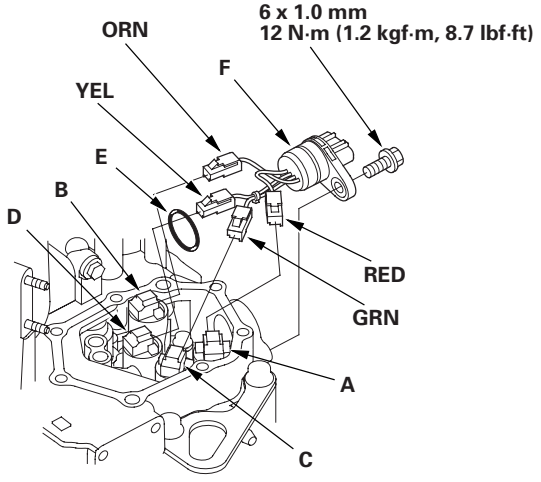
45. Install the snap ring cap (D) with a new O-ring (E).

46. Apply thread lock sealant to the threads of the sealing plug (F), and install the sealing plug and a new sealing washer (G).

(cont'd)

Transmission Reassembly (cont'd)

47. Install a new O-ring (E) on the solenoid harness connector (F).



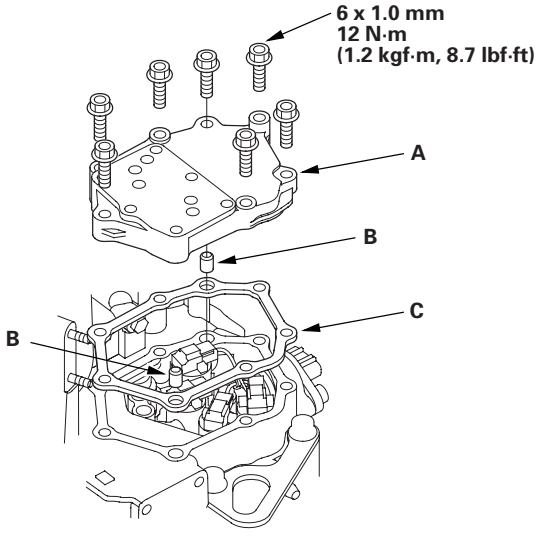
48. Route the solenoid harness through the transmission housing, and install the solenoid harness connector.

49. Connect the harness terminals to the solenoid:

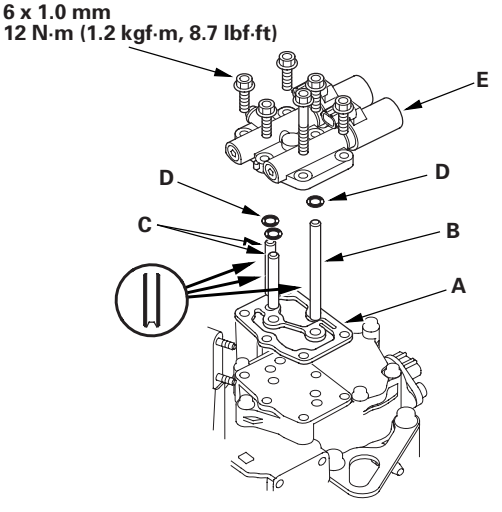
    - GRN wire connector to shift solenoid valve C.
    - YEL wire connector to the torque converter clutch solenoid valve (D).
    - RED wire connector to shift solenoid valve A.
    - ORN wire connector to shift solenoid valve B.

50. Secure the solenoid harness connector with the bolt on the transmission housing.

51. Install the solenoid valve cover (A) with the two dowel pins (B) and a new gasket (C), and secure it with the seven bolts.

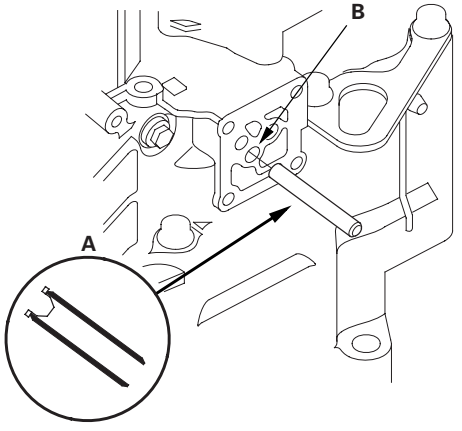


52. Place a new gasket (A) on the solenoid valve cover, then install the 8 x 102.8 mm ATF feed pipe (B) and the 8 x 55.3 mm pipes (C) with the filter end in the transmission housing.

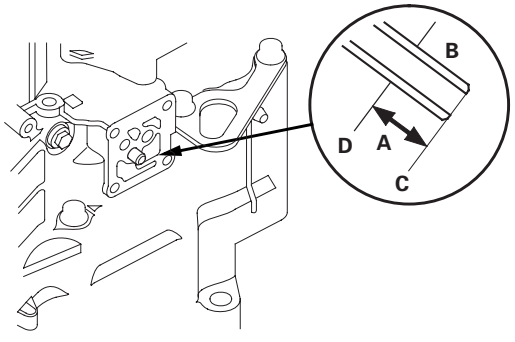


53. Install new O-rings (D) over the ATF feed pipes, and install A/T clutch pressure control solenoid valves A and B (E).

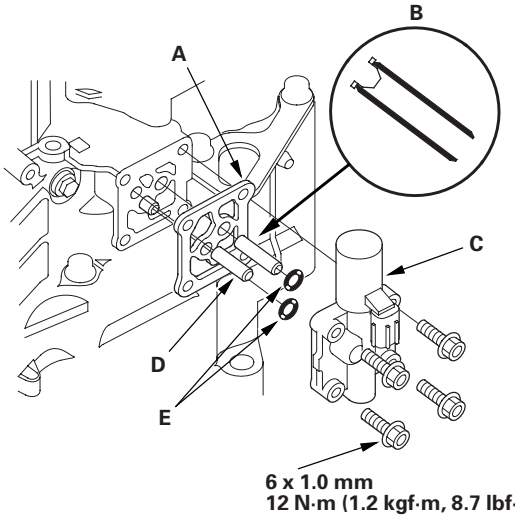
54. Install the 8 x 53 mm ATF joint pipe (A) with the filter end into its mounting hole (B).



55. Check the height (A) of the 8 x 53 mm ATF joint pipe (B) between the top (C) of the pipe and the solenoid valve body mounting surface (D). The height is about 7 mm (0.3 in.) If the height is over 7 mm (0.3 in.), push the pipe until it bottoms in the accumulator body.



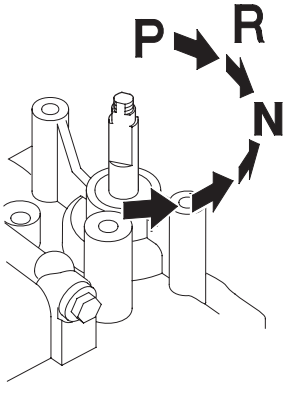
56. Install a new gasket (A) on the transmission housing, and install the 8 x 36 mm ATF joint pipe (B) with the filter end in the transmission housing and the 8 x 25.2 mm ATF pipe (D).



57. Install new O-rings (E) over the ATF joint pipes.

58. Install A/T clutch pressure control solenoid valve C.

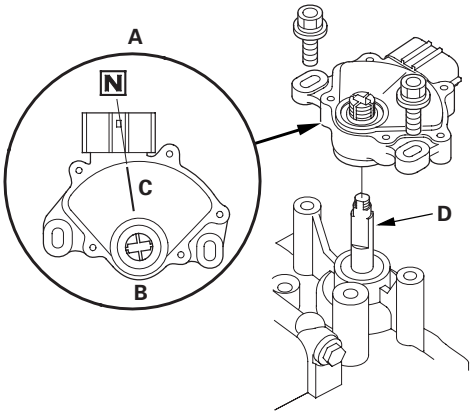
59. With a 6.0 mm wrench, turn the control shaft fully counterclockwise (view from shaft end) to P. Turn the control shaft back two click-stopped position so that the shift position is in N.



(cont'd)

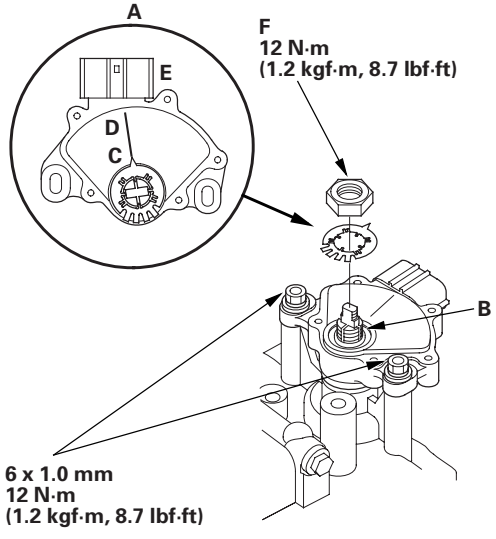
Transmission Reassembly (cont'd)

60. Set the transmission range switch (A) to the N position. The transmission range switch clicks in the N position, and the selector control shaft hole (B) aligns with the N positioning line (C).

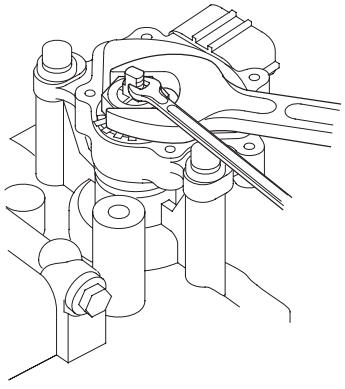


61. Install the transmission range switch gently over the selector control shaft (D), and install the bolts loosely.

62. Install the new lock washer (A) over the selector control shaft (B) by aligning the projection (C) of the lock washer with the N positioning line (D) on the transmission range switch (E), and install the locknut (F).

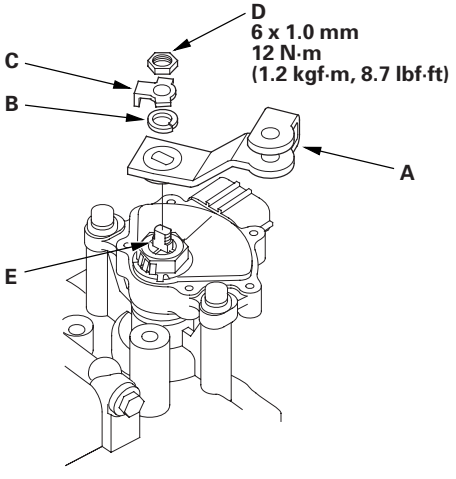


63. Push the locknut against the transmission housing to seat the range switch into the selector control shaft, and tighten the locknut to 12 N·m (1.2 kgf·m, 8.7 lbf·ft) while holding the selector control shaft with a 6 mm wrench, then bend the lock tabs against the locknut.

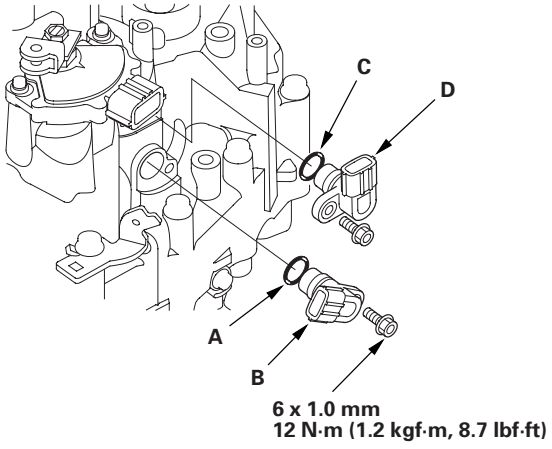


64. Tighten the transmission range switch mounting bolts to 12 N·m (1.2 kgf·m, 8.7 lbf·ft).

65. Install the control lever (A), the spring washer (B), the lock washer (C), and the locknut (D) on the selector control shaft (E).

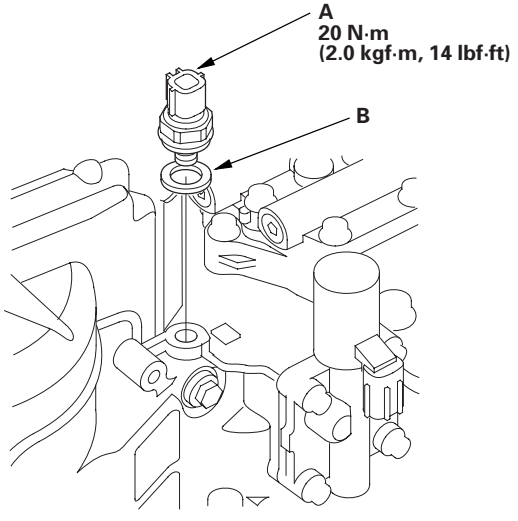


66. Install a new O-ring (A) on the input shaft (mainshaft) speed sensor (B), and install the input shaft (mainshaft) speed sensor.

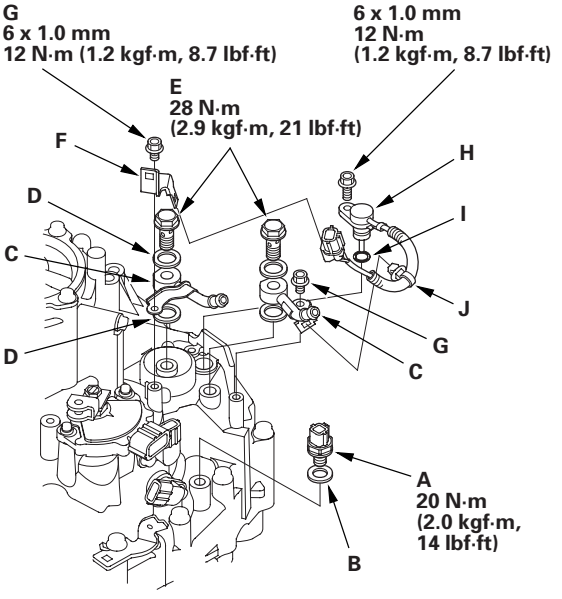


67. Install a new O-ring (C) on the output shaft (countershaft) speed sensor (D), and install the output shaft (countershaft) speed sensor.

68. Install the 4th clutch transmission fluid pressure switch (A) with a new sealing washer (B). Tighten the switch by gripping the metal part.



69. Install the 3rd clutch transmission fluid pressure switch (A) with a new sealing washer (B). Tighten the switch by gripping the metal part.



70. Install the ATF cooler lines (C) with the new sealing washers (D) and the line bolts (E).

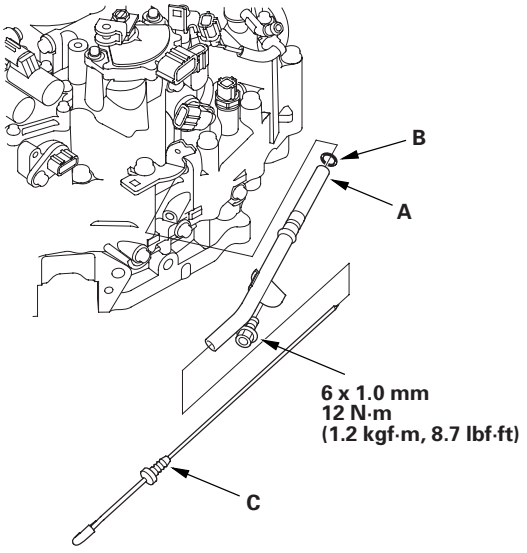
71. Install the connector bracket (F), and secure the ATF line with the 6.0 mm bolts (G) on the transmission housing. Tighten the bolt to 12 N·m (1.2 kgf·m, 8.7 lbf·ft).

72. Install the ATF temperature sensor (H) with the new O-ring (I). Install the harness clamp (J) on the clamp bracket, and install the connector on the connector bracket.

(cont'd)

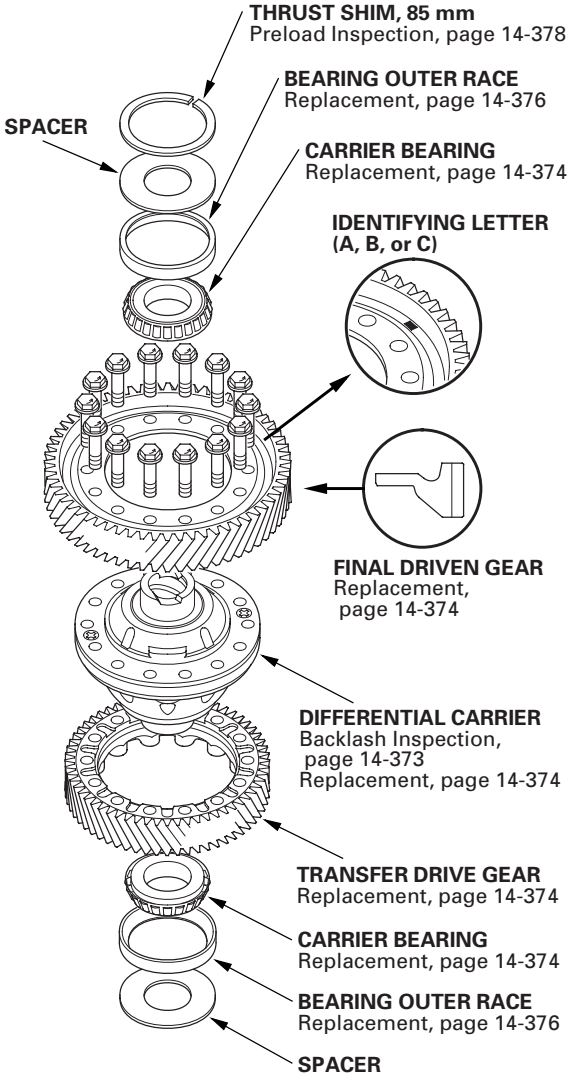
Transmission Reassembly (cont'd)

73. Install the ATF dipstick guide pipe (A) with a new O-ring (B).



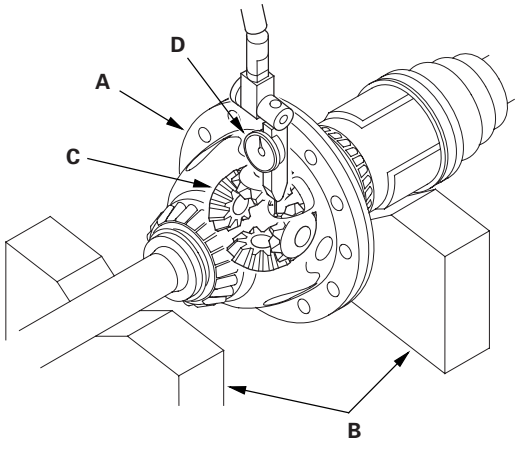
74. Install the ATF dipstick (C) in the guide pipe.

Component Location Index



Backlash Inspection

1. Remove the final driven gear and transfer drive gear from the differential carrier.
2. Install both axles into the differential assembly (A), and place the axles on V-blocks (B).



3. Measure the backlash of the pinion gears (C) with a dial indicator (D).

   Standard (New): 0.05—0.15 mm (0.002—0.006 in.)

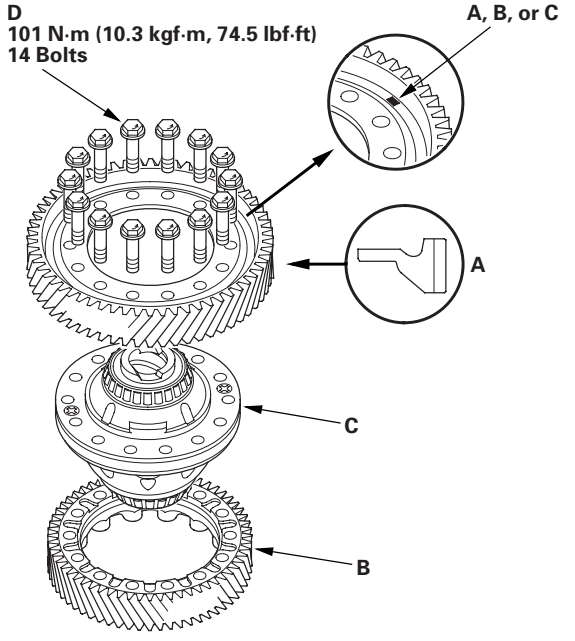
4. If the backlash is out of standard, replace the differential carrier.
5. Install the final driven gear and transfer drive gear on the differential carrier (see page 14-374).

Differential Carrier, Final Driven Gear, and Transfer Drive Gear Replacement

NOTE: Inspect and adjust the carrier bearing preload whenever the differential carrier is replaced.

1. Remove the final driven gear (A) and the transfer driven gear (B) from the differential carrier (C).

   NOTE: The final driven gear bolts (D) have left-hand threads.



2. Install the final driven gear on the differential carrier in the direction shown. Use the final driven gear matching the identifying letter (A, B, or C) with the letter marked on the top of the countershaft.

3. Install the bolts through the differential carrier to the transfer driven gear.

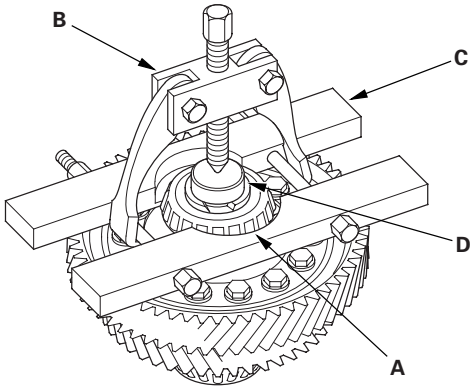
4. Tighten the bolts to 101 N·m (10.3 kgf·m, 74.5 lbf·ft) in a crisscross pattern in two or more steps.

Carrier Bearing Replacement

Special Tools Required
Attachment, 45 x 55 mm 07MAD-PR90100

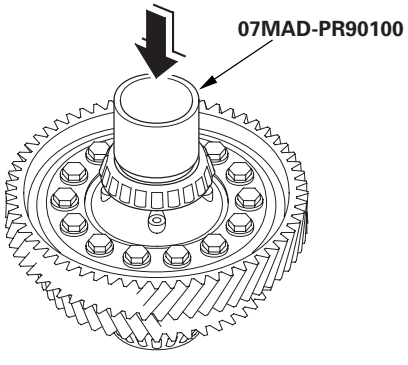
NOTE:
- The bearing and outer race should be replaced as a set.
- Inspect and adjust the bearing preload whenever the bearing is replaced.
- Check the bearing for wear and rough rotation. If the bearing is OK, removal is not necessary.

1. Remove the carrier bearing (A) with a commercially available bearing puller (B), bearing separator (C), and stepper adapter (D).



2. Install the new carrier bearing with the attachment (45 x 55 mm), and a press.

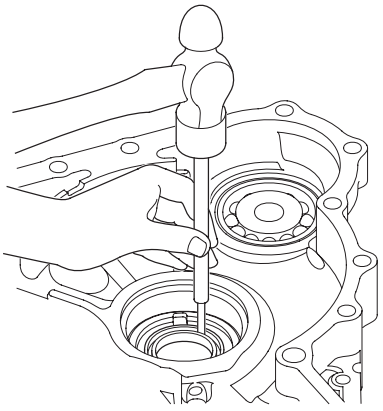
   NOTE:
   - Press the bearing on until it bottoms.
   - Use the small end of the attachment (45 x 55 mm), to install the bearings.
   - Press the bearing on securely so there is no clearance between the bearing and the carrier.



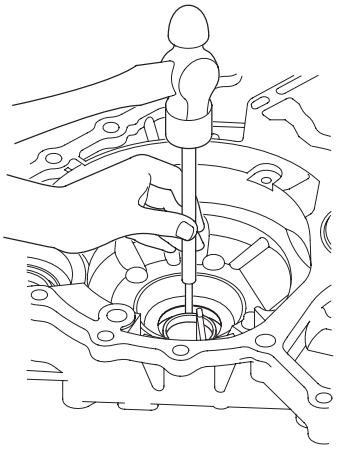
Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Oil seal driver attachment
  07GAD-PG40100 or 07GAD-PG40101
- Oil seal driver attachment 07JAD-PH80101

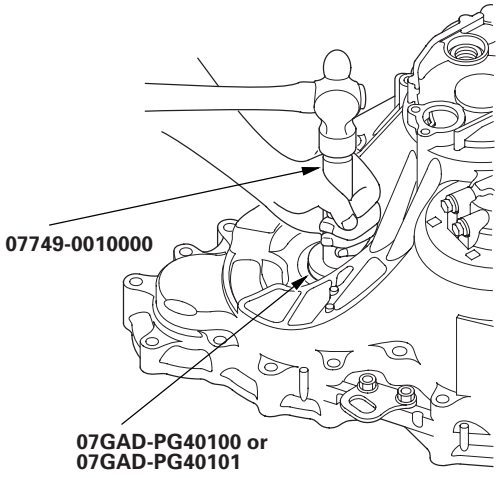
1. Remove the oil seal from the transmission housing.



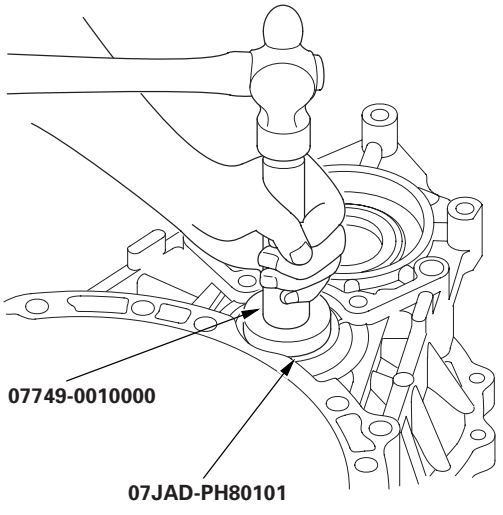
2. Remove the oil seal from the torque converter housing.



3. Install a new oil seal flush into the transmission housing with the driver and oil seal driver attachment.



4. Install a new oil seal into the torque converter housing with the driver and oil seal driver attachment.

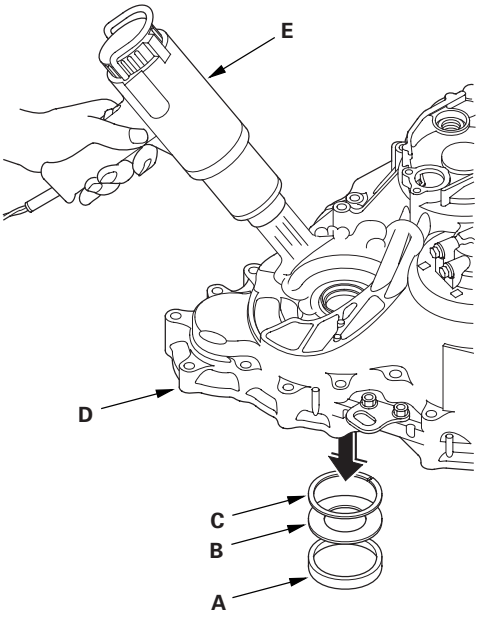


Carrier Bearing Outer Race Replacement

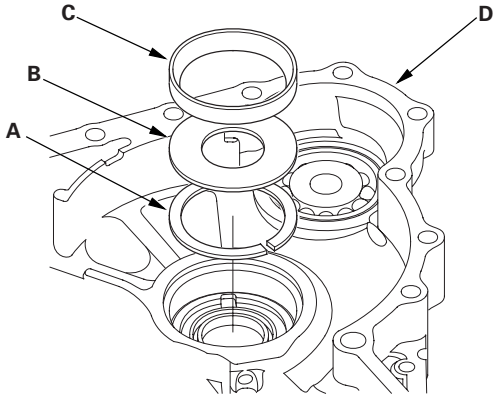
Special Tools Required
- Driver 07749-0010000
- Attachment, 83 mm 07HAD-SG00100
- Attachment, 78 x 80 mm 07NAD-PX40100

NOTE:
- Replace the bearing with a new one whenever the outer race is replaced.
- Do not use shim(s) on the torque converter housing side.
- Adjust the preload after replacing the bearing and the outer race.
- Coat all parts with ATF during installation.

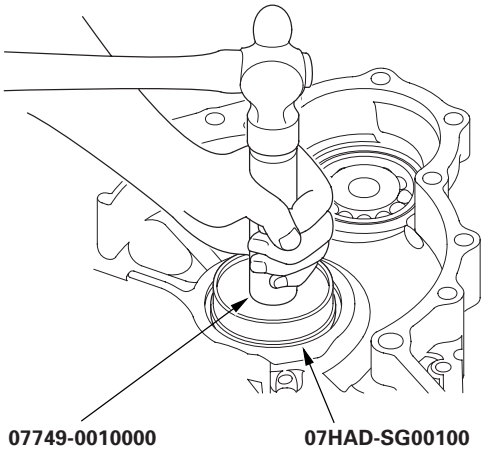
1. Remove the bearing outer race (A), the spacer (B), and the 85 mm thrust shim (C) from the transmission housing (D) by heating the housing to about 212 ℉ (100 ℃) with a heat gun (E). Do not heat the housing more than 212 ℉ (100 ℃).



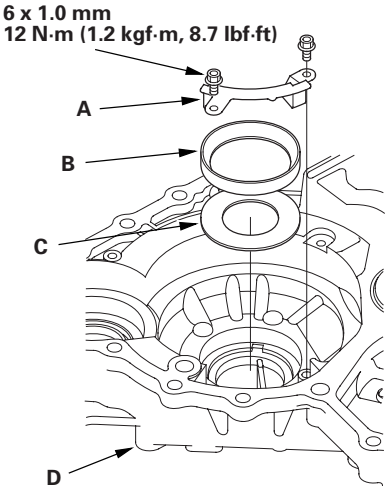
2. Install the 85 mm thrust shim (A), the spacer (B), and the outer race (C) in the transmission housing (D).



3. With the driver and attachment (83 mm), drive the outer race securely in the housing so there is no clearance between the outer race, spacer, shim, and housing.

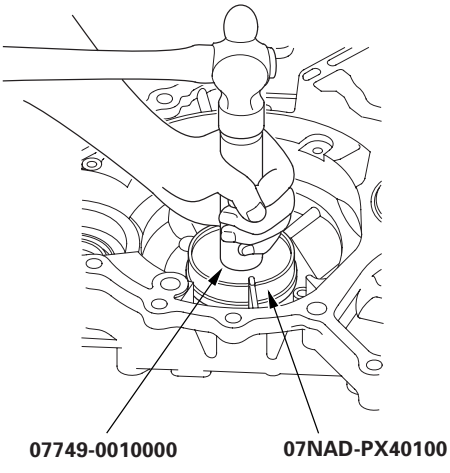


4. Remove the plate (A), and remove the bearing outer race (B) and the spacer (C) from the torque converter housing (D).



5. Install a spacer and a new outer race in the torque converter housing.

6. Drive the bearing outer race securely in the housing with the driver and attachment (78 x 80 mm).



7. Install the plate over the outer race in the torque converter housing.

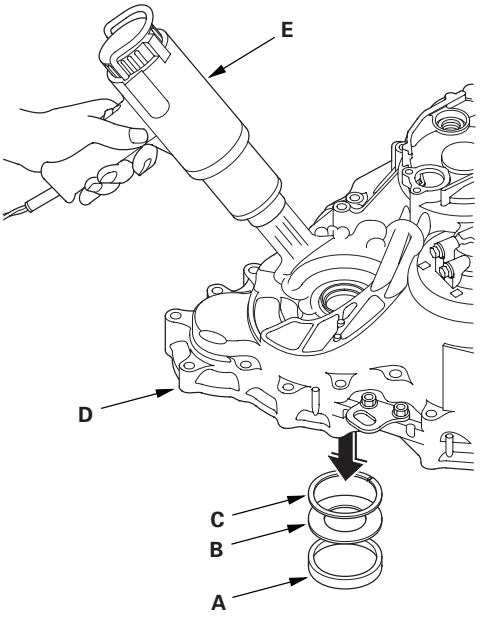
Carrier Bearing Preload Inspection

Special Tools Required
- Driver 07749-0010000
- Attachment, 83 mm 07HAD-SG00100
- Preload inspection tool 070AJ-0020101

NOTE: If the transmission housing, torque converter housing, differential carrier, tapered roller bearing, bearing outer race, or thrust shim were replaced, the bearing preload must be adjusted.

1. Remove the bearing outer race (A), the spacer (B), and the 85 mm thrust shim (C) from the transmission housing (D) by heating the housing to about 212 °F (100 °C) with a heat gun (E). Do not heat the housing more than 212 °F (100 °C).

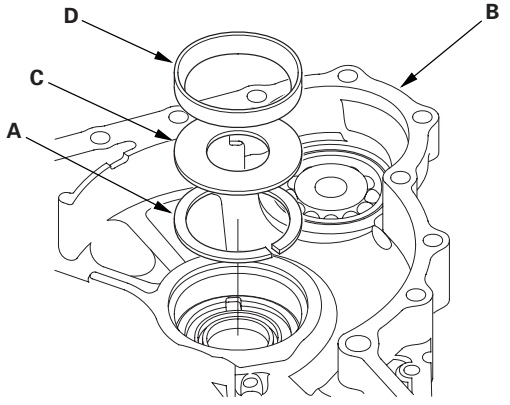
   NOTE: Let the transmission housing cool to room temperature before adjusting the bearing preload.



2. Replace the tapered roller bearing when the outer race is to be replaced.

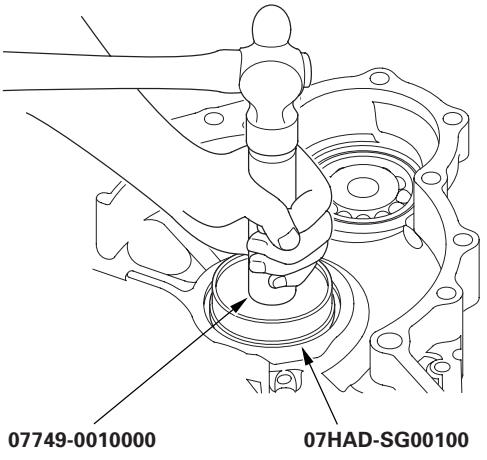
3. Do not use a shim on the torque converter housing side.

4. Install the 85 mm thrust shim (A) in the transmission housing (B). If you replace the 85 mm thrust shim with a new one, use the same thickness shim as the old one.

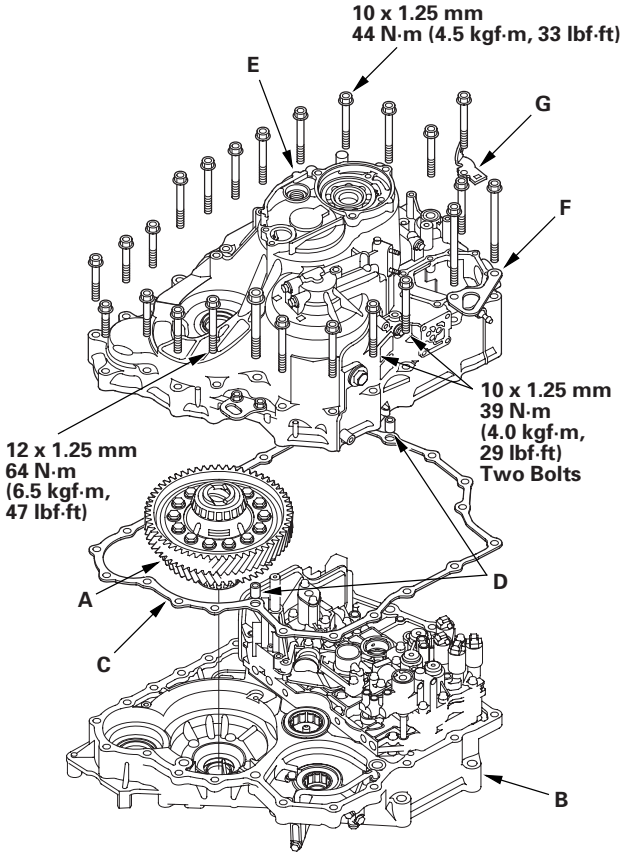


5. Install the spacer (C), and the bearing outer race (D) in the transmission housing.

6. Drive the outer race securely in the housing with the driver and attachment (83 mm) so there is no clearance between the outer race, spacer, shim, and housing.



7. Install the differential assembly (A) in the torque converter housing (B), and install the gasket (C) and the two dowel pins (D) on the housing.

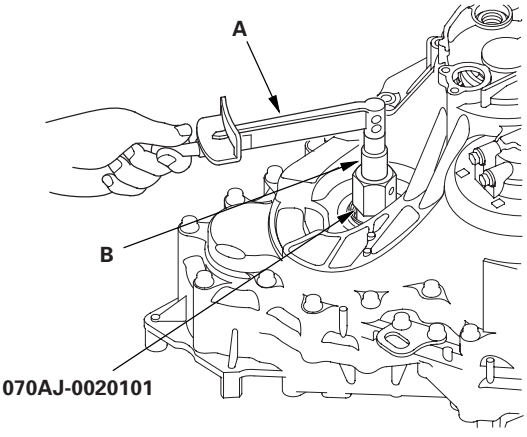


8. Install the transmission housing (E), and install the mounting bolts (24 bolts) with the transmission hanger (F) and the ground terminal bracket (G), then tighten the bolts.

9. Rotate the differential assembly in both directions to seat the bearings.

10. Measure the starting torque of the differential assembly with the preload inspection tool, a torque wrench (A), and a socket (B). Measure the starting torque at normal room temperature in both directions.

Standard
New bearings:
3.9—5.1 N·m (40—52 kgf·cm, 35—45 lbf·in.)
Reused bearings:
3.6—4.8 N·m (37—49 kgf·cm, 32—43 lbf·in.)



11. If the measurement is out of standard, remove the thrust shim and measure its thickness.

(cont'd)

Carrier Bearing Preload Inspection (cont'd)

12. Select a new thrust shim. To increase the starting torque, increase thickness of the thrust shim. To decrease the starting torque, decrease the thickness of the thrust shim.
Changing the shim to the next size will increase or decrease the starting torque about 0.5—0.6 N·m (5—6 kgf·cm, 5—5 lbf·in.).

THRUST SHIM, 85 mm

No.	Part Number	Thickness
A	41440-RGR-000	1.350 mm (0.0531 in.)
B	41441-RGR-000	1.375 mm (0.0541 in.)
C	41442-RGR-000	1.400 mm (0.0551 in.)
D	41443-RGR-000	1.425 mm (0.0561 in.)
E	41444-RGR-000	1.450 mm (0.0571 in.)
F	41445-RGR-000	1.475 mm (0.0581 in.)
G	41446-RGR-000	1.500 mm (0.0591 in.)
H	41447-RGR-000	1.525 mm (0.0600 in.)
I	41448-RGR-000	1.550 mm (0.0610 in.)
J	41449-RGR-000	1.575 mm (0.0620 in.)
K	41450-RGR-000	1.600 mm (0.0630 in.)
L	41451-RGR-000	1.625 mm (0.0640 in.)
M	41452-RGR-000	1.650 mm (0.0650 in.)
N	41453-RGR-000	1.675 mm (0.0659 in.)
O	41454-RGR-000	1.700 mm (0.0669 in.)
P	41455-RGR-000	1.725 mm (0.0679 in.)
Q	41456-RGR-000	1.750 mm (0.0689 in.)
R	41457-RGR-000	1.775 mm (0.0699 in.)
S	41458-RGR-000	1.800 mm (0.0709 in.)
T	41459-RGR-000	1.825 mm (0.0719 in.)
U	41460-RGR-000	1.850 mm (0.0728 in.)
V	41461-RGR-000	1.875 mm (0.0738 in.)
W	41462-RGR-000	1.900 mm (0.0748 in.)
X	41463-RGR-000	1.925 mm (0.0758 in.)
Y	41464-RGR-000	1.950 mm (0.0768 in.)
Z	41465-RGR-000	1.975 mm (0.0778 in.)

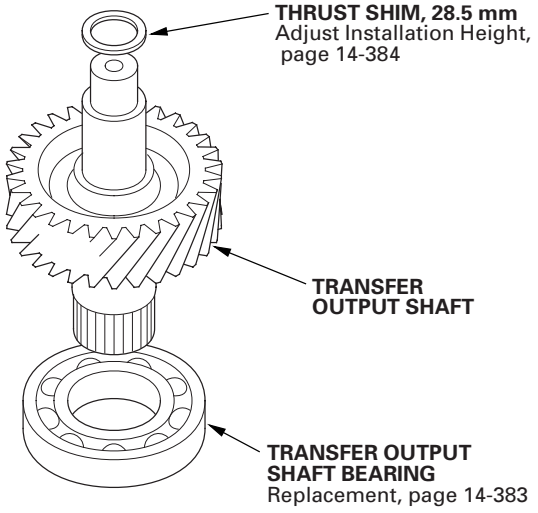
(cont'd)

THRUST SHIM, 85 mm (cont'd)

No.	Part Number	Thickness
AA	41466-RGR-000	2.000 mm (0.0787 in.)
AB	41467-RGR-000	2.025 mm (0.0797 in.)
AC	41468-RGR-000	2.050 mm (0.0807 in.)
AD	41469-RGR-000	2.075 mm (0.0817 in.)
AE	41470-RGR-000	2.100 mm (0.0827 in.)
AF	41471-RGR-000	2.125 mm (0.0837 in.)
AG	41472-RGR-000	2.150 mm (0.0846 in.)
AH	41473-RGR-000	2.175 mm (0.0856 in.)
AI	41474-RGR-000	2.200 mm (0.0866 in.)
AJ	41475-RGR-000	2.225 mm (0.0876 in.)
AK	41476-RGR-000	2.250 mm (0.0886 in.)
AL	41477-RGR-000	2.275 mm (0.0896 in.)
AM	41478-RGR-000	2.300 mm (0.0906 in.)
AN	41479-RGR-000	2.325 mm (0.0915 in.)
AO	41480-RGR-000	2.350 mm (0.0925 in.)

13. Install the new thrust shim, then recheck the starting torque.

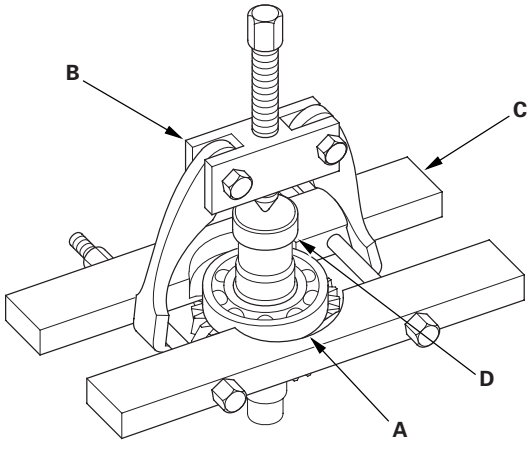
Component Location Index



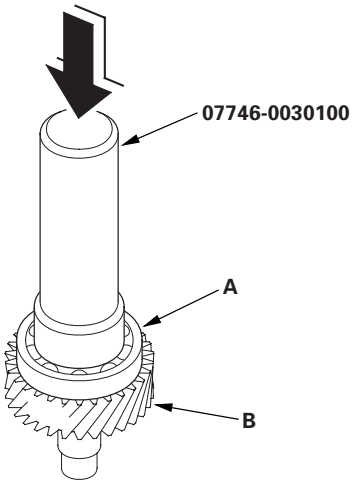
Transfer Output Shaft Bearing Replacement

Special Tools Required
Driver, 40 mm I.D. 07746-0030100

1. Remove the transfer output shaft bearing (A) with a commercially available puller (B), bearing separator (C), and shaft protector (D). Place a shaft protector between the transfer output shaft and a puller to prevent damaging the shaft.



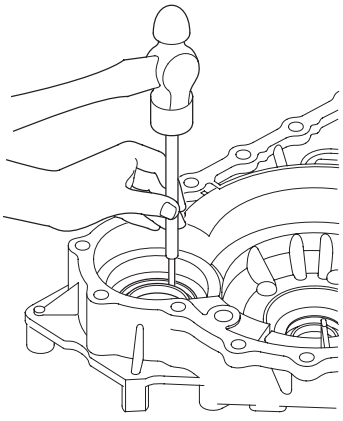
2. Install the new bearing on the transfer output shaft with the driver (40 mm I.D.) and a press.



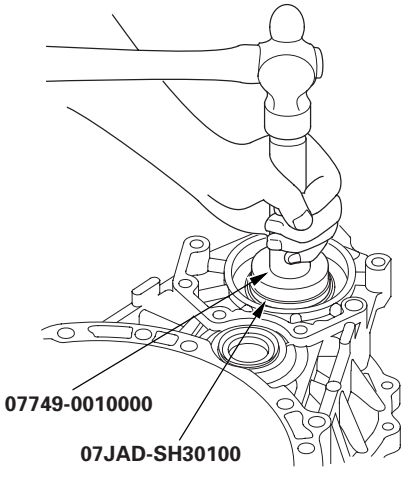
Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 65 mm 07JAD-SH30100

1. Remove the oil seal from the torque converter housing.



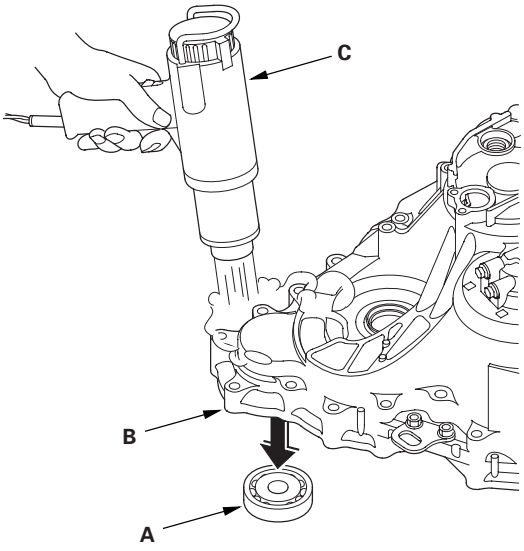
2. Install the new oil seal flush to the torque converter housing with the driver and attachment (65 mm).



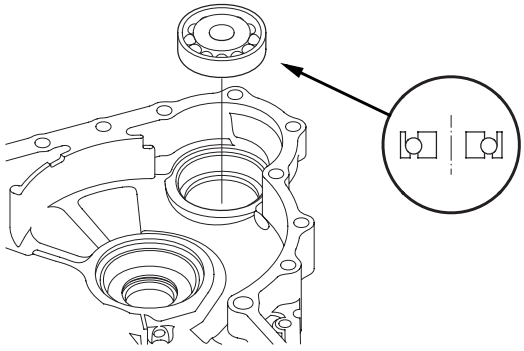
Transmission Housing Bearing Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 72 x 75 mm 07746-0010600

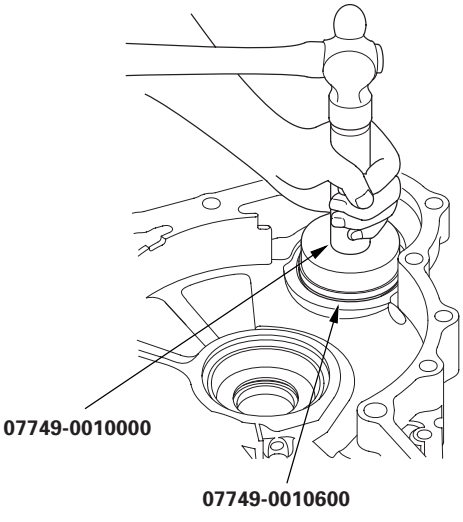
1. Remove the transfer output shaft bearing (A) from the transmission housing (B) by heating the housing to about 212 ℉ (100 ℃) with a heat gun (C). Do not heat the housing more than 212 ℉ (100 ℃).



2. Install the new bearing in the housing in the direction shown.



3. Drive the new bearing until it bottoms in the housing with the driver and attachment (72 x 75 mm).

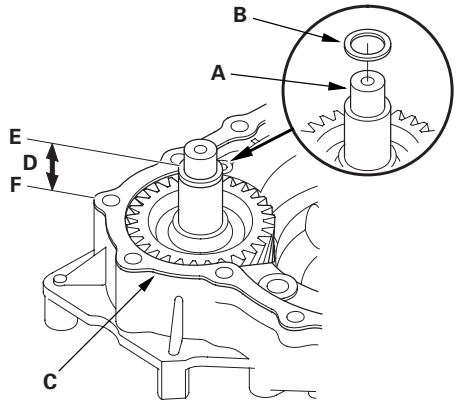


Transfer Output Shaft Installation Height Inspection/Adjustment

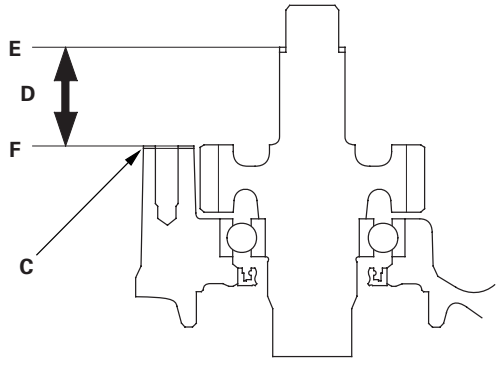
NOTE: If the transfer output shaft, transfer output shaft bearing, transfer output shaft transmission housing bearing, transmission housing, or torque converter housing were replaced, adjust the transfer output shaft installation height with the 28.5 mm thrust shim.

1. Install the transfer output shaft (A) in the torque converter housing, and install the 28.5 mm thrust shim (B) on the top of the shaft. If you replace the 28.5 mm thrust shim with a new one, use the same thickness shim as the old one.

   Standard: 46.31—46.35 mm (1.823—1.825 in.)



Transfer Output Shaft Cutaway View



2. Install a new gasket (C) on the torque converter housing.

3. Measure the height (D) of the transfer output shaft installation between the surface (E) of the gasket and the top (F) of the 28.5 mm thrust shim in at least three places. Use the average as the actual height.

4. If the measurement is out of standard, remove the 28.5 mm thrust shim and measure its thickness.

5. Select and install a new thrust shim, then recheck the installation height.

THRUST SHIM, 28.5 mm

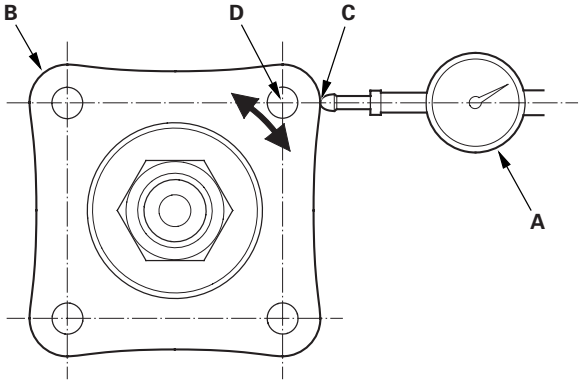
No.	Part Number	Thickness
A	29031-RDK-000	1.82 mm (0.0717 in.)
B	29032-RDK-000	1.84 mm (0.0724 in.)
C	29033-RDK-000	1.86 mm (0.0732 in.)
D	29034-RDK-000	1.88 mm (0.0740 in.)
E	29035-RDK-000	1.90 mm (0.0748 in.)
F	29036-RDK-000	1.92 mm (0.0756 in.)
G	29037-RDK-000	1.94 mm (0.0764 in.)
H	29038-RDK-000	1.96 mm (0.0772 in.)
I	29039-RDK-000	1.98 mm (0.0780 in.)
J	29040-RDK-000	2.00 mm (0.0787 in.)
K	29041-RDK-000	2.02 mm (0.0795 in.)
L	29042-RDK-000	2.04 mm (0.0803 in.)
M	29043-RDK-000	2.06 mm (0.0811 in.)
N	29044-RDK-000	2.08 mm (0.0819 in.)
O	29045-RDK-000	2.10 mm (0.0827 in.)
P	29046-RDK-000	2.12 mm (0.0835 in.)
Q	29047-RDK-000	2.14 mm (0.0843 in.)
R	29048-RDK-000	2.16 mm (0.0850 in.)
S	29049-RDK-000	2.18 mm (0.0858 in.)
T	29050-RDK-000	2.20 mm (0.0866 in.)
U	29051-RDK-000	2.22 mm (0.0874 in.)
V	29052-RDK-000	2.24 mm (0.0882 in.)
W	29053-RDK-000	2.26 mm (0.0890 in.)
X	29054-RDK-000	2.28 mm (0.0898 in.)
Y	29055-RDK-000	2.30 mm (0.0906 in.)
Z	29056-RDK-000	2.32 mm (0.0913 in.)
AA	29057-RDK-000	2.34 mm (0.0921 in.)

Inspection

NOTE: To prevent damage to the transfer housing, always use soft jaws or equivalent materials between the transfer housing and a vise.

Transfer Gear Backlash Measurement

1. Set a dial indicator (A) on the transfer companion flange (B); position the dial indicator tip (C) on the direct extension of the bolt hole canter (D).



2. Measure the transfer gear backlash.

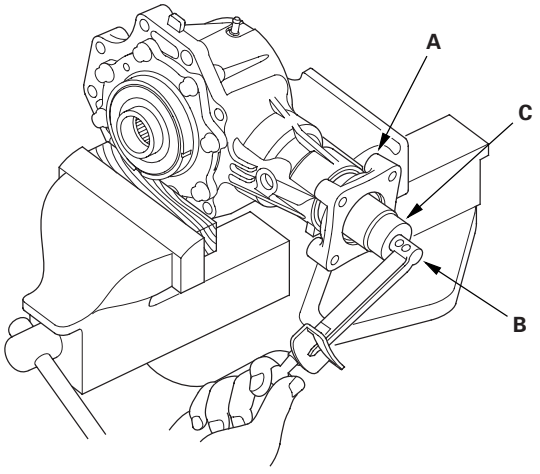
   Standard: 0.06—0.17 mm (0.002—0.007 in.)

Total Starting Torque Measurement

3. Rotate the transfer companion flange several times to seat the tapered roller bearings.

4. Measure the staring torque at the companion flange (A) using a torque wrench (B) and a socket (C).

   Standard: 3.20—4.16 N·m
   (32.6—42.4 kgf·cm, 28.3—36.8 lbf·in.)

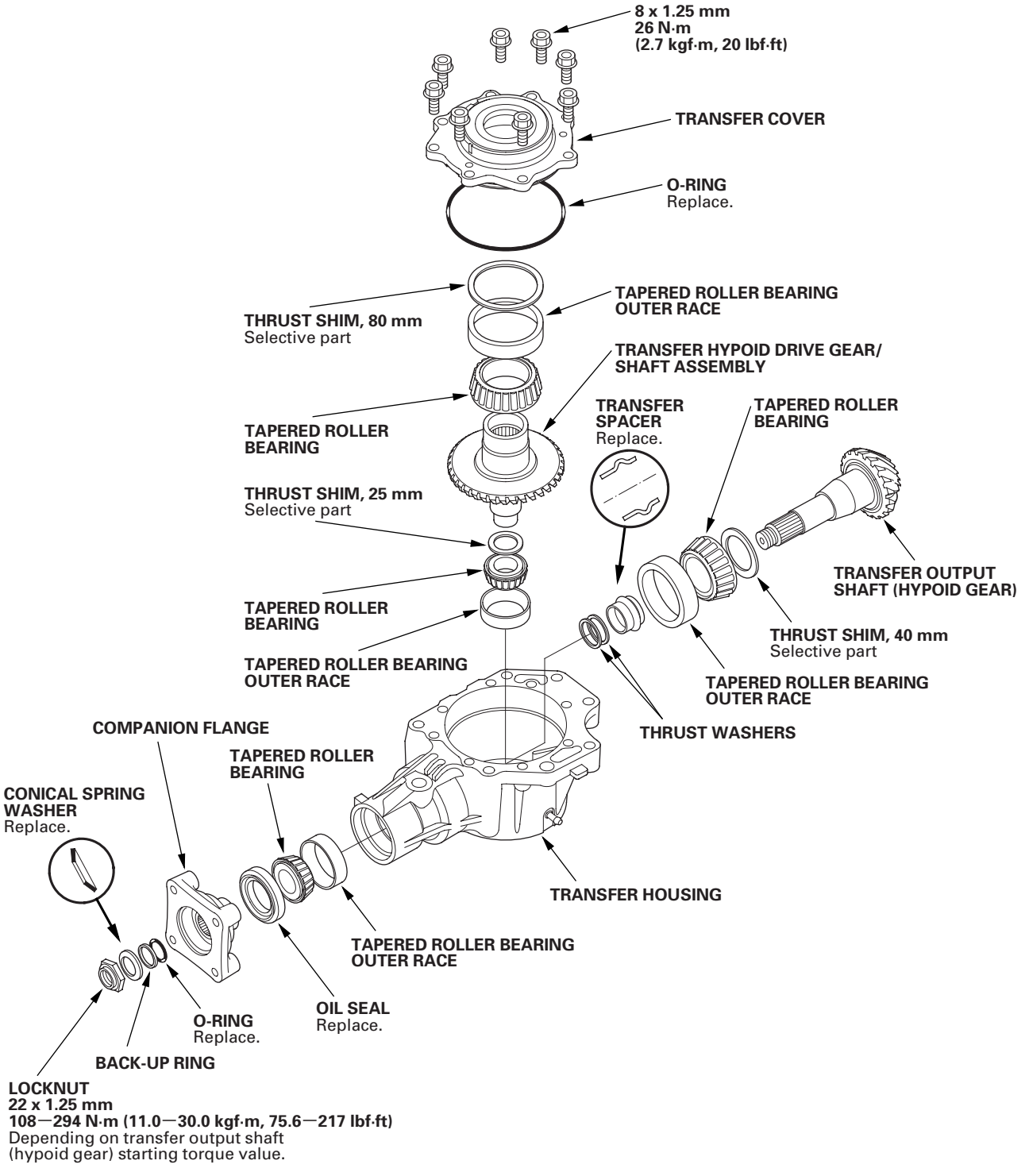


5. If the measurements are out of standard, disassemble the transfer assembly and repair it.

Transfer Assembly

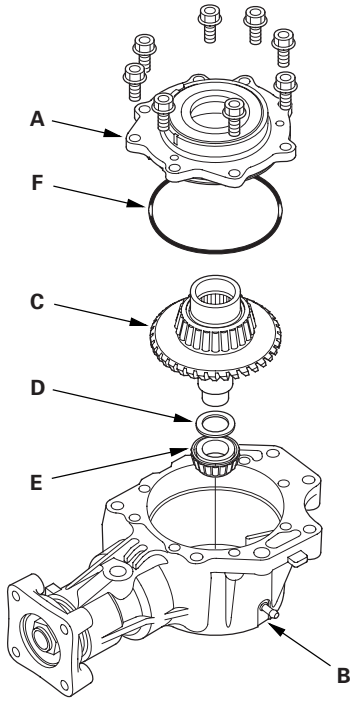
Disassembly

Exploded View



Special Tools Required
Companion flange holder 07XAB-0020100

1. Remove the transfer cover (A) from the transfer housing (B).

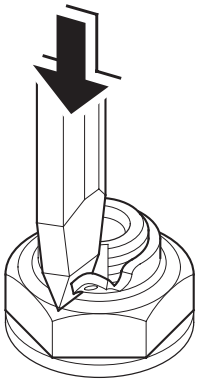


2. Remove the transfer hypoid drive gear/shaft assembly (C), the 25 mm thrust shim (D), and the tapered roller bearing (E).

3. Remove the O-ring (F) from the cover.

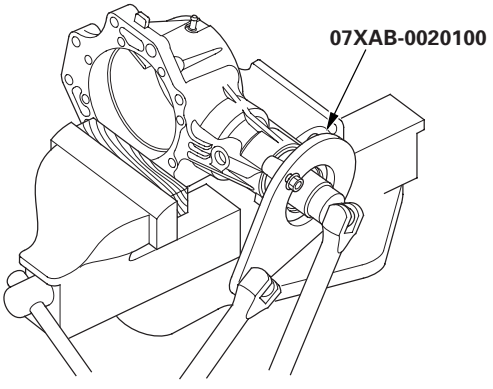
4. Drain the transfer fluid (hypoid gear oil) from the transfer housing.

5. Cut the lock tab on the locknut using a chisel.



6. Secure the transfer housing in a bench vise with soft jaws. To prevent damage to the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.

7. Install the companion flange holder on the companion flange, then loosen the locknut.

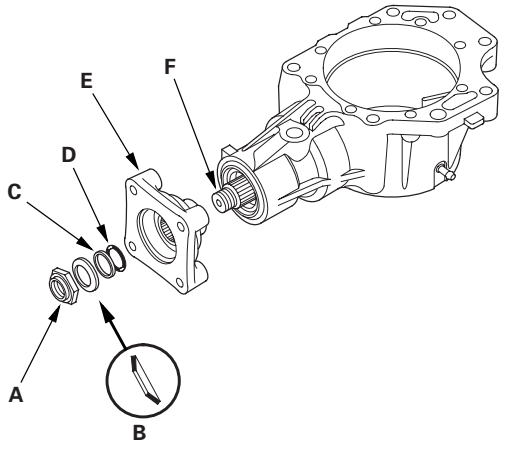


8. Remove the companion flange holder.

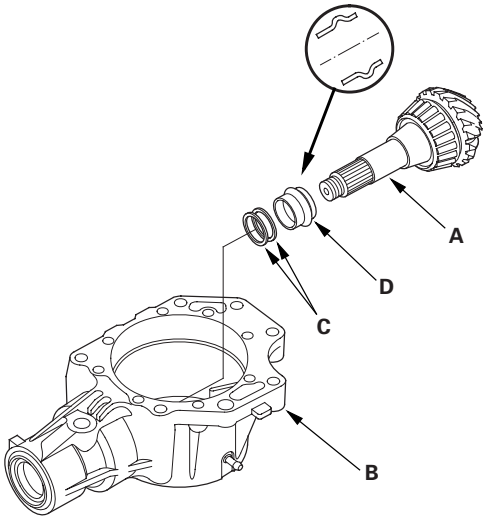
(cont'd)

Disassembly (cont'd)

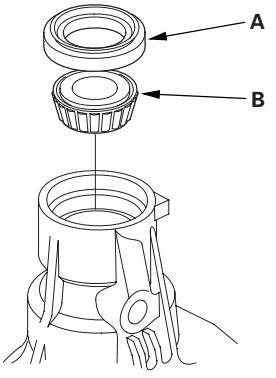
9. Remove the locknut (A), the conical spring washer (B), the back-up ring (C), the O-ring (D), and the companion flange (E) from the transfer output shaft (hypoid gear) (F).



10. Remove the transfer output shaft (hypoid gear) (A) from the transfer housing (B), then remove the thrust washers (C) and the transfer spacer (D) from the transfer output shaft (hypoid gear).



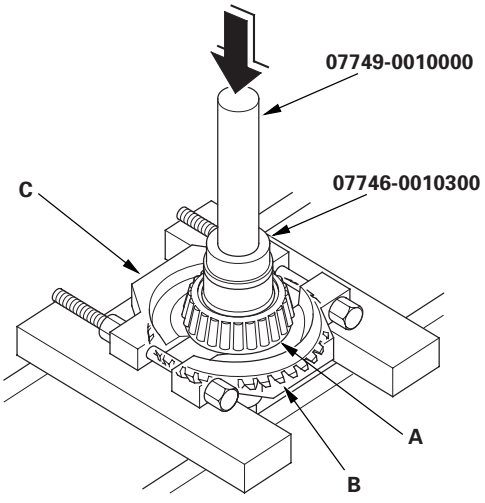
11. Remove the oil seal (A) and the tapered roller bearing (B) from the transfer housing.



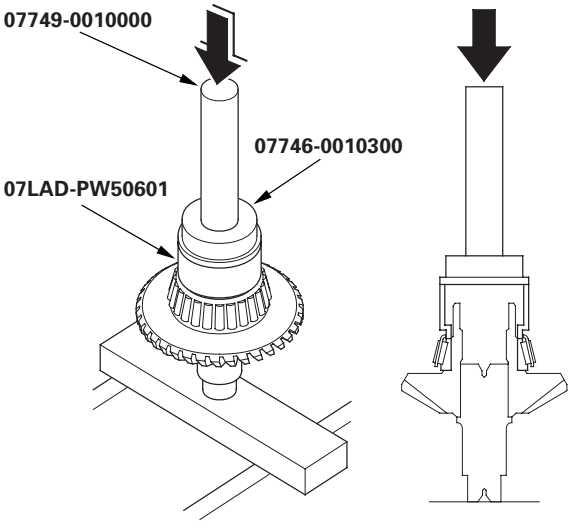
Transfer Hypoid Drive Gear Bearing Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300
- Attachment, 40 x 50 mm 07LAD-PW50601

1. Remove the tapered roller bearing (A) from the transfer hypoid drive gear (B) with the driver, attachment (42 x 47 mm), the bearing separator (C) and the press.



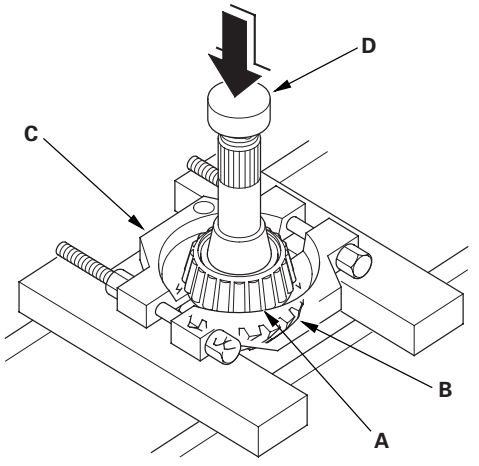
2. Install a new bearing on the transfer hypoid drive gear with the driver, attachment (42 x 47 mm), attachment (40 x 50 mm), and the press.



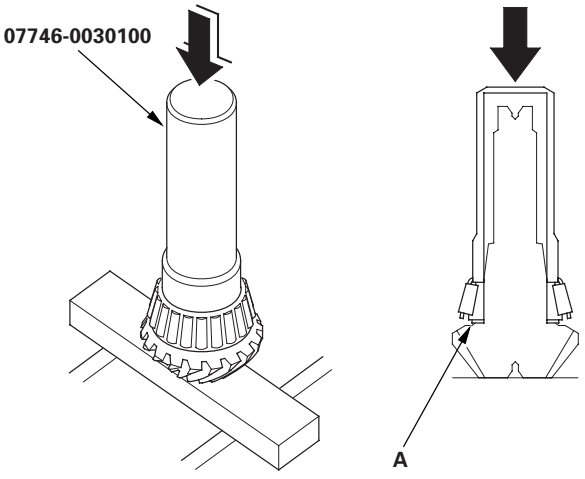
Transfer Output Shaft (Hypoid Gear) Bearing Removal/Installation

Special Tools Required
Driver, 40 mm I.D. 07746-0030100

1. Remove the tapered roller bearing (A) from the transfer output shaft (hypoid gear) (B) with a bearing separator (C) and a press. Place a shaft protector (D) between the transfer output shaft and the press to prevent damaging the shaft.



2. Install the 40 mm thrust shim (A) over the transfer output shaft (hypoid gear).



3. Install the tapered roller bearing over the transfer output shaft (hypoid gear) with the driver (40 mm I.D.), and the press.

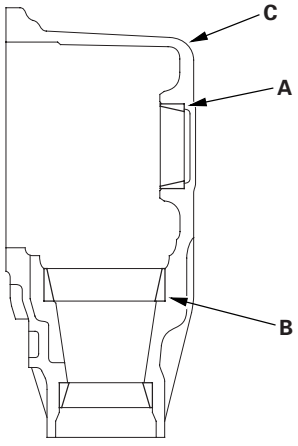
Transfer Housing Tapered Roller Bearing Outer Race Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400
- Oil seal driver attachment 07JAD-PH80101
- Tapered bearing race installer A 07MAF-SP0011A
- Installer shaft 07MAF-SP0013A

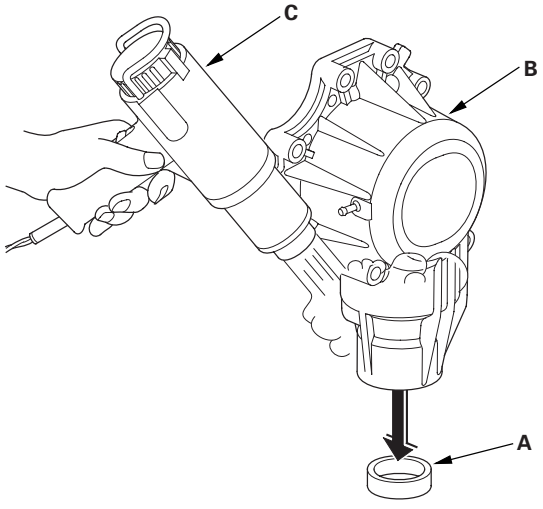
NOTE: Replace the bearing with a new one whenever the outer race is replaced.

1. Remove the 52 mm bearing outer race (A) and the 75 mm outer race (B) from the transfer housing (C).

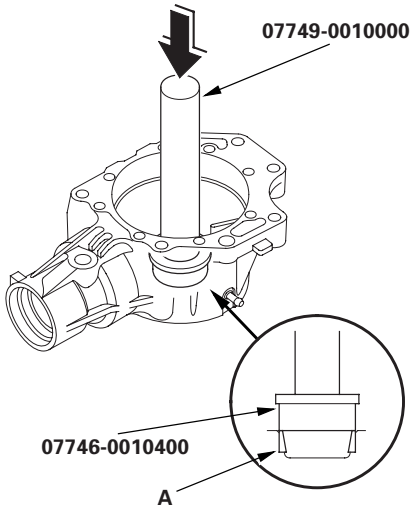
   NOTE: Some bearing outer races (52 mm and 75 mm) are press-fitted in the housing, and these races are removed by heating the housing.



2. Remove the 58 mm bearing outer race (A) from the transfer housing (B) by heating the housing to about 212 ℉ (100 ℃) with a heat gun (C). Remove the 52 mm and the 75 mm outer races by heating, if they are press-fitted. Do not heat the housing more than 212 ℉ (100 ℃).



3. Install the 52 mm bearing outer race (A) until it bottoms in the transfer housing with the driver and attachment (52 x 55 mm).



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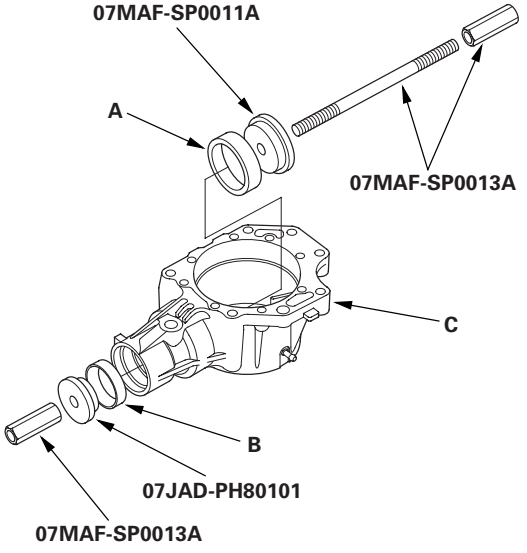
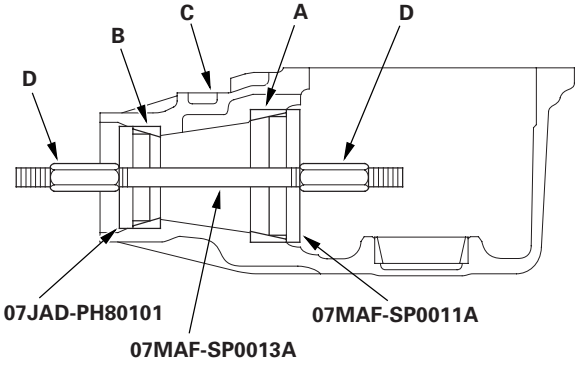
Transfer Housing Tapered Roller Bearing Outer Race Replacement (cont'd)

4. Install the 75 mm bearing outer race (A) and the 58 mm outer race (B) in the transfer housing (C), set the oil seal driver attachment and tapered bearing race installer A attachments over the races, and install the installer shaft through the attachments.



5. Tighten the installer shaft nut (D) to install the races (A) (B) into the transfer housing (C) securely.

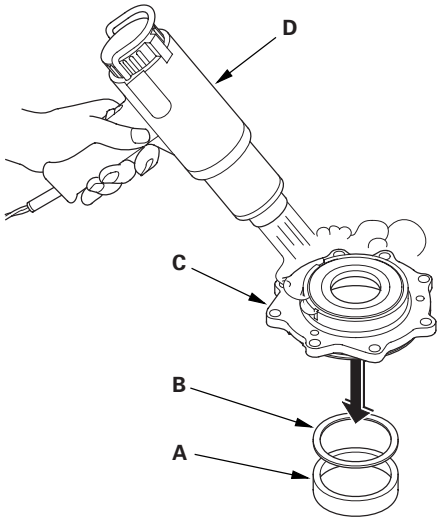


Transfer Cover Tapered Roller Bearing Outer Race Removal/Installation

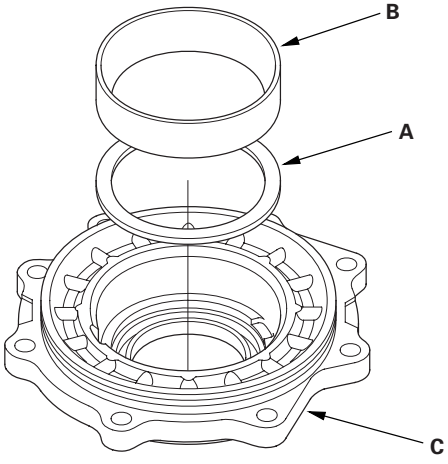
Special Tools Required
- Driver 07749-0010000
- Attachment, 78 x 80 mm 07NAD-PX40100

NOTE: Replace the bearing with a new one whenever the outer race is replaced.

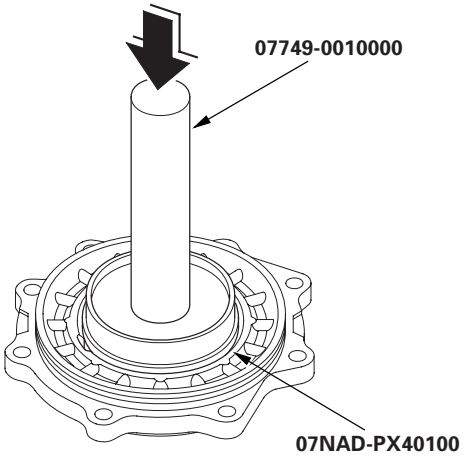
1. Remove the bearing outer race (A) and the 80 mm thrust shim (B) from the transfer cover (C). If the bearing outer race is press-fitted, remove the outer race by heating the cover to about 212 ℉ (100 ℃) with a heat gun (D). Do not heat the cover more than 212 ℉ (100 ℃).



2. Install the 80 mm trust shim (A) and the bearing outer race (B) in the transfer cover (C).



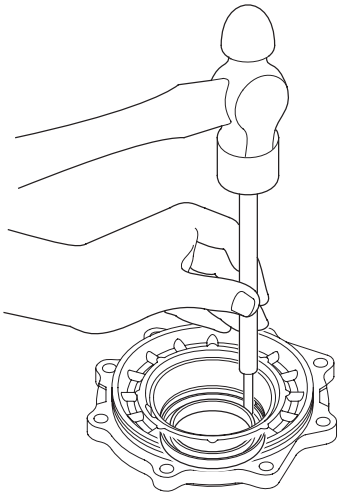
3. Drive the outer race securely in the cover with the driver and attachment (78 x 80 mm), so there is no clearance between the outer race, thrust shim, and cover.



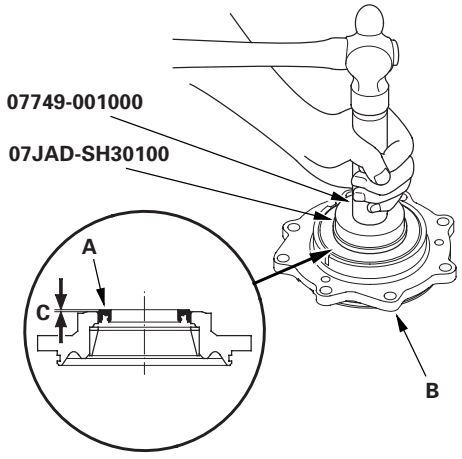
Transfer Cover Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 65 mm 07JAD-SH30100

1. Remove the oil seal from the transfer cover.



2. Install the new oil seal (A) in the transfer cover (B) to a height (C) of 0—1 mm (0—0.04 in.) above the cover surface with the driver and attachment (65 mm).



Reassembly

Special Tools Required
- Driver, 40 mm I.D. 07746-0030100
- Attachment, 35 mm I.D. 07746-0030400
- Driver 07749-0010000
- Oil seal driver attachment 07GAD-PG40100 or 07GAD-PG40101
- Companion flange holder 07XAB-0020100
- Attachment, 78 x 80 mm 07NAD-PX40100

NOTE:
- While reassembling the transfer assembly:
  – Check and adjust the transfer gear tooth contact.
  – Measure and adjust the transfer gear backlash.
  – Check and adjust the tapered roller bearing starting torque.
- Coat all parts with ATF during reassembly.
- Replace the tapered roller bearing and the bearing outer race as a set if either part is replaced.
- Replace the transfer hypoid drive gear and the transfer output shaft (hypoid gear) as a set if either part is replaced.

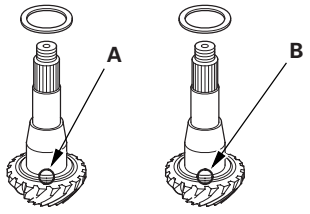
1. Select the 40 mm thrust shim if the transfer output shaft (hypoid gear) is replaced. Calculate the thickness of the 40 mm thrust shim using the formula below, and select the shim from the following table.

FORMULA: $\frac{A}{100} - \frac{B}{100} + C = X$

A: Number on the existing transfer output shaft (hypoid gear)
B: Number on the replacement transfer output shaft (hypoid gear)
C: Thickness of the existing 40 mm thrust shim
X: Thickness needed for the replacement 40 mm thrust shim

NOTE: The number on the transfer output shaft (hypoid gear) is shown in 1/100 mm.

EXAMPLE:
C: EXISTING 40 mm THRUST SHIM Thickness: C=1.05 mm
X: REPLACEMENT 40 mm THRUST SHIM Thickness: X= ? ? mm



A: EXISTING TRANSFER OUTPUT SHAFT (HYPOID GEAR) Number: A=+2
B: REPLACEMENT TRANSFER OUTPUT SHAFT (HYPOID GEAR) Number: B=−1

$$X = \frac{A}{100} - \frac{B}{100} + C$$
$$= \frac{2}{100} - \frac{-1}{100} + 1.05$$
$$= 0.02 + 0.01 + 1.05 = 1.08 \text{ (mm)}$$

Select No. M 40 mm thrust shim of 1.08 mm (0.043 in.).

THRUST SHIM, 40 mm

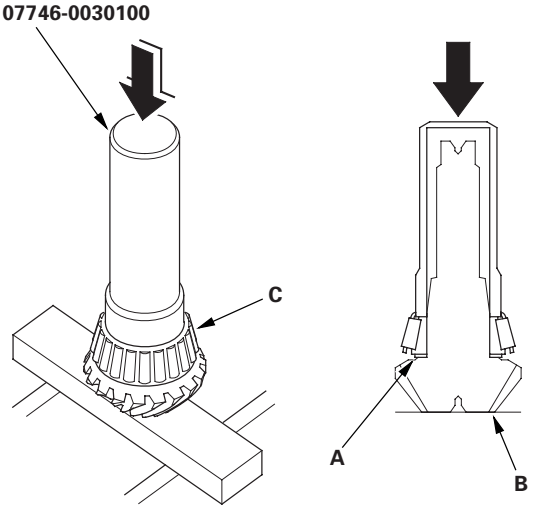
Shim No.	Part Number	Thickness
A	29361-RDK-000	0.72 mm (0.028 in.)
B	29362-RDK-000	0.75 mm (0.030 in.)
C	29363-RDK-000	0.78 mm (0.031 in.)
D	29364-RDK-000	0.81 mm (0.032 in.)
E	29365-RDK-000	0.84 mm (0.033 in.)
F	29366-RDK-000	0.87 mm (0.034 in.)
G	29367-RDK-000	0.90 mm (0.035 in.)
H	29368-RDK-000	0.93 mm (0.037 in.)
I	29369-RDK-000	0.96 mm (0.038 in.)
J	29370-RDK-000	0.99 mm (0.039 in.)
K	29371-RDK-000	1.02 mm (0.040 in.)
L	29372-RDK-000	1.05 mm (0.041 in.)
M	29373-RDK-000	1.08 mm (0.043 in.)
N	29374-RDK-000	1.11 mm (0.044 in.)
O	29375-RDK-000	1.14 mm (0.045 in.)

2. Select the 40 mm thrust shim if the tapered roller bearing on the transfer output shaft (hypoid gear) is replaced. Measure the thickness of the replacement bearing and the existing bearing, and calculate the difference of the bearing thickness. Adjust the thickness of the existing 40 mm thrust shim by the amount of difference in bearing thickness, and select the replacement 40 mm thrust shim.

(cont'd)

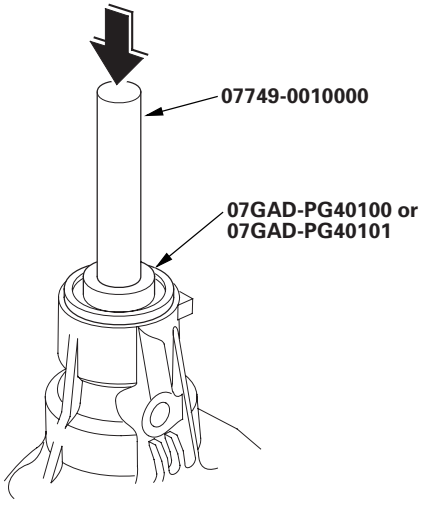
Reassembly (cont'd)

3. Install the 40 mm thrust shim (A) on the transfer output shaft (hypoid gear) (B), then install the tapered roller bearing (C) with the driver (40 mm I.D.) and a press.

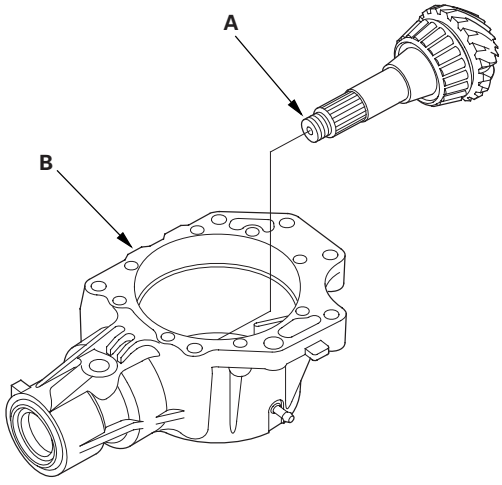


4. Place the tapered roller bearing on the bearing outer race of the companion flange side of the transfer housing.

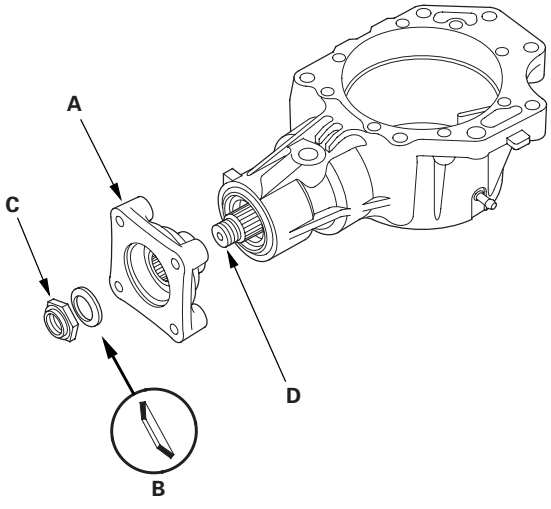
5. Install a new oil seal on the transfer housing with the driver, oil seal driver attachment, and the press.



6. Install the transfer output shaft (hypoid gear) (A) in the transfer housing (B). Do not install the thrust washers and transfer spacer on the transfer output shaft.



7. Install the companion flange (A), the conical spring washer (B) in the direction shown, and the locknut (C) on the transfer output shaft (hypoid gear) (D). Do not install the O-ring and back-up ring on the transfer output shaft.

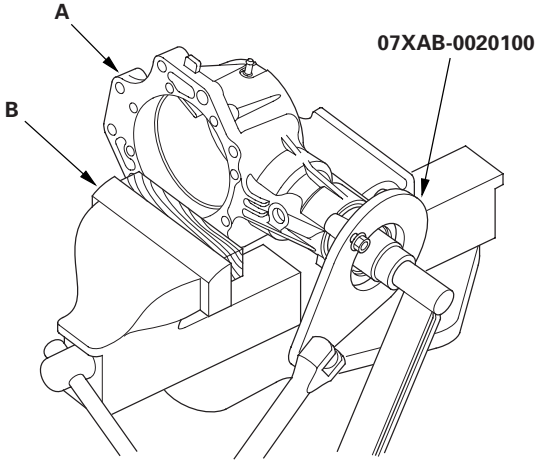


8. Secure the transfer housing (A) in a bench vise (B) with soft jaws, then install the companion flange holder on the companion flange. To prevent damage to the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.

9. Tighten the locknut while measuring the starting torque of the transfer output shaft (hypoid gear) so the starting torque is within 1.15—1.71 N·m (11.7—17.4 kgf·cm, 10.2—15.1 lbf·in.).

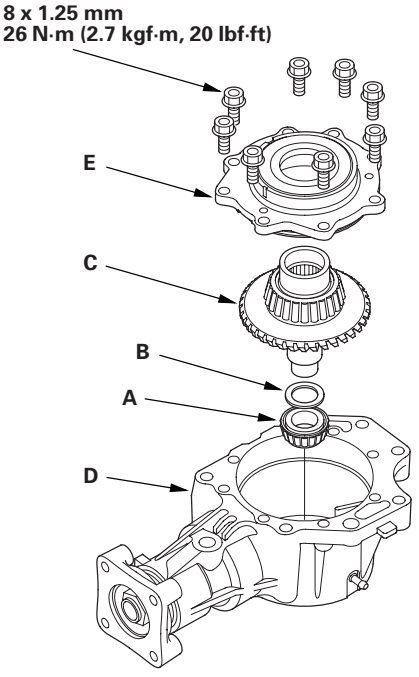
   NOTE: Do not stake the locknut in this step.

   Starting Torque:
   1.15—1.71 N·m
   (11.7—17.4 kgf·cm, 10.2—15.1 lbf·in.)



10. Apply Prussian Blue to both sides of the transfer hypoid drive gear teeth lightly and evenly.

11. Install the tapered roller bearing (A), the 25 mm thrust shim (B), and the transfer hypoid drive gear/shaft assembly (C) in the transfer housing (D).



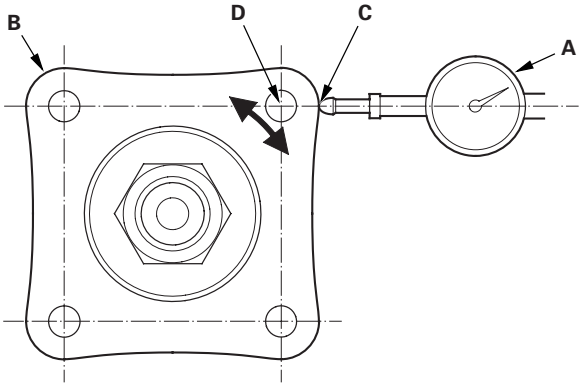
12. Install the transfer cover (E) and the bolts, and tighten the bolts. Do not install the O-ring on the transfer cover.

(cont'd)

Reassembly (cont'd)

13. Rotate the companion flange several times to seat the tapered roller bearings.

14. Set a dial indicator (A) on the transfer companion flange (B); position dial indicator tip (C) on the direct extension of the bolt hole center (D).

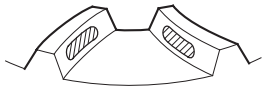


15. Measure the transfer gear backlash.

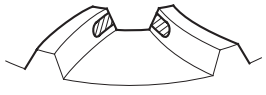
    Standard: 0.06—0.17 mm (0.002—0.007 in.)

16. Remove the transfer cover, the transfer hypoid drive gear/shaft assembly, and check the transfer hypoid drive gear tooth contact pattern.

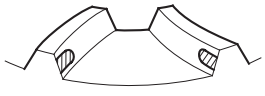
CORRECT TOOTH CONTACT PATTERN



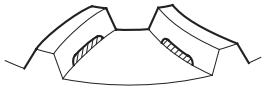
INCORRECT TOOTH CONTACT PATTERN



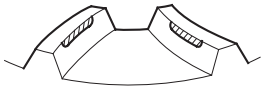
TOE CONTACT



HEEL CONTACT



FLANK CONTACT



FACE CONTACT

17. If the measurement of the backlash is out of the standard, adjust the transfer gear backlash with the 40 mm thrust shim and recheck. Do not use more than two 40 mm thrust shims to adjust the transfer gear backlash.

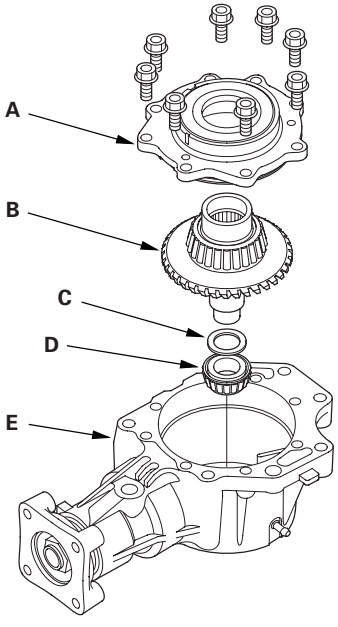
18. If the transfer gear tooth contact is incorrect, adjust the transfer gear tooth contact with the 25 mm or 40 mm thrust shim. Do not use more than two shims of each thrust shim to adjust the tooth contact.

- Toe Contact
  Use a thinner 40 mm thrust shim to move the transfer output shaft (hypoid gear) away from the transfer hypoid drive gear. Because this movement causes the transfer gear backlash to change, move the transfer hypoid drive gear toward the transfer output shaft (hypoid gear) to adjust the transfer gear backlash as follows:
  – Reduce the thickness of the 25 mm thrust shim.
  – Increase the thickness of the 80 mm thrust shim by amount of reduce thickness of the 25 mm thrust shim.
- Heel Contact
  Use a thicker 40 mm thrust shim to move the transfer output shaft (hypoid gear) toward the transfer hypoid drive gear. Because this movement causes the transfer backlash to change, move the transfer hypoid drive gear away from the transfer output shaft (hypoid gear) to adjust the transfer gear backlash as follows:
  – Increase the thickness of the 25 mm thrust shim.
  – Reduce the thickness of the 80 mm thrust shim by the amount of increase thickness of the 25 mm thrust shim.
- Flank Contact
  Use a thicker 25 mm thrust shim to move the transfer hypoid drive gear away from the transfer output shaft (hypoid gear).
  Flank contact must be adjusted within the limits of the transfer gear backlash. If the backlash exceeds the limits, adjust as described under Heel Contact.
- Face Contact
  Use a thinner 25 mm thrust shim to move the transfer hypoid drive gear toward the transfer output shaft (hypoid gear).
  Face contact must be adjusted within the limits of the transfer gear backlash. If the backlash exceeds the limits, adjust as described under Toe Contact.

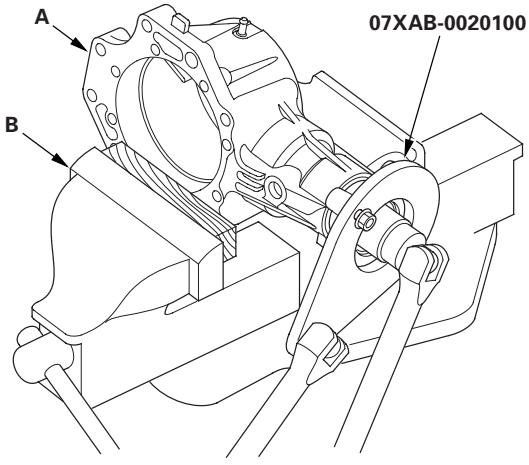
THRUST SHIM, 25 mm

Shim No.	Part Number	Thickness
1.70	29411-P1C-000	1.70 mm (0.067 in.)
1.73	29412-P1C-000	1.73 mm (0.068 in.)
1.76	29413-P1C-000	1.76 mm (0.069 in.)
1.79	29414-P1C-000	1.79 mm (0.070 in.)
1.82	29415-P1C-000	1.82 mm (0.072 in.)
1.85	29416-P1C-000	1.85 mm (0.073 in.)
1.88	29417-P1C-000	1.88 mm (0.074 in.)
1.91	29418-P1C-000	1.91 mm (0.075 in.)
1.94	29419-P1C-000	1.94 mm (0.076 in.)
1.97	29420-P1C-000	1.97 mm (0.078 in.)
2.00	29421-P1C-000	2.00 mm (0.079 in.)
2.03	29422-P1C-000	2.03 mm (0.080 in.)
2.06	29423-P1C-000	2.06 mm (0.081 in.)
2.09	29424-P1C-000	2.09 mm (0.082 in.)
2.12	29425-P1C-000	2.12 mm (0.083 in.)
2.15	29426-P1C-000	2.15 mm (0.085 in.)
2.18	29427-P1C-000	2.18 mm (0.086 in.)
2.21	29428-P1C-000	2.21 mm (0.087 in.)
2.24	29429-P1C-000	2.24 mm (0.088 in.)

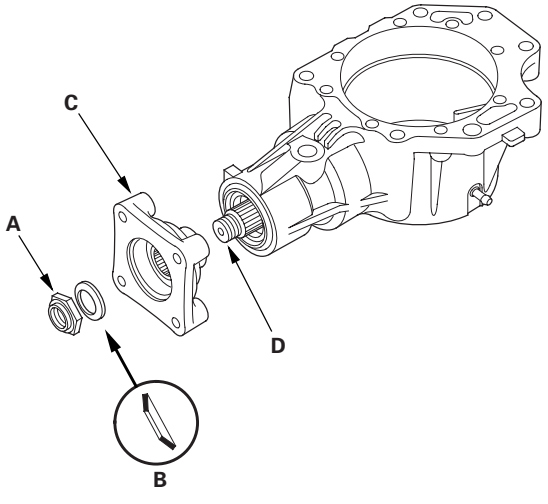
19. Remove the transfer cover (A), transfer hypoid drive gear/shaft assembly (B), 25 mm thrust shim (C), and tapered roller bearing (D) from the transfer housing (E) after adjusting the transfer gear backlash or transfer gear tooth contact.



20. Secure the transfer housing (A) in a bench vise (B) with soft jaws, then install the companion flange holder on the companion flange. To prevent damage to the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.



21. Remove the locknut (A), the conical spring washer (B), and the companion flange (C) from the transfer output shaft (hypoid gear) (D).

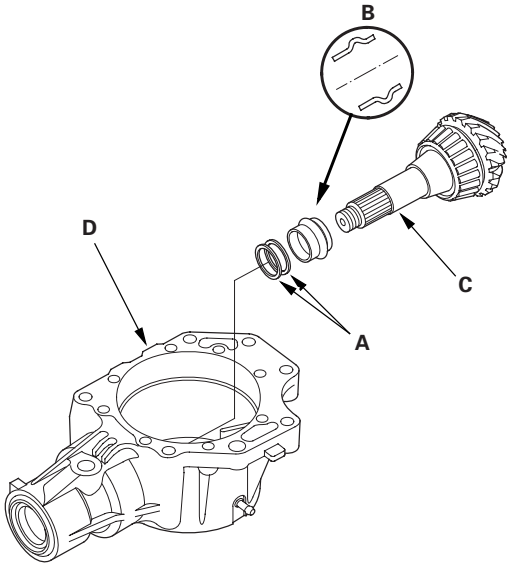


22. Remove the transfer output shaft (hypoid gear) from the transfer housing.

(cont'd)

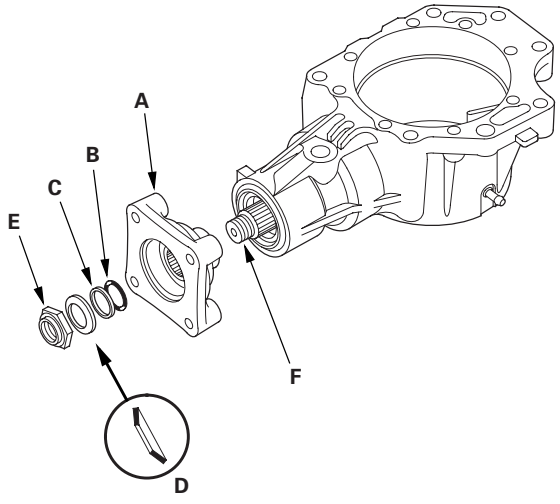
Reassembly (cont'd)

23. Install the two thrust washers (A) and a new transfer spacer (B) on the transfer output shaft (hypoid gear) (C) in the direction shown, and install them in the transfer housing (D).

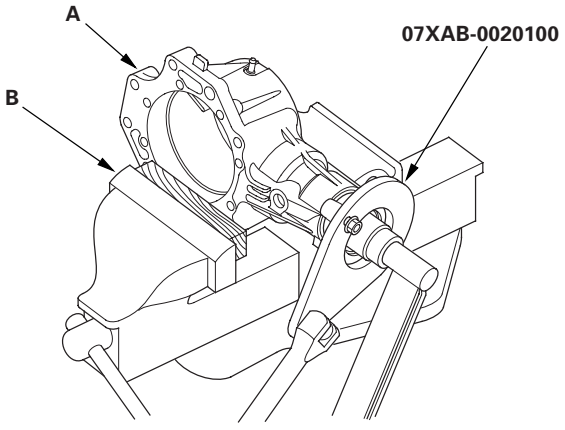


24. Coat the threads of the locknut and transfer output shaft (hypoid gear) with ATF.

25. Install the companion flange (A), a new O-ring (B), back-up ring (C), a new conical spring washer (D), and a new locknut (E) on the transfer output shaft (hypoid gear) (F). Install the conical spring washer in the direction shown.



26. Secure the transfer housing (A) in a bench vise (B) with soft jaws, then install the companion flange holder on the companion flange. To prevent damage to the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.



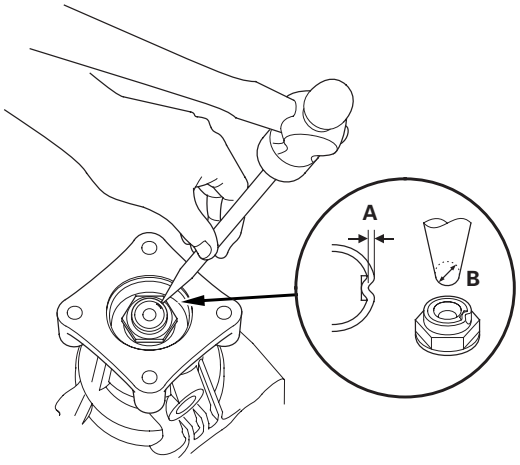
27. Tighten the locknut while measuring the starting torque of the transfer output shaft (hypoid gear) so the starting torque is within 1.15—1.71 N·m (11.7—17.4 kgf·cm, 10.2—15.1 lbf·in.).

Tightening Torque:
108—294 N·m
(11.0—30.0 kgf·m, 79.6—217 lbf·ft)
Starting Torque:
1.15—1.71 N·m
(11.7—17.4 kgf·cm, 10.2—15.1 lbf·in.)

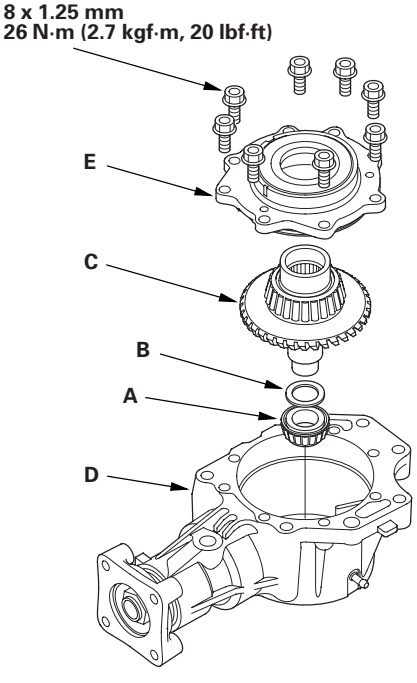
NOTE:
- Rotate the companion flange several times to seat the tapered roller bearings, then measure the starting torque.
- If the starting torque exceeds 1.71 N·m (17.4 kgf·cm, 15.1 lbf·in), replace the transfer spacer and reassemble the parts. Do not adjust the torque with the locknut loose.
- If the tightening torque exceeds 294 N·m (30.0 kgf·m, 217 lbf·ft), replace the transfer spacer and reassemble the parts.

28. Remove the companion flange holder.

29. Stake the locknut to a depth (A) of 0.7—1.2 mm (0.03—0.05 in.) using a 3.5 mm punch (B).

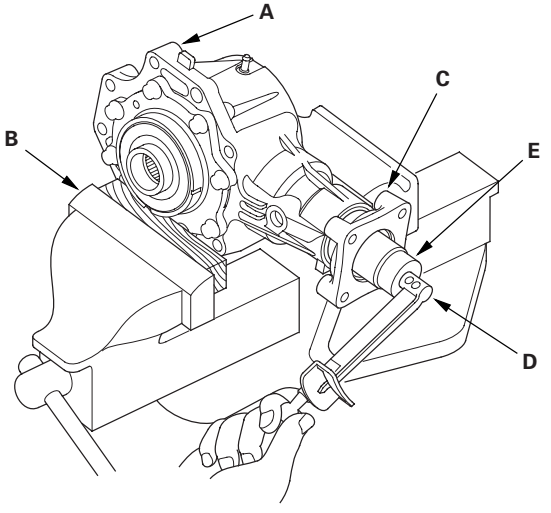


30. Install the tapered roller bearing (A), the 25 mm thrust shim (B), and the transfer hypoid drive gear/shaft assembly (C) in the transfer housing (D).



31. Temporarily install the transfer cover (E) without the O-ring. Install and tighten the bolts.

32. Secure the transfer housing (A) in a bench vise (B) with soft jaws, then install the companion flange holder on the companion flange. To prevent damage to the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.



33. Rotate the transfer companion flange (C) several times to seat the tapered roller bearings.

34. Measure the starting torque at the companion flange using a torque wrench (D) and a socket (E).

Total Starting Torque:
3.20—4.16 N·m
(32.6—42.4 kgf·cm, 28.3—36.8 lbf·in.)

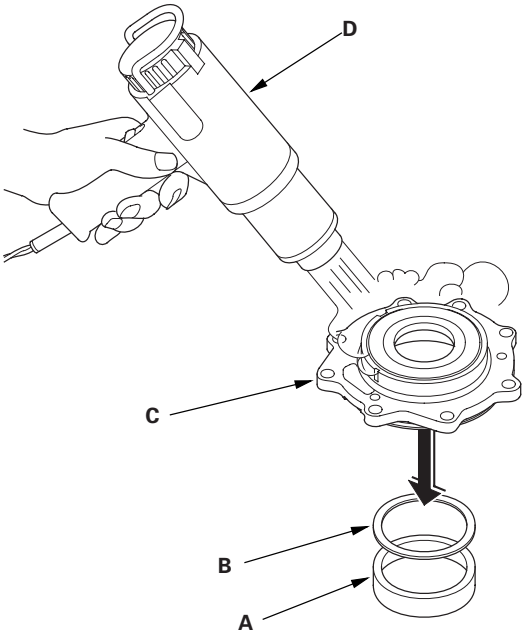
(cont'd)

Reassembly (cont'd)

35. Remove the transfer cover.

36. If the measurement is out of standard, remove the bearing outer race (A) and the 80 mm thrust shim (B) from the transfer cover (C). If the bearing outer race is press-fitted, remove the bearing outer race by heating the cover to about 212 ℉ (100 ℃) with a heat gun (D). Do not heat the cover more than 212 ℉ (100 ℃).

    If the measurement is within the standard, go to step 41.

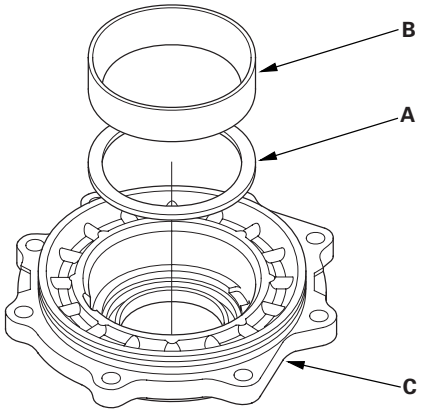


37. Measure the thickness of removed 80 mm thrust shim, and select a new 80 mm shim.

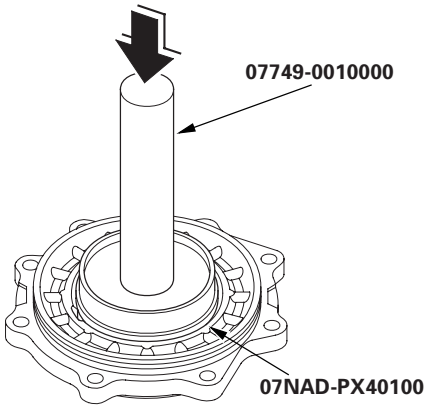
THRUST SHIM, 80 mm

Shim No.	Part Number	Thickness
A	41401-RDK-000	1.52 mm (0.060 in.)
B	41402-RDK-000	1.55 mm (0.061 in.)
C	41403-RDK-000	1.58 mm (0.062 in.)
D	41404-RDK-000	1.61 mm (0.063 in.)
E	41405-RDK-000	1.64 mm (0.065 in.)
F	41406-RDK-000	1.67 mm (0.066 in.)
G	41407-RDK-000	1.70 mm (0.067 in.)
H	41408-RDK-000	1.73 mm (0.068 in.)
I	41409-RDK-000	1.76 mm (0.069 in.)
J	41410-RDK-000	1.79 mm (0.070 in.)
K	41411-RDK-000	1.82 mm (0.072 in.)
L	41412-RDK-000	1.85 mm (0.073 in.)
M	41413-RDK-000	1.88 mm (0.074 in.)
N	41414-RDK-000	1.91 mm (0.075 in.)
O	41415-RDK-000	1.94 mm (0.076 in.)
P	41416-RDK-000	1.97 mm (0.078 in.)
Q	41417-RDK-000	2.00 mm (0.079 in.)
R	41418-RDK-000	2.03 mm (0.080 in.)
S	41419-RDK-000	2.06 mm (0.081 in.)
T	41420-RDK-000	2.09 mm (0.082 in.)
U	41421-RDK-000	2.12 mm (0.083 in.)
V	41422-RDK-000	2.15 mm (0.085 in.)
W	41423-RDK-000	2.18 mm (0.086 in.)
X	41424-RDK-000	2.21 mm (0.087 in.)
Y	41425-RDK-000	2.24 mm (0.088 in.)
Z	41426-RDK-000	2.27 mm (0.089 in.)
AA	41427-RDK-000	2.30 mm (0.091 in.)
AB	41428-RDK-000	2.33 mm (0.092 in.)
AC	41429-RDK-000	2.36 mm (0.093 in.)
AD	41430-RDK-000	2.39 mm (0.094 in.)
AE	41431-RDK-000	2.42 mm (0.095 in.)
AF	41432-RDK-000	2.45 mm (0.096 in.)
AG	41433-RDK-000	2.48 mm (0.098 in.)
AH	41434-RDK-000	2.51 mm (0.099 in.)
AI	41435-RDK-000	2.54 mm (0.100 in.)
AJ	41436-RDK-000	2.57 mm (0.101 in.)
AK	41437-RDK-000	2.60 mm (0.102 in.)
AL	41438-RDK-000	2.63 mm (0.104 in.)
AM	41439-RDK-000	2.66 mm (0.105 in.)

38. Install the 80 mm trust shim (A) and bearing outer race (B) in the transfer cover (C). If you heated the cover, let it cool to room temperature before installing the thrust shim.

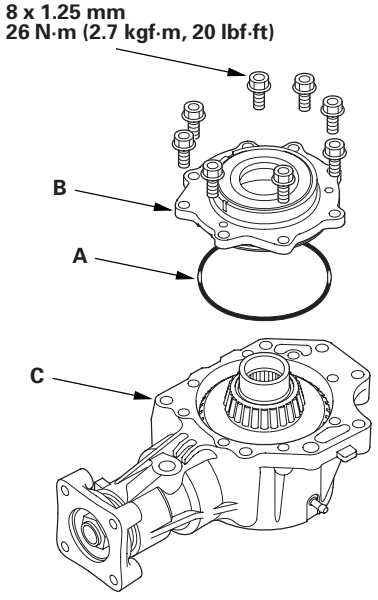


39. Drive the outer race securely in the cover with the driver and attachment (78 x 80 mm), so there is no clearance between the outer race, thrust shim, and cover.



40. After replacing the 80 mm thrust shim, recheck and make sure that the total starting torque is within the specification.

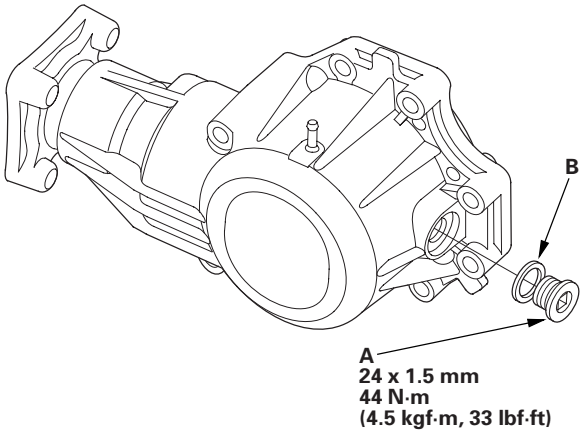
41. Install a new O-ring (A) on the transfer cover (B), then install the cover on the transfer housing (C).



42. Remove the filler plug (A), then refill the transfer with transfer fluid (hypoid gear oil) through the filler hole. Use an SAE 90 or SAE 80W—90 viscosity hypoid gear oil, API classified GL4 or GL5 only.

Viscosity
SAE 90: Above 0 °F (—18 °C)
SAE 80W—90: Below 0 °F (—18 °C)

Hypoid Gear Oil Capacity: 0.45 L (0.48 US qt)



43. Install the filler plug with a new sealing washer (B).

Rear Differential

Rear Differential

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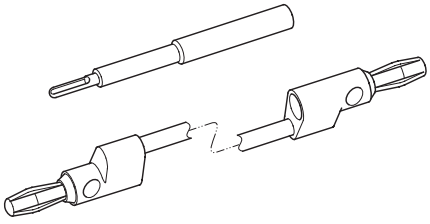
Special Tools

Ref. No.	Tool Number	Description	Qty
①	07SAZ-001000A	Backprobe Set	2
②	07AAD-S9VA000	Driveshaft Remover	1



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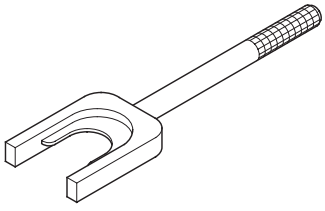

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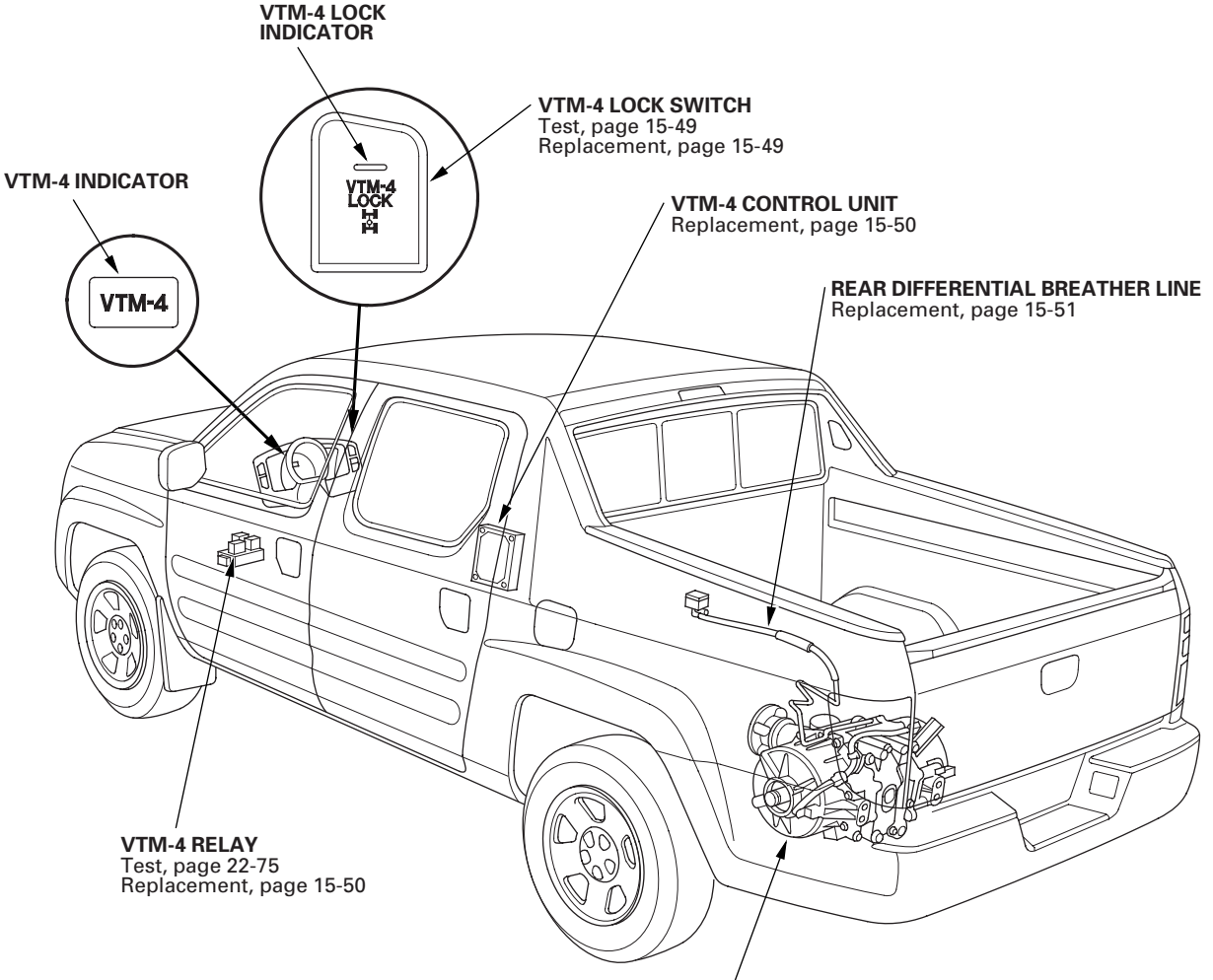
Component Location Index



General Troubleshooting Information

VTM-4 Indicator

The VTM-4 indicator comes on under certain conditions even if the 4WD system is working normally. Here are some examples:

- When you use high-powered wireless equipment such as a CB or Ham radio in the vehicle.
- When you keep spinning the front wheels while the vehicle is stuck in sand, mud, snow, etc.
- When the battery voltage suddenly drops below 8 volts or rises above 16 volts.

After the VTM-4 indicator comes on, it stays on until you turn the ignition switch off.

Diagnostic Trouble Code (DTC)

- The VTM-4 control unit can memorize up to seven different DTCs. The system displays the DTCs by blinking the VTM-4 indicator. Multiple DTCs are displayed in the order they occured, beginning with the most recent.
- If the same DTC is detected more than once, the most recent DTC is written over the earlier one. Therefore, when the same problem is detected more than once, it is memorized as a single DTC.
- The DTCs are memorized in the EEPROM (non-volatile memory). Therefore, the memorized DTCs are not cleared when the battery is disconnected or the VTM-4 control unit is disconnected.
- If there is a problem in the central processing unit (CPU) of the VTM-4 control unit, the VTM-4 indicator comes on, but no DTC is memorized.

Self-diagnosis

When a problem is detected by self-diagnosis, the system does the following:

- Turns the VTM-4 indicator on.
- Memorizes the DTC.
- Stops 4WD control and puts the vehicle back in 2WD (FWD).
- Reduces engine torque to suit the driving conditions when the abnormality was detected.

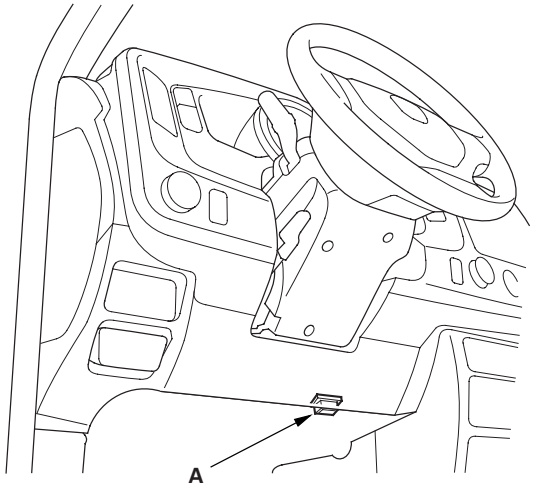
Initialization of the VTM-4 Control Unit

Whenever the VTM-4 control unit is replaced, it must be initialized to make the 4WD system function.
There are two methods used to initialize the VTM-4 control unit. The recommended method is to use the Honda Diagnostic System (HDS) with the appropriate software plugged into the data link connector (DLC).

The other method is to initialize the VTM-4 control unit manually.

Initialization with the HDS

1. With the ignition switch OFF, connect the HDS to the data link connector (DLC) (A) (located behind the driver's dashboard lower cover).



2. Make sure the HDS communicates with the VTM-4 control unit. If it doesn't go to the DLC circuit troubleshooting (see page 11-194).

3. Turn the ignition switch ON (II), and follow the prompts on the HDS screen.

   NOTE: See the HDS user's manual for specific instruction.

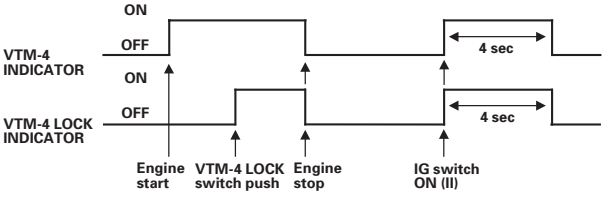
Manual Initialization

1. Start the engine (the VTM-4 indicator comes on, and the VTM-4 LOCK switch indicator is off).

2. Apply the brakes, and move the shift lever to either R, 1, or 2, then push the VTM-4 LOCK switch (the VTM-4 indicator stays on, and the VTM-4 LOCK switch indicator is on). The 4WD system is now in lock mode.

3. Turn the ignition switch OFF.

4. Turn the ignition switch ON (II) (the VTM-4 indicator and the VTM-4 LOCK indicator both come on for 4 seconds, then go off). The VTM-4 control unit is initialized.



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General Troubleshooting Information (cont'd)

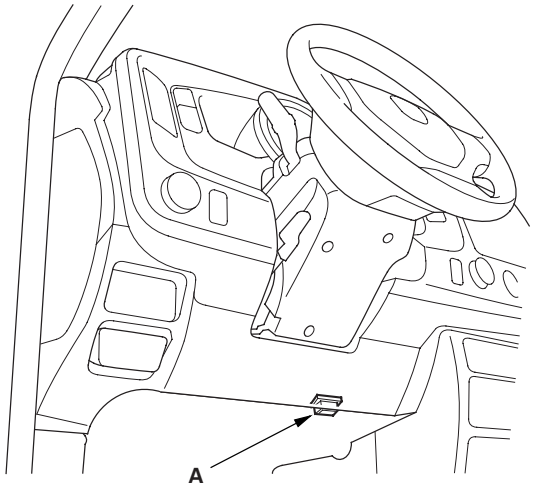
How to Check for DTCs

When the VTM-4 control unit senses an abnormality in the input or output systems, the VTM-4 indicator in the gauge control module will usually come on, and the malfunction indicator lamp (MIL), the D5 indicator, and/or the VSA indicator may also come on.
There are two methods used to check for DTCs. The recommended method is to use the HDS with the appropriate software plugged into the data link connector (DLC).

The other method is to connect the service check signal (SCS) circuit with the HDS. When the data link connector (DLC) is connected to the HDS, the VTM-4 indicator will blink the diagnostic trouble code (DTC) when the ignition switch is turned ON (II) and the SCS circuit is connected to body ground.

HDS Method

1. With the ignition switch OFF, connect the HDS to the data link connector (DLC) (A) (located behind the driver's dashboard lower cover).



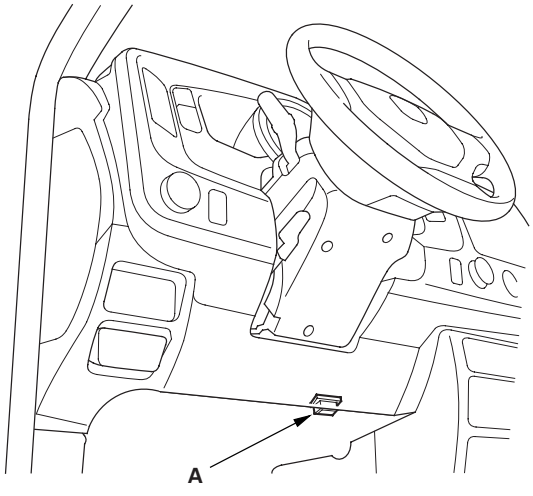
2. Make sure the HDS communicates with the VTM-4 control unit. If it doesn't go to the DLC circuit troubleshooting (see page 11-194).
3. Turn the ignition switch ON (II), and follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC(s), refer to the DTC Troubleshooting.

   NOTE: See the HDS user's manual for specific instruction.

4. If there are fuel and emissions DTCs, A/T DTCs, or VSA DTCs at the same time, troubleshoot the fuel and emissions DTCs first, then A/T DTCs second, then VSA third, and then VTM-4 last.
5. After recording the DTCs, clear all DTCs.
6. Test-drive the vehicle for several minutes in 4WD mode, and check for DTCs. If the DTC returns, refer to the DTC Troubleshooting. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all connectors and terminals in the circuit are tight.

Service Check Signal Circuit (SCS) Method

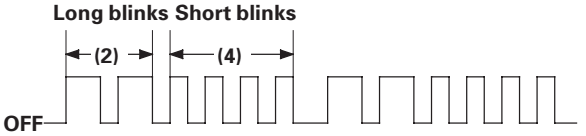
1. Park the vehicle on level ground. Shift to P, then turn off the engine.
2. Release the parking brake pedal.
3. With the ignition switch OFF, connect the HDS to the data link connector (DLC) (A) (located behind the driver's dashboard lower cover).



4. Short the SCS circuit to body ground with the HDS.

5. Turn the ignition switch ON (II), and observe the VTM-4 indicator.

   NOTE: Codes above 10 are indicated by a series of long and short blinks. One long blink equals 10 short blinks. Add the long and short blinks together to determine the code. After determining the code, refer to the DTC Troubleshooting.



See DTC 24

6. Record all the DTC(s), then refer to the DTC Troubleshooting to determine the meaning of each DTC.

7. Clear the DTCs from the VTM-4 control unit memory.

8. If the MIL, D5 indicator, or the VSA indicator all come on at the same time, troubleshoot the cause for the MIL first, then A/T DTCs second, then VSA third, and then VTM-4 last.

9. Test-drive the vehicle for several minutes in 4WD mode, and check for DTCs.
   If the DTC returns, refer to the DTC Troubleshooting.
   If the DTC does not return, there was an intermittent problem within the circuit. Make sure all connectors and terminals in the circuit are tight.

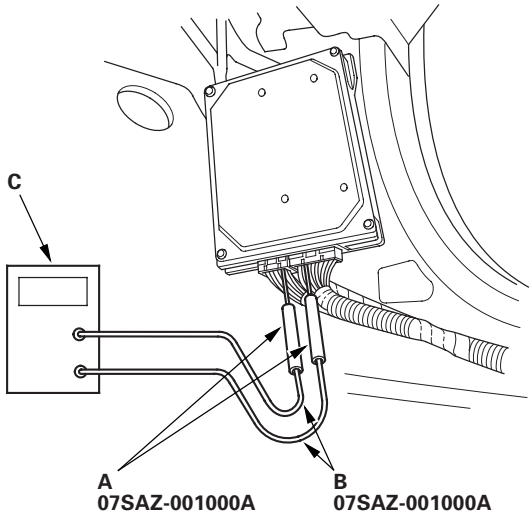
How to Troubleshoot Circuits at the VTM-4 Control Unit

Special Tools Required
Backprobe set 07SAZ-001000A (two required)

1. Remove the right side kick panel (see page 20-60) to gain access tothe VTM-4 control unit.

2. Inspect the circuit on the VTM-4 control unit according to the DTC Troubleshooting using the special tools and a digital multimeter or an analog circuit tester.

3. Connect the backprobe adapters (A) to the stacking patch cords (B), and connect the cords to the multimeter or an analog circuit tester (C). Using the wire insulator as a guide for the contoured-tip of the backprobe adapter, gently slide the tip into the connector from the wire side until it comes in contact with the terminal end of the wires.



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General Troubleshooting Information (cont'd)

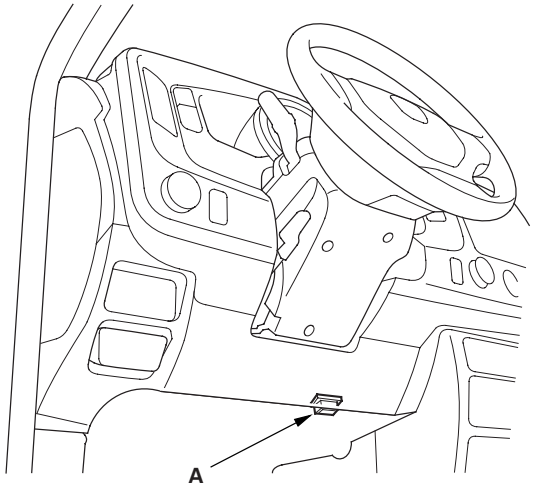
How to Clear the VTM-4 Control Unit Memory

There are two methods used to clear DTCs from the VTM-4 control unit memory. The recommended method is to use the HDS with the appropriate software plugged into the data link connector (DLC).

The other method is to connect the service check signal (SCS) connector with the HDS, and manually clear the memory.

HDS method

1. With the ignition switch OFF, connect the HDS to the data link connector (DLC) (A) (located behind the driver's dashboard lower cover).



2. Make sure the HDS communicates with the VTM-4 control unit. If it doesn't go to the DLC circuit troubleshooting (see page 11-194).

3. Turn the ignition switch ON (II), and follow the prompts on the HDS screen to clear the DTC(s).

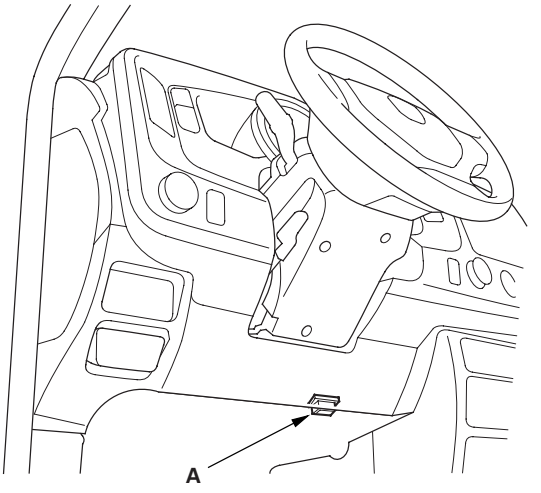
   NOTE: See the HDS user's manual for specific instruction.

Service Check Signal Circuit (SCS) Method

1. Park the vehicle on level ground. Shift to P, then turn off the engine.

2. Release the parking brake pedal.

3. With the ignition switch OFF, connect the HDS to the data link connector (DLC) (A) (located behind the driver's dashboard lower cover).



4. Short the SCS circuit to body ground with the HDS.

5. Turn the ignition switch ON (II).

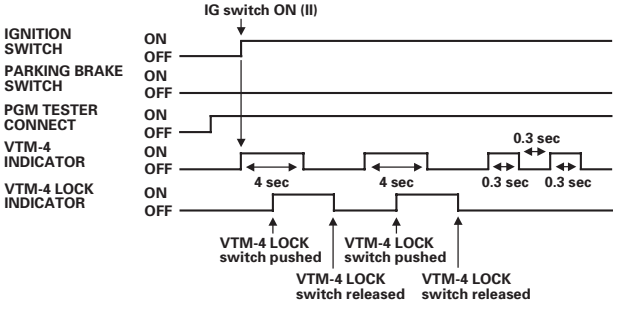
6. The VTM-4 indicator comes on and stays on for 4 seconds. Press and hold the VTM-4 LOCK swtich while the VTM-4 indicator is on.

7. When the VTM-4 indicator goes off, release the VTM-4 LOCK switch.

8. The VTM-4 indicator comes on and stays on for 4 seconds. Press and hold the VTM-4 LOCK switch while the VTM-4 indicator is on.

9. When the VTM-4 indicator goes off, release the VTM-4 LOCK switch. The VTM-4 indicator will blink twice quickly to confirm that the DTCs have been cleared from the VTM-4 control unit memory.

   NOTE: If the VTM-4 indicator does not blink twice quickly, the memory has not been cleared. Turn the ignition switch OFF, then repeat steps 5 through 9.



10. Turn the ignition switch OFF, then disconnect the HDS from the data link connector (DLC).

How to End a Troubleshooting Session (required after any troubleshooting)

1. Turn the ignition switch OFF.
2. Clear the DTCs from the VTM-4 control unit memory.
3. Disconnect the HDS from the data link connector (DLC).
4. Verify that the problem has been repaired; test-drive the vehicle for several minutes in 4WD mode.

DTC Troubleshooting Index

DTC*	VTM-4 Indicator	Detection Item	Possible Cause	Page
21-1	ON	Left-front wheel sensor	• Sensor is defective • Open or short in the wire harness • VTM-4 control unit is defective • VSA modulator-control unit is defective	(see page 15-20)
22-1	ON	Right-front wheel sensor		
23-1	ON	Left-rear wheel sensor		(see page 15-22)
24-1	ON	Right-rear wheel sensor		
26-1	ON	VSA modulator-control unit or wire harness	• Open or short in the wire harness from the VTM-4 control unit to VSA modulator • VSA modulator-control unit is defective	(see page 15-24)
37-1	ON	Engine RPM signal circuit	• Open or short in the wire harness • VTM-4 control unit or PCM is defective	(see page 15-25)
38-1	ON			
41-1	ON	CAN communication (PCM/VSA system)	• Open or short in the wire harness from the VTM-4 control unit to PCM/VSA • VTM-4 control unit or PCM is defective or VSA modulator-control unit is defective	(see page 15-27)
42-1	ON	Differential oil temperature sensor	• Sensor is defective • Open or short in the wire harness • VTM-4 control unit is defective	(see page 15-29)
43-1	ON			
44-1	ON	VTM-4 relay	• Relay is defective • Open or short in the wire harness • VTM-4 control unit is defective	(see page 15-30)
51-1	ON	Left clutch electromagnetic coil	• Electromagnetic coil is defective • Open or short in the wire harness • VTM-4 control unit is defective	(see page 15-32)
52-1	ON			
53-1	ON			
54-1	ON			
55-1	ON	Right clutch electromagnetic coil	• Electromagnetic coil is defective • Open or short in the wire harness • VTM-4 control unit is defective	(see page 15-34)
56-1	ON			
57-1	ON			
58-1	ON			
59-1	ON	Right/left clutch electromagnetic coil power supply	• Low battery voltage • Fault in the charging system • VTM-4 control unit is defective	(see page 15-37)
73-1	ON	MAP (manifold absolute pressure) sensor or PCM	• Fault in the PCM system/MAP (manifold absolute pressure) sensor is defective	(see page 15-37)
76-1	ON	Rear differential clutch warning system	• Sensor is defective • Open or short in the wire harness • VTM-4 control unit is defective • VSA modulator-control unit is defective	(see page 15-38)
77-1	ON	PCM	• PCM is defective	(see page 15-40)
78-1	ON	VTM-4 control unit	• VTM-4 control unit is defective	(see page 15-40)
41-2	ON	CAN communication (PCM/VSA system)	• Open or short in the wire harness from VTM-4 control unit to PCM (or VSA)	(see page 15-27)
42-2	ON	Differential oil temperature sensor	• Sensor is defective • Open or short in the wire harness • VTM-4 control unit is defective	(see page 15-29)
21-2	ON	Left-front wheel sensor	• Sensor is defective • Open or short in the wire harness • VTM-4 control unit is defective • VSA modulator-control unit is defective	(see page 15-20)
22-2	ON	Right-front wheel sensor		
23-2	ON	Left-rear wheel sensor		(see page 15-22)
24-2	ON	Right-rear wheel sensor		
53-2	ON	Left or Right clutch electromagnetic coil	• Electromagnetic coil is defective • Open or short in the wire harness • VTM-4 control unit is defective	(see page 15-32) (see page 15-34)

*: DTCs are indicated by the VTM-4 indicator when the data link connector (DLC) is connected to the HDS.

Symptom Troubleshooting Index

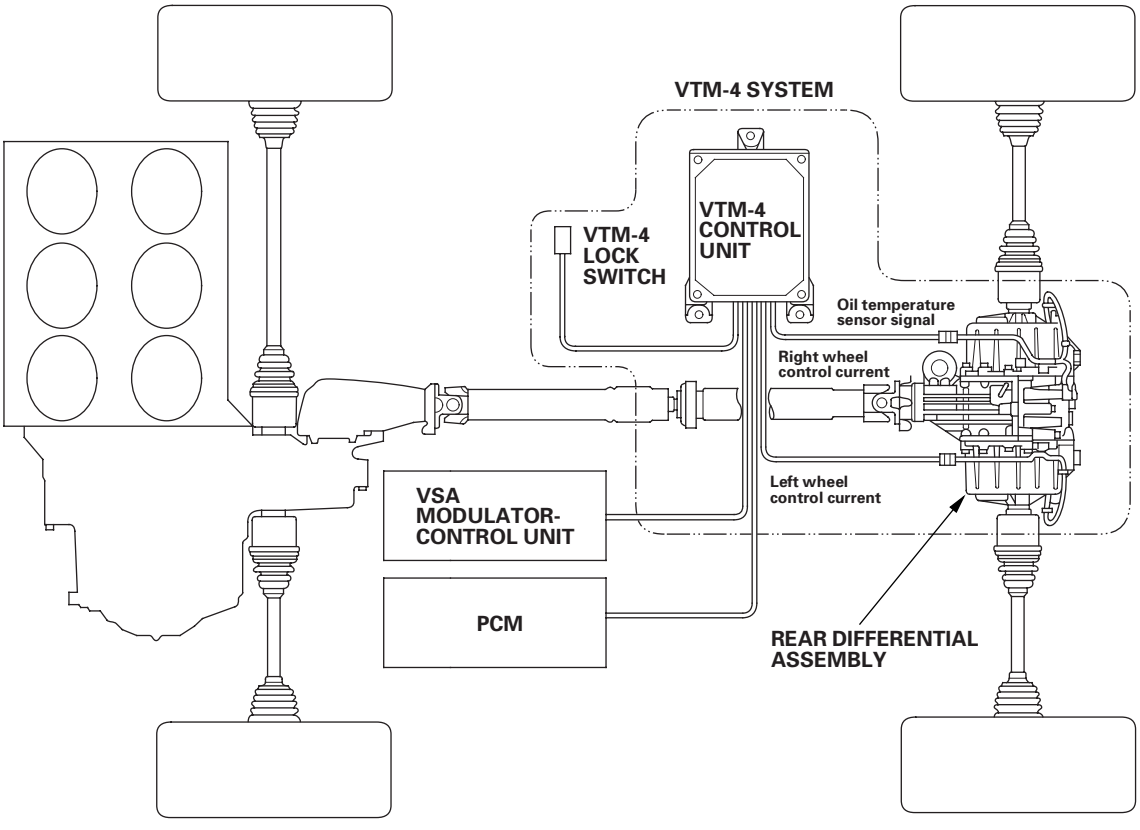
Symptom	Diagnostic Procedure	Also check for
The VTM-4 indicator comes on, but no DTCs are stored in any system: VTM-4, VSA, or PCM	Symptom troubleshooting (see page 15-41).	
The VTM-4 indicator does not come on	Symptom troubleshooting (see page 15-42).	
The VTM-4 LOCK indicator does not come on when the VTM-4 LOCK switch is pressed	Symptom troubleshooting (see page 15-43).	
The VTM-4 LOCK indicator comes on when the ignition switch is turned ON (II) and does not go off	Symptom troubleshooting (see page 15-45).	
The VTM-4 LOCK indicator does not come on for about 4 seconds when the ignition switch is turned ON (II)	Symptom troubleshooting (see page 15-46).	
Noise and judder when turning at full lock	1. Drain and refill the rear differential with new VTM-4 fluid (see page 15-47). 2. Do the Differential Function Test (see page 15-48). 3. Repeat steps 1 and 2. 4. Drain the rear differential, then install new drain plug washers, and refill with new VTM-4 fluid (see page 15-47).	
Clunk noise and then a bump when backing and turning	Normal clutch engagement at throttle opening	

System Description

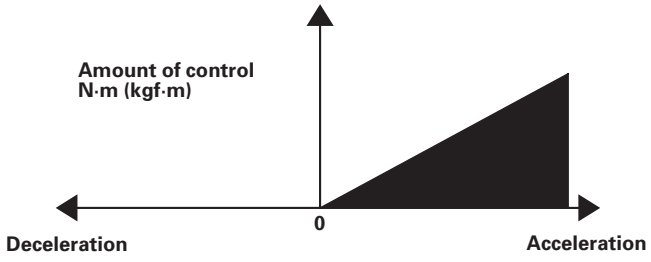
This vehicle is equipped with a rear differential system called the variable torque management 4WD (VTM-4) system. The VTM-4 control unit controls the current flowing through electromagnetic coils to engage and disengage the right and left clutches in the rear differential assembly.
The operation of the VTM-4 system consists of the following functions:

- Vehicle acceleration torque control (VATC)
- Limited slip differential (LSD)
- Lock control

These functions automatically combine to distribute driving torque between the front and rear wheels when the vehicle is being accelerated or when wheels are slipping. When the vehicle speed is about 18 mph (30 km/h) or below, and the transmission is in R, 2, or 1, the system will manually engage the rear differential clutches when the VTM-4 LOCK switch is pressed. By design, in lock mode, the torque is reduced gradually at speeds above 6 mph (10 km/h) to minimize the load on the 4WD system.
The VTM-4 control unit has a fail-safe function, a self-diagnosis function, and a provision to communicate with the HDS.

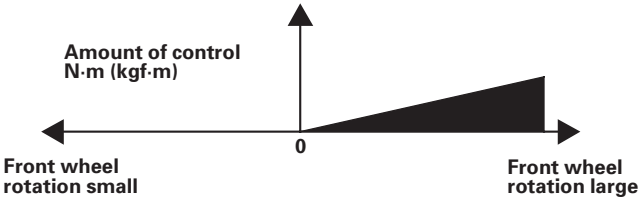


• VATC Control
The torque to be delivered to the rear wheels is calculated based on the acceleration of the vehicle calculated in the VTM-4 control unit.



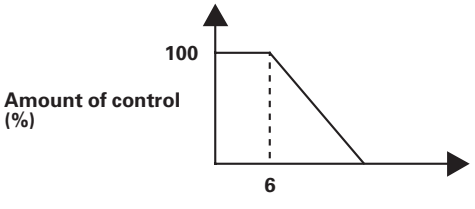
Acceleration of vehicle (calculation from driving torque)

• LSD Control
The torque to be delivered to the rear wheels is calculated based on the differences in speed and acceleration between the front and rear wheels.



Rotation difference between front wheel and rear wheel

• LOCK Control
Rear differential clutch lock control is done by pushing the VTM-4 LOCK switch manually when the shift lever is in R, 1, or 2.

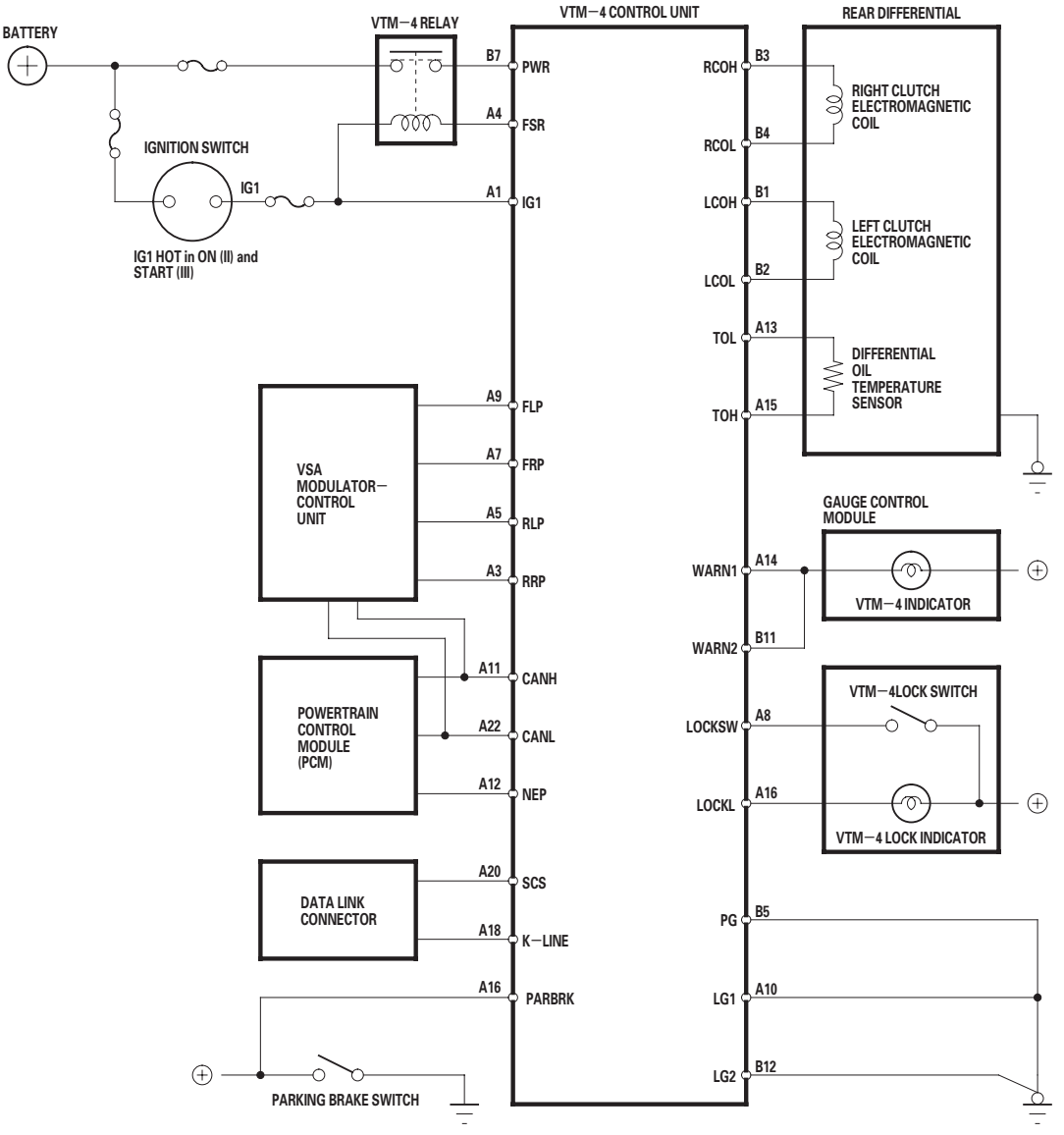


(cont'd)

System Description (cont'd)

Electronic Control System

VTM-4 Control Unit Electrical Connections

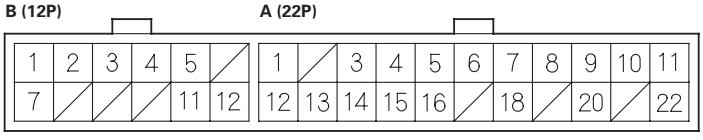


VTM-4 Control Unit Inputs and Outputs

The VTM-4 control unit terminal voltage and measuring conditions for the 4WD control system are shown.

NOTE: Measure voltage with the connectors connected.

VTM-4 Control Unit Connector Terminal Locations



Wire side of female terminals

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Measurement	
				Conditions	Voltage
A1	YEL	IG1 (Ignition 1)	Power supply for activating the system	Ignition switch ON (II)	Battery voltage
A3	GRY/RED	RRP (Rear right pulse)	Detect right-rear wheel sensor signal	Turn wheel at 1 rotation/second	There should be 0—about 5 V repeatedly. (A digital voltmeter reads about 2.5 V when the wheel is turning faster.)
A4	ORN/GRN	FSR (Fail-safe relay)	Drives VTM-4 relay	Ignition switch ON (II)	Battery voltage
				Engine running	Less than 1 V
A5	GRY/YEL	RLP (Rear left pulse)	Detects left-rear wheel sensor signal	Turn wheel at 1 rotation/second	There should be 0—about 5 V repeatedly. (A digital voltmeter reads about 2.5 V when the wheel is turning faster.)
A6	GRN/ORN	PARBRK (Parking brake)	Detects parking brake signal	Parking brake on	Less than 2 V
				Parking brake off	Battery voltage
A7	LT GRN	FRP (Front right pulse)	Detects right-front wheel sensor signal	Turn wheel at 1 rotation/second	There should be 0—about 5 V repeatedly. (A digital voltmeter reads about 2.5 V when the wheel is turning faster.)
A8	BRN/WHT	LOCKSW (LOCK switch)	Detects VTM-4 LOCK switch signal	Ignition switch ON (II)	Less than 1 V
				VTM-4 LOCK mode	Battery voltage
A9	WHT/RED	FLP (Front left pulse)	Detects left-front wheel sensor signal	Turn wheel at 1 rotation/second	There should be 0—about 5 V repeatedly. (A digital voltmeter reads about 2.5 V when the wheel is turning faster.)

(cont'd)

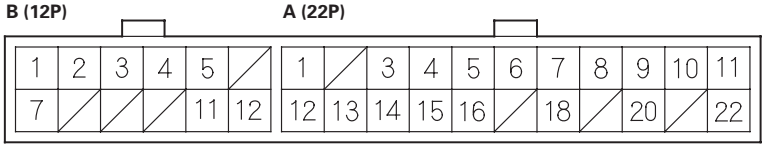
System Description (cont'd)

VTM-4 Control Unit Inputs and Outputs

The VTM-4 control unit terminal voltage and measuring conditions for the 4WD control system are shown.

NOTE: Measure voltage with the connectors connected.

VTM-4 Control Unit Connector Terminal Locations

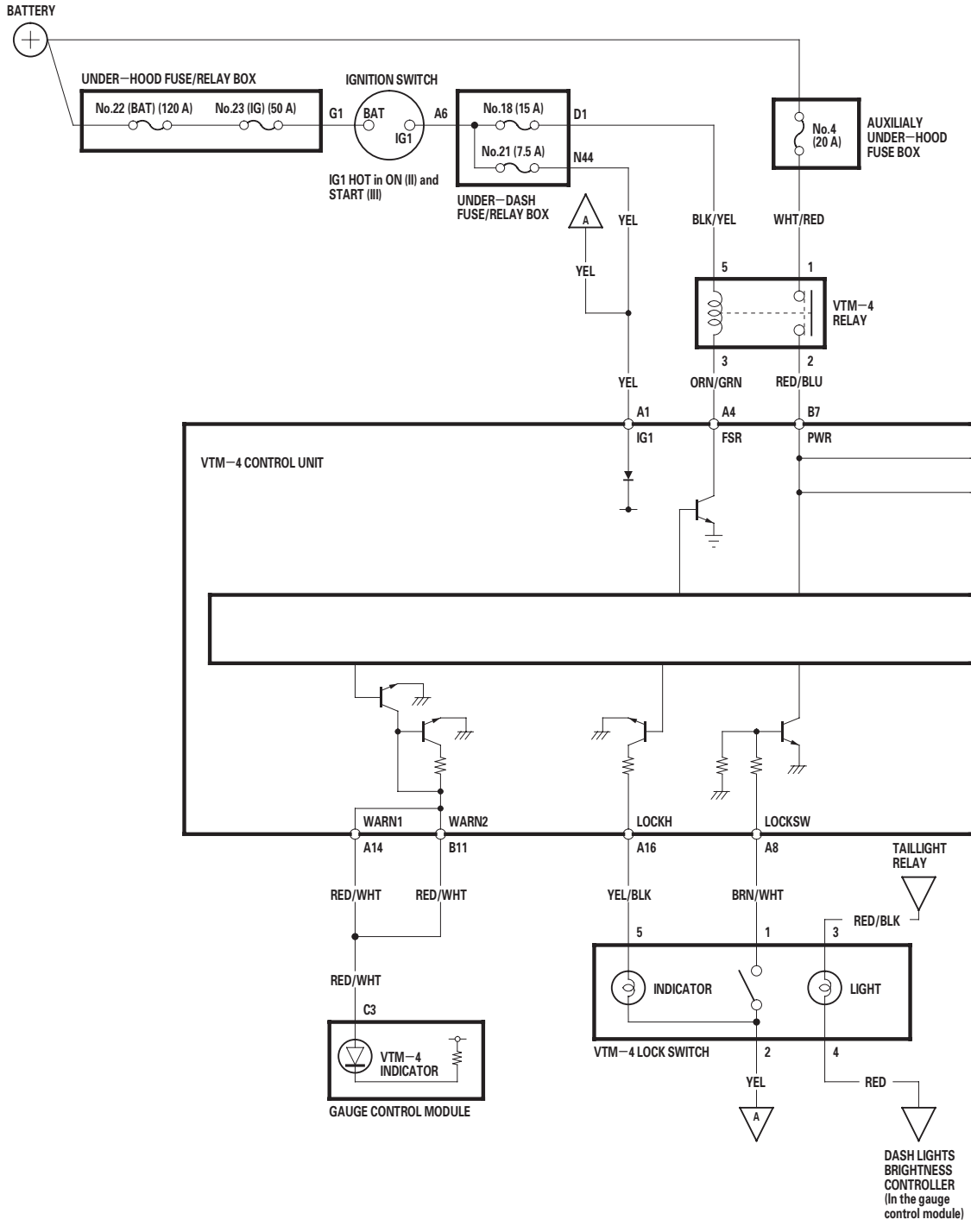


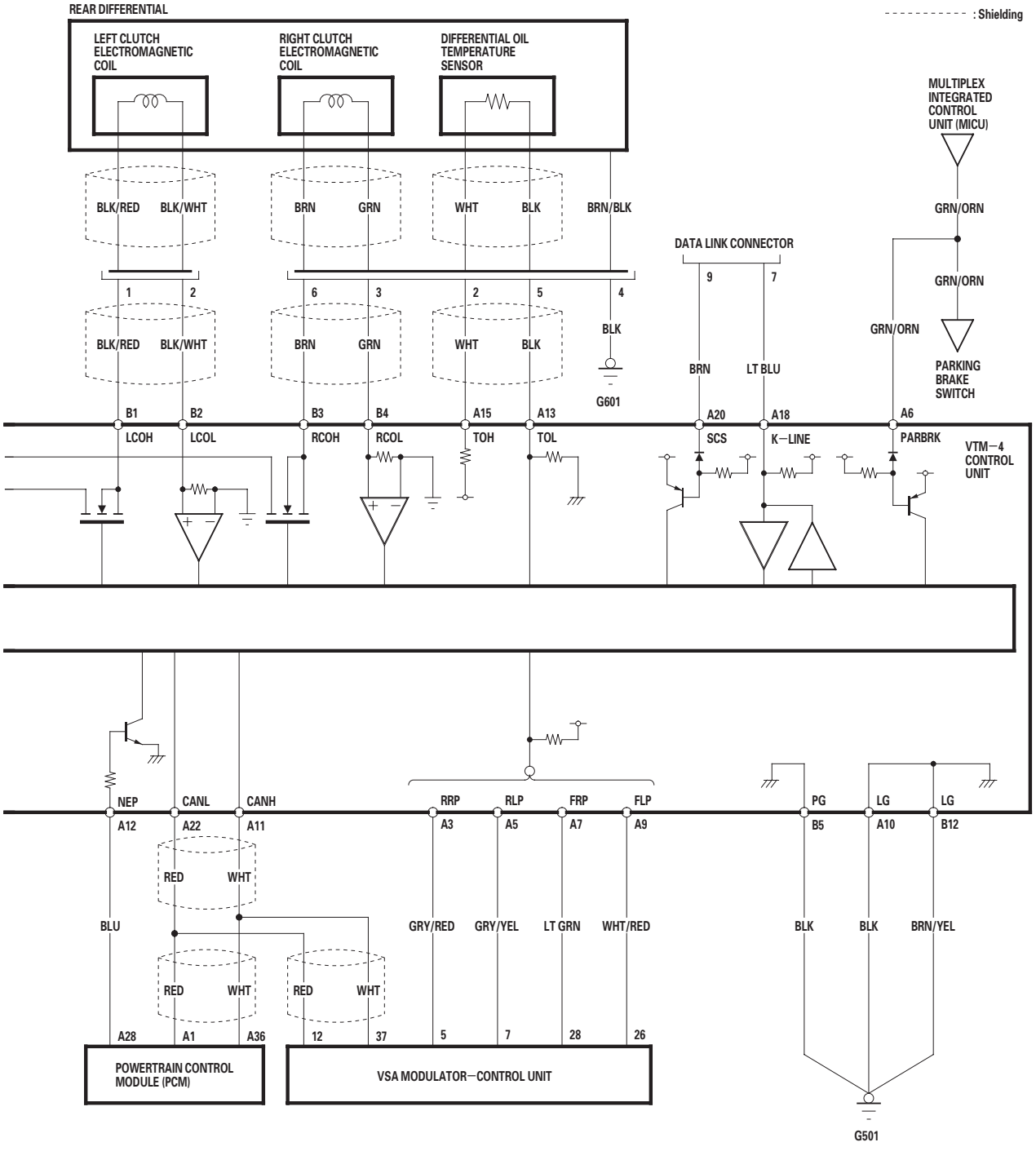
Wire side of female terminals

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Measurement	
				Conditions	Voltage
A10	BLK	LG1 (Logic ground)	Ground		Less than 0.5 V
A11	WHT	CANH (CAN communication signal high)	CAN communication signal	Ignition switch ON (II)	About 2.5 V (pulses)
A12	BLU	NEP (Engine revolution)	Detects engine revolution signal	Ignition switch ON (II)	Above 8 V
				Engine running at 1,000 rpm	5—8 V
A13	BLK	TOL (Temperature oil low)	Detects differential oil temperature sensor signal	Check at normal temperature with the ignition switch ON (II)	1—3.6 V
A14	RED/WHT	WARN1 (Warning 1)	Drives VTM-4 indicator	VTM-4 indicator on	Less than 4 V
				VTM-4 indicator off	Battery voltage
A15	WHT	TOH (Temperature oil high)	Power supply for differential oil temperature sensor	Check at normal temperature with the ignition switch ON (II)	4—5 V
A16	YEL/BLK	LOCKL (Lock lamp)	Drives VTM-4 LOCK indicator	VTM-4 LOCK indicator on	Less than 4 V
				VTM-4 LOCK indicator off	Battery voltage
A18	LT BLU	K-LINE	Communication signal to HDS	Ignition switch ON (II) (Not connected to HDS)	About 9.0 V
A20	BRN	SCS (Service check signal)	Detects service check connector signal	SCS circuit shorted	Less than 2 V
				SCS circuit opened	About 5 V
A22	RED	CANL (CAN communication signal low)	CAN communication signal	Ignition switch ON (II)	About 2.5 V (pulses)

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Measurement	
				Conditions	Voltage
B1	BLK/RED	LCOH (Left coil high)	Drives left clutch electromagnetic coil (positive)	Ignition switch ON (II)	Less than 1 V
				Engine running	Less than 1 V
				VTM-4 LOCK mode	Above 3 V
B2	BLK/WHT	LCOL (Left coil low)	Drives left clutch electromagnetic coil (negative)	Ignition switch ON (II)	Less than 1 V
				Engine running	Less than 1 V
				VTM-4 LOCK mode	Less than 1 V
B3	BRN	RCOH (Right coil high)	Drives right clutch electromagnetic coil (positive)	Ignition switch ON (II)	Less than 1 V
				Engine running	Less than 1 V
				VTM-4 LOCK mode	Above 3 V
B4	GRN	RCOL (Right coil low)	Drives right clutch electromagnetic coil (negative)	Ignition switch ON (II)	Less than 1 V
				Engine running	Less than 1 V
				VTM-4 LOCK mode	Less than 1 V
B5	BLK	PG (Power ground)	Ground		Less than 0.5 V
B7	RED/BLU	PWR (Power)	Power supply for VTM-4 control unit	10 seconds after ignition switch ON (II)	Less than 3 V
				Engine running	Battery voltage
				VTM-4 LOCK mode	Battery voltage
B11	RED/WHT	WARN2 (Warning 2)	Drives VTM-4 indicator	VTM-4 indicator on	Less than 4 V
				VTM-4 indicator off	Battery voltage
B12	BLK	LG2 (Logic ground)	Ground		Less than 0.5 V

Circuit Diagram




REAR DIFFERENTIAL
: Shielding
LEFT CLUTCH ELECTROMAGNETIC COIL
RIGHT CLUTCH ELECTROMAGNETIC COIL
DIFFERENTIAL OIL TEMPERATURE SENSOR
MULTIPLEX INTEGRATED CONTROL UNIT (MICU)
BLK/RED
BLK/WHT
BRN
GRN
WHT
BLK
BRN/BLK
GRN/ORN
DATA LINK CONNECTOR
PARKING BRAKE SWITCH
G601
B1
B2
B3
B4
A15
A13
A20
A18
A6
LCOH
LCOL
RCOH
RCOL
TOH
TOL
SCS
K—LINE
PARBRK
VTM—4 CONTROL UNIT
NEP
CANL
CANH
RRP
RLP
FRP
FLP
PG
LG
A12
A22
A11
A3
A5
A7
A9
B5
A10
B12
RED
WHT
BLU
GRY/RED
GRY/YEL
LT GRN
WHT/RED
BRN/YEL
A28
A1
A36
12
37
5
7
28
26
POWERTRAIN CONTROL MODULE (PCM)
VSA MODULATOR—CONTROL UNIT
G501

DTC Troubleshooting

DTC 21-1, 21-2, 22-1, 22-2: Front Wheel Sensors

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

   Is DTC 21-1, 21-2, and/or 21-2 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time.■
4. Check for DTCs in the VSA system with the HDS.

   Are there any VSA DTCs indicated?

   YES—Go to the indicated DTCs troubleshooting.■

   NO—Go to step 5.
5. Turn the ignition switch OFF.
6. Raise the vehicle, and make sure it is securely supported.
7. Spin the rear wheels by hand, and check for rear brake drag.

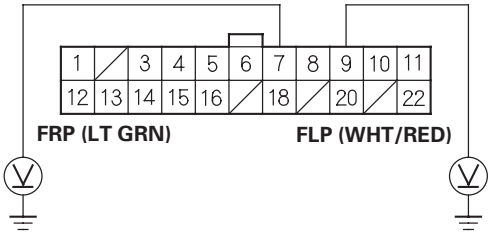
   Are the rear brakes dragging?

   YES—Repair cause of rear brake drag, and retest.■

   NO—Go to step 8.
8. Turn the ignition switch ON (II).
9. Measure voltage between the No. 7 and No. 9 terminals of the VTM-4 control unit connector A (22P) and body ground while rotating the appropriate wheel (1 rotation/second).

DTC	Appropriate Terminal
21 (Left-front)	A9
22 (Right-front)	A7

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Is there about 2 V to 3 V?

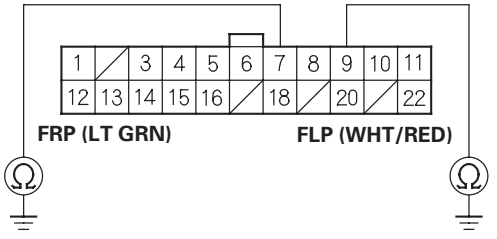
YES—Go to step 16.

NO—Go to step 10.

10. Turn the ignition switch OFF.
11. Disconnect the VTM-4 control unit connector A (22P) and the VSA modulator-control unit 46P connector.

12. Check for continuity between the terminals No. 7 and No. 9 of VTM-4 control unit connector A (22P) and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

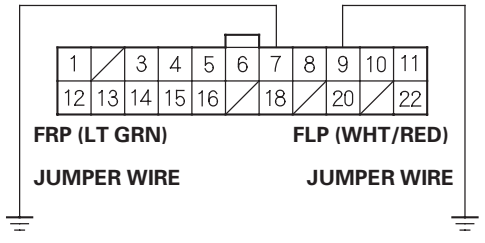
Is there continuity?

YES—Repair short to ground in the wire between the VTM-4 control unit (A7 and/or A9) and the VSA modulator-control unit. ■

NO—Go to step 13.

13. Connect the terminals No. 7 and No. 9 of VTM-4 control unit connector A (22P) to body ground with the jumper wires.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



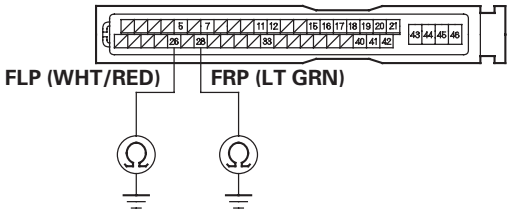
Wire side of female terminals

14. Disconnect the VSA modulator-control unit 46P connector.

15. Check for continuity between the VSA modulator-control unit 46P connector terminals and body ground.

Appropriate wheel	Appropriate Terminal
	VSA modulator-control unit
Right-front	28
Left-front	26

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 16.

NO—Repair open in the wire between the VTM-4 control unit (A7 and/or A9) and the VSA modulator-control unit. ■

16. Check for poor connections or loose terminals at the VTM-4 control unit and the VSA modulator-control unit connectors. If the connections are OK, replace the VTM-4 control unit, then go to step 17.

17. Test-drive the vehicle, and check for DTCs with the HDS.

Is DTCs 21-1, 21-2, and/or 22-2 indicated?

YES—Replace the VSA modulator-control unit (see page 19-94). ■

NO—The system is OK at this time. ■

DTC Troubleshooting (cont'd)

DTC 23-1, 23-2, 24-1, 24-2: Rear Wheel Sensors

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC (see page 15-8).
3. Start the engine, shift the transmission into D. Test-drive the vehicle at speeds over 25 mph (40 km/h), while keeping the engine speed below 2,500 rpm for at least 30 seconds.

   NOTE: Be careful not to overheat the rear differential clutch system.
4. Check for DTSs with the HDS.

   Is DTCs 23-1, 23-2, 24-1, and/or 24-2 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time.■
5. Check for DTCs in the VSA system with the HDS.

   Are there any VSA DTCs indicated?

   YES—Go to the indicated DTCs troubleshooting.■

   NO—Go to step 6.
6. Turn the ignition switch OFF.
7. Raise the vehicle, and make sure it is securely supported.
8. Spin the rear wheels by hand, and check for rear brake drag.

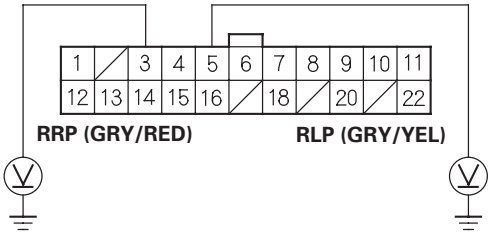
   Are the rear brakes dragging?

   YES—Repair cause of rear brake drag, and retest.■

   NO—Go to step 9.
9. Turn the ignition switch ON (II).
10. Measure voltage between the No. 3 and No. 5 terminals of the VTM-4 control unit connector A (22P) and body ground while rotating the appropriate wheel (1 rotation/second).

DTC	Appropriate Terminal
23 (Left-rear)	A5
24 (Right-rear)	A3

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Is there about 2 V to 3 V?

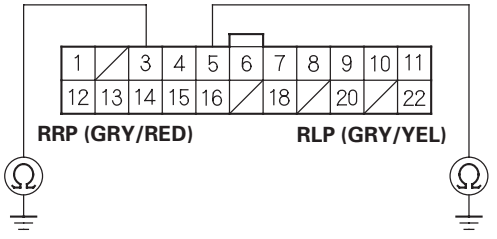
YES—Go to step 18.

NO—Go to step 11.

11. Turn the ignition switch OFF.
12. Disconnect the VTM-4 control unit connector A (22P) and the VSA modulator-control unit 46P connector.

13. Check for continuity between the same terminal of VTM-4 control unit connector A (22P) and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

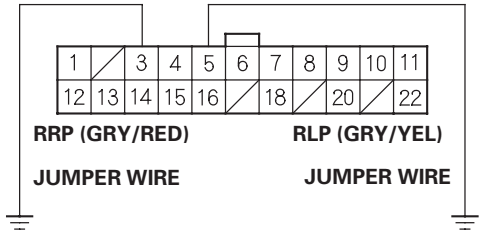
Is there continuity?

YES—Repair short to ground in the wire between the VTM-4 control unit (A3 and/or A5) and the VSA modulator-control unit. ■

NO—Go to step 14.

14. Connect the terminals No. 3 and No. 5 of VTM-4 control unit connector A (22P) to body ground with the jumper wires.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



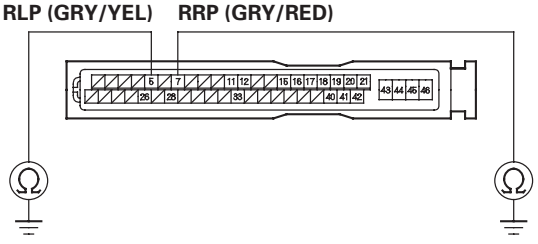
Wire side of female terminals

15. Disconnect the VSA modulator-control unit 46P connector.

16. Check for continuity between the VSA modulator-control unit 46P connector terminals and body ground.

Appropriate wheel	Appropriate Terminal
	VSA modulator-control unit
Right-rear	5
Left-rear	7

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 17.

NO—Repair open in the wire between the VTM-4 control unit (A3 and/or A5) and the VSA modulator-control unit.

17. Check for poor connection or loose terminals at the VTM-4 control unit and the VSA modulator-control unit connectors. If the connections are OK, replace the VTM-4 control unit, then go to step 18.

18. Start the engine, shift the transmission into D. Test-drive the vehicle at speeds over 25 mph (40 km/h), while keeping the engine speed below 2,500 rpm for at least 30 seconds.

NOTE: Be careful not to overheat the rear differential clutch system.

19. Check for DTCs with the HDS.

Is DTCs 23-1, 23-2, 24-1, and/or 24-2 indicated?

YES—Replace the VSA modulator-control unit (see page 19-94). ■

NO—The system is OK at this time. ■

DTC Troubleshooting (cont'd)

DTC 26-1: VSA Modulator-Control Unit or Wire Harness

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

   Is DTC 26-1 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■
4. Check for DTCs in the VSA system with the HDS.

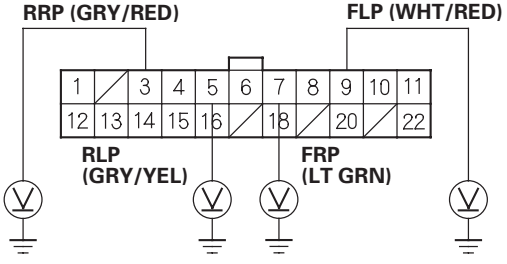
   Are there any VSA DTCs indicated?

   YES—Go to the indicated DTCs troubleshooting. ■

   NO—Go to step 5.
5. Turn the ignition switch OFF.
6. Raise the vehicle, and make sure it is securely supported.
7. Turn the ignition switch ON (II).
8. Measure voltage between the No. 3, No. 5, No. 7, and No. 9 terminals of the VTM-4 control unit connector A (22P) and body ground while rotating the appropriate wheel one rotation a second.

Appropriate wheel	Appropriate Terminal
Left-front	A9
Right-front	A7
Left-rear	A5
Right-rear	A3

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Are all four readings about 2 V to 3 V?

YES—Check for poor connections or loose terminals at the VTM-4 control unit. If the connections are OK, replace the VTM-4 control unit (see page 15-50). ■

NO—Check for poor connections or loose terminals between the VTM-4 control unit and the VSA modulator-control unit. If the connections are OK, replace the VSA modulator-control unit (see page 19-94). ■

DTC 37-1, 38-1: Engine RPM Signal Circuit

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC (see page 15-8).
3. Test-drive the vehicle, and check for DTSs with the HDS.

   Is DTCs 37-1 and/or 38-1 indicated?

   YES—Go to step 4.

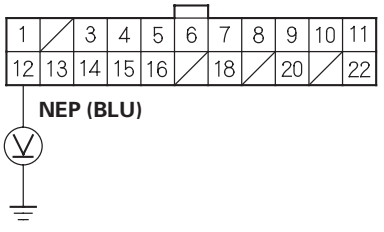
   NO—Intermittent failure, the system is OK at this time. ■
4. Check for DTC's in the PGM-FI DTCs indicated

   Are there any PGM-FI DTCs indicated?

   YES—Go to the indicated DTCs troubleshooting. ■

   NO—Go to step 5.
5. Turn the ignition switch OFF.
6. Disconnect VTM-4 control unit connector A (22P).
7. Turn the ignition switch ON (II).
8. Measure voltage between the No. 12 terminal of the VTM-4 control unit connector A (22P) and body ground with the engine running.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Condition	Voltage
Ignition switch ON (II)	Above 8 V
Engine speed at 1,000 rpm	5—8 V

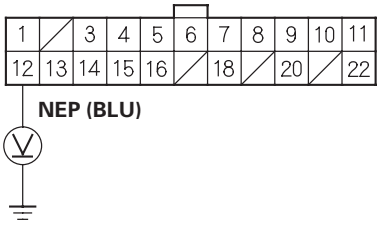
Is the voltage correct?

YES—Go to step 18.

NO—Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector A (44P).
12. Turn the ignition switch ON (II).
13. Measure voltage between the No. 12 terminal of the VTM-4 control unit connector A (22P) and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Is there voltage?

YES—Repair short to power in the wire between the VTM-4 control unit (A12) and the PCM (A28). ■

NO—Go to step 14.

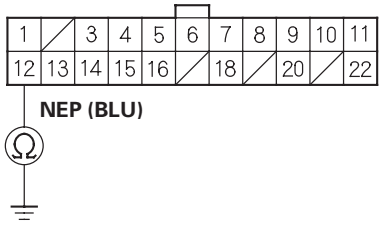
14. Turn the ignition switch OFF.

(cont'd)

DTC Troubleshooting (cont'd)

15. Check for continuity between the No. 12 terminal of the VTM-4 control unit connector A (22P) and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

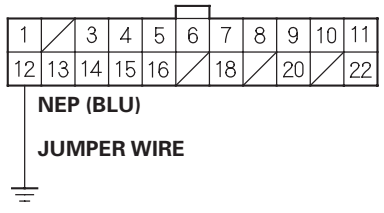
Is there continuity?

YES—Repair short to ground in the wire between the VTM-4 control unit (A12), and the PCM (A28). ■

NO—Go to step 16.

16. Connect the No. 12 terminal of the VTM-4 control unit connector A (22P) to body ground with a jumper wire.

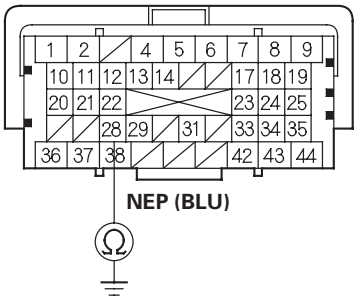
VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

17. Check for continuity between the No. 28 terminal of the PCM connector A (44P) and body ground.

PCM CONNECTOR A (44P)



Wire side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between the VTM-4 control unit (A12), and the PCM (A28). ■

18. Check for poor connections or loose terminals at the VTM-4 control unit, and the PCM connectors. If the connections are OK, replace the VTM-4 control unit, then go to step 19.

19. Test-drive the vehicle, and watch the VTM-4 indicator.

Is DTCs 37-1 and/or 38-1 indicated?

YES—Replace the PCM (see page 11-205). ■

NO—The system is OK at this time. ■

DTC 41-1, 41-2: CAN Communication (PCM/VSA System)

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

   Is DTCs 41-1 and/or 41-2 indicated?

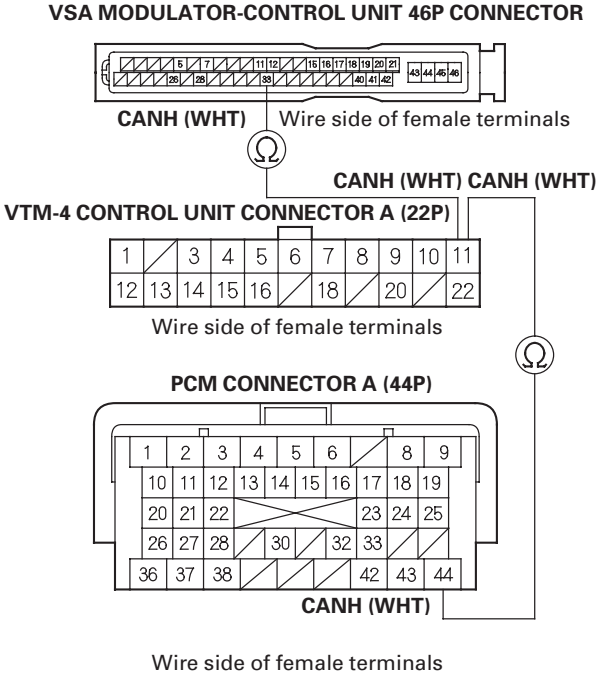
   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■
4. Check for a PCM/VSA system DTCs.

   Is there a DTCs?

   YES—Troubleshoot the indicated PCM/VSA DTCs. ■

   NO—Go to step 6.
5. Disconnect the VTM-4 control unit connector A (44P), and VSA modulator-control unit 46P connector.
6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect the PCM connector A (44P).
9. Check for continuity between the VTM-4 control unit connector A (22P) terminal No. 11 and PCM connector A (44P) terminal No. 44, and between the VTM-4 control unit connector A (22P) terminal No. 11 and VSA modulator-control unit 46P connector terminal No. 33.



Is there continuity?

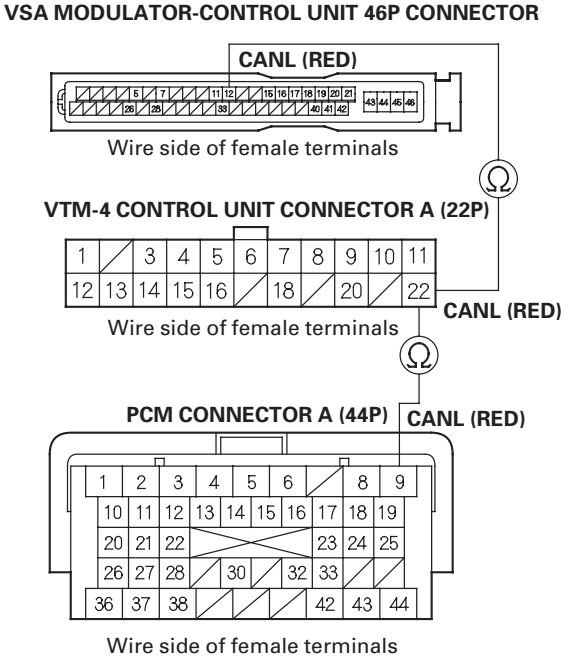
YES—Go to step 10.

NO—Repair open in the wire between the VTM-4 control unit (A11) and the PCM (A44), the VSA modulator-control unit. ■

(cont'd)

DTC Troubleshooting (cont'd)

10. Check for continuity between the VTM-4 control unit connector A (22P) terminal No. 22 and PCM connector A (44P) terminal No. 9, and between the VTM-4 control unit connector A (22P) terminal No. 22 and VSA modulator-control unit 46P connector terminal No. 12.



Is there continuity?

YES—Check for poor connections or loose terminals at the VTM-4 control unit, PCM, VSA modulator-control unit connectors. If the connections are OK, replace the VTM-4 control unit (see page 15-50). ■

NO—Repair open in the wire between the VTM-4 control unit (A22) and the PCM (A9), the VSA modulator-control unit. ■

DTC 42-1, 42-2, 43-1: Differential Oil Temperature Sensor

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

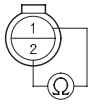
1. Turn the ignition switch ON (II).
2. Clear the DTC (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with in the HDS.

   Is DTCs 42-1, 42-2, and/or 43-1 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time.■
4. Turn the ignition switch OFF.
5. Remove the wire harness cover from the rear differential (see page 15-49).
6. Disconnect the 2P connector from the differential oil temperature sensor, then measure resistance between the No. 1 and No. 2 terminals of the differential oil temperature sensor.

DIFFERENTIAL OIL TEMPERATURE SENSOR 2P CONNECTOR



Terminal side of male terminals

Oil temperature	Resistance
32 ℉ (0 ℃)	5.82 k to 7.26 k Ω
86 ℉ (30 ℃)	1.53 k to 1.83 k Ω
212 ℉ (100 ℃)	148 to 162 Ω
284 ℉ (140 ℃)	52 to 61 Ω

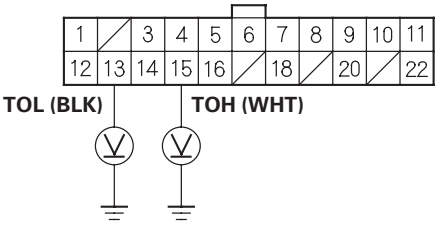
Is the resistance correct?

YES—Go to step 7.

NO—Replace the differential oil temperature sensor (see page 15-49).■

7. Disconnect VTM-4 control unit connector A (22P).
8. Turn the ignition switch ON (II).
9. Measure voltage between the No. 13 and No. 15 terminals of the VTM-4 control unit connector A (22P) and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

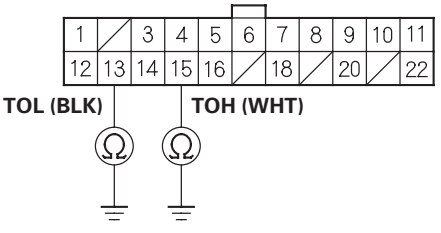
Is there voltage?

YES—Repair short to power in the wire between the VTM-4 control unit (A13 or A15) and the differential oil temperature sensor.■

NO—Go to step 10.

10. Turn the ignition switch OFF.
11. Check for continuity between the No. 13 and No. 15 terminals of the VTM-4 control unit connector A (22P) and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between the VTM-4 control unit (A13 or A15) and the differential oil temperature sensor.■

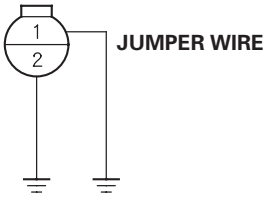
NO—Go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Connect the differential oil temperature sensor 2P connector terminals to body ground with jumper wires.

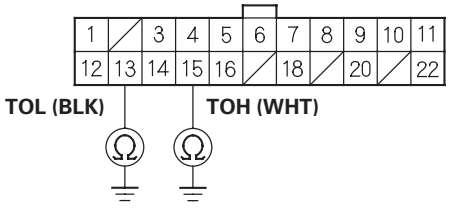
DIFFERENTIAL OIL TEMPERATURE SENSOR 2P CONNECTOR



Terminal side of female terminals

13. Check for continuity between the No. 13 and No. 15 terminals of the VTM-4 control unit connector A (22P) and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Is there continuity?

YES—Check for poor connections or loose terminals at the VTM-4 control unit and the differential oil temperature sensor connectors. If the connections are OK, replace the VTM-4 control unit (see page 15-50). ■

NO—Repair open in the wire between the VTM-4 control unit (A13 or A15) and the differential oil temperature sensor. ■

DTC 44-1: VTM-4 Relay

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

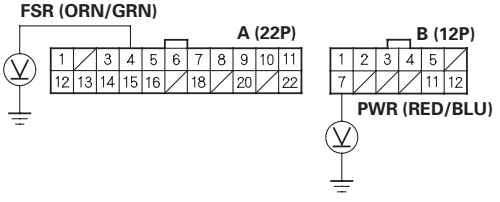
   Is DTC 44-1 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■

4. Measure voltage between the No. 4 terminal of the VTM-4 control unit connector A (22P) and body ground, and between the No. 7 terminal of the VTM-4 control unit connector B (12P) and body ground with the ignition switch ON (II), and with the engine started.

VTM-4 CONTROL UNIT CONNECTORS



Wire side of female terminals

Condition	B7 (PWR)	A4 (FSR)
Ignition switch ON (II)	Less than 3 V	Battery voltage
Engine start	Battery voltage	Less than 1 V

Is the voltage correct?

YES—Go to step 16.

NO—Go to step 5.

5. Turn the ignition switch OFF.

6. Remove the VTM-4 relay, and test it (see page 22-75).

   Is the VTM-4 relay OK?

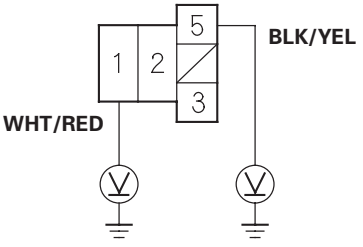
   YES—Go to step 7.

   NO—Replace the VTM-4 relay (see page 15-50). ■

7. Turn the ignition switch ON (II) with the VTM-4 relay removed.

8. Measure voltage between the No. 1 and No. 5 terminals of the VTM-4 relay 5P connector and body ground.

VTM-4 RELAY 5P CONNECTOR



Terminal side of female terminals

   Is there battery voltage?

   YES—Go to step 9.

   NO—Check for blown No. 4 (20 A) fuse in the auxiliary fuse box or No. 18 (15 A) fuse in the driver's under-dash fuse/relay box. If the fuses are OK, repair open in the wire between the auxiliary fuse box or the driver's under-dash fuse/relay box and the VTM-4 relay. ■

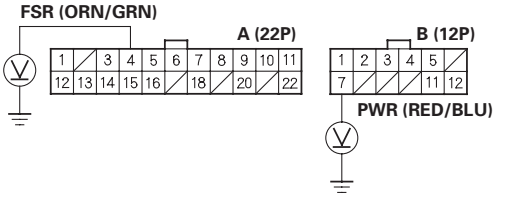
9. Turn the ignition switch OFF.

10. Disconnect the VTM-4 control unit connector A (22P) and connector B (12P).

11. Turn the ignition switch ON (II).

12. Measure voltage between the No. 4 terminal of the VTM-4 control unit connector A (22P) and body ground, and between the No. 7 terminal of the VTM-4 control unit connector B (12P) and body ground.

VTM-4 CONTROL UNIT CONNECTORS



Wire side of female terminals

   Is there battery voltage?

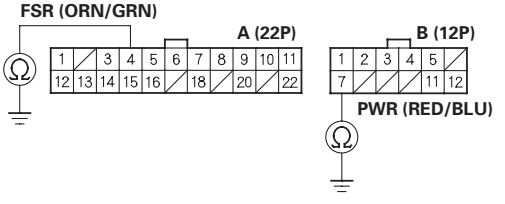
   YES—Repair short to power in the wire between the VTM-4 control unit (A4 or B7) and the VTM-4 relay. ■

   NO—Go to step 12.

13. Turn the ignition switch OFF.

14. Check for continuity between the No. 4 terminal of the VTM-4 control unit connector A (22P) and body grond, and between the No. 7 terminal of the VTM-4 control unit connector B (12P) and body ground.

VTM-4 CONTROL UNIT CONNECTORS



Wire side of female terminals

   Is there continuity?

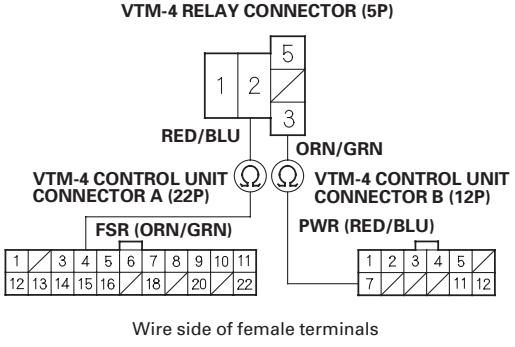
   YES—Repair short to ground in the wire between the VTM-4 control unit (A4 or B7) and the VTM-4 relay. ■

   NO—Go to step 15.

(cont'd)

DTC Troubleshooting (cont'd)

15. Check for continuity between the No. 4 terminal of the VTM-4 control unit connector A (22P) and the No. 3 terminal of the VTM-4 relay, and between the No. 7 terminal of the VTM-4 control unit connector B (12P) and the No. 2 terminal of the VTM-4 relay.



Wire side of female terminals

Is there continuity?

YES—Go to step 16.

NO—Repair open in the wire between the A4 or B7 terminals of the VTM-4 control unit and the VTM-4 relay. ■

16. Check for poor connections or loose terminals at the VTM-4 control unit and the VTM-4 relay connectors. If the connections are OK, go to step 17.

17. Test-drive the vehicle, and check for DTCs with the HDS.

Is DTC 44-1 indicated?

YES—Replace the VTM-4 control unit (see page 15-50). ■

NO—The system is OK at this time. ■

DTC 51-1, 52-1, 53-1, 53-2, 54-1: Left Clutch Electromagnetic Coil

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).

2. Clear the DTC (see page 15-8).

3. Test-drive the vehicle, and check for DTCs with the HDS.

Is DTCs 51-1, 52-1, 53-2, and/or 54-1 indicated?

YES—Go to step 4.

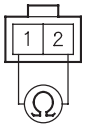
NO—Intermittent failure, the system is OK at this time. ■

4. Turn the ignition switch OFF.

5. Disconnect the left clutch electromagnetic coil 2P connector on the differential.

6. Measure resistance between the No. 1 and No. 2 terminals of the left clutch electromagnetic coil 2P connector.

LEFT CLUTCH ELECTROMAGNETIC COIL 2P CONNECTOR



Terminal side of male terminals

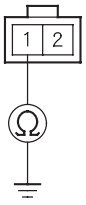
Is there 1 to 3 Ω ?

YES—Go to step 7.

NO—Replace the rear differential assembly. ■

7. Measure resistance between the No. 1 terminal of the left clutch electromagnetic coil and differential carrier assembly.

LEFT CLUTCH ELECTROMAGNETIC COIL 2P CONNECTOR



Terminal side of male terminals

Is there about 50 MΩ or more?

YES—Go to step 8.

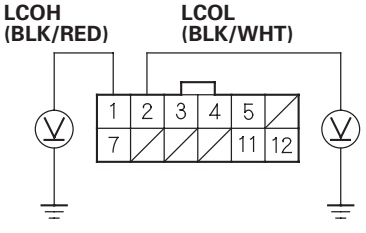
NO—Replace the rear differential assembly. ■

8. Disconnect the VTM-4 control unit connector B (12P).

9. Turn the ignition switch ON (II).

10. Measure voltage between the No. 1 and No. 2 terminals of the VTM-4 control unit connector B (12P) and body ground.

VTM-4 CONTROL UNIT CONNECTOR B (12P)



Wire side of female terminals

Is there battery voltage?

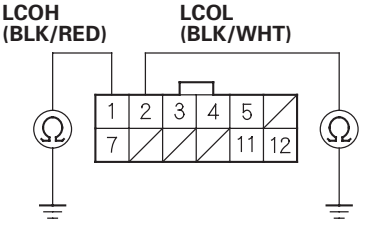
YES—Repair short to power in the wire between the VTM-4 control unit (B1 or B2) and the left clutch electromagnetic coil. ■

NO—Go to step 11.

11. Turn the ignition switch OFF.

12. Check for continuity between the No. 1 and No. 2 terminals of the VTM-4 control unit connector B (12P) and body ground.

VTM-4 CONTROL UNIT CONNECTOR B (12P)



Wire side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between the VTM-4 control unit (B1 or B2) and the left clutch electromagnetic coil. ■

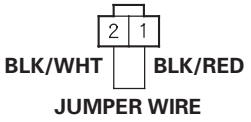
NO—Go to step 13.

(cont'd)

DTC Troubleshooting (cont'd)

13. Connect a jumper wire between the No. 1 and No. 2 terminals of the left clutch electromagnetic coil 2P connector.

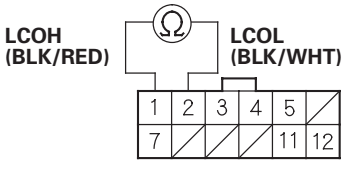
LEFT CLUTCH ELECTROMAGNETIC COIL 2P CONNECTOR



Wire side of female terminals

14. Check for continuity between the No. 1 and No. 2 terminals of the VTM-4 control unit connector B (12P).

VTM-4 CONTROL UNIT CONNECTOR B (12P)



Wire side of female terminals

Is there continuity?

YES—Do the Rear Differential Function Test (see page 15-48). If the rear differential is normal, replace the VTM-4 control unit (see page 15-50). ■

NO—Repair open in the wire between the VTM-4 control unit (B1 or B2) and the left clutch electromagnetic coil. ■

DTC 53-2, 55-1, 56-1, 57-1, 58-1: Right Clutch Electromagnetic Coil

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

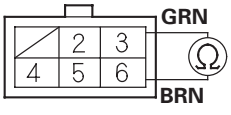
1. Turn the ignition switch ON (II).
2. Clear the DTC (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

   Is DTCs 53-2, 55-1, 56-1, 57-1, and/or 58-1 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■
4. Turn the ignition switch OFF.
5. Disconnect the right clutch electromagnetic coil/ differential oil temperature sensor 6P connector on the differential.
6. Measure resistance between the No. 3 and No. 6 terminals of the right clutch electromagnetic coil/ differential oil temperature sensor 6P connector.

RIGHT CLUTCH ELECTROMAGNETIC COIL/ DIFFERENTIAL OIL TEMPERATURE SENSOR 6P CONNECTOR



Terminal side of male terminals

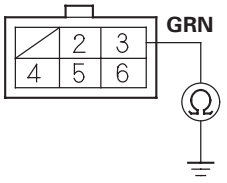
Is there 1 to 3 Ω ?

YES—Go to step 7.

NO—Replace the rear differential assembly.

7. Measure resistance between the No. 3 terminal of the right clutch electromagnetic coil/differential oil temperature sensor 6P connector and the differential carrier assembly.

RIGHT CLUTCH ELECTROMAGNETIC COIL/ DIFFERENTIAL OIL TEMPERATURE SENSOR 6P CONNECTOR



Terminal side of male terminals

Is there 50 MΩ or more?

YES—Go to step 8.

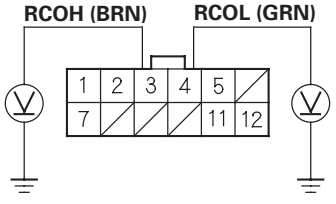
NO—Replace the rear differential assembly. ■

8. Disconnect the VTM-4 control unit connector B (12P).

9. Turn the ignition switch ON (II).

10. Measure voltage between the No. 3 and No. 4 terminals of the VTM-4 control unit connector B (12P) and body ground.

VTM-4 CONTROL UNIT CONNECTOR B (12P)



Wire side of female terminals

Is there battery voltage?

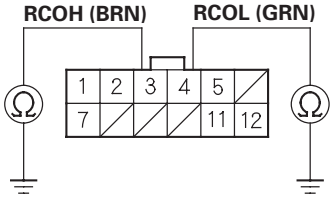
YES—Repair short to power in the wire between the VTM-4 control unit (B3 or B4) and the right clutch electromagnetic coil. ■

NO—Go to step 11.

11. Turn the ignition switch OFF.

12. Check for continuity between the No. 3 and No. 4 terminals of the VTM-4 control unit connector B (12P) and body ground.

VTM-4 CONTROL UNIT CONNECTOR B (12P)



Wire side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between the VTM-4 control unit (B3 or B4) and the right clutch electromagnetic coil. ■

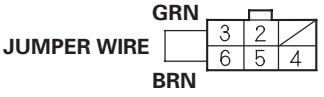
NO—Go to step 13.

(cont'd)

DTC Troubleshooting (cont'd)

13. Connect a jumper between the No. 3 and No. 6 terminals of the right clutch electromagnetic coil/ differential oil temperature sensor 6P connector.

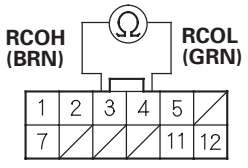
RIGHT CLUTCH ELECTROMAGNETIC COIL/ DIFFERENTIAL OIL TEMPERATURE SENSOR 6P CONNECTOR



Wire side of female terminals

14. Check the for continuity between the No. 3 and No. 4 terminals of the VTM-4 control unit connector B (12P).

VTM-4 CONTROL UNIT CONNECTOR B (12P)



Wire side of female terminals

Is there continuity?

YES—Do the Rear Differential Function Test (see page 15-48). If the rear differential is normal, replace the VTM-4 control unit (see page 15-50). ■

NO—Repair open in the wire between the VTM-4 control unit (B3 or B4) and the right clutch electromagnetic coil. ■

DTC 59-1: Right/Left Clutch Electromagnetic Coil Power Supply

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

   Is DTC 59-1 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■
4. Check the battery.

   Is the specified battery installed, and is it fully charged?

   YES—Go to step 5.

   NO—Replace or charge the battery. ■
5. Watch the charging system indicator.

   Does the charging system indicator come on with the ignition switch ON (II), and go off with the engine started?

   YES—Check for poor connections or loose terminals at the VTM-4 control unit connectors. If the connections are OK, replace the VTM-4 control unit (see page 15-50). ■

   NO—Check the charging system. ■

DTC 73-1: MAP (Manifold Absolute Pressure) Sensor or PCM

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

   Is DTC 73-1 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■
4. Check for DTCs in the PGM-FI system with the HDS.

   Are there any PGM-FI DTCs indicated?

   YES—Go to the indicated DTCs troubleshooting. ■

   NO—Check for poor connections or loose terminals at the VTM-4 control unit and the PCM connectors. If the connections are OK, replace the VTM-4 control unit (see page 15-50). ■

DTC Troubleshooting (cont'd)

DTC 76-1: Rear Differential Clutch Warning System

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC (see page 15-8).
3. Start the engine, shift the transmission into D. Test-drive the vehicle at speeds over 25 mph (40 km/h), while keeping the engine speed below 2,500 rpm for at least 30 seconds.

   NOTE: Be careful not to overheat the rear differential clutch system.
4. Check for DTCs with the HDS.

   Is DTC 76-1 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time.■
5. Check for DTCs in the VSA system with the HDS.

   Are there any VSA DTCs indicated?

   YES—Check the VSA system for DTCs (see page 19-39).

   NO—Go to step 6.
6. Turn the ignition switch OFF.
7. Raise the vehicle, and make sure it is securely supported.
8. Spin the rear wheels by hand, and check for rear brake drag.

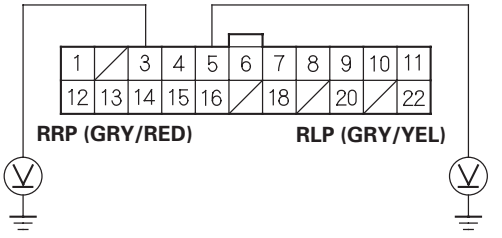
   Are the rear brakes dragging?

   YES—Repair cause of rear brake drag, and retest.■

   NO—Go to step 9.
9. Turn the ignition switch ON (II).
10. Measure voltage between the No. 3 and No. 5 terminals of the VTM-4 control unit connector A (22P) and body ground while rotating the appropriate wheel (1 rotation/second).

Appropriate wheel	Appropriate Terminal
Left-rear	A5
Right-rear	A3

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Is there about 2 to 3 V?

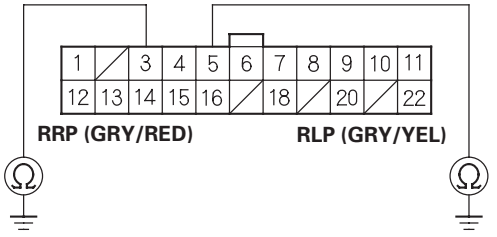
YES—Go to step 18.

NO—Go to step 11.

11. Turn the ignition switch OFF.
12. Disconnect the VTM-4 control unit and the VSA modulator-control unit connectors.

13. Check for continuity between the No. 3 and No. 5 terminals of VTM-4 control unit connector A (22P) and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

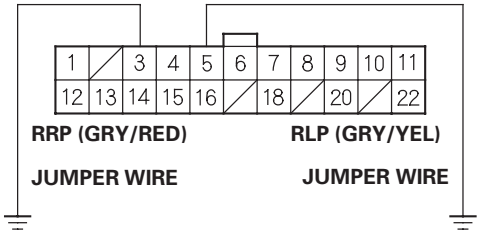
Is there continuity?

YES—Repair short to ground in the wire between the VTM-4 control unit (A3 and/or A5) and the VSA modulator-control unit. ■

NO—Go to step 14.

14. Connect the No. 3 and No. 5 terminals of VTM-4 control unit connector A (22P) to body ground with the jumper wires.

VTM-4 CONTROL UNIT CONNECTOR A (22P)

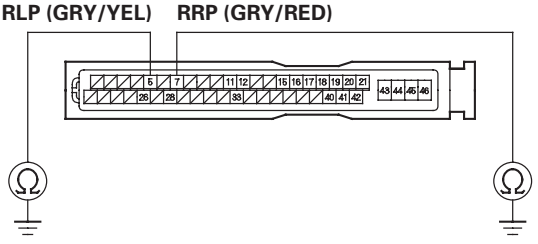


Wire side of female terminals

15. Check for continuity between the VSA modulator-control unit 46P connector terminals and body ground.

Appropriate wheel	Appropriate Terminal	
	VTM-4 control unit	VSA modulator-control unit
Right-rear	A3	5
Left-rear	A5	7

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 16.

NO—Repair open in the wire between the VTM-4 control unit (A3 and/or A5) and the VSA modulator-control unit. ■

16. Check for poor connections or loose terminals at the VTM-4 control unit and the VSA modulator-control unit connectors. If the connections are OK, replace the VTM-4 control unit, then go to step 17.

17. Start the engine, shift the transmission into D. Test-drive the vehicle at speeds over 25 mph (40 km/h), while keeping the engine speed below 2,500 rpm for at least 30 seconds.

NOTE: Be careful not to overheat the rear differential clutch system.

18. Check for DTCs with the HDS.

Is DTC 76-1 indicated?

YES—Replace the VSA modulator-control unit (see page 19-94). ■

NO—The system is OK at this time. ■

DTC Troubleshooting (cont'd)

DTC 77-1: PCM

NOTE:
- Before you troubleshoot, review the general troubleshooting information (see page 15-4).
- Check the fuel and emissions system DTCs. If there is a DTC, troubleshoot the indicated DTC first, then troubleshoot DTC 77.

1. Turn the ignition switch ON (II).
2. Clear the DTC (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

   Is DTC 77-1 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■
4. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
5. Test-drive the vehicle, and check for DTCs with the HDS.

   Is DTC 77-1 indicated?

   YES—Check for loose terminal fit in the VTM-4 control unit. If it is normal, replace the VTM-4 control unit (see page 15-50). ■

   NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-205). ■

DTC 78-1: VTM-4 Control Unit

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTC (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

   Is DTC 78-1 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■
4. Check the battery.

   Is the specified battery installed, and is it fully charged?

   YES—Go to step 5.

   NO—Replace or charge the battery. ■
5. Watch the charging system indicator.

   Does the charging system indicator come on with the ignition switch ON (II), and go off with the engine started?

   YES—Go to step 6.

   NO—Check the charging system. ■
6. Check for installation of any aftermarket CB or Ham radios which may cause an RF signal interference.

   Is there an aftermarket radio installed?

   YES—Disconnect the aftermarket radio, and retest. ■

   NO—Check for poor connections or loose terminals at the VTM-4 control unit connectors. If the connections are OK, replace the VTM-4 control unit (see page 15-50). ■

The VTM-4 indicator comes on, but no DTCs are stored in any system: VTM-4, VSA, or PCM

1. Check the No. 21 (7.5 A) fuse in the driver's under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 2.

   NO—Replace the fuse, and recheck. ■

2. Reinitialize the VTM-4 control unit, and watch the VTM-4 indicator (see page 15-5).

   Does the VTM-4 indicator come on and stay on?

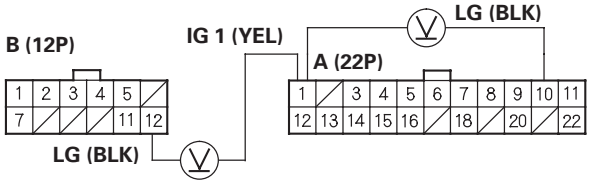
   YES—Go to step 3.

   NO—The system is OK at this time. ■

3. Turn the ignition switch ON (II).

4. Measure voltage between the No. 1 and No. 10 terminals of the VTM-4 control unit connector A (22P), and the No. 1 terminal of the VTM-4 control unit connector A (22P) and the No. 12 terminal of the VTM-4 control unit connector B (12P).

VTM-4 CONTROL UNIT CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES—Go to step 5.

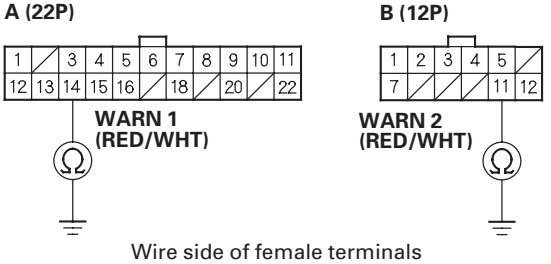
NO—Repair open in the wire between the VTM-4 control unit (A1) and the driver's under-dash fuse/relay box, or repair open in the wire between the VTM-4 control unit (A10 or B12) and body ground, or check the poor ground (G501). ■

5. Turn the ignition switch OFF.

6. Disconnect the VTM-4 control unit and the gauge control module connectors.

7. Check for continuity between the No. 14 terminal of the VTM-4 control unit connector A (22P), and the No. 11 terminal of the VTM-4 control unit connector B (12P) to body ground.

VTM-4 CONTROL UNIT CONNECTORS



Wire side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between the VTM-4 control unit (A14 or B11) and the gauge control module. ■

NO—Go to step 8.

8. Reconnect the gauge control module connectors.

9. Turn the ignition switch ON (II).

10. Watch the VTM-4 indicator.

    Does the VTM-4 indicator come on?

    YES—Replace the gauge control module (see page 22-263). ■

    NO—Check for poor connections or loose terminals at the VTM-4 connectors. If the connections are OK, replace the VTM-4 control unit (see page 15-50). ■

Symptom Troubleshooting (cont'd)

The VTM-4 indicator does not come on

1. Do the gauge control module self-diagnosis function (see page 22-244).

   Is the gauge control module OK?

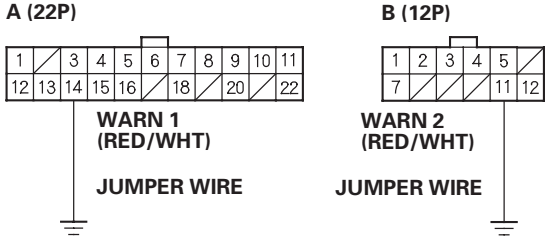
   YES—Go to step 2.

   NO—Go to the gauge control module input test (see page 22-244) and check for an open or short in the power and ground. ■

2. Disconnect the VTM-4 control unit connectors A (22P) and B (12P).

3. Connect the No. 14 terminal of the VTM-4 control unit connector A (22P) and No. 11 terminal of the VTM-4 control unit connector B (12P) to body ground with jumper wires.

VTM-4 CONTROL UNIT CONNECTORS



Wire side of female terminals

4. Turn the ignition switch ON (II).

5. Watch the VTM-4 indicator.

   Does the VTM-4 indicator come on?

   YES—Check for poor connections or loose terminals at the VTM-4 control unit connectors. If the connections are OK, replace the VTM-4 control unit (see page 15-50). ■

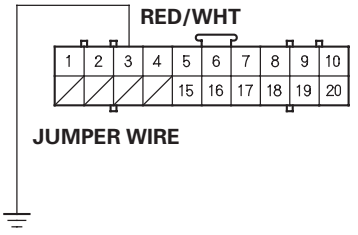
   NO—Go to step 6.

6. Turn the ignition switch OFF.

7. Disconnect gauge control module connector A (30P).

8. Connect the No. 3 terminal of the gauge control module connector C (20P) to body ground with a jumper wire.

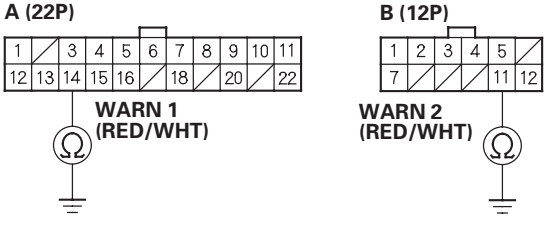
GAUGE CONTROL MODULE CONNECTOR C (20P)



Wire side of female terminals

9. Check for continuity between the No. 14 terminal of the VTM-4 control unit connector A (22P) and body ground, and the No. 11 terminal of the VTM-4 control unit connector B (12P) and body ground.

VTM-4 CONTROL UNIT CONNECTORS



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good gauge control module and recheck. If the symptom/indication goes away with the known-good gauge control module, replace the original gauge control module (see page 22-263). ■

NO—Repair open in the wire between the gauge control module (C3) and the VTM-4 control unit. ■

The VTM-4 LOCK indicator does not come on when the VTM-4 LOCK switch is pressed

NOTE: The VTM-4 LOCK indicator will only come on when the engine is running and the transmission is in R, 1, or 2 before the VTM-4 LOCK switch is pressed.

1. Check the No. 21 (7.5 A) fuse in the driver's under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 2.

   NO—Replace the fuse, and recheck. ■

2. Turn the ignition switch ON (II).

3. Watch the VTM-4 LOCK indicator.

   Does the VTM-4 LOCK indicator come on, and does it go off about 4 seconds later?

   YES—Go to step 4.

   NO—Go to step 11.

4. Start the engine, and move the shift lever to R, 1, and 2, then watch the VTM-4 LOCK indicator.

   Does the VTM-4 LOCK indicator come on when the VTM-4 LOCK switch is pressed?

   YES—The system is OK at this time. ■

   NO—Go to step 5.

5. Check for an A/T system DTC.

   Is there a DTC?

   YES—Troubleshoot the A/T system indicated DTC. ■

   NO—Go to step 6.

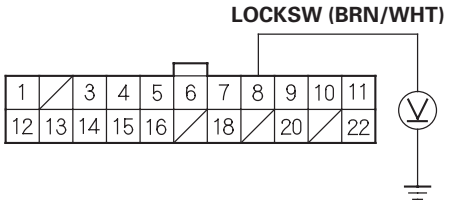
6. Turn the ignition switch OFF.

7. Disconnect the VTM-4 control unit connector A (22P).

8. Turn the ignition switch ON (II).

9. Connect a voltmeter between the A8 terminal of the VTM-4 control unit and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

   Is there battery voltage when the VTM-4 LOCK switch is pressed?

   YES—Check for poor connections or loose terminals at the VTM-4 control unit connectors. If the connections are OK, replace the VTM-4 control unit (see page 15-50). ■

   NO—Go to step 10.

10. Test the VTM-4 LOCK switch (see page 15-49).

    Is the VTM-4 LOCK switch OK?

    YES—Repair open in the wire between the VTM-4 LOCK switch and the VTM-4 control unit (see page 15-50). ■

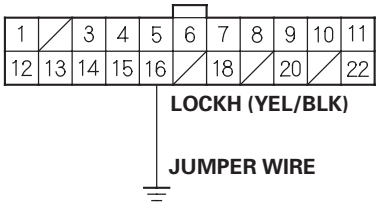
    NO—Replace the VTM-4 LOCK switch. ■

(cont'd)

Symptom Troubleshooting (cont'd)

11. Connect the No. 16 terminal of the VTM-4 control unit connector A (22P) to body ground with a jumper wire.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

12. Watch the VTM-4 LOCK indicator.

Does the VTM-4 LOCK indicator come on?

YES—Check for poor connections or loose terminals at the VTM-4 control unit connectors. If the connections are OK, replace the VTM-4 control unit (see page 15-50). ■

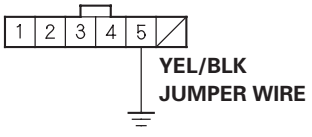
NO—Go to step 13.

13. Turn the ignition switch OFF.

14. Remove the VTM-4 LOCK switch.

15. Connect the No. 5 terminal of the VTM-4 LOCK switch 6P connector to body ground with a jumper wire.

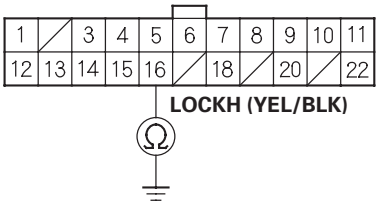
VTM-4 LOCK SWITCH 6P CONNECTOR



Wire side of female terminals

16. Check the continuity between the No. 16 terminal of the VTM-4 control unit connector A (22P) and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Is there continuity?

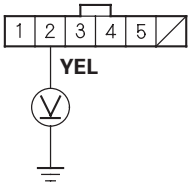
YES—Go to step 17.

NO—Repair open in the wire between the VTM-4 control unit (A16) and the VTM-4 LOCK switch. ■

17. Turn the ignition switch ON (II).

18. Measure voltage between the No. 2 terminal of the VTM-4 LOCK switch 6P connector and body ground.

VTM-4 LOCK SWITCH 6P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Replace the VTM-4 LOCK indicator bulb. ■

NO—Repair open in the wire between the No. 2 terminal of the VTM-4 LOCK switch 6P connector and the driver's under-dash fuse/relay box. ■

The VTM-4 LOCK indicator comes on when the ignition switch is turned ON (II) and does not go off

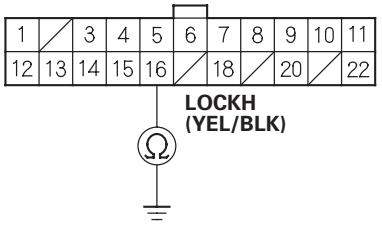
1. Disconnect the VTM-4 control unit connector A (22P).
2. Turn the ignition switch ON (II).
3. Watch the VTM-4 LOCK indicator.

   Does the VTM-4 LOCK indicator come on?

   YES—Go to step 4.

   NO—Check for poor connections or loose terminals at the VTM-4 control unit connectors. If the connections are OK, replace the VTM-4 control unit (see page 15-50). ■
4. Turn the ignition switch OFF.
5. Disconnect the VTM-4 LOCK switch 6P connector.
6. Check for continuity between the No. 16 terminal of the VTM-4 control unit connector A (22P) and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between the VTM-4 control unit (A16) and the VTM-4 LOCK switch. ■

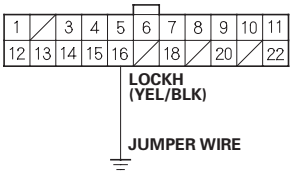
NO—Replace the VTM-4 LOCK switch (see page 15-49). ■

Symptom Troubleshooting (cont'd)

The VTM-4 LOCK indicator does not come on for about 4 seconds when the ignition switch is turned ON (II)

1. Disconnect the VTM-4 control unit connector A (22P).
2. Turn the ignition switch ON (II).
3. Connect the No. 16 terminal of the VTM-4 control unit connector A (22P) to body ground with a jumper wire.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

4. Watch the VTM-4 LOCK indicator.

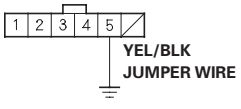
   Does the VTM-4 LOCK indicator come on?

   YES—Check for poor connections or loose terminals at the VTM-4 control unit connectors. If the connections are OK, replace the VTM-4 control unit (see page 15-50). ■

   NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Remove the VTM-4 LOCK switch.
7. Connect the No. 5 terminal of the VTM-4 LOCK switch 6P connector to body ground with a jumper wire.

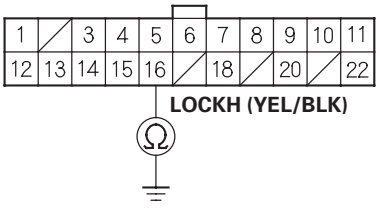
VTM-4 LOCK SWITCH 6P CONNECTOR



Wire side of female terminals

8. Check for continuity between the No. 16 terminal of the VTM-4 conntrol unit connector A (22P) and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

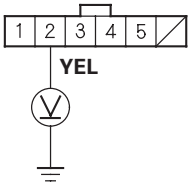
   Is there continuity?

   YES—Go to step 9.

   NO—Repair open in the wire between the VTM-4 control unit (A16) and the VTM-4 LOCK switch. ■

9. Turn the ignition switch ON (II).
10. Measure voltage between the No. 2 terminal of the VTM-4 LOCK switch 6P connector and body ground.

VTM-4 LOCK SWITCH 6P CONNECTOR



Wire side of female terminals

   Is there battery voltage?

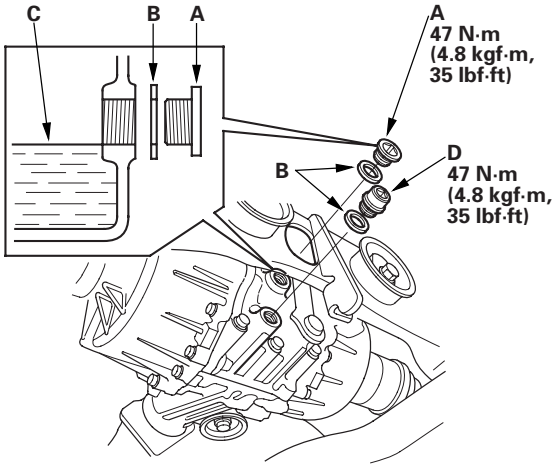
   YES—Replace the VTM-4 LOCK indicator bulb. ■

   NO—Repair open in the wire between the No. 2 terminal of the VTM-4 LOCK switch 6P connector and the driver's under-dash fuse/relay box. ■

Rear Differential Fluid Inspection and Replacement

1. With the vehicle on level ground, inspect the differential fluid with the ignition switch OFF.

2. Remove the oil filler plug (A) and sealing washer (B), then check the condition of the fluid, and make sure the fluid is at the proper level (C).



3. The fluid level must be up to the fill hole. If it is below the hole, add the recommended fluid until it runs out, then reinstall the oil filler plug with a new sealing washer.

4. If the differential fluid is dirty, remove the drain plug (D) and sealing washer (B), then drain the fluid.

5. Clean the drain plug, then reinstall with a new washer, and refill the differential with the recommended fluid to the proper level.

   Fluid capacity:
   2.64 L (2.79 US.qt) at fluid change

   Recommended fluid:
   VTM-4 Differential Fluid (P/N 0822-9003)

6. Reinstall the oil filler plug with a new washer.

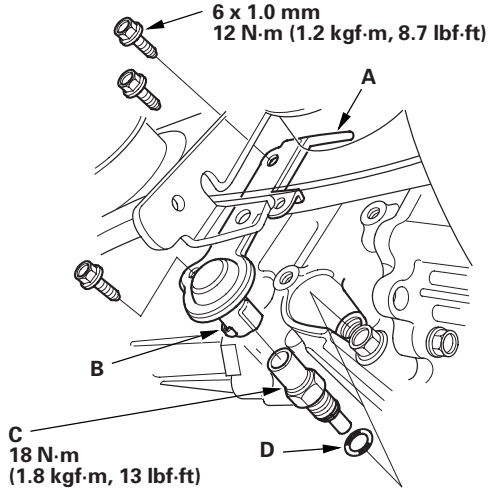
Rear Differential Function Test

NOTE: Before doing the Differential Function Test, the following conditions must be present.
- No DTCs detected
- Engine is OFF
- The VTM-4 control unit must be initialized

1. Connect the HDS to the data link connector (DLC).
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the VTM-4 control unit. If it doesn't go to the DLC circuit troubleshooting (see page 11-194).
4. Confirm that the temperature of the differential oil is between 68 ℉ (20 ℃) and 140 ℉ (60 ℃) with the HDS.
5. Turn the ignition switch OFF with the shift lever in P.
6. Raise the vehicle so all four wheels are off the ground, and make sure the vehicle is securely supported (see page 1-10).
7. Remove the rear wheels (see page 18-28).
8. Release the parking brake.
9. Turn the iginition switch ON (II).
10. Select MISCELLANEOUS TEST, then select the LEFT CLUTCH ELECTROMAGNETIC COIL TEST with the HDS, and follow the screen prompts. If the results are NORMAL, the left clutch is OK, go to step 11. If the results are ABNORMAL, replace the rear differential.
11. Select MISCELLANEOUS TEST, then select the RIGHT CLUTCH ELECTROMAGNETIC COIL TEST with the HDS, and follow the screen prompts. If the results are NORMAL, the right clutch is OK. If the results are ABNORMAL, replace the rear differential.

Rear Differential Fluid Temperature Sensor Replacement

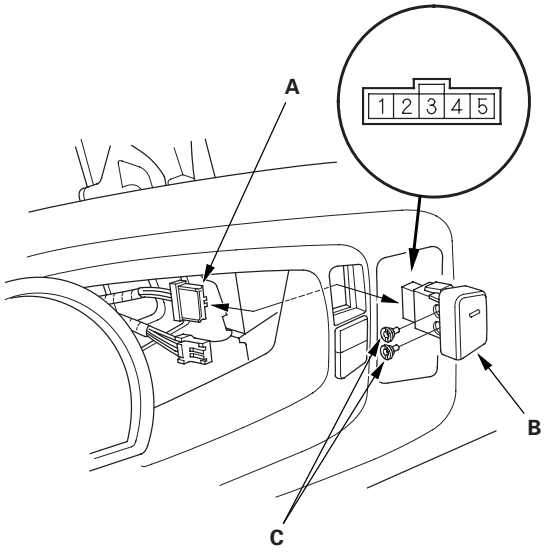
1. Remove the wire harness cover (A), then disconnect the differential oil temperature sensor 2P connector (B).



2. Remove the differential oil temperature sensor (C).
3. Install the differential oil temperature sensor in the reverse order of removal, with a new O-ring (D).

VTM-4 LOCK Switch Test/ Replacement

1. Remove the instrument panel (see page 20-81).
2. Disconnect the 5P connector (A) from the VTM-4 LOCK switch (B), then remove the VTM-4 LOCK switch.



3. Check for continuity between the terminals in each switch position according to the table.

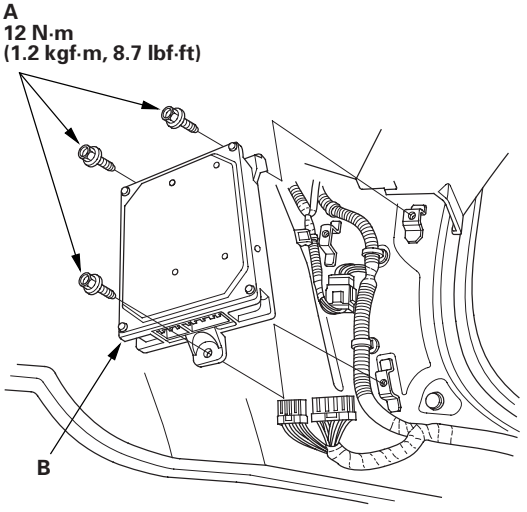
Terminal / Position	1	2	3		4	5
Release the switch		●		●		●
			●	●	●	
Press the switch		●		●		●
	●	●	●	●	●	

4. If the continuity check is not as specified, replace the bulbs (C) or the VTM-4 LOCK switch.

VTM-4 Control Unit Replacement

NOTE: The VTM-4 control unit must be initialized (see page 15-5) after replacement, otherwise the 4WD system will not function.

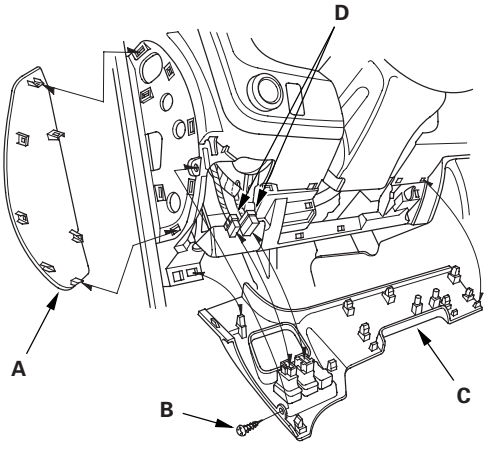
1. Remove the right side kick panel (see page 20-60).
2. Remove the three bolts (A) from the VTM-4 control unit (B).



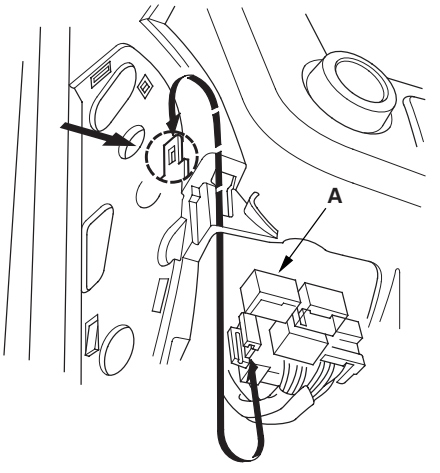
3. Disconnect the VTM-4 control unit connectors.
4. Install the VTM-4 control unit in the reverse order of removal.

VTM-4 Relay Replacement

1. Remove the instrument side panel (A) and the screw (B).



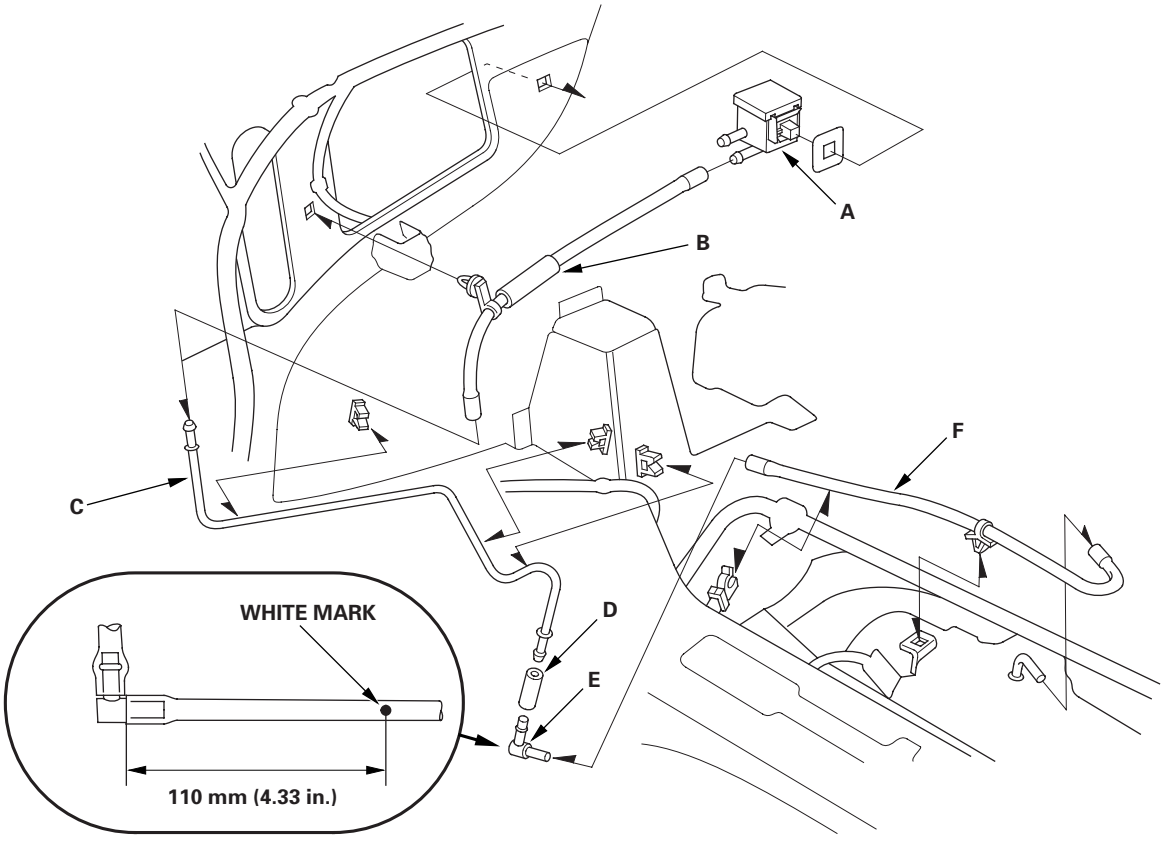
2. Remove the instrument under panel (C) and the connectors (D).
3. Remove the VTM-4 relay (A).



4. Install the VTM-4 relay in the reverse order of removal.

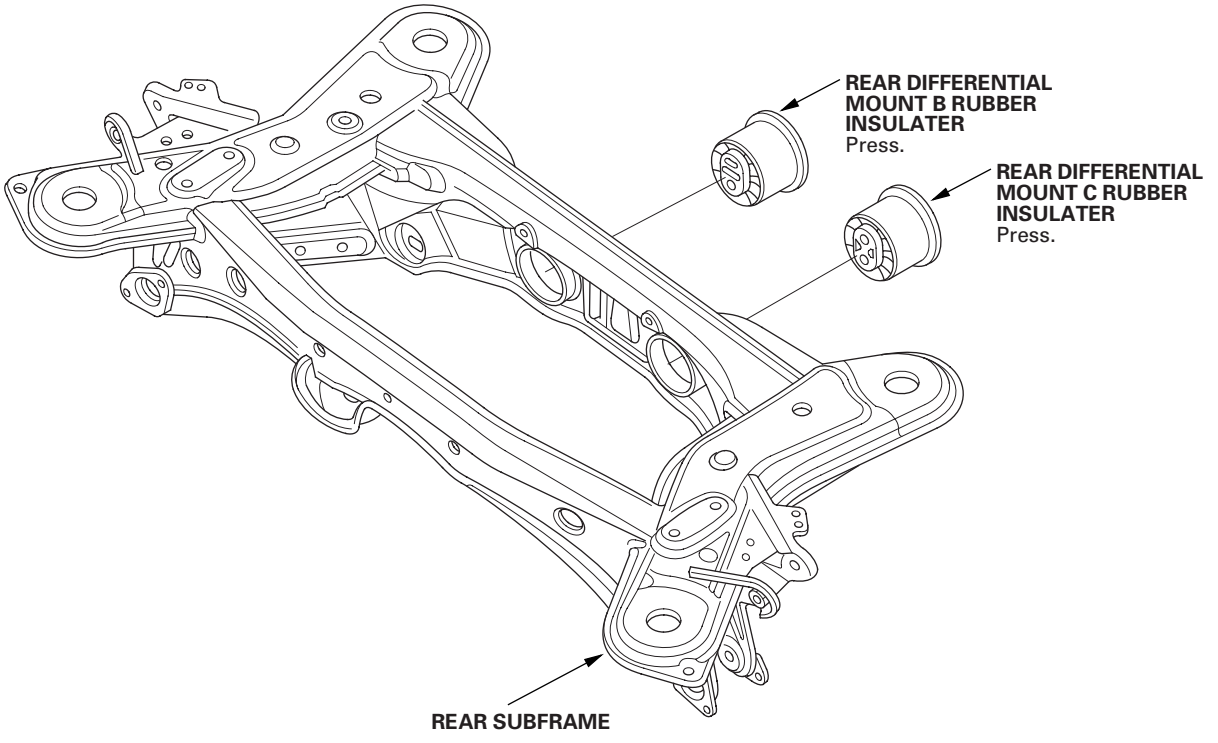
Rear Differential Breather, Line, and Hose Replacement

1. Remove the left side bed panel (see page 20-162).
2. Remove the bed floor panel (see page 20-163).
3. Remove the breather (A) and the line (C), then remove the hoses (B, D, F).



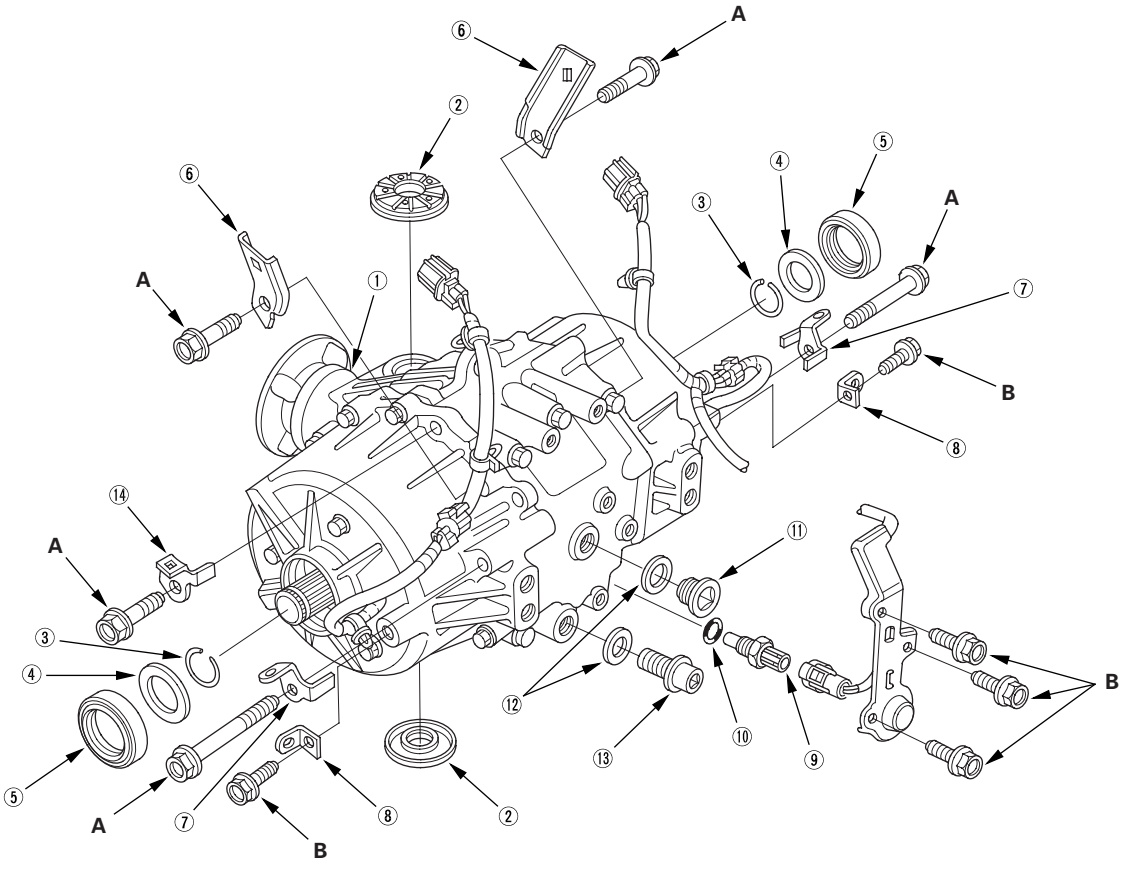
4. Connect and install the breather (A) and the hose (B).
5. Clamp the line (C) into place, then connect it to the upper hose (B).
6. Connect the breather joint (E) to the line (C) with the short hose (D).
7. Connect the joint to the lower hose (F), then connect the hose to the differential.
8. Make sure that all the hoses are properly routed, clipped into place, and not pinched.

Rear Differential Mount Replacement



Rear Differential Removal

Exploded View



A: 27 N·m (2.8 kgf·m, 20 lbf·ft)
B: 12 N·m (1.2 kgf·m, 8.7 lbf·ft)

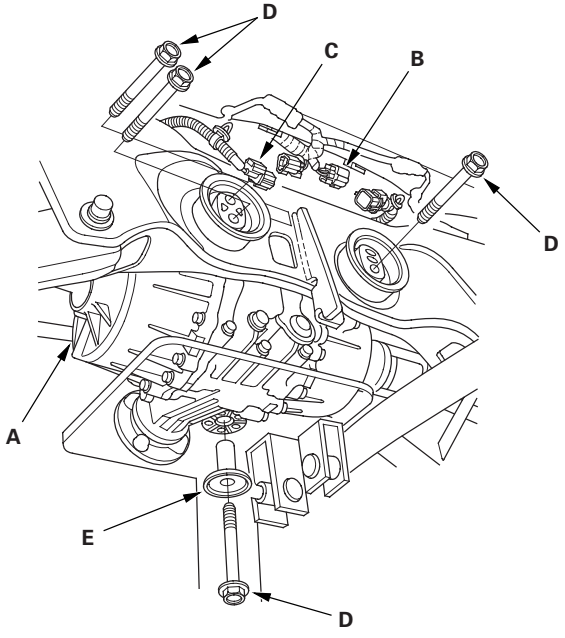
① **REAR DIFFERENTIAL CARRIER ASSEMBLY**
② **REAR DIFFERENTIAL MOUNT A RUBBER INSULATER**
③ **SET RING**
Replace.
④ **THRUST WASHER**
Replace.
⑤ **HALF SHAFT OUTER SEAL**
Replace.
⑥ **REAR DIFFERENTIAL HARNESS BRACKET A**
⑦ **REAR DIFFERENTIAL CABLE BRACKET C**
⑧ **REAR DIFFERENTIAL CABLE BRACKET F**
⑨ **DIFFERENTIAL OIL TEMPERATURE SENSOR**
⑩ **O-RING**
Replace.
⑪ **FILLER PLUG**
47 N·m (4.8 kgf·m, 35 lbf·ft)
⑫ **SEALING WASHER**
Replace.
⑬ **DRAIN PLUG**
47 N·m (4.8 kgf·m, 35 lbf·ft)
⑭ **REAR DIFFERENTIAL HARNESS BRACKET B**

(cont'd)

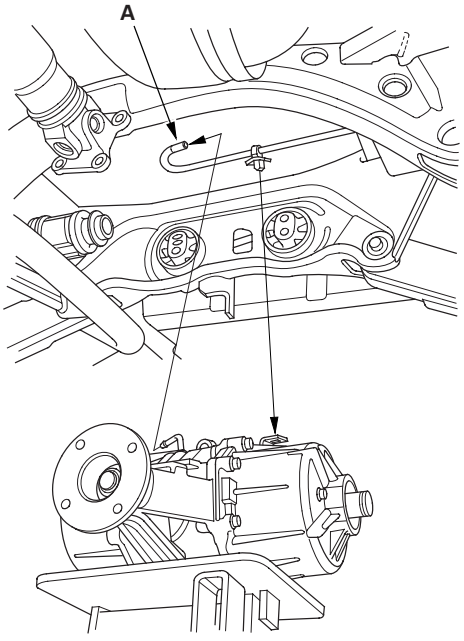
Rear Differential Removal (cont'd)

Special Tools Required
Driveshaft remover 07AAD-S9VA000

1. Drain the differential fluid (see page 15-47).
2. Make a reference mark across the propeller shaft, the transfer, and the rear differential, then remove the propeller shaft (see page 16-40).
3. Remove the rear driveshaft (see page 16-24).
4. Place a transmission jack under the rear differential (A).



5. Disconnect the 6P (B) and 2P (C) connectors, then remove the mounting bolts (D) and washer (E).
6. Lower the rear differential a little on the transmission jack.



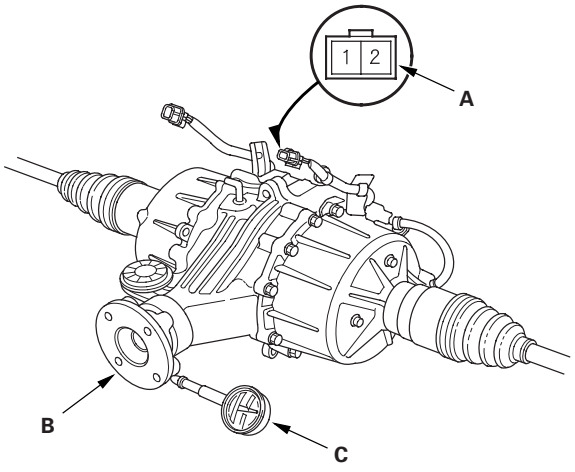
7. Disconnect the breather hose (B) from the rear differential.
8. Lower the rear differential on the transmission jack.

Backlash Inspection

NOTICE

Connecting battery voltage to either the right or left clutch electromagnetic coils for more than 3 minutes will damage the rear differential.

1. Install the left rear driveshaft, then connect the battery power to the No. 1 terminal of the left clutch electromagnetic coil 2P connector (A) and ground to the No. 2 terminal.



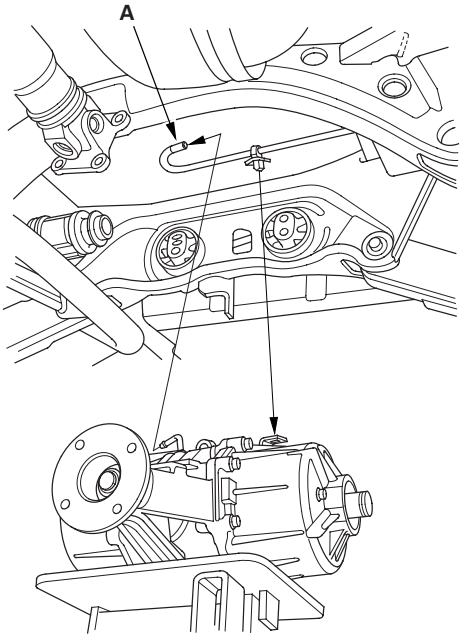
2. Check the backlash of the companion flange (B) with a dial indicator (C).

   Standard: 1.23—2.38 mm (0.048—0.094 in.)

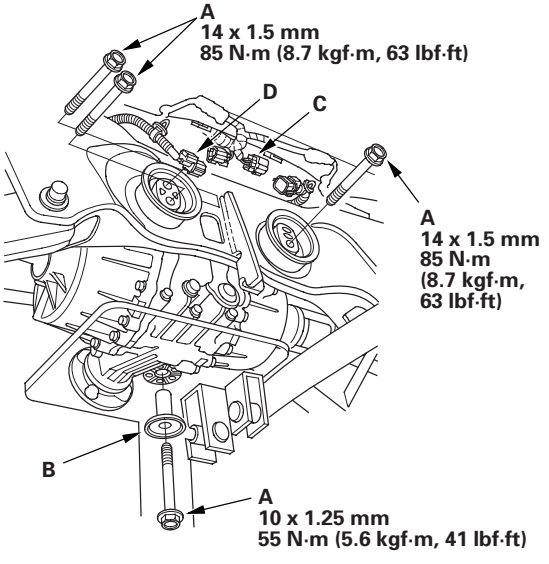
3. If the backlash is out of standard, replace the rear differential.

Rear Differential Installation

1. Raise the rear differential a little on the transmission jack, then connect the breather tube (A) to the rear differential.



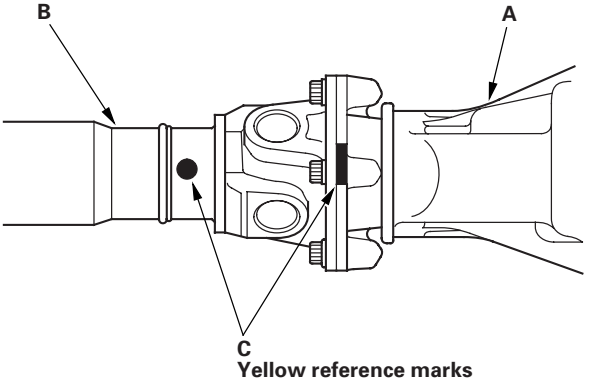
2. Raise the rear differential to the mounting level, then install the mounting bolts (A) and washer (B).



3. Connect the 6P (C) and 2P (D) connectors.

4. Install the rear driveshaft (see page 16-36).

5. Install the new rear differential (A) onto the propeller shaft (B), by aligning the reference mark (C). Make sure you use new mounting bolts.



6. Attach the propeller shaft to the transfer and the rear differential by aligning the reference marks (see page 16-41).

7. Refill the differential with recommended fluid (see page 15-47).

Driveline/Axle

Driveline/Axle

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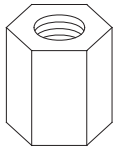
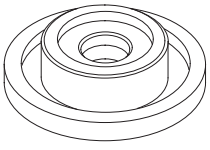
Special Tools

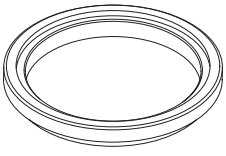
Ref. No.	Tool Number	Description	Qty
①	071AF-S3VA100	Ball Joint Thread Protector, 14 mm	1
②	07JAD-PH80101	Oil Seal Driver Attachment	1
③	07LAF-SM40300	Support Base Attachment	1
④	07MAC-SL0A202	Ball Joint Remover, 28 mm	1
⑤	07XAC-001020A	Threaded Adapter, 24 x 1.5 mm	1
⑥	07XAC-001030A	Threaded Adapter, 26 x 1.5 mm	1
⑦	07746-0010300	Attachment, 42 x 47 mm	1
⑧	07749-0010000	Driver	1
⑨	07947-4630100	Fork Seal Driver, 39.2 x 49.5 x 15 mm	1
⑩	07965-SD90100	Support Base	1
⑪	07AAD-S9VA000	Driveshaft Remover	1



①

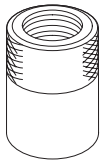


②

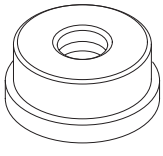


③

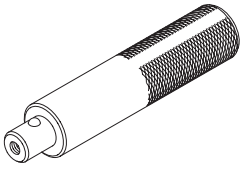
④



⑤, ⑥

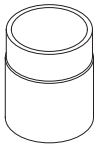


⑦

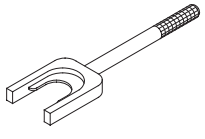


⑧

⑨

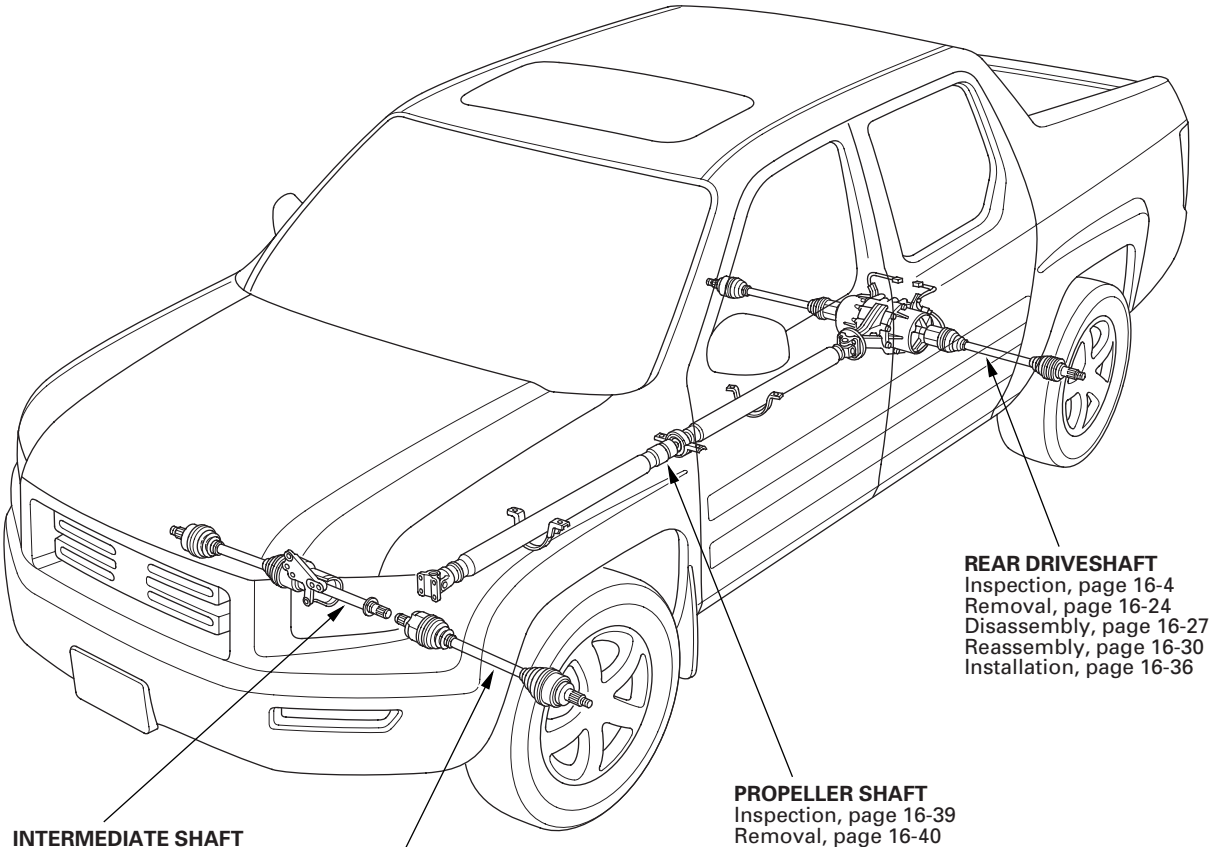


⑩



⑪

Component Location Index



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PROPELLER SHAFT
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INTERMEDIATE SHAFT
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FRONT DRIVESHAFT
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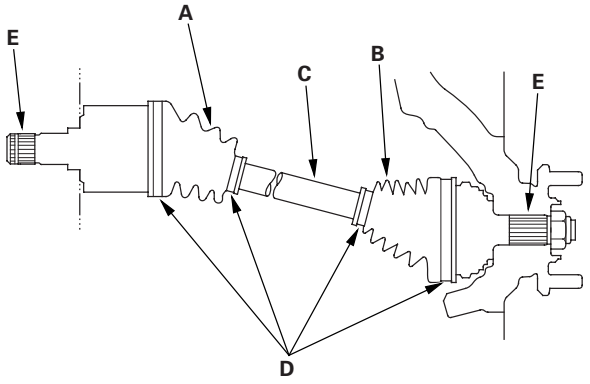
Driveshaft Inspection

1. Check the inboard boot (A) and the outboard boot (B) on the driveshaft (C) for cracks, damage, leaking grease, and loose boot bands (D). If any damage is found, replace the boot and boot bands.



2. Turn the driveshaft by hand, and make sure the splines (E) and joint are not excessively loose.

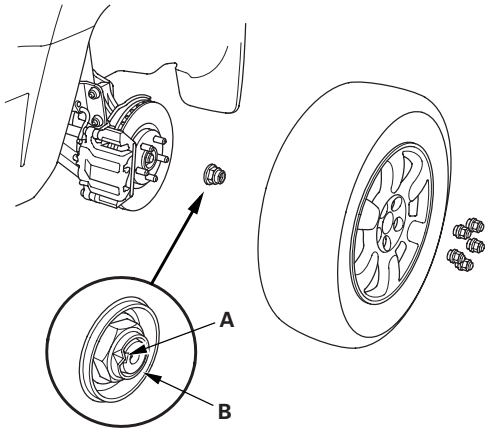
3. Make sure the driveshaft is not twisted, bent, or cracked; if it is, replace it.

Front Driveshaft Removal

Special Tools Required
Ball joint thread protector, 14 mm 071AF-S3VA100

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-10).

2. Remove the wheel nuts and front wheels.

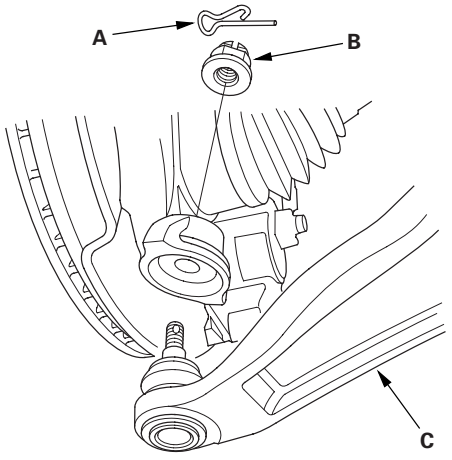


3. Lift up the locking tab (A) on the spindle nut (B), then remove, and discard the nut.

4. If you need to remove the left driveshaft, drain the transmission fluid (see step 3 on page 14-210). It is not necessary to drain the transmission fluid when the right driveshaft is removed.

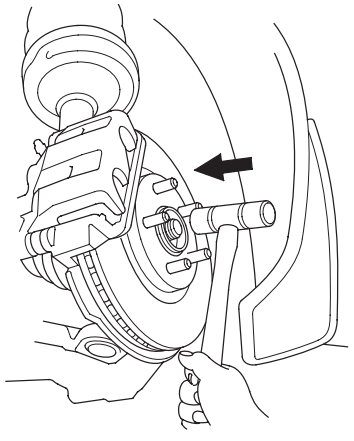
5. Remove the lock pin (A) from the lower arm ball joint castle nut (B), and remove the nut (see page 18-14).

   NOTE:
   - To avoid damaging the ball joint, install the ball joint thread protector onto the threads of the ball joint.
   - Be careful not to damage the ball joint boot when installing the remover.



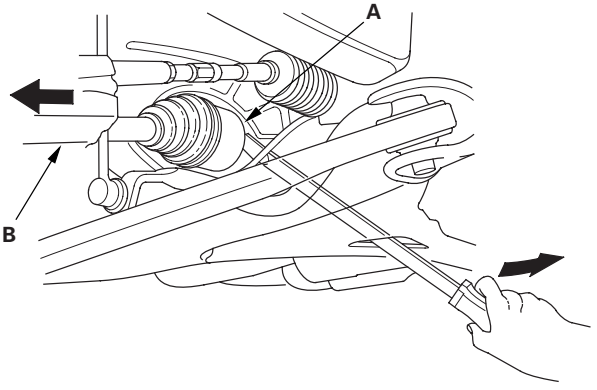
6. Separate the ball joint from the lower arm (C) with the special tool (see step 1 on page 18-12).

7. Pull the knuckle outward, and remove the driveshaft outboard joint from the front wheel hub using a plastic hammer.

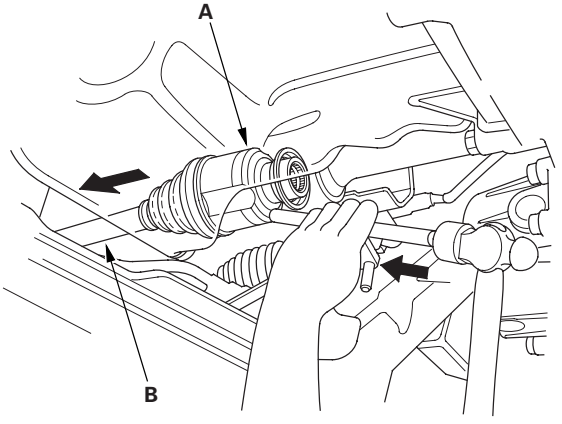


8. Pry (left driveshaft)/tap (right driveshaft) the inboard joint (A), and remove the driveshaft from the differential case or bearing support as an assembly. Do not pull on the driveshaft (B); the inboard joint may come apart. Pull the driveshaft straight out to avoid damaging the differential oil seal or the intermediate shaft outer seal.

Left driveshaft:



Right driveshaft:

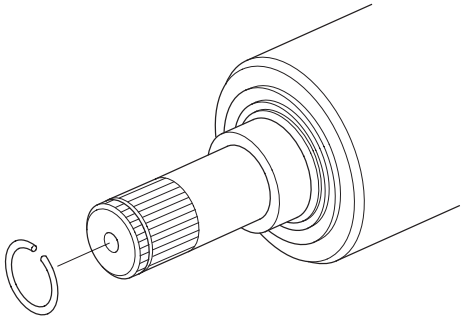


Front Driveshaft Disassembly

Special Tools Required
- Threaded adapter, 26 x 1.5 mm 07XAC-001030A
- Slide hammer, 5/8'' x 18 UNF, commercially available

Inboard Joint Side

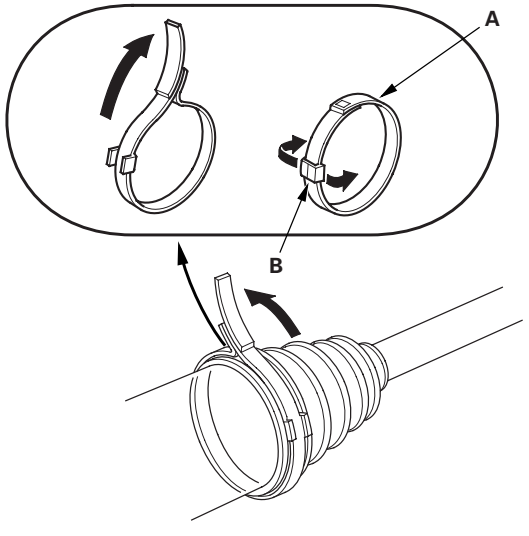
1. Remove the set ring from the inboard joint (left driveshaft).



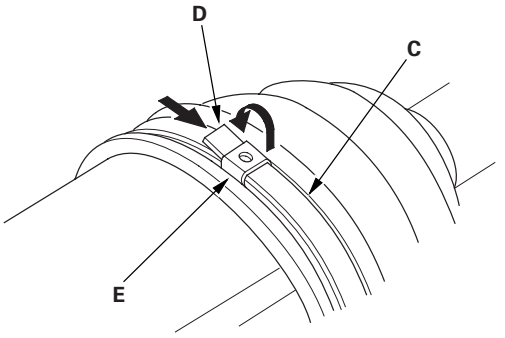
2. Remove the boot bands. Be careful not to damage the boot.

   - If the boot band is a locking tab type (A), pry up the locking tab (B) with a screwdriver, and lift up the end of the band.
   - If the boot band is a double loop type (C), lift up the band end (D), and push it into the clip (E).

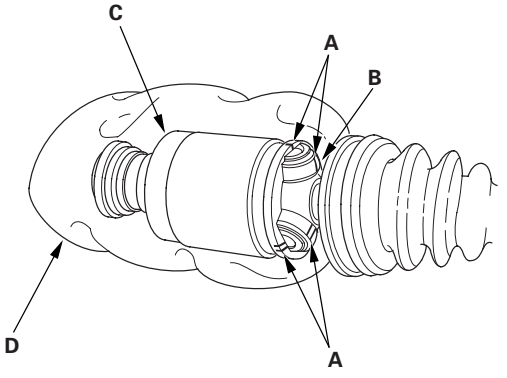
Locking tab type



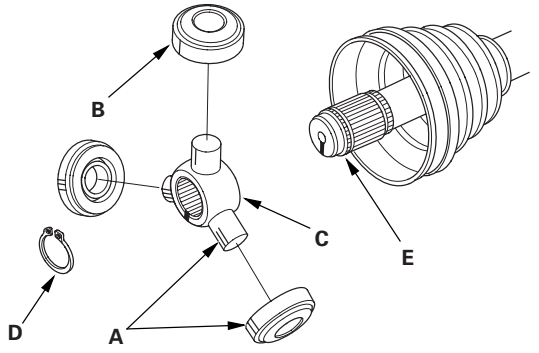
Double loop type



3. Make a mark (A) on each roller (B) and inboard joint (C) to identify the locations of rollers and grooves in the inboard joint. Then remove the inboard joint on the shop towel (D). Be careful not to drop the rollers when separating them from the inboard joint.



4. Make a mark (A) on the rollers (B) and spider (C) to identify the locations of the rollers on the spider, then remove the rollers.



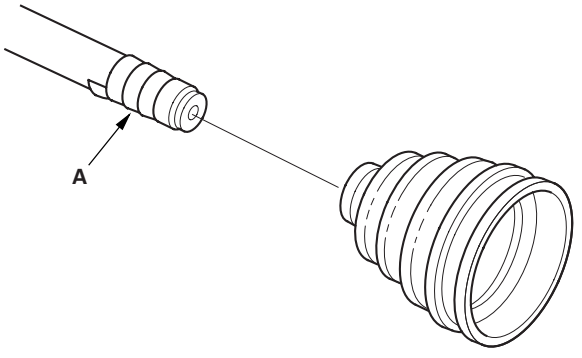
5. Remove the snap ring (D).

6. Mark the spider and driveshaft (E) to identify the position of the spider on the shaft.

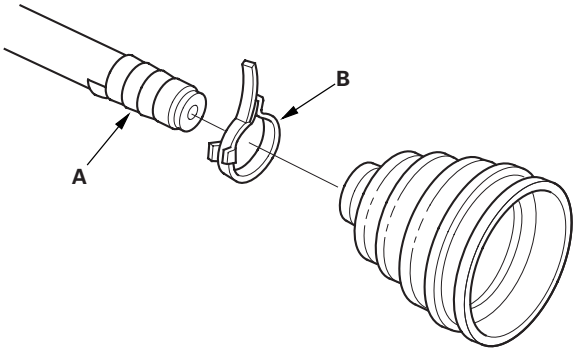
7. Remove the spider.

8. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damage to the boot.

Double loop type



Locking tab type



9. Remove the inboard boot and boot band (B). Be careful not to damage the boot.

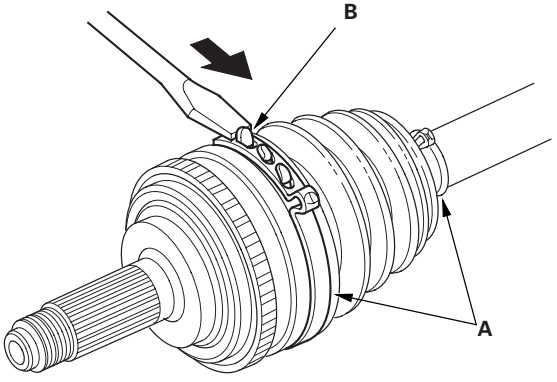
10. Remove the vinyl tape.

(cont'd)

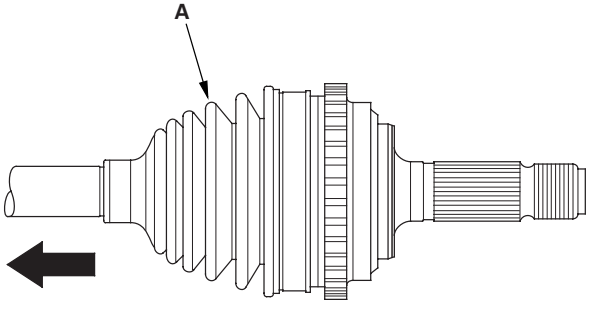
Front Driveshaft Disassembly (cont'd)

Outboard Joint Side

1. Remove the boot bands (A). Lift up the three tabs (B) with a screwdriver. Be careful not to damage the boot.

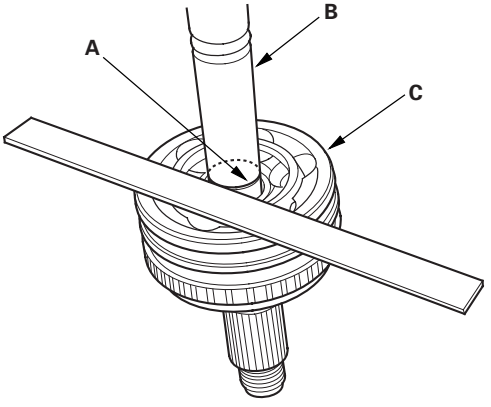


2. Slide the outboard boot (A) partially to the inboard joint side. Be careful not to damage the boot.

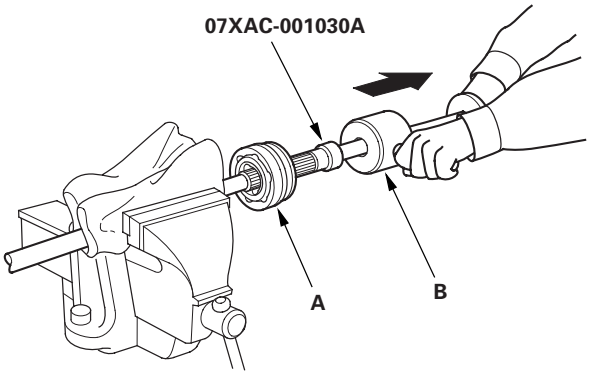


3. Wipe off the grease to expose the driveshaft and the outboard joint inner race.

4. Make a mark (A) on the driveshaft (B) at the same position of the outboard joint end (C).

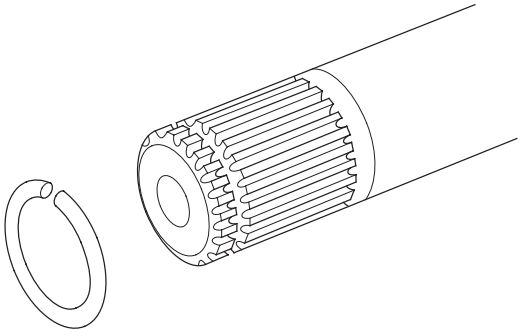


5. Carefully clamp the driveshaft in a vise.

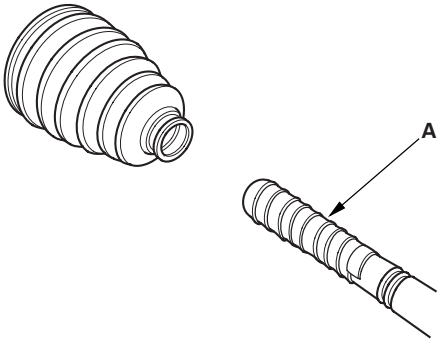


6. Remove the outboard joint (A) using the special tool and a commercially available 5/8'' x 18 UNF slide hammer (B).

7. Remove the driveshaft from the vise.
8. Remove the circlip from the driveshaft.



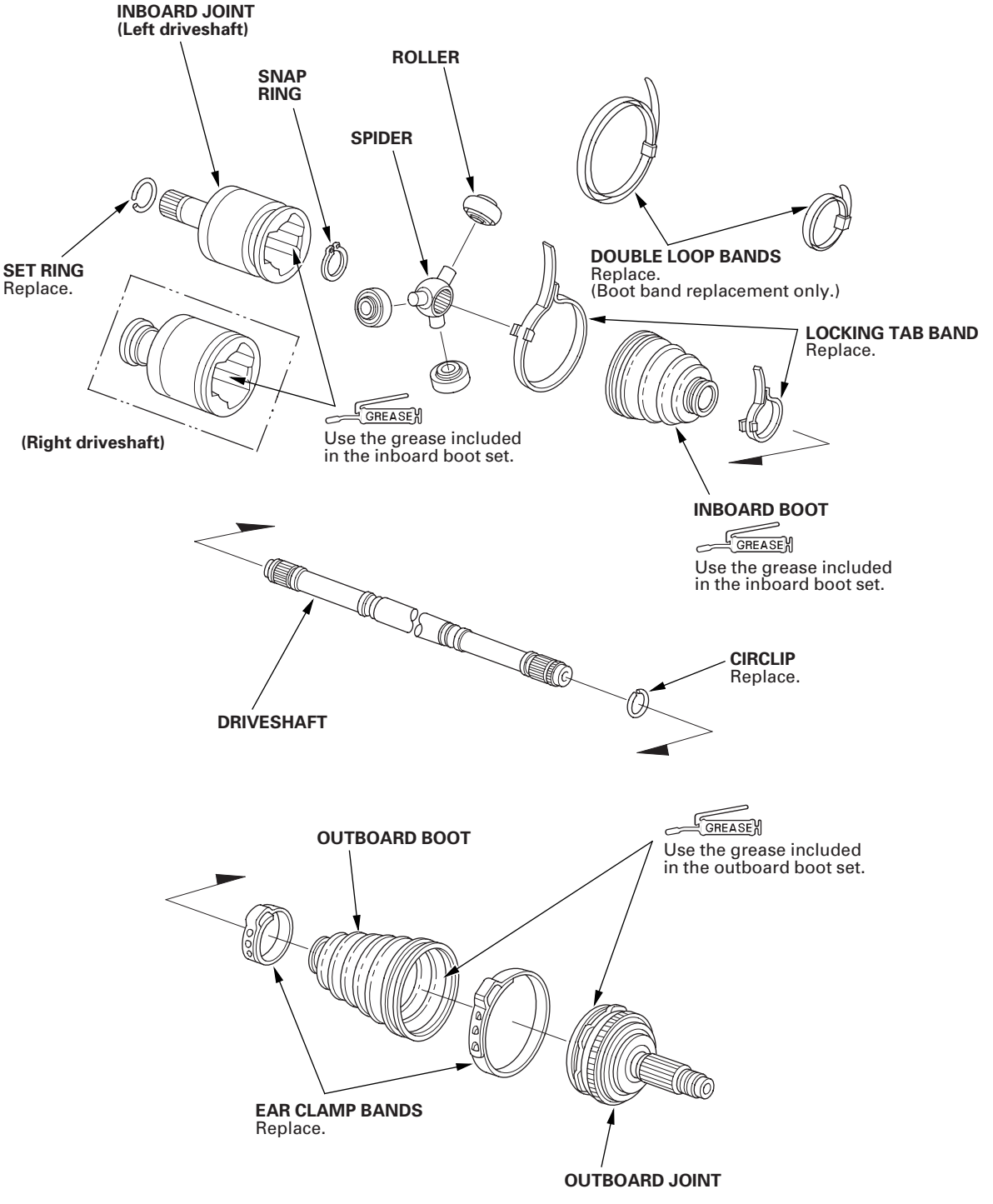
9. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damage to the boot.



10. Remove the outboard boot. Be careful not to damage the boot.
11. Remove the vinyl tape.

Front Driveshaft Reassembly

Exploded View



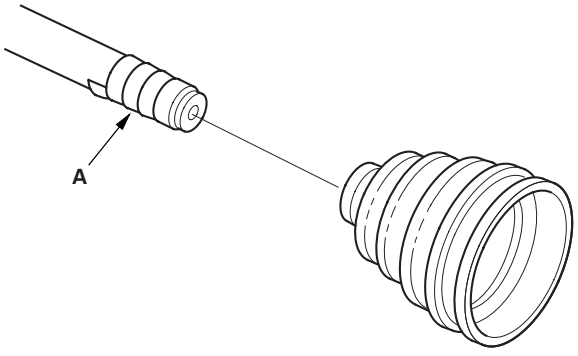
Special Tools Required
- Boot band tool, KD-3191 or equivalent, commercially available
- Boot band pliers, Kent-Moore J-35910 or equivalent, commercially available

NOTE: Refer to the Exploded View as needed during this procedure.

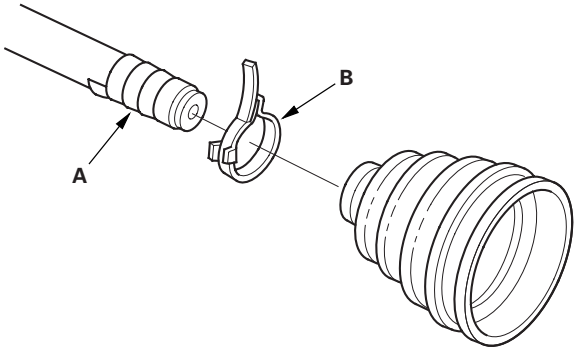
Inboard Joint Side

1. Wrap the splines with vinyl tape (A) to prevent damage to the inboard boot.

Double loop type

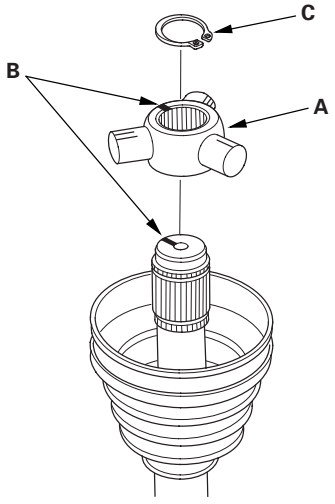


Locking tab type



2. Install the inboard boot and boot band (B) on the driveshaft, then remove the vinyl tape. Be careful not to damage the inboard boot.

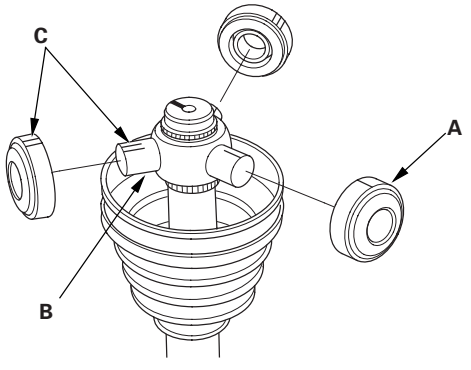
3. Install the spider (A) onto the driveshaft by aligning the marks (B) on the spider and the end of the driveshaft.



4. Fit the snap ring (C) into the driveshaft groove. Always rotate the snap ring in its groove to make sure it is fully seated.

5. Fit the rollers (A) onto the spider (B) with their high shoulders facing outward, and note these items:

   - Reinstall the rollers in their original positions on the spider by aligning the marks (C).
   - Hold the driveshaft pointed up to prevent the rollers from falling off.

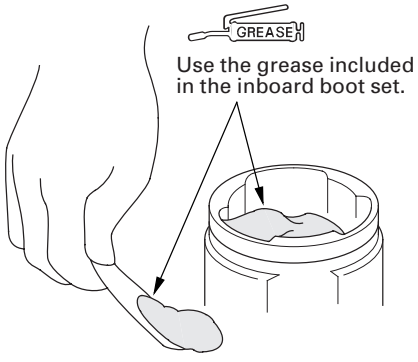


(cont'd)

Front Driveshaft Reassembly (cont'd)

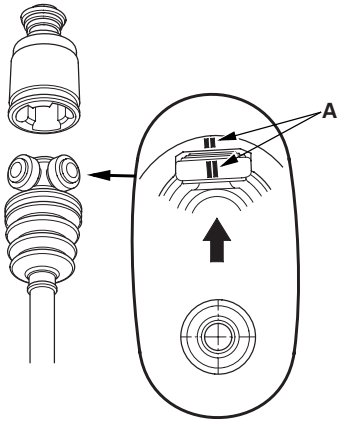
6. Pack the inboard joint with the joint grease included in the new driveshaft set.

   Grease quantity
   '06 model
   Inboard joint: 210—230 g (7.4—8.1 oz)
   '07—08 models
   Inboard joint: 190—210 g (6.7—7.4 oz)



7. Fit the inboard joint onto the driveshaft, and note these items:

   - Reinstall the inboard joint onto the driveshaft by aligning the marks (A) on the inboard joint and the rollers.
   - Hold the driveshaft so the inboard joint points up to prevent it from falling off.

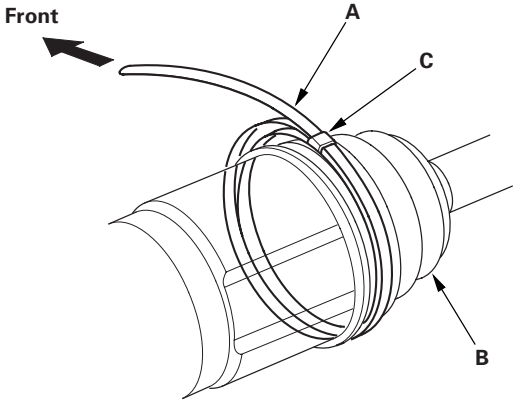


8. Install the boot bands.

   - For the double loop type, go to step 9. (Boot band replacement only.)
   - For the locking tab type, go to step 18.

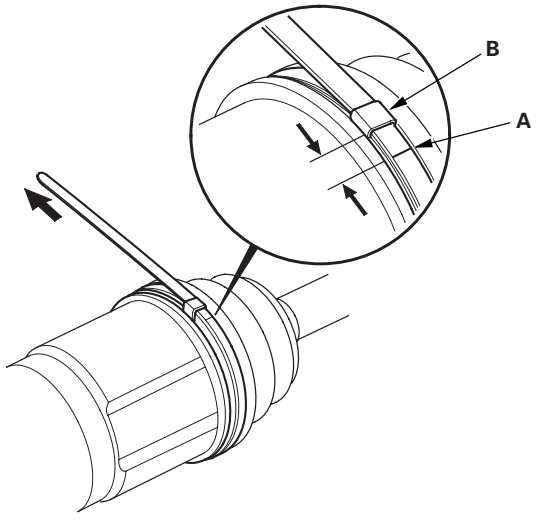
9. Fit the boot ends onto the driveshaft and the inboard joint, then install the new double loop band (A) onto the boot (B).

   NOTE: Pass the end of the new double loop band through the clip (C) twice in the direction of the forward rotation of the driveshaft.

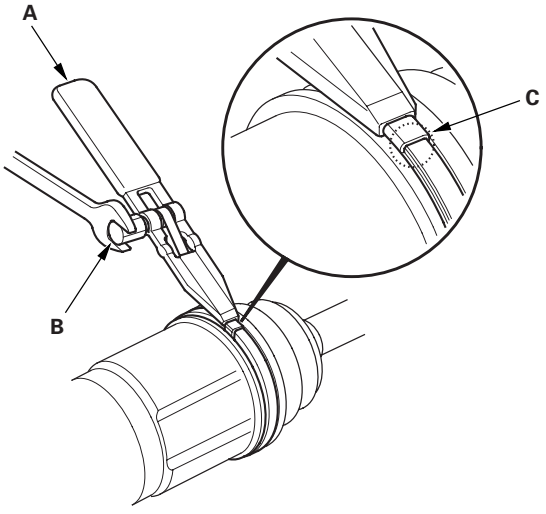


10. Pull up the slack in the band by hand.

11. Mark a position (A) on the band 10—14 mm (0.4—0.6 in.) from the clip (B).

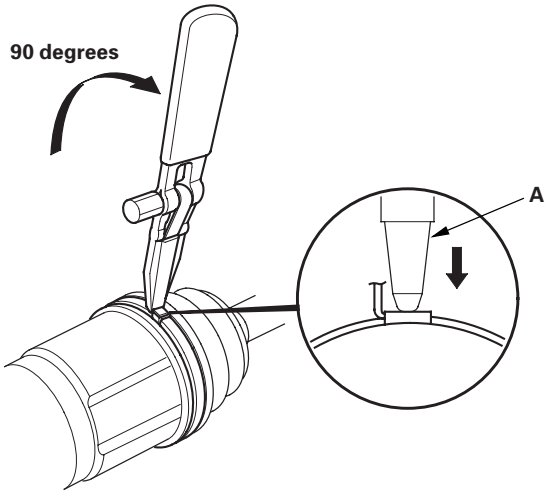


12. Thread the free end of the band through the nose section of a commercially available boot band tool KD-3191 or equivalent (A), and into the slot on the winding mandrel (B).

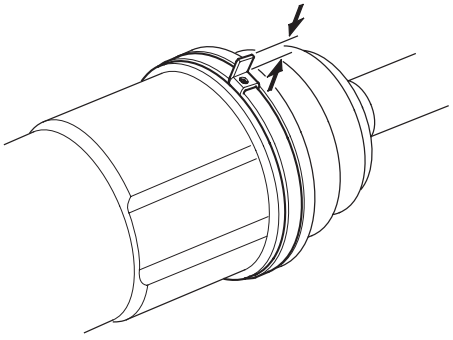


13. Place a wrench on the winding mandrel of the boot band tool, and tighten the band until the marked spot (C) on the band meets the edge of the clip.

14. Lift up the boot band tool to bend the free end of the band 90 degrees to the clip. Center-punch (A) the clip, then fold over the remaining tail onto the clip.

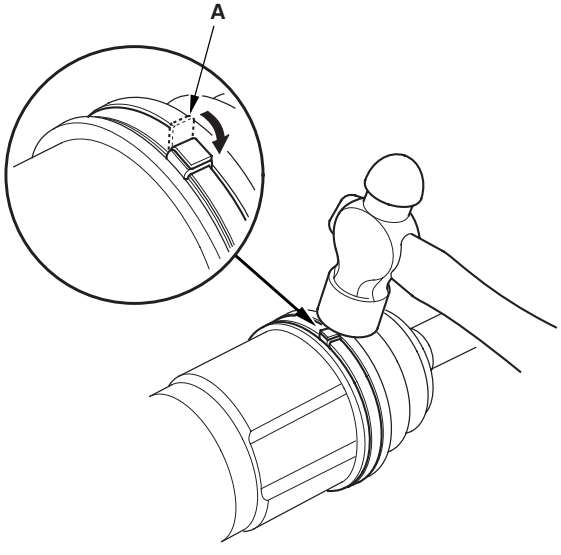


15. Unwind the boot band tool, and cut off the excess free end of the band to leave a 5—10 mm (0.2—0.4 in.) tail protruding from the clip.



16. Bend the band end (A) by tapping it down with a hammer.

    NOTE:
    - Make sure the band and clip do not interfere with anything, and the band does not move.
    - Remove any grease remaining on the surrounding surfaces.

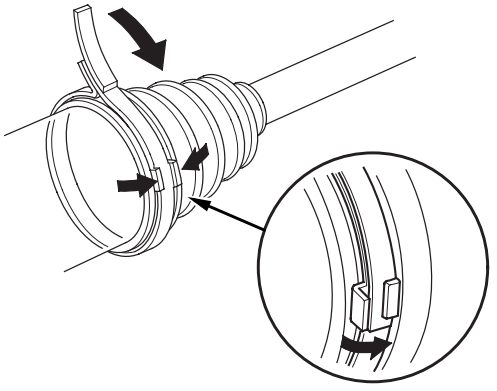


17. Repeat steps 9 through 16 for the band on the other end of the boot, then go to step 20.

(cont'd)

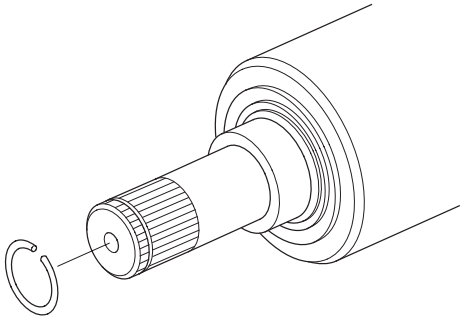
Front Driveshaft Reassembly (cont'd)

18. Install a new locking tab type boot band on the inboard joint side of the inboard boot. Fold down the locking tabs.



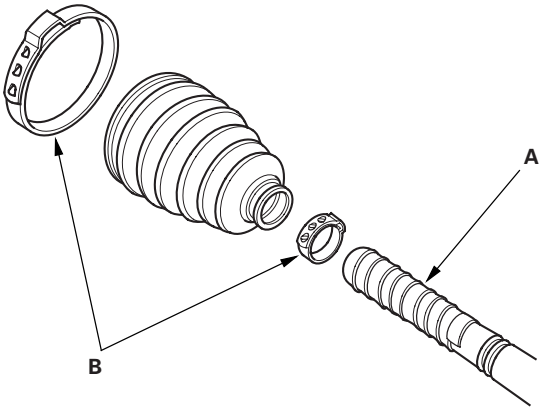
19. Lightly tap on the doubled-over portions to secure them in place.

20. Install a new set ring (left driveshaft).



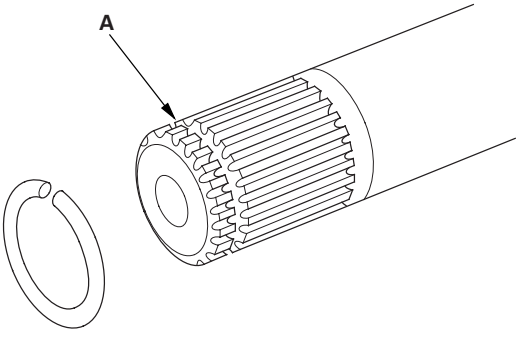
Outboard Joint Side

1. Wrap the splines with vinyl tape (A) to prevent damage to the outboard boot.

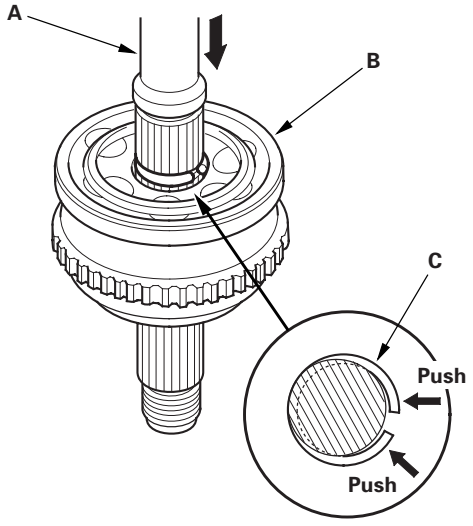


2. Install the new ear clamp bands (B) and the outboard boot, then remove the vinyl tape. Be careful not to damage the boot.

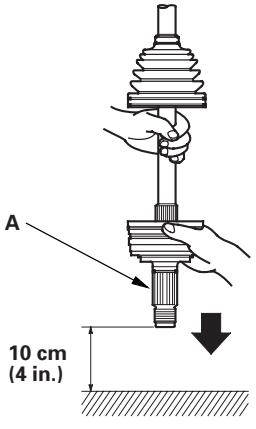
3. Install the new circlip in the driveshaft groove (A).



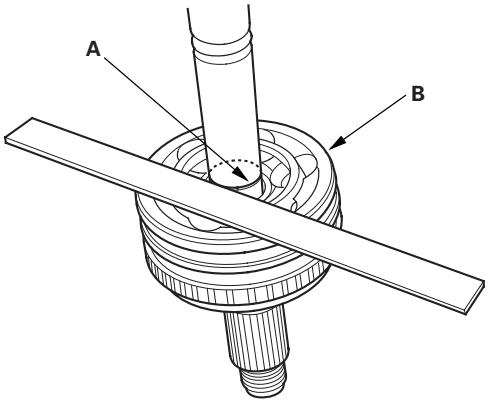
4. Insert the driveshaft (A) into the outboard joint (B) until the circlip (C) is closed.



5. To completely seat the outboard joint, pick up the driveshaft and joint, and tap them from about 10 cm (4 in.) onto a hard surface. Do not use a hammer as excessive force may damage the driveshaft. Be careful not to damage the threaded section (A) of the outboard joint.

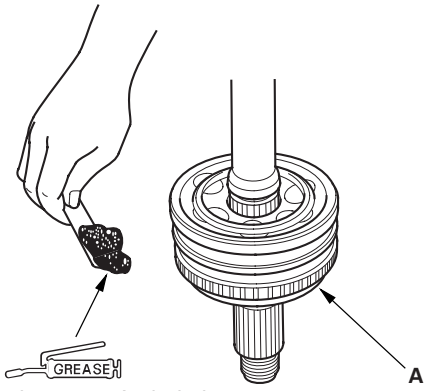


6. Check the alignment of the paint mark (A) with the outboard joint end (B).



7. Pack the outboard joint (A) with the joint grease included in the new joint boot set.

Grease quantity
Outboard joint: 155—175 g (5.5—6.2 oz)

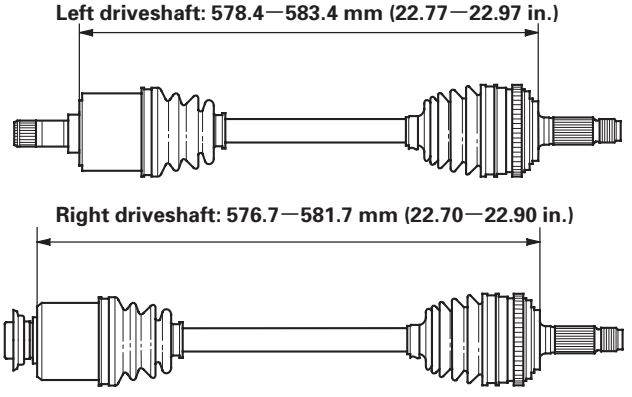


Use the grease included in the outboard boot set.

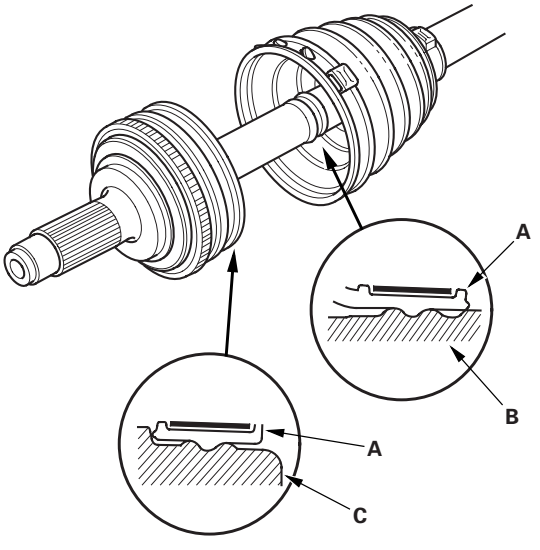
(cont'd)

Front Driveshaft Reassembly (cont'd)

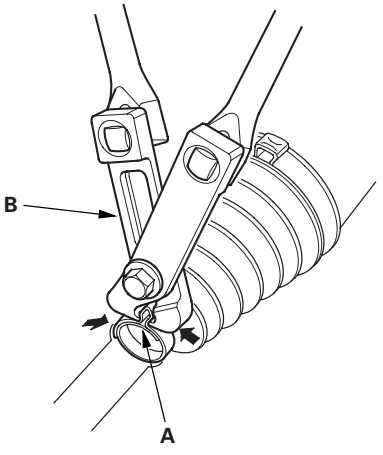
8. Adjust the length of the driveshafts to these measurements, then adjust the boots to halfway between full compression and full extension. Make sure the ends of the boots seat in the grooves of the driveshaft and joint. This prevents a vacuum or too much air in the boot, preventing it from compressing or extending property.



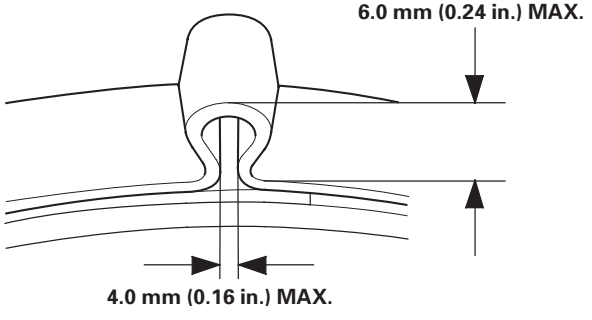
9. Fit the boot (A) ends onto the driveshaft (B) and the outboard joint (C).



10. Close the ear portion (A) of the band with commercially available boot band pliers Kent-Moore J-35910 or equivalent (B).



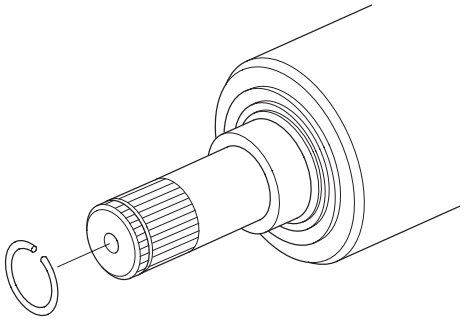
11. Check the clearance between the closed ear portion of the band. If the clearance is not within the standard, close the ear portion of the band tighter.



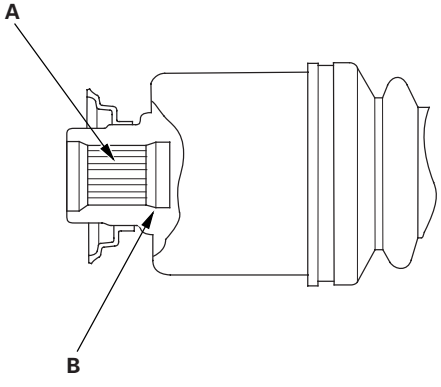
12. Repeat steps 10 and 11 for the band on the other end of the boot.

Front Driveshaft Installation

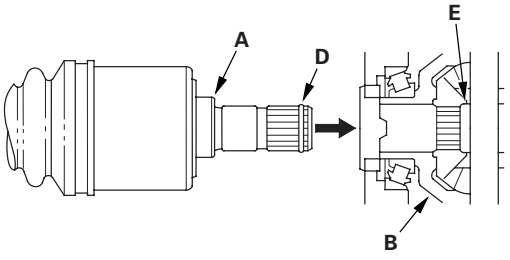
1. Install a new set ring in the set ring groove of the driveshaft (left driveshaft).

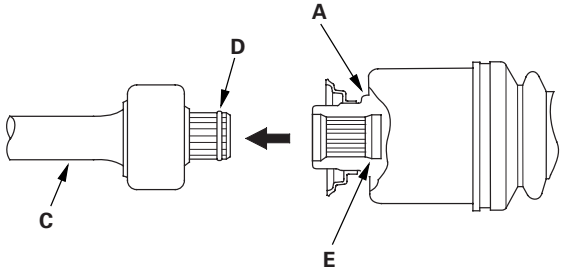


2. Apply 2.0—3.0 g (0.07—0.10 oz) of grease to the whole splined surface (A) of the right driveshaft. After applying grease, remove the grease from the splined grooves at intervals of 2—3 splines and from the set ring groove (B) so that air can bleed from the intermediate shaft.

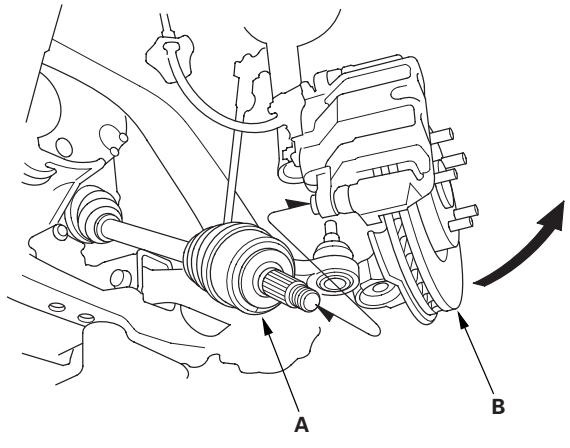


3. Clean the areas where the driveshaft contacts the differential thoroughly with solvent or brake cleaner, and dry with compressed air. Insert the inboard end (A) of the driveshaft into the differential (B) or intermediate shaft (C) until the set ring (D) locks into the groove (E).





4. Install the outboard joint (A) into the front hub (B).

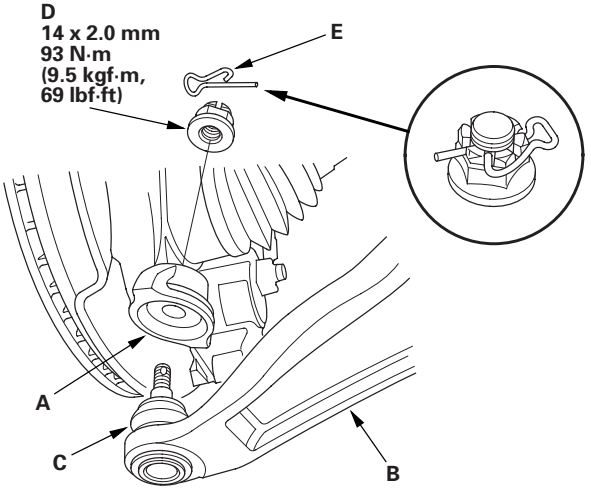


(cont'd)

Front Driveshaft Installation (cont'd)

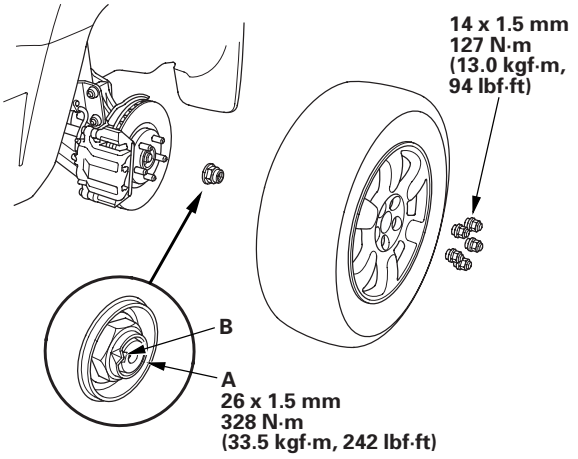
5. Install the knuckle (A) onto the lower arm (B). Be careful not to damage the ball joint boot (C). Wipe off the grease before tightening the nut at the ball joint. Torque the new castle nut (D) to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the nut by loosening it.

   NOTE: Make sure the ball joint boot is not damaged or cracked.



6. Install the new lock pin (E) into the pin hole as shown.

7. Install a new spindle nut (A), then tighten the nut. After tightening, use a drift to stake the spindle nut shoulder (B) against the driveshaft.



8. Clean the mating surfaces of the brake disc and the front wheel, then install the front wheel with the wheel nuts.

9. Turn the front wheel by hand, and make sure there is no interference between the driveshaft and surrounding parts.

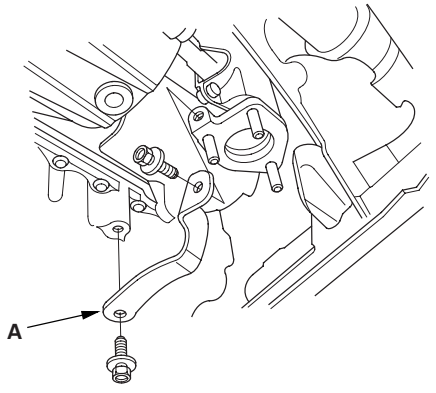
10. Tighten the flange bolts and the self-locking nut with the vehicle's weight on the damper.

11. Refill the transmission with recommended fluid (see step 5 on page 14-210).

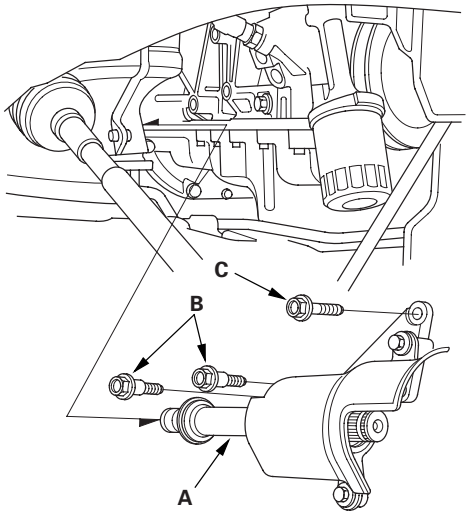
12. Check the front wheel alignment, and adjust it if necessary (see page 18-5).

Intermediate Shaft Removal

1. Drain the transmission fluid (see step 3 on page 14-210).
2. Remove the right driveshaft (see step 8 on page 16-5).
3. Remove the subframe stiffener (see step 38 on page 14-222).
4. Remove the exhaust pipe A (see step 39 on page 14-223).
5. Remove the exhaust pipe bracket (A).



6. Remove the flange bolt (A), and two dowel bolts (B).

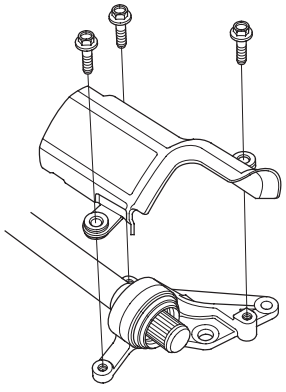


7. Remove the intermediate shaft (C) from the differential. Hold the intermediate shaft horizontally until it is clear of the differential to prevent damage to the differential oil seal.

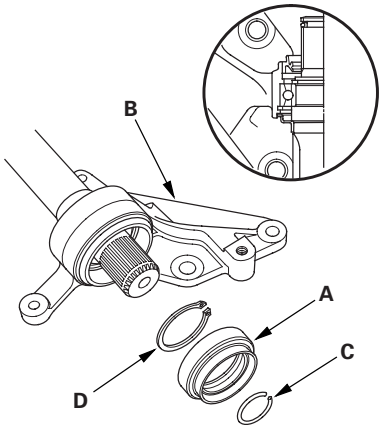
Intermediate Shaft Disassembly

Special Tools Required
- Driver 07749-0010000
- Support base attachment 07LAF-SM40300
- Support base 07965-SD90100
- Attachment, 42 x 47 mm 07746-0010300

1. Remove the heat shield.



2. Remove the intermediate shaft outer seal (A) from the bearing support (B).

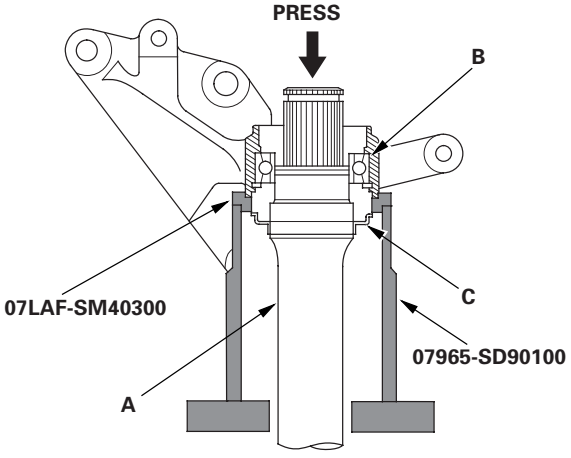


3. Remove the set ring (C) and external snap ring (D).

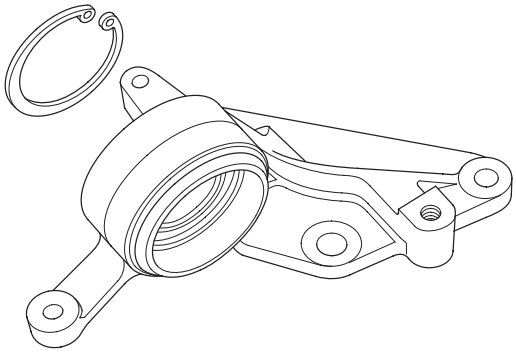
(cont'd)

Intermediate Shaft Disassembly (cont'd)

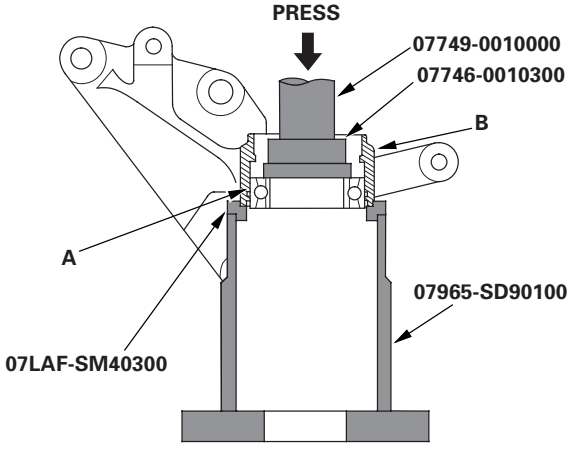
4. Press the intermediate shaft (A) out of the intermediate shaft bearing (B) using the special tools and a press. Be careful not to damage the metal rings (C) on the intermediate shaft during disassembly.



5. Remove the internal snap ring.

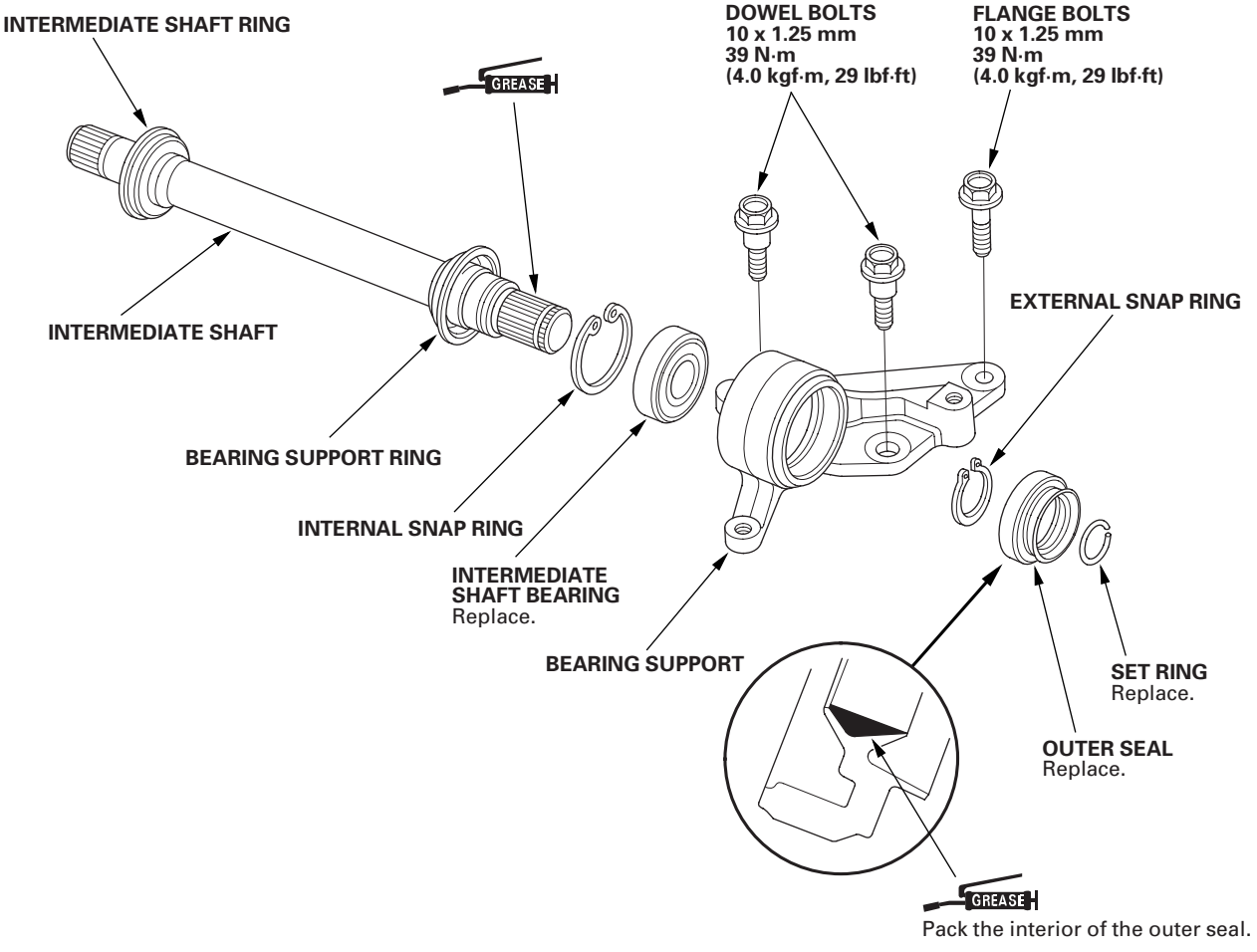


6. Press the intermediate shaft bearing (A) out of the bearing support (B) using the special tools and a press.



Intermediate Shaft Reassembly

Exploded View



(cont'd)

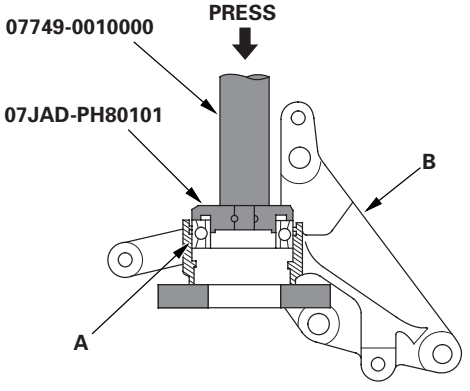
Intermediate Shaft Reassembly (cont'd)

Special Tools Required
- Driver 07749-0010000
- Support base attachment 07LAF-SM40300
- Support base 07965-SD90100
- Oil seal driver attachment 07JAD-PH80101
- Fork seal driver, 39.2 x 49.5 x 15 mm 07947-4630100

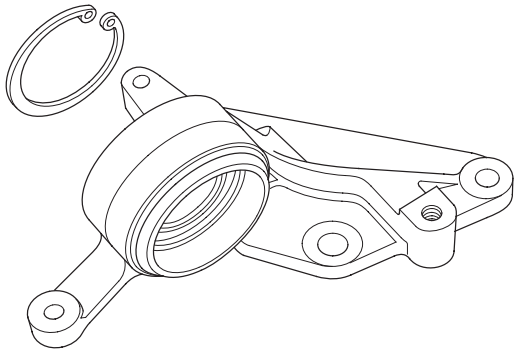
NOTE: Refer to the Exploded View as needed during this procedure.

1. Clean the disassembled parts with solvent, and dry them with compressed air. Do not wash the rubber parts with solvent.

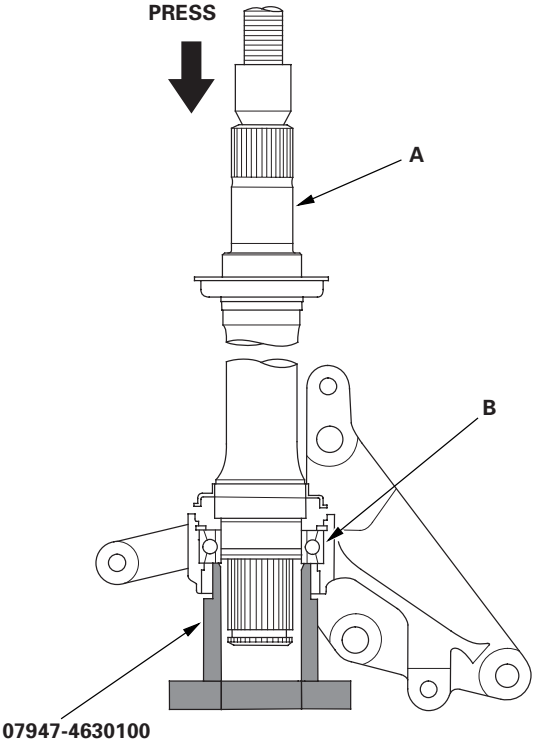
2. Press the intermediate shaft bearing (A) into the bearing support (B) using the special tools and a press.



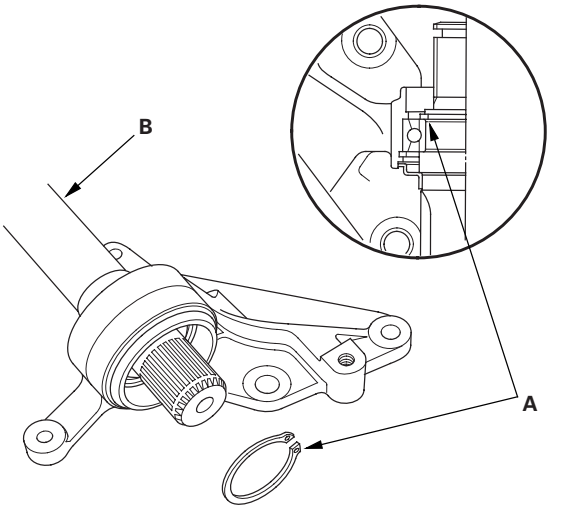
3. Install, then seat the internal snap ring in the groove of the bearing support.



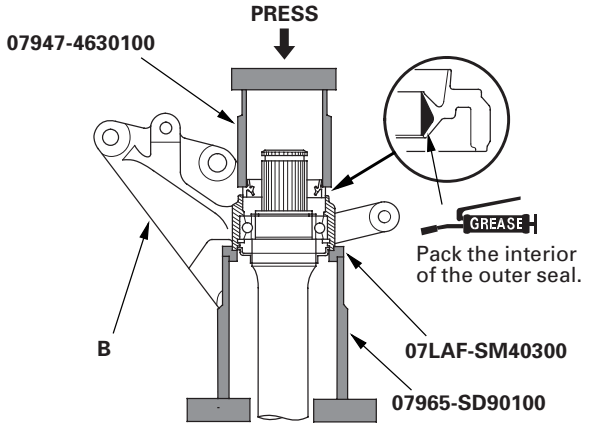
4. Press the intermediate shaft (A) into the shaft bearing (B) using the special tool and a press.



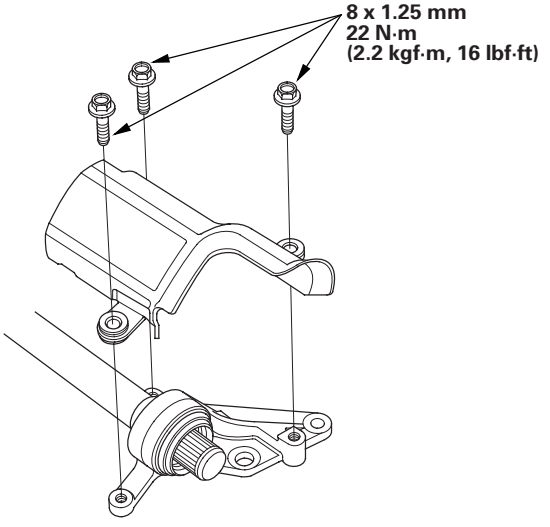
5. Install, then seat the external snap ring (A) in the groove of the intermediate shaft (B).



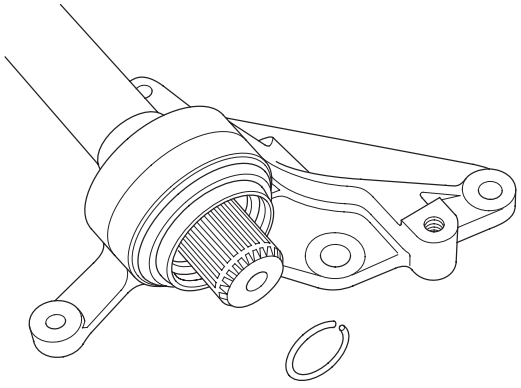
6. Install the outer seal (A) into the bearing support (B) using the special tools and a press.



7. Install the heat shield onto the bearing support.

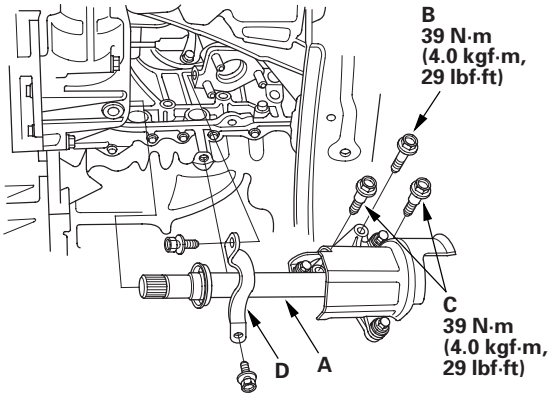


8. Install the set ring.



Intermediate Shaft Installation

1. Use solvent or brake cleaner to thoroughly clean the areas where the intermediate shaft (A) contacts the transmission (differential) and dry with compressed air. Insert the intermediate shaft assembly into the differential. Hold the intermediate shaft horizontally to prevent damage to the differential oil seal.

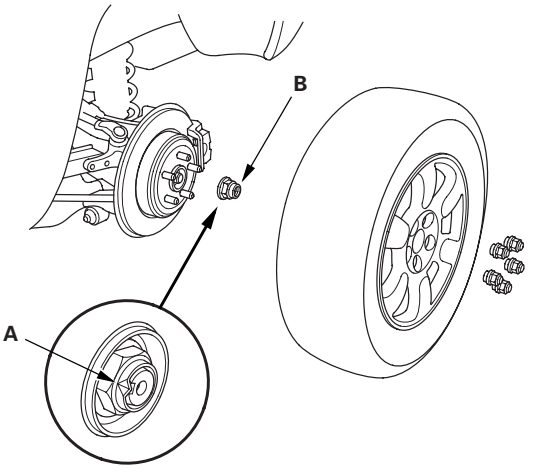


2. Install the flange bolt (B), two dowel bolts (C), and exhaust pipe bracket (D).
3. Install the exhaust pipe A (see step 33 on page 14-234).
4. Install the subframe stiffener (see step 34 on page 14-234).
5. Install the right driveshaft (see page 16-17).
6. Refill the transmission with the recommended fluid (see step 5 on page 14-210).

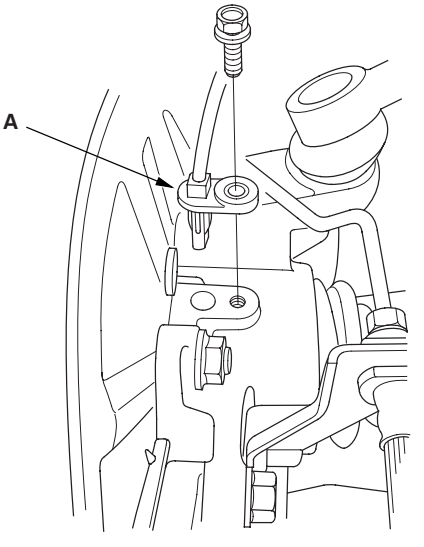
Rear Driveshaft Removal

Special Tools Required
- Driveshaft remover 07AAD-S9VA000
- Ball joint remover, 28 mm 07MAC-SL0A202

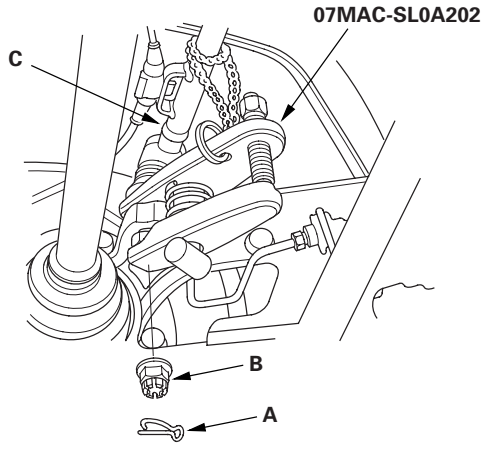
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-10).
2. Drain the differential fluid (see page 15-47).
3. Remove the wheel nuts and rear wheels.



4. Lift up the locking tab (A) on the spindle nut (B), then remove and discard the nut.
5. Remove the VSA rear wheel sensor (A).

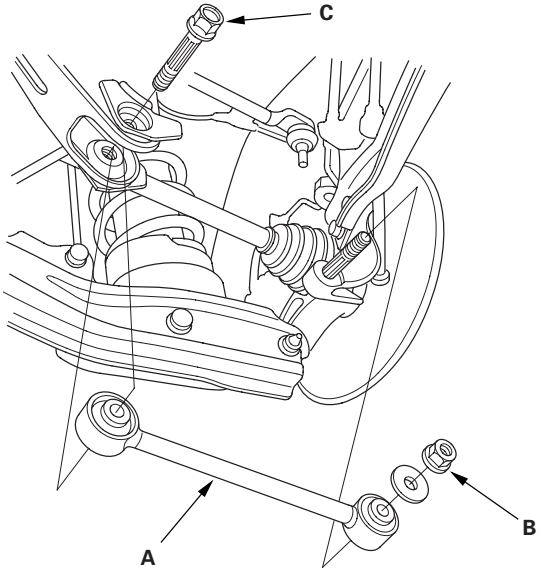


6. Remove the lock pin (A) from the upper arm ball joint castle nut (B), and remove the nut (see page 18-34).

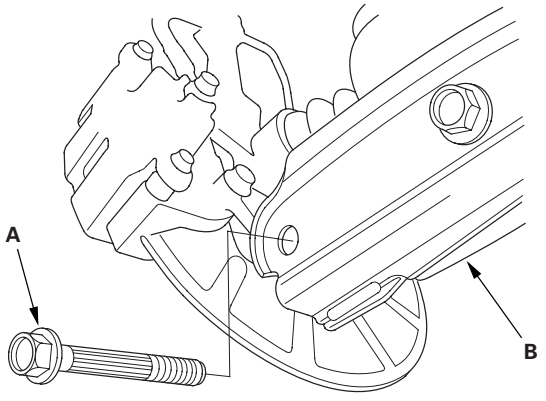


7. Separate the ball joint from the upper arm (C) with the special tool (see page 18-11).

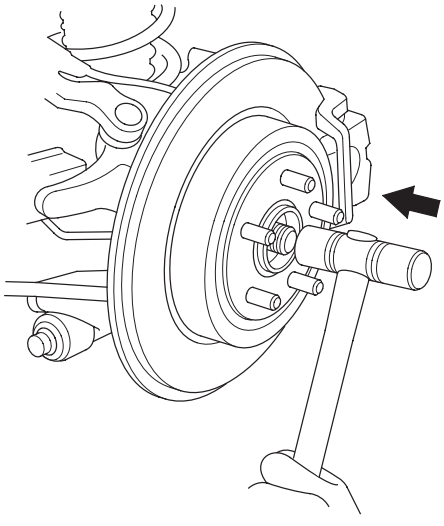
8. Remove the special self-locking nut (B), washer and frange bolt (C), then remove the lower arm A.



9. Remove the flange bolt (A) and separate the knuckle from the lower arm B.



10. Pull the knuckle outward, and disconnect the rear driveshaft outboard joint from the rear wheel hub using a plastic hammer.

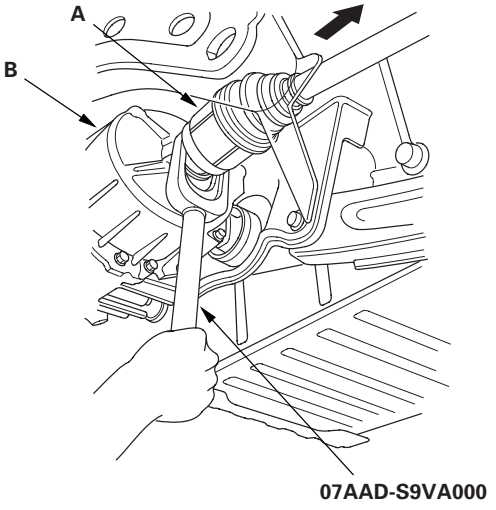


(cont'd)

Rear Driveshaft Removal (cont'd)

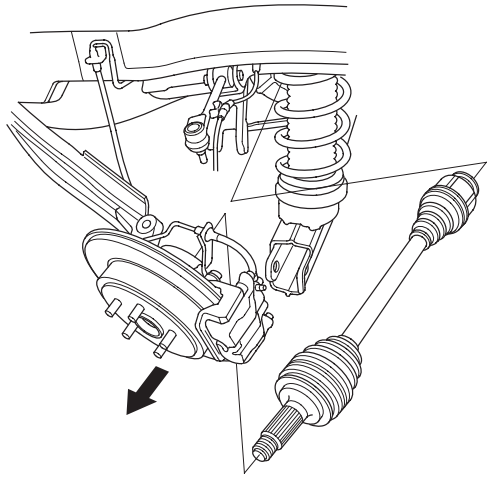
11. Using the special tool, pry out the inboard joint (A) from the differential (B).

    NOTE: This is a prying tool; do not strike it with a hammer.



12. Remove the rear driveshaft.

    NOTE: When removing the outboard joint, the knuckle is supported with a floor jack. Make sure not to over extend the brake hose.



Rear Driveshaft Disassembly

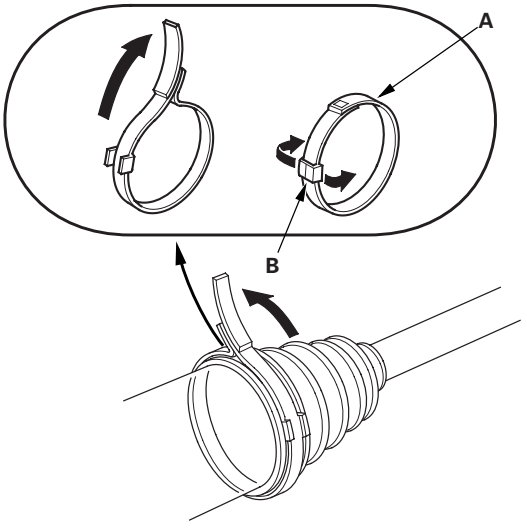
Special Tools Required
Threaded adapter, 24 x 1.5 mm 07XAC-001020A

Inboard Joint Side

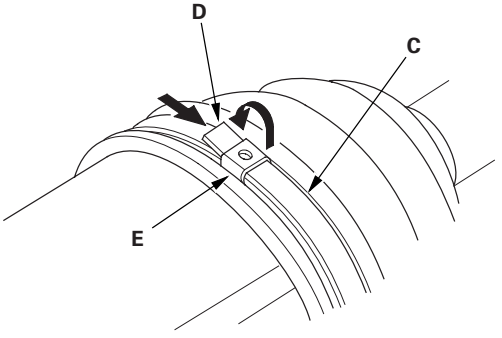
1. Remove the boot bands. Be careful not to damage the boot.

   - If the boot band is a locking tab type (A), pry up the locking tab (B) with a screwdriver, and lift up the end of the band.
   - If the boot band is a double loop type (C), lift up the band end (D), and push it into the clip (E).

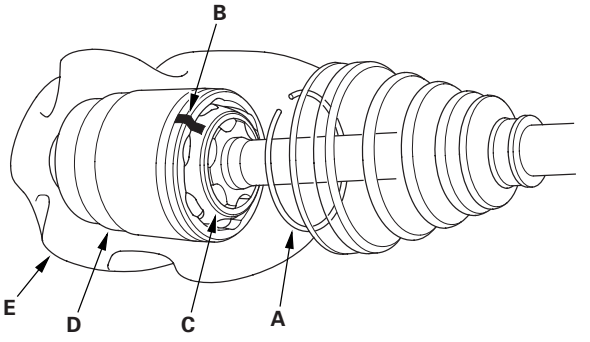
Locking tab type



Double loop type

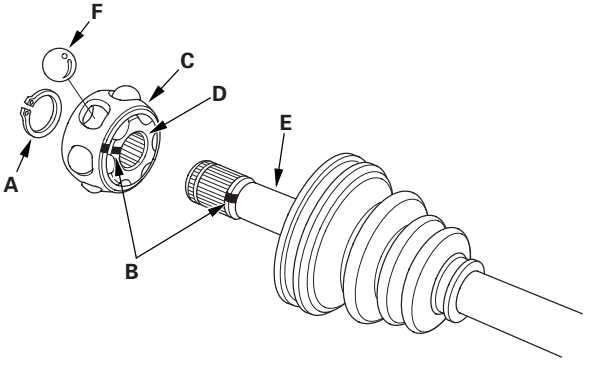


2. Remove the circlip (A).



3. Make a mark (B) on the bearing retainer (C) and inboard joint (D) to identify the locations of ball bearings and grooves in the inboard joint. Then remove the inboard joint on the shop towel (E). Be careful not to drop the ball bearings when separating them from the inboard joint.

4. Remove the snap ring (A).



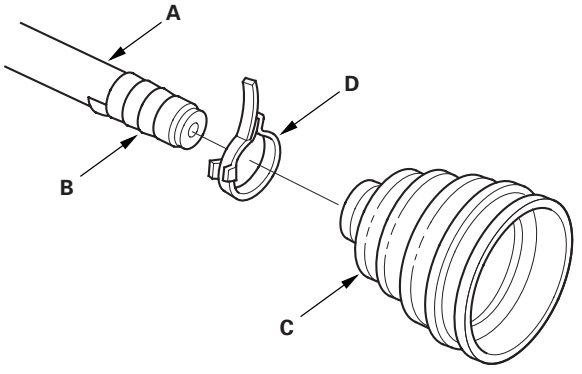
5. Make a mark (B) on the bearing retainer (C), the bearing race (D), and driveshaft (E) to identify the position of the bearing retainer and the bearing race on the shaft.

6. Remove the bearing race and the steel ball bearings (F).

(cont'd)

Rear Driveshaft Disassembly (cont'd)

7. Wrap the splines on the driveshaft (A) with vinyl tape (B) to prevent damage to the boot.



8. Remove the inboard boot (C) and locking tab type boot band (D). Be careful not to damage the boot.

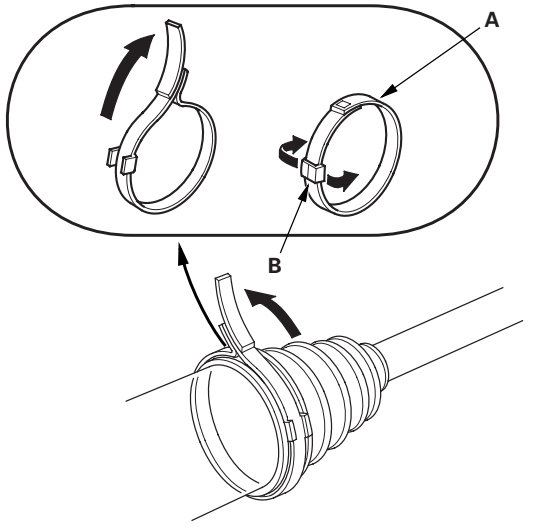
9. Remove the vinyl tape.

Outboard Joint Side

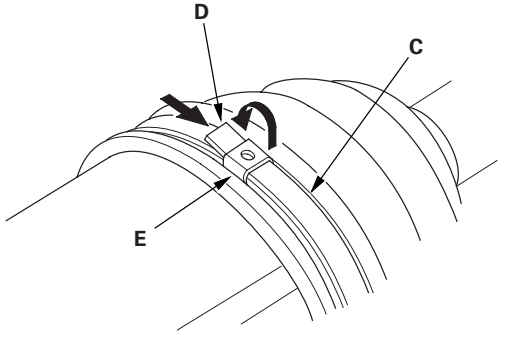
1. Remove the boot bands. Be careful not to damage the boot.

   - If the boot band is a locking tab type (A), pry up the locking tab (B) with a screwdriver, and lift up the end of the band.
   - If the boot band is a double loop type (C), lift up the band end (D), and push it into the clip (E).

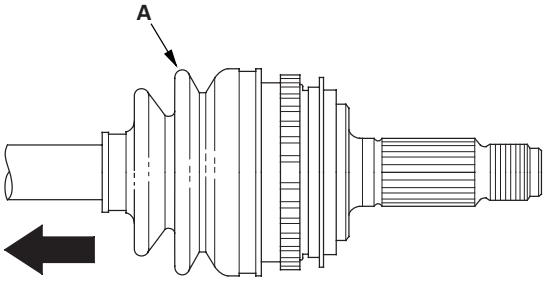
Locking tab type



Double loop type

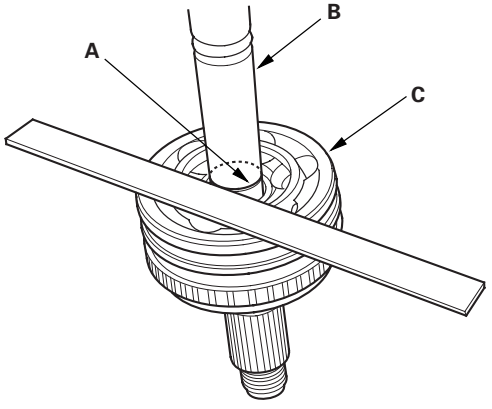


2. Slide the outboard boot (A) to the inboard joint side. Be careful not to damage the boot.

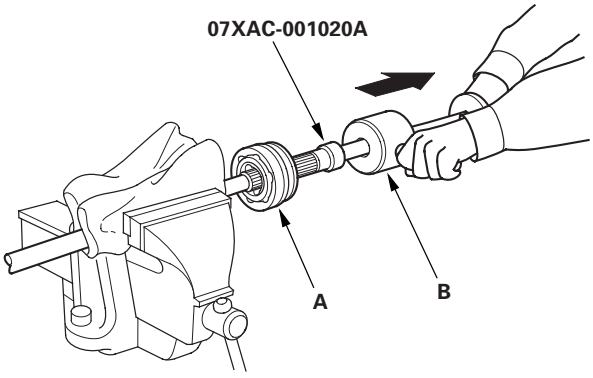


3. Wipe off the grease to expose the driveshaft and the outboard joint inner race.

4. Make a mark (A) on the driveshaft (B) at the same position of the outboard joint end (C).



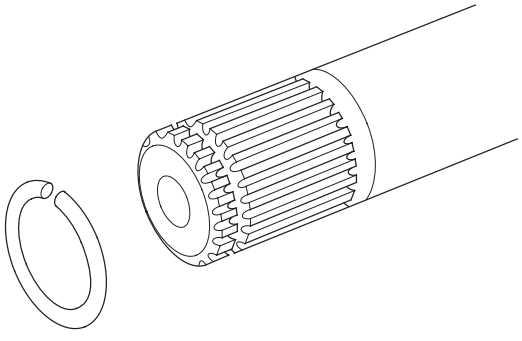
5. Carefully clamp the driveshaft in a vise.



6. Remove the outboard joint (A) using the special tool and a commercially available 5/8'' x 18 UNF slide hammer (B).

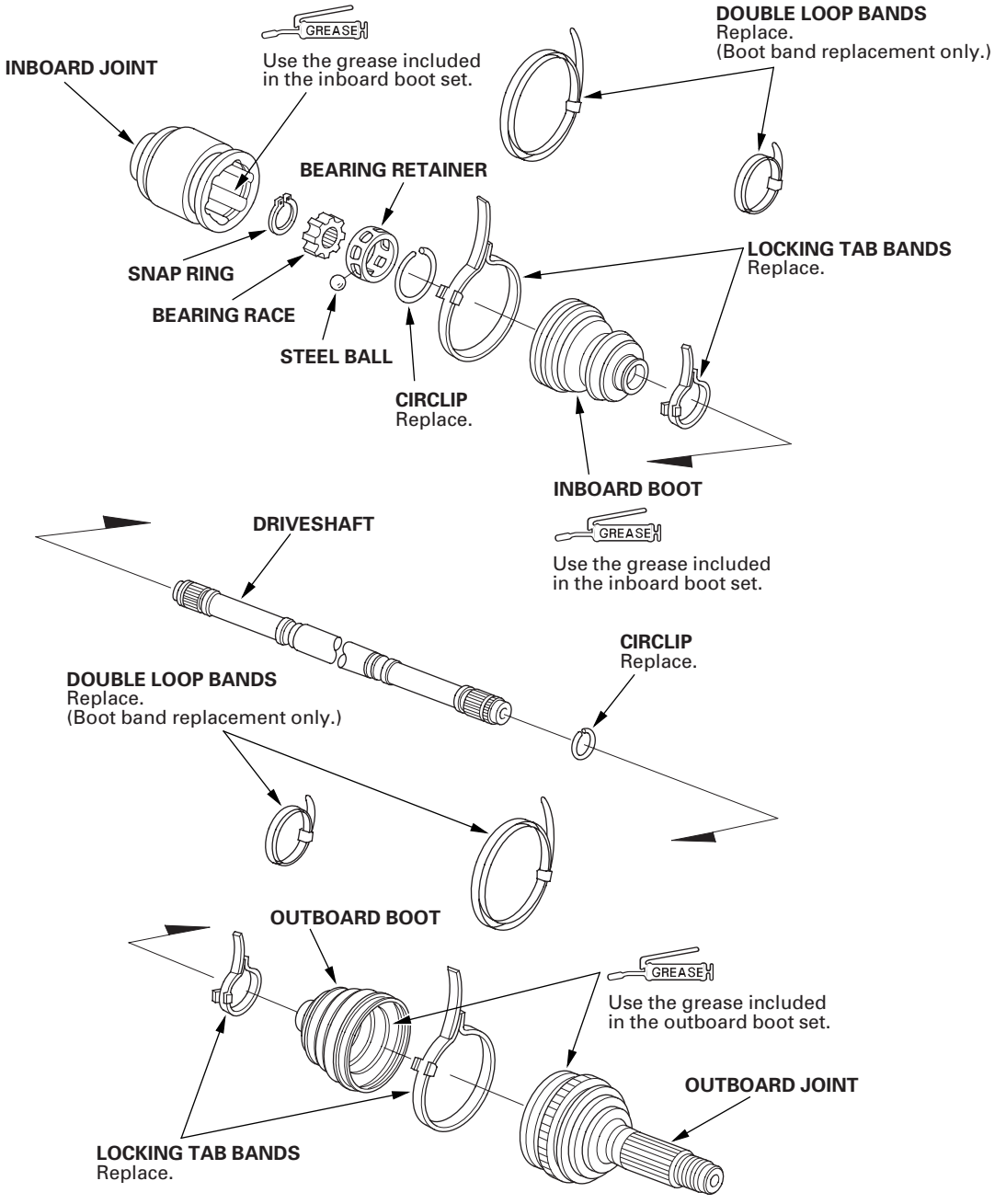
7. Remove the driveshaft from the vise.

8. Remove the circlip from the driveshaft.



Rear Driveshaft Reassembly

Exploded View



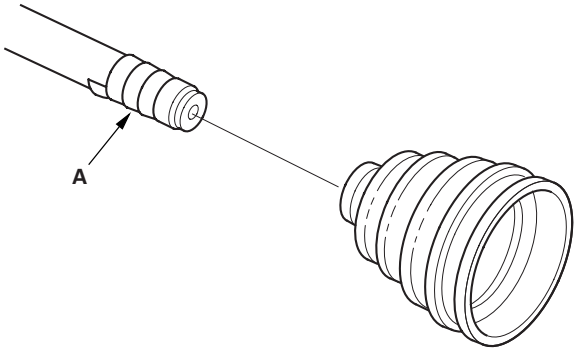
Special Tools Required
Boot band tool, KD-3191 or equivalent, commercially available

NOTE: Refer to the Exploded View as needed during this procedure.

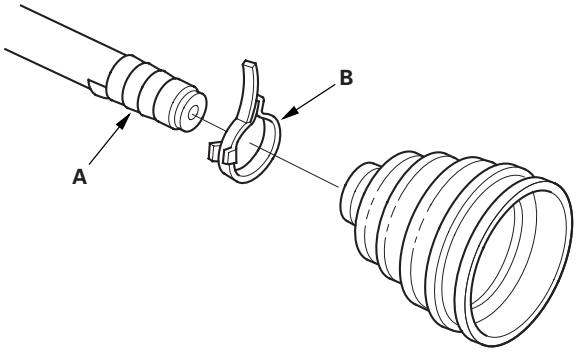
Inboard Joint Side

1. Wrap the splines with vinyl tape (A) to prevent damage to the inboard boot.

Double loop type

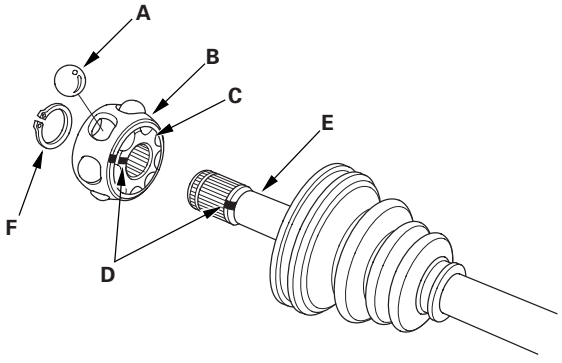


Locking tab type



2. Install the inboard boot and boot band (B) on the driveshaft, then remove the vinyl tape. Be careful not to damage the inboard boot.

3. Install the steel balls (A) and the bearing retainer (B) onto the bearing race (C) by aligning the marks (D) on the bearing retainer and the bearing race.

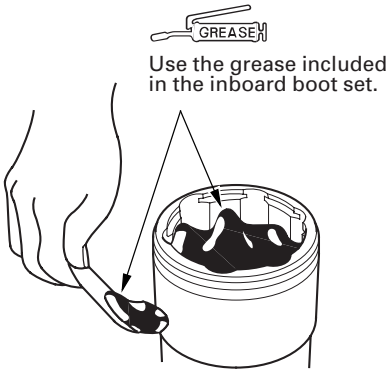


4. Install the bearing onto the driveshaft (E) by aligning the marks on the bearing and the driveshaft.

5. Install the snap ring (F).

6. Pack the inboard joint with the joint grease included in the new driveshaft set.

Grease quantity
Inboard joint: 130—140 g (4.6—4.9 oz)



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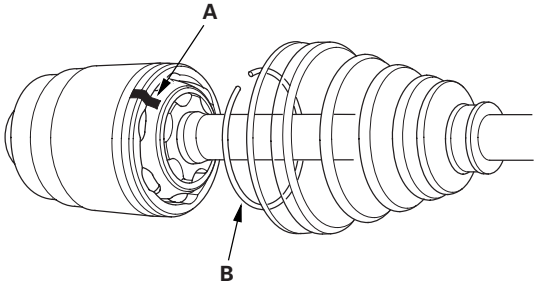
Rear Driveshaft Reassembly (cont'd)

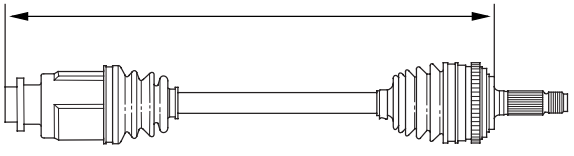
7. Install the inboard joint onto the driveshaft by aligning the marks (A) on the inboard joint and driveshaft.



8. Install the circlip (B).

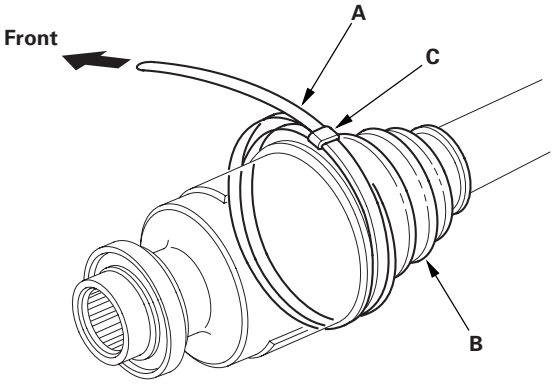
9. Adjust the length of the driveshafts to the figure as shown, then adjust the boots to halfway between full compression and full extension. Make sure the ends of the boots seat in the grooves of the driveshaft and joint.

Left driveshaft: 614.5—619.5 mm (24.19—24.38 in.)
Right driveshaft: 643.5—648.5 mm (25.33—25.53 in.)



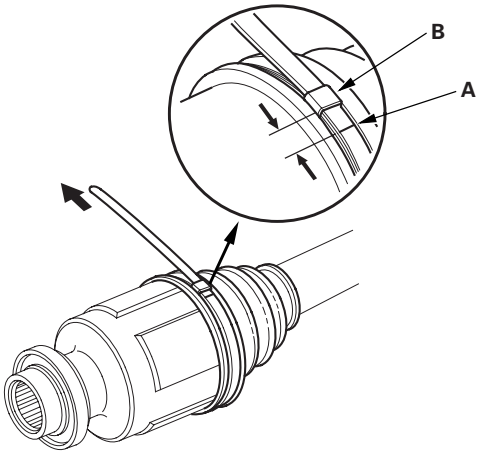
10. Fit the boot ends onto the driveshaft and the inboard joint, then install the new double loop band (A) onto the boot (B).

NOTE: Pass the end of the new double loop band through the clip (C) twice in the direction of the forward rotation of the driveshaft.

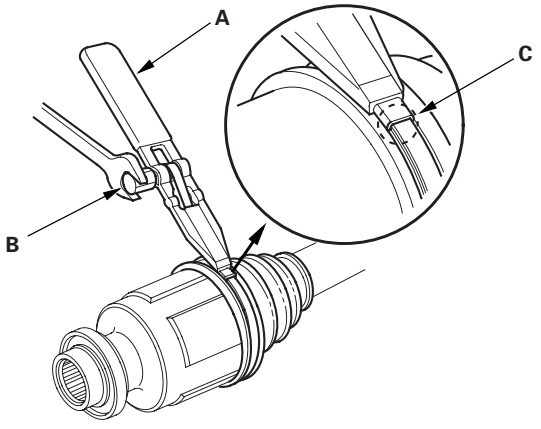


11. Pull up the slack in the band by hand.

12. Mark a position (A) on the band 10—14 mm (0.4—0.6 in.) from the clip (B).

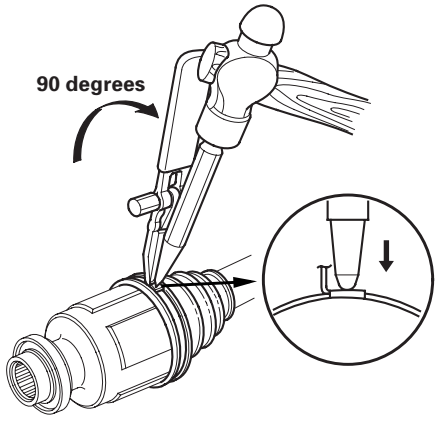


13. Thread the free end of the band through the nose section of the commercially available boot band tool KD-3191 or equivalent (A), and into the slot on the winding mandrel (B).

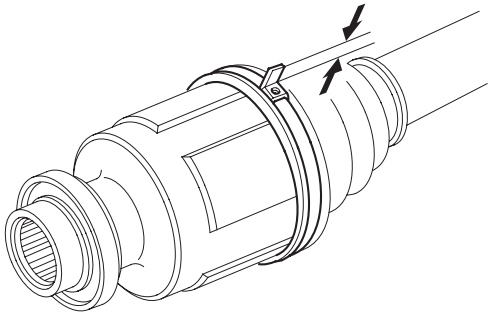


14. Place a wrench on the winding mandrel of the boot band tool, and tighten the band until the marked spot (C) on the band meets the edge of the clip.

15. Lift up the boot band tool to bend the free end of the band 90 degrees to the clip. Center-punch the clip, then fold over the remaining tail onto the clip.

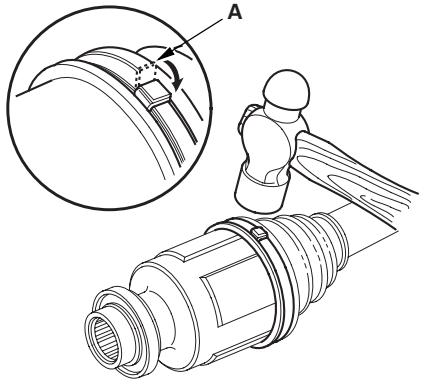


16. Unwind the boot band tool, and cut off the excess free end of the band to leave 5—10 mm (0.2—0.4 in.) from the clip.



17. Bend the band end (A) by tapping it down with a hammer.

    NOTE:
    - Make sure the band and clip do not interfere with anything, and the band does not move.
    - Remove any grease remaining on the surrounding surfaces.

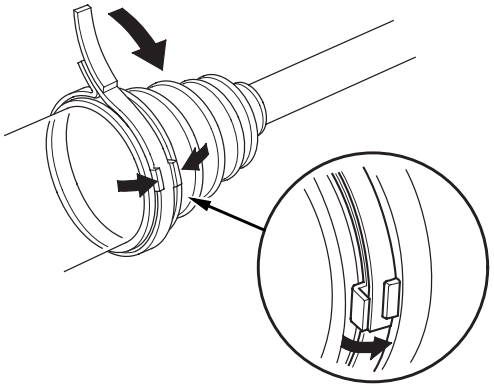


18. Install the boot band on the other end of the boot, and repeat steps 10 through 17.

(cont'd)

Rear Driveshaft Reassembly (cont'd)

19. Install a new locking tab type boot band on the inboard joint side of the inboard boot. Fold down the locking tabs.

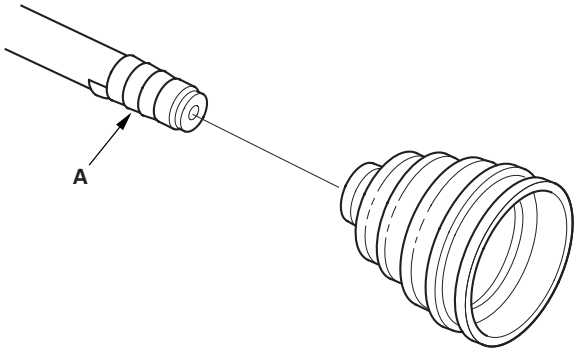


20. Lightly tap on the doubled-over portions to secure them in place.

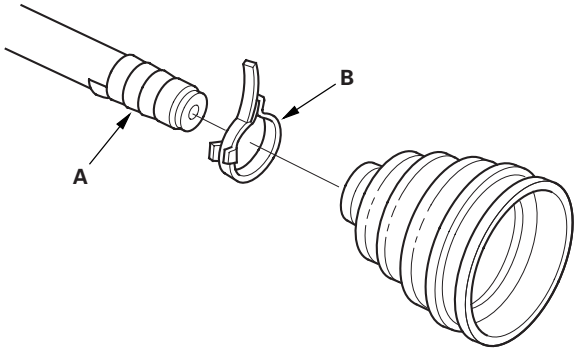
Outboard Joint Side

1. Wrap the splines with vinyl tape (A) to prevent damage to the outboard boot.

Double loop type

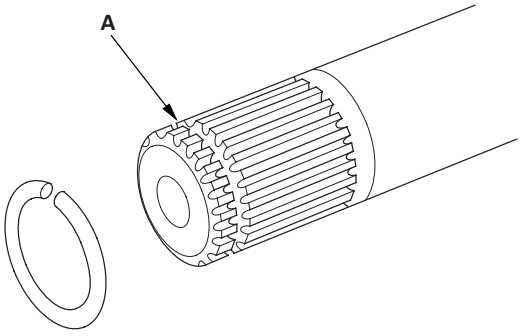


Locking tab type

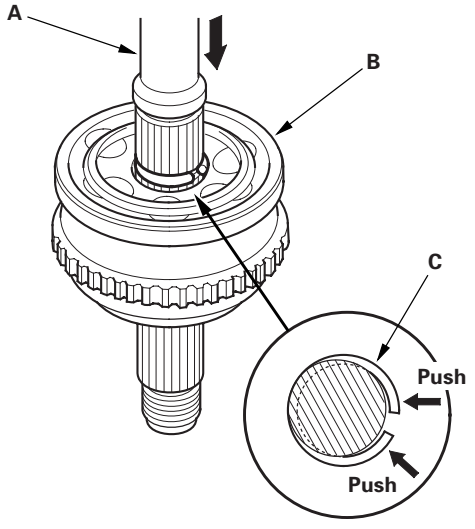


2. Install the outboard boot and boot bands (B) on the driveshaft, then remove the vinyl tape. Be careful not to damage the outboard boot.

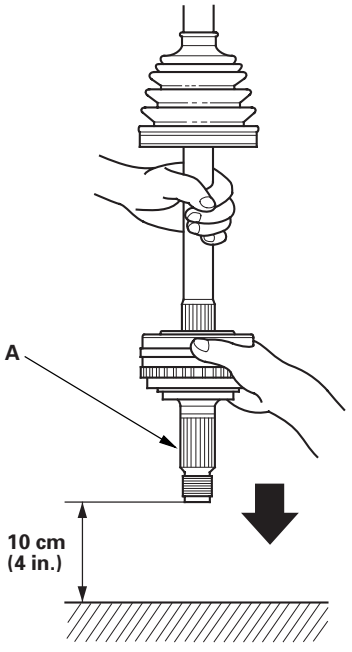
3. Install the new circlip in the driveshaft groove (A).



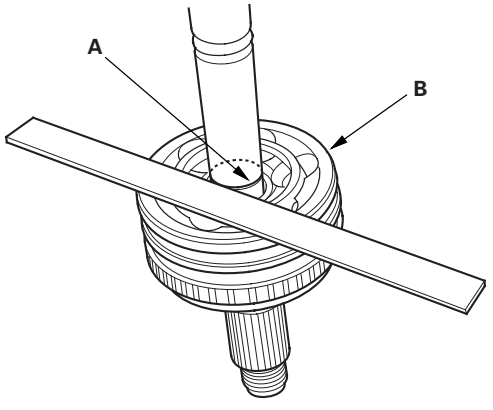
4. Insert the driveshaft (A) into the outboard joint (B) until the circlip (C) is closed.



5. To completely seat the outboard joint, pick up the driveshaft and joint, and tap them from about 10 cm (4 in.) onto a hard surface. Do not use a hammer as excessive force may damage the driveshaft. Be careful not to damage the threaded section (A) of the outboard joint.



6. Check the alignment of the paint mark (A) with the outboard joint end (B).

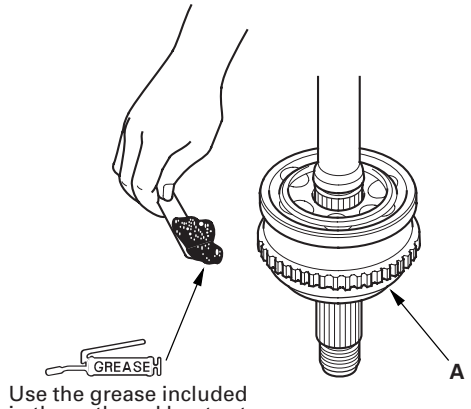


(cont'd)

Rear Driveshaft Reassembly (cont'd)

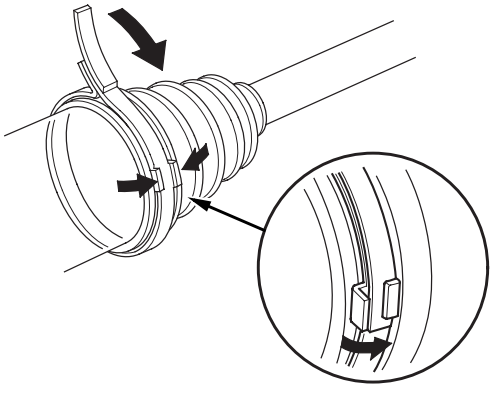
7. Pack the outboard joint (A) with the joint grease included in the new joint boot set.

Grease quantity
Outboard joint: 70—80 g (2.5—2.8 oz)



Use the grease included in the outboard boot set.

8. Install a new locking tab type boot band on the outboard joint side of the outboard boot. Fold down the locking tabs.



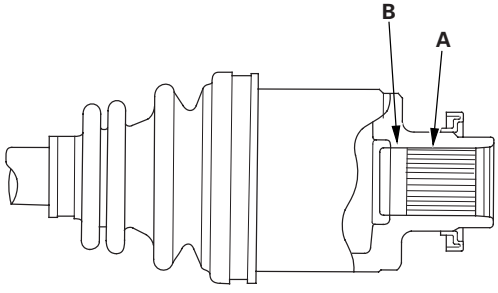
9. Lightly tap on the doubled-over portions to secure them in place.

10. Install a double loop type boot band on the front driveshaft side of inboard boot (see step 9 on page 16-12).

Rear Driveshaft Installation

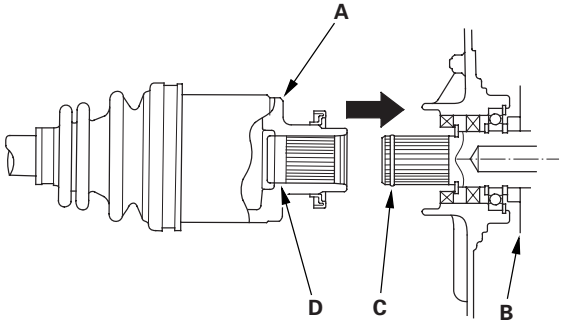
NOTE: Before starting installation, make sure the mating surfaces of the joint and the splined section are free from dirt or dust.

1. Apply 1.5—2.0 g (0.05—0.07 oz) of grease to the whole splined surface (A). After applying grease, remove the grease from the splined grooves at intervals of 2—3 splines and from the set ring groove (B) so that air can bleed from the differential.



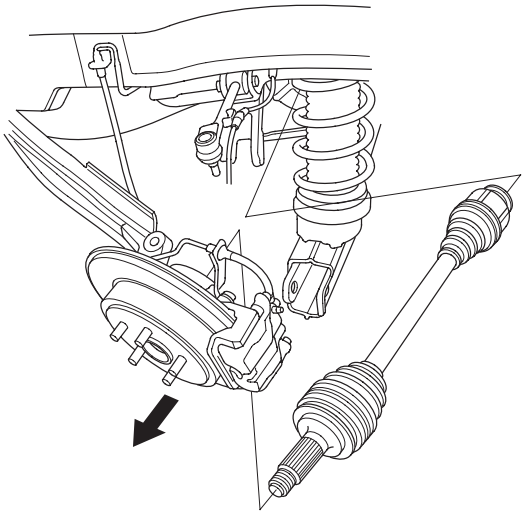
2. Seat a new set ring in the set ring groove of the differential.

3. Clean the areas where the driveshaft contacts the differential thoroughly with solvent or brake cleaner, and dry with compressed air. Insert the inboard end (A) of the driveshaft into the differential (B) until the set ring (C) locks in the groove (D).

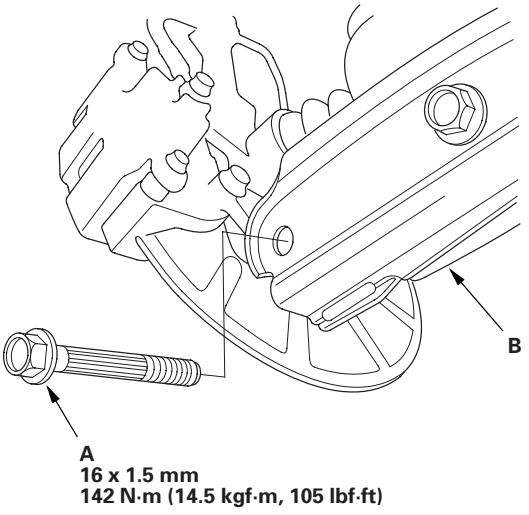


4. Install the outboard joint into the rear hub.

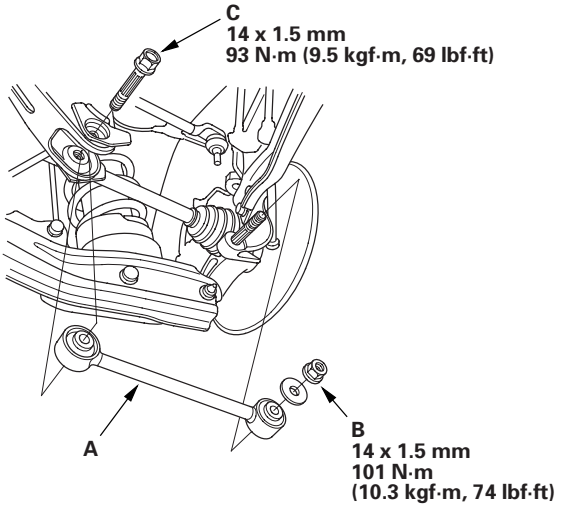
   NOTE: When installing the outboard joint support, the knuckle with a floor jack. Make sure not to over extend the brake hose.



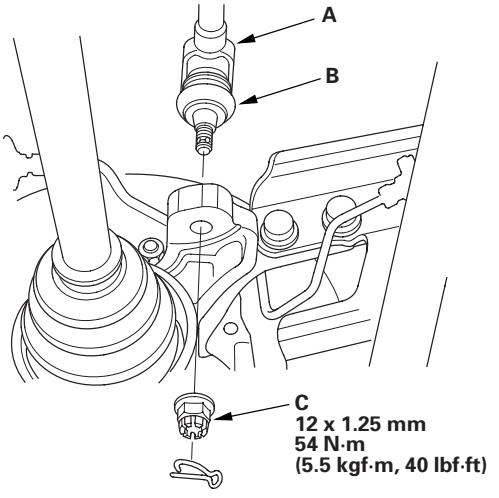
5. Install the flange bolt (A) onto lower arm (B).



6. Install the lower arm A then install the flange bolt (A) and special self-locking nut (B).



7. Install the upper arm (A). Be careful not to damage the ball joint boot (B). Wipe off the grease before tighten the nut at the ball joint.



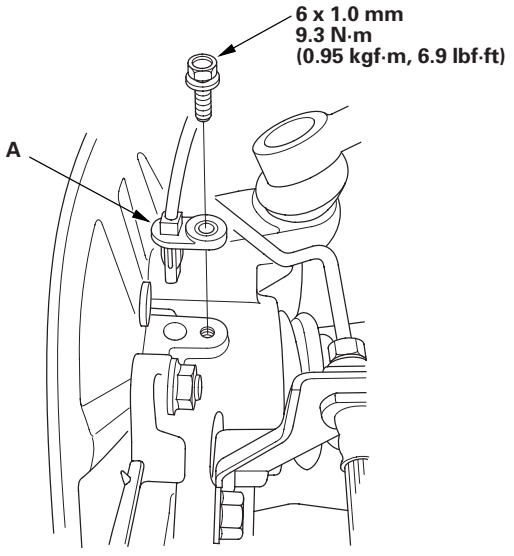
8. Torque the new castle nut (C) to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the nut by loosening it.

   NOTE: Make sure the ball joint boot is not damaged or cracked.

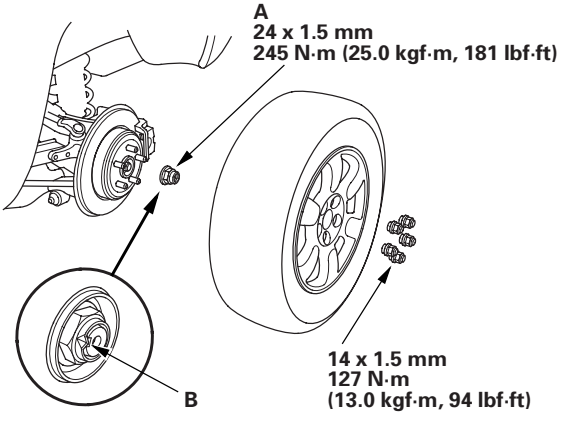
(cont'd)

Rear Driveshaft Installation (cont'd)

9. Install the VSA rear wheel sensor (A).



10. Install a new spindle nut (A), then tighten the nut. After tightening, use a drift to stake the spindle nut shoulder (B) against the driveshaft.



11. Clean the mating surfaces of the brake disc and the rear wheel, then install the rear wheel with the wheel nuts.

12. Turn the rear wheel by hand, and make sure there is no interference between the driveshaft and surrounding parts.

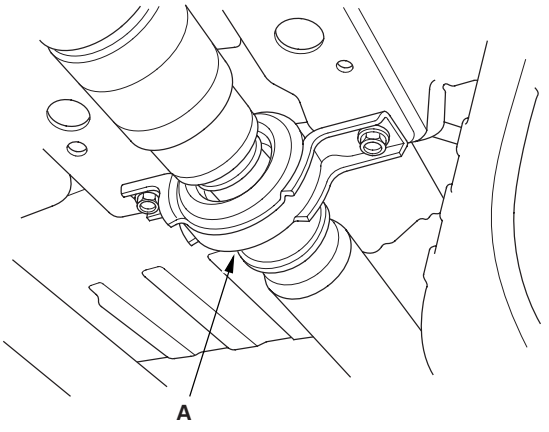
13. Refill the differential with recommended fluid (see page 15-47).

14. Check the rear wheel alignment, and adjust it if necessary (see page 18-5).

Propeller Shaft Inspection

Universal Joint and Boots

1. Shift the transmission to the N position.
2. Raise the vehicle off the ground, and support it with safety stands in the proper locations (see page 1-10).
3. Check the center support bearing (A) for excessive play or rattle. If the center support has excessive play or rattle, replace the propeller shaft assembly.

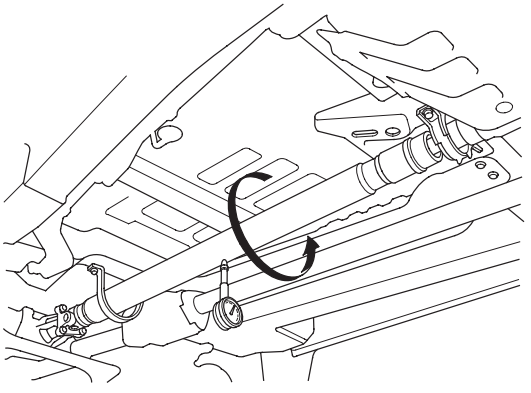


4. Check the universal joint boots for damage and deterioration. If the boots are damaged or deteriorated, replace the propeller shaft assembly.
5. Check the universal joints for excessive play or rattle. If the universal joints have excessive play or rattle, replace the propeller shaft assembly.

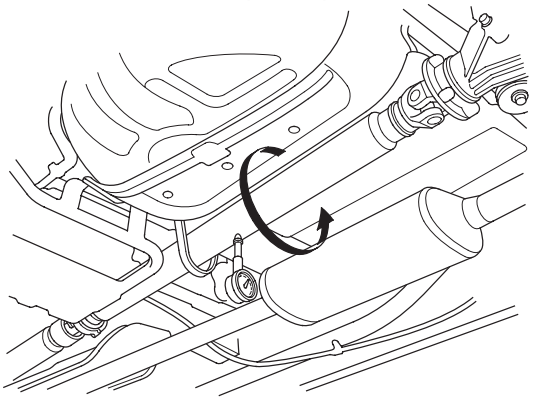
Propeller Shaft Runout

6. Install a dial indicator with its needle on the center of No. 1 propeller shaft or No. 2 propeller shaft.
7. Turn the other propeller shaft slowly and check the runout. Repeat this procedure for the other propeller shaft.

No. 1 Propeller Shaft Runout
Service Limit: 1.5 mm (0.06 in.)



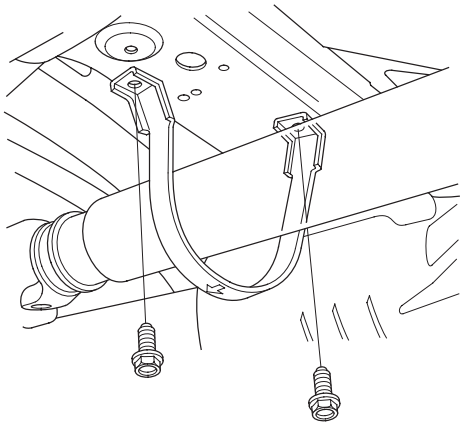
No. 2 Propeller Shaft Runout
Service Limit: 1.5 mm (0.06 in.)



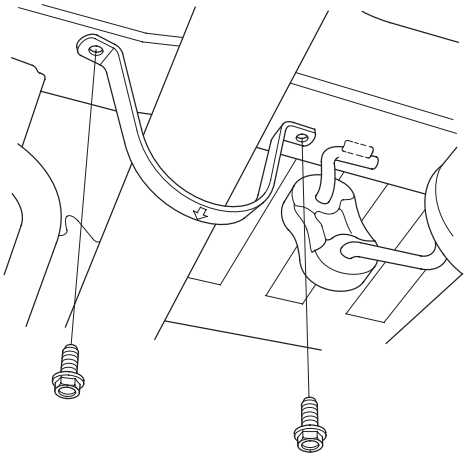
8. If the runout on either propeller shaft exceeds the service limit, replace the propeller shaft assembly.

Propeller Shaft Removal

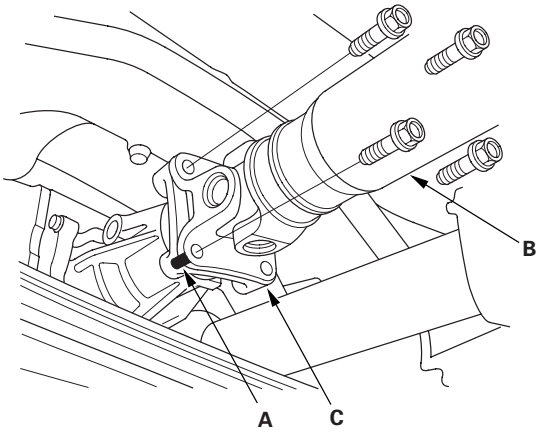
1. Raise the vehicle off the ground, and support it with safety stands in the proper locations (see page 1-10).
2. Remove the No. 1 propeller shaft protector.



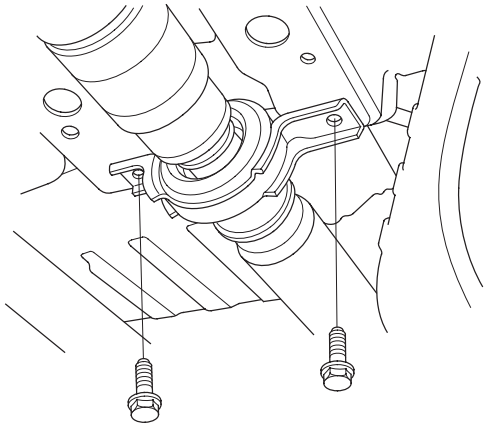
3. Remove the No. 2 propeller shaft protector.



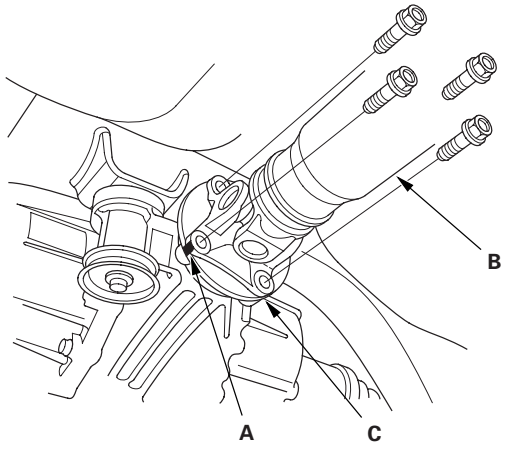
4. Make a reference mark (A) across the propeller shaft (B) and transfer companion flange (C).



5. Separate the propeller shaft from the transfer assembly.
6. Remove the center support bearing mounting bolts.



7. Make a reference mark (A) across the propeller shaft (B) and rear differential companion flange (C).

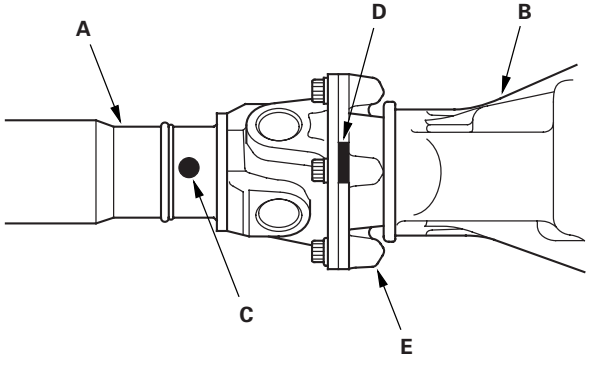


8. Separate the propeller shaft from the rear differential, then remove the propeller shaft.

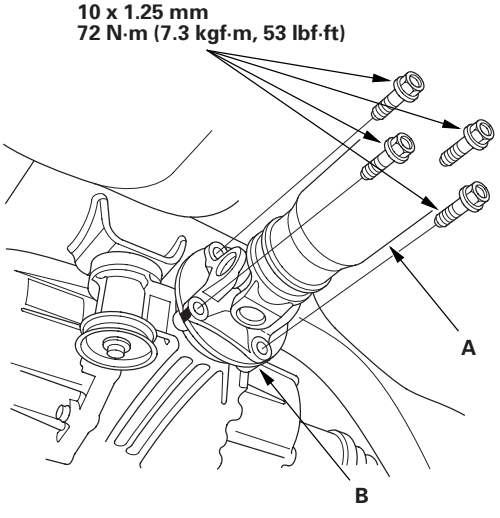
Propeller Shaft Installation

1. If you are installing a new propeller shaft, go to step 2.
   If you reinstalling the original propeller shaft, go to step 3.

2. Install the new propeller shaft (A) onto the rear differential (B), by aligning the reference mark (C) on the new propeller shaft with the factory reference mark (D) on the companion flange (E). Do not use the marks you made on the companion from the removal procedure. If there are no factory marks on the companion flange, go to step 4.



3. Reinstall the propeller shaft (A) to the rear differential (B) by aligning the reference marks (C) you made during the removal procedure.

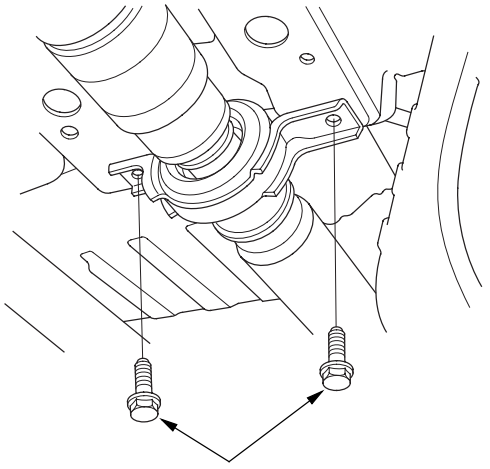


4. Attach the propeller shaft to the rear differential with new mounting bolts. Tighten the bolt to the specified torque.

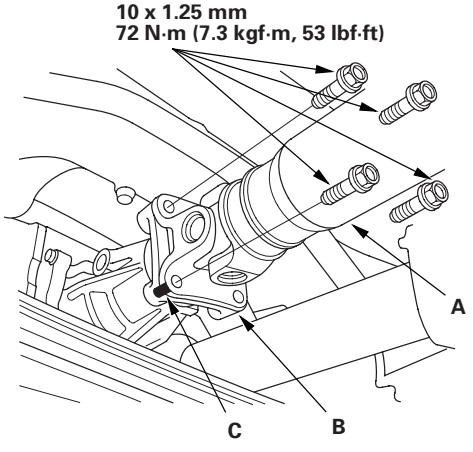
(cont'd)

Propeller Shaft Installation (cont'd)

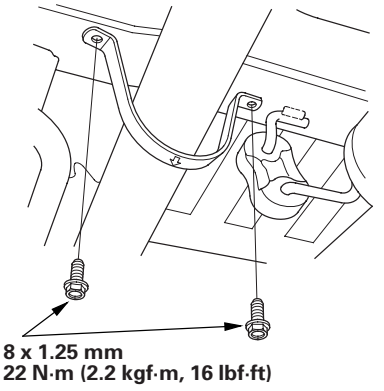
5. Install the center support bearing mounting bolts. Make sure you use new bolts.



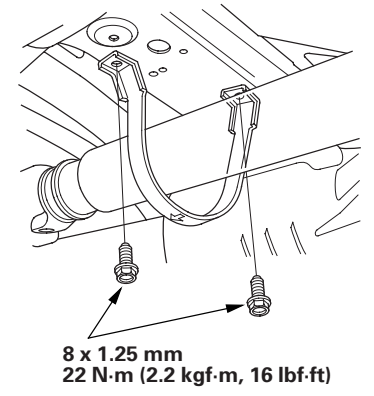
6. Install the propeller shaft (A) onto the transfer companion flange (B) by aligning the reference mark (C). Make sure you use new mounting bolts.



7. Install the No. 2 propeller shaft protector.



8. Install the No. 1 propeller shaft protector.



9. If you installed a new propeller shaft, test drive the vehicle at 55 mph (88 kph) and check for noise or vibration.
   - If there is no noise or vibration, the repair is complete.
   - If there is a noise or vibration, go to step 10.
10. Remove the mounting bolts from the propeller shaft at the rear differential companion flange. Note the current alignment of the propeller shaft to rear differential companion flange.
11. Rotate the propeller shaft 180 degrees from its current alignment with the rear differential companion flange.
12. Install new mounting bolts and tighten them to the specified torque.

SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If steering maintenance required)

The Ridgeline SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the sides of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items requires special precautions and tools, and should be done by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work should be done by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.

Steering

Power Steering

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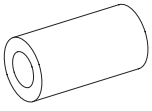
Special Tools

Ref. No.	Tool Number	Description	Qty
①	07GAF-PH70100	Pilot Collar	1
②	07MAA-SL00100	Locknut Wrench, 40 mm	1
③	07MAC-SL0A102	Ball Joint Remover, 32 mm	1
④	07NAG-SR3090A	Valve Seal Ring Sizing Tool	1
⑤	07RAK-S040122	P/S Joint Adapter (Hose)	1
⑥	07TAF-SZ50100	Cylinder End Seal Remover Attachment	1
⑦	07VAK-P8A011A	P/S Joint Adapter (Pump)	1
⑧	07VAK-P8A012B	P/S Joint Adapter Plate (Pump)	1
⑨	07ZAB-S5A0100	Pulley Holder	1
⑩	07ZAG-S3VA100	Piston Seal Ring Guide	1
⑪	07ZAG-S3VA200	Piston Seal Ring Sizing Tool	1
⑫	07406-0010001, 07406-001000A , or 07406-001A101	P/S Pressure Gauge	1
⑬	07746-0010100	Attachment, 32 x 35 mm	1
⑭	07749-0010000	Driver	1
⑮	07946-1870100	Attachment, 28 x 30 mm	1
⑯	07965-SA50500	Front Hub Disassembly Tool	1
⑰	07974-SA5020A or 07974-SA50200	Sleeve Seal Ring Sizing Tool	1
⑱	07974-SA50800	Ball Joint Boot Clip Guide	1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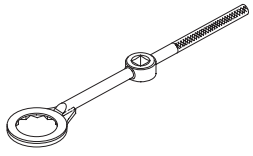
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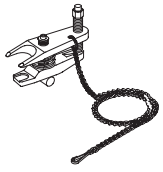
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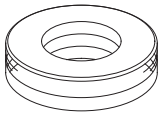
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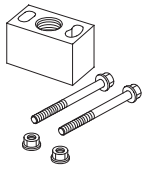
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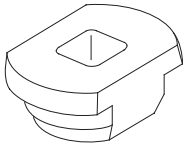
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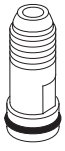
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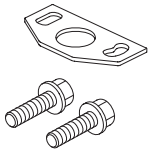
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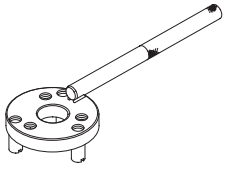
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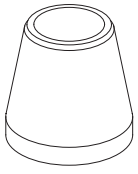
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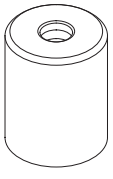
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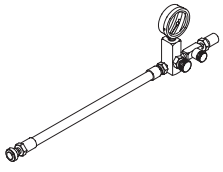
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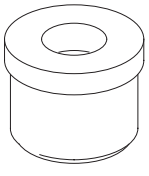
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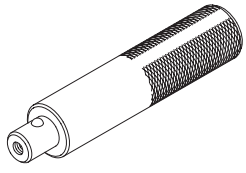
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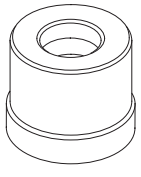
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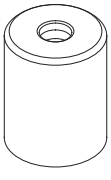
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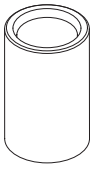
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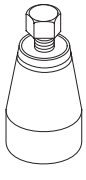
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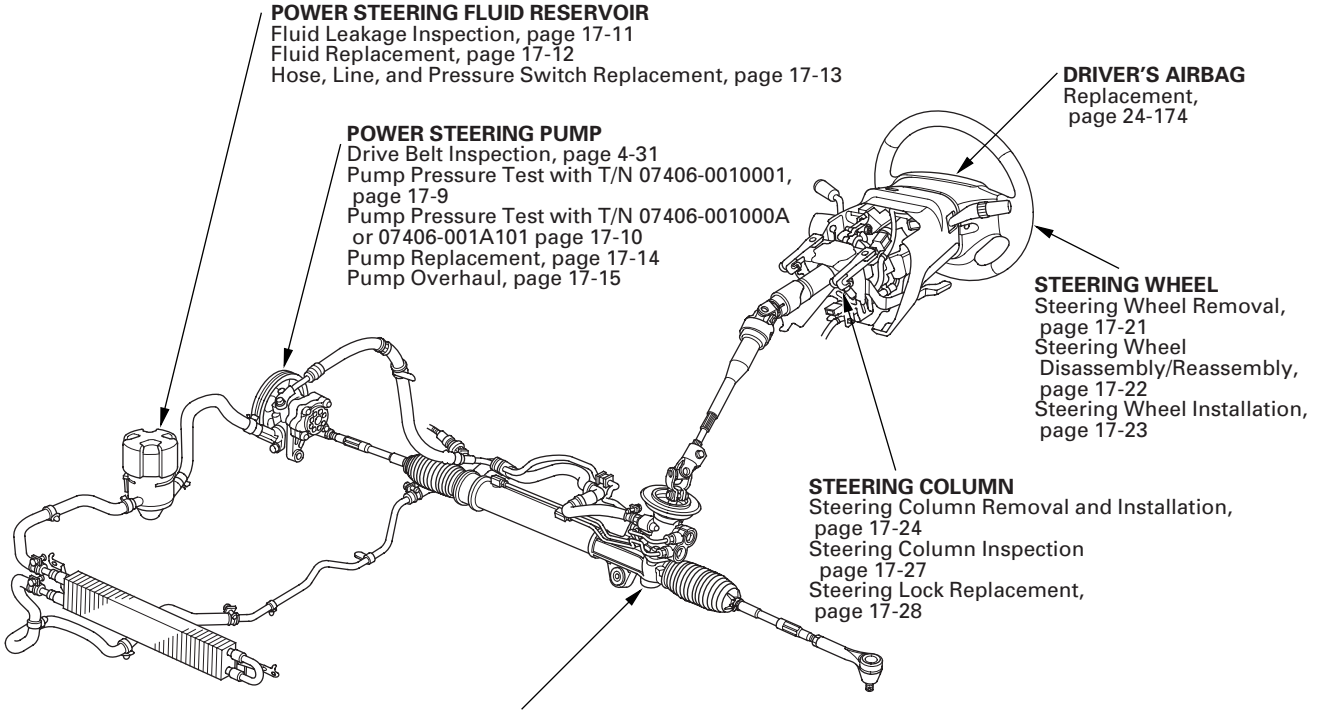
Component Location Index



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Symptom Troubleshooting Index

Find the symptom in the chart below, and do the related procedures in the order listed until you find the cause.

Symptom	Procedure(s)	Also check for:
Hard steering	Troubleshoot the system (see page 17-6).	• Modified suspension • Damaged suspension • Tire sizes, tire varieties, and air pressure
Assist (excessively light steering at high speed)	Check the rack guide adjustment (see page 17-29).	Front wheel alignment (see page 18-5)
Shock or vibration when the steering wheel is turned to full lock	1. Check the rack guide adjustment (see page 17-29). 2. Check the drive belt for slippage (see page 4-31). 3. Check the power steering pump fluid pressure with T/N 07406-0010001 (see page 17-9), T/N 07406-001000A, or T/N 07406-001A101 (see page 17-10). 4. Overhaul the steering gearbox (see page 17-37).	
Steering wheel will not return smoothly	1. Check cylinder lines for deformation. 2. Check the ball joints for binding. 3. Check wheel alignment (see page 18-5). 4. Overhaul the steering gearbox (see page 17-37).	
Uneven or rough steering	1. Check the rack guide adjustment (see page 17-29). 2. Check the drive belt (see page 4-31). 3. Check for low or erratic engine idle speed (see page 11-273). 4. Check for air in the power steering system due to air entering inlet side of pump. 5. Check for low fluid level in the power steering reservoir due to possible leaks in system. 6. Overhaul the steering gearbox (see page 17-37).	
Steering wheel kicks back during wide turns	1. Check the drive belt (see page 4-31). 2. Check the power steering pump fluid pressure with T/N 07406-0010001 (see page 17-9), T/N 07406-001000A, or T/N 07406-001A101 (see page 17-10).	
Humming noise from the power steering system	1. Check when the noise occurs: • If the noise is heard 2—3 minutes after starting the engine in cold weather, this is normal. • If the noise is heard when the wheel is turned with the vehicle stopped, this is normal due to the fluid pulsation. 2. Check for the high-pressure hose touching the subframe or body. 3. Check for automatic transmission converter noise. 4. Check for air bubbles in the power steering fluid, leak on inlet side of pump. 5. Check for particle contamination of fluid and restricted filter in the reservoir.	Pump pressure
Power steering rack rattle or chattering	1. Check for loose steering components (tie-rod and ball joints). Tighten or replace as necessary. 2. Check the steering column shaft for wobbling. If the steering column wobbles, replace the steering column assembly (see page 17-24). 3. Check the rack guide adjustment (see page 17-29). 4. Check the power steering pump pulley: • If the pulley is loose, tighten it (see step 34 on page 17-20). • If the pump shaft is loose, replace the pump (see page 17-14).	

Symptom	Procedure(s)	Also check for:
Hissing from the power steering system/foaming fluid	• Check the fluid level. If low, fill the reservoir to the proper level and check for leaks. • Check the reservoir for leaks. • Check for crushed inlet hose or loose hose clamp allowing air into the suction side of the system. • Check the power steering pump shaft oil seal for leaks.	Air in the power steering fluid
Noise from the power steering pump	• Compare the pump noise at normal operating temperature to another like vehicle (pump noise for 2—3 minutes after starting the engine in cold weather is normal). • Remove and inspect the pump for wear and damage (see page 17-15).	• Power steering pump pressure • Air in the power steering fluid
Squeaking from the power steering pump	Check the drive belt (see page 4-31).	
Fluid leaks from the steering gearbox	• Fluid leaks from the top of the valve body unit. Overhaul the valve body unit (see page 17-37). • Fluid leaks from the driver's side boot. Replace the valve oil seal on the pinion shaft. Replace the cylinder end seal on the gearbox side. • Fluid leaks from the passenger's side boot. Replace the cylinder end seal on the cylinder side. • Fluid leaks from pinion shaft near the lower steering joint bolt. Overhaul the valve body unit (see page 17-37). • Fluid leaks from the steering damping valve covers on the valve body unit. Replace the valve housing.	
Fluid leaks from the power steering line	• Fluid leaks from the cylinder line connections (flare nuts). Tighten the connection and retest (see page 17-13). • Fluid leaks from a damaged cylinder lines. Replace the cylinder line (see page 17-13). • Fluid leaks from the pump outlet hose or return line fitting on the valve body unit (flare nuts). Tighten the fitting and retest. If it still leaks, replace the hose, the line, or valve body unit as necessary.	
Fluid leaks from the power steering pump	• Fluid leaks from the front oil seal. Replace the front oil seal. • Fluid leaks from the power steering pump housing. Replace the leaking O-rings or seals (see page 17-15), and if necessary replace the power steering pump (see page 17-14).	
Fluid leaks from the power steering reservoir	• Fluid leaks from around the reservoir cap because fluid level is too high. Drain the reservoir to the proper level. If the fluid is aerated check for an air leak on the inlet side of pump. • Fluid leaks from reservoir. Check for the reservoir for cracks and replace as necessary.	
Fluid leaks from the power steering pump outlet hose (high-pressure)	• Check the fitting for loose bolts. If the bolts are tight, replace the fitting O-ring. • Fluid leaks at the swagged joint. Replace the outlet hose.	
Fluid leaks from the power steering pump inlet hose (low-pressure)	Check the hose for damage, deterioration, or improper assembly. Replace or repair as necessary.	

Symptom Troubleshooting

Hard Steering

1. Check the power assist (see page 17-7).

   Is the initial turning load more than 29 N (3.0 kgf, 6.6 lbf)?

   YES—Go to step 2.
   NO—Power assist is OK. ■

2. Connect the P/S joint adapter (pump), P/S joint adapter (hose), and P/S pressure gauge T/N 07406-0010001 (see page 17-9), T/N 07406-001000A, or T/N 07406-001A101 (see page 17-10) to the pump.

3. Measure steady-state fluid pressure from the pump at idle.

   Is the pressure 1,470 kPa (15 kgf/cm², 213 psi) or less?

   YES—Go to step 4.
   NO—Go to step 8.

4. Measure the pump relief pressure at idle.

   Is the pressure 8,850—9,350 kPa (90—95 kgf/cm², 1,280—1,350 psi) or more?

   YES—Go to step 5.
   NO—Go to step 9.

5. With a spring scale, measure the power assist in both directions, to the left and to the right.

   Are the two measurements within 5.0 N (0.51 kgf, 1.12 lbf) of each other?

   YES—Go to step 6.
   NO—Go to step 11.

6. Measure the fluid pressure with both pressure gauge valves open (if so equipped), while turning the steering wheel fully to the left and fully to the right.

   Is the pressure 8,850—9,350 kPa (90—95 kgf/cm², 1,280—1,350 psi) or more?

   YES—Go to step 7.
   NO—Faulty steering gearbox. ■

7. Adjust the rack guide (see page 17-29), and retest.

   Is the steering OK?

   YES—Repair is completed. ■
   NO—Faulty steering gearbox. ■

8. Check for feed and return lines between the pump and the steering gearbox for clogging and deformation.

   Are the lines clogged or deformed?

   YES—Repair or replace the lines. ■
   NO—Faulty valve body unit. ■

9. Disassemble the pump (see page 17-16).

10. Check the flow control valve for smooth movement and leaks (see step 11 on page 17-17).

    Is the flow control valve OK?

    YES—Faulty pump assembly. ■
    NO—Faulty flow control valve. ■

11. Check the cylinder lines A and B for deformation (see page 17-13).

    Is the A or B line deformed?

    YES—Replace the line. ■
    NO—Go to step 12.

12. Check for a bent rack shaft or misadjusted rack guide (too tight).

    Is the rack shaft bent or the rack guide adjusted too tight?

    YES—Replace the rack shaft or readjust the rack guide. ■
    NO—Faulty valve body unit. ■

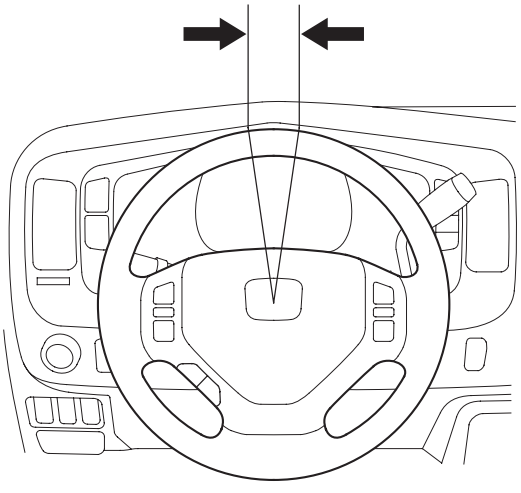
Steering Wheel Rotational Play Check

1. Turn the front wheels to the straight ahead position.

2. Measure how far you can turn the steering wheel left and right without moving the front wheels.

   - If the play is within the limit, the steering gearbox and linkages are OK.
   - If the play exceeds the limit, adjust the rack guide (see page 17-29). If the play is still excessive after rack guide adjustment, inspect the steering linkage and steering gearbox (see page 17-8).

Rotational play: 0—10 mm (0—0.39 in.)



Power Assist Check

NOTE: This test should be done with original equipment tires and wheels at the correct tire pressure.

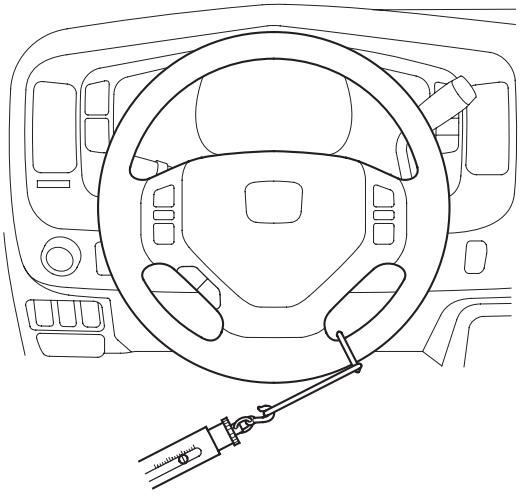
1. Check the power steering fluid level (see page 17-12).

2. Start the engine, let it idle, and turn the steering wheel from lock-to-lock several times to warm up the fluid.

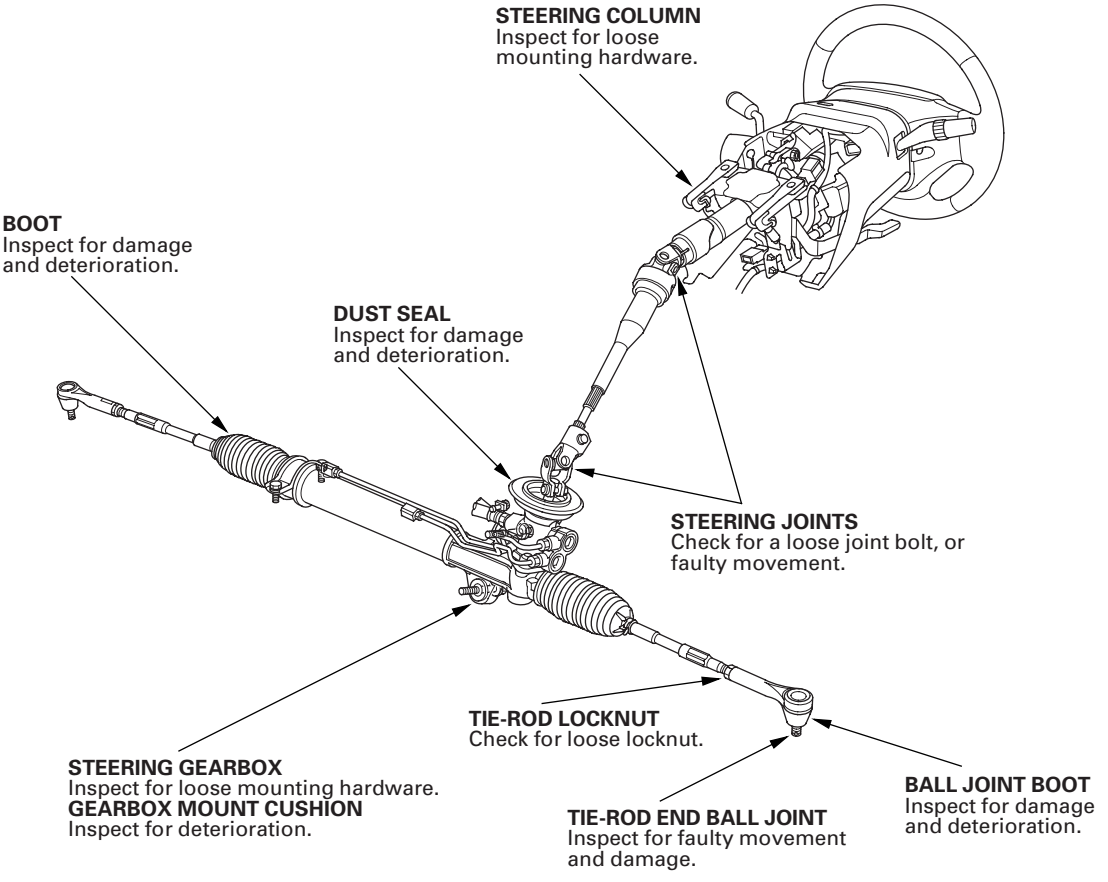
3. Attach a commercially available spring scale to the steering wheel. With the engine idling and the vehicle on a clean, dry floor, pull the scale as shown and read it as soon as the tires begin to turn.

   - If the scale reads no more than the specification, the steering gearbox and pump are OK.
   - If the scale reads more than the specification, troubleshoot the steering system (see page 17-6).

Initial turning load: 29 N (3.0 kgf, 6.6 lbf)



Steering Linkage and Gearbox Inspection



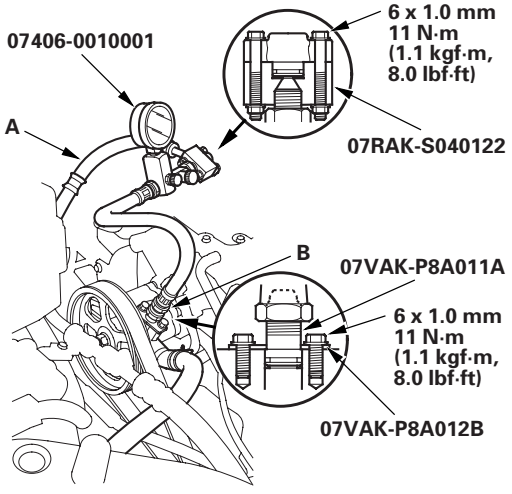
Pump Pressure Test with T/N 07406-0010001

Special Tools Required
- P/S joint adapter (pump) 07VAK-P8A011A
- P/S joint adapter plate (pump) 07VAK-P8A012B
- P/S joint adapter (hose) 07RAK-S040122
- P/S pressure gauge 07406-0010001

Check the fluid pressure as follows to determine whether the trouble is in the pump or steering gearbox.

1. Check the power steering fluid level (see page 17-12).

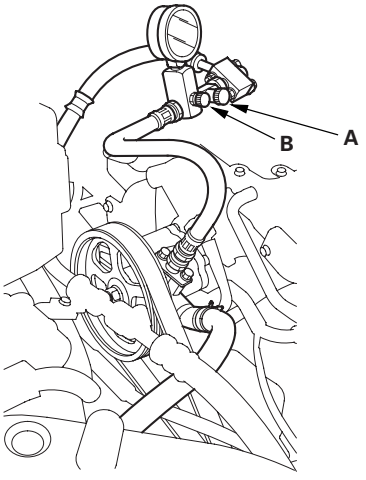
2. Disconnect the pump outlet hose (A) from the pump outlet with care so as not to spill the power steering fluid on the frame and other parts, then install the P/S joint adapter (pump) on the pump outlet (B) with the P/S joint outlet plate.



3. Connect the P/S joint adapter (hose) to the P/S pressure gauge, then connect the pump outlet hose to the P/S joint adapter (hose).

4. Install the P/S pressure gauge to the P/S joint adapter (pump).

5. Fully open the shut-off valve (A).



6. Fully open the pressure control valve (B).

7. Start the engine and let it idle.

8. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature.

9. Measure steady-state fluid pressure while the engine is idling. If the pump is in good condition, the gauge should read no more than 1,470 kPa (15 kgf/cm^2, 213 psi).
   If it reads high, check for:

   - Clogged or deformed feed or return line between the pump and steering gearbox.
   - Clogged valve body unit.

10. Close the shut-off valve, then close the pressure control valve gradually until the pressure gauge needle is stable. Read the pressure.

    NOTICE
    Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by over-heating.

11. Immediately open the shut-off valve fully. If the pump is in good condition, the gauge should read at least 8,850—9,350 kPa (90—95 kgf/cm^2, 1,280—1,350 psi). A low reading means pump output is too low for full assist. Repair or replace the pump.

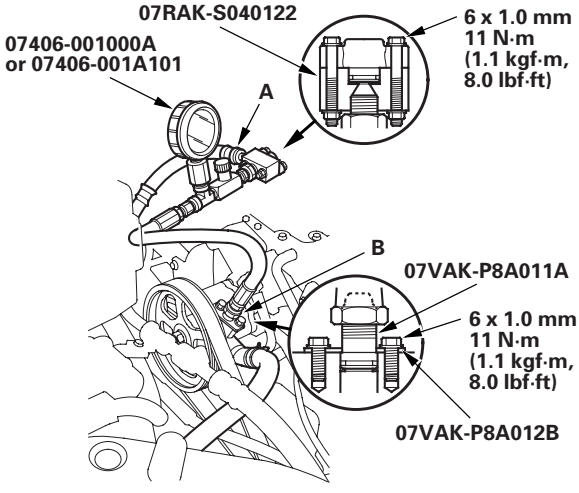
Pump Pressure Test with T/N 07406-001000A or T/N 07406-001A101

Special Tools Required
- P/S joint adapter (pump) 07VAK-P8A011A
- P/S joint adapter plate (pump) 07VAK-P8A012B
- P/S joint adapter (hose) 07RAK-S040122
- P/S pressure gauge 07406-001000A or 07406-001A101

Check the fluid pressure as follows to determine whether the trouble is in the pump or steering gearbox.

1. Check the power steering fluid level (see page 17-12).

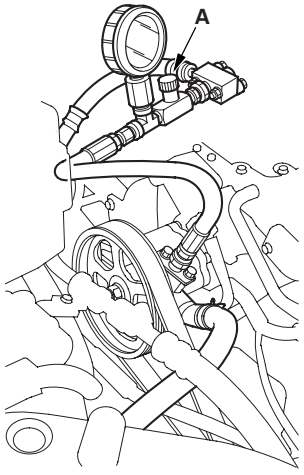
2. Disconnect the pump outlet hose (A) from the pump outlet with care so as not to spill the power steering fluid on the frame and other parts, then install the P/S joint adapter (pump) on the pump outlet (B) with the P/S joint outlet plate.



3. Connect the P/S joint adapter (hose) to the P/S pressure gauge, then connect the pump outlet hose to the P/S joint adapter (hose).

4. Install the P/S pressure gauge to the P/S joint adapter (pump).

5. Open the shut-off valve (A) fully.



6. Start the engine and let it idle.

7. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature.

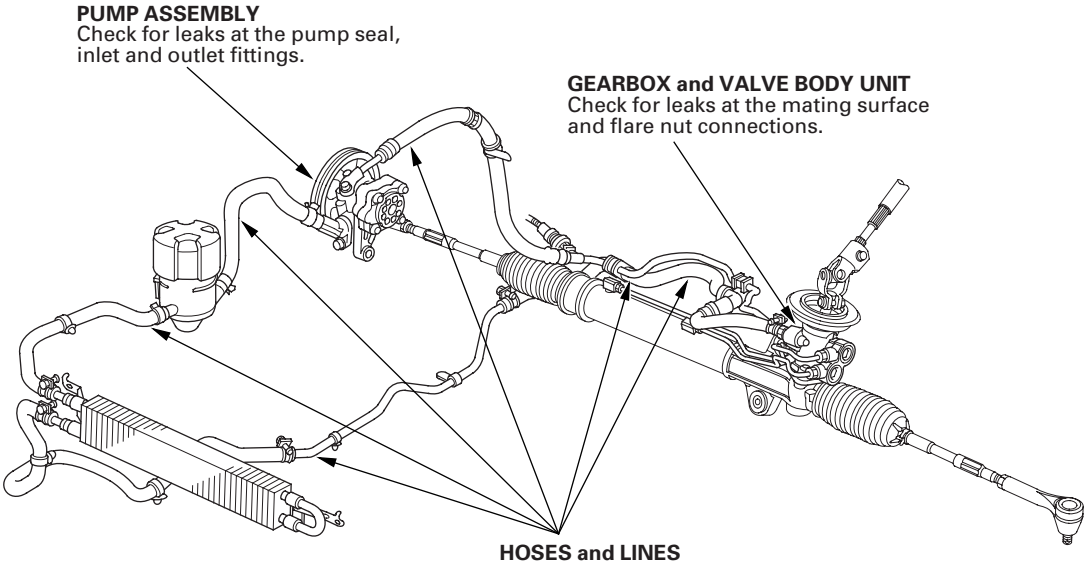
8. Measure steady-state fluid pressure while the engine is idling. If the pump is in good condition, the gauge should read no more than 1,470 kPa (15 kgf/cm^2, 213 psi).
   If it reads high, check for:
   - Clogged or deformed feed or return line between the pump and gearbox.
   - Clogged valve body unit.

9. Let the engine idle, and gradually close the shut-off valve and immediately read the pressure.

   NOTICE
   Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by over-heating.

10. Immediately open the shut-off valve fully. If the pump is in good condition, the gauge should read at least 8,850—9,350 kPa (90—95 kgf/cm^2, 1,280—1,350 psi). A low reading means pump output is too low for full assist. Repair or replace the pump.

Fluid Leakage Inspection

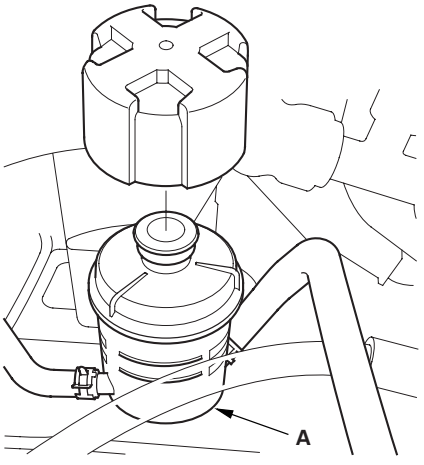


Fluid Replacement

Check the reservoir (A) at regular intervals, and add the recommended fluid as necessary. Always use Honda Power Steering Fluid. Using any other type of power steering fluid or automatic transmission fluid can cause increased wear and poor steering in cold weather.

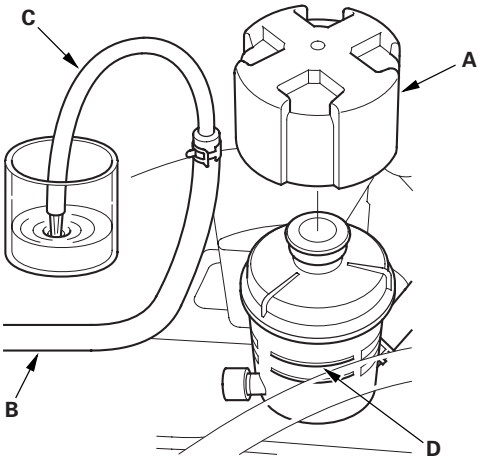
NOTE: If the fluid is contaminated, the screen in the reservoir may be partially blocked. Replace the reservoir if necessary.

SYSTEM CAPACITY:
1.15 L (1.22 US. qt) at disassembly
RESERVOIR CAPACITY:
0.34 L (0.36 US. qt)



1. Pull the cover (A) up, raise the reservoir, then disconnect the return hose (B) to drain the reservoir. Take care not to spill the fluid on the body and parts. Wipe off any spilled fluid at once.

   NOTE: Inspect the reservoir screen for any debris. If the reservoir screen is clogged, replace the reservoir.



2. Connect a hose (C) of suitable diameter to the disconnected return hose, and put the hose end in a suitable container.

3. Start the engine, let it run at idle, and turn the steering wheel from lock-to-lock several times. When fluid stops running out of the hose, shut off the engine. Discard the fluid.

4. Reinstall the return hose on the reservoir.

5. Fill the reservoir to the upper level line (D).

6. Start the engine and run it at fast idle, then turn the steering from lock-to-lock several times to bleed air from the system.

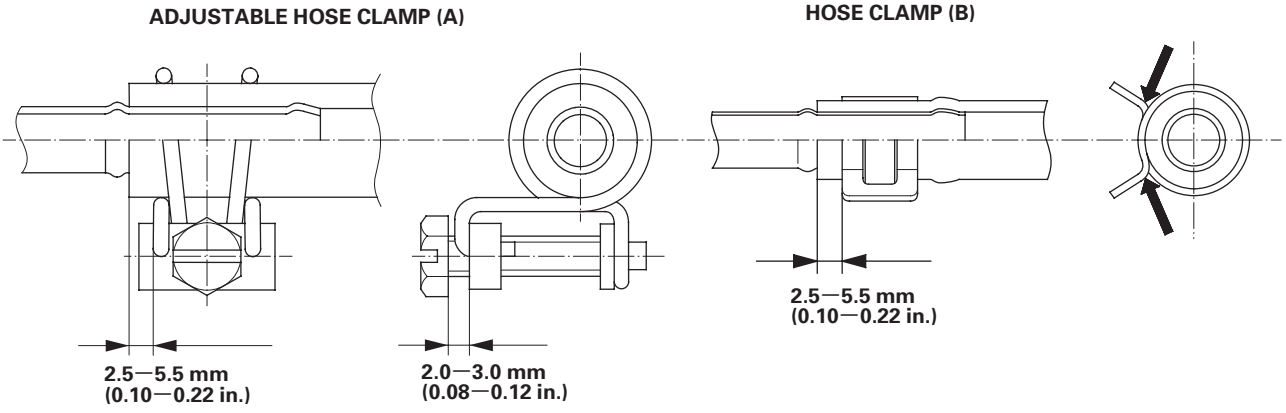
7. Recheck the fluid level and add some if necessary. Do not fill the reservoir beyond the upper level line.

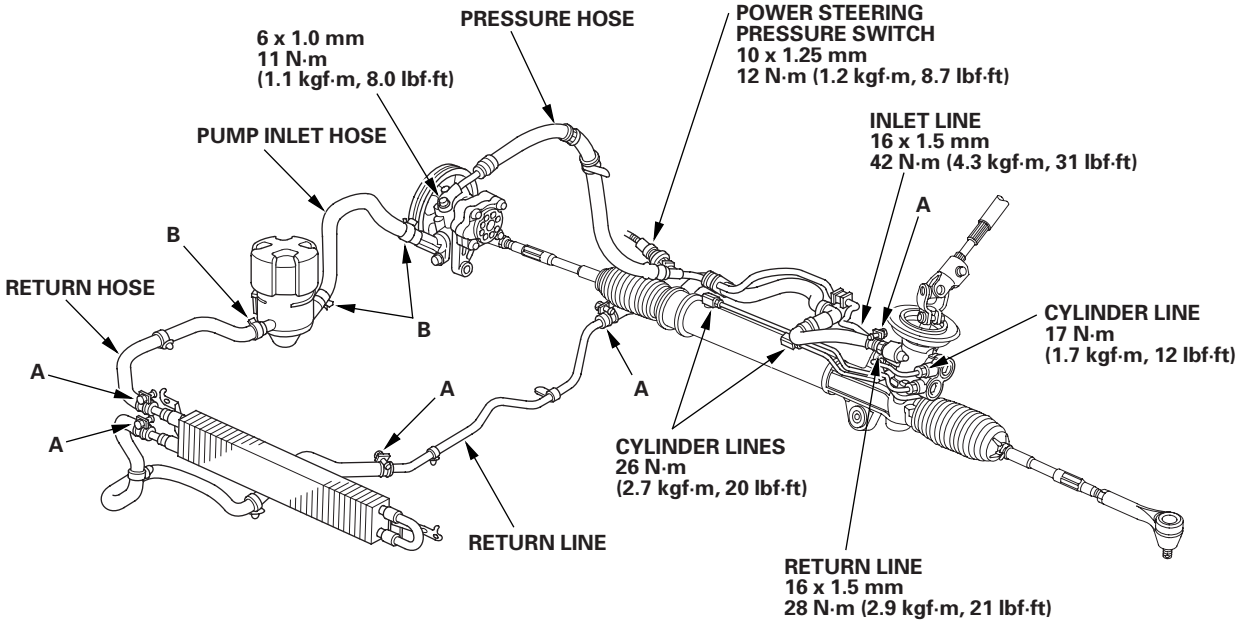
8. If the fluid is contaminated, dark, or discolored, repeat the procedure as necessary.

Power Steering Hose, Line, and Pressure Switch Replacement

Note these items during installation:

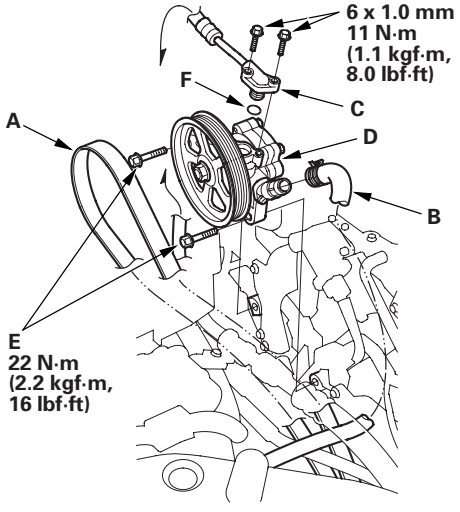
- Connect each hose to the corresponding line securely until it contacts the stop on the line. Install the clamp or adjustable clamp at the specified distance from the hose end as shown.
- Check all clamps for deterioration or deformation; replace the clamps with new ones if necessary.
- Add the recommended power steering fluid to the specified level on the reservoir and check for leaks.





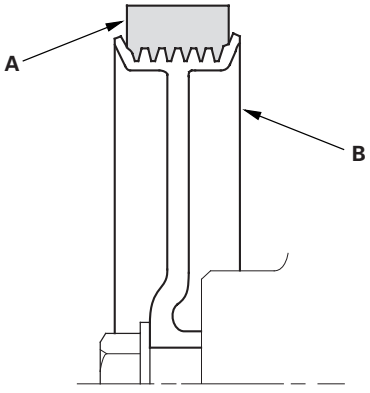
Pump Replacement

1. Place a suitable container under the vehicle.
2. Drain the power steering fluid from the reservoir (see page 17-12).
3. Remove the engine cover.
4. Remove the drive belt (A) from the pump pulley (see page 4-31).



5. Cover the auto-tensioner, alternator, and A/C compressor with several shop towels to protect them from spilled power steering fluid. Disconnect the pump inlet hose (B) and pump outlet hose (C) from the pump (D), and plug them. Take care not to spill the fluid on the body or parts. Wipe off any spilled fluid at once. Do not turn the steering wheel with the pump removed.
6. Remove the pump mounting bolts (E).
7. Cover the opening of the pump with a piece of tape to prevent foreign material from entering the pump.
8. Connect the pump inlet hose and pump outlet hose onto the new pump with new O-ring (F).
9. Loosely install the pump in the pump bracket with the mounting bolts, then tighten the pump fittings securely.
10. Tighten the pump mounting bolts to the specified torque.
11. Install the drive belt (A).

    Note these items during belt installation:
    - Make sure that the belt is properly positioned on the pulleys (B).
    - Do not get power steering fluid or grease on the auto-tensioner, alternator, A/C compressor, and drive belt or pulley faces. Clean off any fluid or grease before installation.

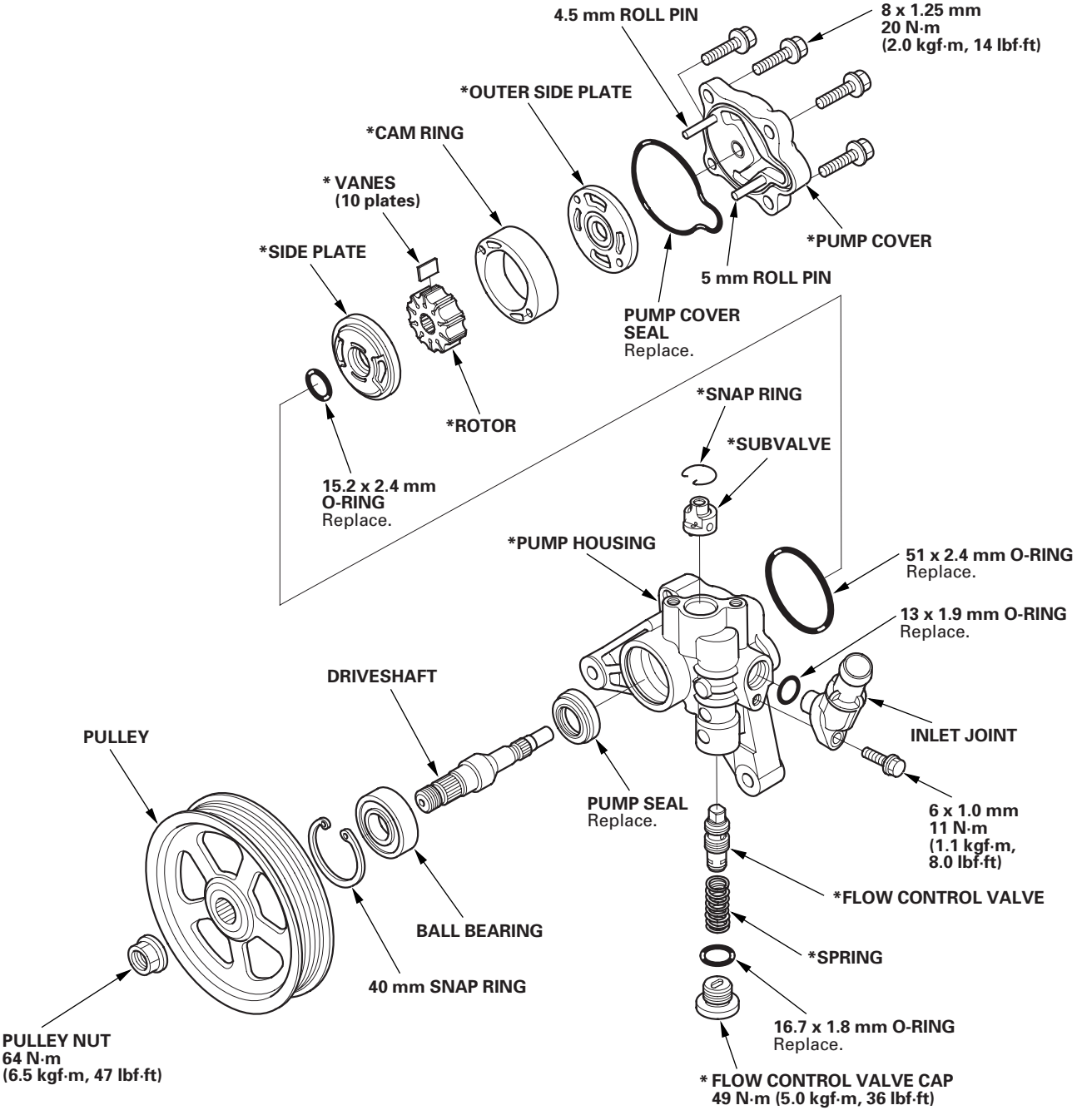


12. Fill the reservoir to the upper level line (see page 17-12).

Pump Overhaul

Exploded View

Replace the pump as an assembly if the parts indicated with asterisk (*) are worn or damaged.



(cont'd)

Pump Overhaul (cont'd)

Special Tools Required
- Attachment, 28 x 30 mm 07946-1870100
- Driver 07749-0010000
- Pulley holder 07ZAB-S5A0100

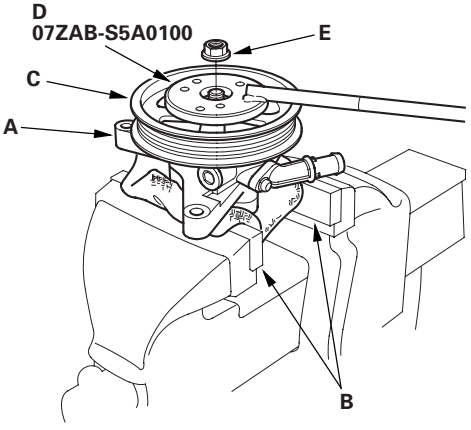
Disassembly

NOTE: Refer to the Exploded View as needed during the following procedure.

1. Drain the fluid from the pump (see page 17-12).

2. Remove the power steering pump (see page 17-14).

3. Hold the power steering pump (A) in a vise with soft jaws (B), then hold the pulley (C) with the pulley holder (D), and remove the pulley nut (E) and pulley. Be careful not to damage the pump housing with the jaws of the vise.



4. Remove the inlet joint and O-ring.

5. Loosen the flow control valve cap with a hex wrench, and remove it and the O-ring, the flow control valve and spring.

6. Remove the pump cover and pump cover seal.

7. Remove the outer side plate, cam ring, rotor, vanes, side plate and O-rings.

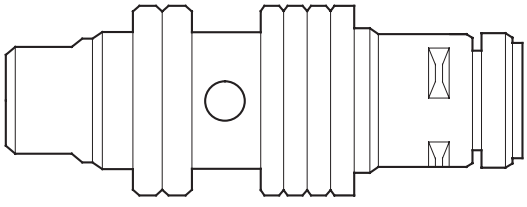
8. Remove the snap ring, then remove the subvalve from the pump housing.

9. Remove the snap ring, then remove the pump driveshaft by tapping the shaft end with a plastic hammer.

10. Remove the seal from the pump housing.

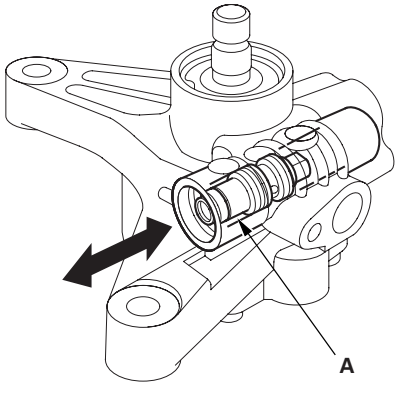
Inspection

11. Check the flow control valve for wear, burrs, and other damage to the edges of the grooves in the valve.



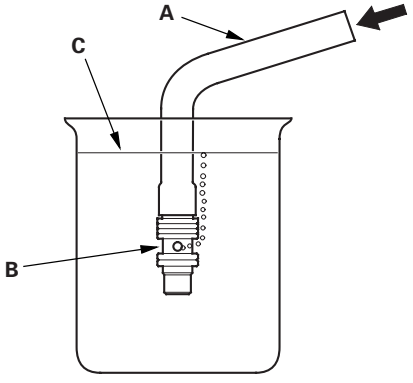
12. Inspect the bore of the flow control valve on the pump housing for scratches and wear.

13. Slip the flow control valve back in the pump housing, and check that it moves in and out smoothly. If OK, go to step 14; if not, replace the pump as an assembly. The flow control valve (A) is not available separately.

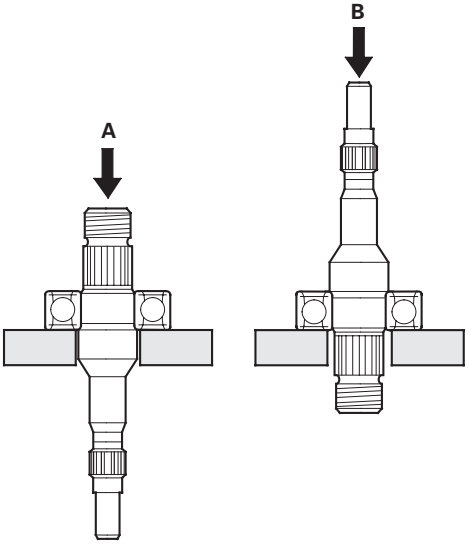


14. Attach a hose (A) to the end of the flow control valve (B) as shown. Then submerge the flow control valve in a container of power steering fluid or solvent (C), and blow in the hose.

    - If air bubbles leak through the valve at less than 98 kPa (1.0 kgf/cm^2, 14.2 psi), replace the pump as an assembly. The flow control valve is not available separately.
    - If the flow control valve is OK, set it aside for reassembly later.



15. Inspect the ball bearing by rotating the outer race slowly. If you feel any play (axial or radial) or roughness, remove the faulty ball bearing (A) and install a new one (B).



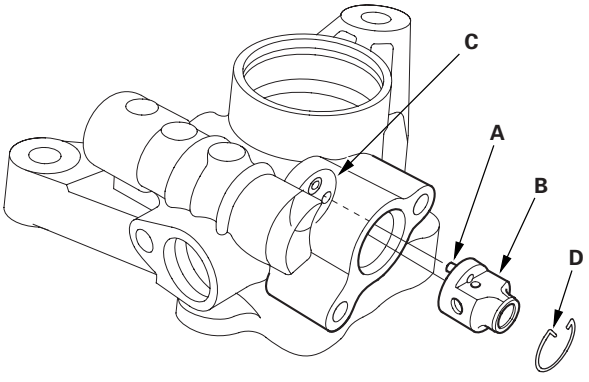
16. Inspect each part shown with an asterisk in the Exploded View. If any of them are worn or damaged, replace the pump as an assembly.

(cont'd)

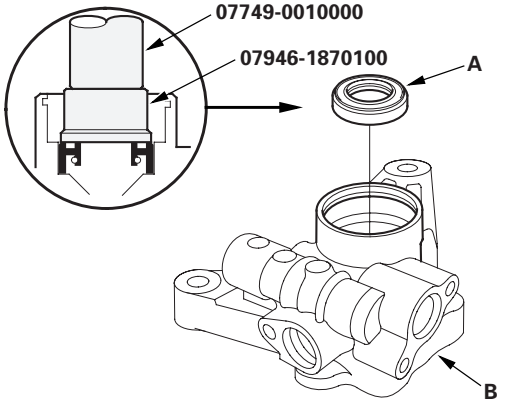
Pump Overhaul (cont'd)

Reassembly

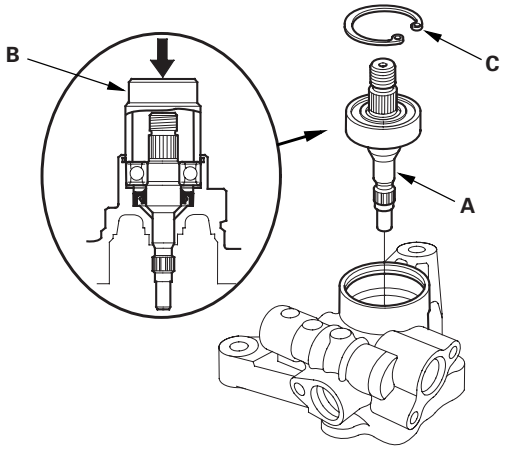
17. Align the pin (A) of the subvalve (B) with the oil passage (C) in the pump housing, and push the subvalve into place, then install the snap ring (D).



18. Install the new pump seal (A) (with its grooved side facing in) into the pump housing (B) by hand first, then drive it in using the special tools until there is no step at the top of the pump seal, and the seal is fully seated in the pump housing.

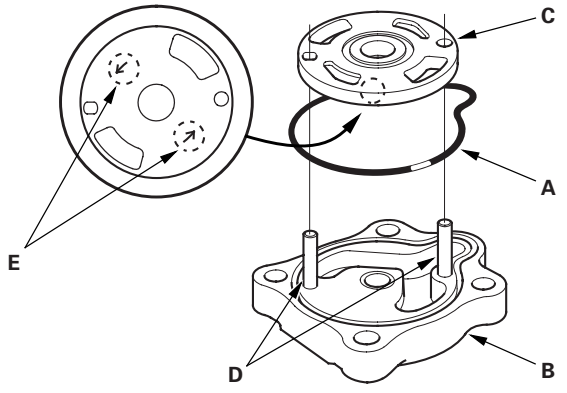


19. Position the pump driveshaft (A) in the pump housing, then press it in with the appropriate size socket wrench (B) as shown.



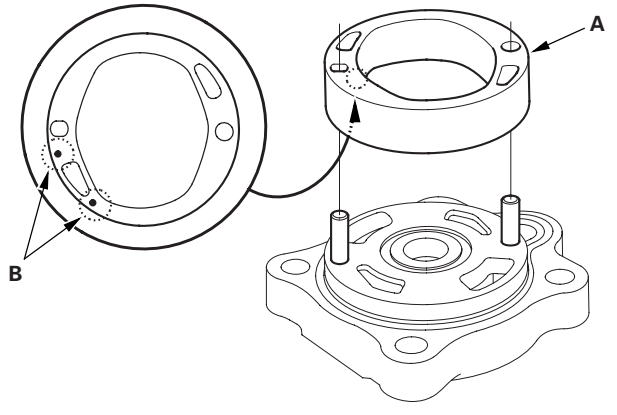
20. Install the 40 mm snap ring (C) with its beveled edge facing out.

21. Coat the new pump cover seal (A) with power steering fluid, and install it into the groove in the pump cover (B).

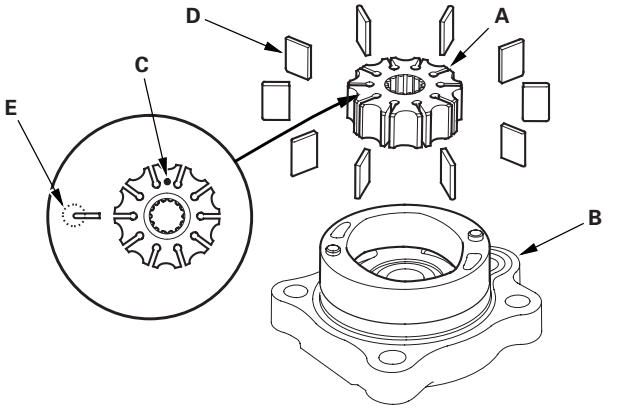


22. Install the outer side plate (C) over the two roll pins (D) with its arrow marks stamped (E) facing down.

23. Set the cam ring (A) over the two roll pins with the ''•'' marks (B) facing down.

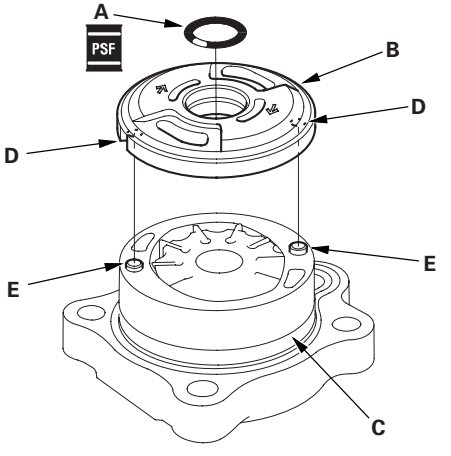


24. Install the rotor (A) to the pump cover (B) with its ''•'' mark (C) facing up.



25. Set the 10 vanes (D) in the grooves in the rotor. Make sure that the round ends (E) of the vanes are in contact with the sliding surface of the cam ring.

26. Coat the new 15.2 mm O-ring (A) with power steering fluid, and install it into the groove in the side plate (B).

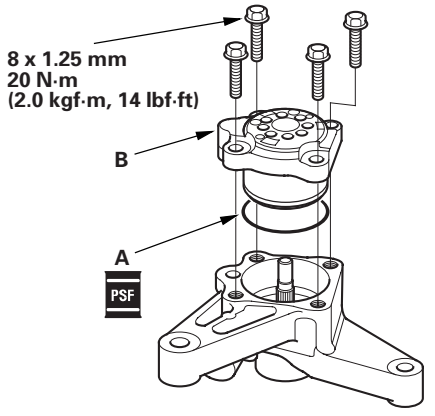


27. Install the side plate on the cam ring (C) by aligning the roll pin set holes (D) in the side plate with the roll pins (E).

(cont'd)

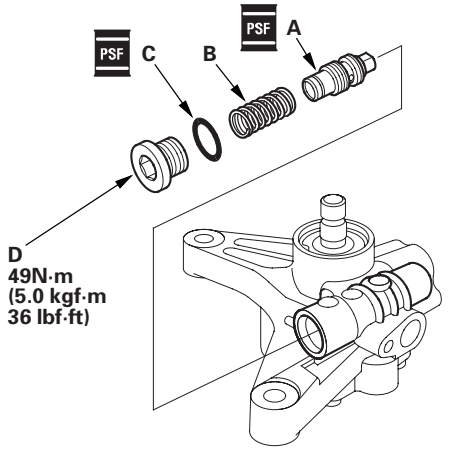
Pump Overhaul (cont'd)

28. Coat the new 51 mm O-ring (A) with power steering fluid, and position it in the bottom of the pump housing.



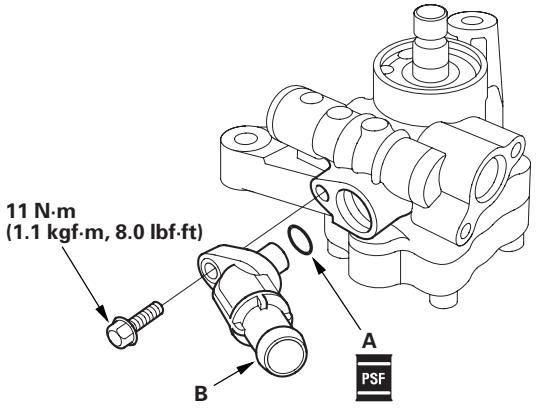
29. Install the pump cover assembly (B) in the pump housing. Tighten the bolts to the specified torque alternating in two or more steps.

30. Coat the flow control valve (A) with power steering fluid, then install it and the spring (B) in the pump housing.

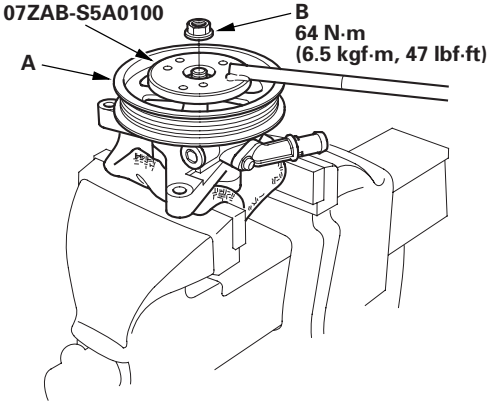


31. Coat the new 16.7 mm O-ring (C) with power steering fluid, and install it on the flow control valve cap (D), then install the cap on the pump housing. Tighten it to the specified torque.

32. Coat the new 13 mm O-ring (A) with power steering fluid, and install it on the inlet joint (B). Install the inlet joint on the pump housing.



33. Install the pulley (A), then loosely install the pulley nut (B). Hold the steering pump in a vise with soft jaws. Be careful not to damage the pump housing with the jaws of the vise.



34. Hold the pulley with the pulley holder, and tighten the pulley nut to the specified torque.

35. Check that the pump turns smoothly by turning the pulley by hand. If it turns hard, loosen the four flange bolts on the cover, then retighten them in same manner as in step 29. Turn the pump again by hand.

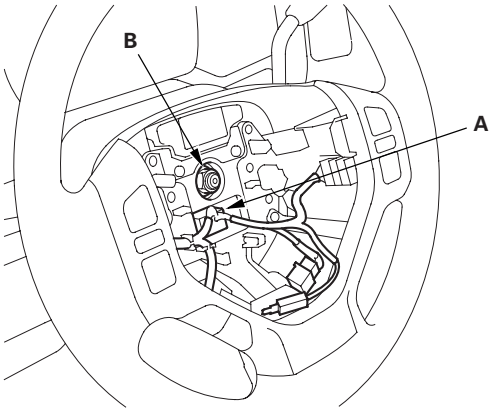
Steering Wheel Removal

SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

1. Make sure you have the anti-theft codes for the audio system and the navigation system (If equipped).

2. Align the front wheels straight ahead, then remove the driver's airbag from the steering wheel (see page 24-174).

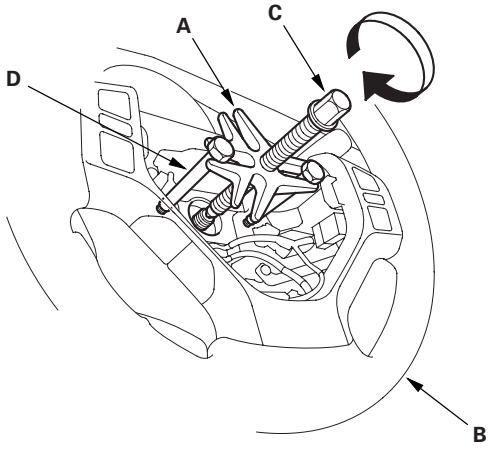
3. Disconnect the cable reel subharness connector (A).



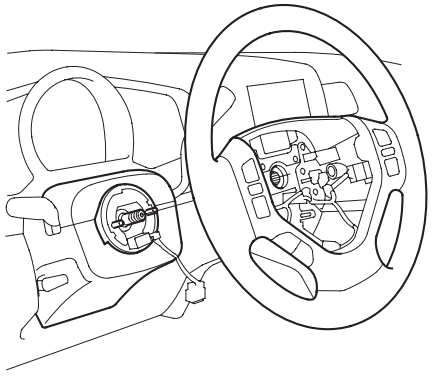
4. Loosen the steering wheel nut (B).

5. Install a commercially available steering wheel puller (A) on the steering wheel (B). Free the steering wheel from the steering column shaft by turning the pressure bolt (C) of the puller.

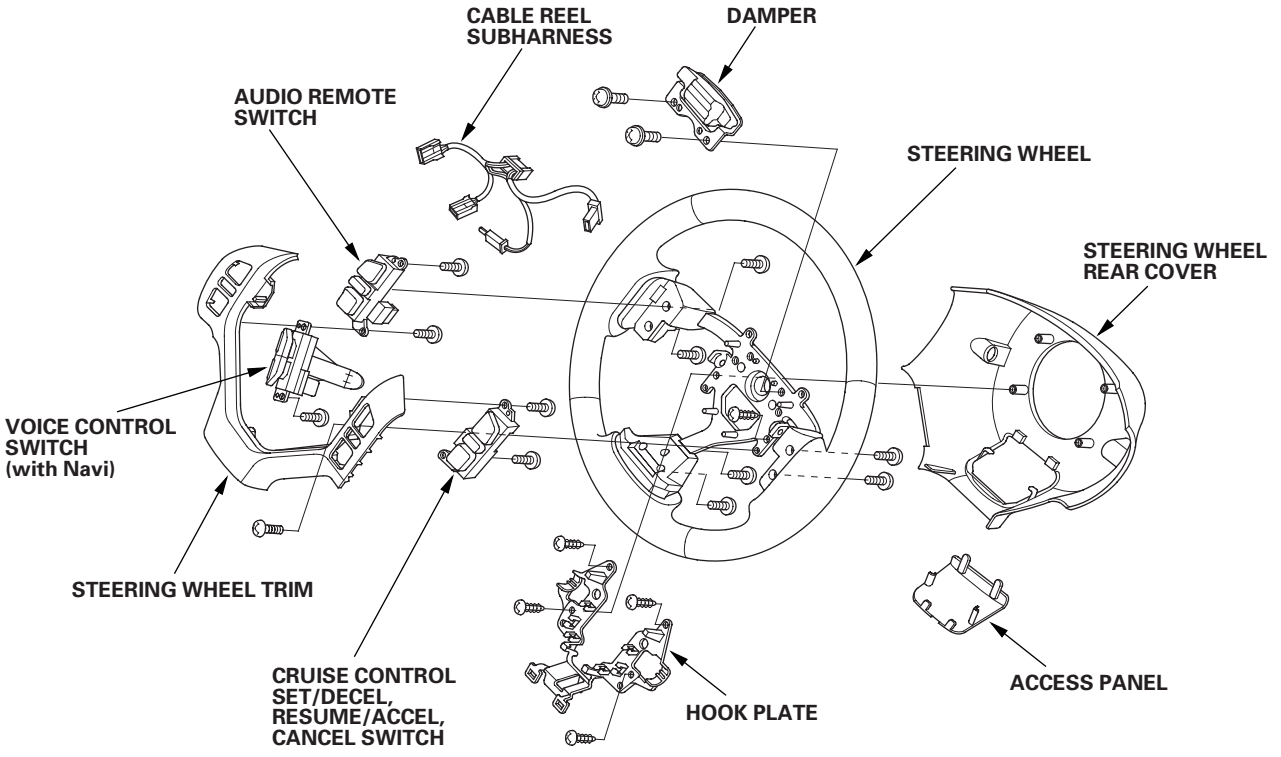
   Note these items when removing the steering wheel:
   - Do not tap on the steering wheel or the steering column shaft when removing the steering wheel.
   - If you thread the puller bolts (D) into the wheel hub more than five threads, the bolts will hit the cable reel and damage it. To prevent this, install a pair of jam nuts five threads up on each puller bolt.



6. Remove the steering wheel puller, then remove the steering wheel nut and steering wheel from the steering column.

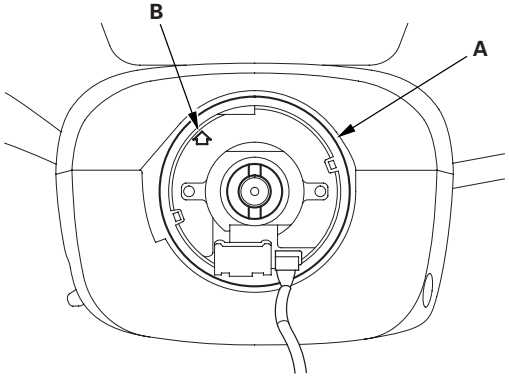


Steering Wheel Disassembly/Reassembly

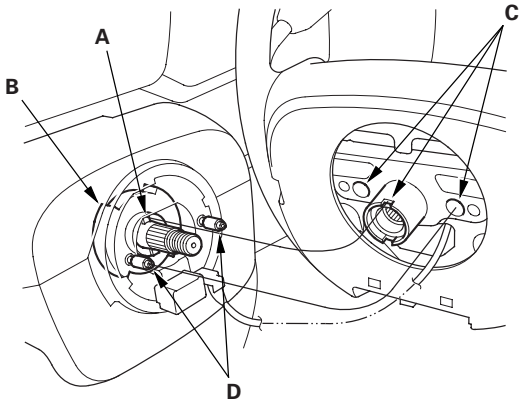


Steering Wheel Installation

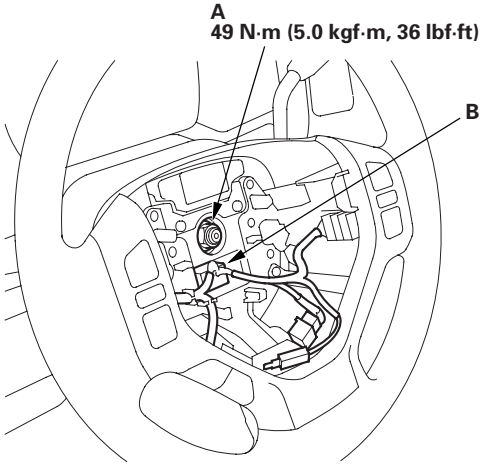
1. Before installing the steering wheel, make sure the front wheels are aligned straight ahead, then center the cable reel (A). Do this by first rotating the cable reel clockwise until it stops. Then rotate it counterclockwise about three full turns. The arrow mark (B) on the cable reel label should point straight up.



2. Position the two tabs (A) of the turn signal canceling sleeve (B) as shown. Install the steering wheel on to the steering column shaft, making sure the steering wheel hub (C) engages the pins (D) of the cable reel and tabs of the turn signal canceling sleeve. Do not tap on the steering wheel or steering column shaft when installing the steering wheel.



3. Install the steering wheel nut (A) and tighten it to the specified torque. Connect the cable reel subharness connector (B). Make sure the wire harness is routed and fastened properly.



4. Install the driver's airbag, and confirm that the system is operating properly (see page 24-174).

5. Reconnect the negative cable to the battery and do the following items:

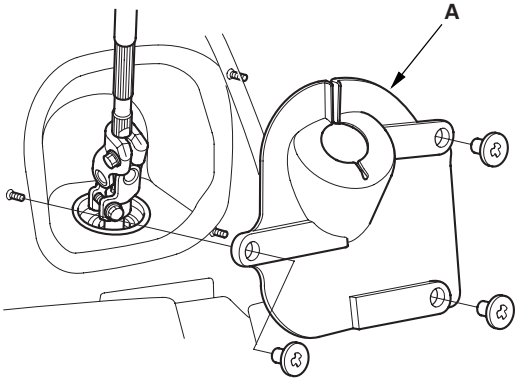
   - Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
   - Enter the anti-theft codes for the audio system and the navigation system (If equipped).
   - Set the clock (or vehicles without navigation).
   - Verify cruise control, audio remote, voice control and turn signal switch operation.
   - Make sure the steering wheel is centered.

Steering Column Removal and Installation

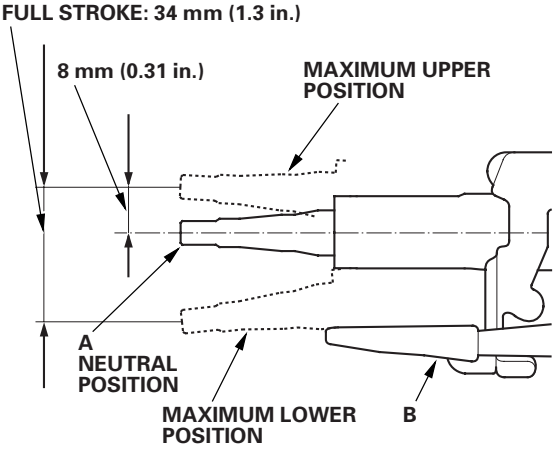
SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

Removal

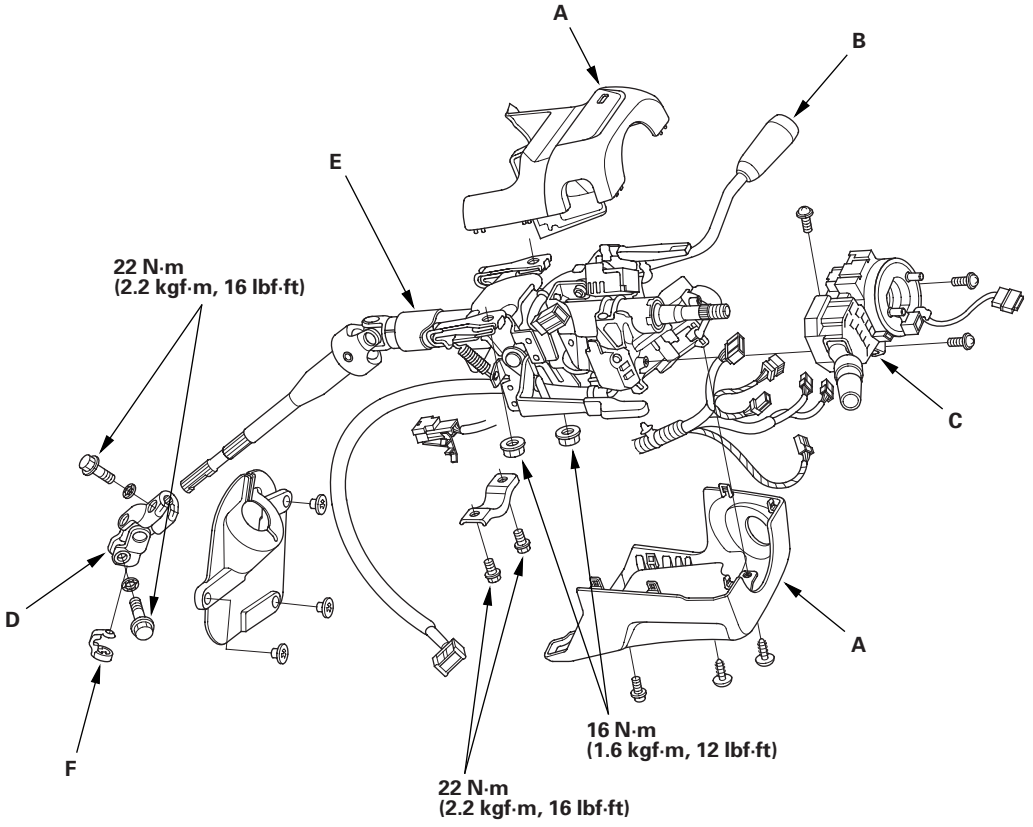
1. Make sure you have the anti-theft codes for the audio system and the navigation system (If equipped).
2. Disconnect the negative cable from the battery.
3. Remove the driver's airbag assembly and the steering wheel (see page 17-21).
4. Remove the steering joint cover A.



5. Set the column shaft (A) in the neutral position by pulling up the steering column to the uppermost position, then lower it 8 mm (0.31 in.). Tighten the lock lever (B).



6. Remove the column covers (A).



7. Move the shift lever (B) to the N position, and remove the shift cable from the column (see page 14-261), then set it aside.

8. Remove the combination switch assembly (C) from the steering column shaft by removing the three mounting screws, and disconnecting the connectors.

9. Disconnect the ignition switch connector and disconnect the harness clips.

10. Disconnect the immobilizer receiver unit, the park pin switch, and the shift lock solenoid.

11. Disconnect the steering joint (D), and remove it from the column shaft.

12. Remove the steering column (E) by removing the attaching nuts and bolts.

13. Remove the center guide (F) (if equipped) from the top of the pinion shaft, and discard it. The center guide is for factory assembly use only.

(cont'd)

Steering Column Removal and Installation (cont'd)

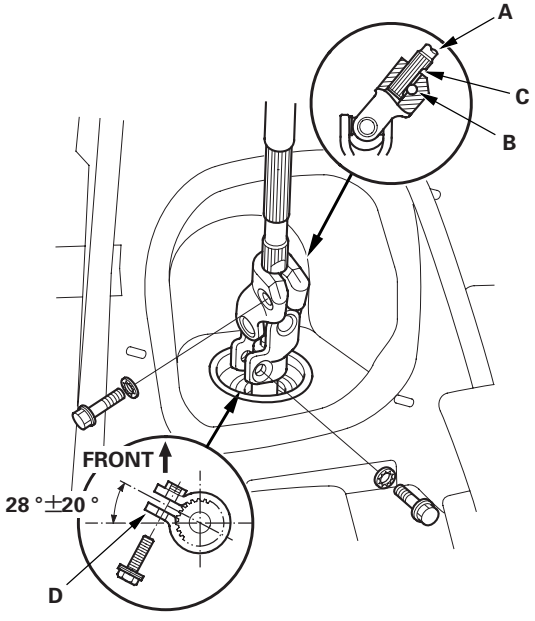
Installation

1. Install the steering column in the reverse order of removal, and note these items:

   - Take care not to let the sliding plates fall out of position during column installation.
   - Make sure the wires are not caught or pinched by any parts.

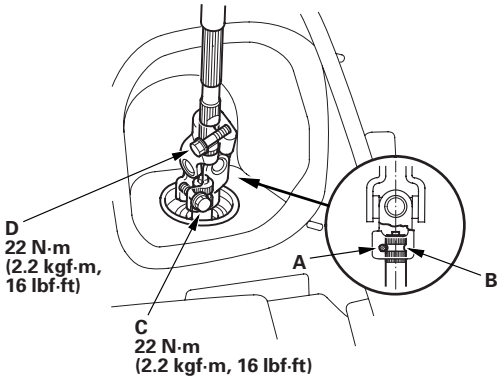
2. Center the steering rack within its stroke.

3. Insert the upper end of the steering joint onto the steering shaft (A) (line up the bolt hole (B) with the flat portion (C) on the shaft), and loosely install the upper joint bolt.



4. Slip the lower end of the steering joint onto the pinion shaft taking care to align the gap (D) within the angle.

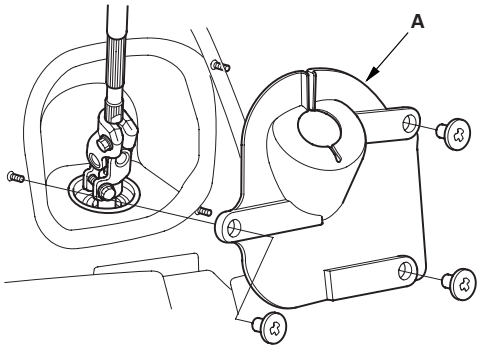
5. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft then loosely install the lower joint bolt (C).



6. Pull on the steering joint to make sure that the steering joint is fully seated, then tighten the lower joint bolt to the specified torque.

7. Tighten the upper joint bolt (D) to the specified torque.

8. Install the steering joint cover A.



9. Install the steering wheel (see page 17-23).

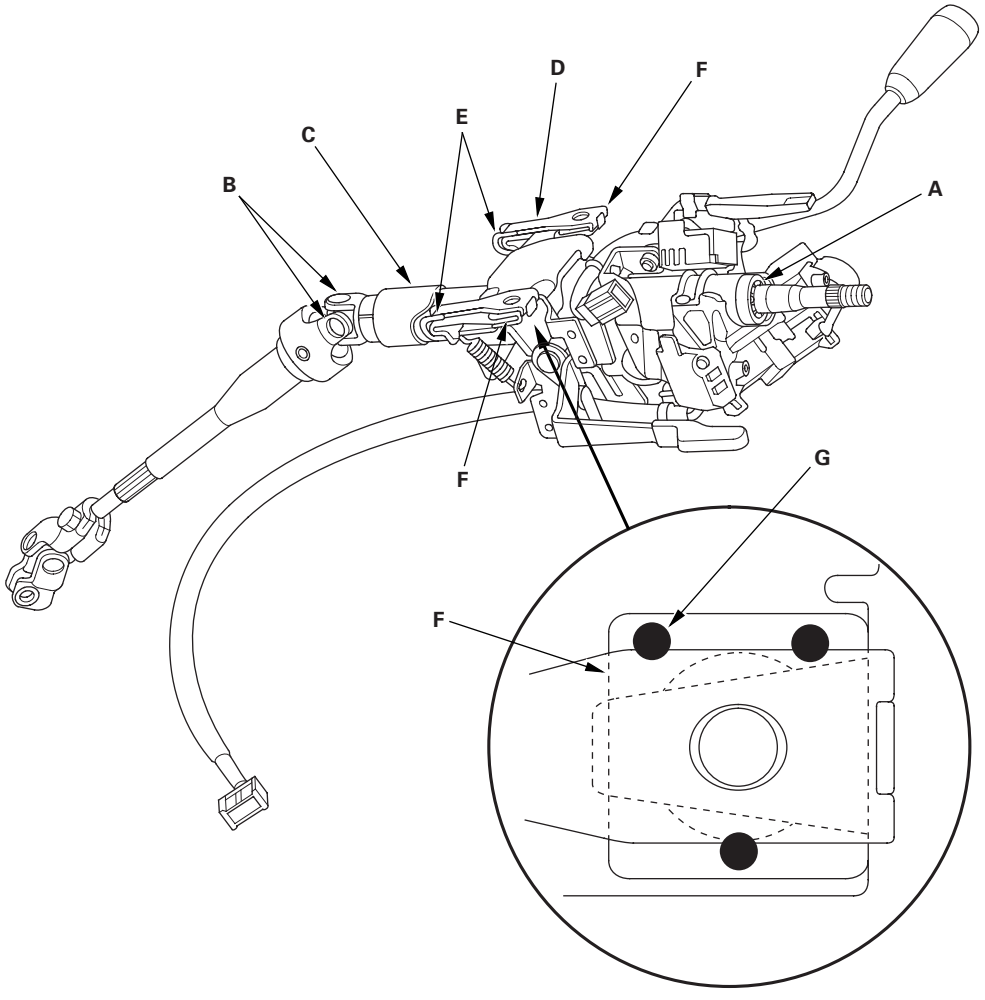
10. Reconnect the negative battery cable to the battery, and do these tasks:

    - Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
    - Enter the anti-theft codes for the audio system and the navigation system (if equipped).
    - Set the clock (or vehicles without navigation).
    - Make sure the horn and turn signal switches work properly.
    - Make sure the steering wheel switches work properly.
    - Make sure the steering wheel is centered.

Steering Column Inspection

Inspection

- Check the steering column ball bearing (A) and the steering joint bearings (B) for play and proper movement. If any bearing is noisy or has excessive play, replace the steering column as an assembly.
- Check the retaining collar (C) for damage. If it is damaged, replace the steering column as an assembly.
- Check the absorbing plates (D), absorbing plate guides (E) and sliding capsules (F) for distortion or breakage. If there is distortion or breakage, replace the steering column as an assembly. The sliding capsule is attached to the column bracket with the plastic injections (G).



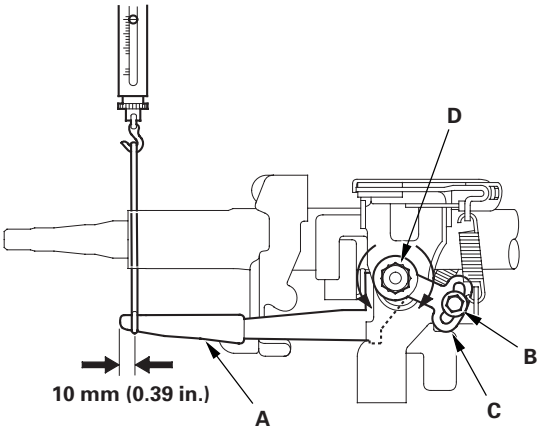
(cont'd)

Steering Column Inspection (cont'd)

Lock lever inspection/adjustment

1. Move the lock lever (A) from the loose position to the lock position three to five times. With the lock lever in the loose position measure the lock lever preload 10 mm (0.39 in.) from the end of the lock lever.

   Preload: 70—90 N (7—9 kgf, 15—20 lbf)

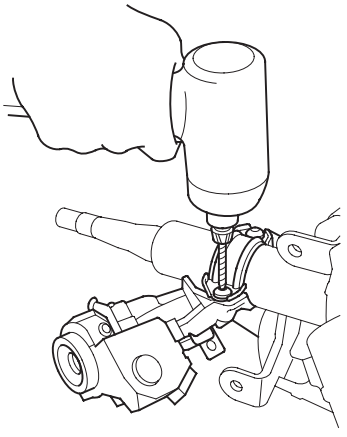


2. If the measurement is out of the specification, adjust the preload using the following procedures.

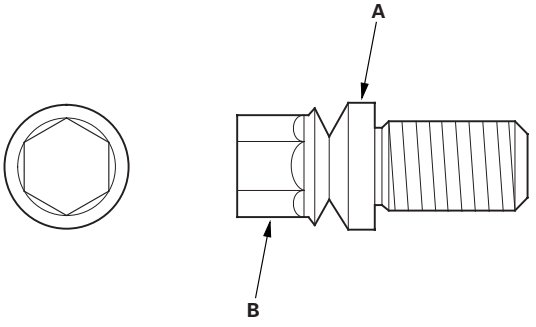
   - Loosen the lock lever, and set the steering column in the neutral position (see step 5 on page 17-24).
   - Remove the 6 mm lock bolt (B), and remove the stop (C).
   - Adjust the preload by turning the lock bolt (D) left or right.
   - Pull up the lock lever to the uppermost position, and install the stop. Be careful not to loosen the lock lever when installing the stop or tightening the 6 mm lock bolt. Check the preload again. If the measurement is still out of specification, repeat the above procedures to adjust.

Steering Lock Replacement

1. Remove the steering column (see page 17-24).
2. Remove the shift lever assembly (see page 14-243).
3. Center-punch each of the two shear bolts, and drill their heads off with a 5 mm (3/16 in.) drill bit. Be careful not to damage the switch body when removing the shear bolts.



4. Remove the shear bolts from the switch body.
5. Install the switch body without the key inserted.
6. Loosely tighten the new shear bolts.
7. Insert the ignition key, and check for proper operation of the steering wheel lock and that the ignition key turns freely.
8. Tighten the shear bolts (A) until the hex heads (B) twist off.



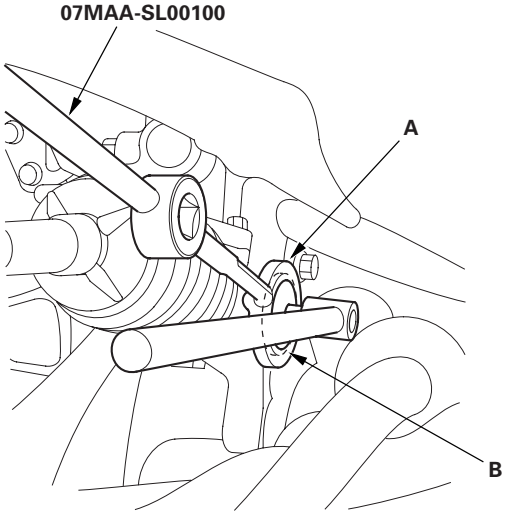
9. Rewrite the new immobilizer control unit-receiver with the HDS, and make sure the immobilizer system works properly.

Rack Guide Adjustment

Special Tools Required
Locknut wrench, 40 mm 07MAA-SL00100

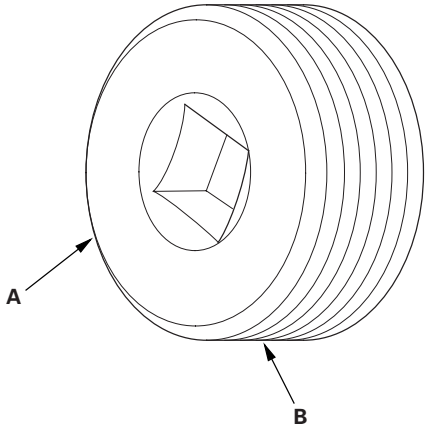
1. Set the wheels in the straight ahead position.

2. Loosen the rack guide screw locknut (A) with the locknut wrench, then remove the rack guide screw (B).

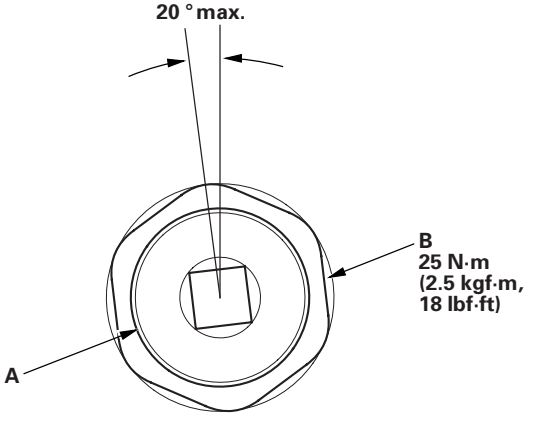


3. Remove the old sealant from the rack guide screw (A), and apply new sealant (Three Bond 1215 or Loctite 5699) to the middle of the threads (B). Loosely install the rack guide screw on the steering gearbox.

   NOTE: If the time within 5 minutes has passed after applying the sealant, remove the old sealant and residue, then reapply new sealant.



4. Tighten the rack guide screw (A) to 25 N·m (2.5 kgf·m, 18 lbf·ft), then loosen it.



5. Retighten the rack guide screw to 3.9 N·m (0.4 kgf·m, 4 lbf·ft), then back it off to the specified angle.

   Specified return angle: 20 ° max.

6. Hold the rack guide screw stationary with a wrench, and tighten the locknut by hand until it's fully seated.

7. Install the locknut wrench on the locknut (B), and hold the rack guide screw stationary with a wrench. Tighten the locknut an additional 30 ° with the special tool.

8. Check for unusual steering effort through the complete turning range.

9. Check the steering wheel rotational play (see page 17-7) and the power assist (see page 17-7).

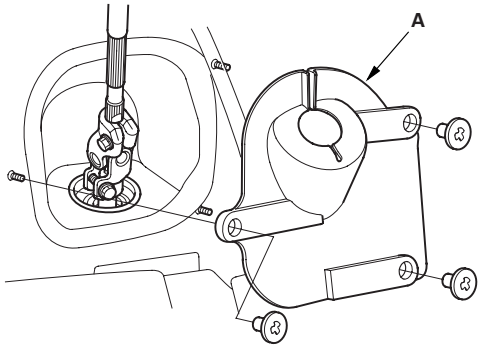
Steering Gearbox Removal

Special Tools Required
- Ball joint remover, 32 mm 07MAC-SL0A102
- Front subframe adapter EQS02BMDXSB0 *
- Front subframe adapter VSB02C000016 *
- Engine support hanger, A and Reds AAR-T-12566 *
- Engine hanger balance bar VSB02C000019 *
- Engine hanger adapter set VSB02C000024 *

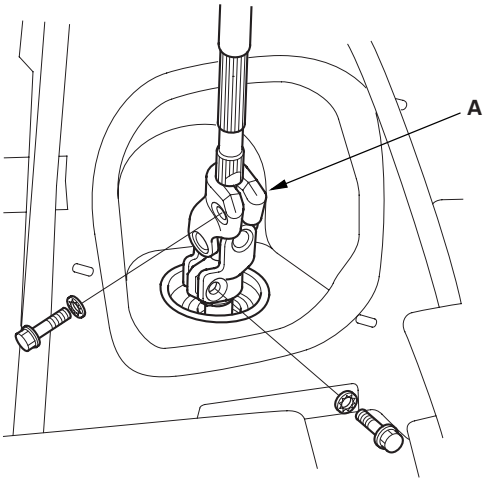
* Available through the American Honda Tool and Equipment program, 1-888-424-6857.

Note these items during removal:
- Using solvent and a brush, wash any oil and dirt off the valve body unit, it's lines, and the end of the gearbox. Blow dry with compressed air.
- Be sure to remove the steering wheel before disconnecting the steering joint. Damage to the cable reel can occur.
- Lower the front subframe from the body and remove the steering gearbox through the gap produced by lowering the front subframe.

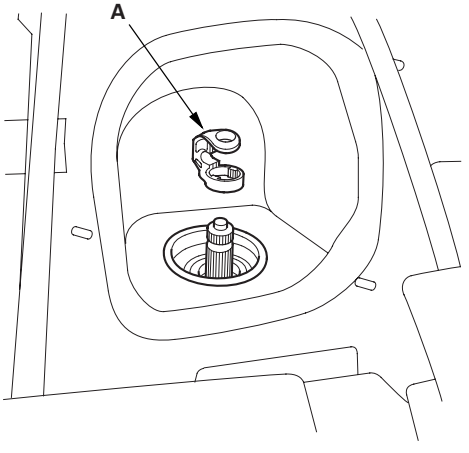
1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
2. Drain the power steering fluid (see page 17-12).
3. Disconnect the negative cable from the battery.
4. Raise the front of vehicle, and support it with safety stands in the proper locations (see page 1-10).
5. Remove the front wheels.
6. Remove the driver's airbag (see page 24-174).
7. Remove the steering wheel (see page 17-21).
8. Remove steering joint cover A.



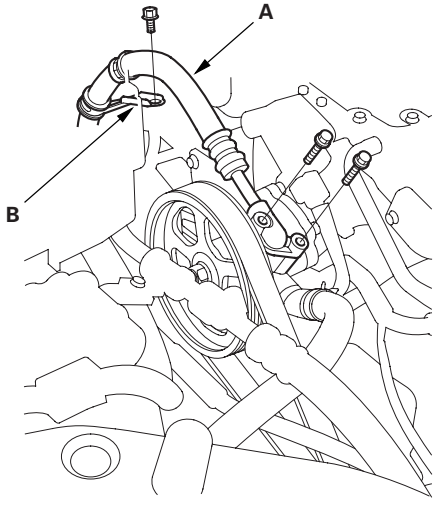
9. Remove the steering joint bolts, disconnect the steering joint by moving the steering joint (A) toward the column.



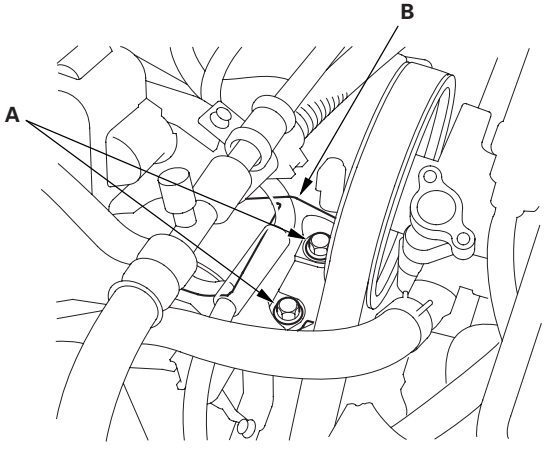
10. Remove the center guide (A) (if equipped), and discard it. The center guide is for factory assembly use only.



11. Disconnect the pump outlet hose (A) from the power steering pump, and remove the clamp (B).

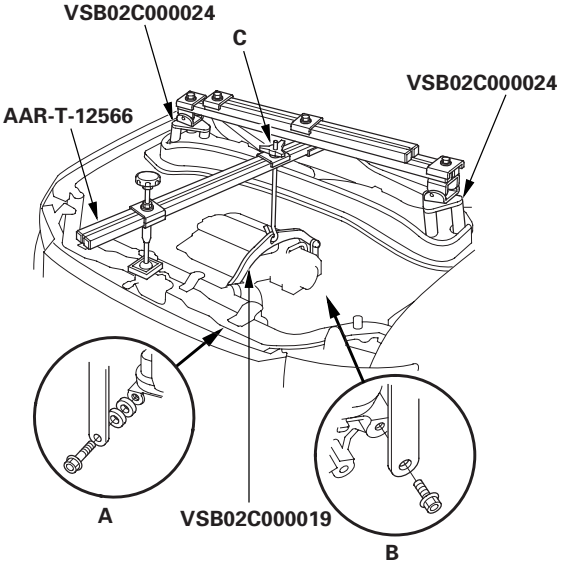


12. Remove the 10 mm flange bolts (A) on the engine side mount bracket (B).

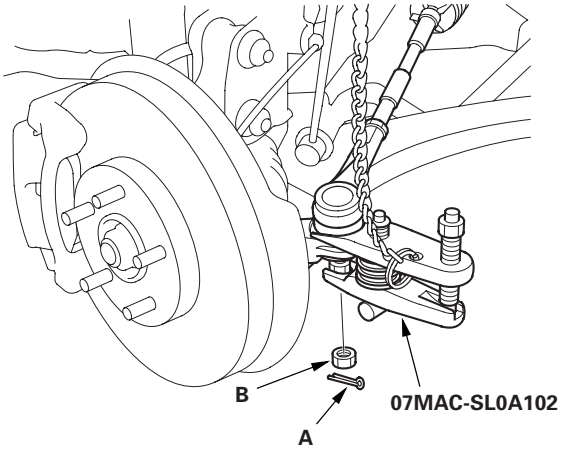


13. Remove the service caps for damper flange nuts, and place the engine support hanger stands (VSB02C000024) over the flange nuts (see step 55 on page 5-8).

14. Install the engine balancer bar (VSB02C000019); attach the front arm (A) to the front cylinder head with the spacer and the 10 mm bolt, and attach the rear arm (B) to the rear cylinder head with the 8 mm bolt.



15. Remove the cotter pin (A) from the 12 mm nut (B), and loosen the nut.

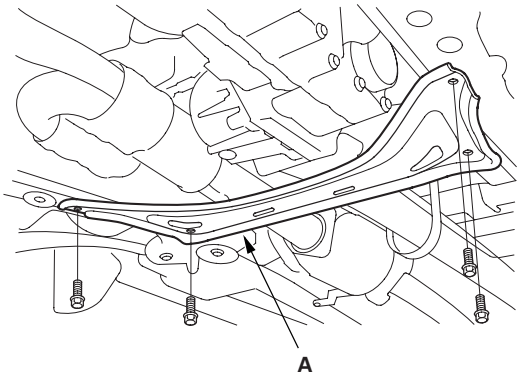


16. Separate the tie-rod ball joint and knuckle using the ball joint remover (see page 18-11).

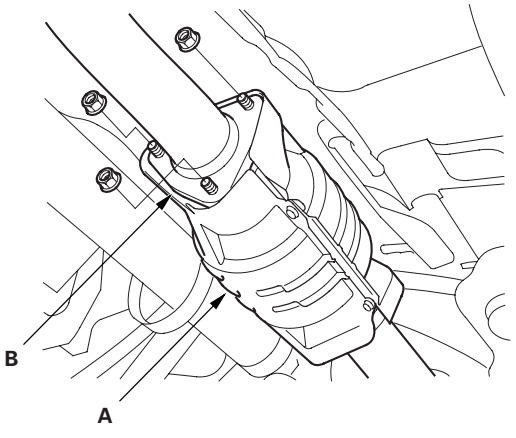
(cont'd)

Steering Gearbox Removal (cont'd)

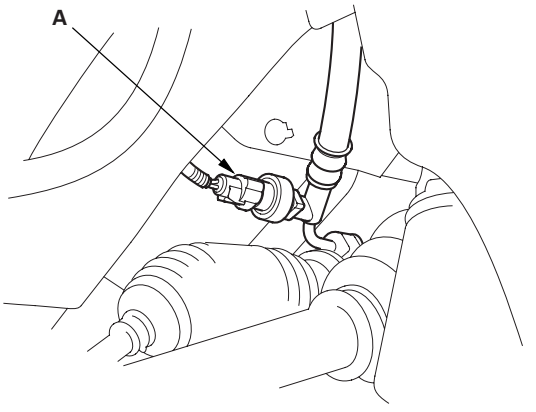
17. Remove the front subframe stiffener (A).



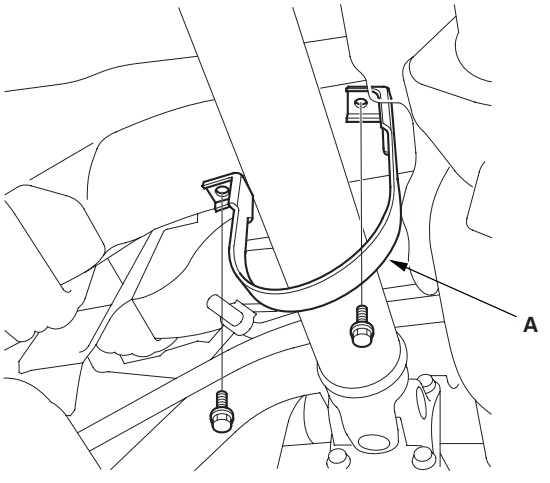
18. Remove the three self-locking nuts, and disconnect the under-floor three way catalytic converter (TWC) (A) from the muffler (B) (see page 9-7).



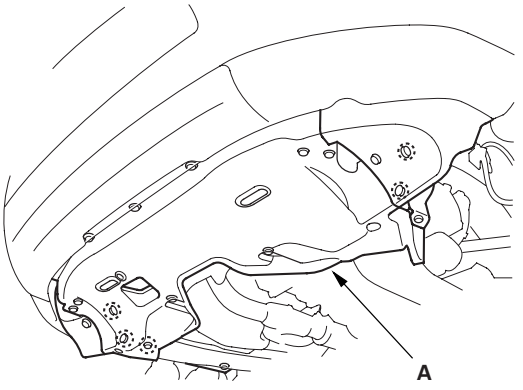
19. Disconnect the power steering pressure (PSP) switch connector (A).



20. Remove the propeller shaft protector (A).

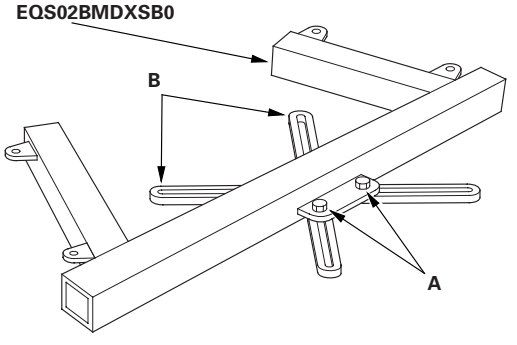


21. Remove the splash shield (A) (see page 20-179).

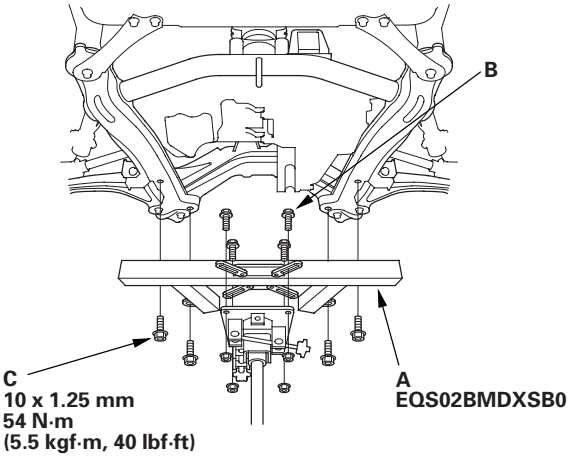


22. Attach the special tool to the front subframe and the transmission jack (model number LSL-W9371) or the powertrain lift (model number OTC-1585), then tighten the special tool screw.

23. Loosen the four bolts (A) holding the adjustable arms (B) of the front subframe adapter to its center plate.

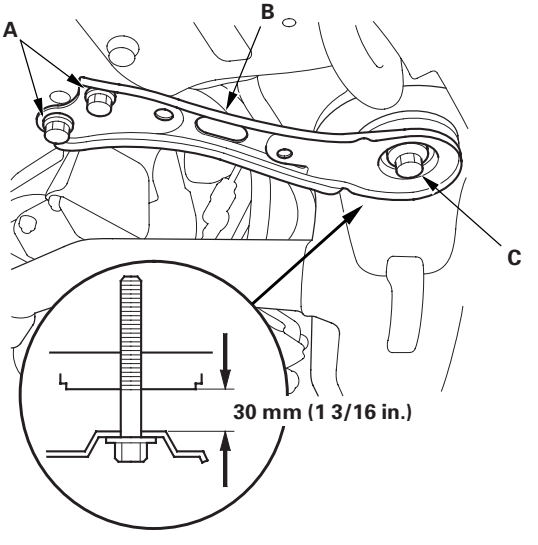


24. Line up the slots in the arms with the bolt holes on the corner of the jack base, then attach the front subframe adapter (A) to the jack base with the bolts (B) that came with the jack. Tighten all bolts securely.



25. Raise the jack to vehicle height, then attach the front subframe adapter to the front subframe using the subframe stiffener mounting bolts (C) and bolt holes.

26. Remove the four 12 mm flange bolts (A) from the front suspension subframe front brackets (B).

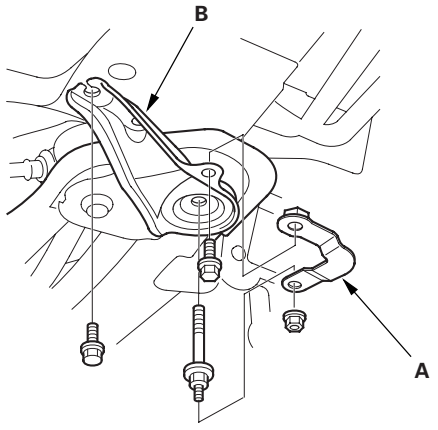


27. Loosen the two 14 mm flange bolts (C) on the front suspension subframe so they are about 30 mm (1 3/16 in.) from the mounting surface. Do not loosen the 14 mm flange bolts more than necessary.

(cont'd)

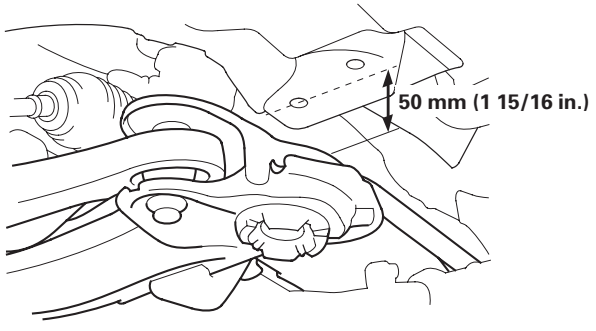
Steering Gearbox Removal (cont'd)

28. Support the front subframe securely by raising the transmission jack.
    For '07-08 models: Remove the 10 mm flange bolts, nuts, and the subframe bolt retainers (A).

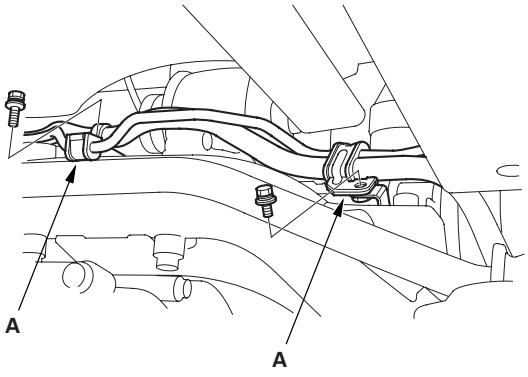


29. Remove the two 12 mm flange bolts, 14 mm special bolts and front subframe rear brackets (B) on the right and left of the vehicle.

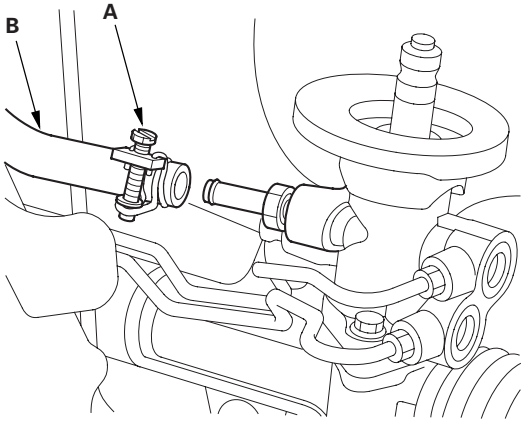
30. Lower the transmission jack slowly until the front subframe has dropped about 50 mm (1 15/16 in.).



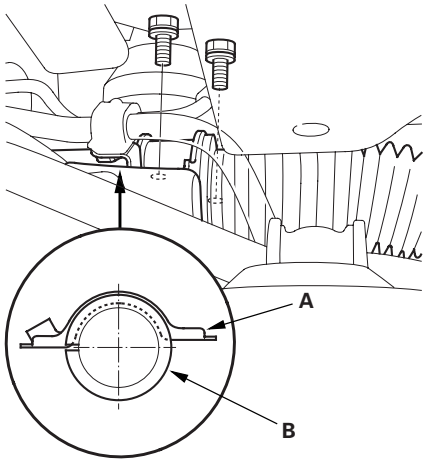
31. Remove the P/S line mounting brackets (A) from the front subframe and gearbox mounting bracket.



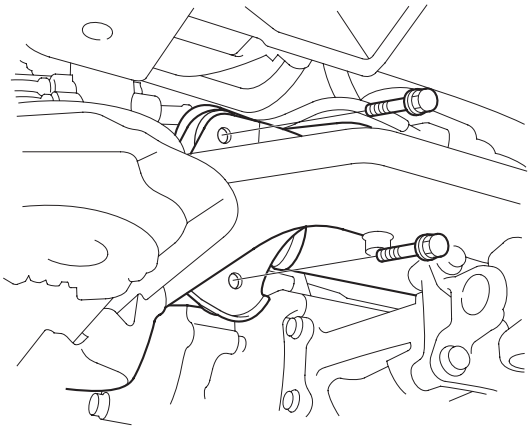
32. Loosen the adjustable hose clamp (A) and disconnect the return hose (B).



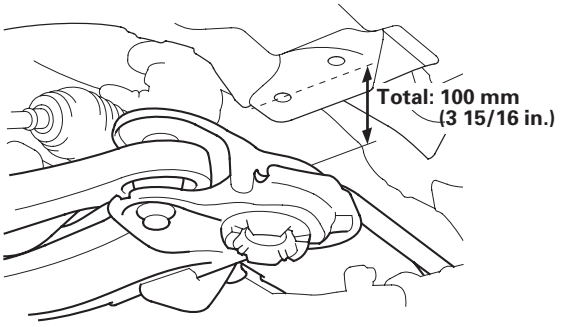
33. Remove the two 10 mm flange bolts from the right side of the steering gearbox, then remove the mounting bracket (A) and cushion (B).



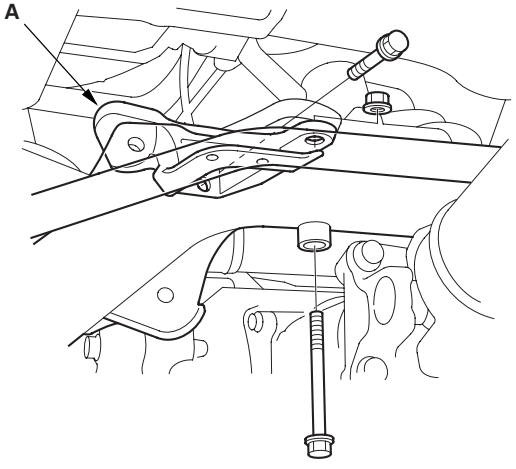
34. Remove the two 10 mm flange bolts from the left side of the gearbox.



35. Lower the transmission jack slowly until the front subframe has dropped 100 mm (3 15/16 in.) total.



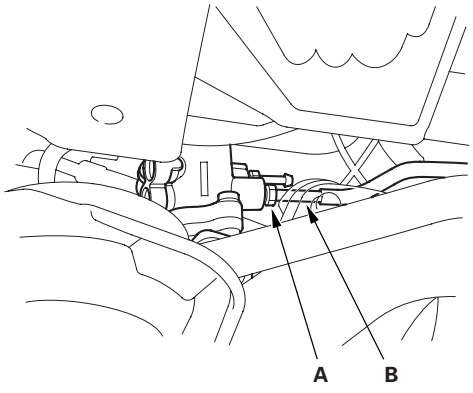
36. Remove the gearbox stiffener bracket (A) from the left side of the front subframe.



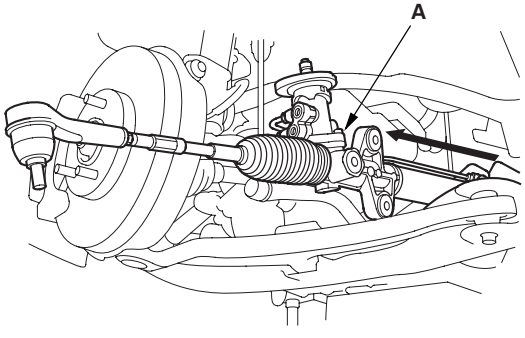
(cont'd)

Steering Gearbox Removal (cont'd)

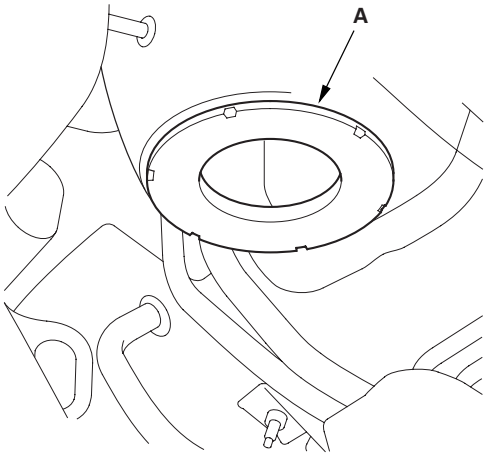
37. Loosen the 16 mm flare nut (A), and disconnect the feed line (B).



38. Slide the steering gearbox (A) between the body and front subframe toward the left, and remove the steering gearbox.



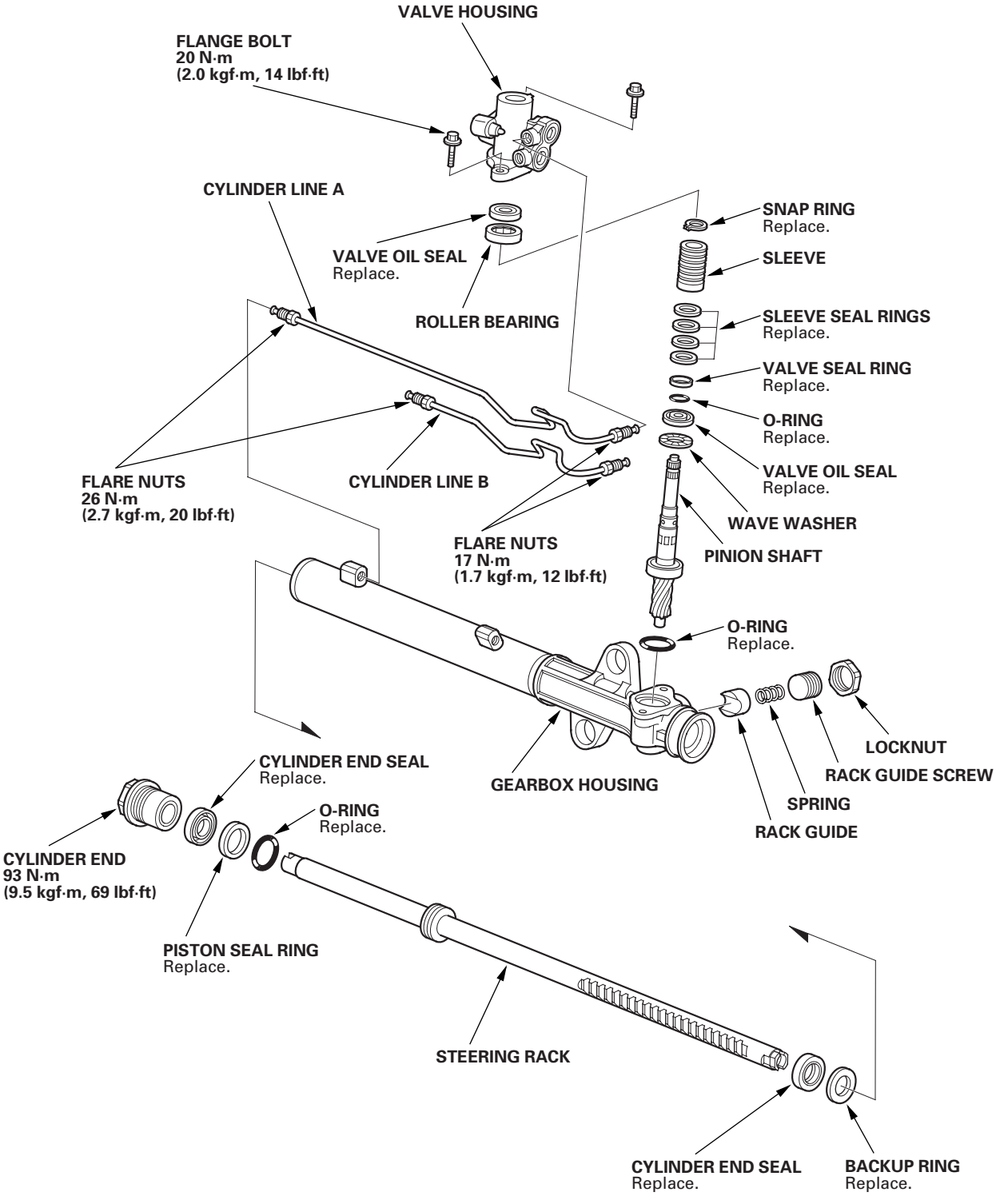
39. Remove the pinion shaft grommet (A) from the frame.



40. After removing the steering gearbox, make sure that no power steering fluid gets on the gearbox mount cushions, gearbox housing, surface of the front subframe and stiffener. Wipe off any spilled fluid at once.

Steering Gearbox Overhaul

Exploded View



(cont'd)

Steering Gearbox Overhaul (cont'd)

Special Tools Required
- Cylinder end seal remover attachment 07TAF-SZ50100
- Pilot collar 07GAF-PH70100
- Valve seal ring sizing tool 07NAG-SR3090A
- Ball joint boot clip guide 07974-SA50800
- Sleeve seal ring sizing tool 07974-SA5020A or 07974-SA50200
- Attachment, 32 x 35 mm 07746-0010100
- Driver 07749-0010000
- Piston seal ring guide 07ZAG-S3VA100
- Piston seal ring sizing tool 07ZAG-S3VA200
- Pincers Oetiker 1098 or equivalent, commercially available

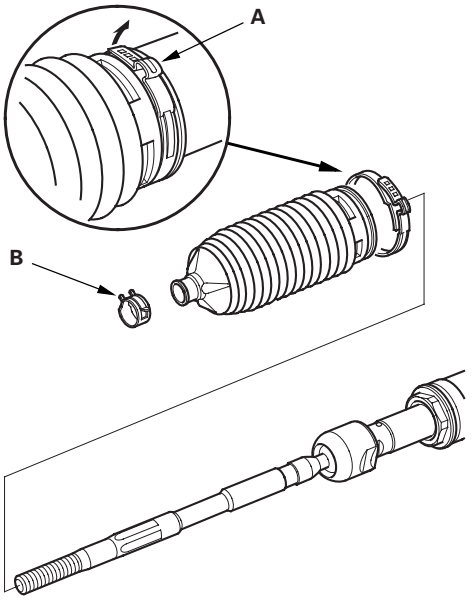
NOTE: Refer to the Exploded View as needed during this procedure.

Removal

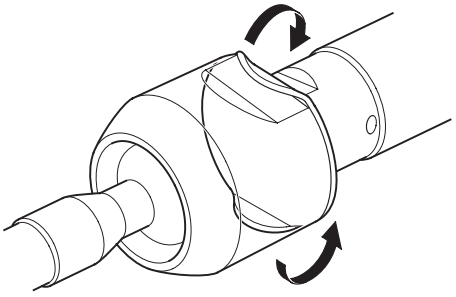
1. Remove the steering gearbox (see page 17-30).

Disassembly

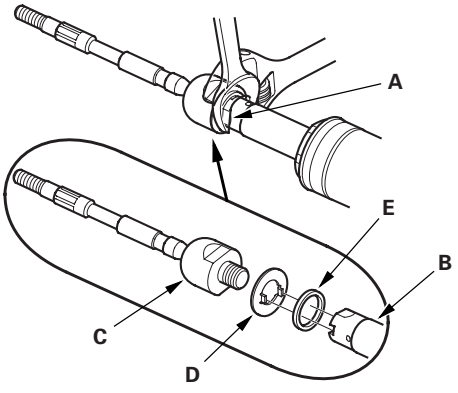
2. Disconnect the tie-rod ends. Remove the boot bands (A) and tie-rod clips (B). Pull the boots away from the ends of the steering gearbox.



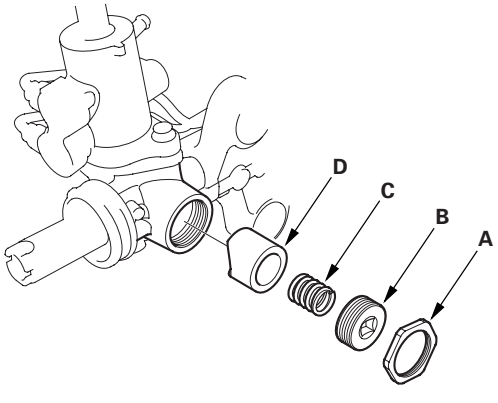
3. Unbend the lock washer.



4. Hold the flat surface sections (A) of the steering rack (B) with a wrench, and unscrew both rack ends (C) with another wrench. Be careful not to damage the rack surface with the wrench. Remove the lock washer (D) and stop rubber (E).

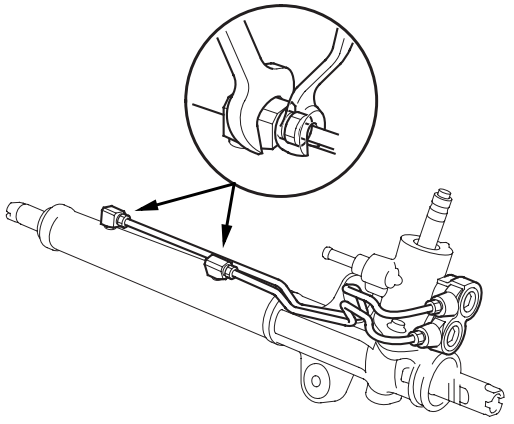


5. Loosen the locknut (A), then remove the rack guide screw (B).



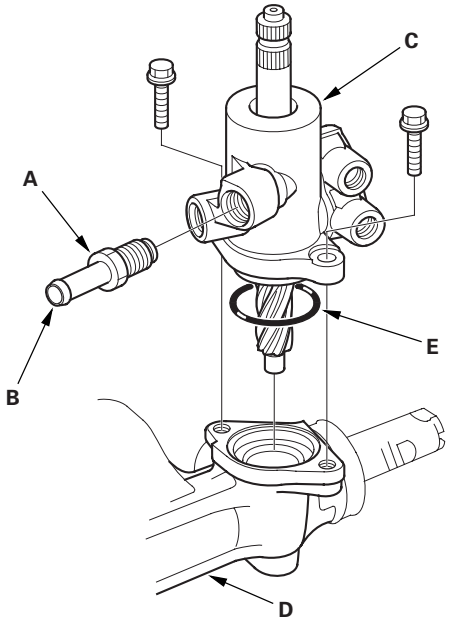
6. Remove the spring (C) and the rack guide (D) from the steering gearbox.

7. Remove the cylinder lines from the steering gearbox.



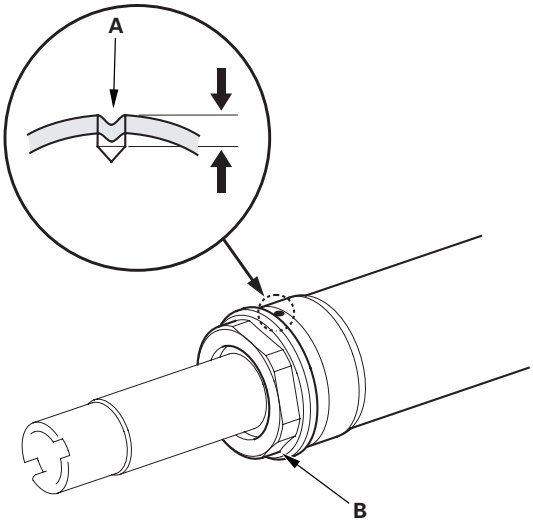
8. Drain the fluid from the cylinder fittings by slowly moving the steering rack back and forth.

9. Loosen the 16 mm flare nut (A), and remove the return line joint (B).

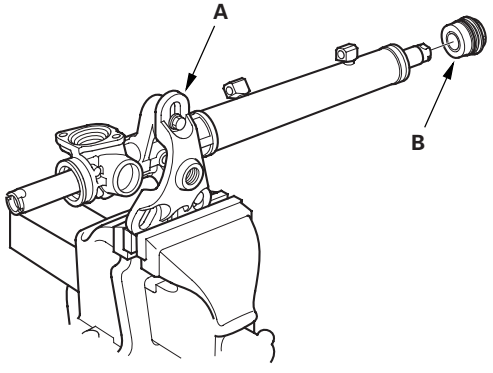


10. Remove the two flange bolts, then remove the valve body unit (C) from the steering gearbox (D). Remove the O-ring (E), and discard it.

11. Drill a 3 mm (0.12 in.) diameter hole about 2.5—3.0 mm (0.10—0.12 in.) in depth in the staked point (A) on the cylinder. Do not allow metal shavings to enter the cylinder housing. After removing the cylinder end (B), remove any burrs at the staked point.



12. Attach the yoke of a universal puller (commercially available) (A) to the steering gearbox mounts with bolts. Clamp the yoke in a vise with soft jaws as shown, then loosen and remove the cylinder end (B). Do not clamp the cylinder housing or gearbox housing in the vise.



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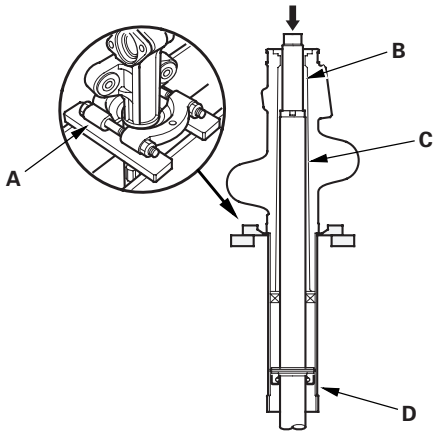
Steering Gearbox Overhaul (cont'd)

13. Install a commercially available bearing separator (A) on the gearbox housing as shown.

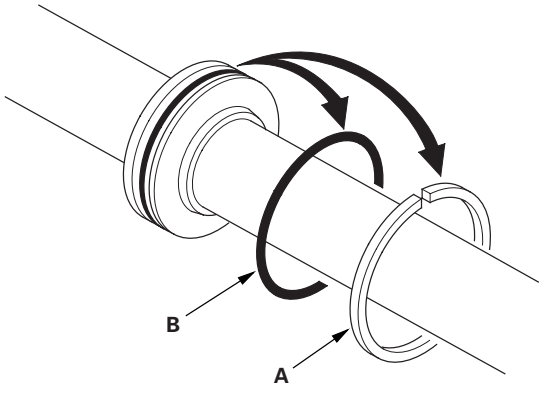


14. Place an appropriate size deep socket wrench (B) on the steering rack (C).

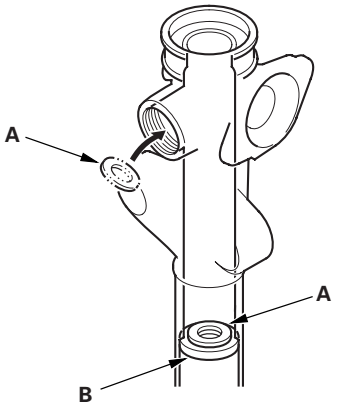
15. Set the steering gearbox in a press so the gearbox housing points upward, then press the cylinder end seal (D) and steering rack out of the gearbox. Hold the steering rack to keep it from falling when pressed clear. Be careful not to damage the inner surface of the cylinder housing with the tool.

16. Remove the cylinder end seal from the steering rack.

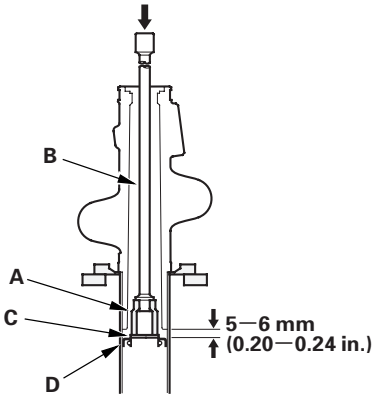
17. Carefully pry the piston seal ring (A) and O-ring (B) off from the rack piston. Be careful not to damage the inside of the seal ring groove and piston edges when removing the seal ring.



18. Install a washer (O.D. 27.5 mm, P/N 94103-10400) (A) so it will fit through the rack guide hole of the gearbox housing, then position the washer on the cylinder end seal (B). Make sure that the washer is centered on the cylinder end seal edges.



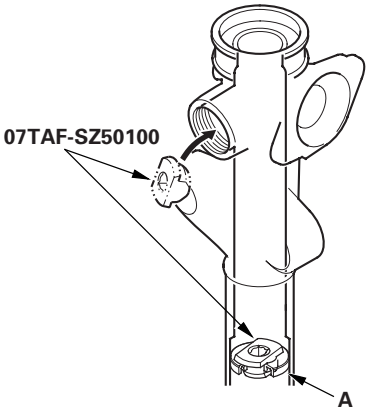
19. Install the socket wrench with a 27.5 mm O.D. (A) onto the 24 '' long 3/8 '' drive extension (B), and carefully place it on the washer (C).



20. Set the steering gearbox in a press so the gearbox housing points upward, then push the cylinder end seal (D) for 5—6 mm (0.20—0.24 in.) by pressing on the 24 '' long 3/8 '' drive extension end.

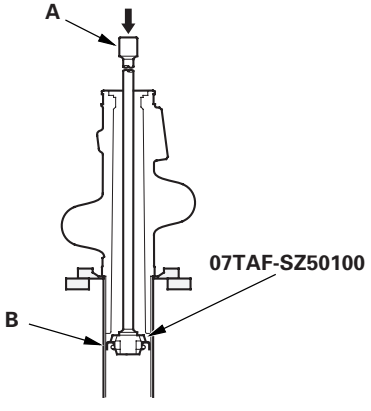
21. Remove the steering gearbox from the press, and remove the washer from the gearbox inside.

22. Turn the special tool so it will fit through the rack guide hole of the steering gearbox, then position the special tool on the cylinder end seal (A). Make sure that the special tool is securely positioned on the seal edges.

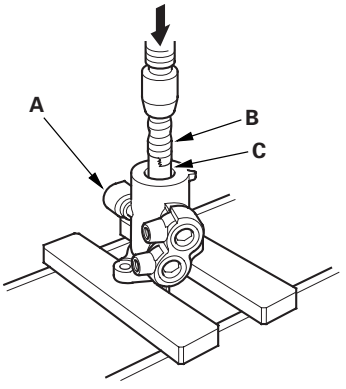


23. Insert a 24 '' long 3/8 '' drive extension (A) and place it on the special tool. Set the steering gearbox in a press, then remove the cylinder end seal (B) from the gearbox by pressing on the 24 '' long 3/8 '' drive extension.

    Note these items when pressing the cylinder end seal:
    - Keep the tool straight to avoid damaging the cylinder wall. Check the tool angle, and correct it if necessary, when removing the cylinder end seal.
    - Use a press to remove the cylinder end seal. Do not try to remove the seal by striking the tool; striking the tool would break the cylinder end seal, and the seal would remain in the steering gearbox.



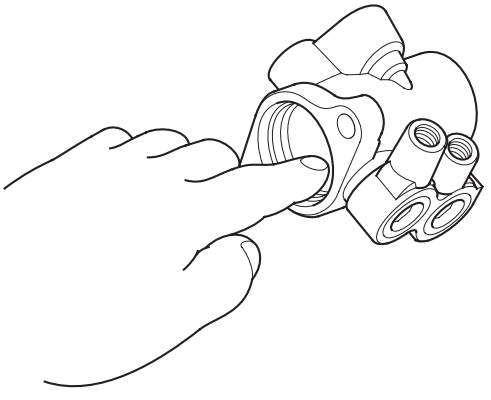
24. Before removing the valve housing (A), apply vinyl tape (B) to the splines on the pinion shaft (C).



25. Separate the valve housing from the pinion shaft/valve using a press.

26. With your finger, check the inner wall of the valve housing where the seal ring slides. If there is a step in the wall, the housing is worn. Replace it.

    NOTE: There may be sliding marks from the seal ring on the wall of the valve housing. Replace the valve housing only if the wall is stepped.



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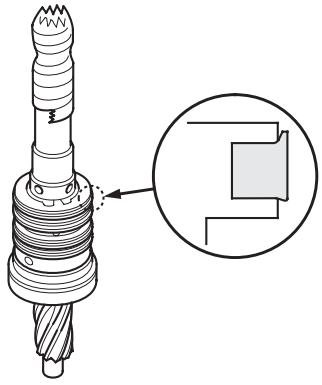
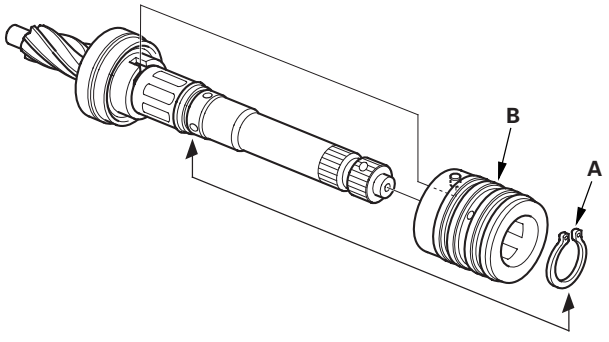
Steering Gearbox Overhaul (cont'd)

27. Check for wear, burrs and other damage to the edges of the grooves in the sleeve.

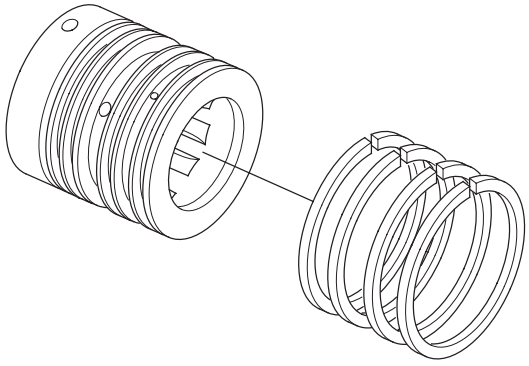
    NOTE: The pinion shaft and sleeve are a precision matched set. If either the pinion shaft or sleeve must be replaced, replace both parts as a set.



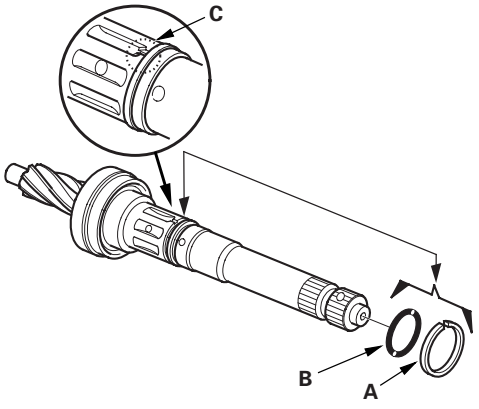
28. Remove the snap ring (A) and sleeve (B) from the pinion shaft.



29. Using a cutter or an equivalent tool, cut and remove the four seal rings from the sleeve. Be careful not to damage the edges of the sleeve grooves and outer surface when removing the seal rings.

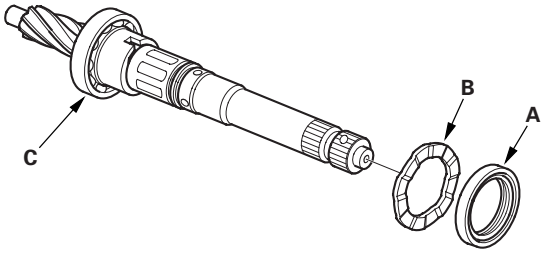


30. Using a cutter or an equivalent tool, cut the valve seal ring (A) and O-ring (B) at the cutting groove position (C) in the pinion shaft. Remove the valve seal ring and O-ring. Be careful not to damage the edges of the pinion shaft groove and outer surface when removing the valve seal ring and O-ring.

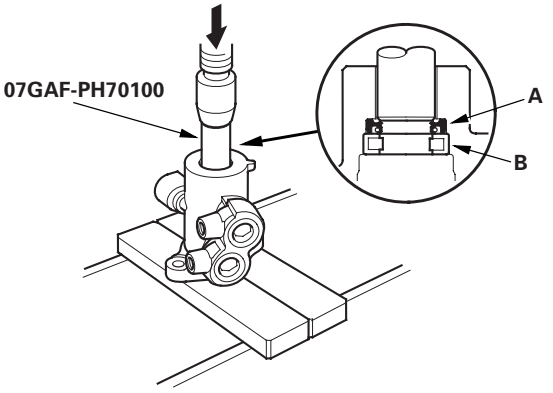


31. Remove the valve oil seal (A) and wave washer (B) from the pinion shaft.

    Note these items during disassembly:
    - Inspect the ball bearing (C) by rotating the outer race slowly. If there is any excessive play or wear, replace the pinion shaft and sleeve as an assembly.
    - The pinion shaft and sleeve are a precise fit; do not intermix with old and new pinion shafts and sleeves.



32. Press the valve oil seal (A) and roller bearing (B) out of the valve housing using a hydraulic press and special tool.



33. Clean the disassembled parts with solvent, and dry them with compressed air. Do not dip rubber parts in the solvent.

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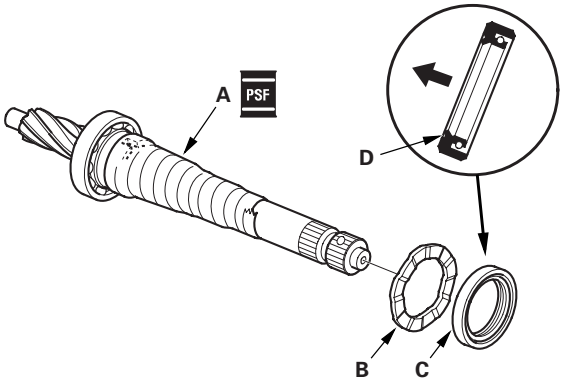
Steering Gearbox Overhaul (cont'd)

Reassembly

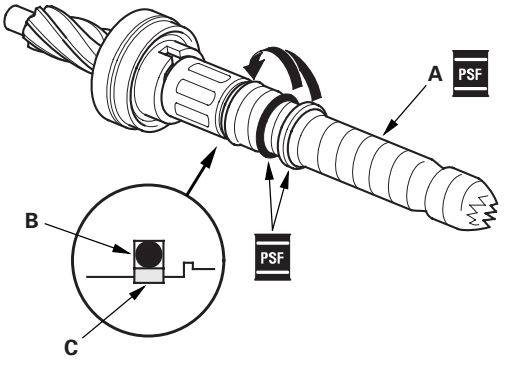
34. Apply vinyl tape (A) to the stepped portion of the pinion shaft, and coat the surface of the vinyl tape with power steering fluid.



35. Install the wave washer (B).

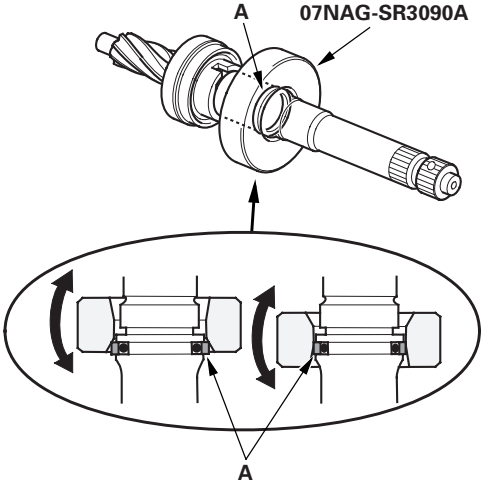
36. Coat the inside surface of the new valve oil seal (C) with power steering fluid, and install the seal with its grooved side facing opposite the bearing, then slide it over the pinion shaft, being careful not to damage its sealing lip (D).

37. Apply vinyl tape (A) to the splines and stepped portion of the shaft, and coat the surface of the vinyl tape with power steering fluid.



38. Fit the new O-ring (B) in the groove of the pinion shaft. Then slide the new valve seal ring (C) over the shaft and in the groove on the pinion shaft.

39. Remove the tape, and apply power steering fluid to the surface of the valve seal ring (A).

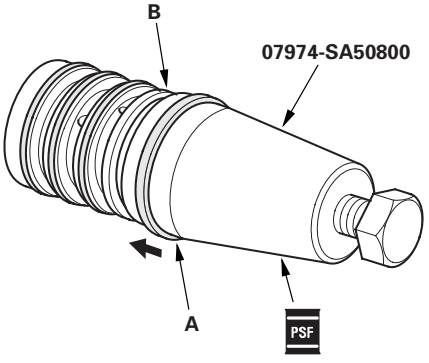


40. Apply power steering fluid to the inside of the special tool. Set the larger diameter end of the special tool over the valve seal ring, and move the special tool up and down several times to make the valve seal ring fit in the pinion shaft groove.

41. Remove the special tool, turn it over, slide the smaller diameter end over the valve seal ring. Move it up and down several times to make sure the valve seal ring fits snugly in the pinion shaft groove.

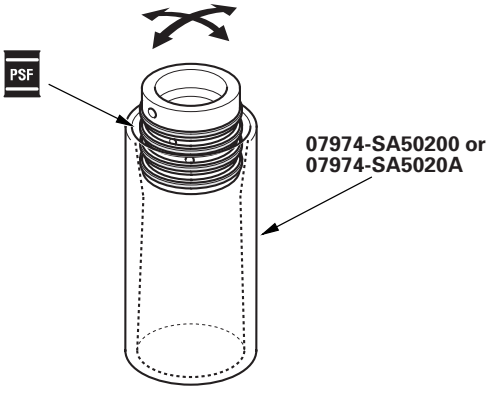
42. Apply power steering fluid to the surface of the special tool. Slip two new seal rings (A) over the special tool from the smaller diameter end, and expand them. Install only two rings at a time from each end of the pinion shaft sleeve (B).

    Note these items when installing the seal ring:
    - Do not over-expand the seal ring. Install the resin seal rings with care so as not to damage them. After installation, make sure you contract the seal rings using the special tool (sizing tool).
    - There are two types of sleeve seal rings; black and brown. Do not mix the different types of rings as they are not compatible.



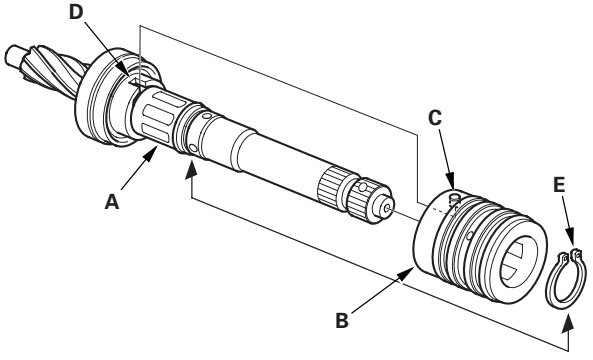
43. Align the special tool with each groove in the sleeve, and slide a sleeve seal ring into each groove. After installation, compress the seal rings with your fingers temporarily.

44. Apply power steering fluid to the seal rings on the sleeve, and to the entire inside surface of the special tool, then slowly insert the sleeve into the special tool.

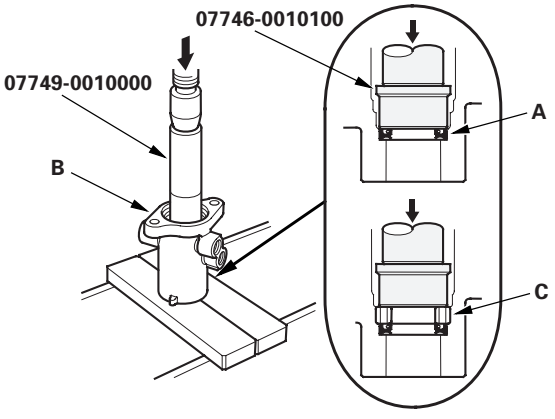


45. Move the sleeve back and forth several times to make the seal rings fit snugly in the sleeve. Make sure the seal rings are not twisted.

46. Apply power steering fluid to the surface of the pinion shaft (A). Slide the sleeve (B) onto the pinion shaft by aligning the locating pin (C) on the inside of the sleeve with the cutout (D) in the shaft. Then install the new snap ring (E) securely in the pinion shaft groove. Be careful not to damage the valve seal ring when inserting the sleeve.



47. Apply power steering fluid to the seal ring lip of the new valve oil seal (A), then install the seal in the valve housing (B) using a hydraulic press and special tools. Install the seal with its grooved side facing the tool.



48. Press the roller bearing (C) into the valve housing with a hydraulic press and special tools.

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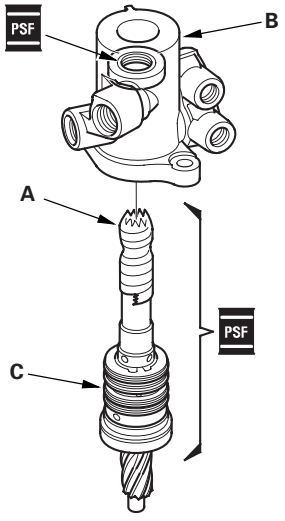
Steering Gearbox Overhaul (cont'd)

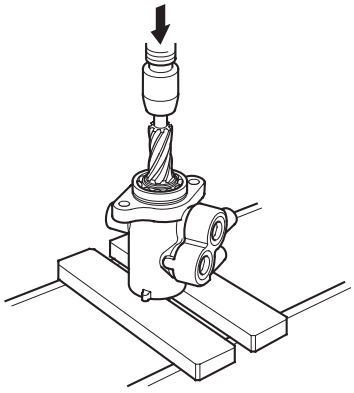
49. Apply vinyl tape (A) to the pinion shaft, then coat the vinyl tape with power steering fluid.



50. Insert the pinion shaft into the valve housing (B). Be careful not to damage the valve seal rings (C).

51. Remove the vinyl tape from the pinion shaft, then remove any residue from the tape adhesive.

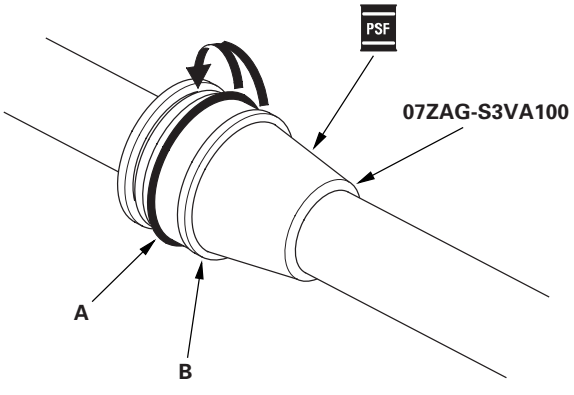
52. Press the pinion shaft/sleeve into the valve housing with a hydraulic press. Check that the pinion shaft/sleeve turns smoothly by hand after installing it.



53. Coat the special tool with power steering fluid, then slide it onto the rack, big end first.

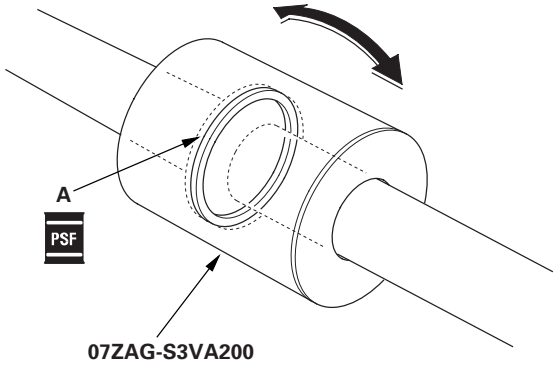
54. Position the new O-ring (A) and new piston seal ring (B) on the special tool, then slide them down toward the big end of the tool.

    Note these items during reassembly:
    - Do not over expand the resin seal rings. Install the resin seal rings with care so as not to damage them. After installation, make sure you contract the seal ring using the special tool (sizing tool).
    - Replace piston's O-ring and seal ring as a set.



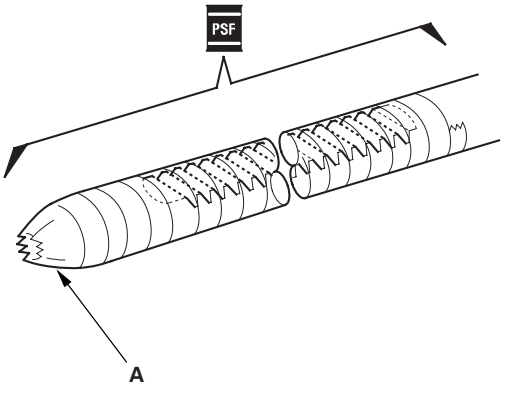
55. Pull the O-ring off into the piston groove, then pull the piston seal ring off into the piston groove on top of the O-ring.

56. Coat the piston seal ring (A) and the inside of the special tool with power steering fluid, then carefully slide the tool onto the rack and over the piston seal ring.

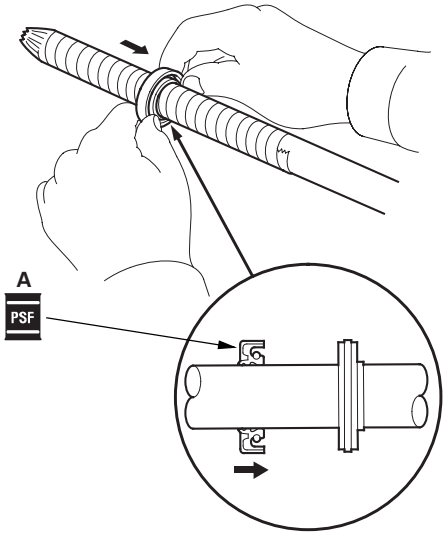


57. Move the special tool back and forth several times to make sure the piston seal ring fits snugly in the piston.

58. Wrap vinyl tape (A) around the rack teeth and rack end edges, then coat the surface of the tape with power steering fluid. Make sure that the vinyl tape is wrapped carefully so there is no stepped portion.

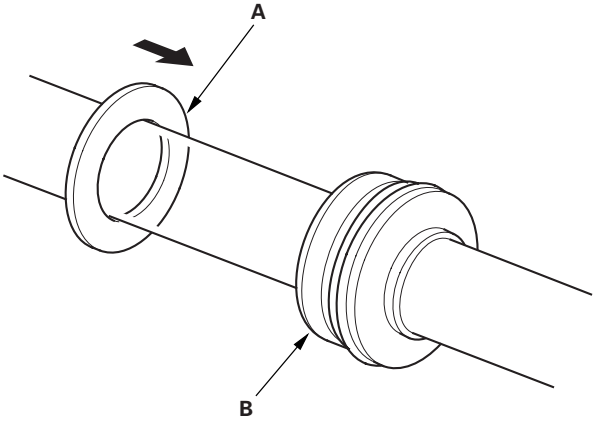


59. Coat the inside surface of the new cylinder end seal (A) with power steering fluid, then install it onto the steering rack with its grooved side toward the piston. When installing the cylinder end seal, be careful not to damage the lip of the seal with the edges or teeth of the steering rack.



60. Remove the vinyl tape from the steering rack, then remove any adhesive residue.

61. Install the new backup ring (A) on the steering rack, then place the cylinder end seal (B) against the piston.



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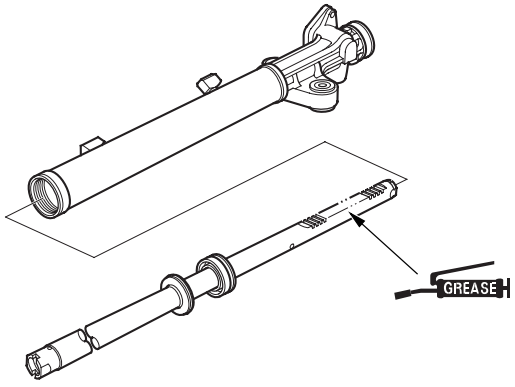
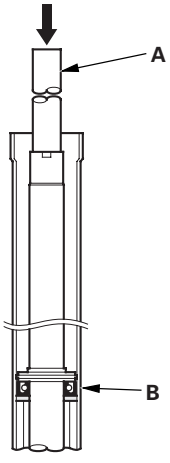
Steering Gearbox Overhaul (cont'd)

62. Apply multipurpose grease to the steering rack teeth, then insert the steering rack into the gearbox housing. Be careful not to damage the inner surface of the cylinder wall with the rack edges.



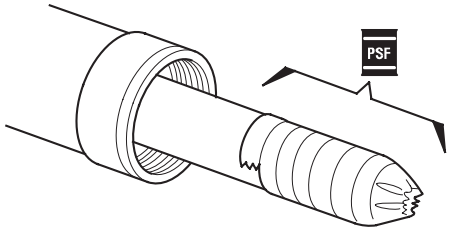
63. Insert an appropriate size deep socket wrench (A) onto the steering rack as shown.



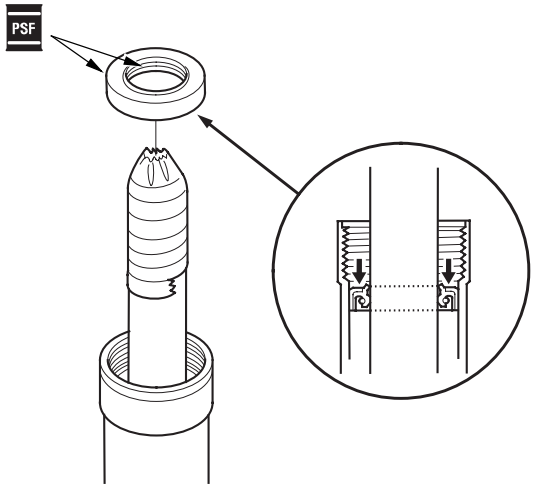
64. Install the cylinder end seal (B) into the bottom of the cylinder by pressing on the tool with a press. Do not push on the tool with excessive force as it may damage the cylinder end seal.

65. Remove the tool, and center the steering rack.

66. Wrap vinyl tape around the rack end edges, and coat the surface of the tape with the power steering fluid. Make sure that the vinyl tape is wrapped carefully so there is no stepped portion.



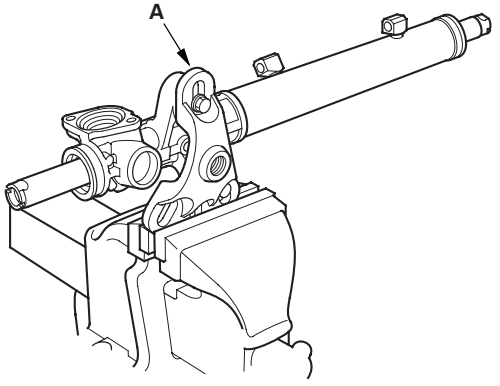
67. Coat the inside surface of the new cylinder end seal with power steering fluid, then install the seal onto the steering rack with its grooved side toward the piston.



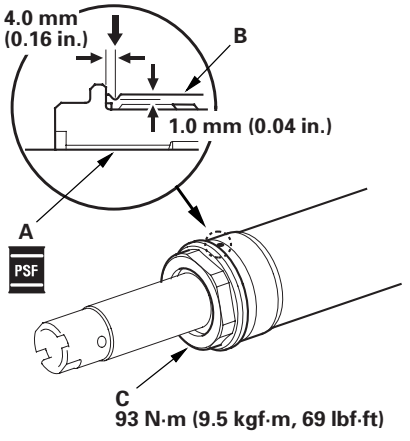
68. Push in the cylinder end seal with your finger. Be careful not to damage the face of the seal with the threads and burrs at the staked position of the cylinder housing.

69. Remove the vinyl tape from the steering rack, then remove any adhesive residue.

70. Attach the yoke of a universal puller (commercially available) (A) to the steering gearbox mounts with bolts, then clamp the yoke in a vise with soft jaws. Do not clamp the cylinder housing or gearbox housing in the vise.

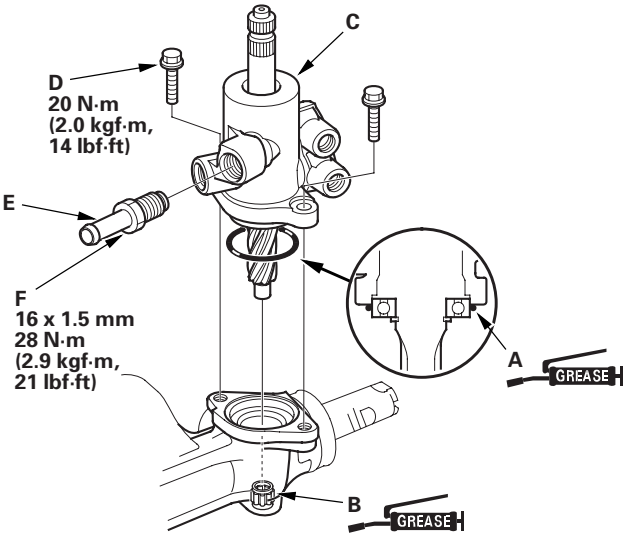


71. Coat the inside surface of the cylinder end (A) with power steering fluid, then install the cylinder end by screwing it into the cylinder (B).



72. Remove the yoke from the gearbox. After tightening the cylinder end (C), stake the point of the cylinder as shown (opposite from where the stake was removed during disassembly).

73. Coat the new O-ring (A) with steering grease (08C35-B0534L), and carefully fit it on the valve housing.



74. Apply multipurpose grease to the needle bearing (B) in the gearbox housing, then install the valve body unit (C) by engaging the gears. Note the valve body unit installation position (direction of the line connections).

75. Tighten the flange bolts (D) to the specified torque.

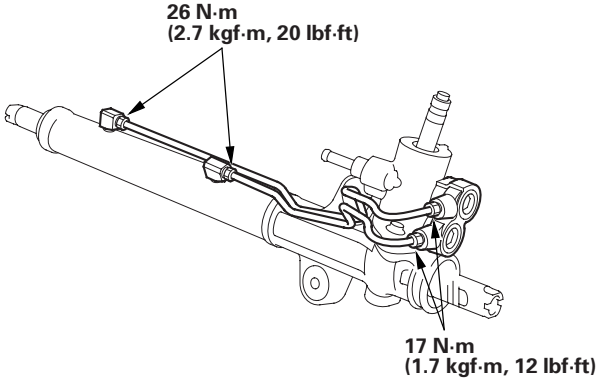
76. Install the return line joint (E), and tighten the 16 mm flare nut (F).

(cont'd)

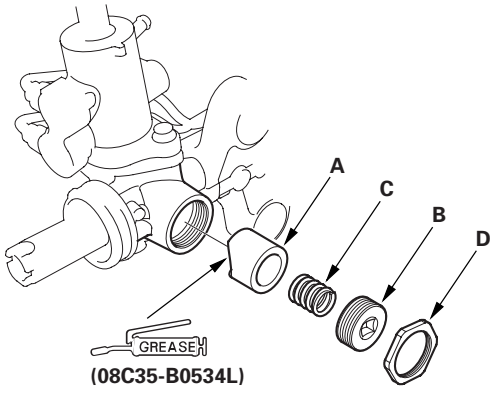
Steering Gearbox Overhaul (cont'd)

77. Install the cylinder lines.

    Note these items during reassembly:
    - Thoroughly clean the joints of the cylinder lines. The joints must be free of foreign material.
    - Install the cylinder lines by tightening the flare nuts by hand first, then tighten the flare nuts to the specified torque.



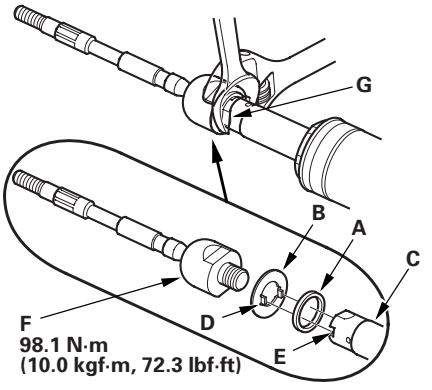
78. Apply steering grease to the sliding surface of the rack guide (A), and install it onto the gearbox housing.



79. Remove the old sealant from the rack guide screw (B), then apply new sealant (Three Bond 1215 or Loctite 5699) to the middle of the threads. Install the spring (C), rack guide screw and locknut (D).

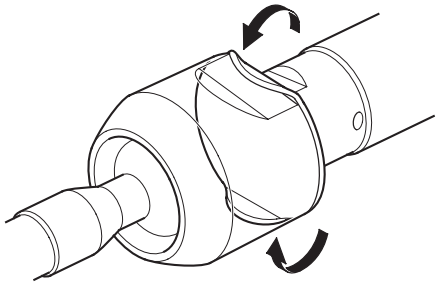
80. Adjust the rack guide screw (see page 17-29). After adjusting, check that the rack moves smoothly by sliding it right and left.

81. Install the new stop rubber (A) and lock washer (B) on the rack end (C) in the rack. Align the lock washer tabs (D) with the slots (E). Install the rack end (F) while holding the lock washer in place. Repeat this step for the other side of the rack.

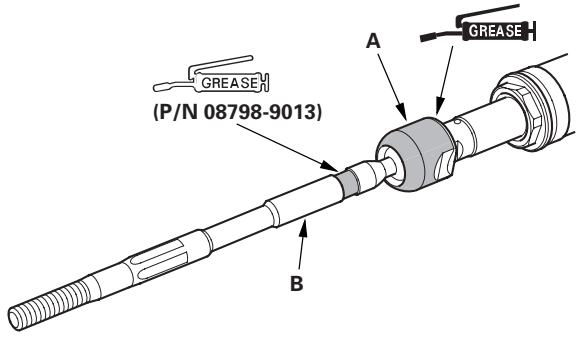


82. Hold the flat surface sections (G) of the steering rack with a wrench, and tighten both rack ends. Be careful not to damage the rack surface with the wrench.

83. Bend the lock washer back against the flat spots on the rack end joint housing.

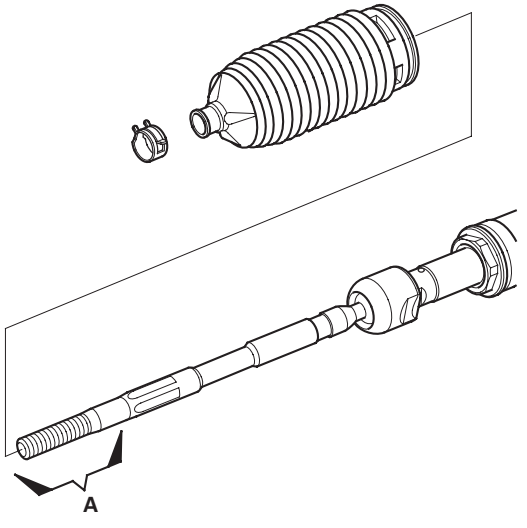


84. Apply multipurpose grease to the circumference of the rack end joint housing (A).

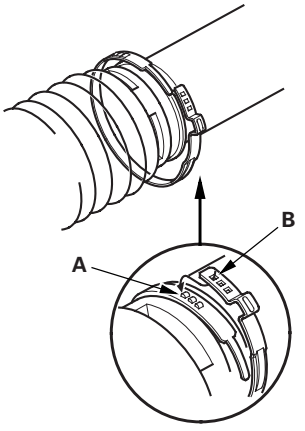


85. Apply a light coat of silicone grease (P/N 08798-9013) to the boot grooves (B) on the rack end.

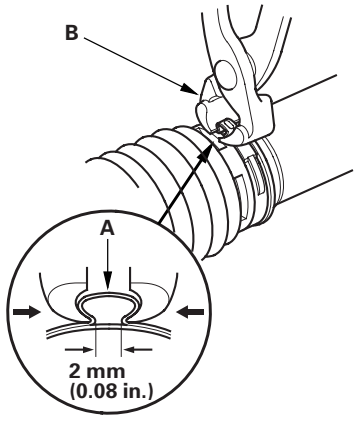
86. Center the steering rack within its stroke. Install the boots on the rack ends with the tie-rod clips. After installing the boots, wipe the grease off the threaded section (A) of the rack end.



87. Install the new boot bands by aligning the tabs (A) with the holes (B) on the band.



88. Close the ear portion (A) of the band with commercially available pincers Oetiker 1098 or equivalent (B).



89. Slide the rack right and left to be certain that the boots are not deformed or twisted.

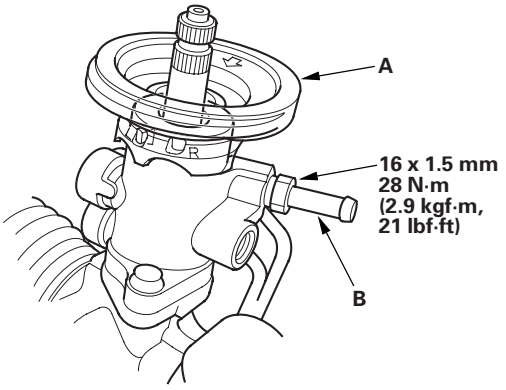
90. Install the tie-rod ends.

91. Install the steering gearbox (see page 17-52).

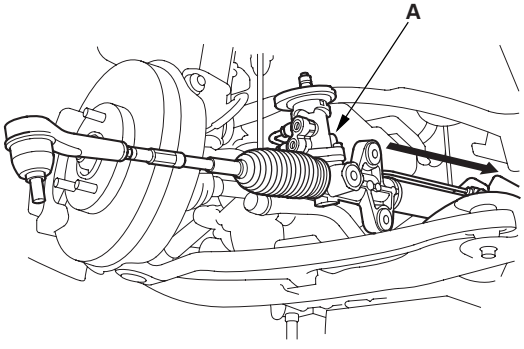
Steering Gearbox Installation

1. Install the pinion shaft grommet (A) on the valve housing.

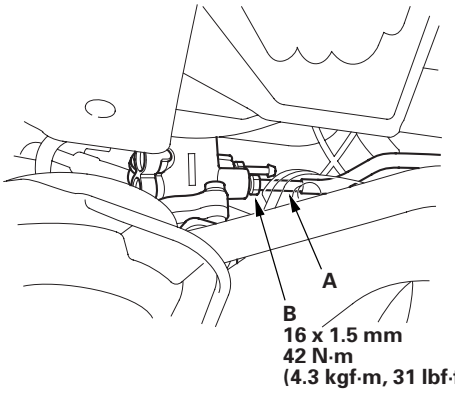
   NOTE: If the return line (B) is removed, install it.



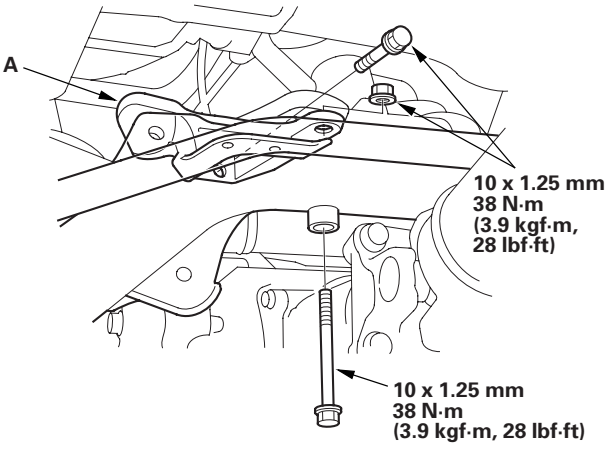
2. Slide the steering gearbox (A) between the front subframe and body from the driver's side. Place the gearbox in position on the front subframe.



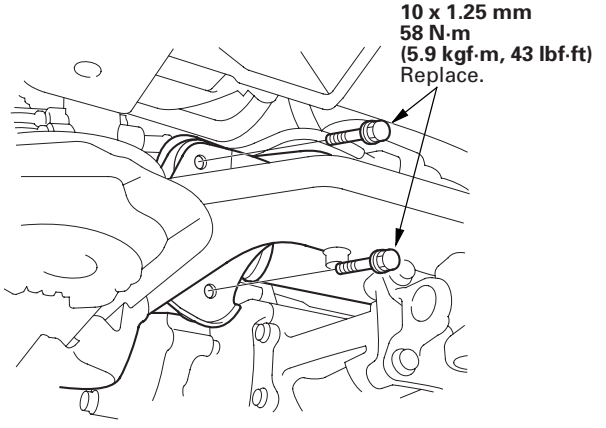
3. Connect the feed line (A), and tighten the 16 mm flare nut (B) to the specified torque.



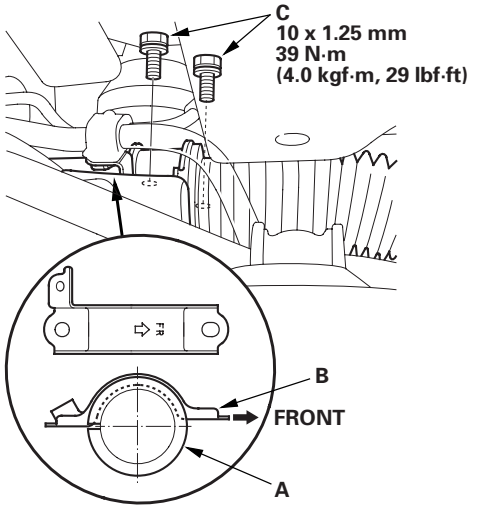
4. Install the gearbox stiffener bracket (A) on the front subframe, and tighten the bolts and nut to the specified torque.



5. Loosely install the new 10 mm flange bolts on the left side of the gearbox.

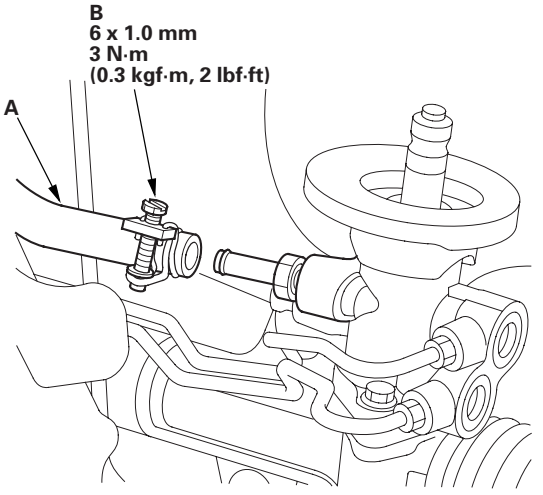


6. Install the mounting cushion (A) on the right side of the gearbox.

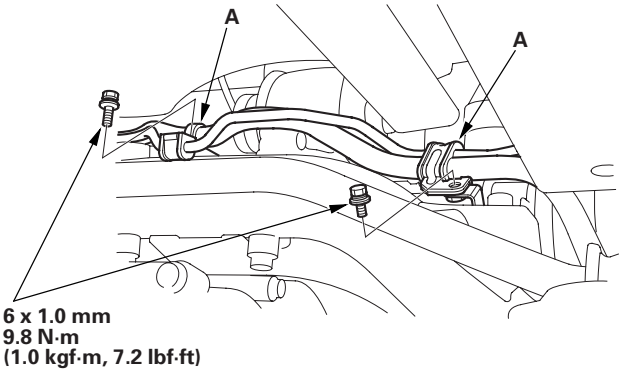


7. Install the mounting bracket (B) over the mounting cushion, then install the two 10 mm flange bolts (C). Tighten the four 10 mm flange bolts for the gearbox to the specified torque.

8. Connect the return hose (A) securely, and tighten the adjustable hose clamp (B) (see page 17-13).



9. Install the P/S line mounting brackets (A) on the front suspension subframe and gearbox mounting bracket.

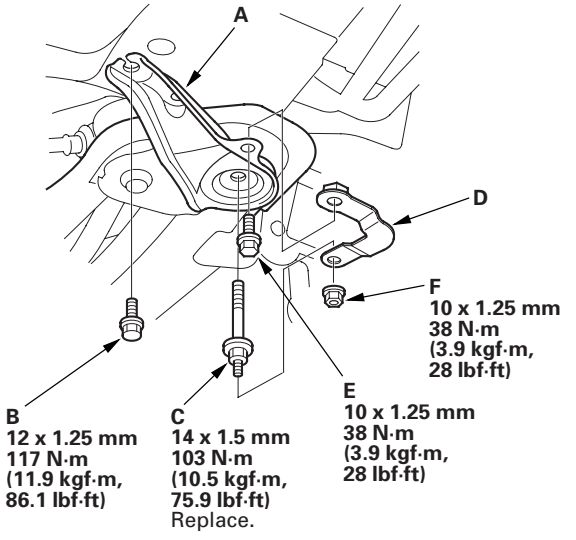


(cont'd)

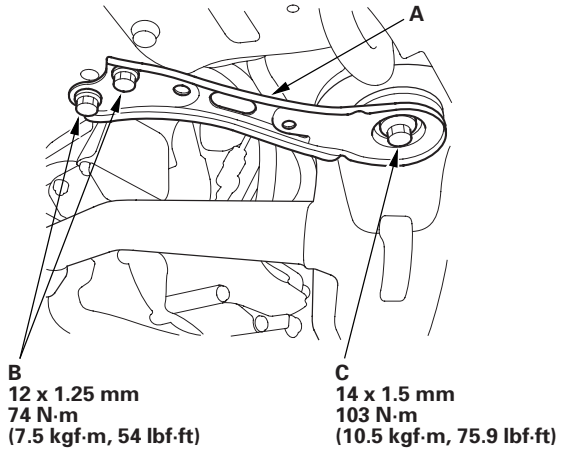
Steering Gearbox Installation (cont'd)

10. Carefully raise the front subframe with the special tool and the transmission jack or the powertrain lift until the subframe is in position (see page 20-192).

11. Install the front subframe rear brackets (A). Tighten the 12 mm flange bolts (B) and the new 14 mm special bolts (C) on the right and the left of the vehicle to the specified torque. For '07-08 models: Install the subframe bolt retainers (D). Tighten the two flange bolts (E) and nuts (F) to the specified torque.

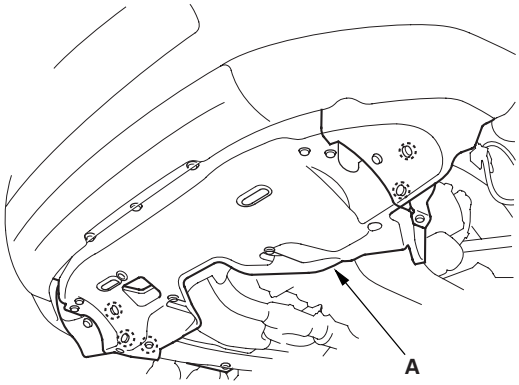


12. Install the front subframe front brackets (A) with 12 mm flange bolts (B) and 14 mm special bolts (C), and tighten to the specified torque.

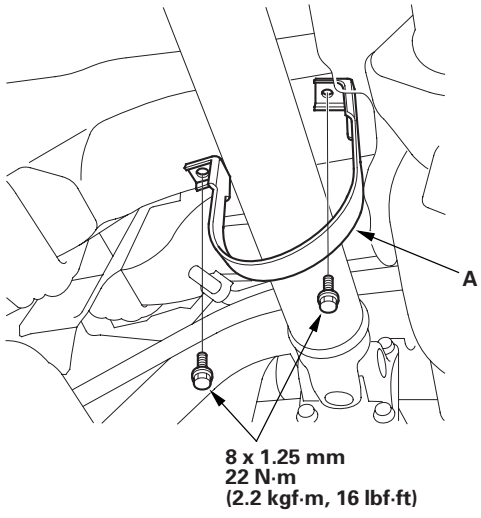


13. Lower the front subframe supporting the transmission jack or the powertrain lift.

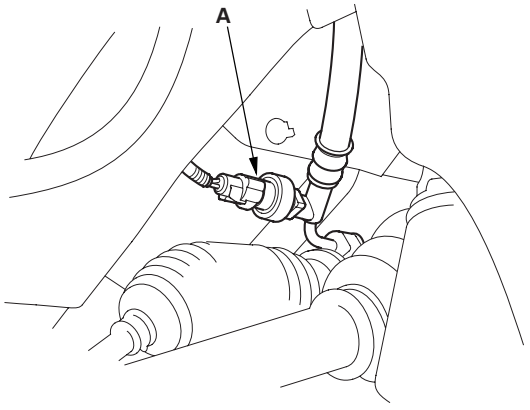
14. Install the front splash shield (A) (see page 20-179).



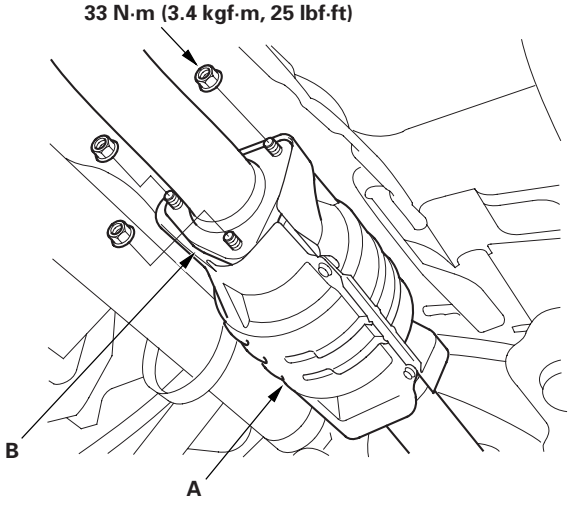
15. Install the propeller shaft protector (A).



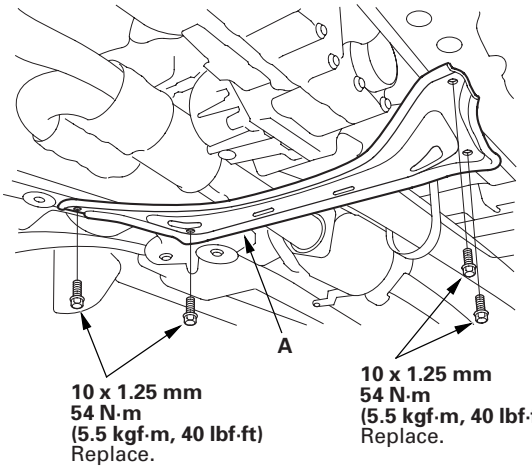
16. Connect the power steering pressure (PSP) switch connector (A).



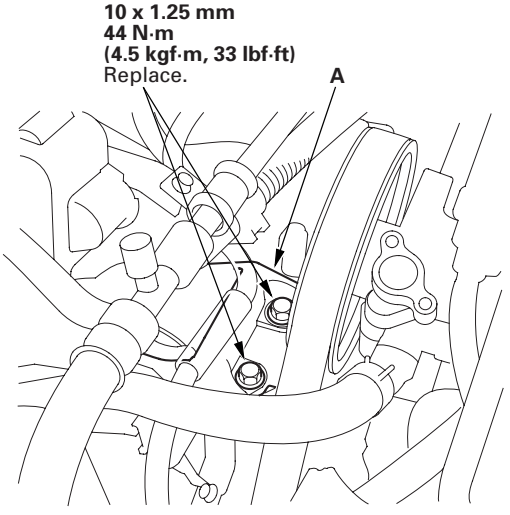
17. Connect the under-floor three way catalytic converter (TWC) (A) to the muffler (B). Install the new 10 mm self-locking nuts and tighten them to the specified torque.



18. Install the front subframe stiffener (A) and tighten to the specified torque.



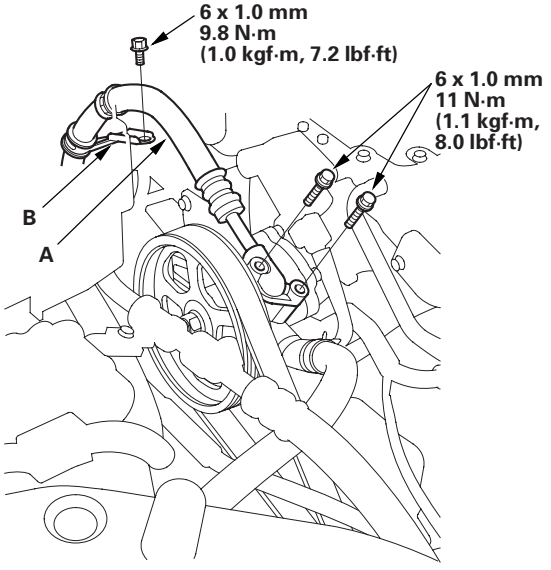
19. Install the new 10 mm flange bolts on the engine side mount bracket (A).



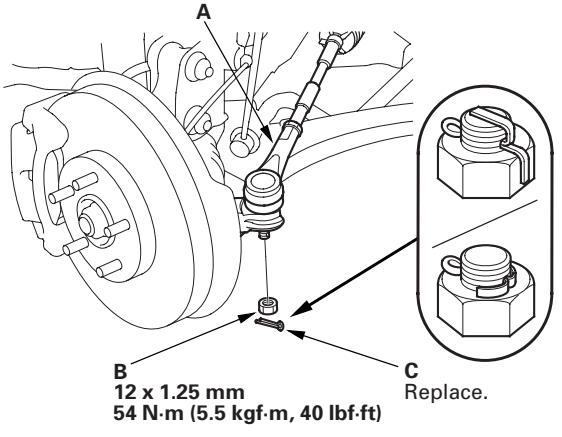
(cont'd)

Steering Gearbox Installation (cont'd)

20. Connect the pump outlet hose (A) to the power steering pump, and install the feed hose clamp (B).



21. Wipe off any grease contamination from the ball joint tapered section and threads. Reconnect the tie-rod ends (A) to the steering knuckles. Install the 12 mm nut (B) and tighten it.

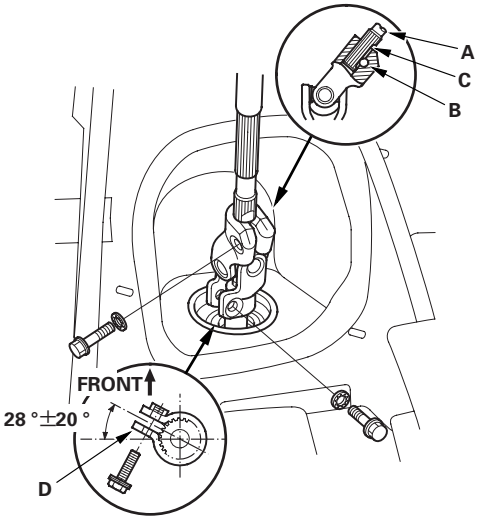


22. Install the new cotter pin (C) and bend it as shown.

23. Remove the engine support hanger, the hanger balance bar, and the hanger adapter set.

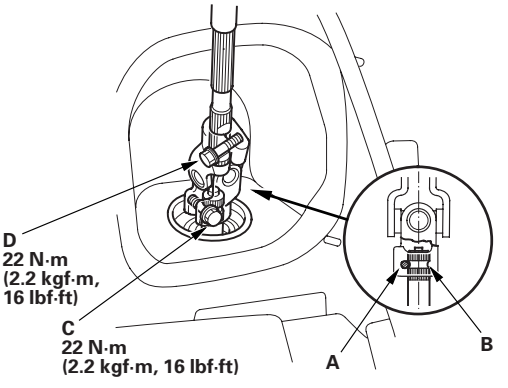
24. Center the steering rack within its stroke.

25. Insert the upper end of the steering joint onto the steering shaft (A) (line up the bolt hole (B) with the flat portion (C) on the shaft), and loosely install the upper joint bolt.



26. Slip the lower end of the steering joint onto the pinion shaft taking care to align the gap (D) within the angle.

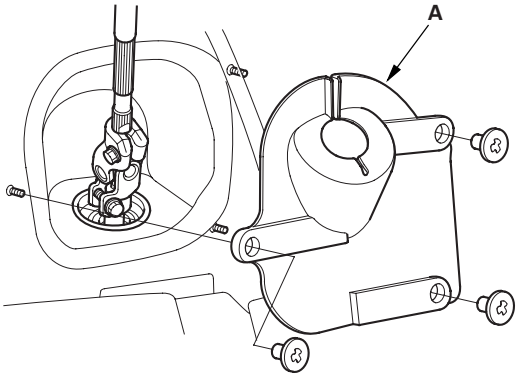
27. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft then loosely install the lower joint bolt (C).



28. Pull on the steering joint to make sure that the steering joint is fully seated, then tighten the lower joint bolt to the specified torque.

29. Tighten the upper joint bolt (D) to the specified torque.

30. Install steering joint cover A.



31. Install the front wheel, then set the wheels in the straight ahead position.

32. Install the steering wheel (see page 17-23).

33. Reconnect the negative battery cable to the battery, and do these tasks:

    - Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
    - Enter the anti-theft codes for the audio system and the navigation system (if equipped).
    - Set the clock (or vehicles without navigation).
    - Make sure the horn and turn signal switches work properly.
    - Make sure the steering wheel switches work properly.
    - Make sure the steering wheel is centered.

34. Fill the system with power steering fluid, and bleed air from the system (see page 17-12).

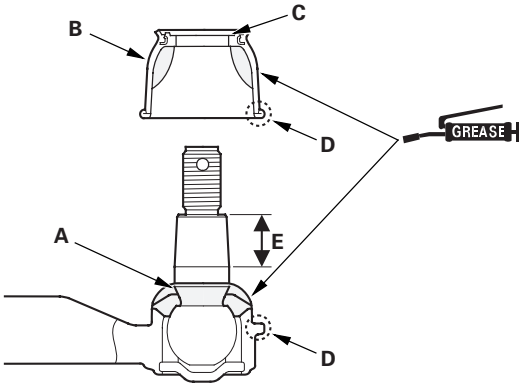
35. After installation, do the following checks.

    - Start the engine, allow it to idle, and turn the steering wheel from lock-to-lock several times to warm up to the fluid. Check the gearbox for leaks (see page 17-11).
    - Do the front toe inspection (see page 18-5).
    - Check the steering wheel spoke angle. If steering spoke angles to the right and left are not equal (steering wheel and rack are not centered), correct the engagement of the joint/pinion shaft serrations, then adjust the front toe by turning the tie-rod ends, if necessary.

Special Tools Required
Front hub dis/assembly tool 07965-SA50500

1. Remove the boot from the tie-rod end, and wipe the old grease off the ball pin.

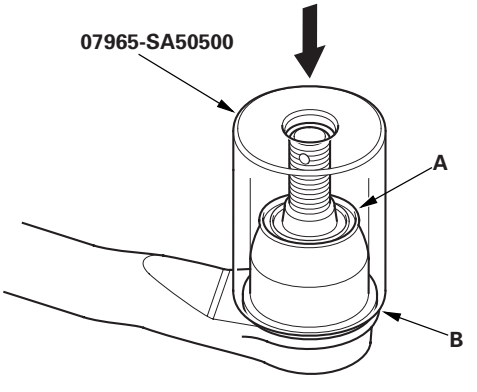
2. Pack the lower area of the ball pin (A) with fresh multipurpose grease.



3. Pack the interior of the new boot (B) and lip (C) with fresh multipurpose grease.

   Note these items when installing new grease:
   - Keep grease off the boot mounting area (D) and the tapered section (E) of the ball pin.
   - Do not allow dust, dirt, or other foreign materials to enter the boot.

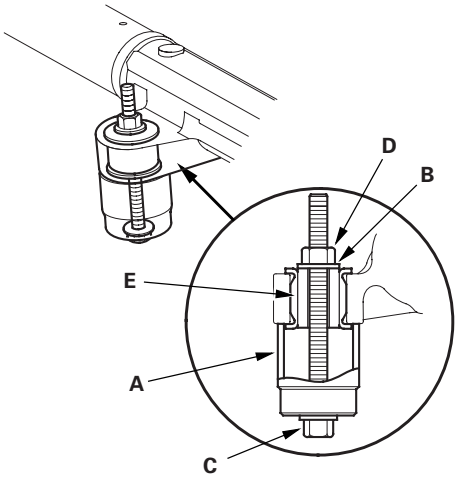
4. Install the new boot (A) using the special tool. The boot must not have a gap at the boot installation sections (B). After installing the boot, check the ball pin tapered section for grease contamination, and wipe it if necessary.



Gearbox Mount Cushion Replacement

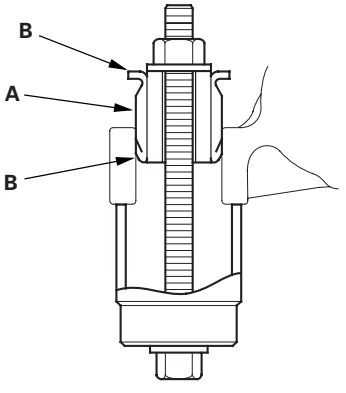
1. Remove the steering gearbox (see page 17-30).

2. Position the 34 mm socket wrench (A) on the flange part of the gearbox housing with a washer (B), 10 x 105 mm flange bolt (C) and the 10 mm nut (D) as shown.



3. Hold the nut with a wrench, and tighten the flange bolt with another wrench. Remove the gearbox mount cushion (E).

4. Apply a mild soap and water solution to the new gearbox mount cushion surface (A), then place it on the gearbox mounting cushion hole.



5. Position the 34 mm socket wrench on the flange part of the gearbox housing with a washer, flange bolt, and the nut as shown.

6. Install the gearbox mount cushion by tightening the nut until the mount cushion edges (B) properly fit on the gearbox flange surface.

Suspension

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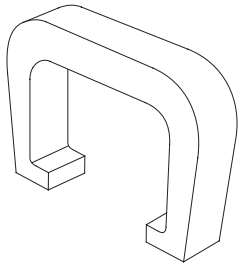
TPMS (Tire Pressure Monitoring System) 18-45

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07AAC-SJCA120	Ball Joint Puller	1
②	07GAF-SD40100	Hub Dis/Assembly Tool	1
③	07GAG-SD40700	Ball Joint Boot Clip Guide	1
④	07MAC-SL0A102	Ball Joint Remover, 32 mm	1
⑤	07MAC-SL0A202	Ball Joint Remover, 28 mm	1
⑥	071AF-S3VA000	Ball Joint Thread Protector, 14 mm	1
⑦	07746-0010500	Attachment, 62 x 68 mm	1
⑧	07746-0010600	Attachment, 72 x 75 mm	1
⑨	07749-0010000	Driver	1
⑩	07948-SB00101	Attachment, 96 mm	1
⑪	07965-SD90100	Support Base	1



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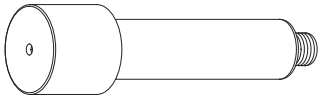

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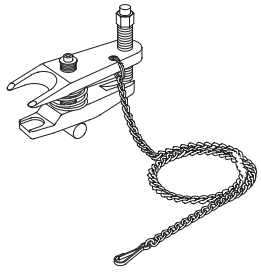

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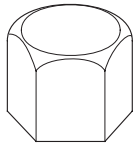

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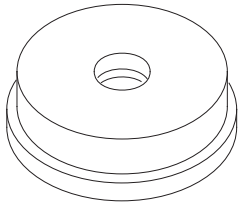

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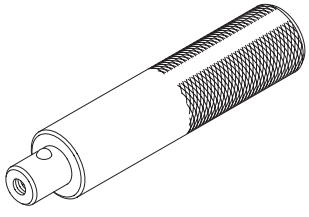

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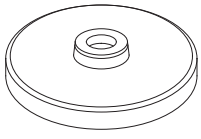

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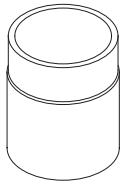
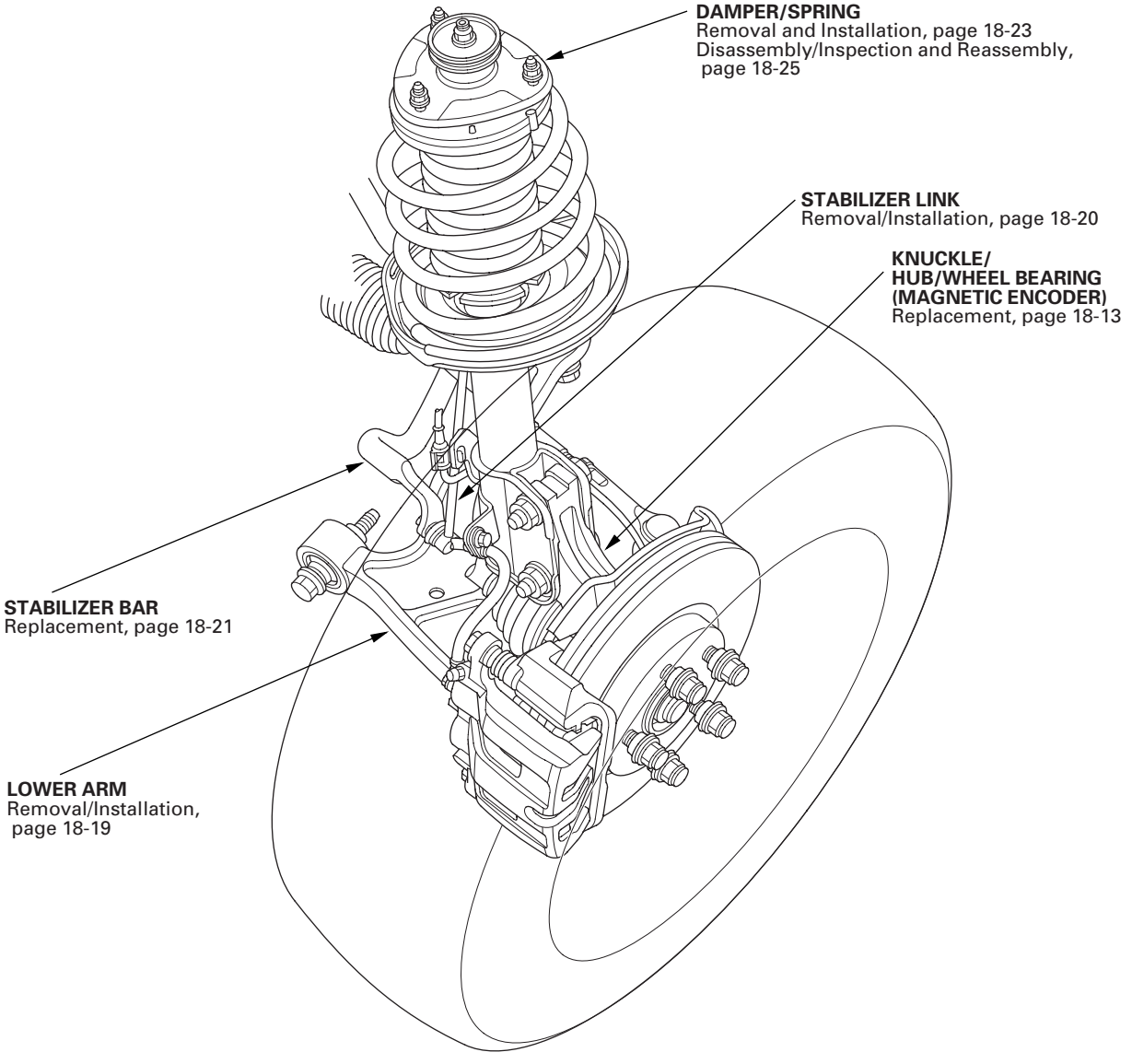


⑪

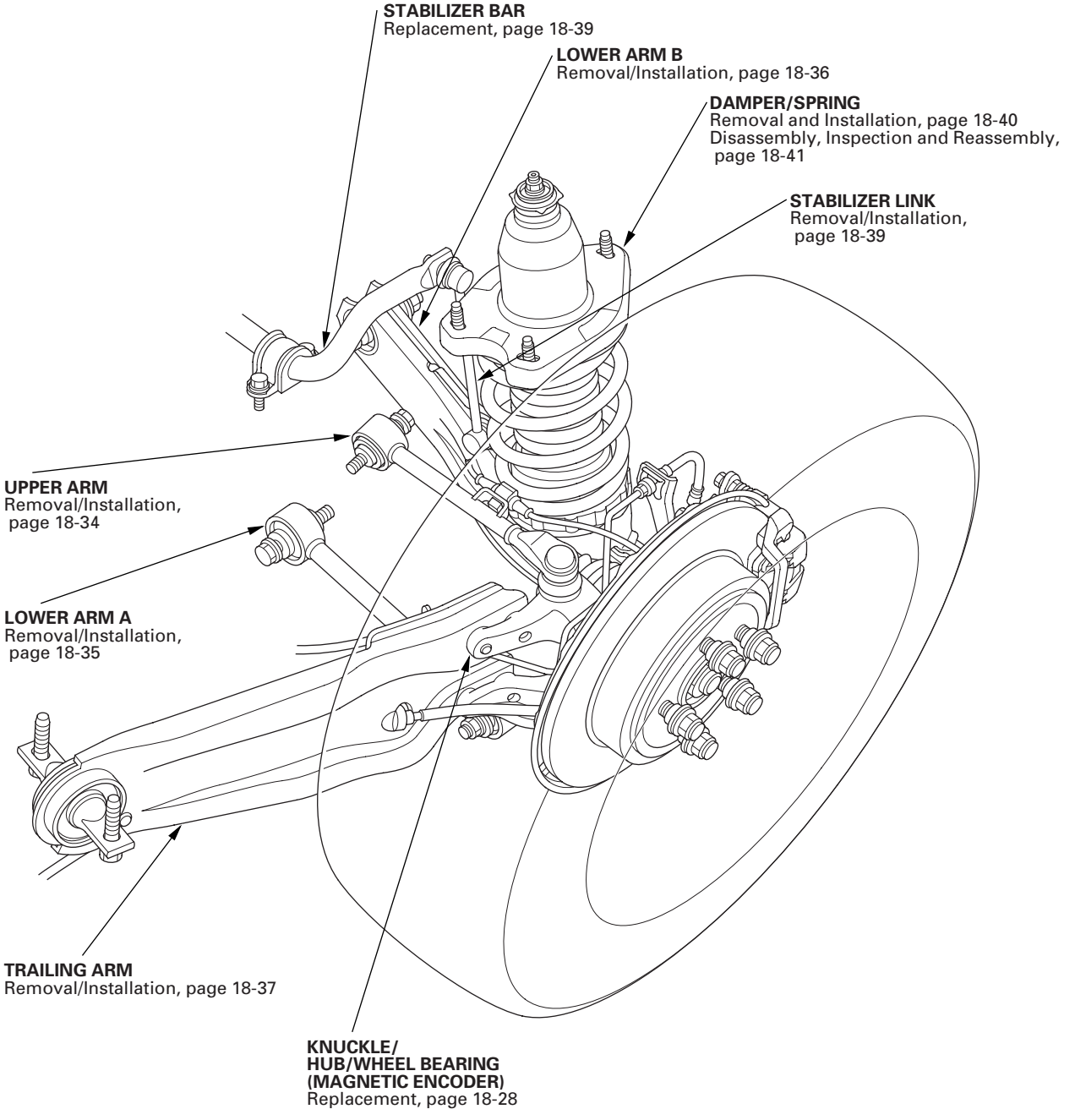
Component Location Index

Front Suspension



Component Location Index (cont'd)

Rear Suspension



Wheel Alignment

The suspension can be adjusted for front camber, front toe, and rear toe. However, each of these adjustments are related to each other. For example, when you adjust camber, the toe will change. Therefore, you must adjust the front wheel alignment whenever you adjust camber or toe.

Pre-Alignment Checks

For proper inspection and adjustment of the wheel alignment, do these checks:

1. Release the parking brake to avoid an incorrect measurement.

2. Make sure the suspension is not modified.

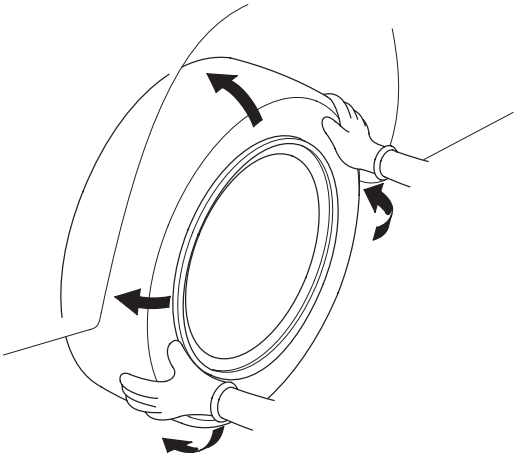
3. Check the tire size and tire pressure.

   Tire size:
   Front/Rear: P245/65R17 105S

   Tire pressure:
   Front/Rear: 220 kPa (2.2 kgf/cm^2, 32 psi)

4. Check the runout of the wheels and tires (see page 18-9).

5. Check the suspension ball joints. (Hold a wheel with your hands, and move it up and down and right and left to check for wobbling.)



6. Bounce the vehicle up and down several times to stabilize the suspension.

Caster Inspection

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

Check the caster angle.

Caster angle: 1 °53 ′ ±1 °

- If the measurement is within specifications, measure the camber angle.
- If the measurement is not within specifications, check for bent or damaged suspension components.

(cont'd)

Wheel Alignment (cont'd)

Camber Inspection

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

Check the camber angle.

Camber angle:
Front: —0 °30 ′ ±1 °
(Maximum difference between the front right and left side: 1 °00 ′)
Rear: —0 °30 ′ ±45 ′

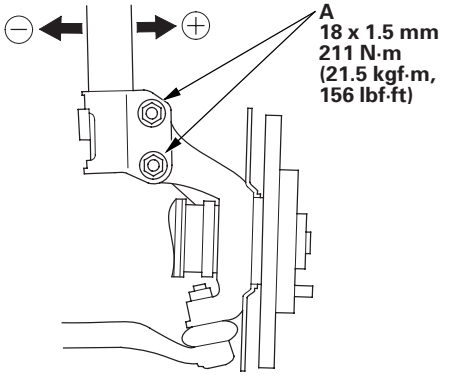
- If the measurement for the front camber is outside the specification, go to front camber adjustment.
- If the measurement for the rear camber is outside the specification, check for bent or damaged suspension components.

Front Camber Adjustment

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-10).

2. Remove the front wheels.

3. Loosen the flange nuts (A) and bolts, and adjust the camber angle by moving the bottom of the damper within the range of the damper pinch bolt free play.



4. Tighten the flange nuts to the specified torque.

5. Reinstall the front wheels. Lower the front of the vehicle to the ground, and bounce the front of the vehicle up and down several times to stabilize the suspension.

6. Measure the camber angle.

   - If the measurement is within specification, measure the toe-in.
   - If the measurement is not within specification, check for bent or damaged suspension components.

Front Toe Inspection/Adjustment

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

NOTE: After setting the front toe always perform the steering angle sensor writing procedure (see page 19-92).

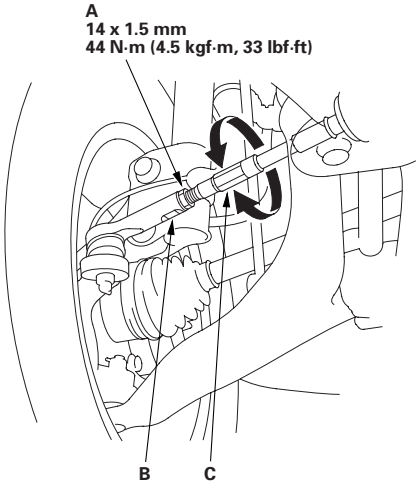
1. Center the steering wheel spokes and install a commercially available steering wheel holder tool.

2. Check the toe with the wheels pointed straight ahead.

   Front toe-in: 0±2 mm (0±0.08 in.)

   - If adjustment is required, go to step 3.
   - If no adjustment is required, go to rear toe inspection/adjustment.

3. Loosen the tie-rod locknuts (A) while holding the flat surface sections (B) of the tie-rod end with a wrench, and turn both tie-rods (C) until the front toe is within specifications.



4. After adjusting, tighten the tie-rod locknuts. Reposition the rack-end boot if it is twisted or displaced.

5. Go to rear toe inspection/adjustment.

   NOTE: After adjusting the front toe always perform the steering angle sensor writing procedure (see page 19-92).

Rear Toe Inspection/Adjustment

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

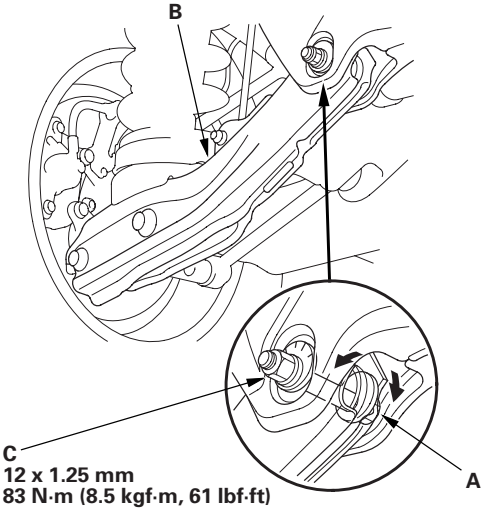
1. Release the parking brake to avoid an incorrect measurement.

2. Check the toe.

   Rear toe-in: 0±2 mm (0±0.08 in.)

   - If adjustment is required, go to step 3.
   - If no adjustment is required, remove the alignment equipment.

3. Hold the adjusting bolt (A) on the lower arm B, and remove the self-locking nut (C).



4. Replace the self-locking nut with a new one, and lightly tighten it.

   NOTE:
   - Always use a new self-locking nut whenever it has been loosened.
   - Reassemble the adjust bolt and cam-plate with the eccentric facing up.

5. Adjust the rear toe by turning the adjusting bolt until the toe is correct.

6. Tighten the new self-locking nut while holding the adjusting bolt.

(cont'd)

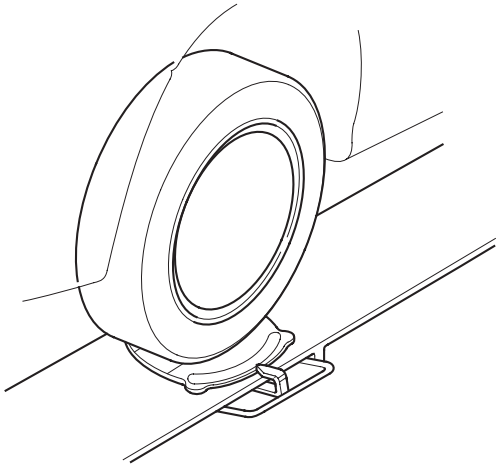
Wheel Alignment (cont'd)

Turning Angle Inspection

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

1. Turn the wheel right and left while applying the brake, and measure the turning angle of both wheels.

   Turning angle:
   Inward wheel: 37 ° 54 ′ ±2 °
   Outward wheel: 30 ° 16 ′ (Reference)



2. If the turning angle is not within the specifications, check for bent or damaged suspension components.

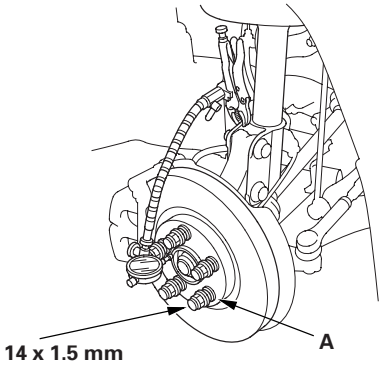
Wheel Bearing End Play Inspection

1. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-10).

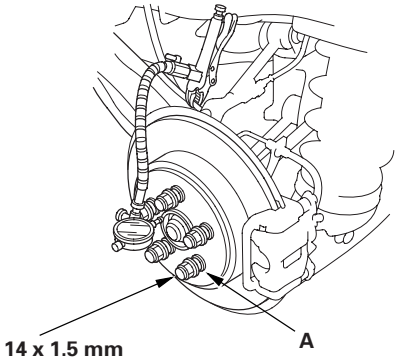
2. Remove the wheels.

3. Install suitable flat washers (A) and the wheel nuts. Tighten the nuts to the specified torque to hold the brake disc securely against the hub.

   Front



   Rear



4. Attach the dial gauge. Place the dial gauge against the hub flange.

   Front/Rear:
   Standard: 0—0.05 mm (0—0.002 in.)

5. Measure the bearing end play by moving the disc inward and outward.

6. If the bearing end play measurement is more than the standard, replace the wheel bearing.

Wheel Runout Inspection

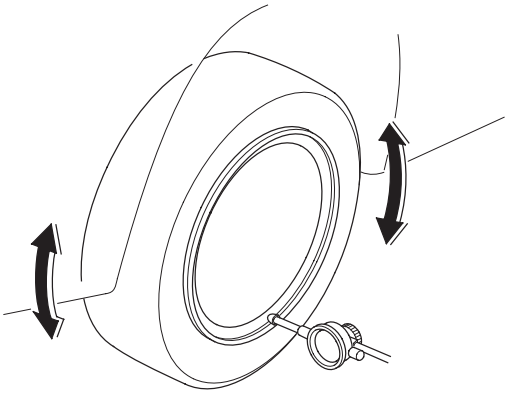
NOTE: When measuring the front wheel runout, turn the other side of the wheel slowly by hand.

1. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-10).

2. Check for bent or deformed wheels.

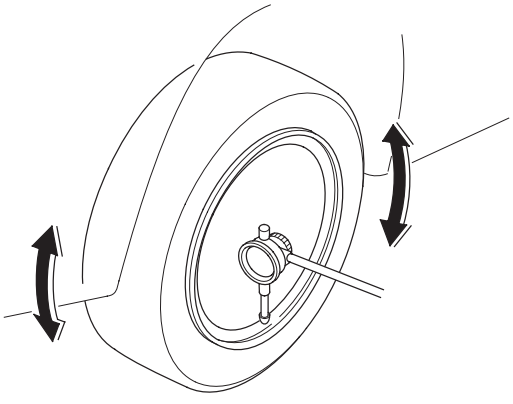
3. Set up the dial gauge as shown, and measure axial runout by turning the wheel.

   Front and rear wheel axial runout:
   Standard:
   Steel wheel: 0—1.0 mm (0—0.04 in.)
   Aluminum wheel: 0—0.7 mm (0—0.03 in.)
   Service limit: 2.0 mm (0.08 in.)



4. Reset the dial gauge to the position shown, and measure the radial runout.

   Front and rear wheel radial runout:
   Standard:
   Steel wheel: 0—1.0 mm (0—0.04 in.)
   Aluminum wheel: 0—0.7 mm (0—0.03 in.)
   Service limit: 1.5 mm (0.06 in.)



5. If the wheel runout is not within the specification, check the wheel bearing end play (see page 18-8), and make sure the mating surfaces on the brake disc and the inside of the wheel are clean.

6. If the bearing end play is within the specification but the wheel runout is more than the service limit, replace the wheel.

Wheel Bolt Replacement

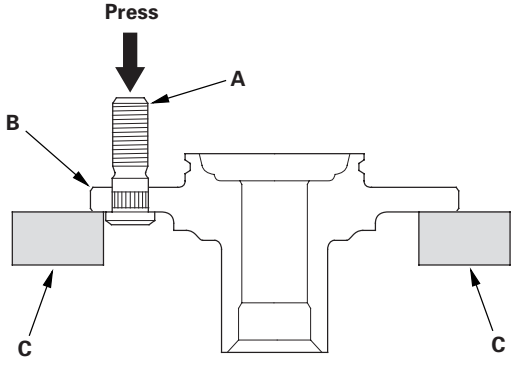
NOTICE

- Do not use a hammer or air or electric impact tools to remove and install the wheel bolts.
- Be careful not to damage the threads of the wheel bolts.

1. Remove the hub: front (see page 18-13), rear (see page 18-28).

2. Separate the wheel bolt (A) from the hub (B) using a hydraulic press. Support the hub with hydraulic press attachments (C) or equivalent tools.

   NOTE:
   - Before installing the new wheel bolt, clean the mating surface on the bolt and the hub.
   - The illustration shows a front hub.



3. Insert the new wheel bolt (A) into the hub (B) while aligning the splined surfaces (C) on the hub hole with the wheel bolt.

   NOTE:
   - Degrease all around the wheel bolt and the threaded section of the nut.
   - Make sure the wheel bolt is installed vertically in relation to the hub disc surface.

4. Install the wheel bolt using a hydraulic press until the wheel bolt shoulder is fully seated.

5. Install the hub: front (see page 18-13), rear (see page 18-28).

   NOTE: If you can not tighten the wheel nut to the specified torque value when installing the wheel, replace the hub as an assembly.

Ball Joint Removal

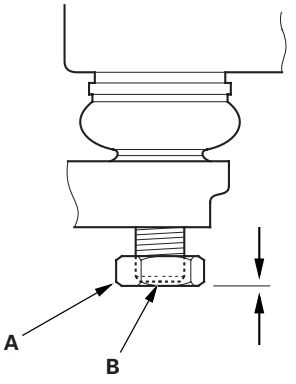
Special Tools Required
- Ball joint puller 07AAC-SJCA120
- Ball joint remover, 32 mm 07MAC-SL0A102
- Ball joint remover, 28 mm 07MAC-SL0A202
- Ball joint thread protector, 14 mm 071AF-S3VA000

NOTICE

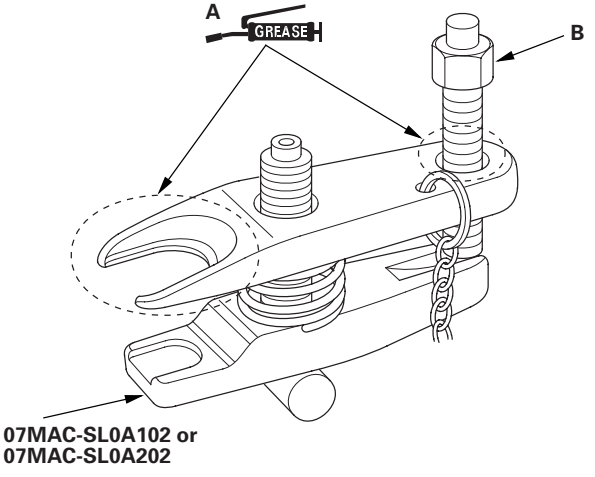
Always use a ball joint remover to disconnect a ball joint. Do not strike the housing or any other part of the ball joint connection to disconnect it.

07MAC-SL0A102 or 07MAC-SL0A202

1. Install a hex nut (A) onto the threads of the ball joint (B). Make sure the nut is flush with the ball joint pin end to prevent damage to the thread end of the ball joint pin.

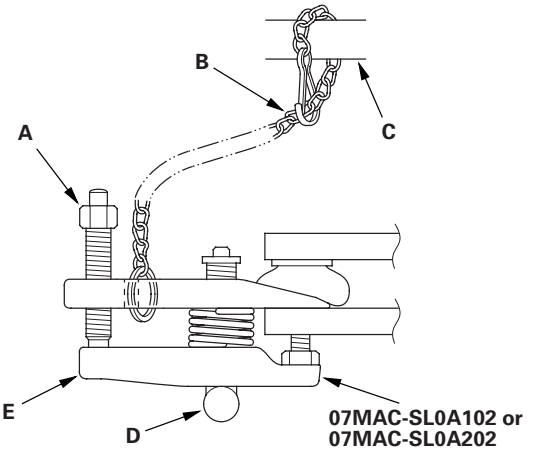


2. Apply grease to the special tool on the areas shown (A). This will ease installation of the tool and prevent damage to the pressure bolt (B) threads.



3. Install the special tool as shown. Insert the jaws carefully, making sure not to damage the ball joint boot. Adjust the jaw spacing by turning the pressure bolt (A).

   NOTE: Fasten the safety chain (B) securely to a suspension arm or the subframe (C). Do not fasten it to a brake line or wire harness.



4. After adjusting the adjusting bolt, make sure the head of the adjusting bolt (D) is in the position shown to allow the jaw (E) to pivot.

5. With a wrench, tighten the pressure bolt until the ball joint pin pops loose from the ball joint pin hole. If necessary, apply penetrating type lubricant to loosen the ball joint pin.

   NOTE: Do not use pneumatic or electric tools on the pressure bolt.

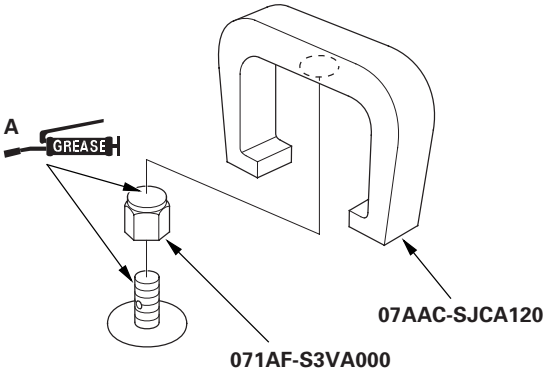
6. Remove the tool, then remove the nut from the end of the ball joint pin, and pull the ball joint out of the ball joint pin hole. Inspect the ball joint boot, and replace it if damaged.

(cont'd)

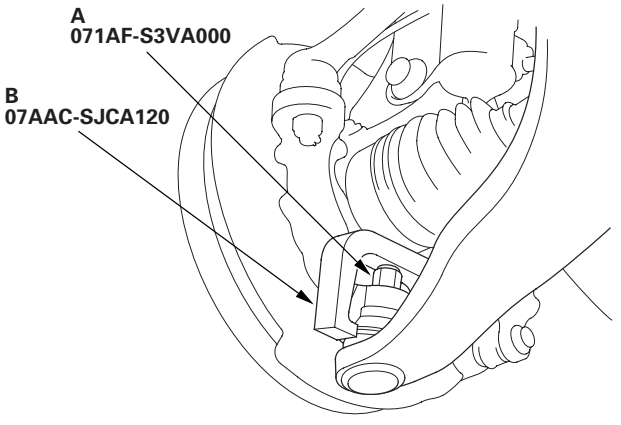
Ball Joint Removal (cont'd)

07AAC-SJCA120

1. Apply grease to the special tool on the points (A). This will prevent damage to the special tool and thread of ball joint.



2. Install the ball joint thread protector (A) by hand, all the way onto the threads of the ball joint.



3. Install the ball joint remover (B) as shown.

4. With a wrench, screw the ball joint thread protector until the ball joint pin pops loose from the ball joint pin hole.

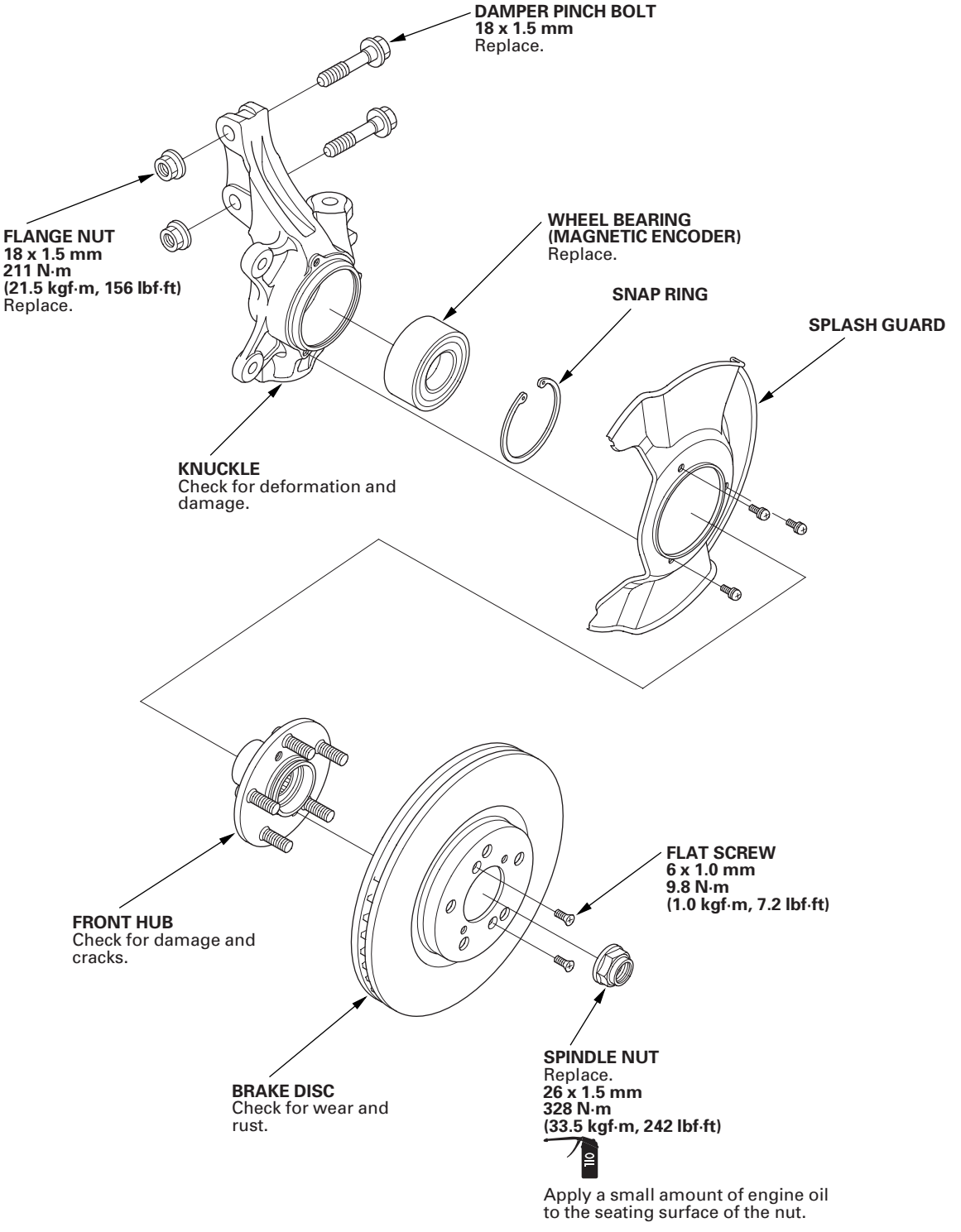
   NOTE: Turn the ball joint thread protector reverse to tighten against thread of the ball joint.

5. Remove the special tools from the knuckle and the end of the ball joint pin, and pull the ball joint out of the ball joint pin hole. Inspect the ball joint boot, and replace it if damaged.

6. Remove any oil, grease, dust, metal debris, and other foreign material from the stud portion of the ball joint stud.

Knuckle/Hub/Wheel Bearing Replacement

Exploded View



(cont'd)

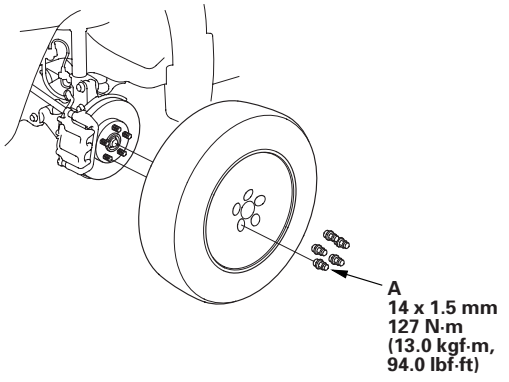
Knuckle/Hub/Wheel Bearing Replacement (cont'd)

Special Tools Required
- Ball joint puller 07AAC-SJCA120
- Ball joint remover, 32 mm 07MAC-SL0A102
- Ball joint thread protector, 14 mm 071AF-S3VA000
- Hub dis/assembly tool 07GAF-SD40100
- Attachment, 72 x 75 mm 07746-0010600
- Driver 07749-0010000
- Support base 07965-SD90100
- Attachment, 96 mm 07948-SB00101

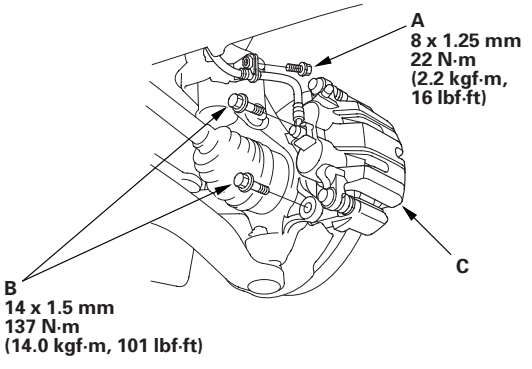
Knuckle/Hub Replacement

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-10).

2. Remove the wheel nuts (A) and front wheel.

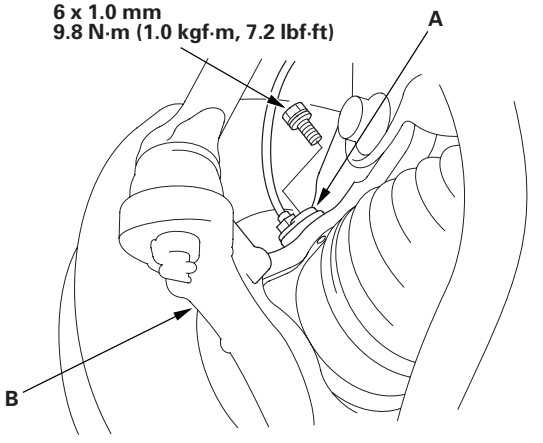


3. Remove the brake hose mounting bolt (A).

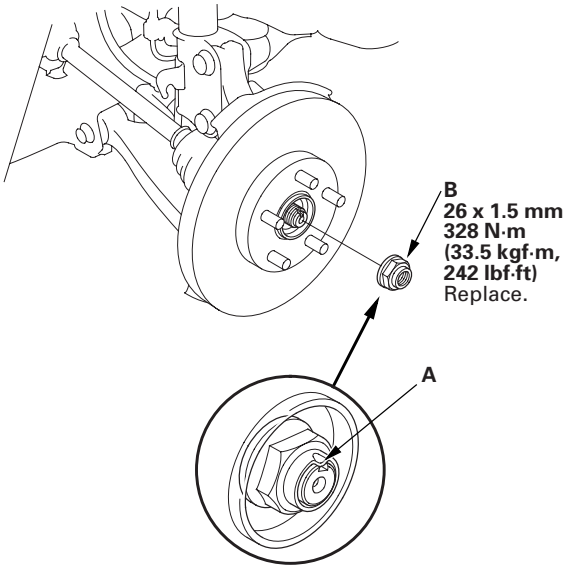


4. Remove the brake caliper bracket mounting bolts (B), and remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose with force.

5. Remove the wheel sensor (A) from the knuckle (B). Do not disconnect the wheel sensor connector.



6. Raise the stake (A), then remove the spindle nut (B).

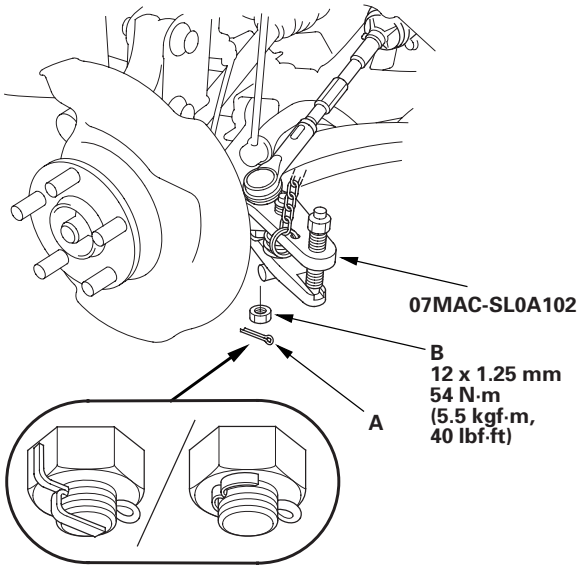


7. Remove the brake disc (see page 19-16).

8. Check the front hub for damage and cracks.

9. Remove the cotter pin (A) from the tie-rod end ball joint, then remove the nut (B).

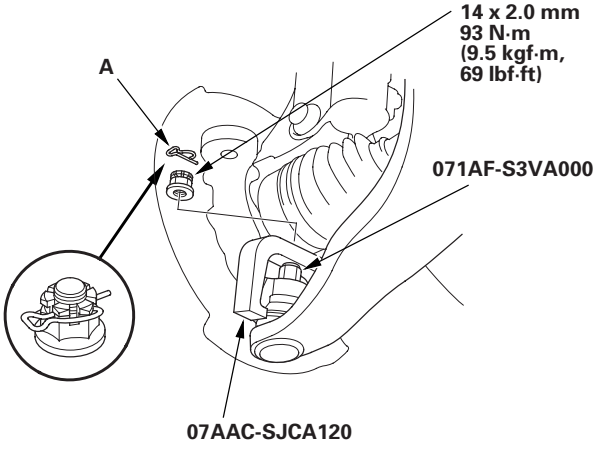
   NOTE: During installation, install the new cotter pin after tightening the nut, and bend its end as shown.



10. Disconnect the tie-rod ball joint from the knuckle using the ball joint remover (see page 18-11).

11. Remove the lock pin (A) from the lower arm ball joint, then remove the nut.

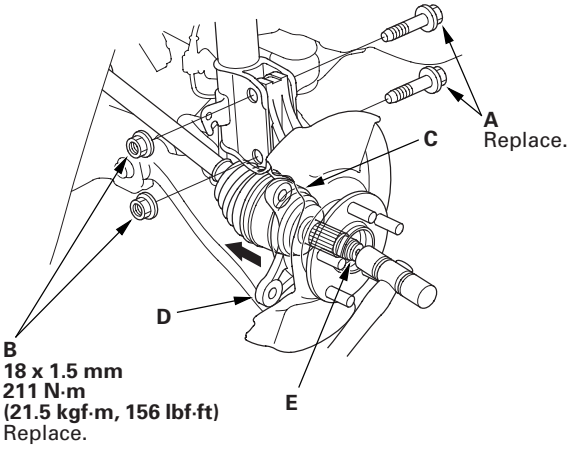
    NOTE: During installation, install the new lock pin after tightening the new castle nut.



12. Disconnect the lower ball joint from the knuckle using the ball joint remover (see page 18-12).

13. Remove the damper pinch bolts (A) and flange nuts (B) from the damper.

    NOTE: During installation, install the new damper pinch bolts and new flange nuts.



14. Remove the driveshaft outboard joint (C) from the knuckle (D) by tapping the driveshaft end (E) with a plastic hammer while drawing the hub outward, then remove the knuckle.

    NOTE: Do not pull the driveshaft end outward. The inner driveshaft joint may come apart.

(cont'd)

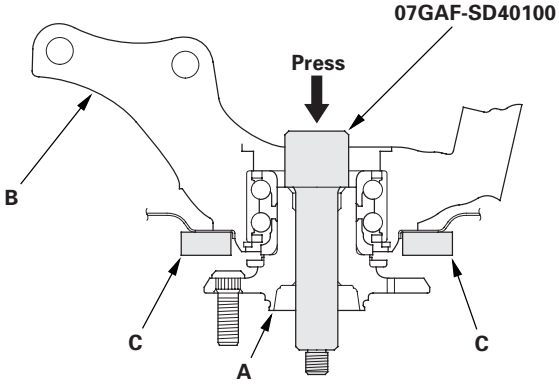
Knuckle/Hub/Wheel Bearing Replacement (cont'd)

15. Install the knuckle/hub in the reverse order of removal, and note these items:

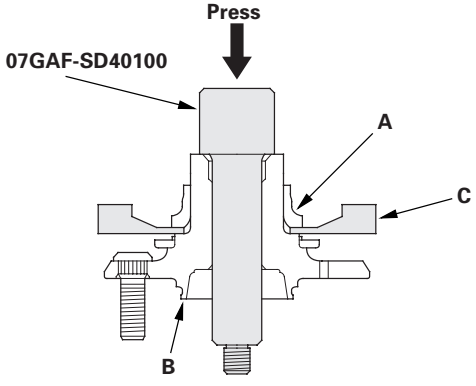
    - Be careful not to damage the ball joint boot when installing the knuckle.
    - Tighten all mounting hardware to the specified torque values.
    - Before connecting the lower ball joint to the knuckle, degrease the threaded section and tapered portion of the ball joint pin, the lower arm connecting hole, the threaded section and mating surface of the castle nut.
    - First install all the components and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
    - Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the castle nut by loosening it.
    - Use a new spindle nut on reassembly.
    - Before installing the spindle nut, apply a small amount of engine oil to the seating surface of the nut. After tightening, use a drift to stake the spindle nut shoulder against the driveshaft.
    - Before installing the brake disc, clean the mating surface of the front hub and the inside of the brake disc.
    - Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
    - Check the wheel alignment, and adjust it if necessary (see page 18-5).

Wheel Bearing Replacement

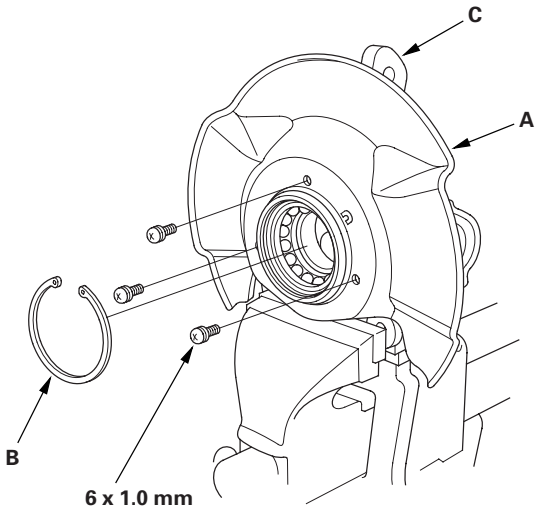
1. Separate the hub (A) from the knuckle (B) using the special tool and a hydraulic press. Hold the knuckle with the attachment (C) of the hydraulic press or equivalent tool. Be careful not to deform the splash guard. Hold onto the hub to keep it from falling when pressed clear.



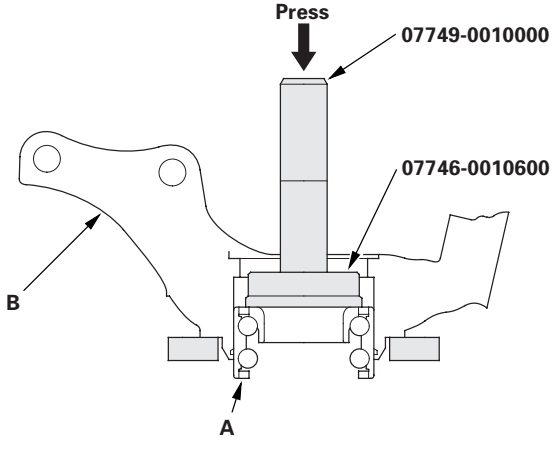
2. Press the wheel bearing inner race (A) off of the hub (B) using the special tool, a commercially available bearing separator (C), and a press.



3. Remove the splash guard (A) and the snap ring (B) from the knuckle (C).



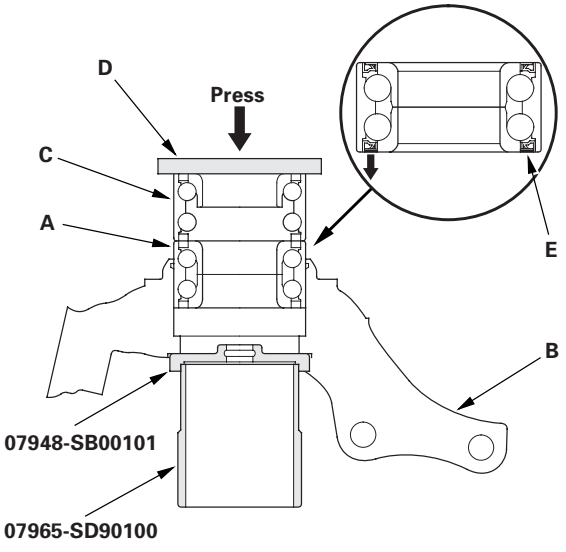
4. Press the wheel bearing (A) out of the knuckle (B) using the special tools and a press.



5. Wash the knuckle and hub thoroughly in high flash point solvent before reassembly.

6. Press a new wheel bearing (A) into the knuckle (B) using the old bearing (C), a steel plate (D), the special tools, and a press.

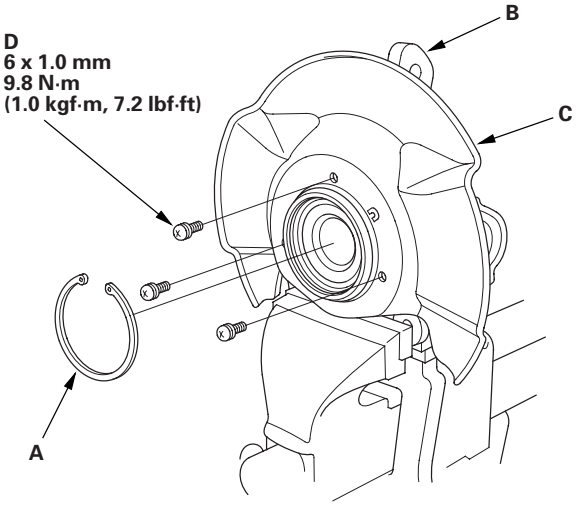
   NOTE:
   - Install the wheel bearing with the wheel sensor magnetic encoder (E) (brown color), toward the inside of the knuckle.
   - Remove any oil, grease, dust, metal debris, and other foreign material from the encoder surface.
   - Keep all magnetic tools away from the encoder surface.
   - Be careful not to damage the encoder surface when you insert the wheel bearing.



(cont'd)

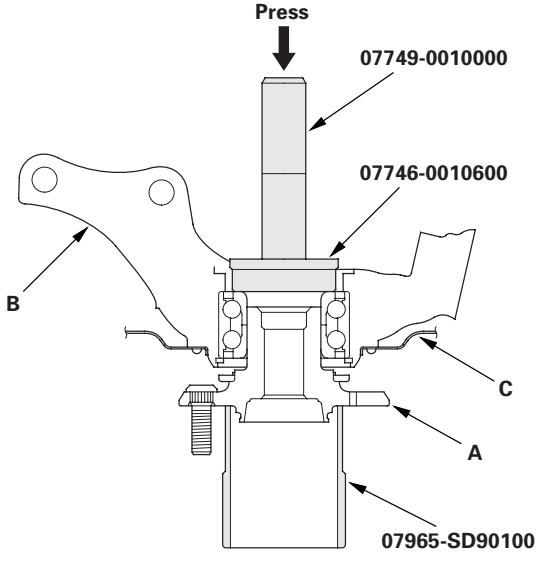
Knuckle/Hub/Wheel Bearing Replacement (cont'd)

7. Install the snap ring (A) securely in the knuckle (B).



8. Install the splash guard (C), and tighten the screws (D) to the specified torque value.

9. Install the hub (A) onto the knuckle (B) using the special tools shown and a hydraulic press. Be careful not to distort the splash guard (C).

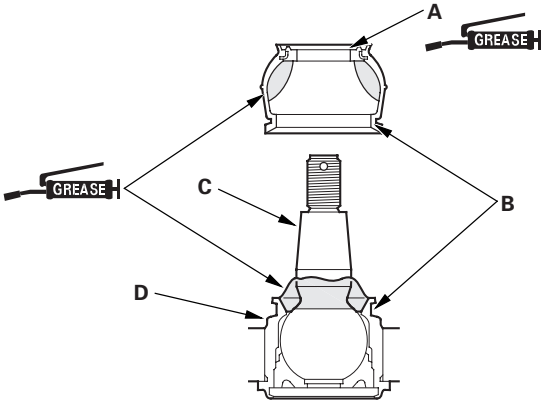


Ball Joint Boot Replacement

Special Tools Required
Ball joint boot clip guide 07GAG-SD40700

1. Remove the boot clip and the boot.

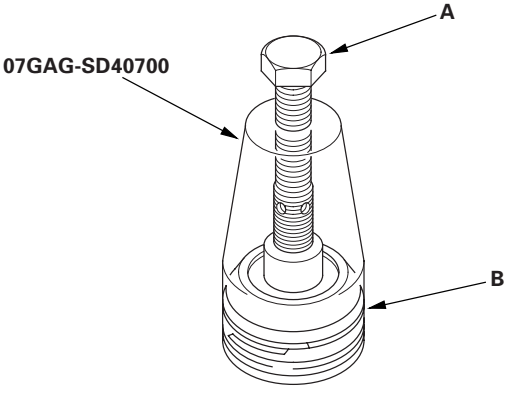
2. Pack the interior and lip (A) of a new boot with grease. Keep the grease off of the boot-to-knuckle mating surfaces (B).



3. Wipe the grease off the tapered portion of the pin (C), and pack fresh grease into the base (D). Do not let dirt or other foreign materials get into the boot.

4. Install the boot on the ball joint, then squeeze it gently to force out any air.

5. Adjust the special tool with the adjusting bolt (A) until its base is just above the groove around the bottom of the boot. Then slide the clip (B) over the tool and into position on the boot.



6. After installing a boot, wipe any grease off the exposed portion of the ball joint pin.

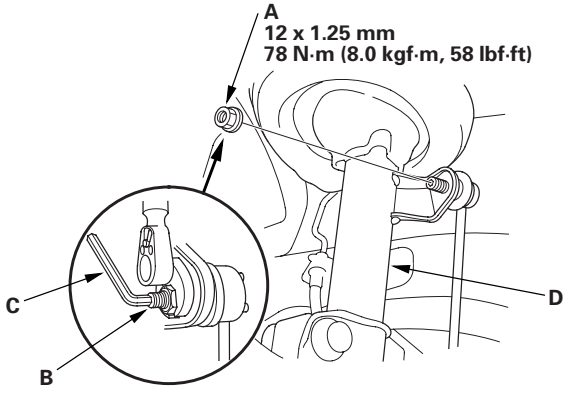
Lower Arm Removal/Installation

Special Tools Required
- Ball joint puller 07AAC-SJCA120
- Ball joint thread protector, 14 mm 071AF-S3VA000

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-10).

2. Remove the front wheels.

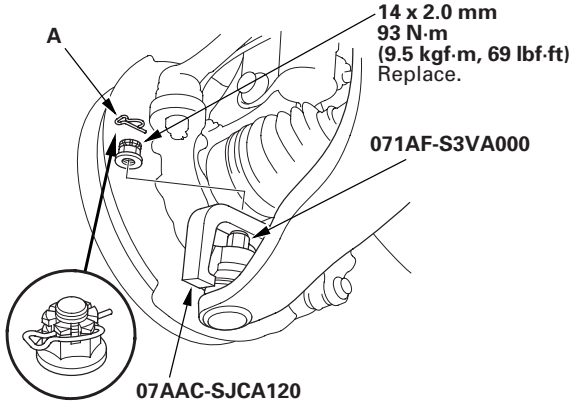
3. Remove the flange nut (A) while holding the respective joint pin (B) with a hex wrench (C), then disconnect the stabilizer links from the damper (D).



4. Turn the stabilizer bar backward to gain easier access to the front side of the lower arm mounting bolt.

5. Remove the lock pin (A) from the lower arm ball joint, then remove the nut.

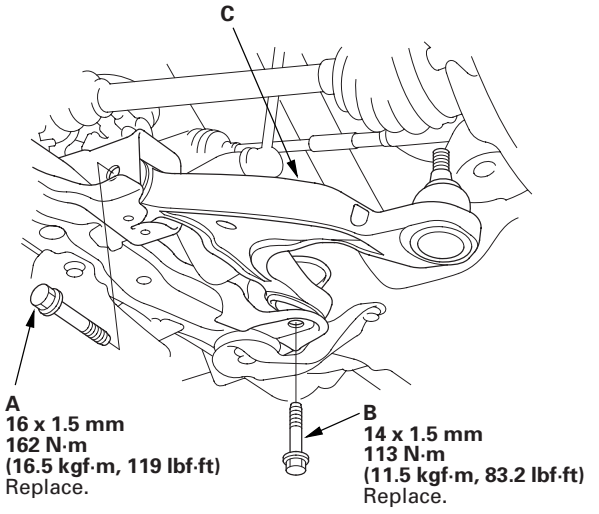
   NOTE: During installation, install the new lock pin after tightening the new castle nut.



6. Disconnect the lower ball joint from the knuckle using the ball joint remover (see page 18-12).

7. Remove the lower arm mounting bolt (A).

   NOTE: During installation, install the new mounting bolt.



8. Remove the lower arm mounting bolt (B), then remove the lower arm (C) from the front suspension subframe.

   NOTE: During installation, install the new mounting bolt.

(cont'd)

Lower Arm Removal/Installation (cont'd)

9. Install the lower arm in the reverse order of removal, and note these items:

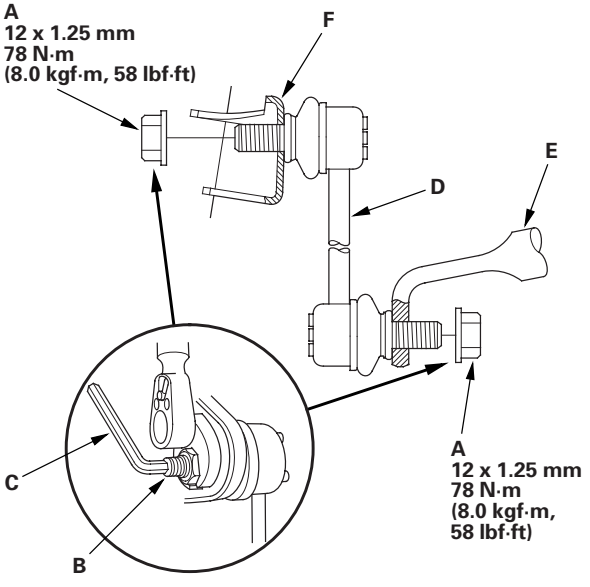
   - Be careful not to damage the ball joint boot when installing the knuckle.
   - Tighten all mounting hardware to the specified torque values.
   - Before connecting the lower ball joint to the knuckle, degrease the threaded section and tapered portion of the ball joint pin, the lower arm connecting hole, the threaded section and mating surface of the castle nut.
   - First install all the components and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
   - Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the castle nut by loosening it.
   - Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
   - Check the wheel alignment, and adjust it if necessary (see page 18-5).

Stabilizer Link Removal/Installation

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-10).

2. Remove the front wheel.

3. Remove the flange nuts (A) while holding the respective joint pin (B) with a hex wrench (C), then remove the stabilizer link (D).



4. Install the stabilizer link on the stabilizer bar (E) and damper (F) with the joint pins set at the center of their range of movement.

5. Install the flange nuts, and lightly tighten them.

6. Clean the mating surface of the brake disc and the inside of the wheel, then install the front wheel.

7. Tighten the flange nuts to the specified torque values while holding the respective joint pin with a hex wrench.

8. Test-drive the vehicle.

Stabilizer Bar Replacement

Special Tools Required
- Front subframe adapter EQS02BMDXSB0 *
- Engine support hanger, A and Reds AAR-T-12566 *
- Engine hanger balance bar VSB02C000019 *
- Engine hanger adapter set VSB02C000024 *

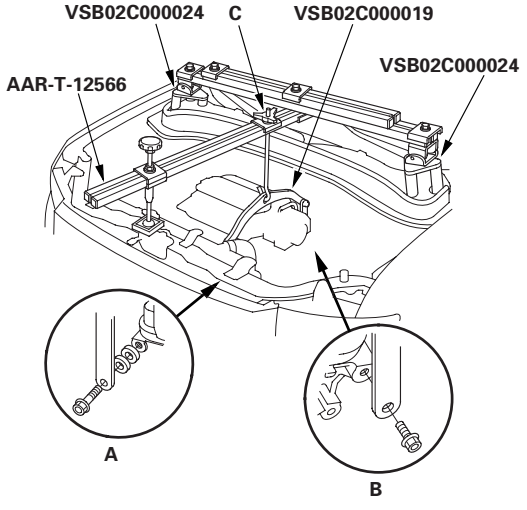
* Available through the American Honda Tool and Equipment program 1-888-424-6857

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-10).

2. Remove the front wheels.

3. Remove the service caps for the damper flange nuts, and place the engine support hanger stands (VSB02C000024) over the flange nuts (see step 55 on page 5-8).

4. Install the engine balancer bar (VSB02C000019); attach the front arm (A) to the front cylinder head with the spacer and the 10 mm bolt, and attach the rear arm (B) to the rear cylinder head with the 8 mm bolt.

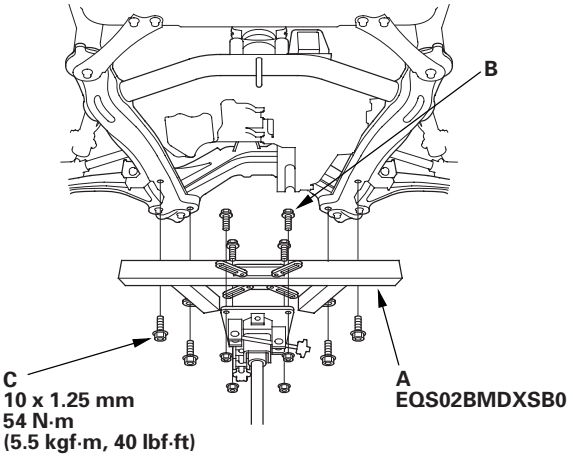


5. Install the engine support hanger (AAR-T-12566) to the vehicle, and attach the hook to the engine balancer bar slot. Tighten the wing nut (C) by hand, and lift and support the engine.

6. Disconnect the stabilizer links from the stabilizer bar on the right and left sides (see page 18-20).

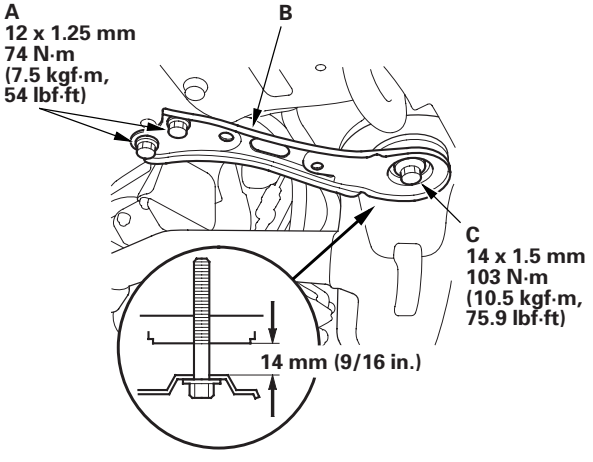
7. Remove the front splash shield (A) (see page 20-179).

8. Line up the slots in the arms with the bolt holes on the corner of the jack base, then attach the front subframe adapter (A) to the jack base with the bolts (B) that came with the jack. Tighten all bolts securely.



9. Raise the jack to vehicle height, then attach the front subframe adapter to the front subframe using the subframe stiffener mounting bolts (C) and bolt holes.

10. Remove the four 12 mm flange bolts (A) from the front suspension subframe front brackets (B).

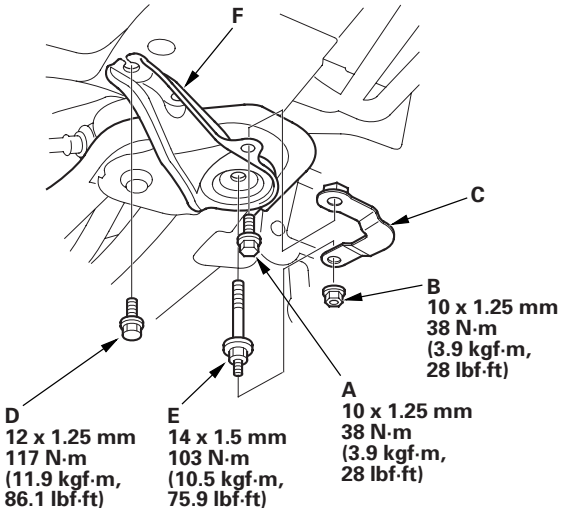


11. Loosen the two 14 mm flange bolts (C) on the front suspension subframe so they are about 14 mm (9/16 in.) from the mounting surface. Do not loosen the 14 mm flange bolts more than necessary.

(cont'd)

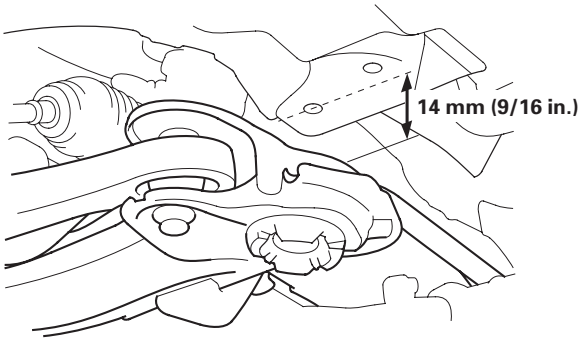
Stabilizer Bar Replacement (cont'd)

12. Support the front suspension subframe securely by raising the transmission jack, then remove the 10 mm flange bolts (A), the nuts (B), and the subframe bolt retainers (C).

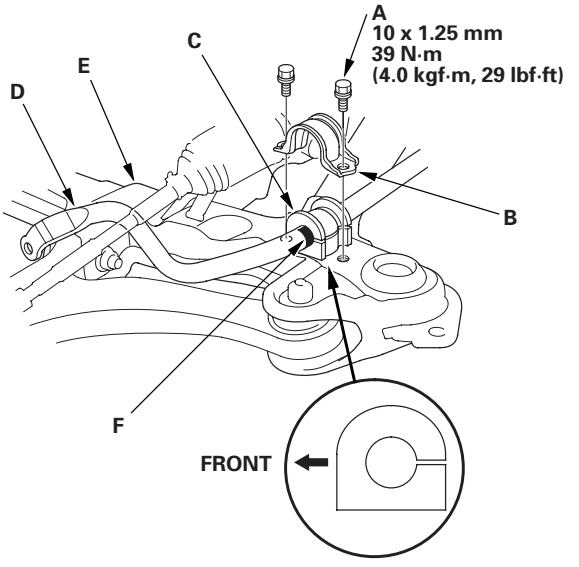


13. Remove the two 12 mm flange bolts (D), the 14 mm special bolts (E) and the front suspension subframe rear brackets (F) on the right and left of the vehicle.

14. Lower the jack supporting the front suspension subframe with the special tool slowly until the front suspension subframe has dropped about 14 mm (9/16 in.).



15. Remove the flange bolts (A) and the bushing holders (B), then remove the bushings (C) and the stabilizer bar (D) from the front suspension subframe (E).



16. Install the stabilizer bar in the reverse order of removal, and note these items:

- Note the right and left direction of the stabilizer bar.
- Align the paint marks (F) on the stabilizer bar with the sides of the bushings.
- Note the fore/aft direction of the bushing holders.
- Raise the front suspension subframe up with the jack and special tool until it contacts the body frame (see page 20-194), then tighten the mounting bolts to the specified torque.
- Refer to stabilizer link removal/installation to connect the stabilizer bar to the links (see page 18-20).
- Do the subframe alignment (see page 20-196).
- Clean the mating surface of the brake disc and the inside of the wheel, then install the front wheel.
- Check the wheel alignment, and adjust it if necessary (see page 18-5).

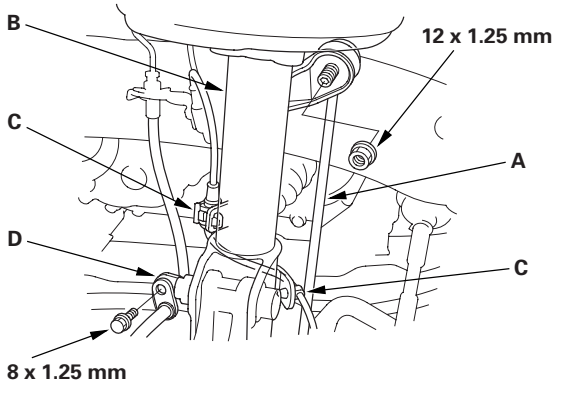
Damper/Spring Removal and Installation

Removal

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-10).

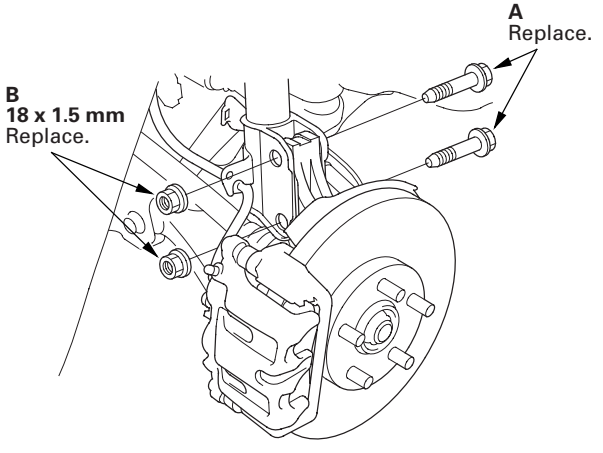
2. Remove the front wheel.

3. Disconnect the stabilizer link (A) from the damper (B) (see page 18-20).



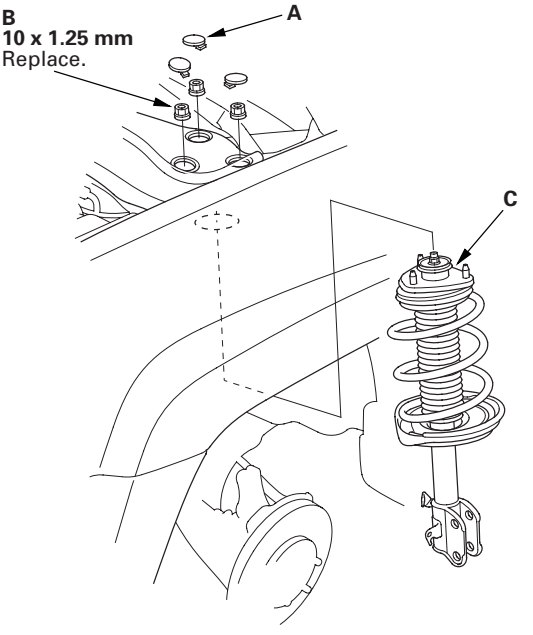
4. Remove the wheel sensor harness clips (C) and the brake hose bracket (D) from the damper. Do not disconnect the wheel sensor connector.

5. Remove the damper pinch bolts (A) and the flange nuts (B) from the damper.



6. Remove the service caps (A), and remove the three flange nuts (B) from top of the damper, then remove the damper assembly (C).

   NOTE: Damper springs are different, left and right. Mark the springs L and R before you continue.



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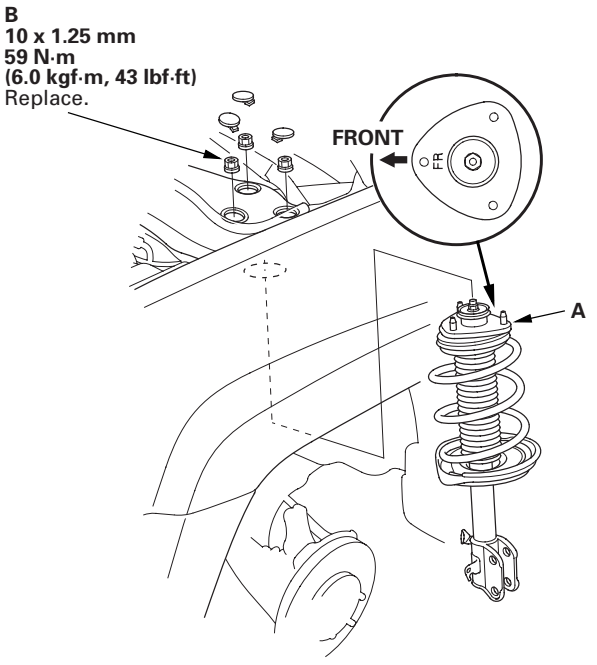
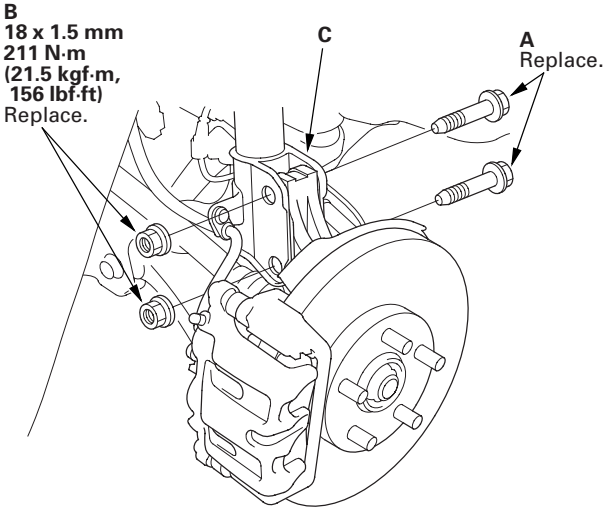
Damper/Spring Removal and Installation (cont'd)

Installation

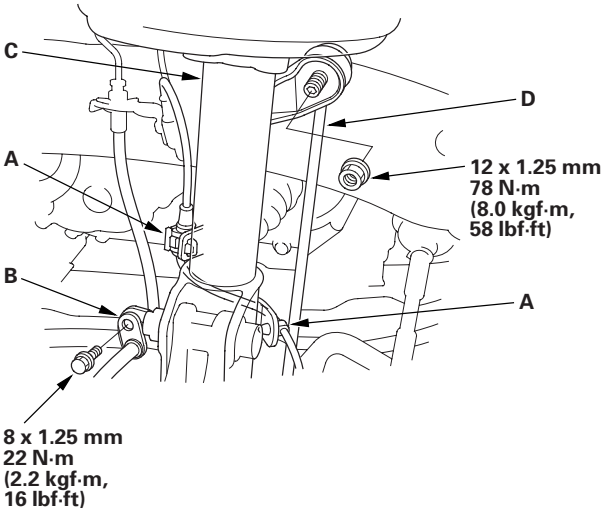
1. Install the damper assembly (A) onto the frame, then loosely install new three flange nuts (B).



2. Loosely install new damper pinch bolts (A) and new flange nuts (B) to the damper (C).



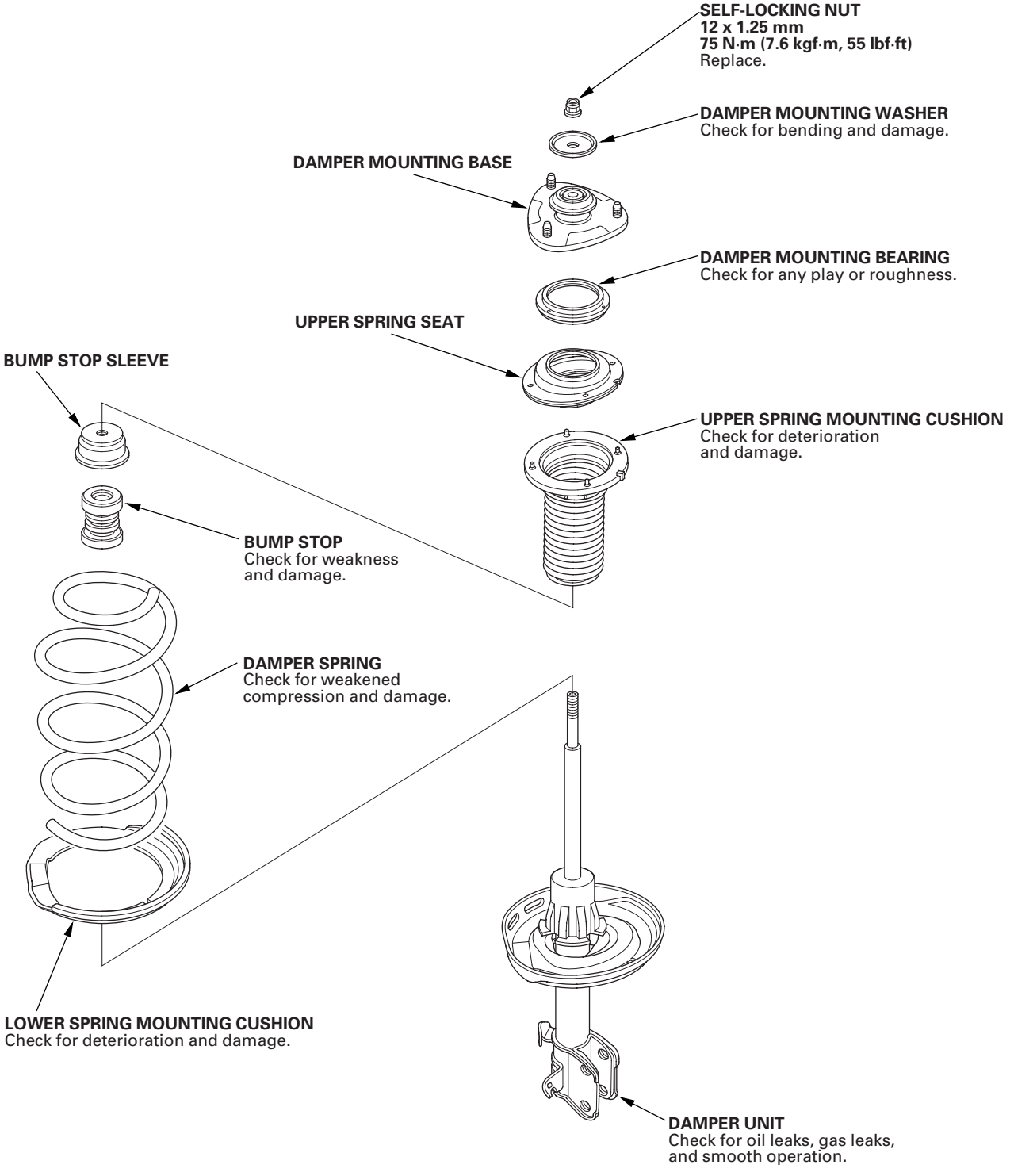
3. Install the wheel sensor harness clips (A) and the brake hose bracket (B) to the damper (C).



4. Loosely install the stabilizer link (D) to the damper.
5. Raise the front suspension with a floor jack to load the suspension with the vehicle's weight.
6. Tighten the damper pinch bolts and flange nuts.
7. Tighten the flange nuts on top of the damper and the stabilizer link nuts to the specified torque value.
8. Install the service caps.
9. Clean the mating surface of the brake disc and the inside of the wheel, then install the rear wheel.
10. Check the wheel alignment, and adjust it if necessary (see page 18-5).

Damper/Spring Disassembly, Inspection, and Reassembly

Exploded View



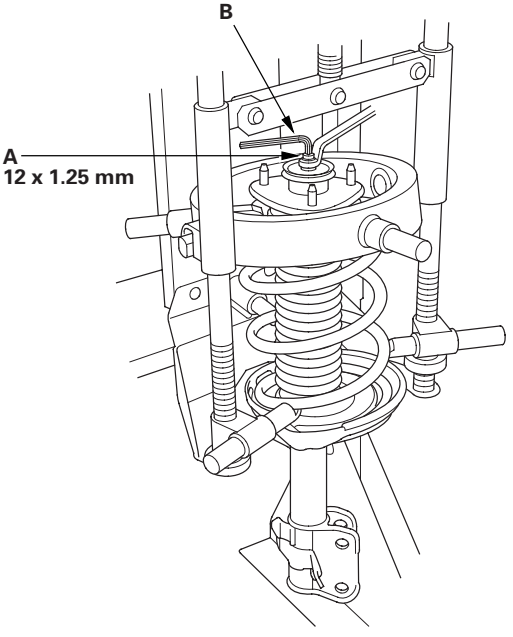
(cont'd)

Damper/Spring Disassembly, Inspection, and Reassembly (cont'd)

NOTE: When compressing the damper spring, use a commercially available strut spring compressor (Branick MST-580A or Model 7200, or equivalent) according to the manufacturer's instructions.

Disassembly/Inspection

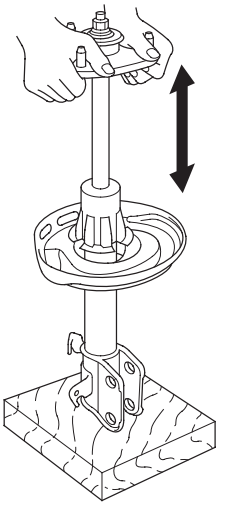
1. Compress the damper spring, then remove the self-locking nut (A) while holding the damper shaft with a hex wrench (B). Do not compress the spring more than necessary to remove the nut.



2. Release the pressure from the strut spring compressor, then disassemble the damper as shown in the Exploded View.

3. Reassemble all the parts, except for the upper spring mounting cushion, the bump stop sleeve, the bump stop, and the damper spring.

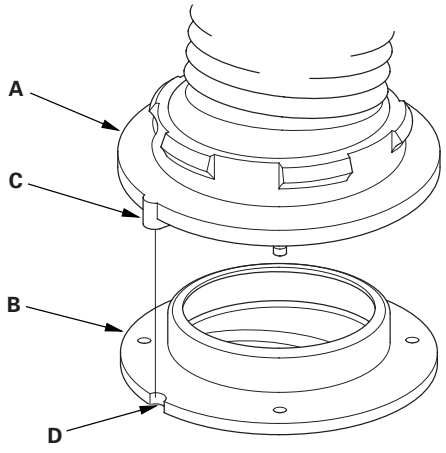
4. Compress the damper assembly by hand, and check for smooth operation through a full stroke, both compression and extension. The damper should extend smoothly and constantly when compression is released. If it does not, the gas is leaking and the damper should be replaced.



5. Check for oil leaks, abnormal noises, and binding during these tests.

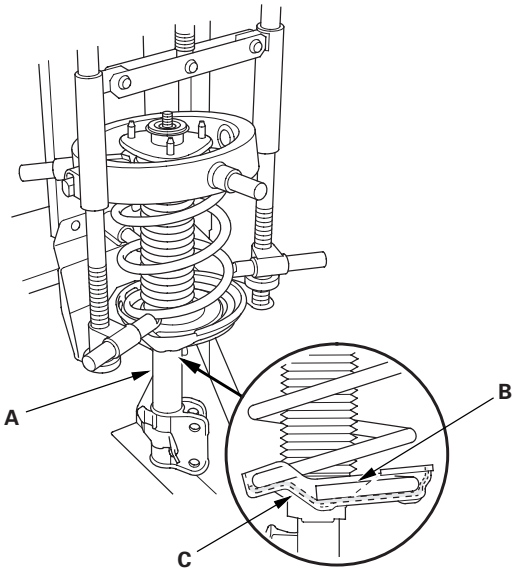
Reassembly

1. Install the spring mounting cushion (A) on the upper spring seat (B) by aligning the tab portion (C) on the cushion with the cutout (D) in the seat.



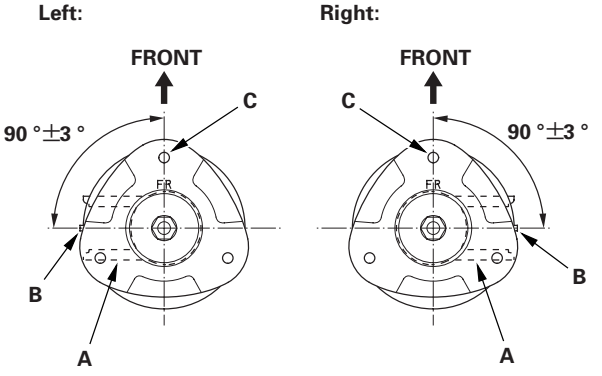
2. Compress the damper spring.

3. Install all the parts except the damper mounting washer and self-locking nut onto the damper unit (A) by referring to the Exploded View.



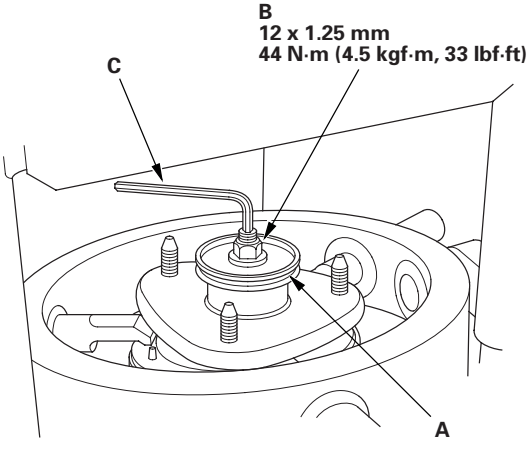
4. Align the bottom of the spring (B) and the stepped part of the lower spring seat (C).

5. Align an angle of the damper bracket (A) and the tab portion (B) on the spring mounting cushion.



6. Position the angle of the tab portion and the stud bolt (C) near the ''FR'' stamp on the upper spring seat as shown.

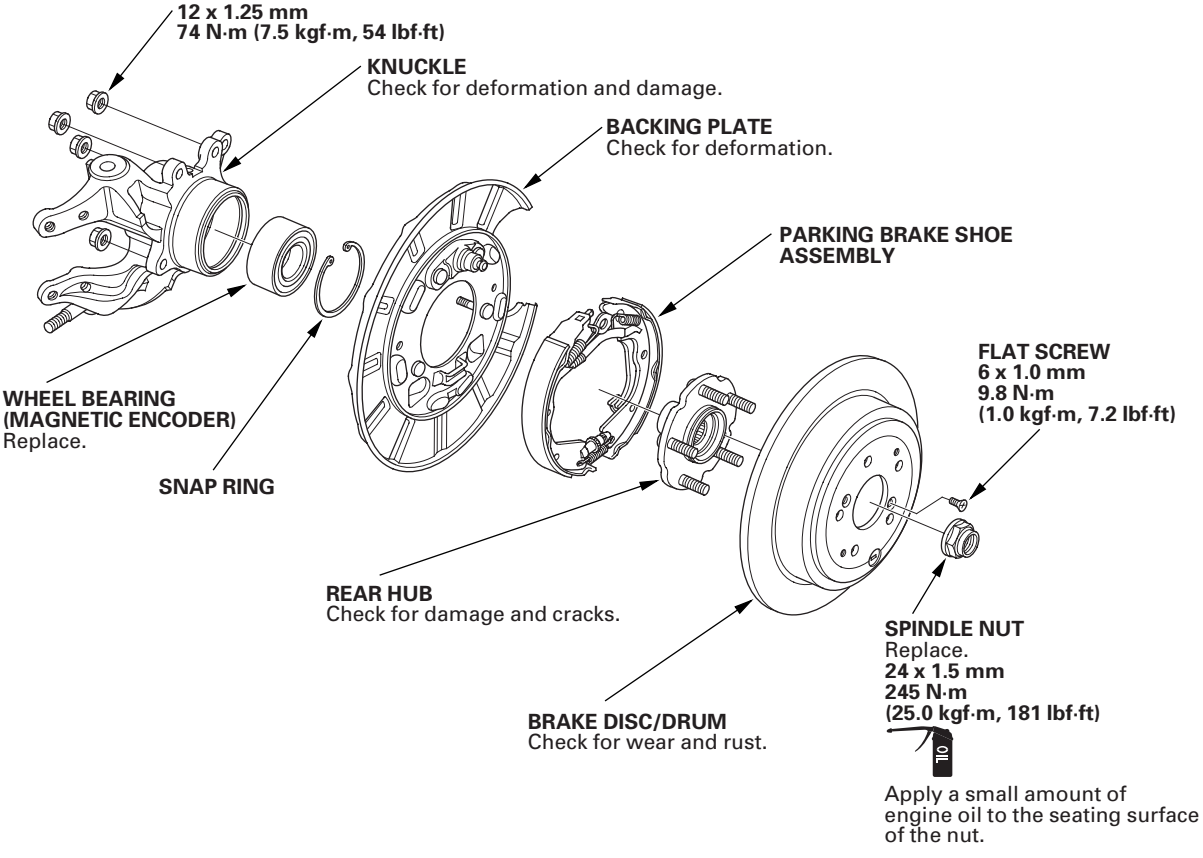
7. Install the damper mounting washer (A) and a new self-locking nut (B).



8. Hold the damper shaft using a hex wrench (C), and tighten the new self-locking nut to the specified torque value.

Knuckle/Hub/Wheel Bearing Replacement

Exploded View

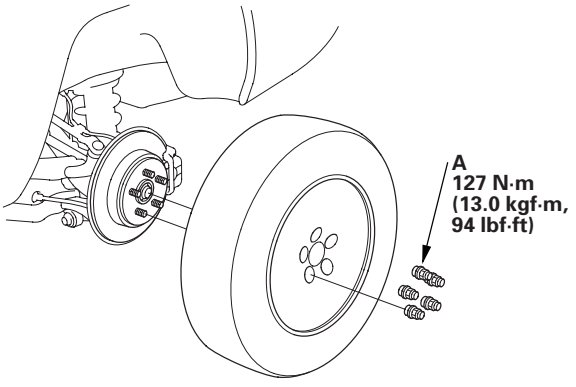


Special Tools Required
- Ball joint remover, 28 mm 07MAC-SL0A202
- Hub dis/assembly tool, 42 mm 07GAF-SD40100
- Attachment, 62 x 68 mm 07746-0010500
- Driver 07749-0010000
- Attachment, 96 mm 07948-SB00101
- Support base 07965-SD90100

Knuckle/Hub Replacement

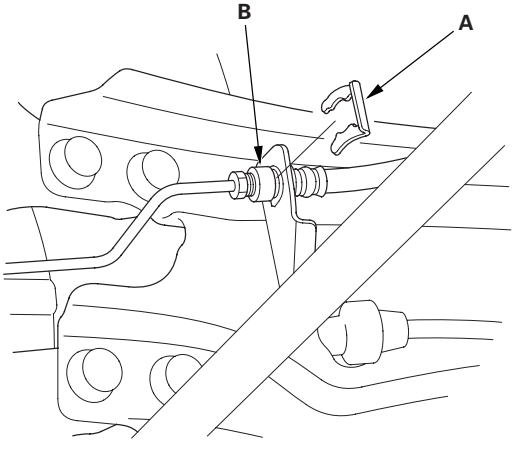
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-10).

2. Remove the wheel nuts (A) and rear wheel.

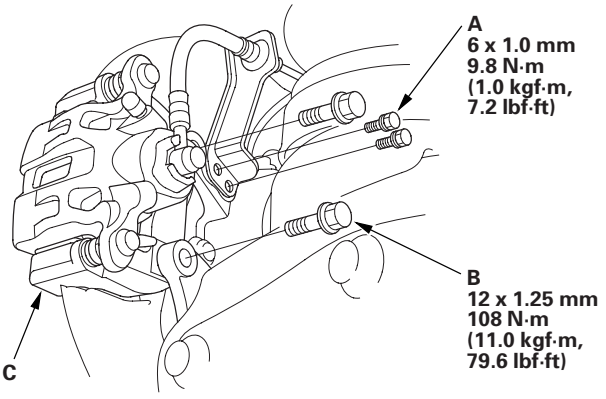


3. Remove and discard the brake hose clip (A) from the brake hose (B).

   NOTE: During installation, install the new brake hose clip.

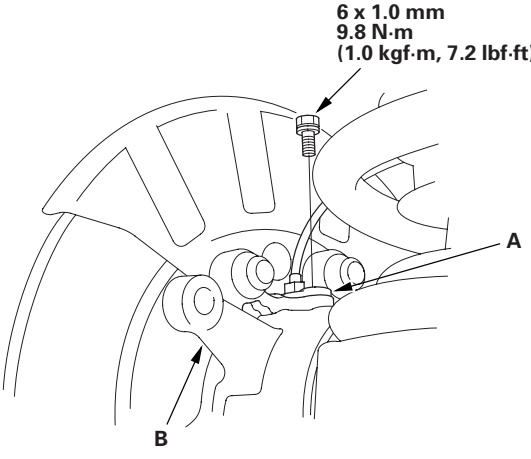


4. Remove the brake hose bracket mounting bolts (A) from the knuckle.



5. Remove the brake caliper bracket mounting bolts (B), and remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose with force.

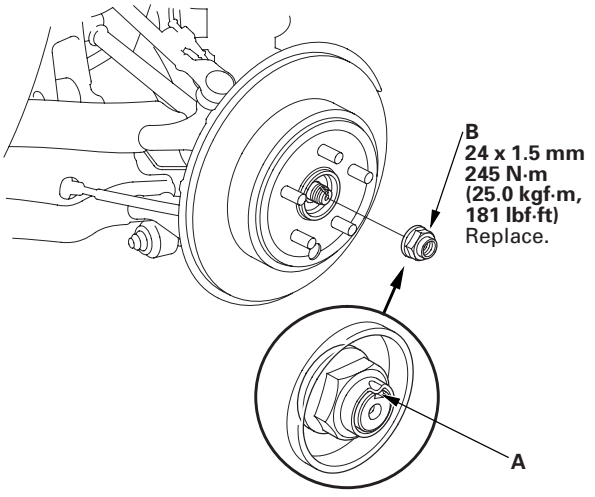
6. Remove the wheel sensor (A) from the knuckle (B). Do not disconnect the wheel sensor connector.



(cont'd)

Knuckle/Hub/Wheel Bearing Replacement (cont'd)

7. Raise the stake (A), then remove the spindle nut (B).



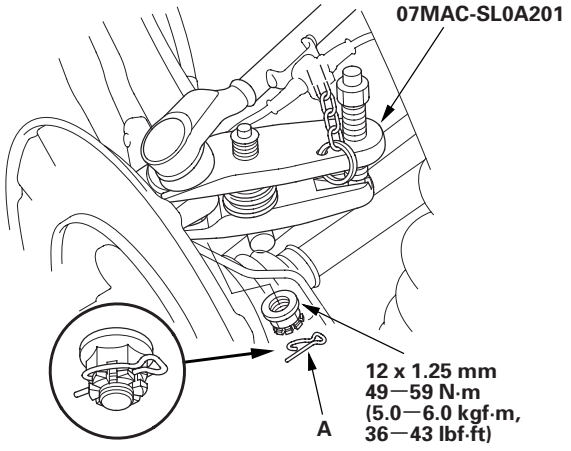
8. Remove the brake disc/drum (see page 19-24).

9. Check the rear hub for damage and cracks.

10. Remove the parking brake shoes (see page 19-28), and parking brake cable (see page 19-35).

11. Remove the lock pin (A) from the upper arm ball joint, then remove the nut.

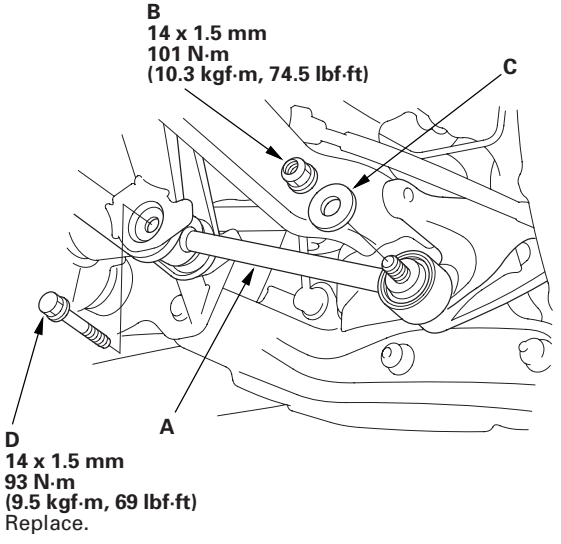
    NOTE: During installation, install the new lock pin after tightening the nut.



12. Disconnect the upper arm ball joint from the knuckle using the ball joint remover (see page 18-11).

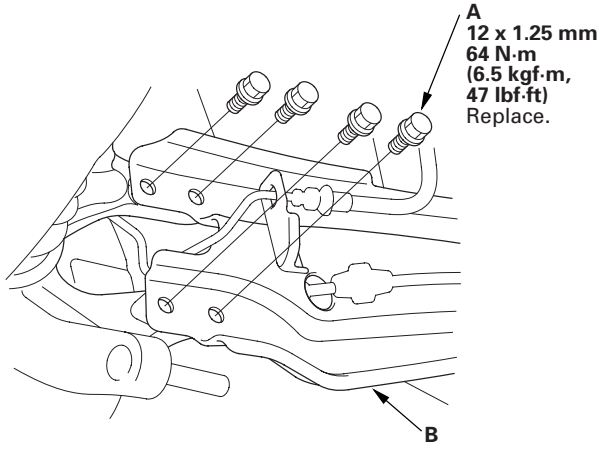
13. Remove the flange nut (B), washer (C), and flange bolt (D), then remove lower arm A.

    NOTE: During installation, install the new flange nut, new washer and new flange bolt.



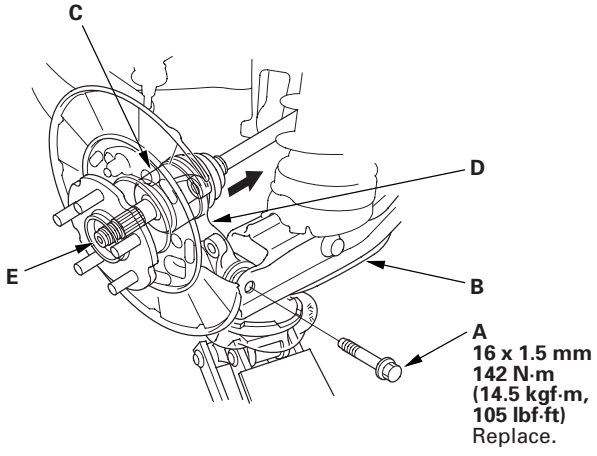
14. Remove the flange bolts (A), and separate the knuckle from the trailing arm (B).

    NOTE: During installation, install the new flange bolts.



15. Place a floor jack under lower arm B. Remove the flange bolt (A).

    NOTE: During installation, install the new flange bolts.



16. Remove the driveshaft outboard joint (C) from the knuckle (D) by tapping the driveshaft end (E) with a plastic hammer while drawing the hub outward, then remove the knuckle.

    NOTE: Do not pull the driveshaft end outward. The inner driveshaft joint may come apart.

17. Install the knuckle/hub in the reverse order of removal, and note these items:

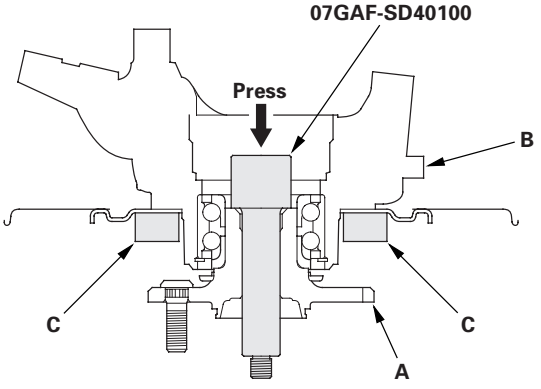
    - Be careful not to damage the ball joint boot when installing the knuckle.
    - Tighten all mounting hardware to the specified torque values.
    - First install all the components and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
    - Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the castle nut by loosening it.
    - Use a new spindle nut on reassembly.
    - Before installing the spindle nut, apply a small amount of engine oil to the seating surface of the nut. After tightening, use a drift to stake the spindle nut shoulder against the driveshaft.
    - Before installing the brake disc/drum, clean the mating surface of the rear hub and the inside of the brake disc/drum.
    - Before installing the wheel, clean the mating surface of the brake disc/drum and the inside of the wheel.
    - Check the wheel alignment, and adjust it if necessary (see page 18-5).

(cont'd)

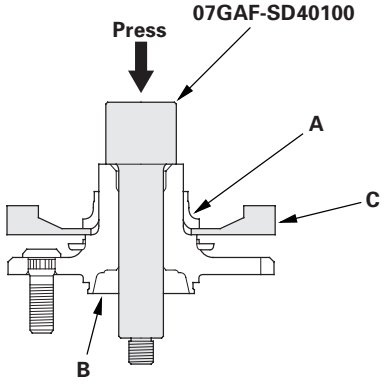
Knuckle/Hub/Wheel Bearing Replacement (cont'd)

Wheel Bearing Replacement

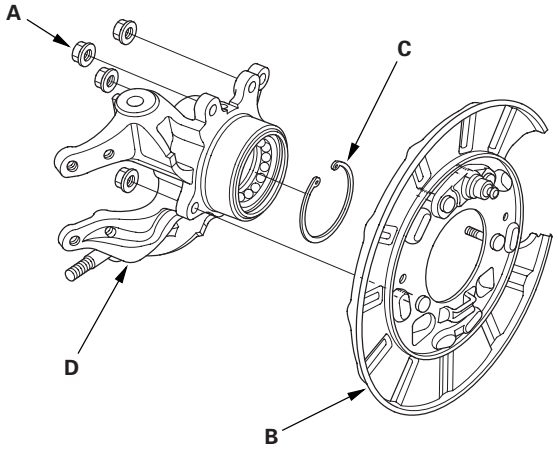
1. Separate the hub (A) from the knuckle (B) using the special tool and a hydraulic press. Hold the knuckle with the attachment (C) of the hydraulic press or equivalent tool. Be careful not to deform the backing plate. Hold onto the hub to keep it from falling when pressed clear.



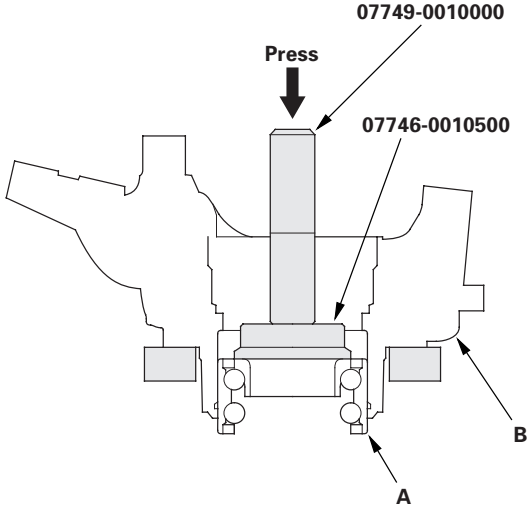
2. Press the wheel bearing inner race (A) off of the hub (B) using the special tool, a commercially available bearing separator (C), and a press.



3. Remove the flange nuts (A), backing plate (B), and snap ring (C) from the knuckle (D).



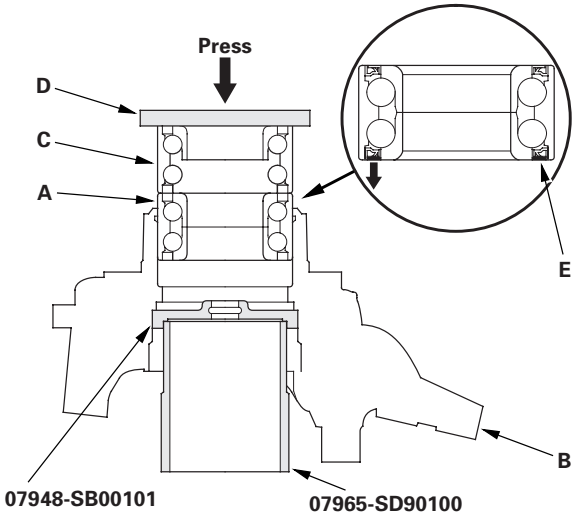
4. Press the wheel bearing (A) out of the knuckle (B) using the special tools and a press.



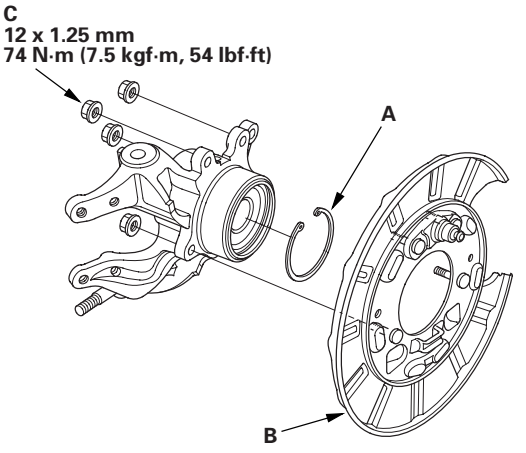
5. Wash the knuckle and hub thoroughly in high flash point solvent before reassembly.

6. Press a new wheel bearing (A) into the knuckle (B) using the old bearing (C), a steel plate (D), the special tools, and a press.

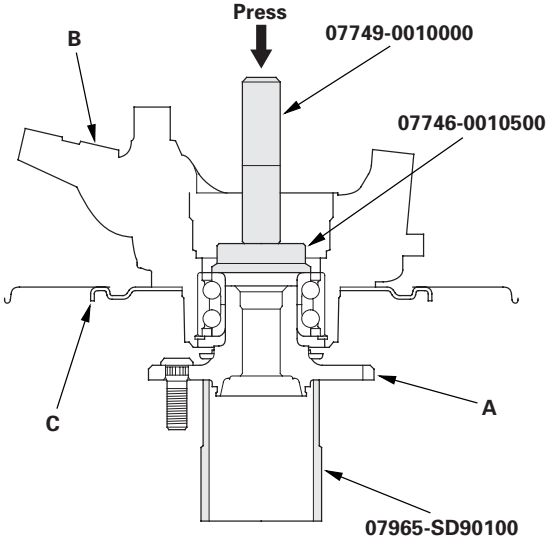
   NOTE:
   - Install the wheel bearing with the wheel sensor magnetic encoder (E) (brown color), toward the inside of the knuckle.
   - Remove any oil, grease, dust, metal debris, and other foreign material from the encoder surface.
   - Keep all magnetic tools away from the encoder surface.
   - Be careful not to damage the encoder surface when you insert the wheel bearing.



7. Install the snap ring (A), backing plate (B), and flange nuts (C). Tighten the flange nuts to the specified torque.



8. Install the hub (A) on the knuckle (B) using the special tools and a hydraulic press. Be careful not to deform the splash guard (C).



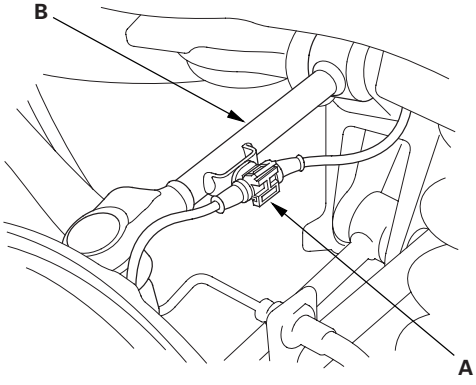
Upper Arm Removal/Installation

Special Tools Required
Ball joint remover, 32 mm 07MAC-SL0A102

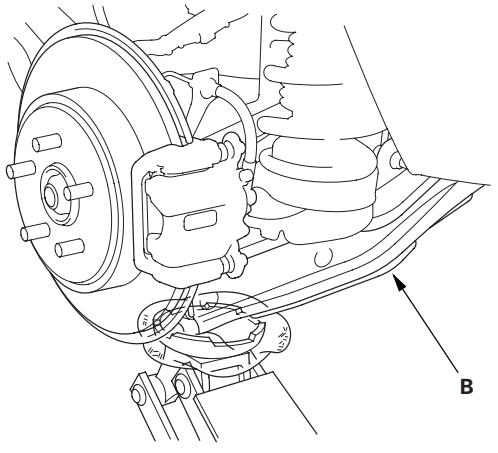
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-10).

2. Remove the rear wheel.

3. Remove the wheel sensor harness clip (A) from the upper arm (B). Do not disconnect the wheel sensor connector.

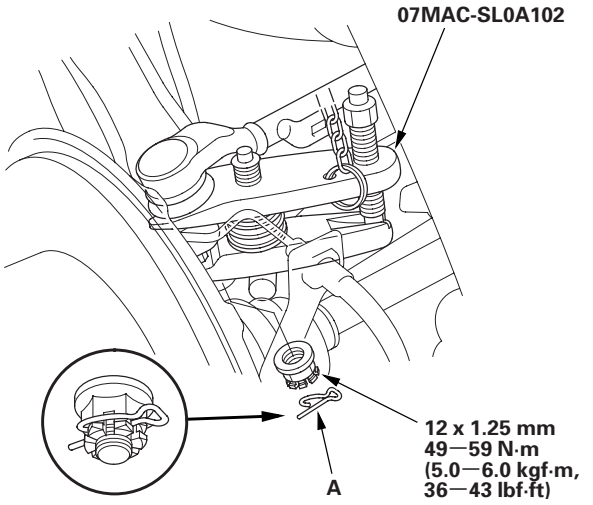


4. Position a floor jack at the connecting point of the lower arm B and the knuckle.



5. Raise the rear suspension with the floor jack to load the vehicle weight.

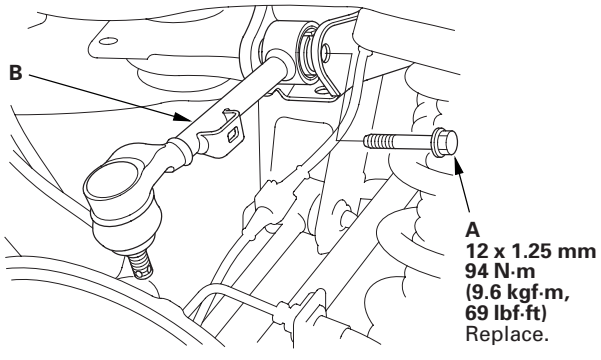
6. Remove the lock pin (A) from the upper arm ball joint, then remove the nut.



7. Disconnect the upper arm ball joint from the knuckle using the ball joint remover (see page 18-11).

8. Remove the upper arm mounting bolt (A) and remove the upper arm (B) from the vehicle.

   NOTE: During installation, install the new mounting bolt.



9. Install the upper arm in the reverse order of removal, and note these items:

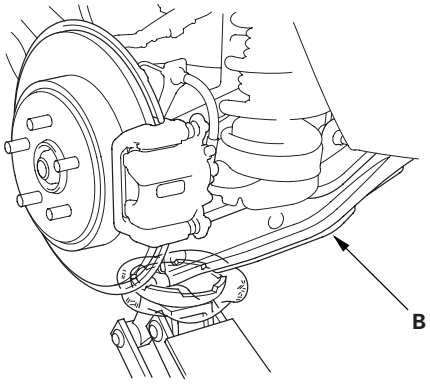
   - Be careful not to damage the ball joint boot when installing the knuckle.
   - Tighten all mounting hardware to the specified torque values.
   - First install all the components and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
   - Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the castle nut by loosening it.
   - Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
   - Check the wheel alignment, and adjust it if necessary (see page 18-5).

Lower Arm A Removal/Installation

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-10).

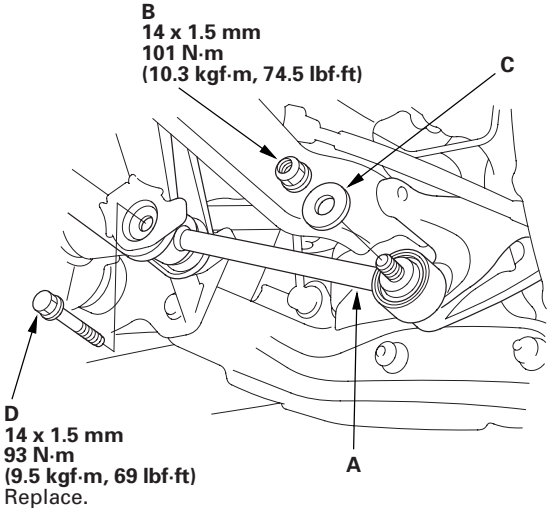
2. Remove the rear wheel.

3. Position a floor jack at the connecting point of the lower arm B and the knuckle.



4. Remove the locknut (B), washer (C), and flange bolt (D).

   NOTE: During installation, install the new locknut and new mounting bolt.



5. Raise the rear suspension with the floor jack until you are finished removing the lower arm A.

(cont'd)

Lower Arm A Removal/Installation (cont'd)

6. Install the lower arm A in the reverse order of removal, and note these items:

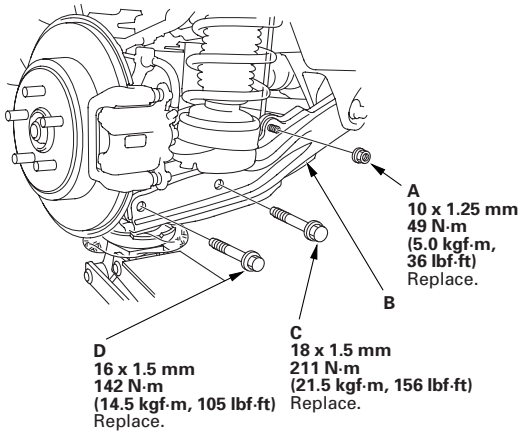
   - Tighten all mounting hardware to the specified torque values.
   - First install all the components and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
   - Before installing the wheel, clean the mating surface on the brake disc/drum and the inside of the wheel.
   - Check the wheel alignment, and adjust it if necessary (see page 18-5).

Lower Arm B Removal/Installation

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-10).

2. Remove the rear wheel.

3. Position a floor jack at the connecting point of lower arm B and the knuckle.



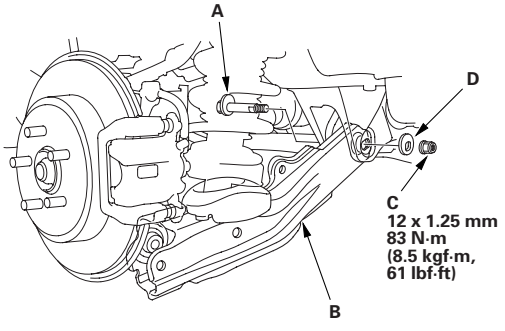
4. Remove the locknut (A), then remove flange bolt (C).

   NOTE: During installation, install the new locknut and new flange bolt.

5. Remove the flange bolt (D), and lower the floor jack gradually.

   NOTE: During installation, install the new flange bolt.

6. Hold the adjusting bolt (A) on the lower arm B, and remove the self-locking nut (C) and adjusting cam (D).



7. Remove the adjusting bolt and the lower arm B.

Trailing Arm Removal/Installation

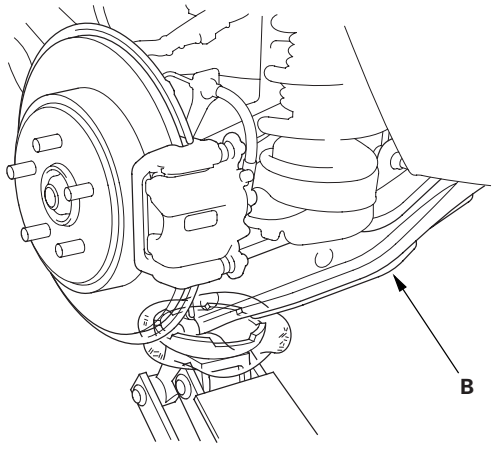
8. Install the lower arm B in the reverse order of removal, and note these items:

   - Align the cam positions of the adjusting bolt and adjusting cam with the marked positions when tightening.
   - Use a new self-locking nut on reassembly.
   - Tighten all mounting hardware to the specified torque values.
   - First install all the components and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
   - Before installing the wheel, clean the mating surface on the brake disc/drum and the inside of the wheel.
   - Check the wheel alignment, and adjust it if necessary (see page 18-5).

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-10).

2. Remove the rear wheel.

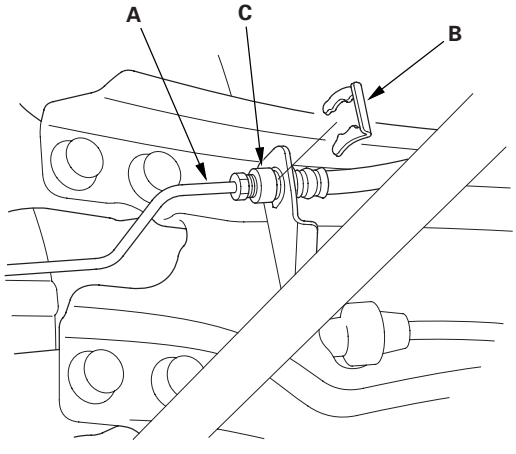
3. Position a floor jack at the connecting point of the lower arm B and the knuckle.



4. Remove the brake disc/drum (see page 19-24).

5. Remove the parking brake shoes (see page 19-28), and parking brake cable (see page 19-35).

6. Disconnect the brake hose from the brake line (A) (see page 19-34).



7. Remove and discard the brake hose clip (B) from the brake hose (C).

   NOTE: During installation, install the new clip.

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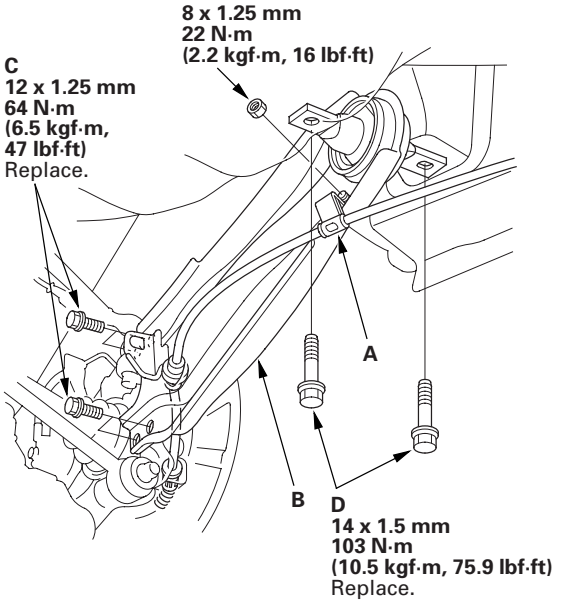
Trailing Arm Removal/Installation (cont'd)

8. Remove the parking brake cable (A) from the trailing arm (B).



9. Remove the flange bolts (C), and separate the knuckle from the trailing arm.

   NOTE: During installation, install new flange bolts.

10. Remove the trailing arm mounting bolts (D), and remove the trailing arm.

    NOTE: During installation, install new mounting bolts.

11. Install the trailing arm in the reverse order of removal, and note these items:

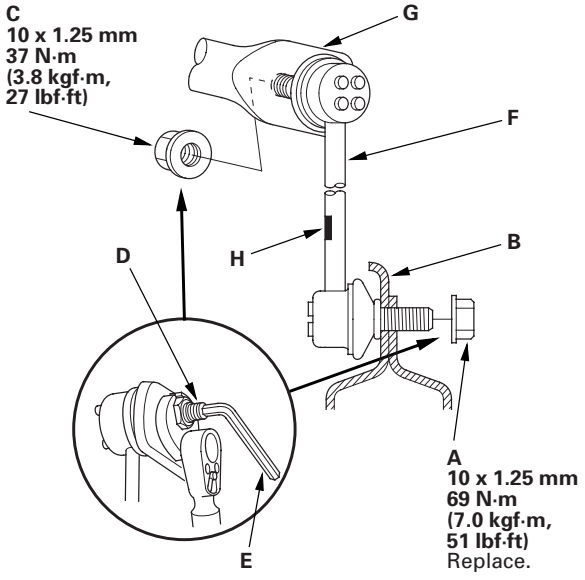
    - Tighten all mounting hardware to the specified torque values.
    - First install all the components and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
    - Check the brake hose for interference and twisting.
    - Before installing the wheel, clean the mating surfaces on the brake disc/drum and the inside of the wheel.
    - Fill up the brake reservoir, and bleed the brake system (see page 19-9).
    - Inspect the parking brake, and adjust as needed (see page 19-7).
    - After installation, check for leaks at the line joint, and retighten if necessary.
    - Check the wheel alignment, and adjust it if necessary (see page 18-5).

Stabilizer Link Removal/Installation

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-10).

2. Remove the rear wheel.

3. Remove the locknut (A) and flange nut (C) while holding the respective joint pin (D) with a hex wrench (E), then remove the stabilizer link (F).



4. Install the stabilizer link on the stabilizer bar (G) and lower arm B with the joint pins set at the center of their range of movement.

   NOTE: The left stabilizer link has a yellow paint mark (H), while the right stabilizer link has a white paint mark.

5. Install the new locknut and flange nut, and lightly tighten them.

6. Clean the mating surface of the brake disc/drum and the inside of the wheel, then install the rear wheel.

7. Tighten the flange nuts to the specified torque values while holding the respective joint pins with a hex wrench.

8. Reinstall all removed parts, and test-drive the vehicle.

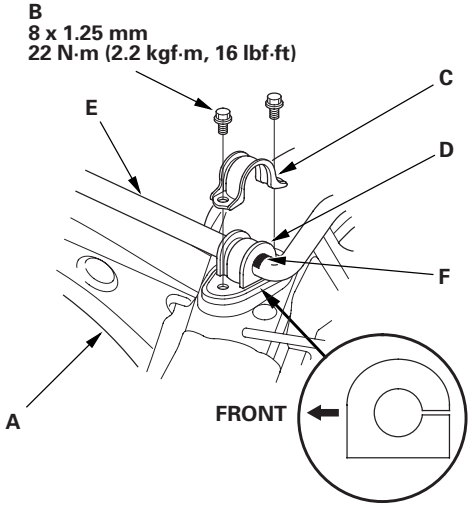
Stabilizer Bar Replacement

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-10).

2. Remove the rear wheels.

3. Disconnect the stabilizer links from the stabilizer bar on the right and left sides (see page 18-39).

4. Remove the rear suspension subframe (A) from the body (see page 20-194).



5. Remove the flange bolts (B) and bushing holders (C), then remove the bushings (D) and the stabilizer bar (E).

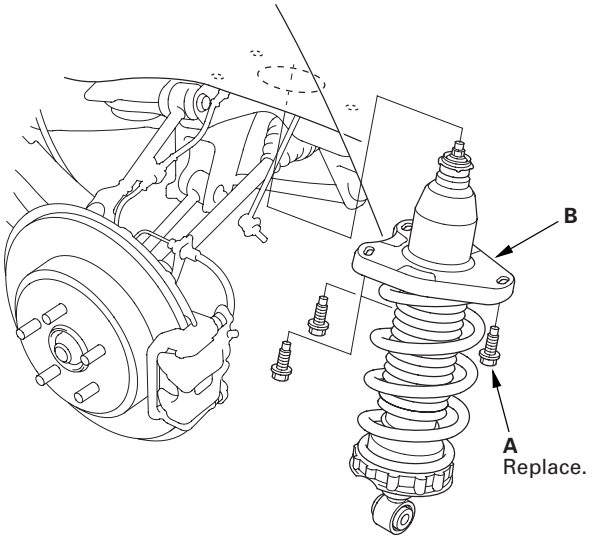
6. Install the stabilizer bar in the reverse order of removal, and note these items:

   - Note the right and left direction of the stabilizer bar.
   - Align the paint marks (F) on the stabilizer bar with the sides of the bushings.
   - Note the fore/aft direction of the bushing holders.
   - Raise the rear suspension subframe up with the jack and special tool until it contacts the body frame (see page 20-194), then tighten the mounting bolts to the specified torque.
   - Refer to stabilizer link removal/installation to connect the stabilizer bar to the links (see page 18-39).
   - Do the subframe alignment (see page 20-194).
   - Clean the mating surface of the brake disc/drum the inside of the wheel, then install the rear wheels.
   - Check the wheel alignment, and adjust it if necessary (see page 18-5).

Damper/Spring Removal and Installation

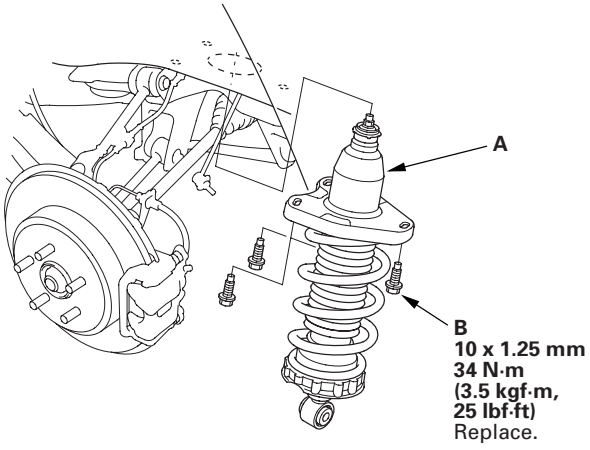
Removal

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-10).
2. Remove the rear wheel.
3. Remove the lower arm B (see page 18-36).
4. Remove the three flange bolts (A) from the top of the damper, then remove the damper assembly (B).

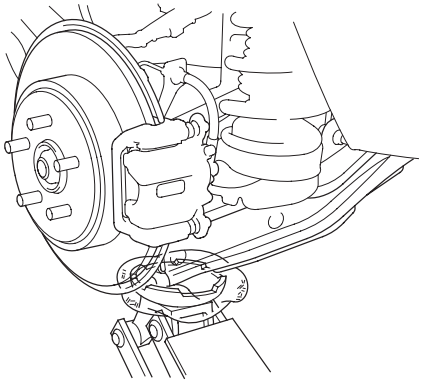


Installation

1. Install the damper assembly (A) onto the flange, then loosely install the new flange bolts (B).



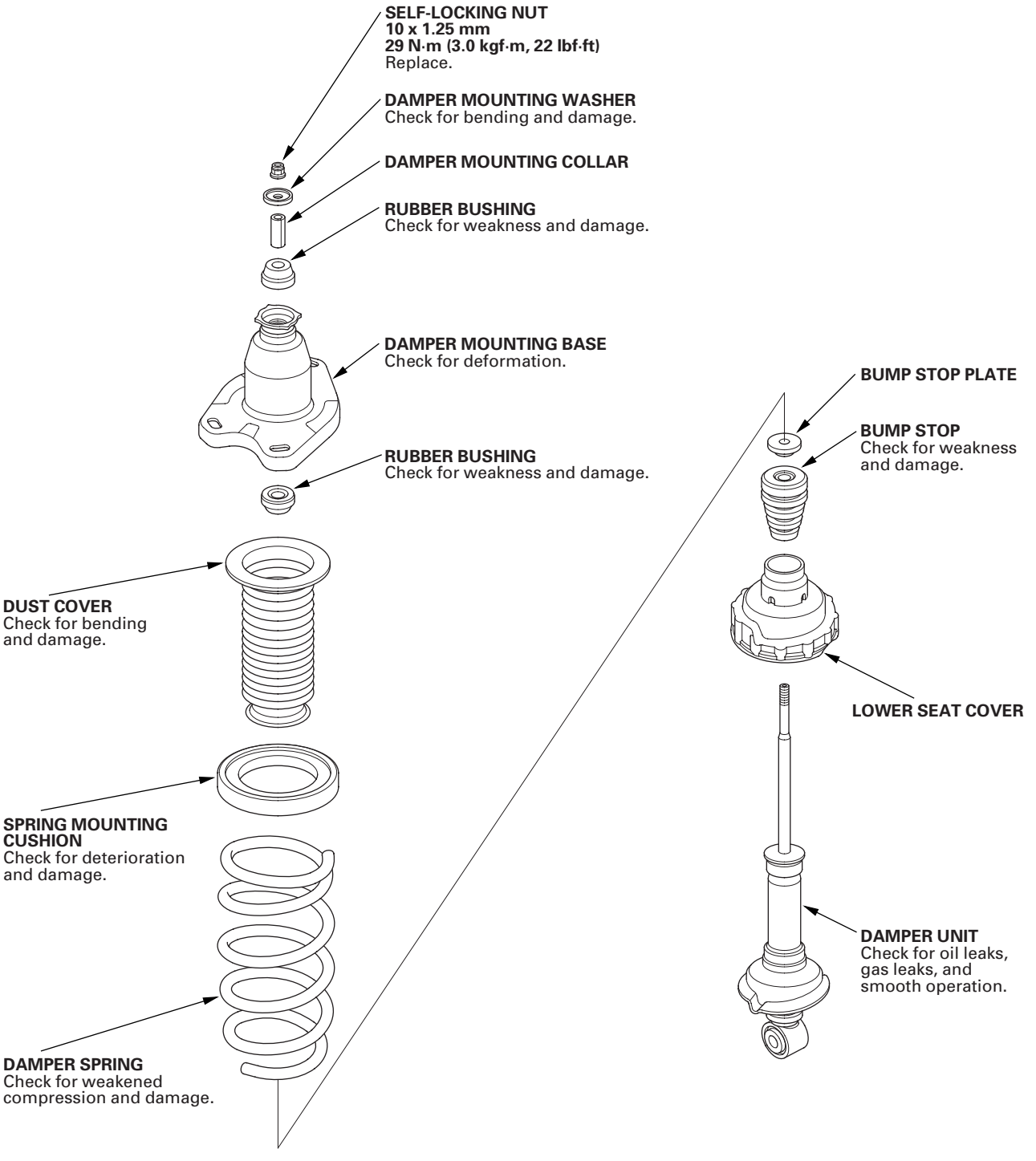
2. Install the lower arm B (see page 18-36).
3. Raise the rear suspension with a floor jack to load the vehicle weight.



4. Tighten all mounting hardware to the specified torque values.
5. Clean the mating surface of the brake disc/drum and the inside of the wheel, then install the rear wheel.
6. Check the wheel alignment, and adjust it if necessary (see page 18-5).

Damper/Spring Disassembly, Inspection, and Reassembly

Exploded View



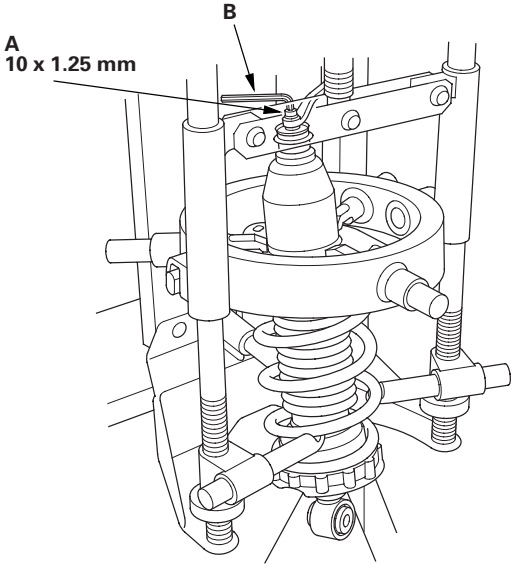
(cont'd)

Damper/Spring Disassembly, Inspection, and Reassembly (cont'd)

NOTE: When compressing the damper spring, use a commercially available strut spring compressor (Branick MST-580A or Model 7200, or equivalent) according to the manufacturer's instructions.

Disassembly

1. Compress the damper spring, then remove the self-locking nut (A) while holding the damper shaft with a hex wrench (B). Do not compress the spring more than necessary to remove the nut.

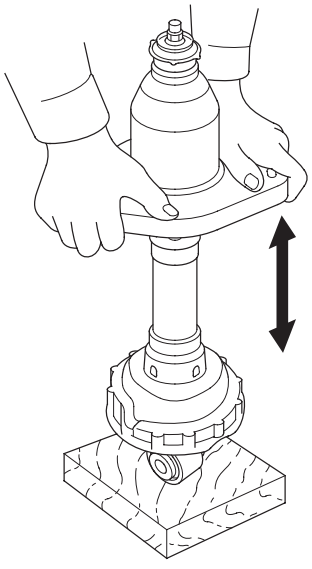


2. Release the pressure from the strut spring compressor, then disassemble the damper as shown in the Exploded View.

Inspection

1. Reassemble all the parts, except for the dust cover, the bump stop, the spring mounting cushion, and the spring.

2. Compress the damper assembly by hand, and check for smooth operation through a full stroke, both compression and extension. The damper should extend smoothly and constantly when compression is released. If it does not, the gas is leaking and the damper should be replaced.

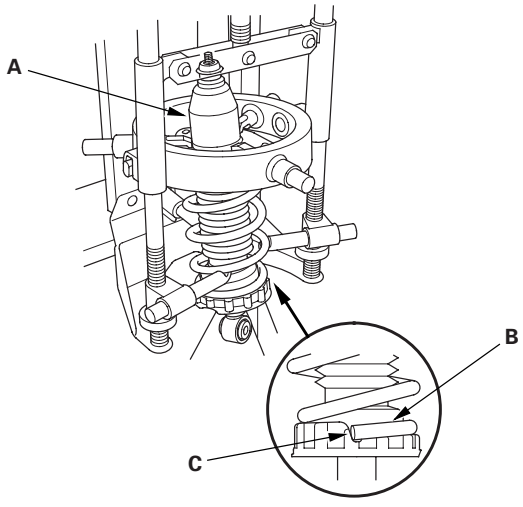


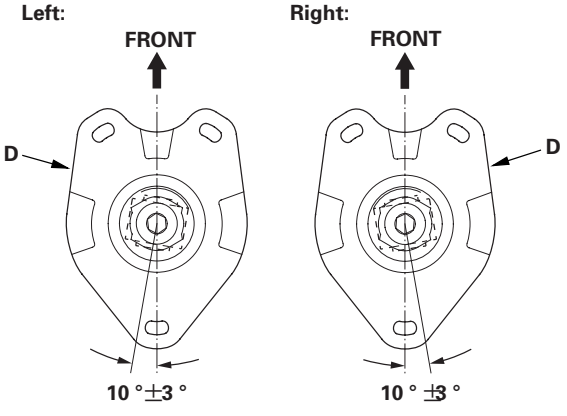
3. Check for oil leaks, abnormal noises, and binding during these tests.

Reassembly

1. Compress the damper spring.

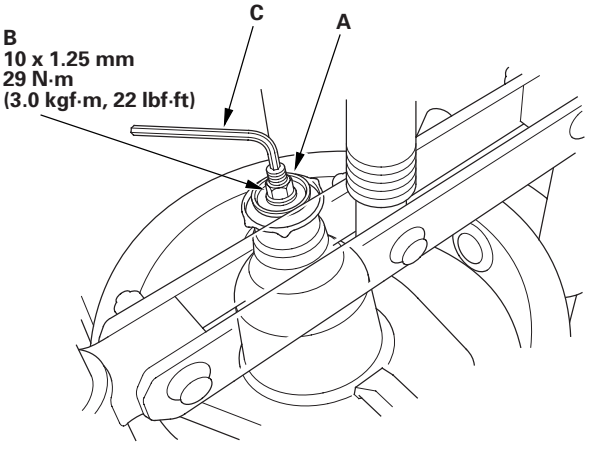
2. Install all parts except the damper mounting washer and self-locking nut onto the damper unit (A) by referring to the Exploded View.





3. Align the bottom of the spring (B) and the stepped part of the lower spring seat (C), and align the damper mounting base (D) as shown.

4. Install the damper mounting washer (A) and loosely install a new self-locking nut (B).



5. Hold the damper shaft using a hex wrench (C), and tighten the self-locking nut to the specified torque value.

Suspension

Front and Rear Suspension 18-2

Front Suspension 18-13

Rear Suspension 18-28

TPMS (Tire Pressure Monitoring System)

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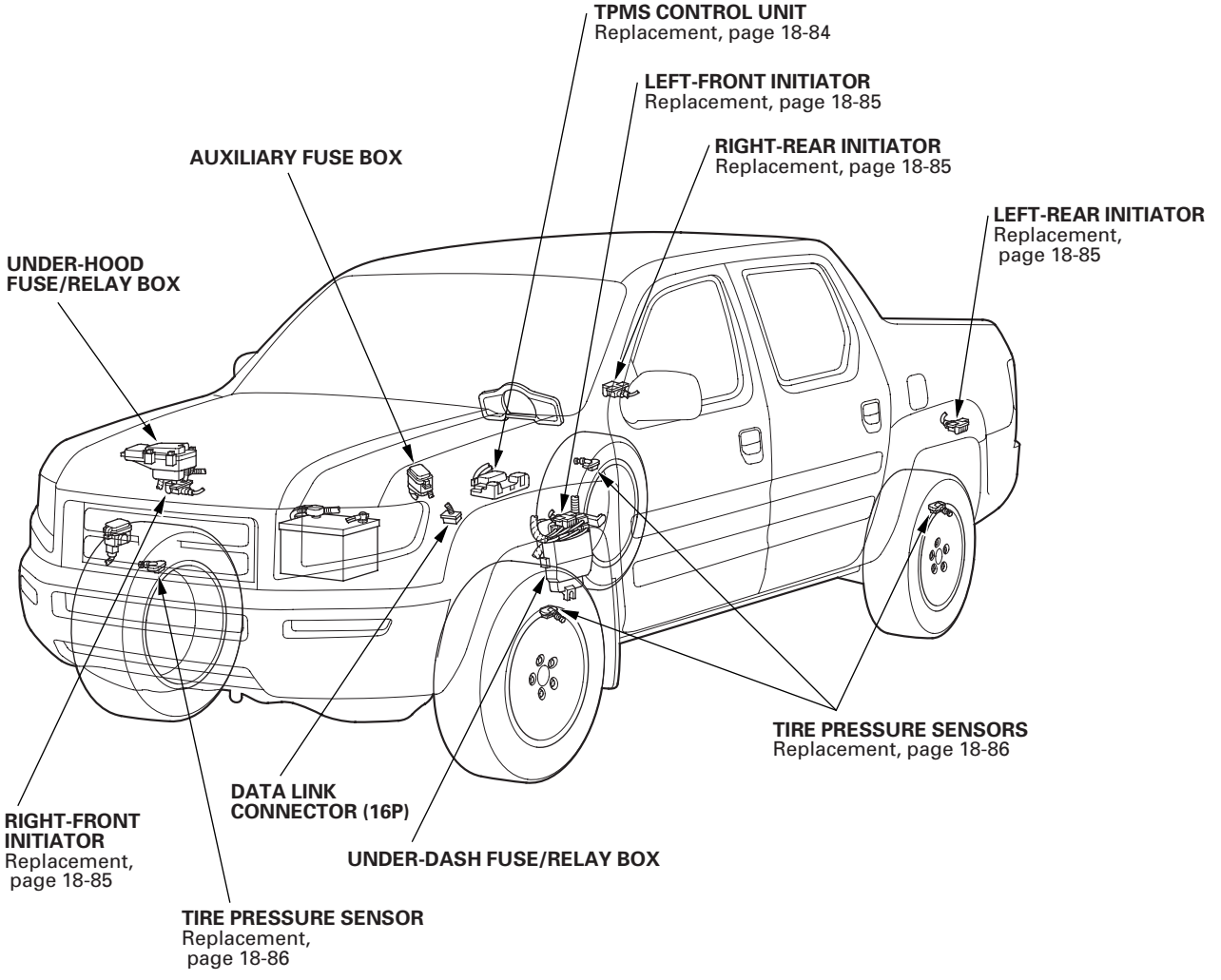
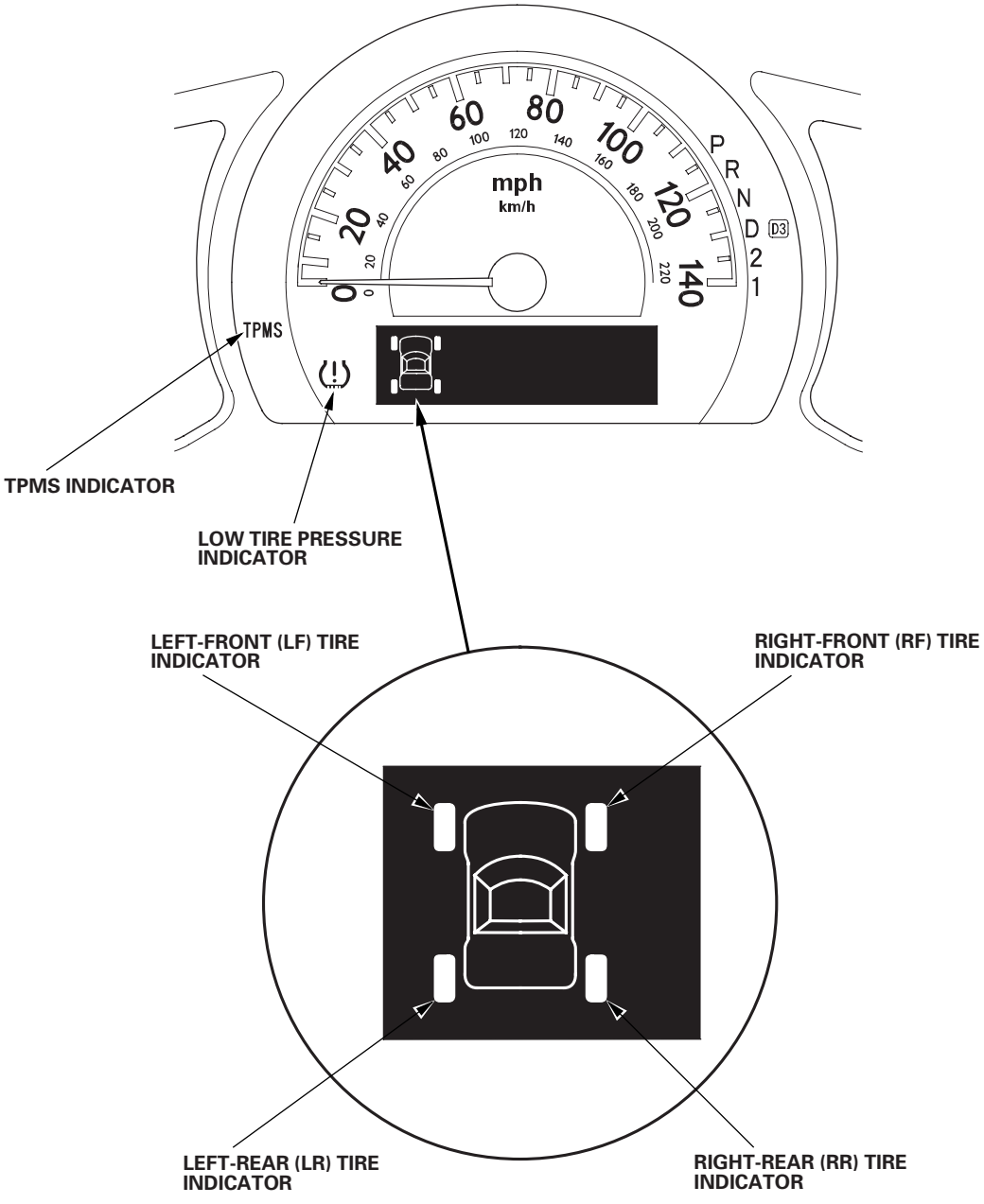
Component Location Index



General Troubleshooting Information

System Indicator Location



(cont'd)

General Troubleshooting Information (cont'd)

How TPMS Works

The TPMS (Tire Pressure Monitoring System) has six indicators; four tire indicators, a low pressure indicator, and a system indicator. When the TPMS control unit detects low pressure in a tire, or a problem in the system, it turns on the appropriate indicator(s).

- If low tire pressure is detected, the low tire pressure indicator and the appropriate tire indicator(s) come on.
- If a problem in the system is detected, the TPMS indicator comes on.
- If low tire pressure and a problem in the system are detected, only the TPMS indicator comes on.

If the system is OK, the TPMS indicator, the low tire pressure indicator and the four tire indicators should come on when you turn the ignition switch ON (II), and then go off 2 seconds later. If they don't, there is a problem with the system.

If the system detects low pressure in any of the four tires, the low tire pressure indicator and the appropriate tire indicator(s) will come on, and the control unit will set one or more of these codes:
DTC 11, 13, 15, 17. When the tire pressure returns to normal, the control unit will turn off the indicators and store the DTC(s). However, if the control unit detects a problem in the system during an indication of low tire pressure, it will turn off the low pressure and tire indicators, store the DTC(s), and turn on the TPMS indicator.

NOTE: Tire pressures will increase slightly as the temperature in the tires rises during driving at highway speeds. Pressures will also increase or decrease slightly with changes in outside air temperature. A temperature change of about 18 ℉ (10 ℃) will change tire pressure by about 10 kPa (0.1 kgf/cm^2, 1.5 psi). If the temperature drops and then rises, tire pressure could decrease just enough to turn on the low pressure and tire indicator(s), but later increase enough to turn them off. To resolve a complaint of such intermittent indications, confirm and clear the stored DTC(s) and check the tire pressures. Then explain to the customer how temperature changes can affect the system, especially when tire pressures are near the low end of the TPMS normal range - 168 to 220 kPa (1.7 to 2.2 kgf/cm^2, 24 to 32 psi).

If a problem is detected in the system, the TPMS indicator will come on and stay on until the system returns to normal with most DTCs. If DTC 45, 51, 53, 55, 57, 81, 83 or 85 is set, the TPMS indicator will go off only when the ignition switch is turned off.

If a flat tire is replaced with the spare tire, and the flat tire is stored in the In-Bed Trunk, the low tire pressure indicator will stay on but the appropriate tire indicator will go off. This prevents the customer from thinking there is a problem with the spare tire. When the flat tire is taken out of the vehicle for repair, the TPMS indicator will come on (DTC 32, 34, 36 or 38) because the system is no longer receiving the signal from the tire's transmitter.

Problems That are Not System Faults

- Tire Sealant
  Fluid sealant used to repair a punctured tire can damage the tire pressure sensor mounted on each wheel. It can prevent the system from detecting the correct tire pressure, which sets a DTC 11, 13, 15, or 17 even though the system is normal.
- Cold Weather
  When the weather is extremely cold - about −40 ℉ (−40 ℃) or colder - the output of the lithium battery in each tire pressure sensor may drop far enough that the control unit sets a DTC for low battery voltage (31, 33, 35, or 37) even though the system is normal.
- Non-TPMS Wheels
  Vehicles equipped with TPMS must use wheels made for the system. Every TPMS wheel has an exclusive mark; do not use any other type of wheel.

How a Diagnostic Trouble Code (DTC) is Set

- When the system detects a problem, the TPMS control unit sets a code, but shifts to fail-safe mode, and will not alert the driver to low tire pressures.
- If the TPMS control unit loses power, or fails, the TPMS indicator will come on, but no DTC will be set.
- The memory can hold all the DTCs that could possibly be set. However, when the same DTC is detected more than once, the most recent one overwrites the previous one, so only the latest DTC of each type is stored.
- DTCs are indicated in ascending order, not in the order they occurred.
- Set DTCs are stored in the EEPROM (nonvolatile memory), they cannot be cleared by disconnecting the battery. To clear a DTC, connect the HDS (Honda Diagnostic System) to the data link connector (DLC), and follow the screen prompts.

How to Troubleshoot DTCs

DTC troubleshooting procedures assume the cause of the problem is still present and the TPMS indicator is still on. (NOTE: The TPMS indicator comes on for DTCs 11, 13, 15, and 17 only if the low tire pressure indication is false, caused by a problem in the system.) Do not use a troubleshooting procedure unless the system has set the DTC listed for it.

1. Ask the customer to describe the conditions when the indicator came on, and try to reproduce the same conditions for troubleshooting. Find out if the customer checked and/or adjusted tire pressures since the indicator came on.

2. If an indicator does not come on during the test-drive, check for loose terminals, poor contact due to damaged terminals, etc. before you start troubleshooting.

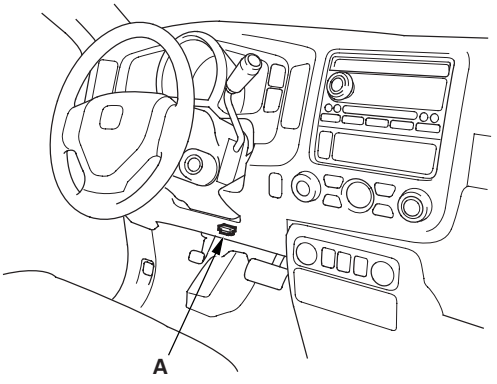
3. After troubleshooting, clear the DTCs, and test-drive the vehicle. Make sure no indicators come on.

(cont'd)

General Troubleshooting Information (cont'd)

How to Retrieve DTCs

1. With the ignition switch OFF, connect the HDS (Honda Diagnostic System) to the 16P data link connector (DLC) (A) under the driver's side of the dashboard.



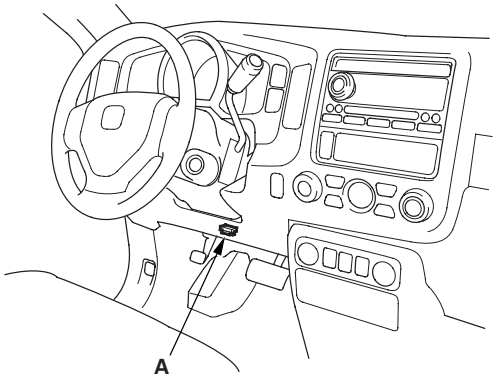
2. Turn the ignition switch ON (II), and follow the prompts on the HDS to retrieve any DTC(s) and display them on the screen. Refer to the troubleshooting procedure(s) for the DTC(s) listed.

   NOTE: See the HDS Help menu for specific instructions.

How to Clear DTCs

NOTE: You cannot clear the DTCs manually.

1. With the ignition switch OFF, connect the HDS to the 16P data link connector (DLC) (A) under the driver's side of the dashboard.



2. Turn the ignition switch ON (II), and clear the DTC(s) by following the screen prompts on the HDS.

   NOTE: See the HDS Help menu for specific instructions.

Memorizing the Tire Pressure Sensor ID

Memorizing a Tire Pressure Sensor ID

When a tire pressure sensor is replaced, the sensor ID must be memorized by the TPMS control unit.

NOTE: To ensure the control unit memorizes the correct ID, the vehicle with the new sensor must be at least 3 m (10 ft) from any other TPMS pressure sensor not installed on that vehicle.

Memorizing a Sensor ID Automatically

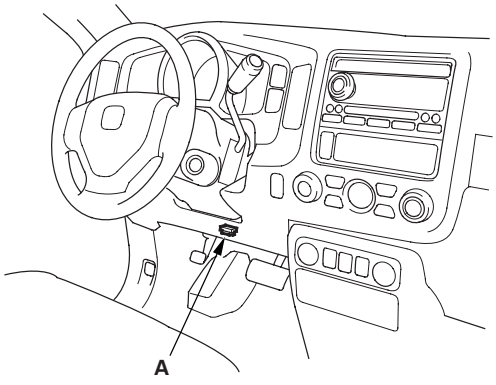
After rotating the tires or replacing a tire pressure sensor, drive the vehicle for at least 40 seconds at a speed of 15 mph (24 km/h) or more, and all the sensor IDs will be memorized automatically.

NOTE:
- When replacing the TPMS control unit, use the HDS to memorize IDs.
- After the IDs are memorized, reduce the pressure in all four tires to less than the appropriate specification, and check to see that the four tire indicators come on.

Memorize the ID with the HDS

The HDS can memorize the ID of a new tire pressure sensor or a previously memorized ID.

1. With the ignition switch OFF, connect the HDS to the 16P data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch ON (II), and memorize the ID of the tire pressure sensor by following the screen prompts on the HDS.

   NOTE:
   - See the HDS Help menu for specific instructions.
   - When replacing the TPMS control unit, use the HDS to memorize IDs.
   - After the IDs are memorized, reduce the pressure in all four tires to less than the appropriate specification, and check to see that the four tire indicators come on.

DTC Troubleshooting Index

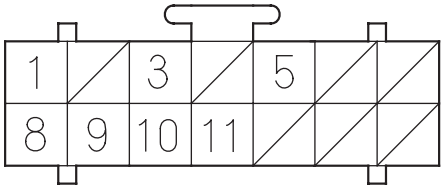
DTC	Detection Item	Troubleshooting
11	Right-front low air pressure	(see page 18-63)
13	Left-front low air pressure	(see page 18-63)
15	Right-rear low air pressure	(see page 18-63)
17	Left-rear low air pressure	(see page 18-63)
21	Right-front tire pressure sensor abnormally high temperature	(see page 18-64)
22	Left-front tire pressure sensor abnormally high temperature	(see page 18-64)
23	Right-rear tire pressure sensor abnormally high temperature	(see page 18-64)
24	Left-rear tire pressure sensor abnormally high temperature	(see page 18-64)
31	Right-front tire pressure sensor low battery voltage	(see page 18-64)
32	Right-front tire pressure sensor transmission failure	(see page 18-65)
33	Left-front tire pressure sensor low battery voltage	(see page 18-64)
34	Left-front tire pressure sensor transmission failure	(see page 18-65)
35	Right-rear tire pressure sensor low battery voltage	(see page 18-64)
36	Right-rear tire pressure sensor transmission failure	(see page 18-65)
37	Left-rear tire pressure sensor low battery voltage	(see page 18-64)
38	Left-rear tire pressure sensor transmission failure	(see page 18-65)
41	Abnormal signal reception error	(see page 18-69)
45	Initiator circuit short detection	(see page 18-70)
51	Right-front tire pressure sensor registration error	(see page 18-73)
53	Left-front tire pressure sensor registration error	(see page 18-73)
55	Right-rear tire pressure sensor registration error	(see page 18-73)
57	Left-rear tire pressure sensor registration error	(see page 18-73)
81	TPMS control unit failure	(see page 18-77)
83	No VSP signal	(see page 18-77)
85	F-CAN Communication failure	(see page 18-78)
91	Right-front tire pressure sensor internal error	(see page 18-79)
93	Left-front tire pressure sensor internal error	(see page 18-79)
95	Right-rear tire pressure sensor internal error	(see page 18-79)
97	Left-rear tire pressure sensor internal error	(see page 18-79)

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Low tire pressure and tire indicators do not come on, and no DTCs are stored	Symptom Troubleshooting (see page 18-80)	
Low tire pressure and tire indicators do not go off, and no DTCs are stored	Symptom Troubleshooting (see page 18-81)	
TPMS indicator does not come on, and no DTCs are stored	Symptom Troubleshooting (see page 18-82)	
TPMS indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see page 18-83)	

System Description

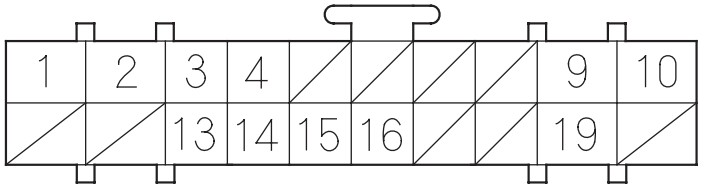
TPMS Control Unit Inputs and Outputs for Connector A (14P)



Wire side of female terminals

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Measurement		
				Terminal	Conditions	Voltage
1	RED/WHT	+B (Battery positive)	Power source for the TPMS control unit	1—GND	At all times	Battery voltage
3	BLK	GND (Ground)	Ground for the TPMS control unit	3—GND	At all times	Less than 0.1 V
5	YEL	IG1 (Ignition 1)	Power source for activating the system	5—GND	Ignition switch ON (II)	Battery voltage
					Ignition switch OFF	Less than 0.1 V
8	YEL/BLU	LF LF PWR. (LF low frequency power)	Power source for the left-front initiator	8—GND	For 5 seconds with ignition switch ON (II)	About 7 V
					After 5 seconds with ignition switch ON (II)	———
9	BLU	RF LF PWR. (RF low frequency power)	Power source for the right-front initiator	9—GND	For 5 seconds with ignition switch ON (II)	About 7 V
					After 5 seconds with ignition switch ON (II)	———
10	GRN/BLU	LR LF PWR. (LR low frequency power)	Power source for the left-rear initiator	10—GND	For 5 seconds with ignition switch ON (II)	About 7 V
					After 5 seconds with ignition switch ON (II)	———
11	BLU	RR LF PWR. (RR low frequency power)	Power source for the right-rear initiator	11—GND	For 5 seconds with ignition switch ON (II)	About 7 V
					After 5 seconds with ignition switch ON (II)	———

TPMS Control Unit Inputs and Outputs for Connector B (20P)



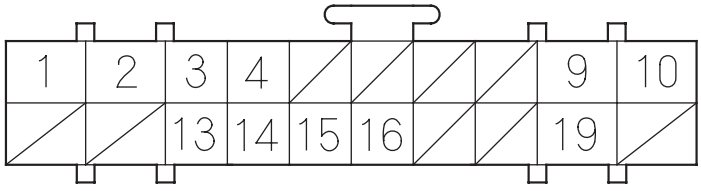
Wire side of female terminals

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Measurement		
				Terminal	Conditions	Voltage
1	GRY/YEL	RF LF SIG. (RF low frequency signal)	Detects the signal from the right-front initiator	1—GND	For the first 5 seconds after turning the ignition switch ON (II)	Pulses 0—2 V
					With ignition switch ON (II) for more than 5 seconds	Less than 0.1 V
2	GRY/YEL	RR LF SIG. (RR low frequency signal)	Detects the signal from the right-rear initiator	2—GND	For the first 5 seconds after turning the ignition switch ON (II)	Pulses 0—2 V
					With ignition switch ON (II) for more than 5 seconds	Less than 0.1 V
3	ORN	LF LF SIG. (LF low frequency signal)	Detects the signal from the left-front initiator	3—GND	For the first 5 seconds after turning the ignition switch ON (II)	Pulses 0—2 V
					With ignition switch ON (II) for more than 5 seconds	Less than 0.1 V
4	PNK/BLK	LR LF SIG. (LR low frequency signal)	Detects the signal from the left-rear initiator	4—GND	For the first 5 seconds after turning the ignition switch ON (II)	Pulses 0—2 V
					With ignition switch ON (II) for more than 5 seconds	Less than 0.1 V
9	LT BLU	K-LINE (Data link connector)	Communications with HDS	———	———	———
10	RED	CAN L (CAN communication signal low)	Sends the communication signal	———	Ignition switch ON (II)	Pulses

(cont'd)

System Description (cont'd)

TPMS Control Unit Inputs and Outputs for Connector B (20P)



Wire side of female terminals

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Measurement		
				Terminal	Conditions	Voltage
13	GRN	LF LF GND (LF low frequency ground)	Ground for the left-front initiator	13—GND	Ignition switch ON (II)	Less than 0.1 V
14	RED/BLK	RF LF GND (RF low frequency ground)	Ground for the right-front initiator	14—GND	Ignition switch ON (II)	Less than 0.1 V
15	YEL/GRN	LR LF GND (LR low frequency ground)	Ground for the left-rear initiator	15—GND	Ignition switch ON (II)	Less than 0.1 V
16	RED/ORN	RR LF GND (RR low frequency ground)	Ground for the right-rear initiator	16—GND	Ignition switch ON (II)	Less than 0.1 V
19	WHT	CAN H (CAN communication signal high)	Sends the communication signal	———	Ignition switch ON (II)	Pulses

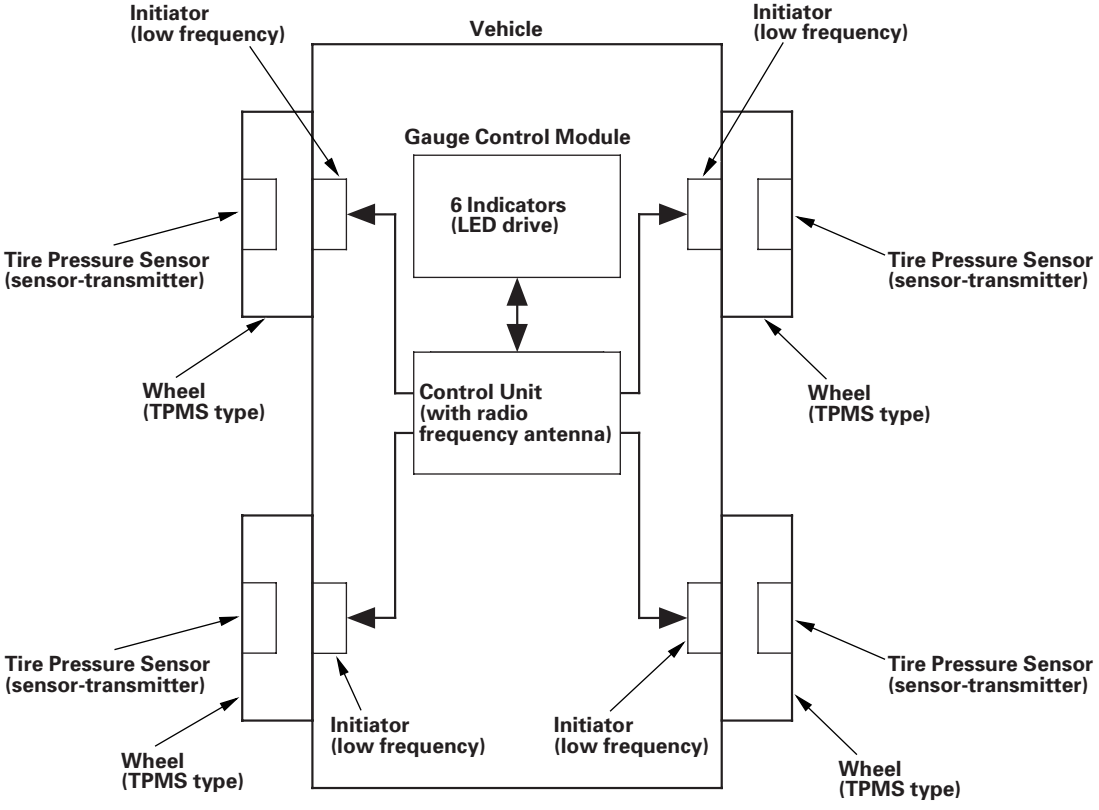
System Structure

Whenever the engine is running, the TPMS control unit continuously monitors all four tires and the system. If it detects low pressure in a tire, it alerts the driver by turning on the low pressure indicator and the appropriate tire indicator. If it detects a problem in the system, it turns on the TPMS indicator.

Initiators
Mounted on each wheel well, each initiator sends a start/stop signal to the tire pressure sensor in the tire below it.

Control unit
Mounted in the lower dash on the driver's side, the control unit sends signals to the initiators and receives signals from them to verify the pressure sensor IDs every time the engine starts. It also receives signals from the transmitters in the tire pressure sensors, and it continuously monitors and controls the system.

Indicators
Six indicators are in the gauge control module: The low tire pressure indicator, four tire indicators to show which tire is affected, and the TPMS indicator that comes on only if there's a problem with the system. When two or more tire pressures are low, the low tire pressure indicator comes on about 5 seconds before the appropriate tire indicator. Once low pressure is detected, the system scans all four pressure sensors to ensure that it turns on the correct tire indicator.



(cont'd)

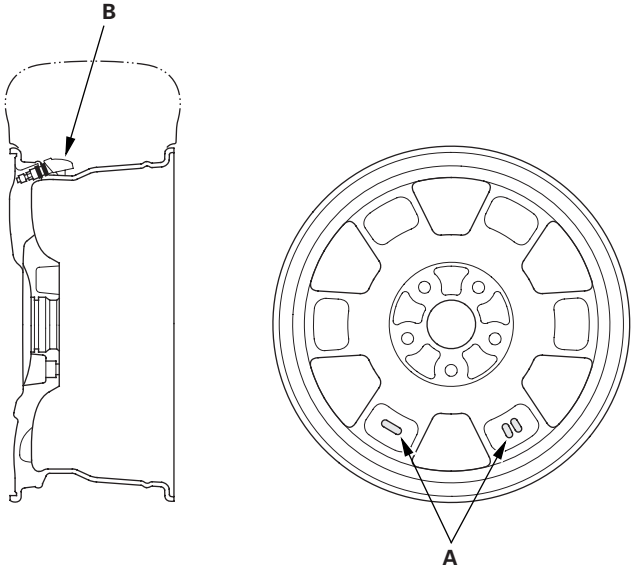
System Description (cont'd)

Tire pressure sensor
Each sensor is an integrated unit made up of the tire valve stem, a pressure sensor, and a transmitter. The unit is attached to the inside of the wheel, around the valve stem. The sensor transmits the tire pressure to the control unit when tire pressure is less than 168 kPa (1.7 kgf/cm^2, 24 psi). The control unit then turns on the low tire pressure indicator and the appropriate tire indicator(s). When that tire's pressure is increased to more than 198 kPa (2.0 kgf/cm^2, 29 psi), the transmitter sends tire pressure to the control unit, and then the control unit turns the indicators off.

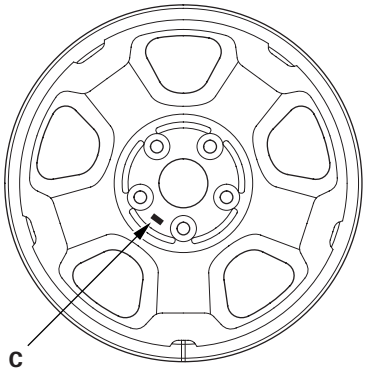
Wheels
TPMS will not work unless TPMS type wheels are installed on the vehicle. The original equipment wheels have these details:

- Aluminum wheel: The wheels have counterweights (A) on the opposite side of the spoke to balance the weight of the tire pressure sensor (B).
- Steel wheel: The wheels have a ''SJC'' stamp (C) on the outside of the flange ribs.

Aluminum wheel



Steel wheel

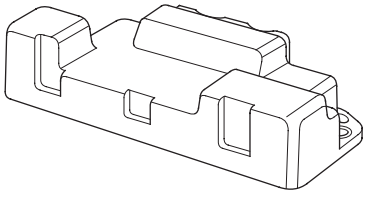


System Communication

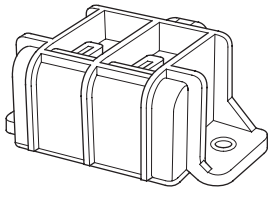
- When the vehicle is running, an RF (radio frequency) band wave signal is continuously transmitted from each tire pressure sensor to the control unit.
- When the ignition switch is turned ON (II), the initiators send an LF (low frequency) band wave signal to the tire pressure sensors, switching them from sleep mode to normal function mode. When the ignition switch is turned OFF, the sensors switch from normal function mode back to sleep mode to extend their battery life.
- Each tire pressure sensor has its own ID to prevent jamming by similar systems on other vehicles. After memorizing all the sensor IDs, the control unit receives only those specific signals.
- An ID can be memorized manually or automatically. Each initiator is hardwired to the control unit. Every time the ignition is turned ON (II), the control unit asks each initiator for a sensor ID. The initiators then transmit the sensor IDs, and the control unit receives and memorizes them. The control unit then knows which ID belongs to each tire location. This recurring ID confirmation prevents any confusion in the system as a result of normal tire rotation.

NOTE: Be careful not to bend the brackets on the TPMS control unit and front initiators: Misalignment of the control unit and initiators could interfere with sending and receiving signals.

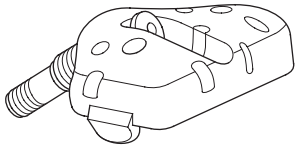
Control Unit
(with Radio Frequency Antenna)



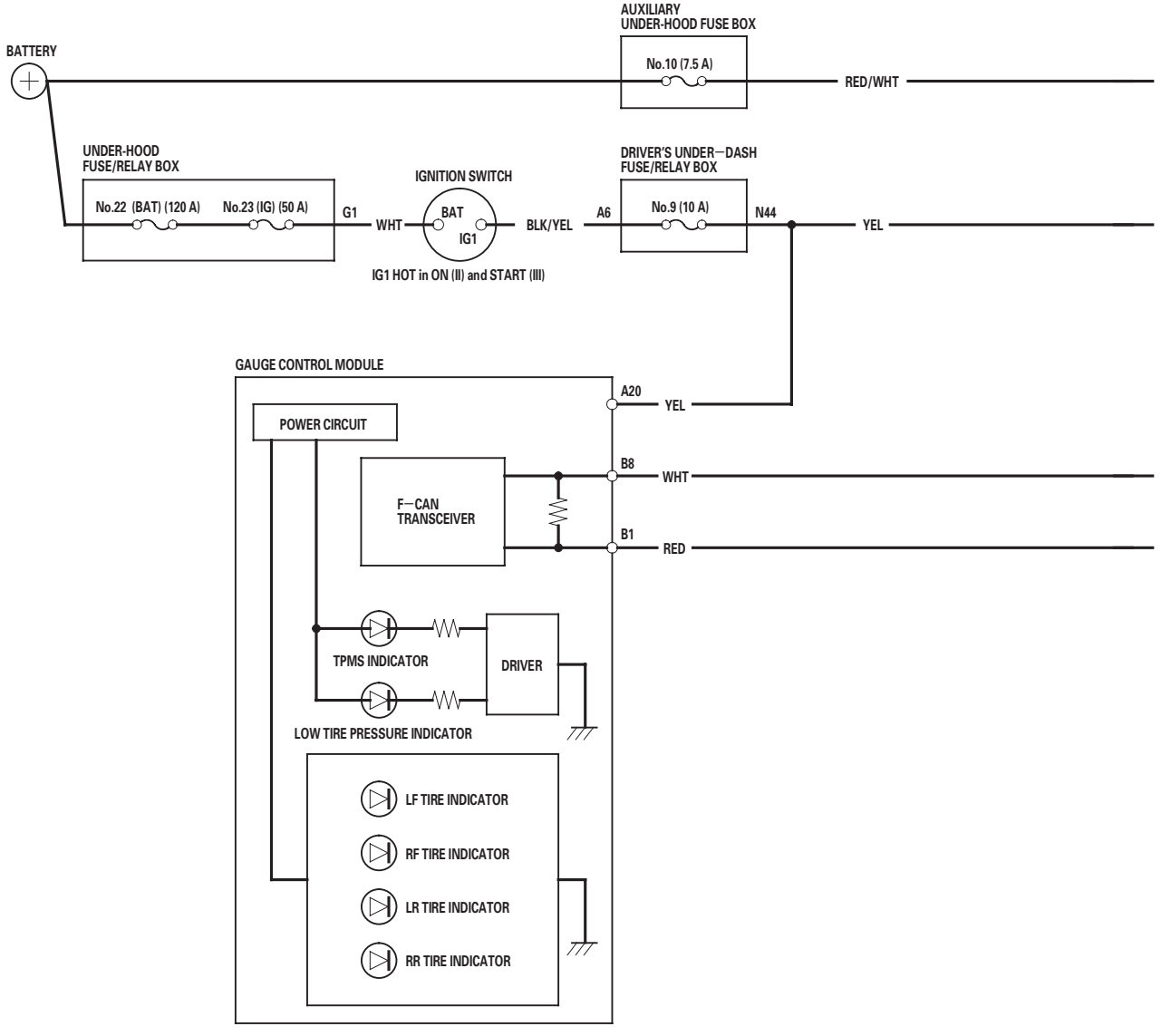
Initiator
(Low Frequency Initiator)

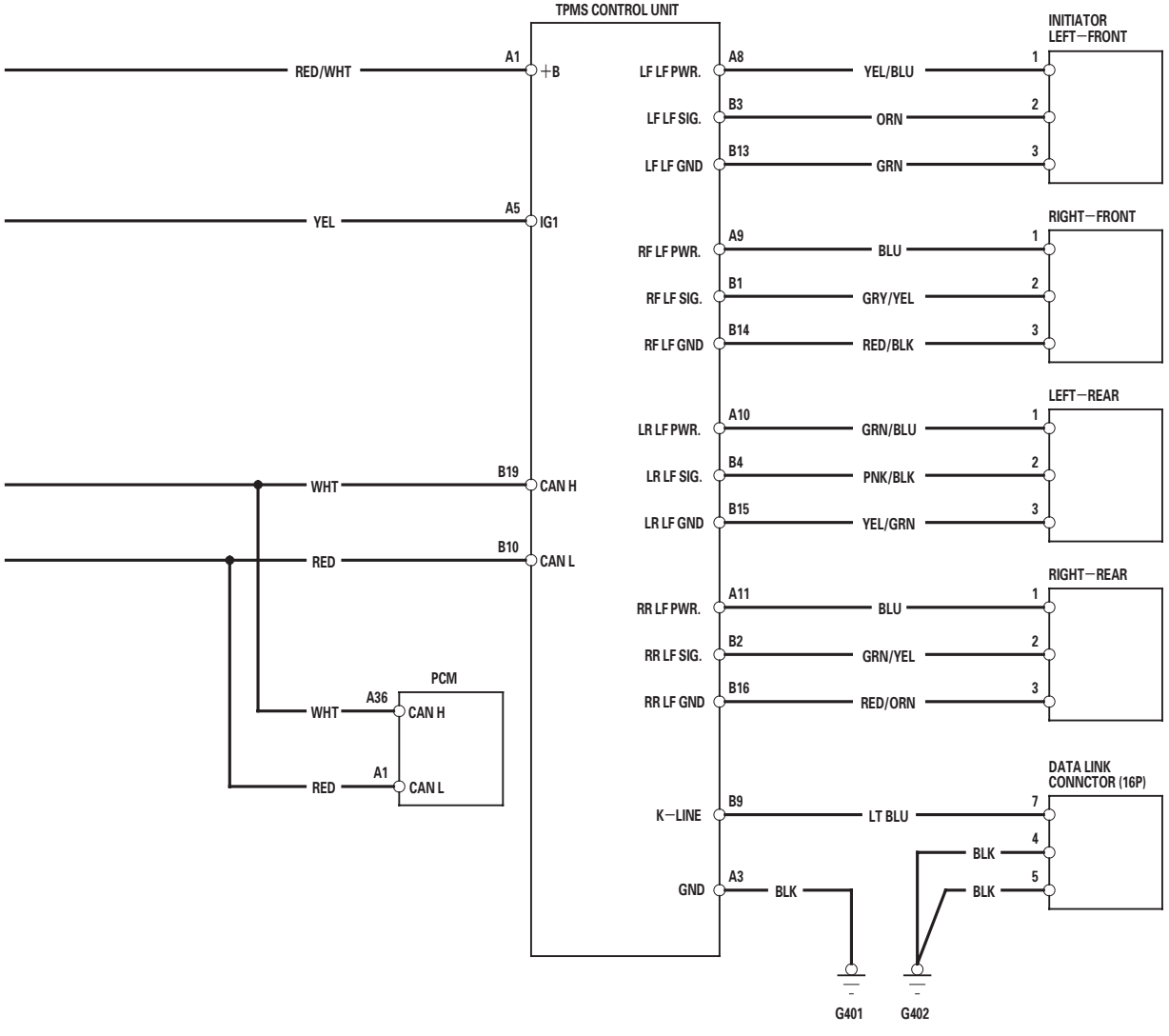


Tire Pressure Sensor
(Sensor-transmitter)



Circuit Diagram

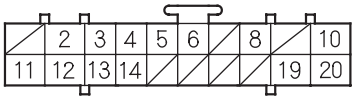



TPMS CONTROL UNIT
RED/WHT
A1
+B
YEL
A5
IG1
WHT
B19
CAN H
RED
B10
CAN L
PCM
WHT
A36
CAN H
RED
A1
CAN L
LF LF PWR.
A8
YEL/BLU
LF LF SIG.
B3
ORN
LF LF GND
B13
GRN
INITIATOR
LEFT—FRONT
1
2
3
RF LF PWR.
A9
BLU
RF LF SIG.
B1
GRY/YEL
RF LF GND
B14
RED/BLK
RIGHT—FRONT
LR LF PWR.
A10
GRN/BLU
LR LF SIG.
B4
PNK/BLK
LR LF GND
B15
YEL/GRN
LEFT—REAR
RR LF PWR.
A11
BLU
RR LF SIG.
B2
GRN/YEL
RR LF GND
B16
RED/ORN
RIGHT—REAR
K—LINE
B9
LT BLU
DATA LINK
CONNCTOR (16P)
7
4
BLK
GND
A3
BLK
5
BLK
G401
G402

(cont'd)

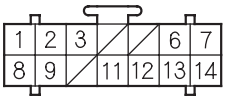
Circuit Diagram (cont'd)

GAUGE CONTROL MODULE CONNECTOR A (20P)



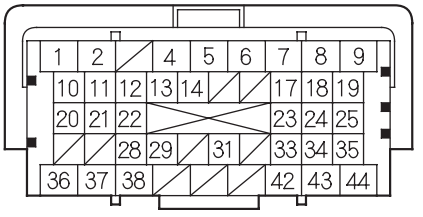
Wire side of female terminals

GAUGE CONTROL MODULE CONNECTOR B (14P)



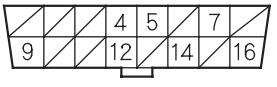
Wire side of female terminals

PCM CONNECTOR A (44P)



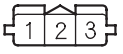
Terminal side of female terminals

DATA LINK CONNECTOR (16P)



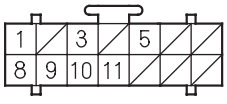
Terminal side of female terminals

INITIATOR CONNECTOR (3P)



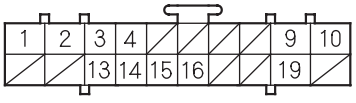
Wire side of female terminals

TPMS CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

TPMS CONTROL UNIT CONNECTOR B (20P)



Wire side of female terminals

DTC Troubleshooting

DTC 11, 13, 15, 17: Low Air Pressure

NOTE: If low tire pressure is detected, the control unit will set one or more of these DTCs, and turn on the low pressure indicator and the appropriate tire indicator(s). If the low pressure and tire indicators come on due to true low tire pressure, and the customer corrects it before bringing the vehicle in, the DTCs will have been stored, but all the indicators will be off.

1. Turn the ignition switch ON (II).
2. Check which tire indicator is on.

   NOTE: If no tire indicators are on, retrieve the DTCs with the HDS.

DTC	Tire location
11	Right-front
13	Left-front
15	Right-rear
17	Left-rear

3. Turn the ignition switch OFF.
4. Check the pressure of the indicated tire.

   Is there 168 kPa (1.7 kgf/cm^2, 24 psi) or less?

   YES—Go to step 5.

   NO—Go to step 7.

5. Check for and repair the cause of air loss, and then inflate the tire (see page 18-5).
6. Turn the ignition switch ON (II).

   Do the tire indicators go off within one minute?

   YES—The system is OK at this time. Clear the DTC with the HDS. ■

   NO—Go to step 7.

7. Check the tire pressure of the appropriate tire with the HDS.

   NOTE: If the HDS screen shows not UNDEFINED for sensor status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If UNDEFINED is still shown, repeat the procedure in the previous sentence until NORMAL is shown.

   Is the indicated tire pressure on the HDS within 40 kPa (0.4 kgf/cm^2, 6 psi) of the actual tire pressure?

   YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-84), and recheck. ■

   NO—Check that the tire-pressure sensor is properly mounted. Replace the appropriate tire pressure sensor (see page 18-86). ■

DTC Troubleshooting (cont'd)

DTC 21, 22, 23, 24: Tire Pressure Sensor Abnormally High Temperature

1. Make sure the tires have cooled down.

2. Turn the ignition switch ON (II).

3. Check the tire indicated by the DTCs you retrieved.

   NOTE: An abnormal rise in the internal temperature of the tires can be caused by:
   - Excessive braking
   - Failure to release the parking brake (rear tires only)
   - Leaving the vehicle running while parked
   - Improper assembly of a wheel and tire

DTC	Tire location
21	Right-front
22	Left-front
23	Right-rear
24	Left-rear

4. Turn the ignition switch ON (II).

   Does the TPMS indicator go off within one minute?

   YES—The system is OK at this time. Clear the DTC with the HDS. ■

   NO—Go to step 5.

5. Read the internal temperature of the tire with the HDS.

   NOTE: If the HDS screen shows UNDEFINED for sensor status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If UNDEFINED is still shown, repeat the procedure in the previous sentence until NORMAL is shown.

   Is 176 °F (80 °C) or more indicated?

   YES—Replace the appropriate tire pressure sensor (see page 18-86). ■

   NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-84), and recheck. ■

DTC 31, 33, 35, 37: Tire Pressure Sensor Low Battery Voltage

NOTE: This problem occurs when the temperature around the sensor is —40 °F (—40 °C) or less. Note that the diagnosis must be made in a place where ambient temperature is —4 °F (—20 °C) or more.

1. Turn the ignition switch ON (II).

   Does the TPMS indicator go off within one minute?

   YES—The system is OK at this time. Clear the DTC with the HDS. ■

   NO—Go to step 2.

2. Check the FR, FL, RR, or RL in the TPMS DATA LIST with the HDS.

   NOTE: If the HDS screen shows UNDEFINED for sensor status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If UNDEFINED is still shown, repeat the procedure in the previous sentence until NORMAL is shown.

DTC	Tire location
31	Right-front
33	Left-front
35	Right-rear
37	Left-rear

   Is LOW indicated?

   YES—Replace the appropriate tire pressure sensor (see page 18-86). ■

   NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-84), and recheck. ■

DTC 32, 34, 36, 38: Tire Pressure Sensor Transmission Failure

NOTE:
- Inspect for an aftermarket device interfering with the RF signal from the sensors when turning the ignition switch ON (II).
- Vehicle must be driven for 3 minutes at 15 mph (24 km/h) or more for DTC 32, 34, 36, or 38 to set.

1. Check the indicated location to make sure the wheel is a TPMS type with the tire pressure sensor.

DTC	Tire location
32	Right-front
34	Left-front
36	Right-rear
38	Left-rear

Is a TPMS type wheel with a tire pressure sensor mounted on the vehicle?

YES—Go to step 4.

NO—Go to step 2.

2. Install a known-good TPMS wheel.

3. To memorize the sensor ID, drive the vehicle above 15 mph (24 km/h) for 40 continuous seconds, or memorize the ID with the HDS (see page 18-51).

4. Test-drive the vehicle.

5. Check the VSP in the TPMS DATA LIST with the HDS.

Is the vehicle speed indicated?

YES—Go to step 9.

NO—Go to step 6.

6. Turn the ignition switch OFF.

7. Turn the ignition switch ON (II).

8. Check for DTCs with the HDS.

Is DTC 85 indicated?

YES—Go to the DTC 85 troubleshooting (see page 18-78). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-84), and recheck. ■

9. Turn the ignition switch OFF.

10. Turn the ignition switch ON (II).

11. With the HDS, check the indicated tire for the tire sensor status changing to normal.

NOTE: If the HDS screen shows UNDEFINED for sensor status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If UNDEFINED is still shown, repeat the procedure in the previous sentence until NORMAL is shown.

DTC	Tire location
32	Right-front
34	Left-front
36	Right-rear
38	Left-rear

Is NORMAL indicated within one full turn of the tire?

YES—The system is OK at this time. Clear the DTC with the HDS. ■

NO—Go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.

13. Install a wheel with a known-good tire pressure sensor on the vehicle.

14. To memorize the sensor ID, drive the vehicle above 15 mph (24 km/h) for 40 continuous seconds, or memorize the ID with the HDS (see page 18-51).

15. Turn the ignition switch OFF.

16. Turn the ignition switch ON (II).

17. With the HDS, check the indicated tire for a normal pressure sensor signal.

    NOTE: If the HDS screen shows UNDEFINED for sensor status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If UNDEFINED is still shown, repeat the procedure in the previous sentence until NORMAL is shown.

DTC	Tire location
32	Right-front
34	Left-front
36	Right-rear
38	Left-rear

Is NORMAL indicated within one full turn of the tire?

YES—Replace the tire pressure sensor on the customer's wheel (see page 18-86). ■

NO—Go to step 18.

18. Turn the ignition switch OFF.

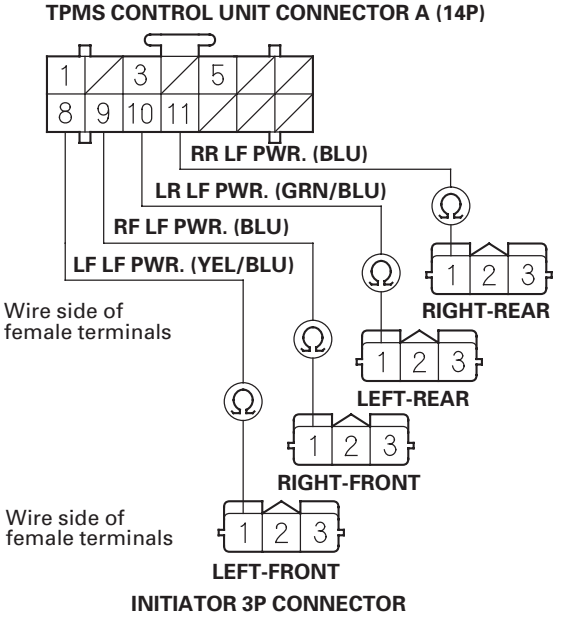
19. Disconnect the appropriate initiator 3P connector.

DTC	Initiator location
32	Right-front
34	Left-front
36	Right-rear
38	Left-rear

20. Disconnect the TPMS control unit connector A (14P) and B (20P).

21. Check for continuity between the appropriate terminal in TPMS control unit connector B (14P) and the appropriate initiator 3P connector terminal No. 1 (see table).

DTC	TPMS control unit terminal	Initiator name/ terminal
32	No. 9	RIGHT-FRONT/1
34	No. 8	LEFT-FRONT/1
36	No. 11	RIGHT-REAR/1
38	No. 10	LEFT-REAR/1



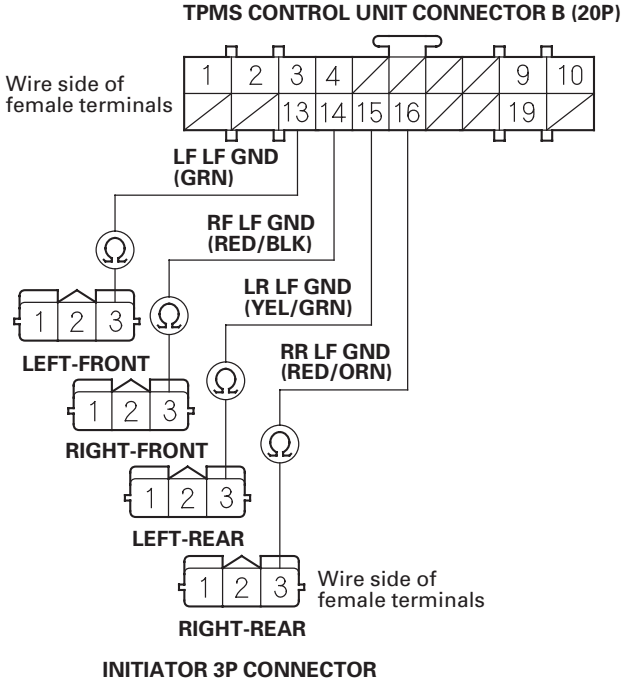
Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

22. Check for continuity between the appropriate terminal in TPMS control unit connector B (20P) and appropriate initiator 3P connector terminal No. 3 (see table).

DTC	TPMS control unit terminal	Initiator name/ terminal No.
32	No. 14	RIGHT-FRONT/3
34	No. 13	LEFT-FRONT/3
36	No. 16	RIGHT-REAR/3
38	No. 15	LEFT-REAR/3



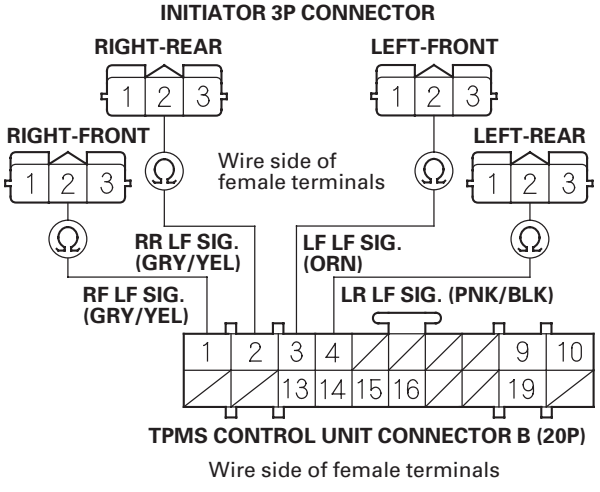
Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

23. Check for continuity between the appropriate terminal in TPMS control unit connector B (20P) and appropriate initiator 3P connector terminal No. 2 (see table).

DTC	TPMS control unit terminal	Initiator name/ terminal No.
32	No. 1	RIGHT-FRONT/2
34	No. 3	LEFT-FRONT/2
36	No. 2	RIGHT-REAR/2
38	No. 4	LEFT-REAR/2



Is there continuity?

YES—Go to step 24.

NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

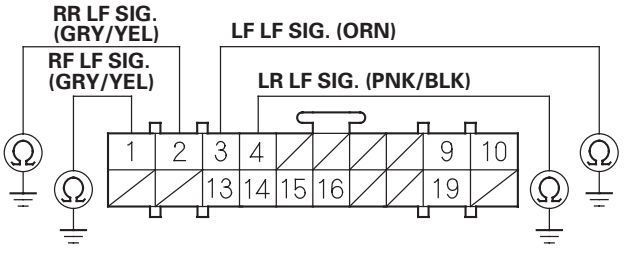
(cont'd)

DTC Troubleshooting (cont'd)

24. Check for continuity between body ground and the appropriate TPMS control unit connector B (20P) terminal (see table).

DTC	TPMS control unit terminal
32	No. 1
34	No. 3
36	No. 2
38	No. 4

TPMS CONTROL UNIT CONNECTOR B (20P)



Wire side of female terminals

Is there continuity?

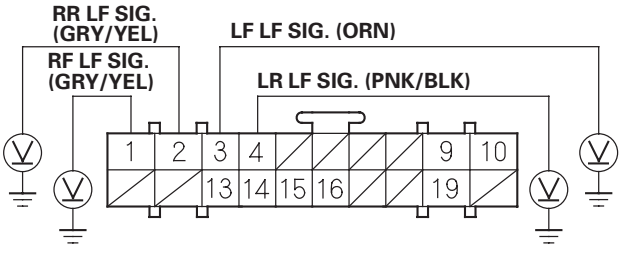
YES—Repair short to body ground in the wire between the TPMS control unit and the appropriate initiator. ■

NO—Go to step 25.

25. Measure the voltage between body ground and the appropriate TPMS control unit connector B (20P) terminal (see table).

DTC	TPMS control unit terminal
32	No. 1
34	No. 3
36	No. 2
38	No. 4

TPMS CONTROL UNIT CONNECTOR B (20P)



Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the TPMS control unit and the appropriate initiator. ■

NO—Replace the appropriate initiator (see page 18-85). ■

DTC 41: Abnormal Signal Reception Error

NOTE: Inspect for an aftermarket device interfering with the RF signal from the sensors when turning the ignition switch ON (II).

1. Check all four wheels to make sure they are the TPMS type with the tire pressure sensor.

   Is each wheel a TPMS type with a tire pressure sensor mounted on the vehicle?

   YES—Go to step 4.

   NO—Go to step 2.

2. Install known-good TPMS wheel(s).

3. To memorize the sensor ID(s), drive the vehicle above 15 mph (24 km/h) for 40 continuous seconds, or memorize the ID(s) with the HDS (see page 18-51).

4. Test-drive the vehicle.

5. Check the VSP in the TPMS DATA LIST with the HDS.

   Is the vehicle speed indicated?

   YES—Go to step 9.

   NO—Go to step 6.

6. Turn the ignition switch OFF.

7. Turn the ignition switch ON (II).

8. Check for DTCs with the HDS.

   Is DTC 85 indicated?

   YES—Go to the DTC 85 troubleshooting (see page 18-78). ■

   NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-84), and recheck. ■

9. Turn the ignition switch OFF.

10. Turn the ignition switch ON (II).

11. Check TPMS DATA LIST for LF, RF, LR, RR sensor status changing to ''NORMAL''.

    NOTE: If the HDS screen shows UNDEFINED for sensor status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If UNDEFINED is still shown, repeat the procedure in the previous sentence until NORMAL is shown.

    Is NORMAL indicated within one full turn of the tire?

    YES—The system is OK at this time. Clear the DTC with the HDS. ■

    NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-84), and recheck. ■

DTC Troubleshooting (cont'd)

DTC 45: Initiator Circuit Short Detection

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn the ignition switch ON (II) again.
4. Check for DTCs with the HDS.

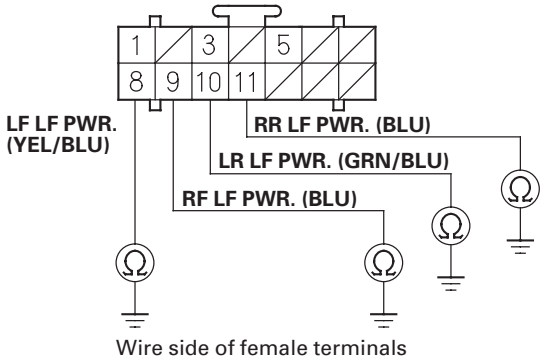
   Is DTC 45 indicated?

   YES—Go to step 5.

   NO—The system is OK at this time. ■
5. Turn the ignition switch OFF.
6. Disconnect the TPMS control unit connector A (14P) and B (20P).
7. Check for continuity between the appropriate terminal in TPMS control unit connector A (14P) and body ground (see table).

Terminal name	TPMS control unit terminal
RF LF PWR.	No. 9
LF LF PWR.	No. 8
RR LF PWR.	No. 11
LR LF PWR.	No. 10

TPMS CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

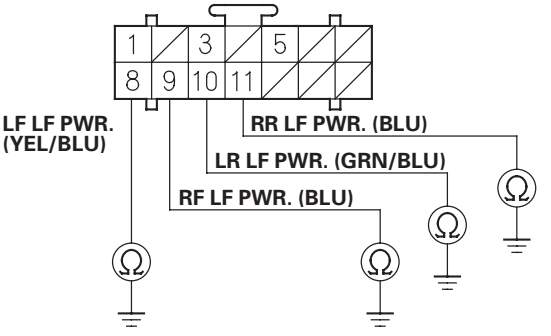
   Is there continuity?

   YES—Go to step 8.

   NO—Go to step 11.
8. Disconnect all four of the initiator 3P connectors.
9. Check for continuity between the appropriate terminal in TPMS control unit connector A (14P) and body ground (see table).

Terminal name	TPMS control unit terminal
RF LF PWR.	No. 9
LF LF PWR.	No. 8
RR LF PWR.	No. 11
LR LF PWR.	No. 10

TPMS CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

   Is there continuity?

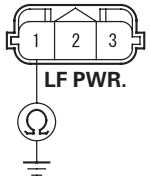
   YES—Repair short to body ground in the wire between the TPMS control unit and the initiators. ■

   NO—Go to step 10.

10. On each individual initiator, check for continuity between body ground and initiator 3P connector terminal No. 1.

    NOTE: Check the initiators when mounted on the vehicle.

INITIATOR 3P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Replace the appropriate initiator (see page 18-85). ■

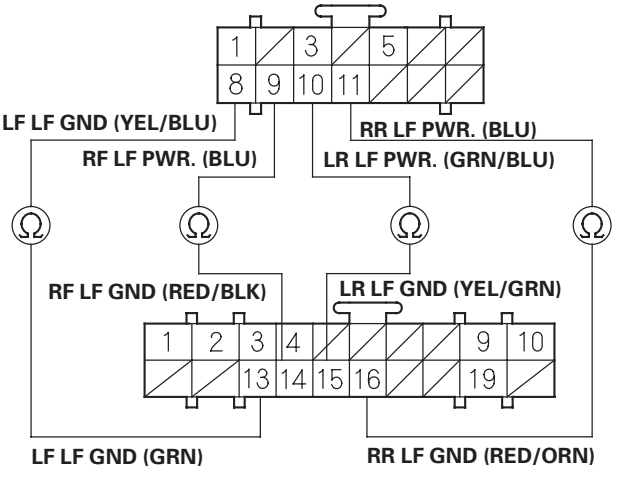
NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-84), and recheck. ■

11. Check for continuity between the appropriate terminal in TPMS control unit connector A (14P) and connector B (20P) terminals.

Tire location	TPMS control unit terminal name/No.	
	Connector A (14P)	Connector B (20P)
Right-front	RF LF PWR./9	RF LF GND/14
Left-front	LF LF PWR./8	LF LF GND/13
Right-rear	RR LF PWR./11	RR LF GND/16
Left-rear	LR LF PWR./10	LR LF GND/15

TPMS CONTROL UNIT CONNECTOR A (14P)

Wire side of female terminals



TPMS CONTROL UNIT CONNECTOR B (20P)

Wire side of female terminals

Is there continuity?

YES—Go to step 12.

NO—Go to step 15.

(cont'd)

DTC Troubleshooting (cont'd)

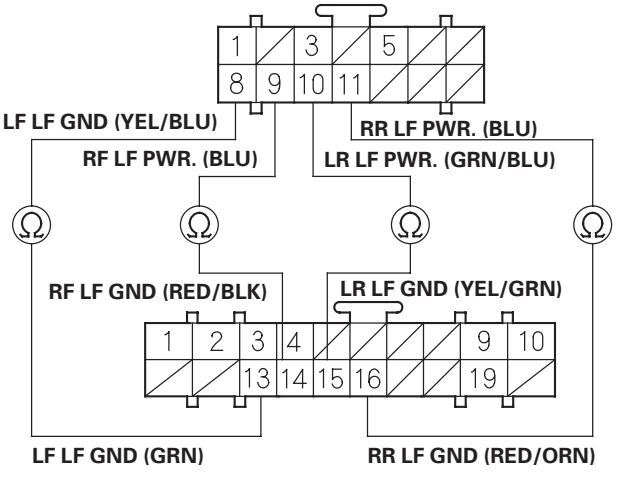
12. Disconnect all four the initiator 3P connectors.

13. Check for continuity between the appropriate terminal in TPMS control unit connector A (14P) and connector B (20P) terminals.

Tire location	TPMS control unit terminal name/No.	
	Connector A (14P)	Connector B (20P)
Right-front	RF LF PWR./9	RF LF GND/14
Left-front	LF LF PWR./8	LF LF GND/13
Right-rear	RR LF PWR./11	RR LF GND/16
Left-rear	LR LF PWR./10	LR LF GND/15

TPMS CONTROL UNIT CONNECTOR A (14P)

Wire side of female terminals



TPMS CONTROL UNIT CONNECTOR B (20P)

Wire side of female terminals

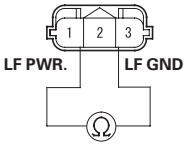
Is there continuity?

YES—Repair the short in the appropriate wire between the TPMS control unit and the initiator. ■

NO—Replace the initiator (see page 18-85). ■

14. On the initiator side, check for continuity between all four initiator 3P connector terminals No. 1 and No. 3 individually.

INITIATOR 3P CONNECTOR



Terminal side of male terminals

Is there continuity?

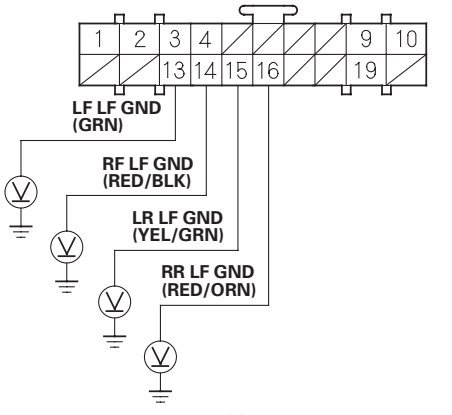
YES—Replace the appropriate initiator (see page 18-85). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-84), and recheck. ■

15. Turn the ignition switch ON (II).

16. Measure the voltage between the appropriate terminal in TPMS control unit connector B (20P) and body ground individually.

TPMS CONTROL UNIT CONNECTOR B (20P)



Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the TPMS control unit and the initiators. ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-84), and recheck. ■

DTC 51, 53, 55, 57: Tire Pressure Sensor Registration Error

NOTE: These DTCs will only set during initialization with the HDS.

1. Check the DTC indicated to the tire location to make sure the wheel is a TPMS type with the tire pressure sensor.

DTC	Tire location
51	Right-front
53	Left-front
55	Right-rear
57	Left-rear

Is a TPMS type wheel with a tire pressure sensor mounted on the vehicle?

YES—Go to step 7.

NO—Go to step 2.

2. Install a known-good TPMS wheel.
3. To memorize the sensor ID, drive the vehicle above 15 mph (24 km/h) for 40 continuous seconds, or memorize the ID with the HDS (see page 18-51).
4. Turn the ignition switch OFF.
5. Turn the ignition switch ON (II).
6. With the HDS, check the indicated tire for the normal sensor signal.

   NOTE: If the HDS screen shows UNDEFINED for sensor status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If UNDEFINED is still shown, repeat the procedure in the previous sentence until NORMAL is shown.

DTC	Tire location
51	Right-front
53	Left-front
55	Right-rear
57	Left-rear

Is NORMAL indicated within one full turn of the tire?

YES—The system is OK at this time. Clear the DTC with the HDS. ■

NO—Go to step 12.

7. Turn the ignition switch OFF.
8. Install a wheel with a known-good tire pressure sensor on the vehicle.
9. To memorize the sensor ID, drive the vehicle above 15 mph (24 km/h) for 40 continuous seconds, or memorize the ID with the HDS (see page 18-51).
10. Turn the ignition switch OFF.
11. Turn the ignition switch ON (II).

(cont'd)

DTC Troubleshooting (cont'd)

12. With the HDS, check the indicated tire for a normal pressure sensor signal.

    NOTE: If the HDS screen shows UNDEFINED for sensor status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If UNDEFINED is still shown, repeat the procedure in the previous sentence until NORMAL is shown.

DTC	Tire location
51	Right-front
53	Left-front
55	Right-rear
57	Left-rear

    Is NORMAL indicated within one full turn of the tire?

    YES—Replace the tire pressure sensor on the customer's wheel (see page 18-86). ■

    NO—Go to step 13.

13. Turn the ignition switch OFF.

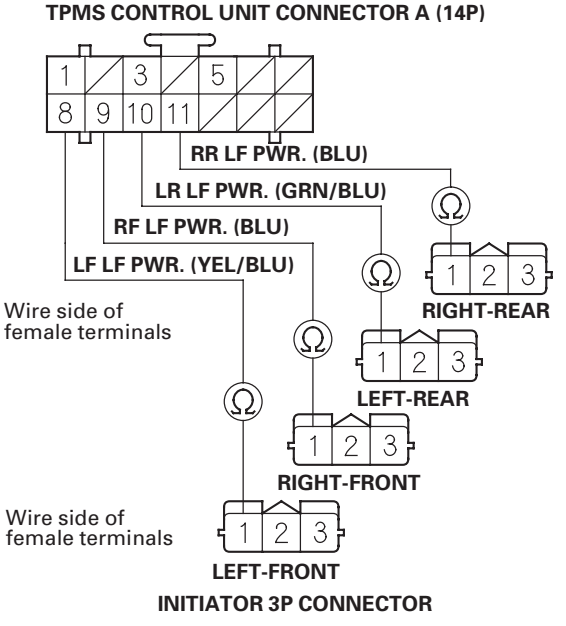
14. Disconnect the appropriate initiator 3P connector.

DTC	Initiator location
51	Right-front
53	Left-front
55	Right-rear
57	Left-rear

15. Disconnect the TPMS control unit connector A (14P) and B (20P).

16. Check for continuity between the appropriate terminal in TPMS control unit connector A (14P) terminal and appropriate initiator 3P connector terminal No. 1 (see table).

DTC	TPMS control unit terminal	Initiator name/ terminal No.
51	No. 9	RIGHT-FRONT/1
53	No. 8	LEFT-FRONT/1
55	No. 11	RIGHT-REAR/1
57	No. 10	LEFT-REAR/1



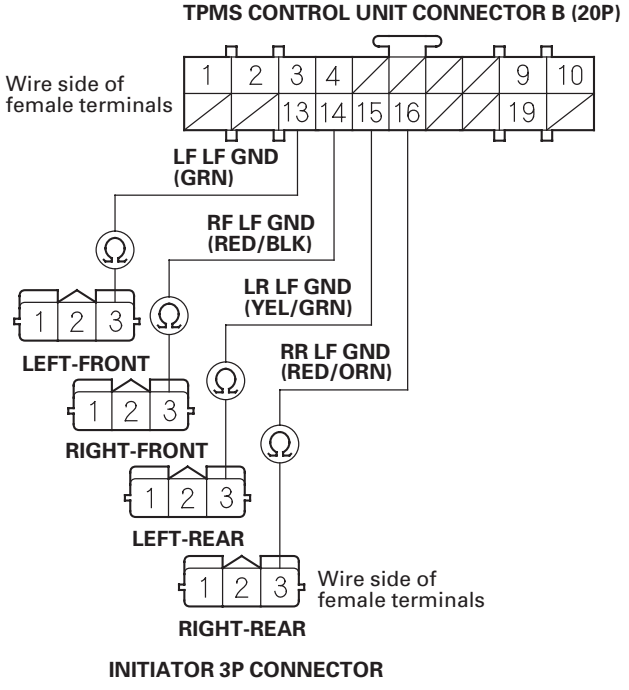
    Is there continuity?

    YES—Go to step 17.

    NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

17. Check for continuity between the appropriate terminal in TPMS control unit connector B (20P) and appropriate initiator 3P connector terminal No. 3 (see table).

DTC	TPMS control unit terminal	Initiator name/ terminal No.
51	No. 14	RIGHT-FRONT/3
53	No. 13	LEFT-FRONT/3
55	No. 16	RIGHT-REAR/3
57	No. 15	LEFT-REAR/3



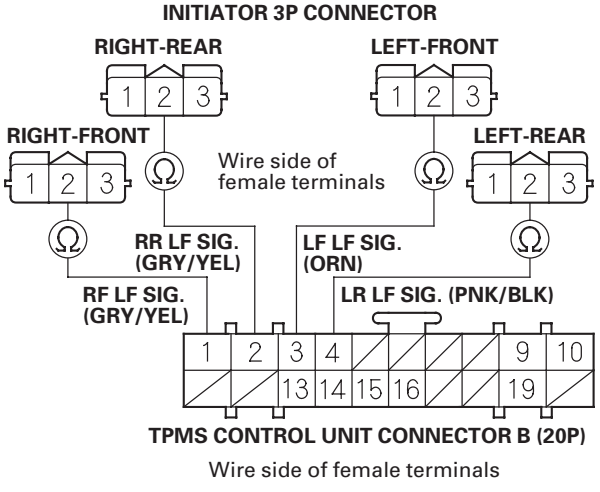
Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

18. Check for continuity between the appropriate terminal in TPMS control unit connector B (20P) and appropriate initiator 3P connector terminal No. 2 (see table).

DTC	TPMS control unit terminal	Initiator name/ terminal No.
51	No. 1	RIGHT-FRONT/2
53	No. 3	LEFT-FRONT/2
55	No. 2	RIGHT-REAR/2
57	No. 4	LEFT-REAR/2



Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the TPMS control unit and the appropriate initiator. ■

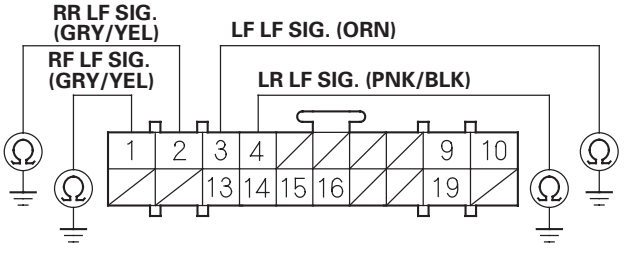
(cont'd)

DTC Troubleshooting (cont'd)

19. Check for continuity between body ground and the appropriate TPMS control unit connector B (20P) terminal (see table).

DTC	TPMS control unit terminal
51	No. 1
53	No. 3
55	No. 2
57	No. 4

TPMS CONTROL UNIT CONNECTOR B (20P)



Wire side of female terminals

Is there continuity?

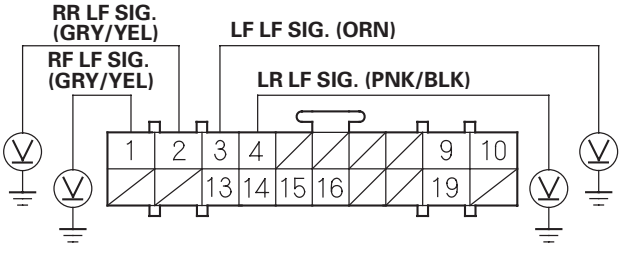
YES—Repair short to body ground in the wire between the TPMS control unit and the appropriate initiator. ■

NO—Go to step 20.

20. Measure the voltage between body ground and the appropriate TPMS control unit connector B (20P) terminal (see table).

DTC	TPMS control unit terminal
51	No. 1
53	No. 3
55	No. 2
57	No. 4

TPMS CONTROL UNIT CONNECTOR B (20P)



Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the TPMS control unit and the appropriate initiator. ■

NO—Repair the appropriate initiator (see page 18-85). ■

DTC 81: TPMS Control Unit Failure

NOTE: Low battery voltage can cause this DTC. Make sure the battery is fully charged and in good condition.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 81 indicated?

   YES—Replace the TPMS control unit (see page 18-84). ■

   NO—The system is OK at this time. ■

DTC 83: No VSP Signal

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.
4. Check for DTCs with the HDS.

   Is DTC 83 indicated?

   YES—Go to step 5.

   NO—The system is OK at this time. ■

5. Check for DTCs with the HDS.

   Is DTC 85 indicated?

   YES—Go to DTC 85 troubleshooting (see page 18-78). ■

   NO—Go to step 6.

6. Test-drive the vehicle.
7. Check the VEHICLE SPEED in the TPMS DATA LIST with the HDS.

   Is the vehicle speed indicated?

   YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-84), and recheck. ■

   NO—Go to step 8.

8. Check the speedometer.

   Does the speedometer register speed?

   YES—Replace the TPMS control unit (see page 18-84). ■

   NO—Substitute a known-good PCM (see page 11-8), and retest. If no codes are shown, replace the original PCM. ■

DTC Troubleshooting (cont'd)

DTC 85: F-CAN Communication Failure

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn the ignition switch ON (II) again.
4. Wait about 5 seconds.
5. Check for DTCs with the HDS.

   Is DTC 85 indicated?

   YES—Go to step 6.

   NO—The system is OK at this time. ■
6. Test-drive the vehicle.

   Does the speedometer work?

   YES—Go to step 10.

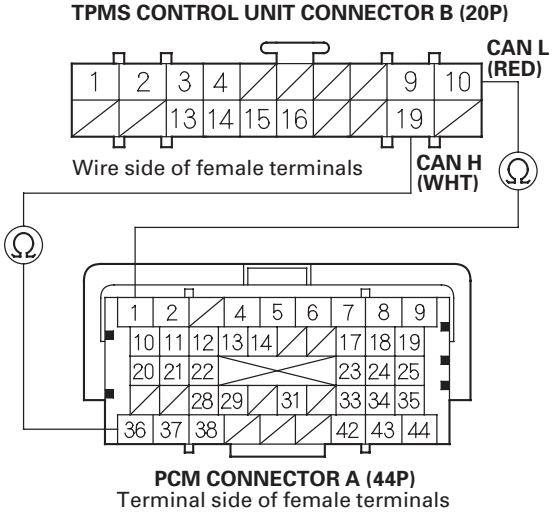
   NO—Go to step 7.
7. Turn the ignition switch OFF.
8. Disconnect the TPMS control unit connector B (20P).
9. Test-drive the vehicle.

   Does the speedometer work?

   YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-84), and recheck. ■

   NO—Turn the ignition switch OFF, and reconnect all connectors, then check and troubleshoot the fuel and emissions systems (see page 11-3). ■
10. Turn the ignition switch OFF.
11. Short the SCS line with the HDS.
12. Disconnect PCM connector A (44P).
13. Disconnect the TPMS control unit connector B (20P).
14. Check for continuity between the TPMS control unit connector B (20P) terminals and the PCM connector A (44P) terminals individually (see table).

Terminal name	TPMS control unit terminal	PCM A terminal
CAN L	No. 10	No. 1
CAN H	No. 19	No. 36



Is there continuity?

YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-84), and recheck. ■

NO—Repair open in the wire between the TPMS control unit and the PCM. ■

DTC 91, 93, 95, 97: Tire Pressure Sensor Internal Error

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Wait about 1 minute.
5. Check for DTCs with the HDS.

   NOTE: The tire pressure sensor of the appropriate wheel is shown.

DTC	Tire location
91	Right-front
93	Left-front
95	Right-rear
97	Left-rear

Is DTC 91, 93, 95 or 97 indicated?

YES—Replace the appropriate tire pressure sensor (see page 18-86). ■

NO—The system is OK at this time. ■

Symptom Troubleshooting

Low tire pressure and tire indicators do not come on, and no DTCs are stored

1. Turn the ignition switch ON (II), and watch the low pressure indicator and the tire indicators.

   Do the low tire pressure and indicators come on for at least 2 seconds?

   YES—Go to step 2.

   NO—Go to step 4.

2. Check the pressure in all four tires.

   Is the tire pressure 168 kPa (1.7 kgf/cm², 24 psi) or less?

   YES—Go to step 3.

   NO—The system is OK at this time. ■

3. Connect the HDS and read the pressure of the low tires.

   NOTE: If UNDEFINED is shown on sensor transmitter status, turn the ignition switch OFF, rotate the appropriate tire 1/4 turn, then turn the ignition switch ON (II), and try again. If there is still no response, repeat the procedure in the previous sentence until a response is shown.

   Is the tire pressure shown on the HDS monitor within 40 kPa (0.4 kgf/cm², 6 psi) of the actual tire pressure?

   YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit and recheck. ■

   NO—Replace the tire pressure sensor (see page 18-86). ■

4. Connect the HDS and select TPMS.

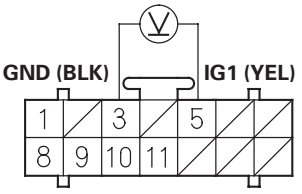
   Does the HDS communicate with the TPMS control unit?

   YES—Go to step 9.

   NO—Go to step 5.

5. Measure the voltage between the TPMS control unit connector A (14P) terminals No. 3 and No. 5.

   TPMS CONTROL UNIT CONNECTOR A (14P)



   Wire side of female terminals

   Is there battery voltage?

   YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit and recheck. ■

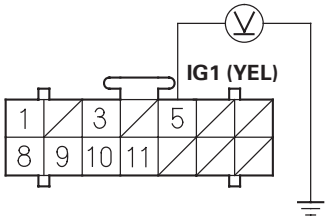
   NO—Go to step 6.

6. Turn the ignition switch OFF, then disconnect the TPMS control unit connector A (14P).

7. Turn the ignition switch ON (II).

8. Measure the voltage between the TPMS control unit connector A (14P) terminal No. 5 and body ground.

TPMS CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

Is there battery voltage?

YES—Repair the open in the ground wire between terminal No. 3 at the TPMS control unit and body ground. ■

NO—Check fuse No. 21 (7.5 A) in the under-dash fuse/relay box. If the fuse is OK, repair the open in the wire between the under-dash fuse/relay box and the TPMS control unit. ■

9. With the HDS, command the system to turn on each tire indicator and the low pressure indicator.

Does the low pressure and each tire indicator illuminate?

YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit and recheck. ■

NO—Do the input test for the gauge control module (see page 22-122). If necessary, substitute a known-good gauge control module and recheck. ■

Low tire pressure and tire indicators do not go off, and no DTCs are stored

1. Turn the ignition switch ON (II).

2. Command the system with the HDS to turn the TPMS indicators off.

Do the low tire pressure and tire indicators go off?

YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit and recheck. ■

NO—Go to step 3.

3. Turn the ignition switch OFF, then disconnect the gauge control module connector B (22P).

4. Turn the ignition switch ON (II), and watch the low pressure and tire indicators.

Do the low tire pressure and tire indicators go off?

YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit and recheck. ■

NO—Do the input test for the gauge control module (see page 22-122). If necessary, substitute a known-good gauge control module and recheck. ■

Symptom Troubleshooting (cont'd)

TPMS indicator does not come on, and no DTCs are stored

1. Turn the ignition switch ON (II), and watch the TPMS indicator.

   Does the TPMS indicator come on for at least 2 seconds?

   YES—The system is OK at this time. ■

   NO—Go to step 2.

2. Connect the HDS and select TPMS.

   Does the HDS communicate with the TPMS control unit?

   YES—Go to step 3.

   NO—Go to step 5.

3. Command the system with the HDS to turn the TPMS indicator on.

   Does the TPMS indicator come on?

   YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit and recheck. ■

   NO—Go to step 4.

4. Turn the ignition switch OFF, then turn the ignition switch ON (II) again and watch the low pressure and tire indicators.

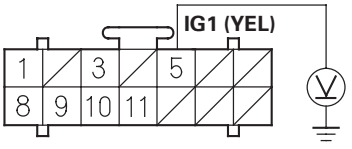
   Do the indicators come on for several seconds?

   YES—Substitute a known-good gauge control module and recheck. ■

   NO—Do the input test for the gauge control module (see page 22-122). If necessary, substitute a known-good gauge control module and recheck. ■

5. Measure the voltage between the TPMS control unit connector A (14P) terminal No. 5 and body ground.

TPMS CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

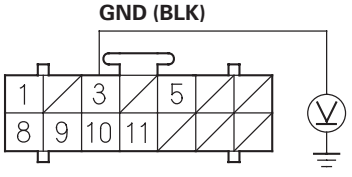
Is there battery voltage?

YES—Go to step 6.

NO—There is an open between the under-dash fuse/relay box fuse No. 21 (7.5 A) and the TPMS control unit. Check the No. 21 fuse (7.5 A). If the fuse is OK, repair the open in the YEL wire between the under-dash fuse/relay box and the TPMS control unit. ■

6. Measure the voltage between the TPMS control unit connector A (14P) terminal No. 3 and body ground.

TPMS CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

Is there more than 0.1 V?

YES—Repair the open in the wire between terminal No. 3 at the TPMS control unit and body ground. ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit and recheck. ■

TPMS indicator does not go off, and no DTCs are stored

1. Turn the ignition switch ON (II), and watch the TPMS indicator.

   Does the TPMS indicators come on for at least 2 seconds, then go off?

   YES—The system is OK at this time. ■

   NO—Go to step 2.

2. Turn the ignition switch OFF, then disconnect the TPMS control unit connector B (20P).

3. Turn the ignition switch ON (II), and watch the TPMS indicator.

   Does the TPMS indicator go off?

   YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit and recheck. ■

   NO—Go to step 4.

4. Turn the ignition switch OFF, then disconnect the gauge control module connector B (22P).

5. Turn the ignition switch ON (II), and watch the TPMS indicator.

   Does the TPMS indicator go off?

   YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit and recheck. ■

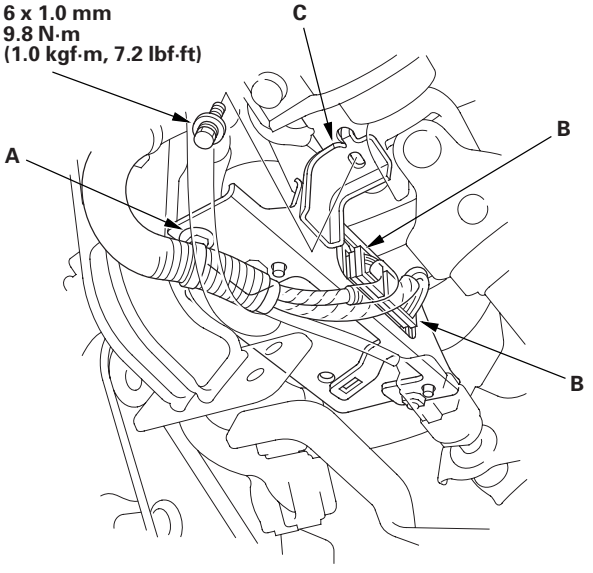
   NO—Do the input test for the gauge control module (see page 22-122). If necessary, substitute a known-good gauge control module and recheck. ■

TPMS Control Unit Replacement

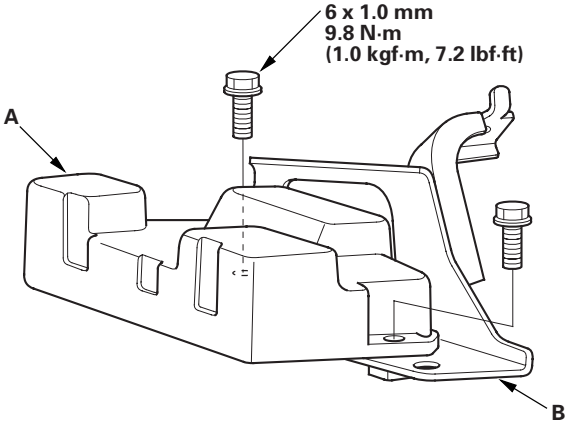
NOTE: Make sure the TPMS control unit mounting bracket is not bent or twisted as this may affect its communication with the initiators and the tire pressure sensors.

1. Make sure the ignition switch is OFF.
2. Remove the clip (A), and disconnect the TPMS control unit connectors (B).

   NOTE: The TPMS control unit is located under the steering column.



3. Remove the TPMS control unit with the bracket (C).
4. Remove the TPMS control unit (A) from the bracket (B).



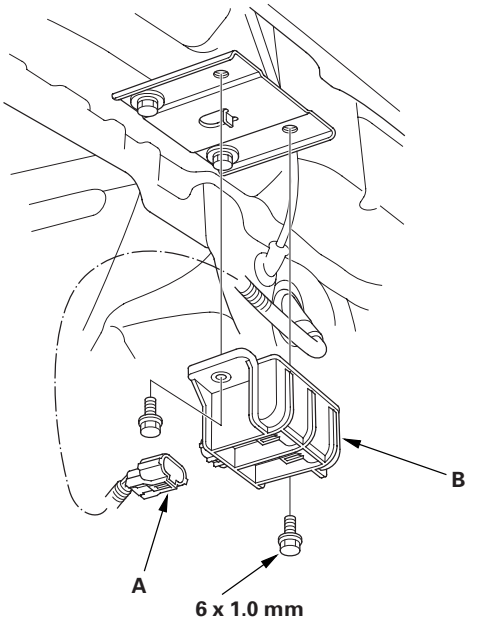
5. Install the TPMS control unit in the reverse order of removal.
6. Connect the HDS and memorize the pressure sensor IDs (see page 18-51). Do not memorize the IDs automatically.

Initiator Replacement

Front

NOTE: Make sure the initiator mounting bracket is not bent or twisted as this may affect its communication with the TPMS control unit and the tire pressure sensor.

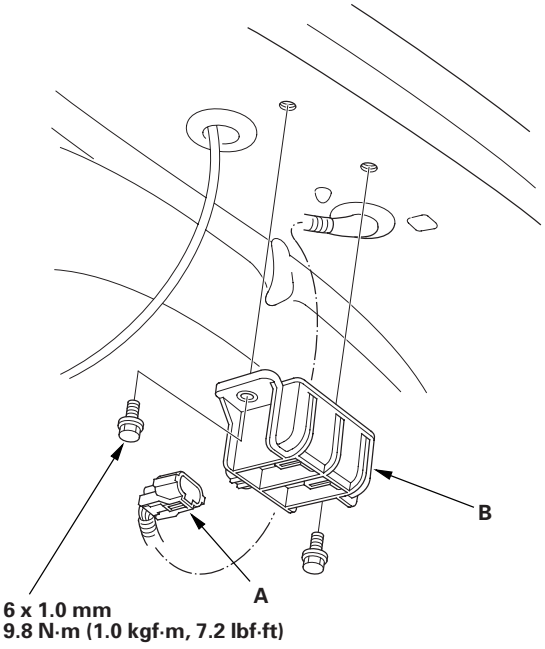
1. Make sure the ignition switch is OFF.
2. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-10).
3. Remove the front wheel.
4. Remove the front inner fender (see page 20-178).
5. Disconnect the initiator connector (A).



6. Remove the initiator (B) from the inner side of the wheel well.
7. Install the initiator in the reverse order of removal.

Rear

1. Make sure the ignition switch is OFF.
2. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-10).
3. Remove the rear wheel.
4. Remove the rear inner fender (see page 20-181).
5. Disconnect the initiator connector (A).



6. Remove the initiator (B) from the inner side of the wheel well.
7. Install the initiator in the reverse order of removal.

Tire Pressure Sensor Replacement

Removal

1. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-10).

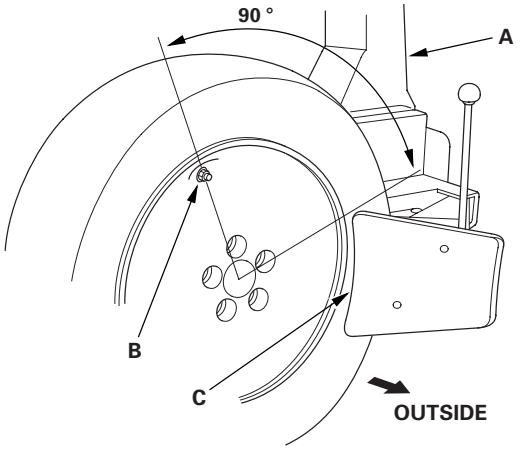
2. Remove the wheel with the faulty sensor.

3. Remove the tire valve cap and the valve core, and let the tire deflate.

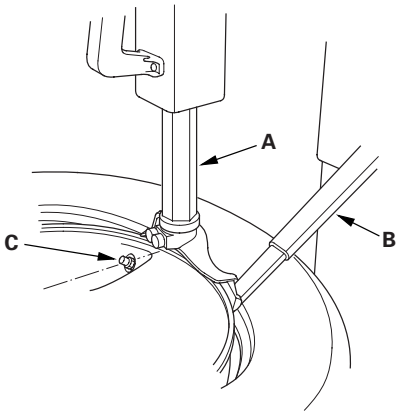
4. Remove any balance weights, and then break the bead loose from the wheel with a commercially available tire changer (A).

NOTICE

Note these items to avoid damaging the tire pressure sensor:
- Do the outside of the wheel first.
- Position the wheel as shown so the valve stem (B) is 90 degrees from the bead breaker (C) as shown.
- Do not position the bead breaker of the tire changer too close to the rim.

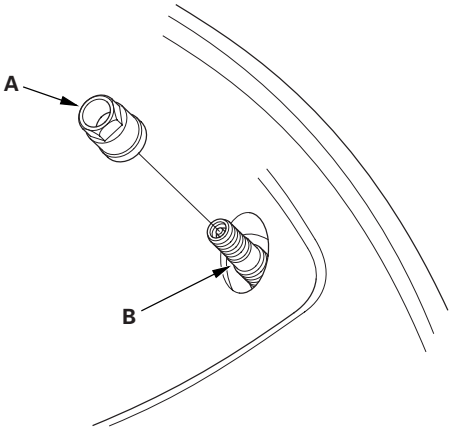


5. Position the wheel so the tire machine (A) and tire iron (B) are next to the valve stem (C) and will move away from it when the machine starts. Then remove the tire from the wheel.



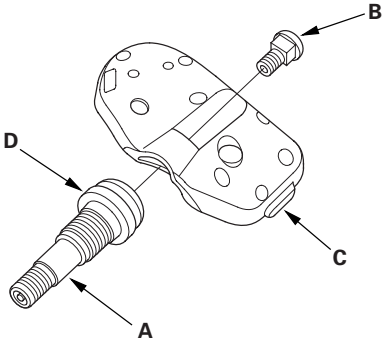
6. Remove and discard the valve stem nut (A), then remove the tire pressure sensor and valve stem (B) from the wheel.

NOTE: Use a new nut and a new valve stem on reassembly.



7. Remove and discard the valve stem (A), and the screw (B) from the tire pressure sensor (C).

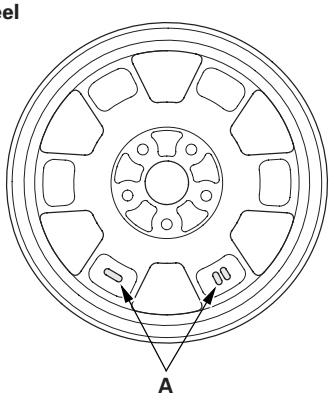
   NOTE: The valve stem grommet (D) might stay in the wheel; make sure you remove it.



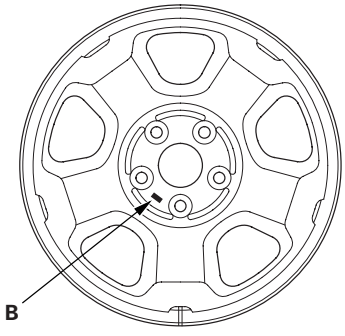
Installation

NOTE: Use only wheels that have counterweights (A) or a ''SJC'' stamp (B) on them.

Aluminum wheel

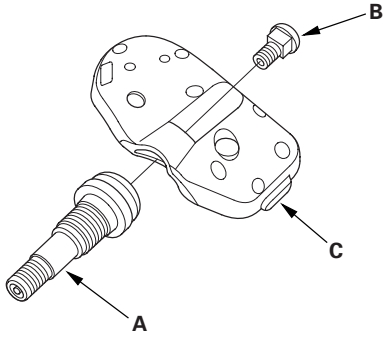


Steel wheel



1. Assemble the new valve stem (A), new screw (B), and the sensor-transmitter (C).

   NOTE: Always use a new valve stem and new screw.

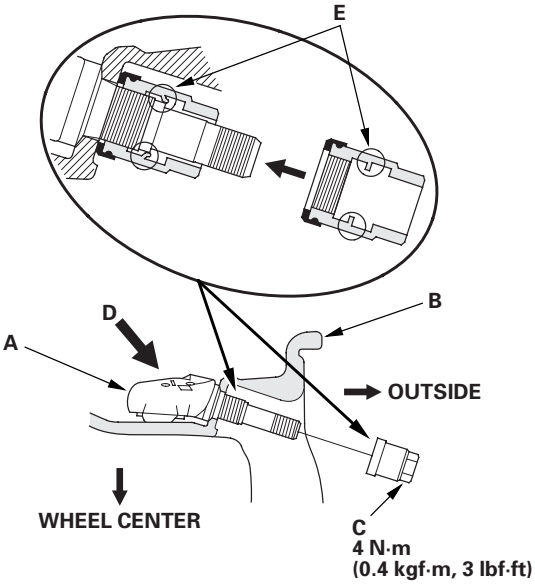


(cont'd)

Tire Pressure Sensor Replacement (cont'd)

2. Before installing the tire pressure sensor, clean the mating surfaces on the sensor and the wheel.

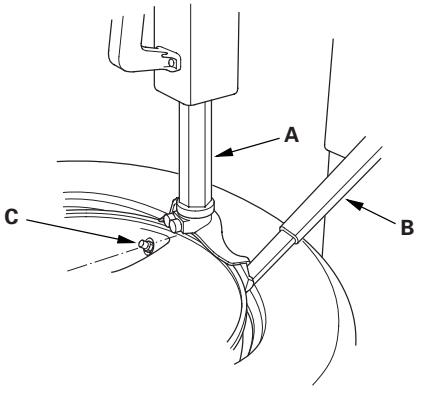
3. Install the tire pressure sensor (A) to the wheel (B), and tighten the valve nut (C) finger tight. Make sure the pressure sensor is resting on the wheel.



4. Tighten the valve nut to the specified torque while holding the tire pressure sensor toward (D) the wheel. You may hear a snap or pop as you tighten the nut. This is normal.

   NOTE:
   - Do not reuse any nut that has been tightened, even one time, to the specified torque, as it is deformed inside (E).
   - Do not use air or electric impact tools to tighten a valve stem nut.
   - Tightening the nut above the specified torque can damage the nut.
   - Make sure that there is no space between the sensor and the wheel.

5. Lube the tire bead, and position the wheel so the tire machine (A) and tire iron (B) are next to the valve stem (C) and will move away from it when the machine starts. Then install the tire onto the wheel.



6. Inflate the tire to 300 kPa (3.1 kgf/cm^2, 44 psi) to seat the tire bead to the rim, then adjust the tire pressure to 220 kPa (2.2 kgf/cm^2, 32 psi), and install the valve stem cap.

   NOTE: Make sure the tire bead is seated on both sides of the rim uniformly.

7. Check and adjust the wheel balance, then install the wheels on the vehicle. Torque the wheels to specifications.

8. Remove the jack stands, and lower the jack.

9. Connect the HDS and memorize the pressure sensor ID(s) (see page 18-51).

Brakes

Conventional Brake Components

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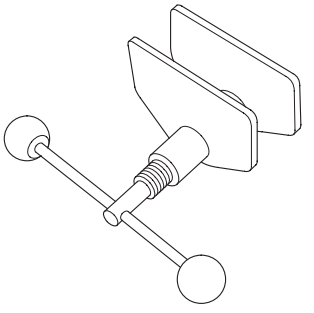
VSA (Vehicle Stability Assist) System Components 19-37

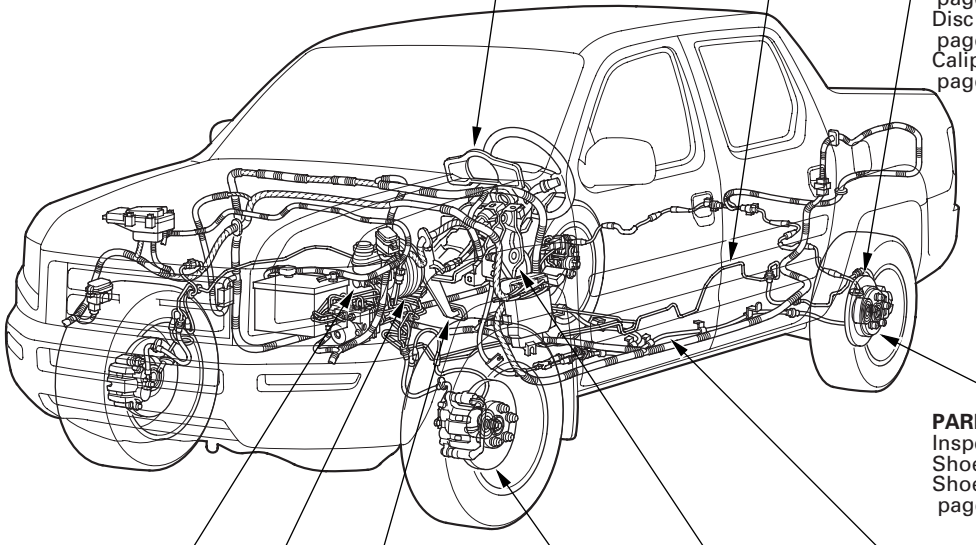
Special Tools

Ref. No.	Tool Number	Description	Qty
①	07AAE-SEPA101	Brake Caliper Piston Compressor	1



①

Component Location Index



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Brake System Inspection and Test

Inspect the brake system components listed. Repair or replace any parts that are leaking or damaged.

Component Inspections:

Component	Procedure	Also check for:
Master Cylinder	Look for damage or signs of fluid leakage at: • Reservoir or reservoir grommets • Line joints • Between master cylinder and booster	Bulging seat at reservoir cap. This is a sign of fluid contamination.
Brake Hoses	Look for damage or signs of fluid leakage at: • Line joints and banjo bolt connections • Hoses and lines, also inspect for twisting or damage	Bulging, twisted, or bent lines.
Caliper	Look for damage or signs of fluid leakage at: • Piston seal • Banjo bolt connections • Bleed screw	Seized or sticking caliper pins.
VSA Modulator	Look for damage or signs of fluid leakage at: • Line joints • Modulator	

Brake System Test

Brake pedal sinks/fades when braking

1. Start the engine, and let it warm up to operating temperature.
2. Attach a 50 mm (2 in.) piece of masking tape along the bottom of the steering wheel, and draw a horizontal reference mark across it.
3. With the transmission in the P or N position, press and hold the brake pedal lightly (about the same pressure needed to keep an A/T-equipped vehicle from creeping), then release the parking brake.
4. While still holding the brake pedal, hook the end of the tape measure behind it. Then pull the tape up to the steering wheel, noting where the tape measure lines up with the reference mark you made on the masking tape.
5. Apply steady pressure to the brake pedal for 3 minutes.
6. Watch the tape measure.

   • If it moves less than 10 mm (3/8 in.), the master cylinder is OK.
   • If it moves more than 10 mm (3/8 in.) replace the master cylinder.

   NOTE: If the brake pedal sinks more than 10 mm (3/8 in.) in 3 minutes, the master cylinder is faulty. A slight change in pedal height when the A/C compressor cycles on and off is normal. (The A/C compressor load changes the vacuum available to the brake booster.)

Symptom Troubleshooting

Rapid brake pad wear, vehicle vibration (after a long drive), or high, hard brake pedal

NOTE: Make sure that the caliper pins are installed correctly.
The upper and lower caliper pins are different. If the top and bottom caliper pins are installed in the wrong location, it will cause uneven tire wear, vibration, and or uneven or rapid pad wear. For proper caliper pin location (see page 19-16).

1. Drive the vehicle until the brakes drag or until the pedal is high and hard. This can take 20 or more brake pedal applications during an extended test drive.

2. With the engine running, raise the vehicle on a lift, and spin all four wheels by hand.

   Is there brake drag at any of the wheels?

   YES—Go to step 3.

   NO—Look for other causes of the pad wear, high pedal, or vehicle vibration. ■

3. Turn the engine off, pump the brake pedal to deplete the vacuum in the brake booster, and then spin the wheels again to check for brake drag.

   Is there brake drag at any of the wheels?

   YES—Go to step 4.

   NO—Replace the brake booster (see page 19-20). ■

4. Without removing the brake lines, unbolt and separate the master cylinder from the booster, then spin the wheels to check for brake drag.

   Is there brake drag at any of the wheels?

   YES—Go to step 5.

   NO—Check the brake pedal position switch adjustment and pedal free play (see page 19-6). ■

5. Loosen the hydraulic lines at the master cylinder, then spin the wheels to check for brake drag.

   Is there brake drag at any of the wheels?

   YES—Go to step 6.

   NO—Replace the master cylinder (see page 19-18). ■

6. Loosen the bleed screws at each caliper, then spin the wheels to check for brake drag.

   Is there brake drag at any of the wheels?

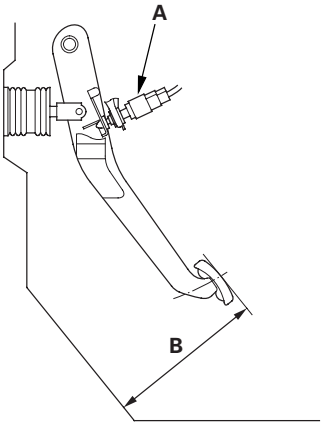
   YES—Disassemble and repair the caliper on the wheel(s) with brake drag. ■

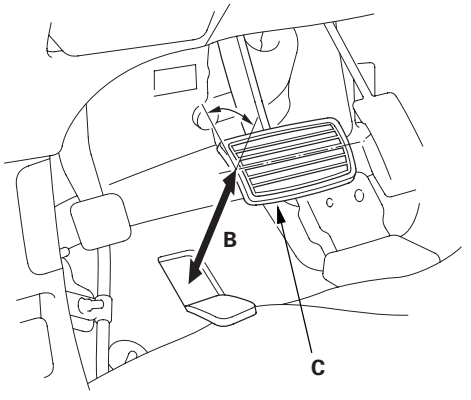
   NO—Look for and replace any damaged brake lines. If all brake lines are OK, replace the VSA modulator-control unit (see page 19-94). ■

Brake Pedal and Brake Pedal Position Switch Adjustment

Pedal Height

1. Turn the brake pedal position switch (A) counterclockwise, and pull it back until it is no longer touching the brake pedal.



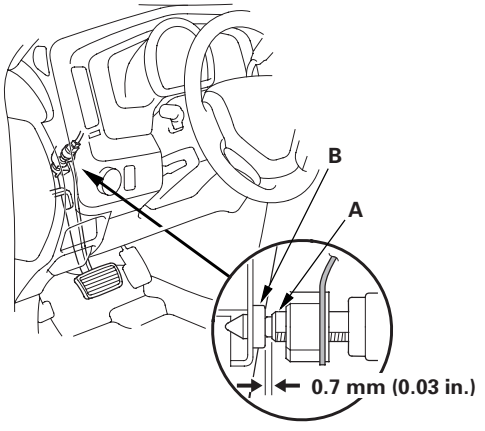


2. Pull back the carpet and find the cutout in the insulator. Lift up the insulator cutout and measure the pedal height (B) at the middle of the left side center of the pedal pad (C) to the floor.

   Standard pedal height (with carpet removed):
   155 mm (6 1/8 in.)

Brake Pedal Position Switch Clearance

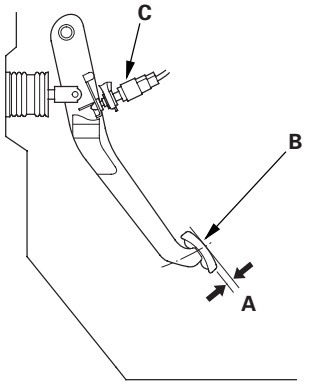
3. Lift up on the brake pedal by hand. Push in the brake pedal position switch until its plunger is fully pressed (the threaded end (A) touches the pad (B) on the pedal arm). Then back off the switch 3/4 turn to make 0.7 mm (0.03 in.) of clearance between the threaded end and pad. Tighten the locknut securely. Connect the brake pedal position switch connector. Make sure the brake lights go off when the pedal is released.



Pedal Free Play

1. With the engine off, inspect the pedal free play (A) on the pedal pad (B) by pushing the pedal by hand.

   Free play: 1—5 mm (1/16—3/16 in.)



2. If the pedal free play is out of specification, adjust the brake pedal position switch (C). If the brake pedal free play is insufficient, it may result in excessive brake drag.

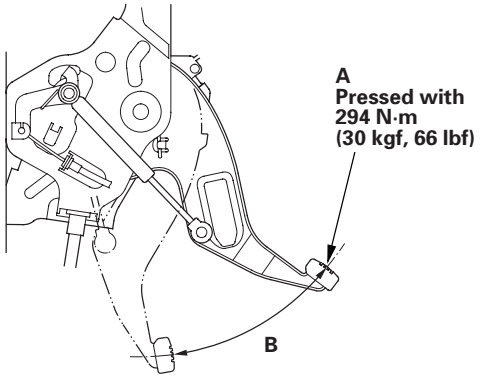
Parking Brake Inspection and Adjustment

Inspection

1. Press the parking brake pedal (A) with 294 N (30 kgf, 66 lbf) of force. The parking brake pedal should travel within the specified number of clicks (B).

   Pedal locked clicks: 10 to 12

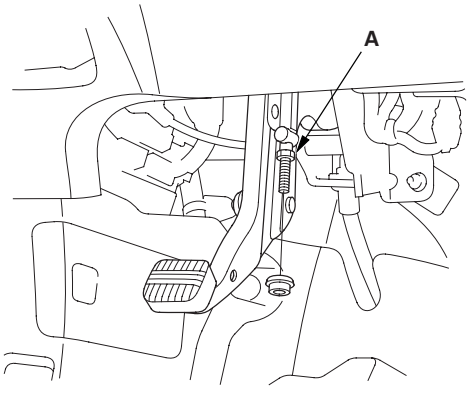
   If the number of pedal clicks is excessive, adjust the parking brake.



Minor Adjustment

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-10).

2. Tighten the adjusting nut (A) until the parking brakes drag slightly when the rear wheels are turned.



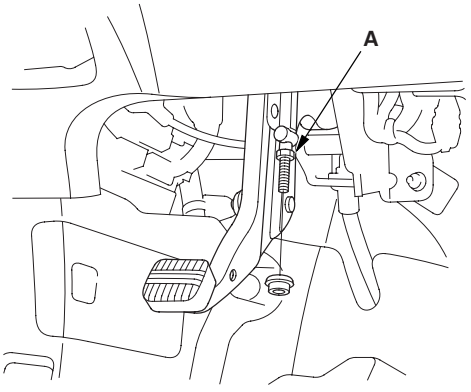
3. Back off the adjusting nut in half-turn increments, and check for proper adjustment (10 to 12 clicks) at a pedal force of 294 N (30 kgf, 66 lbf).

(cont'd)

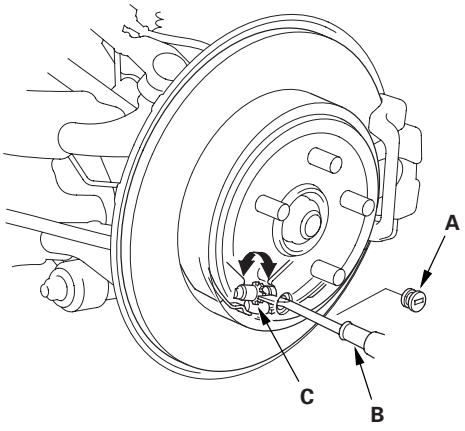
Parking Brake Inspection and Adjustment (cont'd)

Major Adjustment (to be done when replacing parking brake shoes)

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-10).
2. Remove the rear wheels.
3. Release the parking brake, and back off the adjusting nut (A).



4. Remove the access plug (A).

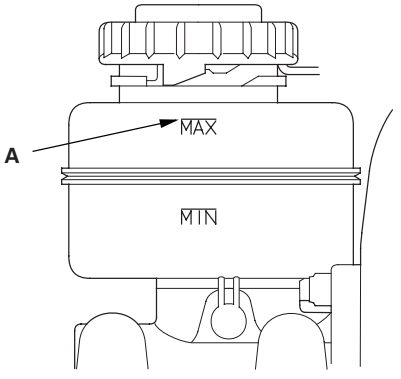


5. Use a flat tip screwdriver (B) to rotate the adjuster assembly (C) until the shoes lock against the drum. Then back off ten clicks, and install the access plug.
6. Clean the mating surface of the brake disc/drum and the inside of the wheel, then install the rear wheels.
7. Do the minor adjustment procedure.
8. Do the parking brake shoe lining break-in procedure (see page 19-31).

Brake System Bleeding

NOTE:
- Do not reuse the drained fluid. Use only clean Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Do not mix different brands of brake fluid; they may not be compatible.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not spill brake fluid on the vehicle, it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- The reservoir on the master cylinder must be at the MAX (upper) level mark at the start of the bleeding procedure and checked after bleeding each brake caliper. Add fluid as required.

1. Make sure the brake fluid level in the reservoir is at the MAX (upper) level line (A).

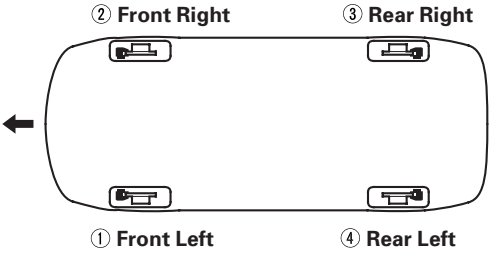


2. Have someone slowly pump the brake pedal several times, then apply steady pressure.

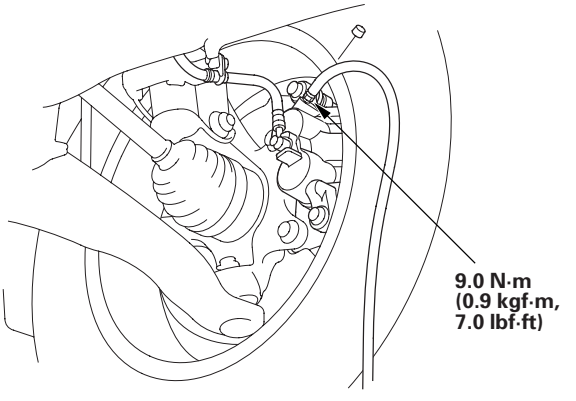
3. Starting at the left-front, loosen the brake bleed screw to allow air to escape from the system. Then tighten the bleed screw securely.

4. Repeat the procedure for each caliper until no air bubbles are in the fluid. Bleed the calipers in the sequence shown.

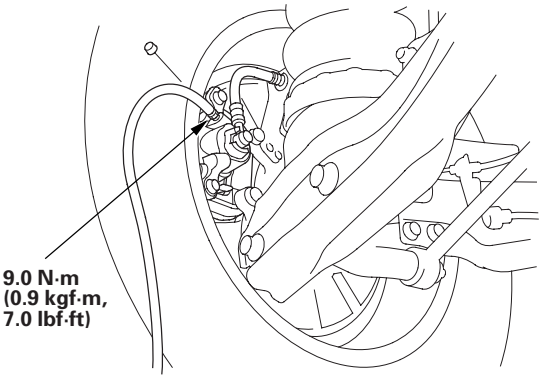
BLEEDING SEQUENCE:



Front

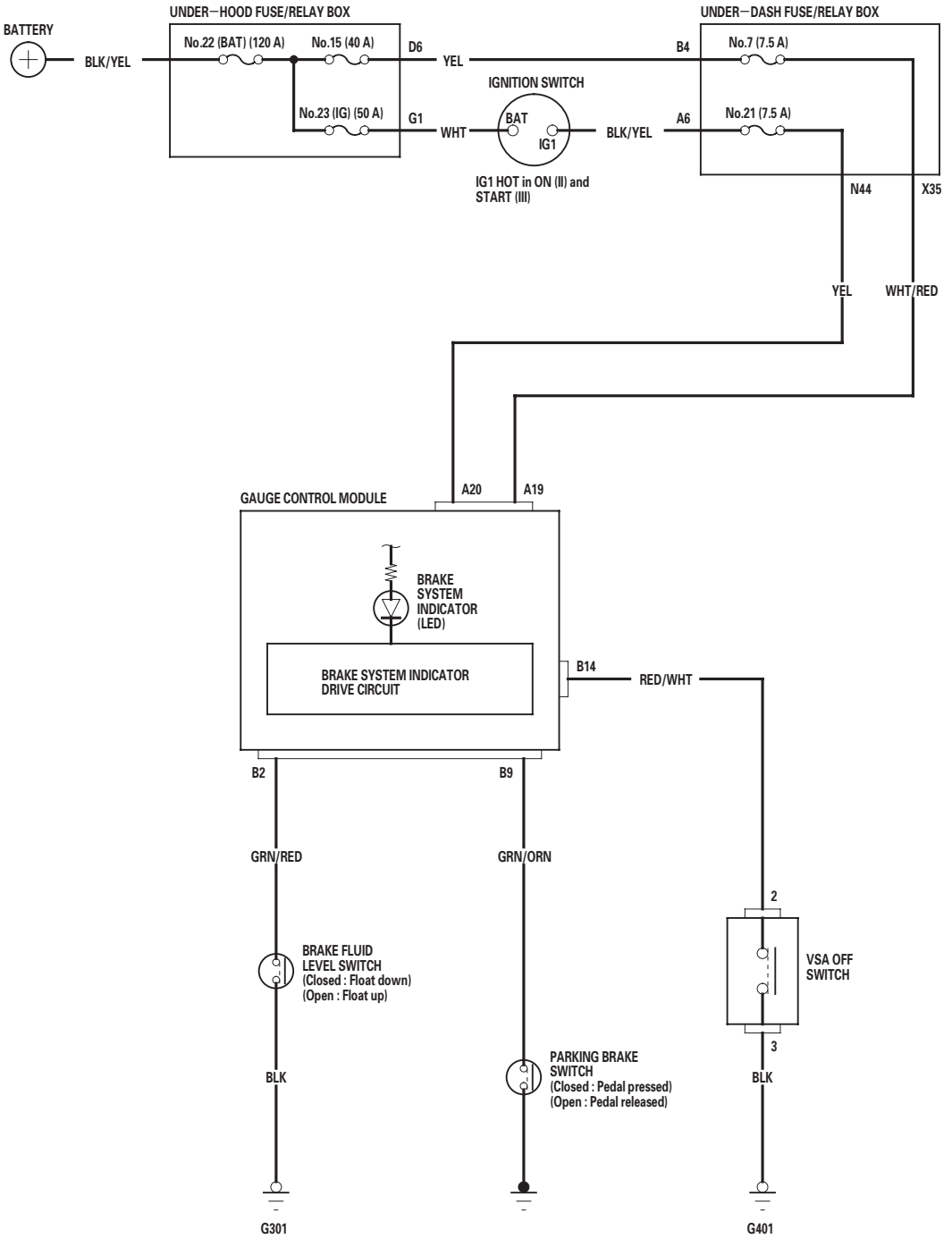


Rear



5. Refill the master cylinder reservoir to the MAX (upper) level line.

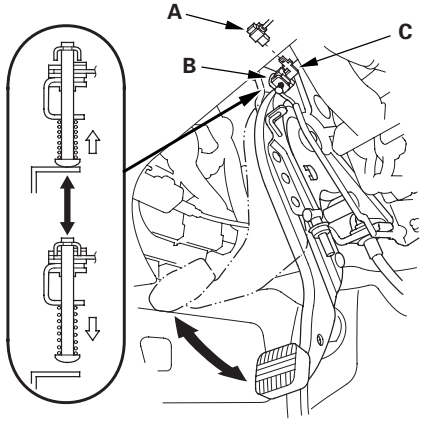
Brake System Indicator Circuit Diagram



Parking Brake Switch Test

NOTE: If both the ABS/VSA indicator and the brake system indicator come on at the same time, check the VSA system first (see page 19-39).

1. Disconnect the parking brake switch connector (A) from the parking brake switch (B).



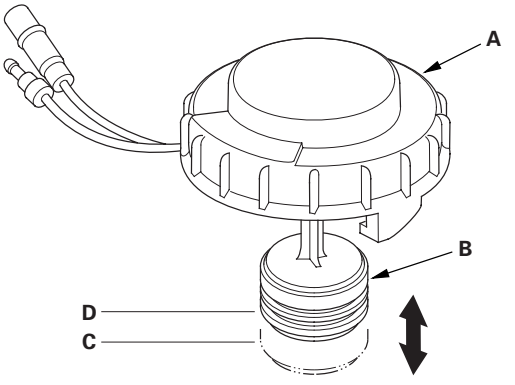
2. Check for continuity between the positive terminal (C) and body ground:

   - With the parking brake pedal pressed, there should be continuity.
   - With the parking brake pedal released, there should be no continuity.

   NOTE:
   - If both the ABS/VSA indicator and the brake system indicator come on at the same time, check the VSA first.
   - If the parking brake switch/fluid level switch is OK, but the brake system indicator does not function, check the VSA (For Canada models: do the input test for the daytime running lights control unit first).

Brake Fluid Level Switch Test

1. Remove the reservoir cap (A). Check that the float (B) moves up and down freely; if it doesn't, replace the reservoir cap assembly.



2. Check for continuity between the terminals with the float in the down position (C) and the up position (D):

   - With the float up, there should be no continuity.
   - With the float down, there should be continuity.

Front Brake Pad Inspection and Replacement

Special Tools Required
Brake caliper piston compressor 07AAE-SEPA101

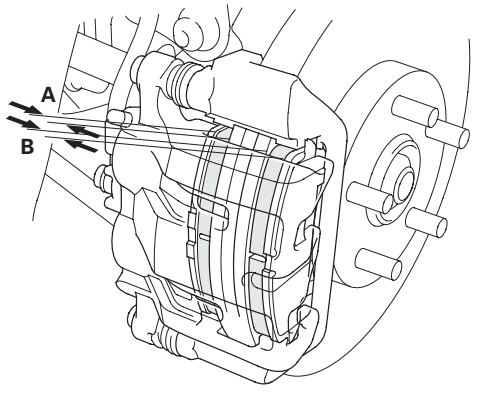
⚠CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

Inspection

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-10).
2. Remove the front wheels.
3. Check the thickness of the inner pad (A) and the outer pad (B). Do not include the thickness of the backing plate.

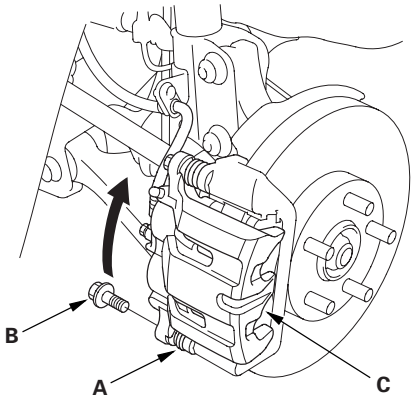
   Brake pad thickness:
   Standard: 11.6—12.2 mm (0.46—0.48 in.)
   Service limit: 1.0 mm (0.04 in.)



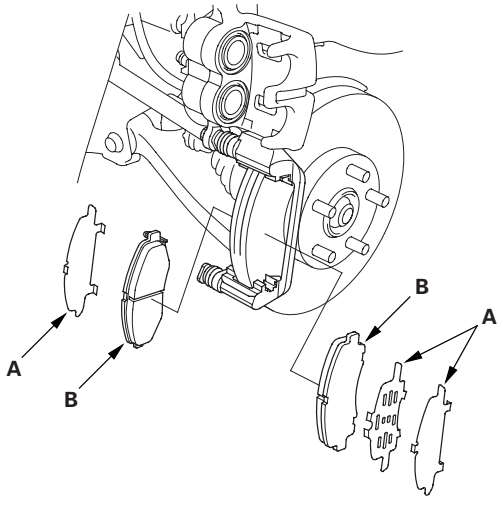
4. If the brake pad thickness is less than the service limit, replace the front brake pads as a set.
5. Clean the mating surface of the brake disc and the inside of the wheel, then install the front wheels.

Replacement

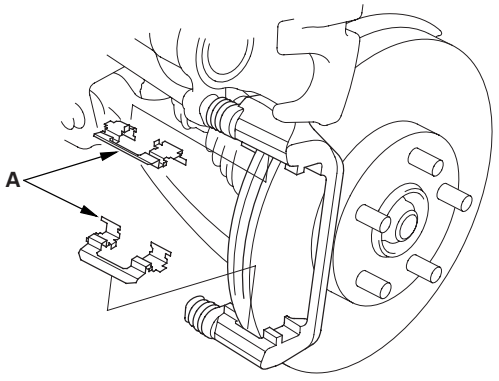
1. Remove some brake fluid from the master cylinder.
2. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-10).
3. Remove the front wheels.
4. While holding the caliper pin (A) with a wrench, remove the flange bolt (B). Be careful not to damage the pin boot. Then pivot the caliper (C) up out of the way. Check the hose and the pin boots for damage and deterioration.



5. Remove the pad shims (A) and the brake pads (B).



6. Remove the pad retainers (A).

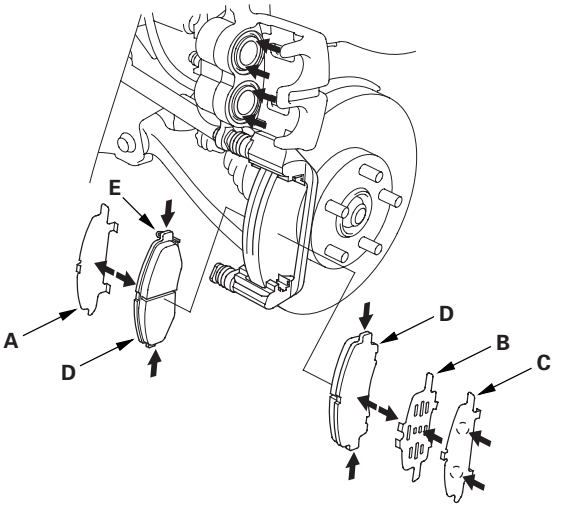


7. Clean the caliper thoroughly; remove any rust, and check for grooves and cracks.

8. Check the brake disc for damage and cracks.

9. Clean and install the pad retainers.

10. Apply Molykote M-77 assembly paste (P/N 08798-9010) to the pad side of inner shim A, outer pad shim B, and outer pad shim C, the back of the brake pads (D), and the other areas indicated by the arrows. Wipe excess assembly paste off the shims and brake pads. Contaminated brake discs or brake pads reduce stopping ability. Keep grease and assembly paste off the brake discs and brake pads.

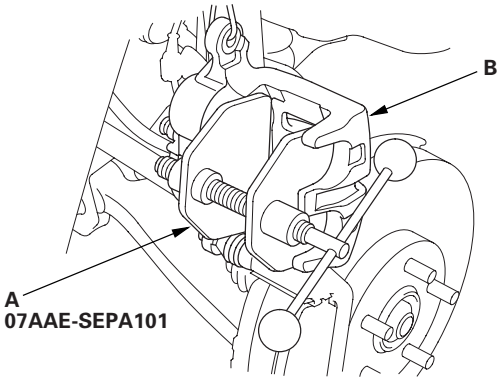


11. Install the brake pads and the pad shims as shown. Install the brake pad with the wear indicator (E) on the upper inside.
    If you are reusing the brake pads, always reinstall the brake pads in their original positions to prevent a momentary loss of braking efficiency.

(cont'd)

Front Brake Pad Inspection and Replacement (cont'd)

12. Mount the brake caliper piston compressor (A) on the caliper (B).

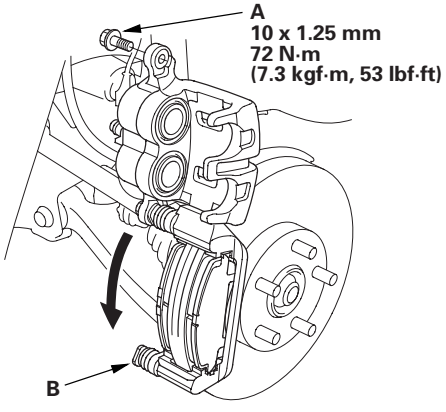


13. Press in the piston with the brake caliper piston compressor so the caliper will fit over the brake pads. Make sure the piston boot is in position to prevent damaging it when pivoting the caliper down.

    NOTE: Be careful when pressing in the pistons because brake fluid might overflow from the master cylinder's reservoir.

14. Remove the brake caliper piston compressor.

15. Pivot the caliper down into position. Install the flange bolt (A), and tighten it to the specified torque while holding the caliper pin (B), with a wrench, being careful not to damage the pin boot.



16. Clean the mating surface of the brake disc and the inside of the wheel, then install the front wheels.

17. Press the brake pedal several times to make sure the brakes work.

    NOTE: Engagement of the brakes may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

18. Add brake fluid as needed.

19. After installation, check for leaks at hose and line joints or connections, and retighten if necessary. Test-drive the vehicle, then check for leaks.

Front Brake Disc Inspection

Runout

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-10).

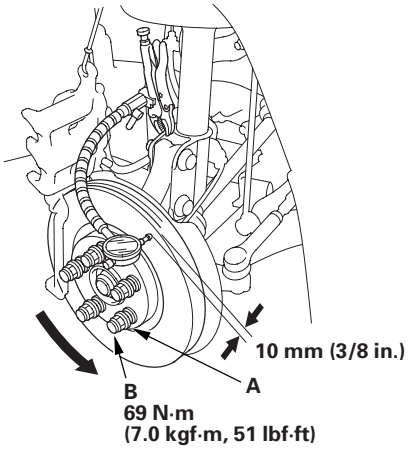
2. Remove the front wheels.

3. Remove the brake pads (see page 19-12).

4. Inspect the brake disc surface for damage and cracks. Clean the brake disc thoroughly, and remove all rust.

5. Install suitable flat washers (A) and wheel nuts (B), and tighten the nuts to the specified torque to hold the brake disc securely against the hub.

   Brake disc runout:
   Service limit: 0.04 mm (0.0016 in.)



6. Set up the dial gauge against the brake disc as shown, and measure the runout at 10 mm (3/8 in.) from the outer edge of the brake disc.

7. If the brake disc is beyond the service limit, refinish the brake disc with a commercially available on-car brake lathe.

   Max. refinish limit: 26.0 mm (1.02 in.)

   NOTE:
   - If the brake disc is beyond the service limit for refinishing, replace it (see page 19-16).
   - A new brake disc should be refinished if its runout is greater than 0.04 mm (0.0016 in.).

Thickness and Parallelism

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-10).

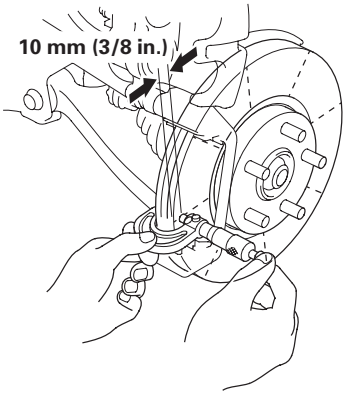
2. Remove the front wheels.

3. Remove the brake pads (see page 19-12).

4. Using a micrometer, measure brake disc thickness at eight points, about 45 ° apart and 10 mm (3/8 in.) in from the outer edge of the brake disc. Replace the brake disc if the smallest measurement is less than the max. refinishing limit.

   Brake disc thickness:
   Standard: 27.9—28.1 mm (1.10—1.11 in.)
   Max. refinishing limit: 26.0 mm (1.02 in.)
   Brake disc parallelism: 0.015 mm (0.0006 in.) max.

   NOTE: This is the maximum allowable difference between the thickness measurements.



5. If the brake disc is beyond the service limit for parallelism, refinish the brake disc with a commercially available on-car brake lathe.

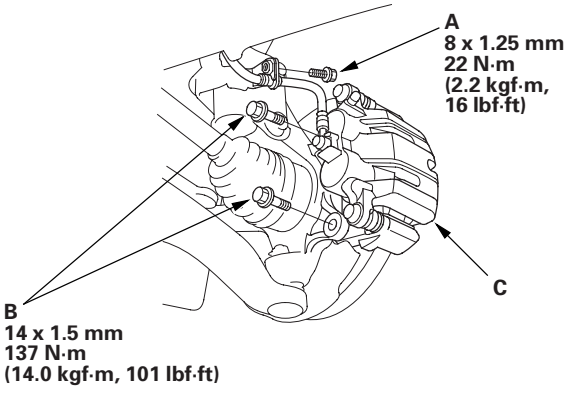
   NOTE: If the brake disc is beyond the service limit for refinishing, replace it (see page 19-16).

Front Brake Disc Replacement

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-10).

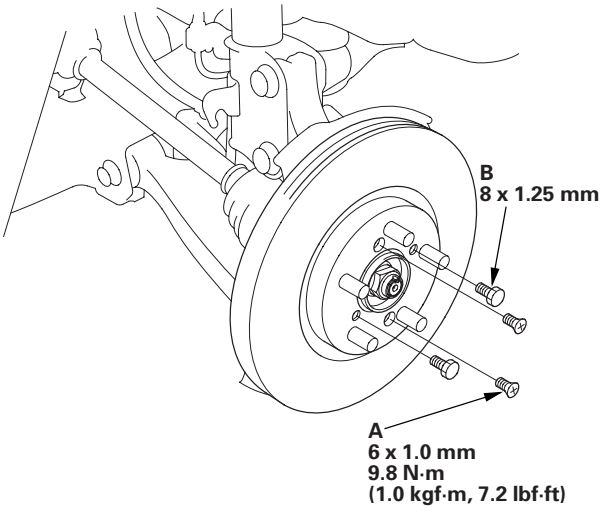
2. Remove the front wheels.

3. Remove the brake hose mounting bolt (A).



4. Remove the brake caliper bracket mounting bolts (B), and remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose with force.

5. Remove the 6 mm brake disc retaining screws (A).



6. Screw two 8 x 1.25 mm bolts (B) into the brake disc to push it away from the hub. Turn each bolt 90 degrees to prevent the brake disc from binding.

7. Remove the brake disc from the hub.

8. Install the brake disc in the reverse order of removal, and note these items:

   - Before installing the brake disc, clean the mating surface of the front hub and the inside of the brake disc.
   - Before installing the wheels, clean the mating surface of the brake disc and the inside of the wheel.

Front Brake Caliper Overhaul

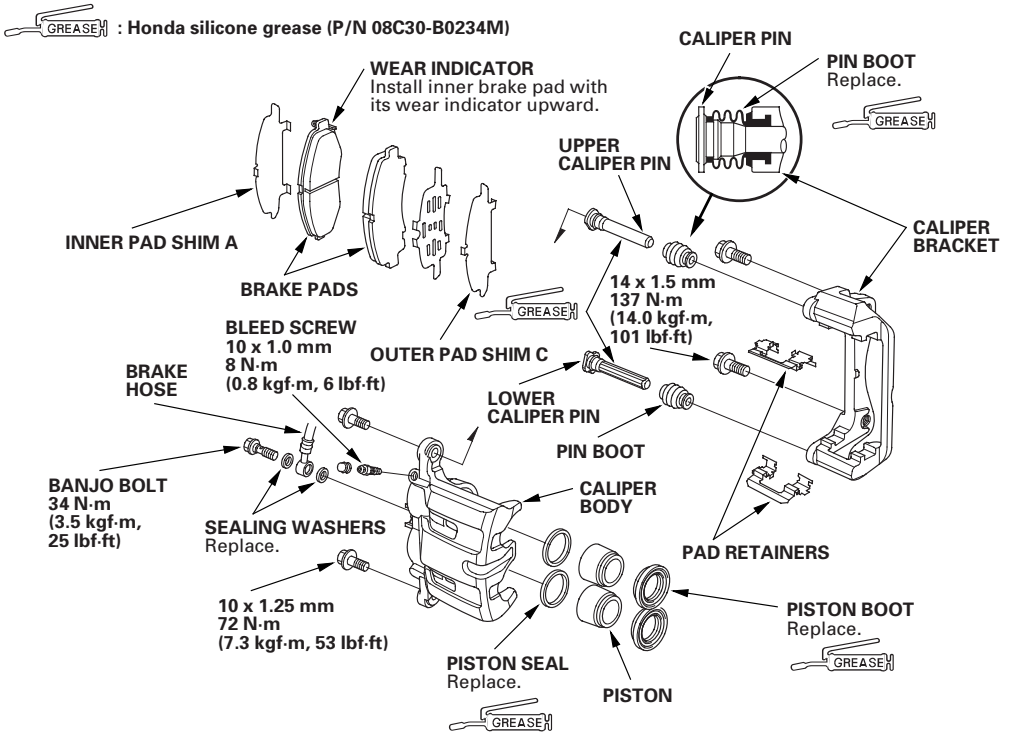
⚠CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

Remove, disassemble, inspect, reassemble, and install the caliper, and note these items:

NOTE: Make sure that the caliper pins are installed correctly.
The upper and lower caliper pins are different. If the caliper pins are installed in the wrong location, it will cause uneven tire wear, vibration, and or uneven or rapid pad wear.

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping brake fluid, cover disconnected hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Replace parts with new ones as specified in the illustration.
- Make sure no dirt or other foreign matter gets in the brake fluid.
- Make sure no grease or oil gets on the brake discs or pads.
- When reusing brake pads, always reinstall them in their original positions to prevent loss of braking efficiency.
- Do not reuse drained brake fluid. Use only clean Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Do not mix different brands of brake fluid as they may not be compatible.
- Coat the pistons, piston seal grooves, and caliper bores with clean brake fluid.
- Replace all rubber parts with new ones whenever disassembled.
- After installing the caliper, check the brake hose and line for leaks, interference, and twisting.

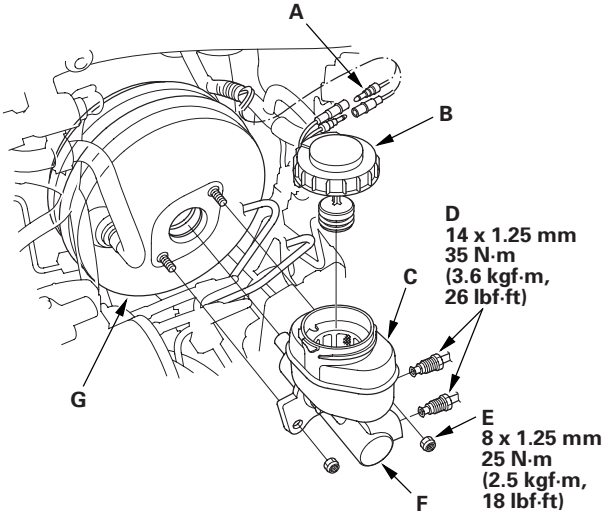


Master Cylinder Replacement

NOTICE

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- Be careful no to damage or deform the brake lines during removal and inspection.
- To prevent the brake fluid from flowing, plug and cover the hose ends and joints with a shop towel or equivalent.

1. Remove the intake manifold cover.
2. Remove the intake air duct (see step 9 on page 5-2).
3. Disconnect the brake fluid level switch connectors (A), and remove the reservoir cap (B).

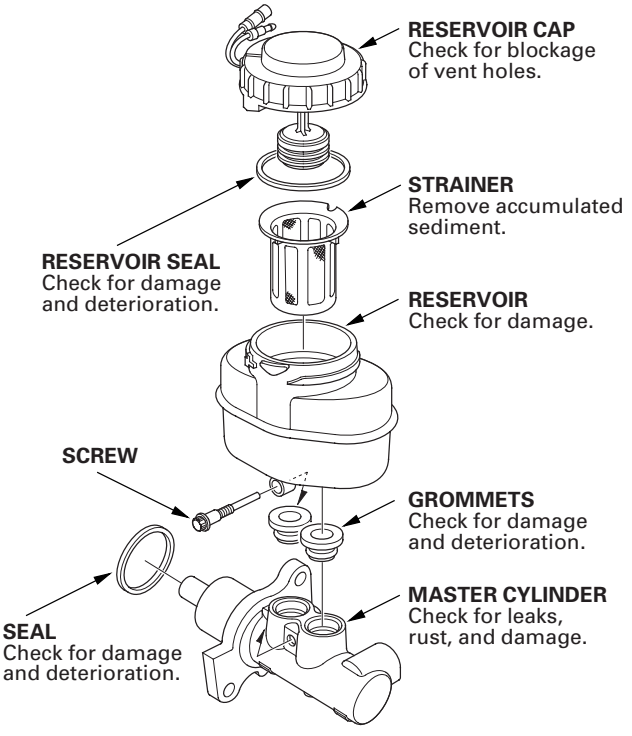


4. Remove the brake fluid from the master cylinder reservoir (C) with a syringe.
5. Disconnect the brake lines (D) from the master cylinder. To prevent spills, cover the hose joints with rags or shop towels.
6. Remove the master cylinder mounting nuts (E).
7. Remove the master cylinder (F) from the brake booster (G). Be careful not to bend or damage the brake lines when removing the master cylinder.
8. Install the master cylinder in the reverse order of removal, and note this item: Spin the wheels to check for brake drag.
9. Bleed the brake system (see page 19-9).

Master Cylinder Inspection

NOTE:

- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Do not try to disassemble the master cylinder assembly. Replace the master cylinder assembly with a new part if necessary.
- Do not allow dirt or foreign matter to contaminate the brake fluid.
- Bleed the brake system (see page 19-9).



Brake Booster Test

Functional Test

1. With the engine stopped, press the brake pedal several times to deplete the vacuum reservoir, then press the brake pedal hard, and hold it for 15 seconds. If the brake pedal sinks, either the master cylinder is bypassing brake fluid internally, or the brake system (master cylinder, lines, modulator, or caliper) is leaking.

2. Start the engine with the brake pedal pressed. If the brake pedal sinks slightly, the vacuum booster is operating normally. If the brake pedal height does not vary, perform the leak test.

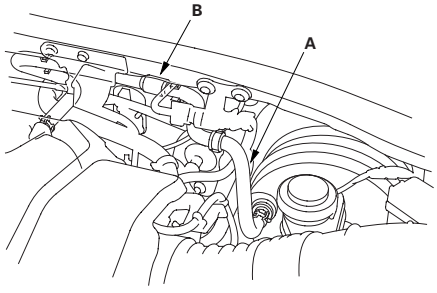
3. With the engine running, press the brake pedal lightly, and shift the transmission to the D position. Apply just enough pressure to hold back automatic transmission creep. If the brake pedal sinks more than 10 mm (3/8 in.) in 3 minutes, the master cylinder is faulty. A slight change in pedal height when the A/C compressor cycles on and off is normal. (The A/C compressor load changes the vacuum available to the booster.)

Leak Test

1. Press the brake pedal with the engine running, then stop the engine. If the brake pedal height does not vary while pressed for 30 seconds, the vacuum booster is OK. If the pedal height rises go to step 6. If it does not rise go to step 2.

2. Start the engine and let it idle for 30 seconds. Turn the engine off, and wait 30 seconds. Press the brake pedal several times using normal pressure. When the pedal is first pressed, it should be low. On consecutive applications, the pedal height should gradually rise. Does the pedal rise on each consecutive application? If it rises the booster is OK. If it does not go to step 3.

3. Disconnect the brake booster vacuum hose (A) at the booster. The check valve (B) is built into the hose.



4. Start the engine, and let it idle. There should be vacuum available. If no vacuum is available, the check valve is not working properly. Replace the brake booster vacuum hose and check valve, and retest. If vacuum is found, go to step 5.

5. Reconnect the vacuum hose to the brake booster.

6. Start the engine, and then pinch the brake booster vacuum hose between the check valve and the booster.

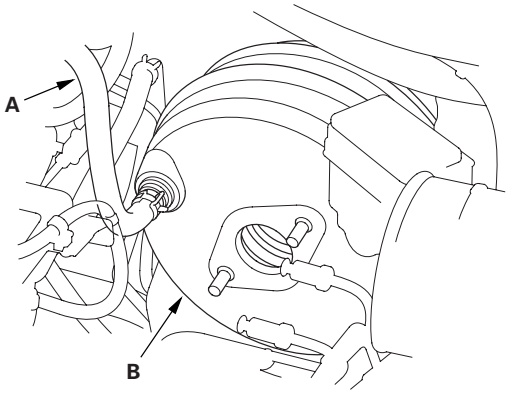
7. Turn the engine off and wait 30 seconds. Press the brake pedal several times using normal pressure. When the pedal is first pressed, it should be low. On consecutive applications, the pedal height should gradually rise.

   - If the pedal position does not vary inspect the seal between the master cylinder and booster. If the seal is OK, replace the brake booster.
   - If the pedal position varies, replace the brake booster vacuum hose/check valve assembly.

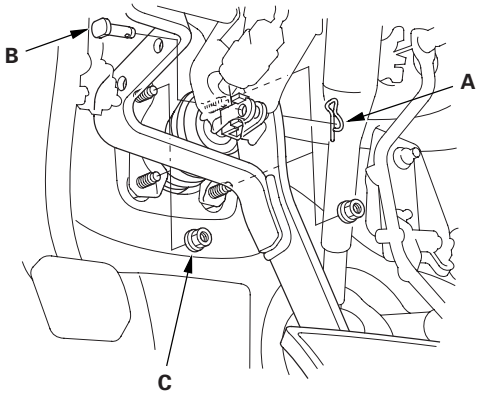
Brake Booster Replacement

1. Remove the master cylinder (see page 19-18).

2. Disconnect the brake booster vacuum hose (A) from the brake booster (B).



3. Remove the lock pin (A) and joint pin (B).

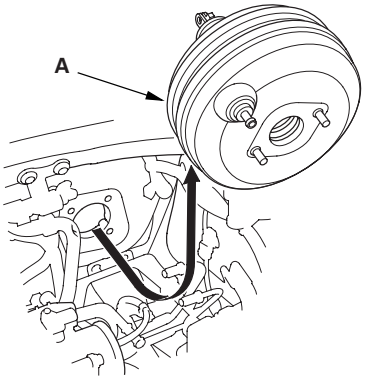


4. Remove the brake booster mounting nuts (C).

5. Pull the brake booster (A) forward, and remove it from the engine compartment.

NOTICE

- Be careful not to damage the booster surfaces and threads of the booster stud bolts.
- Be careful not to bend or damage the brake lines.



6. Install the brake booster in the reverse order of removal, and note these items:

- Use a new lock pin whenever installing.
- After installing the brake booster and master cylinder, fill the reservoir with new brake fluid, bleed the brake system (see page 19-9), and adjust the brake pedal height and free play (see page 19-6).

Rear Brake Pad Inspection and Replacement

Special Tools Required
Brake caliper piston compressor 07AAE-SEPA101

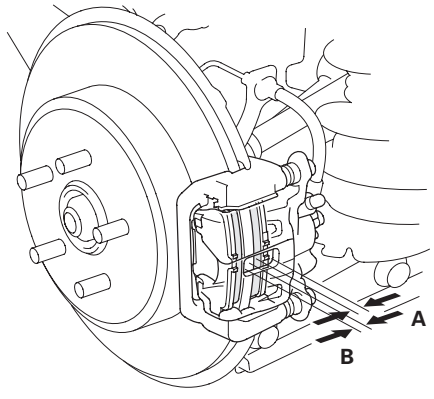
⚠CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

Inspection

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-10).
2. Remove the rear wheels.
3. Check the thickness of the inner pad (A) and the outer pad (B). Do not include the thickness of the backing plate.

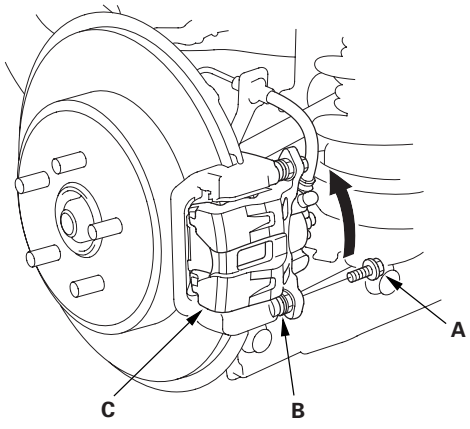
   Brake pad thickness:
   Standard: 9.6—10.4 mm (0.38—0.41 in.)
   Service limit: 1.0 mm (0.04 in.)



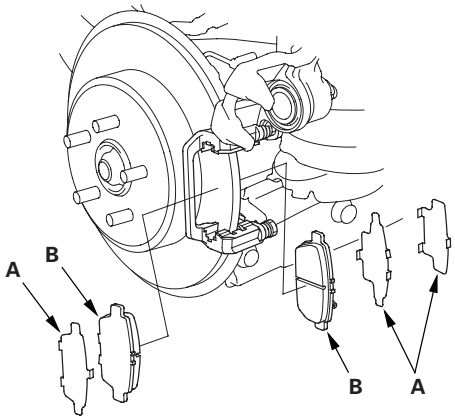
4. If the brake pad thickness is less than the service limit, replace all the rear brake pads as a set.
5. Clean the mating surface of the brake disc and the inside of the wheel, then install the front wheels.

Replacement

1. Remove some brake fluid from the master cylinder.
2. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-10).
3. Remove the rear wheels.
4. Remove the flange bolt (A) while holding the caliper pin B with a wrench being careful not to damage the pin boot, and pivot the caliper (C) up out of the way. Check the hose and pin boots for damage and deterioration.



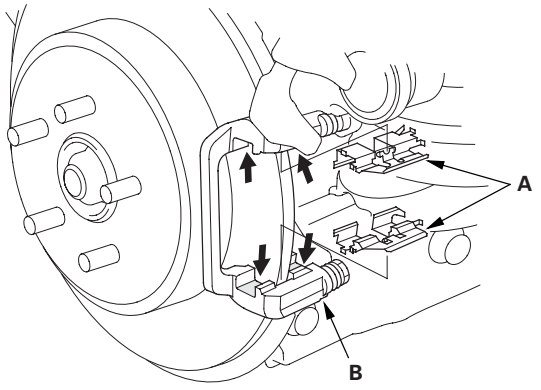
5. Remove the pad shims (A) and brake pads (B).



(cont'd)

Rear Brake Pad Inspection and Replacement (cont'd)

6. Remove the pad retainers (A).



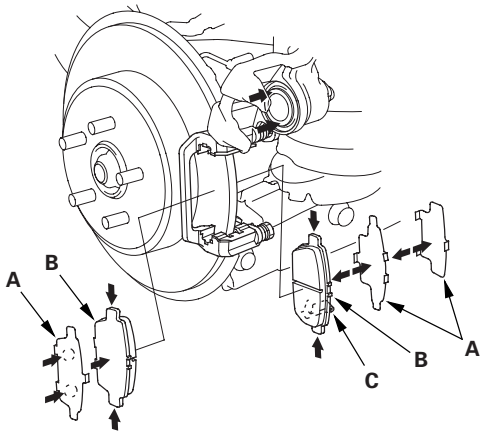
7. Clean the caliper bracket (B) thoroughly; remove any rust, and check for grooves and cracks.

8. Check the brake disc/drum for damage and cracks.

9. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the retainers on their mating surfaces (indicated by the arrow) against the caliper bracket.

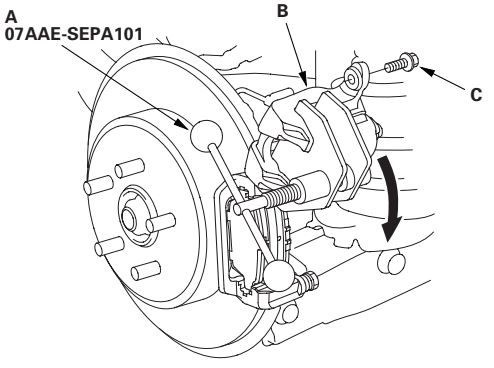
10. Install the pad retainers. Wipe excess assembly paste off the retainers. Keep any assembly paste off the discs and pads.

11. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the pad side of the shims (A), the back of the brake pads (B), and the other areas indicated by the arrows. Wipe excess assembly paste off the pad shims and brake pads. Contaminated brake discs or pads reduce stopping ability. Keep assembly paste off the brake discs and pads.



12. Install the brake pads and the pad shims as shown. Install the brake pad with the wear indicator (C) on the bottom inside. If you are reusing the brake pads, always reinstall the brake pads in their original positions to prevent a momentary loss of braking efficiency.

13. Mount the brake caliper piston compressor (A) on the caliper (B).



14. Push in the piston with a brake caliper piston compressor so the caliper will fit over the brake pads. Make sure the piston boot is in position to prevent damaging it when pivoting the caliper down.

    NOTE: Be careful when pushing in the caliper piston, brake fluid might overfllow from the master cylinder's reservoir.

15. Pivot the caliper down into position. Install the flange bolt (C), and tighten it to the specified torque while holding the caliper pin B with a wrench. Be careful not to damage the pin boot.

16. Clean the mating surface of the brake disc and the inside of the wheel, then install the front wheels.

17. Press the brake pedal several times to make sure the brakes work.

    NOTE: Brake engagement may require a greater pedal stroke immediately after the brake pads have been replaced. Several applications of the brake pedal will restore the normal pedal stroke.

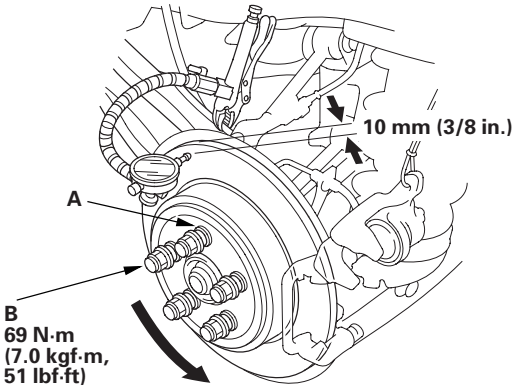
18. Add brake fluid as needed.

19. After installation, check for leaks at hose and line joints or connections, and retighten if necessary.

Rear Brake Disc Inspection

Runout

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-10).
2. Remove the rear wheels.
3. Remove the brake pads (see page 19-21).
4. Inspect the brake disc/drum surface for damage and cracks. Clean the brake disc/drum thoroughly, and remove all rust.
5. Install suitable flat washers (A) and wheel nuts (B), and tighten the wheel nuts to the specified torque to hold the brake disc/drum securely against the hub.



6. Set up the dial gauge against the brake disc/drum as shown, and measure the runout at 10 mm (3/8 in.) from the outer edge of the brake disc.

   Brake disc/drum runout:
   Service limit: 0.04 mm (0.0016 in.)

7. If the brake disc/drum is beyond the service limit, refinish the brake disc/drum with a commercially available on-car brake lathe.

   Max. refinish limit: 9.0 mm (0.35 in.)

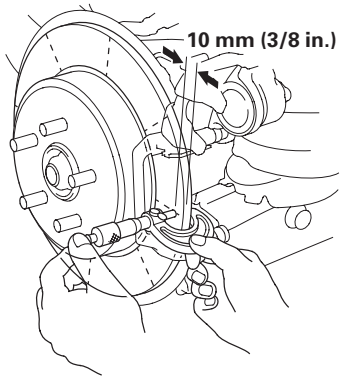
   NOTE:
   - If the brake disc/drum is beyond the service limit for refinishing, replace it (see page 19-24).
   - A new brake disc/drum should be refinished if its runout is greater than 0.04 mm (0.0016 in.).

Thickness and Parallelism

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-10).
2. Remove the rear wheels.
3. Remove the brake pads (see page 19-21).
4. Using a micrometer, measure brake disc thickness at eight points, about 45 ° apart and 10 mm (3/8 in.) in from the outer edge of the brake disc/drum. Replace the brake disc/drum if the smallest measurement is less than the max. refinishing limit.

   Brake disc/drum thickness:
   Standard: 10.9—11.1 mm (0.43—0.44 in.)
   Max. refinishing limit: 9.0 mm (0.35 in.)
   Brake disc/drum parallelism:
   0.015 mm (0.0006 in.) max.

   NOTE: This is the maximum allowable difference between the thickness measurements.



5. If the brake disc/drum is beyond the service limit for parallelism, refinish the brake disc/drum with a commercially available on-car brake lathe.

   NOTE: If the brake disc/drum is beyond the service limit for refinishing, replace it (see page 19-24).

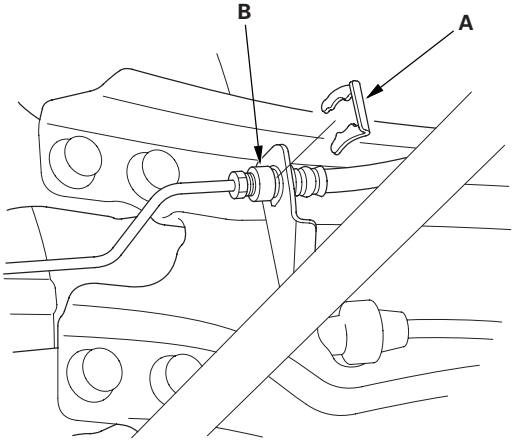
Rear Brake Disc Replacement

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-10).

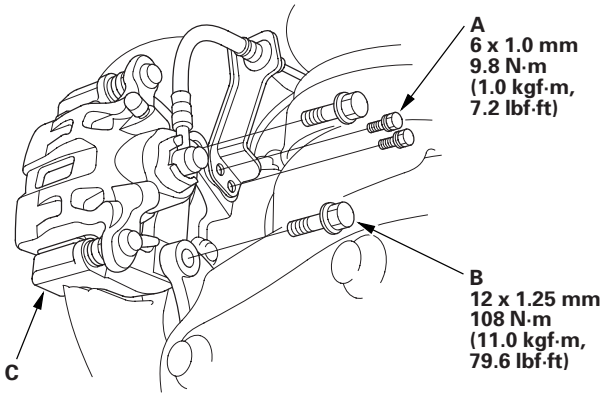
2. Remove the rear wheels.

3. Remove and discard the brake hose clip (A) from the brake hose (B).

   NOTE: During installation, install the new brake hose clip.

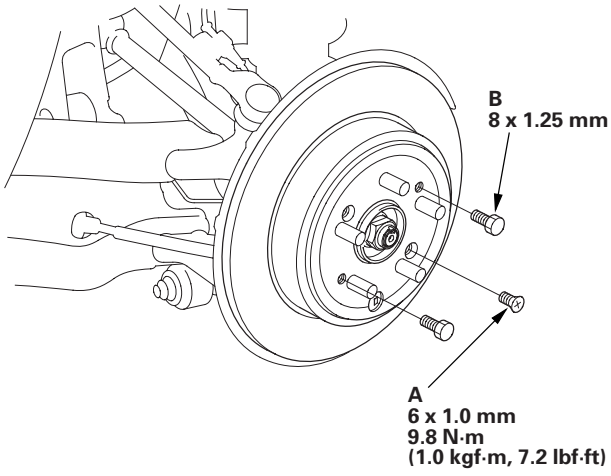


4. Remove the brake hose bracket mounting bolt (A) from the knuckle.



5. Remove the brake caliper bracket mounting bolts (B), and remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose with force.

6. Remove the 6 mm brake disc/drum retaining screw (A).



7. Screw two 8 x 1.25 mm bolts (B) into the brake disc/drum to push it away from the hub. Turn each bolt 90 degrees at a time to prevent the brake disc from binding.

8. Remove the brake disc/drum from the hub.

9. Install the brake disc/drum in the reverse order of removal, and note these items:

   - Before installing the wheel, clean the mating surface of the brake disc/drum and the inside of the wheel.
   - Before installing the wheels, clean the mating surface of the brake disc and the inside of the wheel.

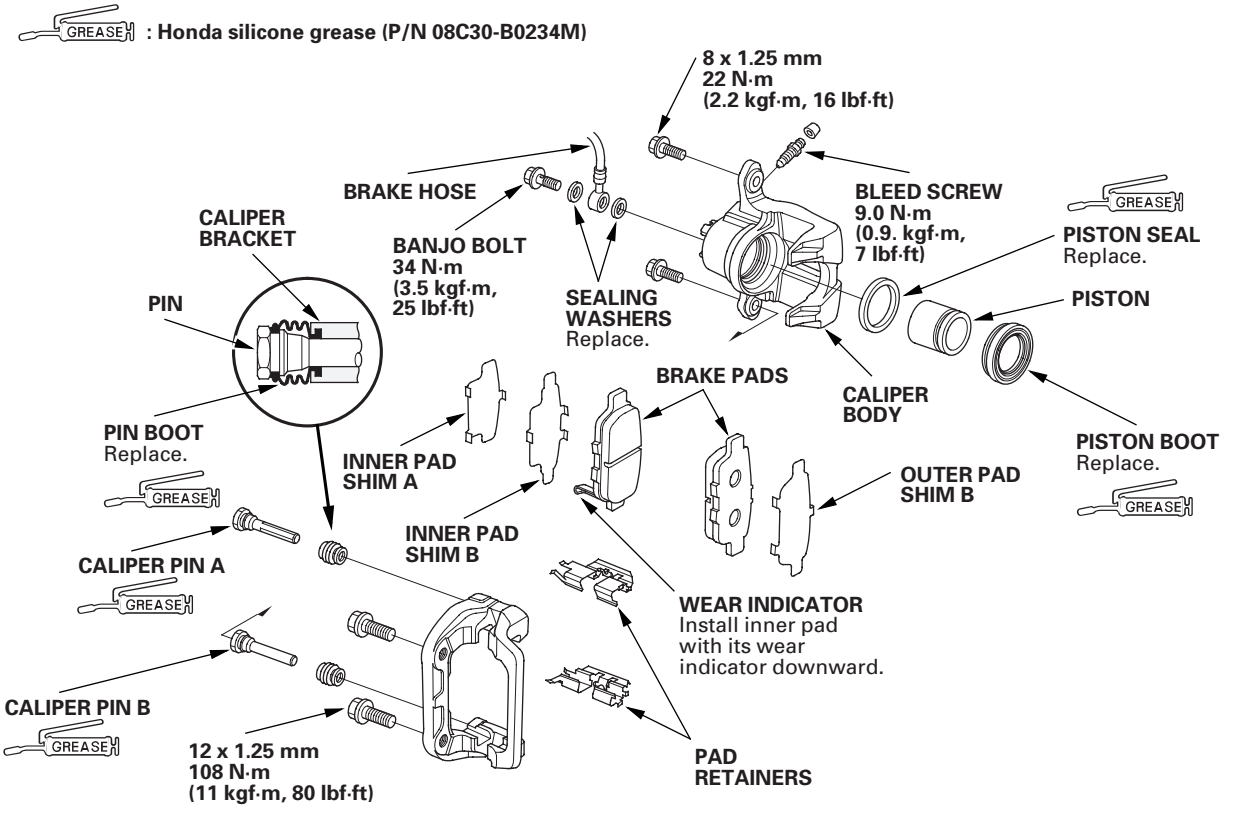
Rear Brake Caliper Overhaul

⚠CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

Remove, disassemble, inspect, reassemble, and install the caliper, and note these items:

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping brake fluid, cover disconnected hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Replace parts with new ones as specified in the illustration.
- Make sure no dirt or other foreign matter gets into the brake fluid.
- Make sure no grease or oil gets on the brake discs or pads.
- When reusing brake pads, always reinstall them in their original positions to prevent loss of braking efficiency.
- Do not reuse drained brake fluid. Use only clean Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Do not mix different brands of brake fluid as they may not be compatible.
- Coat the piston, piston seal groove, and caliper bore with clean brake fluid.
- Replace all rubber parts with new ones whenever disassembled.
- After installing the caliper, check the brake hose and line for leaks, interference, and twisting.

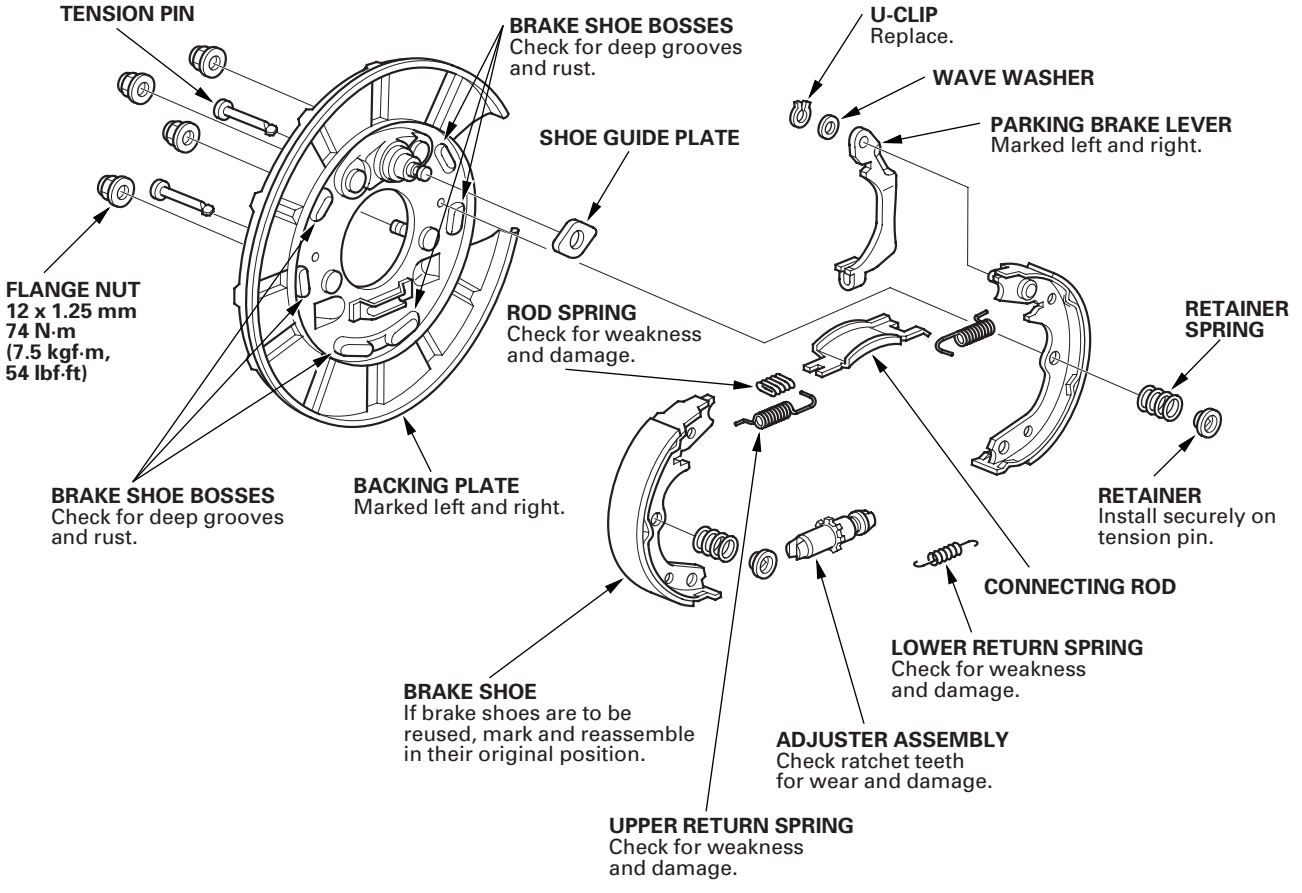


Parking Brake Inspection

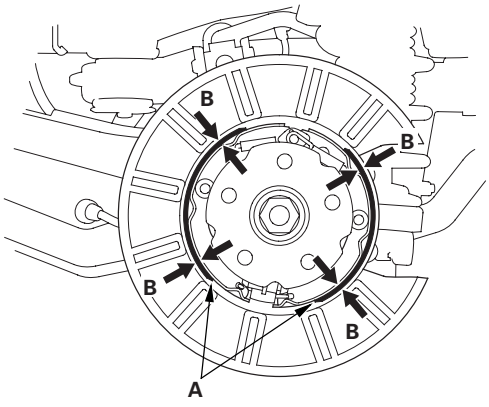
⚠CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-10).
2. Remove the rear wheels.
3. Release the parking brake, and remove the rear caliper and brake disc/drum (see page 18-28).



4. Check the parking brake linings (A) for cracking, glazing, wear, and contamination.



5. Measure the parking brake lining thickness (B). Measurement does not include brake shoe thickness.

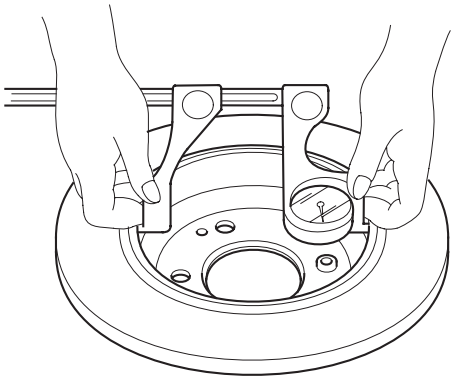
   Parking brake lining thickness:
   Standard: 3.6—4.3 mm (0.14—0.17 in.)
   Service limit: 1.0 mm (0.04 in.)

6. If the parking brake lining thickness is less than the service limit, replace all the parking brake shoes as a set (see page 19-28).

7. Check the bearings in the hub unit for smooth operation.

8. Measure the inside diameter of the parking brake disc/drum with inside vernier calipers.

   Parking brake drum inside diameter:
   Standard: 209.9—210.0 mm (8.264—8.268 in.)
   Service limit: 211.0 mm (8.307 in.)



9. If the inside diameter of the parking brake disc/drum is more than the service limit, replace the brake disc/drum.

10. Check the parking brake disc/drum for scoring, grooves, and cracks.

11. Clean the mating surface of the brake disc/drum and the inside of the wheel, then install the rear wheels.

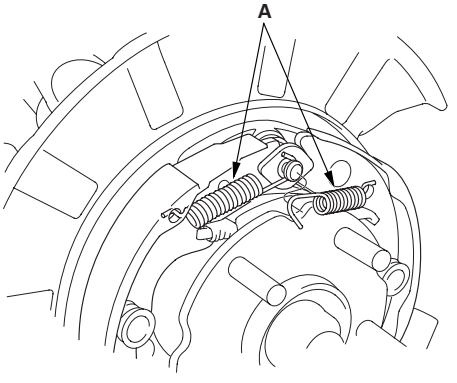
Parking Brake Shoe Replacement

⚠CAUTION

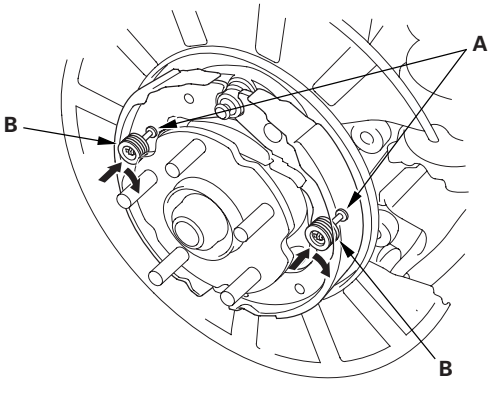
Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

Disassembly

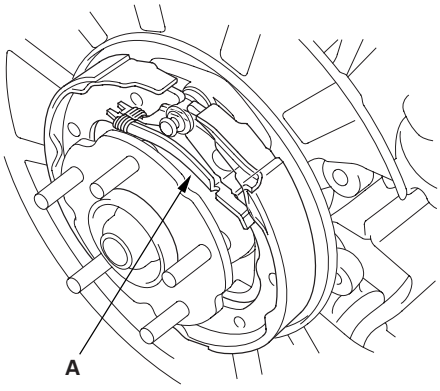
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-10).
2. Remove the rear wheels.
3. Release the parking brake, and remove the rear brake caliper and brake disc/drum (see page 18-28).
4. Disconnect and remove the upper return springs (A).



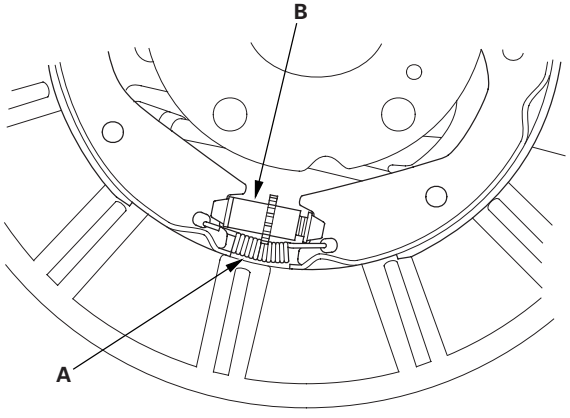
5. Remove the tension pins (A) by pushing and turning the retainers (B).



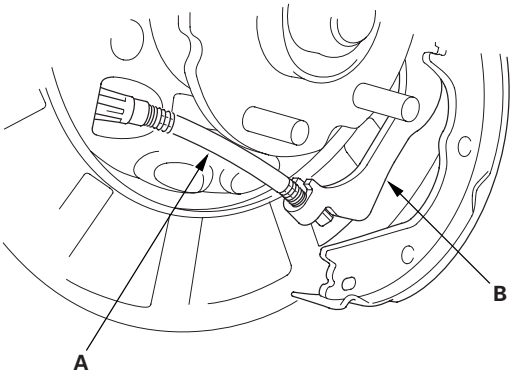
6. Remove the connecting rod (A).



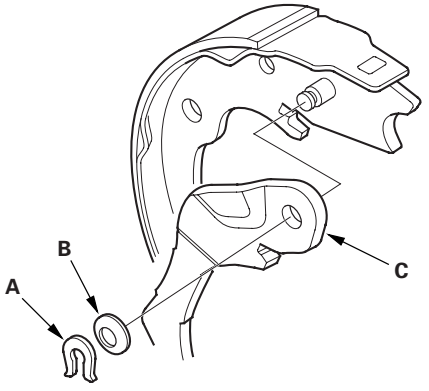
7. Lower the parking brake shoe assembly.
8. Remove the forward brake shoe by removing the lower return spring (A) and adjuster assembly (B).



9. Remove the rearward brake shoe by disconnecting the parking brake cable (A) from the parking brake lever (B).

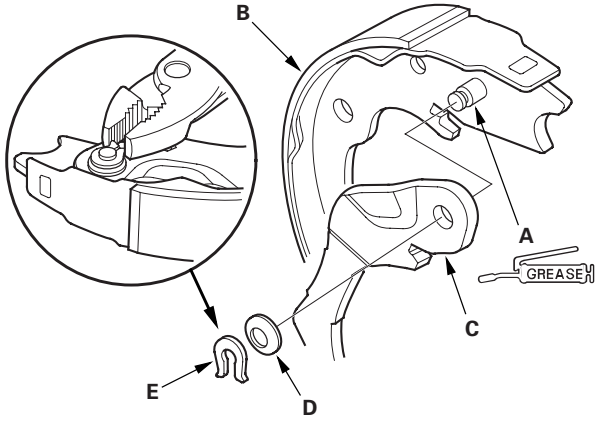


10. Remove the U-clip (A), wave washer (B), and parking brake lever (C) from the brake shoe.



Reassembly

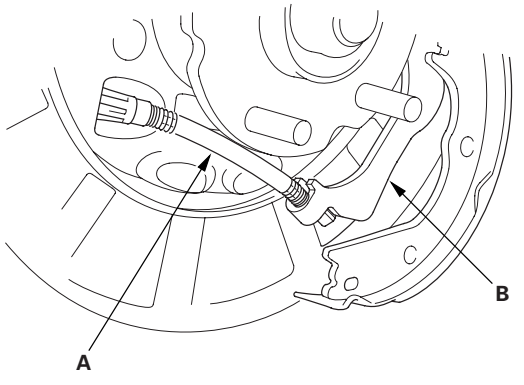
1. Apply Molykote 44 MA grease to the sliding surface of the pivot pin (A) of the rearward brake shoe (B).



2. Install the parking brake lever (C) and wave washer (D) on the pivot pin, and secure with a new U-clip (E).

   - Install the wave washer with its convex side facing out.
   - Pinch the U-clip securely to prevent the parking brake lever from coming out from the brake shoe.

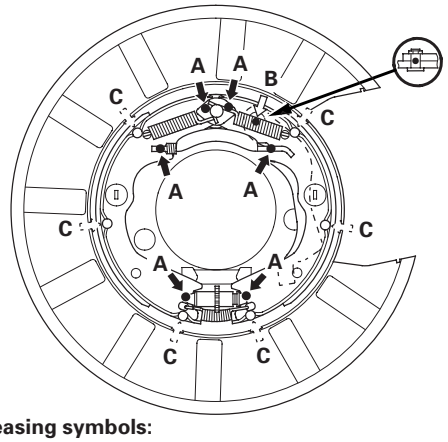
3. Connect the parking brake cable (A) to the parking brake lever (B).



(cont'd)

Parking Brake Shoe Replacement (cont'd)

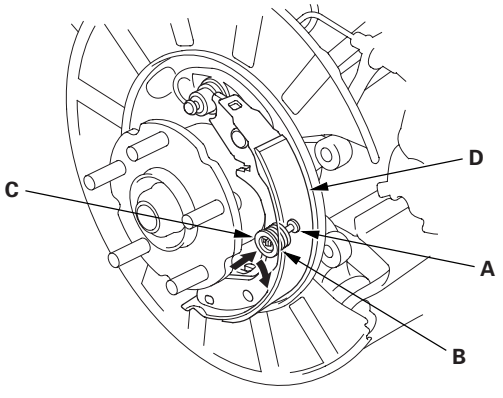
4. Apply a thin coat of 44 MA grease to the shoe ends and connecting rod ends (A), sliding surfaces (B), and opposite edges of the parking brake shoe (C) as shown. Wipe off any excess. Keep grease off the brake linings.



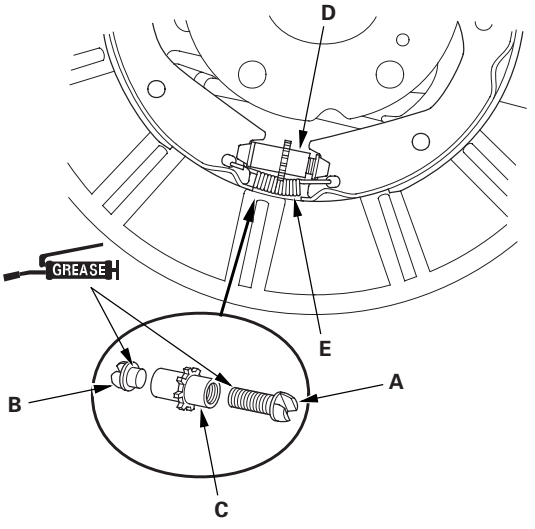
Greasing symbols:

- **Brake shoe ends and connecting rod ends**
- **Opposite edge of the shoe**
- **Sliding surface**

5. Install the tension pin (A), retainer spring (B), and retainer (C) of the rearward brake shoe (D). Make sure the tension pin does not contact the parking brake lever.

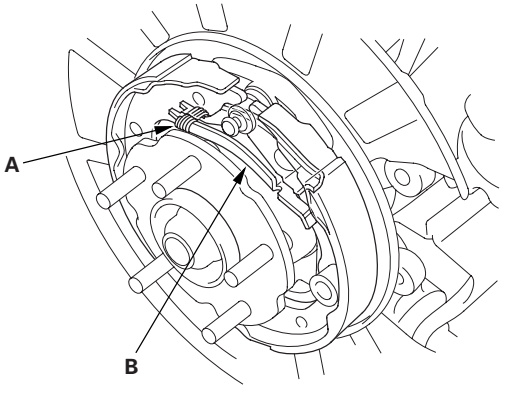


6. Clean the threaded portions of the clevis A, and coat the threads with multipurpose grease. Clean the sliding surface of the clevis B, and coat the sliding surface with multipurpose grease. Install the clevis A and B on the adjuster (C), and shorten the clevis A by turning the adjuster.

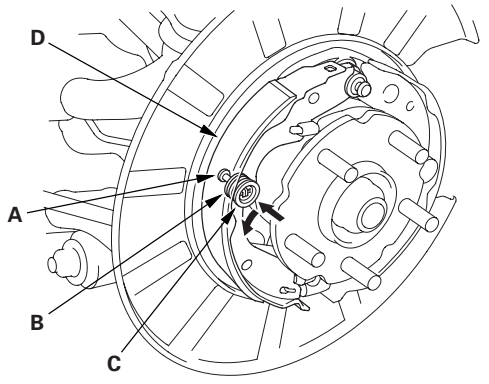


7. Reinstall the brake shoe adjuster assembly (D), and hook the lower return spring (E) on the parking brake shoes.

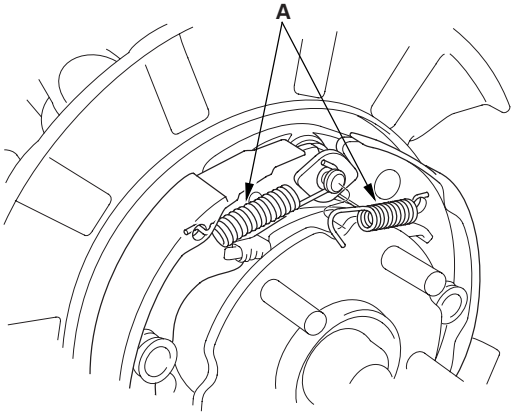
8. Install the rod spring (A) to the connecting rod (B) first. Then install the connecting rod on the parking brake shoes.



9. Install the tension pin (A), the retainer spring (B), and the retainer (C) on the forward brake shoe (D).



10. Install the upper return springs (A).



11. Install the rear brake disc/drum and the rear brake caliper.

12. Do the major parking brake adjustment (see page 19-8).

Parking Brake Shoe Lining Break-in

NOTE: Do the brake linings surface break-in when installing new parking brake shoes and/or new rear drum in brake disc.

⚠ WARNING

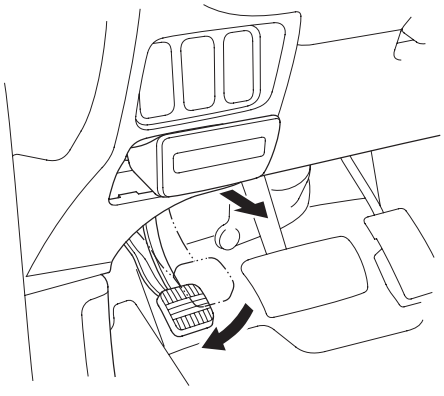
Do this operation in a safe area.

1. Park the vehicle on a firm, level surface.

2. Do the major parking brake adjustment (see page 19-8).

3. Do the minor parking brake adjustment (see page 19-7).

4. Press the parking brake pedal 2 to 4 clicks.



5. Drive the vehicle for 1/4 mile (400 m) at no more than 31 mph (50 km/h).

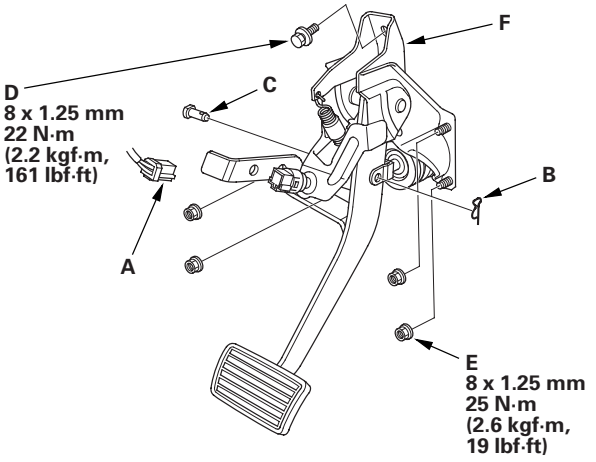
6. Stop the vehicle and release the parking brake for 5—10 minutes or drive the vehicle for 5—10 minutes to allow the brake disc/drum to cool.

7. Repeat steps 4 through 6 three more times.

8. Check the parking brake pedal adjustment (see page 19-7).

Brake Pedal Replacement

1. Disconnect the brake pedal position switch connector (A).



2. Remove the lock pin (B) and joint pin (C).

   NOTE: Use a new lock pin when reinstalling.

3. Remove the brake pedal bracket mounting bolt (D) and nuts (E).

4. Remove the brake pedal with bracket (F).

5. Install in the reverse order of removal.

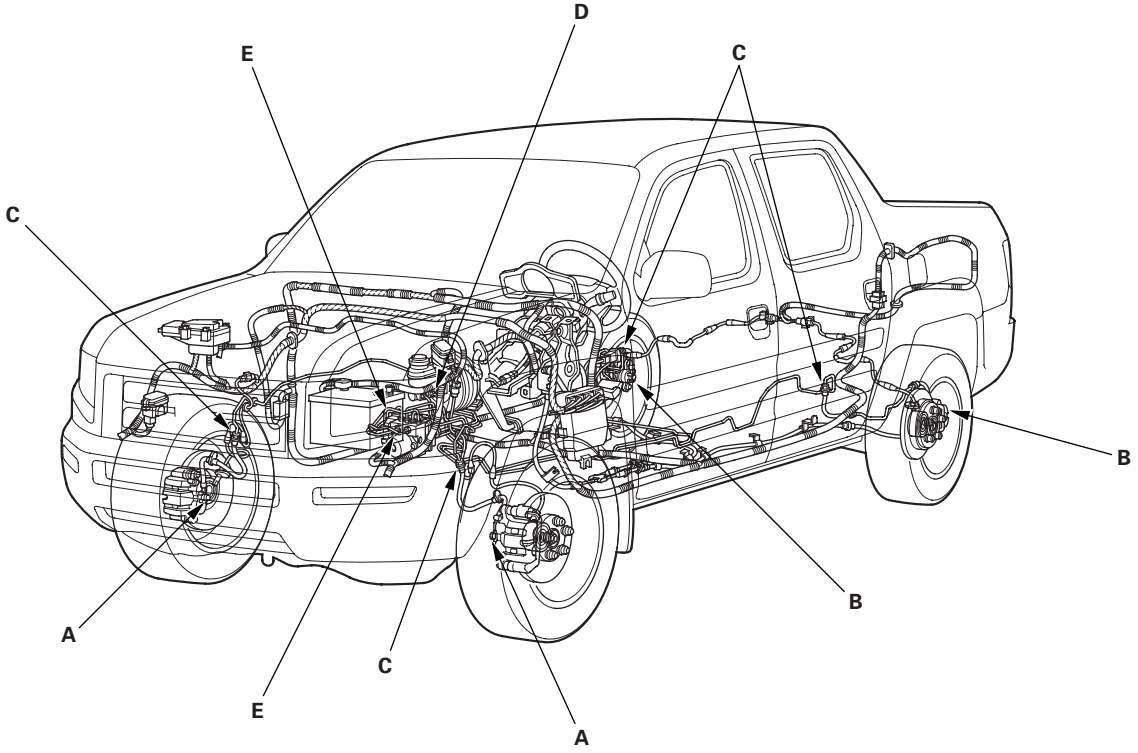
6. Do the brake pedal and brake pedal position switch adjustment (see page 19-6).

Brake Hose and Line Inspection

1. Inspect the brake hoses for damage, deterioration, leaks, interference, and twisting.
2. Check the brake lines for damage, rusting, and leaks. Also check for bent brake lines.
3. Check for leaks at hose and line joints and connections, and retighten if necessary.
4. Check the master cylinder and VSA modulator-control unit for damage and leaks.

NOTE: Replace the brake hose clip whenever the brake hose is serviced.

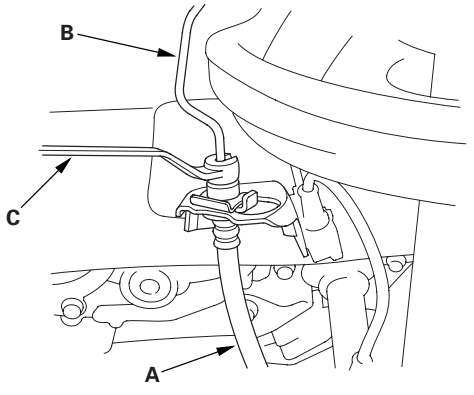
Connection Point	Component	Connected to	Specified Torque Value	Note
A	Front brake caliper	Brake hose	34 N·m (3.5 kgf·m, 25 lbf·ft)	Banjo bolt
		Bleed screw	9.0 N·m (0.9 kgf·m, 7.0 lbf·ft)	
B	Rear brake caliper	Brake hose	34 N·m (3.5 kgf·m, 25 lbf·ft)	Banjo bolt
		Bleed screw	9.0 N·m (0.9 kgf·m, 6.5 lbf·ft)	
C	Brake hose	Brake line	15 N·m (1.5 kgf·m, 11 lbf·ft)	Flare nut
D	Master cylinder	Brake line	35 N·m (3.6 kgf·m, 26 lbf·ft)	Flare nut
E	VSA modulator-control unit	Brake line (14 mm nut)	30 N·m (3.1 kgf·m, 22 lbf·ft)	Flare nut
		Brake line (10 mm nut)	15 N·m (1.5 kgf·m, 11 lbf·ft)	Flare nut



Brake Hose Replacement

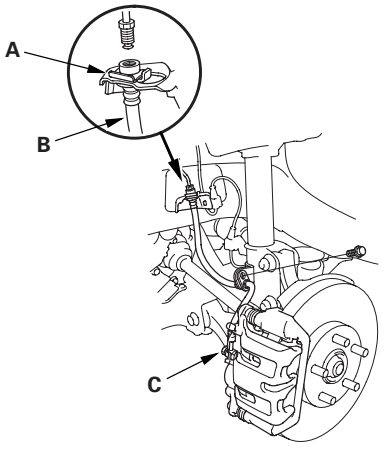
NOTE:
- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent the brake fluid from flowing, plug and cover the hose ends and joints with a shop towel or equivalent material.

1. Replace the brake hose (A) if the hose is twisted, cracked, or leaking.



2. Disconnect the brake hose from the brake line (B) using a 10 mm flare-nut wrench (C).

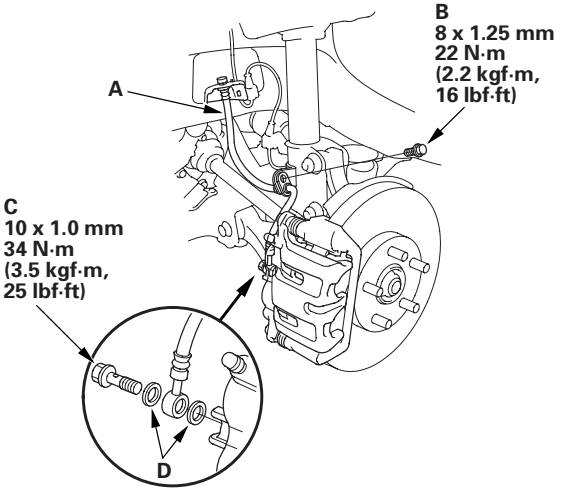
3. Remove and discard the brake hose clip (A) from the brake hose (B).



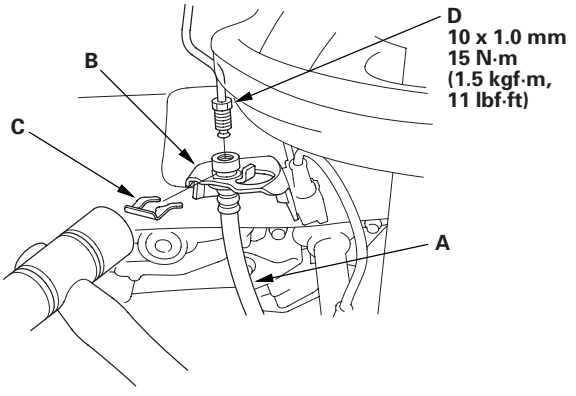
4. Remove the banjo bolt (C), and disconnect the brake hose from the caliper.

5. Remove the brake hose from the damper bracket.

6. Install the brake hose (A) on the damper bracket with flange bolt (B) first, then connect the brake hose to the caliper with the banjo bolt (C) and new sealing washers (D).



7. Install the brake hose (A) on the upper brake hose bracket (B) with a new brake hose clip (C).



8. Connect the brake line (D) to the brake hose.

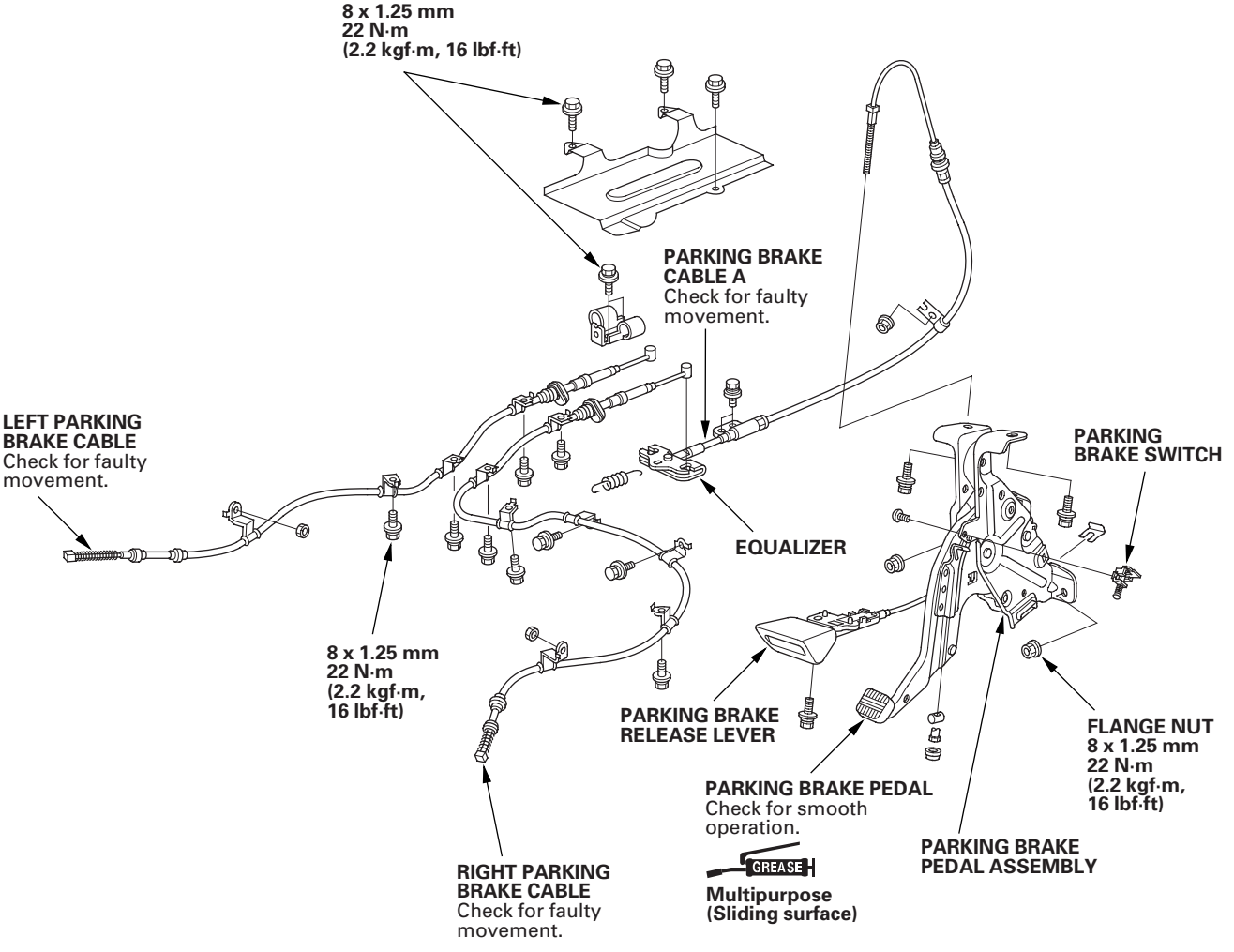
9. After installing the brake hose, bleed the brake system (see page 19-9).

10. Do the following check:

    - Check the brake hose and line joint for leaks, and tighten if necessary.
    - Check the brake hoses for interference and twisting.

Parking Brake Cable Replacement

Exploded View



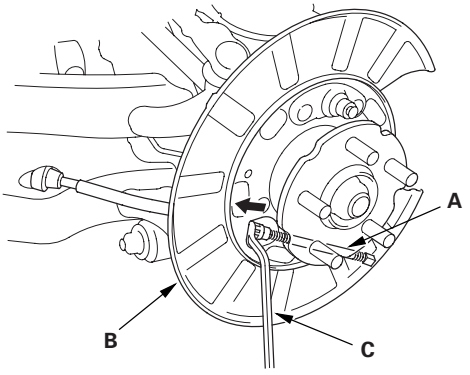
(cont'd)

Parking Brake Cable Replacement (cont'd)

NOTE: The parking brake cable must not be bent or distorted. This will lead to stiff operation and premature cable failure. Refer to the Exploded View as needed during this procedure.

1. Remove the parking brake shoes, and disconnect the parking brake cable from the brake shoe (see page 19-28).

2. Remove the parking brake cable (A) from the backing plate (B) using a 12 mm offset wrench (C).



3. Install the parking brake cable in the reverse order of removal, and adjust the parking brake (see page 19-7). Apply the parking brake firmly ten times, then adjust it again.

Brakes

Conventional Brake Components 19-1

VSA (Vehicle Stability Assist) System Components

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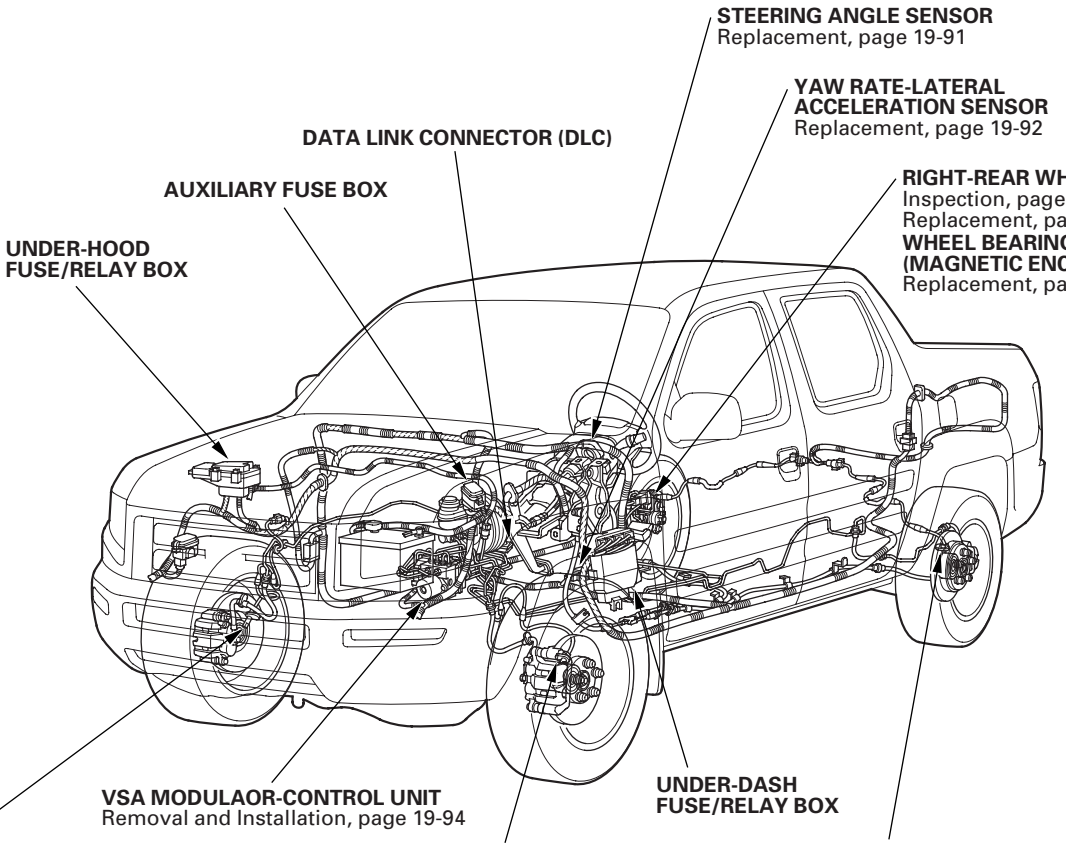
VSA System Components

Component Location Index



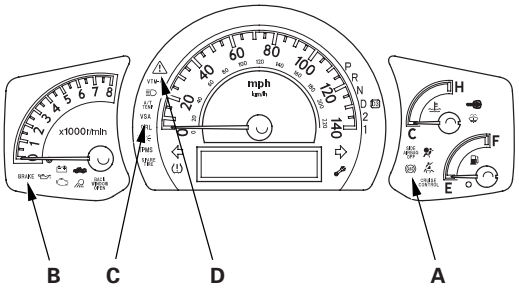
General Troubleshooting Information

System Indicator

This system has four indicators:

- ABS indicator (A)
- Brake system indicator (B)
- VSA indicator (C)
- VSA activation indicator (D)

When the system detects a problem, it turns the appropriate indicators on. Depending on the failure, the VSA modulator-control unit determines which indicators to turn on.
When the system is OK, each indicator comes on for about 2 seconds after turning the ignition switch ON (II), then goes off.



ABS indicator

The ABS indicator comes on when the ABS function is lost. The brakes still work like a conventional system.

Brake system indicator

The brake system indicator comes on when the EBD function is lost, the parking brake is applied, and/or the brake fluid level is low.

VSA indicator

The VSA indicator comes on when the VSA function is lost.

VSA activation indicator

The VSA activation indicator blinks when the VSA function is activating. The VSA activation indicator comes on when VSA is off or VSA function is lost.

ABS and VSA indicators go off

Each indicator goes off after a problem goes away, but the timing which the VSA modulator-control unit turns off the indicators varies between DTCs.

- DTC 61 or 62:
  The indicators go off automatically when the system returns to normal.
- DTC 11, 13, 15, 17, 21*, 25, 26, 27, 31, 32, 33, 34, 35, 36, 37, 38, 45, 46, 47, 48, 54, 65, 66, 67, 68, 72, 73, 74, 75, 76, 81, 84, 91, 92, or 97**:
  The indicators stay on until the ignition switch is turned OFF whether or not the system returns to normal.
  *: There are some cases that the indicators stay on until the vehicle is driven after the system returns to normal.
  **: There are some cases that the indicators go off automatically when the system returns to normal.
- DTC 12, 14, 16, 18, 51, 52, or 53:
  The indicators stay on until the vehicle is driven after the system returns to normal.

(cont'd)

General Troubleshooting Information (cont'd)

Diagnostic Trouble Code (DTC)

- The memory can hold 10 DTCs. However, when the same DTC is detected more than once, the more recent DTC is written over the earlier one. Therefore, when the same problem is detected repeatedly, it is memorized as a single DTC.
- The DTCs are indicated in the order they occur.
- The DTCs are memorized in the EEPROM. Therefore, the memorized DTCs cannot be canceled by disconnecting the battery. Do the specified procedures to clear the DTCs.

Self-diagnosis

- Self-diagnosis can be classified into two categories:
  – Initial diagnosis: Done right after the ignition switch is turned ON (II) and until the ABS and VSA indicators go off.
  – Regular diagnosis: Done right after the initial diagnosis until the ignition switch is turned OFF.
- When the system detects a problem, the VSA modulator-control unit shifts to fail-safe mode.

Kickback

The pump motor operates when the VSA modulator-control unit is functioning, and the fluid in the reservoir is forced out to the master cylinder, causing kickback at the brake pedal.

Pump Motor

- The pump motor operates when the VSA modulator-control unit is functioning.
- The VSA modulator-control unit checks the pump motor operation one time after completing initial diagnosis during regular diagnosis when the vehicle is driven over 10 mph (15 km/h). You may hear the motor operate at this time, but it is normal.

Brake Fluid Replacement/Air Bleeding

Brake fluid replacement and air bleeding procedures are identical to the procedures used on vehicles not equipped with the VSA system (see page 19-9).

How to Troubleshoot DTCs

The troubleshooting procedures assume that the cause of the problem is still present and the ABS and/or VSA indicator is still on. Following the flowchart when the ABS and/or VSA indicator does not come on can result in incorrect diagnosis.
The connector illustrations show the female terminal connectors with a single outline and the male terminal connectors with a double outline.

1. Ask the customer about the conditions when the problem occured, and try to reproduce the same conditions for troubleshooting. Find out when the ABS and/or VSA indicator came on, such as during control, after control, when the vehicle was travelling at a certain speed, etc.

2. When the ABS or VSA indicator does not come on during the test-drive, but troubleshooting is done based on the DTC, check for loose connectors, poor contact of the terminals, etc. before you start troubleshooting.

3. After troubleshooting, or repairs are done, clear the DTCs, and test-drive the vehicle under the same conditions as originally set with the DTCs. Make sure the ABS and VSA indicators do not come on.

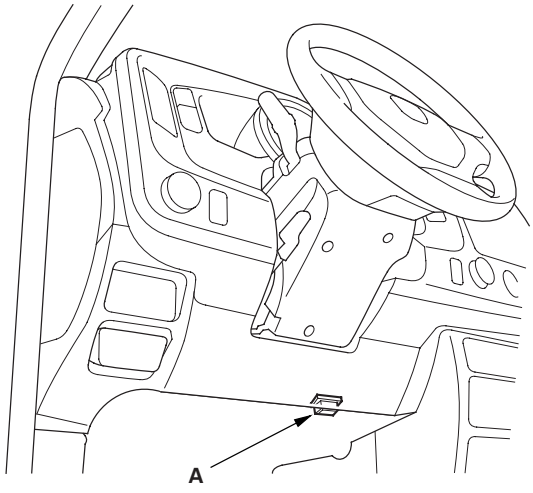
4. Check for other systems DTCs which connected via F-CAN, if there are DTCs that are related to F-CAN, the most likely cause was that the ignition switch was turned ON (II) with the VSA modulator-control unit connector disconnected. Clear the DTCs. Check for PGM-FI and ABS codes, and troubleshoot those first.

Intermittent Failures

The term ''intermittent failure'' means a system may have had a failure, but it checks OK now. If the indicator(s) of the system does not come on, check for loose connectors or poor contacts in the terminals related to the circuit that you are troubleshooting. If the indicators were on, but then went out, the original problem may have been intermittent.

How to Retrieve DTCs

1. With the ignition switch OFF, connect the HDS to the data link connector (DLC) (A) located behind the driver's dashboard lower cover.

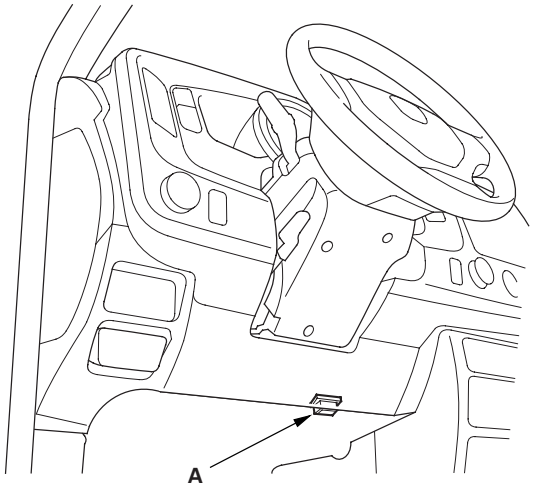


2. Turn the ignition switch ON (II), and follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC, refer to the DTC troubleshooting.

   NOTE: See the HDS Help menu for specific instructions.

How to Clear DTCs

1. With the ignition switch OFF, connect the HDS to the data link connector (DLC) (A) located behind the driver's dashboard lower cover.



2. Turn the ignition switch ON (II), and clear the DTC(s) by following the screen prompts on the HDS.

   NOTE: See the HDS Help menu for specific instructions.

VSA System Components

DTC Troubleshooting Index

DTC	Detection Item	ABS Indicator	Brake System Indicator	VSA Indicator	VSA Activation Indicator	Note
11	Right-front wheel sensor (open/short to body ground/ short to power)	ON	ON or OFF*	ON	ON	(see page 19-59)
12	Right-front wheel sensor (electrical noise/intermittent interruption)	ON	ON or OFF*	ON	ON	(see page 19-61)
13	Left-front wheel sensor (open/short to body ground/ short to power)	ON	ON or OFF*	ON	ON	(see page 19-59)
14	Left-front wheel sensor (electrical noise/intermittent interruption)	ON	ON or OFF*	ON	ON	(see page 19-61)
15	Right-rear wheel sensor (open/short to body ground/ short to power)	ON	ON or OFF*	ON	ON	(see page 19-59)
16	Right-rear wheel sensor (electrical noise/intermittent interruption)	ON	ON or OFF*	ON	ON	(see page 19-61)
17	Left-rear wheel sensor (open/short to body ground/ short to power)	ON	ON or OFF*	ON	ON	(see page 19-59)
18	Left-rear wheel sensor (electrical noise/intermittent interruption)	ON	ON or OFF*	ON	ON	(see page 19-61)
21	Difference in wheel speed	ON	OFF	ON	ON	(see page 19-62)
22	Current flow into wheel sensor input amplifier	OFF	ON	ON	ON	(see page 19-63)
25	Yaw rate sensor (sensor unit)	OFF	OFF	ON	ON	(see page 19-64)
26	Lateral acceleration sensor (sensor unit)	OFF	OFF	ON	ON	(see page 19-65)
27	Steering angle sensor (hardware)	OFF	OFF	ON	ON	(see page 19-65)
31	ABS solenoid	ON	ON	ON	ON	(see page 19-66)
32	ABS solenoid	ON	ON	ON	ON	(see page 19-66)
33	ABS solenoid	ON	ON	ON	ON	(see page 19-66)
34	ABS solenoid	ON	ON	ON	ON	(see page 19-66)
35	ABS solenoid	ON	ON	ON	ON	(see page 19-66)
36	ABS solenoid	ON	ON	ON	ON	(see page 19-66)
37	ABS solenoid	ON	ON	ON	ON	(see page 19-66)
38	ABS solenoid	ON	ON	ON	ON	(see page 19-66)
45	VSA solenoid	ON	ON	ON	ON	(see page 19-66)
46	VSA solenoid	ON	ON	ON	ON	(see page 19-66)
47	VSA solenoid	ON	ON	ON	ON	(see page 19-66)
48	VSA solenoid	ON	ON	ON	ON	(see page 19-66)
51	Motor Locked	ON	OFF	ON	ON	(see page 19-67)
52	Motor stuck OFF	ON	OFF	ON	ON	(see page 19-67)
53	Motor stuck ON	ON	OFF	ON	ON	(see page 19-69)
54	Valve relay	ON	OFF	ON		(see page 19-70)
61	IG1 voltage low	ON	OFF	ON	ON	(see page 19-72)
62	IG1 voltage high	ON	ON	ON	ON	(see page 19-73)
65	VSA pressure sensor (hardware)	ON	OFF	ON	ON	(see page 19-73)
66	VSA pressure sensor (software)	ON	OFF	ON	ON	(see page 19-74)
67	Brake pedal position switch (hardware)	OFF	OFF	ON	ON	(see page 19-75)
68	Brake pedal position switch (software)	OFF	OFF	ON	ON	(see page 19-76)
72	Steering angle sensor	OFF	OFF	ON	ON	(see page 19-78)
73	Yaw rate sensor (power supply)	OFF	OFF	ON	ON	(see page 19-78)
74	Yaw rate sensor (software)	OFF	OFF	ON	ON	(see page 19-79)
75	Lateral acceleration sensor (joint failure)	OFF	OFF	ON	ON	(see page 19-79)
76	Lateral acceleration sensor (software)	OFF	OFF	ON	ON	(see page 19-80)
81	Central Processing Unit (CPU)	ON	OFF	ON	ON	(see page 19-81)
84	Steering angle sensor No center point writing	OFF	OFF	ON	ON	(see page 19-81)
91	F-CAN communication	OFF	OFF	ON	ON	(see page 19-82)
92	F-CAN system	OFF	OFF	ON	ON	(see page 19-84)
97	VSA system	OFF	OFF	ON	ON	(see page 19-84)

*: Brake system indicator turns ON when 3 or more wheels fail.

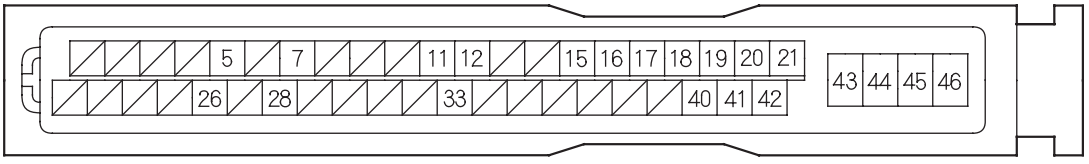
Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
ABS indicator does not come on	Symptom Troubleshooting (see page 19-85)	
ABS indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see page 19-85)	
Brake system indicator does not come on	Symptom Troubleshooting (see page 19-86)	
Brake system indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see page 19-87)	
VSA indicator does not come on	Symptom Troubleshooting (see page 19-88)	
VSA indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see page 19-88)	
VSA activation indicator does not come on at start-up (bulb check)	Symptom Troubleshooting (see page 19-89)	
VSA activation indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see page 19-90)	

VSA System Components

System Description

VSA Modulator-Control Unit Inputs and Outputs



Wire side of female terminals

Terminal number	Wire color	Terminal sign	Description	Measurement (Disconnect the VSA modulator-control unit 46P connector)		
				Terminal	Conditions	Voltage
5	GRY/RED	RRP	Sends right-rear wheel speed	———	———	———
7	GRY/YEL	RLP	Sends left-rear wheel speed			
11	YEL/BLK	S-GND	Ground for yaw rate-lateral acceleration sensor and steering angle sensor	———	———	———
12	RED	CAN-L	F-CAN communication circuit	———	———	———
15	LT BLU	K-LINE	Communicates with HDS	———	———	———
16	BLU	FR-GND	Detects right-front wheel sensor signal	———	———	———
17	GRN/BLK	FR +B				
18	BLU/YEL	RR-GND	Detects right-rear wheel sensor signal			
19	GRN/YEL	RR +B				
20	YEL/RED	RL +B	Detects left-rear wheel sensor signal			
21	BRN/WHT	FL-GND	Detects left-front wheel sensor signal			

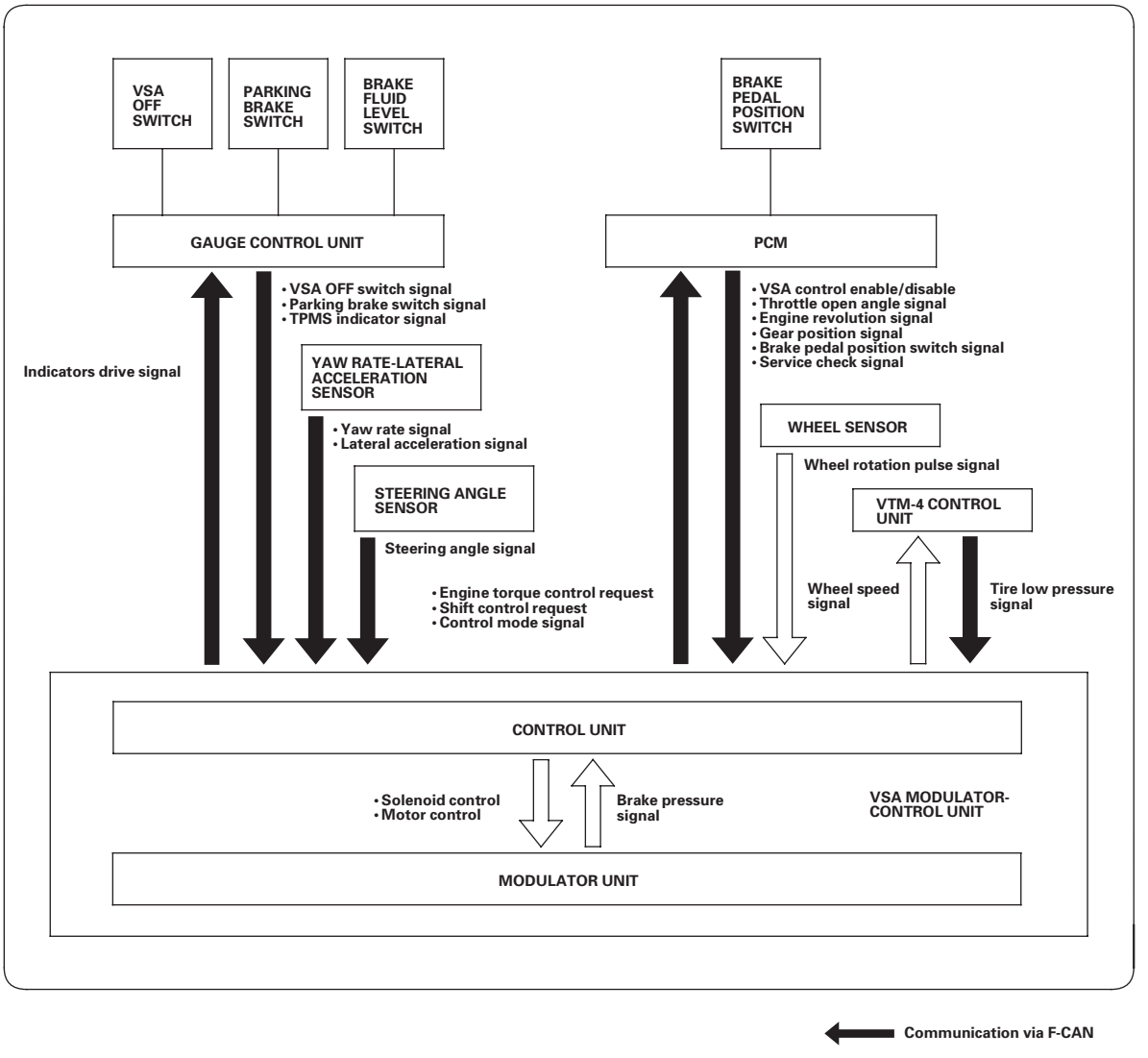
Terminal number	Wire color	Terminal sign	Description	Measurement (Disconnect the VSA control unit 46P connector)		
				Terminal	Conditions	Voltage
26	WHT/RED	FLP	Sends left-front wheel speed	———	———	———
28	LT GRN	FRP	Sends right-front wheel speed			
33	WHT	CAN-H	F-CAN communication circuit	———	———	———
40	GRN/WHT	IG1	Power source for activating the system	40—GND	Ignition switch ON (II)	Battery voltage
41	RED	RL-GND	Detect left-rear wheel sensor signal	———	———	———
42	BLU/WHT	FL +B	Detect left-front wheel sensor signal			
43	BLK	GND2	Ground for the VSA modulator-control unit	43—GND	At all time	0.1 V or less
44	WHT/RED	+B SOL	Power source for the valve relay	44—GND	At all time	Battery voltage
45	WHT	+B MOT	Power source for the motor relay	45—GND	At all time	Battery voltage
46	BLK	GND1	Ground for the pump motor	46—GND	At all time	0.1 V or less

(cont'd)

System Description (cont'd)

System Outline

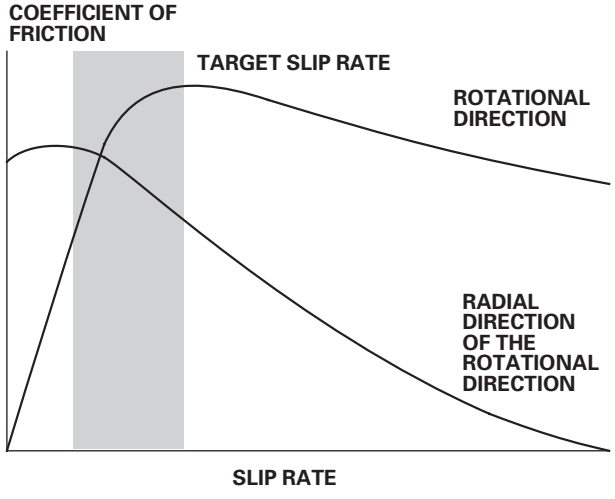
This system is composed of the VSA modulator-control unit, the wheel sensor, steering angle sensor, and yaw rate-lateral acceleration sensor, and takes charge of the ABS, EBD, TCS, VSA, and brake assist control by controlling the brake pressure of each wheel and the engine torque.



ABS Features

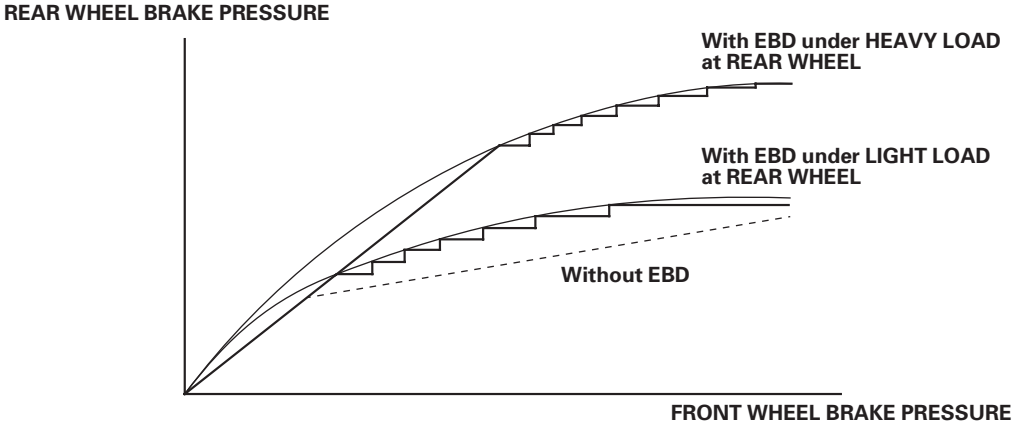
When the brake pedal is pressed while driving, the wheels sometimes lock before the vehicle comes to a stop. In such an event, the maneuverability of the vehicle is reduced if the front wheels are locked, and the stability of the vehicle is reduced if the rear wheels are locked, creating an extremely unstable condition. The ABS precisely controls the slip rate of the wheels to ensure maximum grip force from the tires, and it thereby ensures maneuverability and stability of the vehicle. The ABS calculates the slip rate of the wheels based on the four wheel speed, then it controls the brake fluid pressure to reach the target slip rate.

Grip force of tire and road surface



EBD Features

The electronic brake distribution (EBD) helps control vehicle braking by adjusting the rear brake force in accordance with rear wheel load before the ABS operates. Based on wheel sensor signals, the ABS control unit uses the modulator to control the rear brakes individually. When the rear wheel speed is less than the front wheel speed, the VSA modulator-control unit retains the current rear brake fluid pressure by closing the inlet valve in the modulator. As the rear wheel speed increases and approaches the front wheel speed, the VSA modulator-control unit increases the rear brake fluid pressure by momentarily opening the inlet valve. This whole process is repeated very rapidly. While this is happening, there is kickback at the brake pedal.

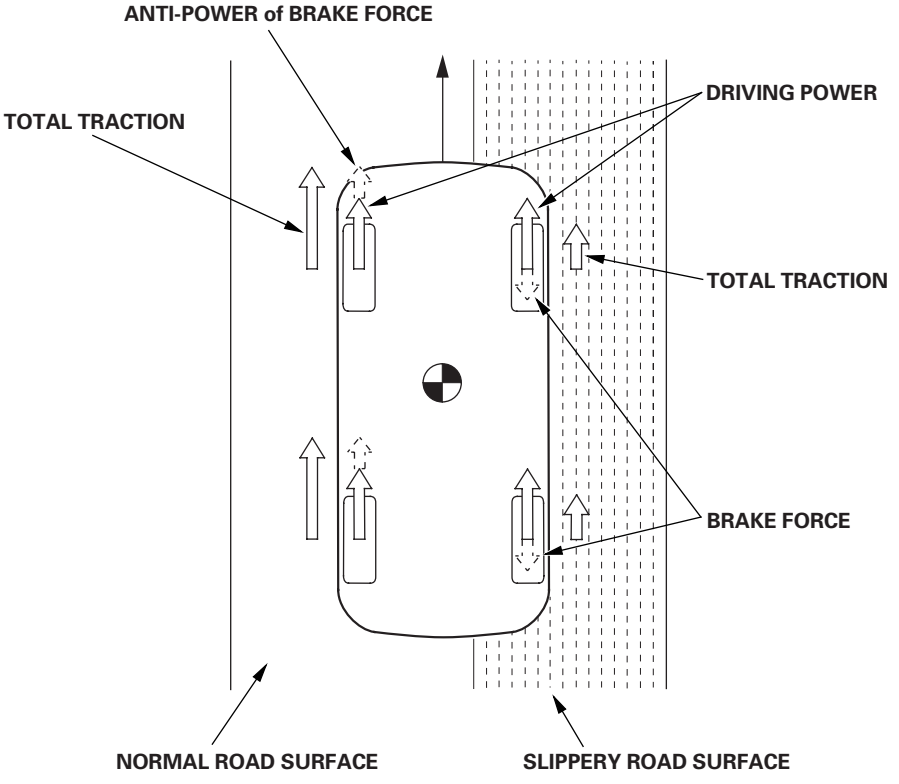


(cont'd)

System Description (cont'd)

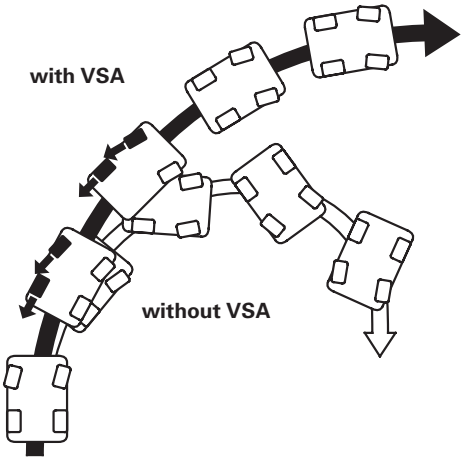
TCS Features

When a drive wheel loses traction on a slippery road surface and starts to spin, the VSA modulator-control unit applies brake pressure to the spinning wheel and sends an engine torque control request to the PCM to slow the spinning wheel and keep traction.



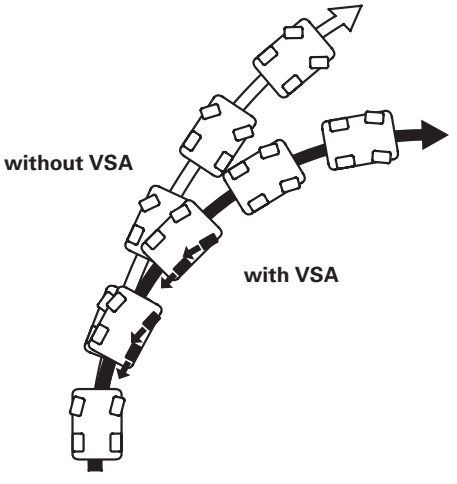
VSA System Features

Oversteer control
Applies the brakes to the front and rear outside wheels



The brake makes the yaw rate opposite to the turning direction

Understeer control
- Applies the brakes to the front and rear inside wheels
- Controls the engine torque when accelerating



The brake increases the yaw rate toward the turning direction

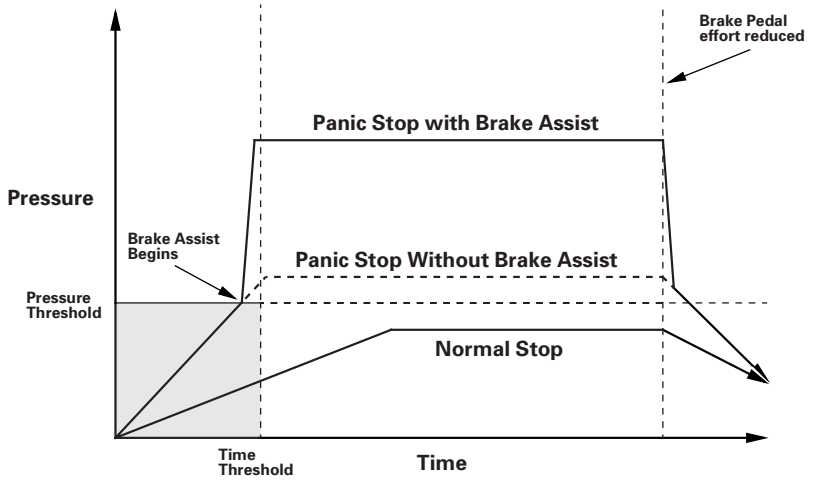
The throttle control effect;
• reduces vehicle speed
• increases cornering force

(cont'd)

System Description (cont'd)

Brake Assist Features

Brake assist helps ensure that any driver can achieve the full braking potential of the vehicle by increasing brake system pressure in a panic situation, bringing the vehicle into a full ABS stop.
Each time the ignition switch is turned ON (II), the VSA modulator-control unit learns the current driver's normal braking characteristics by monitoring the brake pressure sensor and the brake pedal position switch at each stop. Using these inputs and their values, the VSA modulator-control unit is able to learn the driver's normal braking habits, and then determine the difference between a normal stop and a panic stop for the individual driver of the vehicle. If during a panic stop the VSA modulator-control unit determines that the brake system pressure increases above a learned threshold in less than a learned amount of time, the VSA modulator-control unit engages brake assist. Because the brake system pressure crossed the threshold before the time threshold had expired, the VSA modulator-control unit goes into brake assist mode.



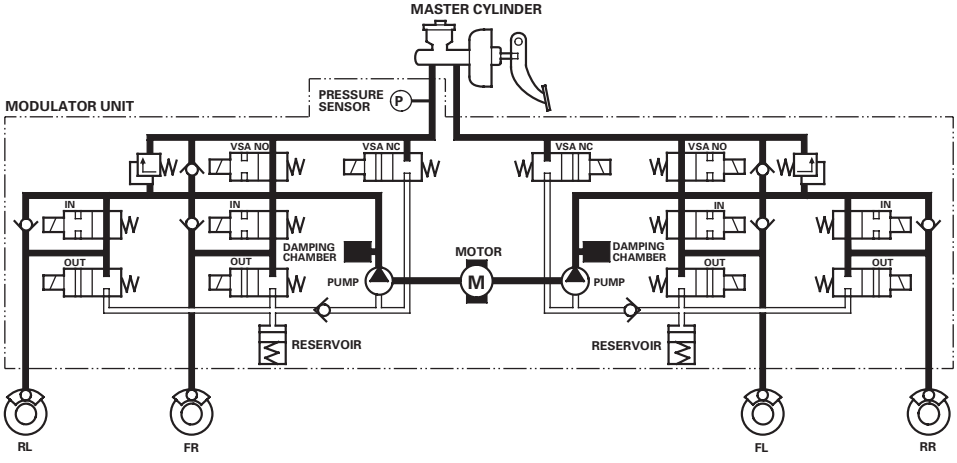
Modulator Unit

The modulator unit consists of the inlet solenoid valve, the outlet solenoid valve, the VSA normally open (NO) solenoid valve, VSA normally closed (NC) solenoid valve, the reservoir, the pump, the pump motor, and the damping chamber.
The modulator controls the caliper fluid pressure directly. It is a circulating-type modulator because the brake fluid circulates through the caliper, the reservoir, and the master cylinder.
The hydraulic control has three modes: pressure intensifying, pressure retaining, and pressure reducing.
The hydraulic circuit is an independent four channel type, one channel for each wheel.

ABS Control

Pressure intensifying mode
VSA NO valve open, VSA NC valve closed, inlet valve open, outlet valve closed.
Master cylinder fluid is pumped out to the caliper.

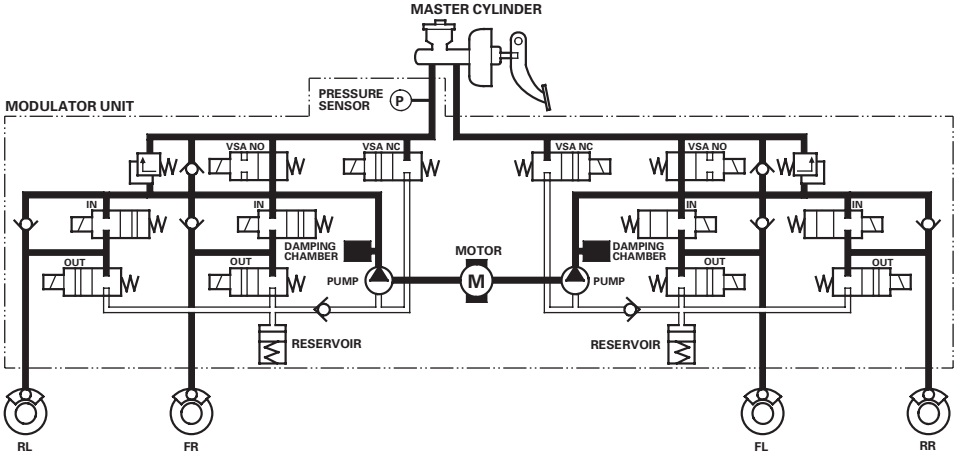
Pump motor
When starting the pressure reducing mode, the pump motor is ON. When stopping ABS operation, the pump motor is OFF.
The reservoir fluid is pumped out by the pump, through the damping chamber, to the master cylinder.



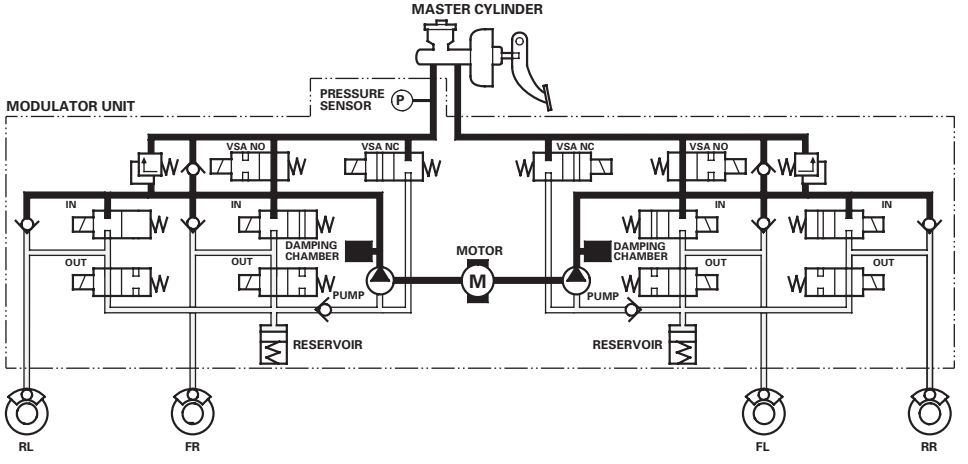
(cont'd)

System Description (cont'd)

Pressure retaining mode
VSA NO valve open, VSA NC valve closed, inlet valve closed, outlet valve closed.
Caliper fluid is retained by the inlet valve and outlet valve.



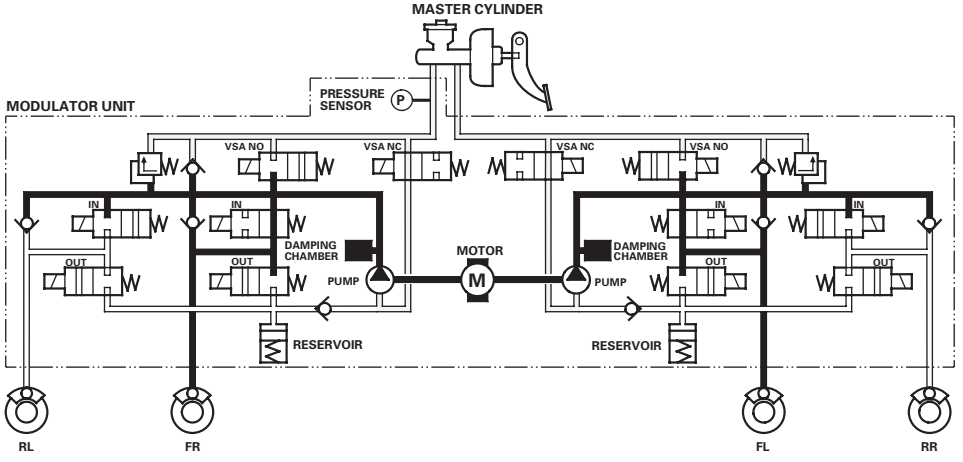
Pressure reducing mode
VSA NO valve open, VSA NC valve closed, inlet valve closed, outlet valve open.
Caliper fluid flows through the outlet valve to the reservoir.



TCS Control

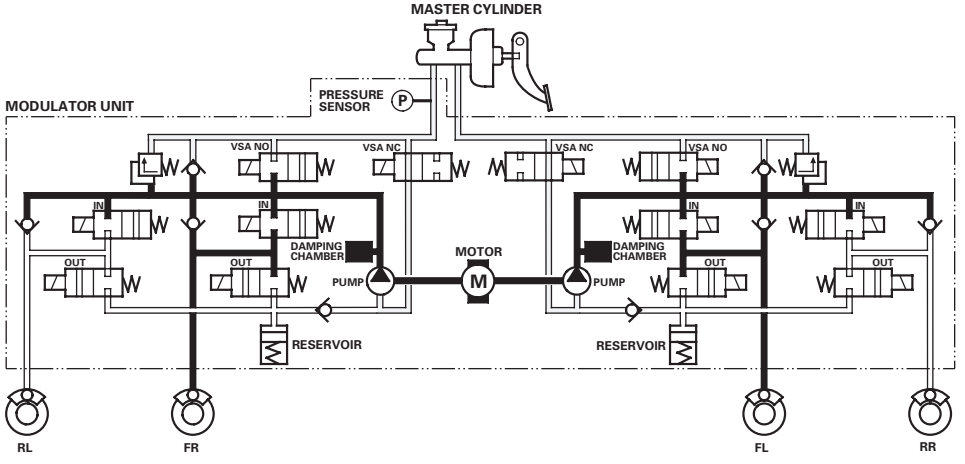
Pressure intensifying mode

VSA NO valve closed, VSA NC valve open, inlet valve open, outlet valve closed, pump motor ON.
The reservoir and master cylinder fluid is pumped out by the pump, through the damping chamber, to the front caliper.



Pressure retaining mode

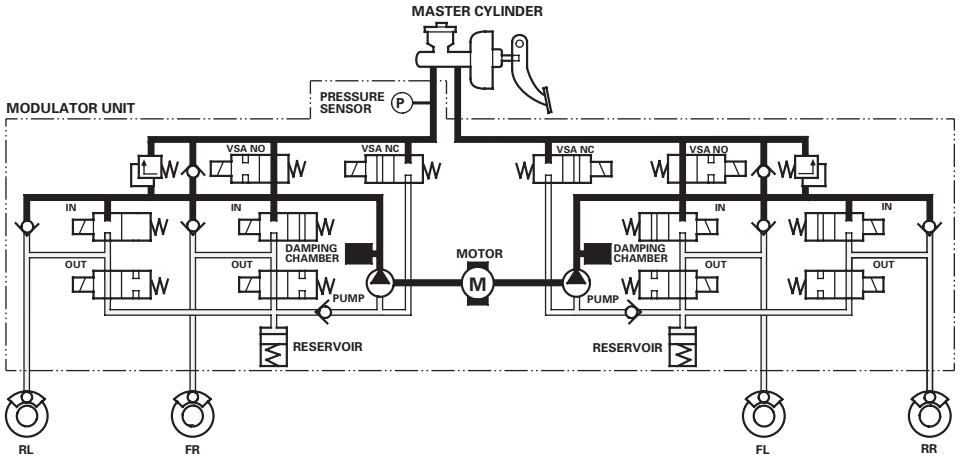
VSA NO valve closed, VSA NC valve open, inlet valve closed, outlet valve closed, pump motor ON.
Front caliper fluid is retained by the inlet valve and outlet valve.



(cont'd)

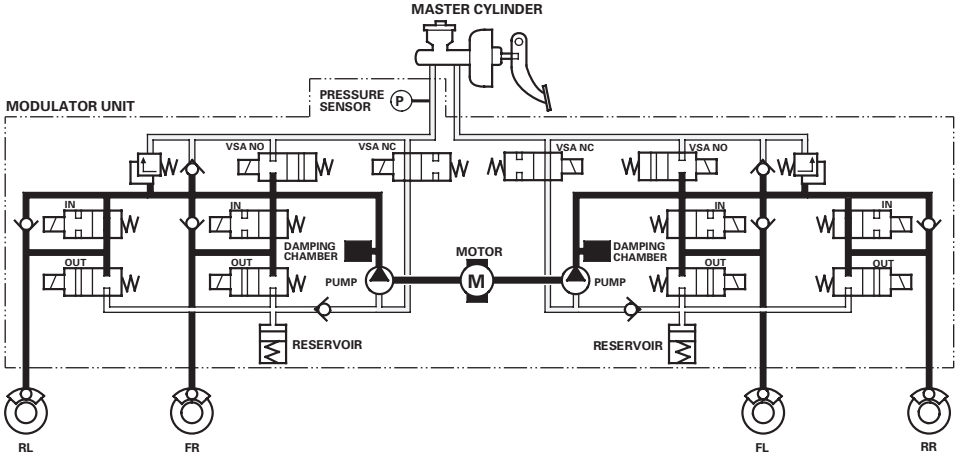
System Description (cont'd)

Pressure reducing mode
VSA NO valve open, VSA NC valve closed, inlet valve closed, front outlet valve open, pump motor ON.
Caliper fluid flows through the outlet valve to the reservoir.

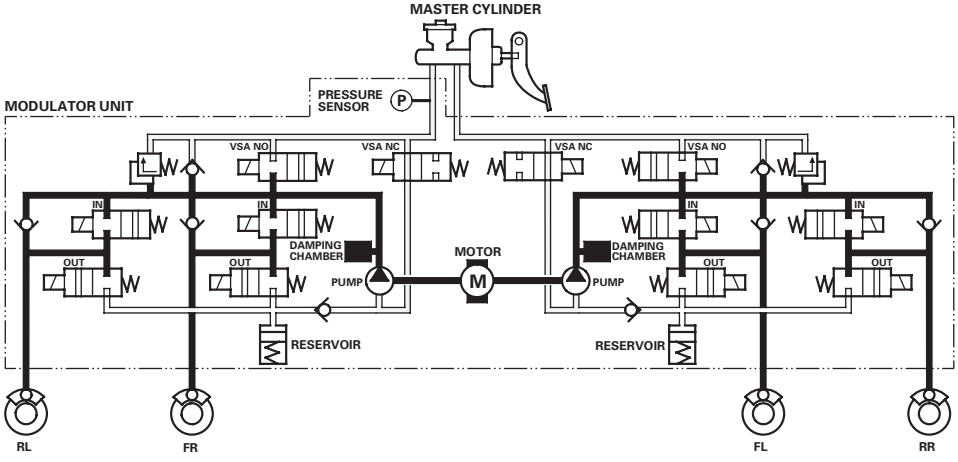


VSA Control

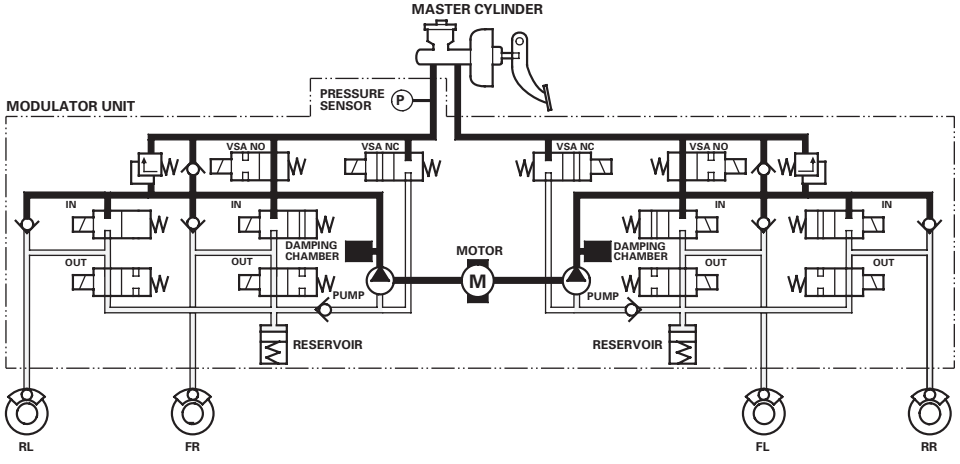
Pressure intensifying mode
VSA NO valve closed, VSA NC valve open, inlet valve open, outlet valve closed, pump motor ON.
The reservoir and master cylinder fluid is pumped out by the pump, through the damping chamber, to the front and rear calipers.



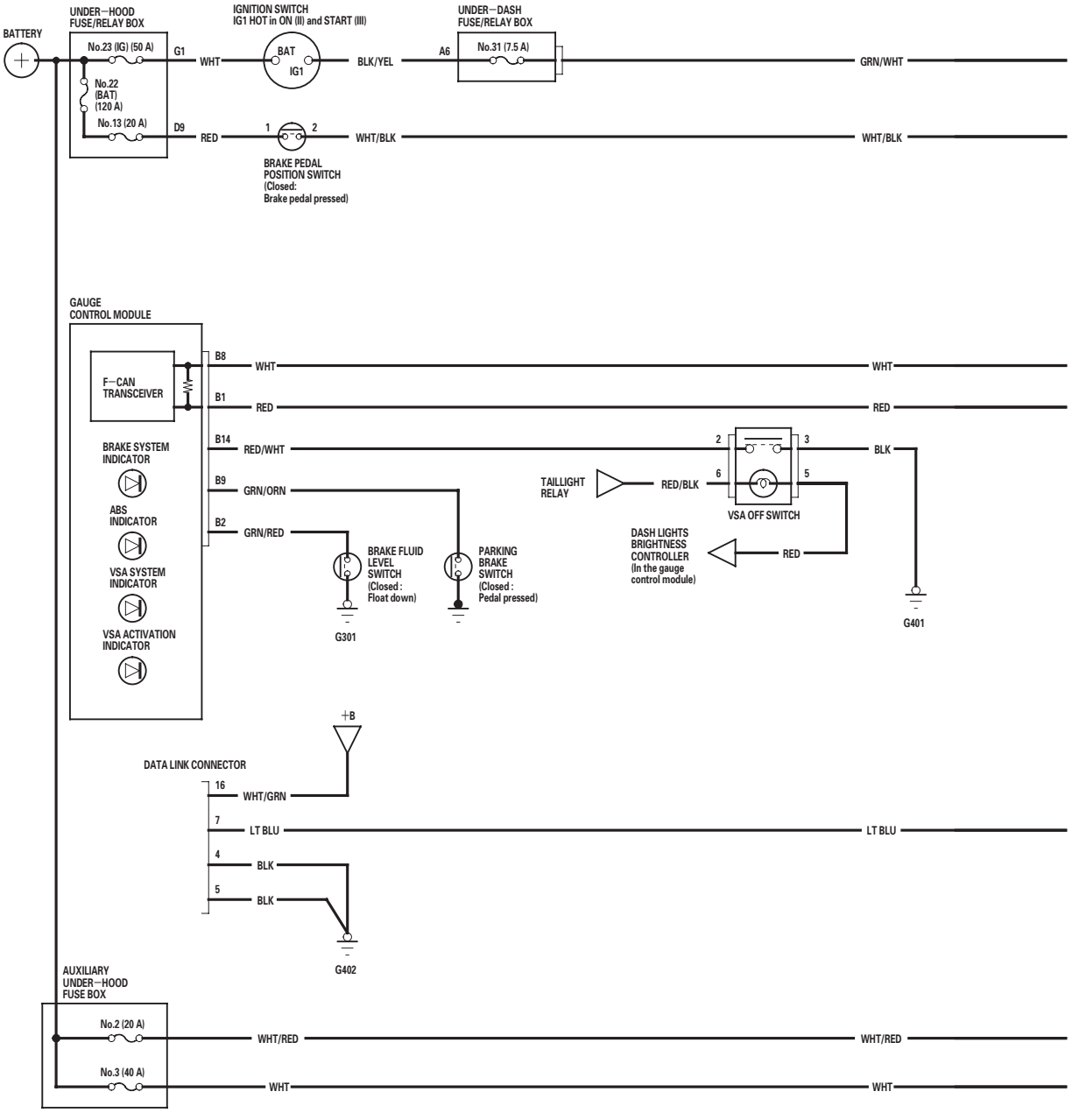
Pressure retaining mode
VSA NO valve closed, VSA NC valve open, inlet valve closed, outlet valve closed, pump motor ON.
Front and rear caliper fluid is retained by the inlet valve and outlet valve.

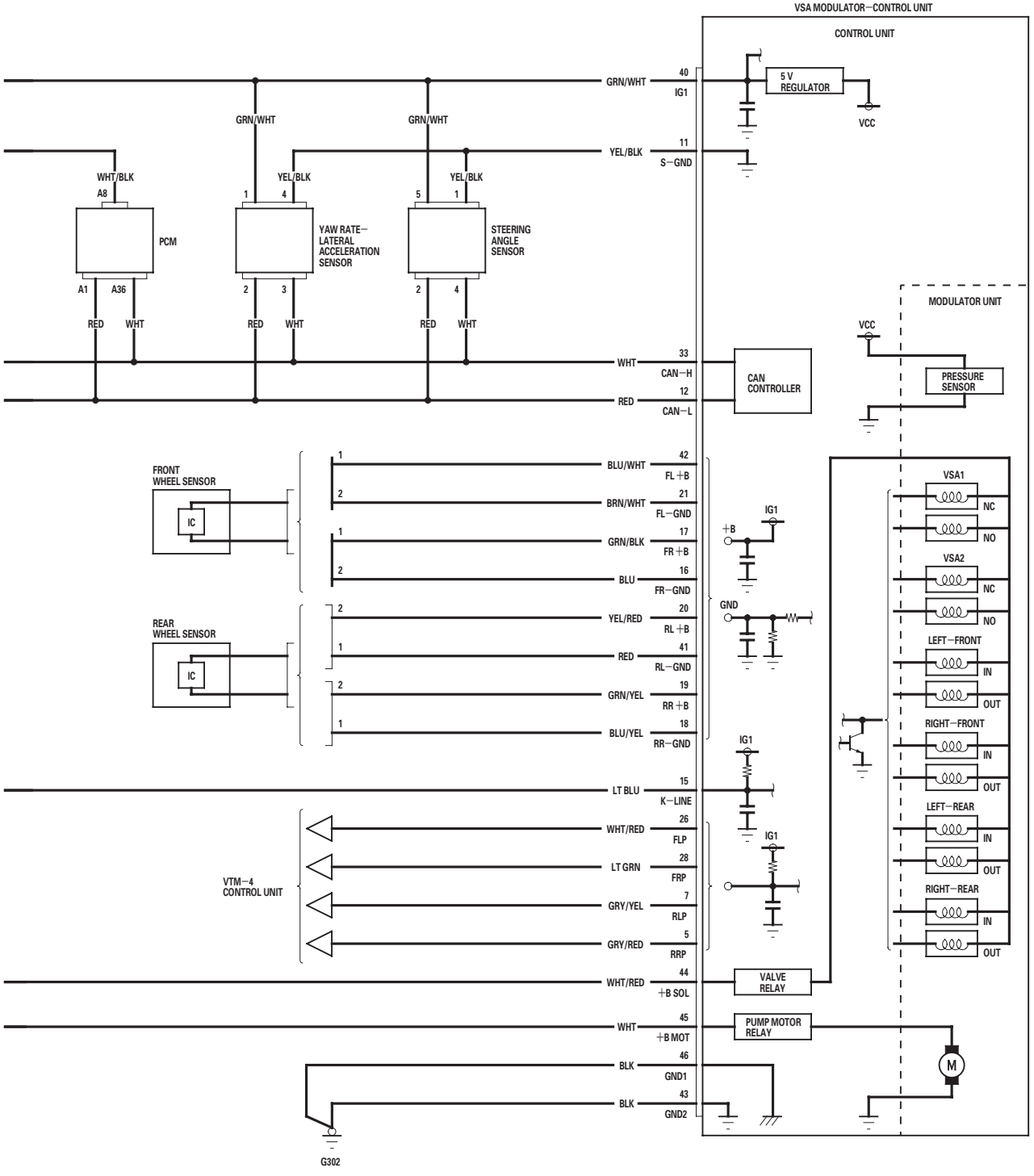


Pressure reducing mode
VSA NO valve open, VSA NC valve closed, inlet valve closed, outlet valve open, pump motor ON.
Caliper fluid flows through the outlet valve to the reservoir.



Circuit Diagram

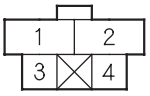



VSA MODULATOR−CONTROL UNIT
CONTROL UNIT
MODULATOR UNIT
GRN/WHT
40
IG1
5 V REGULATOR
VCC
YEL/BLK
11
S−GND
WHT/BLK
A8
PCM
A1
A36
RED
WHT
YEL/BLK
1
4
YAW RATE− LATERAL ACCELERATION SENSOR
2
3
RED
WHT
YEL/BLK
5
1
STEERING ANGLE SENSOR
2
4
RED
WHT
WHT
33
CAN−H
RED
12
CAN−L
CAN CONTROLLER
VCC
PRESSURE SENSOR
FRONT WHEEL SENSOR
IC
BLU/WHT
42
FL +B
BRN/WHT
21
FL−GND
GRN/BLK
17
FR +B
BLU
16
FR−GND
REAR WHEEL SENSOR
IC
YEL/RED
20
RL +B
RED
41
RL−GND
GRN/YEL
19
RR +B
BLU/YEL
18
RR−GND
IG1
+B
GND
VSA1
NC
NO
VSA2
NC
NO
LEFT−FRONT
IN
OUT
RIGHT−FRONT
IN
OUT
LEFT−REAR
IN
OUT
RIGHT−REAR
IN
OUT
LT BLU
15
K−LINE
VTM−4 CONTROL UNIT
WHT/RED
26
FLP
LT GRN
28
FRP
GRY/YEL
7
RLP
GRY/RED
5
RRP
WHT/RED
44
+B SOL
VALVE RELAY
WHT
45
+B MOT
PUMP MOTOR RELAY
M
BLK
46
GND1
BLK
43
GND2
G302

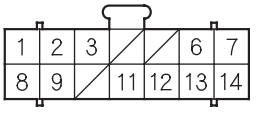
(cont'd)

Circuit Diagram (cont'd)

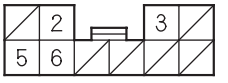
BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



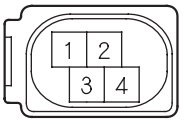
GAUGE CONTROL MODULE CONNECTOR B (14P)



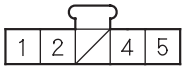
VSA OFF SWITCH 10P CONNECTOR



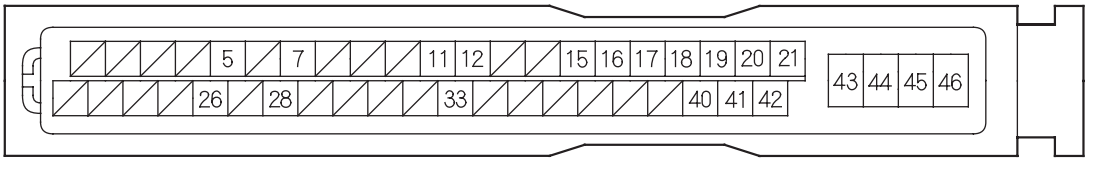
YAW RATE-LATERAL ACCELERATION SENSOR 4P CONNECTOR



STEERING ANGLE SENSOR 5P CONNECTOR

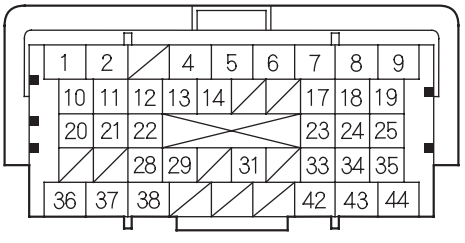


VSA MODULATOR-CONTROL UNIT 46P CONNECTOR

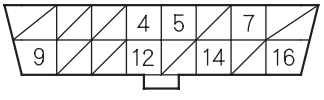


Wire side of female terminals

PCM CONNECTOR A (44P)



DATA LINK CONNECTOR (16P)



Terminal side of female terminals

WHEEL SENSOR 2P CONNECTOR

FRONT

Terminal side of male terminals

REAR

Wire side of female terminals

DTC Troubleshooting

DTC 11, 13, 15, 17: Wheel Sensor (Open/Short to Body Ground/Short to Power)

1. Clear the DTCs with the HDS (see page 19-41).
2. Turn the ignition switch OFF, then turn it ON (II).
3. Check for DTCs with the HDS (see page 19-41).

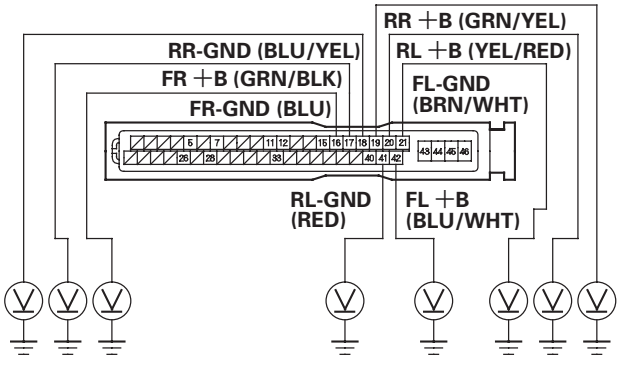
   Does the ABS indicator come on and are DTC 11, 13, 15, and/or 17 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■
4. Turn the ignition switch OFF.
5. Disconnect the VSA modulator-control unit 46P connector.
6. Turn the ignition switch ON (II).
7. Measure voltage between body ground and the appropriate wheel sensor +B and GND terminals of the VSA modulator-control unit 46P connector individually (see table).

DTC	Appropriate Terminal	
	+B	GND
11 (Right-front)	FR +B: No. 17	FR-GND: No. 16
13 (Left-front)	FL +B: No. 42	FL-GND: No. 21
15 (Right-rear)	RR +B: No. 19	RR-GND: No. 18
17 (Left-rear)	RL +B: No. 20	RL-GND: No. 41

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

Is there 0.2 V or more?

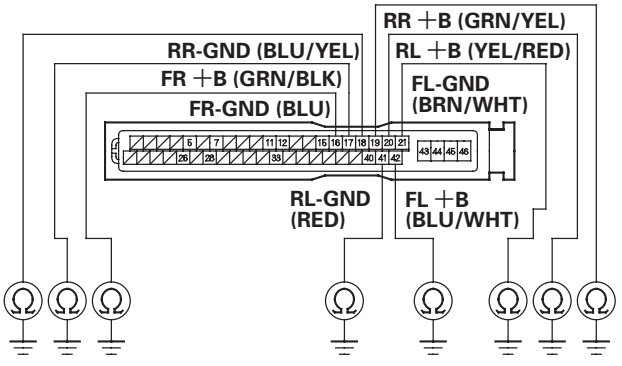
YES—Repair short to power in the wire between the VSA modulator-control unit and the appropriate wheel sensor. ■

NO—Go to step 8.

8. Turn the ignition switch OFF.
9. Check for continuity between body ground and the appropriate wheel sensor +B and GND terminals of the VSA modulator-control unit 46P connector individually (see table).

DTC	Appropriate Terminal	
	+B	GND
11 (Right-front)	FR +B: No. 17	FR-GND: No. 16
13 (Left-front)	FL +B: No. 42	FL-GND: No. 21
15 (Right-rear)	RR +B: No. 19	RR-GND: No. 18
17 (Left-rear)	RL +B: No. 20	RL-GND: No. 41

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 10.

NO—Go to step 12.

(cont'd)

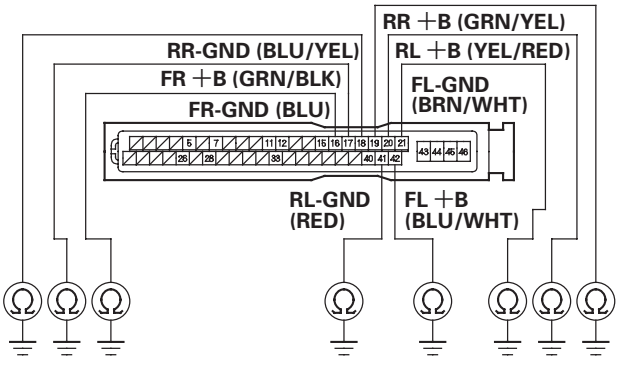
DTC Troubleshooting (cont'd)

10. Disconnect the appropriate wheel sensor 2P connector.

11. Check for continuity between body ground and the appropriate wheel sensor +B and GND terminals of the VSA modulator-control unit 46P connector individually (see table).

DTC	Appropriate Terminal	
	+B	GND
11 (Right-front)	FR +B: No. 17	FR-GND: No. 16
13 (Left-front)	FL +B: No. 42	FL-GND: No. 21
15 (Right-rear)	RR +B: No. 19	RR-GND: No. 18
17 (Left-rear)	RL +B: No. 20	RL-GND: No. 41

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the VSA modulator-control unit and the appropriate wheel sensor. ■

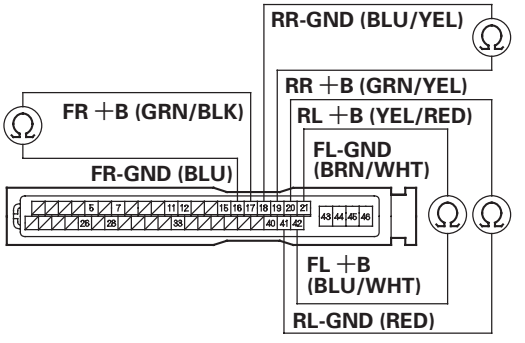
NO—Replace the appropriate wheel sensor (see page 19-97). ■

12. Disconnect the appropriate wheel sensor 2P connector.

13. Check for continuity between the appropriate wheel sensor +B and GND terminals of the VSA modulator-control unit 46P connector (see table).

DTC	Appropriate Terminal	
	+B	GND
11 (Right-front)	FR +B: No. 17	FR-GND: No. 16
13 (Left-front)	FL +B: No. 42	FL-GND: No. 21
15 (Right-rear)	RR +B: No. 19	RR-GND: No. 18
17 (Left-rear)	RL +B: No. 20	RL-GND: No. 41

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the VSA modulator-control unit and the appropriate wheel sensor. ■

NO—Go to step 14.

14. Substitute a known-good wheel sensor for the appropriate wheel sensor (see table).

DTC	Appropriate Wheel Sensor
11	Right-front
13	Left-front
15	Right-rear
17	Left-rear

15. Reconnect all of the disconnected connectors.

16. Clear the DTCs with the HDS (see page 19-41).

17. Turn the ignition switch OFF, then turn it ON (II).

18. Check for DTCs with the HDS (see page 19-41).

    Does the ABS indicator come on and are DTC 11, 13, 15, and/or 17 indicated?

    YES—Check for loose terminals in the VSA modulator-control unit 46P connector. If connections are good, replace the VSA modulator-control unit (see page 19-94), and recheck. ■

    NO—Replace the original wheel sensor (see page 19-97). ■

DTC 12, 14, 16, 18: Wheel Sensor (Electrical Noise/Intermittent Interruption)

NOTE: If the ABS and other indicators come on because of electrical noise, the indicators will go off when you test-drive the vehicle at 10 mph (15 km/h) or more and the noise is gone.

1. Check the DTCs with the HDS (see page 19-41).

2. Turn the ignition switch OFF, then turn it ON (II).

3. Check for DTCs with the HDS (see page 19-41).

    Are DTC 11, 13, 15, and/or 17 indicated with DTC 12, 14, 16, and/or 18 at a time?

    YES—Troubleshoot DTC 11, 13, 15, and/or 17, and recheck. ■

    NO—Go to step 4.

4. Check that the appropriate wheel sensor and magnetic encoder on the wheel bearing are properly mounted.

DTC	Appropriate Wheel Sensor
12	Right-front
14	Left-front
16	Right-rear
18	Left-rear

    Are they installed properly and in good condition?

    YES—Go to step 5.

    NO—Reinstall or replace the appropriate wheel sensor or wheel bearing, and recheck by test-driving. ■

5. Clear the DTCs with the HDS (see page 19-41).

6. Turn the ignition switch OFF, then disconnect the HDS.

(cont'd)

DTC Troubleshooting (cont'd)

7. Test-drive the vehicle at 10 mph (15 km/h) or more.

   NOTE: Drive the vehicle on the road, not on the hoist.

8. Connect the HDS, and check for DTCs with the HDS (see page 19-41).

   Does the ABS indicator come on and are DTC 12, 14, 16, and/or 18 indicated?

   YES—Go to step 9.

   NO—Intermittent failure, the system is OK at this time. ■

9. Substitute a known-good wheel sensor for the appropriate wheel sensor (see page 19-97).

10. Clear the DTCs with the HDS (see page 19-41).

11. Test-drive the vehicle at 10 mph (15 km/h) or more.

12. Check for DTCs with the HDS (see page 19-41).

    Does the ABS indicator come on and are DTC 12, 14, 16, and/or 18 indicated?

    YES—Check for loose terminals in the VSA modulator-control unit 46P connector. If connections are good, replace the VSA modulator-control unit (see page 19-94). ■

    NO—Replace the original wheel sensor (see page 19-97). ■

DTC 21: Difference in Wheel Speed

NOTE: After setting the front toe always perform the steering angle sensor writing procedure (see page 19-92).

1. Check all four tires.

   Are all four tires the correct size and properly inflated?

   YES—Go to step 2.

   NO—Install the correct tires or set the tires to the correct pressure, and retest by test-driving. ■

2. Check all wheel sensors (see page 19-97).

   Are wheel sensors installed correctly and in good condition?

   YES—Go to step 3.

   NO—Reinstall or replace the wheel sensor(s), and recheck by test-driving (see page 19-97). ■

3. Check all magnetic encoders on the wheel bearings.

   Are they installed correctly and in good condition?

   YES—Go to step 4.

   NO—Replace the wheel bearing(s), and recheck by test-driving (see page 18-16). ■

4. Swap the wheels and tires with a known-good vehicle.

5. Clear the DTCs with the HDS (see page 19-41).
6. Test-drive the vehicle at 10 mph (15 km/h) or more.
7. Check for DTCs with the HDS (see page 19-41).

   Does the VSA and ABS indicator come on, and is DTC 21 indicated?

   YES—Check for loose terminals in the VSA control unit 46P connector. If the connections are good, replace the VSA modulator-control unit (see page 19-94). ■

   NO—Install the original wheels and tires onto the vehicle and recheck. If the DTC 21 is indicated again, replace the problem tires. ■

DTC 22: Current Flow into Wheel Sensor Input Amplifier

1. Turn the ignition switch OFF, then turn it ON (II).
2. Check for DTCs with the HDS (see page 19-41).

   Do the VSA and ABS indicators come on, and are DTCs 11, 13, 15, 17 indicated?

   YES—Troubleshoot the DTCs indicated (see page 19-40). ■

   NO—Go to step 3.

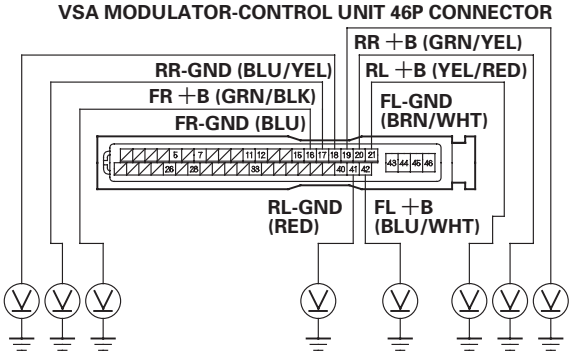
3. Turn the ignition switch OFF.
4. Disconnect the VSA modulator-control unit 46P connector.
5. Start the engine.

(cont'd)

DTC Troubleshooting (cont'd)

6. Measure voltage between body ground and all the wheel sensor +B and GND terminals of the VSA modulator-control unit 46P connector individually (see table).

DTC	Appropriate Terminal	
	+B	GND
Right-front	FR +B: No. 17	FR-GND: No. 16
Left-front	FL +B: No. 42	FL-GND: No. 21
Right-rear	RR +B: No. 19	RR-GND: No. 18
Left-rear	RL +B: No. 20	RL-GND: No. 41



Wire side of female terminals

Is there any voltage?

YES—Repair short to power in the wires between the VSA modulator-control unit and the wheel sensor. After repair, go to step 7. ■

NO—Check for loose or poor connections in the VSA modulator-control unit 46P connector and wheel sensor 2P connector. If connections are good, replace the VSA modulator-control unit (see page 19-94). ■

7. Clear the DTCs with the HDS (see page 19-41).

8. Check for DTCs with the HDS (see page 19-41).

Does the VSA and ABS indicators come on, and is DTC 22 indicated?

YES—Check for loose or poor connections in the VSA modulator-control unit 46P connector. If connections are good, replace the VSA modulator-control unit (see page 19-94). ■

NO—The system is OK at this time. ■

DTC 25: Yaw Rate Sensor (Sensor Unit)

1. Check for DTCs with the HDS (see page 19-41).

Is DTC 91 or 92 indicated with DTC 25 at the same time?

YES—Troubleshoot DTC 91 or 92, and recheck. ■

NO—Go to step 2.

2. Turn the ignition switch OFF.

3. Substitute a known-good yaw rate-lateral acceleration sensor (see page 19-92).

4. Clear the DTCs with the HDS (see page 19-41).

5. Turn the ignition switch OFF, then turn it ON (II).

6. Check for DTCs with the HDS (see page 19-41).

Does the VSA indicator come on, and is DTC 25 indicated?

YES—Replace the VSA modulator-control unit (see page 19-94). ■

NO—Replace the original yaw rate-lateral acceleration sensor (see page 19-92). ■

DTC 26: Lateral Acceleration Sensor (Sensor Unit)

1. Check for DTCs with the HDS (see page 19-41).

   Are DTC 91 or 92 indicated with DTC 26 at the same time?

   YES—Troubleshoot DTC 91 or 92, and recheck. ■

   NO—Go to step 2.

2. Turn the ignition switch OFF.
3. Substitute a known-good yaw rate-lateral acceleration sensor (see page 19-92).
4. Clear the DTCs with the HDS (see page 19-41).
5. Turn the ignition switch OFF, then turn it ON (II).
6. Check for DTCs with the HDS (see page 19-41).

   Does the VSA indicator come on, and is DTC 26 indicated?

   YES—Replace the VSA modulator-control unit (see page 19-94). ■

   NO—Replace the original yaw rate-lateral acceleration sensor (see page 19-92). ■

DTC 27: Steering Angle Sensor (Hardware)

1. Check for DTCs with the HDS (see page 19-41).

   Is DTC 91 or 92 indicated with DTC 27 at the same time?

   YES—Troubleshoot DTC 91 or 92, and recheck. ■

   NO—Go to step 2.

2. Turn the ignition switch OFF.
3. Check the installation of the steering angle sensor.

   Is the steering angle sensor installed correctly?

   YES—Go to step 7.

   NO—Go to step 4.

4. Do the steering angle sensor point writing (see page 19-92).
5. Clear the DTCs with the HDS (see page 19-41).
6. Turn the ignition switch OFF, then turn it ON (II).
7. Check for DTCs with the HDS (see page 19-41).

   Does the VSA system indicator come on, and is DTC 27 indicated?

   YES—The system is OK at this time. ■

   NO—Go to step 8.

8. Substitute a known-good steering angle sensor (see page 19-91).
9. Clear the DTCs with the HDS (see page 19-41).
10. Turn the ignition switch OFF, then turn it ON (II).
11. Check for DTCs with the HDS (see page 19-41).

    Does the VSA system indicator come on, and is DTC 27 indicated?

    YES—Replace the VSA modulator-control unit (see page 19-94). ■

    NO—Replace the original steering angle sensor (see page 19-91). ■

DTC Troubleshooting (cont'd)

DTC 31, 32, 33, 34, 35, 36, 37, 38: ABS Solenoid

1. Check for DTCs with the HDS (see page 19-41).

   Is DTC 54 indicated with DTC 31, 32, 33, 34, 35, 36, 37, and/or 38 at the same time?

   YES—Troubleshoot DTC 54, and recheck. ■

   NO—Go to step 2.

2. Clear the DTCs with the HDS (see page 19-41).
3. Turn the ignition switch OFF, then turn it ON (II).
4. Check for DTCs with the HDS (see page 19-41).

   Does the ABS indicator come on and are DTC 31, 32, 33, 34, 35, 36, 37, and/or 38 indicated?

   YES—Replace the VSA modulator-control unit (see page 19-94). ■

   NO—The system is OK at this time. ■

DTC 45, 46, 47, 48: VSA Solenoid

1. Check for DTCs with the HDS (see page 19-41).

   Is DTC 54 indicated with DTC 45, 46, 47, and/or 48 at the same time?

   YES—Troubleshoot DTC 54, and recheck. ■

   NO—Go to step 2.

2. Clear the DTCs with the HDS (see page 19-41).
3. Turn the ignition switch OFF, then turn it ON (II).
4. Check for DTCs with the HDS (see page 19-41).

   Does the ABS indicator come on and are DTC 45, 46, 47, and/or 48 indicated?

   YES—Replace the VSA modulator-control unit (see page 19-94). ■

   NO—The system is OK at this time. ■

DTC 51: Motor Locked

1. Clear the DTCs with the HDS (see page 19-41).
2. Test-drive the vehicle at 10 mph (15 km/h) or more.
3. Check for DTCs with the HDS (see page 19-41).

   Does the ABS indicator come on, and is DTC 51 indicated?

   YES—Replace the VSA modulator-control unit (see page 19-94). ■

   NO—The system is OK at this time. ■

DTC 52: Motor Stuck OFF

1. Check the No. 3 (40 A) fuse in the auxiliary under-hood fuse box.

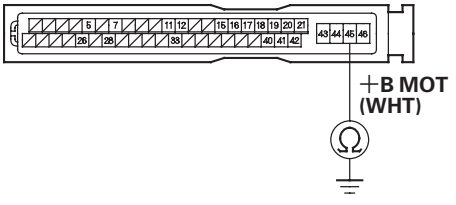
   Is the fuse OK?

   YES—Reinstall the checked fuse, and go to step 4.

   NO—Go to step 2.

2. Disconnect the VSA modulator-control unit 46P connector.
3. Check for continuity between VSA modulator-control unit 46P connector terminal No. 45 and body ground.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between No. 3 (40 A) fuse in the under-hood fuse box and the VSA modulator-control unit. ■

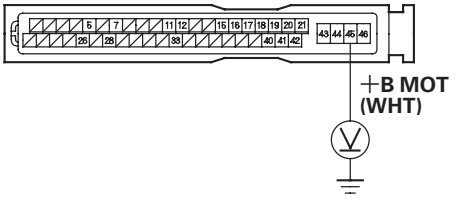
NO—Install a new No. 3 (40 A) fuse, then go to step 4.

(cont'd)

DTC Troubleshooting (cont'd)

4. Disconnect the VSA modulator-control unit 46P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between the VSA modulator-control unit 46P connector terminal No. 45 and body ground.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

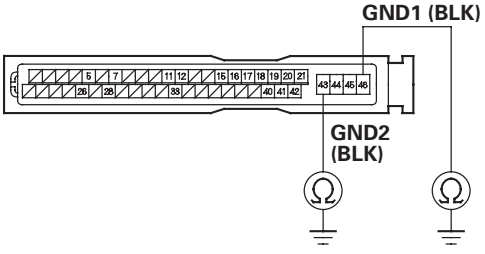
Is there battery voltage?

YES—Go to step 7.

NO—Repair open in the wire between the No. 3 (40 A) fuse in the under-hood fuse/relay box and the VSA modulator-control unit. ■

7. Check for continuity between VSA modulator-control unit 46P connector terminals No. 43, No. 46 and body ground.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 8.

NO—Repair open in the wire between the VSA modulator-control unit and body ground (G302). ■

8. Reconnect the VSA modulator-control unit 46P connector.
9. Turn the ignition switch ON (II).
10. Clear the DTC with the HDS.
11. Test-drive the vehicle at 10 mph (15 km/h) or more.
12. Check for DTCs with the HDS.

Is DTC 52 indicated?

YES—Check for loose terminals in the VSA modulator-control unit 46P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-94) and retest. ■

NO—Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA modulator-control unit 46P connector. ■

DTC 53: Motor Stuck ON

1. Turn the ignition switch ON (II) and check the pump motor.

   Is the pump motor working?

   YES—Replace the VSA modulator-control unit (see page 19-94). ■

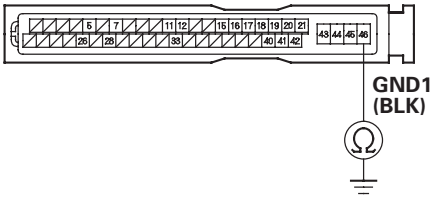
   NO—Go to step 2.

2. Turn the ignition switch OFF.

3. Disconnect the VSA modulator-control unit.

4. Check for continuity between VSA modulator-control unit 46P connector terminal No. 46 and body ground.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

   Is there continuity?

   YES—Go to step 5.

   NO—Repair open in the wire between the VSA modulator-control unit and body ground (G302). ■

5. Reconnect the VSA modulator-control unit 46P connector.

6. Clear the DTCs with the HDS (see page 19-41).

7. Turn the ignition switch OFF, then disconnect the HDS.

8. Test-drive the vehicle at 10 mph (15 km/h) or more.

9. Connect the HDS, and check for DTCs with the HDS (see page 19-41).

   Does the ABS indicator come on, and is DTC 53 indicated?

   YES—Check for loose terminals in the VSA modulator-control unit 46P connector. If connections are good, replace the VSA modulator-control unit (see page 19-94). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC Troubleshooting (cont'd)

DTC 54: Valve Relay

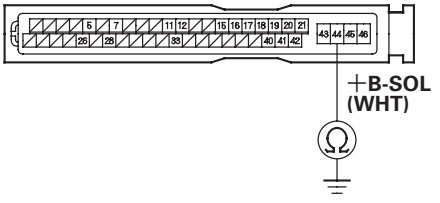
1. Turn the ignition switch OFF.
2. Check the No. 2 (20 A) fuse in the auxiliary fuse box.

   Is the fuse blown?

   YES—Go to step 3.

   NO—Reinstall the checked fuse, then go to step 5.
3. Disconnect the VSA modulator-control unit 46P connector.
4. Check for continuity between VSA modulator-control unit 46P connector terminal No. 44 and body ground.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

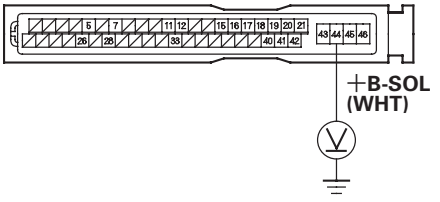
Is there continuity?

YES—Repair short to body ground in the wire between the No. 2 (20 A) fuse in the auxiliary fuse box and the VSA modulator-control unit. ■

NO—Install a new No. 2 (20 A) fuse, then go to step 6.

5. Disconnect the VSA modulator-control unit 46P connector.
6. Measure voltage between VSA modulator-control unit 46P terminal No. 44 and body ground.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

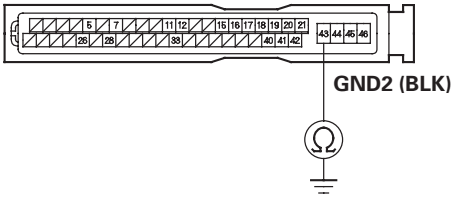
Is there battery voltage?

YES—Go to step 7.

NO—Repair open in the wire between the No. 2 (20 A) fuse in the auxiliary fuse box and the VSA modulator-control unit. ■

7. Check for continuity between VSA modulator-control unit 46P connector terminal No. 43 and body ground.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 8.

NO—Repair open in the wire between the VSA modulator-control unit and body ground (G302). ■

8. Reconnect the VSA modulator-control unit 46P connector.

9. Turn the ignition switch ON (II).

10. Clear the DTC with the HDS.

11. Test-drive the vehicle at 10 mph (15 km/h) or more.

12. Check for DTCs with the HDS.

Is DTC 54 indicated?

YES—Check for loose terminals in the VSA modulator-control unit 46P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-94) and retest. ■

NO—Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA modulator-control unit 46P connector. ■

DTC Troubleshooting (cont'd)

DTC 61: IG1 Voltage Low

1. Test the battery and connections.

   Is the battery OK?

   YES—Go to step 2.

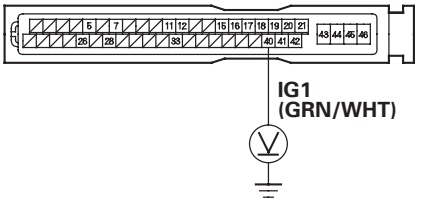
   NO—Replace the battery; test the charging system (see page 4-28), repair any problems found with the charging system before proceeding. ■

2. Disconnect the VSA modulator-control unit 46P connector.

3. Turn the ignition switch ON (II).

4. Measure voltage between VSA modulator-control unit 46P connector terminal No. 40 and body ground.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

   Is there battery voltage?

   YES—Go to step 5.

   NO—Repair open or high resistance in the wire between No. 31 (7.5 A) fuse in the under-dash fuse/relay box and the VSA modulator-control unit. ■

5. Turn the ignition switch OFF.

6. Reconnect the VSA modulator-control unit 46P connector.

7. Clear the DTCs with the HDS (see page 19-41).

8. Test-drive the vehicle at 10 mph (15 km/h) or more.

9. Check for DTCs with the HDS (see page 19-41).

   Does the ABS indicator come on, and is DTC 61 indicated?

   YES—Check for loose or poor connections in the VSA modulator-control unit 46P connector. If connections are good, replace the VSA modulator-control unit (see page 19-94). ■

   NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

DTC 62: IG1 Voltage High

1. Check the charging system (see page 4-28).

   Is the charging system OK?

   YES—Go to step 2.

   NO—Do the alternator and regulator circuit troubleshooting (see page 4-28), then recheck. ■

2. Turn the ignition switch ON (II).
3. Clear the DTCs with the HDS (see page 19-41).
4. Test-drive the vehicle at 10 mph (15 km/h) or more.
5. Check for DTCs with the HDS (see page 19-41).

   Does the ABS indicator come on, and is DTC 62 indicated?

   YES—Replace the VSA modulator-control unit (see page 19-94). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 65: VSA Pressure Sensor (Hardware)

1. Clear the DTCs with the HDS (see page 19-41).
2. Turn the ignition switch OFF, then turn it ON (II).
3. Check BRK PRESS in the VSA DATA LIST with the HDS.

   Does the brake pressure increase when the brake pedal is pressed?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Replace the VSA modulator-control unit (see page 19-94). ■

DTC Troubleshooting (cont'd)

DTC 66: VSA Pressure Sensor (Software)

1. Check for DTCs with the HDS (see page 19-41).

   Is DTC 91 or 92 indicated with DTC 66 at the same time?

   YES—Troubleshoot DTC 91 or 92, and recheck. ■

   NO—Go to step 2.

2. Check BRAKE SWITCH in the VSA DATA LIST with the HDS.

   Is the brake pedal position switch OFF with the brake pedal pressed?

   YES—Go to step 3.

   NO—Go to step 9.

3. Check the No. 13 (20 A) fuse in the under-hood fuse/relay box.

   Is the fuse OK?

   YES—Reinstall the fuse, and go to step 4.

   NO—Replace the fuse and recheck. ■

4. Check the brake pedal position switch for the function and adjustment.

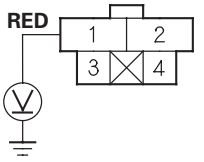
   Is the switch OK and its adjustment OK?

   YES—Go to step 5.

   NO—Replace or adjust the brake pedal position switch. ■

5. Measure voltage between brake pedal position switch 4P connector terminal No. 1 and body ground.

   BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



   Wire side of female terminals

   Is there battery voltage?

   YES—Go to step 6.

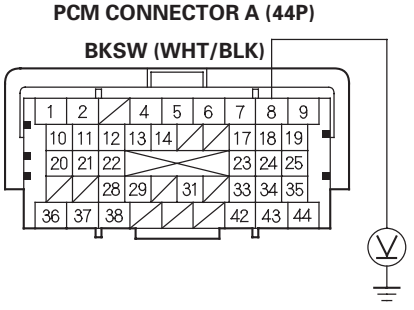
   NO—Repair open in the wire between the No. 13 (20 A) fuse in the under-hood fuse/relay box and the brake pedal position switch. ■

6. Turn the ignition switch OFF, and jump the SCS line with the HDS.

   NOTE: This must be done to protect the powertrain control module (PCM) from damage.

7. Disconnect PCM connector A (44P).

8. Measure voltage between PCM connector terminal A8 and body ground.



Terminal side of female terminals

Is there battery voltage when the brake pedal is pressed?

YES—Check for a loose or poor terminal fit at terminal A8 of PCM connector A. If the connection is bad, fix the fit. If the fit is OK, replace the PCM (see page 11-205). ■

NO—Repair open in the wire between the brake pedal position switch and the PCM (A8). ■

9. Clear the DTCs with the HDS (see page 19-41).
10. Turn the ignition switch OFF, then turn it ON (II), and press the brake pedal several times.
11. Check for DTCs with the HDS (see page 19-41).

Does the ABS indicator come on, and is DTC 66 indicated?

YES—Go to step 12.

NO—The system is OK at this time. ■

12. Check BRK PRESS in the VSA DATA LIST with the HDS.

Does BRK PRESS increase with the brake pedal pressed and decrease with the brake pedal released?

YES—Replace the VSA modulator-control unit (see page 19-94). ■

NO—Check the brake lines for damage and leakage. ■

DTC 67: Brake Pedal Position Switch (Hardware)

1. Check for DTCs with the HDS (see page 19-41).

Is DTC 91 or 92 indicated with DTC 67 at the same time?

YES—Troubleshoot DTC 91 and/or 92, and recheck. ■

NO—Go to step 2.

2. Clear the DTCs with the HDS (see page 19-41).
3. Check for DTCs with the HDS (see page 19-41).

Does the VSA system indicator come on and is DTC 67 indicated?

YES—Go to step 4.

NO—Go to step 11.

4. Check BRAKE SWITCH in the VSA DATA LIST with the HDS.

Is the brake pedal position switch ON with the brake pedal released?

YES—Go to step 5.

NO—Replace the VSA modulator-control unit (see page 19-94). ■

5. Check the brake pedal position switch for function and adjustment.

Is the switch OK and its adjustment OK?

YES—Go to step 6.

NO—Replace or adjust the brake pedal position switch. ■

6. Turn the ignition switch OFF, and jump the SCS line with the HDS.

NOTE: This must be done to protect the powertrain control module (PCM) from damage.

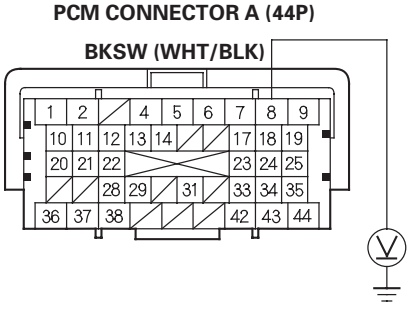
7. Disconnect PCM connector A (44P).

(cont'd)

DTC Troubleshooting (cont'd)

8. Turn the ignition switch ON (II).

9. Measure voltage between PCM connector terminal A8 and body ground.



Terminal side of female terminals

Is there 1 V or more with the brake pedal released?

YES—Repair short to power in the wire between the brake pedal position switch and the PCM (A8). ■

NO—Go to step 9.

10. Check the BRK PRESS in the VSA DATA LIST with the HDS.

Is the brake pressure at 0.0 with the brake pedal released?

YES—The system is OK at this time. ■

NO—Go to step 10.

11. Remove the brake pedal position switch.

Does the brake pressure drop to 0.0?

YES—Install and adjust the brake pedal position switch (see page 19-6). ■

NO—Refer to the brake system inspection and test (see page 19-4). ■

DTC 68: Brake Pedal Position Switch

1. Check for DTCs with the HDS (see page 19-41).

Is DTC 91 or 92 indicated with DTC 68 at the same time?

YES—Troubleshoot DTC 91 or 92, and recheck. ■

NO—Go to step 2.

2. Check the BRAKE SWITCH in the VSA DATA LIST with the HDS.

Is the BRAKE SWITCH OFF with the brake pedal released?

YES—Go to step 3.

NO—Go to step 9.

3. Check the No. 13 (20 A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES—Reinstall the fuse, and go to step 4.

NO—Replace the fuse and recheck. ■

4. Check the brake pedal position switch for function and adjustment.

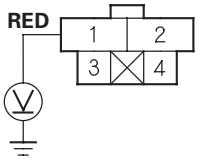
Is the switch OK and its adjustment OK?

YES—Go to step 5.

NO—Replace or adjust the brake pedal position switch. ■

5. Measure the voltage between brake pedal position switch 4P connector terminal No. 1 and body ground.

BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 6.

NO—Repair open in the wire between the No. 13 (20 A) fuse in the under-hood fuse/relay box and the brake pedal position switch. ■

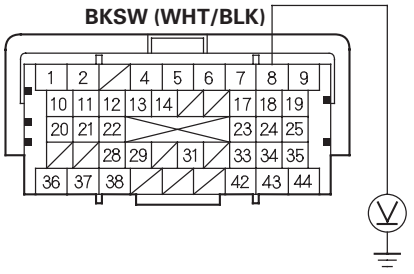
6. Turn the ignition switch OFF, and jump the SCS line with the HDS.

NOTE: This must be done to protect the powertrain control module (PCM) from damage.

7. Disconnect PCM connector A (44P).

8. Measure the voltage between PCM connector terminal A8 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there battery voltage when the brake pedal is pressed?

YES—Substitute a known-good PCM (see page 11-8), and recheck. ■

NO—Repair open in the wire between the brake pedal position switch and the PCM (A8). ■

9. Clear the DTCs with the HDS (see page 19-41).

10. Turn the ignition switch OFF, then turn it ON (II), and press the brake pedal several times.

11. Check for DTCs with the HDS (see page 19-41).

Does the ABS indicator come on, and is DTC 68 indicated?

YES—Go to step 12.

NO—The system is OK at this time. ■

12. Check BRK PRESS in the VSA DATA LIST with the HDS.

Does BRK PRESS increase with the brake pedal pressed and decrease with the brake pedal released?

YES—Replace the VSA modulator-control unit (see page 19-94). ■

NO—Check the brake lines for damage and leakage. ■

DTC Troubleshooting (cont'd)

DTC 72: Steering Angle Sensor

1. Check for DTCs with the HDS.

   Are DTCs 91 or 92 indicated with DTC 72?

   YES—Troubleshoot DTCs 91 or 92 and recheck. ■

   NO—Go to step 2.

2. Put the vehicle on a level surface, and center the steering wheel spokes.

3. Check the STEERING ANGLE in the VSA DATA LIST with the HDS.

   With the steering wheel in the straight ahead position, is STEERING ANGLE within ±5 °?

   YES—Go to step 4.

   NO—Check for installation of the steering angle sensor. If installation is good, do the steering angle sensor center point writing. ■

4. Check the wheel alignment (see page 18-5).

   Is the wheel alignment within the specification?

   YES—Go to step 5.

   NO—Make sure the suspension is not modified, and adjust the wheel alignment correctly, and recheck by test-driving. ■

5. Clear the DTCs with the HDS (see page 19-41).

6. Turn the ignition switch OFF, then disconnect the HDS.

7. Test-drive the vehicle around a number of corners.

8. Connect the HDS, and check for DTCs with the HDS (see page 19-41).

   Does the VSA indicator come on, and is DTC 72 indicated?

   YES—Replace the VSA modulator-control unit (see page 19-94). ■

   NO—Intermittent failure; the most probable cause is that the vehicle has driven on an extremely sloped road. The system is OK at this time. ■

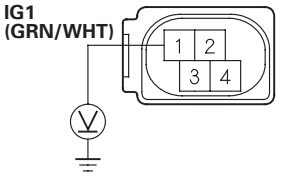
DTC 73: Yaw Rate Sensor (Power Supply)

1. Disconnect the yaw rate-lateral acceleration sensor 4P connector.

2. Turn the ignition switch ON (II).

3. Measure voltage between body ground and yaw rate-lateral acceleration sensor 4P connector terminal No. 1.

YAW RATE-LATERAL ACCELERATION SENSOR 4P CONNECTOR



Wire side of female terminals

   Is there battery voltage?

   YES—Go to step 5.

   NO—Repair open or high resistance in the wire between the No. 31 (7.5 A) fuse in the under-dash fuse/relay box and the yaw rate-lateral acceleration sensor. ■

4. Turn the ignition switch OFF.

5. Reconnect the yaw rate-lateral acceleration sensor 4P connector.

6. Clear the DTCs with the HDS (see page 19-41).

7. Turn the ignition switch OFF, then turn it ON (II).

8. Check for DTCs with the HDS (see page 19-41).

   Does the VSA indicator come on, and is DTC 73 indicated?

   YES—Check for loose terminal in the yaw rate-lateral acceleration 4P connector. If connection is good, replace the VSA modulator-control unit (see page 19-94). ■

   NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

DTC 74: Yaw Rate Sensor (Software)

1. Connect the HDS to the DLC (see page 19-41).
2. Turn the ignition switch ON (II).
3. Check YAW RATE S in the VSA DATA LIST with the HDS.

   Is YAW RATE S within ± 5 °/s?

   YES—Go to step 4.

   NO—Check the installation of the yaw rate-lateral acceleration sensor. Replace the yaw rate-lateral acceleration sensor (see page 19-92). ■
4. Clear the DTCs with the HDS (see page 19-41).
5. Turn the ignition switch OFF, then disconnect the HDS.
6. Test-drive the vehicle around a number of corners.
7. Connect the HDS, and check for DTCs with the HDS (see page 19-41).

   Does the VSA indicator come on, and is DTC 74 indicated?

   YES—Go to step 8.

   NO—Intermittent failure; the most probable cause is that the vehicle might have spun around on a poor road surface. The system is OK at this time. ■
8. Substitute a known-good yaw rate-lateral acceleration sensor (see page 19-92).
9. Clear the DTCs with the HDS (see page 19-41).
10. Turn the ignition switch OFF, then disconnect the HDS.
11. Test-drive the vehicle around a number of corners.

    Does the VSA indicator come on, and is DTC 74 indicated?

    YES—Replace the VSA modulator-control unit (see page 19-94). ■

    NO—Replace the original yaw rate-lateral acceleration sensor (see page 19-92). ■

DTC 75: Lateral Acceleration Sensor (Joint Failure)

1. Put the vehicle on a level surface.
2. Connect the HDS to the DLC (see page 19-41).
3. Turn the ignition switch ON (II).
4. Check LATERAL G SENSOR in the VSA DATA LIST with the HDS.

   Is LATERAL G SENSOR within ± 1 m/s^2?

   YES—Go to step 5.

   NO—Check the installation of the yaw rate-lateral acceleration sensor. Replace the yaw rate-lateral acceleration sensor (see page 19-92). ■
5. Clear the DTCs with the HDS (see page 19-41).
6. Turn the ignition switch OFF, then disconnect the HDS.
7. Test-drive the vehicle around a number of corners.
8. Connect the HDS, and check for DTCs with the HDS (see page 19-41).

   Does the VSA indicator come on, and is DTC 75 indicated?

   YES—Go to step 9.

   NO—Intermittent failure; the most probable cause is that the vehicle has been driven on an extreme canted road. The system is OK at this time. ■
9. Substitute a known-good yaw rate-lateral acceleration sensor (see page 19-92).
10. Clear the DTCs with the HDS (see page 19-41).
11. Turn the ignition switch OFF, then disconnect the HDS.

(cont'd)

DTC Troubleshooting (cont'd)

12. Test-drive the vehicle around a number of corners.

13. Connect the HDS, and check for DTCs with the HDS (see page 19-41).

    Does the VSA indicator come on, and is DTC 75 indicated?

    YES—Replace the VSA modulator-control unit (see page 19-94). ■

    NO—Replace the original yaw rate-lateral acceleration sensor (see page 19-92). ■

DTC 76: Lateral Acceleration Sensor (Software)

NOTE: If DTC 76 is accompanied with any of the following DTCs, troubleshoot DTC 76 last.

DTC 25: Yaw Rate Sensor (Hardware)
DTC 26: Lateral Acceleration Sensor (Hardware)
DTC 72: Steering Angle Sensor
DTC 74: Yaw Rate Sensor (Software)
DTC 75: Lateral Acceleration Sensor (Joint Failure)

1. Clear the DTCs with the HDS (see page 19-41).

2. Test-drive the vehicle in a straight line.

3. Check for DTCs with the HDS (see page 19-41).

   Does the VSA indicator come on, and is DTC 76 indicated?

   YES—Go to step 5.

   NO—Intermittent failure; the most probable cause is that the vehicle has been driven on an extreme canted road. The system is OK at this time. ■

4. Substitute a known-good yaw rate-lateral acceleration sensor (see page 19-92).

5. Clear the DTCs with the HDS (see page 19-41).

6. Test-drive the vehicle in a straight line.

7. Check for DTCs with the HDS (see page 19-41).

   Does the VSA indicator come on, and is DTC 76 indicated?

   YES—Replace the VSA modulator-control unit (see page 19-94). ■

   NO—Replace the original yaw rate-lateral acceleration sensor (see page 19-92). ■

DTC 81: Central Processing Unit (CPU)

1. Clear the DTCs with the HDS (see page 19-41).
2. Turn the ignition switch OFF, then turn the ignition switch ON (II).
3. Check for DTCs with the HDS (see page 19-41).

   Does the ABS indicator come on, and is DTC 81 indicated?

   YES—Replace the VSA modulator-control unit (see page 19-94). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 84: Steering Angle Sensor No Center Point Writing

1. Check for DTCs with the HDS (see page 19-41).

   Are any DTCs indicated with DTC 84 at the same time?

   YES—Troubleshoot other DTCs, and recheck. ■

   NO—Go to step 2.

2. Do the steering angle sensor center point writing with the HDS (see page 19-92).
3. Turn the ignition switch OFF, then turn it ON (II).
4. Check for DTCs with the HDS (see page 19-41).

   Does the VSA activation indicator come on, and is DTC 84 indicated?

   YES—Replace the steering angle sensor (see page 19-91), then do the steering angle sensor center point writing (see page 19-92). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC Troubleshooting (cont'd)

DTC 91: F-CAN Communication

1. Check for PGM-FI DTCs (see page 11-3).

   Are any DTCs indicated?

   YES—Troubleshoot the PGM-FI DTCs, then recheck. ■

   NO—Go to step 2.

2. Connect the HDS to the DLC.
3. Turn the ignition switch ON (II).
4. Check STEERING ANGLE in the VSA DATA LIST with the HDS.

   Does STEERING ANGLE show correct value?

   YES—Go to step 5.

   NO—Go to step 9.

5. Check YAW RATE S and LATERAL G SENSOR in the VSA DATA LIST with the HDS.

   Are the YAW RATE S and LATERAL G SENSOR values correct?

   YES—Go to step 6.

   NO—Go to step 16.

6. Clear the DTCs with the HDS.
7. Turn the ignition switch OFF, then turn it ON (II).
8. Check for DTCs with the HDS (see page 19-41).

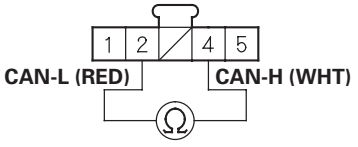
   Does the VSA indicator come on, and is DTC 91 indicated?

   YES—Check for loose terminals in the VSA modulator-control unit 46P connector. If connections are good, replace the VSA modulator-control unit (see page 19-94). ■

   NO—Intermittent failure, the system is OK at this time. ■

9. Turn the ignition switch OFF.
10. Disconnect the steering angle sensor 5P connector.
11. Check for continuity between steering angle sensor 5P connector terminals No. 2 and No. 4.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

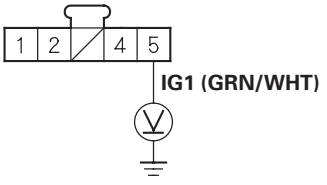
Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between the steering angle sensor and the VSA modulator-control unit. ■

12. Turn the ignition switch ON (II).
13. Measure voltage between steering angle sensor 5P terminal No. 5 connector and body ground.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

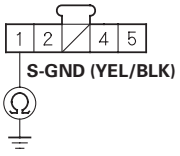
YES—Go to step 14.

NO—Repair open or high resistance in the wire between No. 31 (7.5 A) fuse in the under-dash fuse/relay box and the steering angle sensor. ■

14. Turn the ignition switch OFF.

15. Check for continuity between steering angle sensor 5P connector terminal No. 1 and body ground.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the steering angle sensor (see page 19-91). ■

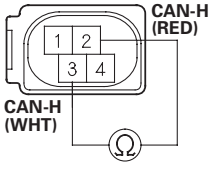
NO—Repair open in the wire between the steering angle sensor and the VSA modulator-control unit. ■

16. Turn the ignition switch OFF.

17. Disconnect the yaw rate-lateral acceleration sensor 4P connector.

18. Check for continuity between yaw rate-lateral acceleration sensor 4P connector terminals No. 2 and No. 3.

YAW RATE-LATERAL ACCELERATION SENSOR 4P CONNECTOR



Wire side of female terminals

Is there continuity?

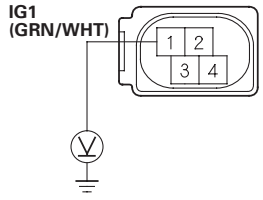
YES—Go to step 19.

NO—Repair open in the wire between the yaw rate-lateral acceleration sensor and the VSA modulator-control unit. ■

19. Turn the ignition switch ON (II).

20. Measure voltage between yaw rate-lateral acceleration sensor 4P connector terminal No. 1 and body ground.

YAW RATE-LATERAL ACCELERATION SENSOR 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

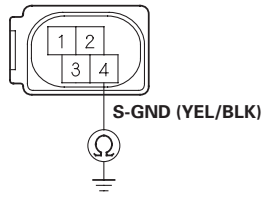
YES—Go to step 21.

NO—Repair open or high resistance in the wire between No. 31 (7.5 A) fuse in the under-dash fuse/relay box and the yaw rate-lateral acceleration sensor. ■

21. Turn the ignition switch OFF.

22. Check for continuity between yaw rate-lateral acceleration sensor 4P connector terminal No. 4 and body ground.

YAW RATE-LATERAL ACCELERATION SENSOR 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the yaw rate-lateral acceleration sensor (see page 19-92). ■

NO—Repair open in the wire between the yaw rate-lateral acceleration sensor and the VSA modulator-control unit. ■

DTC Troubleshooting (cont'd)

DTC 92: F-CAN System

1. Check the PGM-FI DTCs (see page 11-3).

   Are any DTCs indicated?

   YES—Troubleshoot the PGM-FI DTCs, then recheck. ■

   NO—Go to step 2.

2. Clear the DTCs with the HDS (see page 19-41).

3. Turn the ignition switch OFF, then turn it ON (II).

4. Connect the HDS, and check for DTCs with the HDS (see page 19-41).

   Does the VSA indicator come on, and is DTC 92 indicated?

   YES—Check for loose terminals in the VSA modulator-control unit 46P connector. If connections are good, replace the VSA modulator-control unit (see page 19-94). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 97: VSA System

1. Check for DTCs with the HDS (see page 19-41).

   Are DTCs 72, 74, and/or 76 indicated with DTC 97 at the same time?

   YES—Go to step 3.

   NO—Go to step 2.

2. Check the brake system for leaks or mechanical problems.

   Is the brake system OK? (brake fluid leakage, air trapped in the brake system, brake pads worn out)

   YES—Go to step 3.

   NO—Repair the brake system, then recheck. ■

3. Clear the DTCs with the HDS (see page 19-41).

4. Test-drive the vehicle in a straight line. Accelerate the vehicle up to 6 mph (10 km/h), and stop, then accelerate up to 6 mph (10 km/h).

5. Check for DTCs with the HDS (see page 19-41).

   Does the VSA indicator come on, and is DTC 97 indicated?

   YES—Replace the VSA modulator-control unit (see page 19-94). ■

   NO—Intermittent failure, the system is OK at this time. ■

Symptom Troubleshooting

ABS indicator does not come on

1. Turn the ignition switch ON (II), and watch the ABS indicator.

   Does the ABS indicator come on and then go off?

   YES—The system is OK at this time. ■

   NO—Go to step 2.

2. Check for DTCs with the HDS (see page 19-41).

   Is DTC 91 or 92 indicated?

   YES—Troubleshoot the indicated DTC, and recheck. ■

   NO—Go to step 3.

3. Do the gauge control module self-diagnosis function procedure (see page 22-244).

   Is the gauge control module OK?

   YES—Go to step 4.

   NO—Replace the gauge control module (see page 22-263). ■

4. Turn the ignition switch OFF.

5. Substitute a known-good VSA modulator-control unit (see page 19-94).

6. Turn the ignition switch ON (II), and watch the ABS indicator.

   Does the ABS indicator come on and then go off?

   YES—Replace the original VSA modulator-control unit (see page 19-94). ■

   NO—Replace the gauge control module (see page 22-263). ■

ABS indicator does not go off, and no DTCs are stored

1. Check the No. 31 (7.5 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 2.

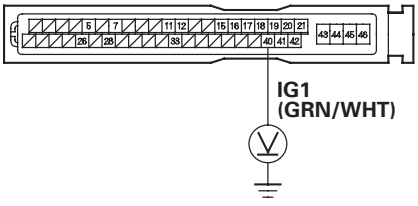
   NO—Replace the fuse, and recheck. ■

2. Disconnect the VSA modulator-control unit 46P connector.

3. Turn the ignition switch ON (II).

4. Measure voltage between VSA modulator-control unit 46P connector terminal No. 40 and body ground.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

   Is there battery voltage?

   YES—Go to step 5.

   NO—Repair open in the wire between the No. 31 (7.5 A) fuse in the under-dash fuse/relay box and the VSA modulator-control unit. ■

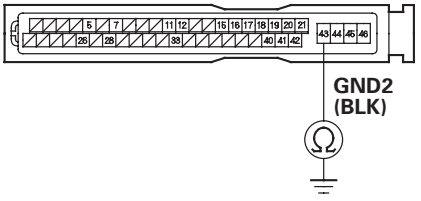
5. Turn the ignition switch OFF.

(cont'd)

Symptom Troubleshooting (cont'd)

6. Check for continuity between VSA modulator-control unit 46P connector terminal No. 43 and body ground.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 7.

NO—Repair open in the wire between the VSA modulator-control unit and body ground or poor ground (G302). ■

7. Check for PGM-FI DTCs (see page 11-3).

Is DTC U0155 indicated?

YES—Troubleshoot DTC U0155. ■

NO—Check for loose terminal in the VSA modulator-control unit 46P connector. If connections are good, replace the VSA modulator-control unit (see page 19-94). ■

Brake system indicator does not come on

1. Turn the ignition switch ON (II), and watch the brake system indicator.

Does the brake system indicator come on and then go off?

YES—The system is OK at this time. ■

NO—Go to step 2.

2. Check the DTCs with the HDS (see page 19-41).

Is DTC 91 or 92 indicated?

YES—Troubleshoot the indicated DTC, and recheck. ■

NO—Go to step 3.

3. Do the gauge control module self-diagnosis function procedure (see page 22-244).

Is the gauge control module OK?

YES—Go to step 4.

NO—Replace the gauge control module (see page 22-263). ■

4. Turn the ignition switch OFF.

5. Substitute a known-good VSA modulator-control unit (see page 19-94).

6. Turn the ignition switch ON (II), and watch the brake system indicator.

Does the brake system indicator come on and then go off?

YES—Replace the original VSA modulator-control unit (see page 19-94). ■

NO—Replace the gauge control module (see page 22-263). ■

Brake system indicator does not go off, and no DTCs are stored

If the brake system indicator does not go off with ABS and VSA indicators at the same time, do the ABS indicator circuit troubleshooting first, then recheck.

1. Turn the ignition switch ON (II).
2. Release the parking brake.

   Does the brake system indicator go off?

   YES—The system is OK at this time. ■

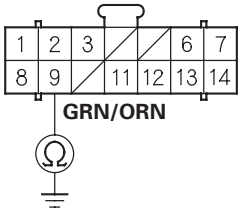
   NO—Go to step 3.
3. Check the brake fluid level.

   Is the level OK?

   YES—Go to step 4.

   NO—Check the brake pad thickness and for brake fluid leakage. If they are OK, refill the brake fluid, and recheck. ■
4. Turn the ignition switch OFF.
5. Remove the gauge control module (see page 22-263).
6. Disconnect gauge control module connector B (14P).
7. Check for continuity between gauge control module connector B (14P) terminal No. 9 and body ground.

GAUGE CONTROL MODULE CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

YES—Go to step 8.

NO—Go to step 9.

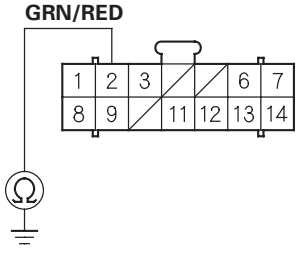
8. Check the parking brake switch.

   Is the parking brake switch OK?

   YES—Repair short in the wire between gauge control module and the parking brake switch. ■

   NO—Replace the parking brake switch. ■
9. Check for continuity between gauge control module connector B (14P) terminal No. 2 and body ground.

GAUGE CONTROL MODULE CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

YES—Go to step 10.

NO—Replace the gauge control module (see page 22-263). ■
10. Check the brake fluid level switch.

    Is the brake fluid level switch OK?

    YES—Repair short in the wire between the gauge control module and the brake fluid level switch. ■

    NO—Replace the brake fluid level switch. ■

Symptom Troubleshooting (cont'd)

VSA indicator does not come on

1. Turn the ignition switch ON (II), and watch the VSA indicator.

   Does the VSA indicator come on and go off?

   YES—The system is OK at this time. ■

   NO—Go to step 2.

2. Check the DTCs with the HDS (see page 19-41).

   Is DTC 91 or 92 indicated?

   YES—Troubleshoot the DTC indicated, and recheck. ■

   NO—Go to step 3.

3. Do the gauge control module self-diagnosis function procedure (see page 22-244).

   Is the gauge control module OK?

   YES—Go to step 4.

   NO—Replace the gauge control module (see page 22-263). ■

4. Turn the ignition switch OFF.

5. Substitute a known-good VSA modulator-control unit (see page 19-94).

6. Turn the ignition switch ON (II), and watch the VSA indicator.

   Does the VSA indicator come on and then go off?

   YES—Replace the original VSA modulator-control unit (see page 19-94). ■

   NO—Replace the gauge control module (see page 22-263). ■

VSA indicator does not go off, and no DTCs are stored

1. Check the No. 31 (7.5 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 2.

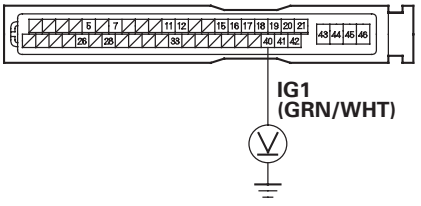
   NO—Replace the fuse, and recheck. ■

2. Disconnect the VSA modulator-control module 46P connector.

3. Turn the ignition switch ON (II).

4. Measure voltage between VSA modulator-control unit 46P connector terminal No. 40 and body ground.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

   Is there battery voltage?

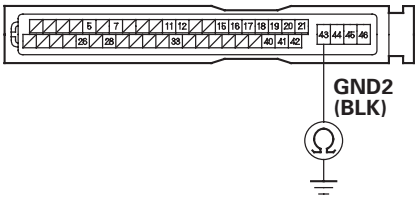
   YES—Go to step 5.

   NO—Repair open in the wire between the No. 31 (7.5 A) fuse in the under-dash fuse/relay box and the VSA modulator-control unit. ■

5. Turn the ignition switch OFF.

6. Check for continuity between VSA modulator-control unit 46P connector terminal No. 43 and body ground.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 7.

NO—Repair open in the wire between the VSA modulator-control unit and body ground. ■

7. Check for PGM-FI DTCs (see page 11-3).

Is DTC U0155 indicated?

YES—Troubleshoot DTC U0155. ■

NO—Check for loose terminal in the VSA modulator-control unit 46P connector. If connections are good, replace the VSA modulator-control unit (see page 19-94). ■

VSA activation indicator does not come on at start-up (bulb check)

If the VSA activation indicator does not come on and the ABS indicator, VSA indicator, and brake system indicator do not go off at the same time, do the ABS indicator circuit troubleshooting first, then recheck.

1. Turn the ignition switch ON (II), and watch the VSA activation indicator.

Does the VSA activation indicator come on and go off?

YES—The system is OK at this time. ■

NO—Go to step 2.

2. Check the DTCs with the HDS (see page 19-41).

Are DTC 91 or 92 indicated?

YES—Troubleshoot the DTC indicated, and recheck. ■

NO—Go to step 3.

3. Do the gauge control module self-diagnosis function procedure (see page 22-244).

Is the gauge control module OK?

YES—Go to step 4.

NO—Replace the gauge control module (see page 22-263). ■

4. Turn the ignition switch OFF.

5. Substitute a known-good VSA modulator-control unit (see page 19-94).

6. Turn the ignition switch ON (II), and watch the VSA activation indicator.

Does the VSA activation indicator come on and go off?

YES—Replace the original VSA modulator-control unit (see page 19-94). ■

NO—Replace the gauge control module (see page 22-263). ■

Symptom Troubleshooting (cont'd)

VSA activation indicator does not go off, and no DTCs are stored

1. Turn the ignition switch ON (II), and watch the VSA activation indicator.

   Does the VSA activation indicator go off within 2 seconds?

   YES—The system is OK at this time. ■

   NO—Go to step 2.

2. Turn the ignition switch OFF.

3. Check the VSA OFF switch (see page 19-93).

   Is the VSA OFF switch OK?

   YES—Go to step 4.

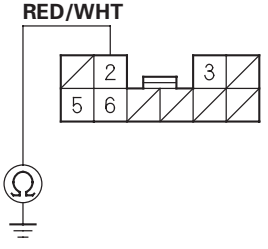
   NO—Replace the VSA OFF switch (see page 19-93). ■

4. Remove the gauge control module (see page 22-263).

5. Disconnect gauge control module connector B (14P).

6. Check for continuity between VSA OFF switch 10P connector terminal No. 2 and body ground.

VSA OFF SWITCH 10P CONNECTOR



Wire side of female terminals

   Is there continuity?

   YES—Repair short to body ground between the gauge control module and the VSA OFF switch. ■

   NO—Go to step 7.

7. Check the gauge control module.

   Is the gauge control module OK?

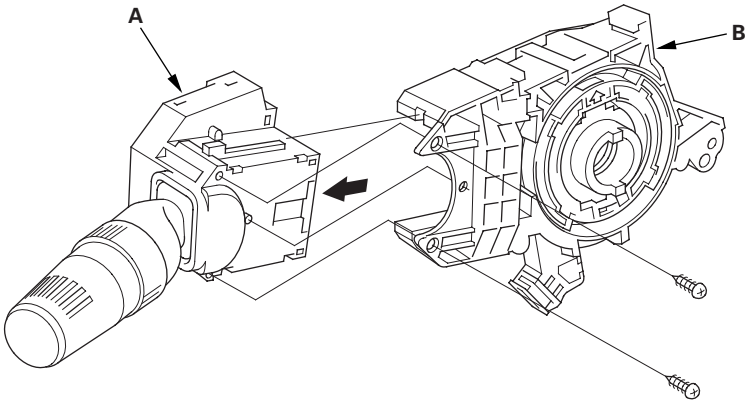
   YES—Replace the VSA modulator-control unit (see page 19-94). ■

   NO—Replace the gauge control module (see page 22-263). ■

Steering Angle Sensor Replacement

NOTE: Do not damage or drop the combination switch as the steering angle sensor is sensitive to shock and vibration.

1. Make sure the ignition switch is OFF.
2. Remove the steering wheel (see page 17-21), and steering column cover (see step 6 on page 17-25).
3. Remove the combination switch assembly (see step 8 on page 17-25).
4. Remove the wiper/turn switch (A).



5. Replace the combination switch body complete (B).
6. Install the combination switch in the reverse order of removal.

   NOTE: Do not remove the steering angle sensor from the combination switch body.

7. Do the steering angle sensor center point writing (see page 19-92).

Steering Angle Sensor Center Point Writing

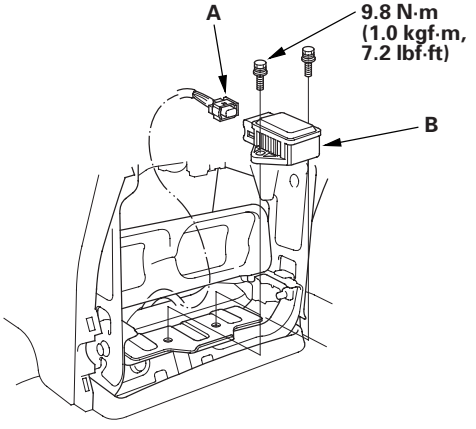
NOTE: Before doing the steering angle sensor center point writing, place the vehicle on a flat level surface, and turn the steering wheel to the straight ahead position while moving the vehicle.

1. Connect the HDS to the DLC.
2. Select ABS TCS VSA, then ADJUSTMENTS, and then CENTER POINT WRITING.
3. Verify DTC 84 clears and does not return. If DTC 84 is indicated, do the appropriate troubleshooting.

Yaw Rate-Lateral Acceleration Sensor Replacement

NOTE: Do not damage or drop the sensor as it is sensitive.

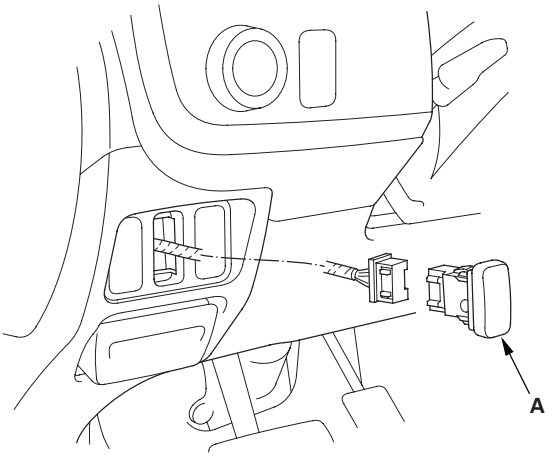
1. Make sure the ignition switch is OFF.
2. Remove the rear console trim (see page 20-76).
3. Disconnect the yaw rate-lateral acceleration sensor 4P connector (A).



4. Remove the sensor mounting bolts, and remove the yaw rate-lateral acceleration sensor (B).
5. Install in the reverse order of removal.

VSA OFF Switch Test

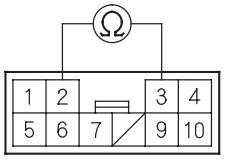
1. Remove the VSA OFF switch (A) from the switch panel.



2. Disconnect the VSA OFF switch 6P connector.

3. Check for continuity between VSA OFF switch connector terminals No. 2 and No. 3. There should be continuity when the switch is pushed.

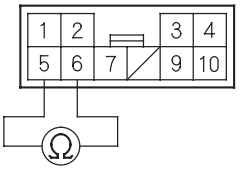
VSA OFF SWITCH 10P CONNECTOR



Terminal side of male terminals

4. Check for continuity between VSA OFF switch connector terminals No. 5 and No. 6. There should be continuity at all times.

VSA OFF SWITCH 10P CONNECTOR



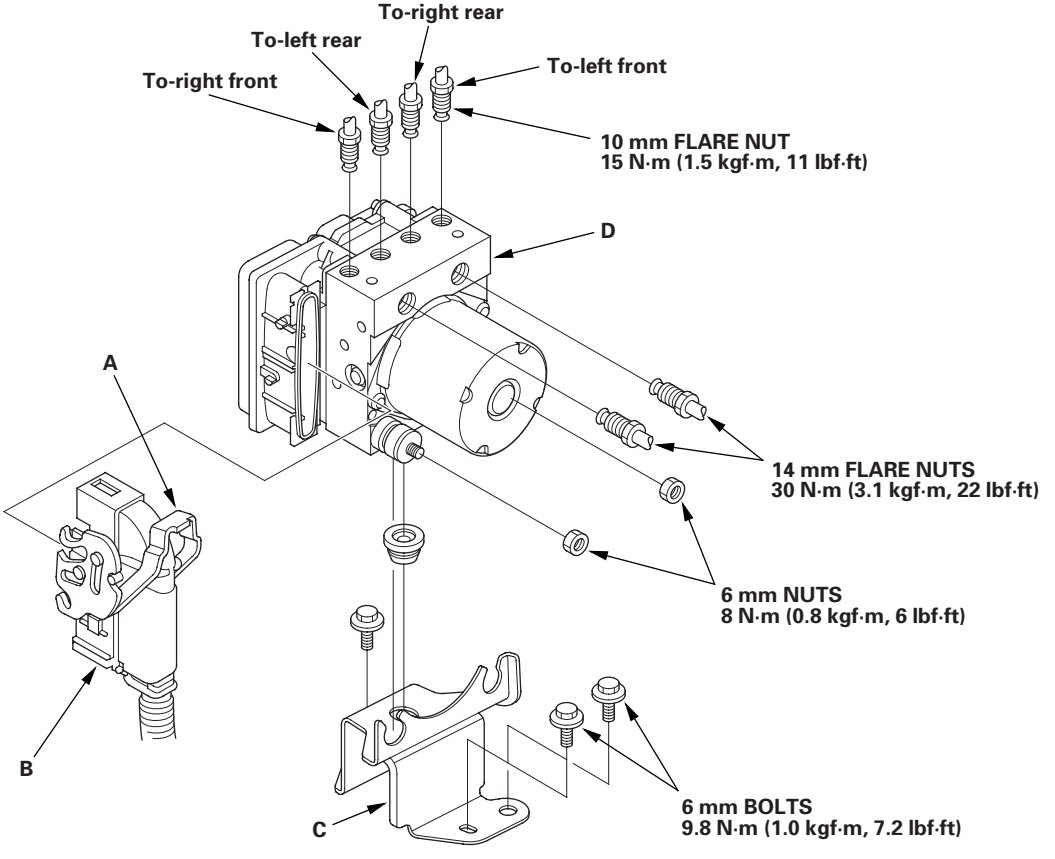
Terminal side of male terminals

VSA Modulator-Control Unit Removal and Installation

NOTE:
- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- Be careful not to damage or deform the brake lines during removal and installation.
- To prevent the brake fluid from flowing, plug and cover the hose ends and joints with a shop towel or equivalent material.

Removal

1. Make sure the ignition switch is OFF.
2. Remove the air intake duct (see step 9 on page 5-2).
3. Pull up the lock (A) of the VSA modulator-control unit 46P connector (B), and the connector disconnects itself.



4. Disconnect the six brake lines.
5. Remove the three 6 mm bolts, then remove the bracket (C) with the VSA modulator-control unit (D) from the body.
6. Remove the two 6 mm nuts, then remove the VSA modulator-control unit from the bracket.

Installation

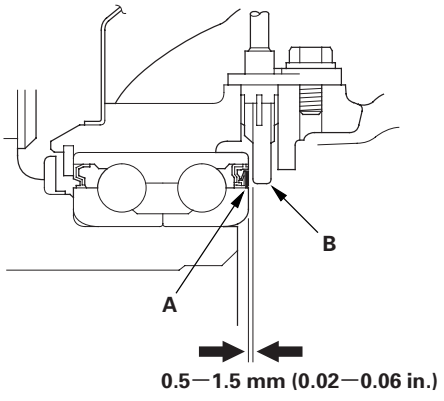
1. Install the VSA modulator-control unit to the bracket, then tighten the two 6 mm nuts.
2. Install the bracket with the VSA modulator-control unit, then tighten the three 6 mm bolts.
3. Reconnect the six brake lines, then tighten the flare nuts to the specified torque.
4. Align the connecting surface of the VSA modulator-control unit 46P connector to the VSA modulator-control unit.
5. Lower the lock of the VSA modulator-control unit 46P connector, then confirm the connector is fully seated.
6. Bleed the brake system, starting with the front wheels (see page 19-9).
7. Start the engine, and check that the ABS and VSA indicators go off.
8. Test-drive the vehicle, and check that the ABS and VSA indicators do not come on.
9. If the brake pedal is now spongy, there may be air trapped in the modulator and then induced into the normal brake system during modulation. Bleed the brake system again, starting with the front wheels (see page 19-9).

Wheel Sensor Inspection

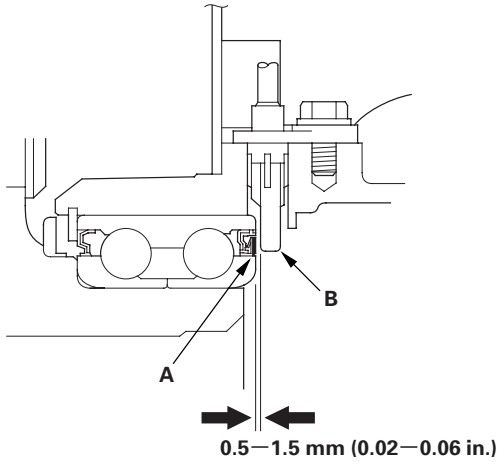
1. Check the magnetic encoder (A) after cleaning. If necessary, replace the wheel bearing.

   - Front wheel bearing replacement (see page 18-13).
   - Rear wheel bearing replacement (see page 18-28).

Front



Rear



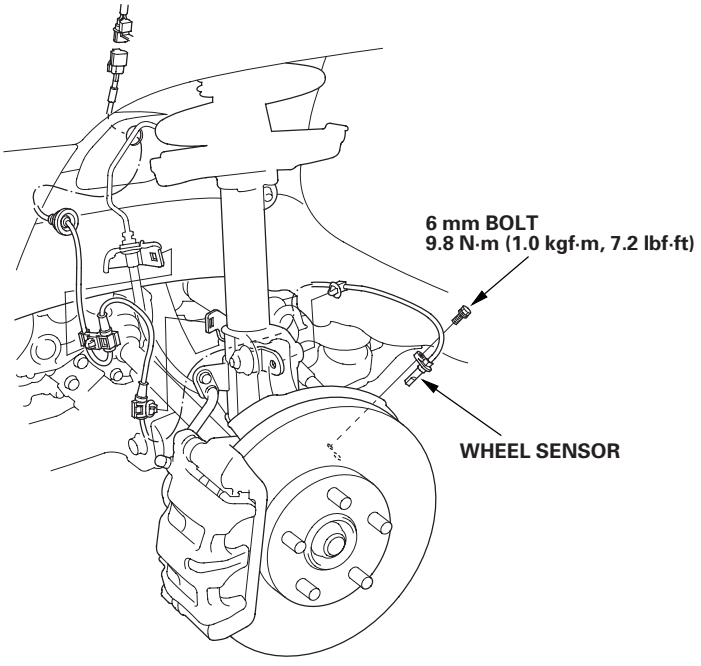
2. Measure the air gap between the wheel sensor (B) and the magnetic encoder all the way around while rotating the encoder.

Standard:
Front: 0.5—1.5 mm (0.02—0.06 in.)
Rear: 0.5—1.5 mm (0.02—0.06 in.)

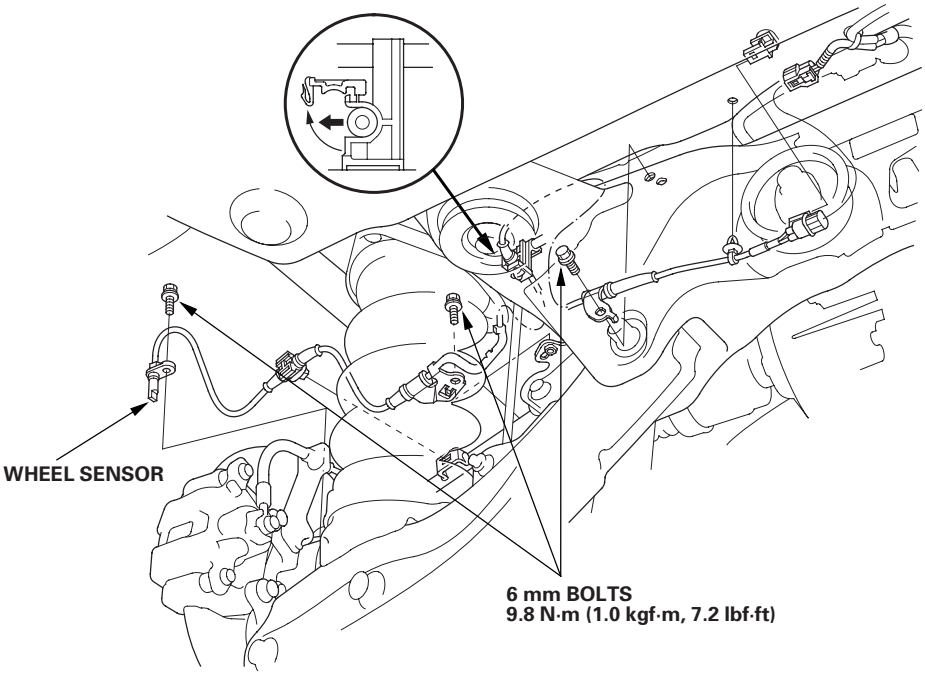
Wheel Sensor Replacement

NOTE: Install the sensor carefully to avoid twisting the wires.

Front



Rear



SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If body maintenance is required)

The Ridgeline SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the sides of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items requires special precautions and tools, and should be done by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work should be done by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.

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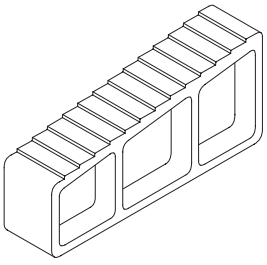
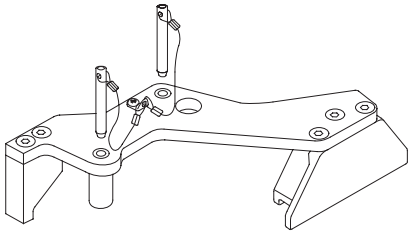
Special Tools

Ref. No.	Tool Number	Description	Qty
①	07AAG-SJCA100	Tailgate Height Step Gauge	1
②	07AAG-SJCA200	Tailgate Left Hinge Alignment Fixture	1

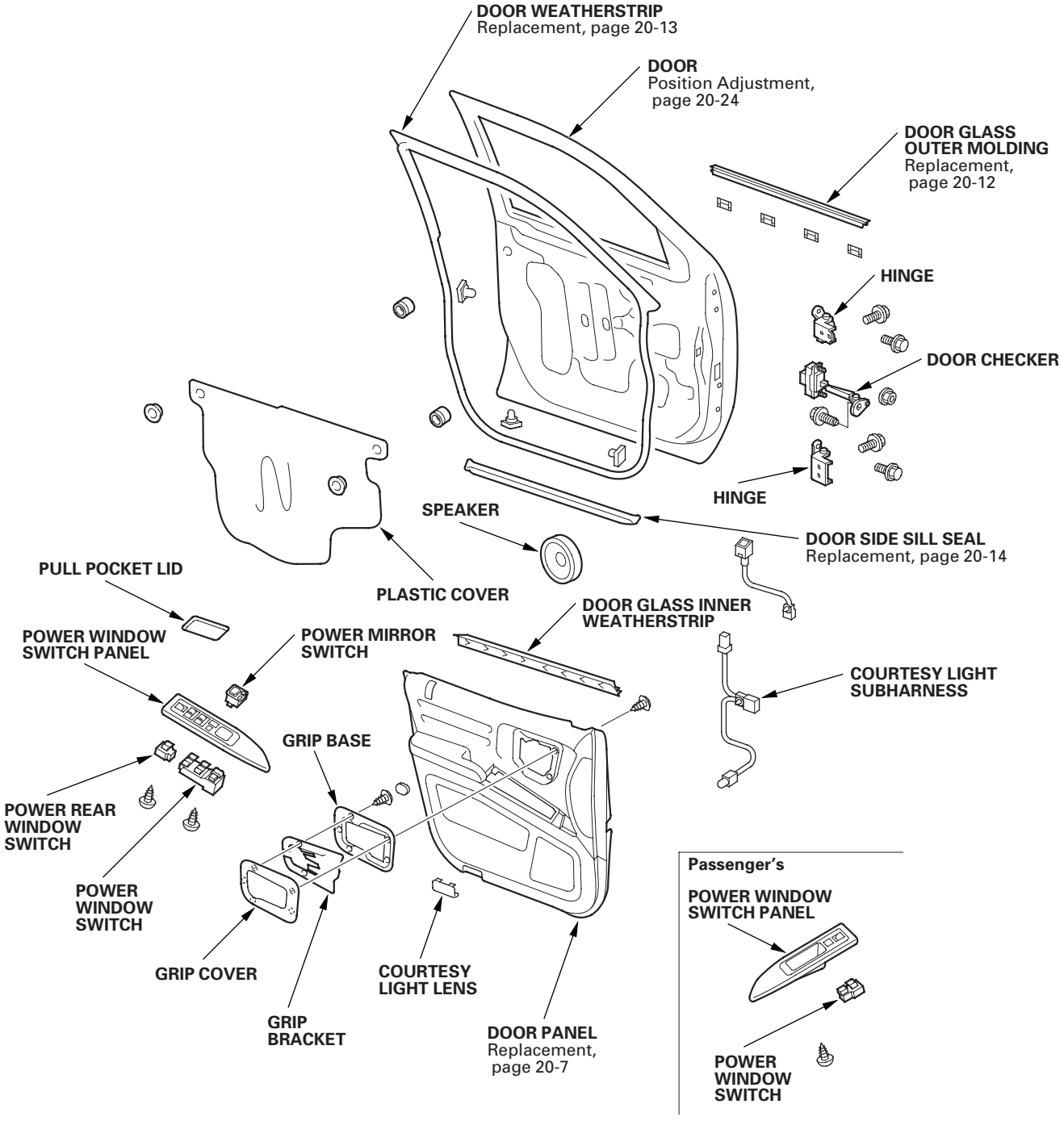


①



②

Component Location Index - Front Door



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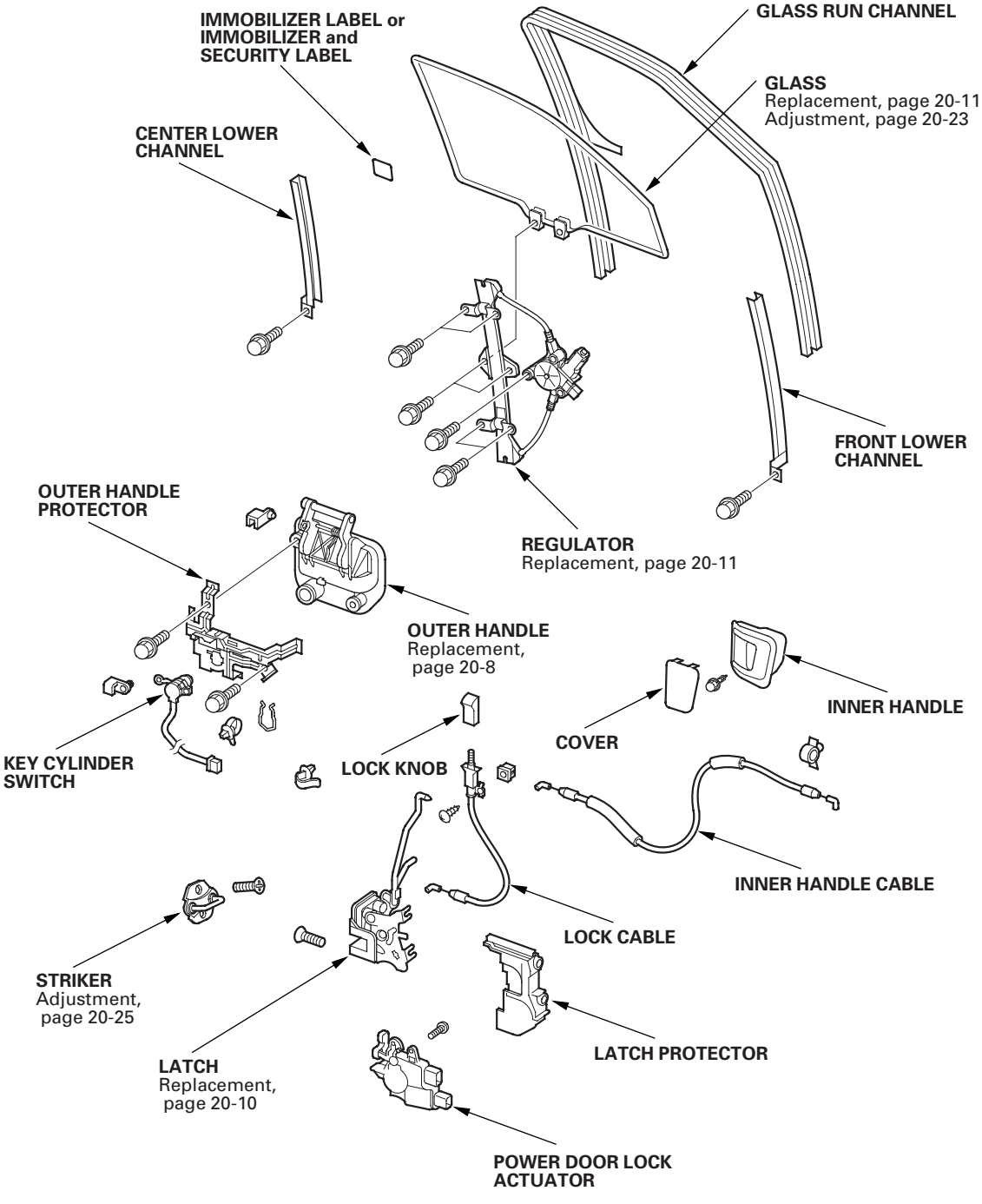
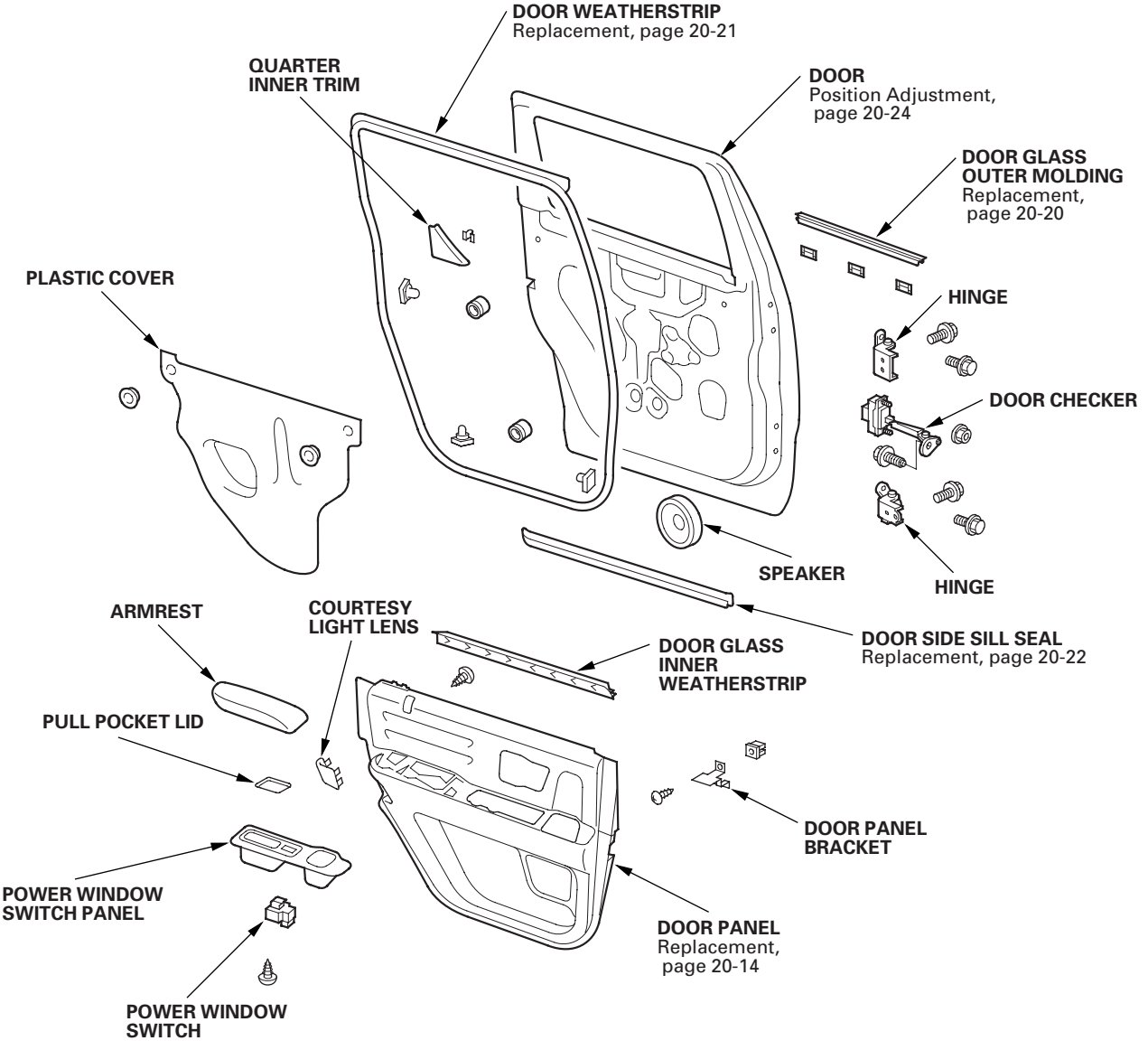
Component Location Index - Front Door (cont'd)



Component Location Index - Rear Door



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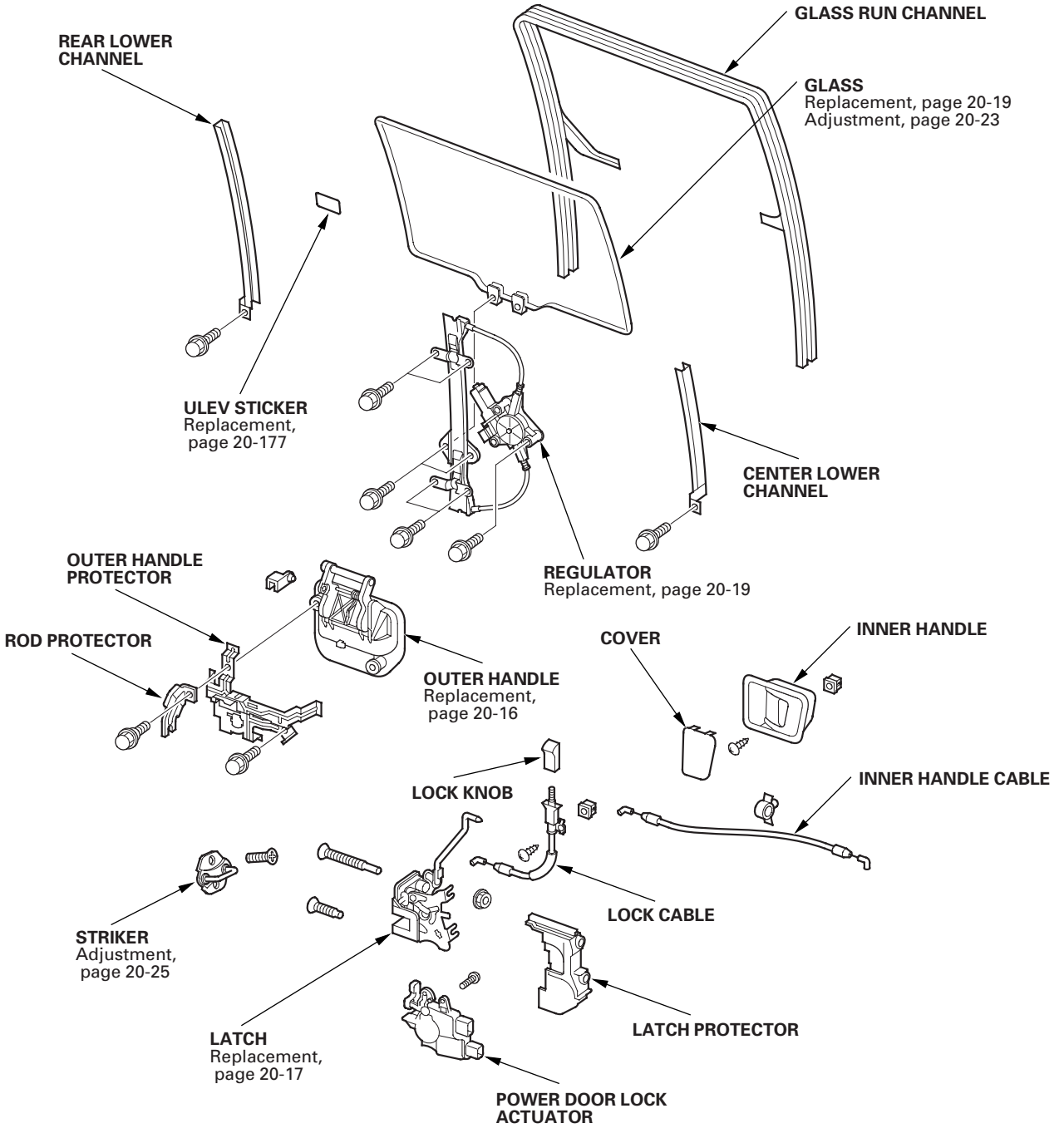
Component Location Index - Rear Door (cont'd)



Front Door Panel Removal/Installation

Special Tools Required
- KTC trim tool set SOJATP2014 *
- Trim pad remover, Snap-on A 177A or equivalent, commercially available

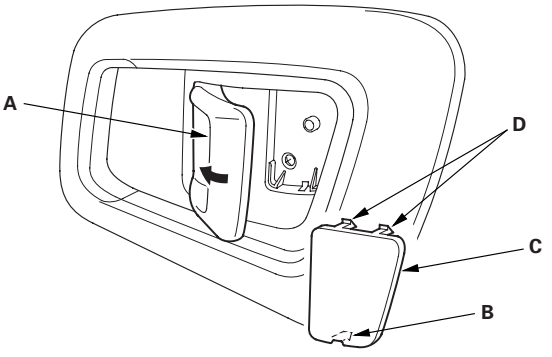
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the door and related parts.

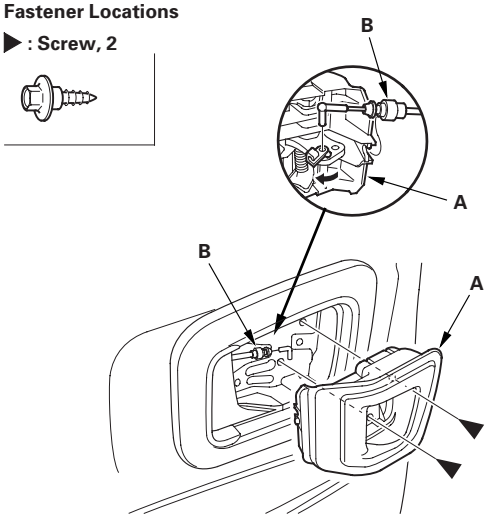
1. Lower the glass fully.

2. Remove the mirror mount cover (see step 2 on page 20-27).

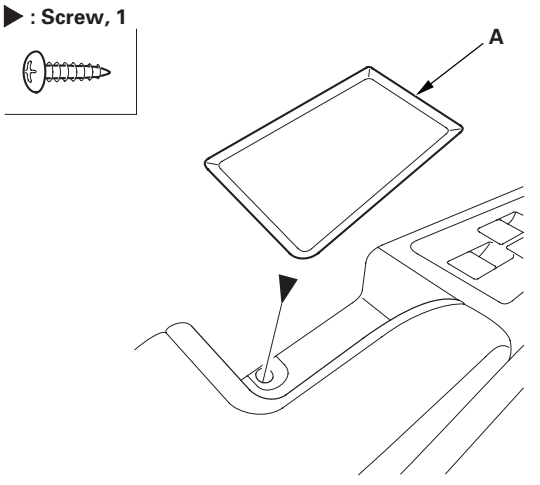
3. Pull back the inner handle knob (A). Using a trim tool, push on the lower hook (B) and pivot the cover (C) on the upper hooks (D), then remove the cover.



4. Remove the screws, then remove the inner handle (A), and disconnect the inner handle cable (B).



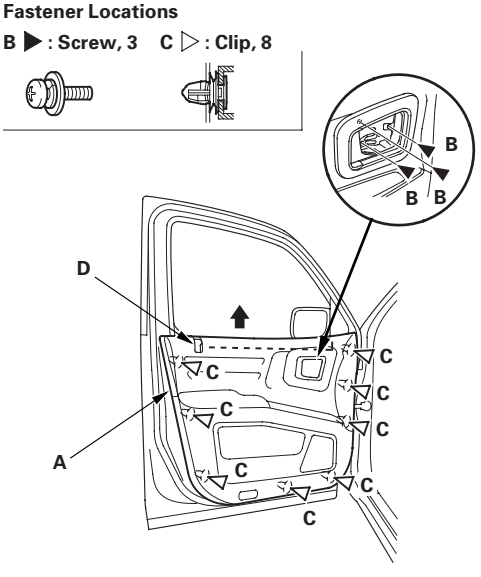
5. Remove the screw from under the pull pocket lid (A).



6. Remove the door panel (A) with as little bending as possible to avoid creasing or breaking it.

   1 Remove the screws (B).
   2 Use a commercially available trim pad remover to detach the clips (C).
   3 Starting at the rear, pull the door panel upward, then release the lock knob (D).

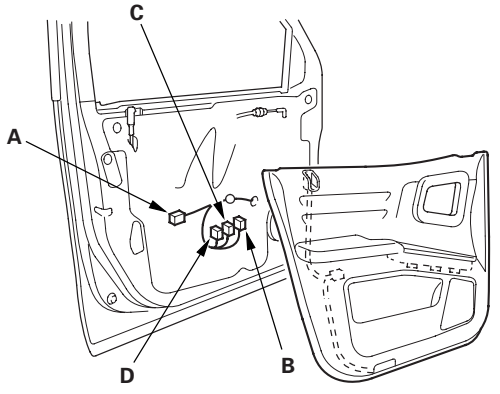
   NOTE: To avoid damaging components inside the door, do not use excessive force when lifting up on the panel.



(cont'd)

Front Door Panel Removal/ Installation (cont'd)

7. Disconnect the courtesy light subharness connector (A), power mirror switch connector (B) (driver's), power window switch connector (C), and power rear window switch connector (D) (driver's).



8. Install the door panel in the reverse order of removal, and note these items:

   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Make sure the connectors are plugged in properly, and the rod is connected securely.
   - Push the clips into place securely.
   - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.

Front Door Outer Handle Replacement

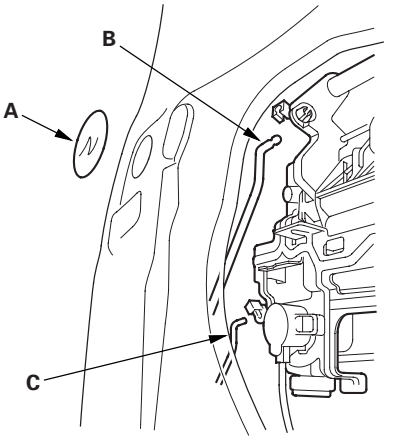
NOTE: Put on gloves to protect your hands.

1. Raise the glass fully.

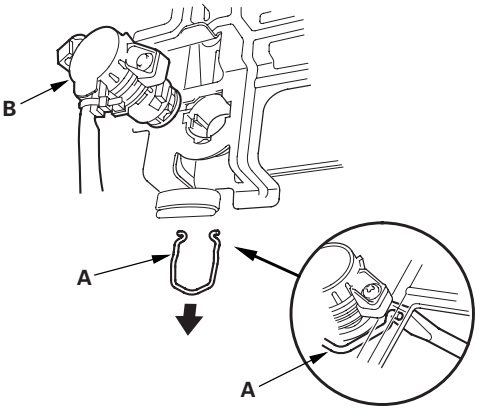
2. Remove these items:

   - Door panel (see page 20-7)
   - Plastic cover, as necessary (see step 2 on page 20-11)
   - Center lower channel (see step 3 on page 20-10) (driver's side only)

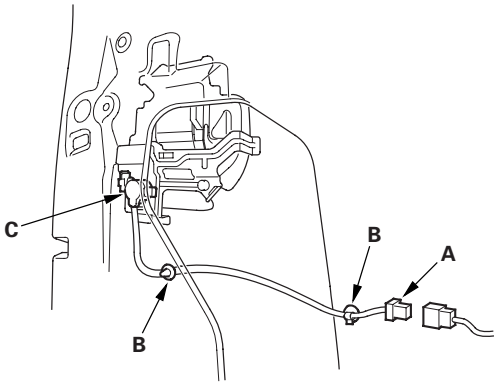
3. Remove the maintenance seal (A) from the rear of the door, then disconnect the outer handle rod (B) and cylinder rod (C) (driver's).



4. Driver's: Release the retainer clip (A) with a hook-shaped tool, then remove the lock cylinder (B).



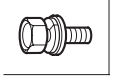
5. With cylinder switch: Disconnect the cylinder switch connector (A), and detach the harness clips (B), then remove the cylinder switch (C).

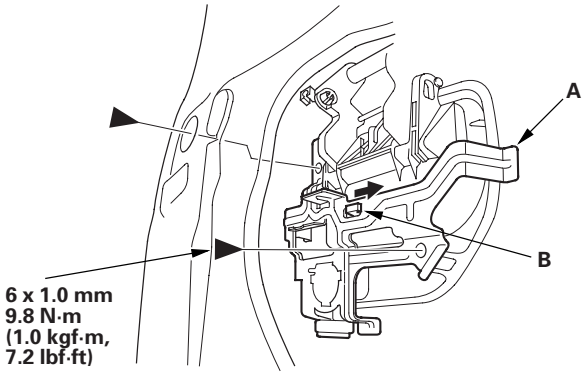


6. Remove the bolts, and slide the outer handle protector (A) to release the hook (B), then remove the outer handle protector.

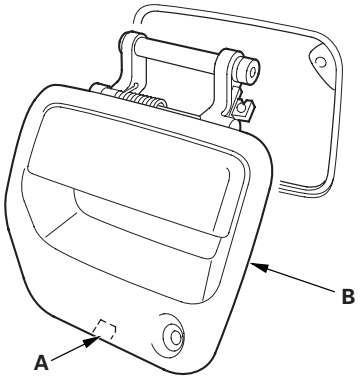
Fastener Locations

▶ : Bolt, 2





7. Release the hook (A), then pull the outer handle (B) out of the door panel. Take care not to scratch the door.



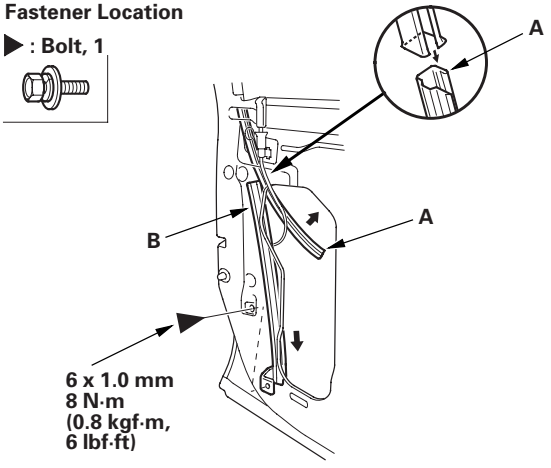
8. Install the handle in the reverse order of removal, and note these items:

- Make sure the cylinder switch harness is routed properly.
- Make sure the cylinder switch connector is plugged in properly, and each rod is connected securely.
- Install the lock cylinder retaining clip on the handle, then install the lock cylinder. Be sure the clip is fully seated in the slot on the lock cylinder.
- Make sure the door key cylinder/door locks operate properly.
- Make sure the door handle works properly.
- When installing the lock cylinder, leave the outer door handle bolts loose so the inner protector does not interfere with the lock cylinder, then tighten the handle bolts.
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.

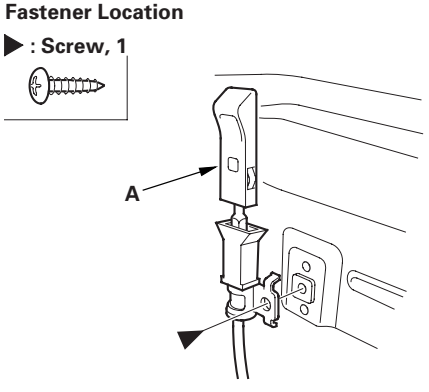
Front Door Latch Replacement

NOTE: Put on gloves to protect your hands.

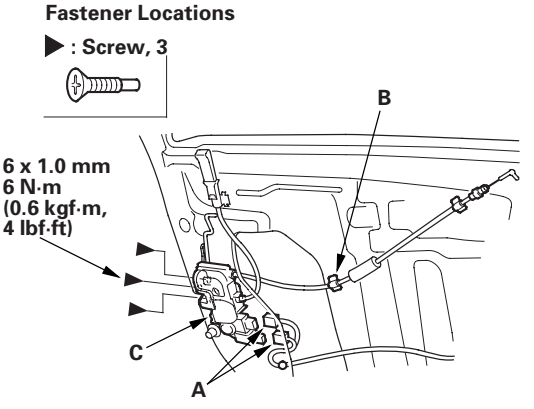
1. Raise the glass fully.
2. Remove these items:
   - Door panel (see page 20-7)
   - Plastic cover, as necessary (see step 2 on page 20-11)
3. Pull the glass run channel (A) away as needed, and remove the bolt, then remove the center lower channel (B) by pulling it downward.



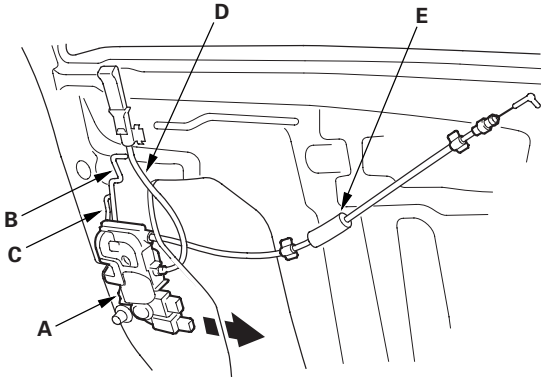
4. Remove the maintenance seal from the rear of the door, then disconnect the outer handle rod and cylinder rod (see step 3 on page 20-8).
5. Remove the screw securing the lock knob (A).



6. Disconnect the actuator connectors (A), and detach the inner handle cable clip (B). Remove the screws securing the latch (C).



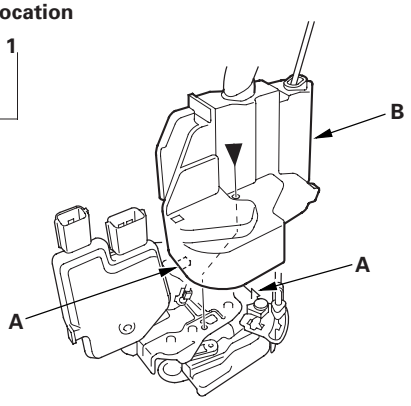
7. Remove the latch (A) through the hole in the door. Take care not to bend the outer handle rod (B), cylinder rod (C), lock cable (D), and inner handle cable (E).



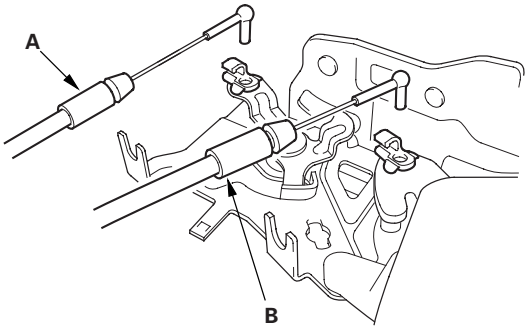
8. Remove the screw and release the hooks (A), then remove the latch protector (B).

Fastener Location

▶ : Screw, 1



9. Disconnect the inner handle cable (A) and lock cable (B).



10. Install the latch in the reverse order of removal, and note these items:

- Make sure the actuator connectors are plugged in properly and that the cables and each rod is connected securely.
- Make sure the door locks and opens properly.
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.

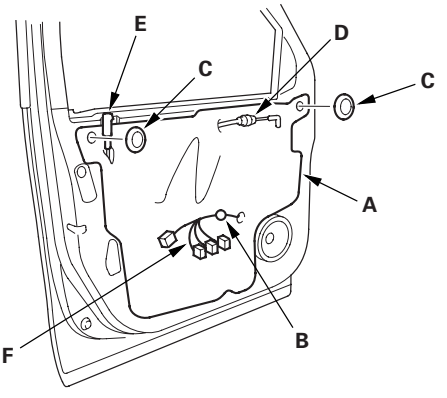
Front Door Glass and Regulator Replacement

NOTE: Put on gloves to protect your hands.

1. Remove the door panel (see page 20-7).

2. Remove the plastic cover (A).

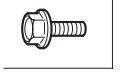
   –1 Detach the harness clip (B) and remove the caps (C).
   –2 Slide the inner handle cable (D), the lock knob (E) and the harness (F) in through the hole in the plastic cover.

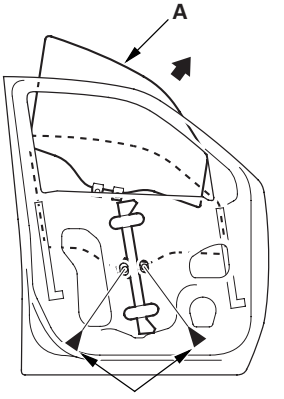


3. Carefully raise the glass (A) until you can see the bolts, then remove them. Carefully pull the glass out through the window slot. Take care not to drop the glass inside the door.

Fastener Locations

▶ : Bolt, 2





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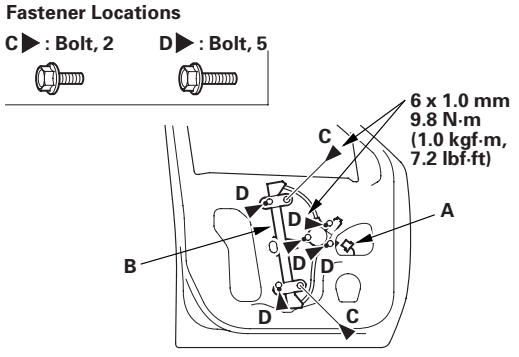
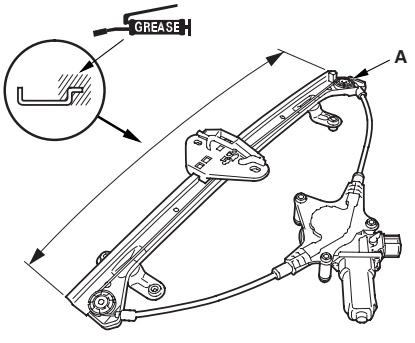
Front Door Glass and Regulator Replacement (cont'd)

4. Disconnect the connector (A) from the regulator (B).



5. Remove the bolts (C), and loosen the bolts (D), then remove the regulator through the hole in the door.

6. Apply multipurpose grease to the sliding surfaces of the regulator (A) where shown.



7. Install the glass and regulator in the reverse order of removal, and note these items:

   - Roll the glass up and down to see if it moves freely without binding.
   - Make sure that there is no clearance between the glass and glass run channel when the glass is closed.
   - Adjust the position of the glass as necessary (see page 20-23).
   - Do the power window control unit reset procedure (see page 22-209).
   - Check for water leaks (see step 7 on page 20-23).
   - Test-drive, and check for wind noise and rattles.
   - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
   - Make sure the power door locks, windows, and power mirror operate properly.

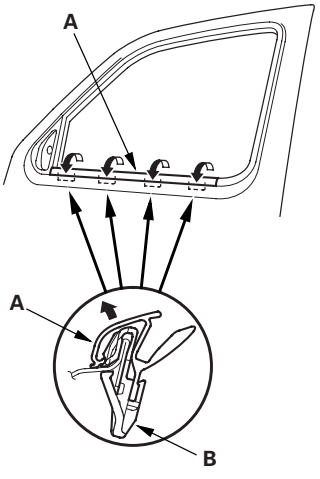
Front Door Glass Outer Molding Replacement

Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

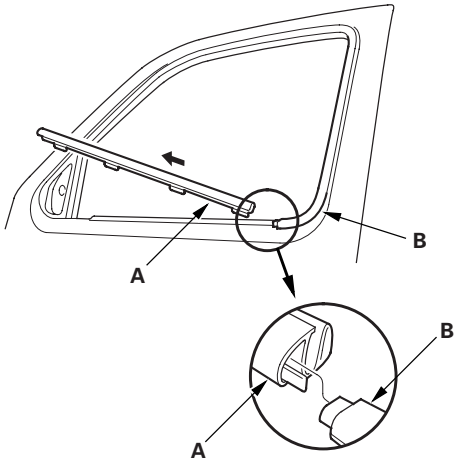
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the door.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Remove the power mirror (see page 20-27).

2. Starting at the front, pull the door glass outer molding (A) to release the clips (B).



3. Release from the rear portion of the glass outer molding (A) from the glass run channel (B).



4. Install the glass outer molding in the reverse order of removal, and note these items:

   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Make sure the rear portion of the glass outer weatherstrip connected to the glass run channel properly.

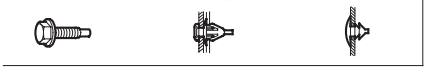
Front Door Weatherstrip Replacement

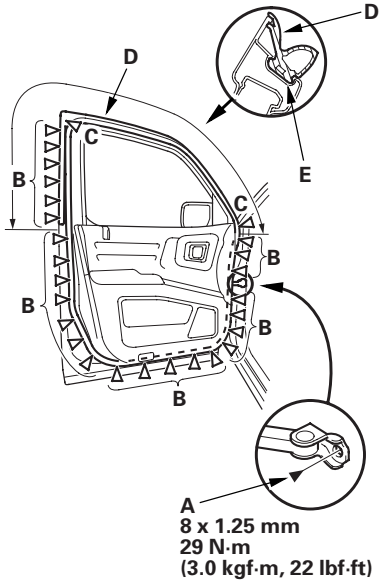
NOTE:
- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. Remove the door checker mounting bolt (A).

Fastener Locations

A ▶: Bolt, 1 B ▷: Clip, 25 C ▷: Clip, 2





2. Detach the clips (B, C), then remove the door weatherstrip (D).

3. Install the weatherstrip in the reverse order of removal, and note these items:

   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Make sure the weatherstrip is installed in the holder (E) securely.
   - Apply medium strength type liquid thread lock to the door checker mounting bolt before installation.
   - Check for water leaks (see step 7 on page 20-23).

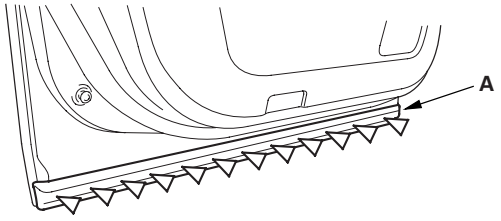
Front Door Side Sill Seal Replacement

NOTE:
- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. Detach the clips, then remove the door side sill seal (A).

Fastener Locations

▷ : **Clip, 12**



2. Install the side sill seal in the reverse order of removal, and note these items:
   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Push the clips into place securely.

Rear Door Panel Removal/ Installation

Special Tools Required
- KTC trim tool set SOJATP2014 *
- Trim pad remover, Snap-on A 177A or equivalent, commercially available

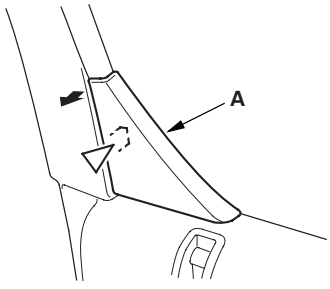
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the door and related parts.

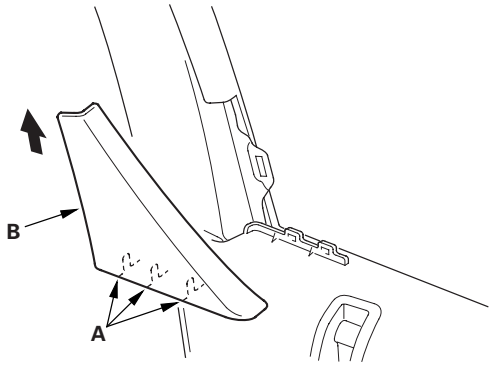
1. Lower the glass fully.
2. Pull back the upper portion of the door quarter inner trim (A) to detach the clip.

Fastener Location

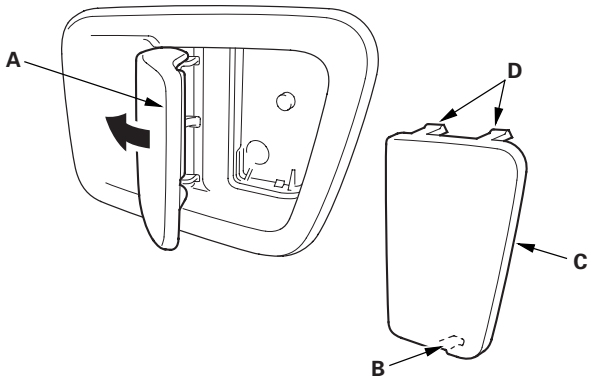
▷ : **Clip, 1**



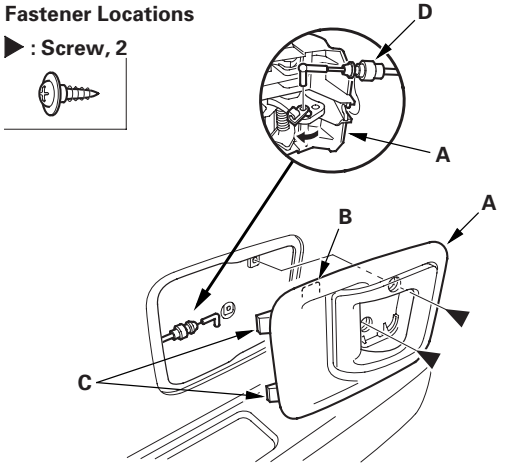
3. Release the hooks (A), then remove the door quarter inner trim (B) to detach the clip.



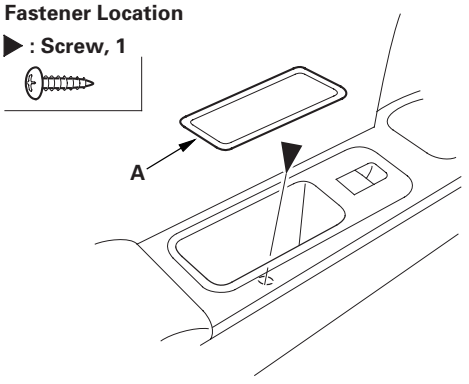
4. Pull back the inner handle knob (A). Using a trim tool, push on the lower hook (B) and pivot the cover (C) on the upper hooks (D), then remove the cover.



5. Remove the screws and inner handle (A) to release the hooks (B, C), then disconnect the inner handle cable (D).



6. Remove the screw from under the pull pocket lid (A).

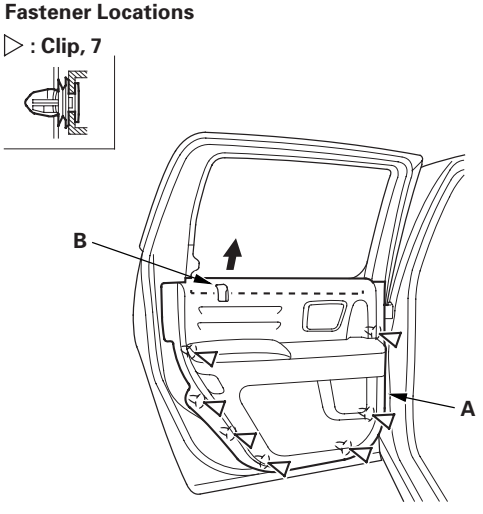


7. Remove the door panel (A) with as little bending as possible to avoid creasing or breaking it.

–1 Use a commercially available trim pad remover to detach the clips.

–2 Starting at the rear, pull the door panel upward, then release the lock knob (B).

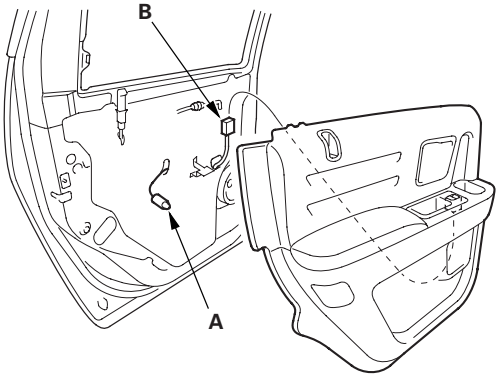
NOTE: To avoid damaging components inside the door, do not use excessive force when lifting up on the panel.



(cont'd)

Rear Door Panel Removal/ Installation (cont'd)

8. Disconnect the courtesy light bulb socket (A) and the power window switch connector (B).



9. Install the door panel in the reverse order of removal, and note these items:

   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Make sure the connectors are plugged in properly, and that the cable and the courtesy light bulb socket are connected properly.
   - Make sure the window and power door lock operate properly.

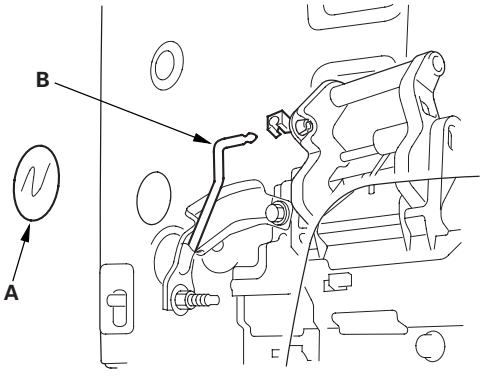
Rear Door Outer Handle Replacement

NOTE: Put on gloves to protect your hands.

1. Remove these items:

   - Door panel (see page 20-14)
   - Rear door glass (see page 20-19)
   - Rear lower channel (see step 2 on page 20-17)

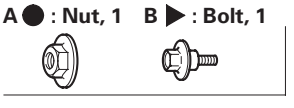
2. Remove the maintenance seal (A) from the rear of the door, then disconnect the outer handle rod (B).

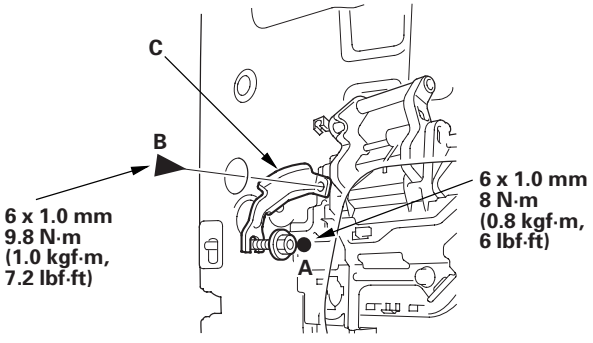


3. Loosen the nut (A), and remove the bolt (B), then remove the rod protector (C).

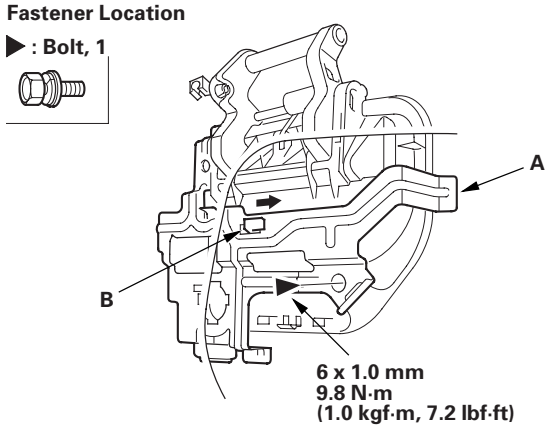
Fastener Locations

A ● : Nut, 1 B ▶ : Bolt, 1

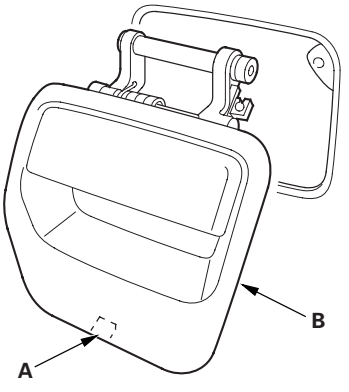




4. Remove the bolt, and slide the outer handle protector (A) to release the hook (B), then remove the outer handle protector.



5. Release the hook (A), then pull the outer handle (B) out of the door panel. Take care not to scratch the door.



6. Install the handle in the reverse order of removal, and note these items:

   - Make sure the rod is connected securely.
   - Make sure the door handle works properly before closing the door.
   - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.

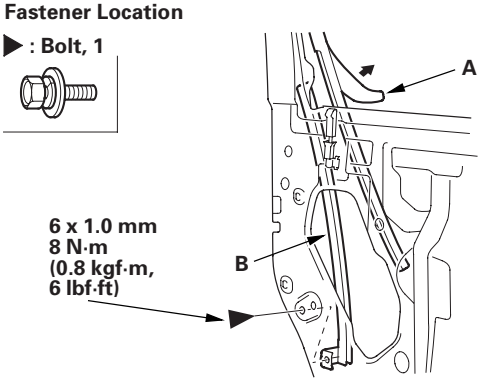
Rear Door Latch Replacement

NOTE: Put on gloves to protect your hands.

1. Remove these items:

   - Door panel (see page 20-14)
   - Rear door glass (see page 20-19)

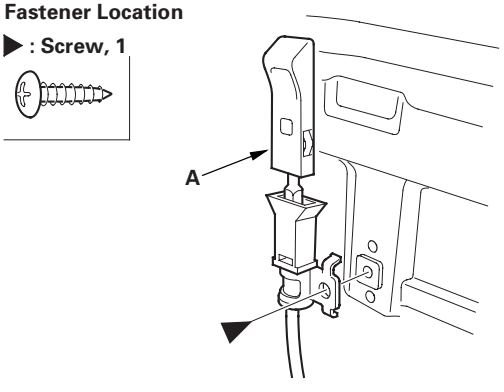
2. Pull the glass run channel (A) away as needed, and remove the bolt, then remove the rear lower channel (B) by pulling it downward.



3. Remove the maintenance seal from the rear of the door, then disconnect the outer handle rod (see step 2 on page 20-16).

4. Remove the nut and bolt then remove the rod protector (see step 3 on page 20-16).

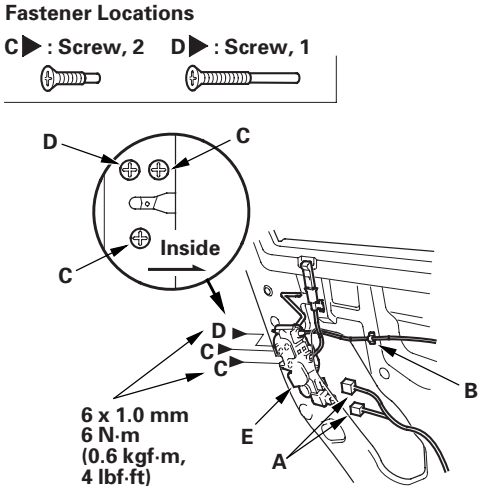
5. Remove the screw securing the lock knob (A).



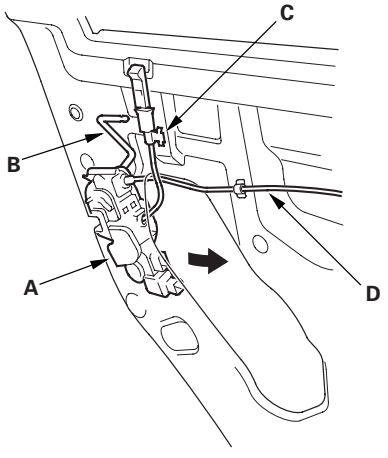
(cont'd)

Rear Door Latch Replacement (cont'd)

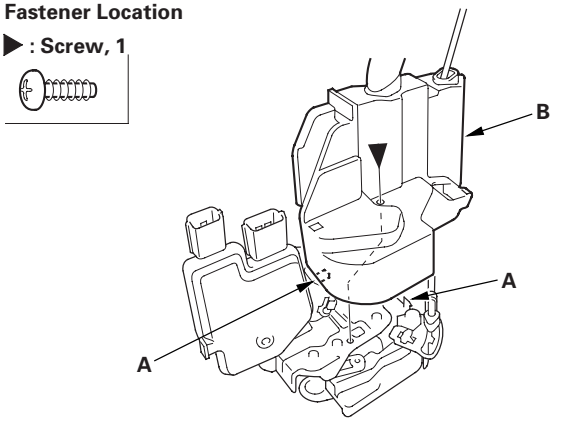
6. Disconnect the actuator connectors (A), and detach the inner handle cable clip (B). Remove the screws (C, D) securing the latch (E).



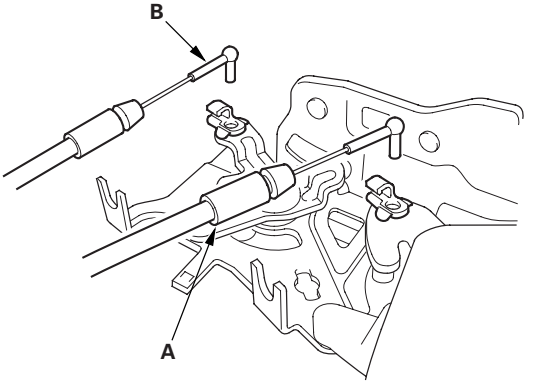
7. Remove the latch (A) with the protector through the hole in the door. Take care not to bend the outer handle rod (B), lock cable (C), and inner handle cable (D).



8. Remove the screw and release the hooks (A), then remove the latch protector (B).



9. Disconnect the inner handle cable (A) and lock cable (B).



10. Install the latch in the reverse order of removal, and note these items:

- Make sure the actuator connectors are plugged in properly and that the cables and each rod are connected securely.
- Make sure the door locks and opens properly.
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.

Rear Door Glass and Regulator Replacement

NOTE: Put on gloves to protect your hands.

1. Remove these items:

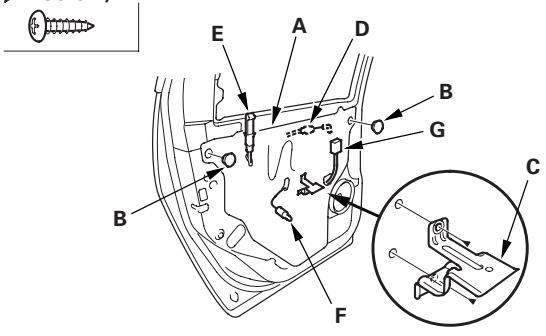
   - Door panel (see page 20-14)
   - Rear glass outer molding (see page 20-20)

2. Remove the plastic cover (A).

   1 Remove the caps (B).
   2 Remove the screws, then remove the panel bracket (C).
   3 Slide the inner handle cable (D), lock knob (E), courtesy light bulb socket (F) and the harness (G) in through the hole in the plastic cover.
   4 Remove the plastic cover.

Fastener Locations

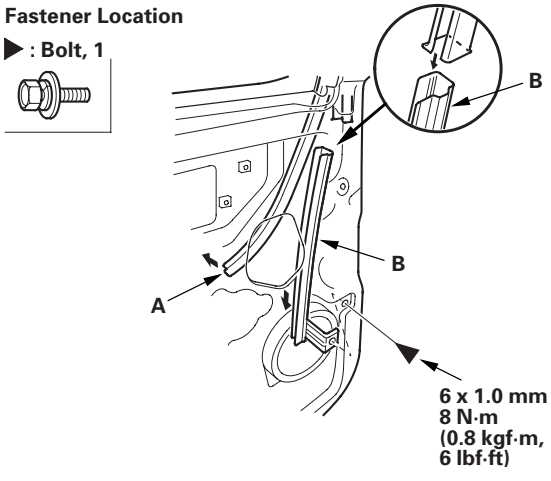
▶ : **Screw, 2**



3. Pull the glass run channel (A) away as needed, and remove the bolt, then remove the center lower channel (B) by pulling it downward.

Fastener Location

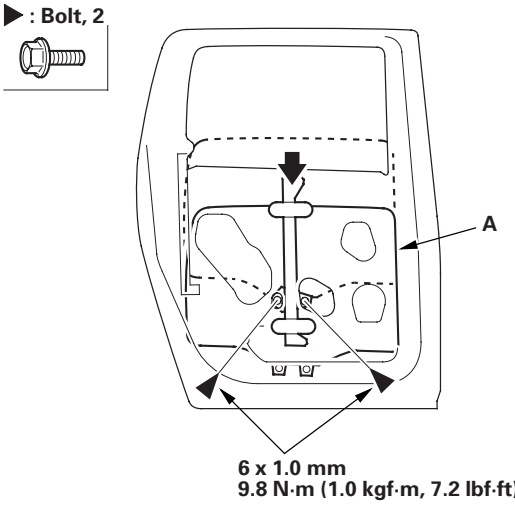
▶ : **Bolt, 1**



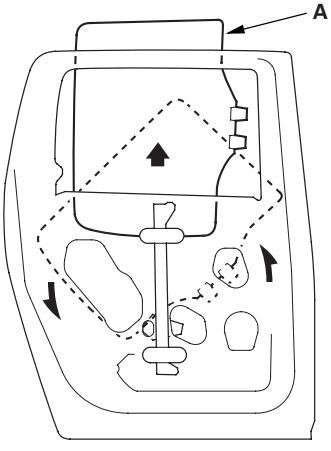
4. Carefully move the glass (A) until you can see the bolts, then remove them. Carefully lower the glass. Take care not to drop the glass inside the door.

Fastener Locations

▶ : **Bolt, 2**



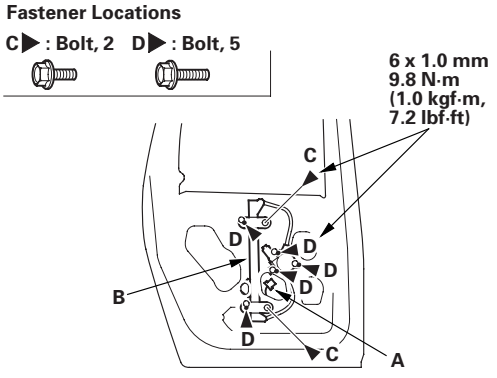
5. Rotate the glass as shown, and carefully remove the glass (A) out through the window opening. Take care not to drop the glass inside the door.



(cont'd)

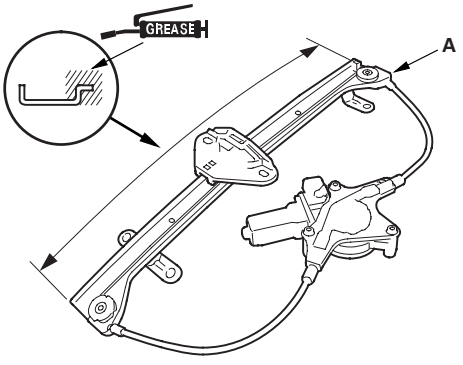
Rear Door Glass and Regulator Replacement (cont'd)

6. Disconnect the connector (A) from the regulator (B).



7. Remove the bolts (C), and loosen the bolts (D), then remove the regulator through the hole in the door.

8. Apply multipurpose grease to the sliding surfaces of the regulator (A) where shown.



9. Install the glass and regulator in the reverse order of removal, and note these items:

   - Roll the glass up and down to see if it moves freely without binding.
   - Make sure that there is no clearance between the glass and glass run channel when the glass is closed.
   - Adjust the position of the glass as necessary (see page 20-23).
   - Check for water leaks (see step 7 on page 20-23).
   - Test-drive, and check for wind noise and rattles.
   - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
   - Make sure the power door locks and windows operate properly.

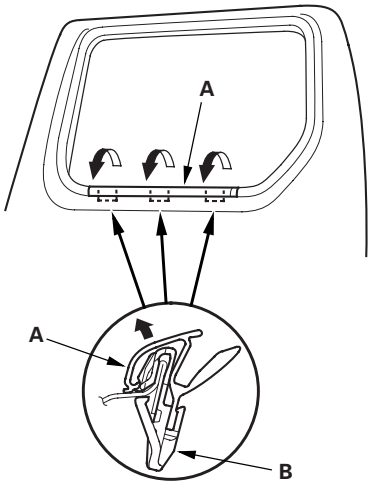
Rear Door Glass Outer Molding Replacement

Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

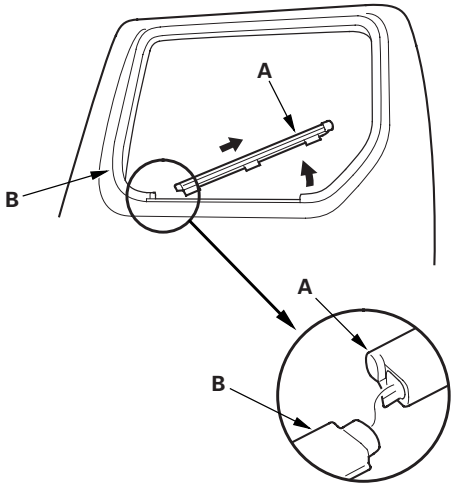
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the door.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Lower the glass fully.

2. Starting at the front, pull the door glass outer molding (A) to release the clips (B).



3. Release from the front portion of the glass outer molding (A) from the glass run channel (B).



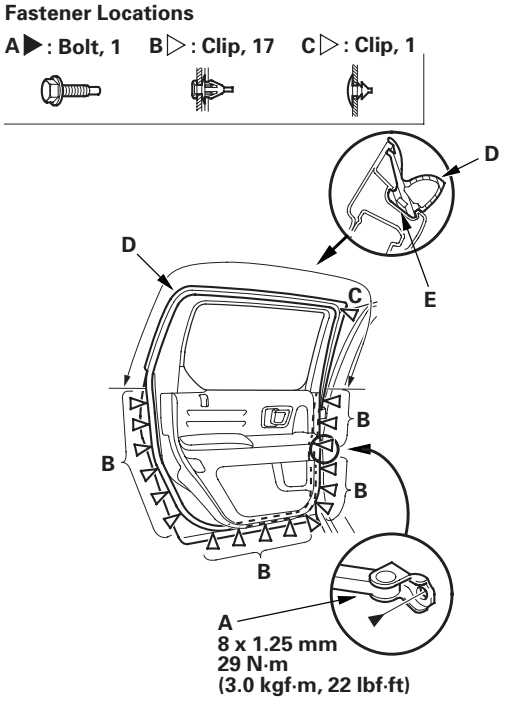
4. Install the glass outer molding in the reverse order of removal, and note these items:

   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Make sure the rear portion of the glass outer weatherstrip catch the glass run channel properly.

Rear Door Weatherstrip Replacement

NOTE:
- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. Remove the door checker mounting bolt (A).



2. Detach the clips (B, C), then remove the door weatherstrip (D).

3. Install the weatherstrip in the reverse order of removal, and note these items:

   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Make sure the weatherstrip is installed in the holder (E) securely.
   - Apply medium strength type liquid thread lock to the door checker mounting bolt before installation.
   - Check for water leaks (see step 7 on page 20-23).

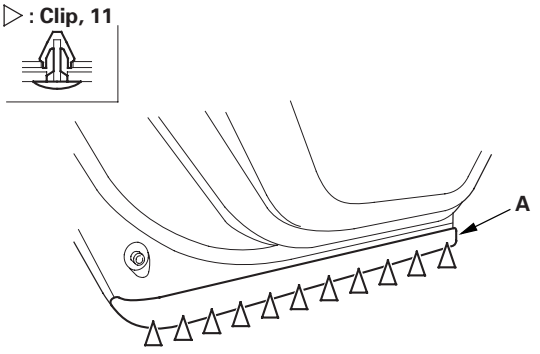
Rear Door Side Sill Seal Replacement

NOTE:
- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. Detach the clips, then remove the door side sill seal (A).

Fastener Locations

▷: **Clip, 11**



2. Install the side sill seal in the reverse order of removal, and note these items:

   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Push the clips into place securely.

Front and Rear Door Glass Adjustment

NOTE:
- Check the weatherstrips and glass run channel for damage or deterioration, and replace them if necessary.
- Wipe the run channel clean with a shop towel.
- Lubricate the run channel with Shin-Etsu silicone grease P/N 08798-9013.

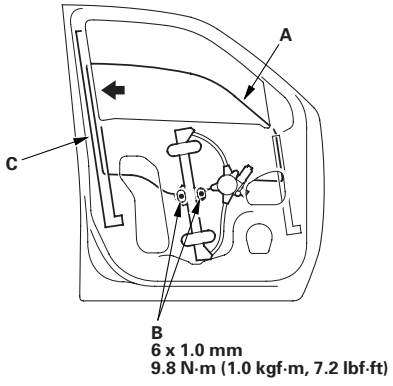
1. Place the vehicle on a firm, level surface.

2. Remove these items:

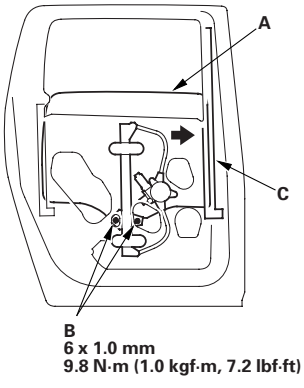
   - Door panel:
     – Front door (see page 20-7)
     – Rear door (see page 20-14)
   - Plastic cover:
     – Front door (see step 2 on page 20-11)
     – Rear door (see step 2 on page 20-19)

3. Carefully move the glass (A) until you can see the glass mounting bolts (B), then loosen them.

Front door



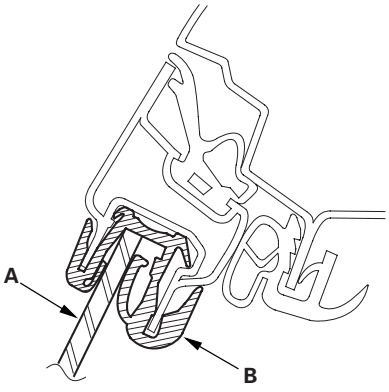
Rear door



4. Push the glass against the channel (C), then tighten the glass mounting bolts.

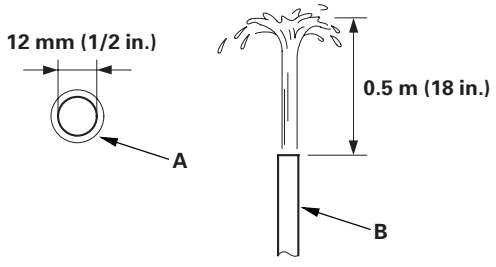
5. Check that the glass moves smoothly.

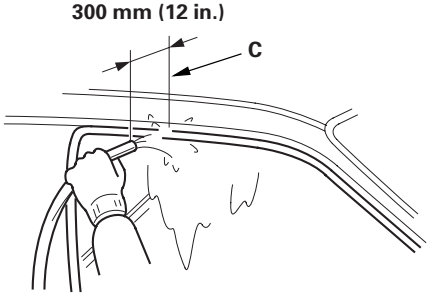
6. Raise the glass fully, and check for gaps. Check that the glass (A) contacts the glass run channel (B) evenly.



7. Check for water leaks. Run water over the roof and on the sealing area as shown, and note these items:

   - Use a 12 mm (1/2 in.) diameter hose (A).
   - Adjust the rate of water flow as shown (B).
   - Do not use a nozzle.
   - Hold the hose about 300 mm (12 in.) away from the door.





8. Attach the plastic cover making sure it is sealed around its outside perimeter to seal out water, then install the door panel.

9. Test-drive, and check for wind noise and rattles.

Front and Rear Door Position Adjustment

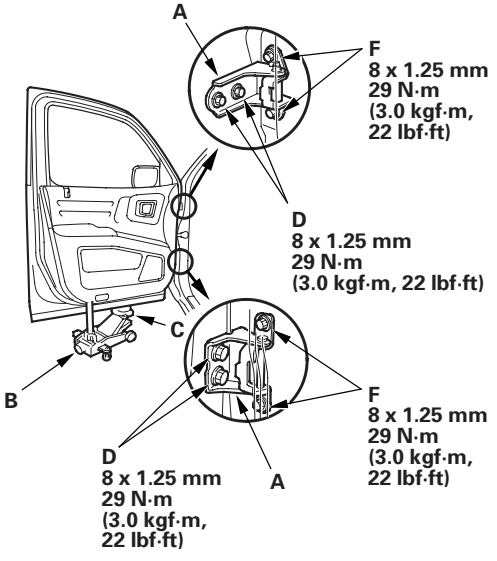
NOTE: Check for a flush fit with the body, then check for equal gaps between the front, rear, and bottom door edges and the body. Check that the door and body edges are parallel. Before adjusting, replace the mounting bolts.

1. Place the vehicle on a firm, level surface when adjusting the doors.

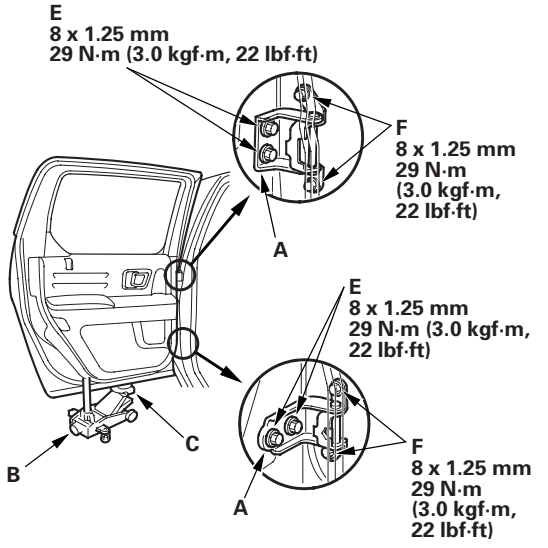
2. Adjust at the hinges (A):

   - Pad a floor jack (B) with shop towels (C), then use the jack to support the door to prevent damage to the door while adjusting it.
   - On the front door: Remove the front inner fender (see page 20-178) and front fender fairing (see page 20-180). Loosen the hinge mounting bolts (D) slightly, and move the door backward or forward, up or down as necessary to equalize the gaps.
   - On the rear door: Loosen the hinge mounting bolts (E) slightly, and move the door backward or forward, up or down as necessary to equalize the gaps.

Front door

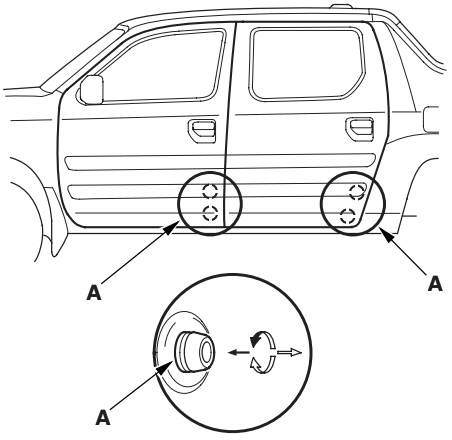


Rear door



3. If necessary, replace the door mounting bolts with the adjusting bolts (P/N 90102-SFA-305) made specifically for door adjustment, then adjust at the door: Loosen the door mounting bolts (F) slightly, and move the door up or down as necessary to equalize the gaps, and in or out until it's flush with the body.

4. Check that the door and body edges are parallel. If necessary, adjust the door cushions (A) to make the rear of the doors flush with the body.



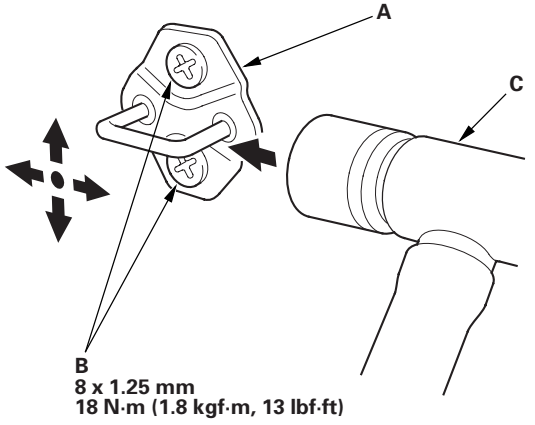
5. Apply touch-up paint to the hinge mounting bolts, and around the hinges.

6. Check for water leaks (see step 7 on page 20-23).

Front and Rear Door Striker Adjustment

Make sure the door latches securely without slamming it. If necessary, adjust the striker (A): The striker can be adjusted slightly up or down, and in or out.

1. Loosen the screws (B).

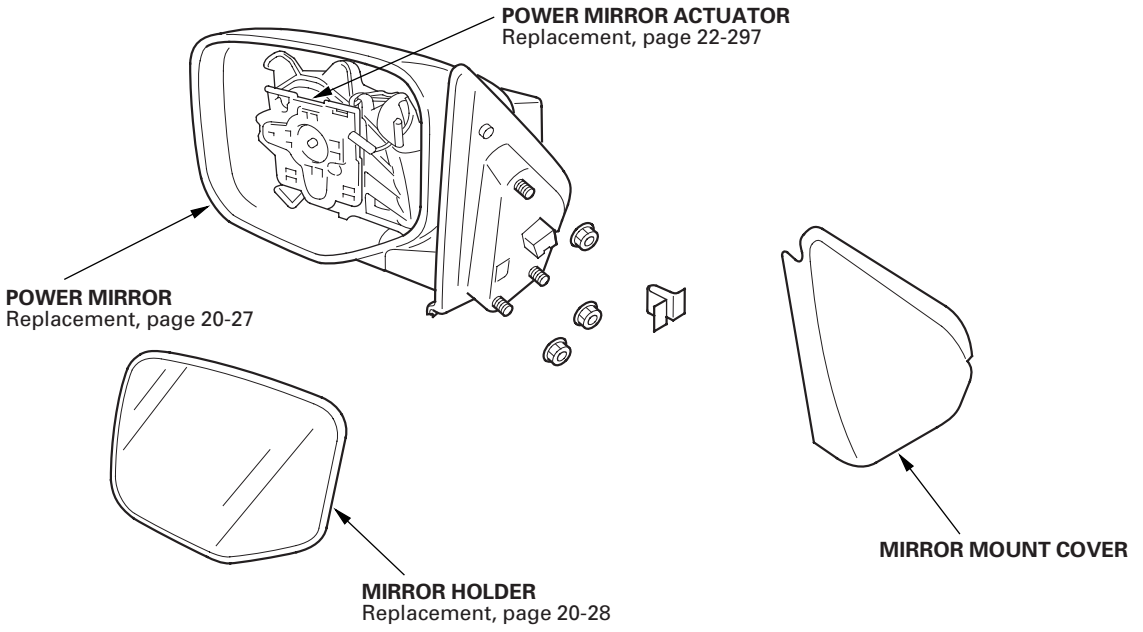


2. Wrap the striker with a shop towel, then adjust the striker by tapping it with a plastic hammer (C). Do not tap the striker too hard.

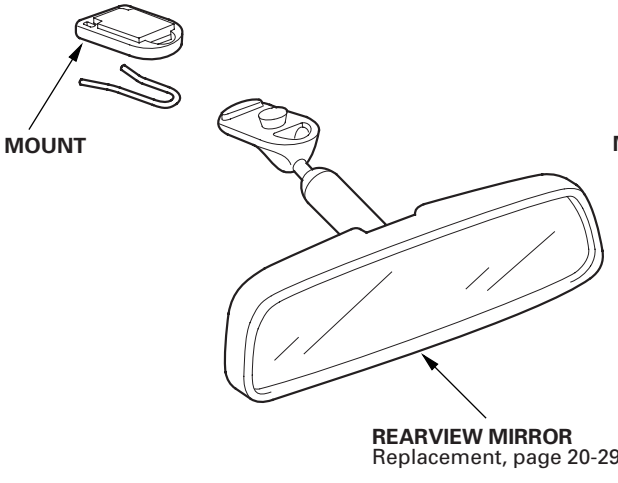
3. Lightly tighten the screws.

4. Hold the outer handle out, and push the door against the body to be sure the striker allows a flush fit. If the door latches properly, tighten the screws and recheck.

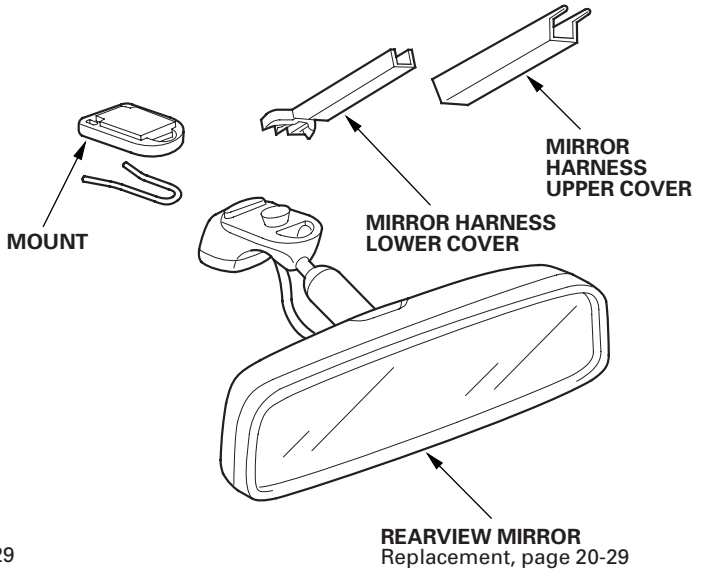
Component Location Index



Without Compass



With Compass

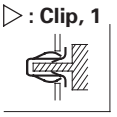


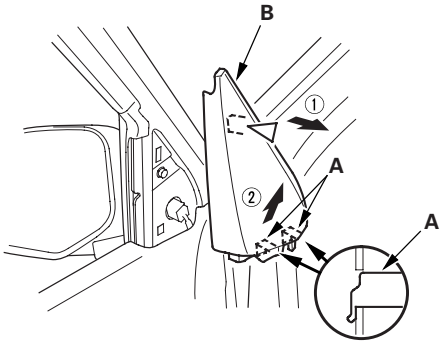
Power Mirror Replacement

1. Lower the door glass fully.
2. With your hand, carefully release the clip, lift the cover upward to release the hooks (A), and remove the cover (B) in the sequence shown.

Fastener Location

▷ : Clip, 1

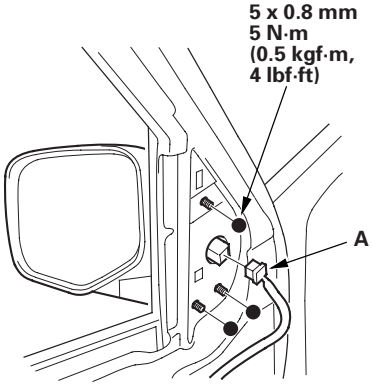




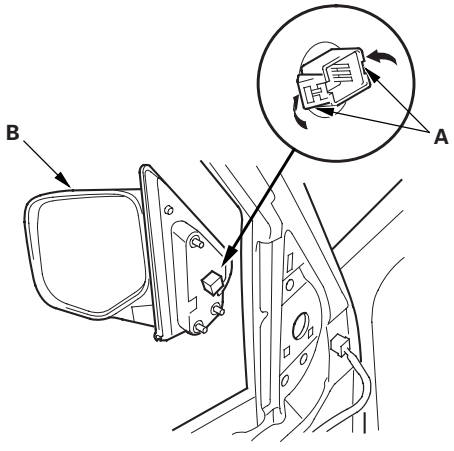
3. Remove the front door panel (see page 20-7).
4. Disconnect the connector (A).

Fastener Locations

● : Nut, 3



5. While holding the mirror, remove the nuts securing the mirror.
6. While holding the mirror, push in on the connector clips (A), then push out to remove the mirror (B). Take care not to scratch the door.



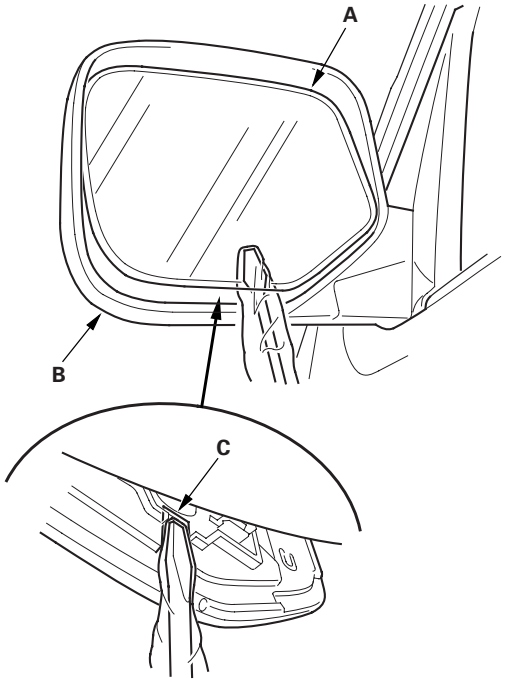
7. Install the mirror in the reverse order of removal, and note these items:

- Make sure the connector is plugged in properly.
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.

Mirror Holder Replacement

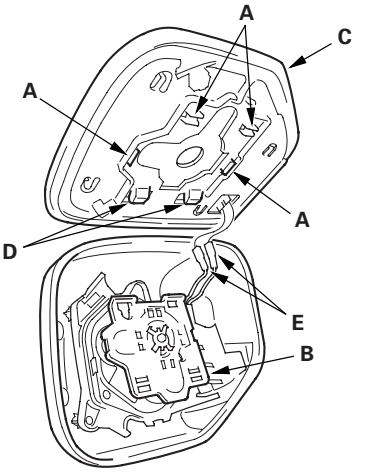
NOTE: Put on gloves to protect your hands.

1. Carefully push on the top edge of the mirror holder (A) by hand.



2. Put a shop towel in the opening between the lower edge of the mirror holder and the mirror housing (B) to prevent scratches. Insert a flat-tip screwdriver wrapped with protective tape through the slot (C) at the bottom of the mirror holder.

3. Twist the screwdriver to release the clips (A) from the actuator (B). Carefully pull out the bottom edge of the mirror holder (C), then separate the mirror holder from the actuator by releasing the hooks (D). Disconnect the mirror defogger connectors (E) from the heater pad terminals.



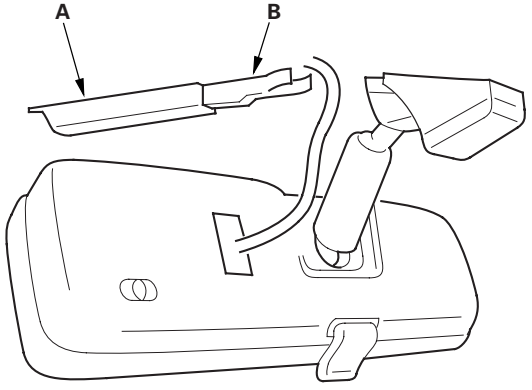
4. Reconnect the mirror defogger connectors.

5. Reattach the hooks of the mirror holder to the actuator, then position the mirror holder on the actuator. Carefully push on the clip portions of the mirror holder until the mirror holder locks into place.

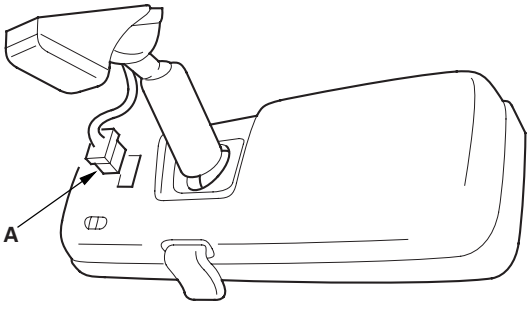
6. Check the operation of the actuator.

Rearview Mirror Replacement

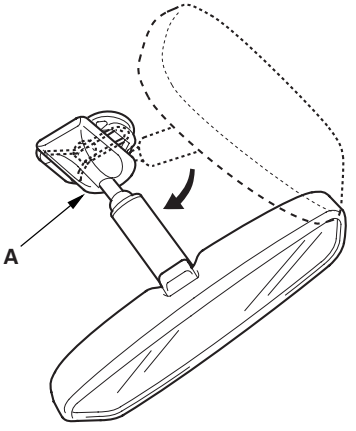
1. With compass: Slide the mirror harness upper cover (A) forward, then remove the mirror harness lower cover (B).



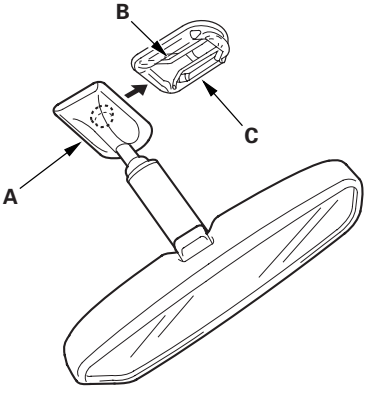
2. With compass: Disconnect the connector (A).



3. Turn the rearview mirror base (A) 90 °.



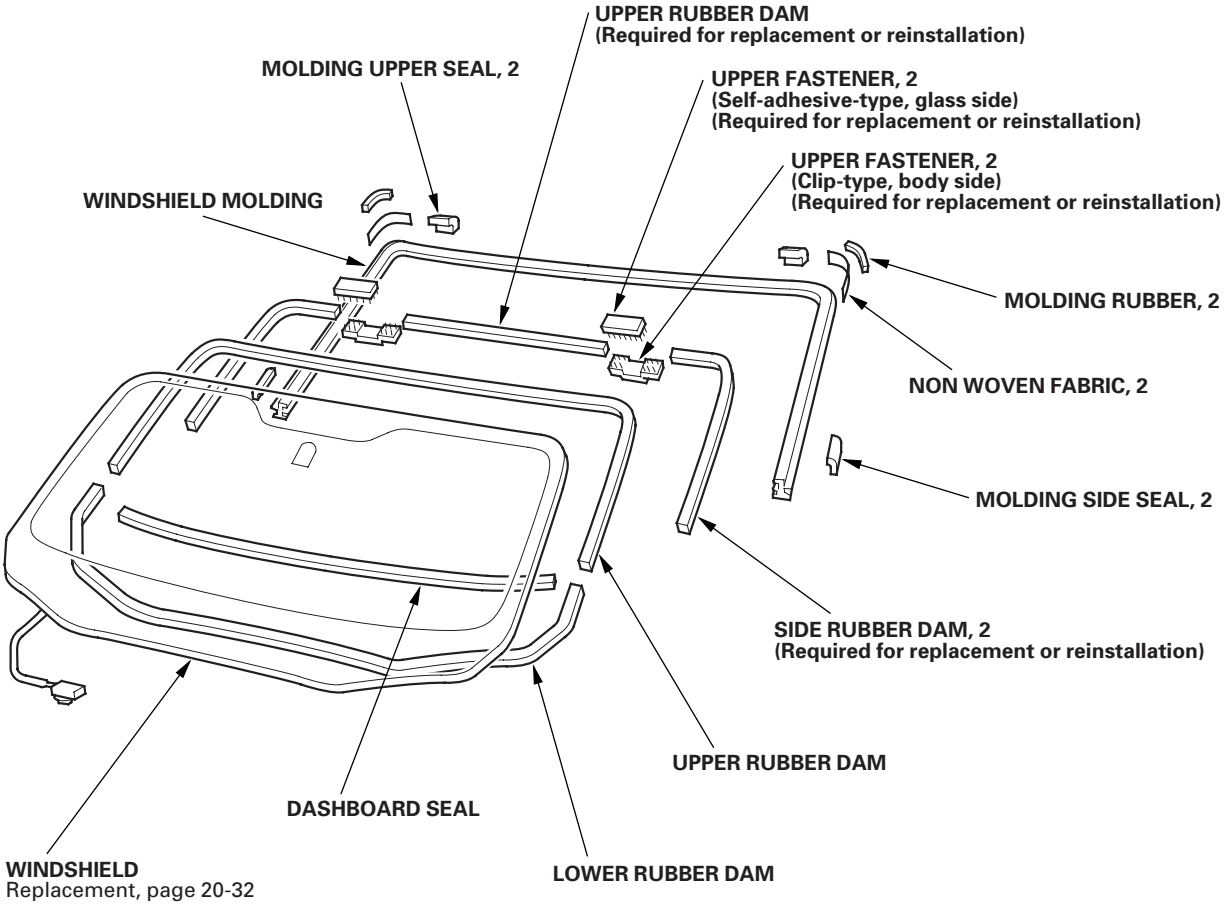
4. Slide the rearview mirror (A) down toward the bottom of the windshield to detach it from the spring (B) in the mount (C).

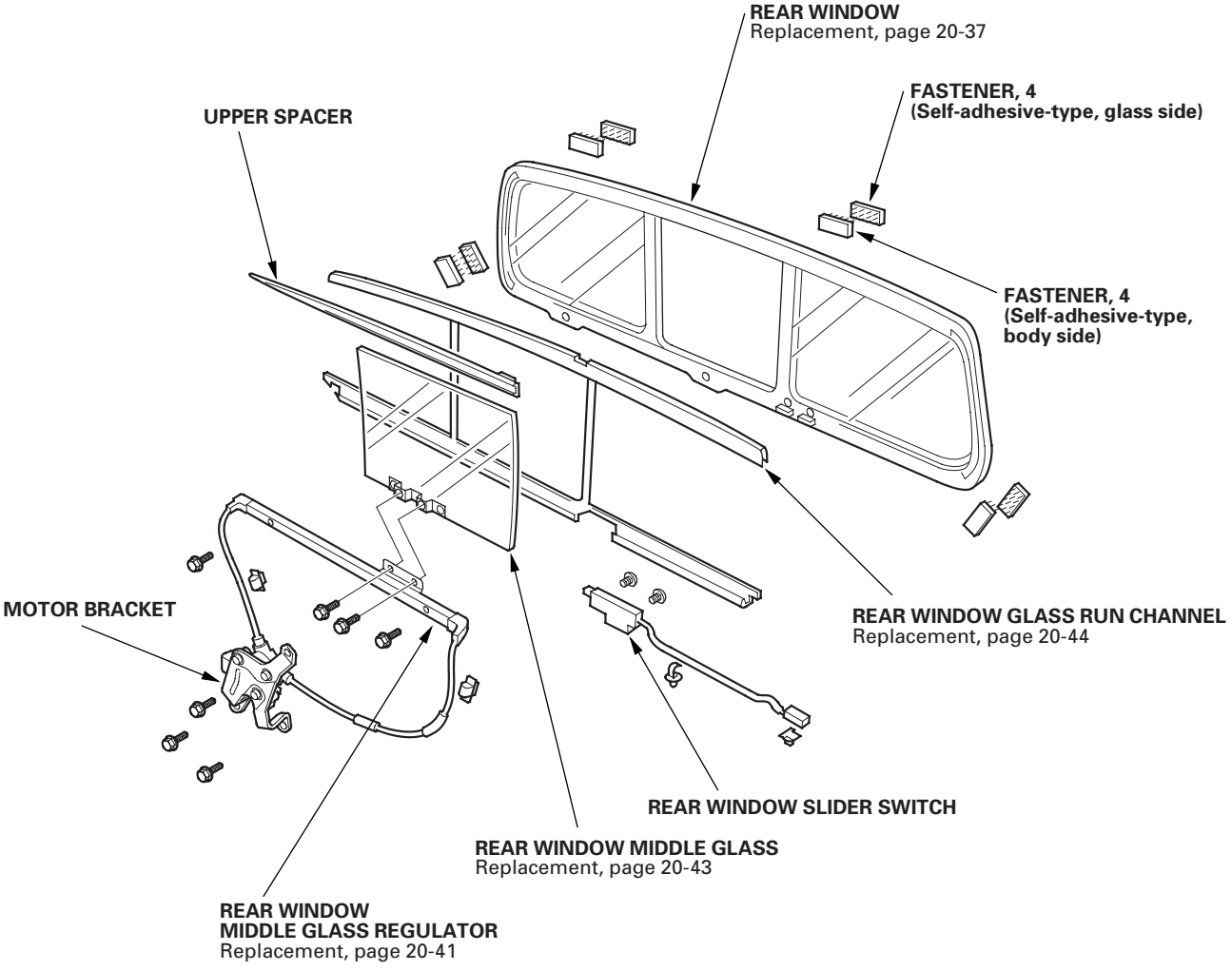


5. If necessary, remove the spring from the mount.

6. Install the rearview mirror in the reverse order of removal.

Component Location Index

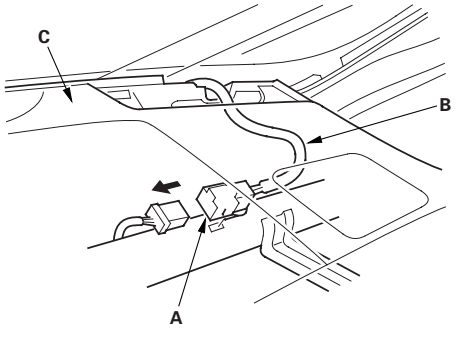



REAR WINDOW
Replacement, page 20-37
FASTENER, 4
(Self-adhesive-type, glass side)
UPPER SPACER
FASTENER, 4
(Self-adhesive-type,
body side)
REAR WINDOW GLASS RUN CHANNEL
Replacement, page 20-44
MOTOR BRACKET
REAR WINDOW SLIDER SWITCH
REAR WINDOW MIDDLE GLASS
Replacement, page 20-43
REAR WINDOW
MIDDLE GLASS REGULATOR
Replacement, page 20-41

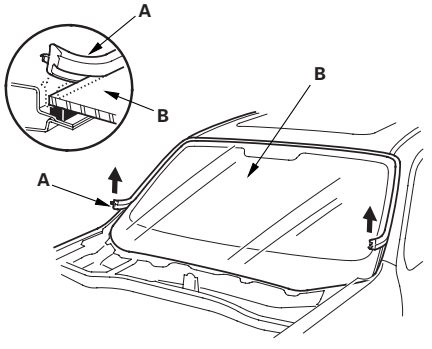
Windshield Replacement

NOTE:
- Put on gloves to protect your hands.
- Wear eye protection when removing the glass with piano wire.
- Use seat covers to avoid damaging the seat.
- When replacing a broken windshield, a commercially available windshield cutter can be efficiently used for cutting the adhesive. For details, follow the instructions of the manufacturer of the tool.
- Do not damage the windshield defogger grid lines and defogger terminals.

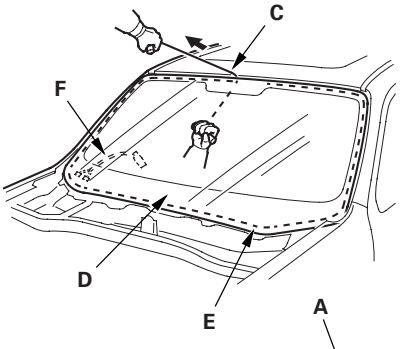
1. Remove these items:
   - Rearview mirror (see page 20-29)
   - A-pillar trim, both sides (see page 20-63)
   - Windshield wiper arms (see page 22-237)
   - Cowl cover (see page 20-173)
   - Right tweeter grille (see step 7 on page 20-90)
2. Lower the glove box (see page 20-85).
3. Disconnect the windshield defogger connector (A) through the glove box opening, and pull out the windshield defogger harness (B) from the tweeter grille opening in the dashboard (C).

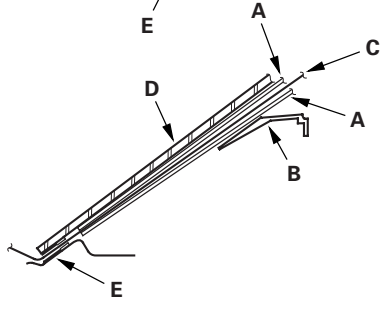


4. Remove the molding (A) from the edge of the windshield (B). If necessary, cut the molding with a utility knife.

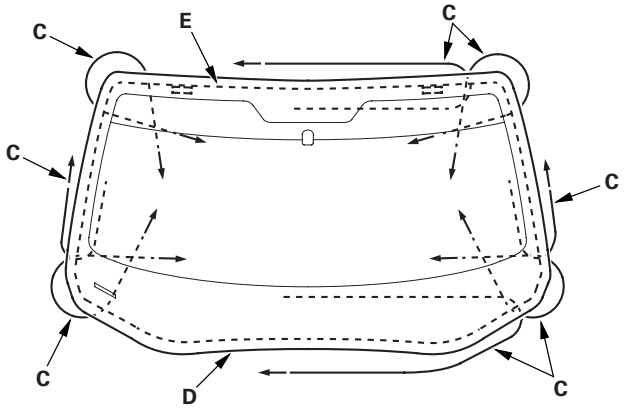


5. If the old windshield will be reinstalled, make alignment marks across the glass and body with a grease pencil.
6. Pull down the front portion of the headliner (see page 20-70). Take care not to bend the headliner excessively, or you may crease or break it.
7. Apply protective tape along the edge of the dashboard and body. Using an awl, make a hole through the rubber dam, adhesive, and dashboard seal from inside the vehicle at the corner portion of the glass. Push a piece of piano wire through the hole, and wrap each end around a piece of wood.
8. Apply the protective plastic plates (A) between the dashboard (B) and piano wire (C) and between the windshield (D) and piano wire. With a helper on the outside, pull the piano wire back and forth in a sawing motion. Hold the piano wire as close to the windshield as possible to prevent damage to the body and dashboard. Carefully cut through the rubber dam and adhesive (E) around the entire windshield. Take care not to damage the windshield defogger harness (F).





Cutting positions



9. Carefully remove the windshield.

10. With a putty knife, scrape the old adhesive until smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire windshield opening flange:

    - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
    - Remove the rubber dam and fasteners from the body.

11. Clean the body bonding surface with a sponge dampened in isopropyl alcohol. After cleaning, keep oil, grease and water from getting on the clean surface.

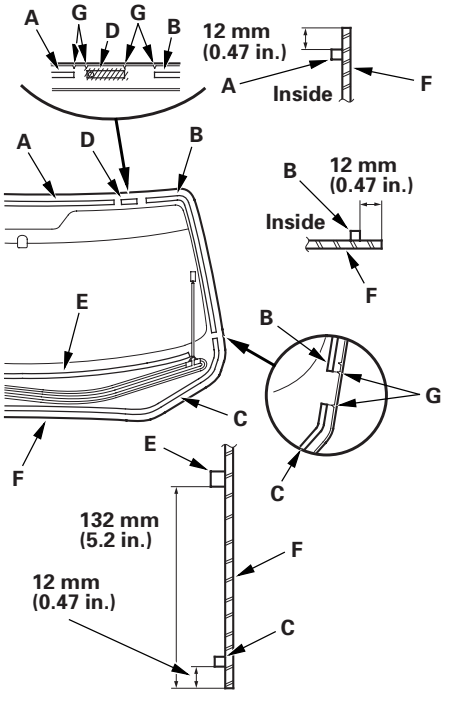
12. If the old windshield will be reinstalled, use a putty knife to scrape off all of the old adhesive, the rubber dam and the dashboard seal from the windshield. Clean the inside face and the edge of the windshield with isopropyl alcohol where new adhesive is to be applied. Make sure the bonding surface is kept free of water, oil, and grease.

13. Attach the upper rubber dam (A), side rubber dams (B), and lower rubber dam (C) with adhesive tape. Apply primer where the fasteners (D) are to be applied, then attach the fasteners with adhesive tape and dashboard seal (E) to the inside face of the windshield (F) as shown:

    - Be sure the rubber dams, fasteners, and dashboard seal line up with the alignment marks (G).
    - Be careful not to touch the windshield where adhesive will be applied.

    Rubber dams adhesive tape:
    Thickness 0.16 mm (0.006 in.)
    Width 4 mm (0.16 in.)
    Fasteners and dashboard seals adhesive tape:
    Thickness 0.2 mm (0.008 in.)
    Width 7.5 mm (0.30 in.)

    : **Apply primer here.**

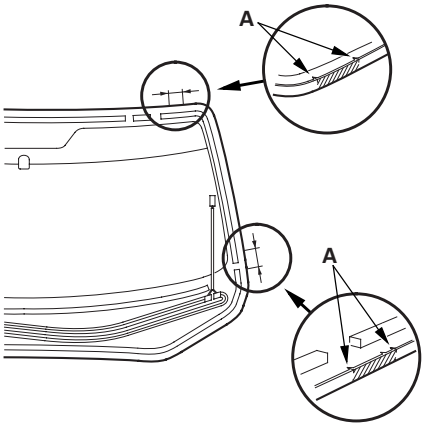


(cont'd)

Windshield Replacement (cont'd)

14. Apply primer to the edge of the windshield between the alignment marks (A). Be careful not to touch the windshield where adhesive will be applied.

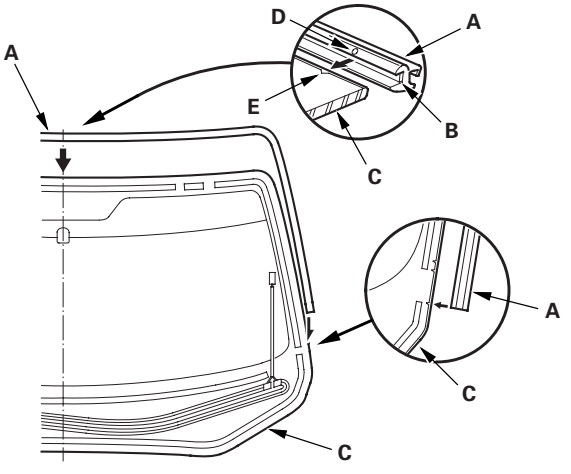
: **Apply primer here.**



15. Attach the molding (A) with adhesive tape (B) to the edge of the windshield (C):

- Be sure the alignment mark (D) of the molding lines up with the alignment mark (E) of the windshield.
- Be careful not to touch the windshield where adhesive will be applied.

Adhesive tape: Thickness 0.8 mm (0.03 in.)
Width 4 mm (0.16 in.)

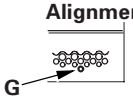


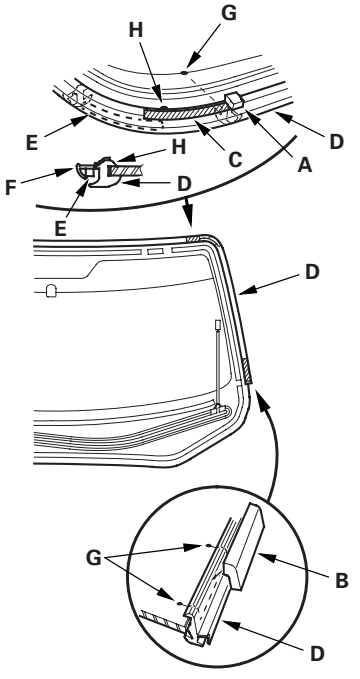
16. Attach the molding upper seals (A), molding lower seals (B), and non woven fabric (C) to the inside surface of the molding (D), and attach the molding rubbers (E) with the adhesive tape to the inside surface of the molding lip (F) as shown:

- Be sure the molding upper seal and molding side seal line up with the alignment dots (G).
- Be sure the molding rubber lines up with the alignment mark (H) of the molding.
- Be careful not to touch the windshield where adhesive will be applied.

Molding rubber adhesive tape:
Thickness 0.16 mm (0.006 in.)
Width 3 mm (0.12 in.)

Alignment dot location

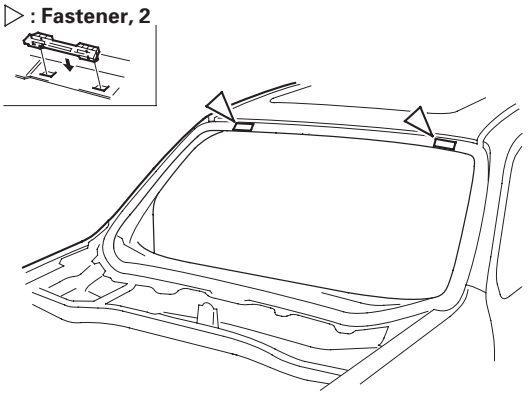




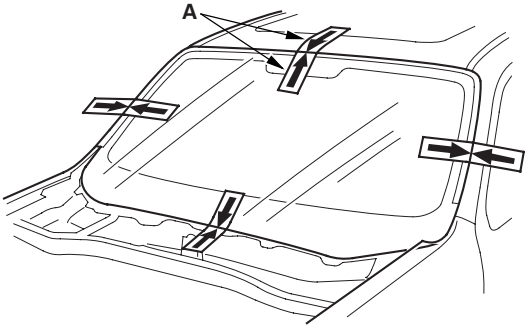
17. Install the fasteners to the body.

Fastener Locations

▷ : **Fastener, 2**



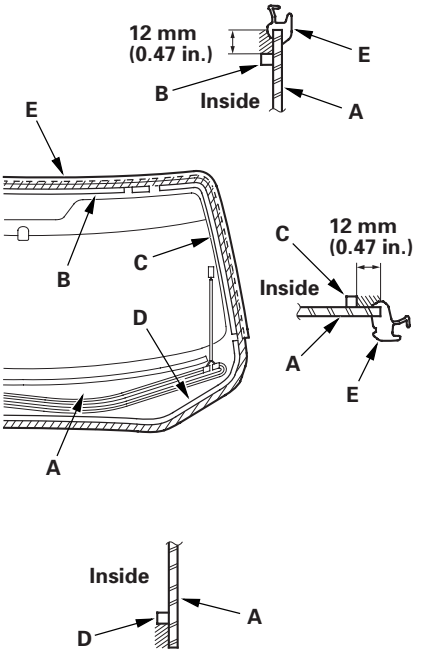
18. Set the windshield in the opening, and center it. Make alignment marks (A) across the windshield and body with a grease pencil at the four points shown. Be careful not to touch the windshield where adhesive will be applied.



19. With a sponge, apply a light coat of glass primer around the edge of the windshield (A) between the upper rubber dam (B), side rubber dams (C), lower rubber dam (D), and molding (E) as shown, then lightly wipe it off with gauze or cheesecloth:

- Apply glass primer to the molding.
- Do not apply body primer to the windshield, and do not get the body and glass primer sponges mixed up.
- Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the windshield properly, causing a leak after the windshield is installed.
- Keep water, dust, and abrasive materials away from the primed surfaces.

▨ : **Apply glass primer here.**



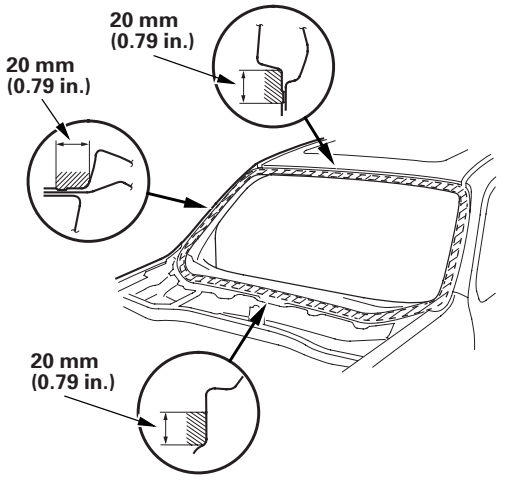
(cont'd)

Windshield Replacement (cont'd)

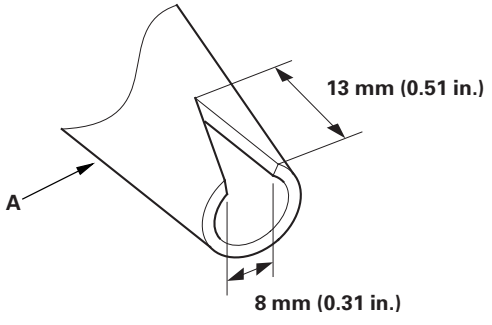
20. With a sponge, carefully apply a light coat of body primer to any exposed paint around the flange where new adhesive will be applied. Let the primer dry for at least 10 minutes:

    - Do not apply body primer to any remaining original adhesive on the flange.
    - Be careful not to mix up the body and glass primer sponges.
    - Never touch the primed surface with your hands.

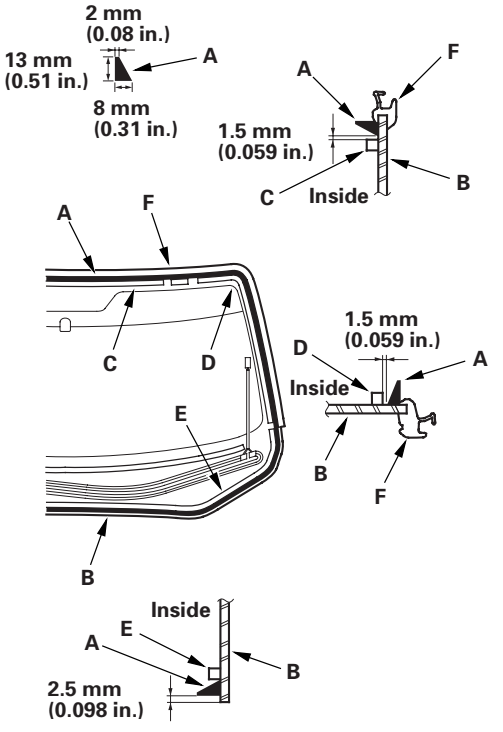
    : **Apply body primer to any exposed paint as shown.**



21. Cut a ''V'' in the end of the nozzle (A) on the adhesive cartridge as shown.



22. Put the cartridge in a caulking gun, and run a bead of adhesive (A) around the edge of the windshield (B) between the upper rubber dam (C), side rubber dams (D), lower rubber dam (E), and molding (F) as shown. Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.



23. Use suction cups to hold the windshield over the opening, align it with the alignment marks made in step 18, and set it down on the adhesive. Lightly push on the windshield until its edges are fully seated on the adhesive all the way around.

    NOTE: Do not open or close the doors for about an hour until the adhesive is dry.

24. Scrape or wipe any excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the windshield, wipe with a soft shop towel dampened with isopropyl alcohol.

25. After the adhesive has dried, spray water over the windshield and check for leaks. Mark leaking areas, and let the windshield dry, then seal with sealant:

    - Let the vehicle stand for at least 4 hours after windshield installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.
    - Keep the windshield dry for the first hour after installation.

26. Reinstall all removed parts. Install the rearview mirror after the adhesive has dried thoroughly. Advise the customer not to do the following things for 2 to 3 days:
    - Slam the doors with all the windows rolled up.
    - Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).

Rear Window Replacement

NOTE:
- Put on gloves to protect your hands.
- Use seat covers to avoid damaging any surface.

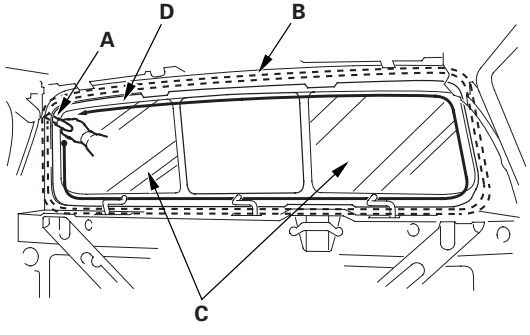
1. Remove these items:

    - Rear seat assembly (see page 20-117)
    - C-pillar trim, both sides (see page 20-68)
    - Rear seat belt lower anchor, both sides (see step 2 on page 24-7)
    - Rear seat side trim, both sides (see step 9 on page 20-62)
    - Subwoofer, for some models (see page 23-60)
    - Rear panel insulator (see page 20-69)
    - Rear window middle glass regulator (see page 20-41)

2. Pull down the rear portion of the headliner as needed (see page 20-70).

3. From inside the vehicle, use a utility knife (A) to cut through the adhesive (B) all the way around:

    - If the rear window (C) will be reinstalled, take care not to damage the molding (D).
    - Apply protective tape along the edge of the entire rear window opening flange.



4. Carefully remove the rear window. Check the molding for damage, and replace the rear window if necessary.

(cont'd)

Rear Window Replacement (cont'd)

5. With a putty knife, scrape the old adhesive smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire rear window opening flange:

   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
   - Remove the fasteners from the body.

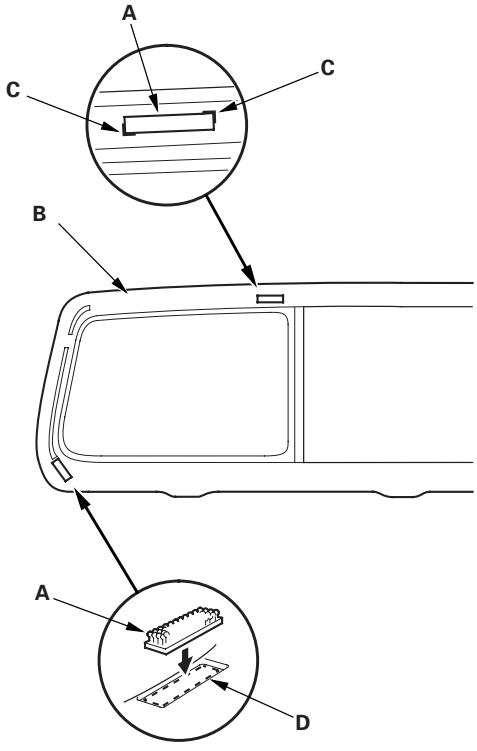
6. Clean the body bonding surface with a sponge dampened in isopropyl alcohol. After cleaning, keep oil, grease and water from getting on the surface.

7. If the old rear window will be reinstalled, use a putty knife to scrape off all of the old adhesive and the fasteners from the rear window molding. Clean the inside face and the edge of the rear window molding with isopropyl alcohol where new adhesive will be applied. Make sure the bonding surface is kept free of water, oil and grease.

8. Attach the fasteners (A) with adhesive tape to the rear window molding (B) as shown:

   - Be sure the fasteners line up with the alignment marks (C) and molding shapes (D).
   - Be careful not to touch the rear window molding where adhesive will be applied.

   Adhesive tape: Thickness 0.6 mm (0.03 in.)
   Width 7.5 mm (0.3 in.)

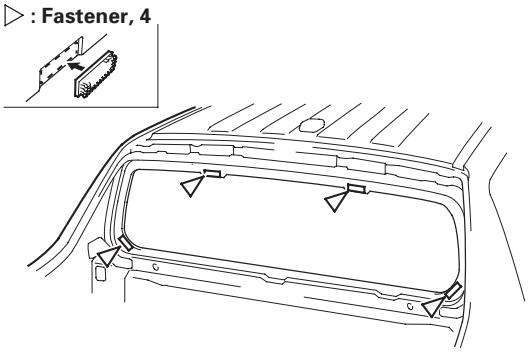


9. Attach the fasteners with adhesive tape to the rear window opening flange of the body on both sides.

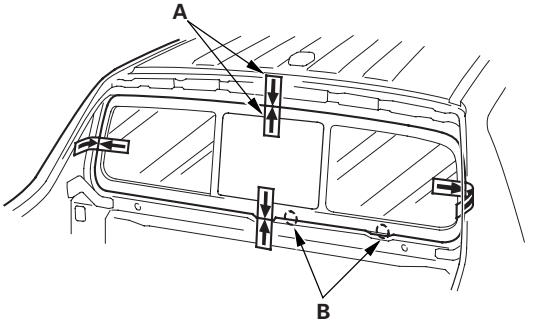
Adhesive tape: Thickness 0.6 mm (0.03 in.)
Width 9.5 mm (0.37 in.)

Fastener Locations

▷ : **Fastener, 4**



10. Set the rear window in the opening, and center it. Make alignment marks (A) across the rear window and body with a grease pencil at the four points shown. Make sure insert nuts (B) are aligned in the body holes (inside). Be careful not to touch the rear window molding where adhesive will be applied.

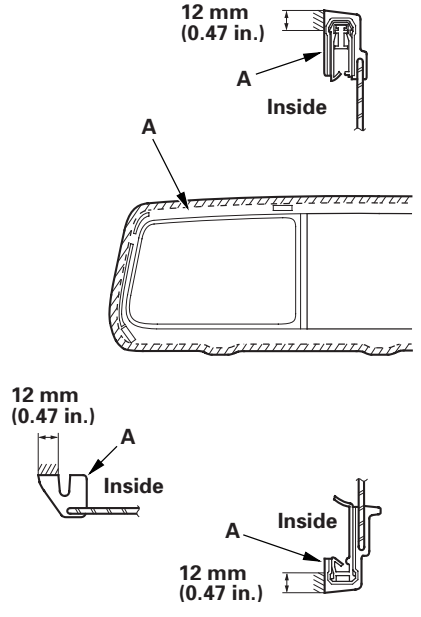


11. Remove the rear window.

12. With a sponge, apply a light coat of glass primer along the edge of the rear window molding (A) as shown, then lightly wipe it off with gauze or cheesecloth:

- Do not apply body primer to the rear window, and do not get body and glass primer sponges mixed up.
- Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the rear window properly, causing a leak after the rear window is installed.
- Keep water, dust, and abrasive materials away from the primed surfaces.

▨ : **Apply glass primer here.**



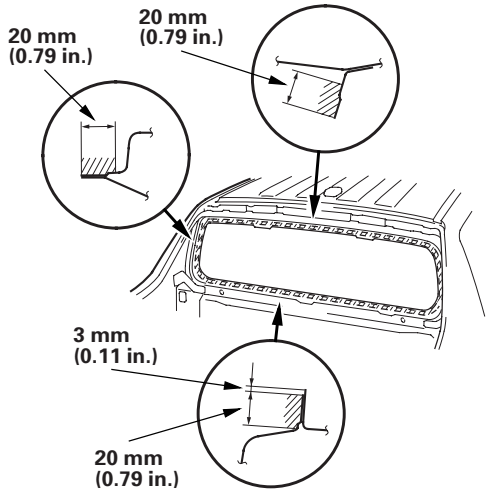
(cont'd)

Rear Window Replacement (cont'd)

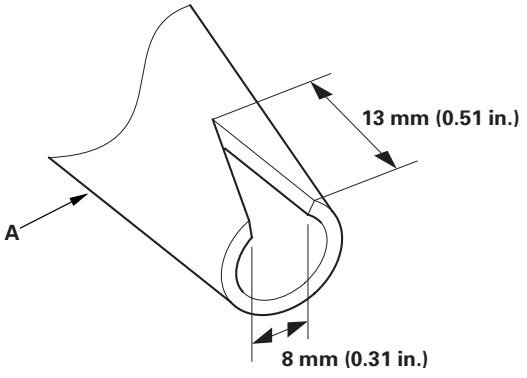
13. With a sponge, carefully apply a light coat of body primer to any exposed paint around the flange where new adhesive will be applied. Let the primer dry for at least 10 minutes:

    - Do not apply body primer to any remaining original adhesive on the flange.
    - Be careful not to mix up the body and glass primer sponges.
    - Never touch the primed surfaces with your hands.

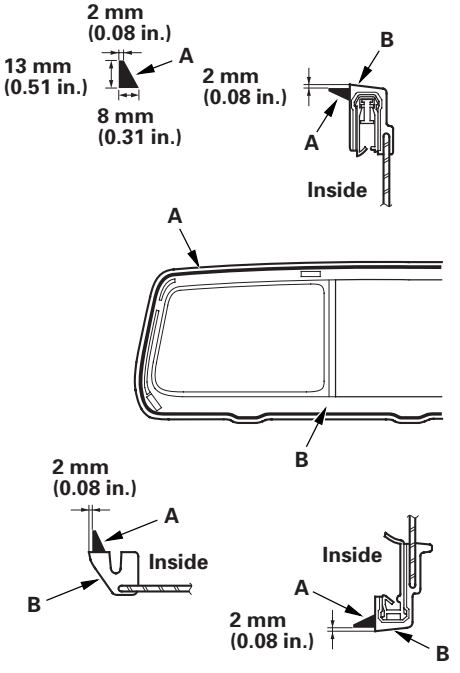
    : **Apply body primer to any exposed paint as shown.**



14. Cut a ''V'' in the end of the nozzle (A) on the adhesive cartridge as shown.



15. Put the cartridge in a caulking gun, and run a bead of adhesive (A) around the edge of the rear window molding (B) as shown. Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.



16. Use suction cups to hold the rear window over the opening, align it with the alignment marks you made in step 10, and set it down on the adhesive. Lightly push on the rear window until its edges are fully seated on the adhesive all the way around.

    NOTE: Do not open or close any of the doors for about an hour until the adhesive is dry.

17. Scrape or wipe any excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the rear window, use a soft shop towel dampened with isopropyl alcohol.

18. After the adhesive has dried, then spray water over the rear window and check for leaks. Mark any leaking areas, let the rear window dry, then seal with sealant. Let the vehicle stand for at least 4 hours after rear window installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.

19. Reinstall all remaining removed parts.

    NOTE: Advise the customer not to do the following things for 2 to 3 days:
    - Slam the doors with all the windows rolled up.
    - Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).

Rear Window Middle Glass Regulator Replacement

NOTE:
- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.

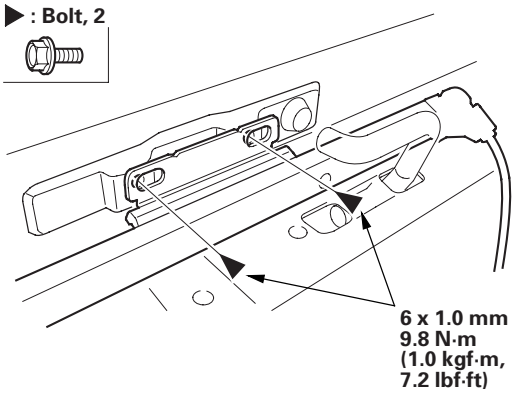
1. Remove these items:

    - Rear seat assembly (see page 20-117)
    - C-pillar trim, both sides (see page 20-68)
    - Rear seat belt lower anchor (see step 2 on page 24-7)
    - Rear seat side trim, both sides (see step 9 on page 20-62)
    - Subwoofer, for some models (see page 23-60)
    - Rear panel insulator (see page 20-69)

2. Remove the rear window middle glass mounting bolts.

Fastener Locations

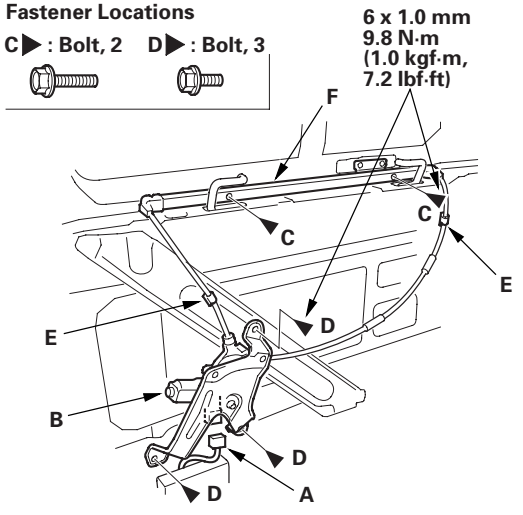
▶ : Bolt, 2



(cont'd)

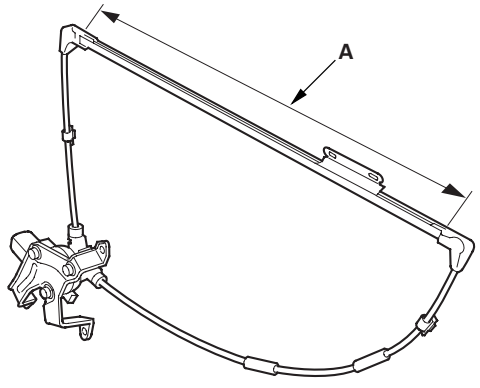
Rear Window Middle Glass Regulator Replacement (cont'd)

3. Disconnect the connector (A) from the regulator motor (B).



4. Remove the bolts (C, D), and detach the cable clips (E), then remove the regulator (F) and motor.

5. Apply multipurpose grease to the sliding surfaces of the regulator (A) where shown.



6. Install the regulator in the reverse order of removal, and note these items:

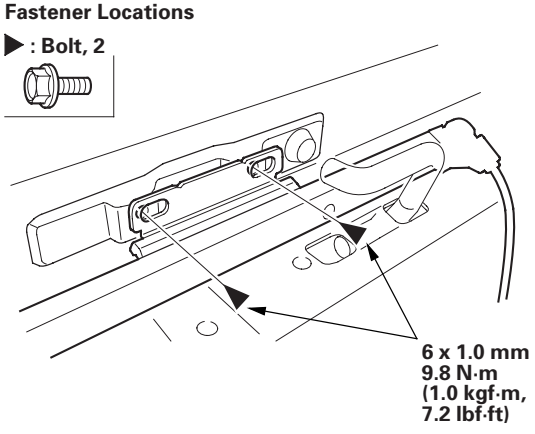
   - Slide the glass right and left to see if it moves freely without binding.
   - Make sure the connector is plugged in properly.

Rear Window Middle Glass Replacement

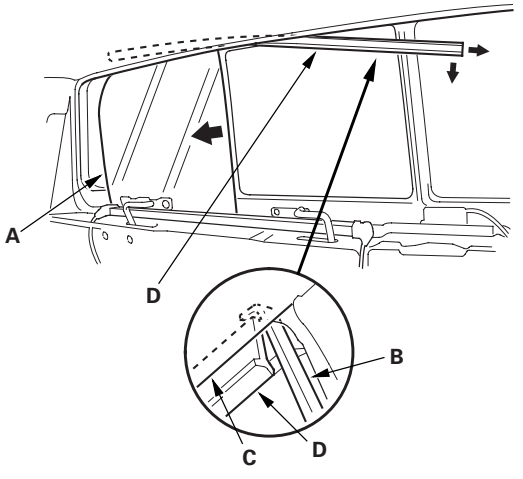
NOTE:
- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.

1. Remove these items:
   - Rear seat-back (see page 20-119)
   - Rear trim panel (see step 2 on page 20-68)

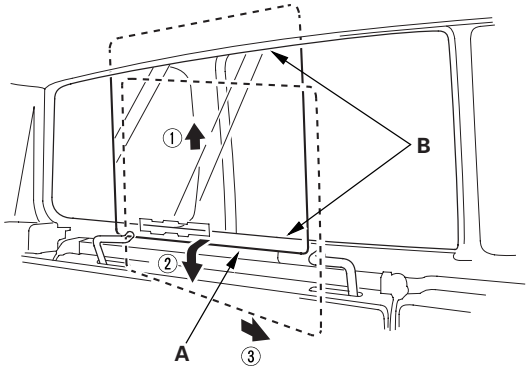
2. Remove the rear window middle glass mounting bolts.



3. Open the middle glass (A) fully by hand. Insert a pick tool (B) to the glass run channel (C) as shown, and pull out the edge of the upper spacer (D), and then pull out the spacer by hand from between the glass run channel and glass.



4. Move the glass (A) until you can remove it as shown. Pull up the glass to release the bottom of the glass, and pull out the top of the glass from the glass run channel (B), and then remove the glass.



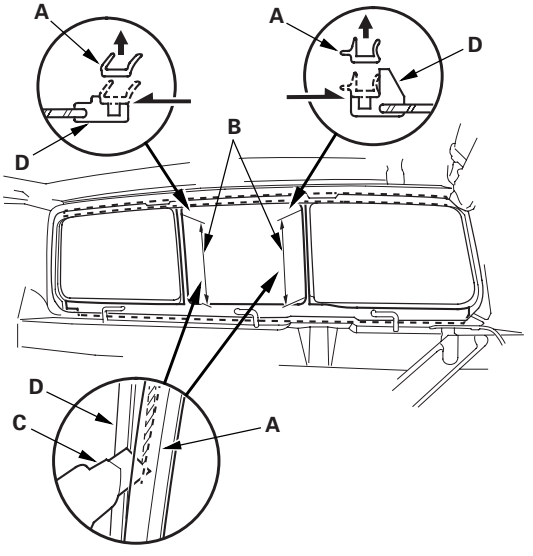
5. Install the glass in the reverse order of removal, and note these items:
   - Make sure the spacer is installed properly.
   - Slide the glass to see if it moves freely without binding.
   - Make sure that there is no clearance between the glass and glass run channel when the glass is closed.
   - Check for water leaks (see step 7 on page 20-23).
   - Test-drive, and check for wind noise and rattles.

Rear Window Glass Run Channel Replacement

NOTE:
- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.

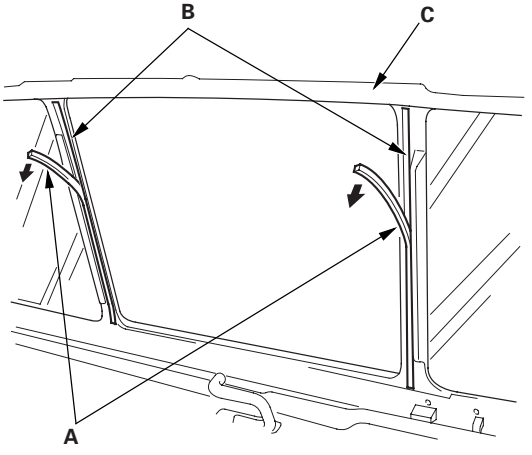
1. Remove these items:
   - Rear seat-back (see page 20-119)
   - Rear trim panel (see step 2 on page 20-68)
   - Rear window middle glass (see page 20-43)

2. Carefully cut the glass run channel (A) on the middle glass areas (B) with a utility knife (C), and then pull out the glass run channel from the top and bottom groove areas of the rear window molding (D). Take care not to damage the molding.



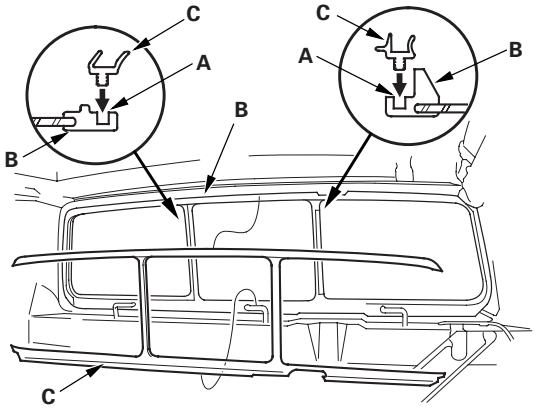
3. Check the molding for damage, and replace the rear window if necessary.

4. With a knife, scrape the remaining glass run channels (A) from the grooves (B) on the middle glass areas of the rear window molding (C).



5. Clean the molding bonding surface with a sponge dampened in isopropyl alcohol. After cleaning, keep oil, grease and water from getting on the clean surface.

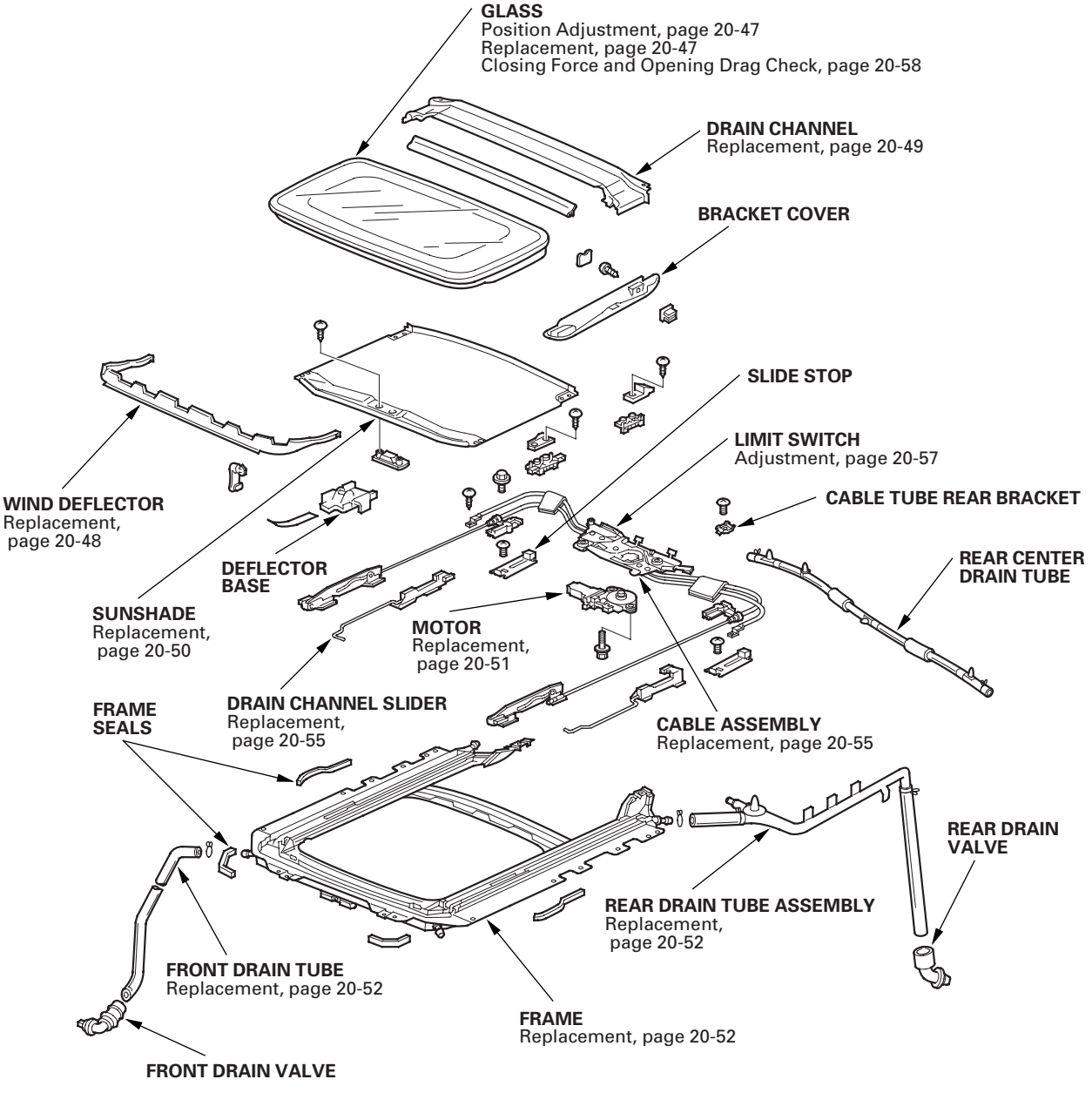
6. Apply a light coat of primer to the groove areas (A) of the rear window molding (B). Install the glass run channel (C) to the top and bottom groove areas of the molding, and then attach the glass run channel to the middle glass areas of the molding with adhesive (3M DP8005).



7. Scrape or wipe the excess adhesive off with a soft shop towel dampened with alcohol.

8. Reinstall the removed parts.

Component Location Index

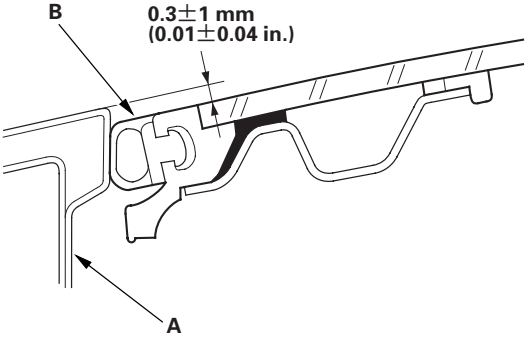


Symptom Troubleshooting Index

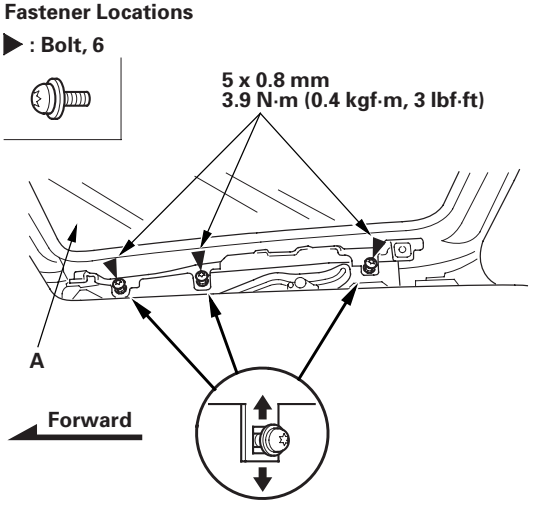
Symptom	Diagnostic procedure	Also check for
Water leaks from moonroof	1. Check for a clogged drain tube. 2. Check for a gap between the glass weatherstrip and the roof panel. 3. Check for a defective or an improperly installed glass weatherstrip or drain channel. 4. Check for a gap between the drain seal and the roof panel.	
Wind noise from moonroof	Check for excessive clearance between the glass weatherstrip and the roof panel.	
Motor noise from moonroof	1. Check for a loose motor. 2. Check for a worn gear or bearing. 3. Check for a deformed cable assembly.	
Moonroof glass does not move, but motor turns	1. Check for a defective gear or inner cable. 2. Check for foreign matter stuck between the guide rail and the slider. 3. Check for a loose inner cable. 4. Make sure the cable assembly is attached properly.	
Moonroof glass does not move and motor does not turn (glass can be moved with 5 mm hexagonal wrench)	1. Check for a blown fuse. 2. Check for a faulty moonroof switch. 3. Check the limit switch. 4. Check for a run down battery. 5. Check for a defective motor. 6. Check for a faulty relay.	

Glass Position Adjustment

The roof panel (A) should be even with the glass weatherstrip (B), to within 0.3+1/−1 mm (0.01+0.04/−0.04 in.) all the way around. If not, make the following adjustment:



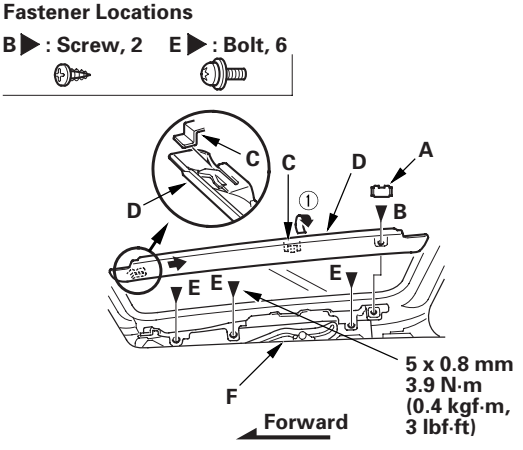
1. Slide the sunshade all the way back.
2. Remove the bracket cover.
3. With a TORX T25 bit, loosen the bolts on each side, and adjust the glass (A).



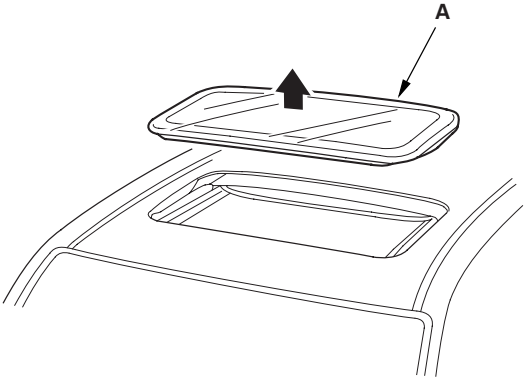
4. If necessary, repeat on the opposite side.

Glass Replacement

1. Close the glass fully.
2. Slide the sunshade all the way back.
3. Pry out the cap (A), remove the screw (B), release the hooks (C), and remove the bracket cover (D). Repeat on opposite side. Use a TORX T25 bit to remove the bolts (E) from the glass brackets (F) on both sides.



4. Remove the glass (A) by lifting it up. Do not damage the roof panel.

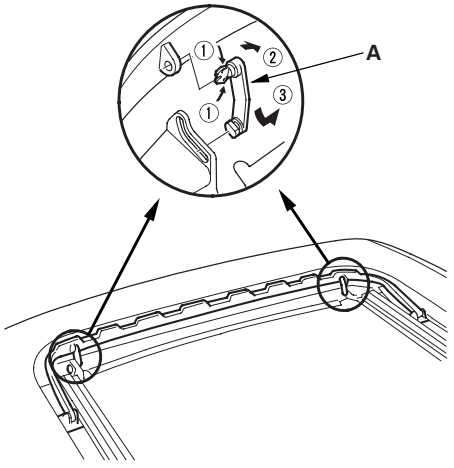


5. Install the glass in the reverse order of the removal, and adjust the glass position alignment.
6. Check for water leaks. Use free-flowing water from a hose without a nozzle. Do not use high-pressure water.

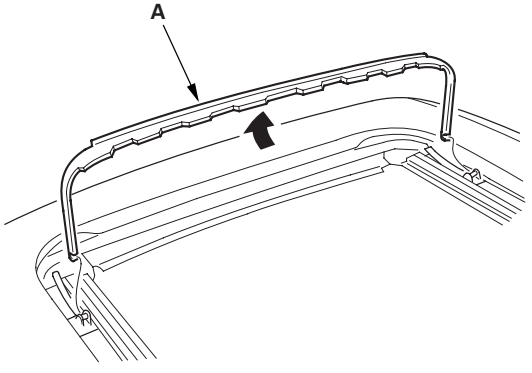
   NOTE: It is normal for some water to seep past the moonroof into the moonroof frame and exit through the drains.

Wind Deflector Replacement

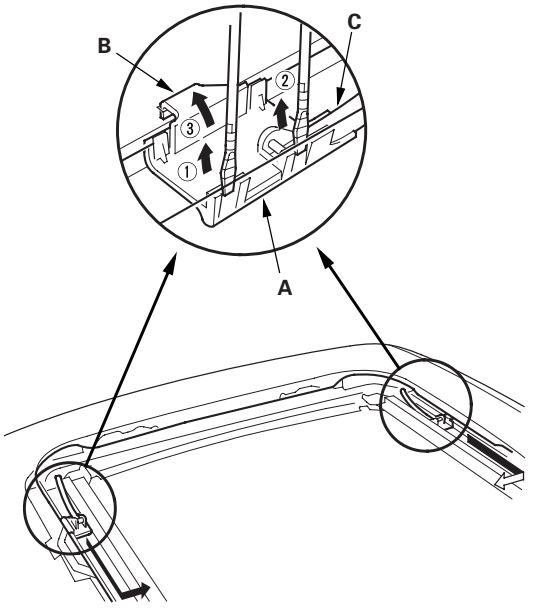
1. Open the glass fully.
2. Remove the links (A) from both sides.



3. Remove the wind deflector (A).



4. Pry up on the deflector bases (A) and release the hooks (B), then remove the bases with springs (C) from both sides.



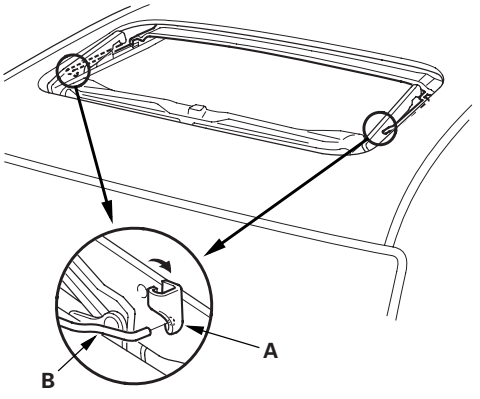
5. Install the deflector in the reverse order of removal.

Drain Channel Replacement

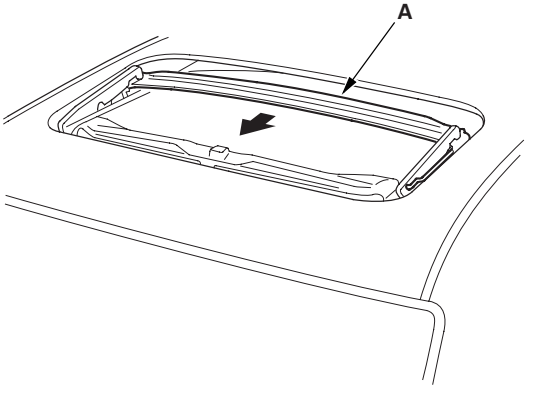
1. Fully close the moonroof, then place it in the full tilt-up position.

2. Remove the glass (see page 20-47).

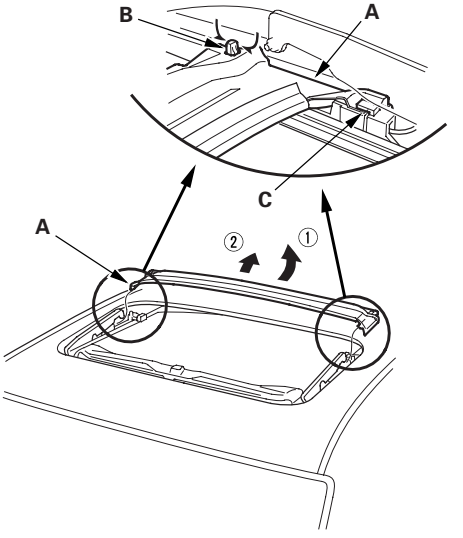
3. Disconnect the rod clips (A), then remove the drain channel rods (B) on both sides.



4. Slide the drain channel (A) forward.



5. Pull the rear edge of the drain channel (A) up while pushing both clips (B), and release the channel from both hooks (C) of the drain channel slider by pulling it rearward.



6. Remove the drain channel.

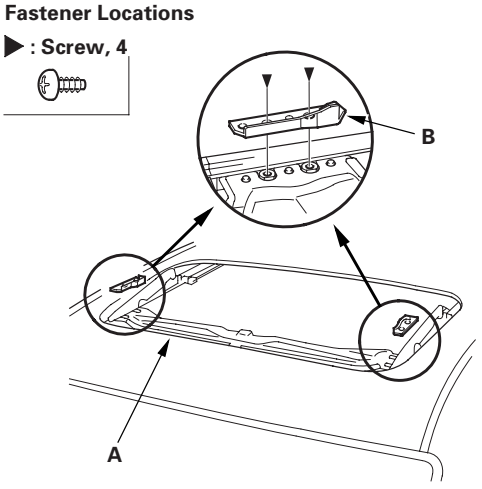
7. Install the channel in the reverse order of removal, and note these items:

   - Push the clip portions into place securely.
   - Check the glass position adjustment (see page 20-47).

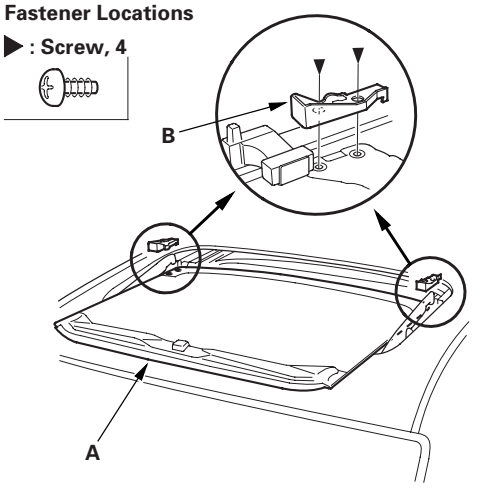
8. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

Sunshade Replacement

1. Remove the drain channel (see page 20-49).
2. Slide the sunshade (A) until you can see both sunshade slider spacers (B).

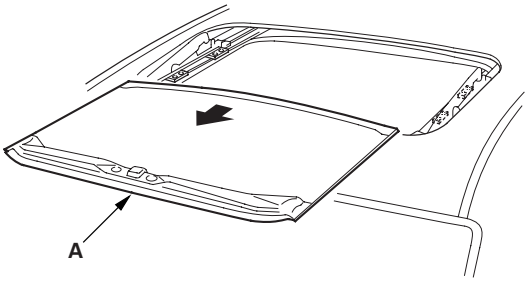


3. Remove the screws, then remove both spacers.
4. While lifting the front portion of the sunshade (A), move the sunshade forward until you can see both sunshade rear hooks (B). Do not damage the sunshade and hooks.

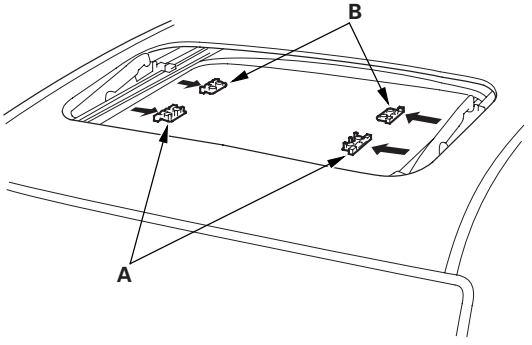


5. Remove the screws, then remove both hooks.

6. Remove the sunshade (A).



7. Remove both front sunshade base sliders (A) and both rear sunshade base sliders (B).



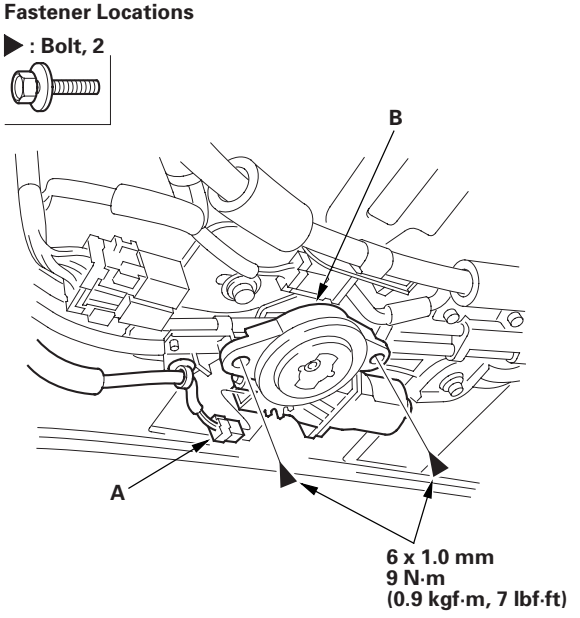
8. Install the sunshade in the reverse order of removal, and check the glass position adjustment (see page 20-47).

9. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

Motor Replacement

1. Remove the headliner (see page 20-70).

2. Put on gloves to protect your hands. Disconnect the connector (A), and remove the bolts, then remove the motor (B).



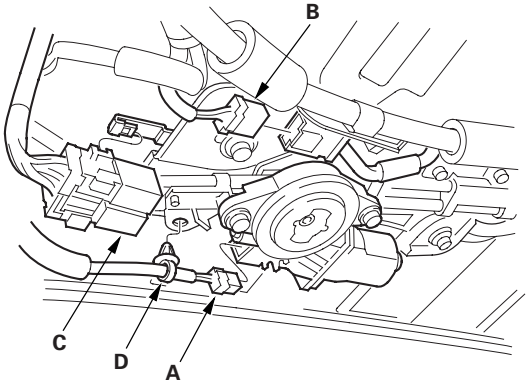
3. Install the motor in the reverse order of removal, and note these items:

   • Make sure the connector is plugged in properly.
   • Check the motor operation.

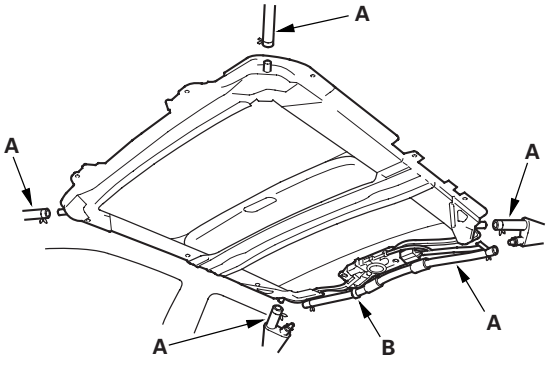
Frame and Drain Tube Replacement

SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

1. Remove these items:
   - Headliner (see page 20-70)
   - Moonroof glass (see page 20-47)
2. Disconnect the motor connector (A) and open/close-tilt/close switch connector (B). Remove the moonroof relays (C), and detach the harness clip (D).



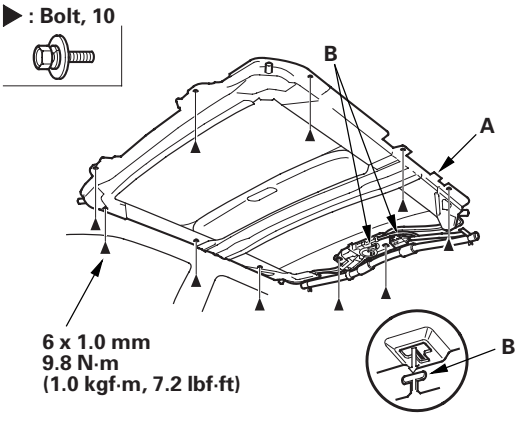
3. Disconnect the drain tubes (A), and detach the drain tube clip (B).



4. With an assistant holding the frame (A), remove the bolts, starting at the rear, and release the rear hooks (B) by moving the frame forward.

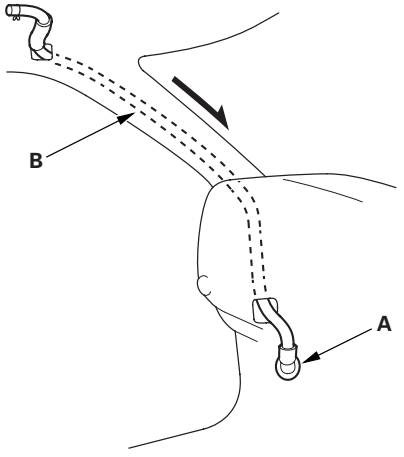
Fastener Locations

▶ : Bolt, 10



5. With the help of an assistant, carefully remove the frame through the front door opening. Take care not to scratch the interior trim and body, or tear the seat covers.

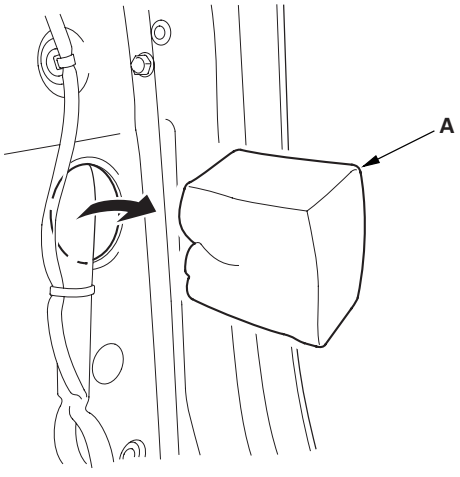
6. To remove a front drain valve (A) from the body, remove the kick panel, driver's or passenger's (see page 20-60). Tie a string to the top end of the drain tube, then pull the front drain tube (B) down through the A-pillar. The string will later be used to install the drain tube.



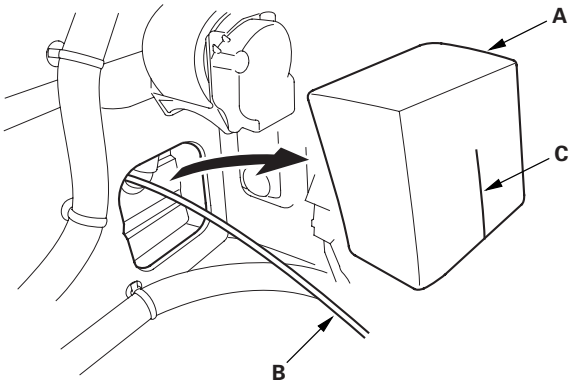
7. For the rear drain tubes, remove these items:

   - Rear panel insulator (see page 20-69)
   - Side curtain airbag, as necessary (see page 24-177)

8. At the passenger's side C-pillar, below the rear window frame, remove the foam insert (A) through the hole.



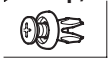
9. At the passenger's side C-pillar, below the seat belt retractor, remove the foam insert (A) through the hole. On the driver's side, release the fuel fill door opener cable (B) from the slit (C) in the foam insert.

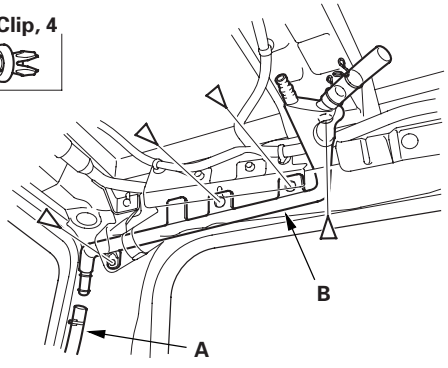


10. Disconnect the drain tube (A), and remove the clips, then remove the drain tube joint (B).

Fastener Locations

▷ : **Clip, 4**

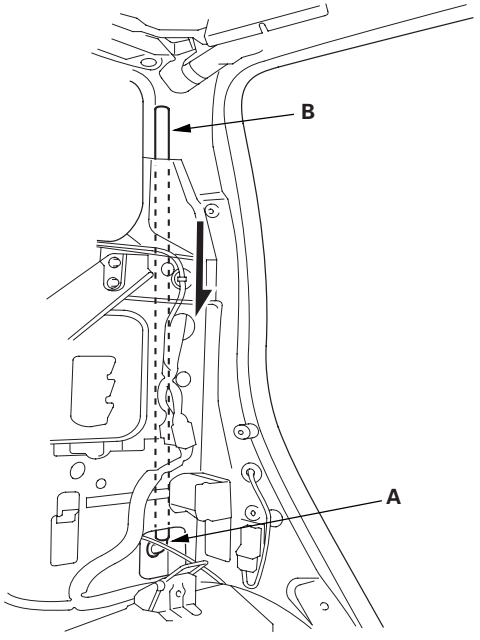




(cont'd)

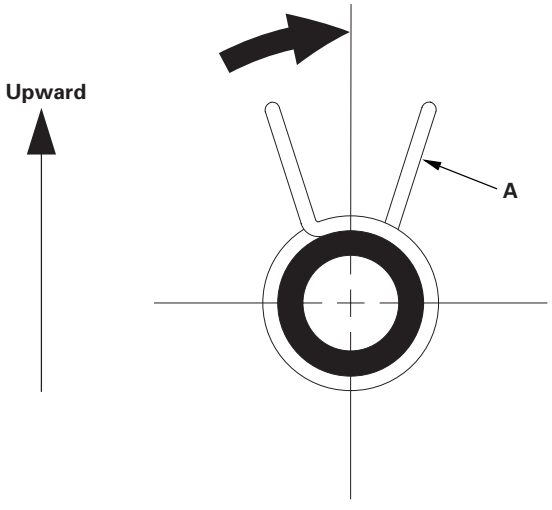
Frame and Drain Tube Replacement (cont'd)

11. To remove the rear drain valve (A), tie a string to the end of the drain tube (B), then pull the drain tube down through the C-pillar.



12. Install the frame and drain tube in the reverse order of removal, and note these items:

    - Before installing the frame, clear the drain tubes and drain valves using compressed air.
    - When installing a drain tube, tie the string that was pulling through the pillar during the disassembly to the top end of the new drain tube, pull it up through the pillar to the moonroof frame.
    - Check the frame seal.
    - Clean the surface of the frame.
    - When installing the frame, first attach the rear hooks into the body holes.
    - Make sure the connectors are plugged in properly.
    - When connecting the drain tube, slide it over the frame nozzle at least 10 mm (0.39 in.).
    - Install the tube clip (A) on the drain tube (B) as shown.
    - Make sure the clips are not rubbing on any parts or body panels.



13. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

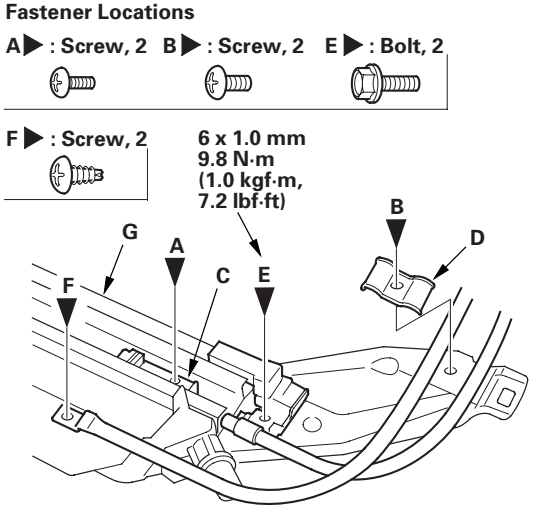
Drain Channel Slider and Cable Assembly Replacement

1. Remove the frame (see page 20-52).

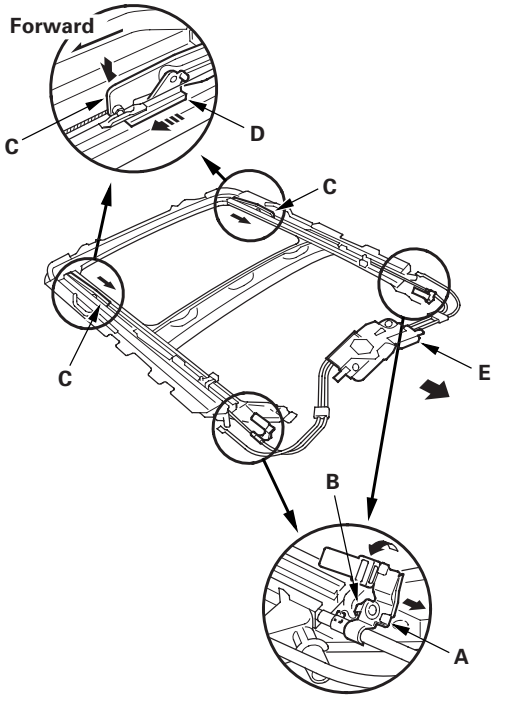
2. Remove these parts from the frame:

   - Sunshade (see page 20-50)
   - Moonroof motor (see page 20-51)

3. Put on gloves to protect your hands. Remove the screws (A, B) securing the slide stops (C), and cable tube rear brackets (D), cable tube side bracket mounting bolts (E) and the cable tube mounting screws (F) from both sides of the frame (G).



4. Turn both cable tube side brackets (A) up to release the hooks (B) from the holes in both sides of the frame.



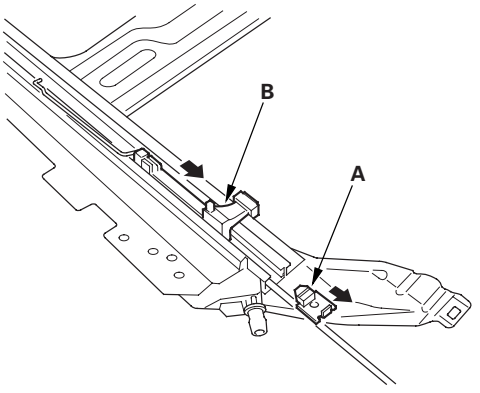
5. Pivot the glass brackets (C) down by sliding the link lifters (D) back, then slide both glass brackets back with the link lifters.

6. Slide the cable assembly (E) half-way.

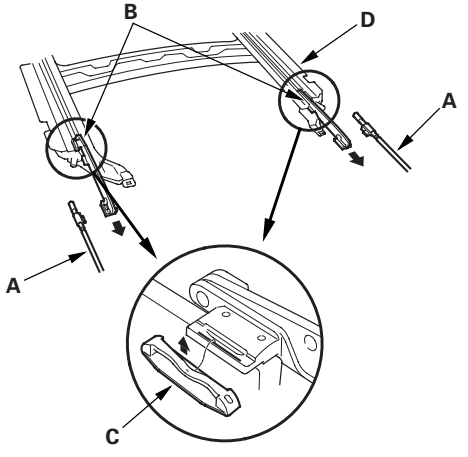
(cont'd)

Drain Channel Slider and Cable Assembly Replacement (cont'd)

7. Remove the slide stops (A) and the drain channel sliders (B) from both sides.

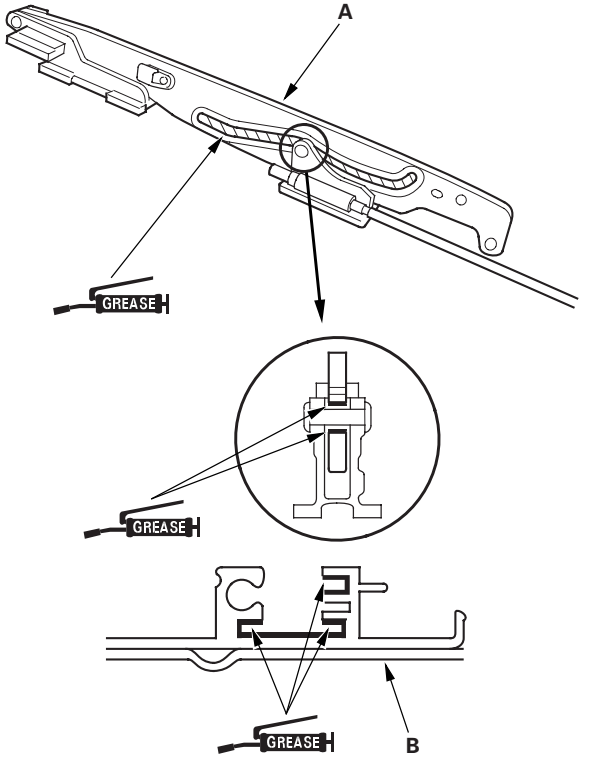


8. Slide the cable assembly (A) and both glass brackets (B) back, remove the deflector sliders (C) from both glass brackets, then remove them from the frame (D).



9. Install the slider and cable assembly in the reverse order of removal, and note these items:

   - Damaged parts should be replaced.
   - Apply multipurpose grease to the glass bracket (A) and guide rail portion of the frame (B) indicated by the arrows.
   - Before reinstalling the motor, make sure both link lifters are parallel, and in the fully closed position.
   - Before reinstalling the motor, install the frame and glass, then check the opening drag (see page 20-58).

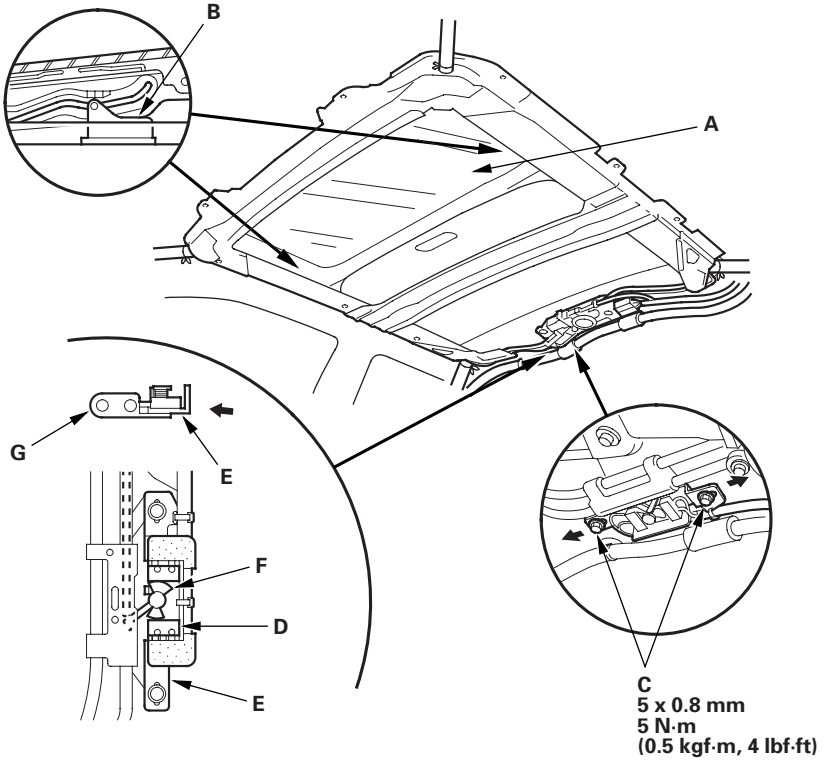


Limit Switch Adjustment

1. Remove the headliner (see page 20-70).

2. With the moonroof wrench, close the glass (A) fully:

   - Make sure both link lifters (B) are parallel, and in the position shown.
   - Check the glass fit to the roof panel and the glass position (see page 20-47).



3. With an open-end wrench, loosen the limit switch mounting bolts (C).

4. Adjust the limit switch (D):

   - Move the switch plate (E) a little at a time, then secure it at the position where you hear a faint click when the switch cam (F) pushes the limit switch (open/close).
   - Check that the switch plate contacts the switch bracket (G).

5. Check the operation of the glass (from the tilt-up position to fully closed position, from the fully open position to the fully closed position) by operating the moonroof switch.

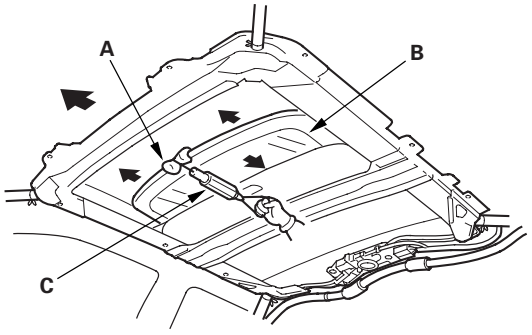
   NOTE: Adjust the switch plate until the glass opens and closes correctly.

6. Reinstall all remaining parts in the reverse order of removal.

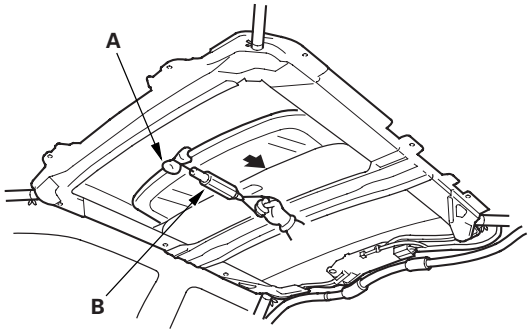
Closing Force and Opening Drag Check

1. Remove the headliner (see page 20-70).
2. Open the moonroof halfway.
3. Closing force check:
   - With a shop towel (A) on the leading edge of the glass (B), attach a spring scale (C) as shown.
   - Have an assistant hold the switch to close the glass while you measure the force required to stop it.
   - Read the force as soon as the glass stops moving, then immediately release the switch and carefully unload the spring scale.

   Closing force: 200—290 N (20—30 kgf, 44—66 lbf)

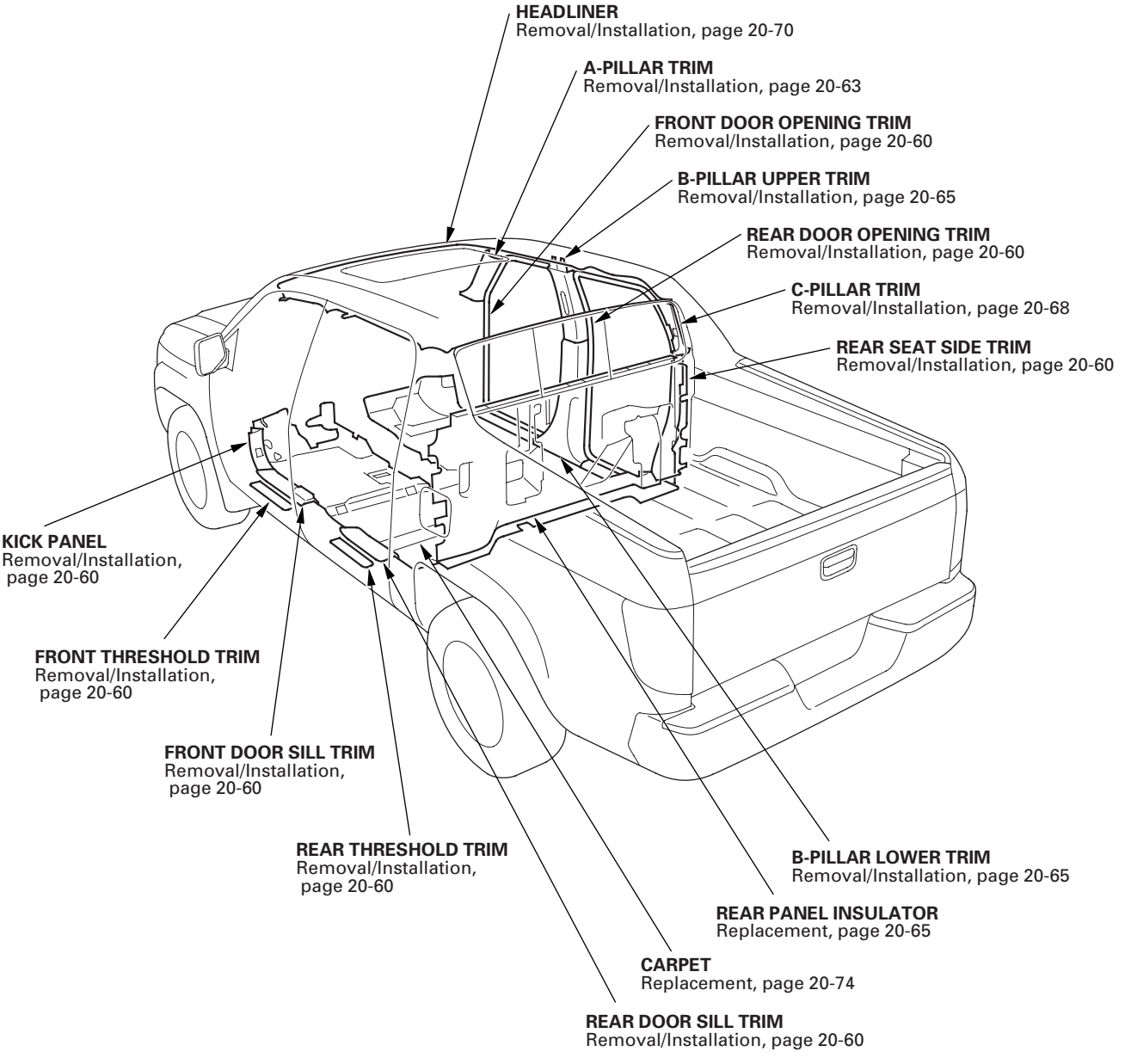


4. If the force in not within specification, remove the moonroof motor (see page 20-51), then check:
   - The gear portion and the inner cable for breakage and damage. If the gear portion is broken, replace the motor. If the inner cable is damaged, remove the frame (see page 20-52), and replace the cable (see page 20-55).
   - The moonroof motor (see page 22-279). If the motor fails to run or doesn't turn smoothly, replace it.
   - The opening drag. Go to step 5.
5. Opening drag check: Protect the leading edge of the glass with a shop towel (A). Measure the effort required to open the glass using a spring scale (B) as shown.



6. If the load is over 40 N (4 kgf, 9 lbf), check:
   - The side clearance and glass position adjustment (see page 20-47).
   - For broken or damaged sliding parts. If any sliding parts are damaged, replace them.

Component Location Index



Trim Removal/Installation - Door Areas

Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

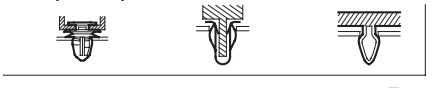
NOTE:
- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

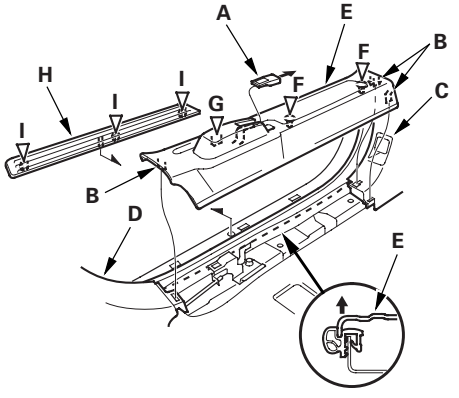
1. Pull out the fuel fill door opener knob (A), and detach the hooks (B) from the kick panel (C) and B-pillar lower trim (D), and pull the front door sill trim (E) up by hand to detach the clips (F) and a clip (G) (driver's), then remove it.

Driver's side

Fastener Locations

F ▷: Clip, 2 (White) G ▷: Clip, 1 I ▷: Clip, 3

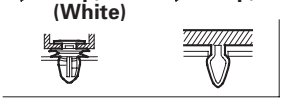


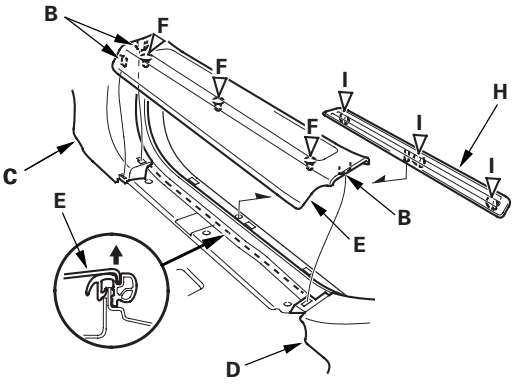


Passenger's side

Fastener Locations

F ▷: Clip, 3 (White) I ▷: Clip, 3





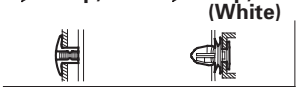
2. If necessary, pull the front threshold trim (H) up to detach the clips (I), then remove the trim.

3. Remove the kick panel (A).

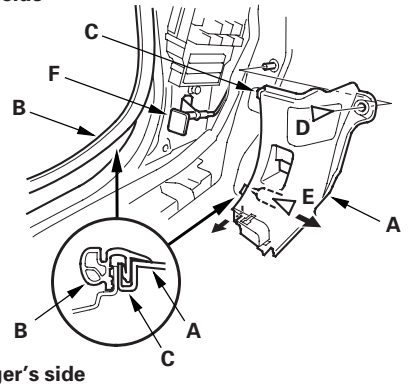
–1 Pull out the door opening trim (B) as needed from the kick panel hooks (C) and the door opening flange.
–2 Release the clip (D).
–3 Pull the panel out by hand to detach the clip (E), then remove it. Driver's: Pull the panel back to release it from the hood release handle (F).

Fastener Locations (One each per kick panel)

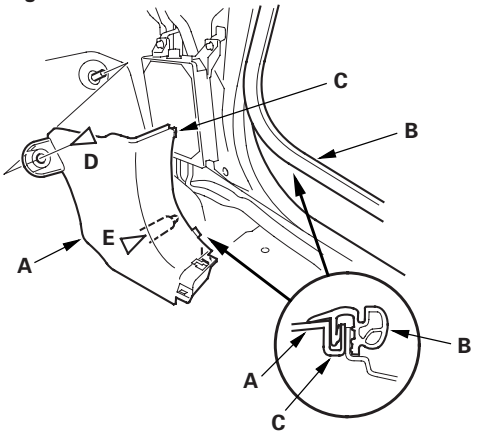
D▷: Clip, 2 **E▷: Clip, 2 (White)**



Driver's side



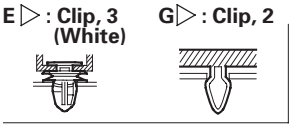
Passenger's side

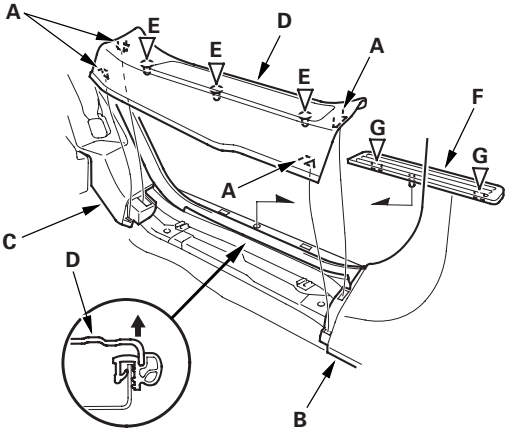


4. Detach the hooks (A) from the B-pillar lower trim (B) and rear seat side trim (C), and pull the rear door sill trim (D) up by hand to detach the clips (E), then remove it.

Fastener Locations

E▷: Clip, 3 (White) **G▷: Clip, 2**





5. If necessary, pull the rear threshold trim (F) up to detach the clips (G), then remove the trim.

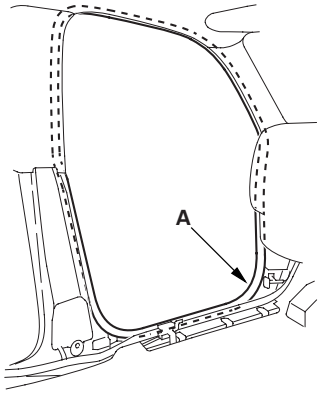
(cont'd)

Trim Removal/Installation - Door Areas (cont'd)

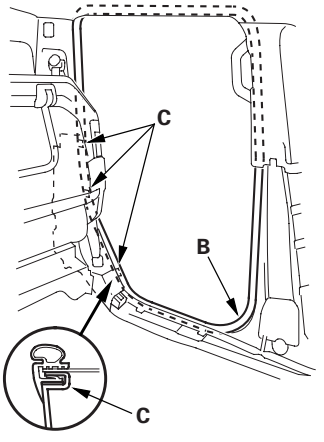
6. Remove the B-pillar lower trim (see page 20-65).

7. Pull out the front door opening trim (A) and rear door opening trim (B) from the trim hooks (C) and around the front and rear door opening flanges, then remove the trim.

Front door opening



Rear door opening



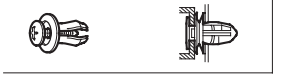
8. Remove these items:

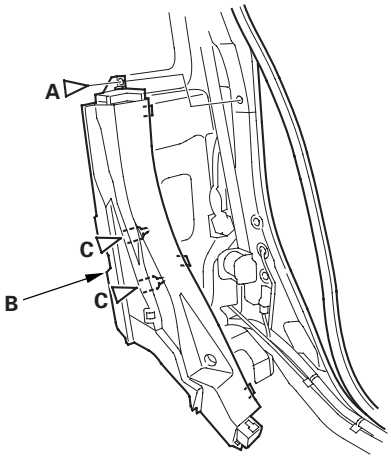
- Rear seat assembly (see page 20-117)
- Rear trim panel (see step 2 on page 20-68)
- Rear seat belt upper anchor (see step 3 on page 24-7)
- C-pillar trim (see step 4 on page 20-68)
- Rear seat belt lower anchor (see step 2 on page 24-7)

9. Remove the clip (A). Pull out the rear seat side trim (B) to detach the clips (C), then remove the trim.

Fastener Locations

A▷: Clip, 1 C▷: Clip, 2 (Black)





10. Install the trim in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips and hooks into place securely.

Trim Removal/Installation - Pillar Areas

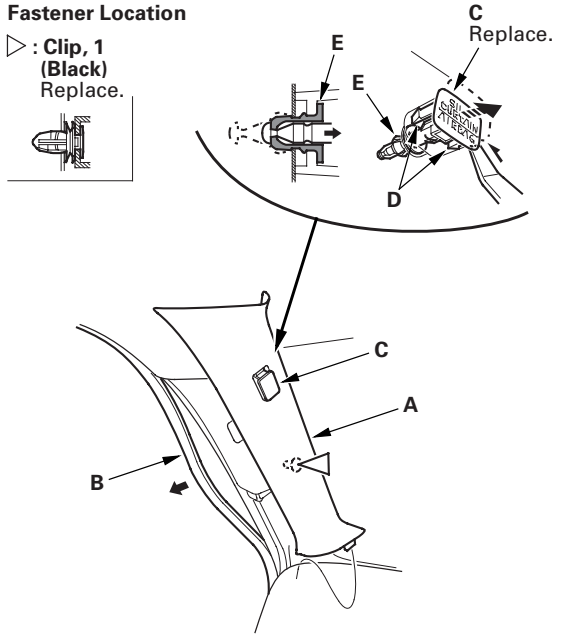
Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

A-Pillar Trim - Driver's Side

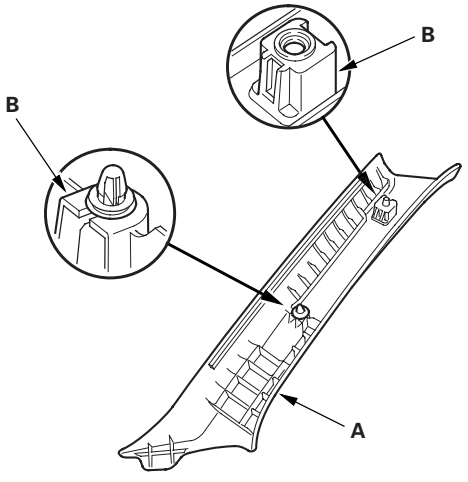
SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

NOTE:
- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Remove the A-pillar trim (A).
   - 1 Pull out the front door opening trim (B) as needed.
   - 2 Pry the A-pillar cap (C) out while releasing the hooks (D) until it is stopped by the grommet (E).
   - 3 Pull the trim back by hand to detach the clip.
   - 4 Release the hooks on the grommet and pull the cap out. Discard the cap and grommet.



2. Install the trim in the reverse order of removal, and note these items:
   - Check if the clip is damaged or stress-whitened, and if necessary, replace it with new one.
   - Do not reuse the A-pillar cap and grommet; always replace them.
   - If the side curtain airbag has deployed, replace the A-pillar trim with a new one.
   - To prevent the side curtain airbags from deploying improperly and possibly causing injury, inspect removed pieces and replace them if they have any of these types of damage:
     – Any cracks, deformations, or stress-whitenings in the A-pillar trim (A)
     – Any cracks, or stress-whitenings in the grommet and clip seating surfaces (B)
   - Replace any damaged parts with new ones.
   - Make sure the top of the trim overlaps with the headliner correctly (see page 24-173).
   - Push the clip into place securely.



Trim Removal/Installation - Pillar Areas (cont'd)

Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

A-Pillar Trim - Passenger's Side

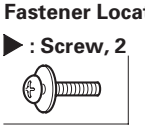
SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

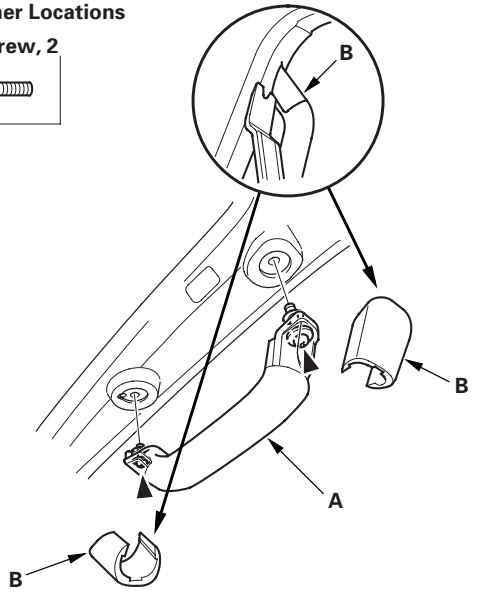
NOTE:
- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Remove the grab handle (A).

   –1 Using a trim tool, remove the caps (B).
   –2 Remove the screws.

Fastener Locations
▶ : **Screw, 2**

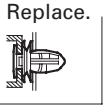


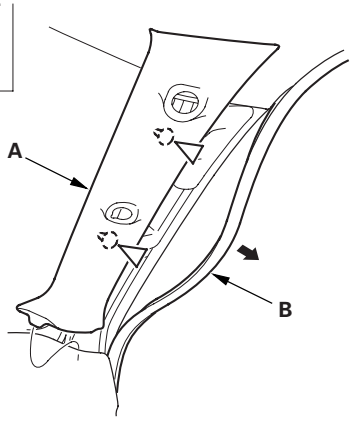


2. Remove the A-pillar trim (A).

   –1 Pull out the front door opening trim (B) as needed.
   –2 Pull the trim back by hand to detach the clip.

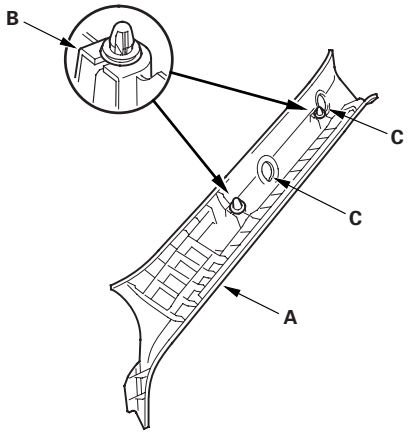
Fastener Locations
▷ : **Clip, 2 (Black)**
Replace.

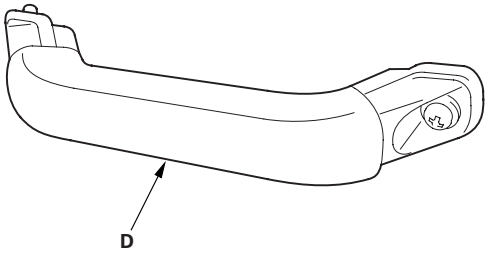




3. Install the trim in the reverse order of removal, and note these items:

   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - If the side curtain airbag has deployed, replace the A-pillar trim with a new one.
   - To prevent the side curtain airbags from deploying improperly and possibly causing injury, inspect removed pieces and replace them if they have any of these types of damage:
     – Any cracks, deformations, or stress-whitened areas in the A-pillar trim (A)
     – Any cracks, or stress-whitenings in the clip seating surfaces (B)
     – Any damage around the grab handle holes (C) in the trim
     – Any deformations in the grab handle (D)
     – Any deformations in the grab handle bracket
   - Replace any damaged parts with new ones.
   - Make sure the top of the trim overlaps with the headliner correctly (see page 24-173).
   - Push the clips into place securely.





Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

B-Pillar Trim

SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

NOTE:
- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

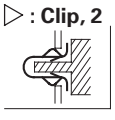
1. Remove these items:

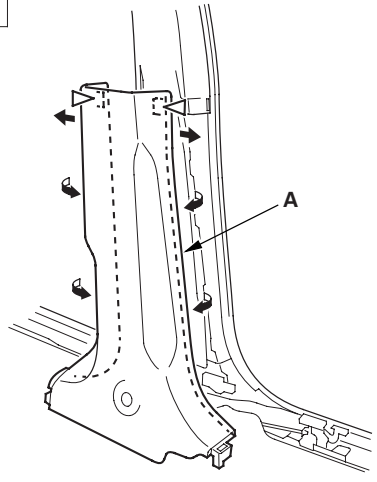
   - Front door sill trim (see page 20-60)
   - Rear door sill trim (see step 4 on page 20-61)
   - Front seat belt lower anchor bolt (see step 4 on page 24-4)

2. Remove the B-pillar lower trim (A).

   –1 Pull both upper edges of the trim outward to detach the clips.
   –2 While pulling both edges of the trim outward, pull out the trim.

Fastener Locations





(cont'd)

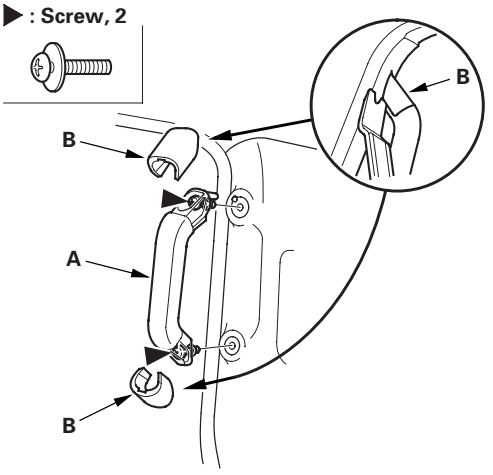
Trim Removal/Installation - Pillar Areas (cont'd)

3. Remove the grab handle (A).

   –1 Using a trim tool, remove the caps (B).
   –2 Remove the screws.

Fastener Locations

▶ : **Screw, 2**



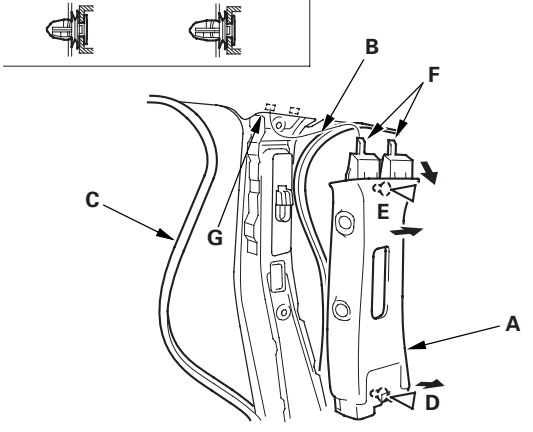
4. Remove the front seat belt upper anchor bolt (see step 7 on page 24-4).

5. Remove the B-pillar upper trim (A).

   –1 Pull out the front door opening trim (B) and rear door opening trim (C) as needed.
   –2 Pull the bottom of the trim back to detach the lower clip (D).
   –3 Pull the top of the trim out to detach the clip (E).
   –4 Lower the trim to release the upper two hooks (F) from the body, and disengage the top of the trim from the edge of the headliner (G).

Fastener Locations

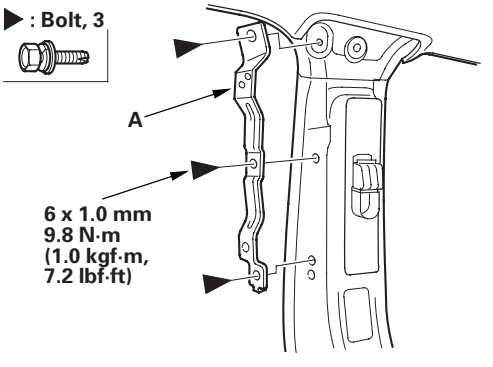
D ▷ : **Clip, 1 (White)** Replace.
E ▷ : **Clip, 1 (Black)** Replace.



6. Remove the bolts, then remove the grab handle bracket (A).

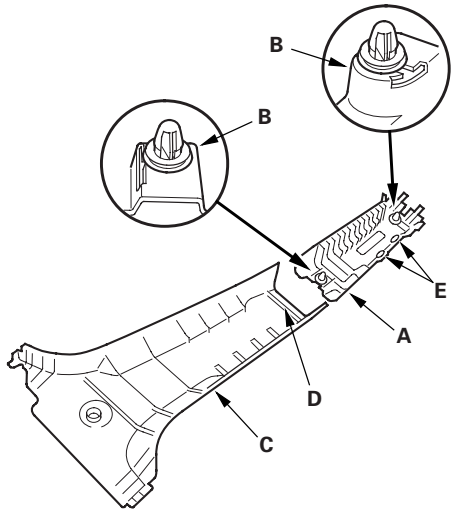
Fastener Locations

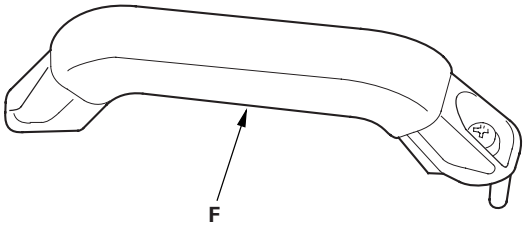
▶ : **Bolt, 3**

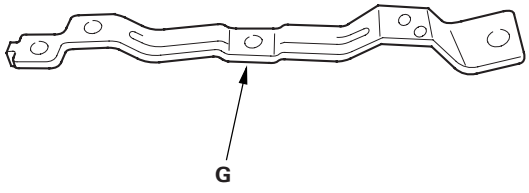


7. Install the trim in the reverse order of removal, and note these items:

   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - If the side curtain airbag has deployed, replace the B-pillar upper trim with a new one.
   - To prevent the side curtain airbags from deploying improperly and possibly causing injury, inspect removed pieces and replace them if they have any of these types of damage:
     – Any cracks, deformations, or stress-whitened areas in the B-pillar upper trim (A)
     – Any cracks, or stress-whitenings in the clip seating surfaces (B)
     – Any cracks or deformations in the B-pillar lower trim (C), and any breakages in the part (D) that fits into the B-pillar upper trim
     – Any damage around the grab handle holes (E) in the B-pillar upper trim
     – Any deformations in the grab handle (F)
     – Any deformations in the grab handle bracket (G)
   - Make sure the top of the trim overlaps with the headliner correctly (see page 24-173).
   - Make sure the trim hooks are installed into the holes in the body securely.
   - Push the clips into place securely.
   - Apply medium strength type liquid thread lock to the front seat belt upper and lower anchor bolts before installation.
   - Before installing the anchor bolts, make sure there are no twists or kinks in the seat belt.







Trim Removal/Installation - Pillar Areas (cont'd)

Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

C-Pillar Trim

SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

NOTE:
- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

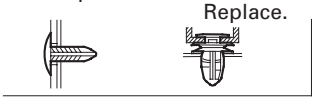
1. Remove the rear seat-back (see page 20-119).

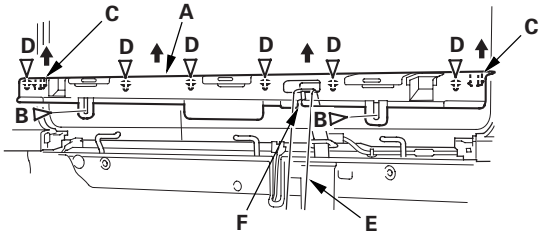
2. Remove the rear trim panel (A).

   –1 Remove the clips (B).
   –2 Detach the hooks (C) from the C-p illar trim on both sides.
   –3 Pull the panel up to detach the clips (D).
   –4 Pull the rear center seat belt (E) out through the slit (F) in the panel.

Fastener Locations

B▷: **Clip, 2** Replace.
D▷: **Clip, 6 (Black)** Replace.





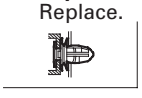
3. Remove the rear seat belt upper anchor bolt (see step 3 on page 24-7).

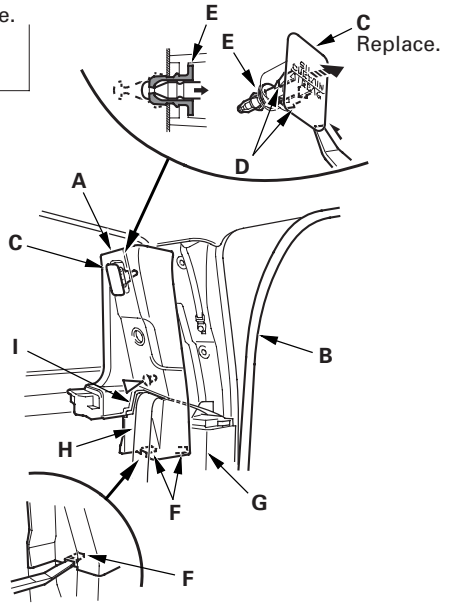
4. Remove the C-pillar trim (A).

   –1 Pull out the rear door opening trim (B) as needed.
   –2 Pry the C-pillar cap (C) out while releasing the hooks (D) until it is stopped by the grommet (E).
   –3 Using a trim tool, release the hooks (F) from the rear seat side trim (G).
   –4 Pull out the trim to detach the clip.
   –5 Pull the rear seat belt (H) out through the slit (I) in the trim.
   –6 Release the hooks on the grommet and pull the cap out. Discard the cap and grommet.

Fastener Location

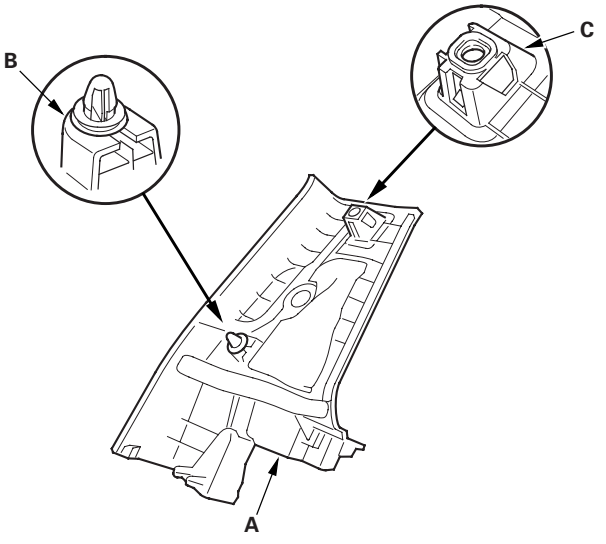
▷: **Clip, 1** Replace.





5. Install the trim in the reverse order of removal, and note these items:

   - Check if the clip is damaged or stress-whitened, and if necessary, replace it with new one.
   - Do not reuse the C-pillar cap and grommet; always replace them.
   - If the side curtain airbag has deployed, replace the C-pillar trim with a new one.
   - To prevent the side curtain airbags from deploying improperly and possibly causing injury, inspect removed pieces and replace them if they are damaged:
     – Any cracks, or press-whitened areas in the C-pillar trim (A)
     – Any cracks, or stress-whitenings in the clip seating surfaces (B)
     – Any cracks, or press-whitenings in the grommet seating surface (C)
   - Make sure the top of the trim overlaps with the headliner correctly (see page 24-173).
   - Push the clip and hooks into place securely.
   - Apply medium strength type liquid thread lock to the rear seat belt upper anchor bolts before installation.
   - Before installing the anchor bolt, make sure there are no twists or kinks in the seat belt.



Rear Panel Insulator Replacement

Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

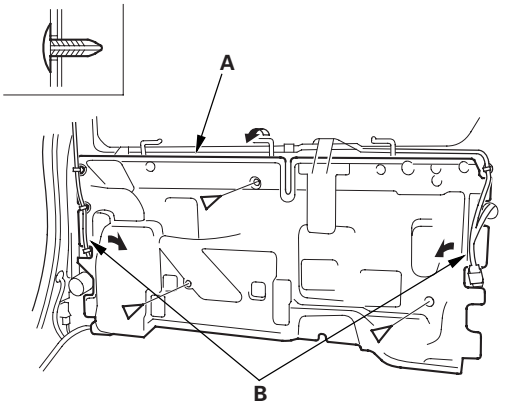
NOTE:
- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Remove these items:

   - Rear seat assembly (see page 20-117)
   - C-pillar trim, both sides (see page 20-68)
   - Rear seat belt lower anchor, both sides (see step 2 on page 24-7)
   - Rear seat side trim, both sides (see step 9 on page 20-62)
   - Subwoofer, for some models (see page 23-60)

2. Remove the clips, and release the rear panel insulator (A) from the wire harnesses (B) on both sides, then remove the insulator.

Fastener Locations
▷ : **Clip, 3**



3. Install the insulator in the reverse order of removal, and note these items:

   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Make sure there are no pinch the wire harnesses.

Headliner Removal/Installation

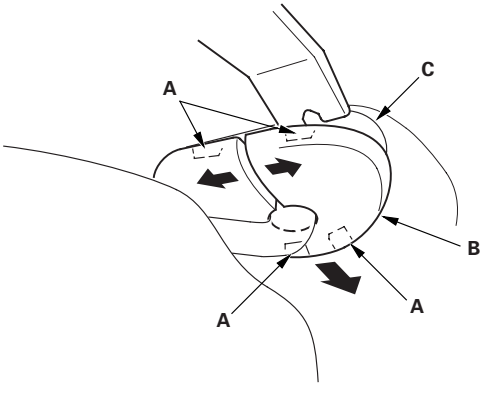
Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to bend and scratch the headliner.
- Be careful not to damage the dashboard and other interior trim.

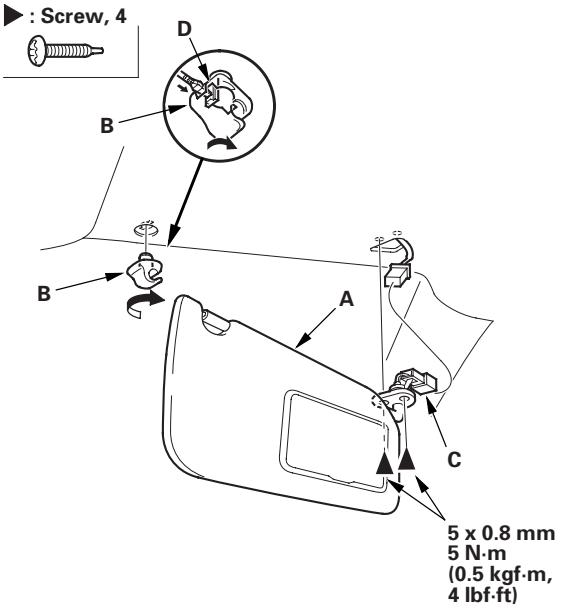
1. Remove these items:
   - A-pillar trim, both sides (see page 20-63)
   - Front seat belt lower anchor, both sides (see step 4 on page 24-4)
   - B-pillar lower trim, both sides (see page 20-65)
   - Front seat belt upper anchor, both sides (see step 7 on page 24-4)
   - B-pillar upper trim, both sides (see step 5 on page 20-66)
   - Rear seat-back (see page 20-119)
   - Rear trim panel (see step 2 on page 20-68)
   - Rear seat belt upper anchor, both sides (see step 3 on page 24-7)
   - C-pillar trim, both sides (see step 4 on page 20-68)
   - Ceiling light (see page 22-195)
   - Front seat, passenger's side (see page 20-97)
   - Center console (see page 20-76)

2. From both sides, using a trim tool, release the tabs (A), then remove the sunvisor cap (B) from the bracket (C). Turn the cap, and remove it.



3. Remove both sunvisors (A) and holders (B).
   1. Remove the screws.
   2. Remove the sunvisor from the body and holder.
   3. If equipped, disconnect the vanity mirror light connector (C).
   4. Using a flat-tip screwdriver, push the hook (D), turn the holder 90 °, then pull it out.

Fastener Locations

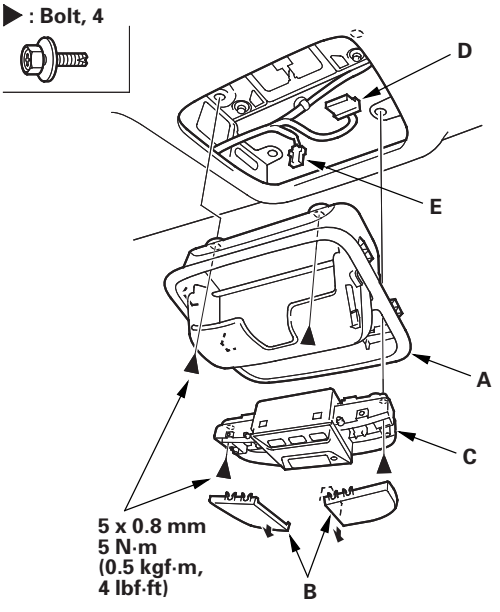


4. Remove the roof console (A).

–1 Remove the lenses (B).
–2 Remove the bolts.
–3 Pull out the roof console and front individual map light (C).
–4 Disconnect the front individual map light connector (D) and navigation microphone connector (E).

Fastener Locations

▶ : Bolt, 4

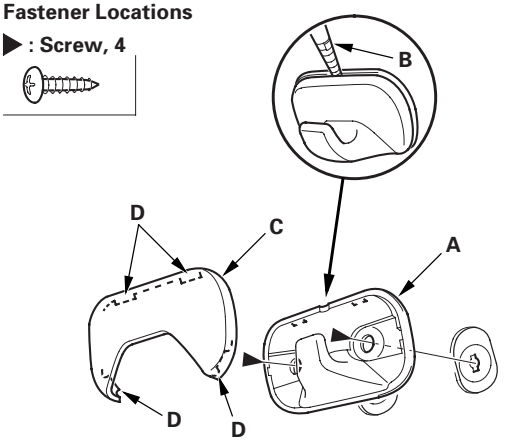


5. From both sides, remove the coat hangers (A).

–1 Using a wrapped pick tool (B) with the protective tape, pry the cap (C) down to detach the hooks (D), then remove it.
–2 Remove the screws.

Fastener Locations

▶ : Screw, 4



(cont'd)

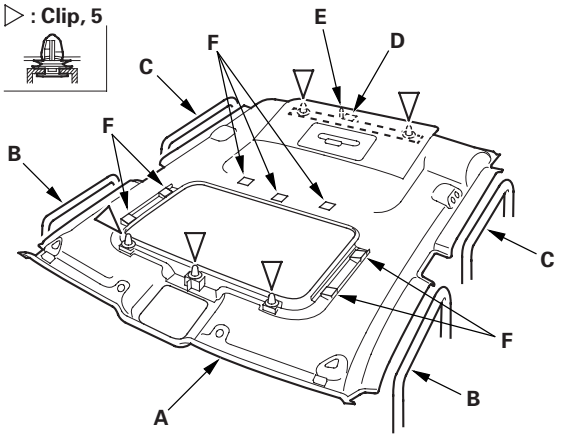
Headliner Removal/Installation (cont'd)

6. Remove the headliner (A).

   –1 Remove the front door opening trim (B) and rear door opening trim (C) from each roof portion.
   –2 With the help of an assistant, detach the rear clips, and release the fastener (D) and pin (E) by pulling the rear portion of the headliner down.
   –3 Moonroof: Detach the front clips by lowering the headliner.
   –4 Release the fasteners (F) by lowering the headliner.
   –5 Lower the headliner, and remove it through the passenger's door opening.
   –6 If necessary, remove the bolts, then remove the roof console bracket (G).

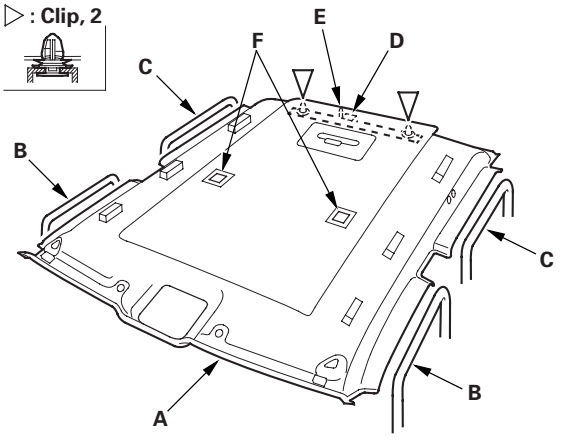
With moonroof

Fastener Locations



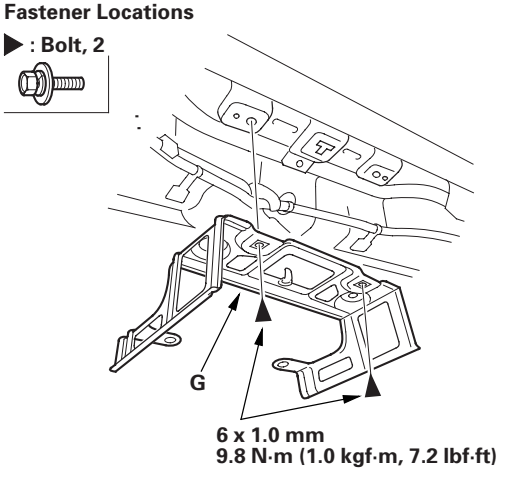
Without moonroof

Fastener Locations



Roof console bracket removal

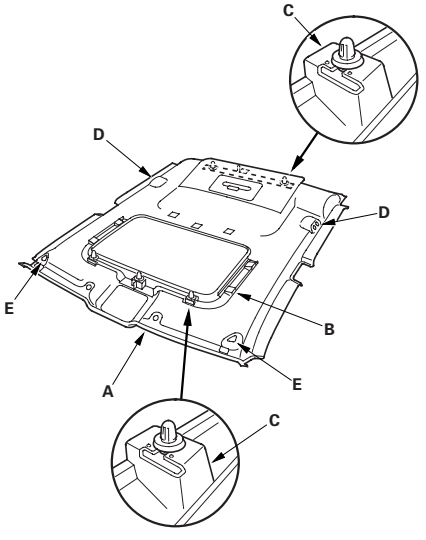
Fastener Locations



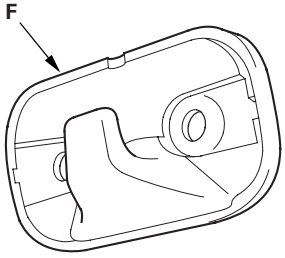
7. Install the headliner in the reverse order of removal, and note these items:

   - If the side curtain airbag has been deployed, replace the headliner.
   - To prevent the side curtain airbags from deploying improperly and possibly causing injury, inspect removed pieces and replace them if they have any of these types of damage:
     – Any creases or tears in the headliner (A)
     – Any fasteners (B) or clip bases (C) which have come off the headliner
     – Any damage around the coat hanger holes (D) or sunvisor holes (E) in the headliner
     – Any deformations in the coat hangers (F)
     – Any cracks in the sunvisor stay base (G)
     – Any bends or cracks in the sunvisor stay shaft (H)
     – Any cracks in the sunvisor base (I)
     – Any cracks in the vanity mirror base (J)
     – Any deformations in the grab handle bracket
   - Replace any damaged parts with new ones.
   - Make sure the trim pieces overlaps the headliner correctly (see page 24-173)
   - When passing the headliner through the door opening, be careful not to fold or bend it. Also, be careful not to scratch the body.
   - Check that both sides of the headliner are securely attached to the trim.
   - If the threads on a visor screws are worn out, use an oversized self-tapping ET screw, P/N 90137-S30-003, made specifically for this application.

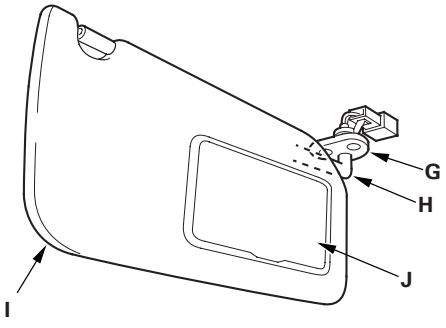
Headliner



Coat hanger



Sunvisor



Carpet Replacement

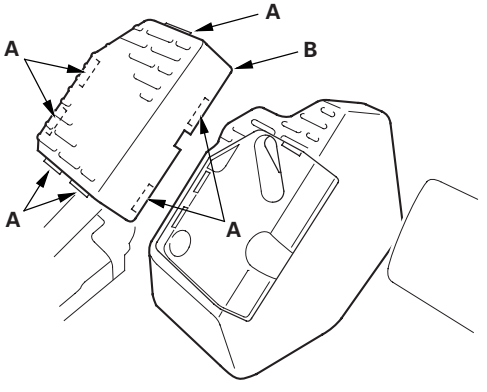
Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

NOTE:
- Put on gloves to protect your hands.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to damage, wrinkle or twist the carpet.
- Be careful not to damage the dashboard and other interior trim pieces.

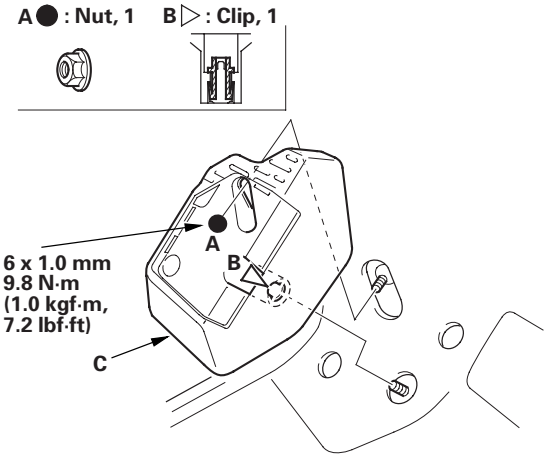
1. Remove these items:
   - Front seats, both sides (see page 20-97)
   - Rear seat assembly (see page 20-117)
   - Front door sill trim, both sides (see page 20-60)
   - Rear door sill trim, both sides (see step 4 on page 20-61)
   - B-pillar lower trim, both sides (see page 20-65)
   - Kick panel, both sides (see step 3 on page 20-61)
   - Center console (see page 20-76)
   - Dashboard center lower cover (see page 20-84)
   - Rear seat leg guide cover (see page 20-120)

2. Detach the hooks (A), then remove the footrest plate (B).



3. Remove the nut (A), and using a 6 mm socket wrench, release the clip (B), then remove the footrest (C).

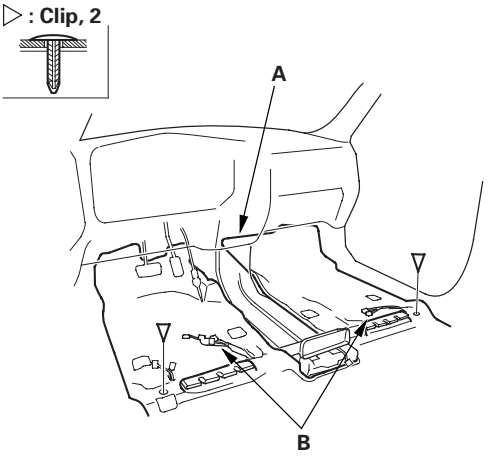
Fastener Locations
A ● : Nut, 1 B ▷ : Clip, 1



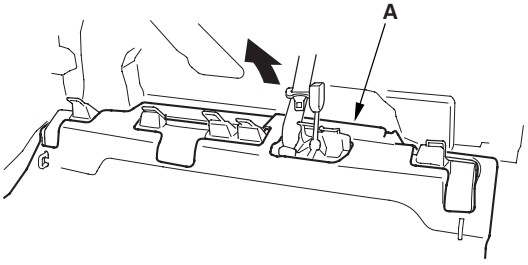
4. Remove the carpet (A).
   1. Remove the clips.
   2. Pull back the rear passenger's area of the carpet.
   3. Pull back the carpet from under the dashboard.
   4. Pull both seat wire harnesses (B) out through the slit in the carpet.

Front area

Fastener Locations
▷ : Clip, 2



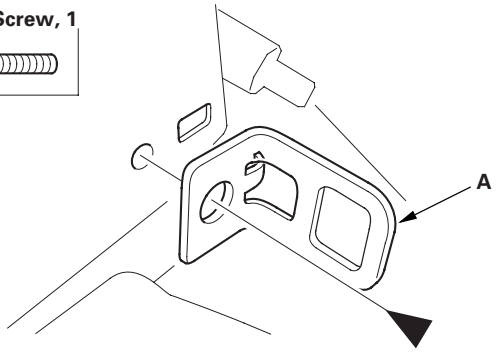
Rear area



5. If necessary, remove the screw, then remove the tie-down hook (A) from each side.

Fastener Location

▶ : Screw, 1



6. Install the carpet in the reverse order of removal, and note these items:

   - Take care not to damage, wrinkle or twist the carpet.
   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Slip the slit in the carpet over the hooks on the rear heater upper duct.
   - Push the clips into place securely.

Center Console Removal/Installation

Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

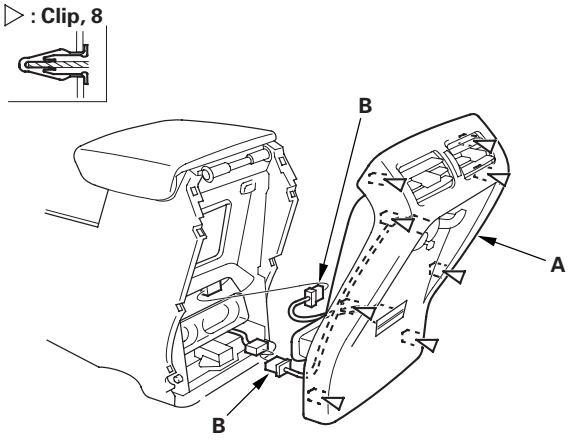
SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

NOTE:
- Put on gloves to protect your hands.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the front seat, dashboard, and related parts.

1. Remove the dashboard center lower cover (see page 20-84).

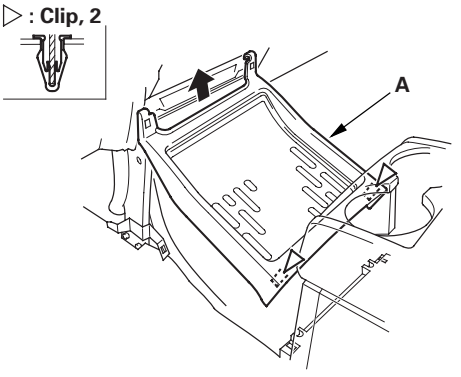
2. Detach the clips, then remove the console trim (A). Disconnect the subharness connectors (B), and detach the harness slip.

Fastener Locations
▷ : **Clip, 8**



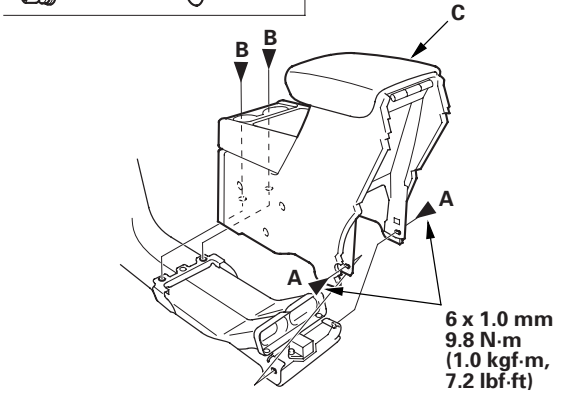
3. Pull the center floor tray (A) up by hand to detach the clips, then remove it.

Fastener Locations
▷ : **Clip, 2**



4. Remove the bolts (A) and screws (B), then remove the center console (C).

Fastener Locations
A▶ : **Bolt, 2** B▶ : **Screw, 2**



5. Install the console in the reverse order of removal, and note these items.

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Make sure the connectors are plugged in properly.

Center Console Disassembly/Reassembly

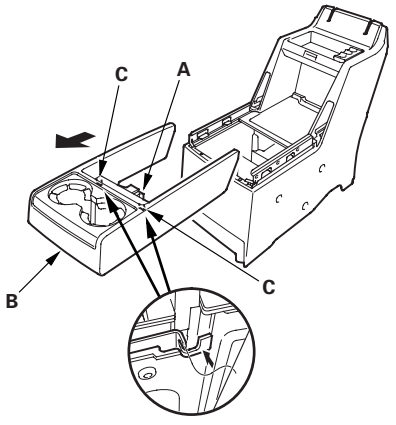
Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the console and related parts.

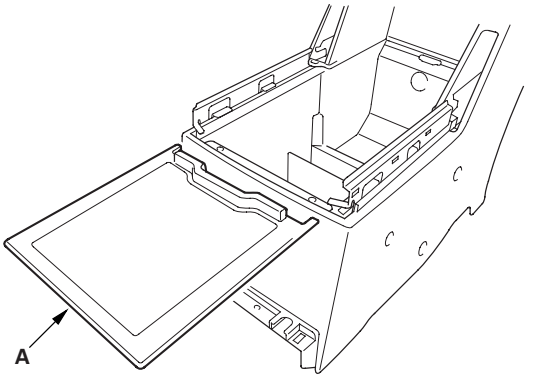
1. Remove the center console (see page 20-76).

2. Remove the console armrest (see page 20-78).

3. While pushing the beverage holder lever (A), slide the beverage holder (B) forward, and disengage the beverage holder stops (C) to remove the beverage holder.

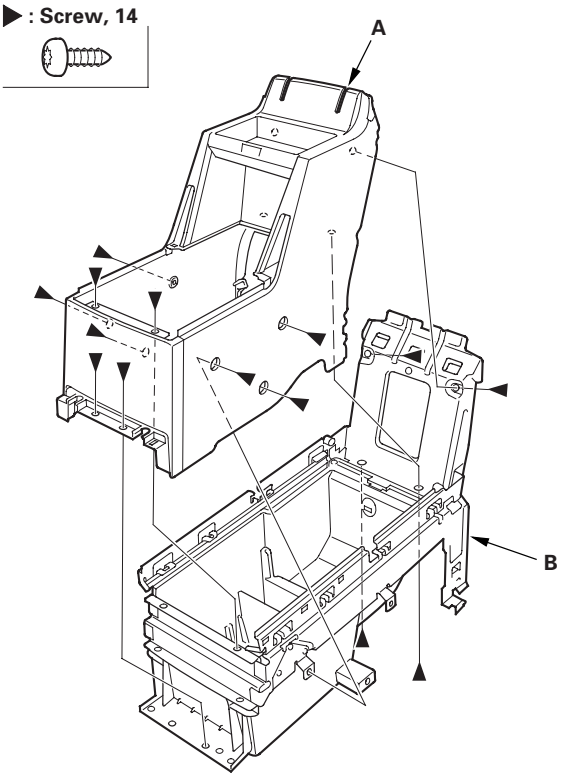


4. Release the console lid (A).



5. Using a TORX T20 bit, remove the screws, then separate the console (A) and console frame (B).

Fastener Locations
▶ : Screw, 14



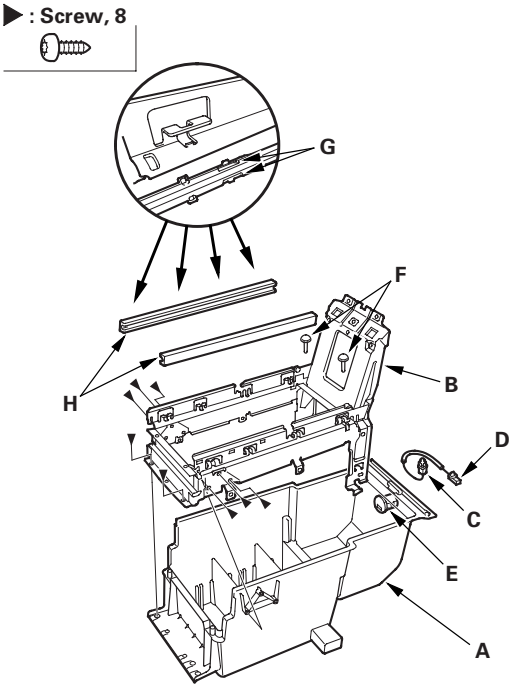
(cont'd)

Center Console Disassembly/ Reassembly (cont'd)

6. Using a TORX T20 bit, remove the screws, then separate the console box (A) and the console frame (B). Disconnect the light bulb socket (C), and detach the connector clip (D), then remove the light (E) from the console box.

Fastener Locations

▶ : **Screw, 8**



7. Remove the console lid bumpers (F). Release the hooks (G), then remove the console lid guides (H) from the console frame.

8. Reassemble the console in the reverse order of disassembly, and make sure the light bulb socket is plugged in properly.

Console Armrest Removal/ Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

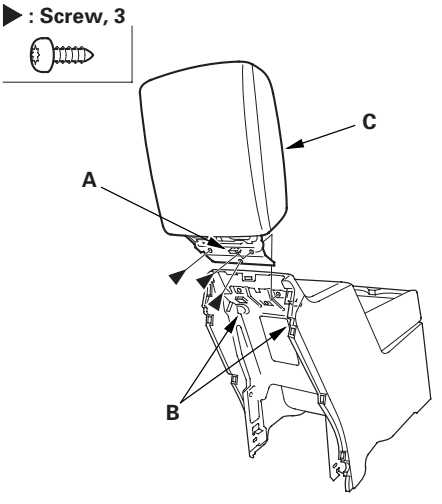
- Take care not to scratch the console.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Remove the center console trim (see step 2 on page 20-76).

2. Using a TORX T20 bit, remove the screws and release the hooks (A, B), then remove the armrest (C).

Fastener Locations

▶ : **Screw, 3**



3. Install the armrest in the reverse order of removal.

Console Armrest Disassembly/Reassembly

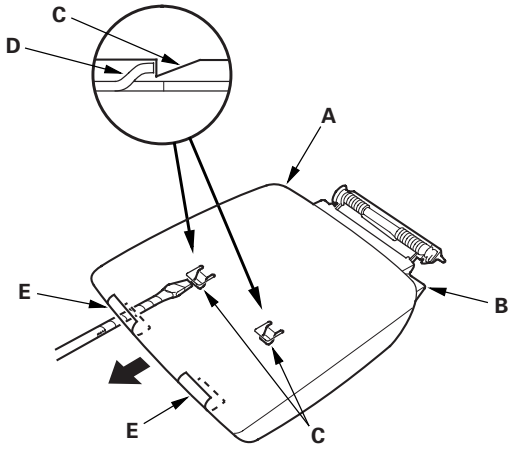
NOTE:
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to scratch the armrest.

1. Remove these items.

   - Center console trim (see step 2 on page 20-76)
   - Console armrest (see page 20-78)

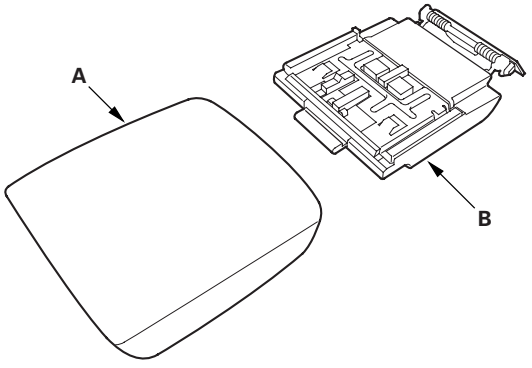
2. Insert a flat-tip screwdriver wrapped with protective tape into a gap between the console armrest (A) and the console armrest base (B), and gently push it straight down until one of the inside hooks (C) of the console armrest come off the stop portion (D) of the console base.

   NOTE: Apply protective tape (E) to the projection in the back surface of the console armrest to prevent damage.



3. Slightly slide console armrest forward to get the inside hooks over the stop portions, then remove the flat-tip screwdriver from the gap.

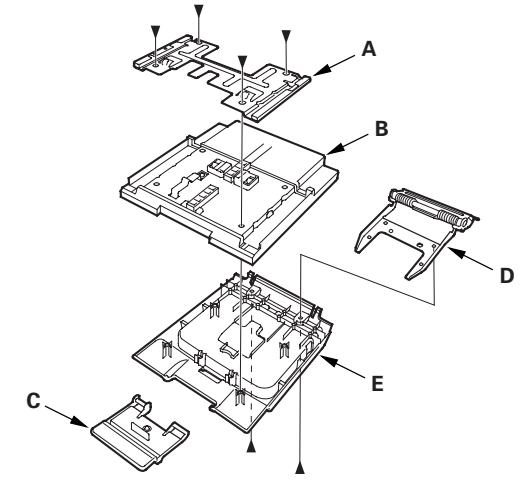
4. Remove the console armrest (A) from the guide rails of the console armrest base (B).



5. Using a TORX T20 bit, remove the screws, then separate the slide bracket (A), upper base (B), armrest lock (C), armrest hinge (D) and the lower base (E).

Fastener Locations

▶ : Screw, 6



6. Reassemble the console armrest in the reverse order of disassembly.

Center Console Trim Disassembly/Reassembly

NOTE: Take care not to scratch the armrest.

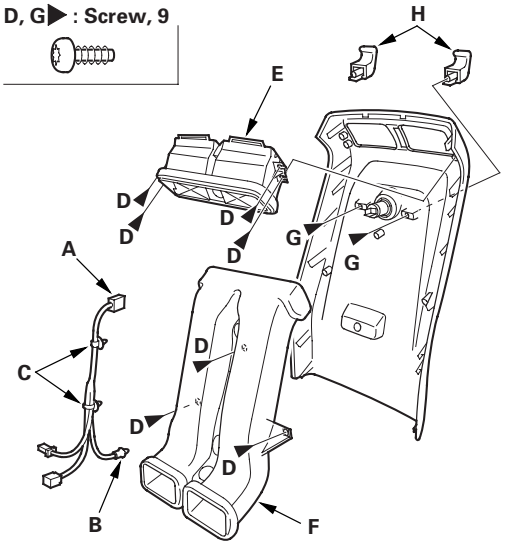
1. Remove the center console trim (see step 2 on page 20-76).

2. Disassemble the center console trim.

   –1 Disconnect the accessory socket connector (A) and light bulb socket (B), and detach the harness clips (C).
   –2 Using a TORX T20 bit, remove the screws (D), then remove the console vent (E) and console duct (F).
   –3 Using a TORX T20 bit, remove the screws (G), then remove the hooks (H).

Fastener Locations

D, G▶ : Screw, 9



3. Reassemble the console in the reverse order of disassemble, and make sure the accessory socket connector the and light bulb socket are plugged in properly.

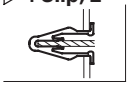
Instrument Panel Removal/Installation

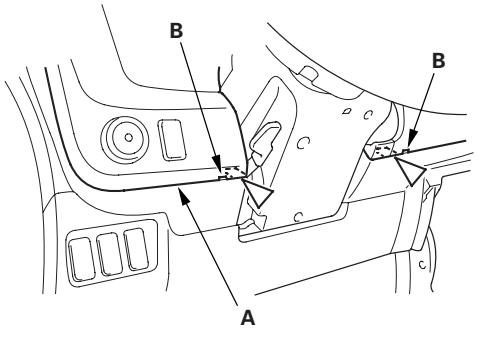
Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:
- Take care not to scratch the dashboard and related parts.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Tilt the steering column down.
2. Lower the shift lever knob.
3. Pry up on the lower edge of the instrument panel (A) at the notches (B) to detach the clips.

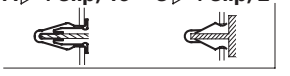
Fastener Locations
▷: **Clip, 2**

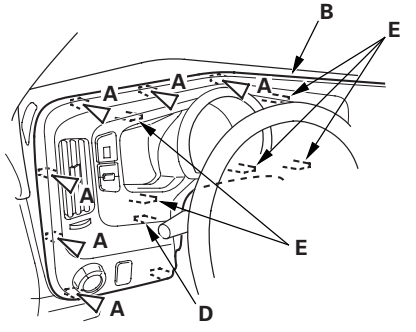


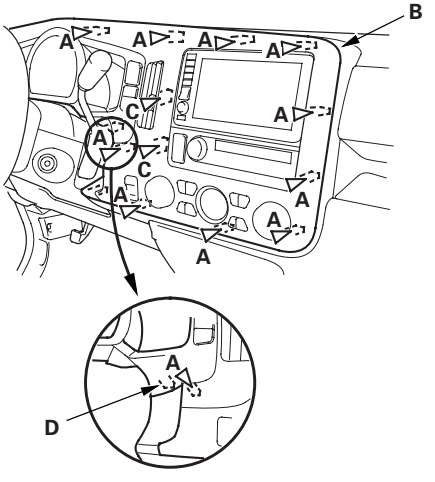


4. Detach the clips (A) along the edge of the instrument panel (B). Gently pull out the instrument panel to detach the clips (C), and release the hooks (D), then release the instrument panel from the guide hooks (E) of the gauge control module.

Fastener Locations
A▷: **Clip, 16** C▷: **Clip, 2**



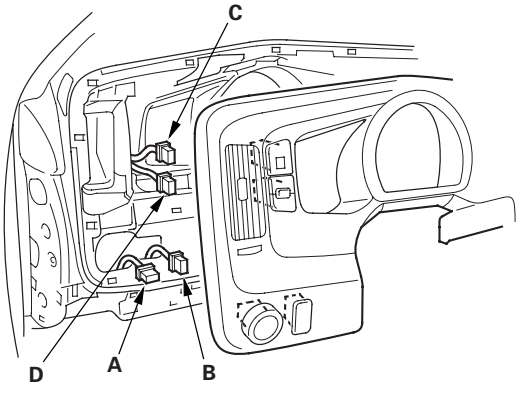


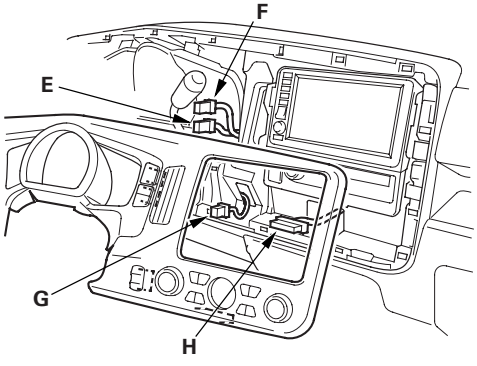


(cont'd)

Instrument Panel Removal/Installation (cont'd)

5. Disconnect the headlight switch connector (A), cargo lights switch connector (B), illumination switch connector (C), moonroof switch connector (D) (for some models), VTM-4 lock switch connector (E), select/reset information switch connector (F), interior lights switch connector (G), and climate control unit connector or HVAC control unit connector (H).

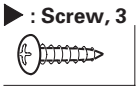


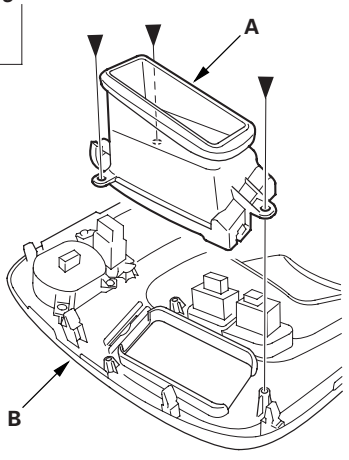


6. If necessary, remove the screws securing the driver's vent (A), then remove the driver's vent from the instrument panel (B).

Fastener Locations

▶ : Screw, 3





7. Install the panel in the reverse order of removal, and note these items:

   - Make sure all connectors are plugged in properly.
   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Push the clips and hooks into place securely.

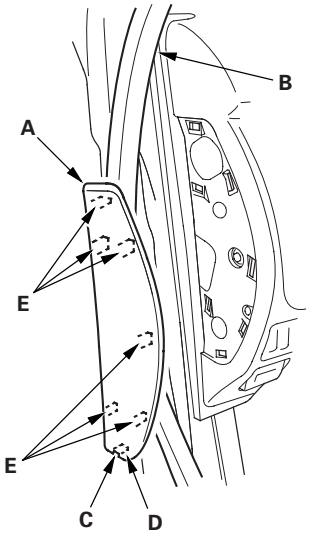
Driver's Dashboard Lower Cover Removal/Installation

Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the dashboard and related parts.
- Put on gloves to protect your hands.

1. Open the front door, and remove the driver's dashboard side cover (A).

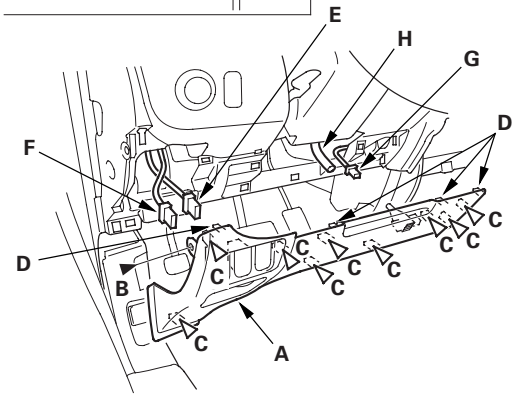
   -1 Pull out the front door opening trim (B), as necessary.
   -2 Pry up on the lower edge of the dashboard side cover at the notch (C) to release the clip (D).
   -3 Gently pull out along the edge to release the clips (E).



2. Remove the driver's dashboard lower cover (A).

   -1 Remove the screw (B) from the driver's dashboard lower cover.
   -2 Pull out the bottom of the driver's dashboard lower cover to release the clips (C) and hooks (D).
   -3 Disconnect the VSA OFF switch connector (E), the cruise control switch connector (F), the in-car temperature sensor connector (G), and the air hose (H).

Fastener Locations
B ▶ : Screw, 1 C ▷ : Clip, 9



3. Install the cover in the reverse order of removal, and note these items:

   - Make sure all connectors are plugged in properly, and the air hose is connected properly.
   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Push the clips and hooks into place securely.

Dashboard Center Lower Cover Removal/Installation

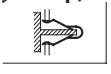
Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

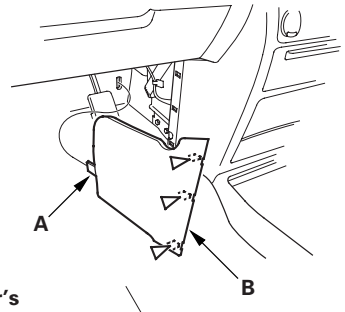
NOTE:
- Take care not to scratch the dashboard and related parts.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. From under the dash, detach the clips, release the guide (A), then remove the driver's console side trim (B) and passenger's console side trim (C).

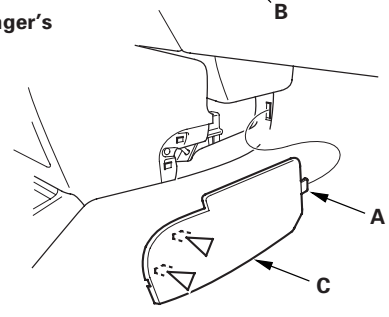
Fastener Locations
▷: **Clip, 5**



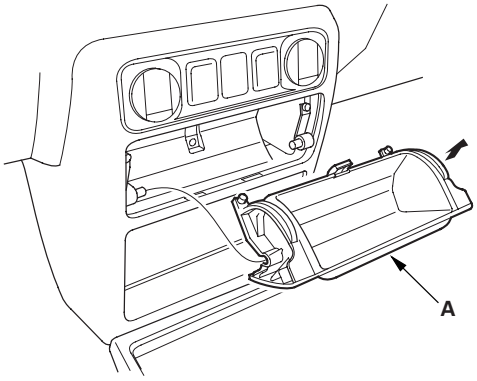
Driver's



Passenger's



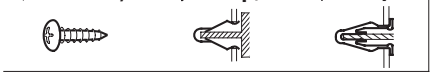
2. Open the center lower pocket (A), and remove it by pulling the bottom of it up.

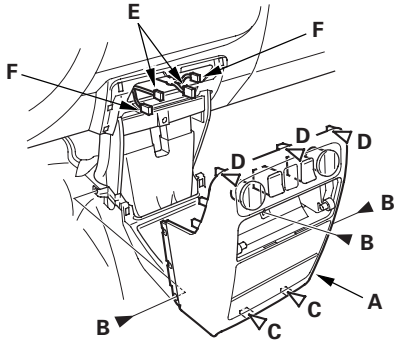


3. Remove the dashboard center lower cover (A).

–1 Remove the screws (B).
–2 Pull out the cover to release the clips (C, D).
–3 Disconnect the seat heater connectors (E) (for some models) and accessory socket connectors (F).

Fastener Locations
B▶: **Screw, 3** C▷: **Clip, 2** D▷: **Clip, 3**





4. Install the cover in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Make sure the each connector is plugged in properly.
- Push the clips into place securely.

Dashboard Center Lower Cover Disassembly/Reassembly

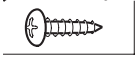
NOTE: Take care not to scratch the armrest.

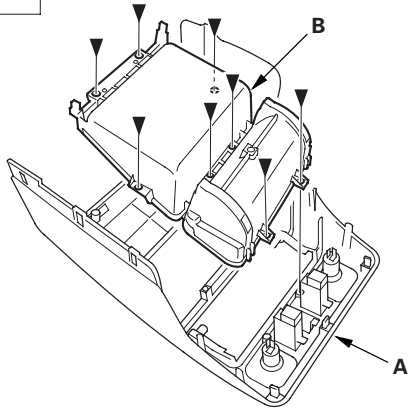
1. Remove the dashboard center lower cover (see page 20-84).

2. Remove the screws, then separate the dashboard center lower cover (A) and dashboard center lower cover bin (B).

Fastener Locations

▶ : Screw, 8





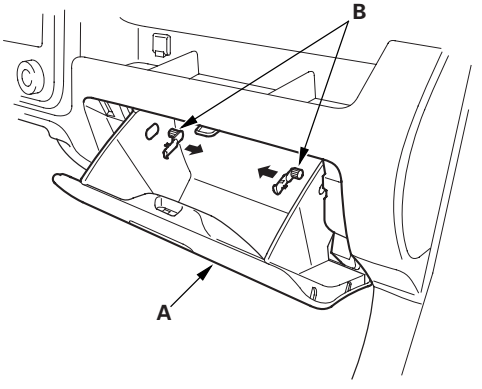
3. Reassemble the cover in the reverse order of disassemble, and make sure the accessory socket connectors and seat heater connectors (for some models) are plugged in properly.

Glove Box Removal/Installation

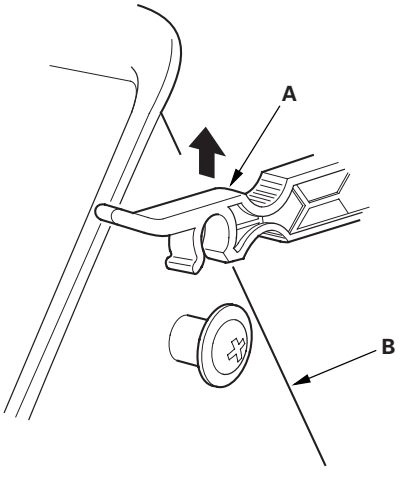
SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

NOTE: Take care not to scratch the dashboard and related parts.

1. While holding the glove box (A), remove the glove box stop (B) on each side.



2. Disconnect the glove box damper (A) from the glove box (B).



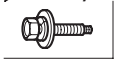
(cont'd)

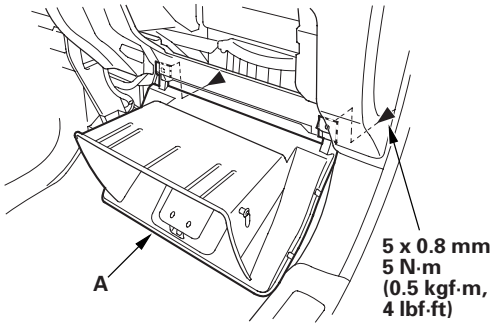
Glove Box Removal/Installation (cont'd)

3. Remove the bolts, then remove the glove box (A).

Fastener Locations

▶ : Bolt, 2





4. Install the glove box in the reverse order of removal.

Glove Box Damper Replacement

SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

NOTE: Take care not to scratch the dashboard and related parts.

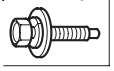
1. While holding the glove box, remove the glove box stop on each side (see step 1 on page 20-85).

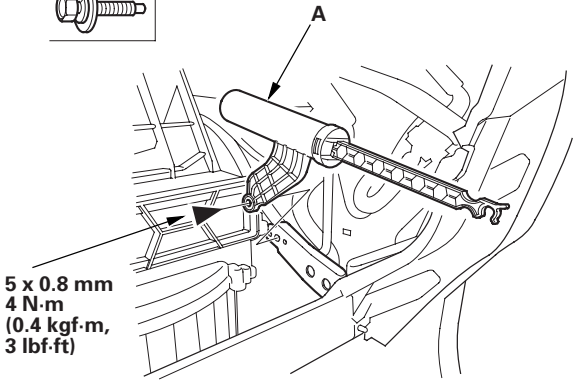
2. Disconnect the glove box damper from the glove box (see step 2 on page 20-85).

3. Remove the bolt, then remove the glove box damper (A).

Fastener Location

▶ : Bolt, 1



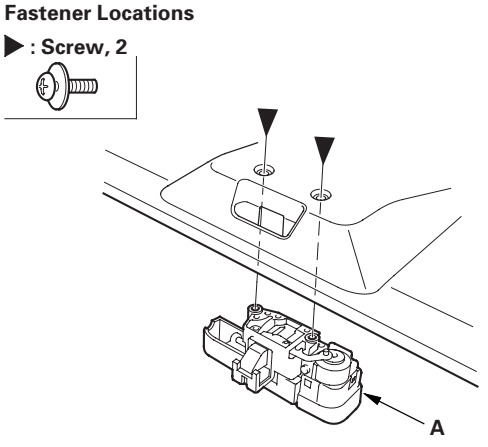


4. Install the glove box damper in the reverse order of removal.

Glove Box Lock Replacement

NOTE: Take care not to scratch the glove box and related parts.

1. Open the glove box.
2. Remove the screws, then remove the glove box lock (A).



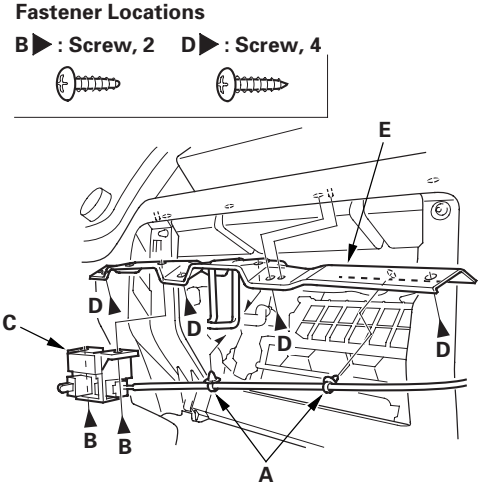
3. Install the glove box lock in the reverse order of removal.

Glove Box Striker Bracket Replacement

SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

NOTE: Take care not to scratch the dashboard and related parts.

1. While holding the glove box, remove the glove box stop on each side (see step 1 on page 20-85).
2. Disconnect the glove box damper from the glove box (see step 2 on page 20-85).
3. Detach the harness clips (A), and remove the screws (B), then remove the glove box light (C).



4. Remove the screws (D), then remove the glove box striker bracket (E).
5. Install the glove box striker bracket in the reverse order of removal.

Passenger's Tray Replacement

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the passenger's tray and related parts.

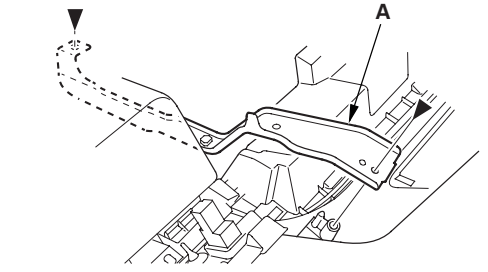
1. Remove the steering hanger beam from the dashboard (see page 20-93).

2. Remove the glove box striker bracket (see page 20-87).

3. Remove the screws, then remove the right dashboard center stay (A).

Fastener Locations

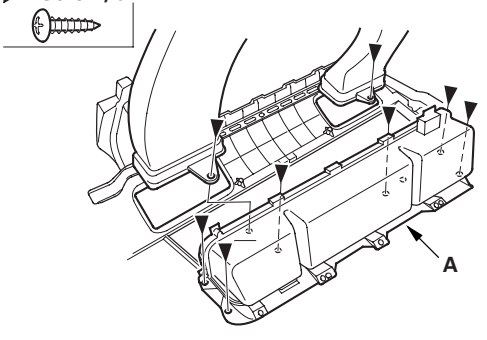
▶ : Screw, 2



4. Remove screws, then remove the passenger's tray (A).

Fastener Locations

▶ : Screw, 8



5. Install the passenger's tray in the reverse order of removal.

Dashboard Vent Removal/ Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

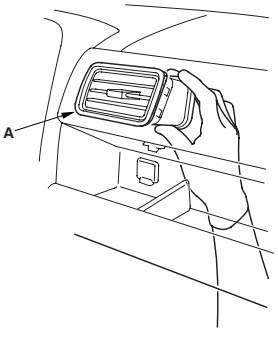
NOTE:
- Take care not to scratch the dashboard and related parts.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Put on gloves to protect your hands.

1. While holding the glove box, remove the glove box stop on each side (see step 1 on page 20-85).

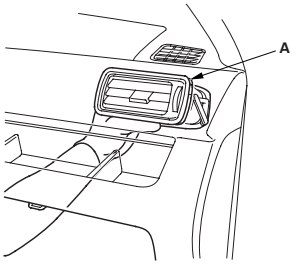
2. Disconnect the glove box damper from the glove box (see step 2 on page 20-85).

3. To loosen, push on the dashboard vent (A) by reaching through the glove box opening.

Center

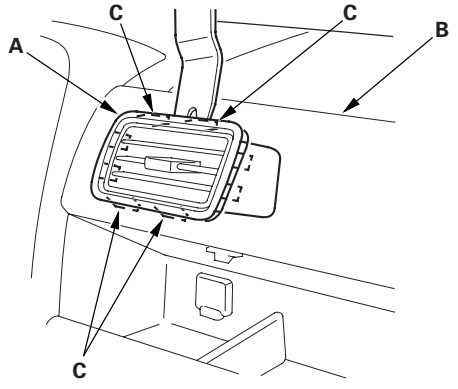


Outer

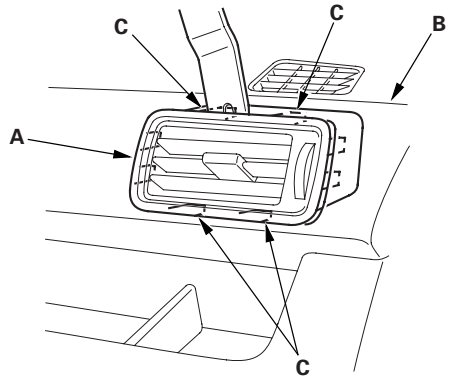


4. Insert the trim tool into a gap between the dashboard vent (A) and the dashboard (B), and release the hooks (C).

Center



Outer



5. Install the dashboard vent in the reverse order of removal.

Dashboard/Steering Hanger Beam Removal/Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Have an assistant help you when removing and installing the dashboard.
- Take care not to scratch the dashboard, body and other related parts.
- Put on gloves to protect your hands.

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equiped).

2. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.

3. Remove these items:

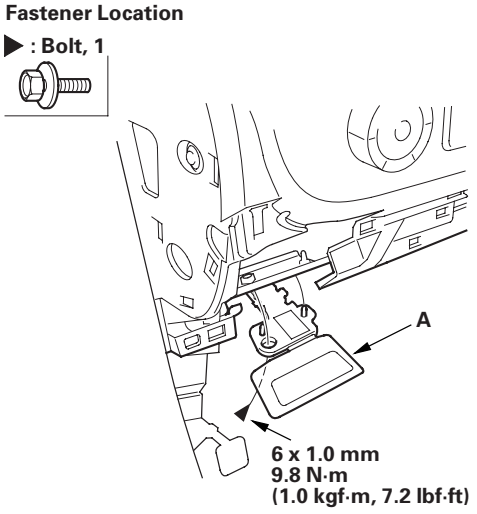
   - Driver's dashboard lower cover (see page 20-83)
   - Dashboard center lower cover (see page 20-84)
   - Center console (see page 20-76)
   - Glove box (see page 20-85)
   - Driver's dashboard side cover (see page 20-83)
   - Kick panels, both sides (see page 20-60)
   - A-pillar trim, both sides (see page 20-63)
   - Steering column (see page 17-24)

4. Disconnect the A/T shift cable (see page 14-261).

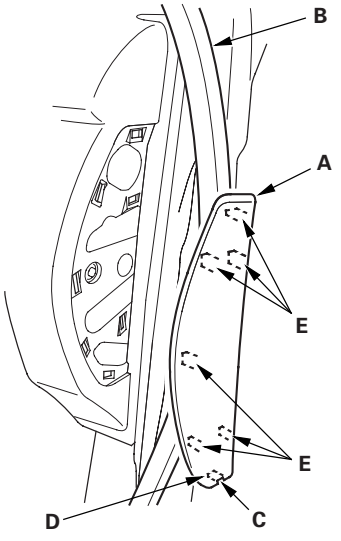
(cont'd)

Dashboard/Steering Hanger Beam Removal/Installation (cont'd)

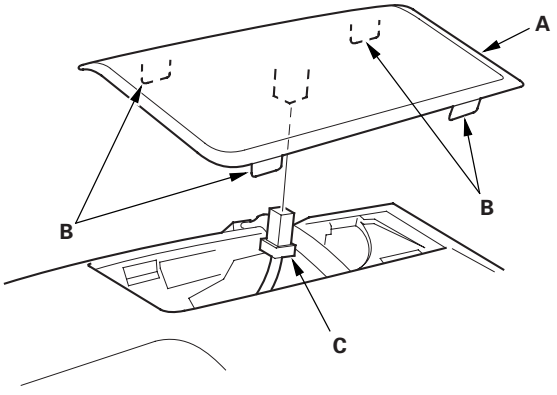
5. Remove the bolt securing the parking brake release lever (A).



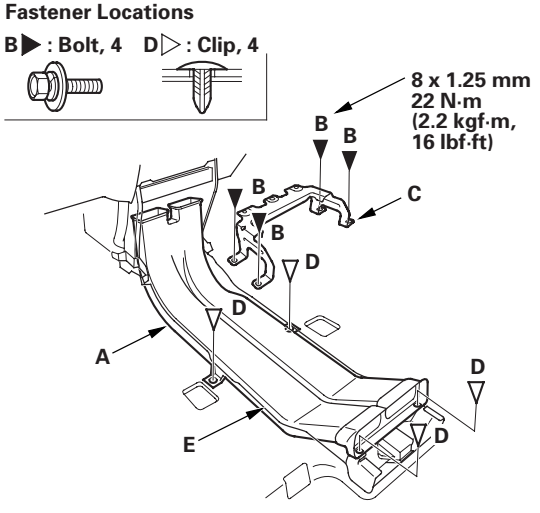
6. Open the passenger's front door, and remove the passenger's dashboard side cover (A).
   1. Pull out the front door opening trim (B), as necessary.
   2. Pry up on the lower edge of the passenger's dashboard side cover at the notch (C) to release the clip (D).
   3. Gently pull out along the edge to release the clips (E).



7. Gently pull out the right tweeter grille (A) to release the hooks (B), and disconnect the tweeter connector (C), then remove it.



8. Pull up the floor carpet (A) as needed. Remove the bolts (B), then remove the console front bracket (C).

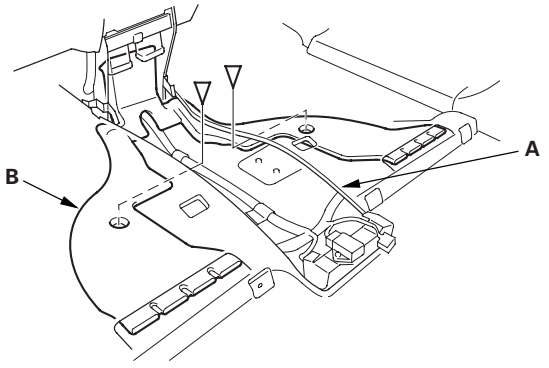


9. Remove the clips (D), then remove the rear vent duct (E).

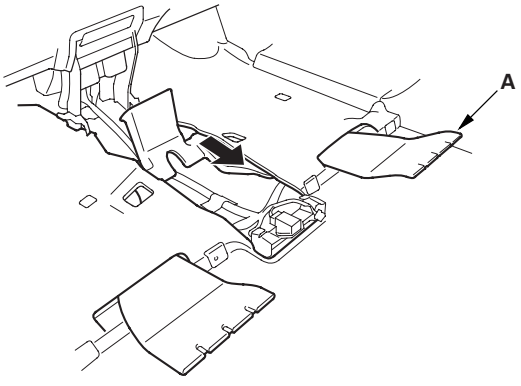
10. Pull up the floor carpet (A) as needed. Remove the clips securing the rear heater duct (B).

Fastener Locations

▷ : **Clip, 2**



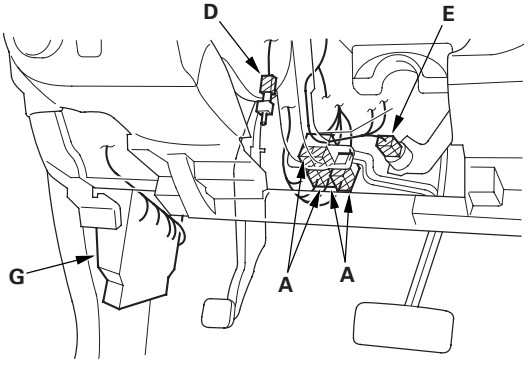
11. Slide the rear heater duct (A) rearward.

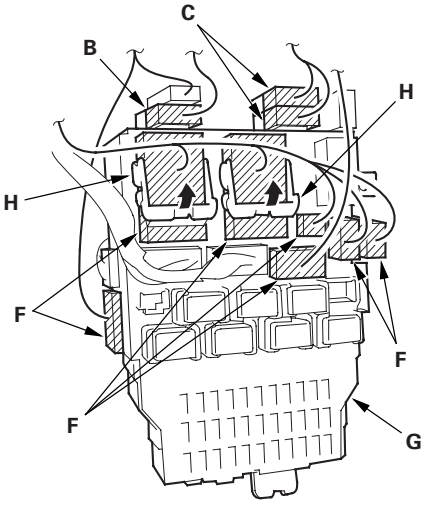


Driver's side

12. From under the dash, disconnect the cabin wire harness connectors (A), interior wire harness connector (B), left side wire harness connectors (C), parking brake switch connector (D), brake switch connector (E), and dashboard wire harness connector (F) from the driver's under-dash fuse/relay box (G).

    NOTE: Lift the large wire harness connector locks (H) before trying to remove the connectors from the fuse/relay box.



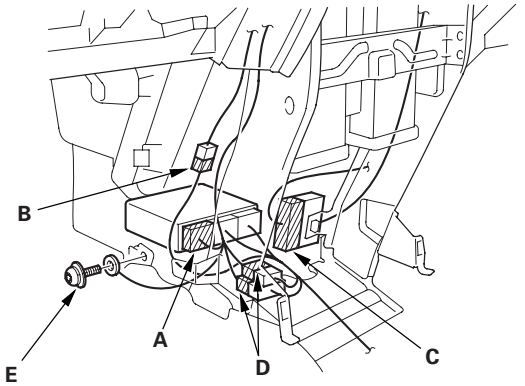


(cont'd)

Dashboard/Steering Hanger Beam Removal/Installation (cont'd)

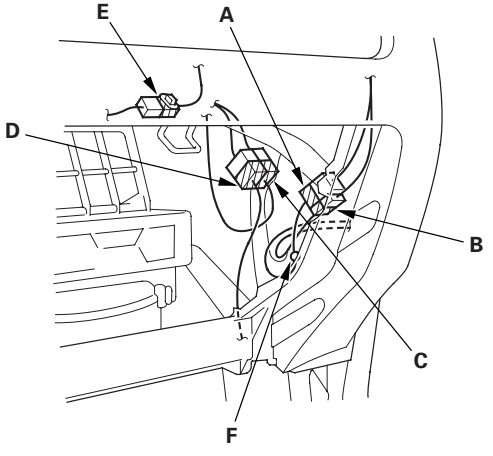
Middle portion

13. Disconnect the SRS unit connector (A), GPS antenna connector (B), A/C subharness connector (C), and floor wire harness connectors (D). Using a TORX T30 bit, remove the ground bolt (E).



Passenger's side

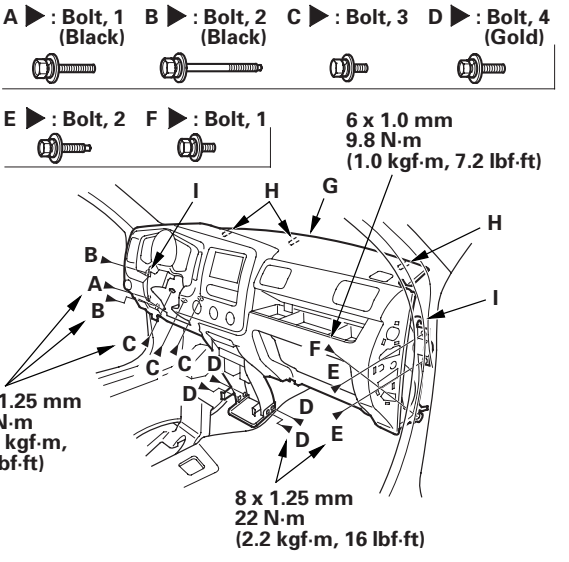
14. From under the dash, disconnect the passenger's door wire harness connector (A), radio antenna connector (B), cabin wire harness connector (C), right side wire harness connector (D) and front glass defogger harness connector (E), then detach the connector clip and harness clip (F).



15. Open the driver's door, and remove the bolts (A, B). But the upper A and B bolts are not able to remove the body because the driver's door will interfere. Remove the remaining bolts (C, D, E, F), and lift up on the dashboard (G) to release it from the guide pins (H, I).

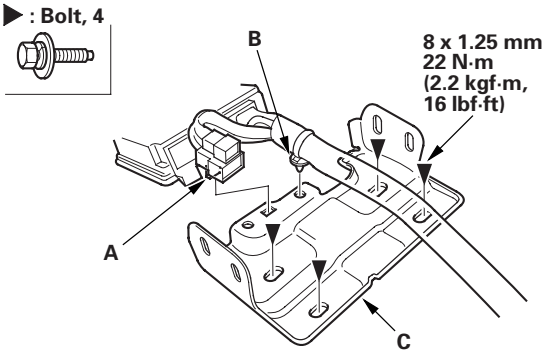
NOTE:
- Before removing the dashboard, make sure all the harnesses have been disconnected.
- Do not open the door fully with the driver's side upper dash bolts partially removed. Before removing the dashboard, open the driver's door until one-half position, then pull the upper dash bolts outward.

Fastener Locations



16. If necessary, detach the connector clip (A) and harness clip (B), and remove the bolts, then remove the center bracket (C).

Fastener Locations



17. Carefully remove the dashboard through the passenger's front door opening.

    NOTE: Do not rest the dashboard on its lower center cover opening, or it may be damaged. Lay it on its front or back.

18. Install the dashboard in the reverse order of removal, and note these items:

    - Before tightening the bolts, make sure the wire harnesses are not pinched.
    - Reinstall the center bracket on the center frame, and slightly tighten the mounting bolts. Reinstall the dashboard on the body. After tightening the dashboard mounting bolts, tighten the center bracket mounting bolts and center frame mounting bolts.
    - Make sure the dashboard fits onto the guide pins correctly.
    - Apply medium strength type liquid thread lock to the bolts securing the center bracket and the dashboard before reinstallation.
    - Make sure the connectors are plugged in properly.
    - Reconnect the negative cable to the battery.
    - Enter the anti-theft codes for the audio system and the navigation system (if equiped).
    - Set the clock (on vehicles without navigation).
    - Perform the power window control unit reset procedure (see page 22-209).
    - Check for any DTCs that may have been set during repairs, and clear them.

Dashboard/Steering Hanger Beam Disassembly/Reassembly

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

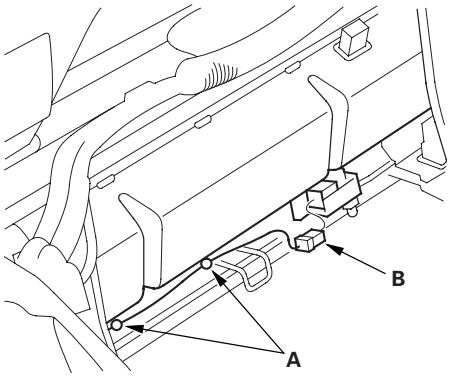
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.
- Take care not to bend the brackets.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Remove the dashboard/steering hanger beam (see page 20-89).

2. Remove these items from the dashboard:

    - Instrument panel (see page 20-81)
    - Gauge control module (see page 22-263)
    - Navigation display (see page 23-141)
    - Audio unit, without navigation system (see page 23-57)
    - GPS antenna (see page 23-140)
    - Passenger's airbag (see page 24-175)
    - Sunlight sensor (see page 21-134)

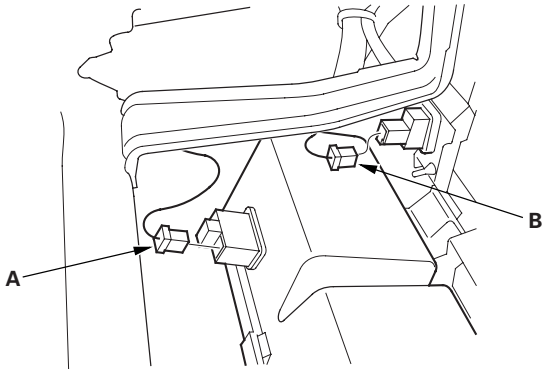
3. From the back of the dashboard, detach the harness clips (A), and disconnect the glove box light connector (B).



(cont'd)

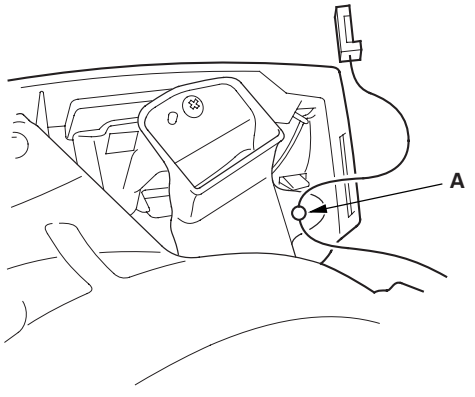
Dashboard/Steering Hanger Beam Disassembly/Reassembly (cont'd)

4. From the back of the dashboard, disconnect the AUX jack connector (A) and in-bed trunk lid main switch connector (B).

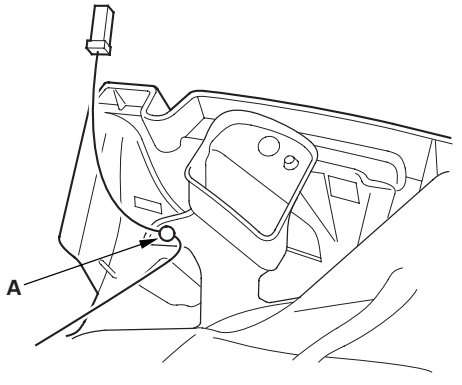


5. From the back of the dashboard, detach the tweeter harness clip (A).

Driver's side



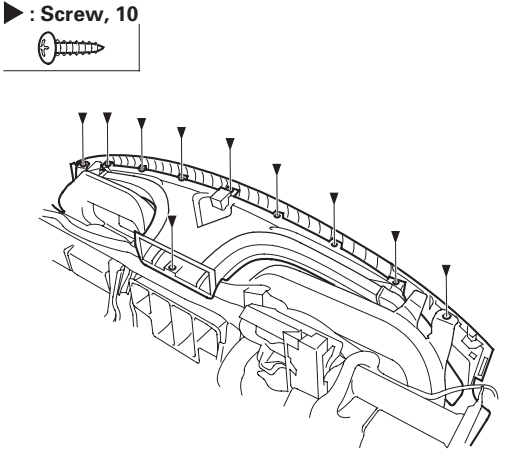
Passenger's side



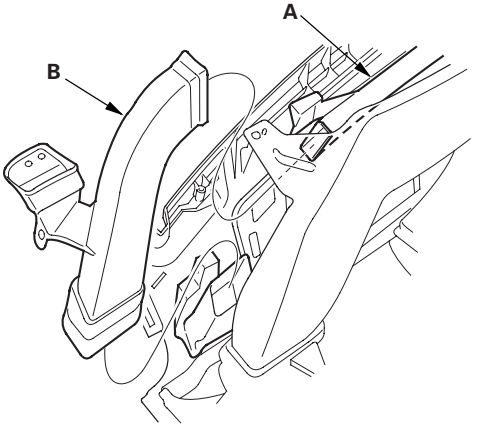
6. From the back of the dashboard, remove the screws.

Fastener Locations

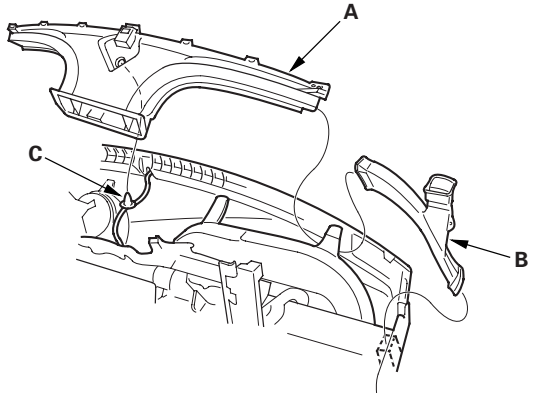
▶ : Screw, 10



7. Slide the defogger duct (A), and remove the passenger's A/C duct (B).



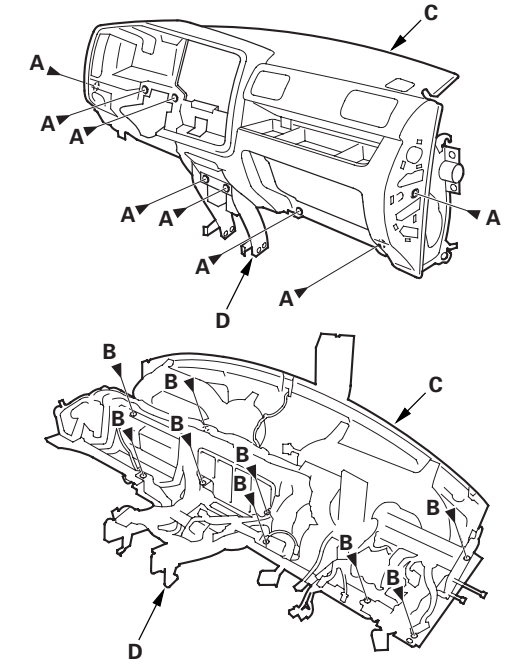
8. Remove the defogger duct (A) and driver's A/C duct (B), then detach the sunlight sensor connector harness clip (C).



9. Remove the screws (A, B), then separate the dashboard (C) from the steering hanger beam (D).

Fastener Locations

A▶ : Screw, 8 B▶ : Screw, 9



10. Install the beam in the reverse order of removal, and note these items:

    - Make sure the dashboard wire harness is not pinched.
    - Make sure the connectors are plugged in properly.
    - If necessary, adjust the shift cable (see page 14-265).

Component Location Index

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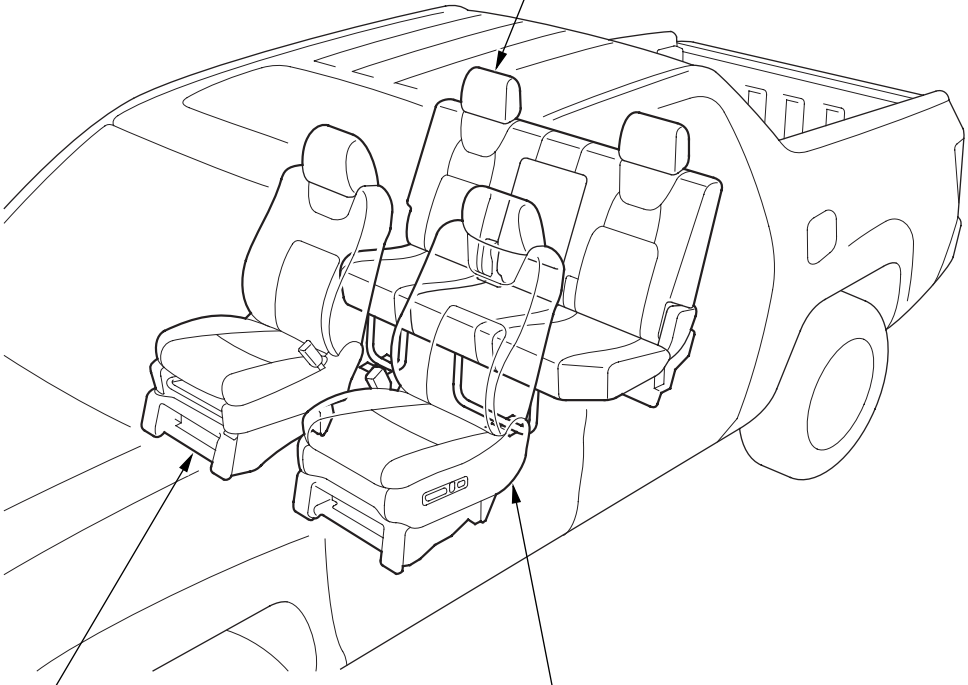
Armrest Replacement, page 20-121
Armrest Beverage Holder Replacement, page 20-122
Seat Cushion Disassembly/Reassembly, page 20-123
Seat Cushion Handle Replacement, page 20-126
Seat Cushion Pivot Cable Replacement, page 20-127
Seat-back Cover Replacement, page 20-129
Seat Cushion Cover Replacement, page 20-130
Armrest Cover Replacement, page 20-131



FRONT SEAT (Passenger's)
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Seat-back Cover Replacement, page 20-111
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Disassembly/Reassembly-Driver's 10-Way Power, page 20-99
Linkage Disassembly/Reassembly-Driver's Manual Height Adjustable, page 20-106
Linkage Disassembly/Reassembly-Driver's 10-Way Power, page 20-108
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Seat Cushion Cover Replacement, page 20-114

Front Seat Removal/Installation

Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

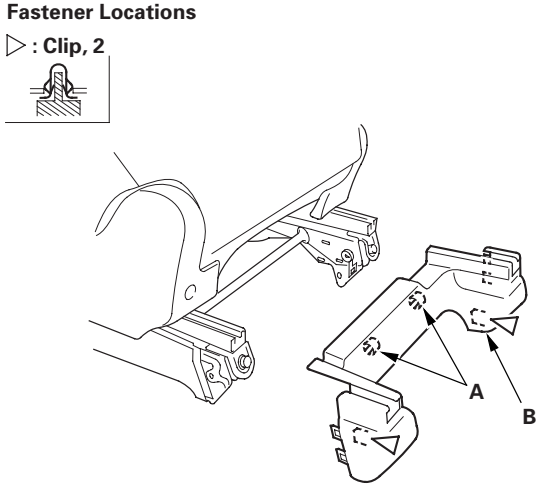
SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the body or tear the seat covers.
- Put on gloves to protect your hands.
- DTC codes will set if the ignition is turned ON (II) with the seats removed.

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).

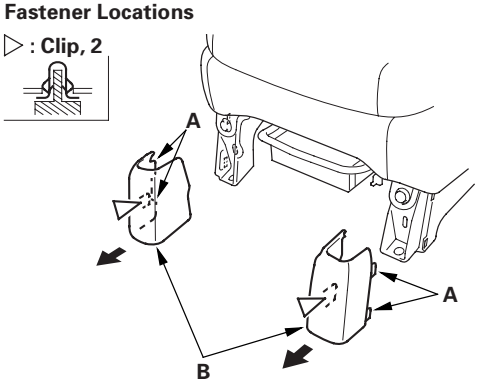
2. Tilt the steering wheel all the way up.

3. Detach the side clips and middle hooks (A), then remove the rear riser cover (B).



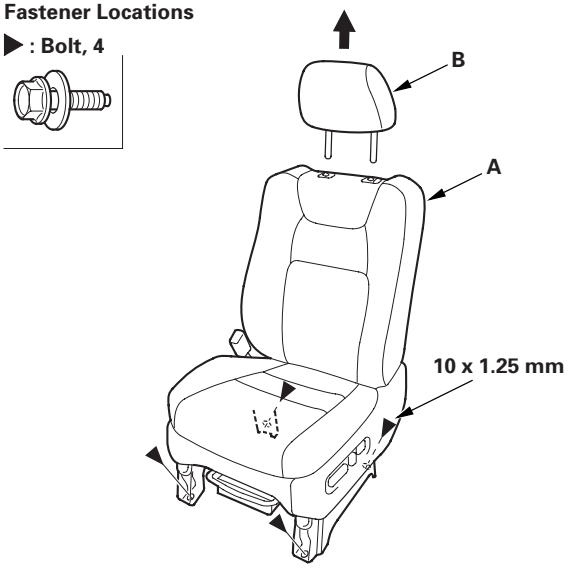
4. Slide the seat fully to the rear to access the front riser cover.

5. Detach the clip and release the hook (A), and remove the front riser cover (B) from both sides.



6. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.

7. Remove the bolts securing the front seat (A), and remove the head restraint (B).



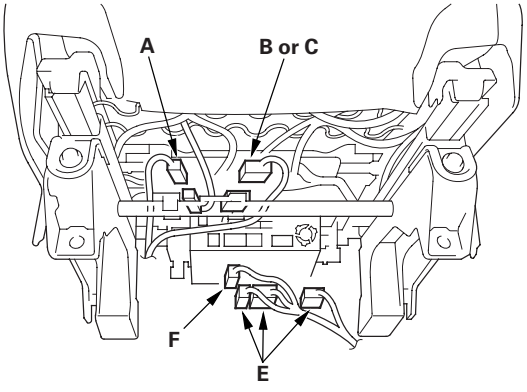
(cont'd)

Front Seat Removal/Installation (cont'd)

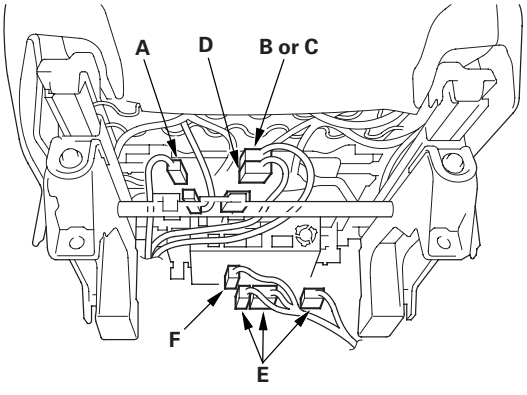
8. Tilt the front seat forward and disconnect the side airbag connector (A) and seat wire harness connector (B).
   Driver's manual height adjustable seat disconnect the seat belt switch connector (C) and seat position sensor harness (D).
   With navigation system: Disconnect the navigation unit connectors (E) and GPS antenna harness connector (F).

   NOTE: The driver's 10-way power seat is shown; the passenger's manual seat and the driver's manual height adjustable seat are similar.

'06 model



'07-08 models



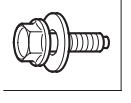
9. Install the seat in the reverse order of removal, and note these items:

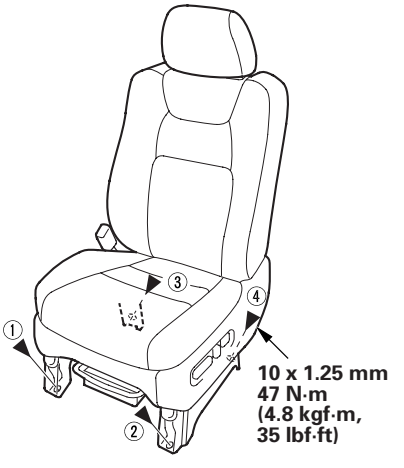
   - Apply medium strength type liquid thread lock to the front seat mounting bolts before reinstallation.
   - Make sure each connector is plugged in properly.
   - Reconnect the negative cable to the battery.
   - Tighten the seat mounting bolts to the specified torque in the sequence shown. Slide the seat all the way back and tighten ① and ②, then slide it forward and tighten ③ and ④. The driver's seat is shown; the passenger's seat is symmetrical.
   - Enter the anti-theft codes for the audio system and the navigation system (if equipped).
   - Set the clock (on vehicles without navigation).
   - Do the power window control unit reset procedure (see page 22-209).

Seat mounting bolts tightening sequence

Fastener Locations

▶ : Bolt, 4





Front Seat Disassembly/Reassembly

Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

Seat-back/Seat Cushion

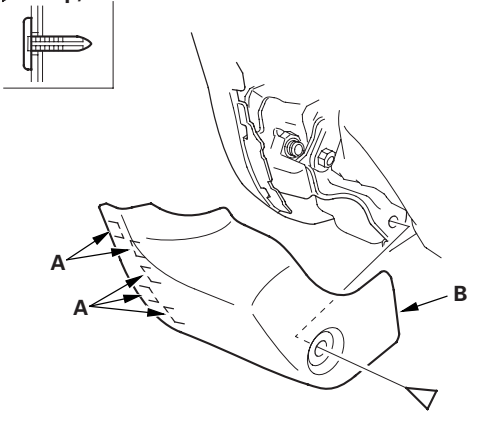
SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.
- DTC codes will set it the ignition is turned ON (II) with the seats removed.

1. Remove the front seat (see page 20-97).

2. Driver's 10-way power seat: Remove the clip and release the hooks (A), then remove the inner cover (B).

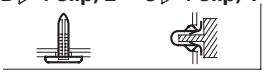
Fastener Location
▷ : **Clip, 1**



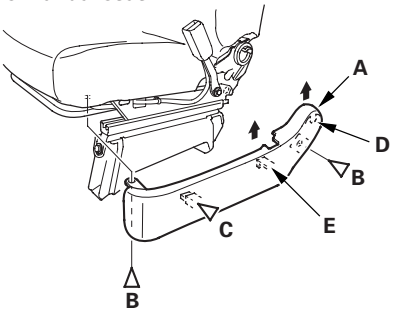
3. Remove the center cover (A).

–1 Remove the clip (B), and detach the clip (C).
–2 Pull up the cover, then release the hooks (D, E).

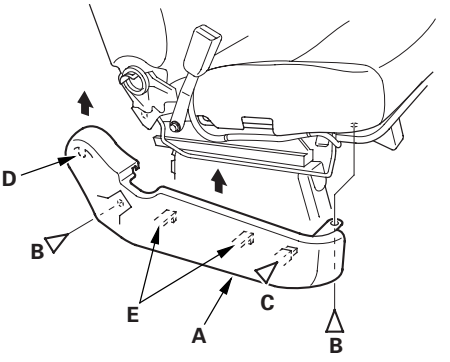
Fastener Locations
B ▷ : Clip, 2 C ▷ : Clip, 1



Passenger's manual seat



Driver's manual height adjustable seat



(cont'd)

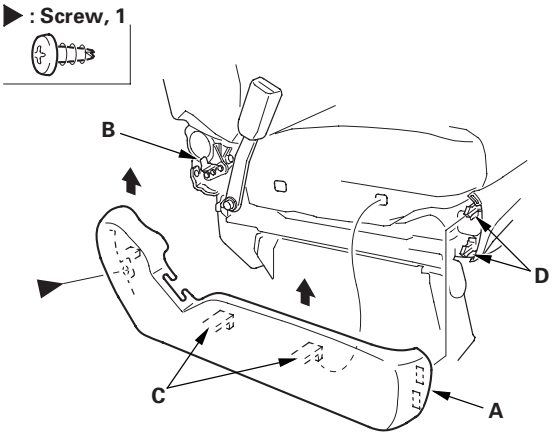
Front Seat Disassembly/Reassembly (cont'd)

4. Driver's 10-way power seat: Remove the center cover (A).

   –1 Remove the screw.
   –2 Pull up the cover, then release the hooks (B, C, D).

Fastener Location

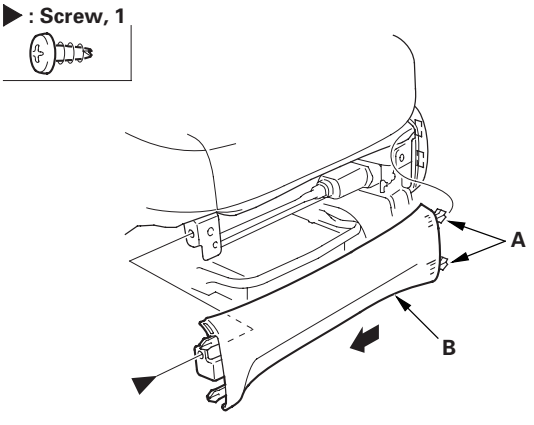
▶ : Screw, 1



5. Driver's 10-way power seat: Remove the screw and release the hooks (A), then remove the front cover (B).

Fastener Location

▶ : Screw, 1



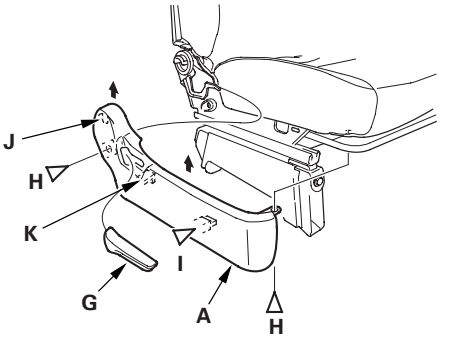
6. Remove the recline cover (A).

   –1 Gently pull out along the bottom to release the hooks (B), then remove the cap (C).
   –2 Remove the bolts (D), then remove the height handle (E) and screw (F).
   –3 Remove the recline knob (G) and clips (H), and detach the clip (I).
   –4 Pull up the cover, then release the hooks (J, K).

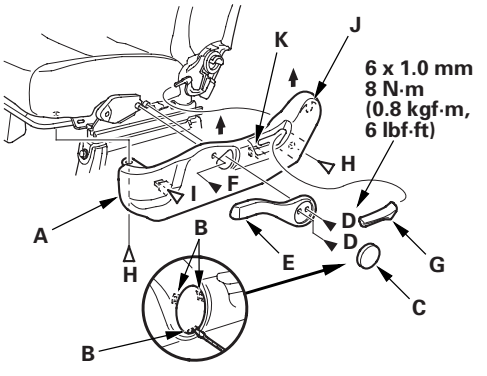
Fastener Locations

D ▶ : Bolt, 2 F ▶ : Screw, 1 H ▷ : Clip, 2 I ▷ : Clip, 1

Passenger's manual seat



Driver's manual height adjustable seat

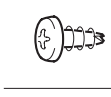


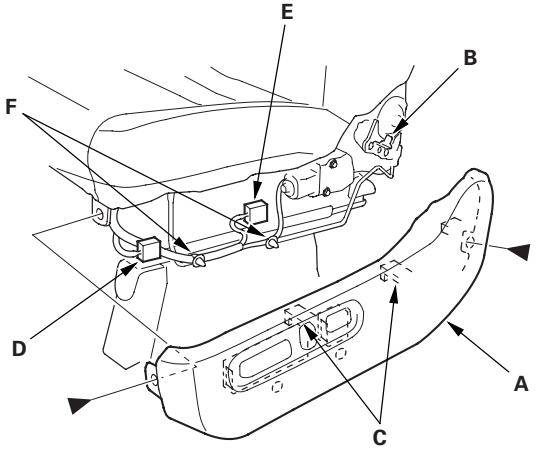
7. Driver's 10-way power seat: Remove the recline cover (A).

   1. Remove the screws.
   2. Pull up the cover, then release the hooks (B, C).
   3. Disconnect the recline switch and up-down switch connector (D), lumbar support switch connector (E).
   4. Detach the harness clips (F) from the recline cover.

Fastener Locations

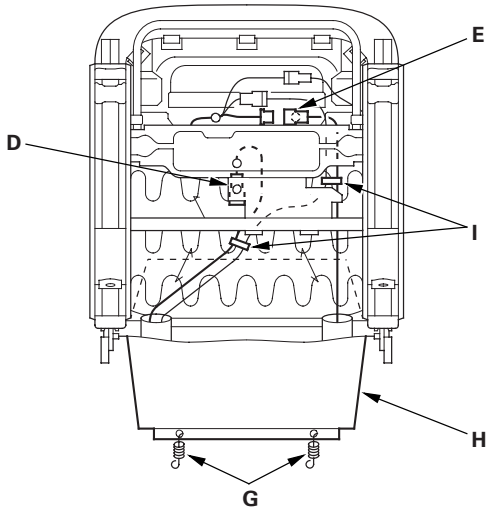
▶ : **Screw, 2**



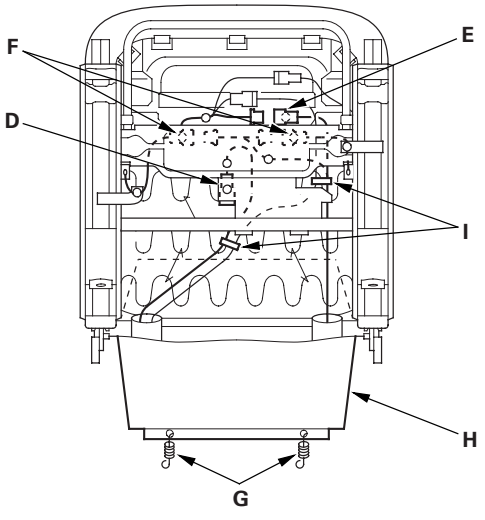


8. From under the seat cushion, disconnect the seat-back heater connector (A) lumbar support switch connector (B) and recline motor subharness connector (C), then detach the connector clip. Detach the side airbag connector clip (D), OPDS/ODS unit connector clip (E), seat weight sensor connectors (F). Release the hook springs (G) and seat cushion cover (H), pull the cover back, and remove the wire ties (I).

Passenger's manual seat ('06 model)



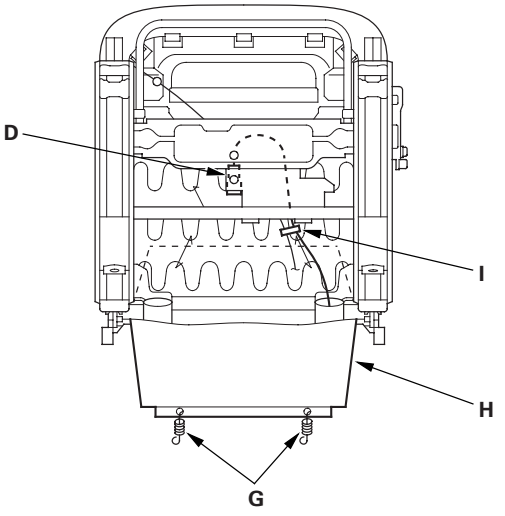
Passenger's manual seat ('07-08 models)



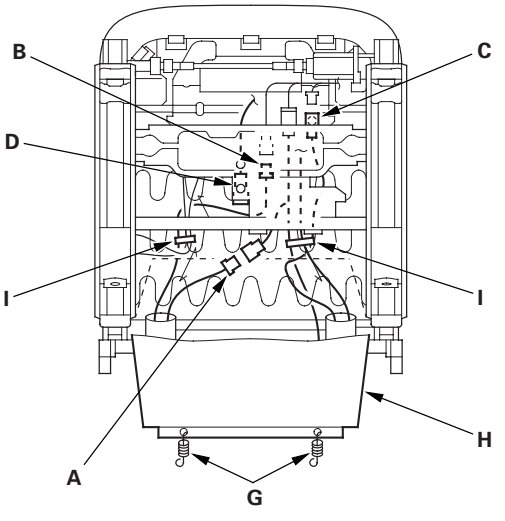
(cont'd)

Front Seat Disassembly/Reassembly (cont'd)

Driver's manual height adjustable seat



Driver's 10-way power seat

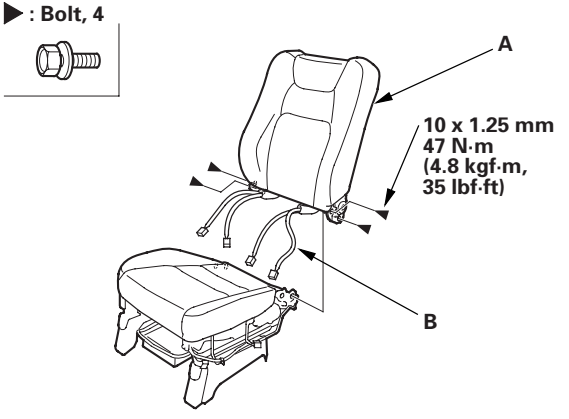


9. Remove the seat-back (A).

   –1 Remove the bolts.
   –2 Lift the seat-back, then pull the harnesses (B), out through the hole in the seat cushion trim cover.

Fastener Locations

▶: Bolt, 4



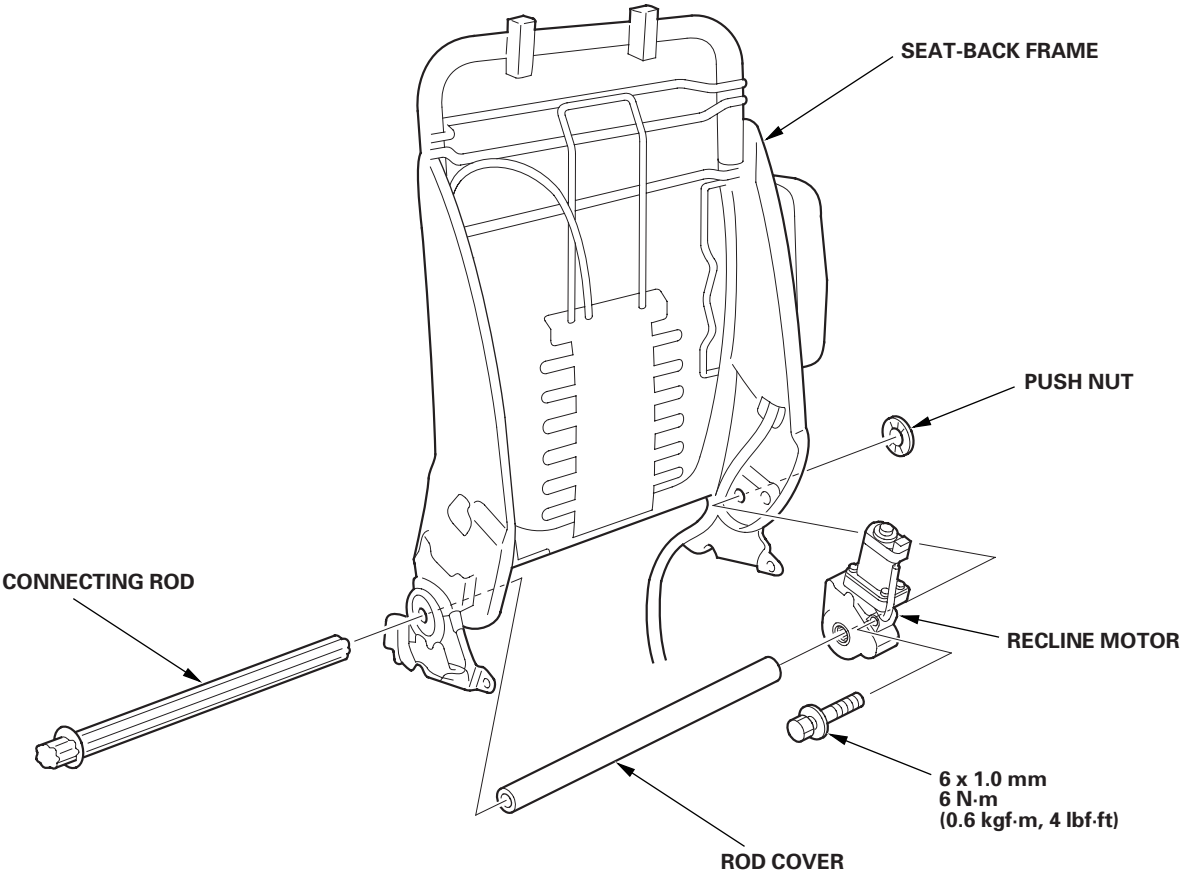
10. Assemble the seat-back and seat cushion in the reverse order of disassembly, and note these items:

    - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
    - Push the clips into place securely.
    - Apply multipurpose grease to the moving parts of the seat track.
    - To prevent wrinkles in the seat cushion cover, stretch the material evenly over the pad.

Seat-back

SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

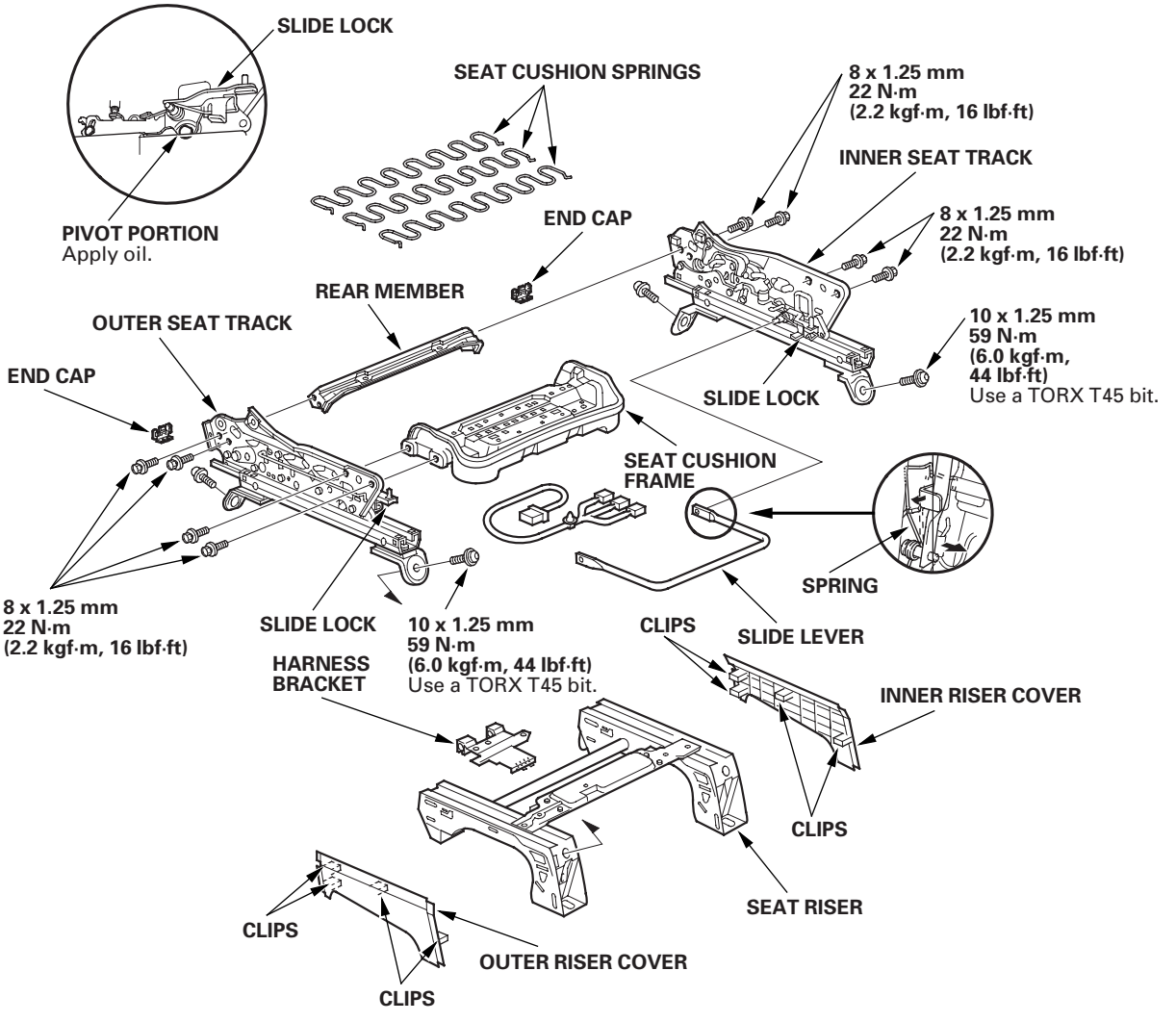
NOTE:
- Put on gloves to protect your hands.
- Replace the push nuts with new ones. Make sure the push nuts are installed correctly.
- Apply low strength type liquid thread lock to the motor mounting bolt before reinstallation.



Front Seat Linkage Disassembly/Reassembly - Passenger's Manual

'06 model

NOTE:
- Put on gloves to protect your hands.
- Apply oil to the pivot portions of the slide lock.
- Apply multipurpose grease to the sliding parts and pivot portions of the seat tracks.

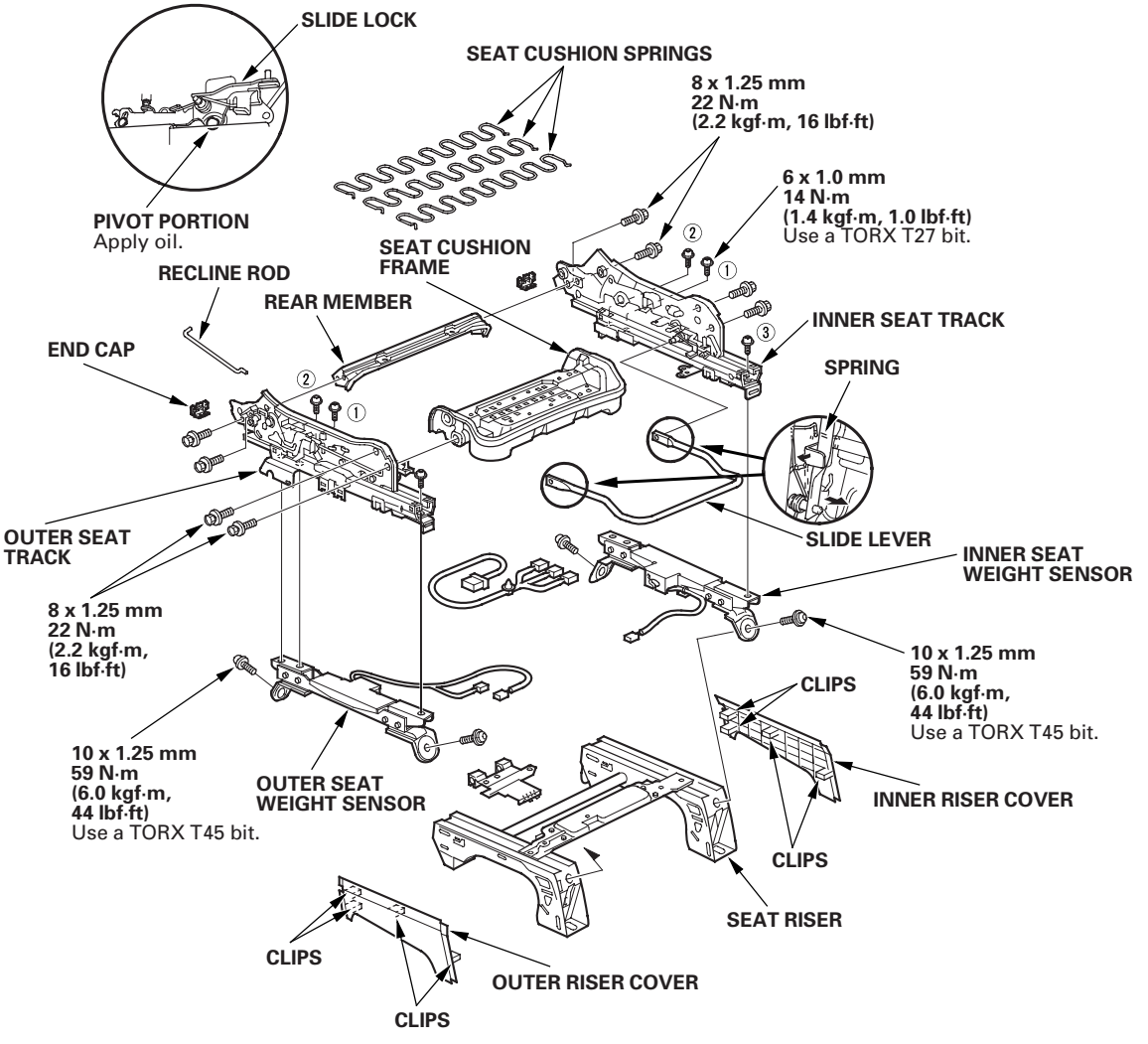


’07-08 models

- The front ODS unit must be calibrated after any of these actions (see page 24-31):
  – Front passenger’s seat replacement (including any seat components)
  – Replacement of the seat weight sensors
  – Replacement of the ODS unit

NOTE:
- Put on gloves to protect your hands.
- Apply oil to the pivot portions of the slide locks.
- Apply multipurpose grease to the sliding portions of the seat tracks.
- When tightening the weight sensor mounting bolts, tighten the bolts in the sequence shown. Improper tightening could cause the front passenger’s airbag system to malfunction.
- Make sure the weight sensor wires are routed properly so they are not pinched and do not interfere with other parts.

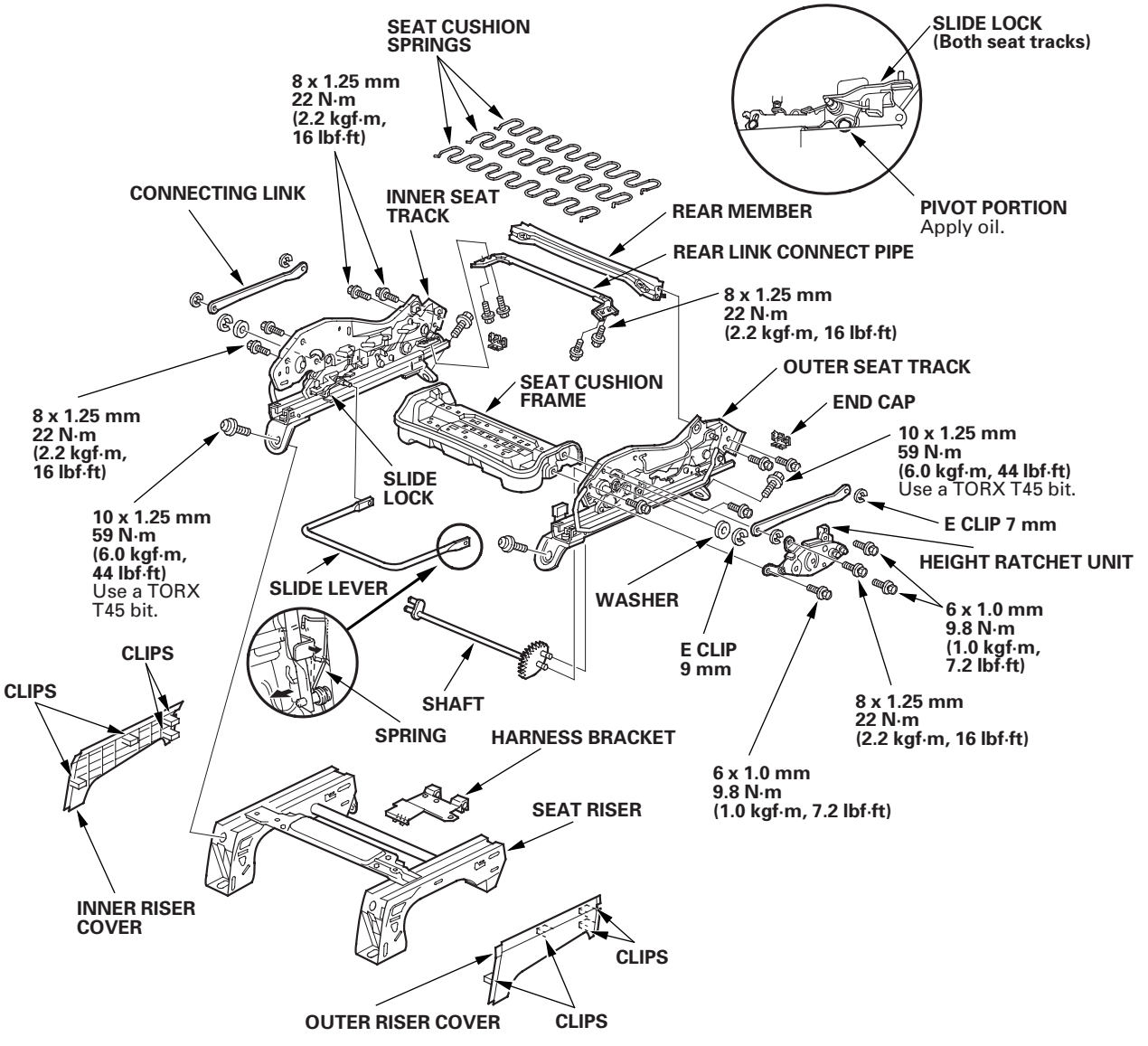
Seat tracks/Seat weight sensor/Seat cushion frame



Front Seat Linkage Disassembly/Reassembly - Driver's Manual Height Adjustable

'06 model

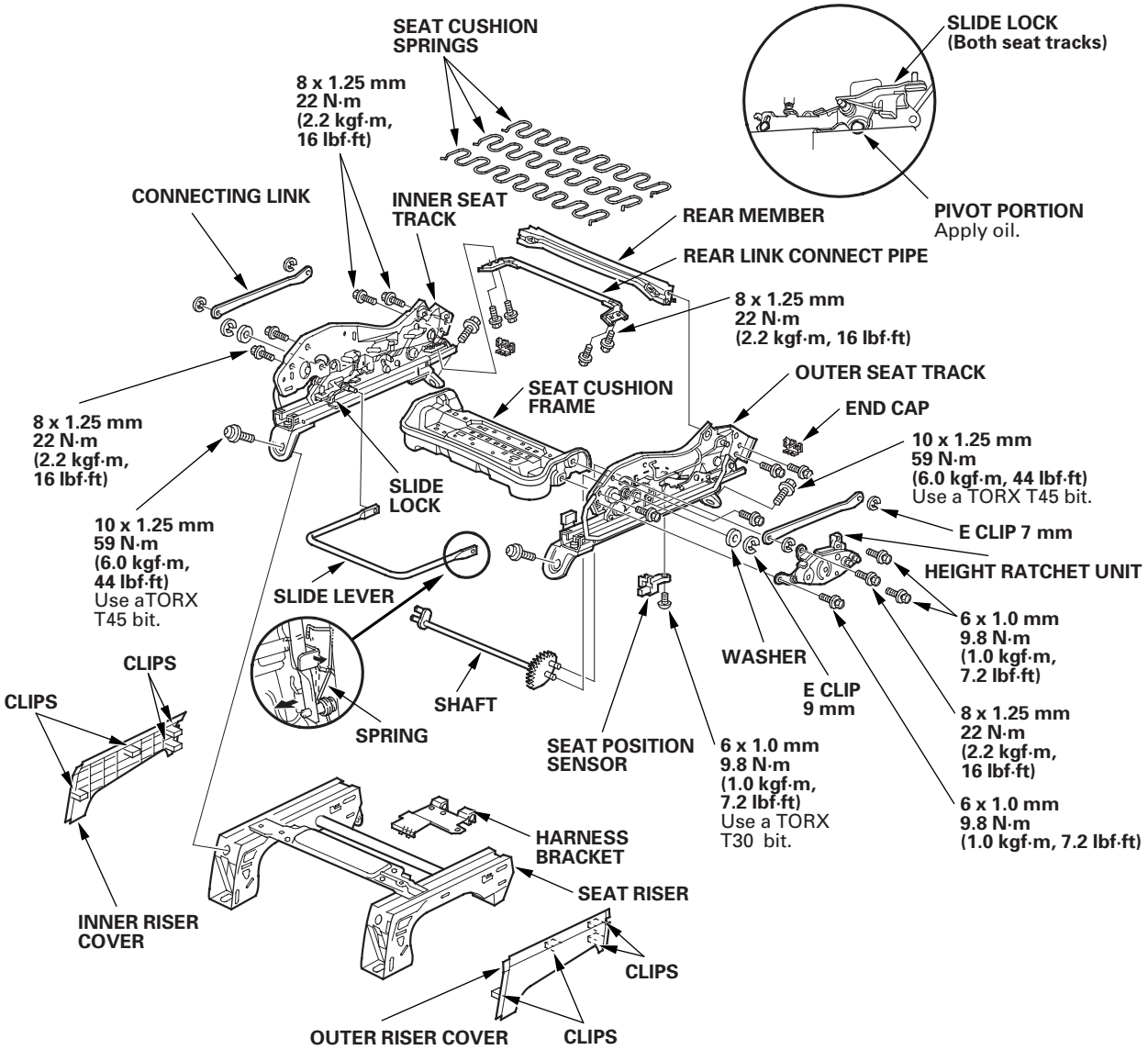
NOTE:
- Put on gloves to protect your hands.
- Apply oil to the pivot portions of the slide lock.
- Apply multipurpose grease to the sliding parts and pivot portions of the seat tracks.



’07-08 models

- The operation of the driver’s seat position sensor must be checked after any of these actions (see page 24-33):
  – Driver’s seat position sensor replacement
  – Cover plate (front side of driver’s seat slide rail) replacement

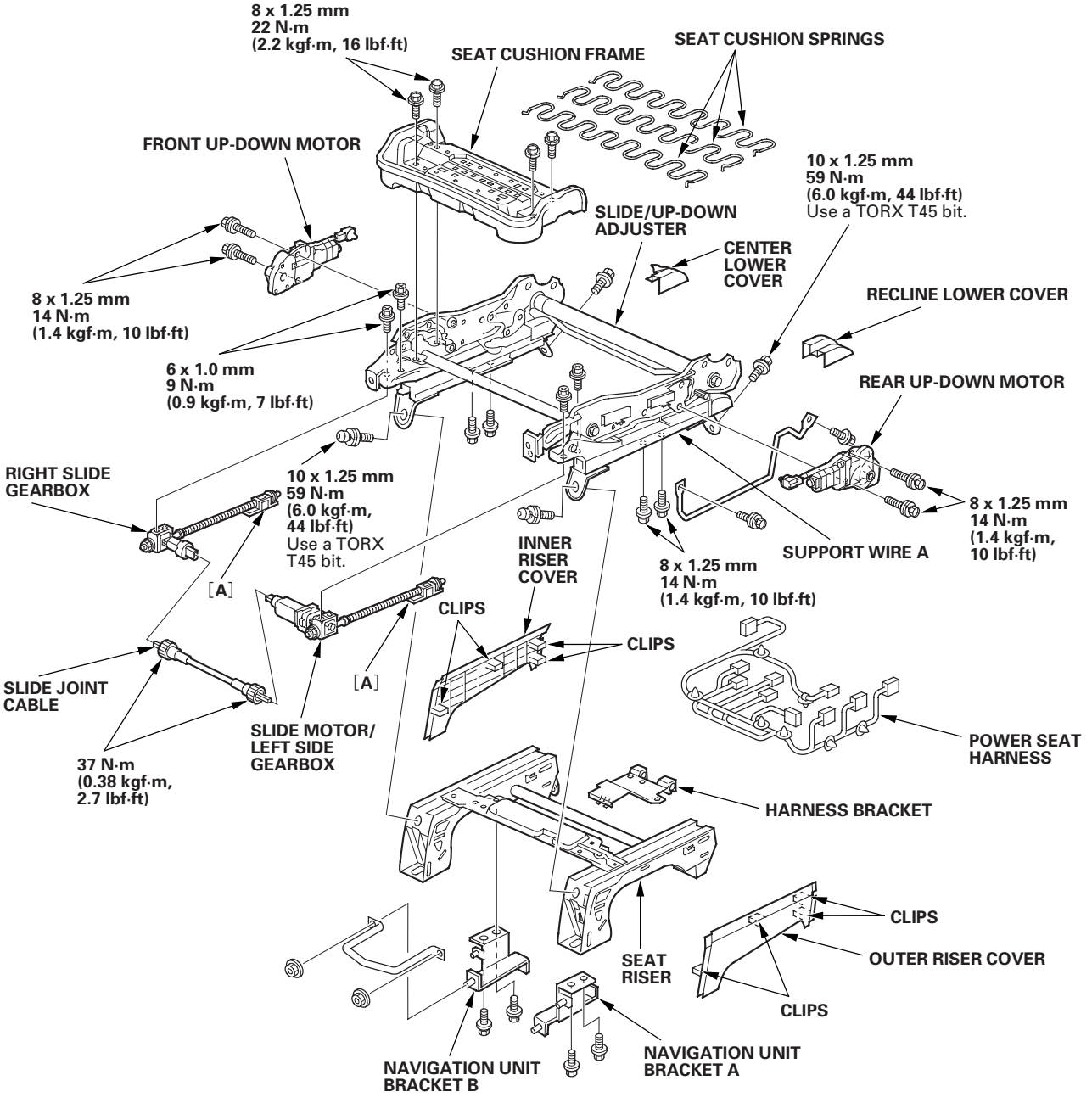
NOTE:
- Put on gloves to protect your hands.
- Apply oil to the pivot portions of the slide lock.
- Apply multipurpose grease to the sliding parts and pivot portions of the seat tracks.



Front Seat Linkage Disassembly/Reassembly - Driver's 10-Way Power

'06 model

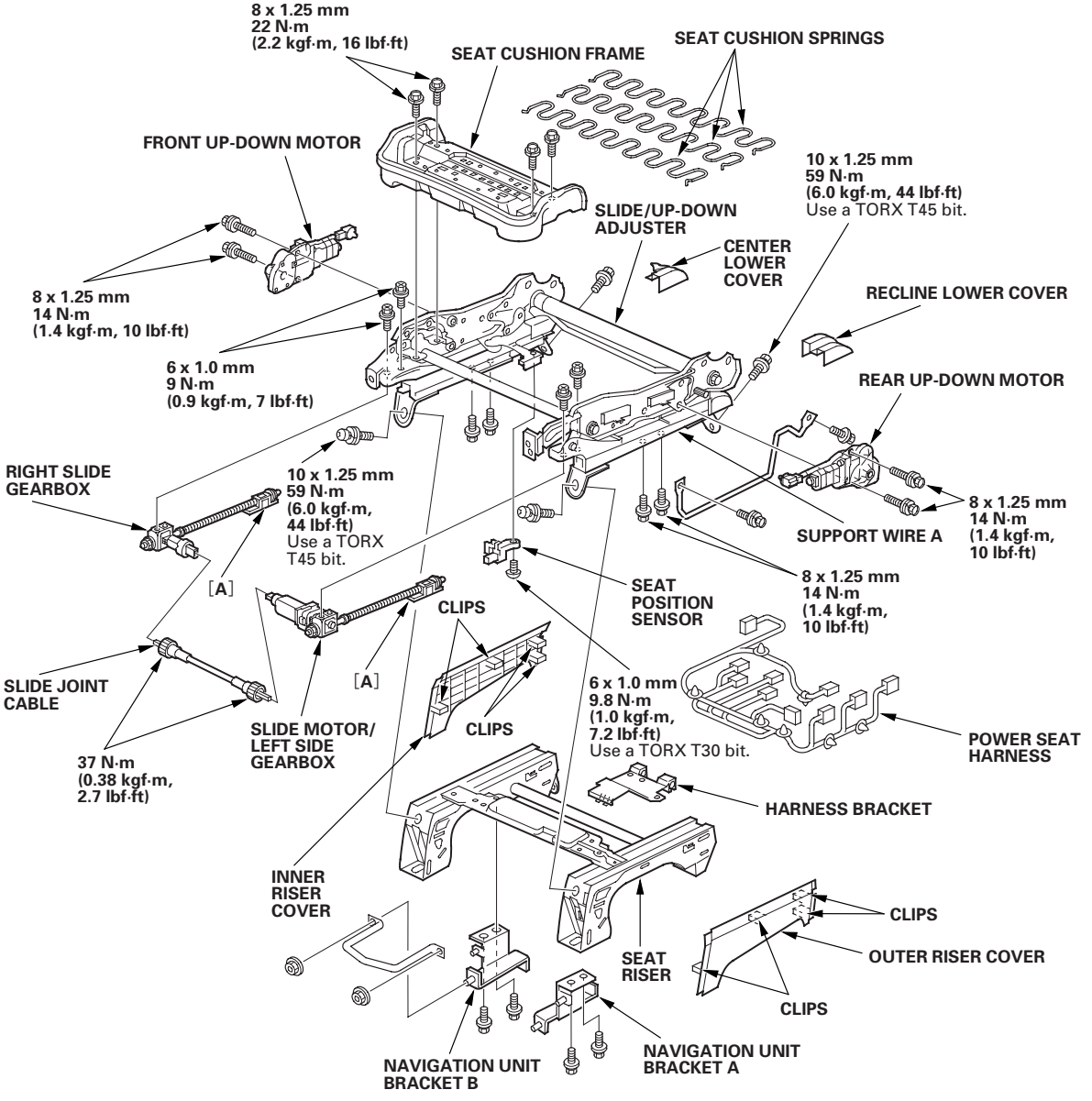
NOTE:
- Put on gloves to protect your hands.
- To remove the slide motor and slide gearbox, slide the front seat forward fully.
- Before installing the slide motor and slide gearbox, align portion (A) as shown to align both slide gearbox positions.
- Apply multipurpose grease to the sliding and pivot portions.
- Check operation of the recline adjuster and slide/up-down adjuster.



’07-08 models

- The operation of the driver’s seat position sensor must be checked after any of these actions (see page 24-33):
  – Driver’s seat position sensor replacement
  – Cover plate (front side of driver’s seat slide rail) replacement

NOTE:
- Put on gloves to protect your hands.
- To remove the slide motor and slide gearbox, slide the front seat forward fully.
- Before installing the slide motor and slide gearbox, align portion (A) as shown to align both slide gearbox positions.
- Apply multipurpose grease to the sliding and pivot portions.
- Check operation of the recline adjuster and slide/up-down adjuster.



Front Seat Lumbar Support Replacement

For Some Models (Driver's seat)

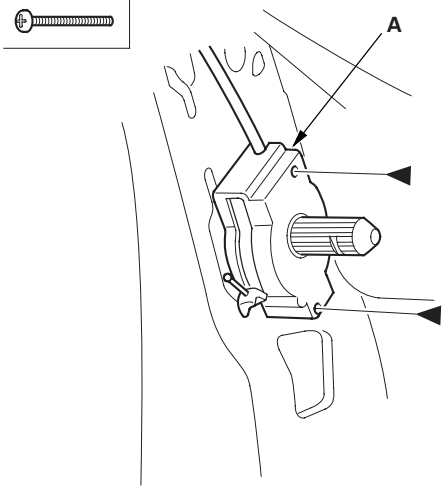
SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

NOTE:
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to bend the cable.
- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.

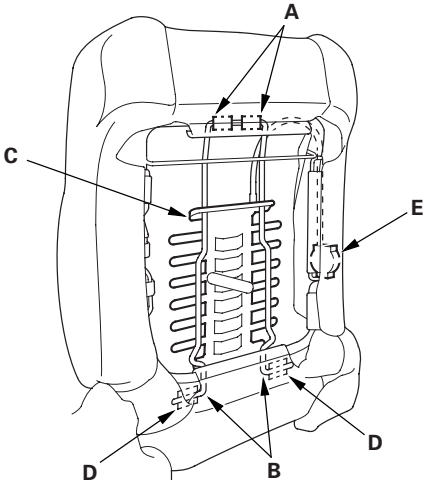
1. Remove these items:
   - Lumbar support knob (see step 4 on page 20-111)
   - Back panel (see step 5 on page 20-112)
2. Release the hook strips on the inside of the seat-back (see step 6 on page 20-112).
3. Remove the screws securing the lumbar support actuator (A).

Fastener Locations

▶ : **Screw, 2**



4. Remove the metal clamps (A) and release the wire (B) of the lumber support (C) from the retainers (D), then remove the lumbar support and lumbar support actuator (E) as an assembly.



5. Install the lumbar support in the reverse order of removal, and note these items:
   - To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the hook strips.
   - Replace the back panel clips with new ones.
   - Replace the metal clips with new ones.

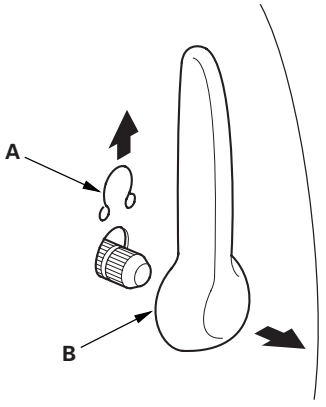
Front Seat-back Cover Replacement

Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

NOTE:
- Seats with a side airbag have a ''SIDE AIRBAG'' label on the seat-back. Because the component parts (seat-back cover, cushion, etc.) of seats with and without airbags are different, make sure you install only the correct replacement parts.
- Do not repair any tears or frayed spots of the seat-back cover. If necessary, replace the seat-back cover.
- Take care not to tear the seams or damage the seat covers.
- On the passenger's seat, do not touch the OPDS sensor in the seat-back pad, and keep it away from oil. Oil can corrode the sensor causing it to fail.
- Put on gloves to protect your hands.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Remove the front seat (see page 20-97).
2. Remove the seat-back (see page 20-99).
3. Remove the head restraint.
4. If equipped, remove the clip (A), then remove the lumbar support handle (B).



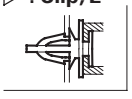
(cont'd)

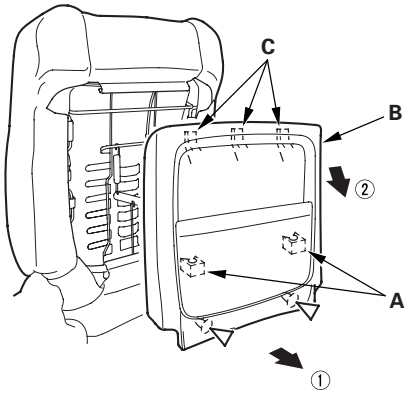
Front Seat-back Cover Replacement (cont'd)

5. Detach the clips and hooks (A) by pulling the bottom of the back panel (B) back, then gently pull down the panel to release the hooks (C) from the seat-back frame, and remove the panel.

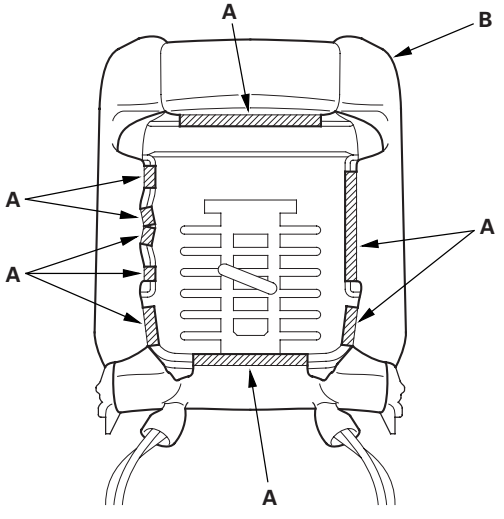
Fastener Locations

▷ : **Clip, 2**



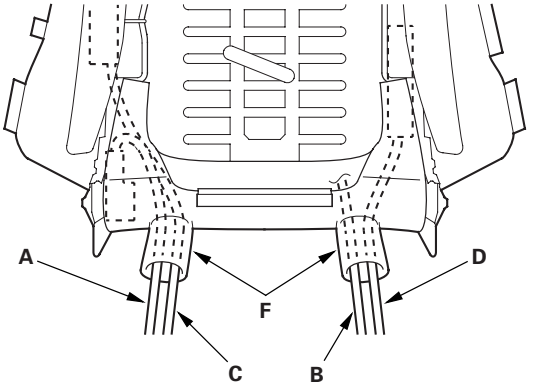


6. Release the hook strips (A), then loosen the seat-back cover (B).

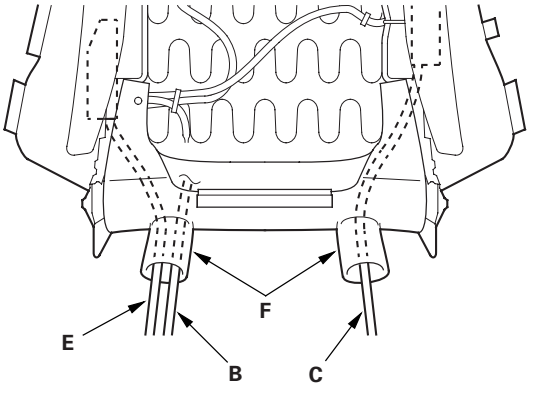


7. Pull the recline motor subharness (A) (some driver's seats), seat-back heater harness (B) (some driver's seats), side airbag harness (C), lumbar support motor harness (D) (some driver's seats), and the OPDS/ODS harness (E) (passenger's seat) out through the harness guides (F).

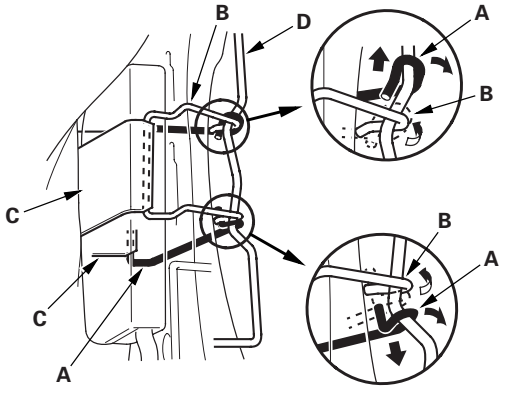
Driver's seat-back



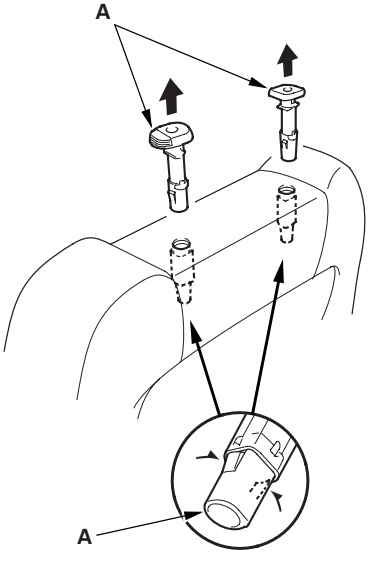
Passenger's seat-back



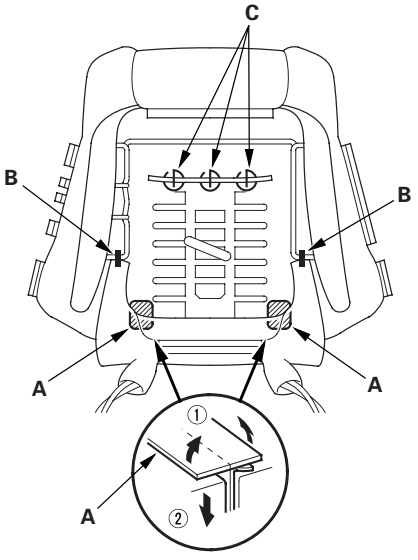
8. Release the front hook (A) and rear hook (B) of the reinforcing cloth (C) from seat-back frame (D).



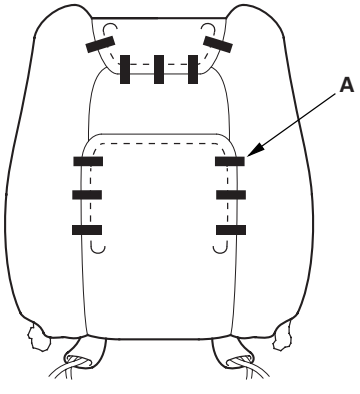
9. Pinch the tabs on the ends of the head restraint guides (A), and remove them from the seat-back.



10. From the back of the seat-back, pass both lower retainers (A) through the slots in the seat-back pad, and release the clips (B) and inside springs (C).



11. Pull back the edge of the seat-back cover all the way around, and release the clips (A), then remove the seat-back cover.

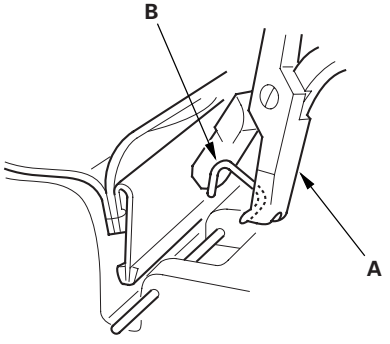


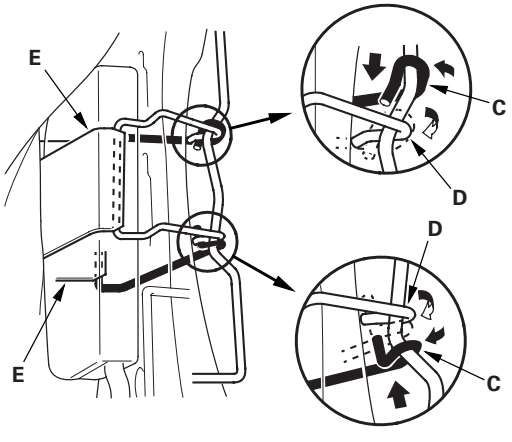
(cont'd)

Front Seat-back Cover Replacement (cont'd)

12. Install the cover in the reverse order of removal, and note these items:

    - Reinitialize the OPDS/ODS unit (see page 24-30).
    - To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the clips, hooks, and hook strips.
    - Using commercially available upholstery ring pliers (A), replace all of the clips you removed with new ones (B).
    - Reinstall the front hook (C) and rear hook (D) of the reinforcing cloth (E) securely.
    - Use only original Honda replacement seat-back covers.
    - If equipped, make sure the recline motor harness, side airbag harness, seat-back heater harness, and OPDS/ODS unit harness (passenger's seat) are routed properly.





Front Seat Cushion Cover Replacement

Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to tear the seams of damage the seat covers.
- Put on gloves to protect your hands.

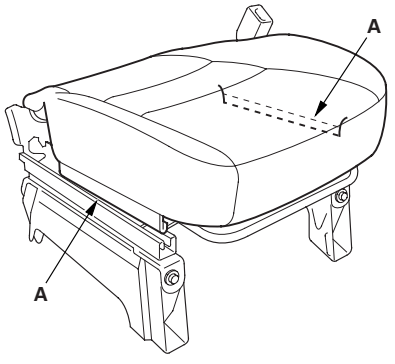
1. Remove the front seat (see page 20-97).

2. Remove the seat-back (see page 20-99).

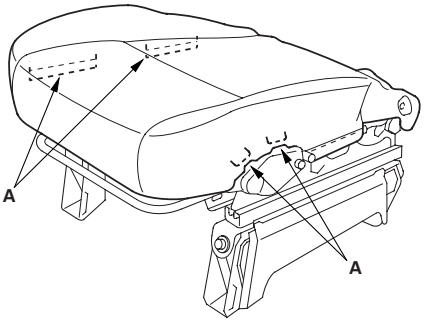
3. From under the seat cushion, disconnect the seat cushion heater connector, and detach the seat cushion heater connector clip on the manual seat.

4. Release the hook strips (A) from both sides of the seat cushion.

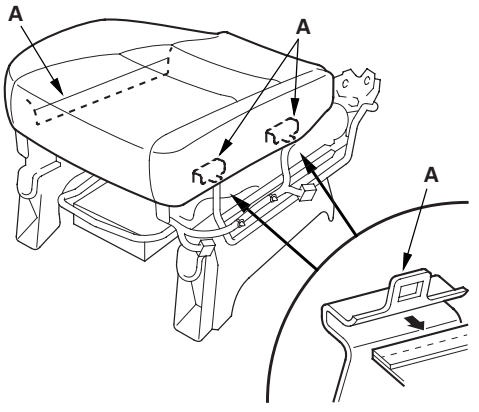
Passenger's manual seat



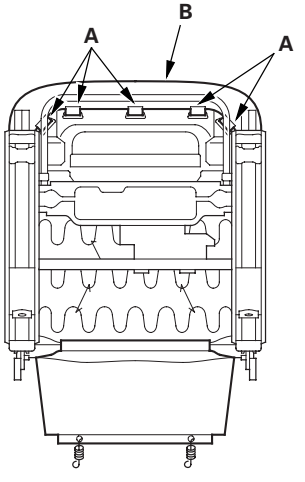
Driver's manual height adjustable seat



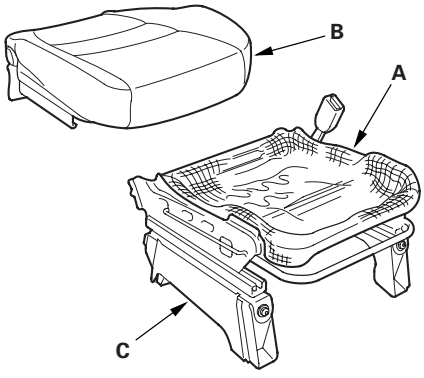
Driver's 10-way power seat



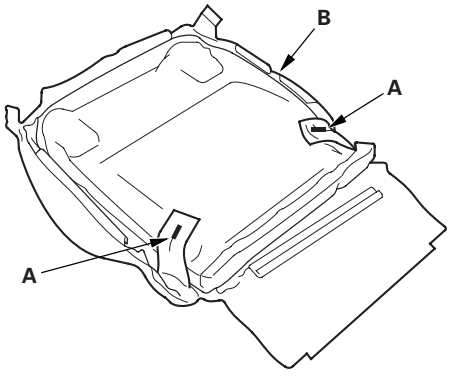
5. Release the hooks (A) from under the seat cushion (B).



6. Remove the silencer (A) and seat cushion pad (B) from the seat cushion frame (C).



7. Release the clips (A) from under the seat cushion (B).

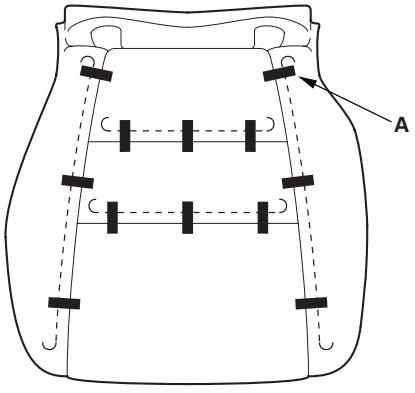


(cont'd)

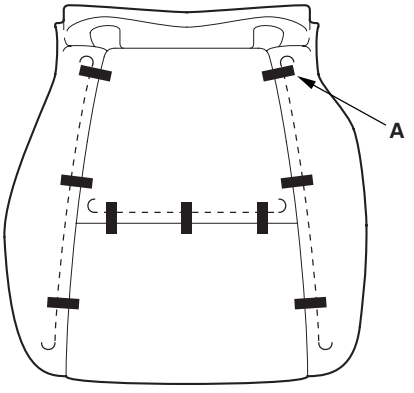
Front Seat Cushion Cover Replacement (cont'd)

8. Pull back the edge of the seat cushion cover all the way around, and release the clips (A), then remove the seat cushion cover.

Leather seat

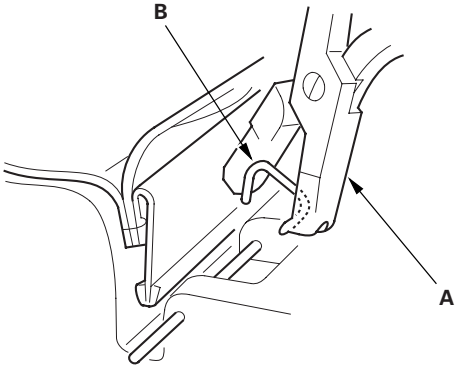


Fabric seat



9. Install the cover in the reverse order of removal, and note these items:

- To prevent wrinkles when installing a seat cushion cover, make sure the material is stretched evenly over the pad before securing the clips and hook strips.
- Using commercially available upholstery ring pliers (A), replace all of the clips you removed with new ones (B).



Rear Seat Removal/Installation

Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

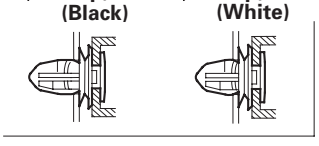
NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Have an assistant help you when removing and installing the rear seat.
- Take care not to scratch the trim and panels or tear the seat covers.
- Put on gloves to protect your hands.

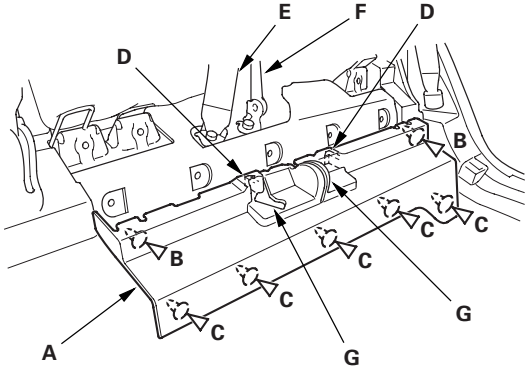
Rear Seat Assembly Removal/Installation

1. Remove the left rear under-seat trim panel (A).

   –1 Detach the clips (B, C) and hooks (D).
   –2 Release the rear center seat belt (E) and left seat belt buckle (F) through the slits (G) in the trim panel.

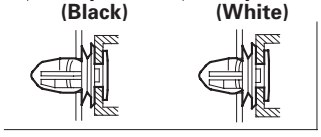
Fastener Locations
B ▷: Clip, 2 (Black) **C ▷: Clip, 5 (White)**

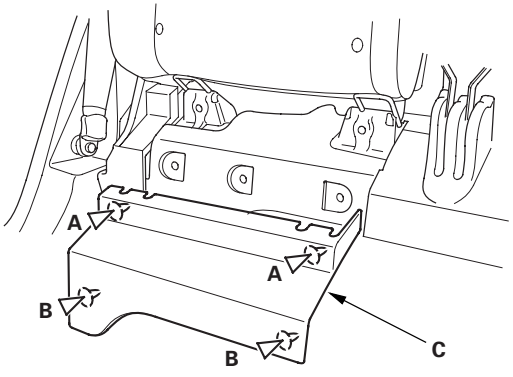




2. Detach the clips (A, B), then remove the right rear under-seat trim panel (C).

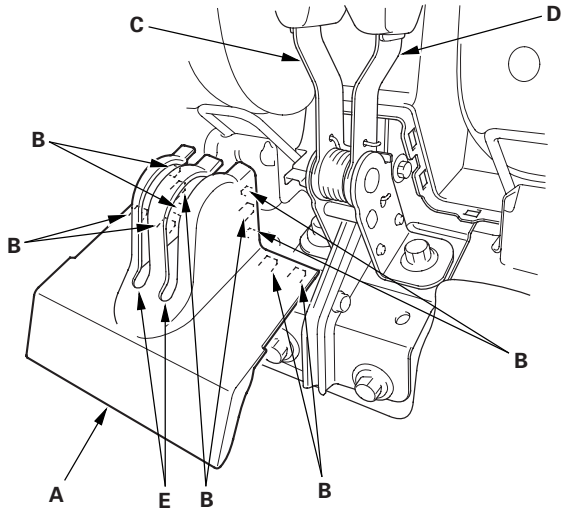
Fastener Locations
A ▷: Clip, 2 (Black) **B ▷: Clip, 2 (White)**





3. Remove the lower middle rear seat mount cover (A).

   –1 Detach the hooks (B).
   –2 Release the right rear seat belt buckle (C) and center seat belt buckle (D) through the slits (E) in the cover.



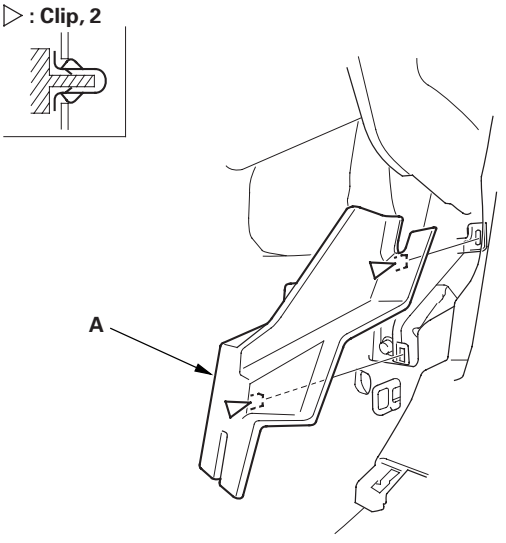
(cont'd)

Rear Seat Removal/Installation (cont'd)

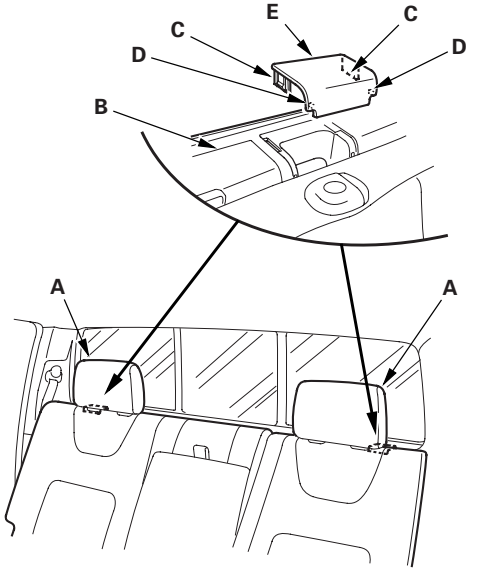
4. From both sides, pull out the rear seat mount covers (A) to detach the clips, then remove the covers.

Fastener Locations

▷ : **Clip, 2**



5. Remove the head restraint (A). From both sides of the rear trim panel (B), detach the hooks (C) and tabs (D), then remove the caps (E).



6. Remove the right rear seat belt buckle and center seat belt buckle (see page 24-11).

7. Remove the center seat belt lower anchor bolt (see step 2 on page 24-9) and left rear seat belt buckle (see page 24-11).

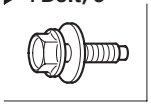
8. Pull out the center seat belt through the gap between the rear seat-back and rear seat cushion (see step 3 on page 24-9).

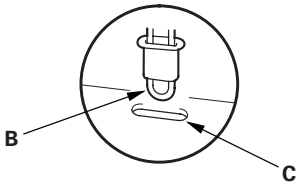
9. Remove the rear seat assembly (A).

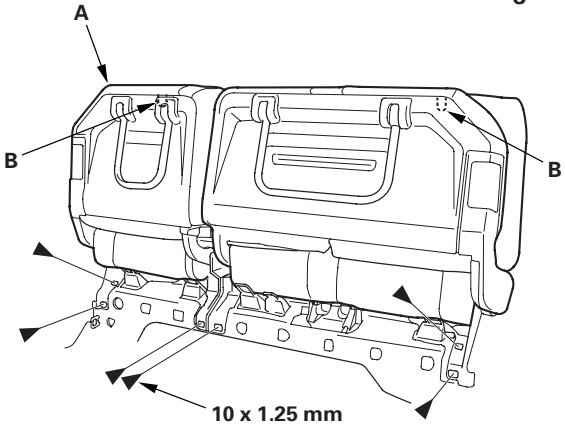
–1 Remove the bolts.
–2 Lift the seat assembly up to release the hooks (B) from the holes (C) on the body, then remove the seat assembly.

Fastener Locations

▶ : **Bolt, 6**





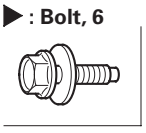


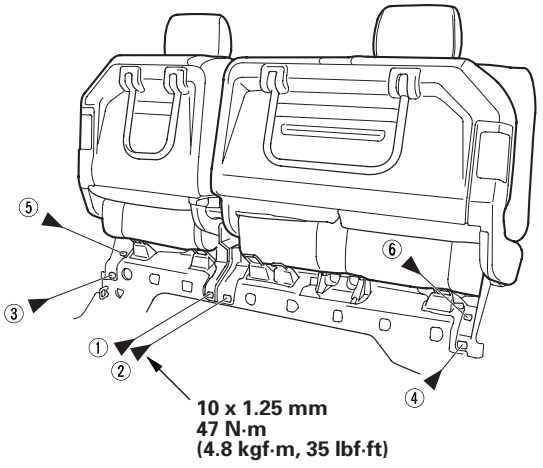
10. Install the seat in the reverse order of removal, and note these items:

    - Before installing the anchor bolt, make sure there are no twists or kinks in the center seat belt.
    - Tighten the seat mounting bolts to the specified torque in the sequence shown.
    - Replace any damaged cover clips.

Fastener Locations

▶ : Bolt, 6





Rear Seat-back Removal/Installation

1. Remove these items:

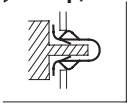
    - Left rear under-seat trim panel
    - Right rear under-seat trim panel
    - Lower middle rear seat mount cover
    - Rear seat mount covers, both sides

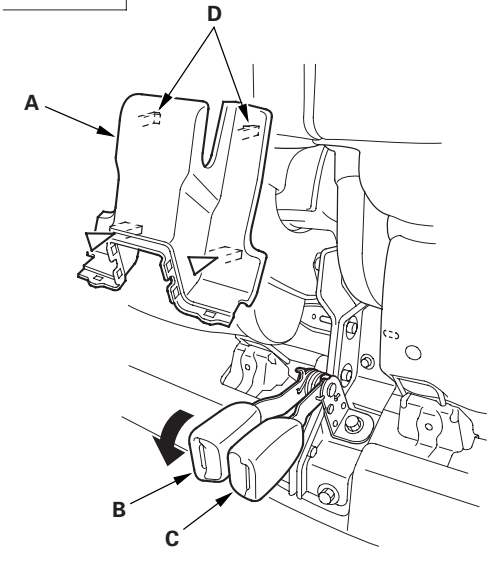
2. Remove the upper middle rear seat mount cover (A).

    1. Fold the right rear seat belt buckle (B) and center seat belt buckle (C) down, and hold them.
    2. Detach the clips, and release the hooks (D).

Fastener Locations

▷ : Clip, 2





3. Remove the caps from both sides of the rear trim panel.

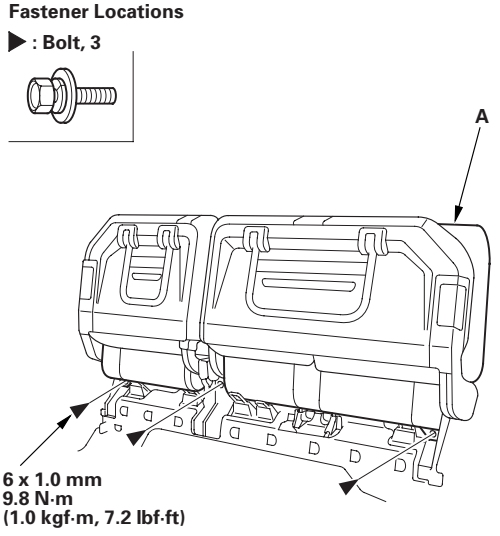
4. Remove the center seat belt lower anchor bolt (see step 2 on page 24-9).

5. Pull out the center seat belt through the gap between the rear seat-back and rear seat cushion (see step 3 on page 24-9).

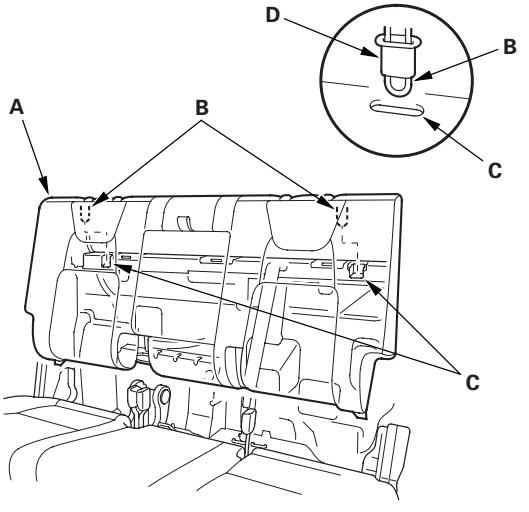
(cont'd)

Rear Seat Removal/Installation (cont'd)

6. Remove the bolts securing the rear seat-back (A).



7. Lift the seat-back (A) up to release the hooks (B) from the holes (C) on the body, then remove the seat-back.

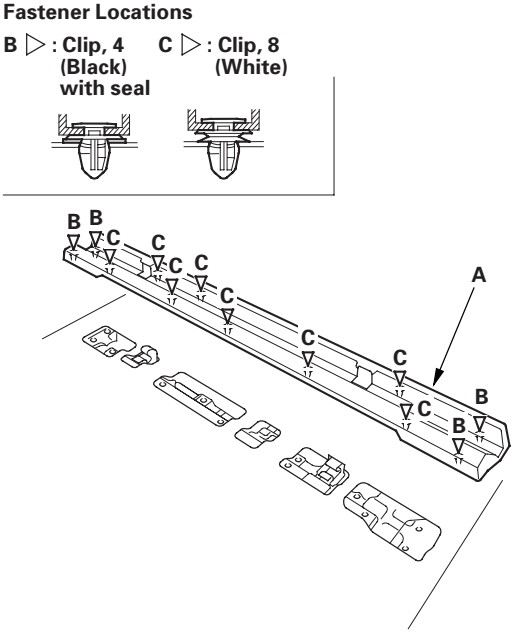


8. Install the seat-back in the reverse order of removal, and note these items:

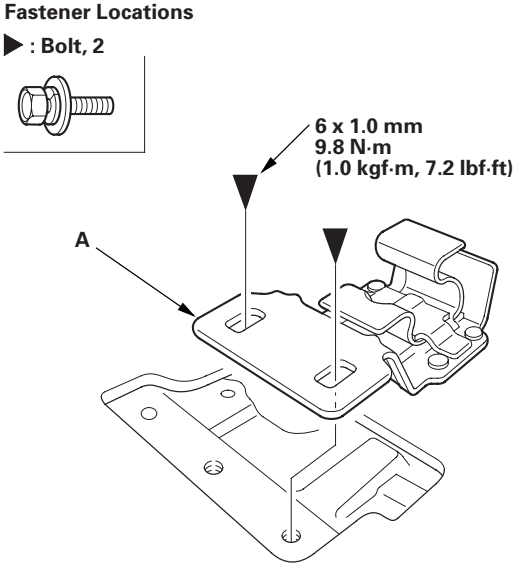
   - Before installing the anchor bolt, make sure there are no twists or kinks in the center seat belt.
   - Replace any damaged cover clips.
   - Check for missing or displaced seat collars (D) between the seat-back hooks (B) and the body (C) as shown, and replace damaged or missing seat collars.

Rear Seat Leg Guide Replacement

1. Pull the seat leg guide cover (A) up to detach the clips (B, C), then remove it.

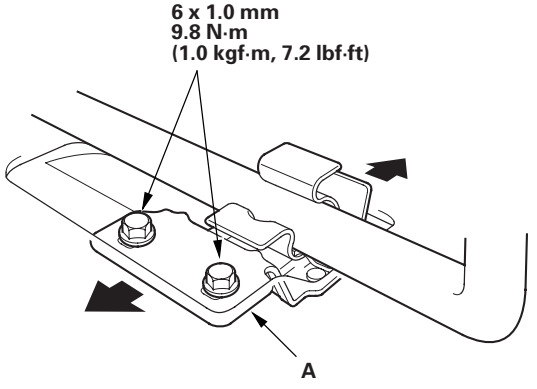


2. Remove the bolts, then remove the seat leg guide (A).



3. Install the leg guide in the reverse order of removal, and note these items:

   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Before reinstalling the leg guide cover, adjust the seat leg guide (A) position.
   - Push the clips into place securely.

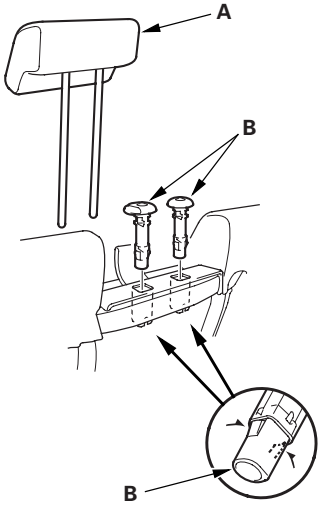


Rear Seat Armrest Replacement

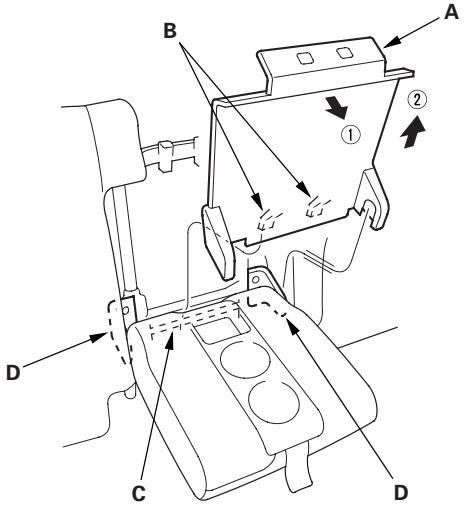
NOTE:
- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.

1. Remove the rear seat-back (see page 20-119).

2. Remove the center head restraint (A). Pinch the tabs on the ends of the head restraint guides (B), and remove them from the seat-back.



3. Pull out the top of the armrest board (A), and then pull it up to release the hooks (B) from the frame wire (C) and to release the board from the armrest pivot brackets (D).



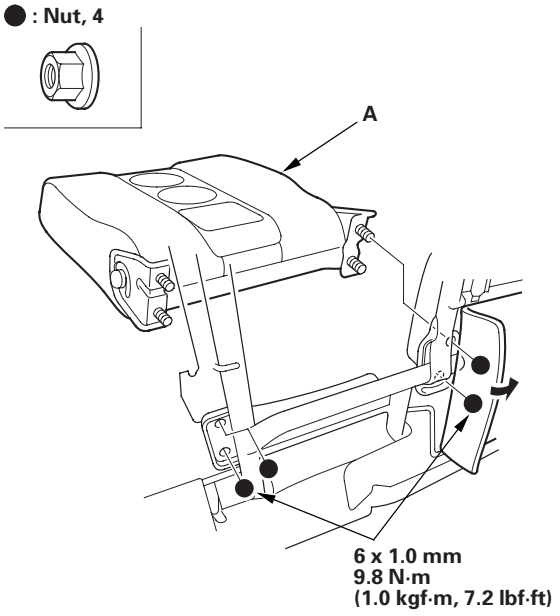
(cont'd)

Rear Seat Armrest Replacement (cont'd)

4. Remove the nuts, then remove the armrest (A).

Fastener Locations

● : Nut, 4



5. Install the armrest in the reverse order of removal, and make sure the armrest board hooks are installed securely.

Rear Seat Armrest Beverage Holder Replacement

Special Tools Required

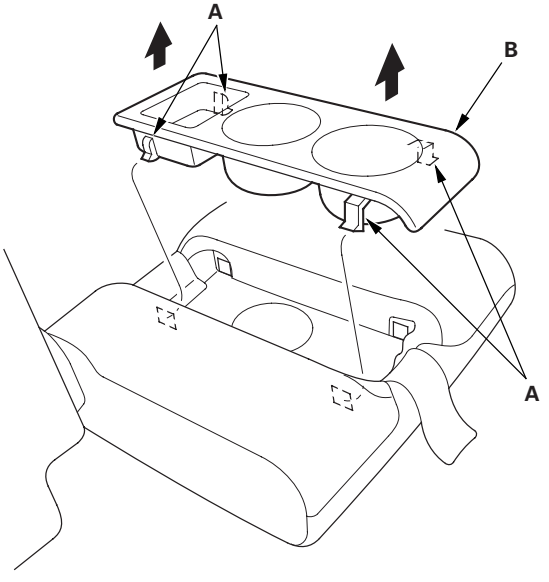
KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

- Take care not to tear the seams or damage the seat covers.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Using a trim tool, detach the hooks (A), then remove the armrest beverage holder (B).



2. Install the beverage holder by pushing on the hook portions until the hooks snap into place securely.

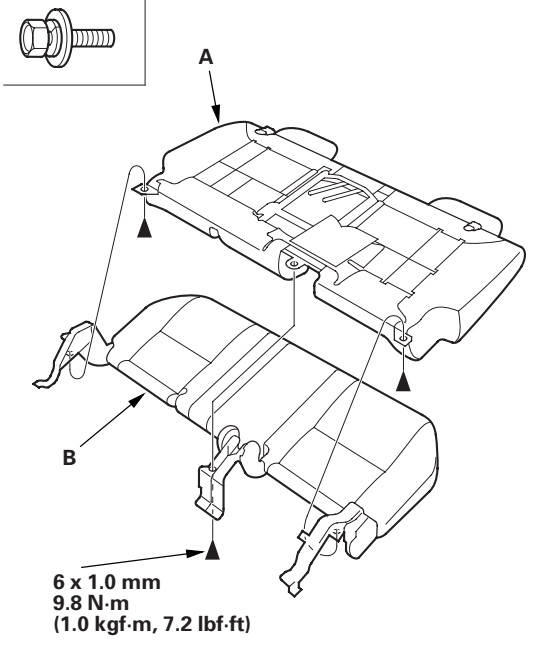
Rear Seat Cushion Disassembly/Reassembly

Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:
- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

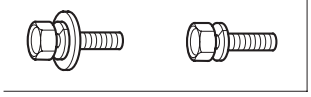
1. Remove the bolts, then separate the rear seat-back (A) and rear seat cushion (B).

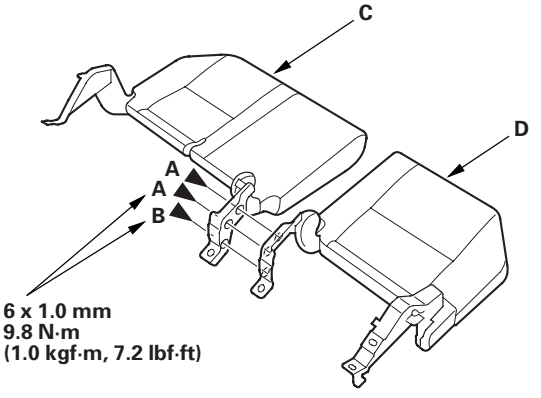
Fastener Locations
▶ : Bolt, 3



2. Remove the bolts (A, B), then separate the left seat-back (C) and right seat-back (D).

Fastener Locations
A ▶ : Bolt, 2 B ▶ : Bolt, 1

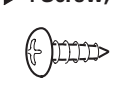


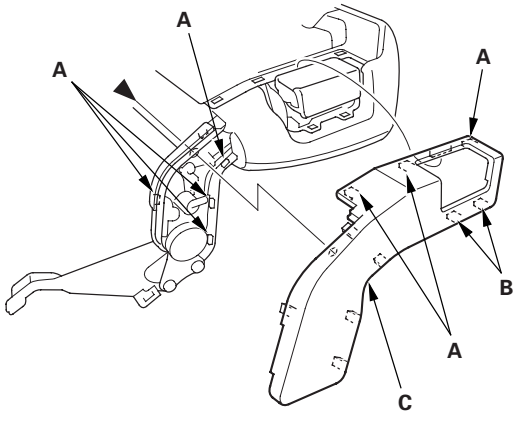


3. Remove the screw. Release the tabs (A) and hooks (B), then remove the recline outer cover (C).

NOTE: The left seat cushion is shown; the right seat cushion is similar.

Fastener Location
▶ : Screw, 1





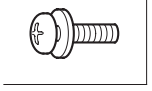
(cont'd)

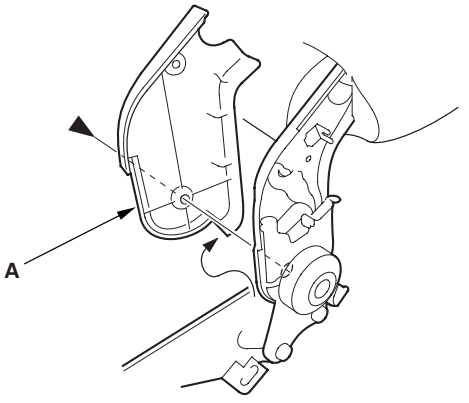
Rear Seat Cushion Disassembly/Reassembly (cont'd)

4. Remove the screw, then remove the recline inner cover (A).

Fastener Location

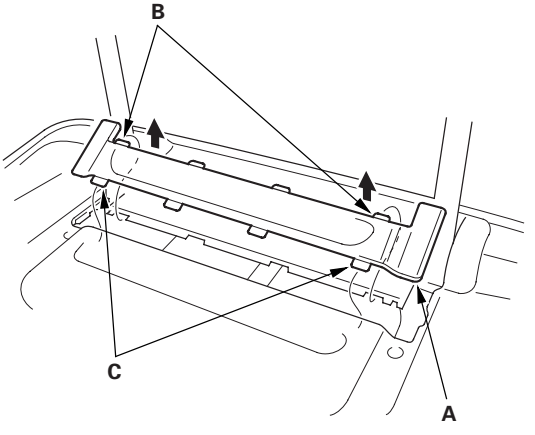
▶ : Screw, 1



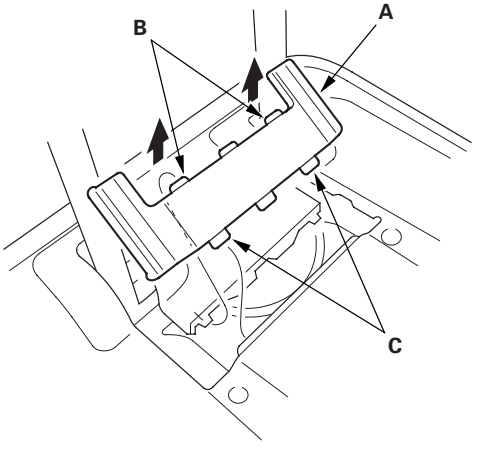


5. Pull back the rear seat cushion under-cover trim (A) to release the hooks (B), and release the hooks (C), then remove it.

Left seat cushion



Right seat cushion



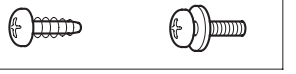
6. Remove the rear seat cushion under-cover (A).

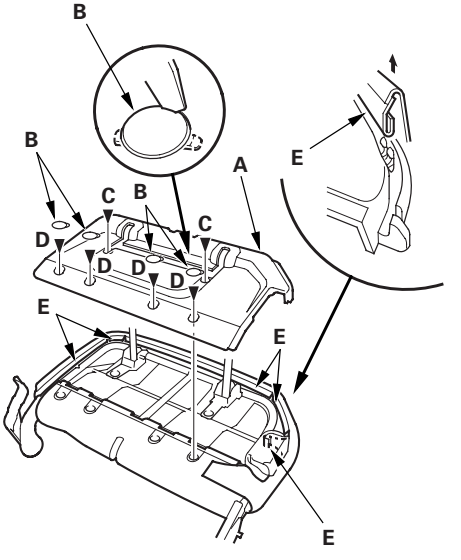
–1 Using a trim tool, remove the caps (B).
–2 Remove the screws (C, D).
–3 Release the hook strips (E) of the seat cushion cover from the under-cover.

Left seat cushion

Fastener Locations

C ▶ : Screw, 2 D ▶ : Screw, 4

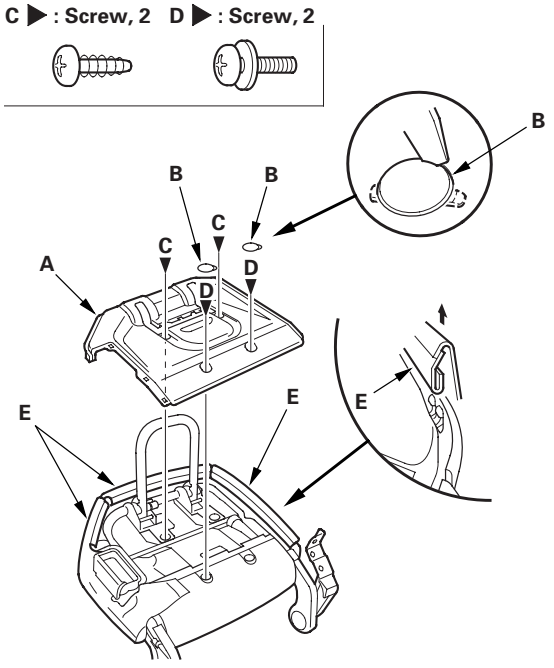




Right seat cushion

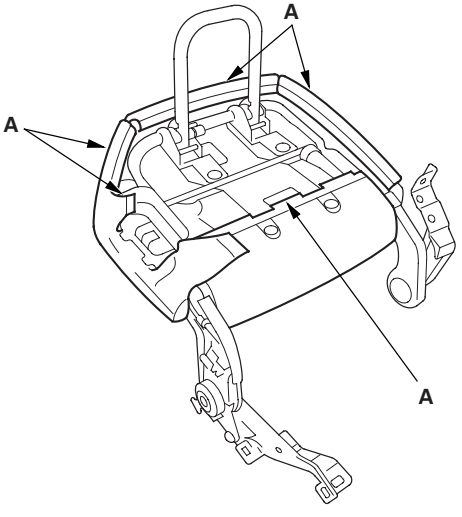
Fastener Locations

C ▶ : Screw, 2 D ▶ : Screw, 2

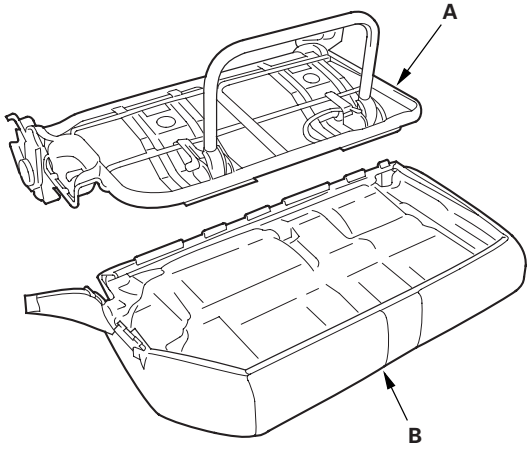


7. Remove the rear seat cushion handle (see page 20-126).

8. Release the hooks (A) securing the seat cushion cover.



9. Separate the seat cushion frame (A) and seat cushion cover/pad (B).



10. Assemble the seat cushion in the reverse order of disassembly, and note these items:

    - To prevent wrinkles in the seat cushion cover, stretch the material evenly over the pad.
    - Push each cover hooks and tabs into place securely.

Rear Seat Cushion Handle Replacement

Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:
- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- The left seat cushion is shown; the right seat cushion is similar.

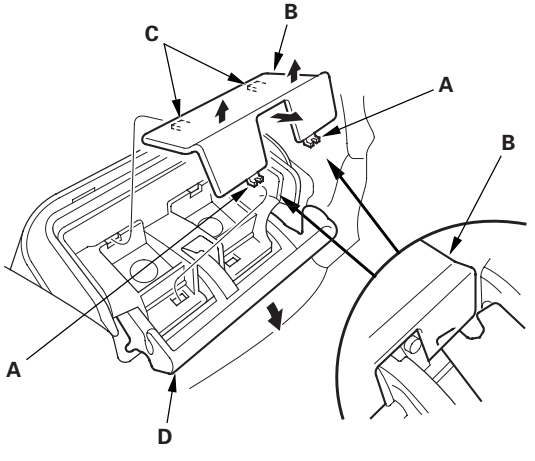
1. Remove the rear seat assembly (see page 20-117).

2. Remove the seat cushion (see page 20-123).

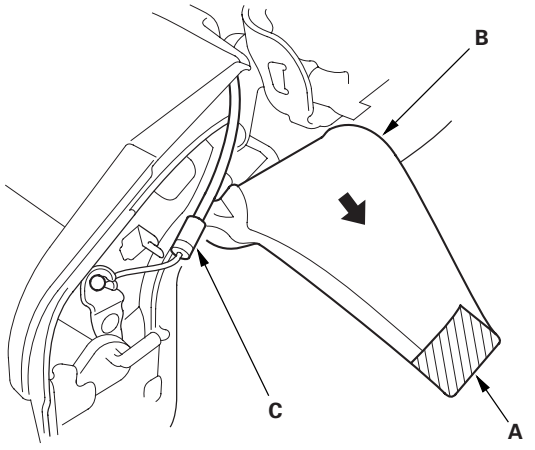
3. Remove these items:

   - Recline outer cover (see step 3 on page 20-123)
   - Rear seat cushion under-cover trim (see step 5 on page 20-124)
   - Rear seat cushion under-cover (see step 6 on page 20-124)

4. Using a trim tool, release the hooks (A), and pull out the handle cover (B) to release the hooks (C), then remove the cover from the rear seat cushion handle (D).

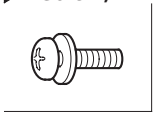


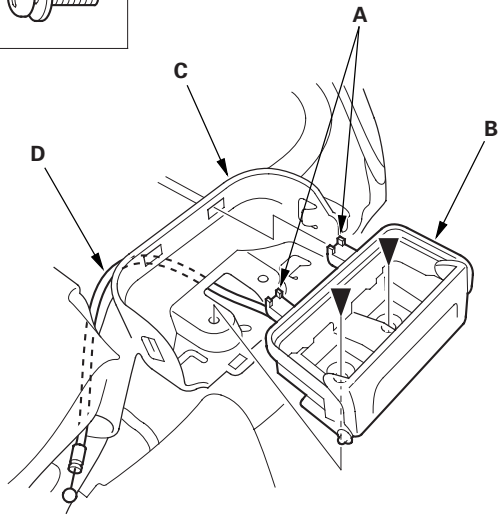
5. Release the Velcro fastener (A), then pull back the seat cushion cover (B). Disconnect the handle cable (C).



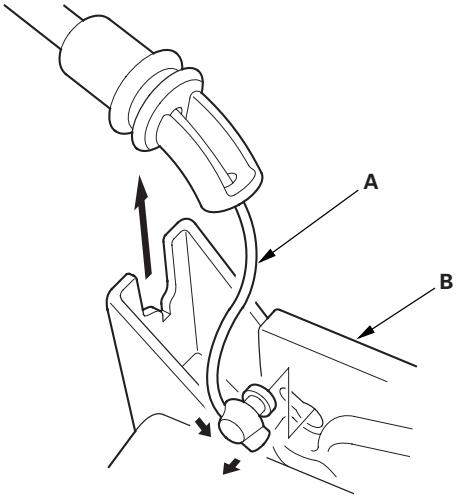
6. Remove the screws, and release the hooks (A), then remove the handle (B) from the cushion frame (C) by pulling out the cable (D) through the hole in the cushion frame.

Fastener Locations
▶ : Screw, 2





7. Disconnect the handle cable (A) from the handle (B).



8. Install the handle in the reverse order of removal, and note these items:

   - Make sure the handle cable is connected securely.
   - Check the seat cushion tip-up operation.

Rear Seat Cushion Pivot Cable Replacement

Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:
- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- The left seat cushion is shown; the right seat cushion is similar.

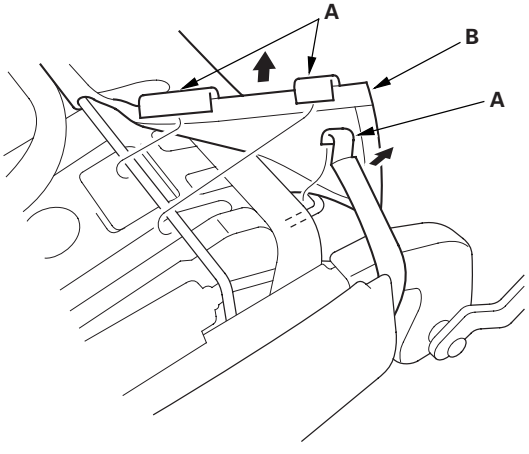
1. Remove the rear seat assembly (see page 20-117).

2. Remove the seat cushion (see page 20-123).

3. Remove these items:

   - Recline outer cover (see step 3 on page 20-123)
   - Rear seat cushion under-cover trim (see step 5 on page 20-124)
   - Rear seat cushion under-cover (see step 6 on page 20-124)

4. Release the hooks (A), and pull back the seat cushion cover (B).



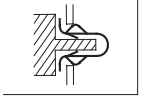
(cont'd)

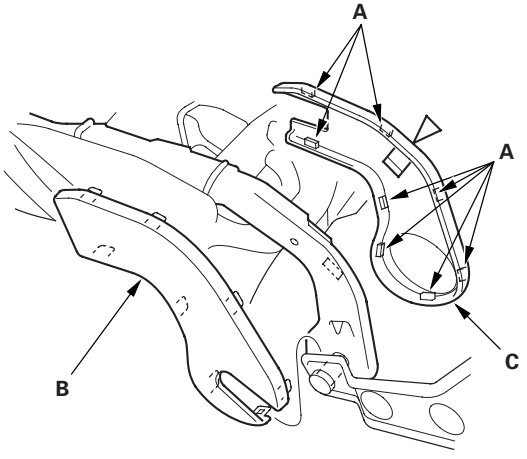
Rear Seat Cushion Pivot Cable Replacement (cont'd)

5. Release the tabs (A) and clip, then remove the pivot outer cover (B) and pivot inner cover (C).

Fastener Location

▷ : **Clip, 1**



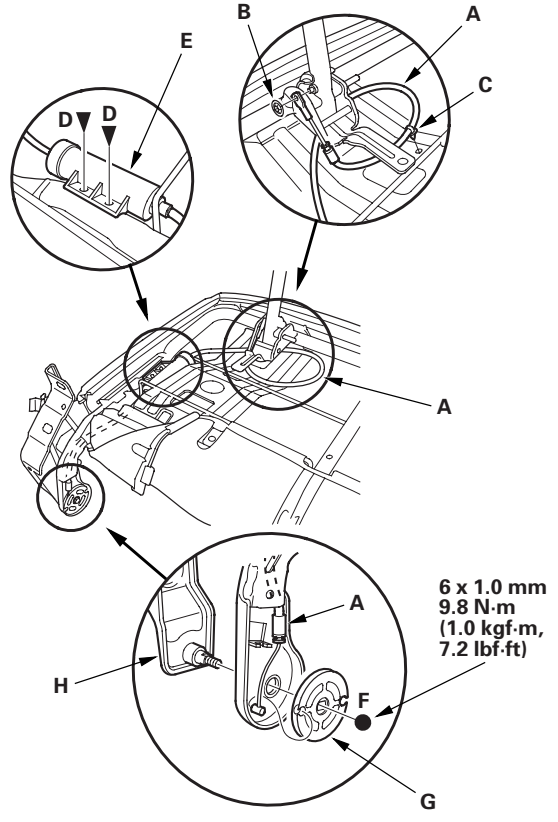


6. Remove the rear seat cushion pivot cable (A).

–1 Remove the lock washer (B), then disconnect the cable, and detach the cable clip (C).
–2 Remove the screws (D), then remove the cable joint (E).
–3 Remove the nut (F), then remove the cable guide (G) and inner mounting bracket (H), and disconnect the cable from the cable guide.

Fastener Locations

D ▶ : **Screw, 2** F ● : **Nut, 1**



7. Install the pivot cable in the reverse order of removal, and note these items:

- Make sure the pivot cable is connected securely.
- Replace the lock washer with new one.

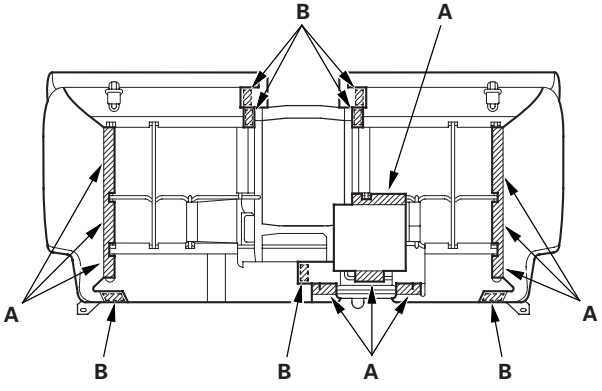
Rear Seat-back Cover Replacement

NOTE:
- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.

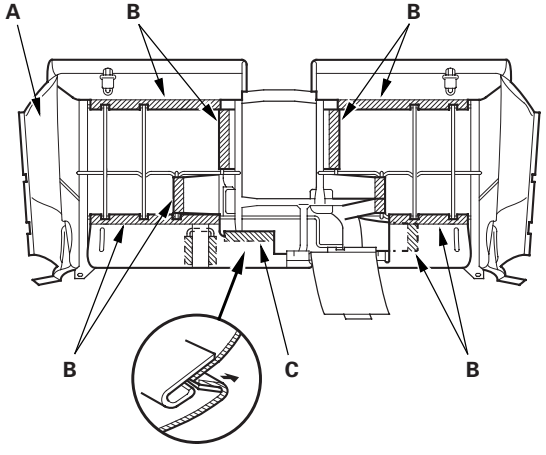
1. Remove the seat-back (see page 20-119).

2. Remove the armrest (see page 20-121).

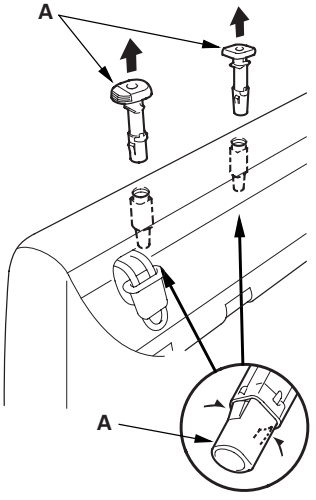
3. Release the hook strips (A) and fasteners (B).



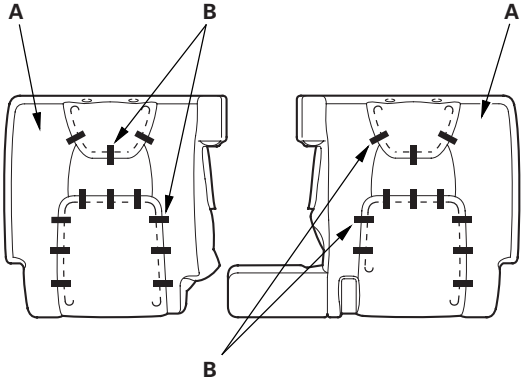
4. Pull back the edge of the seat-back cover (A), then release the hook strips (B, C).



5. Pull out the head restraint guides (A) while pinching the tabs on the end of the guides, and remove them.



6. Pull back the edge of the seat-back cover (A) all the way around, and release the clips (B), then remove the seat-back cover.



7. Install the cover in the reverse order of removal, and note these items:

   - To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the hook strips and clips.
   - Replace any clips you removed with new ones. Install them with commercially available upholstery ring pliers.

Rear Seat Cushion Cover Replacement

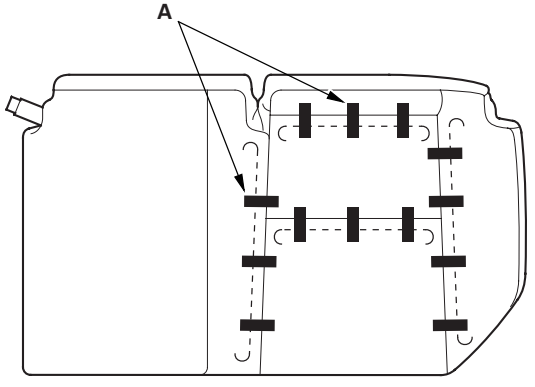
NOTE:
- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.

1. Remove the rear seat assembly (see page 20-117).

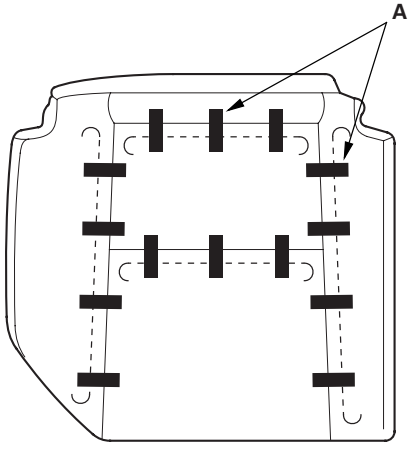
2. Remove the seat cushion cover/pad from the seat cushion frame (see page 20-123).

3. Pull back the edge of the seat cushion cover all the way around, and release the clips (A), then remove the seat cushion cover.

Left seat cushion cover

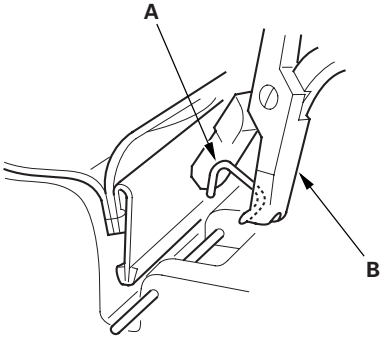


Right seat cushion cover



4. Install the cover in the reverse order of removal, and note these items:

   - To prevent wrinkles, make sure the material is stretched evenly over the pad before securing the clips.
   - Replace any clips (A) you removed with new ones. Install them with commercially available upholstery ring pliers (B).



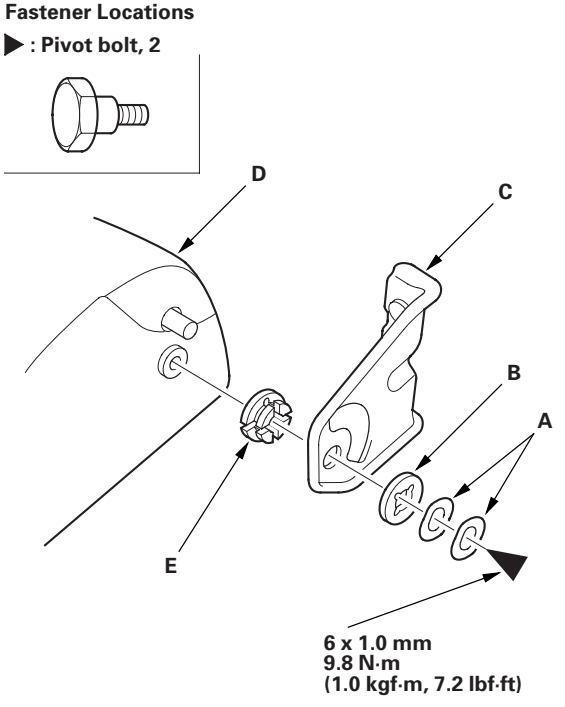
Rear Seat Armrest Cover Replacement

NOTE: Take care not to tear the seams or damage the seat covers.

1. Remove the armrest from the seat-back (see page 20-121).

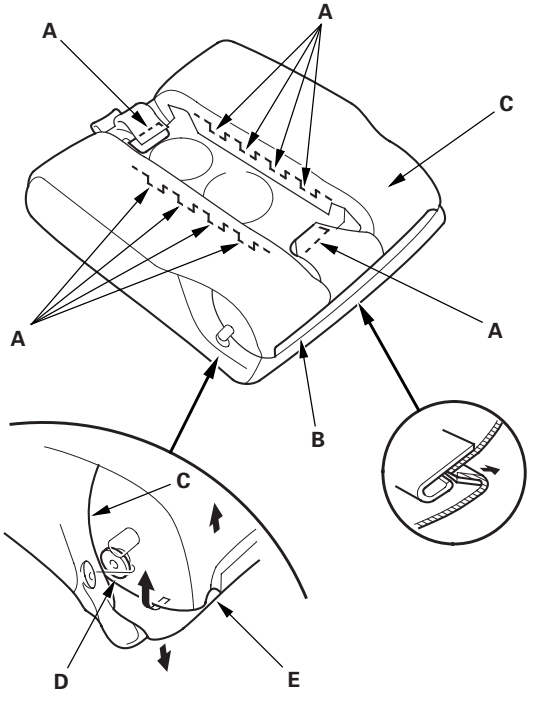
2. Remove the armrest beverage holder from the armrest (see page 20-122).

3. Using a 17 mm socket wrench, remove the pivot bolts, then remove the wave washers (A), washer (B), and pivot brackets (C) from both sides of the armrest (D).



4. If necessary, remove the collars (E) from the pivot brackets.

5. Release the hooks (A) and hook strip (B), and pull back the armrest cover (C) all the way around.



6. Release the armrest cover from the armrest pivot portions (D), then remove it from the pad (E).

7. Install the cover in the reverse order of removal, and to prevent wrinkles, make sure the material is stretched evenly over the pad before securing the hooks and hook strips.

Front Bumper Removal/Installation

NOTE:
- Have an assistant help you when removing and installing the front bumper.
- Take care not to scratch the front bumper and body.
- Put on gloves to protect your hands.

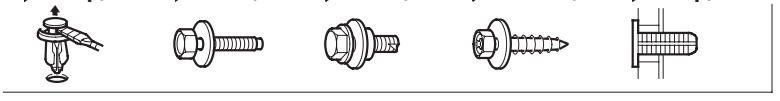
1. Remove the front bulkhead cover (see page 20-171).

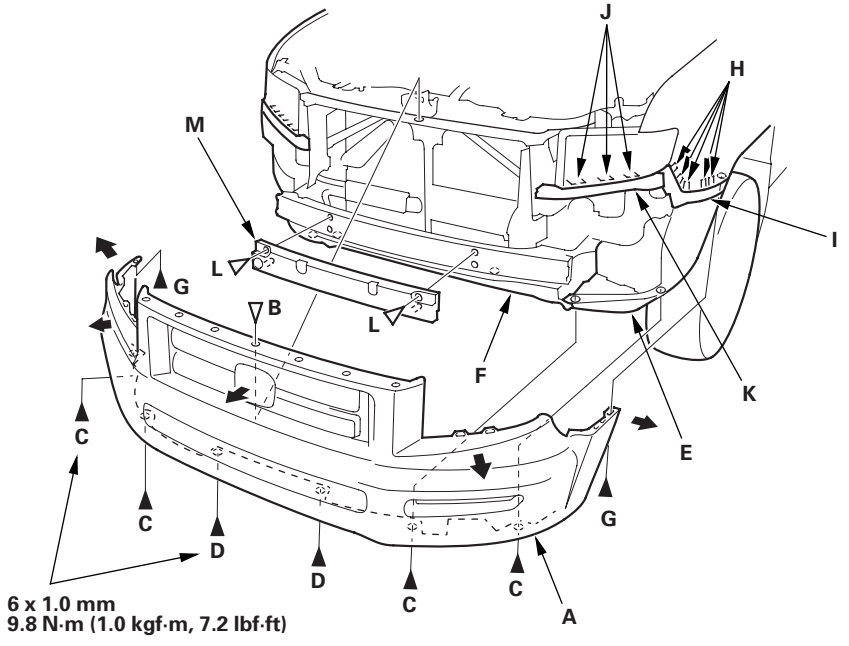
2. Remove the front bumper (A).

   1 Remove the clip (B).
   2 Remove the bolts (C, D) securing the front bumper, front inner fender (E), and splash shield (F).
   3 Remove the screws (G), then pull the wheel arch portions of the bumper outward to release the bumper from the hooks (H) on the side spacers (I).
   4 With the help of an assistant, pull the bumper forward to release the hooks (J) from both upper corner beams (K).
   5 Remove the clips (L), then remove the front bumper absorber (M).

Fastener Locations

B ▷ : Clip, 1 C ▶ : Bolt, 4 D ▶ : Bolt, 2 G ▶ : Screw, 2 L ▷ : Clip, 2





3. Install the bumper in the reverse order of removal, and note these items:

   - Make sure the front bumper engages the hooks (on both corner upper beams and side spacers) on each side securely.
   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Push the clips and hooks into place securely.

Rear Bumper Removal/Installation

NOTE:
- Have an assistant help you when removing and installing the rear bumper.
- Take care not to scratch the rear bumper and body.
- Put on gloves to protect your hands.

1. Remove these items:

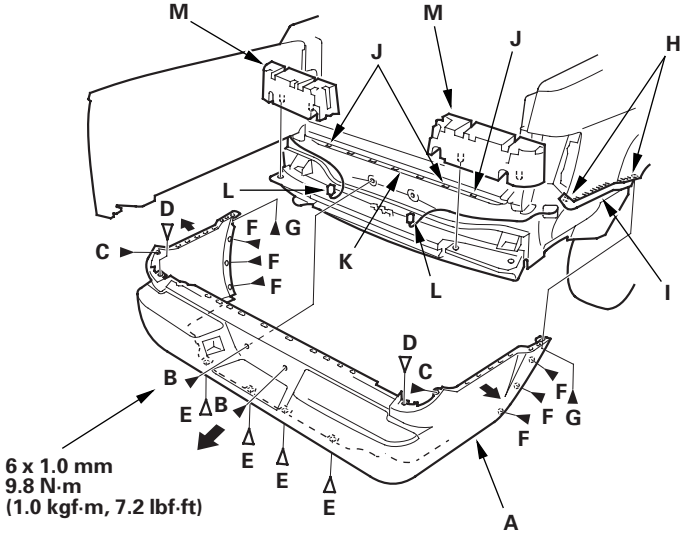
   - Taillight, both sides (see page 22-178)
   - Rear license plate

2. Remove the rear bumper (A).

   1. Remove the bolts (B).
   2. From the taillight areas, remove the screws (C) and clips (D).
   3. From under the bumper, remove the clips (E).
   4. Remove the screws (F, G), then pull the wheel arch portions of the bumper outward to release the bumper from the hooks (H) on the side spacers (I).
   5. With the help of an assistant, pull the bumper rearward to release the hooks (J) from the upper beams (K).
   6. Disconnect the rear license light connectors (L).
   7. Remove the rear bumper absorbers (M).

Fastener Locations

B ▶ : Bolt, 2 C, F ▶ : Screw, 8 D, E ▷ : Clip, 6 G ▶ : Screw, 2



3. Install the bumper in the reverse order of removal, and note these items:

   - Make sure the rear license light connectors are plugged in properly.
   - Make sure the rear bumper engages the hooks (on the upper beams and both side spacers) on each side securely.
   - Check if the clips are damaged or stress-whitened, if necessary, replace them with new ones.
   - Push the clips and hooks into place securely.

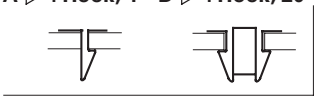
Rear Bumper Step Replacement

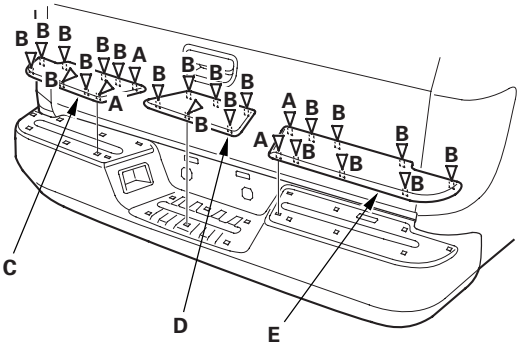
Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the bumper.

1. Using a trim tool, detach the hooks (A, B), then remove the left rear bumper step (C), center rear bumper step (D), and right rear bumper step (E).

Fastener Locations
A ▷: Hook, 4 B ▷: Hook, 20

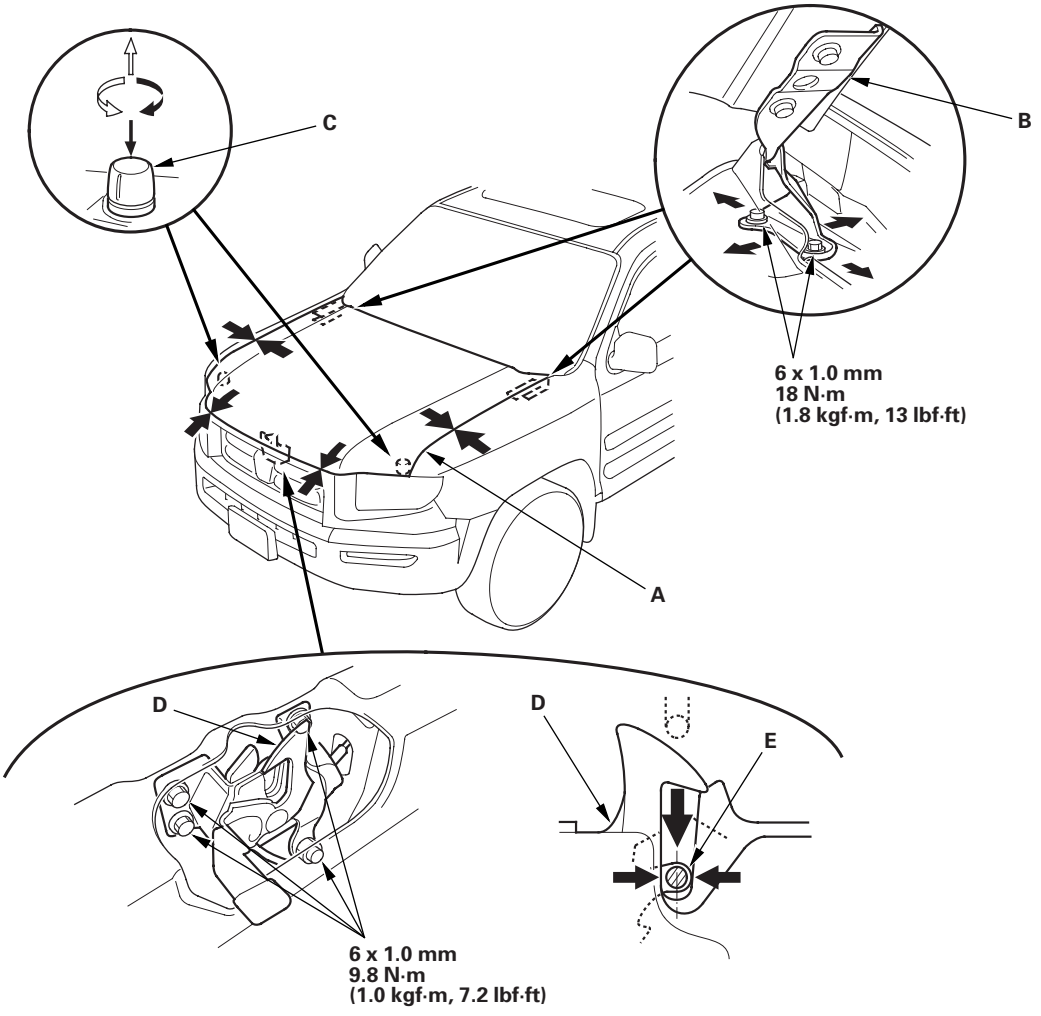




2. Install the bumper step by pushing on the hook portions until the hooks snap into place.

Hood Adjustment

1. Remove the front bulkhead cover (see page 20-171).
2. Slightly loosen each hood hinge bolt.
3. Adjust the hood alignment (A) in this sequence.
   - Adjust the hood right and left, as well as forward and rearward, by using the elongated holes in the hood hinges (B).
   - Turn the hood edge cushions (C), as necessary, to make the hood fit flush with the body at the front and side edges.



4. Adjust the hood latch (D) to obtain the proper height at the forward edge, and move the hood latch right or left until the striker (E) is centered in the hood latch.
5. Tighten the bolts to the specified torque, and recheck the hood alignment.

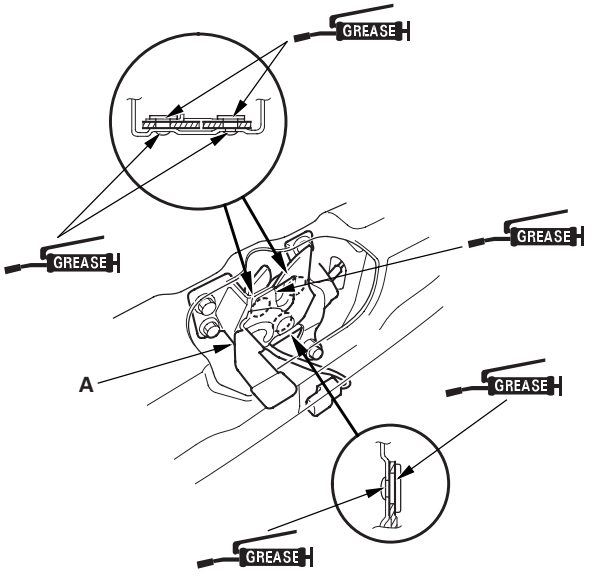
(cont'd)

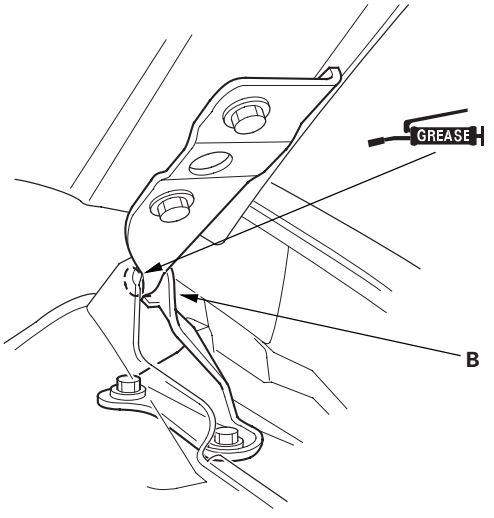
Hood Adjustment (cont'd)

6. Check that the hood opens properly and closes securely.

7. Apply touch-up paint to the hinge mounting bolts and around the hinges, and let the paint dry.

8. Apply multipurpose grease to the hood latch (A) and hood hinges (B) as indicated by the arrows.





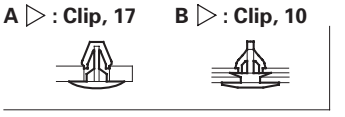
9. Reinstall all of the removed parts.

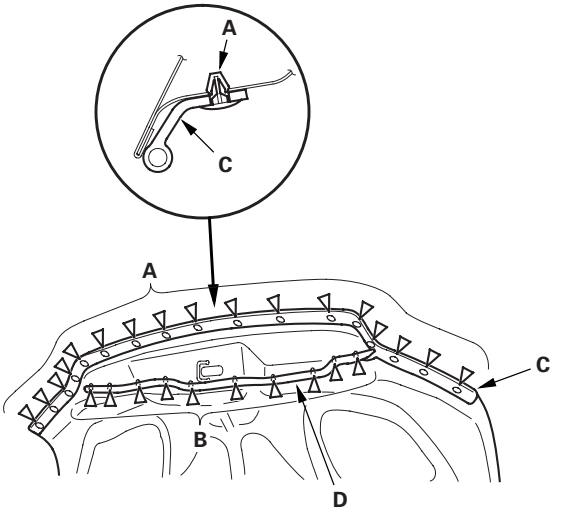
Hood Seal Replacement

1. Using a clip remover, detach the clips (A, B), then remove the hood seals (C, D). Take care not to scratch the hood.

Fastener Locations

A ▷ : Clip, 17 **B ▷ : Clip, 10**

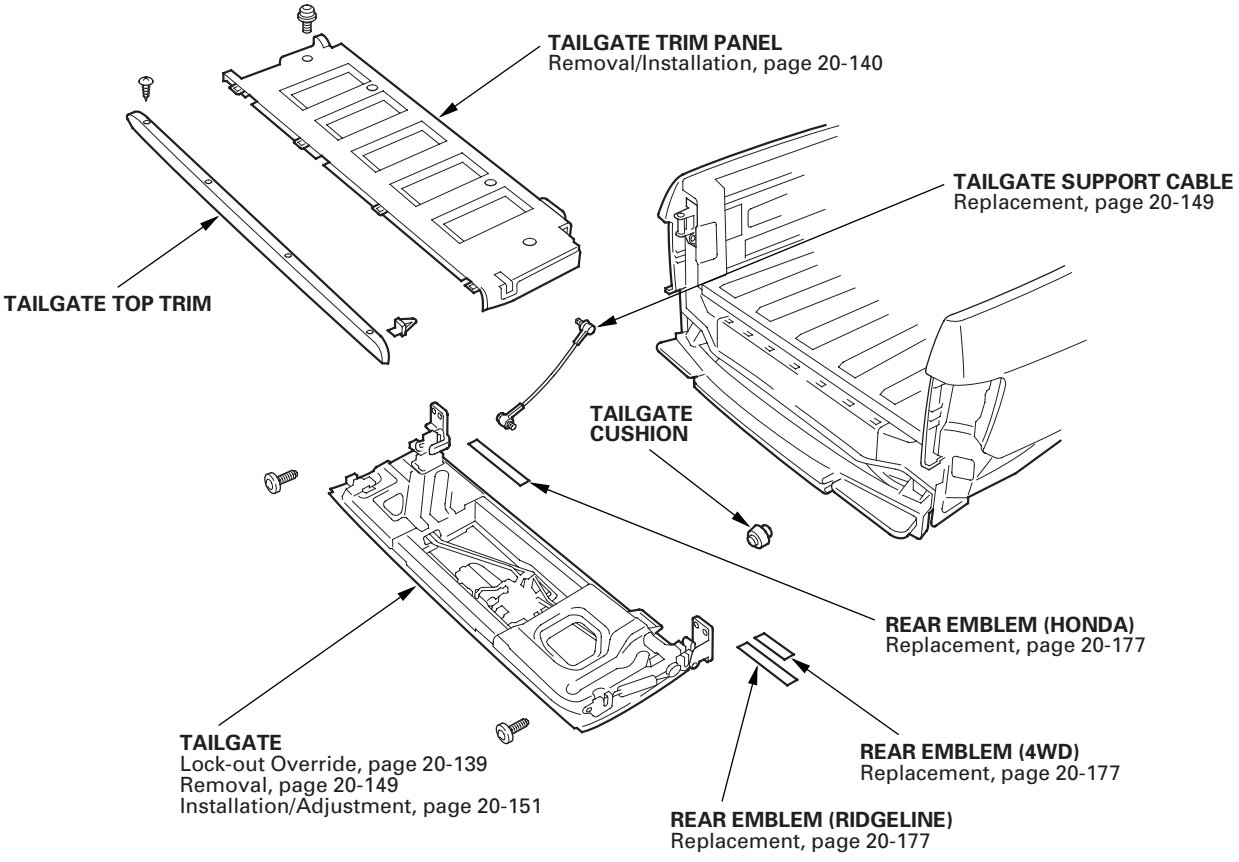




2. Install the hood seals in the reverse order of removal, and note these items:

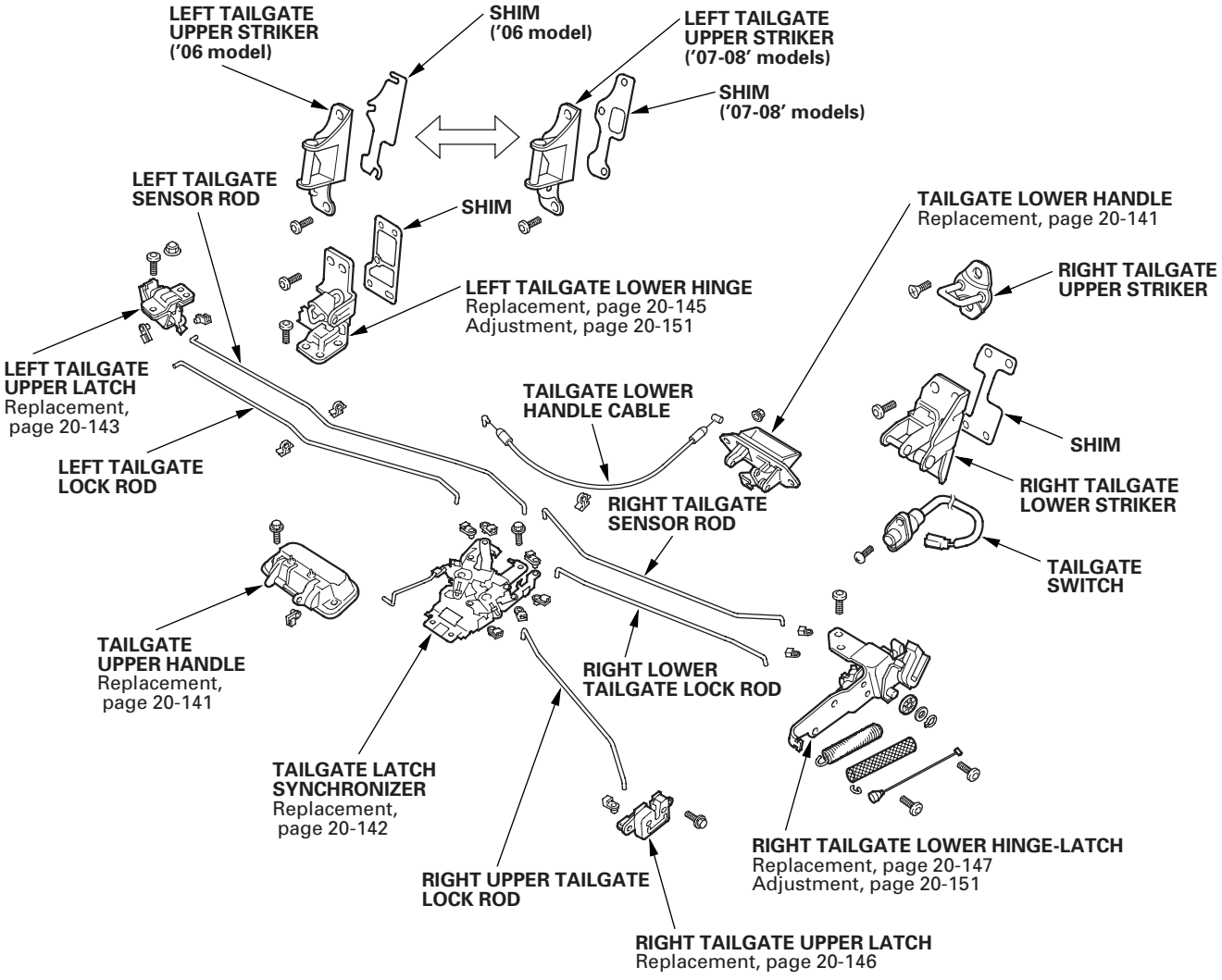
   - Check if the clips are damaged or stress-whitened, if necessary, replace them with new ones.
   - Push the clips into place securely.

Component Location Index



(cont'd)

Component Location Index (cont'd)



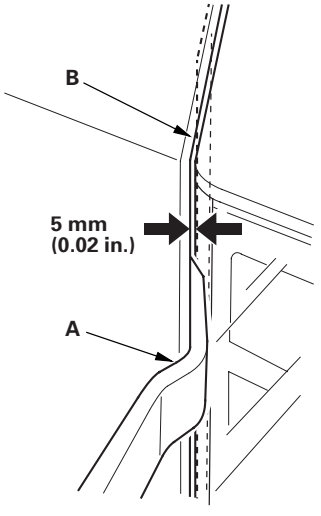
Tailgate Lock-out Override

Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:
- If the tailgate does not open in either swing mode or flip mode because neither tailgate handle functions, unlock the tailgate by directly accessing the right side latches.
- In this case, something is the matter with tailgate locking functions.
- Take care not to scratch the tailgate and damage the taillight lens.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Use protective tape on painted surfaces and the taillight.

1. Using a trim tool (A), pry a right gap between the tailgate and trim panel (B) to open up a 5 mm (0.02 in.) gap.

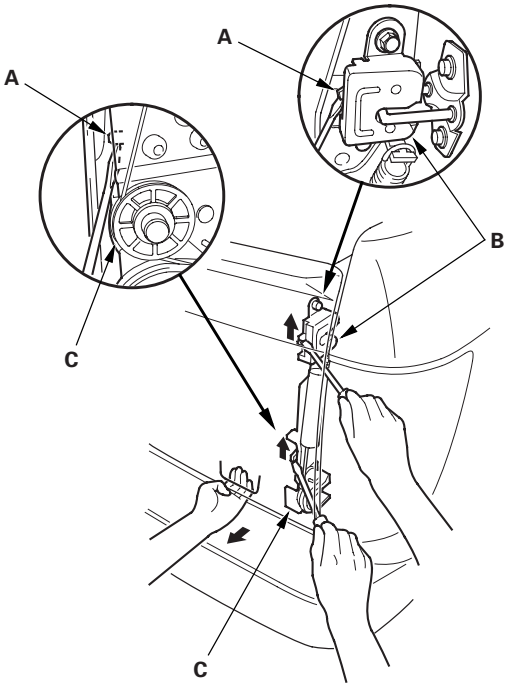
   NOTE: If you cannot create a large enough gap, remove the passenger side tailgate trim panel bolt. Use a flexible LED flashlight to help you locate the latch tap.



2. Insert a flat-tip screwdriver in the gap between the tailgate and the trim panel.

3. While pulling on the tailgate lower handle, use the long thin prybar trim tool to push up on the latch tab mechanism (A) on either the right upper latch (B) or right lower latch (C) to open the tailgate:

   - Take care not to damage the body, tailgate, or the taillight.
   - If the lower handle is malfunctioning, unlocking both latches at the same time is required.



4. Swing the tailgate open, remove the tailgate trim panel (see page 20-140), and then perform required tailgate maintenance.

Tailgate Trim Panel Removal/Installation

1. Open the tailgate.

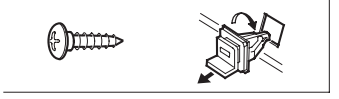
   NOTE:
   - To open the tailgate in either swing mode or drop-down mode allows you to remove the tailgate trim panel.
   - The drop-down mode is shown; the swing mode is similar.

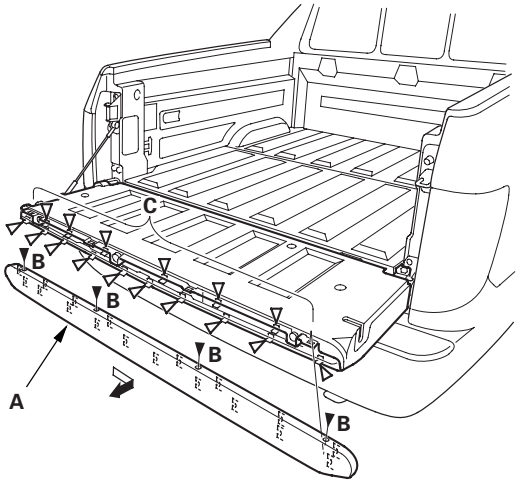
2. Remove the tailgate top trim (A).

   1. Remove the screws (B).
   2. Using a rubber mallet, slide the top trim to the right, and remove it. The upper clips (C) will stay in the tailgate.
   3. Remove the upper clips from the tailgate.

Fastener Locations

B ▶ : Screw, 4 C ▷ : Clip, 16

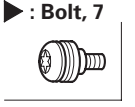


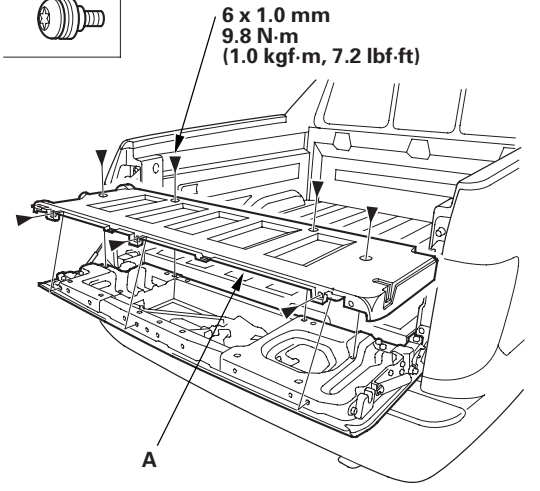


3. Using a TORX T40 bit, remove the bolts, and then remove the tailgate trim panel (A).

Fastener Locations

▶ : Bolt, 7





4. Install the trim panel in the reverse order of removal, and note these items:

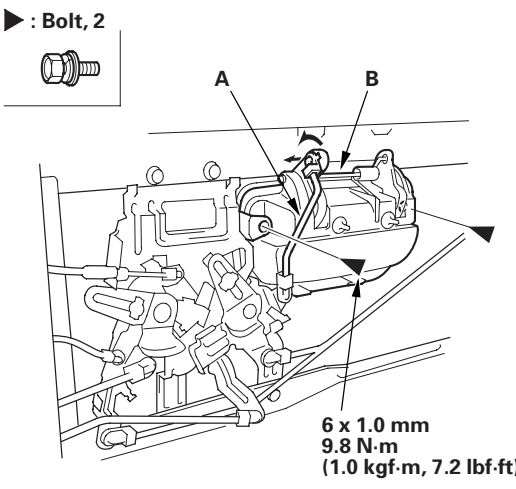
   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Before reinstalling the top trim, install the upper clips on the trim. Hold the trim up, and fit all the upper clips into the holes in the tailgate, then push on the trim until the clips snap into place.

Tailgate Upper Handle Replacement

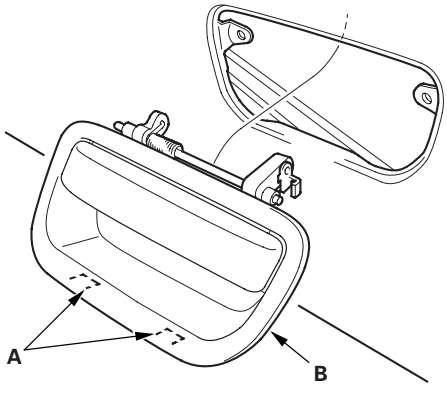
NOTE: Put on gloves to protect your hands.

1. Remove the tailgate trim panel (see page 20-140).

2. Disconnect the upper handle rod (A) and remove the bolts securing the upper handle (B).



3. Push out the hooks (A) from inside of the tailgate, and then remove the tailgate upper handle (B). Take care not to scratch the tailgate.



4. Install the upper handle in the reverse order of removal, and note these items:

   - Make sure the upper handle rod is connected securely.
   - Make sure the tailgate opens in flip mode properly.

Tailgate Lower Handle Replacement

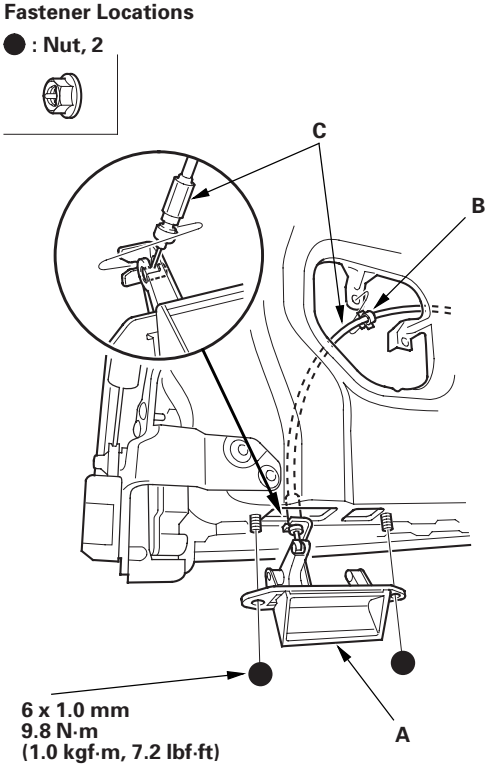
NOTE:
- Put on gloves to protect your hands.
- Take care not to kink the cable.

1. Swing the tailgate open.

2. Remove the tailgate trim panel (see page 20-140).

3. Remove the tailgate lower handle (A).

   1. Detach the cable clip (B).
   2. Remove the nuts securing the lower handle.
   3. Pull out the handle and disconnect the lower handle cable (C).



4. Install the lower handle in the reverse order of removal, and note these items:

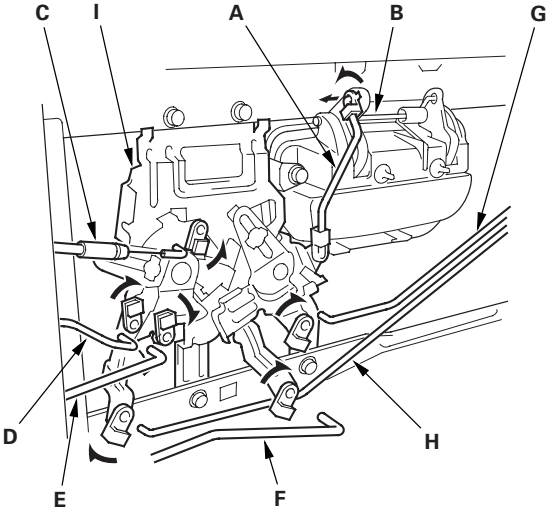
   - Apply medium strength type liquid thread lock to the stud-bolts before reinstalling the handle.
   - Make sure the lower handle cable is connected securely.
   - Make sure the tailgate opens in swing mode properly.

Tailgate Latch Synchronizer Replacement

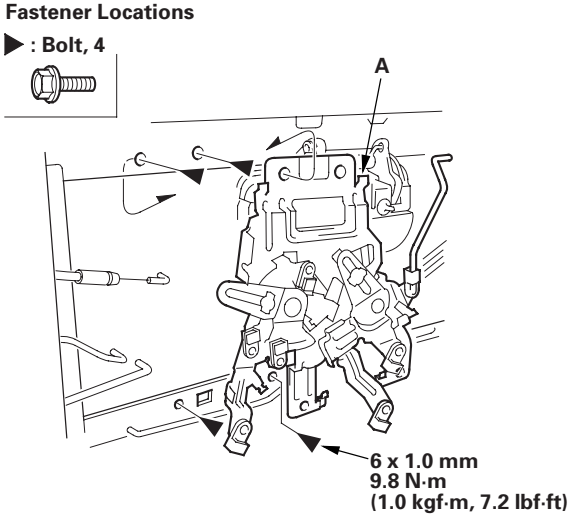
NOTE: Put on gloves to protect your hands.

1. Remove the tailgate trim panel (see page 20-140).

2. Disconnect the upper handle rod (A) from the upper handle (B), lower handle cable (C), right upper lock rod (D), right lower lock rod (E), right lower sensor rod (F), left upper lock rod (G) and left upper sensor rod (H) from the latch synchronizer (I).



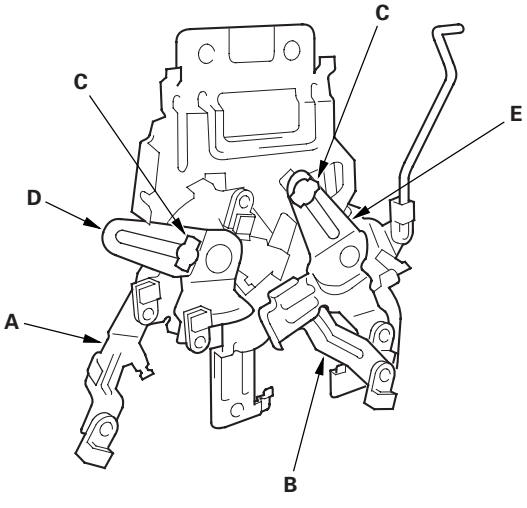
3. Remove the bolts, and then remove the latch synchronizer (A).



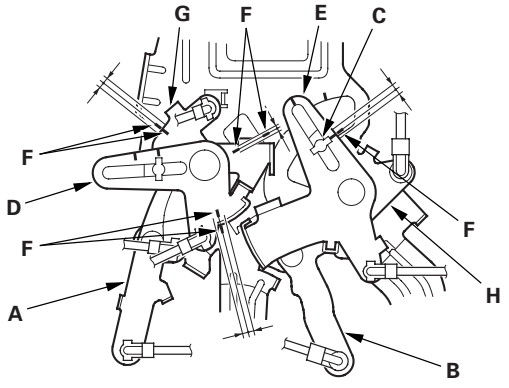
4. Install the latch synchronizer in the reverse order of removal, and note these items:

- The latch synchronizer is equipped with a fail-safe function for misconnected sensor rods. If either of the sensor rods are disconnected, it becomes impossible to unlatch the other side when pulling on the handle: Make sure the left sensor lever (A) and right sensor lever (B) on the removed latch synchronizer has returned upward, and white pins (C) are close to the end of the slots in the left open lever (D) and right sensor lever (E).
- Make sure each cable and rod is connected securely.
- After installing the latch synchronizer, check the positions of the timing marks (F) on both sensor levers, both open levers, lower handle lever (G), and upper handle lever (H).
- Make sure the tailgate operates properly:
  – The tailgate that is closed should open in drop-down mode by pulling on the upper handle.
  – The tailgate that is closed should open in swing mode by pulling on the lower handle.
  – The upper handle doesn't function with the tailgate opened in swing mode.
  – The lower handle doesn't function with the tailgate opened in drop-down mode.

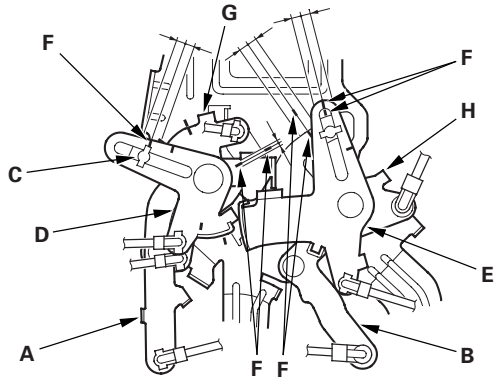
Off the tailgate



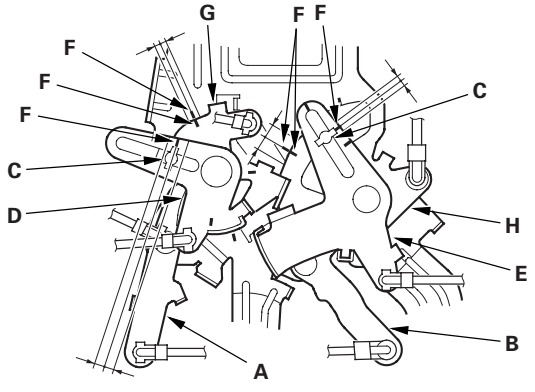
Swing open condition



Drop-down open condition



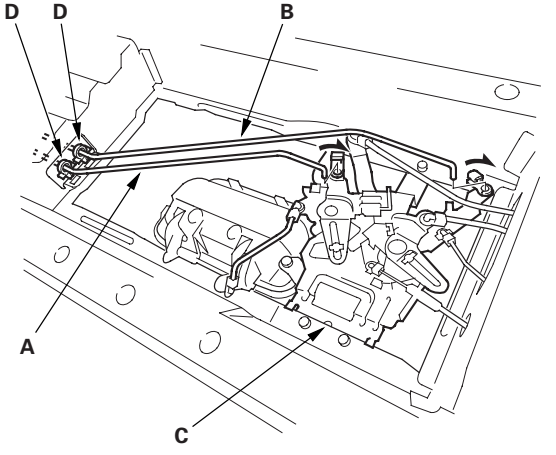
Closed condition



Left Tailgate Upper Latch Replacement

NOTE: Put on gloves to protect your hands.

1. Open the tailgate in drop-down mode.
2. Remove the tailgate trim panel (see page 20-140).
3. Disconnect the left upper lock rod (A), and left upper sensor rod (B) from the latch synchronizer (C).

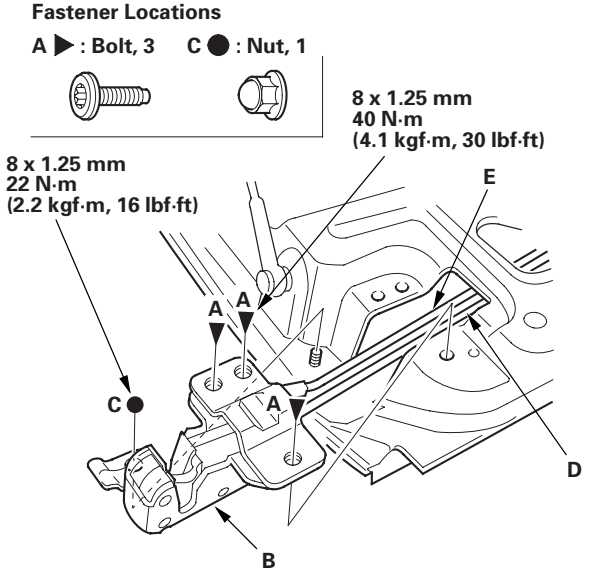


4. Detach the rod clips (D).

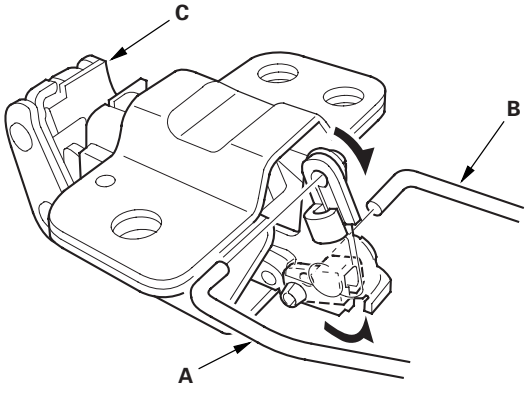
(cont'd)

Left Tailgate Upper Latch Replacement (cont'd)

5. Remove the bolts (A) securing the left tailgate upper latch (B) using a TORX T50 bit, and remove the mounting nut (C), then remove the latch with the left upper lock rod (D) and left upper sensor rod (E).

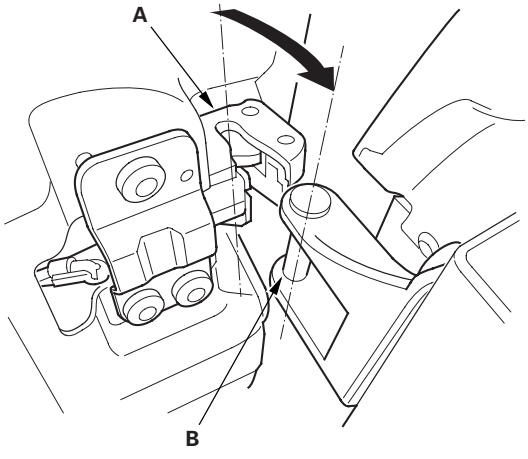


6. Disconnect the left upper lock rod (A) and left upper sensor rod (B) from the left tailgate upper latch (C), and be careful not to fix them.



7. Install the latch in the reverse order of removal, and note these items:

- Make sure each rod is connected securely.
- Apply liquid thread lock to the mounting nut before installation.
- Before securing the left tailgate upper latch (A), lightly loosen the bolts and nut. While holding the upper handle out, push the tailgate against the body to align the latch opening to the left upper striker (B) on the body. Tighten the bolts and nut, and recheck.
- Make sure the tailgate locks properly.
- Make sure the tailgate that is closed opens in drop-down mode by pulling on the upper handle.
- Make sure the lower handle doesn't function with the tailgate opened in drop-down mode.
- Make sure the tailgate swings smoothly. If necessary, do the tailgate position adjustment (see page 20-151).

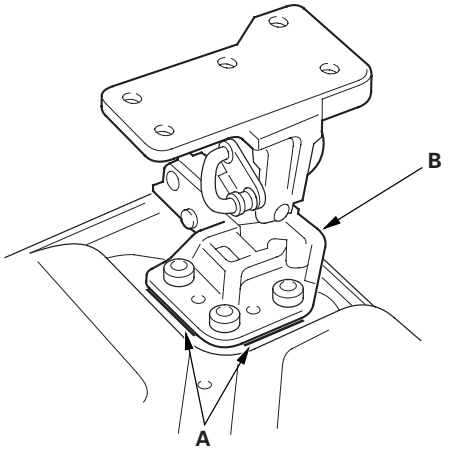


Left Tailgate Lower Hinge Replacement

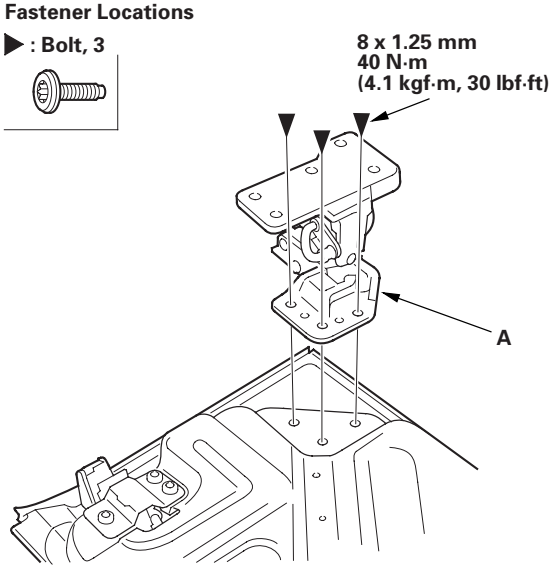
NOTE: Put on gloves to protect your hands.

1. Remove the tailgate (see page 20-149).

2. With a maker, make reference lines (A) on two side of the left tailgate lower hinge (B) for reinstallation.



3. Using a TORX T50 bit, remove the bolts, then remove the left tailgate lower hinge (A).



4. Install the lower hinge in the reverse order of removal, and note these items:

   - Apply multipurpose grease to the checker portion.
   - Do the tailgate position adjustment (see page 20-151).

Right Tailgate Upper Latch Replacement

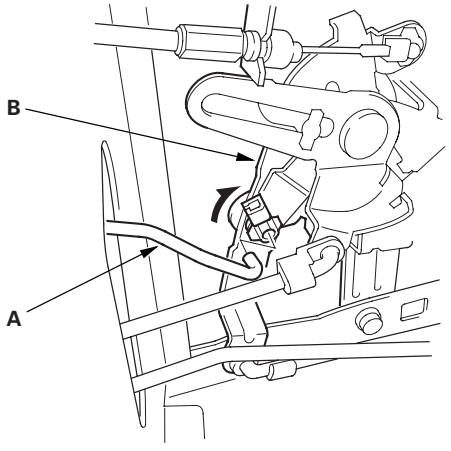
NOTE: Put on gloves to protect your hands.

1. Open the tailgate.

   NOTE: Opening the tailgate in either swing mode or drop-down mode will allow you to remove the right upper latch.

2. Remove the tailgate trim panel (see page 20-140).

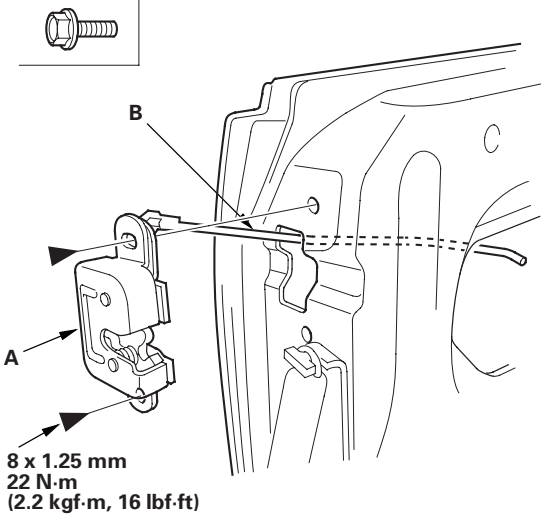
3. Disconnect the right upper lock rod (A) from the latch synchronizer (B).



4. Remove the bolts, and then remove the right tailgate upper latch (A) with the right upper lock rod (B).

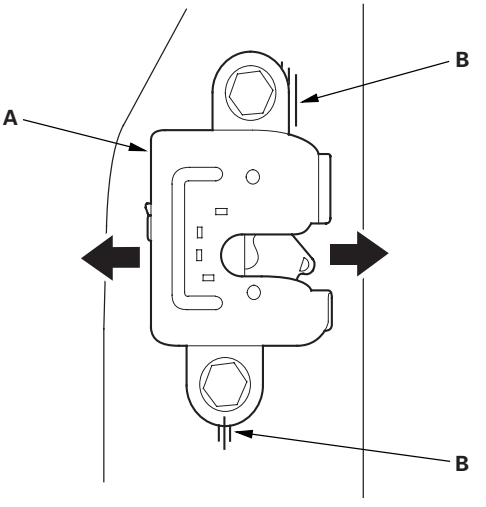
Fastener Locations

▶ : Bolt, 2



5. Install the latch in the reverse order of removal, and note these items:

   - Make sure the rod is connected securely.
   - The right tailgate upper latch (A) must be synchronized to lock with right tailgate lower latch (in swing mode) or left tailgate upper latch (in drop-down mode). If not, adjust the latch forward or rearward as necessary, using alignment lines (B) on the tailgate as guides.
   - Make sure the tailgate that is closed should open in drop-down mode by pulling on the upper handle.
   - Make sure the tailgate that is closed should open in swing mode by pulling on the lower handle.



Right Tailgate Lower Hinge-latch Replacement

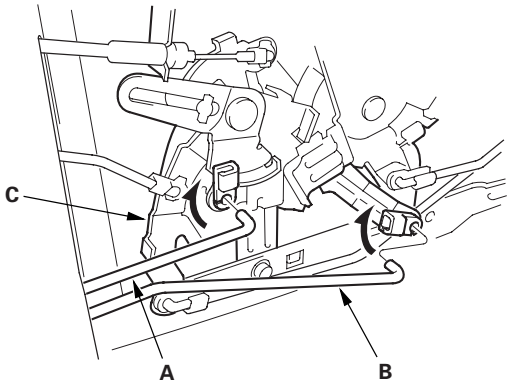
NOTE: Put on gloves to protect your hands.

Removal/Installation

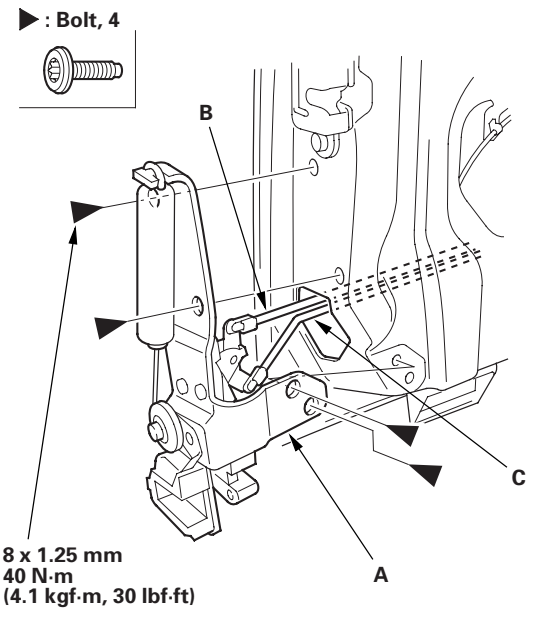
1. Swing the tailgate open.

2. Remove the tailgate trim panel (see page 20-140).

3. Disconnect the right lower lock rod (A), and right lower sensor rod (B) from the latch synchronizer (C).

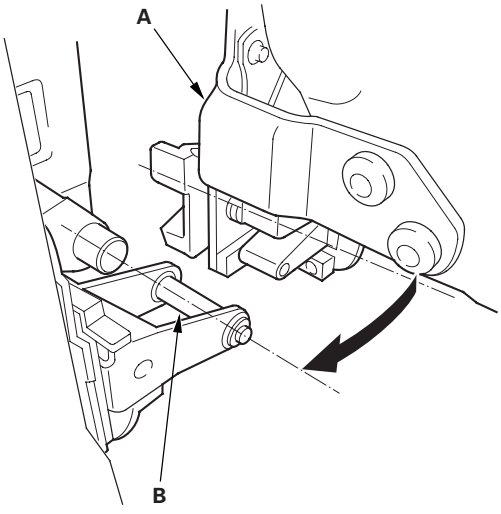


4. Remove the bolts securing the right tailgate lower hinge-latch (A) using a TORX T50 bit, then remove the hinge-latch with the right lower lock rod (B) and right lower sensor rod (C).



5. Install the lower hinge-latch in the reverse order of removal, and note these items:

   - Make sure each rod is connected securely.
   - Before securing the right tailgate lower hinge (A), lightly loosen the bolts. While holding the lower handle out, push the tailgate against the body to align the right lower latch opening to the right lower striker (B) on the body. Tighten the bolts, and recheck.
     – Do the tailgate position adjustment (see page 20-151).
   - Make sure the tailgate locks properly.
   - Make sure the tailgate that is closed opens in swing mode by pulling on the lower handle.
   - Make sure the upper handle doesn't function with the tailgate opened in swing mode.
   - Make sure the tailgate moves smoothly up or down in down-drop mode.



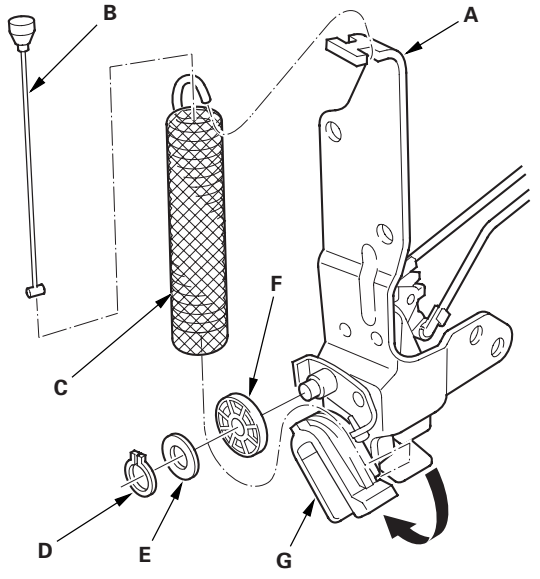
(cont'd)

Right Tailgate Lower Hinge-latch Replacement (cont'd)

Disassembly/Reassembly

1. Disassemble the right tailgate lower hinge-latch (A). Take care not to kink the cable (B).

   1 Pry off the spring (C) from top of the lower hinge with a flat-tip screwdriver wrapped with protective tape.
   2 Remove the snap ring (D), washer (E), and pulley (F).
   3 Rotate the pin receiver (G) down, and disconnect the cable from it.
   4 Pull the cable out of the spring.

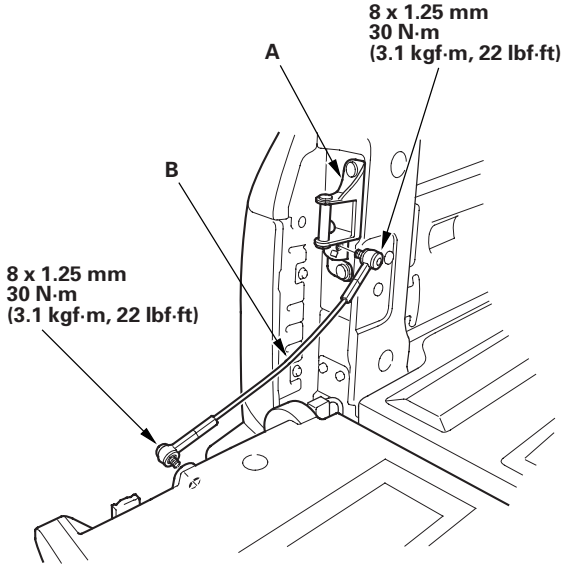


2. Reassemble the lower hinge-latch in the reverse order of disassembly, and make sure the cable is routed properly and connected securely.

Tailgate Support Cable Replacement

1. Open the tailgate in drop-down mode about halfway, and hold it.

2. Using a TORX T50 bit, remove the bolts from the left tailgate upper striker (A) and tailgate, then remove the tailgate support cable (B).



3. Install the support cable in the reverse order of removal, and check for wear on the tailgate support cable, replace the cable if there are signs of wear on the protective cover.

Tailgate Removal

NOTE:
- Have an assistant help you when removing and installing the tailgate.
- Take care not to drop the tailgate.
- Put on gloves to protect your hands.
- Inspect the support cable for cracks or damage to the protective cover. If the cover is damaged, replace it (see page 20-149).

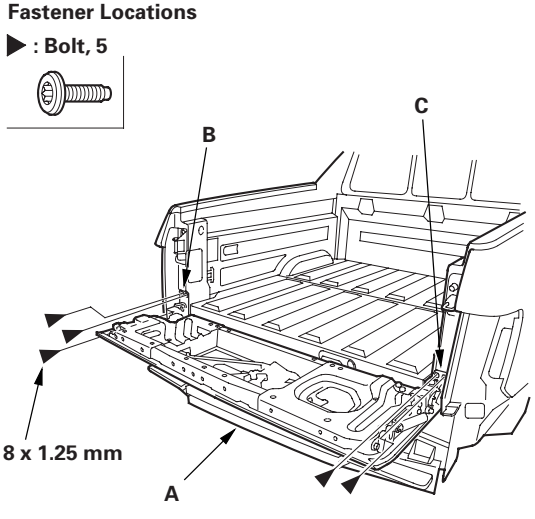
Removal

1. Open the tailgate in drop-down mode.

2. Remove these items:

   - Tailgate trim panel (see page 20-140)
   - Rear bumper and both rear bumper absorbers (see page 20-133)
   - Tailgate support cable (see page 20-149)
   - Disconnect the tailgate swing-switch connector

3. While pressing the tailgate (A) against the body, using a TORX T50 bit, remove five bolts securing the left tailgate lower hinge (B) and right tailgate lower striker (C).

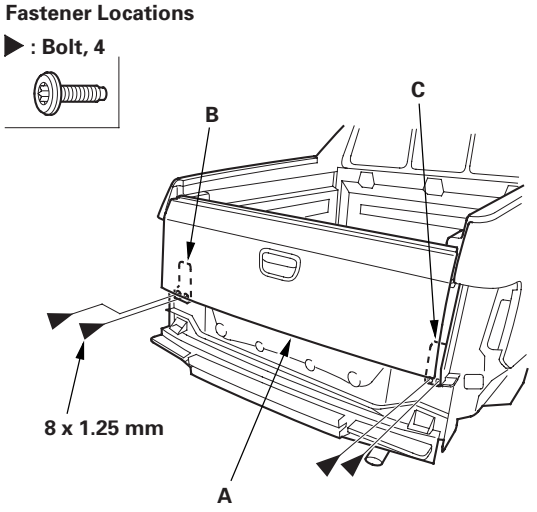


4. Carefully close the tailgate. Make sure both upper latches have locked securely.

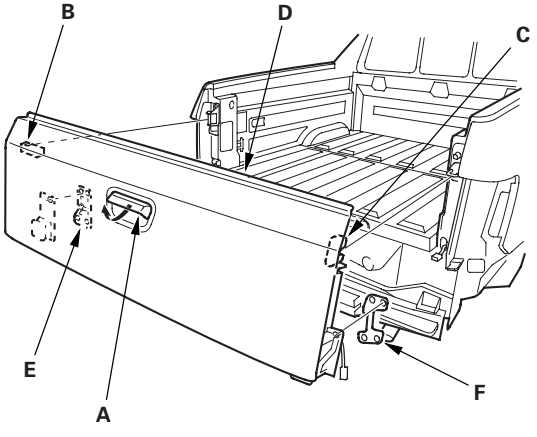
(cont'd)

Tailgate Removal (cont'd)

5. While holding the tailgate (A), using a TORX T50 bit, remove remaining four bolts securing the left tailgate lower hinge (B) and right tailgate lower striker (C).



6. Pull on the upper handle (A) to unlock the left tailgate upper latch (B) and right tailgate upper latch (C) while holding the tailgate (D).



7. Pull out the tailgate. Remove the shims (E, F) from under the left tailgate lower hinge and right tailgate lower striker.

8. Place the tailgate on a padded surface to prevent damage.

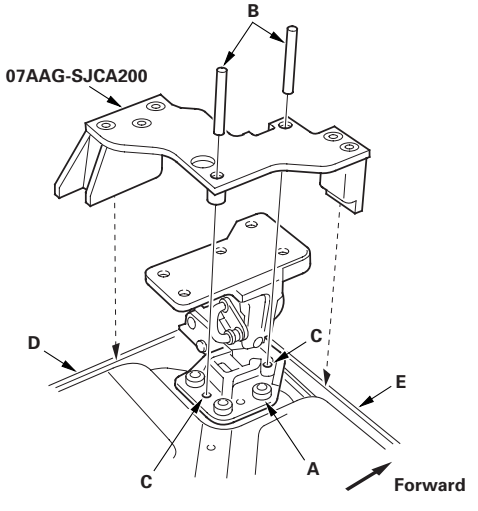
9. To install the tailgate (see page 20-151) for inatallation and adjustment procedures.

Tailgate Installation/Adjustment

Special Tools Required
- Tailgate Height Step Gauge 07AAG-SJCA100
- Tailgate Left Hinge Alignment Fixture 07AAG-SJCA200

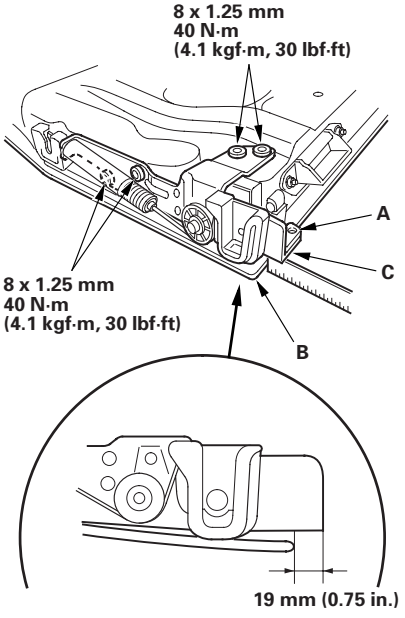
NOTE: This procedure is based on these conditions:
- Tailgate panel removed (see page 20-140).
- The rear bumper removed (see page 20-133).
- Tailgate removed (see page 20-149).
- The left tailgate upper striker and the right tailgate upper striker removed from vehicle.
- The right tailgate lower striker is installed onto the vehicle with the bolts snug enough to allow the striker to slide up or down.
- The left tailgate upper latch and the right tailgate upper latch are installed onto the tailgate with the bolts loosely installed.
- The left tailgate lower hinge and the right tailgate lower hinge are installed onto the tailgate with the hardware hand tight, allowing some movement of the latch/hinges.
- All shims are installed in their original locations (if any).

1. Place the left tailgate hinge alignment fixture (07AAG-SJCA200) over the hinge (A). Insert the pins (B) through the holes in the alignment fixture and into the holes (C) in the hinge. With the alignment fixture firmly and squarely against the side and the lower edge of the tailgate, apply pressure to the side of the alignment fixture at the side of the tailgate (D) first, and then simultaneously apply pressure to the side of the alignment fixture at the bottom of the tailgate (E). Using a TORX T50 bit and ratchet, tighten the bolts hand tight.



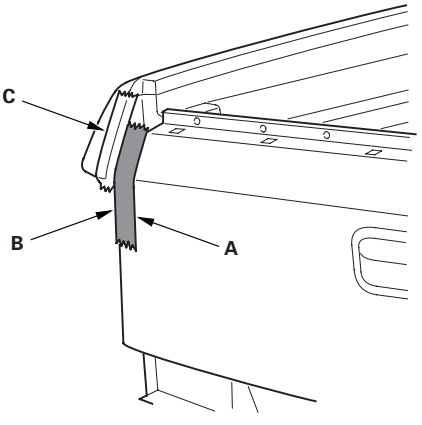
2. Remove the alignment fixture, and torque the three bolts to 40 N·m (4.1 kgf·m, 30 lbf·ft).

3. Position the lower edge of the right tailgate lower hinge (A) 19 mm (0.75 in.) below the bottom edge of the tailgate (B). Measure from the hinge at the seam (C). Using a TORX T50 bit and ratchet, torque the four bolts. After tightening the bolts, recheck the measurement.



4. Using a screwdriver, latch the left tailgate upper latch.

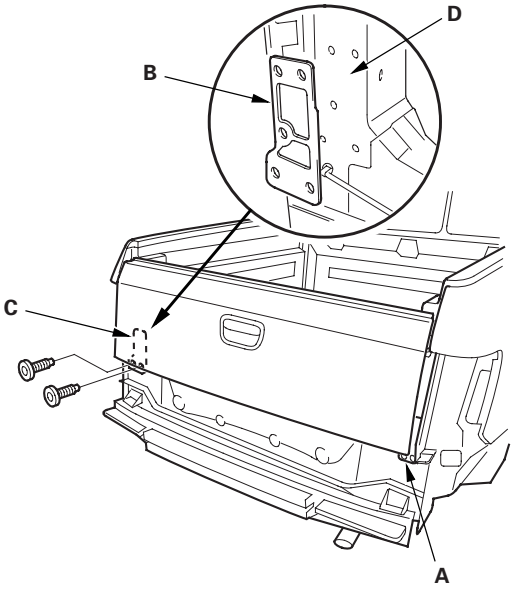
5. Apply masking tape (A) to the left side of the tailgate (B) and the inside of the tailgate opening on the body (C).



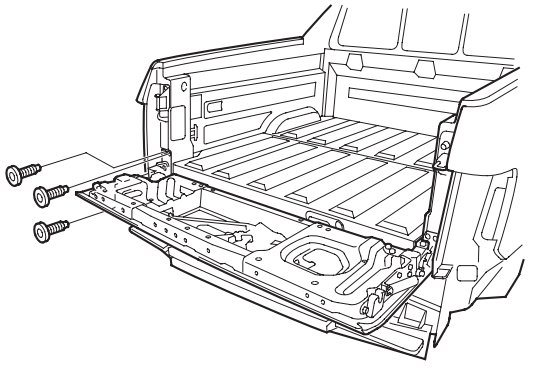
(cont'd)

Tailgate Installation/Adjustment (cont'd)

6. Carefully position and hold the tailgate in the tailgate opening, and latch the right tailgate lower latch (A). Continue to hold up the left side of the tailgate, and install the original shims (B) (if any) between the left tailgate lower hinge (C) and the body (D), then loosely install the lower two bolts in the hinge.

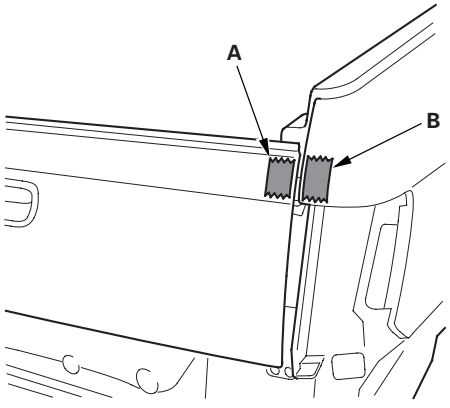


7. Lower the tailgate, and loosely install the remaining three bolts into the left tailgate lower hinge.

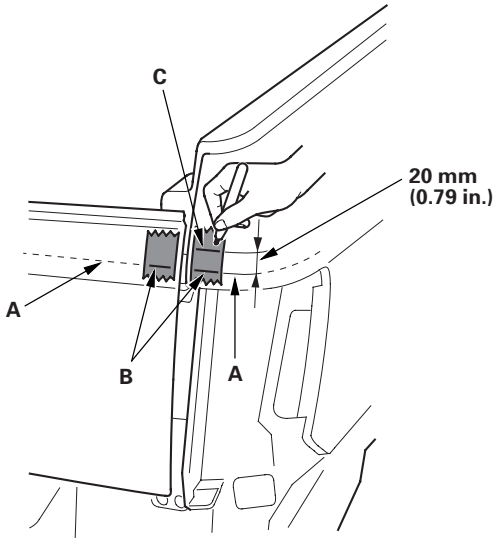


8. Raise the tailgate, and hold it in place.

9. Apply a strip of masking tape on the right upper side of the tailgate (A). Apply another strip of tape next to it on the body (B).



10. Using the body lines (A) as a guide, hold the right side of the tailgate at the correct height. Make a horizontal line across both strips of tape (B), then make another mark (C) 20 mm (0.79 in.) above the first mark on the body side.

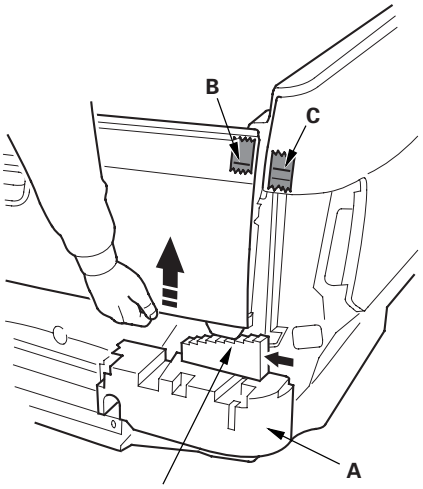


11. Carefully use the tailgate lower handle to release the right tailgate lower latch. Do not lower the tailgate.

    NOTE: When you release the right tailgate lower latch, the tailgate is only supported by the left tailgate lower hinge.

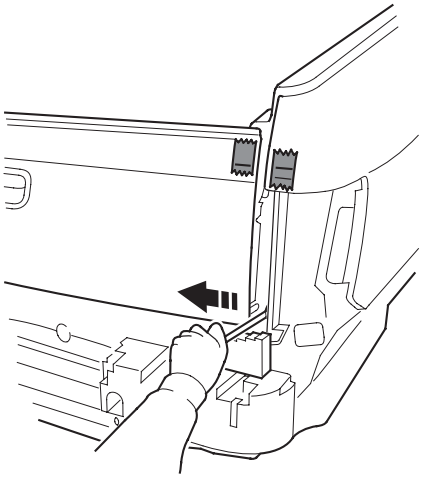
12. Insert the tailgate height step gauge (07AAG-SJCA100) on top of the right side bumper foam (A), supporting the right side of the tailgate under the hinge. Keep the right lower hinge as close to the striker as possible without touching. Position the step gauge so the mark (B) on the tailgate (made in step 11) aligns with the higher mark (C) on the body side.

    NOTE:
    - Make sure the left upper come of the tailgate rests forward against the body.
    - Note the step number on the gauge where the latch rests.

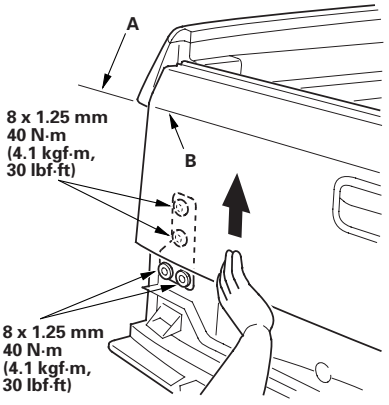


07AAG-SJCA100

13. Insert a pry bar between the right tailgate lower striker and the right tailgate lower hinge. Have an assistant apply pressure to move the tailgate to the left.



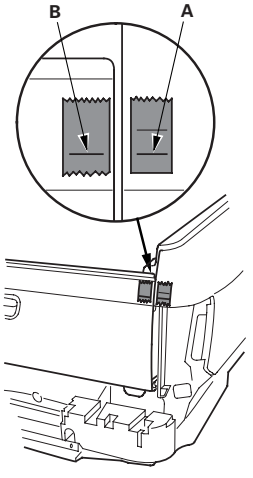
14. With the assistant still applying pressure, raise the left side of the tailgate to align the body line of the body (A) and tailgate (B), and torque the four left tailgate lower hinge bolts.



15. Carefully lift and hold the tailgate in the upward position and remove the step gauge, allowing the tailgate to sag supported by the left tailgate lower hinge. Do not latch the right tailgate lower latch.

16. Check the height of the right side of the tailgate. The alignment mark (A) made on the tailgate side should line up with the lower alignment mark (B) made on the body side. If the tailgate is not aligned, loosen the two left lower hinge bolts on the body and repeat steps 12 through 15, step gauge, as needed.

    NOTE: When repeating steps 12 through 15, the mark on the tailgate may not align with the mark on the body. The higher mark is only used as a starting point.

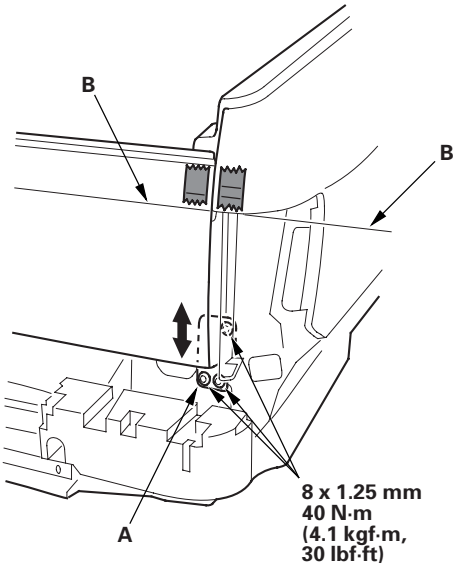


(cont'd)

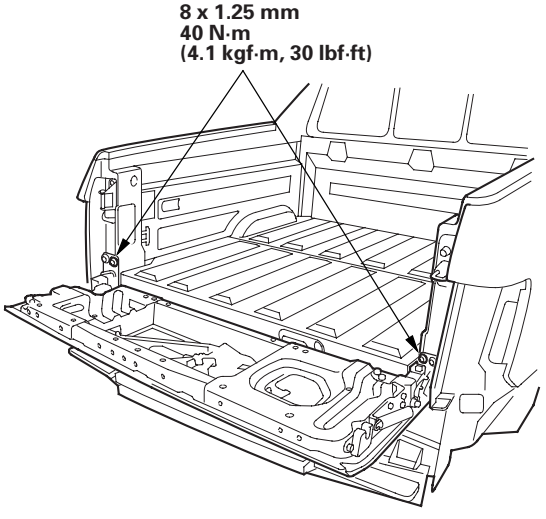
Tailgate Installation/Adjustment (cont'd)

17. Still holding the tailgate in the upward position, latch the right tailgate lower latch. Continue to hold the tailgate upward.

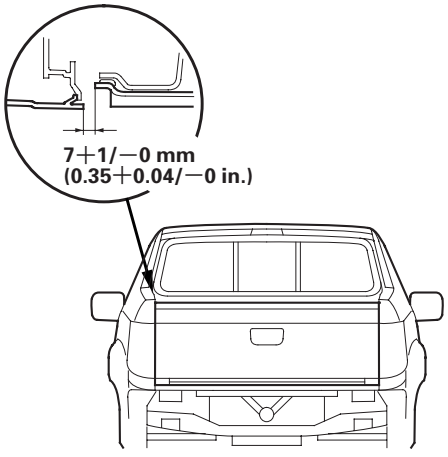
18. Move the right tailgate lower striker (A) to align the body lines (B), then torque the three lower striker bolts.



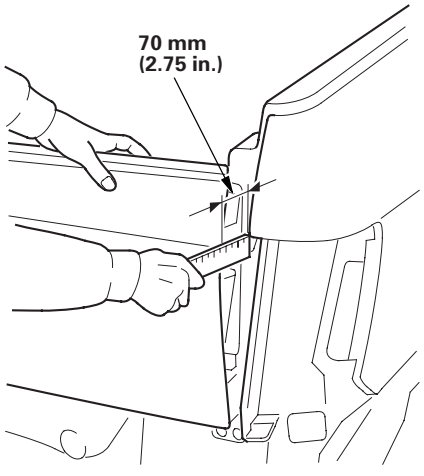
19. Lower the tailgate, and torque the one remaining left tailgate lower hinge bolts and the one right tailgate lower striker bolts.



20. Raise the tailgate. Inspect the gap between the left upper tailgate and the body.



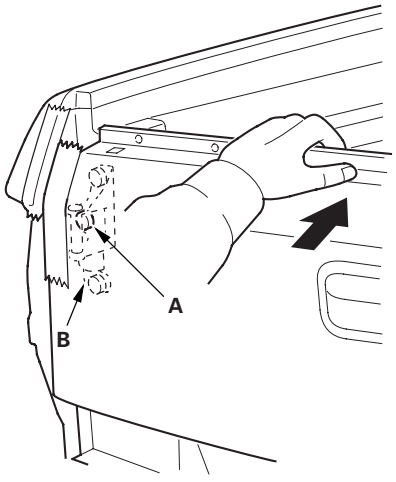
21. Open the tailgate about 70 mm (2.75 in.), and then let go of the tailgate. The tailgate should begin to fall open on its own, if does not, repeat steps 12 through 15 and use the next step lower on the height gauge.



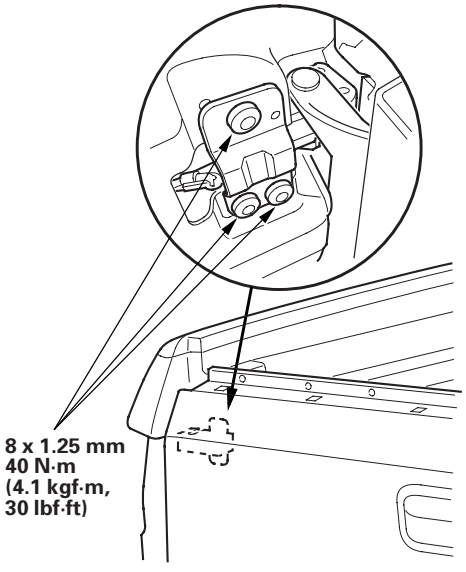
22. Pull the tailgate upper handle to release the left tailgate upper latch, and then lower the tailgate.

23. Install the left body-side striker/hinge with the bolts hand tight, allowing some movement of the striker/hinge.

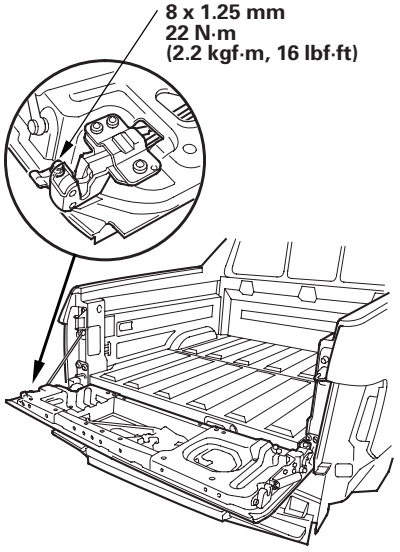
24. Raise and close the tailgate firmly. The left body-side striker/hinge and the tailgate latch/hinge align themselves. Push in on the upper left of the tailgate and hold it, and then use a TORX T50 bit and extension, tighten the center bolt (A) hand tight on the left tailgate upper striker (B).



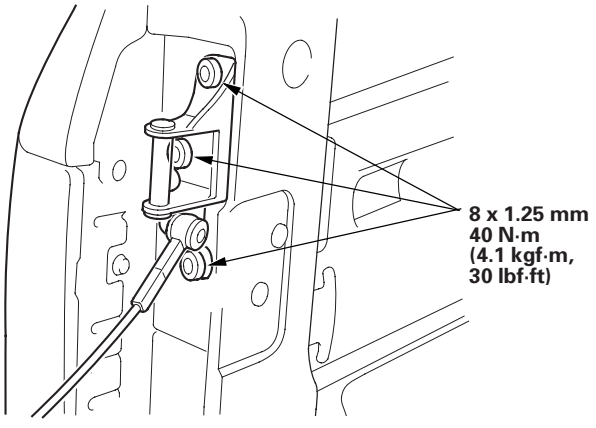
25. Torque the three left tailgate upper latch bolts.



26. Lower the tailgate. Remove the from the left upper tailgate latch, and apply liquid thread lock to the nut. Reinstall the nut and tighten it to the specified torque.



27. Torque the left tailgate upper striker bolts, starting with the center bolt first.

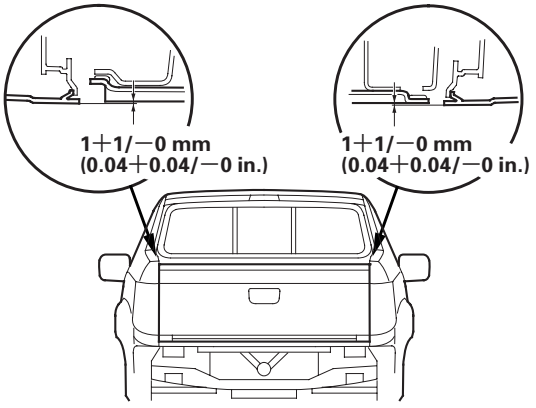


28. Install and torque the tailgate support cable (see page 20-149).

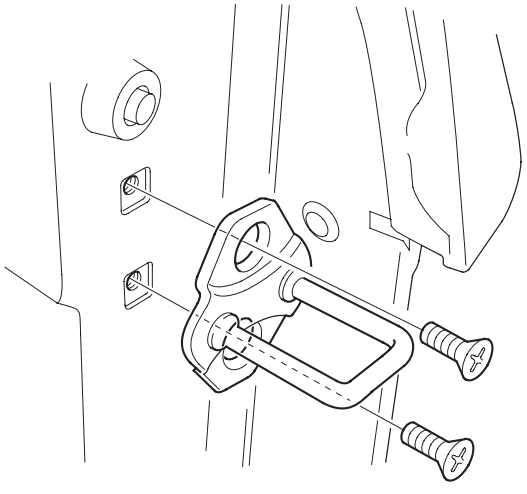
(cont'd)

Tailgate Installation/Adjustment (cont'd)

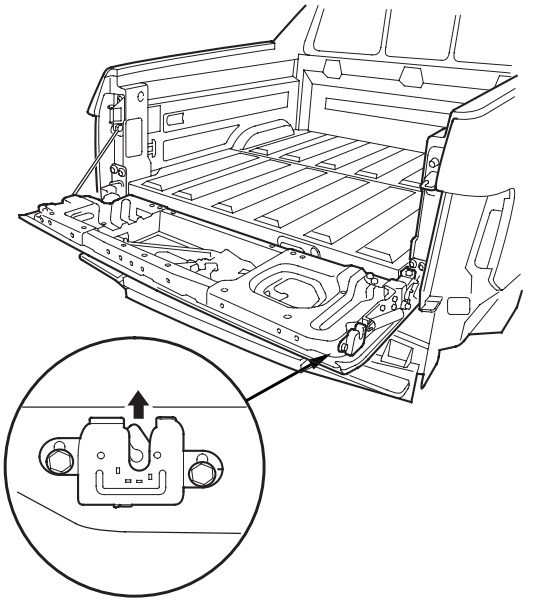
29. Close the tailgate. Check the flushness of the tailgate to the body at the top of the tailgate. If the left side is out of specification, install or remove shims between the left striker/hinge and the body as needed (go to step 24). If the right side is out specification, install or remove shims between the right tailgate lower hinge and the body as needed (go to step 18).



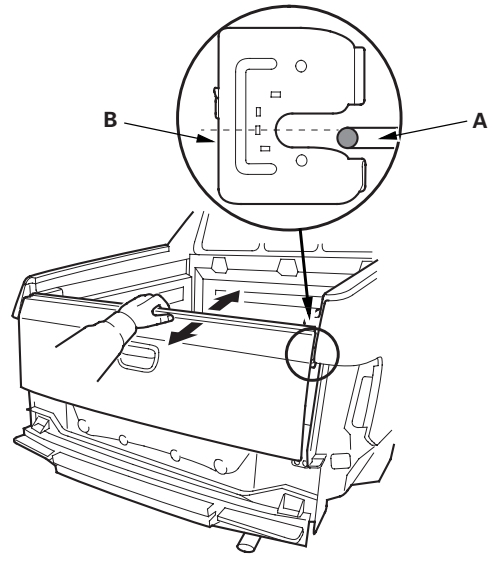
30. Lower the tailgate, and install the right tailgate upper striker with the two screws hand tight. Make sure the striker is positioned horizontally.



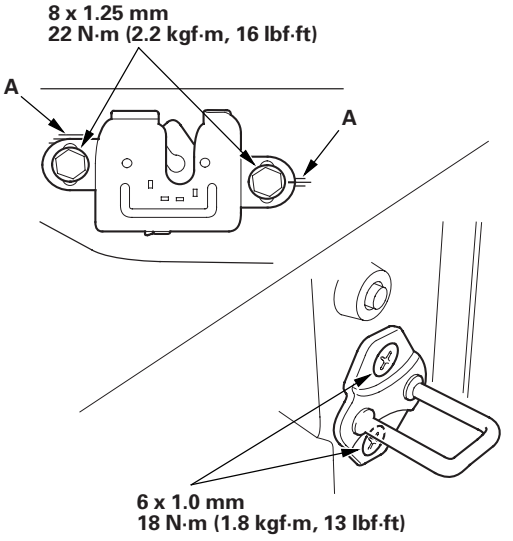
31. With the right upper tailgate latch bolts hand tight, position the latch in the upward position.



32. Close the tailgate, making sure both latches are latched. Make sure the right striker (A) is in the lower range of adjustment within the tailgate latch (B). Grab the top, center of the tailgate, and push and pull it inward and outward a few times to center the right upper tailgate latch.



33. Lower the tailgate. Make sure the right tailgate upper latch alignment marks (A) are at equal positions, and torque the right tailgate upper latch bolts and the right tailgate upper striker screws.



34. Loosely install the tailgate trim panel, and check the dual-mode tailgate operation.

35. Install the tailgate trim panel (see page 20-140).

36. Check the dual-mode tailgate operation.

    NOTE: When closing the tailgate from the lowered position, apply a slow steady pressure to the top, center of the tailgate. Be sure that both the left and right latches close simultaneously. If they latch independently, and the tailgate is not fully latched, the tailgate may not open in swing mode.

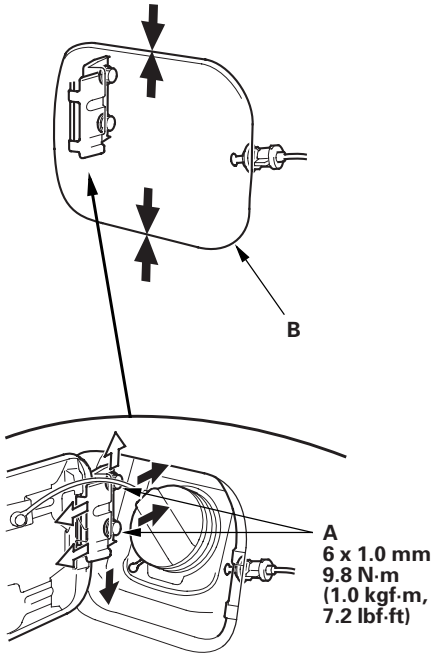
37. Check tailgate switch operation (see page 22-182).

38. Reinstall the taillights (see page 22-178).

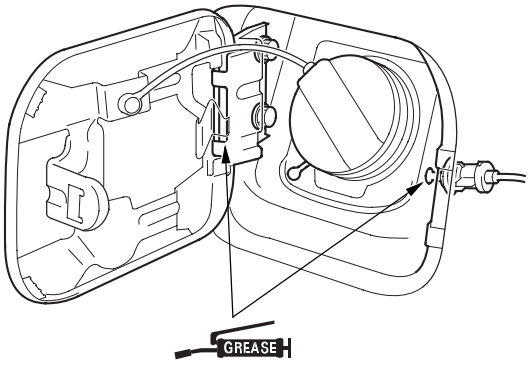
39. Reinstall the rear bumper (see page 20-133).

Fuel Fill Door Adjustment

1. Loosen the hinge mounting bolts (A) slightly.



2. Adjust the fuel fill door (B) in or out until it's flush with the body, and up or down as necessary to equalize the gaps.
3. Tighten the hinge mounting bolts.
4. Check that the fuel fill door opens properly and locks securely.
5. Apply multipurpose grease to each location indicated by the arrows.



6. Apply touch-up paint to the hinge mounting bolts and around the hinges.

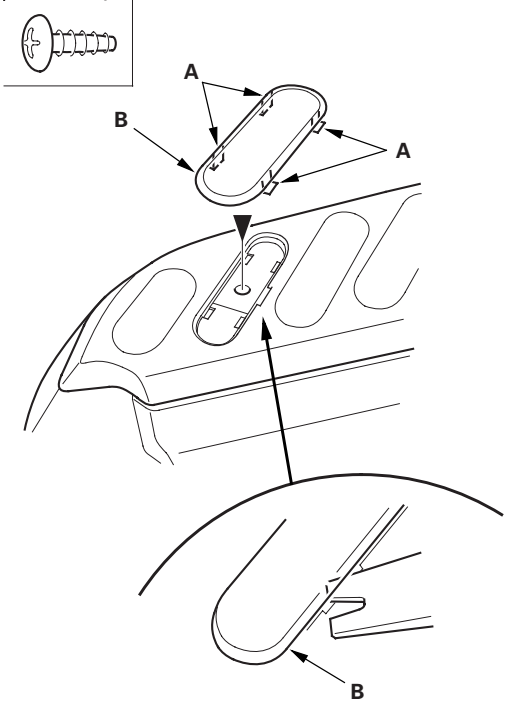
Bed Rail Trim Replacement

Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

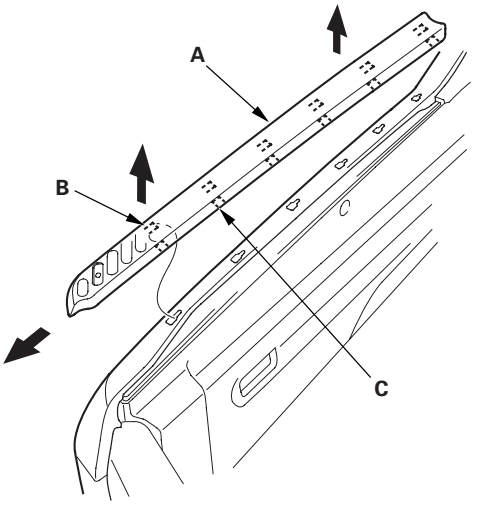
NOTE:
- Take care not to scratch the body.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Using a trim tool, release the hooks (A), then remove the trim cap (B), and remove the screw.

Fastener Location
▶ : Screw, 1



2. Slide the bed rail trim (A) backward, and pull it up to release the hooks (B, C), then remove the trim.



3. Install the bed rail trim in the reverse order of removal, and make sure each hook is installed properly.

C-Pillar Outer Trim Replacement

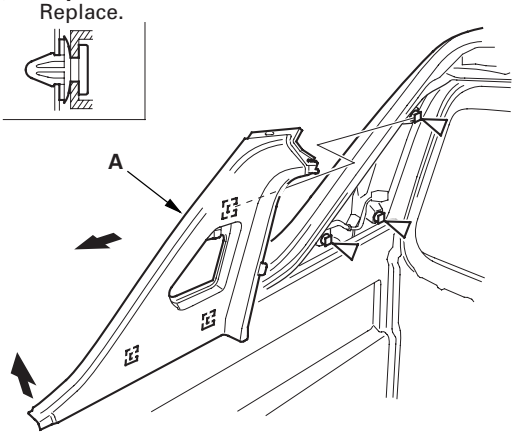
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the body.

1. Remove these items:
   - Bed rail trim (see page 20-159)
   - Rear roof trim (see page 20-175)
   - Front upper tie-down hooks, both sides (see step 1 on page 20-161)
   - Front bed panel (see page 20-161)
   - Cargo area front light (see page 22-180)

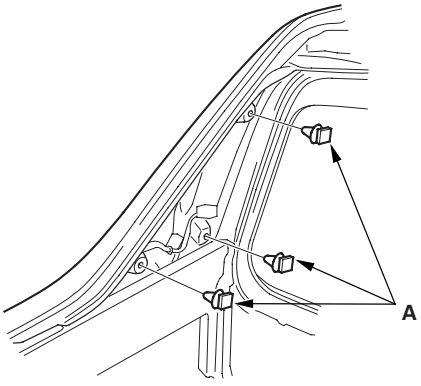
2. Pull up on the rear end of the C-pillar outer trim (A), and slide the trim rearward to release it from the clips, and remove the trim. Take care not to scratch the trim and/or body.

Fastener Locations

▷: **Clip, 3**
Replace.

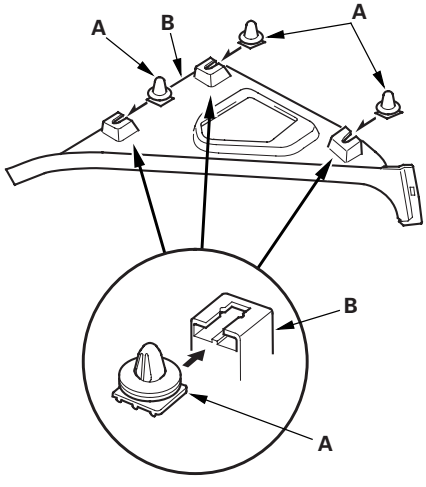


3. Remove the clips (A) from the body.



4. Replace all of the clips.

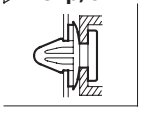
5. Install the new clips (A) on the trim (B).

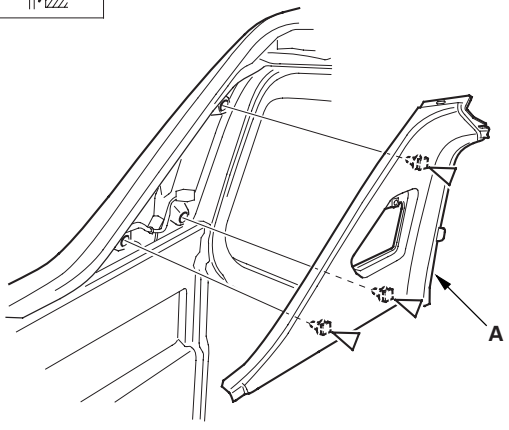


6. Hold the trim (A) up into position, and fit all the clips into the holes in the body, then push on the trim until the clips snap into place.

Fastener Locations

▷ : Clip, 3





7. Reinstall the all removed parts.

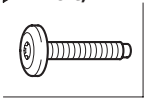
Front Bed Panel Removal/ Installation

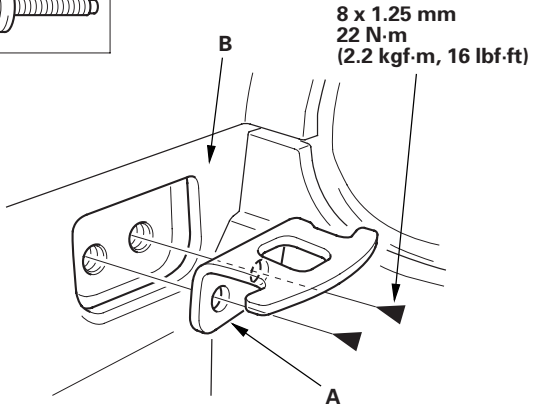
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the bed panels and body.

1. Using a TORX T50 bit, remove the bolts, then remove the front upper tie-down hooks (A) from both sides of the side bed panel (B).

Fastener Locations

▶ : Bolt, 4

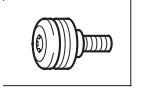


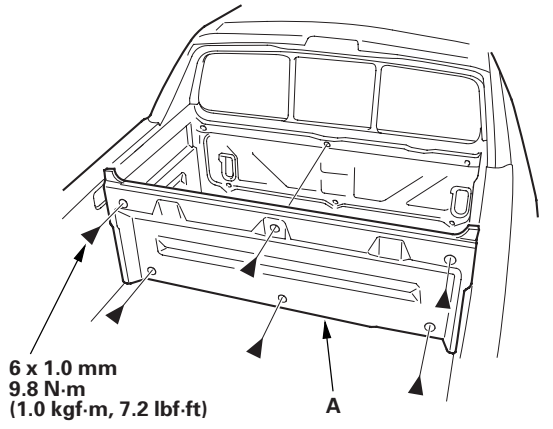


2. Using a TORX T40 bit, remove the bolts, then remove the front bed panel (A).

Fastener Locations

▶ : Bolt, 6





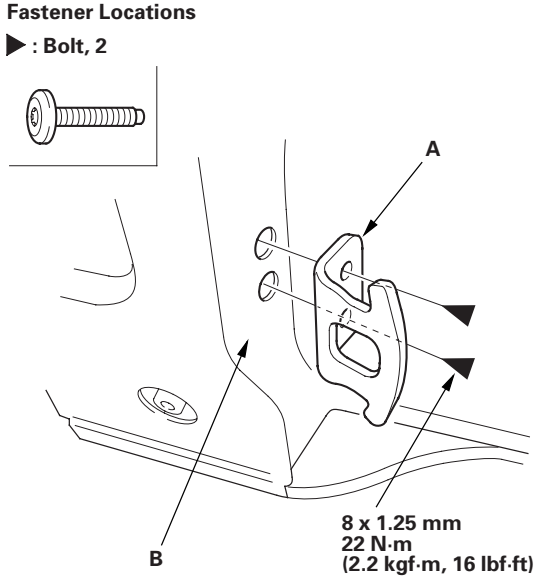
3. Install the panel in the reverse order of removal.

Side Bed Panel Removal/Installation

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the bed panels and body.
- The left side is shown; the right side is similar.

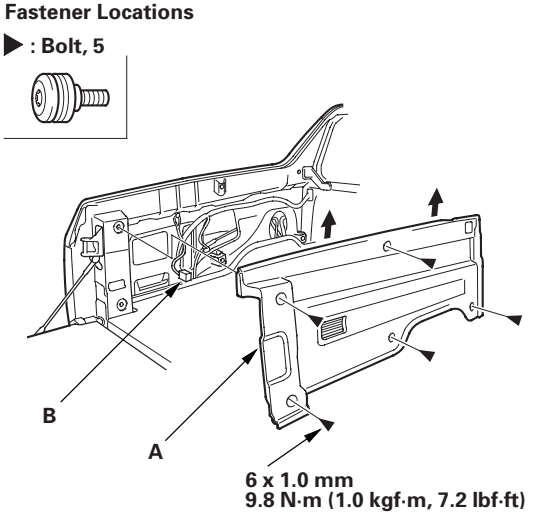
1. Remove these items:
   - Bed rail trim (see page 20-159)
   - Rear roof trim (see page 20-175)
   - Front upper tie-down hooks, both sides (see step 1 on page 20-161)
   - Front bed panel (see page 20-161)
   - Cargo area front light (see page 22-180)
   - C-pillar outer trim (see page 20-160)

2. Using a TORX T50 bit, remove the bolts, then remove the rear tie-down hook (A) from rear end of the side bed panel (B).

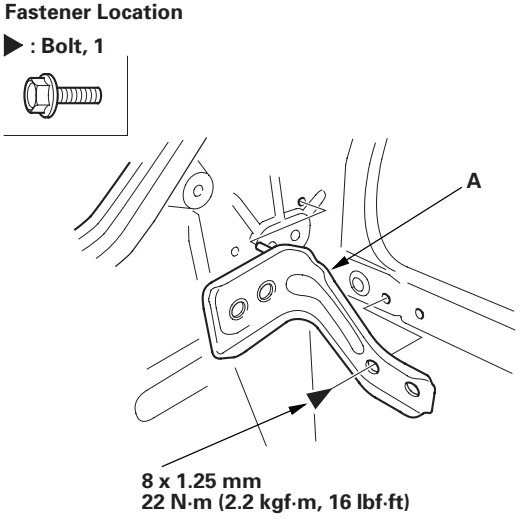


3. Open the tailgate in the drop-down mode.

4. Using a TORX T40 bit, remove the bolts. Lift the side bed panel (A) up, and disconnect the cargo area rear light connector (B), then remove the panel. Take care not to scratch the body.



5. If necessary, remove the bolt, then remove the tie-down bracket (A) from the body.



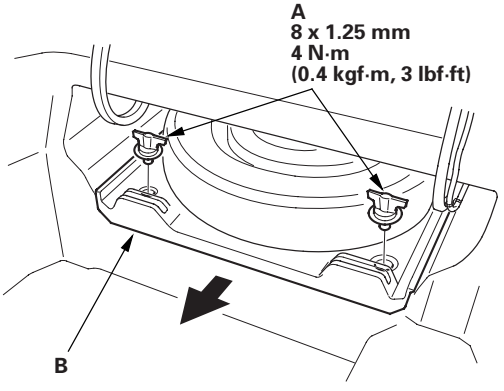
6. Install the panel in the reverse order of removal, and make sure the cargo area rear light connector is plugged in properly.

Bed Floor Removal/Installation

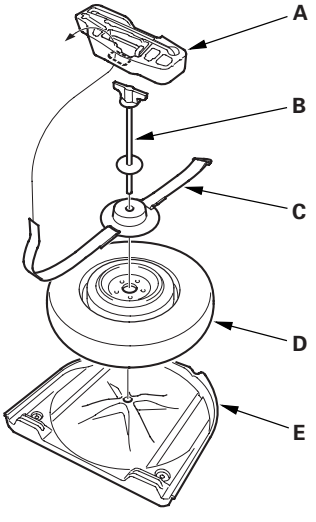
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the bed panels and body.
- Have some assistants help you when removing and installing the bed floor.

1. Remove these items:
   - Bed rail trim, both sides (see page 20-159)
   - Rear roof trim (see page 20-175)
   - Front bed panel (see page 20-161)
   - C-pillar outer trim, both sides (see page 20-160)
   - Side bed panel, both sides (see page 20-162)

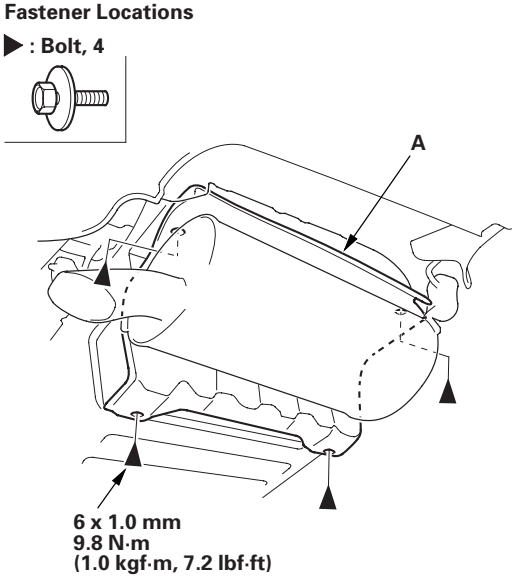
2. Open the in-bed trunk lid. Remove the spare tire tray bolts (A), then pull out the spare tire tray (B).



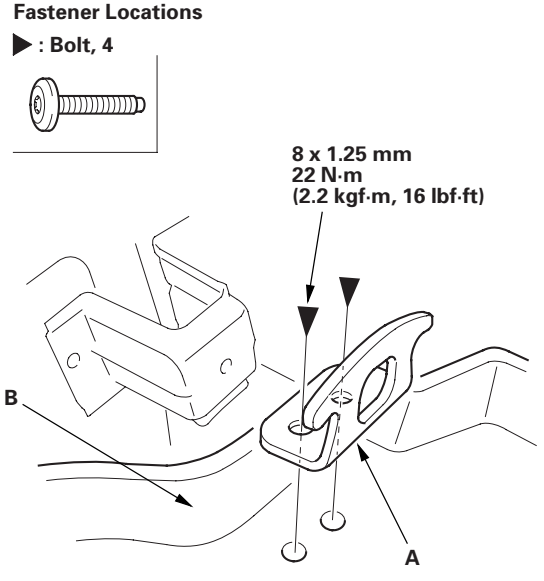
3. Remove the jack and tool box (A). Remove the anchor bolt (B), then remove the anchor bolt adapter (C), spare tire (D), and spare tire tray (E).



4. From under the body, remove the bolts, then remove the silencer baffle plate (A).



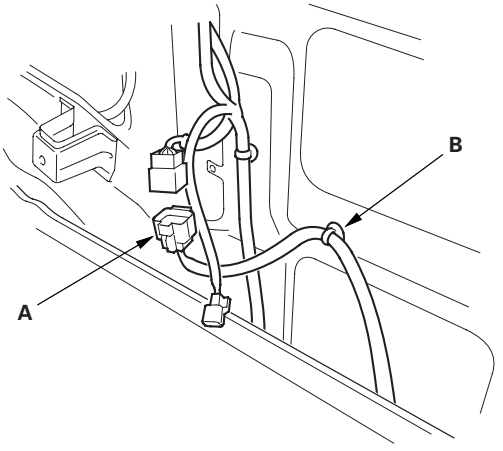
5. Using a TORX T50 bit, remove the bolts, then remove the front lower tie-down hooks (A) from both sides of the bed floor (B).



(cont'd)

Bed Floor Removal/Installation (cont'd)

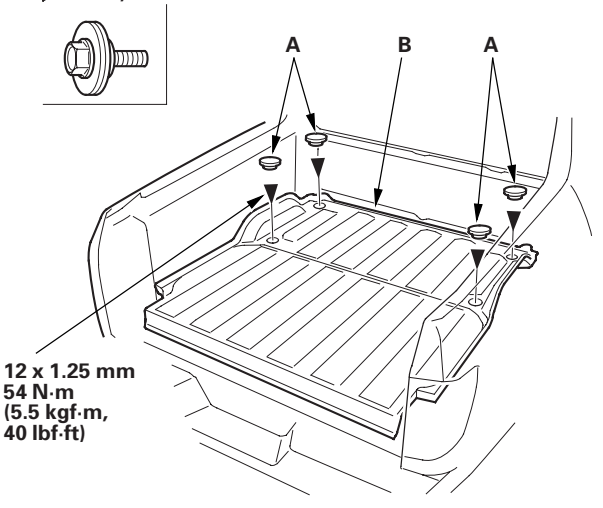
6. From the rear right side of the bed floor, detach the in-bed trunk lid subharness connector (A), and disconnect it. Detach the harness clip (B).



7. Remove the plug caps (A) and bolts from the bed floor (B).

Fastener Locations

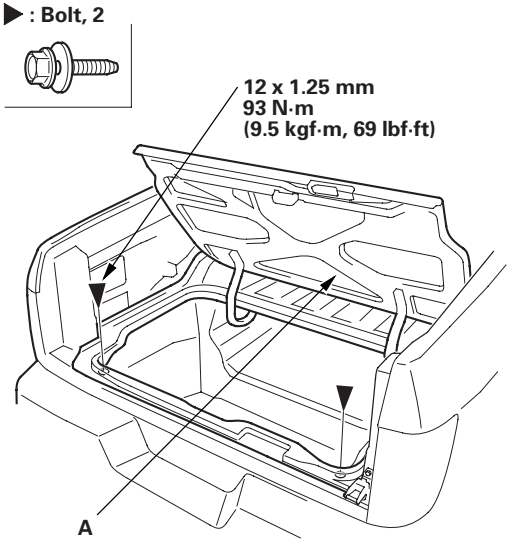
▶ : Bolt, 4



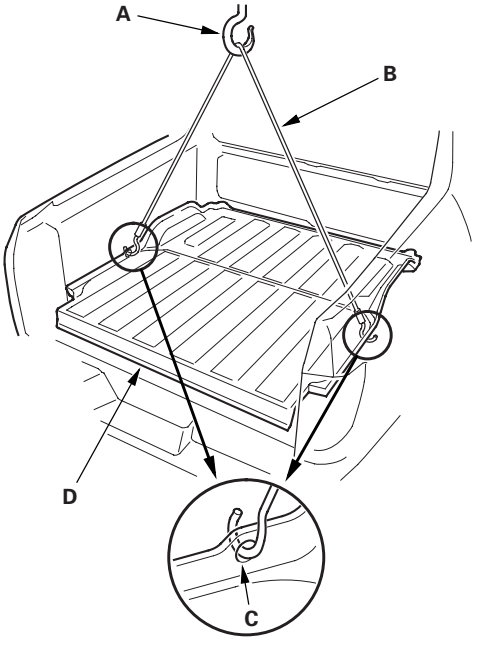
8. Open the in-bed trunk lid (A), then remove the bolts.

Fastener Locations

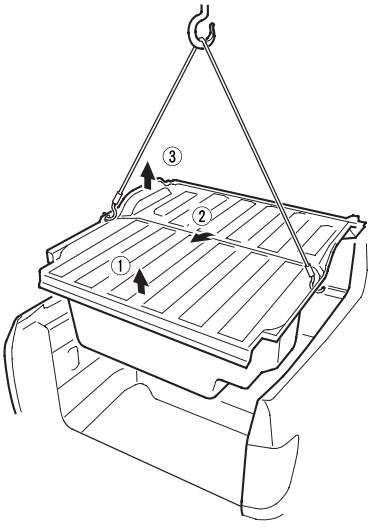
▶ : Bolt, 2



9. Using the hoist (A), and the rope with the hooks (B), attach them to the holes (C) in the bed floor (D) as shown.



10. Having some assistants help you, lift the bed floor up, and remove it in the sequence shown. Take care not scratch the body.



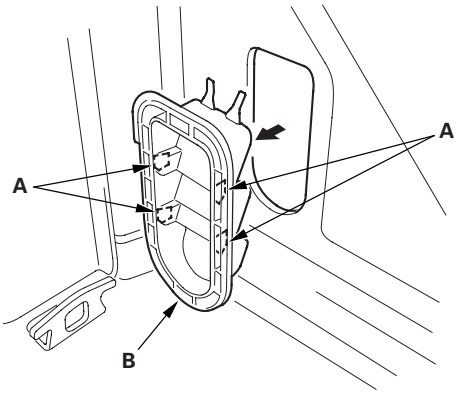
11. Install the bed floor in the reverse order of removal, and make sure the in-bed trunk lid subharness connector is plugged in properly.

Rear Air Outlet Replacement

Body Side Outlet

1. Remove the front bed panel (see page 20-161).

2. Detach the hooks (A), then remove the rear air outlet (B). Take care not to scratch the body.



3. Install the air outlet by pushing on the hook portions until the hooks snap into place.

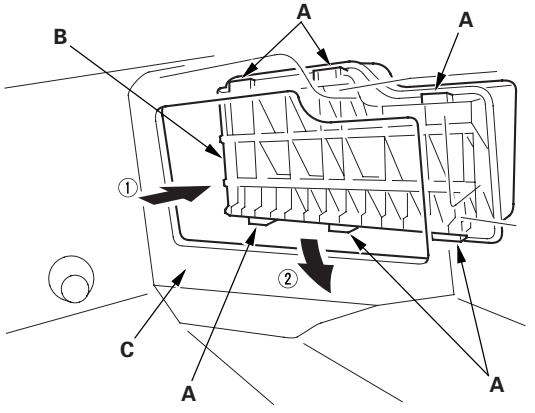
4. Reinstall the front bed panel.

(cont'd)

Rear Air Outlet Replacement (cont'd)

Bed Floor Side Outlet

1. Open the in-bed trunk lid.
2. Remove the jack and tool box, spare tire, and spare tire tray (see page 20-163).
3. From inside the bed floor, detach the hooks (A), then remove the rear air outlet (B) to outside of the bed floor (C), and then pass the outlet to the inside through the outlet opening in the bed floor. Take care not to scratch the bed floor.

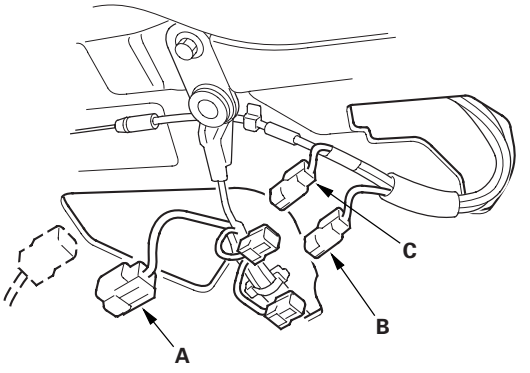


4. Install the air outlet by pulling on the hook portions until the hooks snap into place.

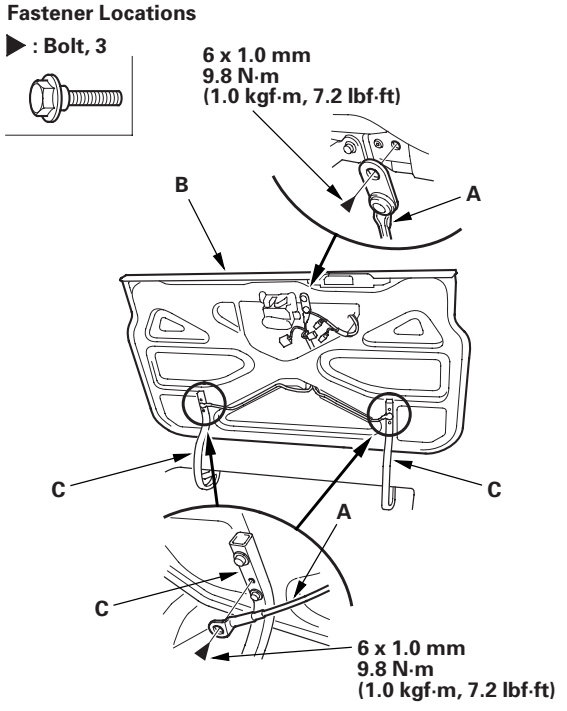
In-Bed Trunk Lid Removal/ Installation

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the in-bed trunk lid.
- Have an assistant help you when removing and installing the in-bed trunk lid.

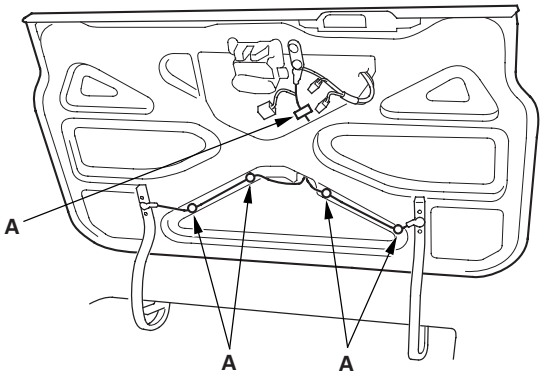
1. Open the in-bed trunk lid.
2. Remove the in-bed trunk lid inner cover (see step 2 on page 20-187).
3. Disconnect the in-bed trunk lid latch actuator connector (A), in-bed trunk lid opener switch connector (B), and cylinder switch connector (C).



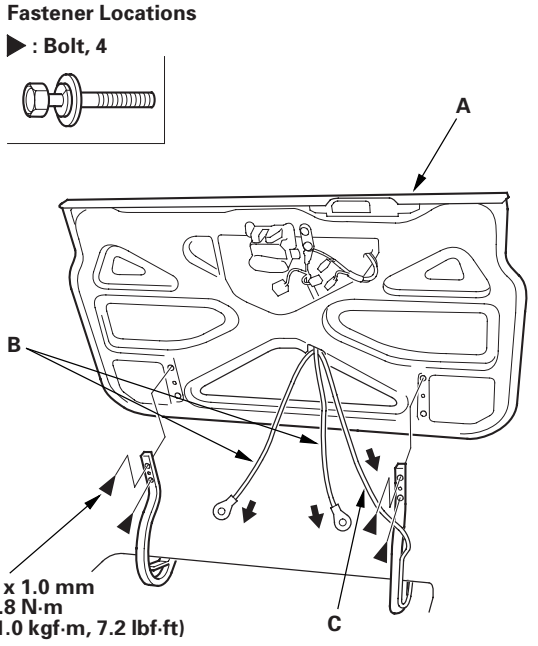
4. Remove the bolts, then remove the in-bed trunk lid anchor cables (A) from the in-bed trunk lid (B) and in-bed trunk lid hinges (C).



5. Detach the cable and wire harness clips (A).



6. Remove the bolts, then remove the in-bed trunk lid (A) by pulling out the in-bed trunk lid anchor cables (B) and in-bed trunk lid subharness (C).



7. Install the in-bed trunk lid in the reverse order of removal, and note these items:

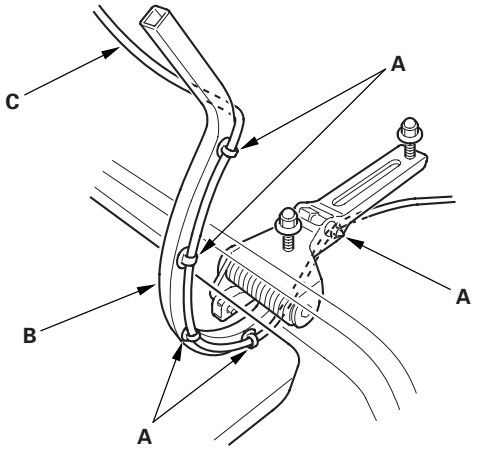
   - Make sure the anchor cables and subharness are routed properly.
   - Make sure each connector is plugged in properly.

In-Bed Trunk Lid Hinge Replacement

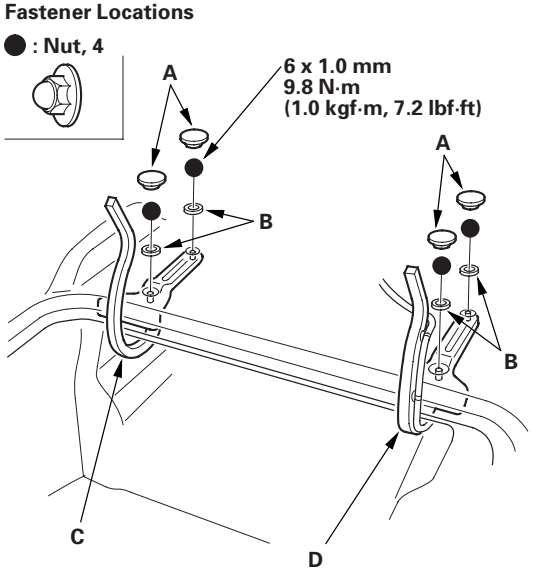
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the in-bed trunk lid.

1. Remove the in-bed trunk lid (see page 20-166).

2. Detach harness clips (A) from the right in-bed trunk lid hinge (B), then remove the in-bed trunk lid subharness (C) from the hinge.



3. Remove the plug caps (A), washers (B), and nuts, then remove the left in-bed trunk lid hinge (C) and right in-bed trunk lid hinge (D).

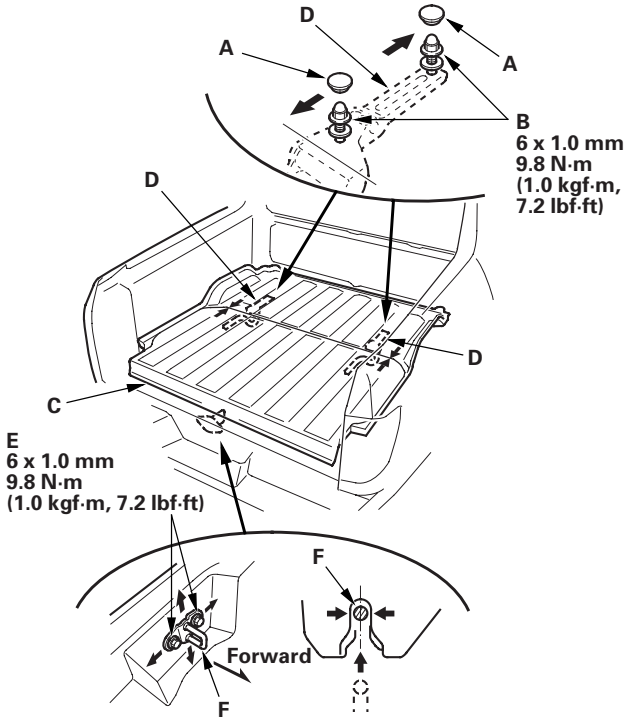


4. Install the hinges in the reverse order of removal, and note these items:

   - Make sure the subharness is routed properly.
   - Adjust the in-bed trunk lid alignment (see page 20-169).

In-Bed Trunk Lid Alignment

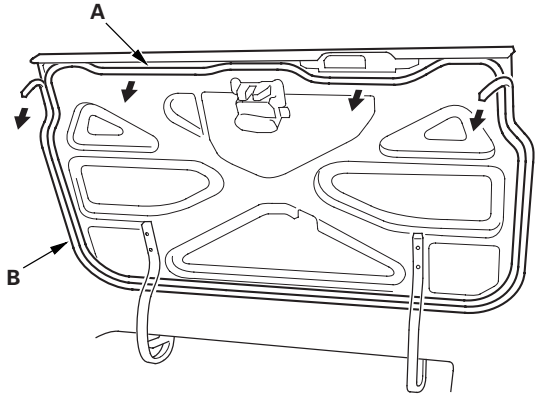
1. Swing the tailgate open.
2. Remove the plug caps (A) and slightly loosen the in-bed trunk lid hinge nuts (B).



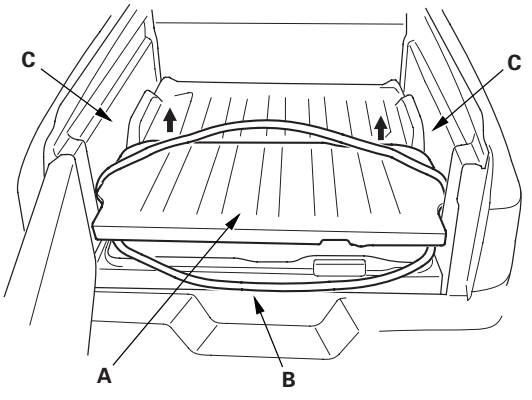
3. Adjust the in-bed trunk lid (C) alignment in the following sequence:
   - Adjust the in-bed trunk lid and in-bed trunk lid hinges (D) right and left, as well as forward and rearward, by using the elongated holes.
   - Loosen the striker bolts (E), and adjust the fit between the in-bed trunk lid and the in-bed trunk lid opening by moving the striker (F).
4. Tighten the bolts to the specified torque.
5. Make sure the in-bed trunk lid opens properly and locks securely.
6. Reinstall the plug caps.

In-Bed Trunk Lid Weatherstrip Replacement

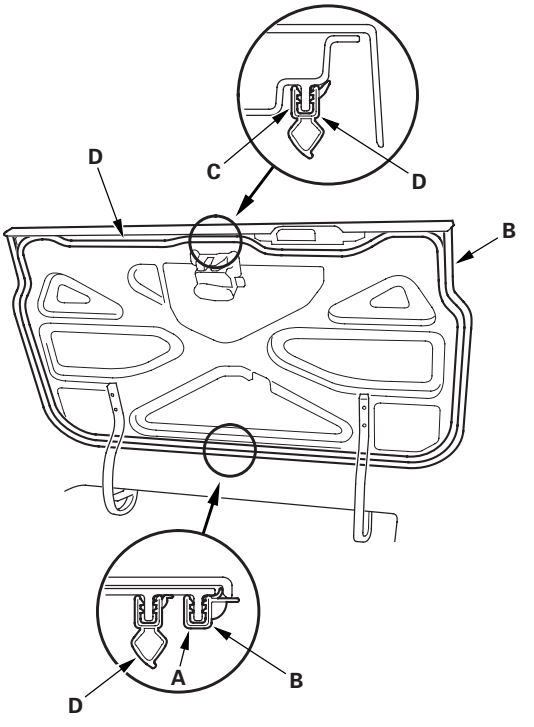
1. Remove the in-bed trunk lid weatherstrip (A) and in-bed trunk lid edge weatherstrip (B) by pulling them off.



2. While closing the in-bed trunk lid (A), Pull out the in-bed trunk lid weatherstrip (B) from between the lid and side bed panels (C), then remove the weatherstrip.



3. Locate the painted alignment mark (A) on the in-bed trunk lid edge weatherstrip (B) and locate the bonded ends position (C) on the in-bed trunk lid weatherstrip (D). Align the painted mark and the bonded ends position in the center of the in-bed trunk lid, and install the in-bed trunk lid weatherstrips all the way around in the direction shown. Make sure there are no wrinkles in the weatherstrips.



4. Check for water leaks.

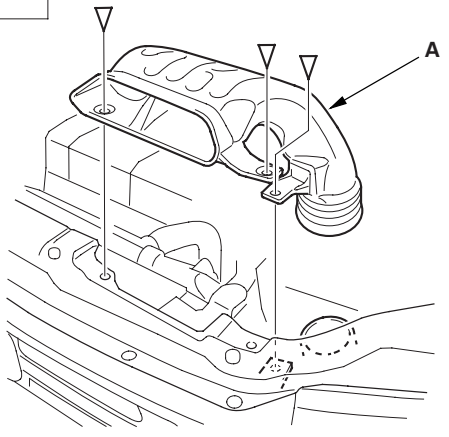
Front Bulkhead Cover Replacement

NOTE: Take care not to scratch the front bumper and body.

1. Remove the clips, then remove the air intake duct (A).

Fastener Locations

▷ : **Clip, 3**

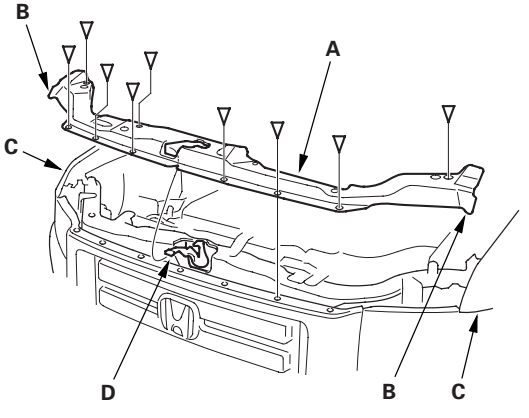


2. Remove the front bulkhead cover (A).

–1 Remove the clips.
–2 Release the side edges (B) of the cover from the front fenders (C) on both sides, and pass the hood latch knob (D) through the hole in the cover.

Fastener Locations

▷ : **Clip, 9**



3. Install the cover in the reverse order of removal, and note these items:

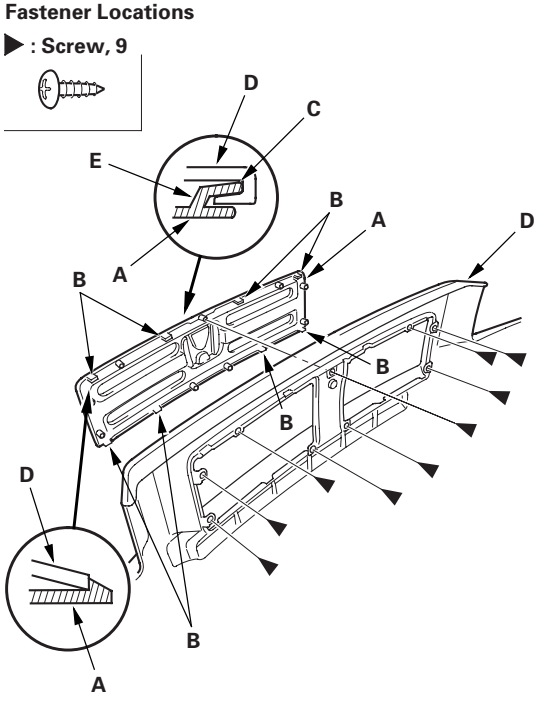
- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips into place securely.

Front Grille Replacement

Front Bumper Mesh Replacement

NOTE: Take care not to scratch the front bumper.

1. Remove the front bumper (see page 20-132).
2. Remove the front bumper mesh (A).
   - 1 Remove the screws.
   - 2 Release the hooks (B) of the bumper mesh.
   - 3 Pull out the bumper mesh from the groove (C) of the front bumper (D) to release the ribs (E) of the bumper mesh.

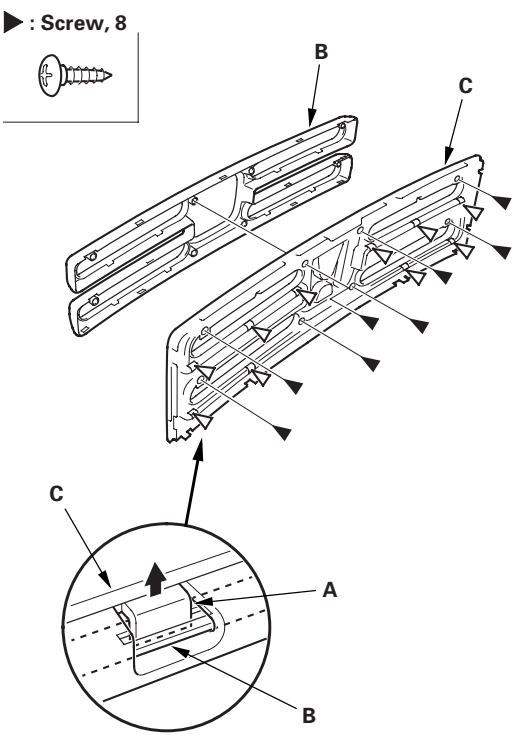


3. Install the bumper mesh in the reverse order of removal, and push the hooks into place securely.

Front Grille Molding Replacement (For some '07-08 models)

NOTE: Take care not to scratch the front bumper.

1. Remove the front bumper mesh.
2. Remove the screws, and release the hooks (A), then remove the front grille molding (B) from the front bumper mesh (C).



3. Install the grille molding in the reverse order of removal, and push the hooks into place securely.

Cowl Cover Replacement

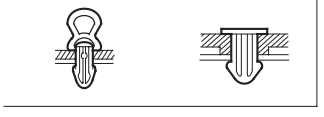
Special Tools Required
KTC trim tool set SOJATP2014 *
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

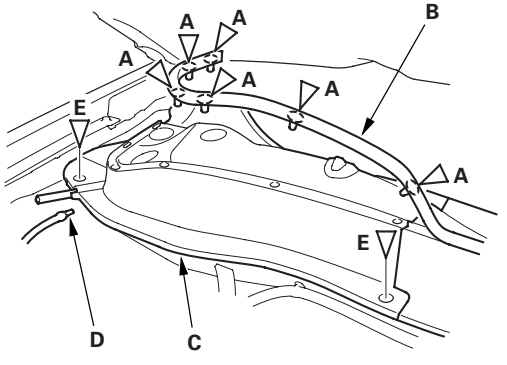
NOTE:
- Take care not to scratch the cowl cover and body.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Remove the windshield wiper arms (see page 22-237).

2. Using a trim tool, detach the clips (A), then remove the hood rear seal (B) from the passenger's cowl cover (C). Disconnect the windshield washer tube (D), and remove the clips (E).

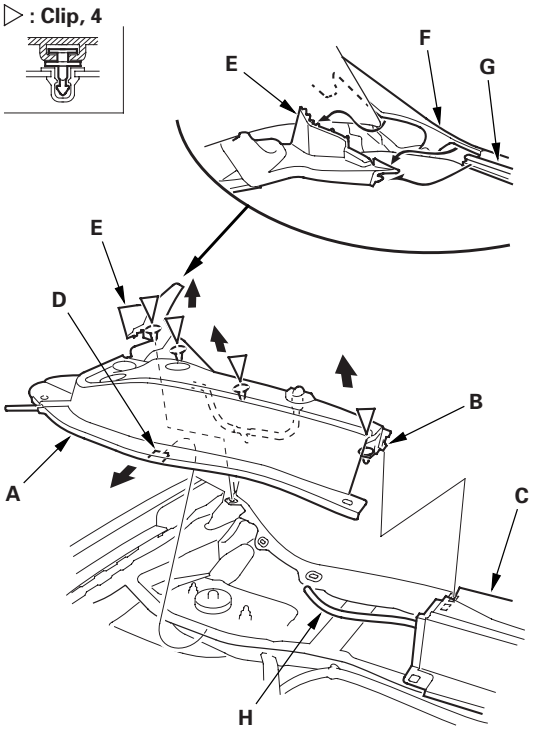
Fastener Locations
A ▷ : Clip, 6 **E ▷ : Clip, 2**





3. Detach the clips by carefully pulling the passenger's cowl cover (A) upward, and release the hook (B) on the passenger's cowl cover from the driver's cowl cover (C). Pull the cover forward to release the hook (D), and pull the hinge cover (E) out from the front fender (F) and windshield molding (G).

Fastener Locations
▷ : Clip, 4



4. Disconnect the washer tube (H), then remove the passenger's cowl cover.

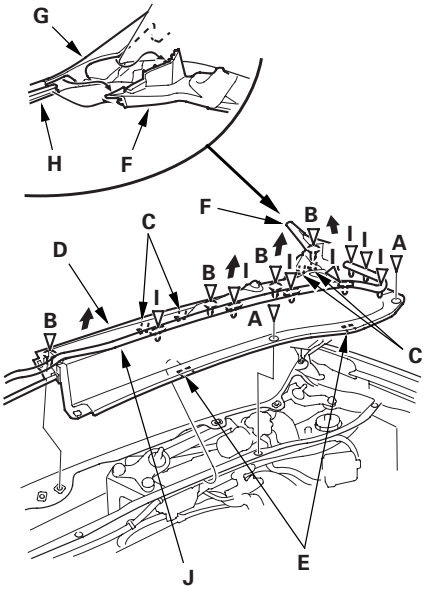
(cont'd)

Cowl Cover Replacement (cont'd)

5. Remove the clips (A). Detach the clips (B) and hooks (C) by carefully pulling the driver's cowl cover (D) upward. Pull the cover forward to release the hooks (E), and pull the hinge cover (F) out from the front fender (G) and windshield molding (H).

Fastener Locations

A ▷: Clip, 2 B ▷: Clip, 4 I ▷: Clip, 7



6. If necessary, using a trim tool, detach the clips (I), then remove the hood rear seal (J) from the driver's cowl cover.

7. Install the covers in the reverse order of removal, and note these items:

   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Push the clips into place securely.
   - Make sure the washer tubes are connected securely.

Roof Molding Replacement

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

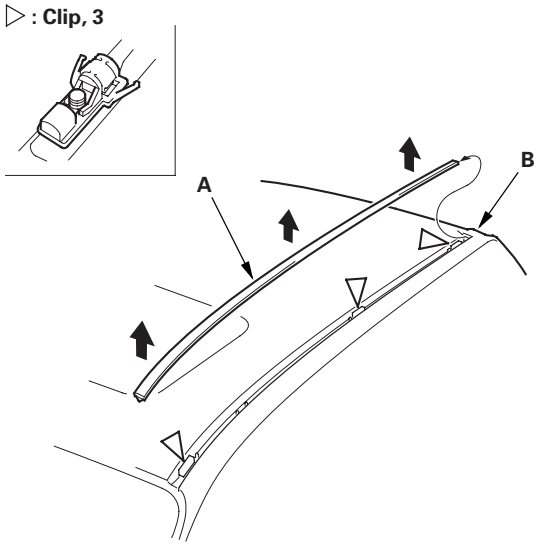
NOTE:

- Take care not to scratch the body.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- The steel core in the roof molding cannot be restored to its original shape once it is bent. Replace the roof molding when the steel core is bent.

1. Using a trim tool and a shop towel on the body, starting at the front, detach the clips by prying up the roof molding (A), and release the molding from under the rear roof trim (B).

Fastener Locations

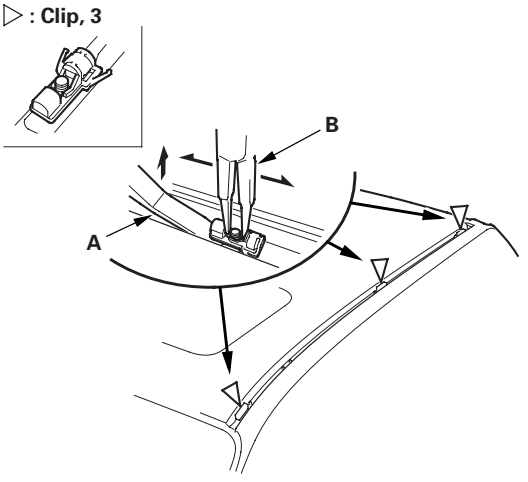
▷: Clip, 3



2. Using a trim tool (A) and the pliers (B), remove the clips from the body.

Fastener Locations

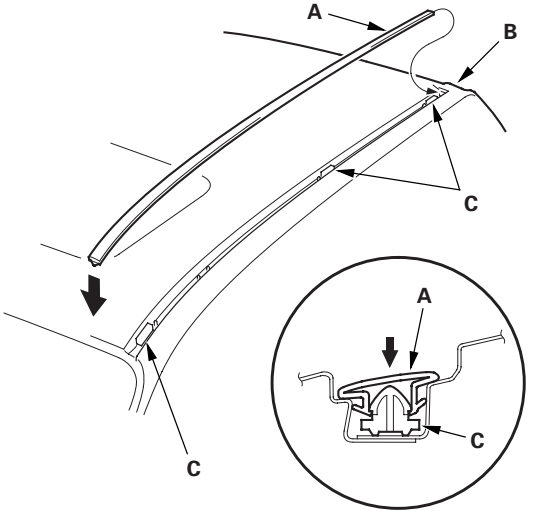
▷ : **Clip, 3**



3. Replace any damaged clips.

4. Install the clips to the body. The clip should be installed with its hook toward the rear.

5. Insert the rear end of the roof molding (A) under the rear roof trim (B), and align the front edge of the molding with the body, then push on the clips (C) portions until the molding snap into place.



Rear Roof Trim Replacement

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

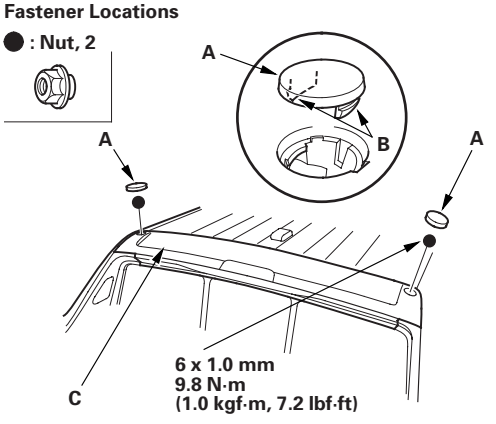
NOTE:

- Take care not to scratch the body.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Using a trim tool, pry the caps (A) up to detach the hooks (B), then remove them, and remove the nuts securing the rear roof trim (C).

Fastener Locations

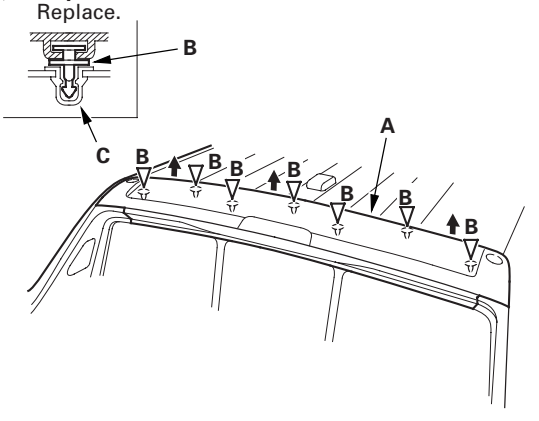
● : **Nut, 2**



2. Using a trim tool, carefully pry up the on rear roof trim (A) along three front clips (B) to release them from the grommets (C). Start with the left front clip, and work your way to the right clip.

Fastener Locations

▷ : **Clip, 7**
Replace.

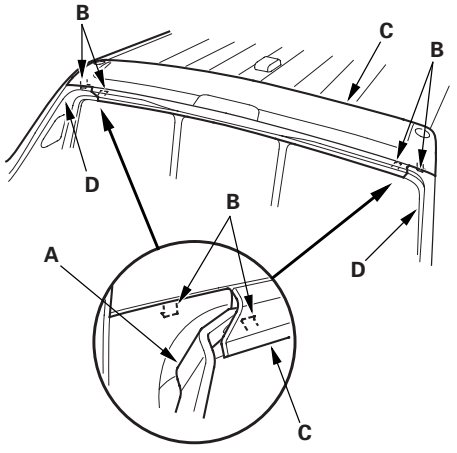


3. Place your hand under the rear roof trim and lift to release the four remaining clips from the grommets.

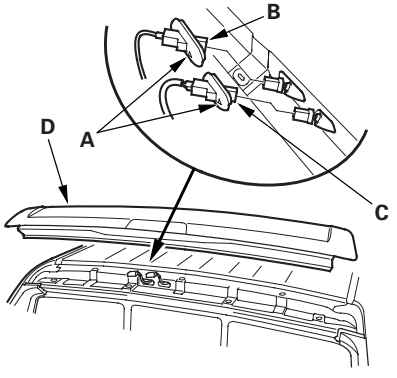
(cont'd)

Rear Roof Trim Replacement (cont'd)

4. Using a trim tool (A), detach the hooks (B) of the rear roof trim (C) from the C-pillar outer trim (D) on both sides while pulling out the rear roof trim.



5. Remove the connector grommets (A) from the body, and then disconnect the antenna connector (B) and high mount brake light connector (C), then remove the rear roof trim (D).



6. Remove the clips from the rear roof trim, and remove the grommets from the body. Replace the clips and grommets with new ones.

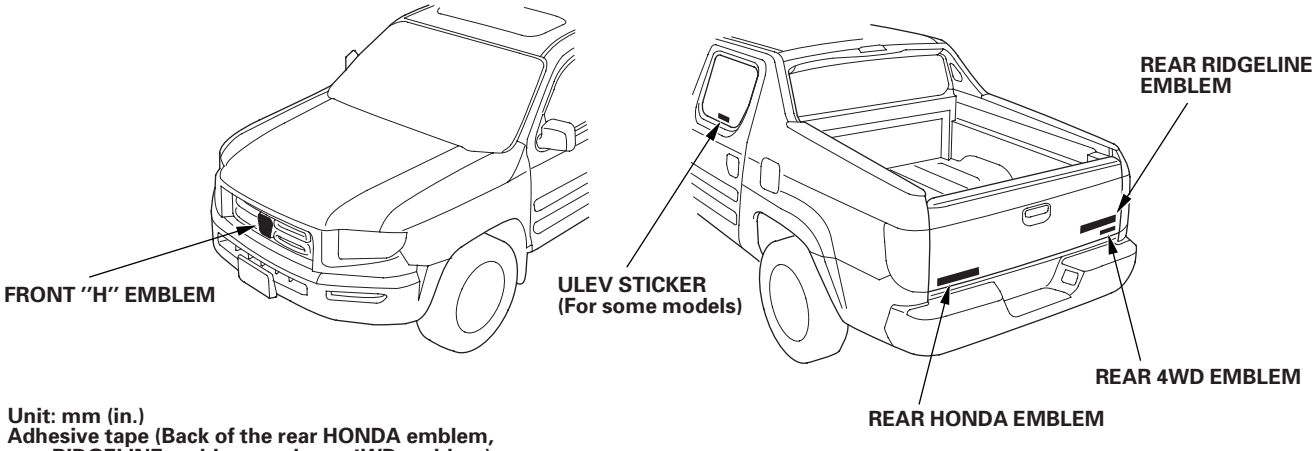
7. Install the trim in the reverse order of removal, and note these items:

   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Make sure the antenna connector and high mount brake light connector are plugged in properly.
   - Make sure the each connector grommet is installed securely.
   - Push the clips into place securely.
   - Make sure the clips are set securely and the nuts tightened.

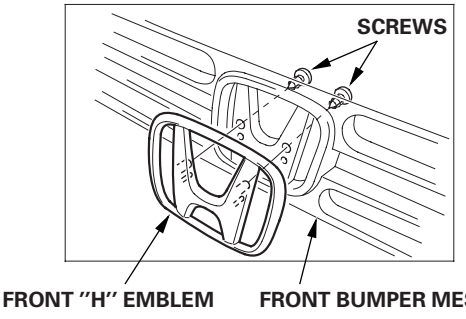
Emblem/Sticker Replacement

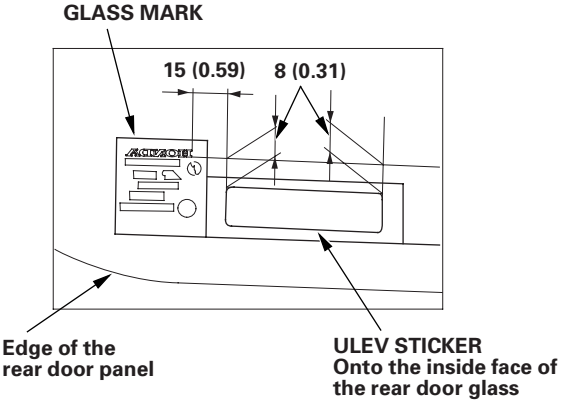
NOTE: When using dental floss to cut the emblem adhesive, take care not to scratch the body.

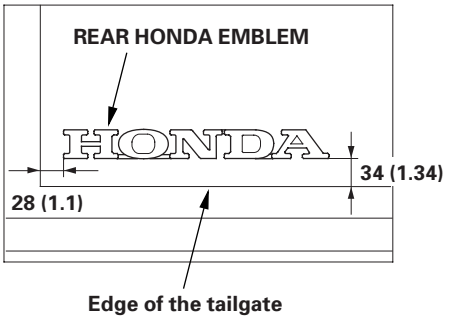
1. To remove the front ''H'' emblem, remove the front bumper mesh (see page 20-172).
2. Clean the bonding surface with a sponge dampened in isopropyl alcohol. After cleaning, keep oil, grease, and water from getting on the surface.
3. Apply the emblems where shown.

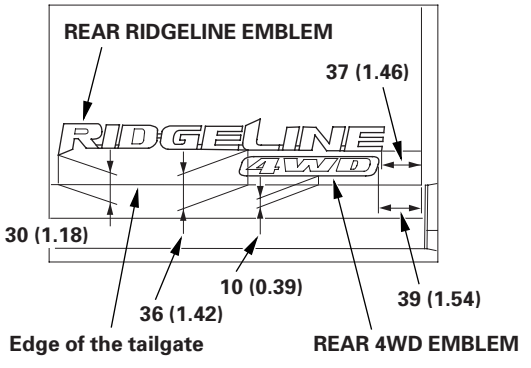


Unit: mm (in.)
Adhesive tape (Back of the rear HONDA emblem, rear RIDGELINE emblem, and rear 4WD emblem): Thickness 0.8 mm (0.03 in.)









Front Inner Fender Replacement

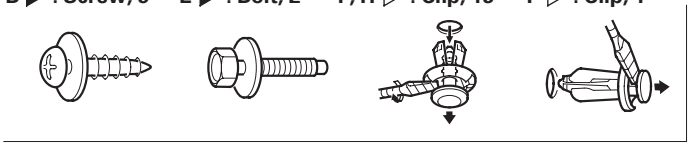
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the body and related parts.

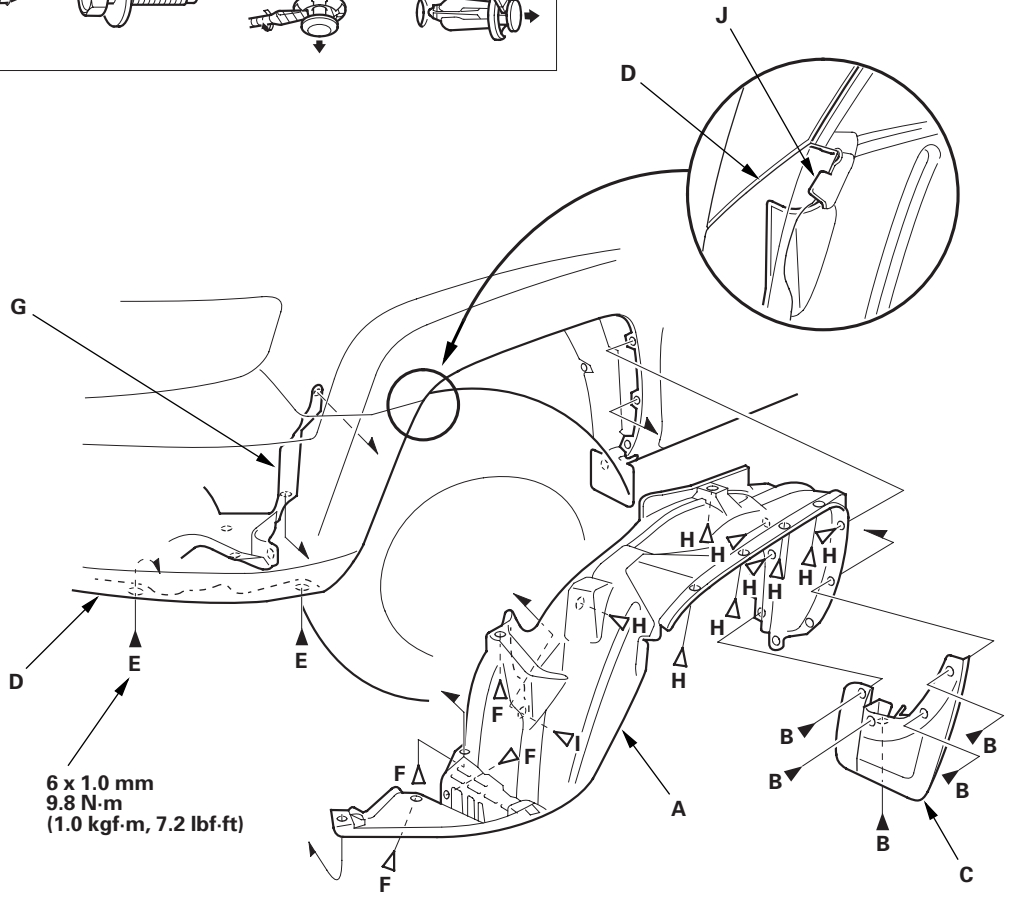
1. Remove the front inner fender (A).

   1 Remove the screws (B) from the rear of the front wheel arch, then remove the splash guard (C).
   2 From under the front bumper (D), remove the bolts (E) securing the front bumper and front inner fender, and remove the clips (F) securing the front inner fender and front splash shield (G).
   3 From the wheel arch, remove the clips (H, I) securing the front inner fender (and splash shield) to the body.
   4 Pull out the front inner fender from the wheel arch.

Fastener Locations

B ▶ : Screw, 5 E ▶ : Bolt, 2 F, H ▷ : Clip, 13 I ▷ : Clip, 1





2. Install the inner fender in the reverse order of removal, and note these items:

   - Make sure to set the tab (J) on the inner fender behind the front bumper.
   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Push the clips into place securely.

Front Splash Shield Replacement

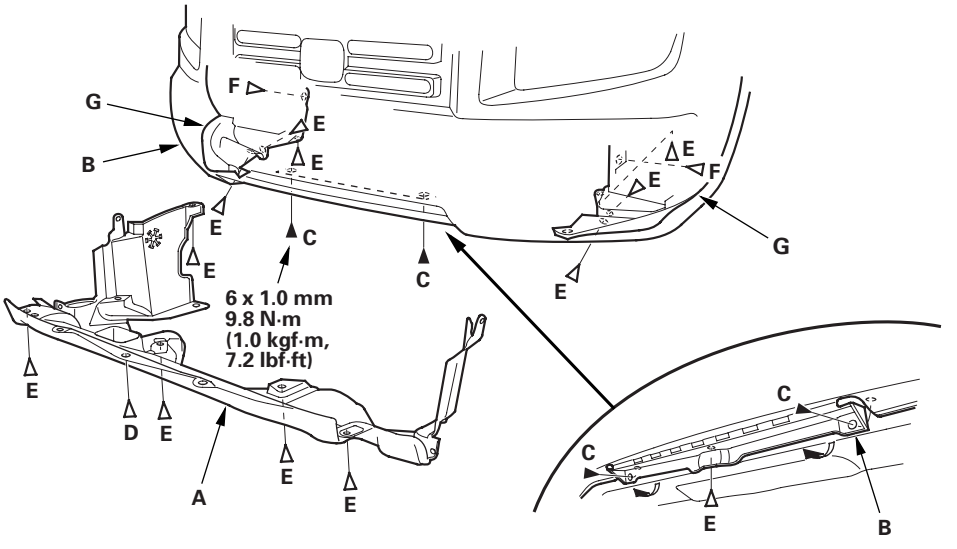
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the body and related parts.

1. Remove the splash shield (A).

   1 From under the front bumper (B), remove the bolts (C), then turn down the bumper, and remove the clip (D).
   2 Remove the clips (E, F) that secure the front inner fender (G) and splash shield to the body.
   3 Pull the splash shield out.

Fastener Locations

C ▶ : Bolt, 2 D ▷ : Clip, 1 E ▷ : Clip, 12 F ▷ : Clip, 2

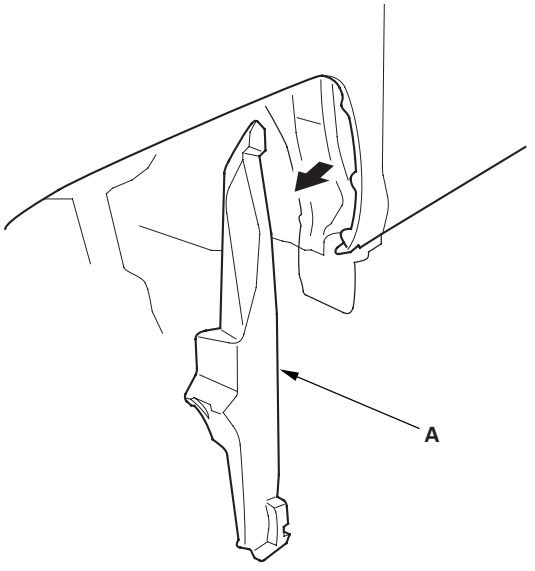


2. Install the splash shield in the reverse order of removal, and note these items:

   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Push the clips into place securely.

Front Fender Fairing Replacement

1. Remove the front inner fender as needed (see page 20-178).
2. Pull out and remove the front fender fairing (A).



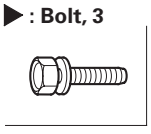
3. Install the fender fairing in the reverse order of removal.

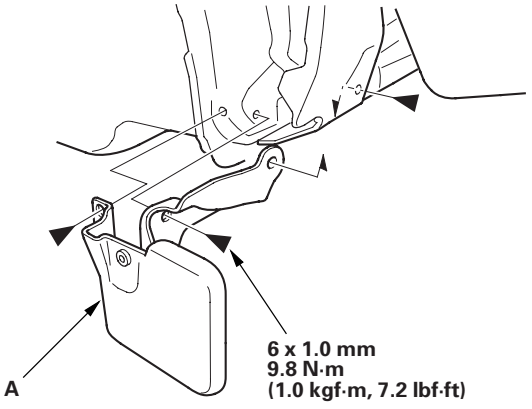
Left Front Splash Guard Reinforcement Replacement

1. Remove the left front inner fender as needed (see page 20-178).
2. Open the driver's door.
3. Remove the bolts, then remove the left front splash guard reinforcement (A). Take care not to scratch the body.

Fastener Locations

▶ : Bolt, 3





4. Install the reinforcement in the reverse order of removal.

Rear Fender Cover Replacement

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the body and related parts.

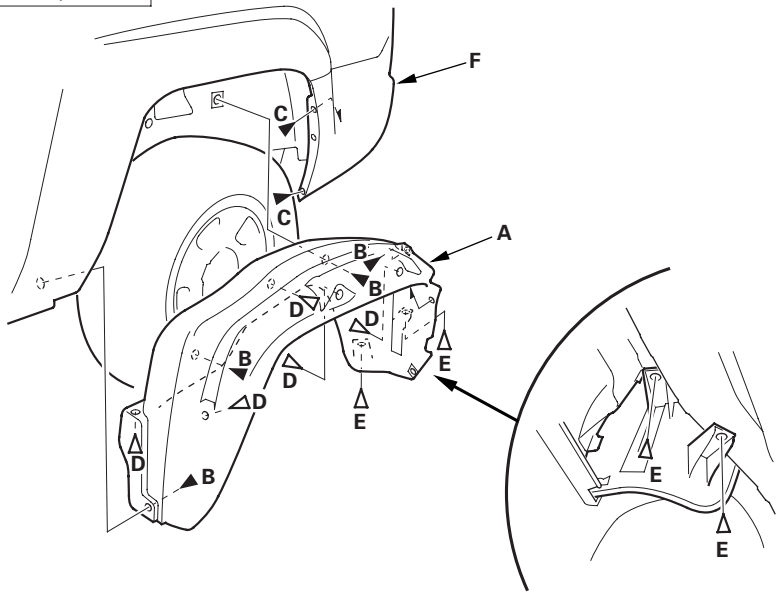
1. Remove the rear fender cover (A).

   1 Remove the screws (B, C) and clips (D) and from the wheel arch of the fender cover.
   2 Remove the clips (E) from under the rear bumper (F).
   3 Pull out the rear fender cover.

   NOTE: The left side is shown, the right side is similar.

Fastener Locations

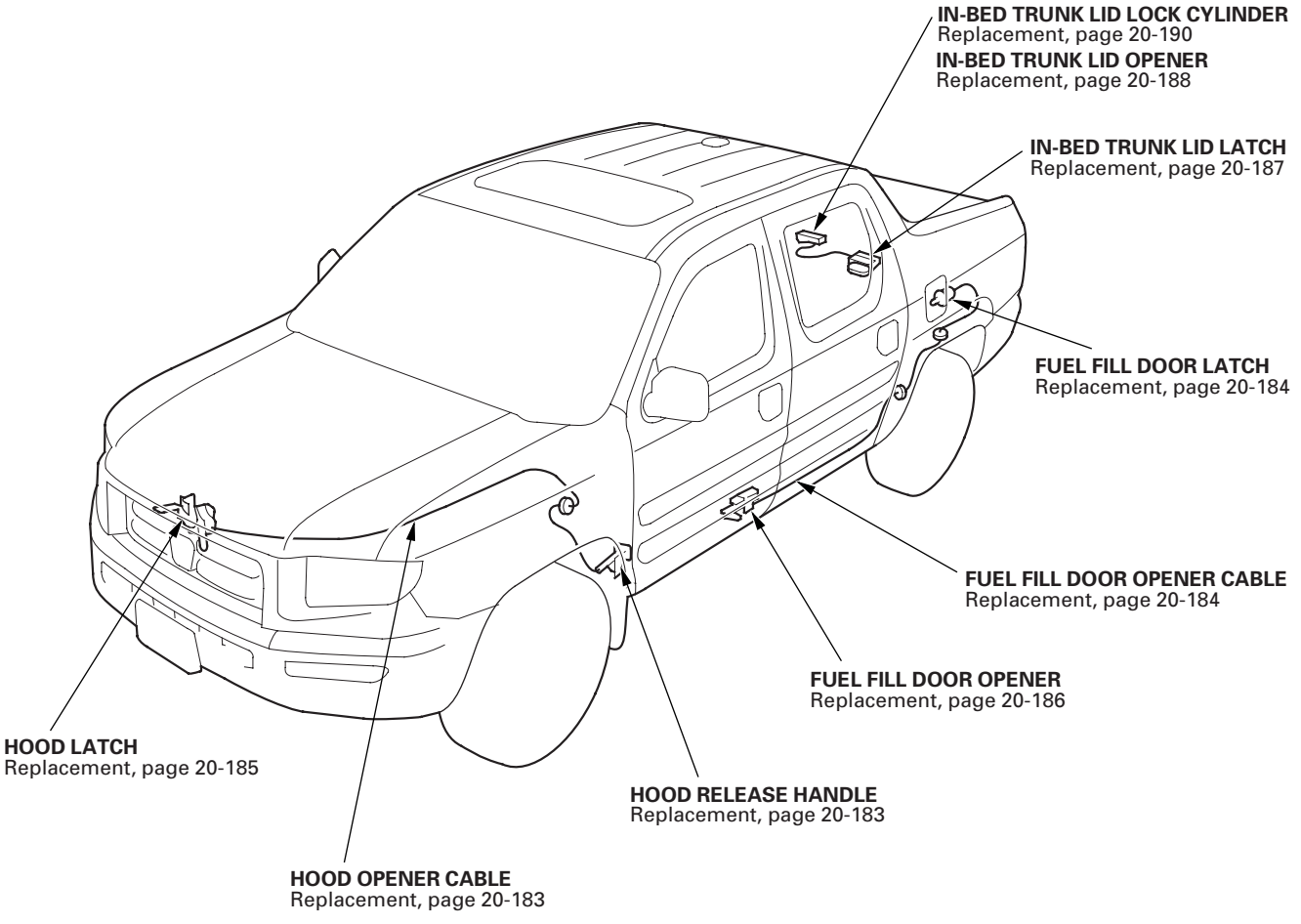
B ▶ : Screw, 4 C ▶ : Screw, 2 D, E ▷ : Clip, 7



2. Install the fender cover in the reverse order of removal, and note these items:

   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Push the clips into place securely.

Component Location Index



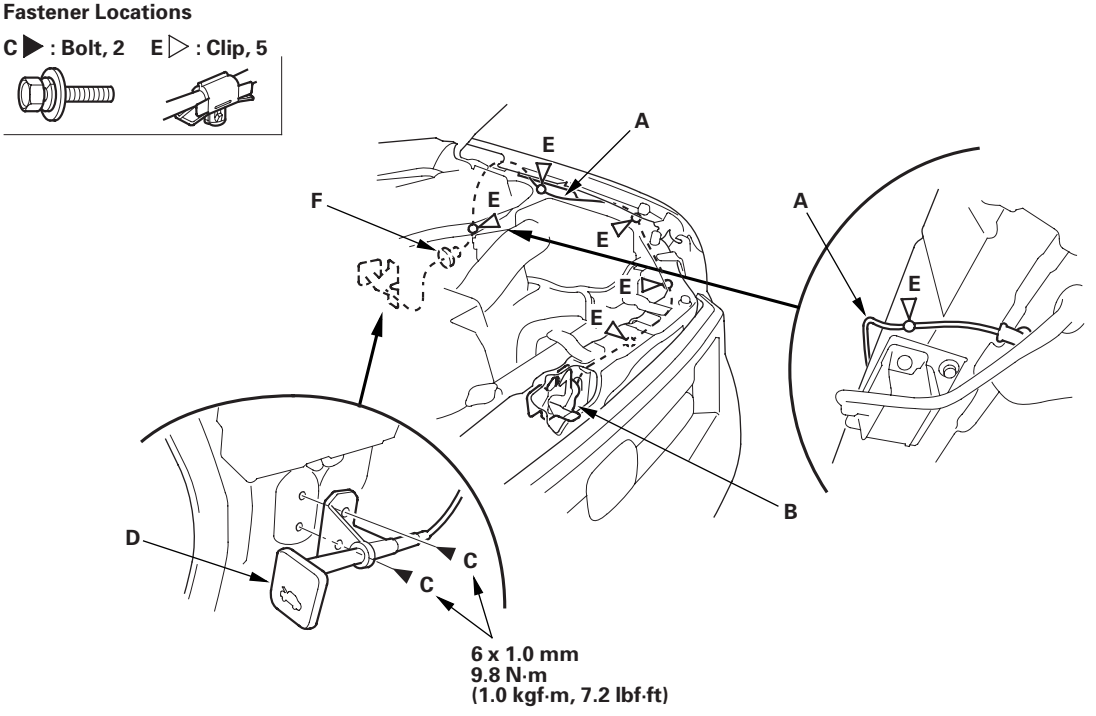
Hood Opener Cable Replacement

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the body and related parts.

1. Remove these items:

   - Front bulkhead cover (see page 20-171)
   - Front inner fender, left side as needed (see page 20-178)
   - Kick panel, left side (see page 20-60)

2. Disconnect the hood opener cable (A) from the hood latch (B) (see page 20-185).



3. Remove the bolts (C), then remove the hood release handle (D).

4. Using a clip remover, detach the clips (E), and remove the grommet (F) from the body, then remove the hood opener cable from the vehicle. Take care not to kink the cable.

5. Install the cable in the reverse order of removal, and replace any damaged clips.

Fuel Fill Door Opener Cable Replacement

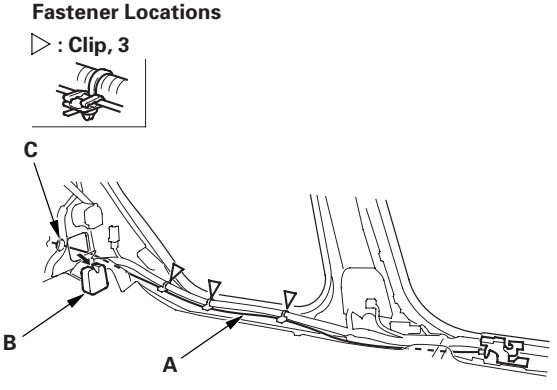
SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before doing repairs or service.

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the body and related parts.

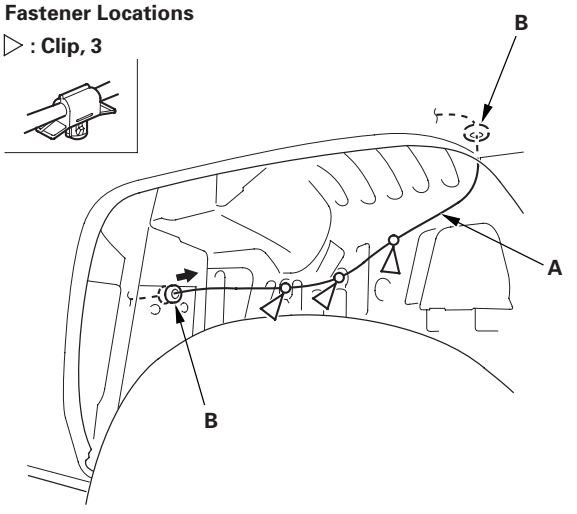
1. Remove these items from the left side of the vehicle:
   - Front door sill trim (see page 20-60)
   - Rear door sill trim (see page 20-60)
   - B-pillar lower trim (see page 20-65)
   - Rear seat side trim (see page 20-60)
   - Rear fender cover (see page 20-181)
   - Side bed panel (see page 20-162)

2. Disconnect the fuel fill door opener cable from the fuel fill door opener (see page 20-186).

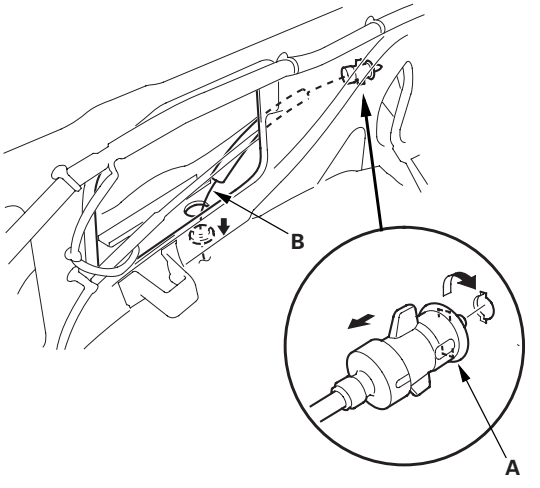
3. Remove the fuel fill door opener cable (A) from the clips, and remove the urethane block (B) from the body, then remove the grommet (C).



4. From the left rear wheel arch, detach the clips, and then pull out the fuel fill door opener cable (A), and remove the grommets (B).

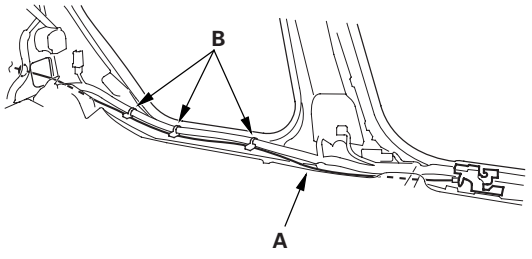


5. On the pickup bed, remove the fuel fill door latch (A) from the body by turning it 90 °, then remove the fuel fill door opener cable (B) by pulling out through the hole in the body. Take care not to kink the cable.



6. Install the opener cable (A) in the reverse order of removal, and note these items:

   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Align the mark (B) on the cable with the clips.

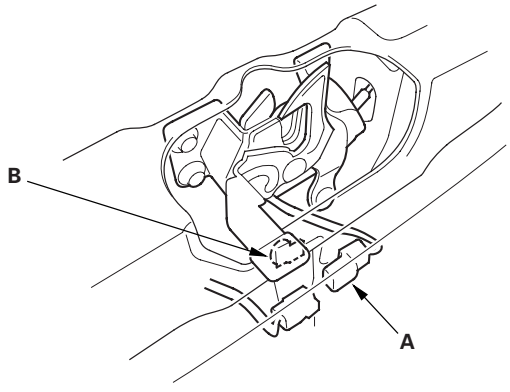


Hood Latch Replacement

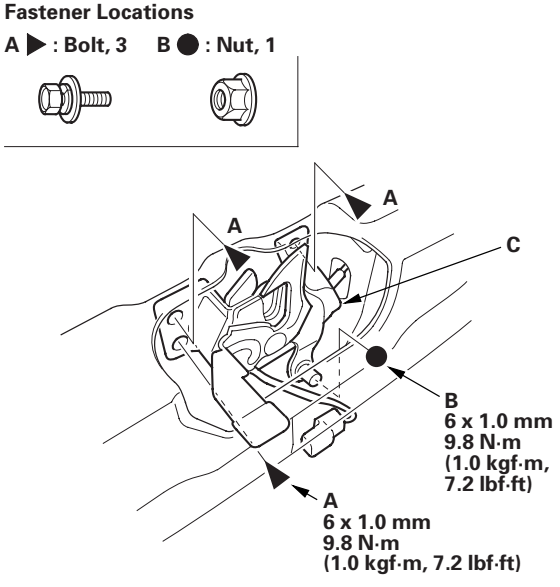
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the body.

1. Remove the front bulkhead cover (see page 20-171).

2. Detach the latch switch connector (A) from the connector clip (B), and disconnect it.



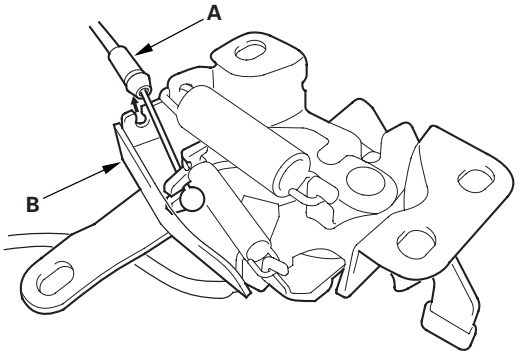
3. Remove the bolts (A) and nut (B), then remove the latch (C) from the body.



(cont'd)

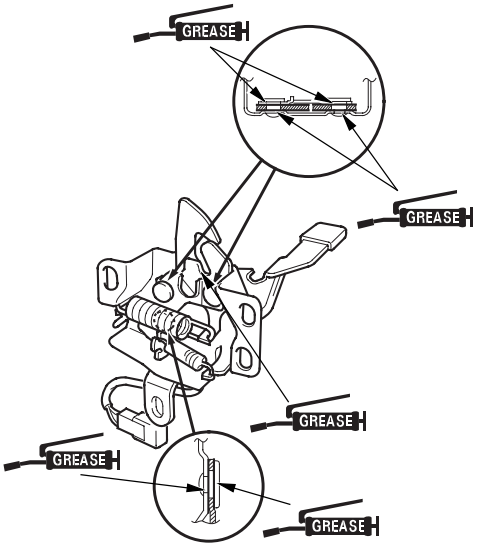
Hood Latch Replacement (cont'd)

4. Disconnect the hood opener cable (A) from the hood latch (B). Take care not to kink the cable.



5. Install the latch in the reverse order of removal, and note these items:

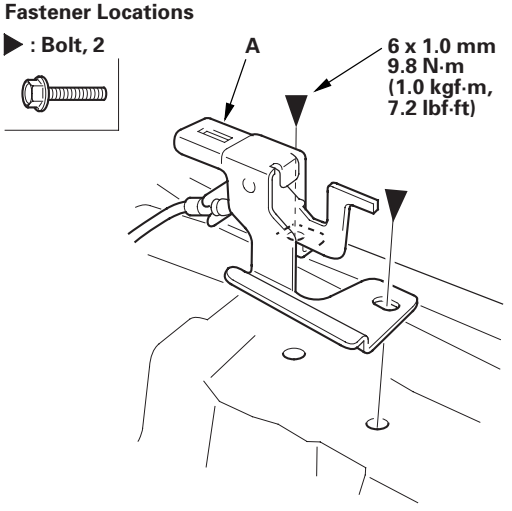
   - Apply multipurpose grease to the hood latch as indicated by the arrows.
   - Make sure the hood opener cable is connected properly and hood latch switch connector is plugged in properly.
   - Make sure the cable actuates the latch before you close the hood.
   - Adjust the hood latch alignment (see step 3 on page 20-135).
   - Make sure the hood opens properly and locks securely.



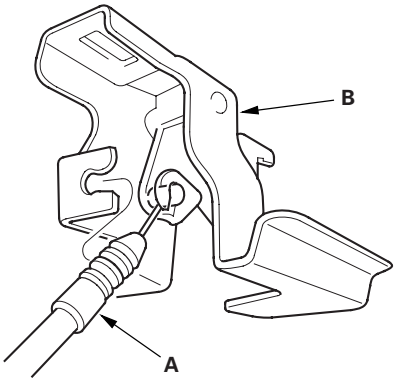
Fuel Fill Door Opener Replacement

1. Remove the left front door sill trim (see page 20-60).

2. Remove the bolts, then remove the fuel fill door opener (A) from the body.



3. Disconnect the fuel fill door opener cable (A) from the opener (B). Take care not to kink the cable.



4. Install the fuel fill door opener in the reverse order of removal, and note these items:

   - Make sure the fuel fill door opener cable is connected properly.
   - Make sure the fuel fill door opens properly.

In-Bed Trunk Lid Latch Replacement

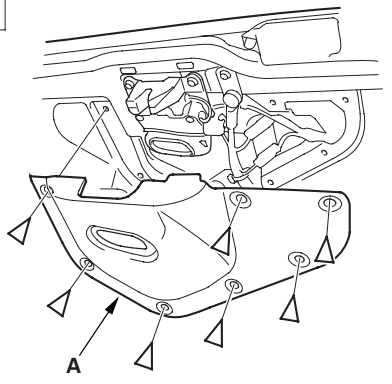
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the in-bed trunk lid.

1. Open the in-bed trunk lid.

2. Using a clip remover, remove the clips, then remove the in-bed trunk lid inner cover (A).

Fastener Locations

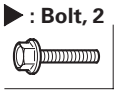
▷ : Clip, 7

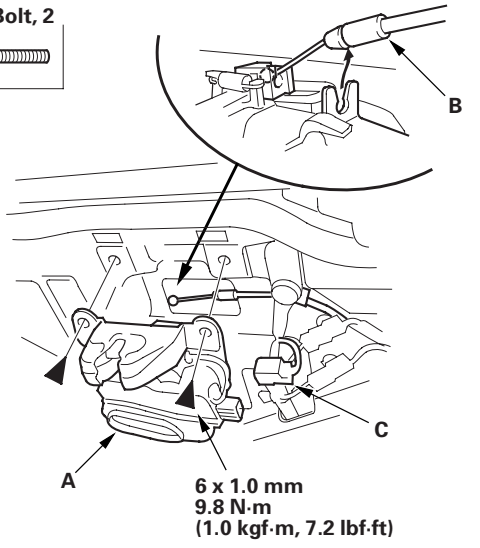


3. Remove the bolts, then remove the in-bed trunk lid latch (A) from the in-bed trunk lid. Disconnect the in-bed trunk lid latch cable (B) and actuator connector (C). Take care not to kink the cable.

Fastener Locations

▶ : Bolt, 2





4. Install the latch in the reverse order of removal, and note these items:

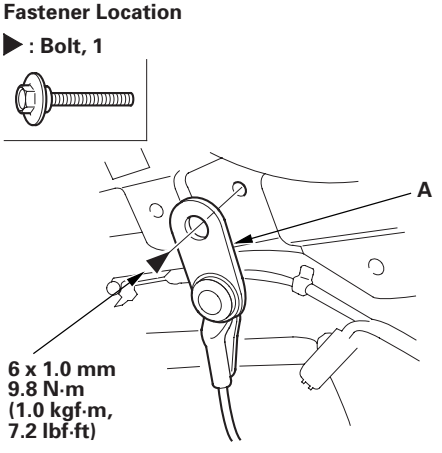
   - Make sure the connector is plugged in properly.
   - Make sure the in-bed trunk lid opens properly and locks securely.

In-Bed Trunk Lid Opener Replacement

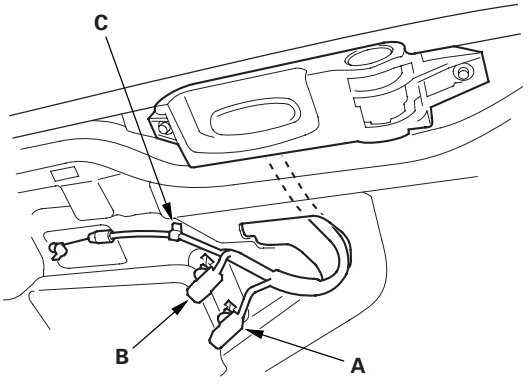
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the in-bed trunk lid.

1. Remove the in-bed trunk lid latch (see page 20-187).

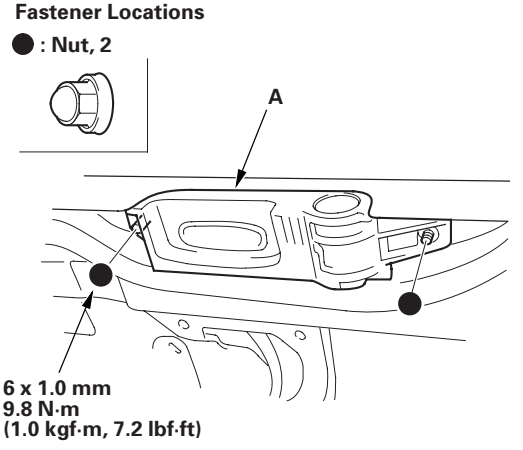
2. Remove the bolt, then remove the in-bed trunk lid anchor cable plate (A) from the in-bed trunk lid.



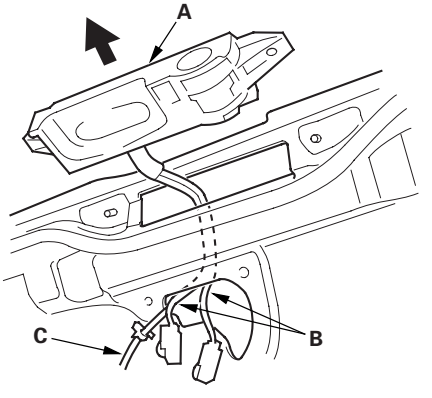
3. Disconnect the in-bed trunk lid opener switch connector (A) and cylinder switch connector (B), and then remove them and cable clip (C).



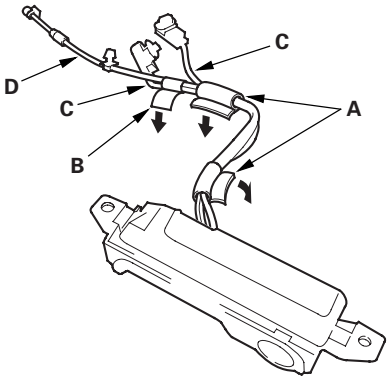
4. Remove the nuts securing the in-bed trunk lid opener (A).



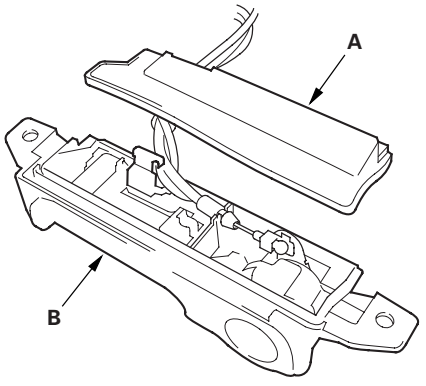
5. Remove the in-bed trunk lid opener (A) by pulling it out, and pull out the wire harnesses (B) and in-bed trunk lid cable (C) through the opener opening in the in-bed trunk lid.



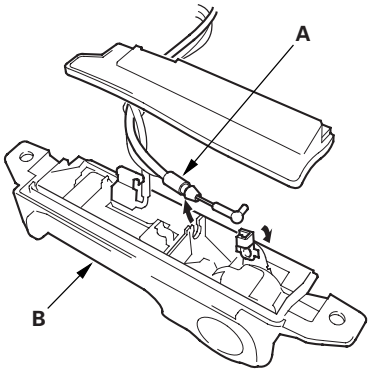
6. Remove the foam tapes (A) and vinyl tape (B) from the wire harnesses (C) and in-bed trunk lid latch cable (D).



7. Remove the opener seat (A) from the opener (B).



8. Disconnect the in-bed trunk lid latch cable (A) from the opener (B).



9. Install the opener in the reverse order of removal, and note these items:

   - Replace the foam tape and vinyl tape with new ones.

     Foam tape: Thickness 3 mm (0.12 in.)
     Width 40 mm (1.6 in.)

   - Make sure the opener seat is installed properly.
   - Make sure the in-bed trunk lid opener switch connector and cylinder switch connector are plugged in properly and the in-bed trunk lid latch cable is connected properly.
   - Make sure the in-bed trunk lid opens properly.

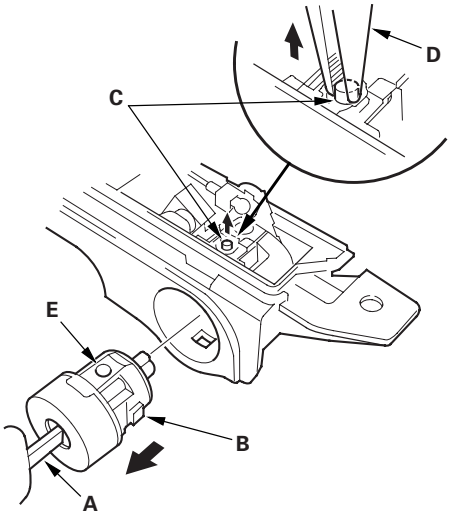
In-Bed Trunk Lid Lock Cylinder Replacement

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the in-bed trunk lid.

1. Remove the nuts, then remove the in-bed trunk lid opener from the in-bed trunk lid (see step 4 on page 20-188).

2. Remove the opener seat from the in-bed trunk lid opener as needed (see step 7 on page 20-189).

3. Insert the key (A) to the in-bed trunk lid lock cylinder (B). Remove the lock cylinder by pulling out it while pulling the pin (C) by using pliers (D).



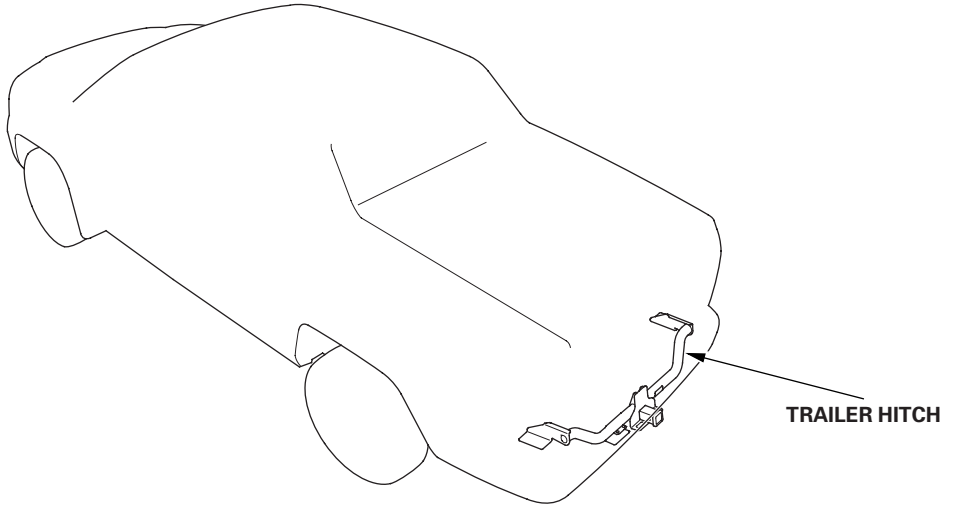
4. Install the lock cylinder in the reverse order of removal, and note these items:

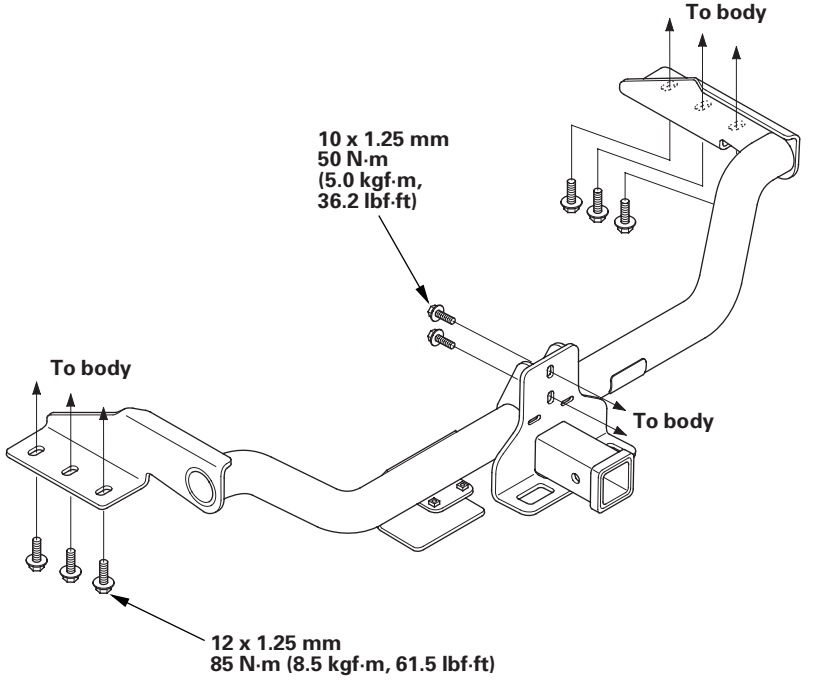
   - Position the lock cylinder with the keyed pin hole (E) facing up. Push the lock cylinder into the opener until the pin clicks into place.
   - Make sure the opener seat is installed properly.
   - Make sure the in-bed trunk lid opens properly.

Trailer Hitch Replacement

Trailer Hitch Torque

After removing the trailer hitch mounting bolts, be sure to replace them with new ones.



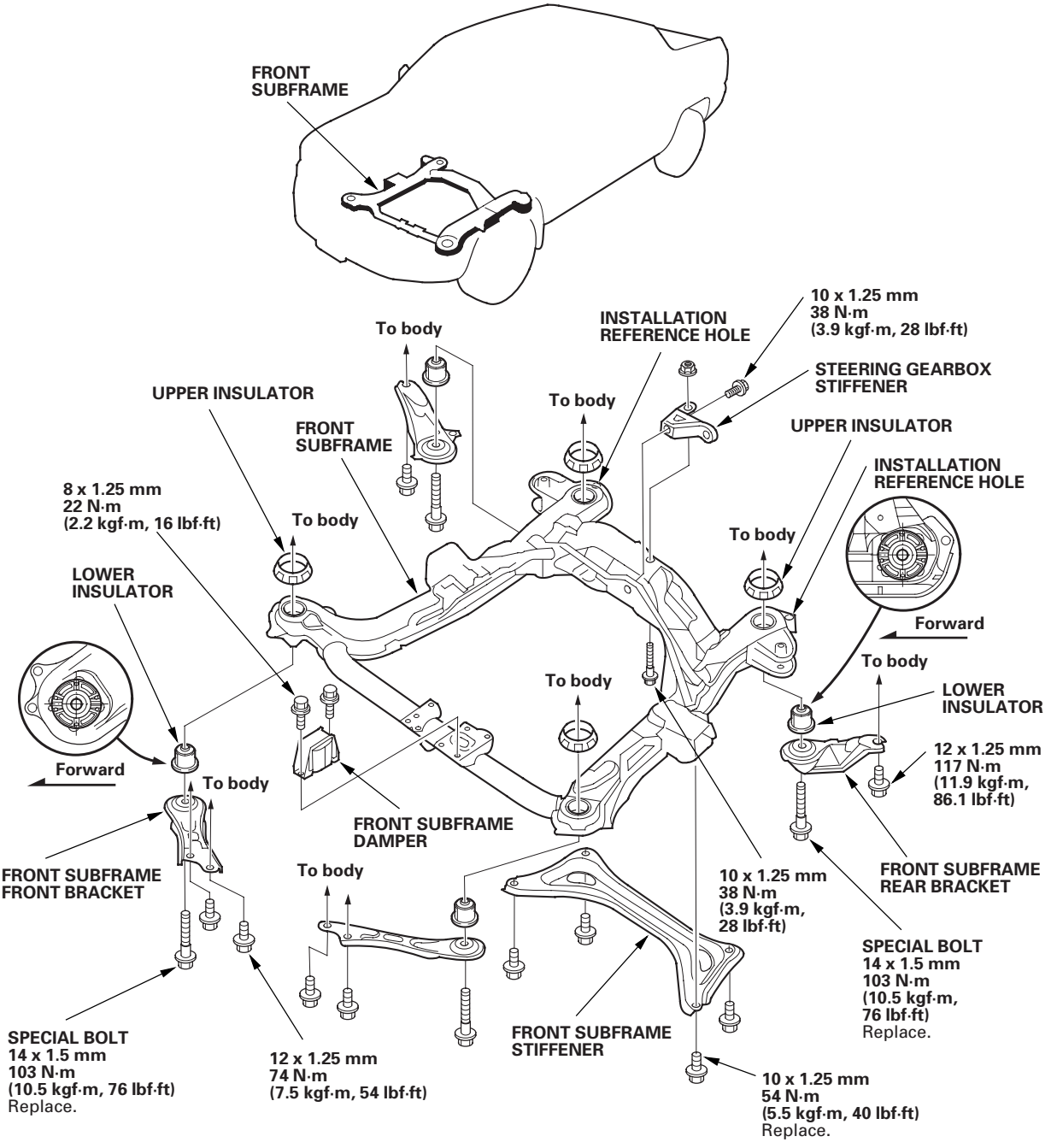


Subframe Replacement

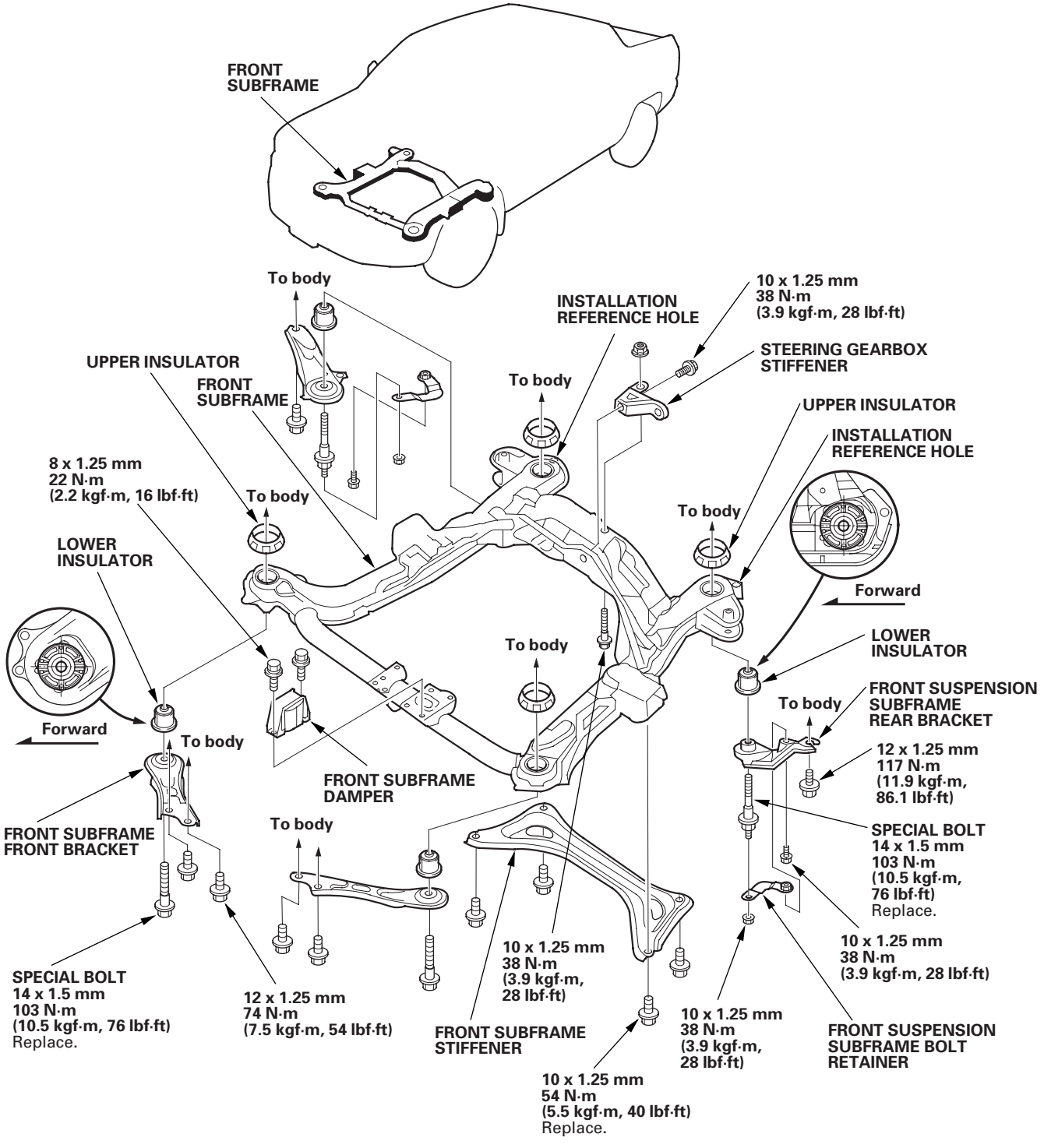
Front Subframe Torque

After removing the subframe mounting bolts and front subframe stiffener mounting bolts, be sure to replace them with new ones.

'06 model



'07-08 models



(cont'd)

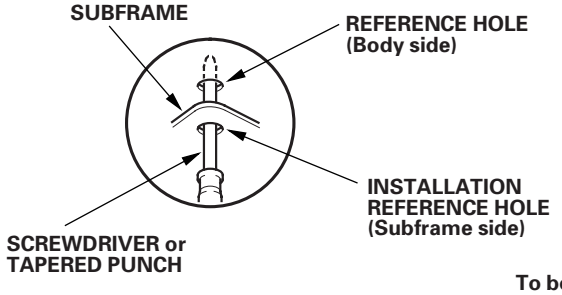
Subframe Replacement (cont'd)

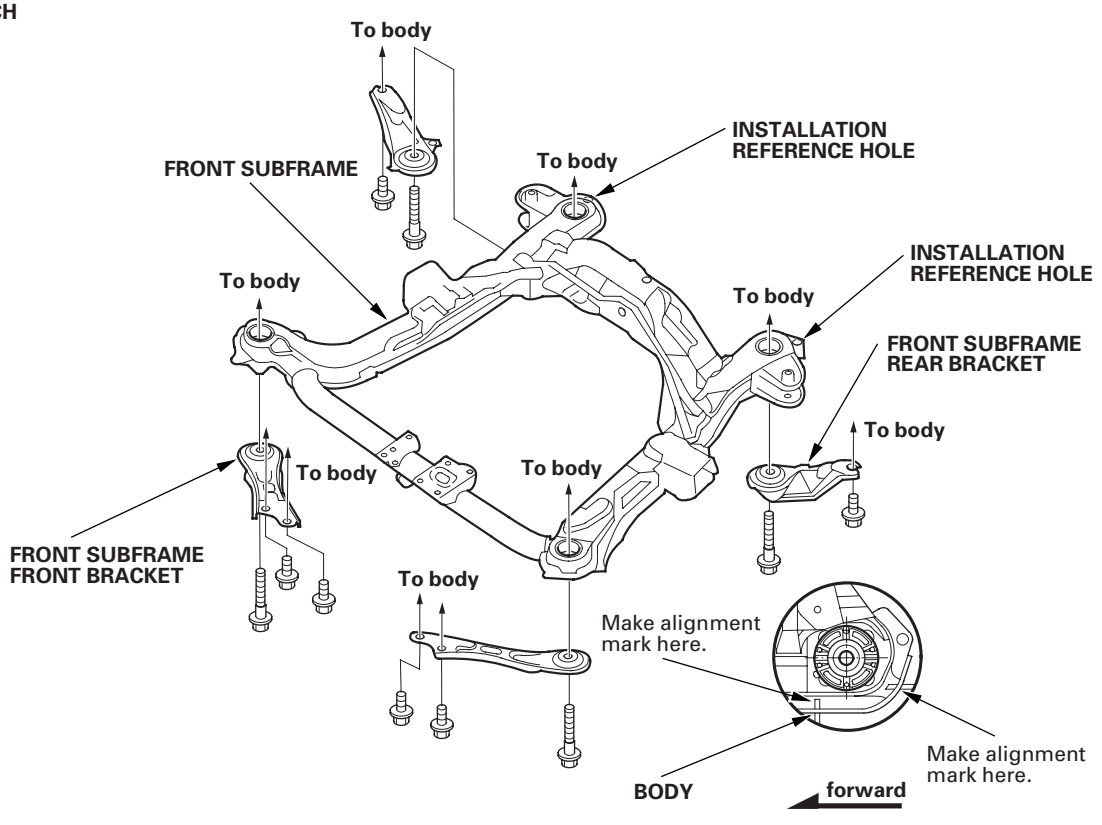
Front Subframe Alignment

NOTE:
- Before removing the subframe, make a mark where the subframe lines up with the body for reinstallation.
- When installing, align both installation reference holes in the subframe with the reference holes in the body using a screwdriver or tapered punch as a guide.
- After mounting the subframe and brackets loosely, align the reference marks with the body, then tighten the bolts.
- After reinstalling all removed parts, check and adjust the front wheel alignment (see page 18-5).

'06 model

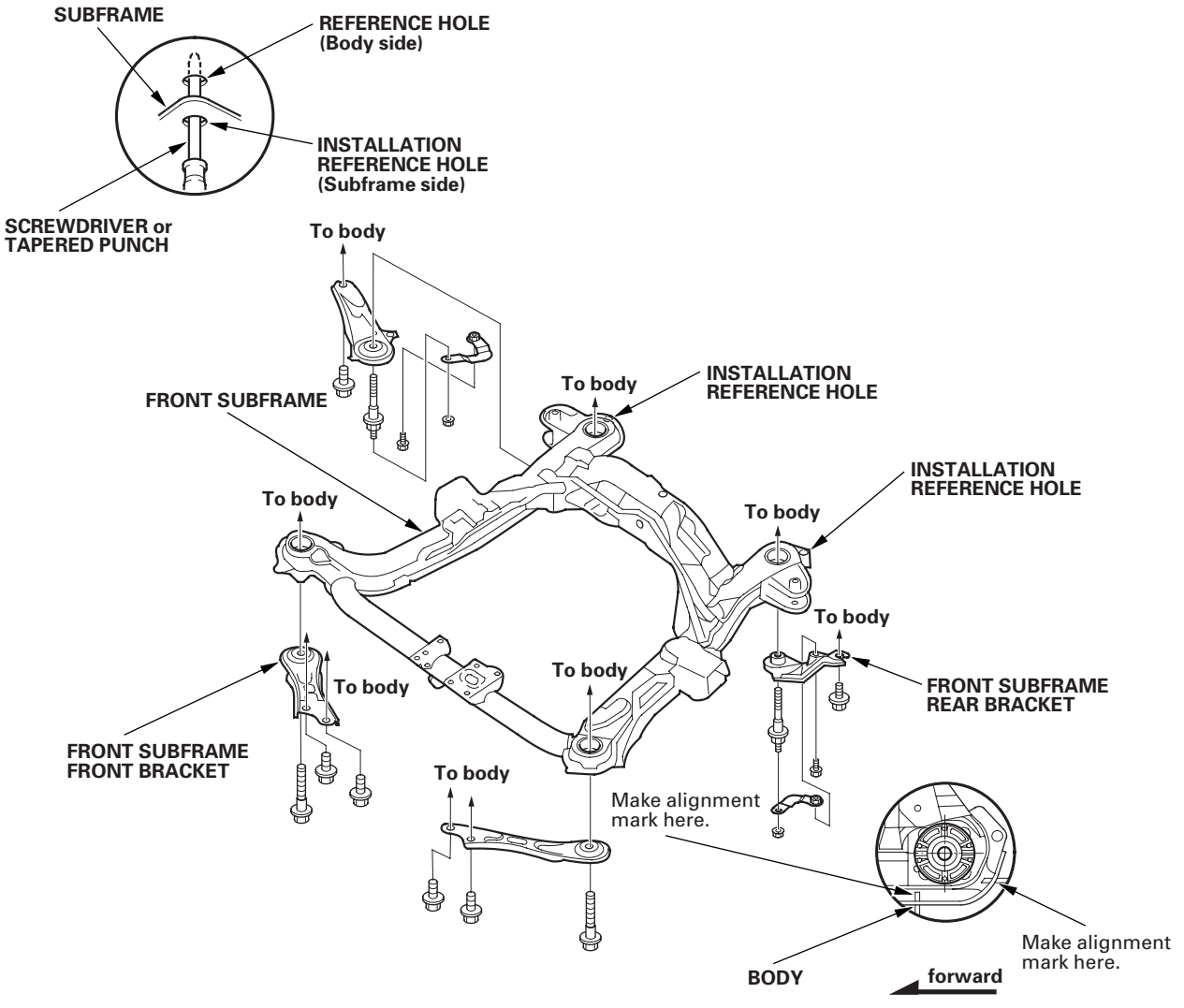
Reference holes alignment





'07-08 models

Reference holes alignment

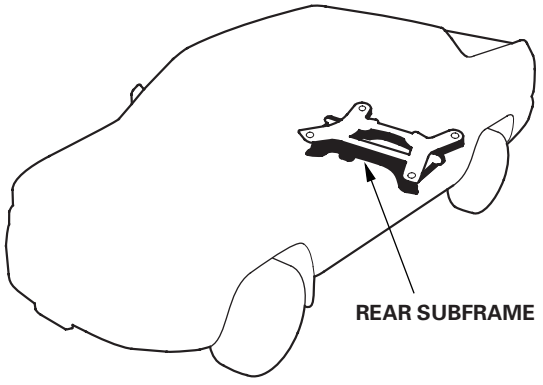


(cont'd)

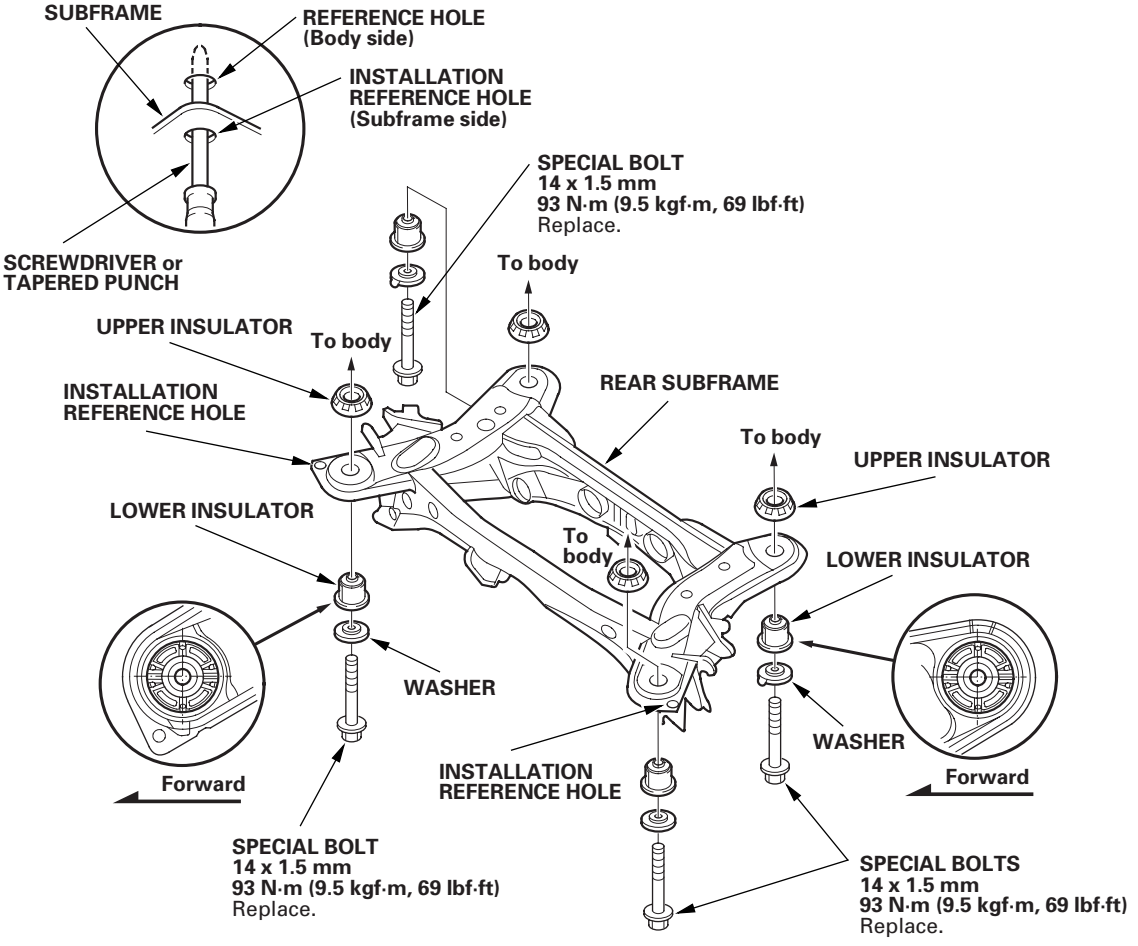
Subframe Replacement (cont'd)

Rear Subframe Torque

NOTE:
- When installing, align both installation reference holes in the subframe with the reference holes in the body using a screwdriver or tapered punch as a guide.
- After removing the subframe mounting bolts, be sure to replace them with new ones.



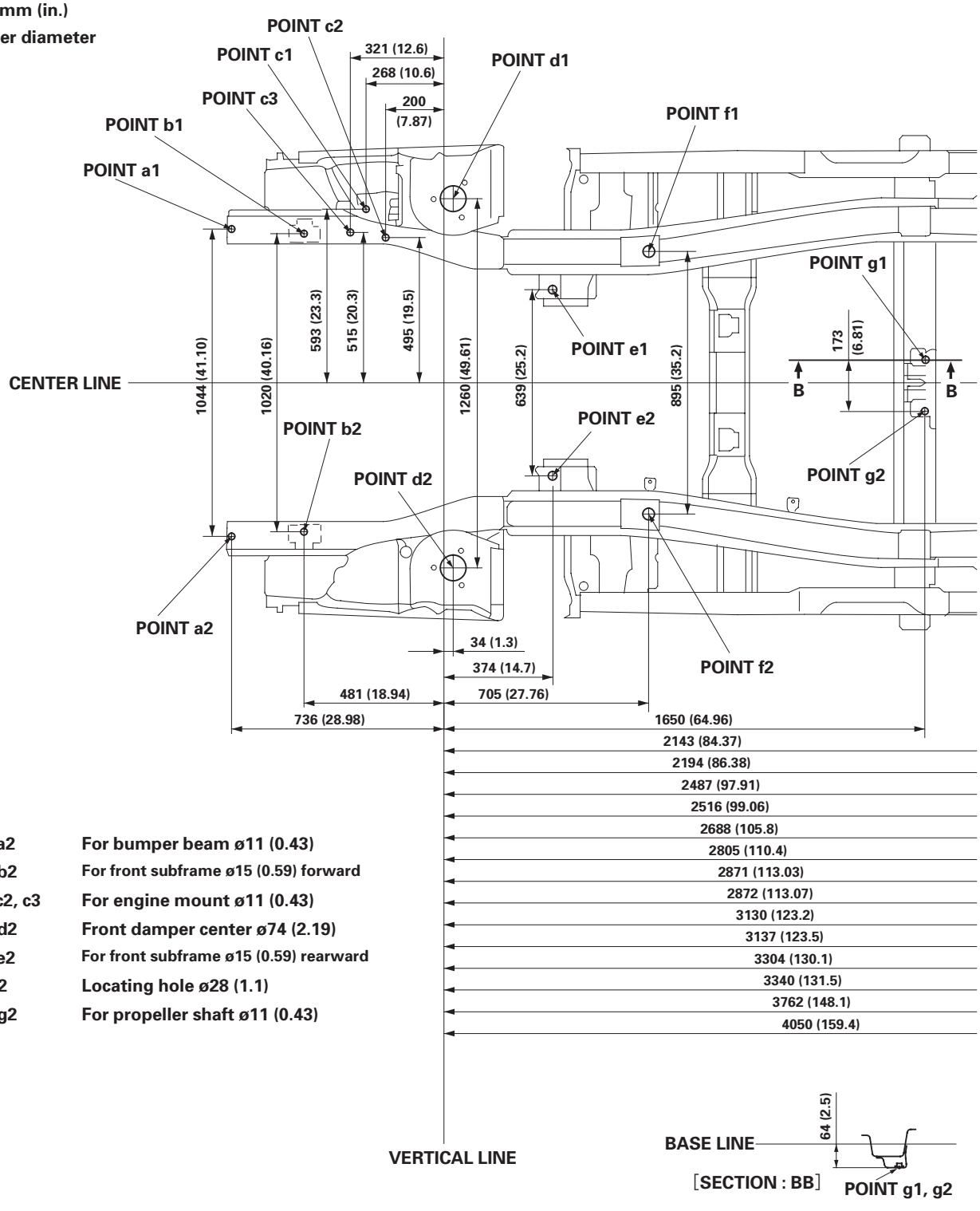
Reference hole alignment



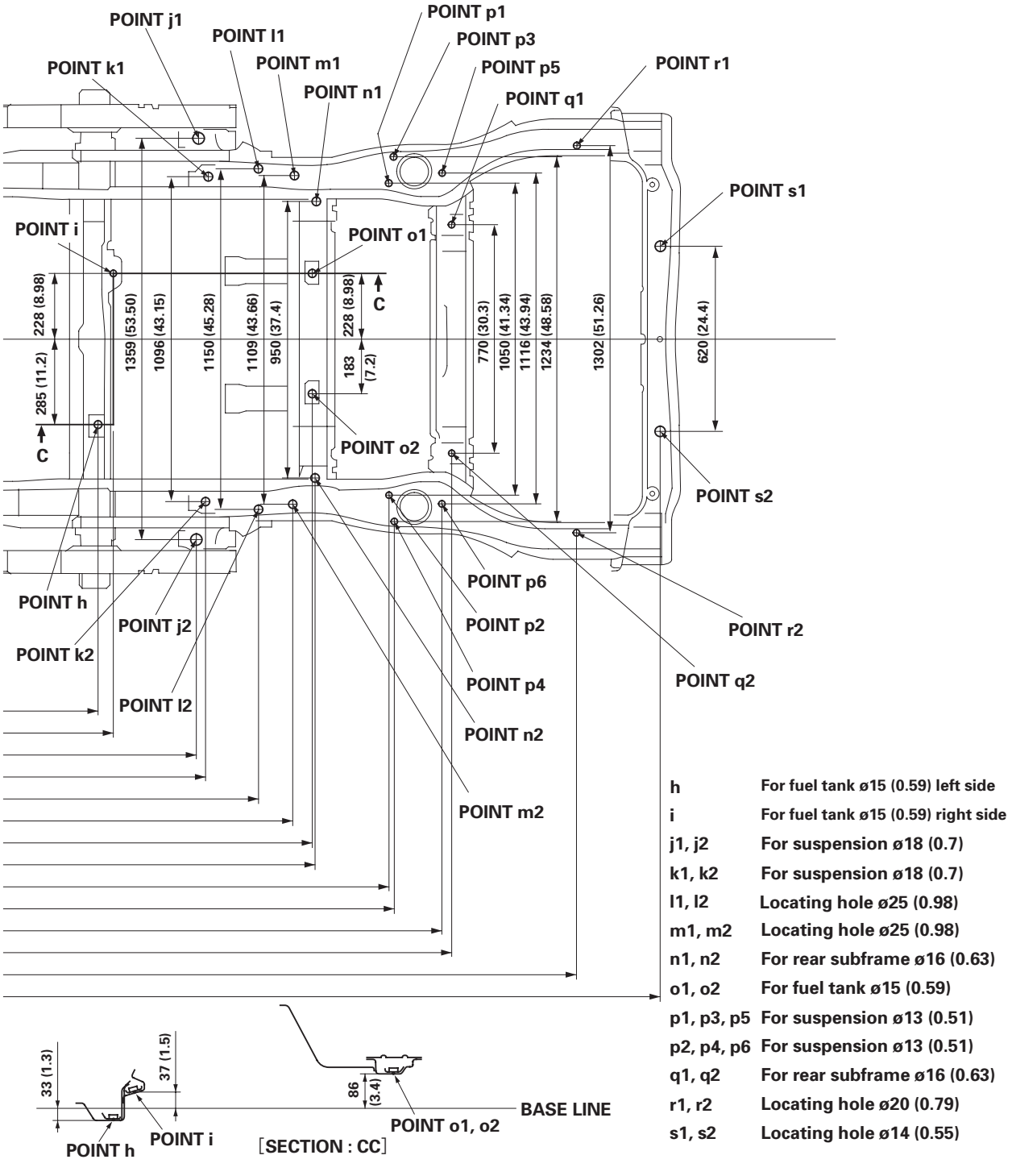
Frame Repair Chart

Top View

Unit: mm (in.)
ø: Inner diameter



a1, a2	For bumper beam ø11 (0.43)
b1, b2	For front subframe ø15 (0.59) forward
c1, c2, c3	For engine mount ø11 (0.43)
d1, d2	Front damper center ø74 (2.19)
e1, e2	For front subframe ø15 (0.59) rearward
f1, f2	Locating hole ø28 (1.1)
g1, g2	For propeller shaft ø11 (0.43)



h	For fuel tank ø15 (0.59) left side
i	For fuel tank ø15 (0.59) right side
j1, j2	For suspension ø18 (0.7)
k1, k2	For suspension ø18 (0.7)
l1, l2	Locating hole ø25 (0.98)
m1, m2	Locating hole ø25 (0.98)
n1, n2	For rear subframe ø16 (0.63)
o1, o2	For fuel tank ø15 (0.59)
p1, p3, p5	For suspension ø13 (0.51)
p2, p4, p6	For suspension ø13 (0.51)
q1, q2	For rear subframe ø16 (0.63)
r1, r2	Locating hole ø20 (0.79)
s1, s2	Locating hole ø14 (0.55)

(cont'd)

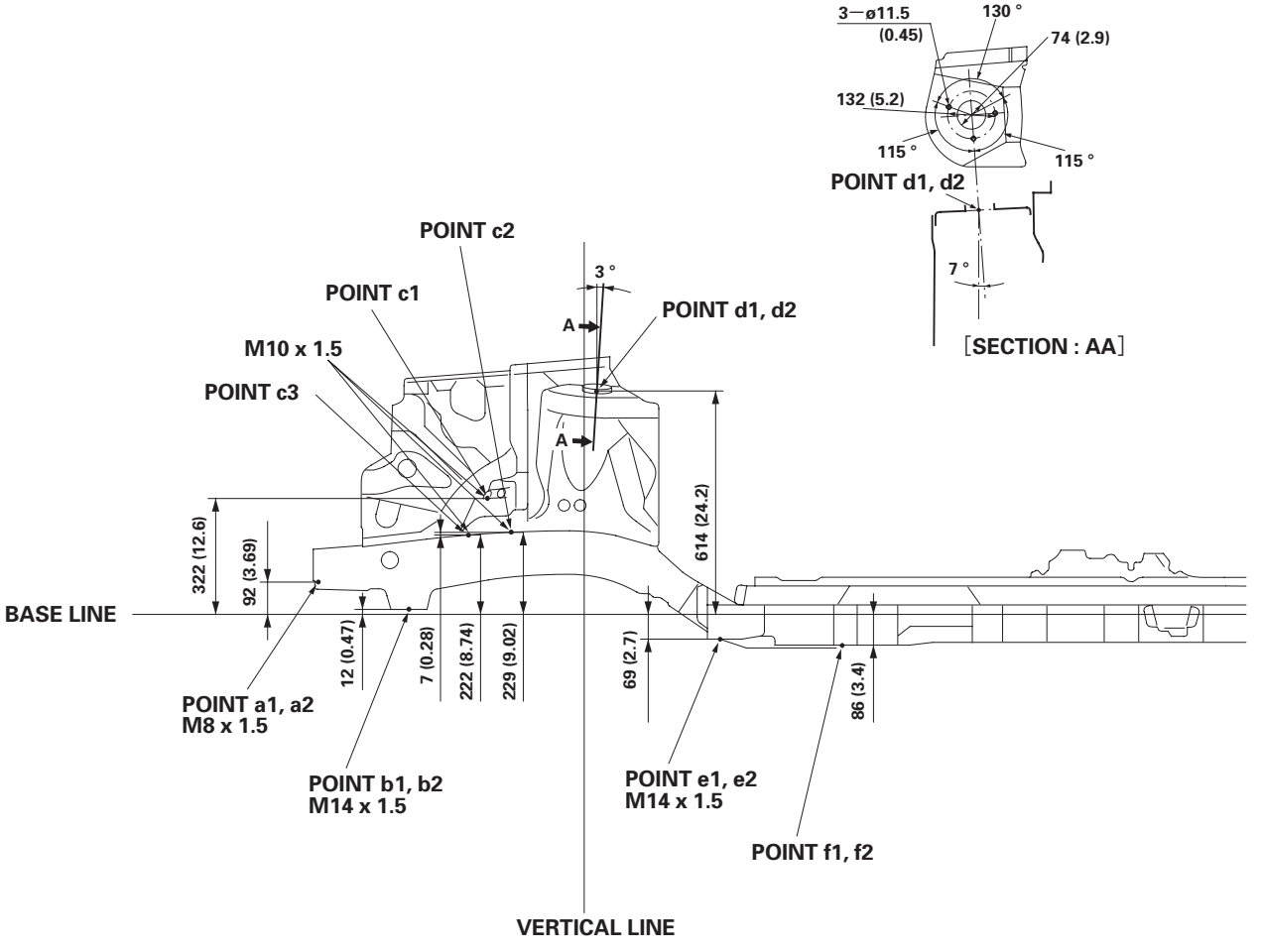
Frame Repair Chart (cont'd)

Side View

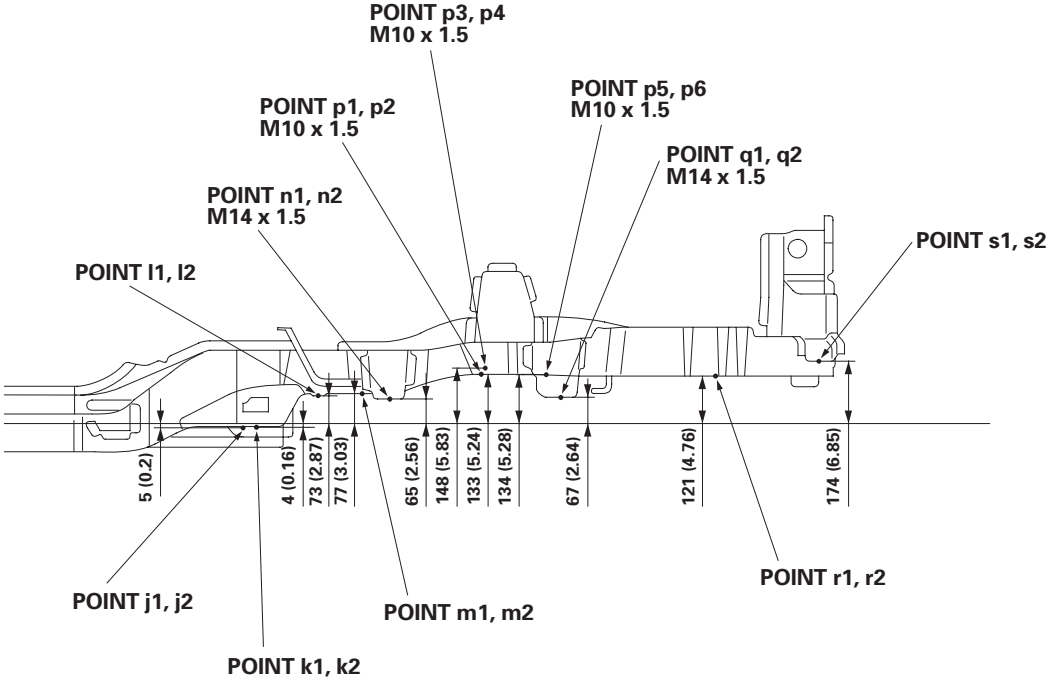
Unit: mm (in.)

ø: Inner diameter

a1, a2	For bumper beam ø11 (0.43)
b1, b2	For front subframe ø15 (0.59) forward
c1, c2, c3	For engine mount ø11 (0.43)
d1, d2	Front damper center ø74 (2.19)
e1, e2	For front subframe ø15 (0.59) rearward
f1, f2	Locating hole ø28 (1.1)



j1, j2	For suspension ø18 (0.7)
k1, k2	For suspension ø18 (0.7)
l1, l2	Locating hole ø25 (0.98)
m1, m2	Locating hole ø25 (0.98)
n1, n2	For rear subframe ø16 (0.63)
p1, p3, p5	For suspension ø13 (0.51)
p2, p4, p6	For suspension ø13 (0.51)
q1, q2	For rear subframe ø16 (0.63)
r1, r2	Locating hole ø20 (0.79)
s1, s2	Locating hole ø14 (0.55)



SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If HVAC maintenance is required)

The Ridgeline SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the sides of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items requires special precautions and tools, and should be done by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work should be done by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.

HVAC (Heating, Ventilation, and Air Conditioning)

HVAC (Heating, Ventilation, and Air Conditioning)

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Heating/Air Conditioning

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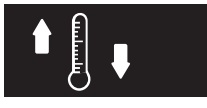
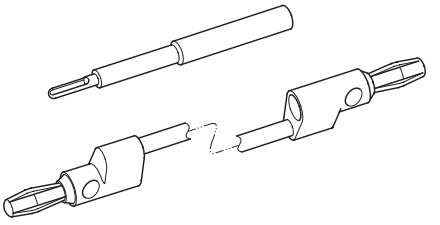


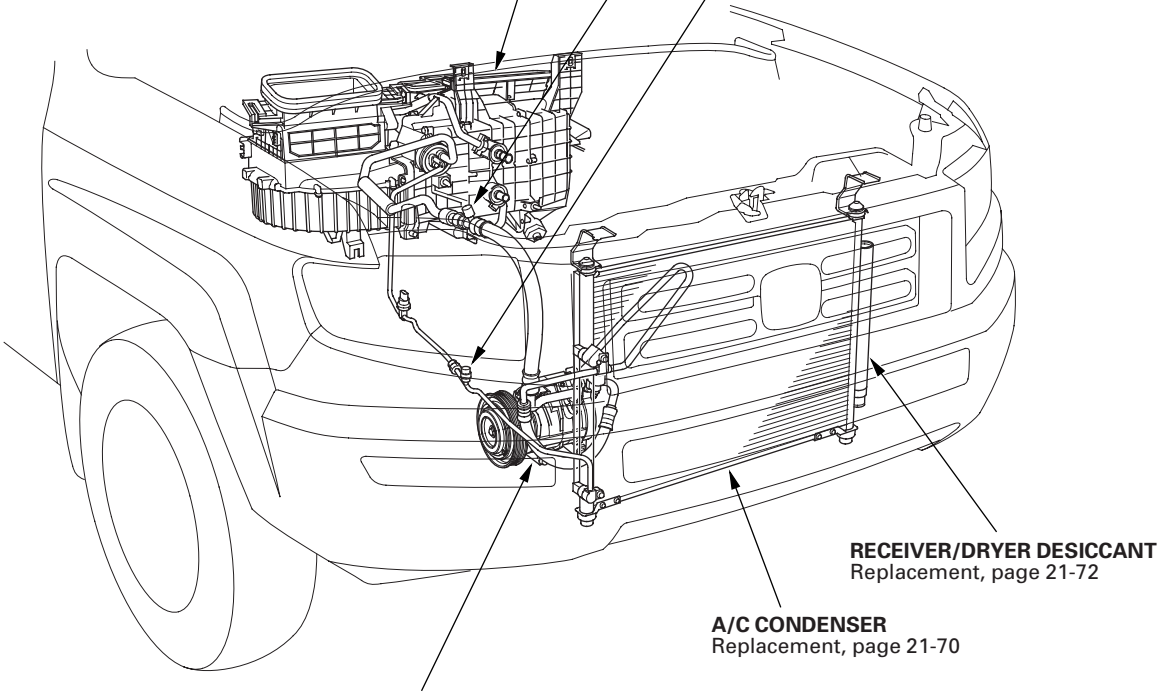
Special Tools

Ref. No.	Tool Number	Description	Qty
①	07SAZ-001000A	Backprobe Set	2



①

Component Location Index



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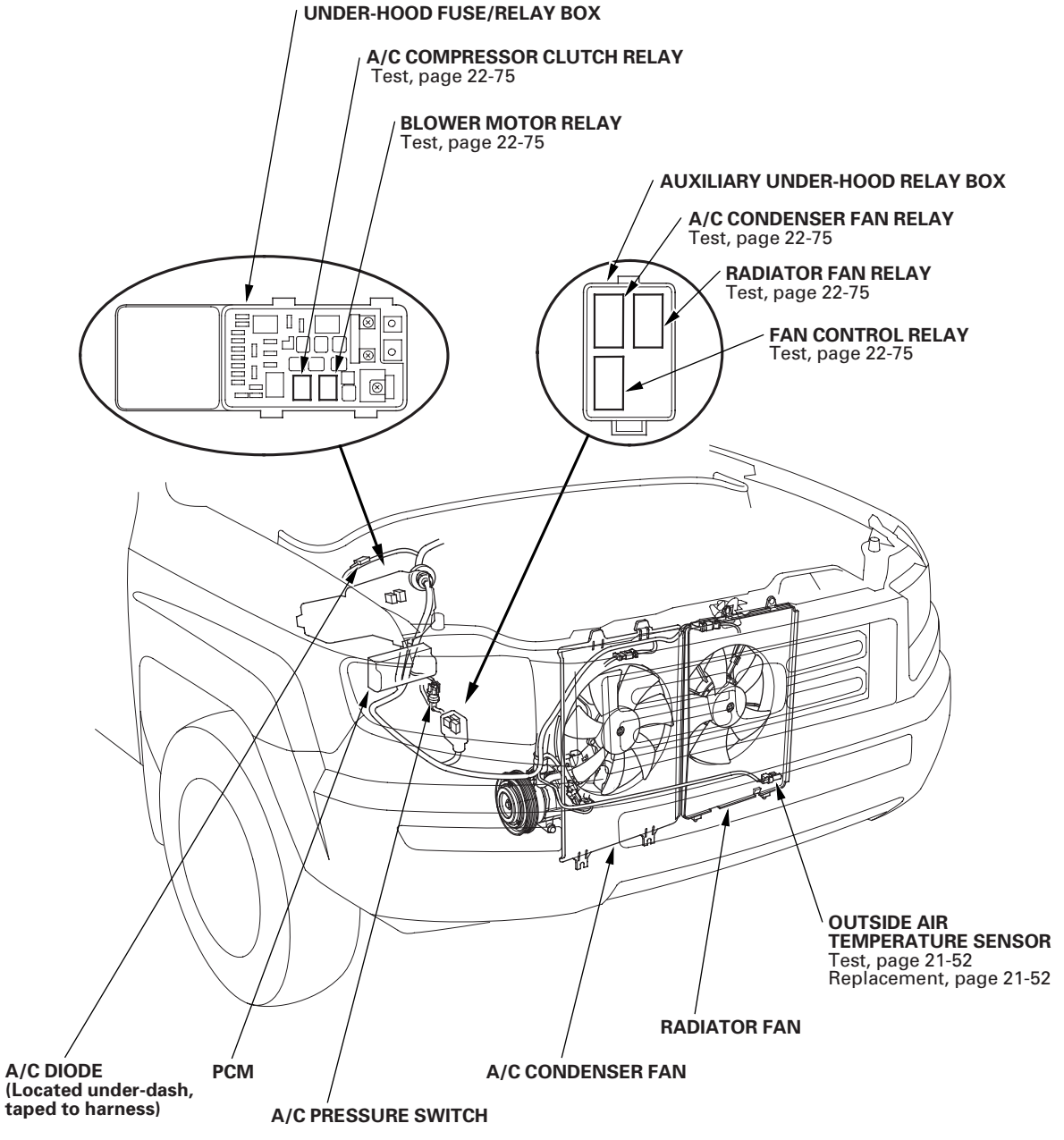
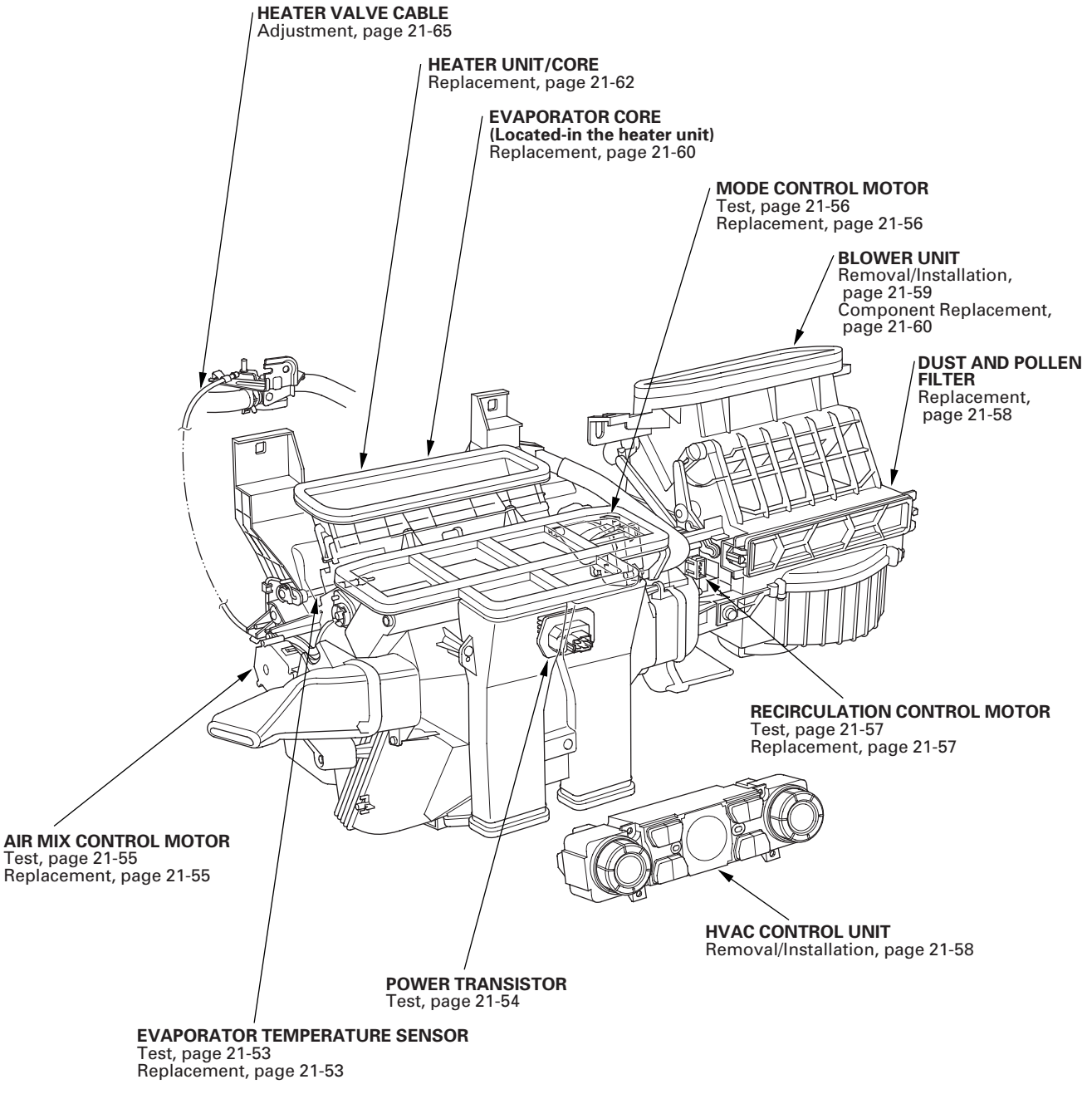
Component Location Index (cont'd)

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A/C Service Tips and Precautions

⚠ WARNING

- Compressed air mixed with the R-134a forms a combustible vapor.
- The vapor can burn or explode causing serious injury.
- Never use compressed air to pressure test R-134a service equipment or vehicle air conditioning systems.

⚠ CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

The air conditioning system uses HFC-134a (R-134a) refrigerant and polyalkyleneglycol (PAG) refrigerant oil, which are not compatible with CFC-12 (R-12) refrigerant and mineral oil. Do not use R-12 refrigerant or mineral oil in this system, and do not attempt to use R-12 servicing equipment; damage to the air conditioning system or your servicing equipment will result.
Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove R-134a from the air conditioning system.

If accidental system discharge occurs, ventilate the work area before resuming service.

R-134a service equipment or vehicle air conditioning systems should not be pressure tested or leak tested with compressed air.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

- Always disconnect the negative cable from the battery whenever replacing air conditioning parts.
- Keep moisture and dirt out of the system. When disconnecting any lines, plug or cap the fittings immediately; don't remove the caps or plugs until just before you reconnect each line.
- Before connecting any hose or line, apply a few drops of refrigerant oil to the O-ring.
- When tightening or loosening a fitting, use a second wrench to support the matching fitting.
- When discharging the system, use an R-134a refrigerant recovery/recycling/charging station; don't release refrigerant into the atmosphere.

A/C Refrigerant Oil Replacement

Recommended PAG oil: DENSO ND-OIL 8

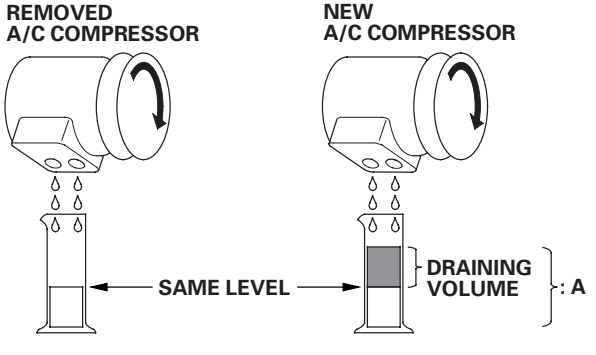
- P/N 38897-PR7-A01AH: 120 mL (4 fl·oz)
- P/N 38899-PR7-A01: 40 mL (1 1/3 fl·oz)

Add the recommended refrigerant oil in the amount listed if you replace any of the following parts.

- To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if it gets on the paint, wash it off immediately.

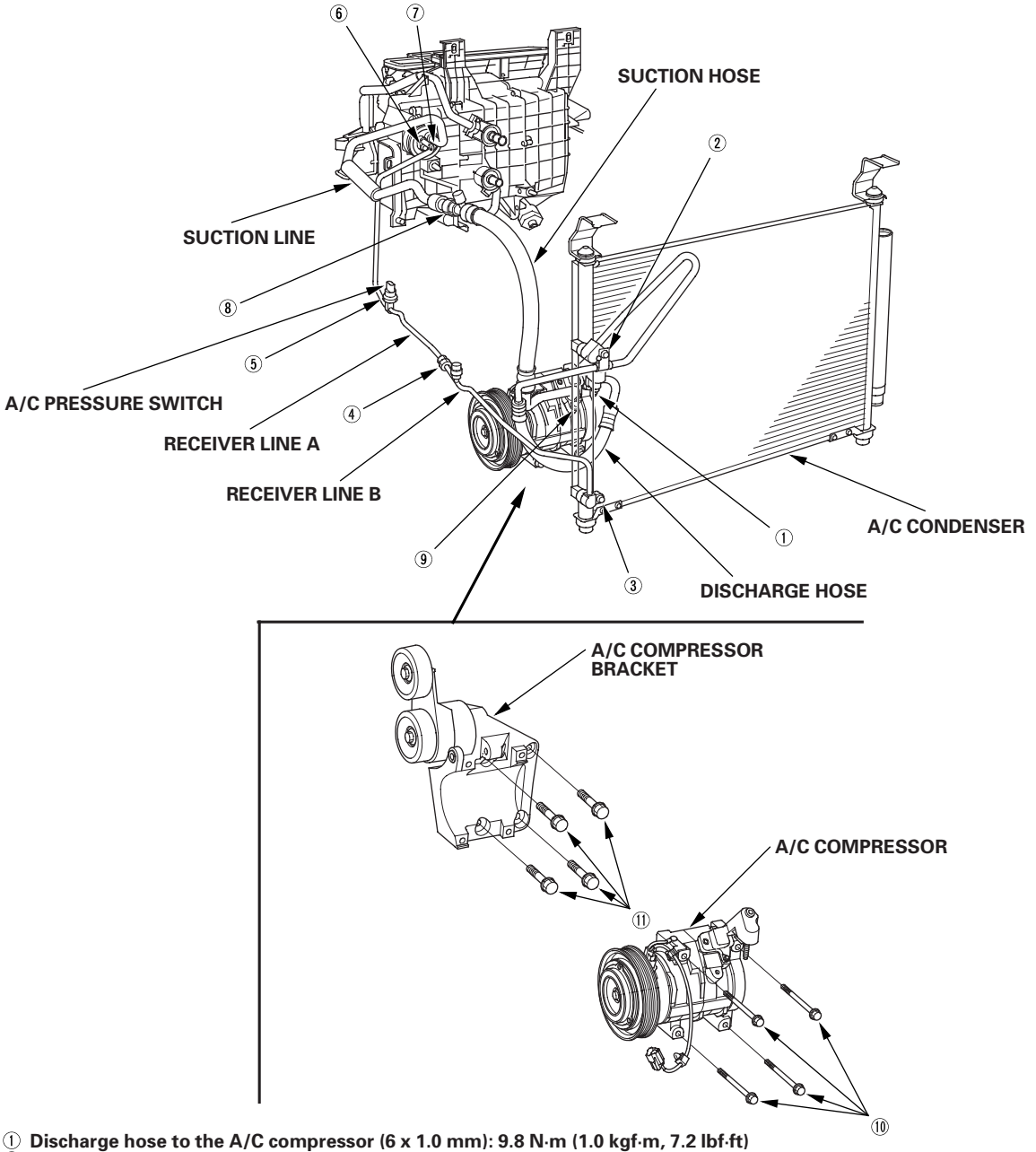
A/C condenser .....45 mL (1 1/2 fl·oz)
Evaporator .....45 mL (1 1/2 fl·oz)
Line or hose .....10 mL (1/3 fl·oz)
Leakage repair .....25 mL (5/6 fl·oz)
A/C compressor .....For A/C compressor replacement, subtract the volume of oil drained from the removed A/C compressor from 180 mL (6 fl·oz), and drain the calculated volume of oil from the new A/C compressor: 180 mL (6 fl·oz) — Volume of removed A/C compressor = Volume to drain from new A/C compressor.

NOTE: Even if no oil is drained from the removed A/C compressor, don't drain more than 50 mL (1 2/3 fl·oz) from the new A/C compressor.



A: 180 mL (6 fl·oz)

A/C Line Replacement

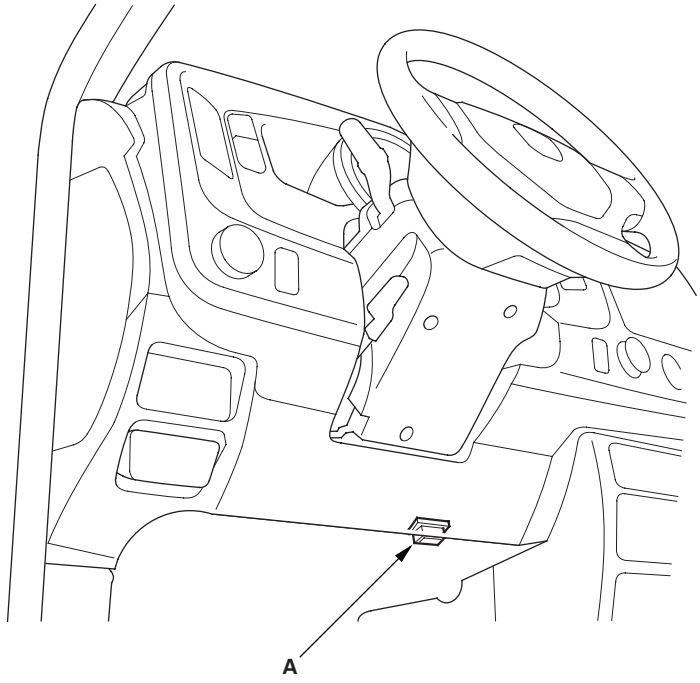


① Discharge hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
② Discharge hose to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
③ Receiver line B to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
④ Receiver line A to the receiver line B (16 x 1.5 mm): 13.2 N·m (1.4 kgf·m, 9.8 lbf·ft)
⑤ A/C pressure switch to receiver line A (11 x 1.0 mm): 9.3 N·m (0.9 kgf·m, 6.9 lbf·ft)
⑥ Receiver line A to the evaporator (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑦ Suction line to the evaporator (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑧ Suction line to the suction hose (24 x 1.5 mm): 31.9 N·m (3.3 kgf·m, 23.5 lbf·ft)
⑨ Suction hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑩ A/C compressor to the A/C compressor bracket (8 x 1.25 mm): 22 N·m (2.2 kgf·m, 16 lbf·ft)
⑪ A/C compressor bracket to the engine block (10 x 1.25 mm): 44 N·m (4.5 kgf·m, 33 lbf·ft)

General Troubleshooting Information

How to Check for DTCs with the HDS

1. Make sure the ignition switch is OFF.
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



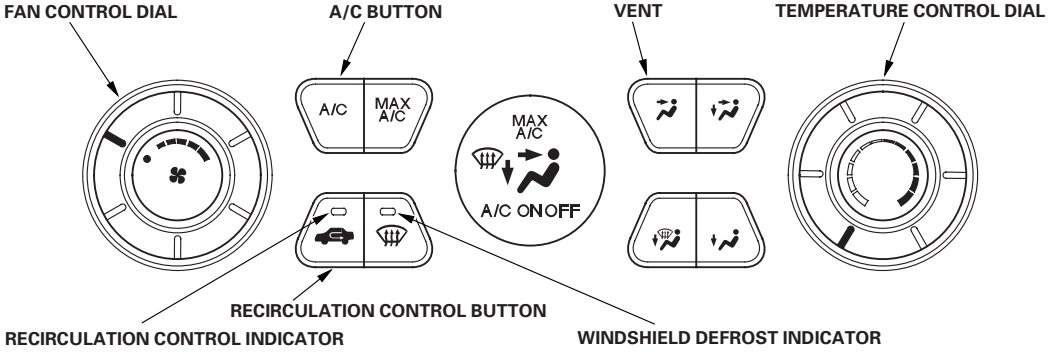
3. Turn the ignition switch ON (II).
4. Make sure the HDS communicates with the vehicle and the climate control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-194).
5. Select HVAC/CLIMATE CONTROL in the BODY ELECTRICAL menu.
6. Select DTCs in the HVAC/CLIMATE CONTROL menu.
7. Check for DTCs. If any DTCs are indicated, write down the DTCs, then go to the indicated DTC troubleshooting. If no DTCs are indicated, refer to symptom troubleshooting.

   NOTE:
   - After troubleshooting, clear the DTCs with the HDS.
   - For specific operations, refer to the user's manual that came with the HDS.

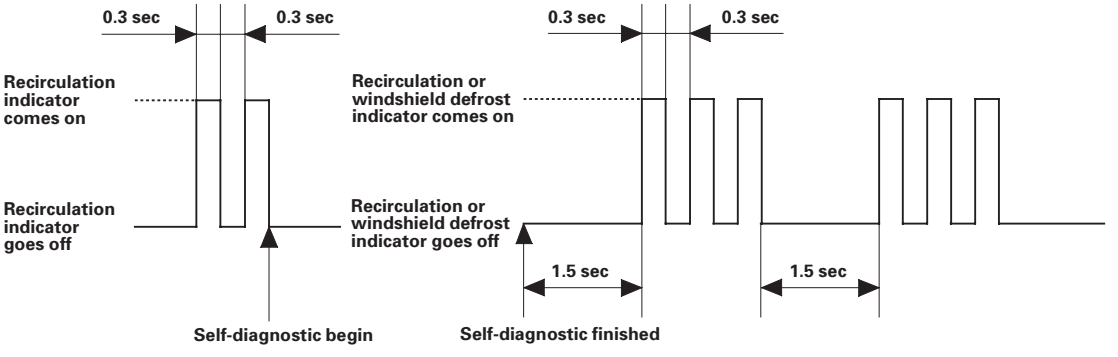
How to Use the Self-diagnostic Function without the HDS

The HVAC control unit has a self-diagnostic function for heating, ventilation, and air conditioning system. To run the self-diagnostic function, do the following:

1. Turn the ignition switch OFF.
2. Set the fan control dial OFF, the temperature control dial on Max Cool.
3. Turn the ignition switch ON (II), and select the vent mode.
4. Press and hold the A/C button, then press the recirculation button five times within 10 seconds. Release the A/C buttons; the recirculation indicator blinks two times, then the self-diagnostic begins.
   - If there is any problem in the system after self-diagnostic is finished, the recirculation indicator will blink Diagnostic Trouble Code (DTC) 1 through 10.
   - If no DTCs are found, the indicator will not blink.



Example of DTC Indication Pattern (DTC 3)



Canceling the Self-diagnostic Function

5. Turn the ignition switch OFF to cancel the self-diagnostic function. After completing repair work, run the self-diagnostic function again to make sure that there are no other malfunctions.

Max Cool Position Function

When the mode control button is in the MAX A/C position, the HVAC control unit will automatically select the recirculation mode and turn the A/C on. The recirculation switch and A/C switch are disabled and cannot be turned off in this mode. If the HVAC control unit fails to function as described, replace it.

(cont'd)

General Troubleshooting Information (cont'd)

DTC (Recirculation Indicator Blinks)	Detection Item
1	An open in the air mix control motor circuit (see page 21-26)
2	A short in the air mix control motor circuit (see page 21-27)
3	A problem in the air mix control linkage, door, or motor (see page 21-28)
4	An open or short in the mode control motor circuit (see page 21-30)
5	A problem in the mode control linkage, doors, or motor (see page 21-32)
6	A problem in the blower motor circuit (see page 21-33)
9	An open in the outside temperature sensor circuit (see page 21-21)
10	A short in the outside temperature sensor circuit (see page 21-22)

DTC (Windshield Defrost Indicator Blinks)	Detection Item
7	An open in the evaporator temperature sensor circuit (see page 21-23)
8	A short in the evaporator temperature sensor circuit (see page 21-25)

In case of multiple problems, the recirculation indicator will indicate only the DTC with the least number of blinks.

DTC Troubleshooting Index

Checking the DTCs by HDS

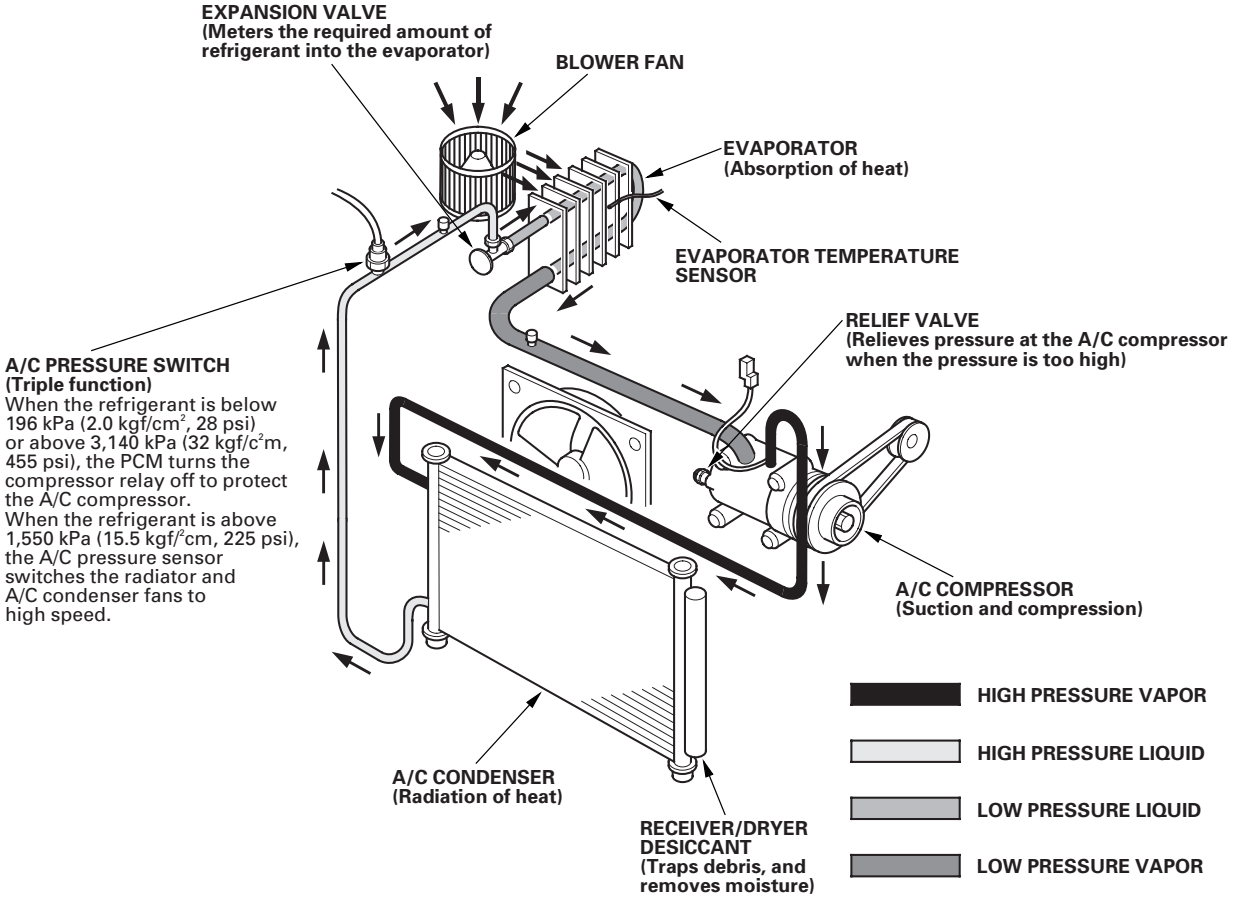
DTC	Detection Item or Symptom	ECU	DTC type	page
B1200	Communication bus line error	HVAC control unit	Loss of communication	(see page 22-110)
B1202	HVAC control unit internal error	HVAC control unit	Internal error	(see page 21-20)
B1205	HVAC control unit lost communication with gauge control module (VSP/NE message)	HVAC control unit	Loss of communication	(see page 21-20)
B1206	HVAC control unit lost communication with gauge control module (ECT message)	HVAC control unit	Loss of communication	(see page 21-20)
B1207	HVAC control unit lost communication with gauge control module (ILLUMI message)	HVAC control unit	Loss of communication	(see page 21-20)
B1227	An open in the outside air temperature sensor circuit	HVAC control unit	Signal error	(see page 21-21)
B1228	A short in the outside air temperature sensor circuit	HVAC control unit	Signal error	(see page 21-22)
B1231	An open in the evaporator temperature sensor circuit	HVAC control unit	Signal error	(see page 21-23)
B1232	A short in the evaporator temperature sensor circuit	HVAC control unit	Signal error	(see page 21-25)
B1233	An open in the air mix control motor circuit	HVAC control unit	Signal error	(see page 21-26)
B1234	A short in the air mix control motor circuit	HVAC control unit	Signal error	(see page 21-27)
B1235	A problem in the air mix control linkage, door, or motor	HVAC control unit	Signal error	(see page 21-28)
B1239	An open or short in the mode control motor circuit	HVAC control unit	Signal error	(see page 21-30)
B1240	A problem in the mode control linkage, doors, or motor	HVAC control unit	Signal error	(see page 21-32)
B1241	A problem in the blower motor circuit	HVAC control unit	Signal error	(see page 21-33)

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Recirculation control doors do not change between Fresh and Recirculate	Recirculation control motor circuit troubleshooting (see page 21-37)	• HVAC DTCs (see page 21-8) • Blown fuse No. 30 (7.5 A) in the under-dash fuse/relay box • Cleanliness and tightness of all terminals
Blower, heater controls, and A/C do not work	HVAC control power and ground circuit troubleshooting (see page 21-39)	• HVAC DTCs (see page 21-8) • Blown fuse No. 30 (7.5 A) in the under-dash fuse/relay box • Poor ground at G402 (see page 22-68) • Cleanliness and tightness of all terminals
Both fans do not run at low speed with the A/C on (but the A/C compressor runs with the A/C on)	Radiator and A/C condenser fan low speed circuit troubleshooting (see page 21-40)	• HVAC DTCs (see page 21-8) • Blown fuse No. 20 (30 A) in the under-hood fuse/relay box, and No. 30 (7.5 A) in the under-dash fuse/relay box • Poor ground at G201 (see page 22-68) • Cleanliness and tightness of all terminals
The A/C condenser fan does not run at high speed (but both fans run at low speed and the A/C compressor operates with the A/C on)	A/C condenser fan high speed circuit troubleshooting (see page 21-44)	• HVAC DTCs (see page 21-8) • Blown fuse No. 30 (7.5 A) in the under-dash fuse/relay box • Poor ground at G201 (see page 22-68) • Cleanliness and tightness of all terminals
Both fans do not run at high speed with the A/C on (but both fans run at low speed and the A/C compressor operates with the A/C on)	Radiator and A/C condenser fan high speed circuit troubleshooting (see page 21-46)	• HVAC DTCs (see page 21-8) • Poor ground at G202 (see page 22-68) • Cleanliness and tightness of all terminals
Both fans run at high speed all the time with the A/C on	Radiator and A/C condenser fan high speed circuit troubleshooting (see page 21-46)	• HVAC DTCs (see page 21-8) • Poor ground at G202 (see page 22-68) • Cleanliness and tightness of all terminals
The A/C compressor clutch does not engage (but both fans run with the A/C on)	A/C compressor clutch circuit troubleshooting (see page 21-47)	• HVAC DTCs (see page 21-8) • Blower motor operation • Blown fuse No. 12 (7.5 A) in the under-hood fuse/relay box, and No. 30 (7.5 A) in the driver's under-dash fuse/relay box • Cleanliness and tightness of all terminals
A/C system does not come on (both fans and the A/C compressor do not work); heater is OK	A/C Pressure switch circuit troubleshooting (see page 21-49)	• Body DTCs in B-CAN System Diagnosis Test Mode A Troubleshooting (see page 22-99) • HVAC DTCs (see page 21-8) • Cleanliness and tightness of all terminals
Blower fan runs slower than expected in cold weather	ECT Troubleshooting: ECT sensor 2 circuit low voltage (see page 11-149), ECT sensor 2 circuit high voltage (see page 11-151) NOTE: It is normal for the blower to run slowly until the engine coolant temperature begins to rise. If the blower continues to run slowly for an abnormal length of time, continue to troubleshoot the problem.	• Powertrain DTCs (see page 11-3) • Blower motor operation
HDS does not communicate with the HVAC control unit or the vehicle	Troubleshoot the DLC (see page 11-194)	

System Description

The air conditioning system removes heat from the passenger compartment by transferring heat from the ambient air to the evaporator. The evaporator cools the air with the refrigerant that is circulating through the evaporator. The refrigerant expands in the evaporator, and the evaporator becomes very cold and absorbs the heat from the ambient air. The blower fan pushes air across the evaporator where the heat is absorbed, and then it blows the cool air into the passenger compartment.



This vehicle uses HFC-134a (R-134a) refrigerant, which does not contain chlorofluorocarbons. Pay attention to the following service items:

- Do not mix refrigerants CFC-12 (R-12) and HFC-134a (R-134a). They are not compatible.
- Use only the recommended polyalkyleneglycol (PAG) refrigerant oil (DENSO ND-OIL 8) designed for the R-134a A/C compressor. Intermixing the recommended (PAG) refrigerant oil with any other refrigerant oil will result in A/C compressor failure.
- All A/C system parts (A/C compressor, discharge line, suction line, evaporator, A/C condenser, receiver/dryer, expansion valve, O-rings for joints) are designed for refrigerant R-134a. Do not exchange with R-12 parts.
- Use a halogen gas leak detector designed for refrigerant R-134a.
- R-12 and R-134a refrigerant servicing equipment are not interchangeable. Use only a recovery/recycling/charging station that is U.L.-listed and is certified to meet the requirements of SAE J2210 to service the R-134a air conditioning systems.
- Always recover refrigerant R-134a with an approved recovery/recycling/charging station before disconnecting any A/C fitting.

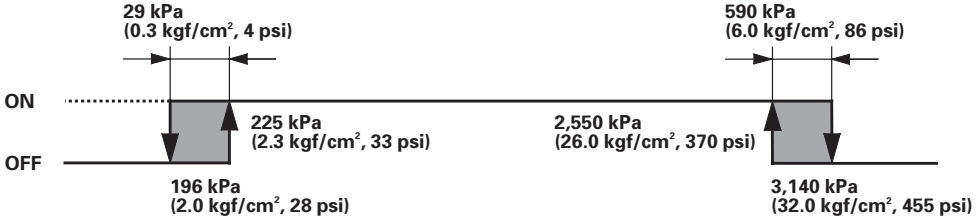
(cont'd)

System Description (cont'd)

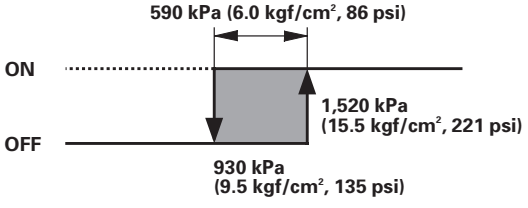
A/C Pressure Switch

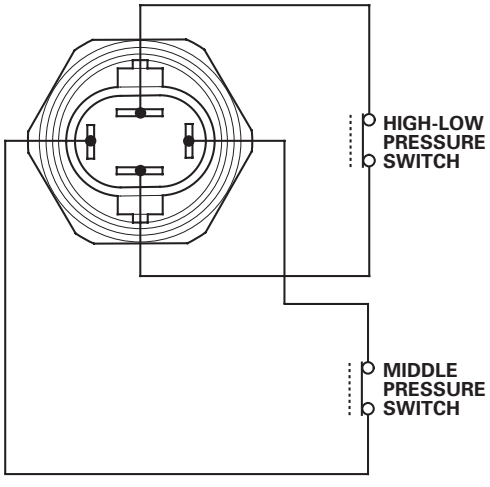
The A/C pressure switch consists of a high-low pressure switch (A/C pressure switch A) and a middle pressure switch (A/C pressure switch B).

- High-low pressure switch
  If the refrigerant pressure becomes too high (due to blockage or lack of airflow at the condenser), or too low (due to leakage), the A/C pressure switch stops the A/C request signal to the PCM and the A/C compressor stops operating.

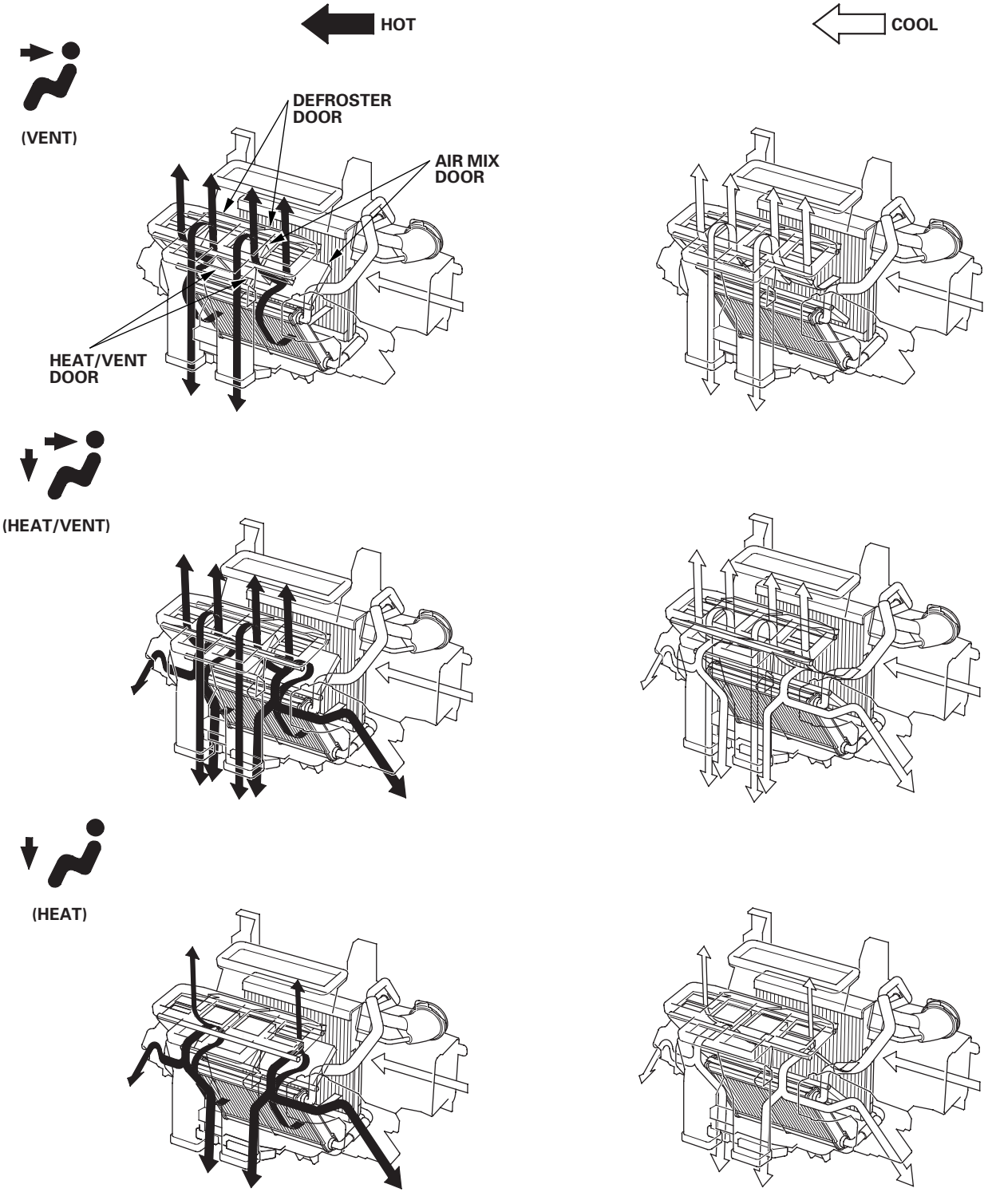


- Middle pressure switch
  If the refrigerant pressure goes above 1,520 kPa (15.5 kgf/cm², 221 psi), the A/C pressure switch closes to signal the PCM to change the speed of the A/C condenser fan and radiator fan to high. When the refrigerant pressure drops below 930 kPa (9.5 kgf/cm², 135 psi), the A/C pressure switch opens to signal the PCM to change the speed of the A/C condenser fan and radiator fan to low.



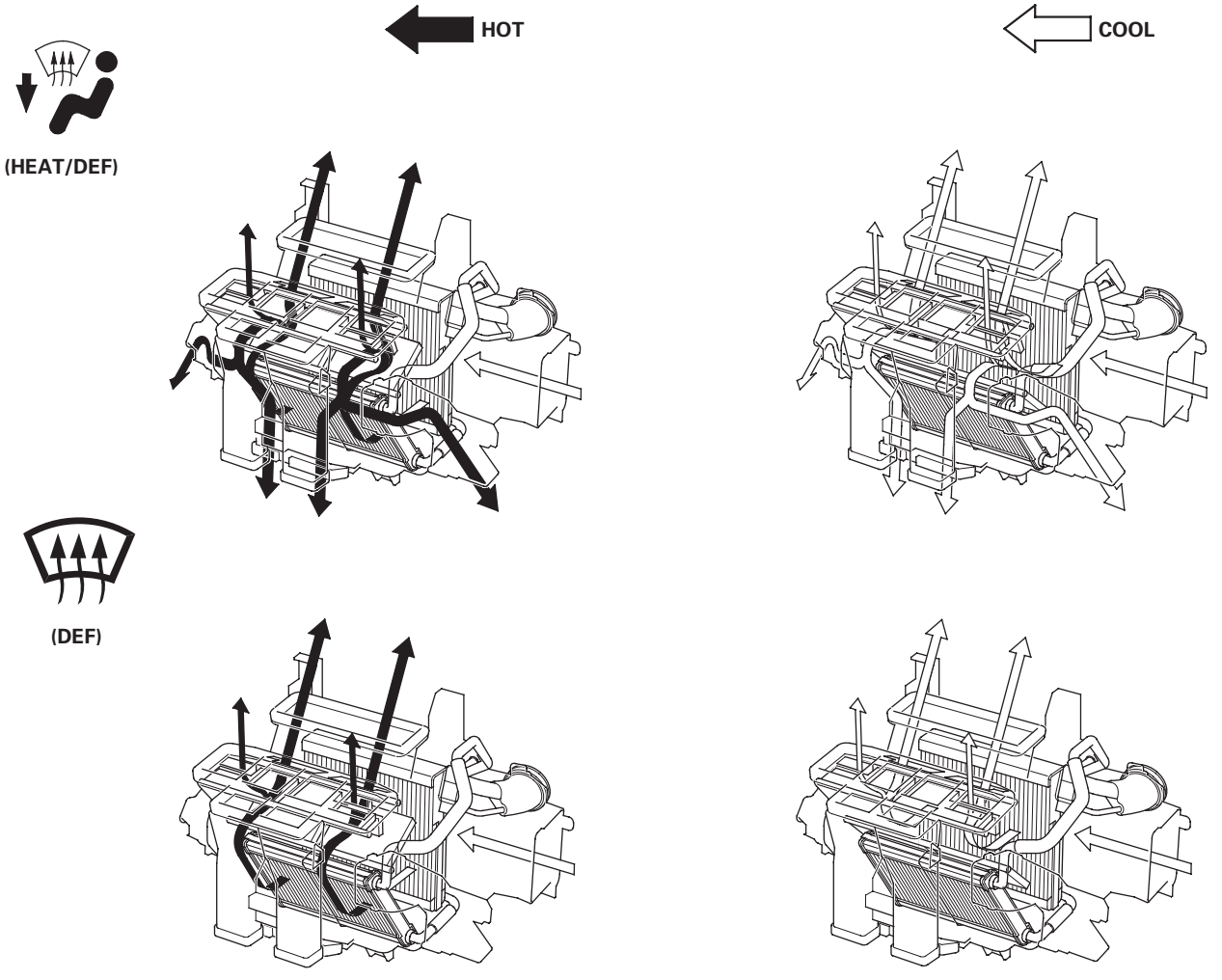


Heating/Air Conditioning Door Positions



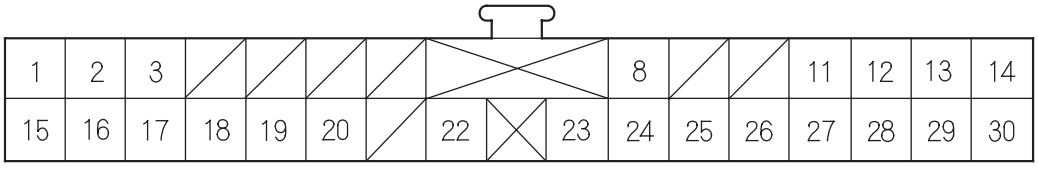
(cont'd)

System Description (cont'd)



HVAC Control Unit Inputs and Outputs

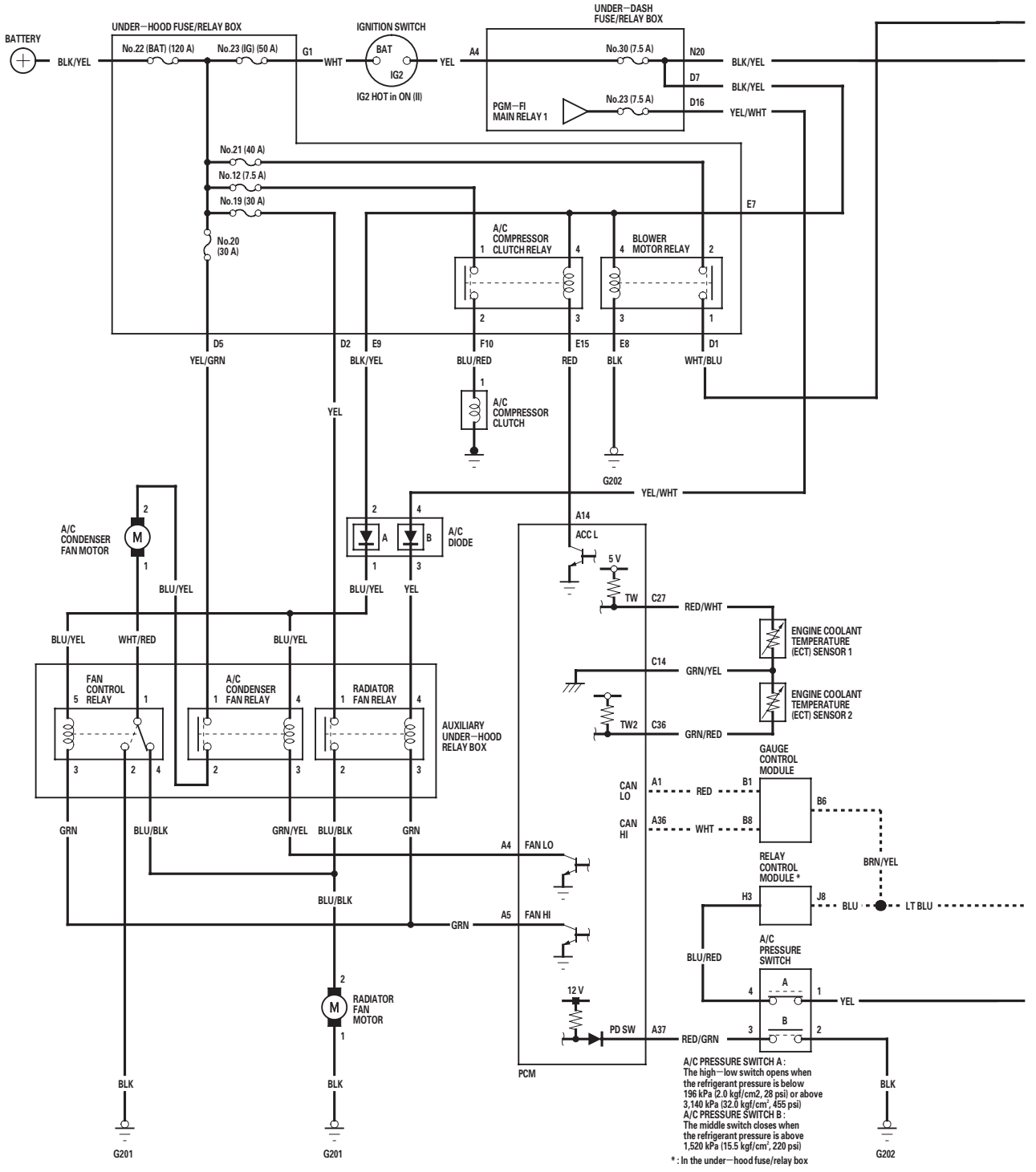
HVAC CONTROL UNIT 30P CONNECTOR

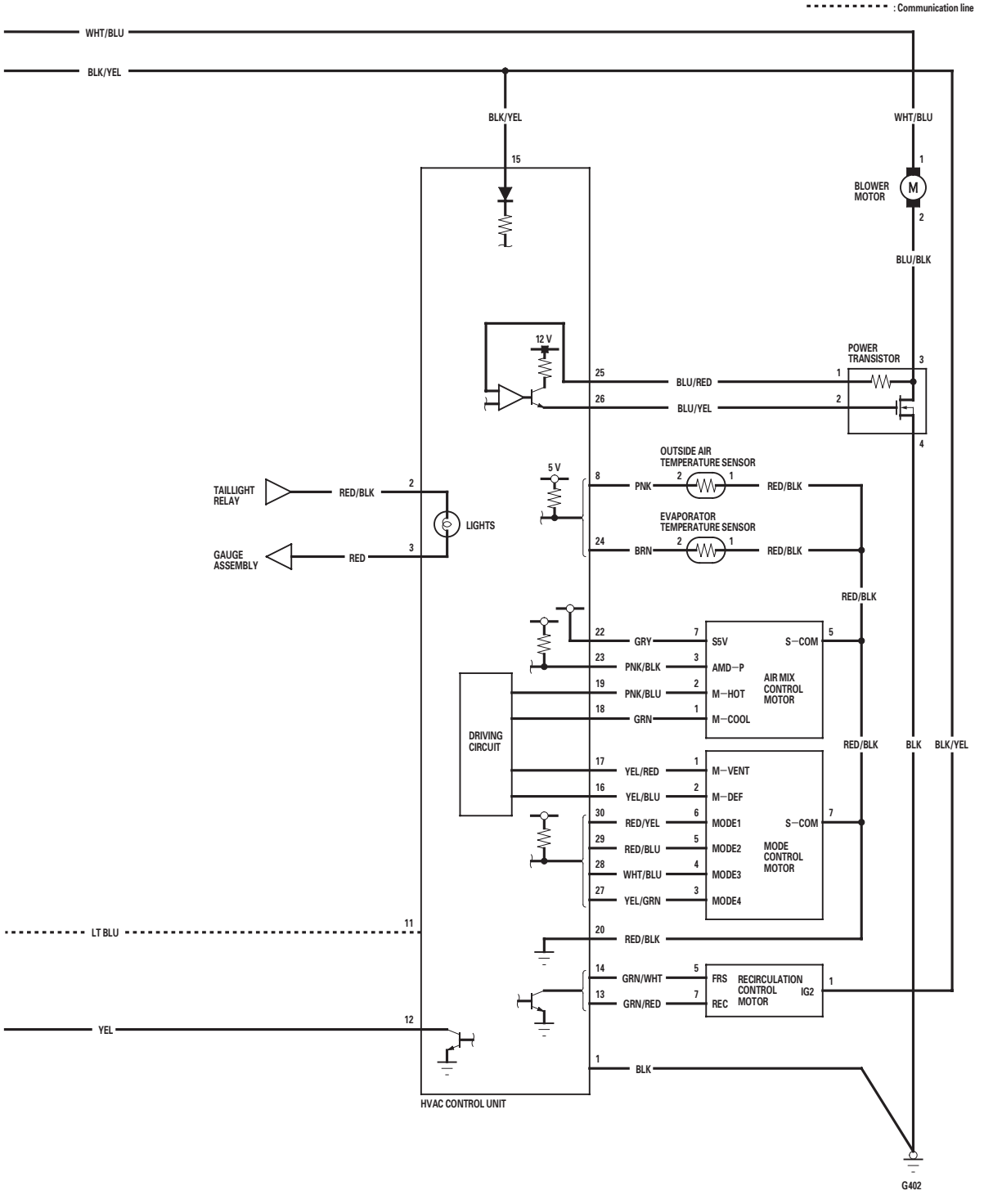


Wire side of female terminals

Cavity	Wire color	Signal	
1	BLK	GROUND (G402)	OUTPUT
2	RED/BLK	TAILLIGHT RELAY	INPUT
3	RED	GAUGE ASSEMBLY	OUTPUT
8	PNK	OUTSIDE AIR TEMPERATURE SENSOR	OUTPUT
11	LT BLU	B-CAN	INPUT/OUTPUT
12	YEL	A/C PRESSURE SWITCH	INPUT
13	GRN/RED	RECIRCULATE	INPUT
14	GRN/WHT	FRESH	INPUT
15	BLK/YEL	IG2 (Power)	INPUT
16	YEL/BLU	MODE OFF	OUTPUT
17	YEL/RED	MODE VENT	OUTPUT
18	GRN	AIR MIX COOL	OUTPUT
19	PNK/BLU	AIR MIX HOT	OUTPUT
20	RED/BLK	SENSOR COMMON GROUND	INPUT
22	GRY	AIR MIX POTENTIAL +5	OUTPUT
23	PNK/BLK	AIR MIX POTENTIAL	OUTPUT
24	BRN	EVAPORATOR TEMPERATURE SENSOR	OUTPUT
25	BLU/RED	BLOWER FEEDBACK	INPUT
26	BLU/YEL	POWER TRANSISTOR CONTROL	OUTPUT
27	YEL/GRN	MODE 4	OUTPUT
28	WHT/BLU	MODE 3	OUTPUT
29	RED/BLU	MODE 2	OUTPUT
30	RED/YEL	MODE 1	OUTPUT

Circuit Diagram




: Communication line
WHT/BLU
BLK/YEL
BLK/YEL
WHT/BLU
15
1
BLOWER MOTOR
M
2
BLU/BLK
12 V
POWER TRANSISTOR
3
25
BLU/RED
1
26
BLU/YEL
2
4
OUTSIDE AIR TEMPERATURE SENSOR
5 V
8
PNK
2
1
RED/BLK
TAILLIGHT RELAY
RED/BLK
2
LIGHTS
GAUGE ASSEMBLY
RED
3
EVAPORATOR TEMPERATURE SENSOR
24
BRN
2
1
RED/BLK
RED/BLK
22
GRY
7
S5V
S−COM
5
23
PNK/BLK
3
AMD−P
19
PNK/BLU
2
M−HOT
AIR MIX CONTROL MOTOR
18
GRN
1
M−COOL
DRIVING CIRCUIT
RED/BLK
BLK
BLK/YEL
17
YEL/RED
1
M−VENT
16
YEL/BLU
2
M−DEF
30
RED/YEL
6
MODE1
S−COM
7
29
RED/BLU
5
MODE2
MODE CONTROL MOTOR
28
WHT/BLU
4
MODE3
27
YEL/GRN
3
MODE4
LT BLU
11
20
RED/BLK
14
GRN/WHT
5
FRS
RECIRCULATION CONTROL MOTOR
IG2
1
13
GRN/RED
7
REC
YEL
12
1
BLK
HVAC CONTROL UNIT
G402

DTC Troubleshooting

DTC B1202: HVAC Control Unit Internal Error

NOTE:
- Check the battery condition (see page 22-74) and the charging system (see page 4-26).
- If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN system diagnosis test mode A (see page 22-99).

1. Clear the DTC with the HDS.
2. Operate the heater-A/C control system in several modes.
3. Check for DTCs using the HDS.

   Is DTC B1202 indicated?

   YES—The HVAC control unit is faulty, replace the control unit. ■

   NO—Intermittent failure, the HVAC control unit is OK at this time. ■

DTC B1205: HVAC Control Unit Lost Communication with Gauge Control Module (VSP/NE message)

DTC B1206: HVAC Control Unit Lost Communication with Gauge Control Module (ECT message)

DTC B1207: HVAC Control Unit Lost Communication with Gauge Control Module (ILLUMI message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN system diagnosis test mode A (see page 22-99).

1. Clear the DTC with the HDS.
2. Operate the heater-A/C control system in several modes.
3. Check for DTCs using the HDS.

   Is DTC B1205, B1206 and/or B1207 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the gauge control module and HVAC control unit are OK at this time. ■

4. Check for DTCs using the HDS.

   Is DTC B1060 or B2157 indicated?

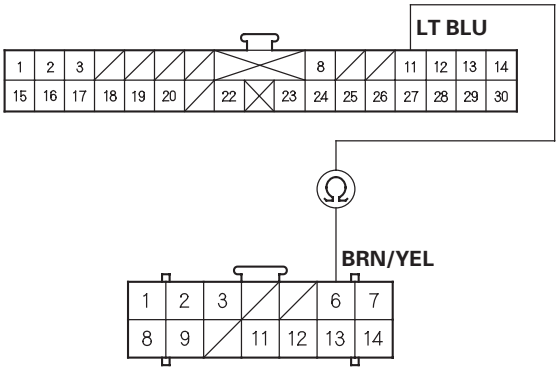
   YES—Perform the gauge control module input test (see page 22-122). ■

   NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the HVAC control unit 30P connector.
7. Remove the gauge control module (see page 22-263).

8. Check for continuity between the HVAC control unit 30P connector No. 11 terminal and gauge control module connector B (14P) No. 6 terminal.

HVAC CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



GAUGE CONTROL MODULE CONNECTOR B (14P)
Wire side of female terminals

Is there continuity?

YES—Substitute a known-good HVAC control unit, then return to step 3 and recheck . If the problem is still present, replace the gauge control module (see page 22-263).■

NO—Repair open in the wire between the HVAC control unit and gauge control module.■

DTC B1227 or DTC indicator 9: An Open in the Outside Air Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Operate the heater-A/C control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1227 or 9 indicated?

   YES—Go to step 4.

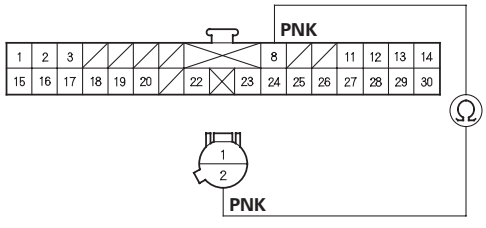
   NO—Intermittent failure, check for loose wires or poor connections on the outside air temperature sensor circuit.■
4. Turn the ignition switch OFF.
5. Remove the outside air temperature sensor (see page 21-52) and test it (see page 21-52).

   Is the outside air temperature sensor OK?

   YES—Go to step 6.

   NO—Replace the outside air temperature sensor.■
6. Disconnect the HVAC control unit 30P connector.
7. Check for continuity between the HVAC control unit 30P connector No. 8 terminal and the outside air temperature sensor 2P connector No. 2 terminal.

HVAC CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



OUTSIDE AIR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 8.

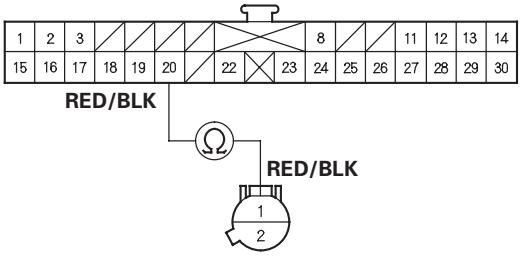
NO—Repair open in the wire between the HVAC control unit and the outside air temperature sensor.■

(cont'd)

DTC Troubleshooting (cont'd)

8. Check for continuity between the HVAC control unit 30P connector No. 20 terminal and the outside air temperature sensor 2P connector No. 1 terminal.

HVAC CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



OUTSIDE AIR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the HVAC control unit 30P connector and at the outside air temperature sensor 2P connector. If the connections are good, substitute a known-good HVAC control unit, and recheck. If the symptom/indication goes away, replace the original HVAC control unit. ■

NO—Repair open in the wire between the HVAC control unit and the outside air temperature sensor. ■

DTC B1228 or DTC indicator 10: A Short in the Outside Air Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Operate the heater-A/C control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1228 or 10 indicated?

   YES—Go to step 4.

   NO—Intermittent failure. ■
4. Turn the ignition switch OFF.
5. Remove the outside air temperature sensor (see page 21-52) and test it (see page 21-52).

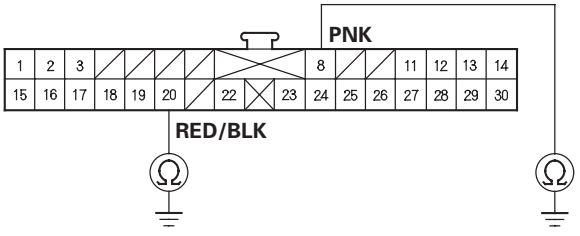
   Is the outside air temperature sensor OK?

   YES—Go to step 6.

   NO—Replace the outside air temperature sensor. ■
6. Disconnect the HVAC control unit 30P connector.

7. Check for continuity between body ground and the HVAC control unit 30P connector No. 8 and No. 20 terminals.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

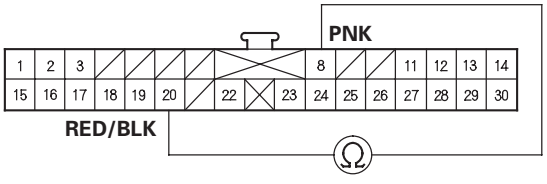
Is there continuity?

YES—Repair short to body ground in the wires between the HVAC control unit and the outside air temperature sensor. ■

NO—Go to step 8.

8. Check for continuity between the HVAC control unit 30P connector No. 8 and No. 20 terminals.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the HVAC control unit and the outside air temperature sensor. ■

NO—Substitute a known-good HVAC control unit, and recheck. If the symptom/indication goes away, replace the original HVAC control unit. ■

DTC B1231 or DTC indicator 7: An Open in the Evaporator Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Operate the heater-A/C control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1231 or 7 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, check for loose wires or poor connections on the evaporator temperature sensor circuit. ■
4. Turn the ignition switch OFF.
5. Remove the evaporator temperature sensor (see page 21-53) and test it (see page 21-53).

   Is the evaporator temperature sensor OK?

   YES—Go to step 6.

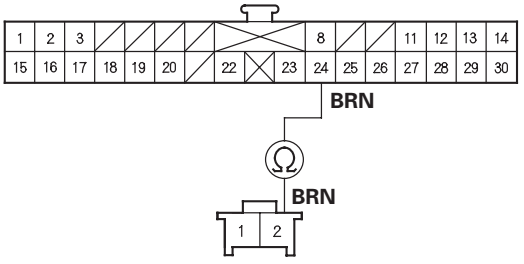
   NO—Replace the evaporator temperature sensor. ■
6. Disconnect the HVAC control unit 30P connector.

(cont'd)

DTC Troubleshooting (cont'd)

7. Check for continuity between the HVAC control unit 30P connector No. 24 terminal and the evaporator temperature sensor 2P connector No. 2 terminal.

HVAC CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

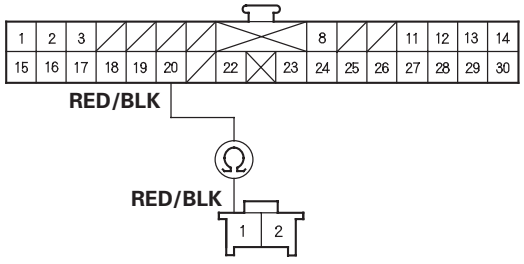
Is there continuity?

YES—Go to step 8.

NO—Repair open in the wire between the HVAC control unit and the evaporator temperature sensor. ■

8. Check for continuity between the HVAC control unit 30P connector No. 20 terminal and the evaporator temperature sensor 2P connector No. 1 terminal.

HVAC CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the HVAC control unit 30P connector and at the evaporator temperature sensor 2P connector. If the connections are good, substitute a known-good HVAC control unit, and recheck. If the symptom/indication goes away, replace the original HVAC control unit. ■

NO—Repair open in the wire between the HVAC control unit and the evaporator temperature sensor. ■

DTC B1232 or DTC indicator 8: A Short in the Evaporator Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Operate the heater-A/C control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1232 or 8 indicated?

   YES—Go to step 4.

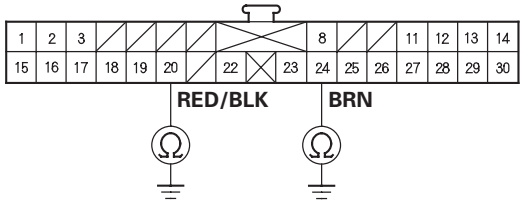
   NO—Intermittent failure. ■
4. Turn the ignition switch OFF.
5. Remove the evaporator temperature sensor (see page 21-53) and test it (see page 21-53).

   Is the evaporator temperature sensor OK?

   YES—Go to step 6.

   NO—Replace the evaporator temperature sensor. ■
6. Disconnect the HVAC control unit 30P connector.
7. Check for continuity between body ground and the HVAC control unit 30P connector No. 20 and No. 24 terminals.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

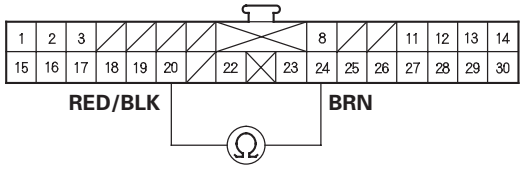
Is there continuity?

YES—Repair short to body ground in the wires between the HVAC control unit and the evaporator temperature sensor. ■

NO—Go to step 8.

8. Check for continuity between the HVAC control unit 30P connector No. 20 and No. 24 terminals.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the HVAC control unit and the evaporator temperature sensor. ■

NO—Substitute a known-good HVAC control unit, and recheck. If the symptom/indication goes away, replace the original HVAC control unit. ■

DTC Troubleshooting (cont'd)

DTC B1233 or DTC indicator 1: An Open in the Air Mix Control Motor Circuit

1. Clear the DTC with the HDS.
2. Operate the heater-A/C control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1233 or 1 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, check for loose wires or poor connections on the air mix control motor circuit. ■
4. Turn the ignition switch OFF.
5. Test the air mix control motor (see page 21-55).

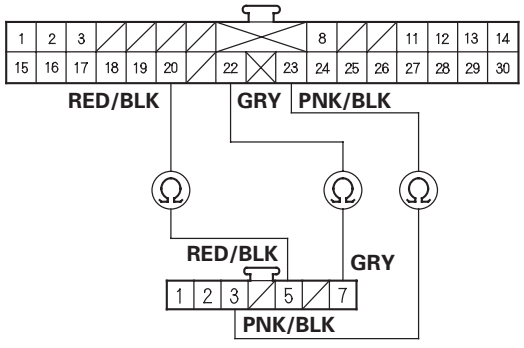
   Is the air mix control motor OK?

   YES—Go to step 6.

   NO—Replace the air mix control motor (see page 21-55). ■
6. Disconnect the air mix control motor 7P connector.
7. Disconnect the HVAC control unit 30P connector.
8. Check for continuity between the following terminals of the HVAC control unit 30P connector and the air mix control motor 7P connector.

30P:	7P:
No. 20	No. 5
No. 22	No. 7
No. 23	No. 3

HVAC CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



AIR MIX CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the HVAC control unit 30P connector and at the air mix control motor 7P connector. If the connections are good, substitute a known-good HVAC control unit and recheck. If the symptom/indication goes away, replace the original HVAC control unit. ■

NO—Repair any open in the wires between the HVAC control unit and the air mix control motor. ■

DTC B1234 or DTC indicator 2: A Short in the Air Mix Control Motor Circuit

1. Clear the DTC with the HDS.
2. Operate the heater-A/C control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1234 or 2 indicated?

   YES—Go to step 4.

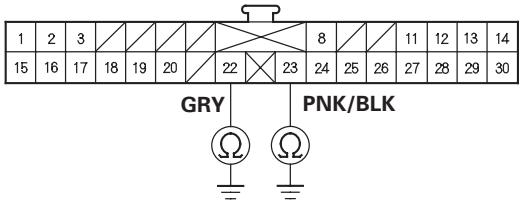
   NO—Intermittent failure. ■
4. Turn the ignition switch OFF.
5. Test the air mix control motor (see page 21-55).

   Is the air mix control motor OK?

   YES—Go to step 6.

   NO—Replace the air mix control motor (see page 21-55). ■
6. Disconnect the air mix control motor 7P connector.
7. Disconnect the HVAC control unit 30P connector.
8. Check for continuity between body ground and the HVAC control unit 30P connector No. 22 and No. 23 terminals individually.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

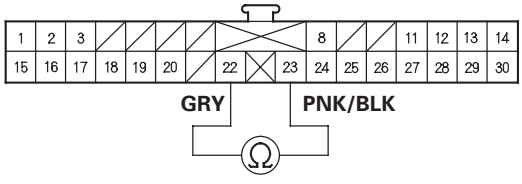
Is there continuity?

YES—Repair any short to body ground in the wire(s) between the HVAC control unit and the air mix control motor. ■

NO—Go to step 9.

9. Check for continuity between the HVAC control unit 30P connector No. 22 and No. 23 terminals.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity between any of the terminals?

YES—Repair the short in the wires. ■

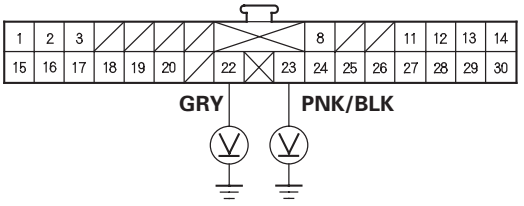
NO—Go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

10. Turn the ignition switch ON (II), and check the same terminals for voltage to body ground.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there voltage?

YES—Repair short to power in the wire(s) between the HVAC control unit and the air mix control motor. This short may also damage the HVAC control unit. Repair the short to power before replacing the HVAC control unit. ■

NO—Substitute a known-good HVAC control unit, and recheck. If the symptom/indication goes away, replace the original HVAC control unit. ■

DTC B1235 or DTC indicator 3: A Problem in the Air Mix Control Linkage, Door, or Motor

1. Clear the DTC with the HDS.
2. Operate the heater-A/C control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1235 or 3 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, check for loose wires or poor connections on the air mix control motor circuit. ■
4. Turn the ignition switch OFF.
5. Test the air mix control motor (see page 21-55).

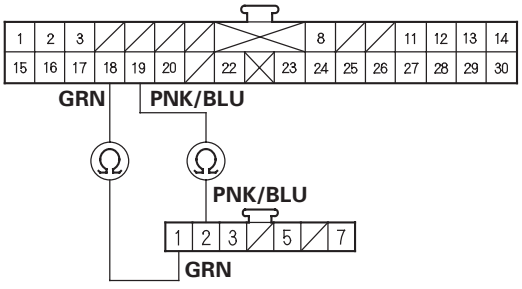
   Is the air mix control motor OK?

   YES—Go to step 6.

   NO—Replace the air mix control motor (see page 21-55), or repair the air mix control linkage or door. ■
6. Disconnect the air mix control motor 7P connector.
7. Disconnect HVAC control unit 30P connector.

8. Check for continuity between the following terminals of HVAC control unit 30P connector and the air mix control motor 7P connector.
   30P: 7P:
   No. 18 No. 1
   No. 19 No. 2

HVAC CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



AIR MIX CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

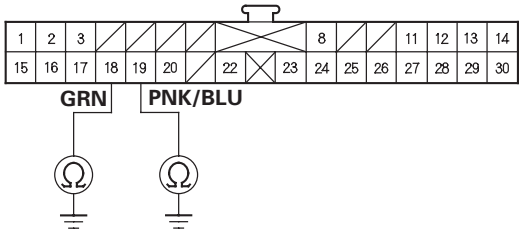
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire(s) between the HVAC control unit and the air mix control motor.■

9. Check for continuity between body ground and HVAC control unit 30P connector No. 18 and No. 19 terminals individually.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the HVAC control unit and the air mix control motor.■

NO—Substitute a known-good HVAC control unit, and recheck. If the symptom/indication goes away, replace the original HVAC control unit.■

DTC Troubleshooting (cont'd)

DTC B1239 or DTC indicator 4: An Open or Short in the Mode Control Motor Circuit

1. Clear the DTC with the HDS.
2. Operate the heater-A/C control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1239 or 4 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, check for loose wires or poor connections on the mode control motor circuit. ■
4. Turn the ignition switch OFF.
5. Test the mode control motor (see page 21-56).

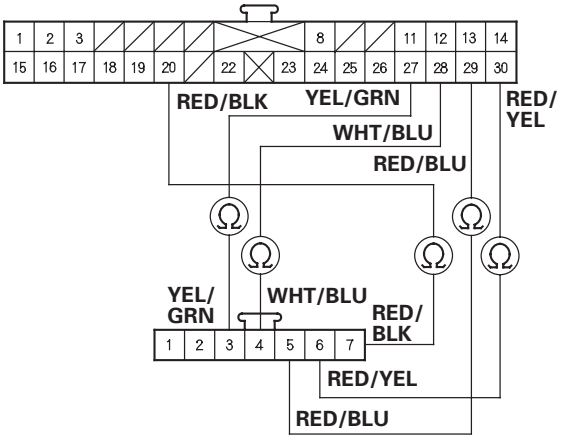
   Is the mode control motor OK?

   YES—Go to step 6.

   NO—Replace the mode control motor (see page 21-56). ■
6. Disconnect the mode control motor 7P connector.
7. Disconnect the HVAC control unit 30P connector.
8. Check for continuity between the following terminals of the HVAC control unit 30P connector and the mode control motor 7P connector.

30P:	7P:
No. 20	No. 7
No. 27	No. 3
No. 28	No. 4
No. 29	No. 5
No. 30	No. 6

HVAC CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



MODE CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

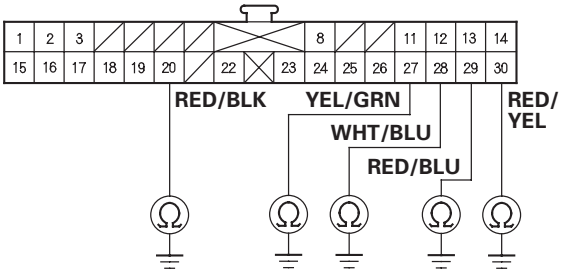
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wires between the HVAC control unit and the mode control motor. ■

9. Check for continuity between body ground and the HVAC control unit 30P connector No. 20, 27, 28, 29, and 30 terminals individually.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wires between the HVAC control unit and the mode control motor. ■

NO—Go to step 10.

10. Check for continuity between the HVAC control unit connector terminals as follows.

From terminal	To terminals
20	27, 28, 29, 30
27	28, 29, 30
28	29, 30
29	30

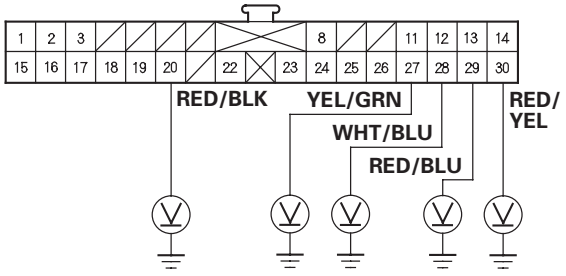
Is there continuity between any of the terminals?

YES—Repair the short in the wires. ■

NO—Go to step 11.

11. Turn the ignition switch ON (II), and check the same terminals for voltage to body ground.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there any voltage?

YES—Repair short to power in the wires between the HVAC control unit and the mode control motor. This short may also damage the HVAC control unit. Repair the short to power before replacing the HVAC control unit. ■

NO—Check for loose wires or poor connections at the HVAC control unit 30P connector and at the mode control motor 7P connector. If the connections are good, substitute a known-good HVAC control unit, and recheck. If the symptom/indication goes away, replace the original HVAC control unit. ■

DTC Troubleshooting (cont'd)

DTC B1240 or DTC indicator 5: A Problem in the Mode Control Linkage, Doors, or Motor

1. Clear the DTC with the HDS.
2. Operate the heater-A/C control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1240 or 5 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, check for loose wires or poor connections on the mode control motor circuit. ■
4. Turn the ignition switch OFF.
5. Test the mode control motor (see page 21-56).

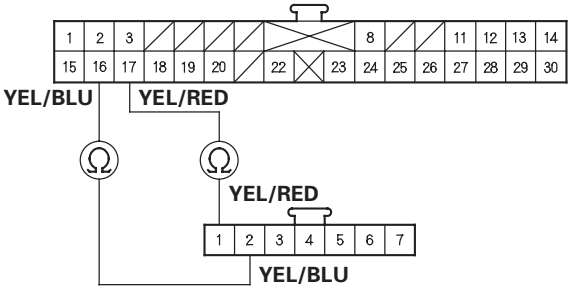
   Is the mode control motor OK?

   YES—Go to step 6.

   NO—Replace the mode control motor (see page 21-56), or repair the mode control linkage or doors. ■
6. Disconnect the mode control motor 7P connector.
7. Disconnect HVAC control unit 30P connector.
8. Check for continuity between the following terminals of HVAC control unit 30P connector and the mode control motor 7P connector.

30P:	7P:
No. 16	No. 2
No. 17	No. 1

HVAC CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



MODE CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

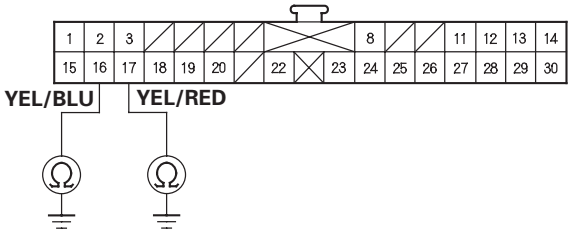
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire(s) between the HVAC control unit and the mode control motor. ■

9. Check for continuity between body ground and HVAC control unit 30P connector No. 16 and No. 17 terminals individually.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the HVAC control unit and the mode control motor. ■

NO—Substitute a known-good HVAC control unit, and recheck. If the symptom/indication goes away, replace the original HVAC control unit. ■

DTC B1241 or DTC indicator 6: A Problem in the Blower Motor Circuit

1. Clear the DTC with the HDS.
2. Operate the heater-A/C control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1241 or 6 indicated?

   YES—Go to step 4.

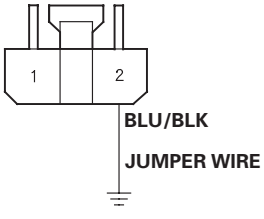
   NO—Intermittent failure, check for loose wires or poor connections on the blower motor circuit. ■
4. Turn the ignition switch OFF.
5. Check the No. 21 (40 A) fuse in the under-hood fuse/relay box, and the No. 30 (7.5 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Go to step 6.

   NO—Replace the fuses, and recheck. If the fuses blow again, check for a short in the No. 21 (40 A) and No. 30 (7.5 A) fuses circuit. ■
6. Connect the blower motor 2P connector No. 2 terminal to body ground with a jumper wire.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

7. Turn the ignition switch ON (II).

   Does the blower motor run?

   YES—Go to step 8.

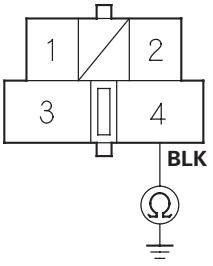
   NO—Go to step 23.

(cont'd)

DTC Troubleshooting (cont'd)

8. Turn the ignition switch OFF.
9. Disconnect the jumper wire.
10. Disconnect the power transistor 4P connector.
11. Check for continuity between the power transistor 4P connector No. 4 terminal and body ground.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

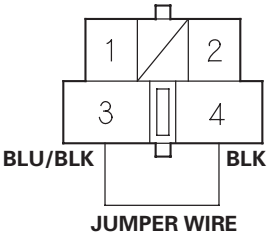
Is there continuity?

YES—Go to step 12.

NO—Check for an open in the wire between the power transistor and body ground. If the wire is OK, check for poor ground at G402 (see page 22-68). ■

12. Connect the power transistor 4P connector No. 3 and No. 4 terminals with a jumper wire.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

13. Turn the ignition switch ON (II).

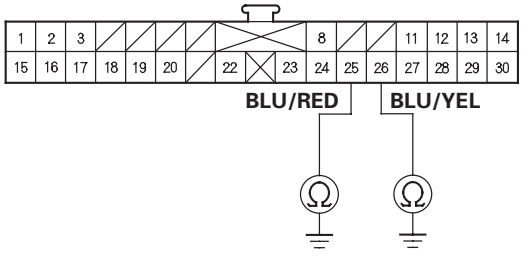
Does the blower motor run at high speed?

YES—Go to step 14.

NO—Repair open in the BLU/BLK wire between the power transistor and the blower motor. ■

14. Turn the ignition switch OFF.
15. Disconnect the jumper wire.
16. Disconnect the HVAC control unit 30P connector.
17. Check for continuity between body ground and the HVAC control unit 30P connector No. 25 and No. 26 terminals individually.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

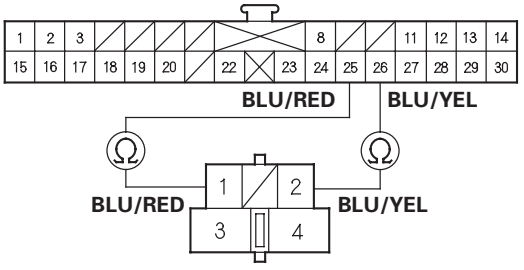
Is there continuity?

YES—Repair short to body ground in the wires between the HVAC control unit and the power transistor. ■

NO—Go to step 18.

18. Check for continuity between the following terminals of the HVAC control unit 30P connector and the power transistor 4P connector.
    30P: 4P:
    No. 25 No. 1
    No. 26 No. 2

HVAC CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



POWER TRANSISTOR 4P CONNECTOR
Wire side of female terminals

Is there continuity?

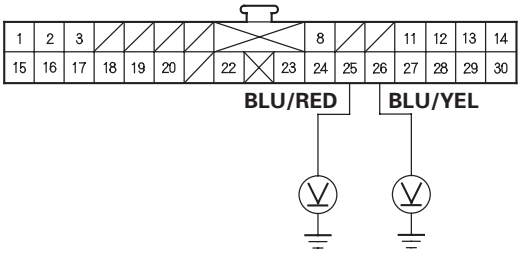
YES—Go to step 19.

NO—Repair open in the wires between the HVAC control unit and the power transistor. ■

19. Start the engine.

20. Measure the voltage between body ground and the HVAC control unit 30P connector No. 25 and No. 26 terminals individually.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there voltage?

YES—Repair short to power in the wires. ■

NO—Go to step 21.

21. Reconnect the HVAC control unit 30P connector.

22. Test the power transistor (see page 21-54).

Is the power transistor OK?

YES—Check for loose wire or poor connections at the HVAC control unit 30P connector and at the power transistor 4P connector. If the connections are good, substitute a known-good HVAC control unit, and recheck. If the symptom/indication goes away, replace the original HVAC control unit. ■

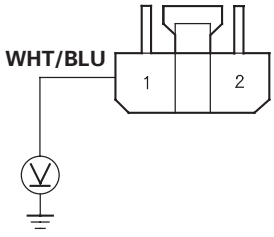
NO—Replace the power transistor. ■

23. Disconnect the jumper wire.

24. Disconnect the blower motor 2P connector.

25. Measure the voltage between the blower motor 2P connector No. 1 terminal and body ground.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Replace the blower motor. ■

NO—Go to step 26.

26. Turn the ignition switch OFF.

27. Remove the blower motor relay from the under-hood fuse/relay box, and test it (see page 22-75).

Is the relay OK?

YES—Go to step 28.

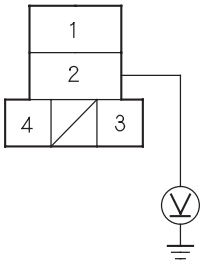
NO—Replace the blower motor relay. ■

(cont'd)

DTC Troubleshooting (cont'd)

28. Measure the voltage between the blower motor relay 4P socket No. 2 terminal and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there battery voltage?

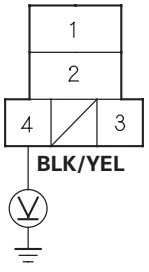
YES—Go to step 29.

NO—Replace the under-hood fuse/relay box (see page 22-72). ■

29. Turn the ignition switch ON (II).

30. Measure the voltage between the blower motor relay 4P socket No. 4 terminal and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there battery voltage?

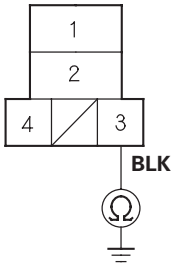
YES—Go to step 31.

NO—Repair open in the wire between the No. 30 (7.5 A) fuse in the under-dash fuse/relay box and the blower motor relay. ■

31. Turn the ignition switch OFF.

32. Check for continuity between the blower motor relay 4P socket No. 3 terminal and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there continuity?

YES—Repair open in the WHT/BLU wire between the blower motor relay and the blower motor. ■

NO—Check for an open in the wire between the blower motor relay and body ground. If the wire is OK, check for poor ground at G202 (see page 22-68). ■

Recirculation Control Motor Circuit Troubleshooting

1. Check the No. 30 (7.5 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 2.

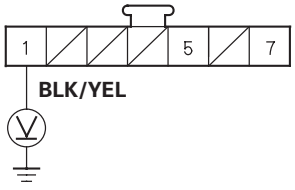
   NO—Replace the fuse, and recheck. If the fuse blows again, check for a short in the No. 30 (7.5 A) fuse circuit. ■

2. Disconnect the recirculation control motor 7P connector.

3. Turn the ignition switch ON (II).

4. Measure the voltage between the recirculation control motor 7P connector No. 1 terminal and body ground.

RECIRCULATION CONTROL MOTOR 7P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 5.

NO—Repair open in the wire between the No. 30 (7.5 A) fuse in the under-dash fuse/relay box and the recirculation control motor. ■

5. Turn the ignition switch OFF.

6. Test the recirculation control motor (see page 21-57).

   Is the recirculation control motor OK?

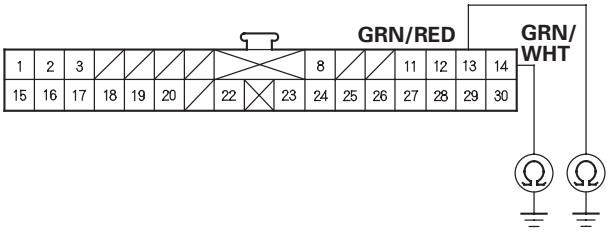
   YES—Go to step 7.

   NO—Replace the recirculation control motor (see page 21-57), or repair the recirculation control linkage or door. ■

7. Disconnect the HVAC control unit 30P connector.

8. Check for continuity between body ground and the HVAC control unit 30P connector No. 13 and No. 14 terminals individually.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wires between the HVAC control unit and the recirculation control motor. ■

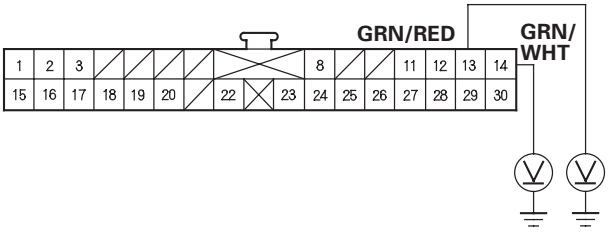
NO—Go to step 9.

(cont'd)

Recirculation Control Motor Circuit Troubleshooting (cont'd)

9. Turn the ignition switch ON (II), and check the same terminals for voltage to body ground.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there any voltage?

YES—Repair short to power in the wires between the HVAC control unit and the recirculation control motor. This short may also damage the HVAC control unit. Repair the short to power before replacing the HVAC control unit. ■

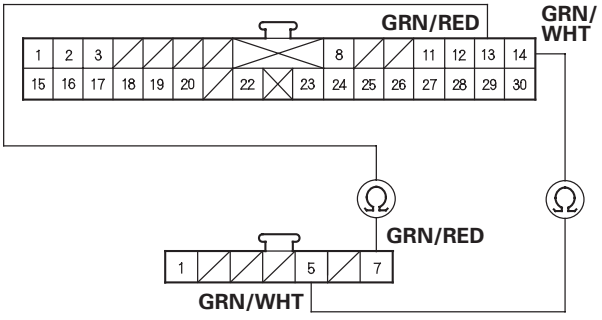
NO—Go to step 10.

10. Turn the ignition switch OFF.

11. Check for continuity between the following terminals of the HVAC control unit 30P connector and the recirculation control motor 7P connector.

30P:	7P:
No. 13	No. 7
No. 14	No. 5

HVAC CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



RECIRCULATION CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the HVAC control unit 30P connector and at the recirculation control motor 7P connector. If the connections are good, substitute a known-good HVAC control unit, and recheck. If the symptom/indication goes away, replace the original HVAC control unit. ■

NO—Repair open in the wires between the HVAC control unit and the recirculation control motor. ■

HVAC Control Power and Ground Circuit Troubleshooting

1. Check the No. 30 (7.5 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 2.

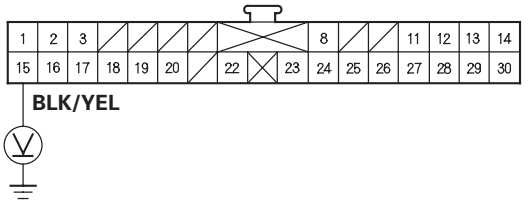
   NO—Replace the fuse, and recheck. If the fuse blows again, check for a short in the No. 30 (7.5 A) fuse circuit. ■

2. Disconnect the HVAC control unit 30P connector.

3. Turn the ignition switch ON (II).

4. Measure the voltage between the HVAC control unit 30P connector No. 15 terminal and body ground.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there battery voltage?

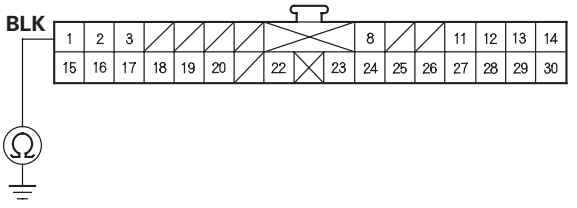
YES—Go to step 5.

NO—Repair open in the wire between the No. 30 (7.5 A) fuse in the under-dash fuse/relay box and the HVAC control unit. ■

5. Turn the ignition switch OFF.

6. Check for continuity between the HVAC control unit 30P connector No. 1 terminal and body ground.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the HVAC control unit 30P connector. If the connections are good, substitute a known-good HVAC control unit, and recheck. If the symptom/indication is still present, substitute a known-good HVAC control unit, and recheck. ■

NO—Check for an open in the wire between the HVAC control unit and body ground. If the wire is OK, check for poor ground at G402 (see page 22-68). ■

Radiator and A/C Condenser Fan Low Speed Circuit Troubleshooting

NOTE:
- Do not use this troubleshooting procedure if the A/C compressor is inoperative. Refer to the symptom troubleshooting index.
- Before performing symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Check the No. 20 (30 A) fuse in the under-hood fuse/relay box, and the No. 30 (7.5 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Go to step 2.

   NO—Replace the fuses, and recheck. If the fuses blow again, check for a short in the No. 20 (30 A) and No. 30 (7.5 A) fuses circuit. ■

2. Remove the A/C condenser fan relay from the auxiliary under-hood fuse/relay box, and test it (see page 22-75).

   Is the relay OK?

   YES—Go to step 3.

   NO—Replace the A/C condenser fan relay. ■

3. Connect the HDS to the DLC (see page 21-8).

4. Turn the ignition switch ON (II).

5. Turn on the A/C on the HVAC control unit.

6. Check the FAN LOW CTRL in the PGM-FI Data List with the HDS.

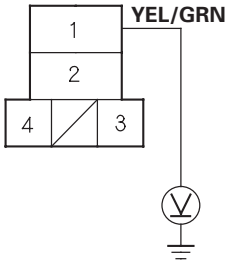
   Is the FAN LOW CTRL on?

   YES—Go to step 7.

   NO—Substitute a known-good PCM (see page 11-8), and retest. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-205). ■

7. Measure the voltage between the A/C condenser fan relay 4P socket No. 1 terminal and body ground.

A/C CONDENSER FAN RELAY 4P SOCKET



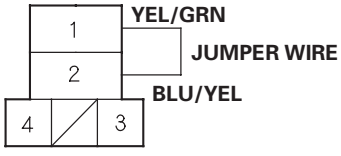
Is there battery voltage?

YES—Go to step 8.

NO—Repair open in the wire between the No. 20 (30 A) fuse in the auxiliary under-hood fuse/relay box and the A/C condenser fan relay. ■

8. Connect the A/C condenser fan relay 4P socket No. 1 and No. 2 terminals with a jumper wire.

A/C CONDENSER FAN RELAY 4P SOCKET



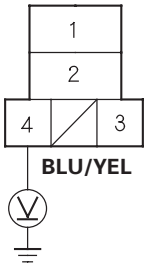
Do the A/C condenser and radiator fans run?

YES—Go to step 9.

NO—Go to step 18.

9. Disconnect the jumper wire.
10. Turn the ignition switch ON (II).
11. Measure the voltage between the A/C condenser fan relay 4P socket No. 4 terminal and body ground.

A/C CONDENSER FAN RELAY 4P SOCKET



Is there battery voltage?

YES—Go to step 12.

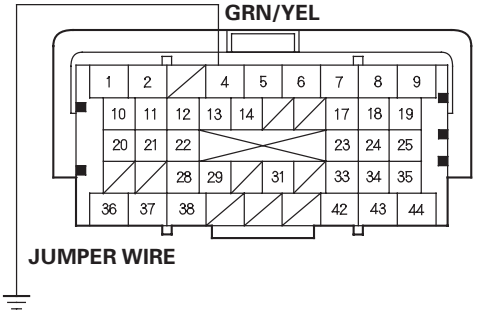
NO—Go to step 36.

12. Turn the ignition switch OFF.
13. Reinstall the A/C condenser fan relay.
14. Jump the SCS line with the HDS.

    NOTE: This step must be done to protect the powertrain control module (PCM) from damage.

15. Disconnect PCM connector A (44P).
16. Connect the PCM connector A (44P) No. 4 terminal to body ground with a jumper wire.

PCM CONNECTOR A (44P)



Terminal side of female terminals

17. Turn the ignition switch ON (II).

    Do the A/C condenser and radiator fans run on LO?

    YES—Check for loose wires or poor connections at PCM connector A (44P) No. 4 terminal. If the connections are good, substitute a known-good PCM, and recheck. If the symptom/indication goes away, replace the original PCM (see page 11-205). ■

    NO—Repair open in the wire between the A/C condenser fan relay and the PCM. ■

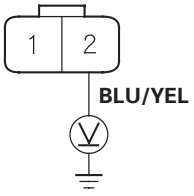
18. Disconnect the jumper wire.
19. Reinstall the A/C condenser fan relay.
20. Disconnect the A/C condenser fan 2P connector.
21. Turn the ignition switch ON (II), then set the A/C button and fan control dial ON.

(cont'd)

Radiator and A/C Condenser Fan Low Speed Circuit Troubleshooting (cont'd)

22. Measure the voltage between the A/C condenser fan 2P connector No. 2 terminal and body ground.

A/C CONDENSER FAN 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 23.

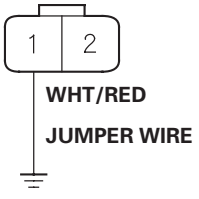
NO—Repair open in the wire between the A/C condenser fan relay and the A/C condenser fan. ■

23. Set the A/C button and fan control dial OFF, then turn the ignition switch OFF.

24. Reconnect the A/C condenser fan 2P connector.

25. Connect the A/C condenser fan 2P connector No. 1 terminal to body ground with a jumper wire.

A/C CONDENSER FAN 2P CONNECTOR



Wire side of female terminals

26. Turn the ignition switch ON (II), then set the A/C button and fan control dial ON.

Does the A/C condenser fan run?

YES—Go to step 27.

NO—Replace the A/C condenser fan motor. ■

27. Set the A/C button and fan control dial OFF, then turn the ignition switch OFF.

28. Disconnect the jumper wire.

29. Remove the fan control relay from the auxiliary under-hood relay box, and test it (see page 22-75).

Is the relay OK?

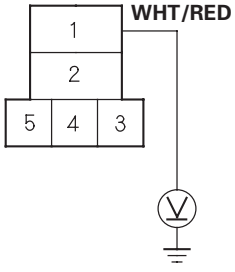
YES—Go to step 30.

NO—Replace the fan control relay. ■

30. Turn the ignition switch ON (II), then set the A/C button and fan control dial ON.

31. Measure the voltage between the fan control relay 5P socket No. 1 terminal and body ground.

FAN CONTROL RELAY 5P SOCKET



Is there battery voltage?

YES—Go to step 32.

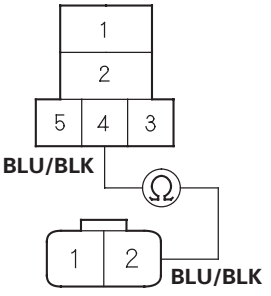
NO—Repair open in the wire between the A/C condenser fan and the fan control relay. ■

32. Set the A/C button and fan control dial OFF, then turn the ignition switch OFF.

33. Disconnect the radiator fan 2P connector.

34. Check for continuity between the fan control relay 5P socket No. 4 terminal and the radiator fan 2P connector No. 2 terminal.

FAN CONTROL RELAY 5P SOCKET



RADIATOR FAN 2P CONNECTOR
Wire side of female terminals

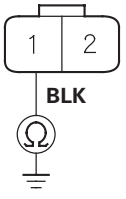
Is there continuity?

YES—Go to step 35.

NO—Repair open in the wire between the fan control relay and the radiator fan. ■

35. Check for continuity between the radiator fan 2P connector No. 1 terminal and body ground.

RADIATOR FAN 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the radiator fan motor. ■

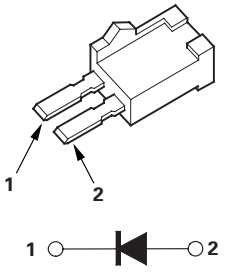
NO—Check for an open in the wire between the radiator fan and body ground. If the wire is OK, check for poor ground at G201 (see page 22-68). ■

36. Turn the ignition switch OFF.

37. Remove A/C diode A from right engine compartment wire harness.

38. Using the diode setting (⊣◀⊢) on a DVOM, check for current flow in both directions between the A/C diode A No. 1 and No. 2 terminals.

A/C DIODE A



Is there current flow in only one direction?

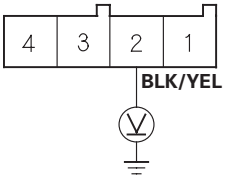
YES—Go to step 39.

NO—Replace A/C diode A. ■

39. Turn the ignition switch ON (II).

40. Measure the voltage between the A/C diode 4P socket No. 2 terminal and body ground.

A/C DIODE 4P SOCKET



Is there battery voltage?

YES—Repair open in the wire between A/C diode A and the A/C condenser fan relay. ■

NO—Repair open in the wire between the No. 30 (7.5 A) fuse in the under-dash fuse/relay box and A/C diode A. ■

A/C Condenser Fan High Speed Circuit Troubleshooting

NOTE:
- Do not use this troubleshooting procedure if the radiator fan and/or the A/C compressor is inoperative. Refer to the symptom troubleshooting index.
- Before performing symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Check the No. 30 (7.5 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 2.

   NO—Replace the fuse, and recheck. If the fuse blows again, check for a short in the No. 30 (7.5 A) fuse circuit. ■

2. Remove the fan control relay from the auxiliary under-hood relay box, and test it (see page 22-75).

   Is the relay OK?

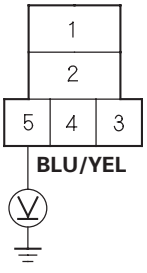
   YES—Go to step 3.

   NO—Replace the fan control relay. ■

3. Turn the ignition switch ON (II).

4. Measure the voltage between the No. 5 terminal of the fan control relay 5P socket and body ground.

FAN CONTROL RELAY 5P SOCKET



   Is there battery voltage?

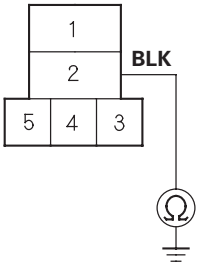
   YES—Go to step 5.

   NO—Go to step 9.

5. Turn the ignition switch OFF.

6. Check for continuity between the fan control relay 5P socket No. 2 terminal and body ground.

FAN CONTROL RELAY 5P SOCKET



   Is there continuity?

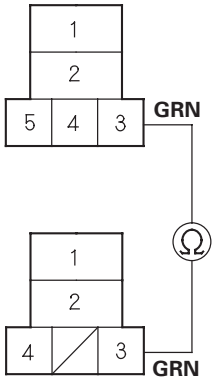
   YES—Go to step 7.

   NO—Check for an open in the wire between the fan control relay and body ground. If the wire is OK, check for poor ground at G201 (see page 22-68). ■

7. Remove the radiator fan relay from the auxiliary under-hood fuse/relay box.

8. Check for continuity between the fan control relay 5P socket No. 3 terminal and the radiator fan relay 4P socket No. 3 terminal.

FAN CONTROL RELAY 5P SOCKET



RADIATOR FAN RELAY 4P SOCKET

Is there continuity?

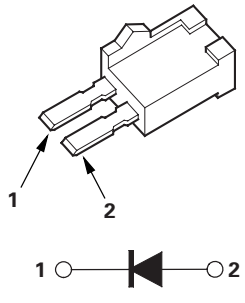
YES—Repair open in the GRN wire between the radiator fan relay No. 3 terminal and the PCM A5 terminal. ■

NO—Repair open in the wire between the fan control relay and the radiator fan relay. ■

9. Remove A/C diode A from right engine compartment wire harness.

10. Using the diode setting(⊷) on a DVOM, check for current flow in both directions between the A/C diode A No. 1 and No. 2 terminals.

A/C DIODE A



Is there current flow in only one direction?

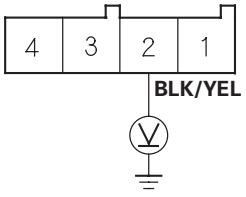
YES—Go to step 11.

NO—Replace A/C diode A. ■

11. Turn the ignition switch ON (II).

12. Measure the voltage between the A/C diode 4P socket No. 2 terminal and body ground.

A/C DIODE 4P SOCKET



Is there battery voltage?

YES—Repair open in the wire between A/C diode A and the condenser fan control relay. ■

NO—Repair open in the wire between the No. 30 (7.5 A) fuse in the under-dash fuse/relay box and A/C diode A. ■

Radiator and A/C Condenser Fan High Speed Circuit Troubleshooting

NOTE:
- Do not use this troubleshooting procedure if only one fan is inoperative, or if the A/C compressor is inoperative. Refer to the symptom troubleshooting index.
- Before performing symptom troubleshooting, check for powertrain DTCs (see page 11-3).
- The normal operating A/C pressure for the radiator and A/C condenser fans to run at high speed is 1,520 kPa (15.5 kgf/cm^2, 221 psi).

1. Check the No. 19 (30 A) fuse and No. 20 (30 A) fuse in the under-hood fuse/relay box, and the No. 30 (7.5 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?
   YES—Go to step 2.
   NO—Replace the fuse(s), and recheck. ■

2. Using the HDS, confirm the following values in the Data List at idle.

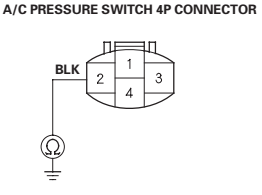
A/C SWITCH	on
A/C CLUTCH	on
Fan Low Speed	on
Fan High Speed	on

   Are all the values OK?
   YES—Go to step 3.
   NO—Troubleshoot the value that is not the specifications. ■

3. Turn the ignition switch OFF.

4. Disconnect the A/C pressure switch 4P connector.

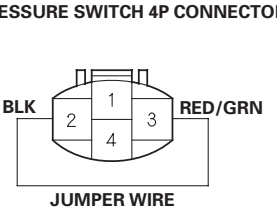
5. Check for continuity between the A/C pressure switch 4P connector No. 2 terminal and body ground.



   Is there continuity?
   YES—Go to step 6.
   NO—Check for an open in the wire between the A/C pressure switch and body ground. If the wire is OK, check for poor ground at G202 (see page 22-68). ■

6. Turn the ignition switch ON (II), then set the A/C button and fan control dial to ON.

7. Connect the A/C pressure switch 4P connector No. 2 and No. 3 terminals with a jumper wire.



   Do the radiator and condenser fans run at high speed?

   YES—Replace the A/C pressure switch. ■

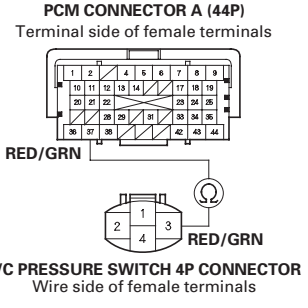
   NO—Go to step 8.

8. Jump the SCS line with the HDS.

   NOTE: This step must be done to protect the powertrain control module (PCM) from damage.

9. Disconnect PCM connector A (44P).

10. Check for continuity between the PCM connector A (44P) No. 37 terminal and the A/C pressure switch 4P connector No. 3 terminal.



   Is there continuity?

   YES—Check for loose wires or poor connections at PCM connector A (44P). If the connections are good, substitute a known-good PCM, and recheck. If the symptom/indication goes away, replace the original PCM (see page 11-205). ■

   NO—Repair open in the wire between the PCM and A/C pressure switch. ■

A/C Compressor Clutch Circuit Troubleshooting

NOTE:
- It is normal for the A/C compressor to turn off under certain conditions, such as low idle, high engine coolant temperature, or hard acceleration.
- Do not use this troubleshooting procedure if the fans are also inoperative with the A/C on. Refer to the symptom troubleshooting index.
- Before doing any symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Check the No. 12 (7.5 A) fuse in the under-hood fuse/relay box, and the No. 30 (7.5 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Go to step 2.

   NO—Replace the fuses and recheck. If the fuses blow again, check for a short in the No. 12 (7.5 A) and No. 30 (7.5 A) fuses circuit. ■

2. Connect the HDS to the DLC (see page 21-8).

3. Start the engine.

4. Turn on the A/C on the HVAC control unit.

5. Check the A/C CLUTCH in the PGM-FI Data List with the HDS.

   Is the A/C CLUTCH on?

   YES—Go to step 7.

   NO—Go to step 6.

6. Check the engine coolant temperature and idle speed (use the HDS PGM-FI data list if possible).

ECT Sensor 2	169—194 °F (76—90 °C)
TP sensor	About 0.5 V at idle
RPM	More than 730

   Are the coolant temperature and idle speed OK?

   YES—Go to step 7.

   NO—Troubleshoot and repair the cause of the high engine coolant temperature or low idle. ■

7. Remove the A/C compressor clutch relay from the under-hood fuse/relay box, and test it (see page 22-75).

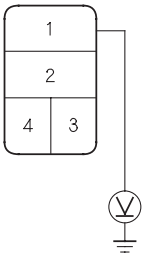
   Is the relay OK?

   YES—Go to step 8.

   NO—Replace the A/C compressor clutch relay. ■

8. Measure the voltage between the A/C compressor clutch relay 4P socket No. 1 terminal and body ground.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



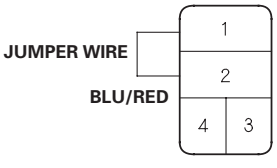
   Is there battery voltage?

   YES—Go to step 9.

   NO—Replace the under-hood fuse/relay box (see page 22-72). ■

9. Connect the A/C compressor clutch relay 4P socket No. 1 and No. 2 terminals with a jumper wire.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



   Does the A/C compressor clutch click?

   YES—Go to step 10.

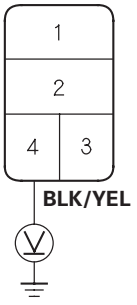
   NO—Go to step 19.

(cont'd)

A/C Compressor Clutch Circuit Troubleshooting (cont'd)

10. Disconnect the jumper wire.
11. Turn the ignition switch ON (II).
12. Measure the voltage between the A/C compressor clutch relay 4P socket No. 4 terminal and body ground.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



Is there battery voltage?

YES—Go to step 13.

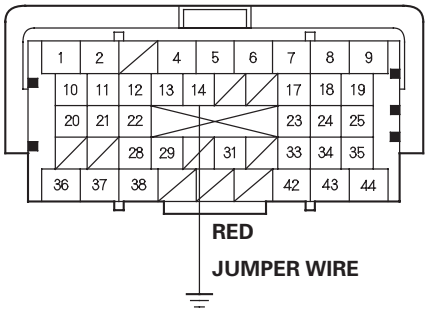
NO—Repair open in the wire between the No. 30 (7.5 A) fuse in the under-dash fuse/relay box and the A/C compressor clutch relay. ■

13. Turn the ignition switch OFF.
14. Reinstall the A/C compressor clutch relay.
15. Jump the SCS line with the HDS.

    NOTE: This step must be done to protect the powertrain control module (PCM) from damage.

16. Disconnect PCM connector A (44P).
17. Connect the PCM connector A (44P) No. 14 terminal to body ground with a jumper wire.

PCM CONNECTOR A (44P)



Terminal side of female terminals

18. Turn the ignition switch ON (II).

    Does the A/C compressor click?

    YES—Check for loose wires or poor connections at PCM connector A (44P). If the connections are good, check the PCM grounds. If the grounds are good, substitute a known-good PCM, and recheck. If the symptom/indication goes away, replace the original PCM (see page 11-205).■

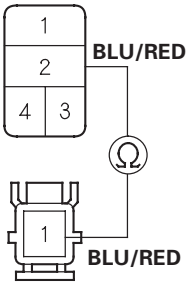
    NO—Repair open in the wire between the A/C compressor clutch relay and the PCM.■

19. Disconnect the jumper wire.

20. Disconnect the A/C compressor clutch 1P connector.

21. Check for continuity between the A/C compressor clutch relay 4P socket No. 2 terminal and the A/C compressor clutch 1P connector No. 1 terminal.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



A/C COMPRESSOR CLUTCH 1P CONNECTOR
Terminal side of male terminals

Is there continuity?

YES—Check the A/C compressor clutch clearance, and the compressor clutch field coil (see page 21-68). Repair as needed.■

NO—Repair open in the wire between the A/C compressor clutch relay and the A/C compressor clutch.■

A/C Pressure Switch Circuit Troubleshooting

NOTE:
- Do not use this troubleshooting procedure if any of the following items are operative; A/C condenser fan, radiator fan, A/C compressor. Refer to the symptom troubleshooting index.
- Before doing any symptom troubleshooting, check for powertrain DTCs (see page 11-3).
- If the blower motor does not run at all speeds, the A/C compressor will be inoperative. Before performing any other troubleshooting, repair the cause of the inoperative blower motor.

1. Check for body DTCs using B-CAN system diagnosis test mode A troubleshooting (see page 22-99).

   Are there any DTCs indicated?

   YES—Do the appropriate troubleshooting for the DTC indicated.■
   NO—Go to step 3.

2. Refer to the PGM-FI ECU Data List.

   Is the A/C switch off?

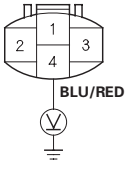
   YES—Go to step 3.
   NO—Refer to the symptom troubleshooting index.■

3. Disconnect the A/C pressure switch 4P connector.

4. Turn the ignition switch ON (II).

5. Measure the voltage between the A/C pressure switch 4P connector No. 4 terminal and body ground.

A/C PRESSURE SWITCH 4P CONNECTOR



Wire side of female terminals

Is there 5 V or more?

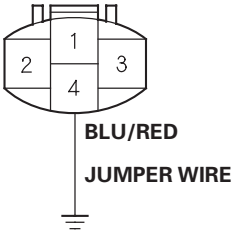
YES—Go to step 6.
NO—Go to step 20.

(cont'd)

A/C Pressure Switch Circuit Troubleshooting (cont'd)

6. Connect the A/C pressure switch 4P connector No. 4 terminal to body ground with a jumper wire.

A/C PRESSURE SWITCH 4P CONNECTOR



Wire side of female terminals

7. Start the engine.

Does the compressor and fans come on?

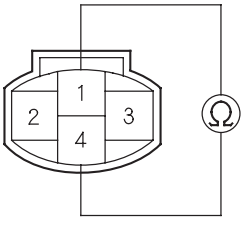
YES—Go to step 8.

NO—Check the connection of under-hood fuse/relay box connector H (18P) No. 3 terminal. If the connection is OK, replace the under-hood fuse/relay box (see page 22-72). ■

8. Disconnect a jumper wire, and turn the ignition switch OFF.

9. Check for continuity between the A/C pressure switch No. 1 and No. 4 terminals.

A/C PRESSURE SWITCH



Is there continuity?

YES—Go to step 10.

NO—Go to step 19.

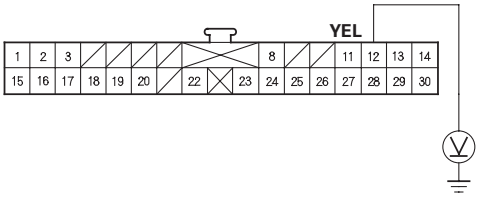
10. Reconnect the A/C pressure switch 4P connector.

11. Disconnect the HVAC control unit 30P connector.

12. Turn the ignition switch ON (II).

13. Measure the voltage between the HVAC control unit 30P connector No. 12 terminal and body ground.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there 5 V or more?

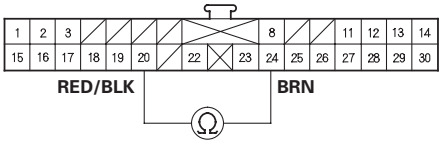
YES—Go to step 14.

NO—Repair the open in the wire between the HVAC control unit and the A/C pressure switch. ■

14. Turn the ignition switch OFF.

15. Measure the evaporator temperature sensor resistance between the HVAC control unit 30P connector No. 20 and No. 24 terminals.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is the resistance less than 24 kΩ ?

YES—Go to step 16.

NO—Test the evaporator temperature sensor (see page 21-53). ■

16. Reconnect the HVAC control unit 30P connector.

17. Turn the ignition switch ON (II).

18. Check that blower motor operates at all speeds.

    Does the blower motor operate at all speeds?

    YES—Check for loose wires or poor connections at the HVAC control unit 30P connector and at the A/C pressure switch 4P connector. If the connections are good, substitute a known-good HVAC control unit and recheck. If the symptom/indication goes away, replace the original HVAC control unit. ■

    NO—Repair the problem in the blower motor circuit. ■

19. Check for proper A/C system pressure.

    Is the pressure within specifications?

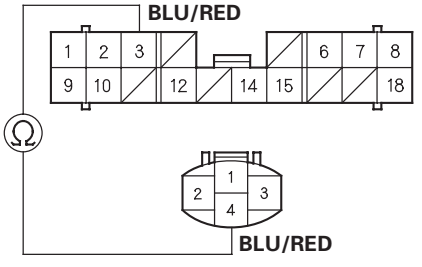
    YES—Replace the A/C pressure switch. ■

    NO—Repair the A/C pressure problem. ■

20. Disconnect under-hood relay box connector H (18P).

21. Check for continuity between the A/C pressure switch connector No. 4 terminal and under-hood relay box connector H (18P) No. 3 terminal.

UNDER-HOOD RELAY BOX CONNECTOR H (18P)
Wire side of female terminals



A/C PRESSURE SWITCH 4P CONNECTOR
Wire side of female terminals

Is there continuity?

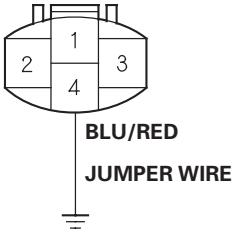
YES—Go to step 22.

NO—Repair open in the wire between the relay control module and the A/C pressure switch. ■

22. Reconnect under-hood relay box connector H (18P).

23. Connect the A/C pressure switch connector No. 4 terminal to body ground with the jumper wire.

A/C PRESSURE SWITCH 4P CONNECTOR



Wire side of female terminals

24. Start the engine.

    Do the A/C compressor and fans come on?

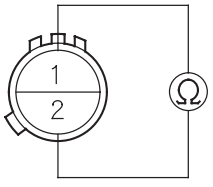
    YES—Replace the relay control module. ■

    NO—Check for loose wires or poor connections. If the connections are good, check the grounds. If the grounds are good, replace the relay control module. ■

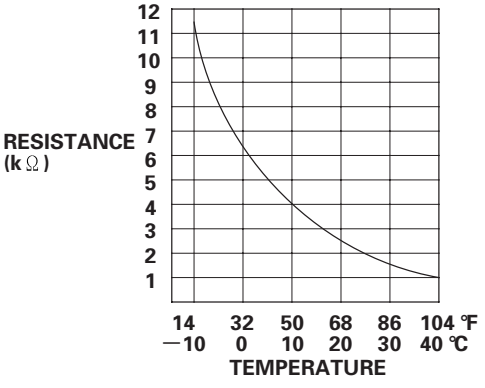
Outside Air Temperature Sensor Test

1. Remove the outside air temperature sensor (see page 21-52).
2. Dip the sensor in ice water, and measure the resistance. Then pour warm water on the sensor, and check for a change in resistance.
3. Compare the resistance reading between the No. 1 and No. 2 terminals of the outside air temperature sensor with the specifications shown in the graph; the resistance should be within the specifications.

OUTSIDE AIR TEMPERATURE SENSOR



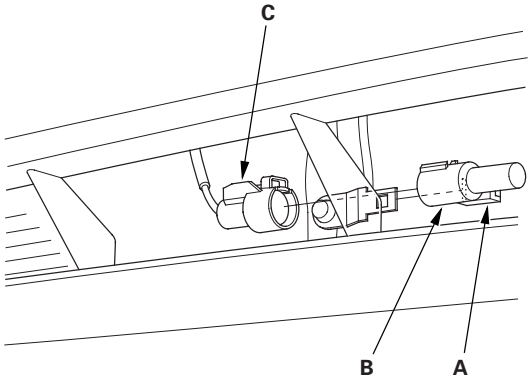
Terminal side of male terminals



4. If the resistance is not as specified, replace the out side air temperature sensor (see page 21-52).

Outside Air Temperature Sensor Replacement

1. Lift the tab (A) to release the lock, then remove the outside air temperature sensor (B) from the bulkhead bracket. Disconnect the 2P connector (C) from the outside air temperature sensor.

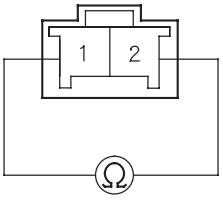


2. Install the sensor in the reverse order of removal.

Evaporator Temperature Sensor Test

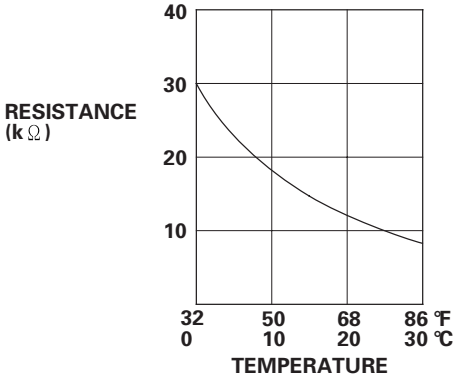
1. Remove the evaporator temperature sensor (see page 21-53).
2. Dip the sensor in ice water, and measure the resistance between its terminals.

EVAPORATOR TEMPERATURE SENSOR



Terminal side of male terminals

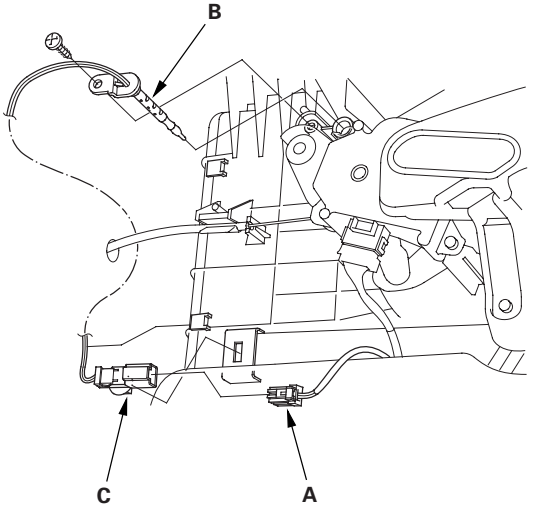
3. Then pour warm water on the sensor, and check for a change in resistance.
4. Compare the resistance readings with the specifications shown in the graph; the resistance should be within the specifications.



5. If the resistance is not as specified, replace the evaporator temperature sensor (see page 21-53).

Evaporator Temperature Sensor Replacement

1. Remove the driver's dashboard lower cover (see page 20-83).
2. Disconnect the 2P connector (A) from the evaporator temperature sensor (B), then remove the connector clip (C). Remove the self-tapping screw, and carefully pull out the evaporator temperature sensor.



3. Install the sensor in the reverse order of removal.

Power Transistor Test

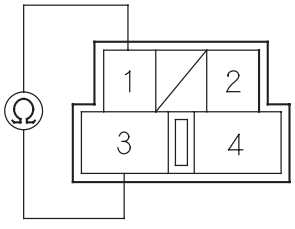
1. Disconnect the 4P connector from the power transistor.

2. Measure the resistance between the No. 1 and No. 3 terminals of the power transistor. It should be about 1.5 kΩ.

   - If the resistance is within the specifications, go to step 3.
   - If the resistance is not within the specifications, replace the power transistor.

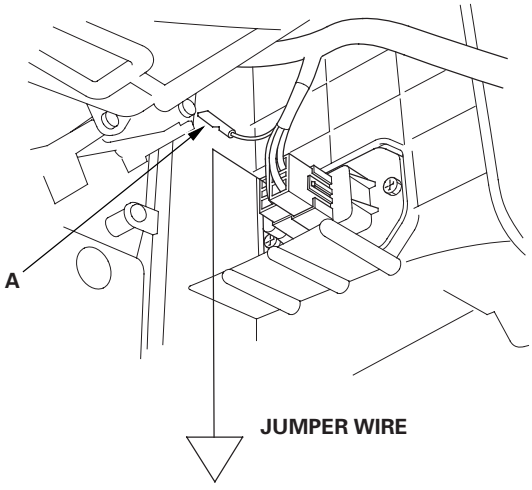
   NOTE: Also check the blower motor. Power transistor failure can be caused by a defective blower motor.

POWER TRANSISTOR



Terminal side of male terminals

3. Carefully release the lock tab on the No. 2 terminal (BLU/YEL) (A) in the 4P connector, then remove the terminal and insulate it from body ground.



4. Reconnect the 4P connector to the power transistor.

5. Make sure the BLU/YEL wire is completely isolated, then supply 12 V to the No. 2 cavity with a jumper wire.

6. Turn the ignition switch ON (II), and check that the blower motor runs.

   - If the blower motor does not run, replace the power transistor.
   - If the blower motor runs, the power transistor is OK.

Air Mix Control Motor Test

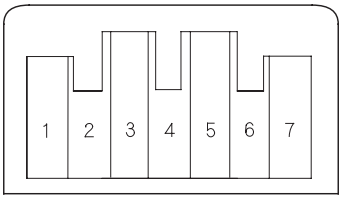
NOTE: Before testing, check for HVAC DTCs (see page 21-8).

1. Disconnect the 7P connector from the air mix control motor.

   NOTICE
   Incorrectly applying power and ground to the air mix control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the air mix control motor, and ground the No. 2 terminal; the air mix control motor should run, and stop at Max Cool. If it doesn't, reverse the connections; the air mix control motor should run, and stop at Max Hot. When the air mix control motor stops running, disconnect battery power immediately.

AIR MIX CONTROL MOTOR



3. If the air mix control motor did not run in step 2, remove it, then check the air mix control linkage and door for smooth movement.

   - If the linkage and door move smoothly, replace the air mix control motor (see page 21-55).
   - If the linkage or door sticks or binds, repair them as needed.
   - If the air mix control motor runs smoothly, go to step 4.

4. Measure the resistance between the No. 5 and No. 7 terminals. It should be between 4.2 to 7.8 kΩ.

5. Reconnect the air mix control motor 7P connector, then turn the ignition switch ON (II).

6. Using the backprobe set, measure the voltage between the No. 3 and No. 7 terminals.

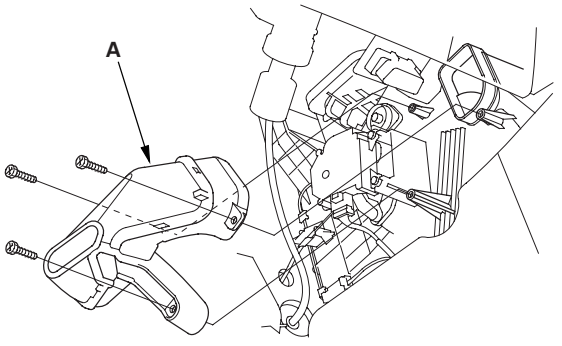
   Max Cool: About 0.5 V
   Max Hot: About 4.5 V

7. If either the resistance or voltage readings are not as specified, replace the air mix control motor (see page 21-55).

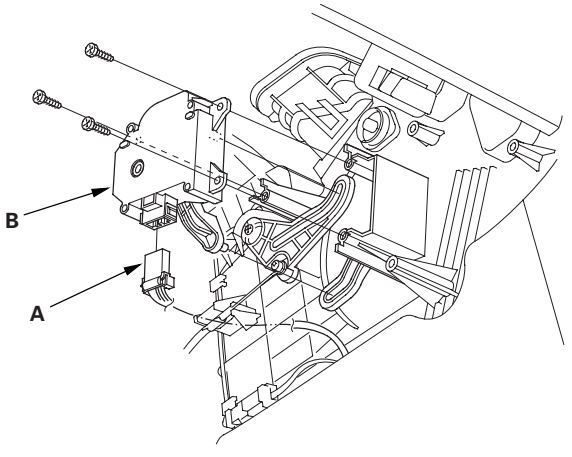
Air Mix Control Motor Replacement

1. Remove the driver's dashboard lower cover (see page 20-83).

2. Remove the self-tapping screws and the duct (A).



3. Disconnect the 7P connector (A) from the air mix control motor (B). Remove the self-tapping screws and the air mix control motor from the heater unit.



4. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

Mode Control Motor Test

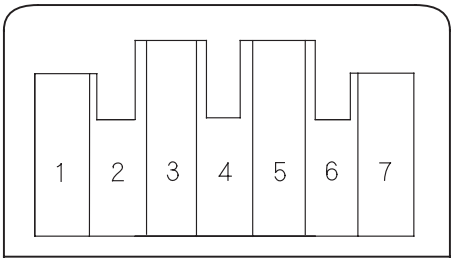
NOTE: Before testing, check for HVAC DTCs (see page 21-8).

1. Disconnect the 7P connector from the mode control motor.

   NOTICE
   Incorrectly applying power and ground to the mode control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the mode control motor, and ground the No. 2 terminal; the mode control motor should run smoothly, and stop at Vent. If it doesn't, reverse the connections; the mode control motor should run smoothly, and stop at Defrost. When the mode control motor stops running, disconnect battery power immediately.

MODE CONTROL MOTOR



3. If the mode control motor did not run in step 2, remove it, then check the mode control linkage and doors for smooth movement.

   - If the linkage and doors move smoothly, replace the mode control motor (see page 21-56).
   - If the linkage or doors stick or bind, repair them as needed.
   - If the mode control motor runs smoothly, go to step 4.

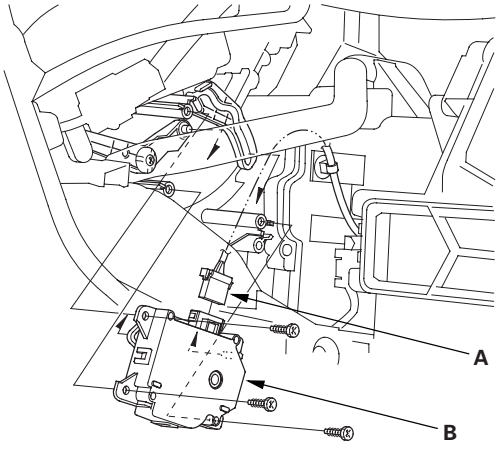
4. Use a digital multimeter with an output of 1 mA or less at the 20 kΩ range. With the mode control motor running as in step 2, check for continuity between the No. 3, 4, 5, and 6 terminals and the No. 7 terminal individually. There should be continuity for a moment at each terminal as the motor moves past the switch's terminal.

5. If there is no continuity for a moment at each terminal, replace the mode control motor (see page 21-56).

Mode Control Motor Replacement

1. Open the glove box. Remove the damper and the glove box stop on each side, then let the glove box hang down (see page 20-85).

2. Disconnect the 7P connector (A) from the mode control motor (B). Remove the self-tapping screws and the mode control motor from the heater unit.



3. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

Recirculation Control Motor Test

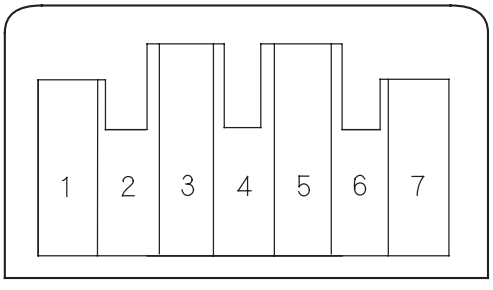
NOTE: Before testing, check for HVAC DTCs (see page 21-8).

1. Disconnect the 7P connector from the recirculation control motor.

   NOTICE
   Incorrectly applying power and ground to the recirculation control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the recirculation control motor, and ground the No. 5 and No. 7 terminals; the recirculation control motor should run smoothly. To avoid damaging the recirculation control motor, do not reverse power and ground. Disconnect the No. 5 or No. 7 terminals from ground; the recirculation control motor should stop at Fresh (when the No. 7 terminal is disconnected) or Recirculate (when the No. 5 terminal is disconnected). Don't cycle the recirculation control motor for a long time.

RECIRCULATION CONTROL MOTOR



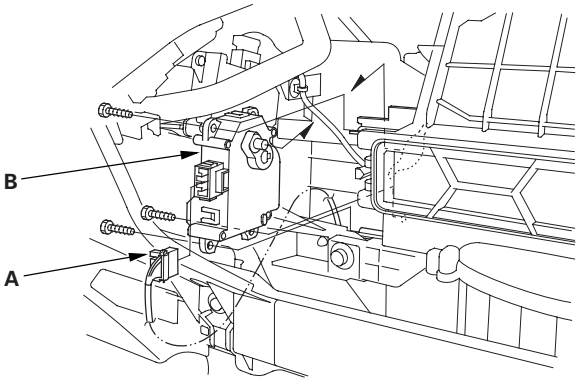
3. If the recirculation control motor did not run in step 2, remove it, then check the recirculation control linkage and door for smooth movement.

   - If the linkage and door move smoothly, replace the recirculation control motor (see page 21-57).
   - If the linkage or door stick or bind, repair them as needed.

Recirculation Control Motor Replacement

1. Open the glove box. Remove the damper and the glove box stop on each side, then let the glove box hang down (see page 20-85).

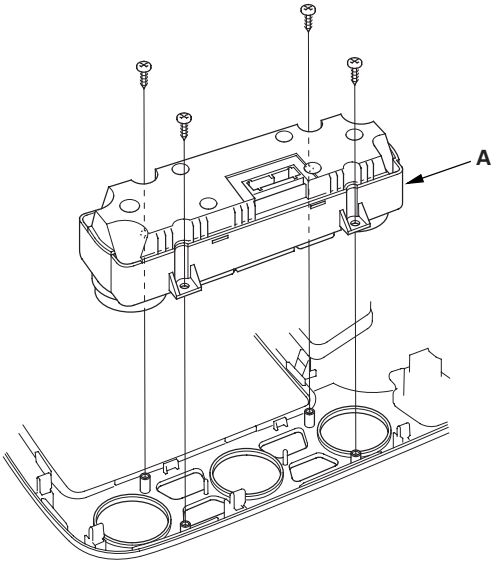
2. Disconnect the 7P connector (A) from the recirculation control motor (B). Remove the self-tapping screws and the recirculation control motor from the blower unit.



3. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

HVAC Control Unit Removal/ Installation

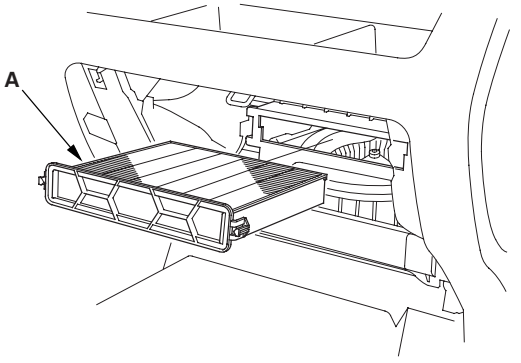
1. Remove the instrument panel (see page 20-81).
2. Remove the self-tapping screws, and the HVAC control unit (A).



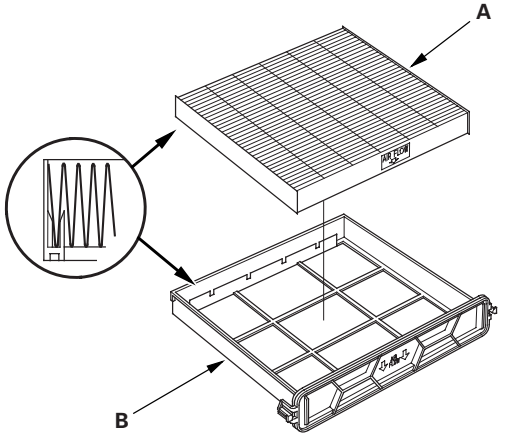
3. Install the control unit in the reverse order of removal. After installation, operate the various functions to make sure they work properly.
4. Run the self-diagnosis function to confirm that there are no problems in the system (see page 21-8).

Dust and Pollen Filter Replacement

1. Open the glove box. Remove the damper and the glove box stop on each side, then let the glove box hang down (see page 20-85).
2. Remove the dust and pollen filter assembly (A) from the evaporator.



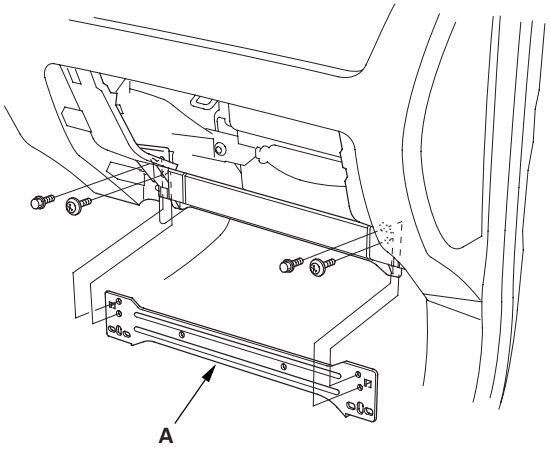
3. Remove the filter (A) from the housing (B), and replace the filter.



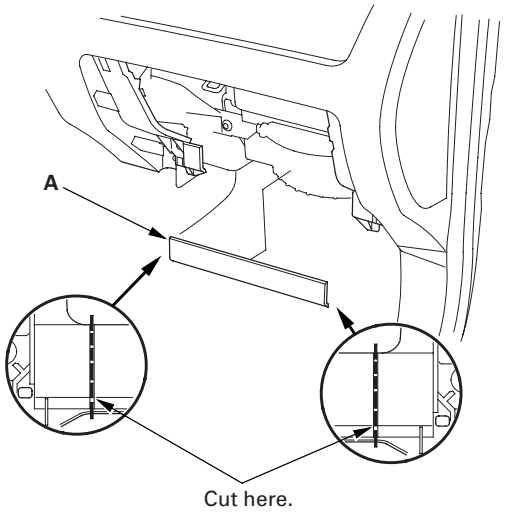
4. Install the filter in the reverse order of removal. Make sure that there is no air leaking out of the evaporator.

Blower Unit Removal/Installation

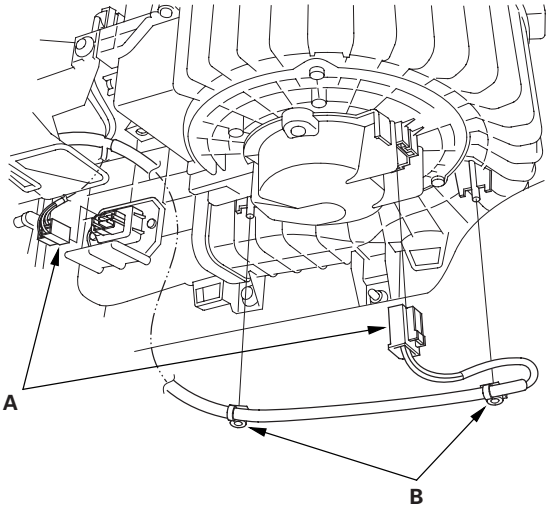
1. Remove the glove box housing (see page 20-85).
2. Remove the bolts and the glove box frame (A).



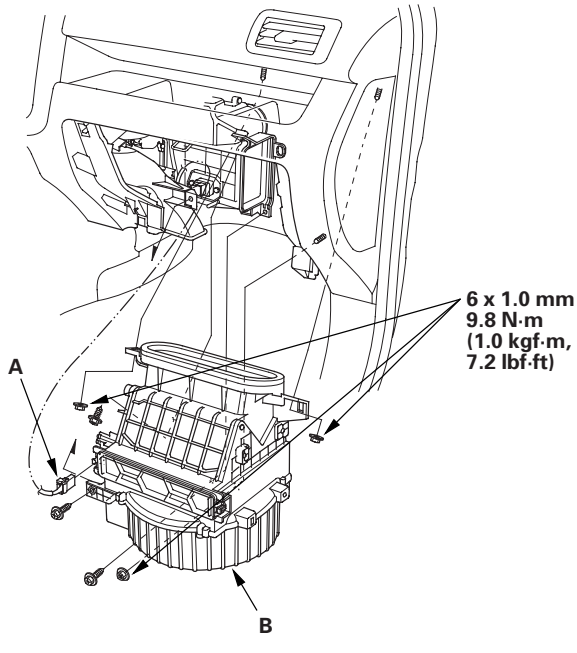
3. Cut the plastic cross brace (A) in the glove box opening with diagonal cutters in the area shown, and discard it.



4. Disconnect the connectors (A) from the blower motor and the power transistor, then remove the wire harness clips (B).



5. Disconnect the connector (A) from the recirculation control motor, then remove the self-tapping screws, the mounting nuts, and the blower unit (B).

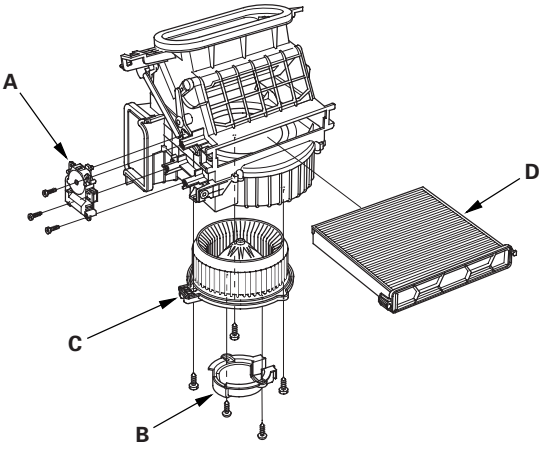


6. Install the unit in the reverse order of removal. Make sure that there is no air leakage.

Blower Unit Component Replacement

Note these items when overhauling the blower unit:

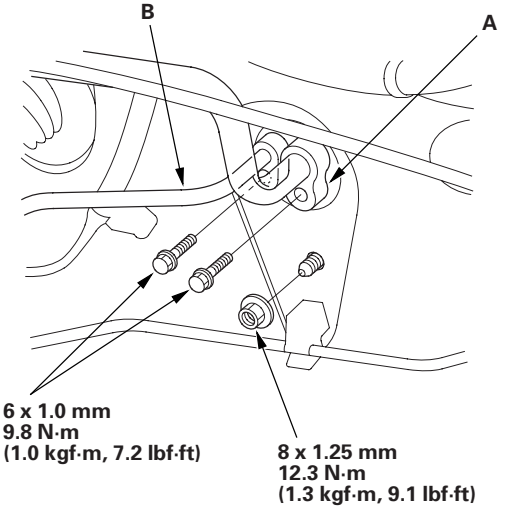
- The recirculation control motor (A), the blower motor cover (B), blower motor (C), and the dust and pollen filter (D) can be replaced without removing the blower unit.
- Before reassembly, make sure that the recirculation control linkage and door move smoothly without binding.
- After reassembly, make sure the recirculation control motor runs smoothly (see page 21-57).



Evaporator Core Replacement

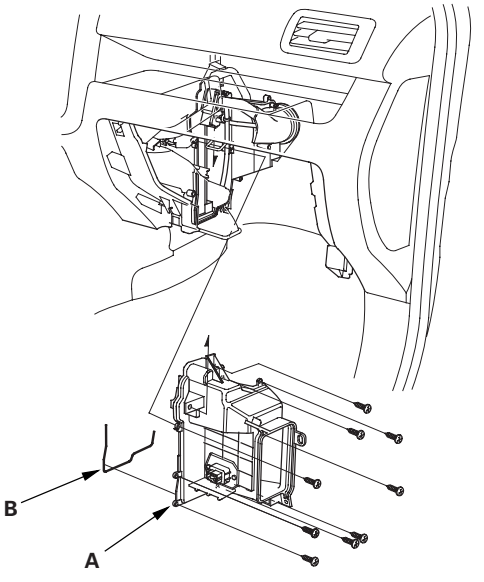
1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-73).

2. Remove the bolts and nut, then disconnect the suction line (A) and the receiver line A (B) from the evaporator core.

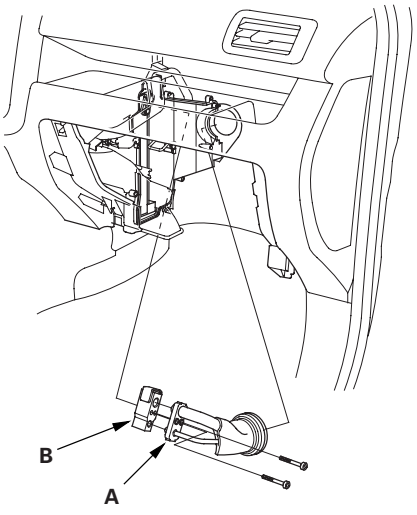


3. Remove the blower unit (see page 21-59).

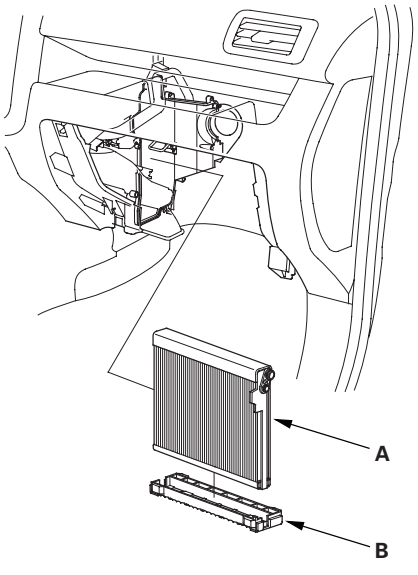
4. Remove the self-tapping screws, the joint duct (A) and the seal (B).



5. Remove the bolts, inlet and outlet pipes (A), and expansion valve (B).



6. Carefully pull out the evaporator core (A) and the plate (B).



7. Install the core in the reverse order of removal, and note these items:

   - If you're installing a new evaporator core, add refrigerant oil (DENSO ND-OIL 8) (see page 21-6).
   - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
   - Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
   - Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
   - Make sure that there is no air leakage.
   - Charge the system (see page 21-75).

Heater Unit/Core Replacement

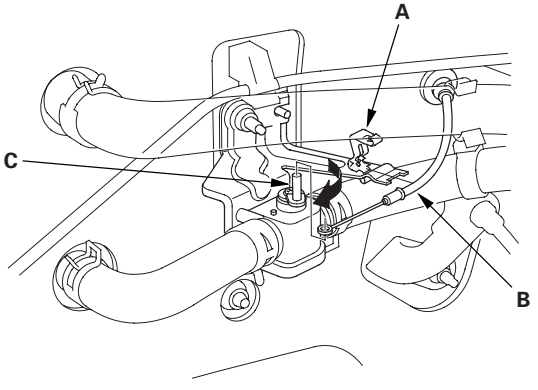
SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before repairing or servicing.

1. Make sure you have the anti-theft code for the audio or the navigation system, then write down the audio presets.

2. Make sure the ignition is OFF, then disconnect the negative cable from the battery.

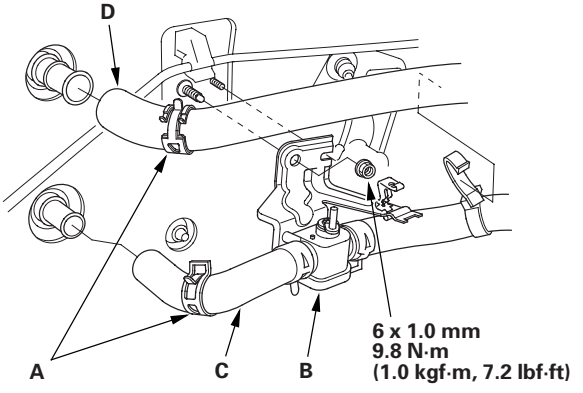
3. Disconnect the suction and receiver lines from the evaporator core (see page 21-60).

4. From under the hood, open the cable clamp (A), then disconnect the heater valve cable (B) from the heater valve arm (C). Turn the heater valve arm to the fully opened position as shown.

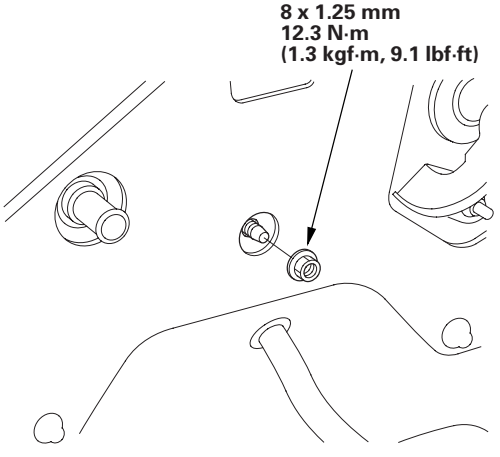


5. When the engine is cool, drain the engine coolant from the radiator (see page 10-6).

6. Slide the hose clamps (A) back. Remove the nut and the water valve (B), then disconnect the inlet heater hose (C) and the outlet heater hose (D) from the heater unit. Engine coolant will run out when the hoses are disconnected; drain it into a clean drip pan. Be sure not to let coolant spill on the electrical parts or the painted surfaces. If any coolant spills, rinse it off immediately.

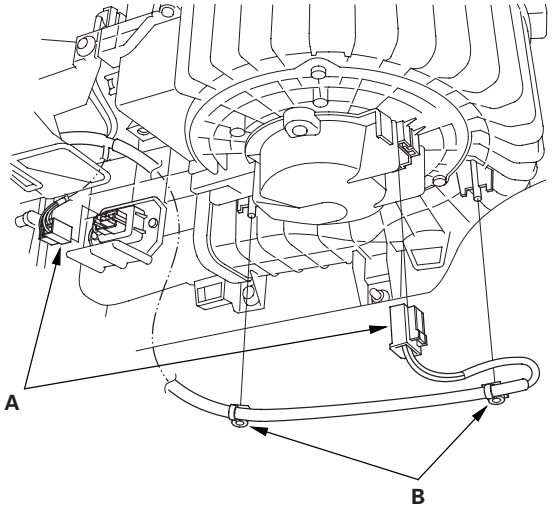


7. Remove the mounting nut from the heater unit. Take care not to damage or bend the fuel lines and the brake lines, etc.

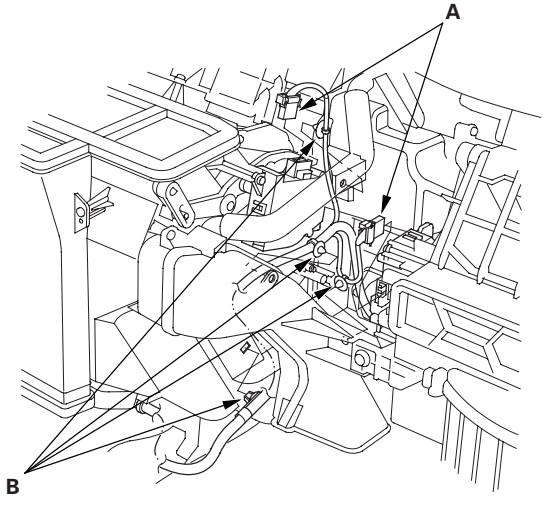


8. Remove the dashboard (see page 20-89).

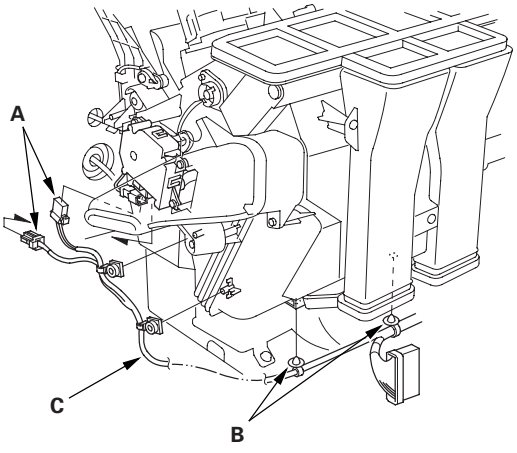
9. Disconnect the connectors (A) from the blower motor and the power transistor, then remove the wire harness clips (B).



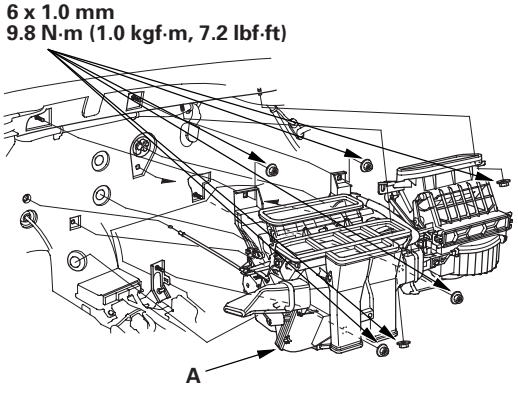
10. Disconnect the connectors (A) from the mode control motor and the recirculation control motor, then remove the wire harness clips (B).



11. Disconnect the connectors (A) from the evaporator sensor and the air mix control motor, then remove the wire harness clips (B) and the wire harness (C).



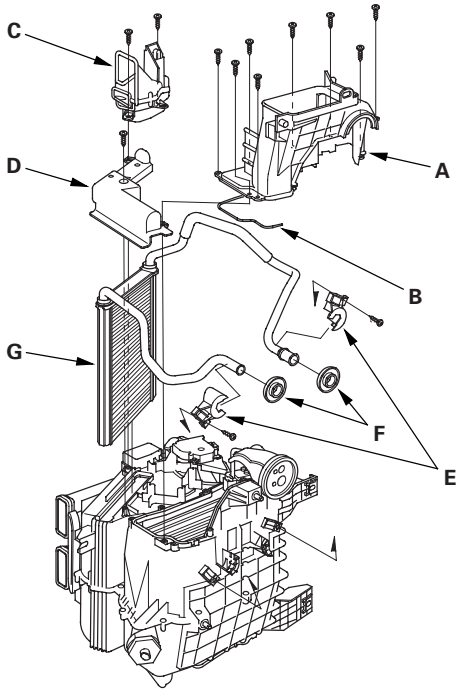
12. Remove the mounting nuts and the blower-heater unit (A).



(cont'd)

Heater Unit/Core Replacement (cont'd)

13. Remove the self-tapping screws, the joint duct (A), and seal (B). Remove the self-tapping screws, then remove the passenger's heater outlet (C), and the heater core cover (D). Remove the self-tapping screws, the heater pipe brackets (E), the grommets (F), and carefully pull out the heater core (G) so you don't bend the inlet and outlet pipes.



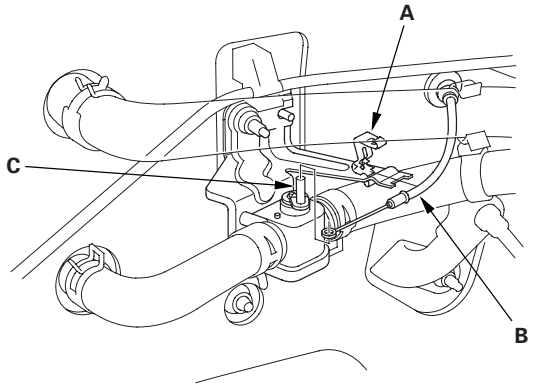
14. Install the heater core in the reverse order of removal.

15. Install the heater unit in the reverse order of removal, and note these items:

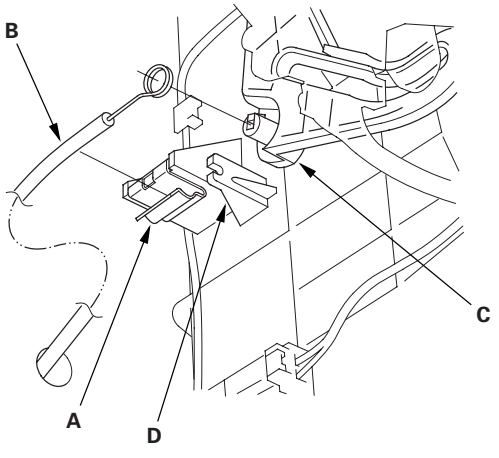
    - Do not interchange the inlet and outlet heater hoses, and install the hose clamps securely.
    - Refill the cooling system with engine coolant (see page 10-6).
    - Adjust the heater valve cable (see page 21-65).
    - Make sure that there is no coolant leakage.
    - Make sure that there is no air leakage.
    - Refer to evaporator core replacement (see page 21-60).
    - Reset the power window control unit (see page 22-209).
    - Enter the anti-theft code for the audio or the navigation system, then enter the audio presets.
    - Set the clock.

Heater Valve Cable Adjustment

1. From under the hood, open the cable clamp (A), then disconnect the heater valve cable (B) from the heater valve arm (C).



2. From under the dash, disconnect the heater valve cable housing from the cable clamp (A), and disconnect the heater valve cable (B) from the air mix control linkage (C).

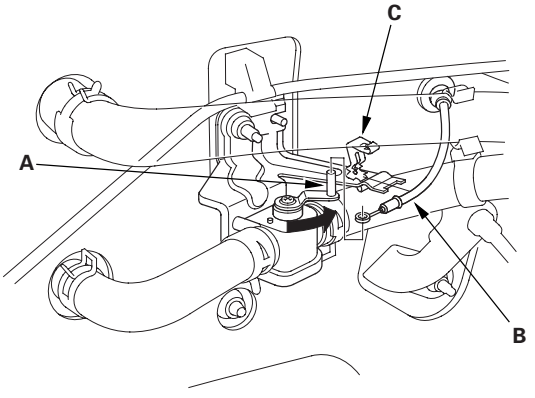


3. Set the temperature control dial to Max Cool (Lo) with the ignition switch ON (II).

4. Attach the heater valve cable to the air mix control linkage as shown step 2. Hold the end of the heater valve cable housing against the stop (D), then snap the heater valve cable housing into the cable clamp.

   NOTE: Make sure the ring-end of the cable is pushed all the way to the base of the pin on air mix control linkage.

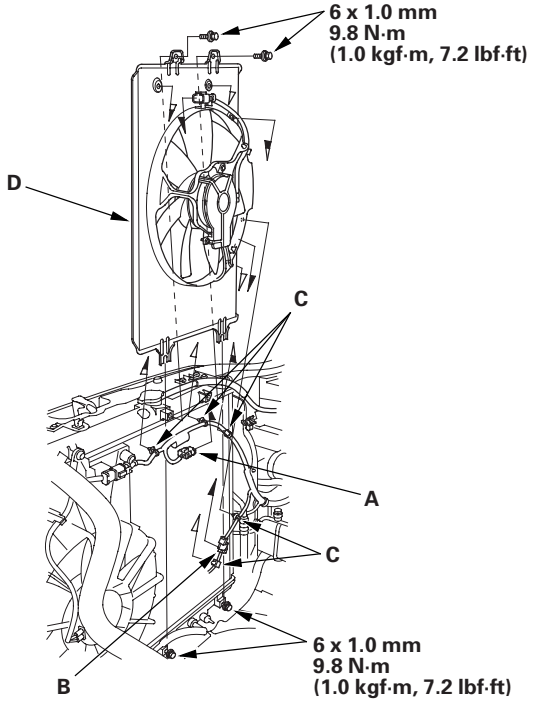
5. From under the hood, turn the heater valve arm (A) to the fully closed position as shown, and hold it. Attach the heater valve cable (B) to the heater valve arm, and gently pull on the heater valve cable housing to take up any slack, then install the heater valve cable housing into the cable clamp (C).



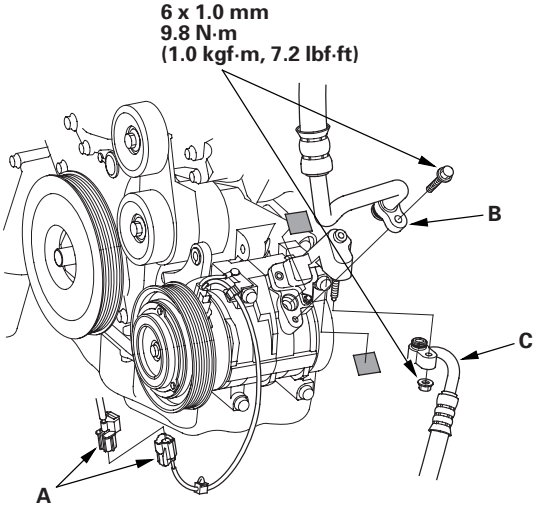
A/C Compressor Replacement

NOTE: Do not install the A/C compressor into a system unless you are completely sure that the system is free of contamination. Installing the A/C compressor into a contaminated system can result in premature A/C compressor failure.

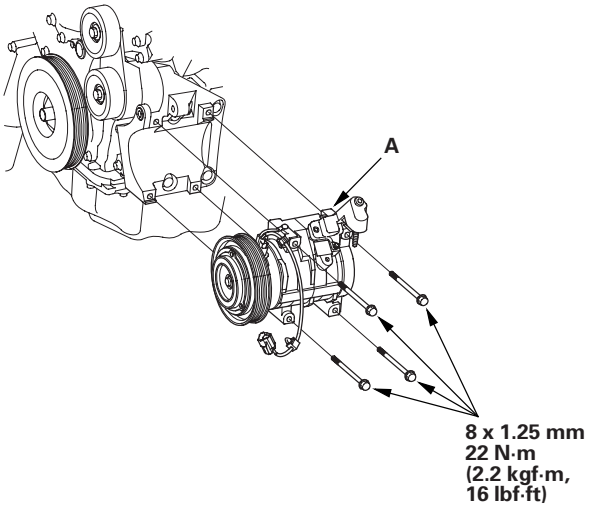
1. If the A/C compressor is marginally operable, run the engine at idle speed, and let the air conditioning work for a few minutes, then shut the engine off.
2. Recover the refrigerant with a recovery/recycling/charging station (see page 21-73).
3. Make sure you have the anti-theft code for the audio or the navigation system, then write down the audio presets.
4. Remove the alternator (see page 4-34).
5. Disconnect the A/C condenser fan connector (A), then remove the A/C compressor clutch connector (B) and the wire harness clips (C). Loosen the lower mounting bolt, then remove the upper mounting bolts and the condenser fan shroud (D). Be careful not to damage the radiator fins when removing the condenser fan shroud.



6. Disconnect the connector (A) from the A/C compressor clutch. Remove the bolt and the nut, then disconnect the suction hose (B) and the discharge hose (C) from the A/C compressor. Plug or cap the hoses immediately after disconnecting them to avoid moisture and dust contamination.



7. Remove the mounting bolts and the A/C compressor (A). Be careful not to damage the radiator fins when removing the A/C compressor.



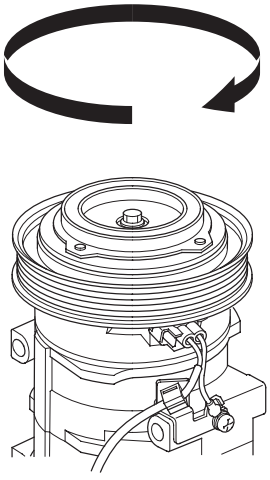
8. Install the compressor in the reverse order of removal, and note these items:

   - Inspect the A/C lines for any signs of contamination.
   - If you're installing a new A/C compressor, you must calculate the amount of refrigerant oil to be removed from it (see page 21-6). A new A/C compressor comes with a full charge of oil.
   - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
   - Use refrigerant oil (DENSO ND-OIL 8) for HFC-134a DENSO piston type A/C compressor only.
   - To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
   - Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
   - Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
   - Charge the system (see page 21-75).
   - Reset the power window control unit (see page 22-209).
   - Enter the anti-theft code for the audio or the navigation system, then enter the audio presets.
   - Set the clock.

A/C Compressor Clutch Check

1. Check the pressure plate for discoloration, peeling, or other damage. If there is damage, replace the clutch set (see page 21-69).

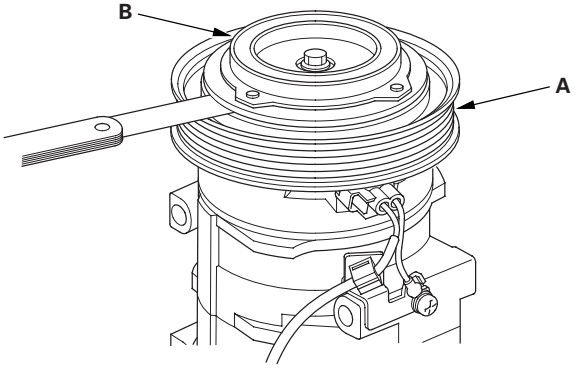
2. Check the pulley bearing play and drag by rotating the pulley by hand. Replace the clutch set with a new one if it is noisy or has excessive play/drag (see page 21-69).



3. Measure the clearance between the pulley (A) and the pressure plate (B) all the way around. If the clearance is not within specified limits, remove the pressure plate (see page 21-69) and add or remove shims as needed to increase or decrease clearance.

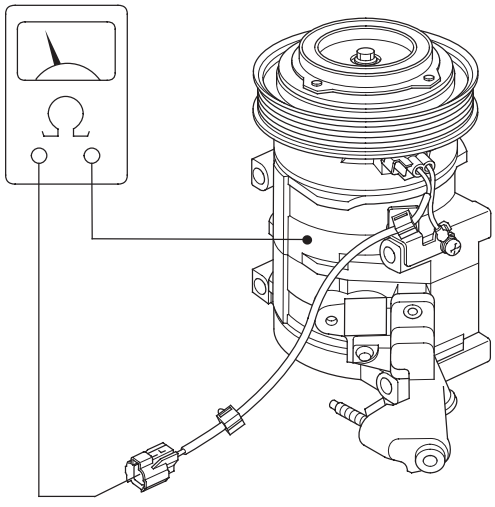
   Clearance: 0.35—0.60 mm (0.014—0.024 in.)

   NOTE: The shims are available in three thicknesses: 0.1 mm, 0.3 mm, and 0.5 mm.



4. Check the resistance of the field coil. If resistance is not within specifications, replace the field coil (see page 21-69).

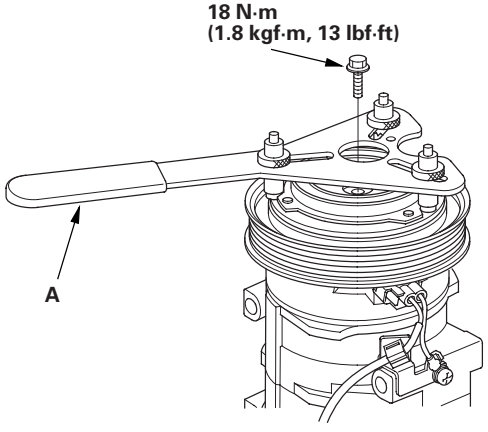
   Field Coil Resistance: 3.9—4.3 Ω at 68 ℉ (20 ℃)



A/C Compressor Clutch Overhaul

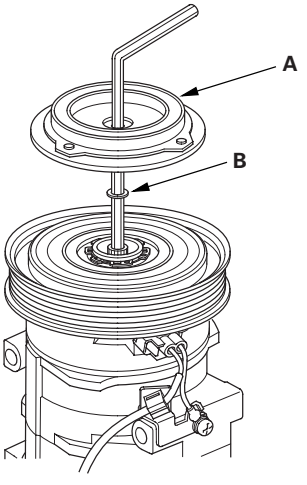
Special Tools Required
A/C clutch holder, Robinair 10204 or Kent-Moore J37872, or Honda Tool and Equipment KMT-J33939, commercially available

1. Remove the center bolt while holding the pressure plate with a commercially available A/C clutch holder (A).

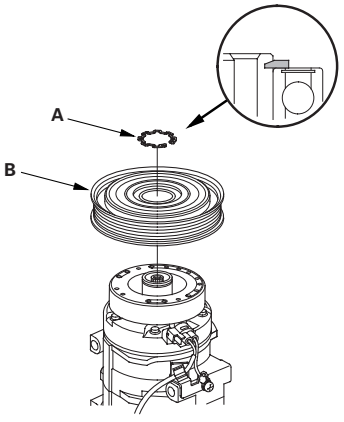


2. Remove the pressure plate (A) and shim(s) (B), taking care not to lose the shim(s). If the clutch needs adjustment, increase or decrease the number and thickness of shims as necessary, then reinstall the pressure plate, and recheck its clearance (see page 21-68).

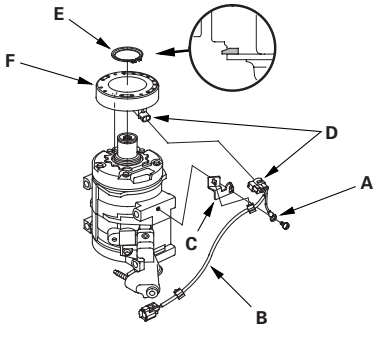
   NOTE: The shims are available in three thicknesses: 0.1 mm, 0.3 mm, and 0.5 mm.



3. If you are replacing the field coil, remove the snap ring (A) with snap ring pliers, then remove the pulley (B). Be careful not to damage the pulley or the A/C compressor.



4. Remove the screw from the field coil ground terminal (A), then remove the wire harness (B) and the bracket (C). Disconnect the field coil connector (D). Remove the snap ring (E) with snap ring pliers, then remove the field coil (F). Be careful not to damage the field coil or the A/C compressor.

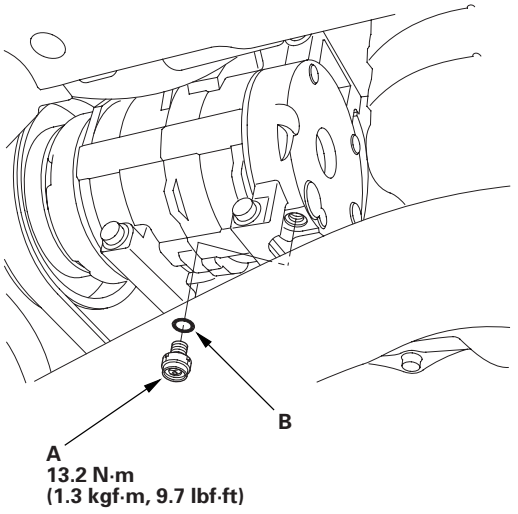


5. Reassemble the clutch in the reverse order of disassembly, and note these items:

   - Install the field coil with the wire side facing down, and align the boss on the field coil with the hole in the A/C compressor.
   - Clean the pulley and A/C compressor sliding surfaces with contact cleaner or other non-petroleum solvent.
   - Install new snap rings, note the installation direction, and make sure they are fully seated in the groove.
   - Make sure that the pulley turns smoothly after it's reassembled.
   - Route and clamp the wires properly or they can be damaged by the pulley.

A/C Compressor Relief Valve Replacement

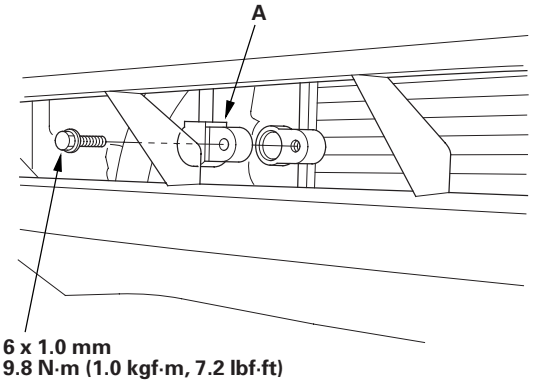
1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-73).
2. Remove the relief valve (A) and the O-ring (B). Plug the opening to keep foreign matter from entering the system and the A/C compressor oil from running out.



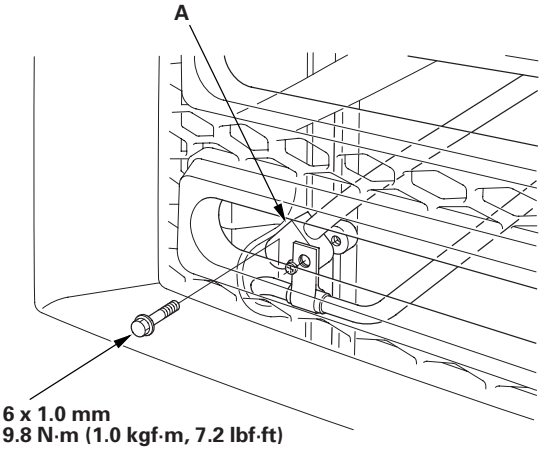
3. Clean the mating surfaces.
4. Replace the O-ring with a new one, and apply a thin coat of refrigerant oil before installing it.
5. Remove the plug, and install and tighten the relief valve.
6. Charge the system (see page 21-75).

A/C Condenser Replacement

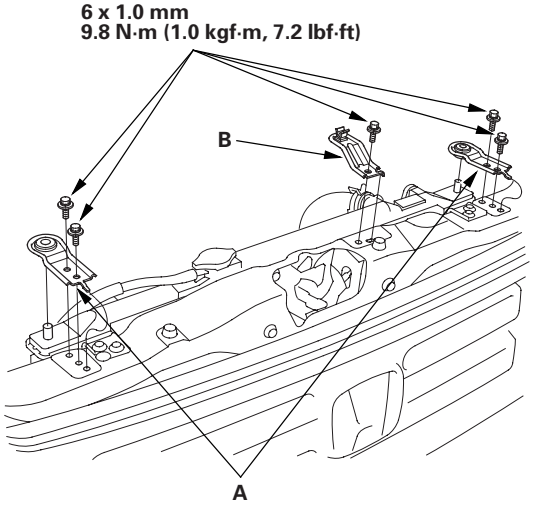
1. Recover the refrigerant with a recovery/recycling charging station (see page 21-73).
2. Remove the front bulkhead cover (see page 20-171).
3. Remove the bolt, then disconnect the receiver line B (A) from the A/C condenser.



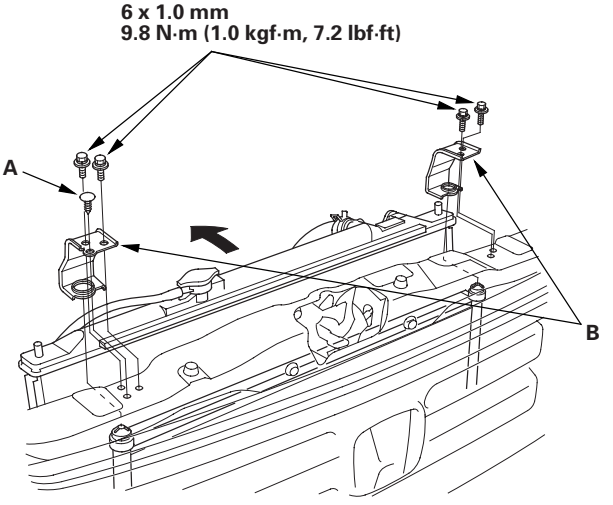
4. Remove the bolts, then disconnect the discharge hose (A) from the A/C condenser.



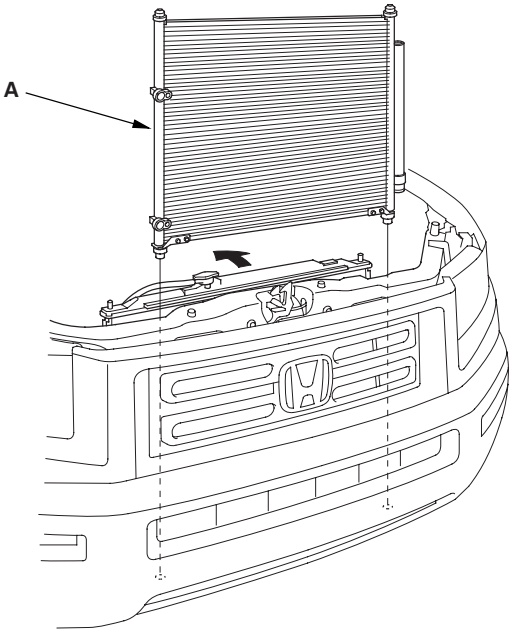
5. Remove the bolts, the radiator upper mount brackets (A), and the hood opener bracket (B).



6. Remove the clip (A), the bolts, and the A/C condenser upper mount brackets (B).



7. Remove the A/C condenser (A) by lifting it up. Be careful not to damage the radiator and A/C condenser fins when removing the A/C condenser.



(cont'd)

A/C Condenser Replacement (cont'd)

8. Install the A/C condenser in the reverse order of removal, and note these items:

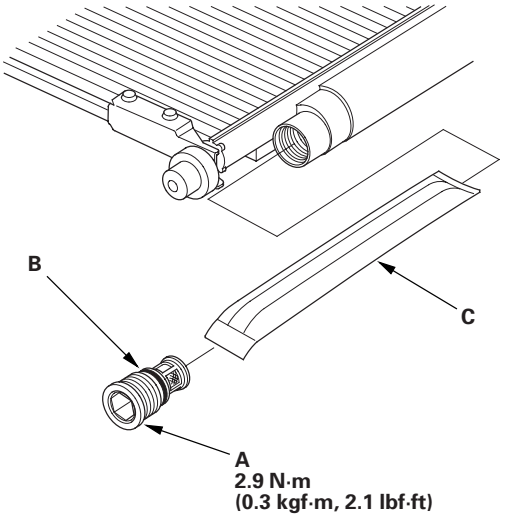
   - If you're installing a new A/C condenser, add refrigerant oil (DENSO ND-OIL 8) (see page 21-6).
   - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
   - Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
   - Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
   - Charge the system (see page 21-75).

Receiver/Dryer Desiccant Replacement

NOTE: Install the receiver/dryer as quickly as possible to prevent the system from absorbing moisture from the air.

1. Remove the A/C condenser (see page 21-70).

2. Remove the cap (A) from the bottom of the A/C condenser. Remove the O-ring (B) and the desiccant (C).



3. Install the receiver/dryer in the reverse order of removal, and note these items:

   - Replace the O-rings with new ones, and apply a thin coat of refrigerant oil (DENSO ND-OIL 8) before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
   - Install the cap to the specified torque. It is made of resin a can be easily stripped.

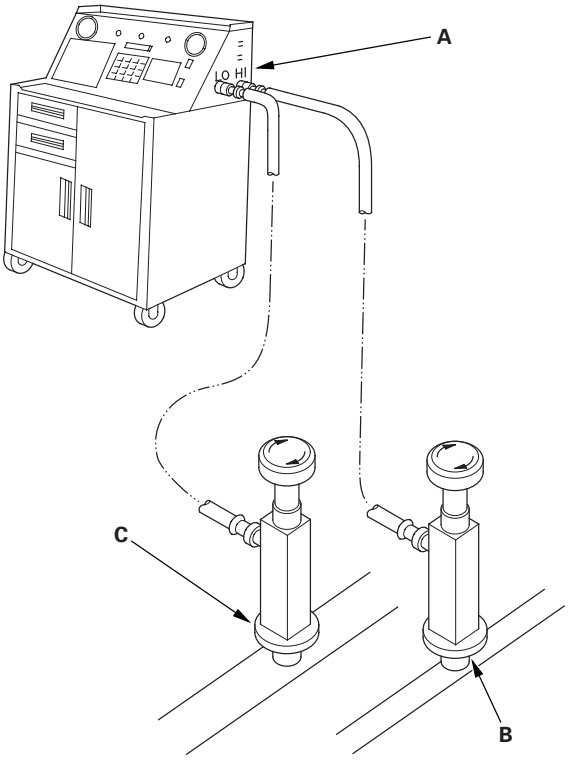
Refrigerant Recovery

⚠CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

NOTE:
- If accidental system discharge occurs, ventilate the work area before resuming service.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.



2. Measure the amount of refrigerant oil removed from the A/C system after the recovery process is completed. Be sure to put the same amount of new refrigerant oil back into the A/C system before charging.

System Evacuation

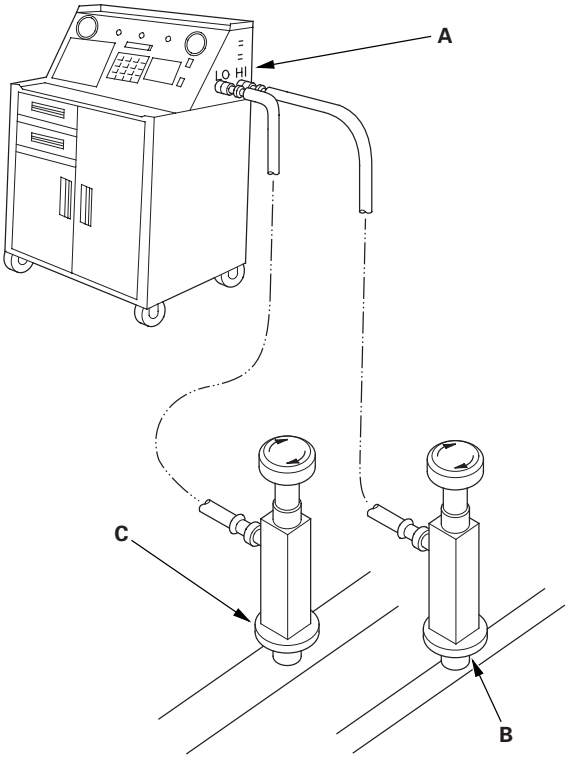
⚠CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

NOTE:
- If accidental system discharge occurs, ventilate the work area before resuming service.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. When an A/C system has been opened to the atmosphere, such as during installation or repair, it must be evacuated using an R-134a refrigerant recovery/recycling/charging station. If the system has been open for several days, the receiver/dryer should be replaced, and the system should be evacuated for several hours.

2. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions. Evacuate the system.



3. If the low-pressure does not reach more than 93.3 kPa (700 mmHg, 27.6 in.Hg) in 15 minutes, there is probably a leak in the system. Partially charge the system, and check for leaks (see step 3 on page 21-76).

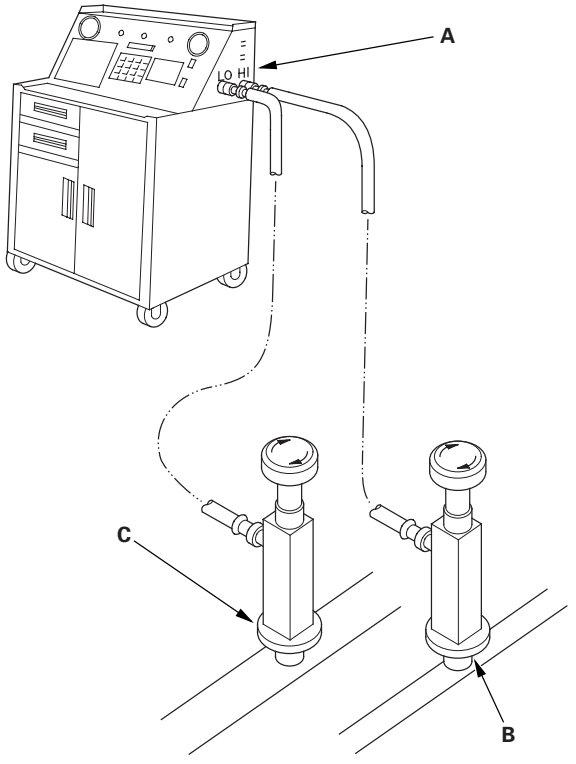
System Charging

⚠CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

NOTE:
- If accidental system discharge occurs, ventilate the work area before resuming service.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.



2. Evacuate the system (see page 21-74).

3. Add the same amount of new refrigerant oil to the system that was removed during recovery. Use only DENSO ND-OIL 8 refrigerant oil.

4. Charge the system with the specified amount of R-134a refrigerant. Do not overcharge the system; the A/C compressor will be damaged.

   Select the appropriate units of measure for your refrigerant charging station.

   Refrigerant Capacity:
   600 to 650 g
   0.6 to 0.65 kg
   1.3 to 1.4 lbs
   20.3 to 22.0 oz

5. Check for refrigerant leaks (see page 21-76).

6. Check the system performance (see page 21-77).

Refrigerant Leak Test

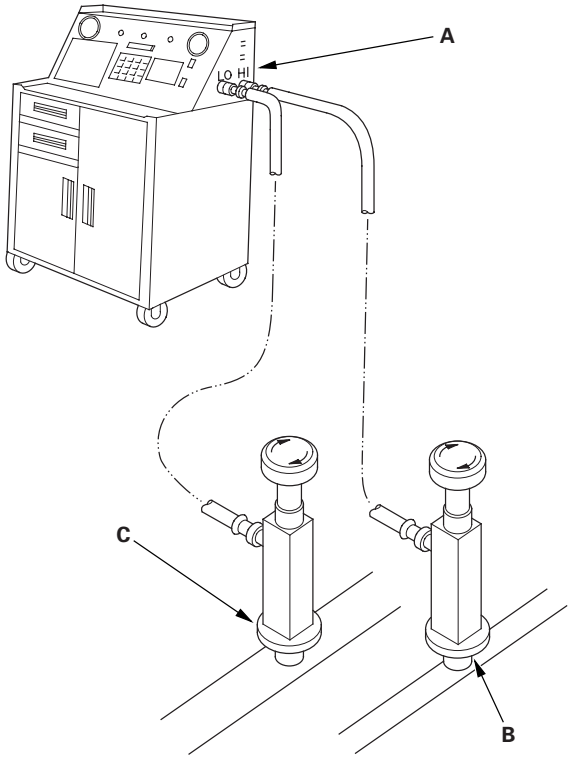
Special Tools Required
Leak detector, Honda Tool and Equipment YGK-H-10PM or commercially available

⚠CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

NOTE:
- If accidental system discharge occurs, ventilate the work area before resuming service.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.



2. Open the high pressure valve to charge the system to the specified capacity, then close the supply valve, and disconnect the charging station fittings.

   Select the appropriate units of measurement for your refrigerant charging station.

   Refrigerant Capacity:
   600 to 650 g
   0.6 to 0.65 kg
   1.3 to 1.4 lbs
   20.3 to 22.0 oz

3. Check the system for leaks using an R-134a refrigerant leak detector with an accuracy of 14 g (0.5 oz) per year or better.

4. If you find leaks that require the system to be opened (to repair or replace hoses, fittings, etc.), do the refrigerant recovery.

5. After checking and repairing leaks, the system must be evacuated.

A/C System Test

Performance Test

⚠CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

The performance test will help determine if the A/C system is operating within specifications.

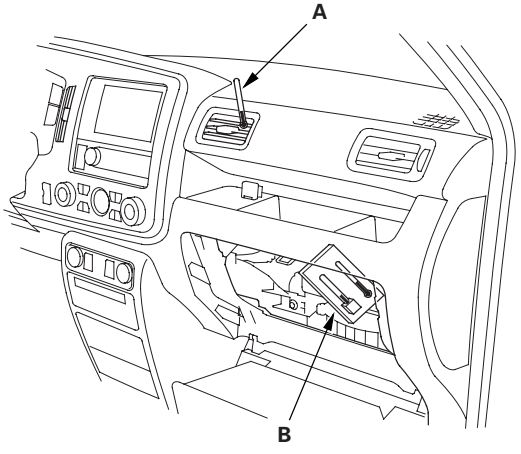
NOTE:
- If accidental system discharge occurs, ventilate the work area before resuming service.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect an R-134a refrigerant recovery/recycling/charging station to the high-pressure service port and the low-pressure service port, following the equipment manufacturer's instructions.

2. Determine the relative humidity and air temperature.

3. Open the glove box. Remove the damper and the glove box stop on each side, then let the glove box hang down (see page 20-85).

4. Insert a thermometer (A) in the center vent.



5. Place a thermometer (B) near the blower unit's recirculation inlet duct.

6. Test conditions:

   - Avoid direct sunlight.
   - Open hood.
   - Open front doors.
   - Set the temperature control dial to Max Cool, the mode control switch to Vent, and the recirculation control switch to Recirculate.
   - Turn the A/C switch ON and the fan switch to Max.
   - Run the engine at 1,500 rpm.
   - No driver or passengers in vehicle.

7. After running the air conditioning for 10 minutes under the above test conditions, read the delivery temperature from the thermometer in the center vent, the intake temperature near the blower unit, and the discharge (high) and suction (low) pressures on the A/C gauges.

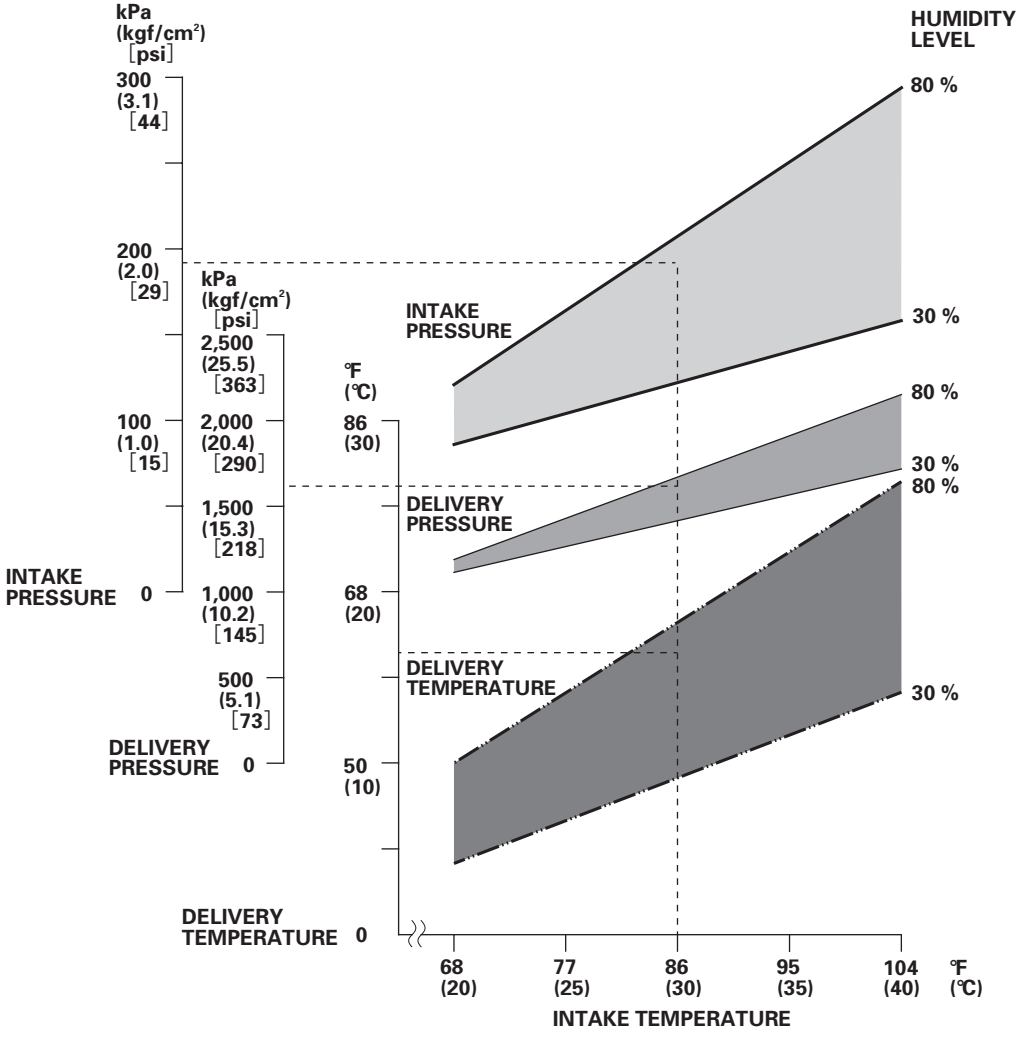
(cont'd)

A/C System Test (cont'd)

8. Refer to the inspection data.

Inspection data

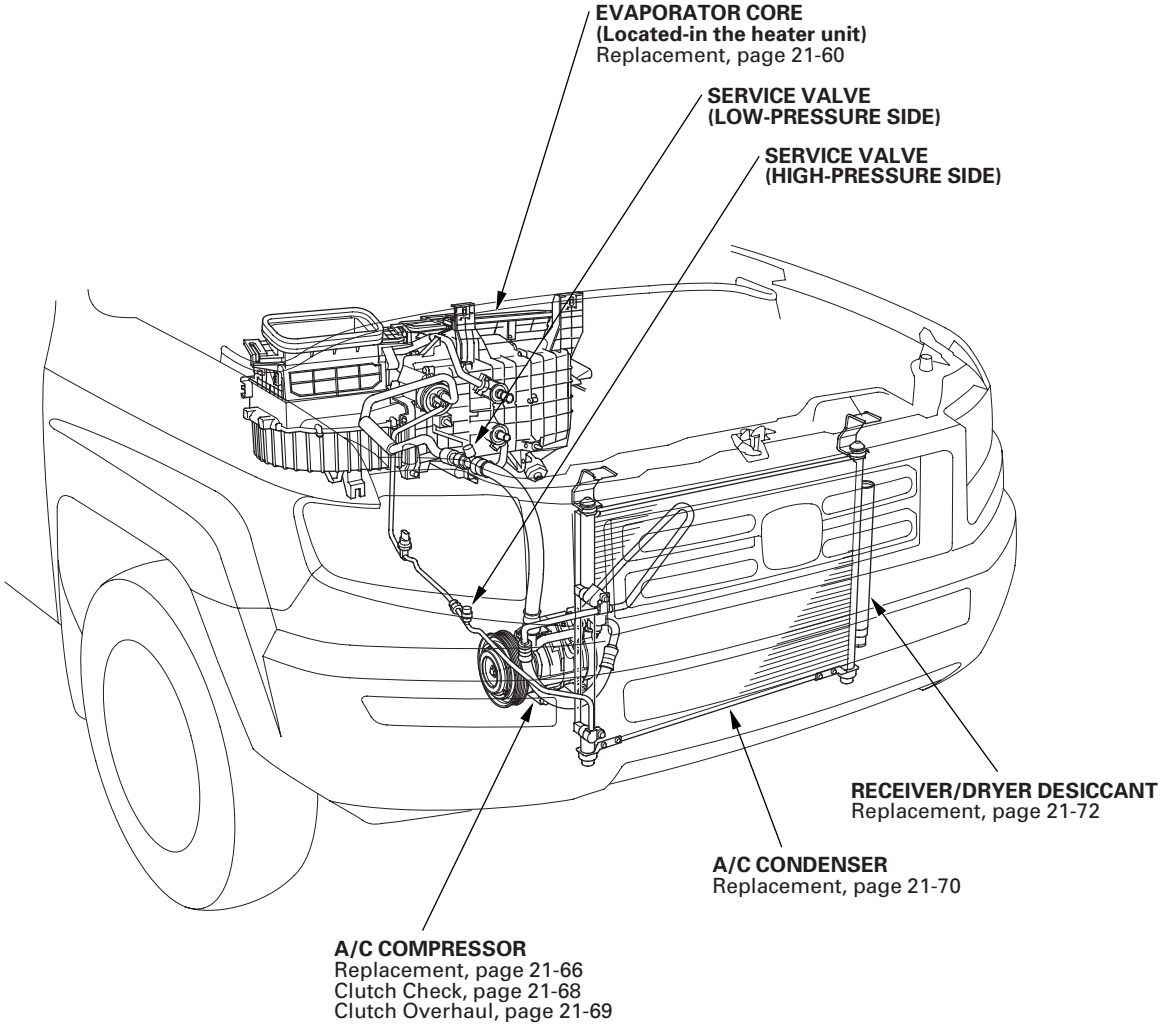
Example	**Intake temperature (dry):**	**86 ℉ (30 ℃) Humidity level 70 %**
	Intake temperature (wet):	**77.9 ℉ (25.5 ℃)**
	Delivery temperature:	**62.0 ℉ (16.6 ℃)**
	Delivery pressure:	**1,636 kPa (16.7 kgf/cm²) [237 psi]**
	Intake pressure:	**192 kPa (2.0 kgf/cm²) [28 psi]**
Results:	**Within normal range**	

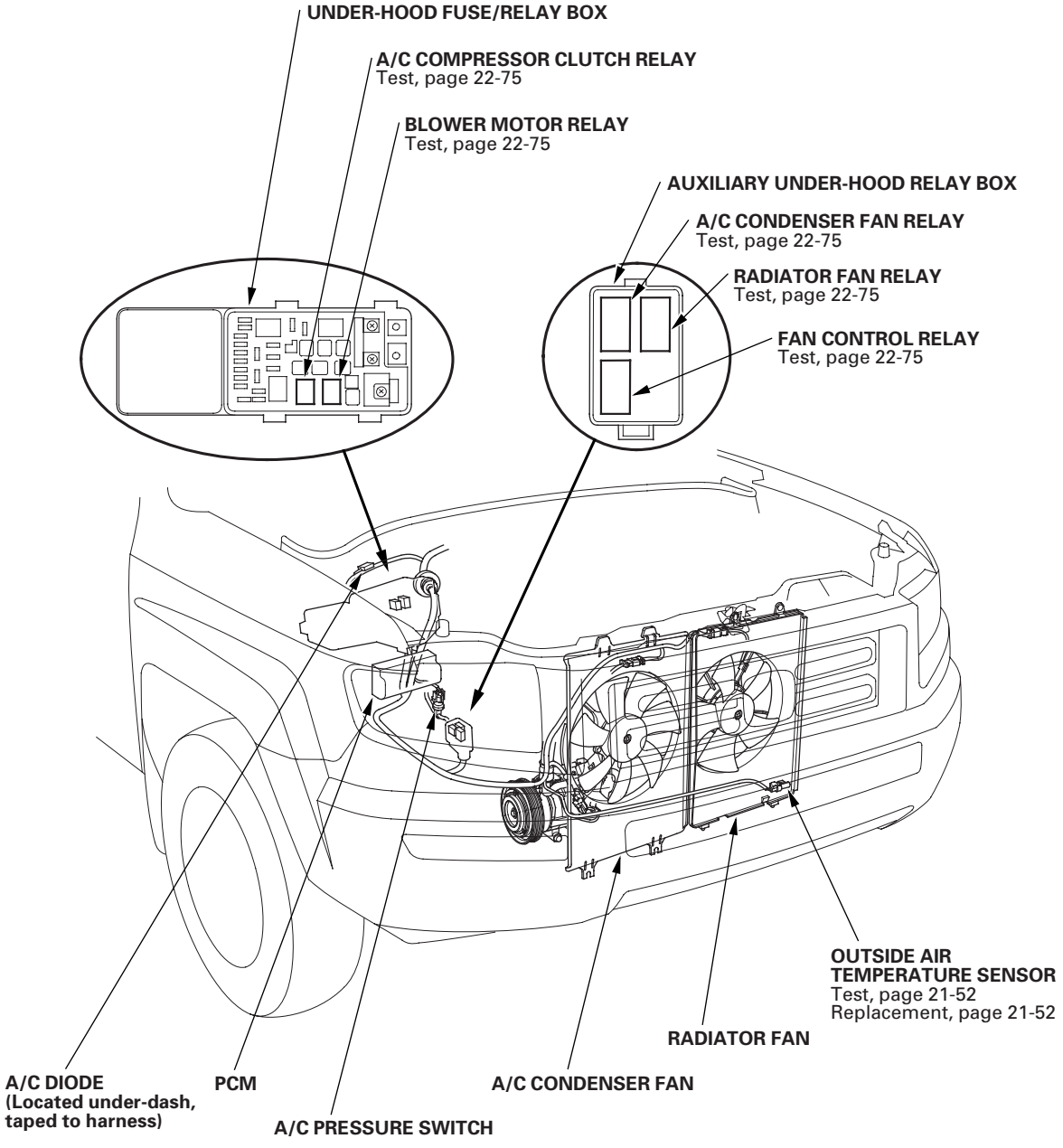


Pressure Test

Test results	Related symptoms	Probable cause	Remedy
Discharge (high) pressure abnormally high	After stopping A/C compressor, pressure drops about 196 kPa (2.0 kgf/cm^2, 28 psi) quickly, and then falls gradually.	Air in system	Recover, evacuate (see page 21-73), and recharge with specified amount (see page 21-75).
	Reduced or no airflow through A/C condenser.	• Clogged condenser or radiator fins • A/C condenser or radiator fan not working properly	• Clean. • Check voltage and fan rpm. • Check fan direction.
	Line to A/C condenser is excessively hot.	Restricted flow of refrigerant in system	Restricted lines.
Discharge pressure abnormally low	High and low-pressures are balanced soon after stopping A/C compressor. Low side is higher than normal.	• Faulty A/C compressor discharge valve • Faulty A/C compressor seal	Replace the A/C compressor.
	Outlet of expansion valve is not frosted, low-pressure gauge indicates vacuum.	• Faulty expansion valve • Moisture in system	• Replace. • Recover, evacuate, and recharge with specified amount.
Suction (low) pressure abnormally low	Expansion valve is not frosted, and low-pressure line is not cold. Low-pressure gauge indicates vacuum.	• Frozen expansion valve (Moisture in system) • Faulty expansion valve	• Recover, evacuate, and recharge with specified amount. • Replace the expansion valve.
	Discharge temperature is low, and the airflow from vents is restricted.	Frozen evaporator	Run the fan with A/C compressor off, then check evaporator temperature sensor.
	Expansion valve is frosted.	Clogged expansion valve	Clean or replace.
Suction pressure abnormally high	Low-pressure hose and check joint are cooler than the temperature around evaporator.	Expansion valve open too long	Repair or replace.
	Suction pressure is lowered when A/C condenser is cooled by water.	Excessive refrigerant in system	Recover, evacuate, and recharge with specified amount.
	High and low-pressures are equalized as soon as the A/C compressor is stopped, and both gauges fluctuate while running.	• Faulty gasket • Faulty high-pressure valve • Foreign particle stuck in high-pressure valve	Replace the A/C compressor.
Suction and discharge pressures abnormally high	Reduced airflow through A/C condenser.	• Clogged A/C condenser or radiator fins • A/C condenser or radiator fan not working properly	• Clean. • Check voltage and fan rpm. • Check fan direction.
Suction and discharge pressures abnormally low	Low-pressure hose and metal end areas are cooler than evaporator.	Clogged or kinked low-pressure hose parts	Repair or replace.
	Temperature around expansion valve is too low compared with that around receiver/dryer.	Clogged high-pressure line	Repair or replace.
Refrigerant leaks	A/C compressor clutch is dirty.	A/C compressor shaft seal leaking	Replace the A/C compressor.
	A/C compressor bolt(s) are dirty.	Leaking around bolt(s)	Tighten bolt(s) or replace A/C compressor.
	A/C compressor gasket is wet with oil.	Gasket leaking	Replace the A/C compressor.
	A/C fitting is dirty.	Leaking O-ring	Clean the A/C fitting and replace the O-ring.

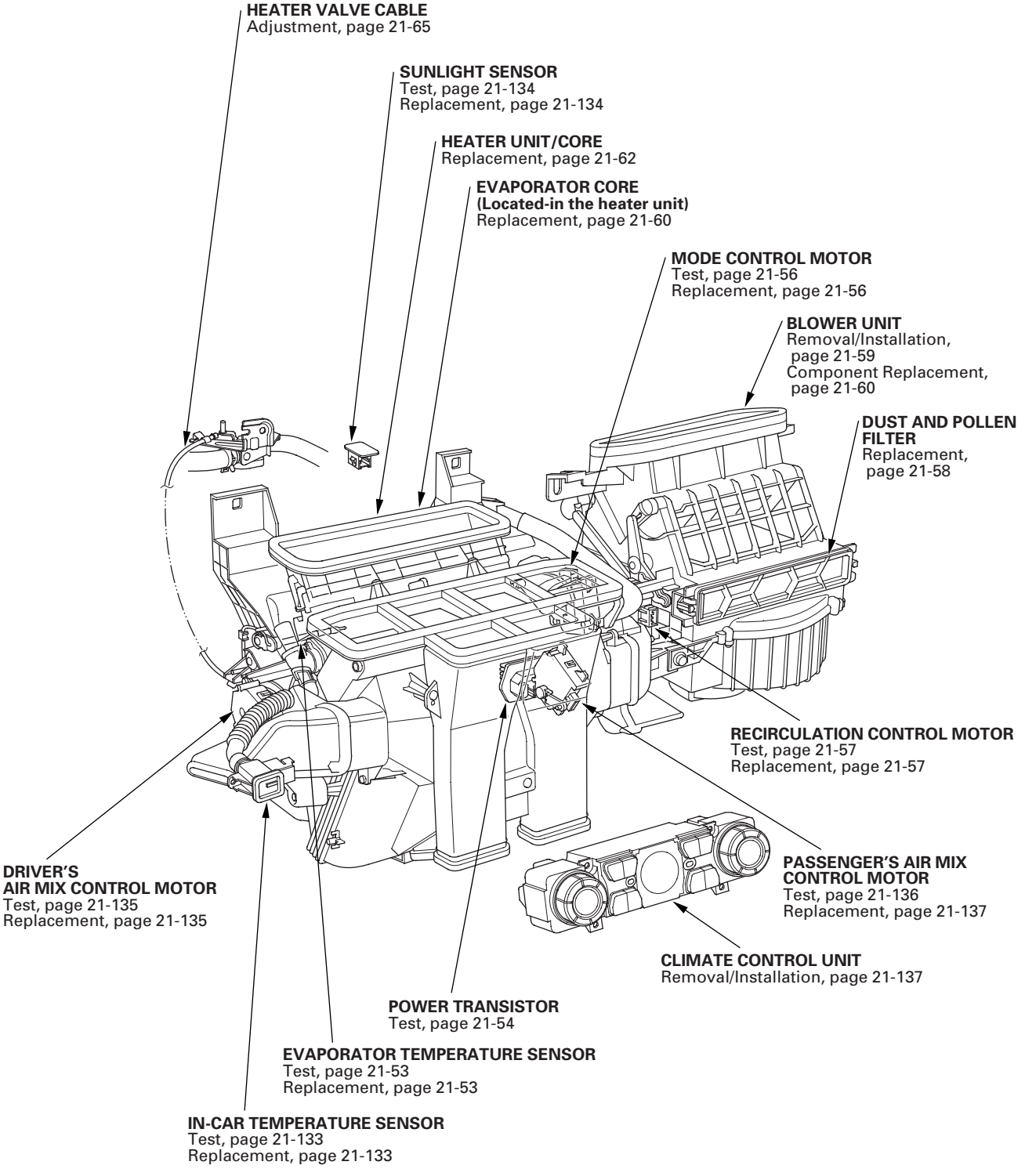
Component Location Index




UNDER-HOOD FUSE/RELAY BOX
A/C COMPRESSOR CLUTCH RELAY
Test, page 22-75
BLOWER MOTOR RELAY
Test, page 22-75
AUXILIARY UNDER-HOOD RELAY BOX
A/C CONDENSER FAN RELAY
Test, page 22-75
RADIATOR FAN RELAY
Test, page 22-75
FAN CONTROL RELAY
Test, page 22-75
OUTSIDE AIR TEMPERATURE SENSOR
Test, page 21-52
Replacement, page 21-52
RADIATOR FAN
A/C DIODE
(Located under-dash, taped to harness)
PCM
A/C PRESSURE SWITCH
A/C CONDENSER FAN

(cont'd)

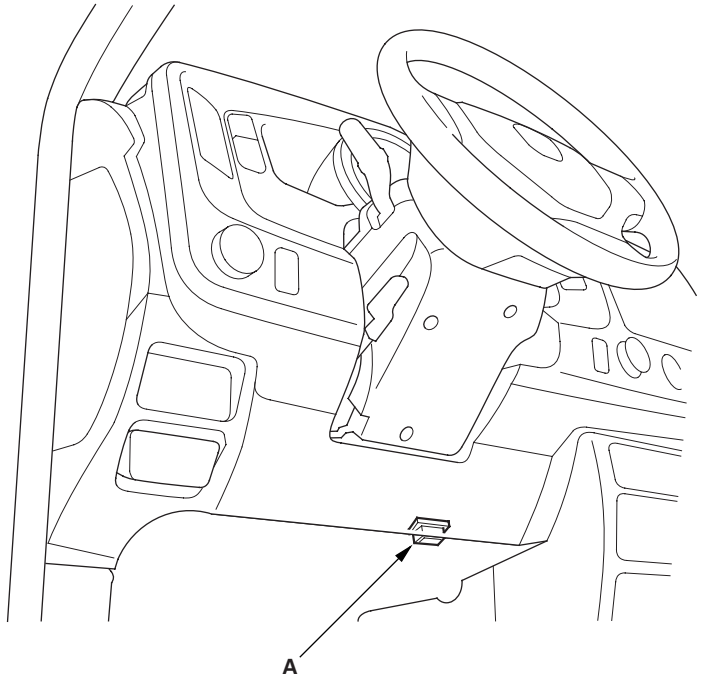
Component Location Index (cont'd)



General Troubleshooting Information

How to Check for DTCs with the HDS

1. Make sure the ignition switch is OFF.
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Turn the ignition switch ON (II).
4. Make sure the HDS communicates with the vehicle and the climate control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-194).
5. Select HVAC/CLIMATE CONTROL in the BODY ELECTRICAL menu.
6. Select DTCs in the HVAC/CLIMATE CONTROL menu.
7. Check for DTCs. If any DTCs are indicated, write down the DTCs, then go to the indicated DTC troubleshooting. If no DTCs are indicated, refer to symptom troubleshooting.

   NOTE:
   - After troubleshooting, clear the DTCs with the HDS.
   - For specific operations, refer to the user's manual that came with the HDS.

(cont'd)

General Troubleshooting Information (cont'd)

How to Use the Self-diagnostic Function without the HDS

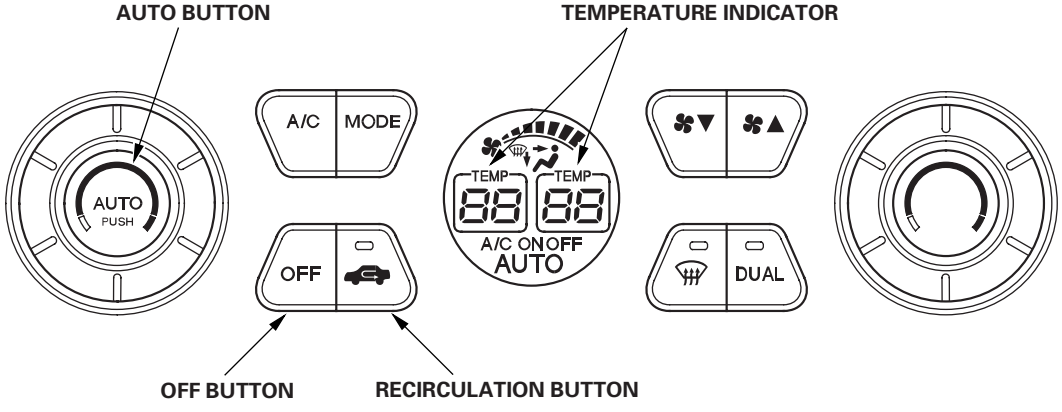
The climate control unit has a self-diagnostic function. To run the self-diagnostic function, do the following.

NOTE: Before troubleshooting the climate control system, refer to B-CAN System Diagnosis Test Mode A Troubleshooting (see page 22-99), and the communication circuit self-diagnostic function test.

1. Turn the ignition switch OFF, and then ON (II).

2. Press and hold the OFF button. While holding the OFF button, press the recirculation button five times within 10 seconds. Release the OFF button, then the self-diagnostic begins. Wait for about one minute for the self-diagnostic to complete.

   NOTE: The blower motor will run various speeds regardless of what the panel is displaying.



- If there is any problem in the system, the temperature indicator will light up the segment (A through Q) corresponding to the error. The temperature indicator will then alternate every second between displaying ''88'' (all segments lit) and the error code segment (A through Q). To determine the meaning of the DTC, refer to checking for DTCs.
- If there are no problems detected, the segments will not illuminate, and the system will appear to be turned off.

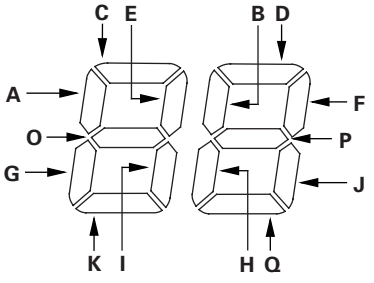
Canceling the Self-diagnostic Function

3. Turn the ignition switch OFF to cancel the self-diagnostic function. After completing repair work, run the self-diagnostic function again to make sure that there are no other malfunctions.

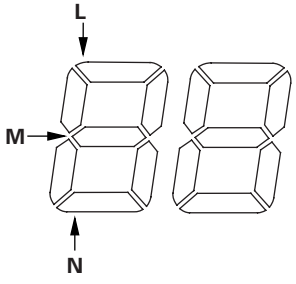
Checking for DTCs

The temperature display indicates single or multiple DTCs. If indicator segments A, C, E, G, I, L, and O are on at the same time, there may be an open in the common ground wire. If no DTCs are present, the indicator remains blank.

DRIVER'S SIDE TEMPERATURE INDICATOR



PASSENGER'S SIDE TEMPERATURE INDICATOR



DTC (Temperature Indicator Segment)	Detection Item
A	An open in the in-car temperature sensor circuit (see page 21-101)
B	A short in the in-car temperature sensor circuit (see page 21-103)
C	An open in the outside air temperature sensor circuit (see page 21-104)
D	A short in the outside air temperature sensor circuit (see page 21-105)
E	An open in the sunlight sensor circuit (see page 21-106)
F	A short in the sunlight sensor circuit (see page 21-107)
G	An open in the evaporator temperature sensor circuit (see page 21-108)
H	A short in the evaporator temperature sensor circuit (see page 21-110)
I	An open in the driver's air mix control motor circuit (see page 21-111)
J	A short in the driver's air mix control motor circuit (see page 21-112)
K	A problem in the driver's air mix control linkage, door, or motor (see page 21-113)
L	An open in the passenger's air mix control motor circuit (see page 21-115)
M	A short in the passenger's air mix control motor circuit (see page 21-116)
N	A problem in the passenger's air mix control linkage, door, or motor (see page 21-117)
O	An open or short in the mode control motor circuit (see page 21-119)
P	A problem in the mode control linkage, doors, or motor (see page 21-121)
Q	A problem in the blower motor circuit (see page 21-122)

(cont'd)

General Troubleshooting Information (cont'd)

Displaying Sensor Inputs at the Climate Control Unit

The climate control unit has a mode that displays sensor inputs it receives. This mode shows you what the climate control unit is receiving from each of the sensors, one at a time, and it can help you determine if a sensor is faulty.

Check these items before using the sensor input display mode

1. Turn the ignition switch ON (II), and check the recirculation door function; press the recirculation button to switch from FRESH to RECIRC. The air volume and sound should change slightly.

2. Set the temperature control knob to the desired test temperature. When selecting the test temperature, note these items:

   - ''Lo'' temperature setting will default to MAX COOL, VENT, and RECIRC.
   - ''Hi'' temperature setting will default to MAX HOT, FLOOR, and FRESH.
   - 58 through 86 ℉ settings will use the automatic climate control logic.

3. Turn the ignition switch OFF.

To run the sensor input display mode, follow these steps

1. Turn the ignition switch OFF.

2. Press and hold both the AUTO and recirculation buttons, then start the engine.

3. After the engine starts, release the buttons. The display panel control unit will flash the sensor number and then the value for that sensor. Record the value displayed.

4. To advance to the next sensor, press the recirculation button.

Sensor	Item	Displayed Value
1	In-car Temperature	℃
2	Outside Air Temperature	℃
3	Solar Radiation Sensor Value: Dark = 00, Flashlight = 04, Cloudy =10, Sunny =65	10 kcal/m^2·h
4	Engine Coolant Temperature	℃
5	Evaporator Outlet Air Temperature	℃
6	Driver's Air Mix Opening (Low value indicates cooler air distribution, higher value indicates warmer air distribution)	% of opening
7	Passenger's Air Mix Opening (Low value indicates cooler air distribution, higher value indicates warmer air distribution)	% of opening
8	Vehicle Speed (Vehicle must be driven to display speed)	km/h
9	Driver's Vent Temperature Air Out (TAO-Dr)	℃

NOTE:
- The sensor values will be displayed in degrees Celsius (℃) or an alphanumeric code. Use the chart to convert the value to degrees Fahrenheit (℉).
- If the sensor value displays ''Er'' this indicates there is an open or short in the circuit or sensor. Check for DTCs using the HDS, or refer to checking DTCs by DTC indication.
- If necessary, compare the sensor input display to a like, known-good vehicle under the same test conditions.
- If the sensor is out of the normal range, refer to the sensor test or substitute a known-good sensor, and recheck.

5. To cancel the sensor input display mode, press the AUTO button or turn the ignition switch OFF.

Celsius to Fahrenheit Conversion Table

℃	℉	℃	℉	℃	℉	℃	℉	℃	℉
0	32	10	50	20	68	30	86	40	104
1	34	11	52	21	70	31	88	41	106
2	36	12	54	22	72	32	90	42	108
3	37	13	55	23	73	33	91	43	109
4	39	14	57	24	75	34	93	44	111
5	41	15	59	25	77	35	95	45	113
6	43	16	61	26	79	36	97	46	115
7	45	17	63	27	81	37	99	47	117
8	46	18	64	28	82	38	100	48	118
9	48	19	66	29	84	39	102	49	120

℃	℉	℃	℉	℃	℉	℃	℉	℃	℉
50	122	60	140	70	158	80	176	90	194
51	124	61	142	71	160	81	178	91	196
52	126	62	144	72	162	82	180	92	198
53	127	63	145	73	163	83	181	93	199
54	128	64	147	74	165	84	183	94	201
55	131	65	149	75	167	85	185	95	203
56	133	66	151	76	169	86	187	96	205
57	135	67	152	77	170	87	188	97	207
58	136	68	154	78	172	88	190	98	208
59	139	69	158	79	174	89	192	99	210

Alphanumeric Conversion Table

Display Reading (Alphanumeric)	℃	℉	%
A1 thru A9	−1 thru −9	30 thru 16	−1 thru −9
B0 thru B9	−10 thru −19	14 thru −2	−10 thru −19
C0 thru C9	−20 thru −29	−4 thru −20	−20 thru −29
D0 thru D9	−30 thru −39	−22 thru −38	−30 thru −39
E0 thru E9	−40 thru −49	−40 thru −58	———
F0 thru F9	———	———	+100 thru +109

DTC Troubleshooting Index

Checking the DTCs by HDS

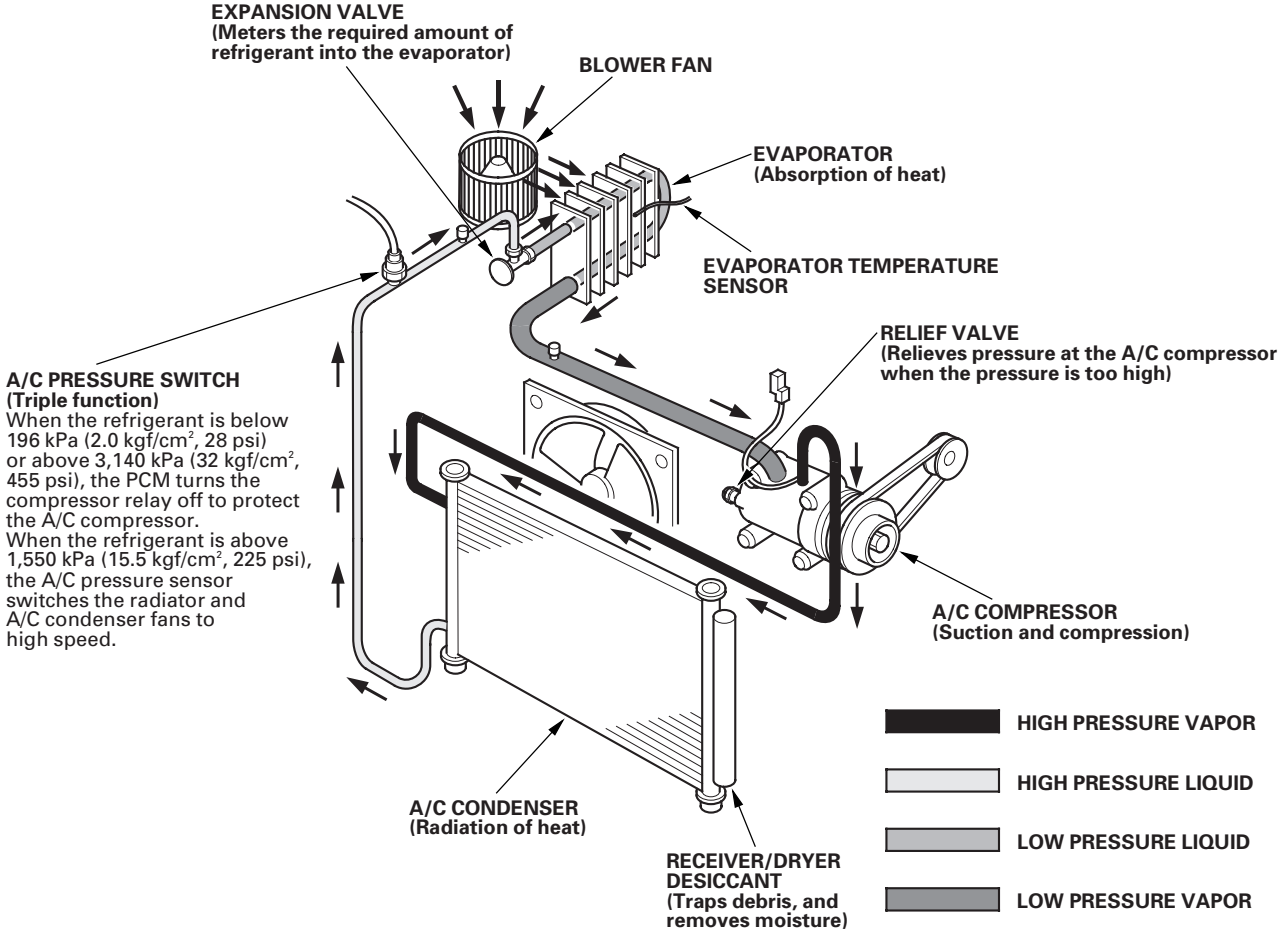
DTC	Detection Item or Symptom	ECU	DTC type	Page
B1200	Communication bus line error	Climate control unit	Loss of communication	(see page 22-110)
B1202	Climate control unit internal error	Climate control unit	Internal error	(see page 21-100)
B1205	Climate control unit lost communication with gauge control module (VSP/NE message)	Climate control unit	Loss of communication	(see page 21-100)
B1206	Climate control unit lost communication with gauge control module (ENGTEMP message)	Climate control unit	Loss of communication	(see page 21-100)
B1207	Climate control unit lost communication with gauge control module (ILLUMI message)	Climate control unit	Loss of communication	(see page 21-100)
B1225	An open in the in-car temperature sensor circuit	Climate control unit	Signal error	(see page 21-101)
B1226	A short in the in-car temperature sensor circuit	Climate control unit	Signal error	(see page 21-103)
B1227	An open in the outside air temperature sensor circuit	Climate control unit	Signal error	(see page 21-104)
B1228	A short in the outside air temperature sensor circuit	Climate control unit	Signal error	(see page 21-105)
B1229	An open in the sunlight sensor circuit	Climate control unit	Signal error	(see page 21-106)
B1230	A short in the sunlight sensor circuit	Climate control unit	Signal error	(see page 21-107)
B1231	An open in the evaporator temperature sensor circuit	Climate control unit	Signal error	(see page 21-108)
B1232	A short in the evaporator temperature sensor circuit	Climate control unit	Signal error	(see page 21-110)
B1233	An open in the driver's air mix control motor circuit	Climate control unit	Signal error	(see page 21-111)
B1234	A short in the driver's air mix control motor circuit	Climate control unit	Signal error	(see page 21-112)
B1235	A problem in the driver's air mix control linkage, door, or motor	Climate control unit	Signal error	(see page 21-113)
B1236	An open in the passenger's air mix control motor circuit	Climate control unit	Signal error	(see page 21-115)
B1237	A short in the passenger's air mix control motor circuit	Climate control unit	Signal error	(see page 21-116)
B1238	A problem in the passenger's air mix control linkage, door, or motor	Climate control unit	Signal error	(see page 21-117)
B1239	An open or short in the mode control motor circuit	Climate control unit	Signal error	(see page 21-119)
B1240	A problem in the mode control linkage, doors, or motor	Climate control unit	Signal error	(see page 21-121)
B1241	A problem in the blower motor circuit	Climate control unit	Signal error	(see page 21-122)

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Recirculation control doors do not change between Fresh and Recirculate	Recirculation control motor circuit troubleshooting (see page 21-126)	• HVAC DTCs (see page 21-8) • Blown fuse No. 30 (7.5 A) in the under-dash fuse/relay box • Cleanliness and tightness of all terminals
Voice communication does not work	Navigation communication line circuit troubleshooting (see page 21-128)	• HVAC DTCs (see page 21-8) • Cleanliness and tightness of all terminals
Blower, heater controls, and A/C do not work	Climate control power and ground circuit troubleshooting (see page 21-129)	• HVAC DTCs (see page 21-8) • Blown fuse No. 30 (7.5 A) in the under-dash fuse/relay box • Poor ground at G402 (see page 22-68) • Cleanliness and tightness of all terminals
Both fans do not run at low speed with the A/C on (but the A/C compressor runs with the A/C on)	Radiator and A/C condenser fan low speed circuit troubleshooting (see page 21-40)	• HVAC DTCs (see page 21-8) • Blown fuse No. 20 (30 A) in the under-hood fuse/relay box, and No. 30 (7.5 A) in the under-dash fuse/relay box • Poor ground at G201 (see page 22-68) • Cleanliness and tightness of all terminals
The A/C condenser fan does not run at high speed (but both fans run at low speed and the A/C compressor operates with the A/C on)	A/C condenser fan high speed circuit troubleshooting (see page 21-44)	• HVAC DTCs (see page 21-8) • Blown fuse No. 30 (7.5 A) in the under-dash fuse/relay box • Poor ground at G201 (see page 22-68) • Cleanliness and tightness of all terminals
Both fans do not run at high speed with the A/C on (but both fans run at low speed and the A/C compressor operates with the A/C on)	Radiator and A/C condenser fan high speed circuit troubleshooting (see page 21-46)	• HVAC DTCs (see page 21-8) • Poor ground at G202 (see page 22-68) • Cleanliness and tightness of all terminals
Both fans run at high speed all the time with the A/C on	Radiator and A/C condenser fan high speed circuit troubleshooting (see page 21-46)	• HVAC DTCs (see page 21-8) • Poor ground at G202 (see page 22-68) • Cleanliness and tightness of all terminals
The A/C compressor clutch does not engage (but both fans run with the A/C on)	A/C compressor clutch circuit troubleshooting (see page 21-47)	• HVAC DTCs (see page 21-8) • Blown fuse No. 12 (7.5 A) in the under-hood fuse/relay box, and No. 30 (7.5 A) in the under-dash fuse/relay box • Cleanliness and tightness of all terminals
A/C system does not come on (both fans and the A/C compressor do not work); heater is OK	A/C pressure switch circuit troubleshooting (see page 21-130)	• Body DTCs in B-CAN System Diagnosis Test Mode A Troubleshooting (see page 22-99) • HVAC DTCs (see page 21-8) • Cleanliness and tightness of all terminals
Blower fan runs slower than expected in cold weather	ECT Troubleshooting: ECT sensor 2 circuit low voltage (see page 11-149), ECT sensor 2 circuit high voltage (see page 11-151) NOTE: It is normal for the blower to run slowly until the engine coolant temperature begins to rise. If the blower continues to run slowly for an abnormal length of time, continue to troubleshoot the problem.	• Powertrain DTCs (see page 11-3)
HDS does not communicate with the climate control unit or the vehicle	Troubleshoot the DLC circuit (see page 11-194)	

System Description

The air conditioning system removes heat from the passenger compartment by transferring heat from the ambient air to the evaporator. The evaporator cools the air with the refrigerant that is circulating through the evaporator. The refrigerant expands in the evaporator, and the evaporator becomes very cold and absorbs the heat from the ambient air. The blower fan pushes air across the evaporator where the heat is absorbed, and then it blows the cool air into the passenger compartment.



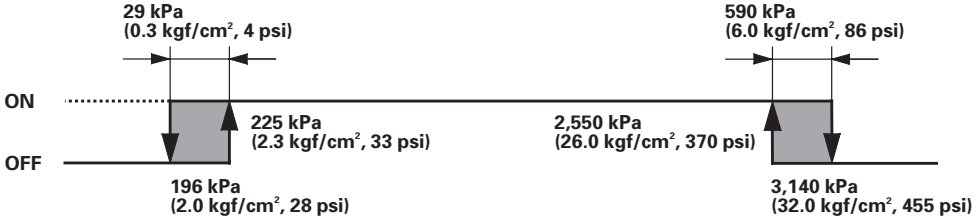
This vehicle uses HFC-134a (R-134a) refrigerant, which does not contain chlorofluorocarbons. Pay attention to the following service items:

- Do not mix refrigerants CFC-12 (R-12) and HFC-134a (R-134a). They are not compatible.
- Use only the recommended polyalkyleneglycol (PAG) refrigerant oil (DENSO ND-OIL 8) designed for the R-134a A/C compressor. Intermixing the recommended (PAG) refrigerant oil with any other refrigerant oil will result in A/C compressor failure.
- All A/C system parts (A/C compressor, discharge line, suction line, evaporator, A/C condenser, receiver/dryer, expansion valve, O-rings for joints) are designed for refrigerant R-134a. Do not exchange with R-12 parts.
- Use a halogen gas leak detector designed for refrigerant R-134a.
- R-12 and R-134a refrigerant servicing equipment are not interchangeable. Use only a recovery/recycling/charging station that is U.L.-listed and is certified to meet the requirements of SAE J2210 to service the R-134a air conditioning systems.
- Always recover refrigerant R-134a with an approved recovery/recycling/charging station before disconnecting any A/C fitting.

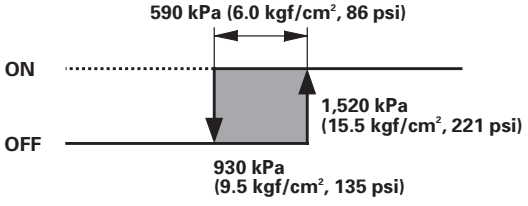
A/C Pressure Switch

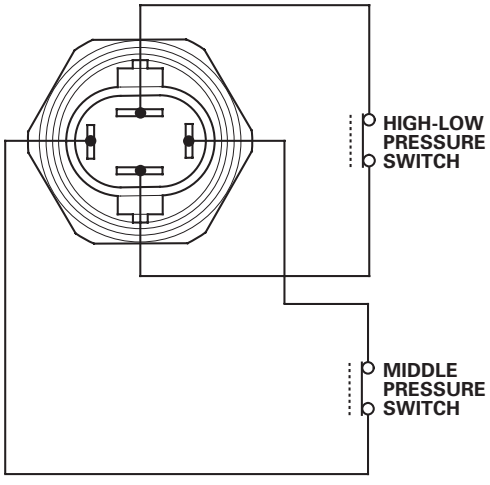
The A/C pressure switch consists of a high-low pressure switch (A/C pressure switch A) and a middle pressure switch (A/C pressure switch B).

- High-low pressure switch
  If the refrigerant pressure becomes too high (due to blockage or lack of airflow at the condenser), or too low (due to leakage), the A/C pressure switch stops the A/C request signal to the PCM and the A/C compressor stops operating.



- Middle pressure switch
  If the refrigerant pressure goes above 1,520 kPa (15.5 kgf/cm², 221 psi), the A/C pressure switch closes to signal the PCM to change the speed of the A/C condenser fan and radiator fan to high. When the refrigerant pressure drops below 930 kPa (9.5 kgf/cm², 135 psi), the A/C pressure switch opens to signal the PCM to change the speed of the A/C condenser fan and radiator fan to low.

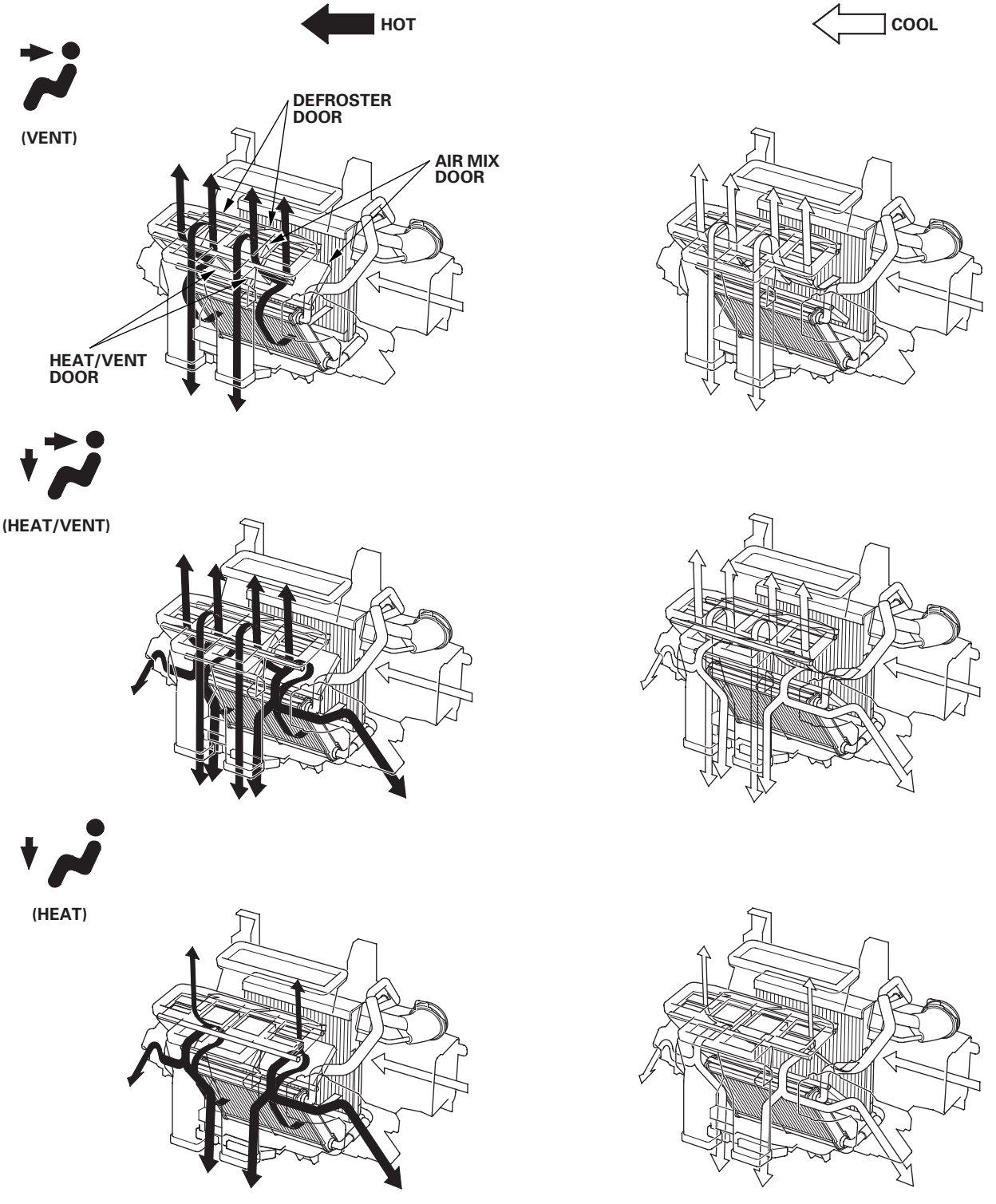




(cont'd)

System Description (cont'd)

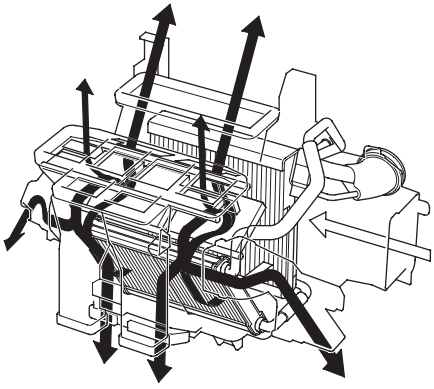
Climate Control Door Positions

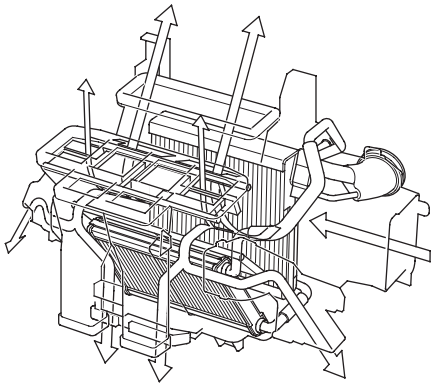


HOT

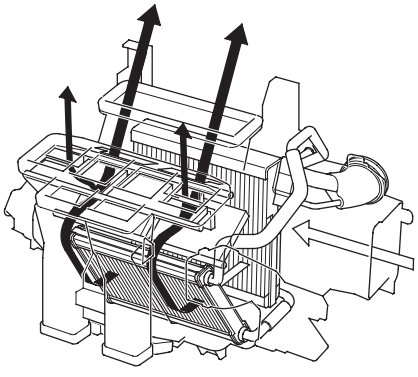
COOL

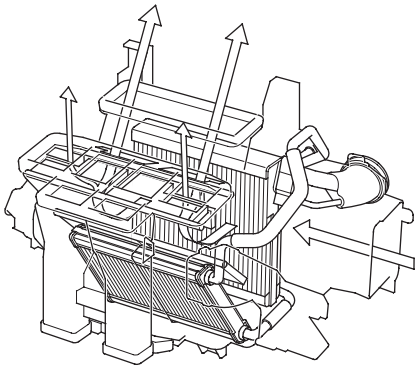
(HEAT/DEF)





(DEF)



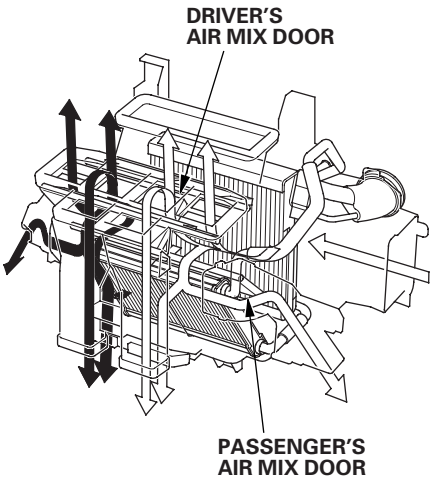


(cont'd)

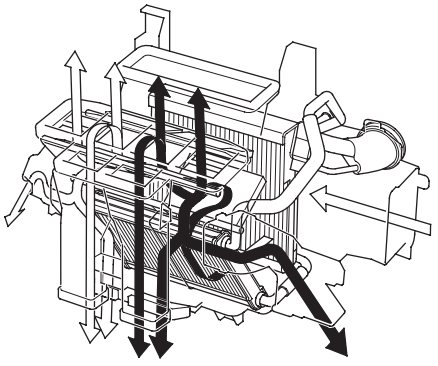
System Description (cont'd)

Dual Air Mix Control System

Driver's side: HOT
Passenger's side: COOL

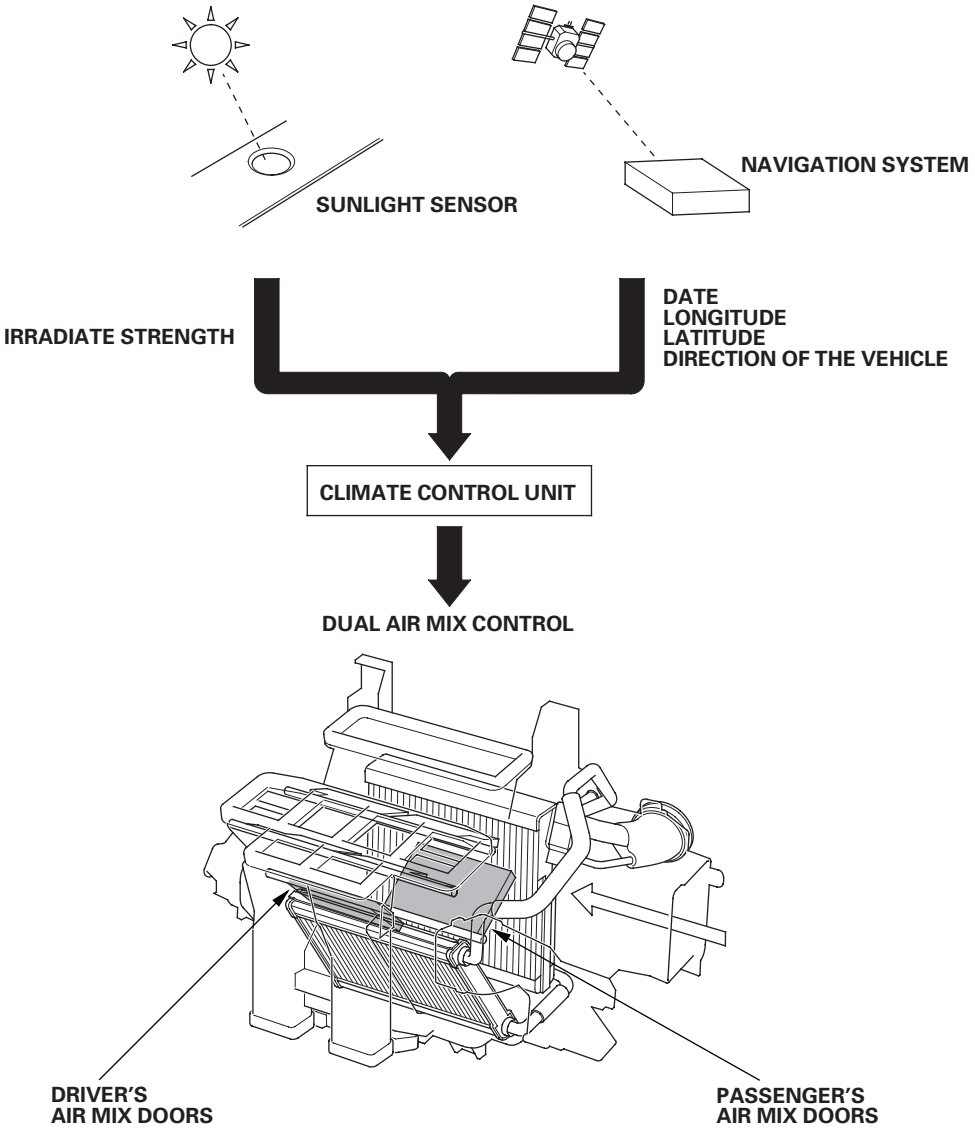


Driver's side: COOL
Passenger's side: HOT



i-Dual Climate Control System

This system automatically controls the temperature and the vent mode for the driver and passenger's sides depending on the angle of the sun and the direction of the vehicle. The system receives information such as date, time, longitude, and latitude from the navigation system, and it determines the irradiate strength of the sun from the sunlight sensor.



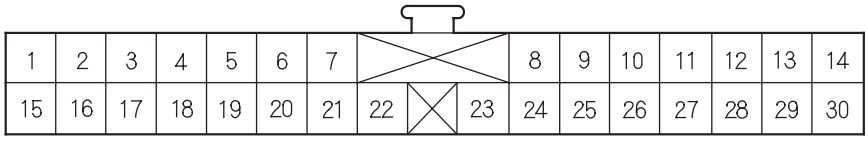
In the event that the navigation system malfunctions, or when driving in areas where the navigation cannot determine the vehicle position (non-coverage areas, tunnels, etc.), the climate control system will operate the same as one in a vehicle without navigation.

(cont'd)

System Description (cont'd)

Climate Control Unit Inputs and Outputs

CLIMATE CONTROL UNIT 30P CONNECTOR

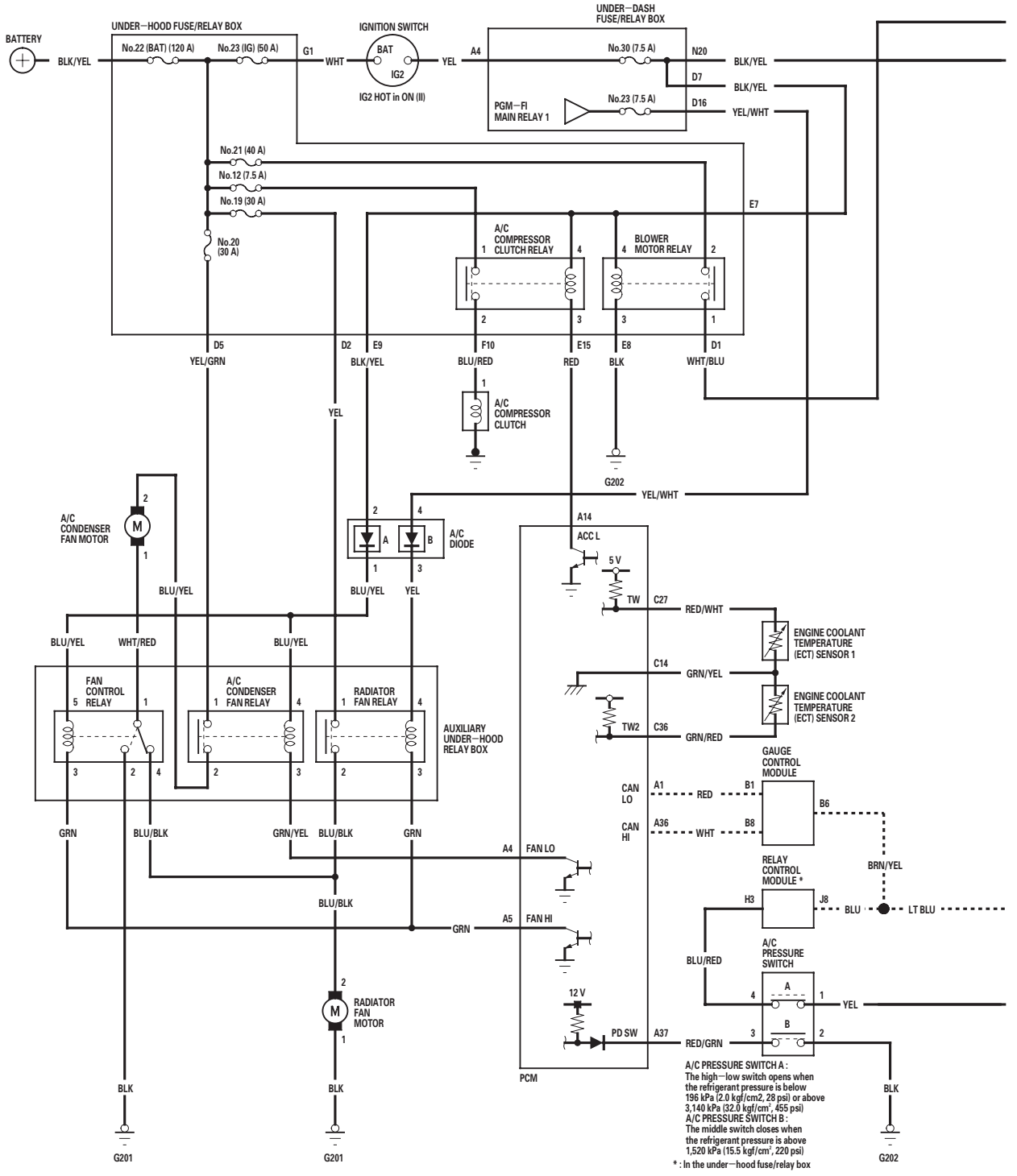


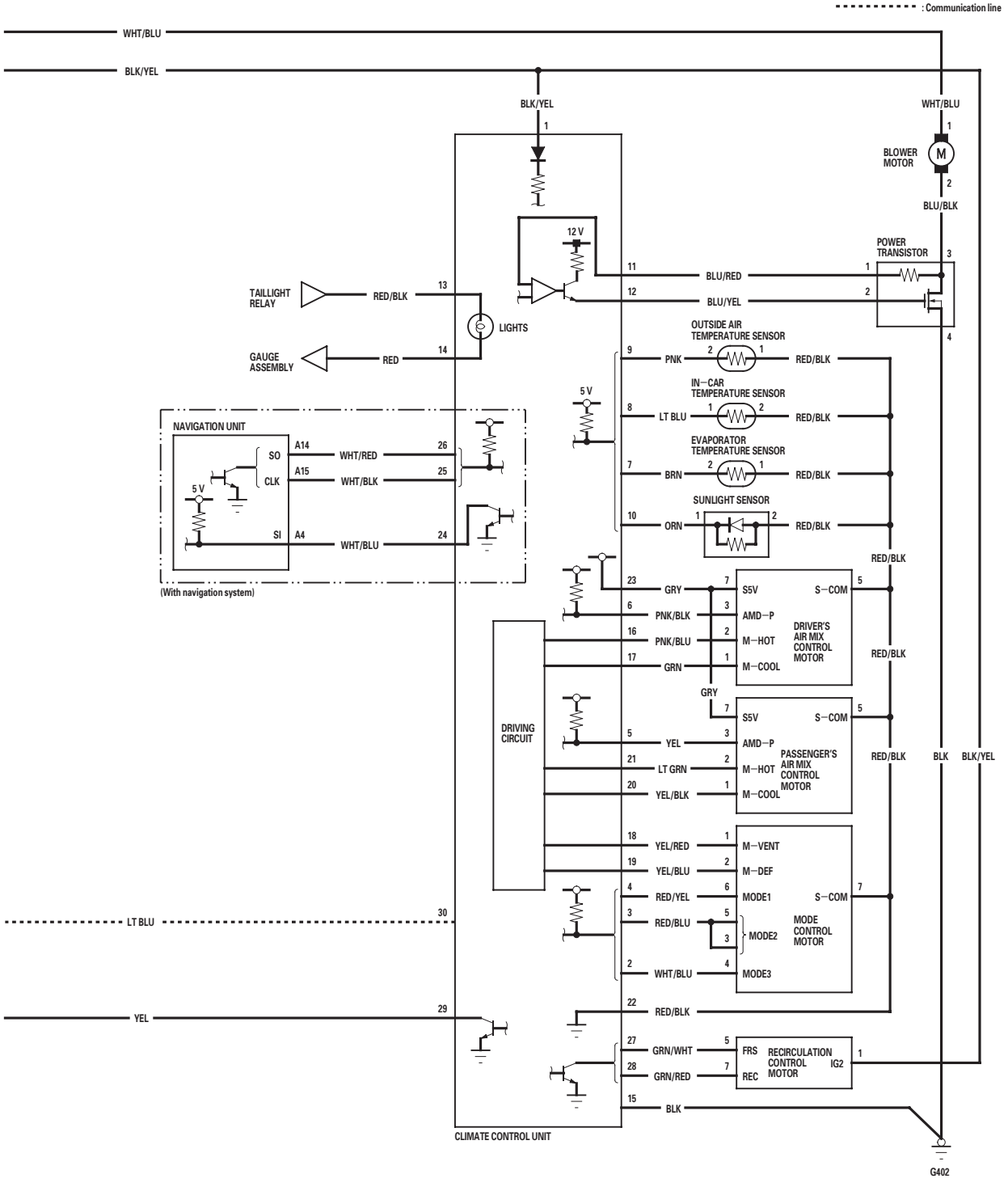
Wire side of female terminals

Cavity	Wire color	Signal	
1	BLK/YEL	IG2 (Power)	INPUT
2	WHT/BLU	MODE 3	OUTPUT
3	RED/BLU	MODE 2	OUTPUT
4	RED/YEL	MODE 1	OUTPUT
5	YEL	PASSENGER'S AIR MIX POTENTIAL	OUTPUT
6	PNK/BLK	DRIVER'S AIR MIX POTENTIAL	OUTPUT
7	BRN	EVAPORATOR TEMPERATURE SENSOR	OUTPUT
8	LT BLU	IN-CAR TEMPERATURE SENSOR	OUTPUT
9	PNK	OUTSIDE AIR TEMPERATURE SENSOR	OUTPUT
10	ORN	SUNLIGHT SENSOR	OUTPUT
11	BLU/RED	BLOWER FEEDBACK	INPUT
12	BLU/YEL	POWER TRANSISTOR CONTROL	OUTPUT
13	RED/BLK	TAILLIGHT RELAY	INPUT
14	RED	GAUGE ASSEMBLY	OUTPUT
15	BLK	GROUND (G402)	OUTPUT
16	PNK/BLU	DRIVER'S AIR MIX HOT	OUTPUT
17	GRN	DRIVER'S AIR MIX COOL	OUTPUT
18	YEL/RED	MODE VENT	OUTPUT
19	YEL/BLU	MODE DEF	OUTPUT
20	YEL/BLK	PASSENGER'S AIR MIX COOL	OUTPUT
21	LT GRN	PASSENGER'S AIR MIX HOT	OUTPUT
22	RED/BLK	SENSOR COMMON GROUND	INPUT
23	GRY	AIR MIX POTENTIAL +5	OUTPUT
24	WHT/BLU	NAVIGATION UNIT (SI)*	INPUT
25	WHT/BLK	NAVIGATION UNIT (CLK)*	OUTPUT
26	WHT/RED	NAVIGATION UNIT (SO)*	OUTPUT
27	GRN/WHT	FRESH	INPUT
28	GRN/RED	RECIRCULATE	INPUT
29	YEL	A/C PRESSURE SWITCH	INPUT
30	LT BLU	B-CAN	INPUT/OUTPUT

*: With navigation system

Circuit Diagram




: Communication line
WHT/BLU
BLK/YEL
BLK/YEL
WHT/BLU
BLOWER MOTOR
M
BLU/BLK
POWER TRANSISTOR
12 V
TAILLIGHT RELAY
RED/BLK
LIGHTS
GAUGE ASSEMBLY
RED
BLU/RED
BLU/YEL
OUTSIDE AIR TEMPERATURE SENSOR
PNK
RED/BLK
IN-CAR TEMPERATURE SENSOR
LT BLU
EVAPORATOR TEMPERATURE SENSOR
BRN
SUNLIGHT SENSOR
ORN
5 V
NAVIGATION UNIT
SO
CLK
SI
A14
A15
A4
WHT/RED
WHT/BLK
WHT/BLU
(With navigation system)
GRY
PNK/BLK
PNK/BLU
GRN
S5V
AMD-P
M-HOT
M-COOL
S-COM
DRIVER'S AIR MIX CONTROL MOTOR
DRIVING CIRCUIT
YEL
LT GRN
YEL/BLK
PASSENGER'S AIR MIX CONTROL MOTOR
YEL/RED
YEL/BLU
M-VENT
M-DEF
RED/YEL
RED/BLU
MODE1
MODE2
MODE3
MODE CONTROL MOTOR
WHT/BLU
LT BLU
YEL
GRN/WHT
GRN/RED
FRS
REC
RECIRCULATION CONTROL MOTOR
IG2
BLK
CLIMATE CONTROL UNIT
G402

DTC Troubleshooting

DTC B1202: Climate Control Unit Internal Error

NOTE:
- Check the battery condition (see page 22-74) and the charging system (see page 4-26).
- If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN system diagnosis test mode A (see page 22-99).

1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS.

   Is DTC B1202 indicated?

   YES—The climate control unit is faulty, replace the control unit. ■

   NO—Intermittent failure, the climate control unit is OK at this time. ■

DTC B1205: Climate Control Unit Lost Communication with Gauge Control Module (VSP/NE message)

DTC B1206: Climate Control Unit Lost Communication with Gauge Control Module (ECT message)

DTC B1207: Climate Control Unit Lost Communication with Gauge Control Module (ILLUMI message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN system diagnosis test mode A (see page 22-99).

1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS.

   Is DTC B1205, B1206 and/or B1207 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the gauge control module and climate control unit are OK at this time. ■

4. Check for DTCs using the HDS.

   Is DTC B1060 or B2157 indicated?

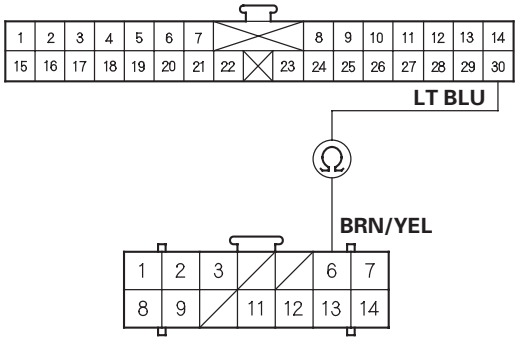
   YES—Perform the gauge control module input test (see page 22-122). ■

   NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the climate control unit 30P connector.
7. Remove the gauge control module (see page 22-263).

8. Check for continuity between the climate control unit 30P connector No. 30 terminal and gauge control module connector B (14P) No. 6 terminal.

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



GAUGE CONTROL MODULE CONNECTOR B (14P)
Wire side of female terminals

Is there continuity?

YES—Substitute a known-good HVAC or climate control unit, then return to step 3 and recheck. If the problem is still present, replace the gauge control module (see page 22-263). ■

NO—Repair open in the wire between the climate control unit and gauge control module. ■

DTC B1225 or DTC indicator A: An Open in the In-car Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1225 or A indicated?

   YES—Go to step 4.

   NO—Intermittent failure, check for loose wires or poor connections on the in-car temperature sensor circuit. ■
4. Turn the ignition switch OFF.
5. Remove the in-car temperature sensor (see page 21-133) and test it (see page 21-133).

   Is the in-car temperature sensor OK?

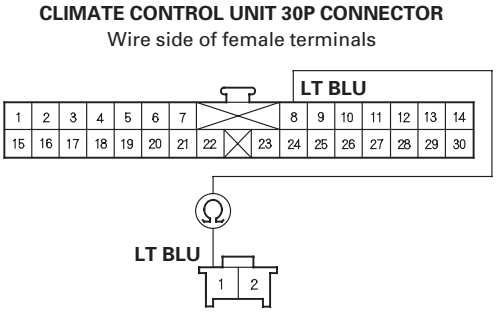
   YES—Go to step 6.

   NO—Replace the in-car temperature sensor. ■
6. Disconnect the climate control unit 30P connector.

(cont'd)

DTC Troubleshooting (cont'd)

7. Check for continuity between the climate control unit 30P connector No. 8 terminal and the in-car temperature sensor 2P connector No. 1 terminal.

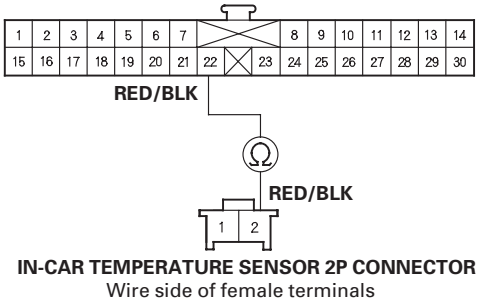


Is there continuity?

YES—Go to step 8.

NO—Repair open in the wire between the climate control unit and the in-car temperature sensor. ■

8. Check for continuity between the climate control unit 30P connector No. 22 terminal and the in-car temperature sensor 2P connector No. 2 terminal.



Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 30P connector and at the in-car temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire between the climate control unit and the in-car temperature sensor. ■

DTC B1226 or DTC indicator B: A Short in the In-car Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1226 or B indicated?

   YES—Go to step 4.

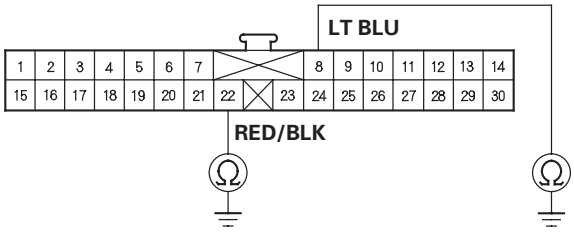
   NO—Intermittent failure. ■
4. Turn the ignition switch OFF.
5. Remove the in-car temperature sensor (see page 21-133) and test it (see page 21-133).

   Is the in-car temperature sensor OK?

   YES—Go to step 6.

   NO—Replace the in-car temperature sensor. ■
6. Disconnect the climate control unit 30P connector.
7. Check for continuity between body ground and the climate control unit 30P connector No. 8 and No. 22 terminals.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

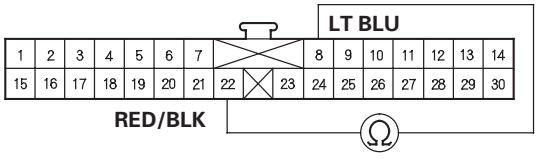
Is there continuity?

YES—Repair short to body ground in the wires between the climate control unit and the in-car temperature sensor. ■

NO—Go to step 8.

8. Check for continuity between the climate control unit 30P connector No. 8 and No. 22 terminals.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the climate control unit and the in-car temperature sensor. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC Troubleshooting (cont'd)

DTC B1227 or DTC indicator C: An Open in the Outside Air Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1227 or C indicated?

   YES—Go to step 4.

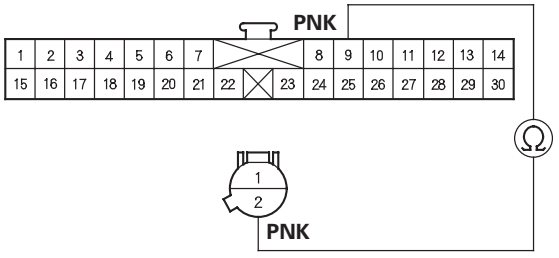
   NO—Intermittent failure, check for loose wires or poor connections on the outside air temperature sensor circuit. ■
4. Turn the ignition switch OFF.
5. Remove the outside air temperature sensor (see page 21-52) and test it (see page 21-52).

   Is the outside air temperature sensor OK?

   YES—Go to step 6.

   NO—Replace the outside air temperature sensor. ■
6. Disconnect the climate control unit 30P connector.
7. Check for continuity between the climate control unit 30P connector No. 9 terminal and the outside air temperature sensor 2P connector No. 2 terminal.

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



OUTSIDE AIR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

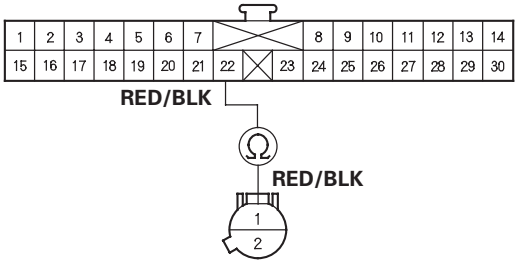
Is there continuity?

YES—Go to step 8.

NO—Repair open in the wire between the climate control unit and the outside air temperature sensor. ■

8. Check for continuity between the climate control unit 30P connector No. 22 terminal and the outside air temperature sensor 2P connector No. 1 terminal.

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



OUTSIDE AIR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 30P connector and at the outside air temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire between the climate control unit and the outside air temperature sensor. ■

DTC B1228 or DTC indicator D: A Short in the Outside Air Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1228 or D indicated?

   YES—Go to step 4.

   NO—Intermittent failure. ■
4. Turn the ignition switch OFF.
5. Remove the outside air temperature sensor (see page 21-52) and test it (see page 21-52).

   Is the outside air temperature sensor OK?

   YES—Go to step 6.

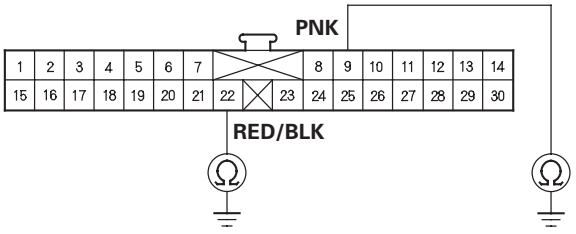
   NO—Replace the outside air temperature sensor. ■
6. Disconnect the climate control unit 30P connector.

(cont'd)

DTC Troubleshooting (cont'd)

7. Check for continuity between body ground and the climate control unit 30P connector No. 9 and No. 22 terminals.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

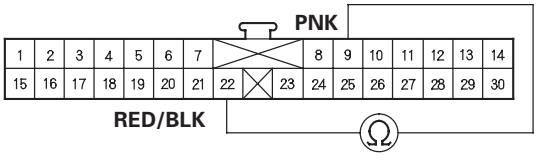
Is there continuity?

YES—Repair short to body ground in the wires between the climate control unit and the outside air temperature sensor. ■

NO—Go to step 8.

8. Check for continuity between the climate control unit 30P connector No. 9 and No. 22 terminals.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the climate control unit and the outside air temperature sensor. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC B1229 or DTC indicator E: An Open in the Sunlight Sensor Circuit

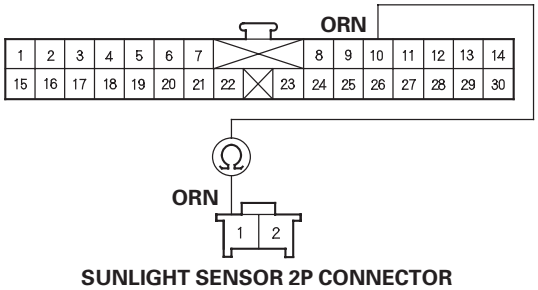
1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1229 or E indicated?

   YES—Go to step 4.

   NO—Intermittent failure, check for loose wires or poor connections on the sunlight sensor circuit. ■
4. Turn the ignition switch OFF.
5. Disconnect the sunlight sensor 2P connector.
6. Disconnect the climate control unit 30P connector.
7. Check for continuity between the climate control unit 40P connector No. 10 terminal and the sunlight sensor 2P connector No. 1 terminal.

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



SUNLIGHT SENSOR 2P CONNECTOR
Wire side of female terminals

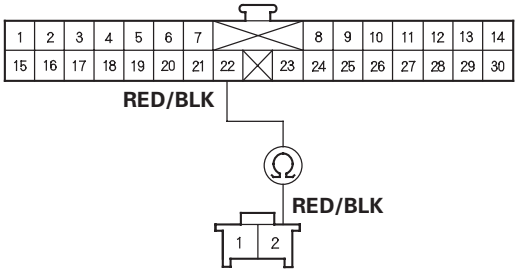
Is there continuity?

YES—Go to step 8.

NO—Repair open in the wire between the climate control unit and the sunlight sensor. ■

8. Check for continuity between the climate control unit 30P connector No. 22 terminal and the sunlight sensor 2P connector No. 2 terminal.

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



SUNLIGHT SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire between the climate control unit and the sunlight sensor. ■

9. Reconnect the sunlight sensor 2P connector.
10. Reconnect the climate control unit 30P connector.
11. Test the sunlight sensor (see page 21-134).

Is the sunlight sensor OK?

YES—Check for loose wires or poor connections at the climate control unit 30P connector and at the sunlight sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Replace the sunlight sensor (see page 21-134). ■

DTC B1230 or DTC indicator F: A Short in the Sunlight Sensor Circuit

1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

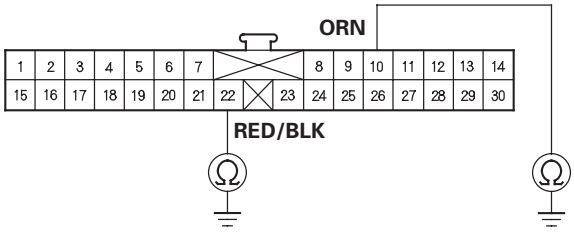
Is DTC B1230 or F indicated?

YES—Go to step 4.

NO—Intermittent failure. ■

4. Turn the ignition switch OFF.
5. Disconnect the sunlight sensor 2P connector.
6. Disconnect the climate control unit 30P connector.
7. Check for continuity between body ground and the climate control unit 30P connector No. 10 and No. 22 terminals.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wires between the climate control unit and the sunlight sensor. ■

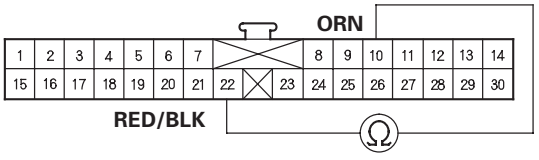
NO—Go to step 8.

(cont'd)

DTC Troubleshooting (cont'd)

8. Check for continuity between the climate control unit 30P connector No. 10 and No. 22 terminals.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the climate control unit and the sunlight sensor. ■

NO—Go to step 9.

9. Reconnect the sunlight sensor 2P connector.
10. Reconnect the climate control unit 30P connector.
11. Test the sunlight sensor (see page 21-134).

Is the sunlight sensor OK?

YES—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Replace the sunlight sensor (see page 21-134). ■

DTC B1231 or DTC indicator G: An Open in the Evaporator Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

Is DTC B1231 or G indicated?

YES—Go to step 4.

NO—Intermittent failure, check for loose wires or poor connections on the evaporator temperature sensor circuit. ■

4. Turn the ignition switch OFF.
5. Remove the evaporator temperature sensor (see page 21-53) and test it (see page 21-53).

Is the evaporator temperature sensor OK?

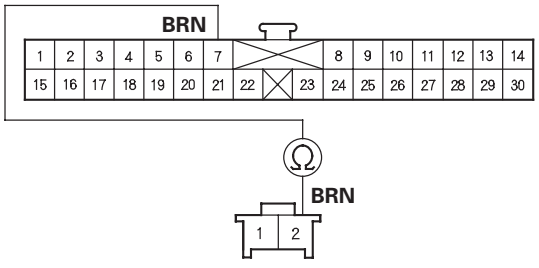
YES—Go to step 6.

NO—Replace the evaporator temperature sensor. ■

6. Disconnect the climate control unit 30P connector.

7. Check for continuity between the climate control unit 30P connector No. 7 terminal and the evaporator temperature sensor 2P connector No. 2 terminal.

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

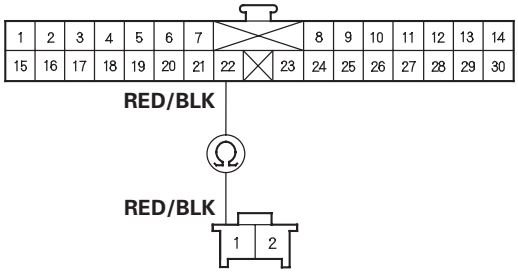
Is there continuity?

YES—Go to step 8.

NO—Repair open in the wire between the climate control unit and the evaporator temperature sensor. ■

8. Check for continuity between the climate control unit 30P connector No. 22 terminal and the evaporator temperature sensor 2P connector No. 1 terminal.

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 30P connector and at the evaporator temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire between the climate control unit and the evaporator temperature sensor. ■

DTC Troubleshooting (cont'd)

DTC B1232 or DTC indicator H: A Short in the Evaporator Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1232 or H indicated?

   YES—Go to step 4.

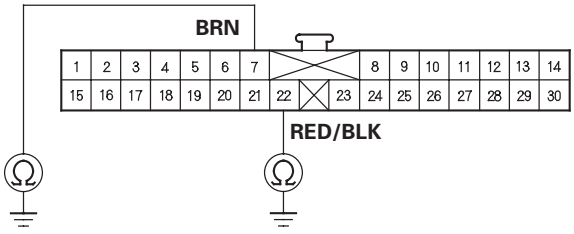
   NO—Intermittent failure. ■
4. Turn the ignition switch OFF.
5. Remove the evaporator temperature sensor (see page 21-53) and test it (see page 21-53).

   Is the evaporator temperature sensor OK?

   YES—Go to step 6.

   NO—Replace the evaporator temperature sensor. ■
6. Disconnect the climate control unit 30P connector.
7. Check for continuity between body ground and the climate control unit 30P connector No. 7 and No. 22 terminals.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

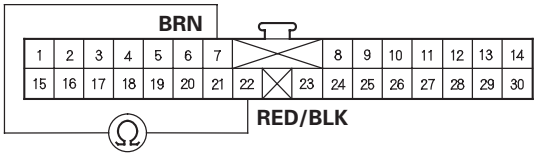
Is there continuity?

YES—Repair short to body ground in the wire between the climate control unit and the evaporator temperature sensor. ■

NO—Go to step 8.

8. Check for continuity between the climate control unit 30P connector No. 7 and No. 22 terminals.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the climate control unit and the evaporator temperature sensor. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC B1233 or DTC indicator I: An Open in the Driver's Air Mix Control Motor Circuit

1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1233 or I indicated?

   YES—Go to step 4.

   NO—Intermittent failure, check for loose wires or poor connections on the driver's air mix control motor circuit. ■
4. Turn the ignition switch OFF.
5. Test the driver's air mix control motor (see page 21-135).

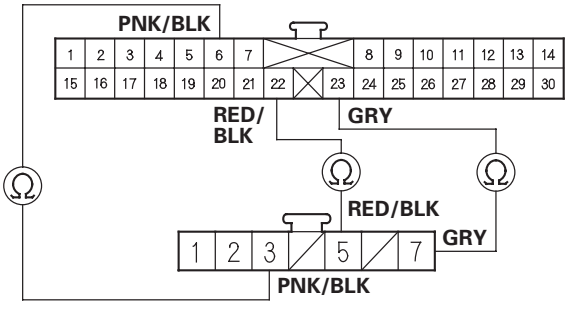
   Is the driver's air mix control motor OK?

   YES—Go to step 6.

   NO—Replace the driver's air mix control motor (see page 21-135). ■
6. Disconnect the driver's air mix control motor 7P connector.
7. Disconnect the climate control unit 30P connector.
8. Check for continuity between the following terminals of the climate control unit 30P connector and the driver's air mix control motor 7P connector.

30P:	7P:
No. 6	No. 3
No. 22	No. 5
No. 23	No. 7

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



DRIVER'S AIR MIX CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 30P connector and at the driver's air mix control motor 7P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wires between the climate control unit and the driver's air mix control motor. ■

DTC Troubleshooting (cont'd)

DTC B1234 or DTC indicator J: A Short in the Driver's Air Mix Control Motor Circuit

1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1234 or J indicated?

   YES—Go to step 4.

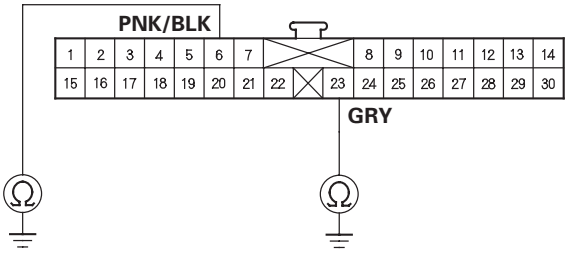
   NO—Intermittent failure. ■
4. Turn the ignition switch OFF.
5. Test the driver's air mix control motor (see page 21-135).

   Is the driver's air mix control motor OK?

   YES—Go to step 6.

   NO—Replace the driver's air mix control motor (see page 21-135). ■
6. Disconnect the driver's air mix control motor 7P connector.
7. Disconnect the climate control unit 30P connector.
8. Check for continuity between body ground and the climate control unit 30P connector No. 6 and No. 23 terminals individually.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

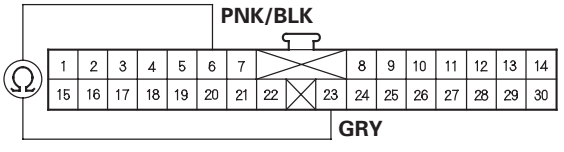
Is there continuity?

YES—Repair short to body ground in the wires between the climate control unit and the driver's air mix control motor. ■

NO—Go to step 9.

9. Check for continuity between the climate control unit 30P connector terminals as follows.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

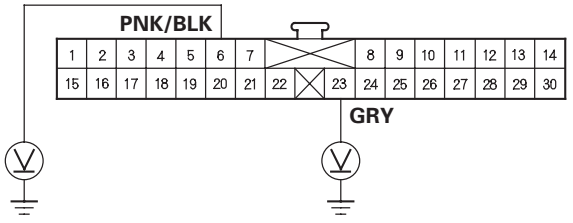
Is there continuity?

YES—Repair the short in the wires. ■

NO—Go to step 10.

10. Turn the ignition switch ON (II), and check the same terminals for voltage to body ground.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there voltage?

YES—Repair short to power in the wire(s) between the climate control unit and the driver's air mix control motor. This short may also damage the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC B1235 or DTC indicator K: A Problem in the Driver's Air Mix Control Linkage, Door, or Motor

1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1235 or K indicated?

   YES—Go to step 4.

   NO—Intermittent failure, check for loose wires or poor connections on the driver's air mix control motor circuit. ■
4. Turn the ignition switch OFF.
5. Test the driver's air mix control motor (see page 21-135).

   Is the driver's air mix control motor OK?

   YES—Go to step 6.

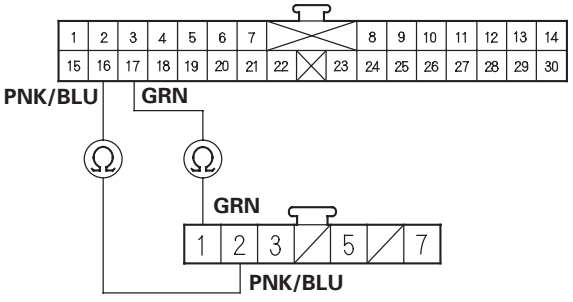
   NO—Replace the driver's air mix control motor (see page 21-135), or repair the driver's air mix control linkage or door. ■
6. Disconnect the driver's air mix control motor 7P connector.
7. Disconnect the climate control unit 30P connector.

(cont'd)

DTC Troubleshooting (cont'd)

8. Check for continuity between the following terminals of climate control unit 30P connector and the driver's air mix control motor 7P connector.
   30P: 7P:
   No. 16 No. 2
   No. 17 No. 1

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



DRIVER'S AIR MIX CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

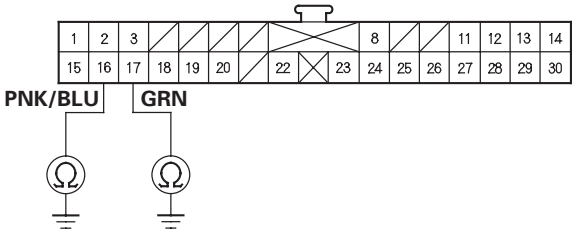
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire(s) between the climate control unit and the driver's air mix control motor.■

9. Check for continuity between body ground and climate control unit 30P connector No. 16 and No. 17 terminals individually.

HVAC CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the driver's air mix control motor.■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit.■

DTC B1236 or DTC indicator L: An Open in the Passenger's Air Mix Control Motor Circuit

1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1236 or L indicated?

   YES—Go to step 4.

   NO—Intermittent failure, check for loose wires or poor connections on the passenger's air mix control motor circuit. ■
4. Turn the ignition switch OFF.
5. Test the passenger's air mix control motor (see page 21-136).

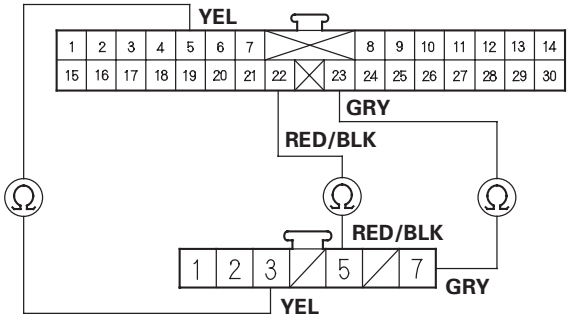
   Is the passenger's air mix control motor OK?

   YES—Go to step 6.

   NO—Replace the passenger's air mix control motor (see page 21-137). ■
6. Disconnect the passenger's air mix control motor 7P connector.
7. Disconnect the climate control unit 30P connector.
8. Check for continuity between following terminals of the climate control unit 30P connector and the passenger's air mix control motor 7P connector.

30P:	7P:
No. 5	No. 3
No. 22	No. 5
No. 23	No. 7

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



PASSENGER'S AIR MIX CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 30P connector and at the passenger's air mix control motor 7P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wires between the climate control unit and the passenger's air mix control motor. ■

DTC Troubleshooting (cont'd)

DTC B1237 or DTC indicator M: A Short in the Passenger's Air Mix Control Motor Circuit

1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1237 or M indicated?

   YES—Go to step 4.

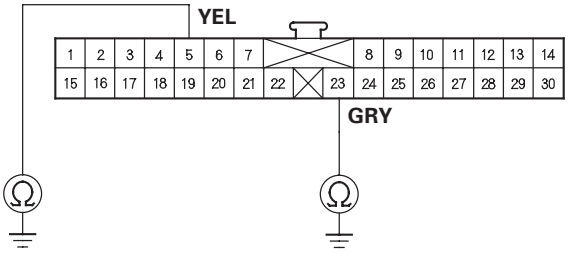
   NO—Intermittent failure. ■
4. Turn the ignition switch OFF.
5. Test the passenger's air mix control motor (see page 21-136).

   Is the passenger's air mix control motor OK?

   YES—Go to step 6.

   NO—Replace the passenger's air mix control motor (see page 21-137). ■
6. Disconnect the passenger's air mix control motor 7P connector.
7. Disconnect the climate control unit 30P connector.
8. Check for continuity between body ground and the climate control unit 30P connector No. 5 and No. 23 terminals individually.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

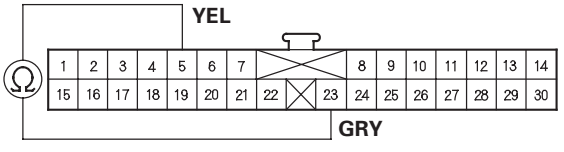
Is there continuity?

YES—Repair short to body ground in the wires between the climate control unit and the passenger's air mix control motor. ■

NO—Go to step 9.

9. Check for continuity between the climate control unit 30P connector terminals as follows.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

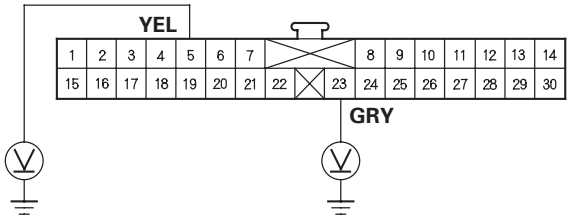
Is there continuity?

YES—Repair the short in the wires. ■

NO—Go to step 10.

10. Turn the ignition switch ON (II), and check the same terminals for voltage to body ground.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there voltage?

YES—Repair short to power in the wire(s) between the climate control unit and the passenger's air mix control motor. This short may also damage the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC B1238 or DTC indicator N: A Problem in the Passenger's Air Mix Control Linkage, Door, or Motor

1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1238 or N indicated?

   YES—Go to step 4.

   NO—Intermittent failure, check for loose wires or poor connections on the passenger's control motor circuit. ■
4. Turn the ignition switch OFF.
5. Test the passenger's air mix control motor (see page 21-136).

   Is the passenger's air mix control motor OK?

   YES—Go to step 6.

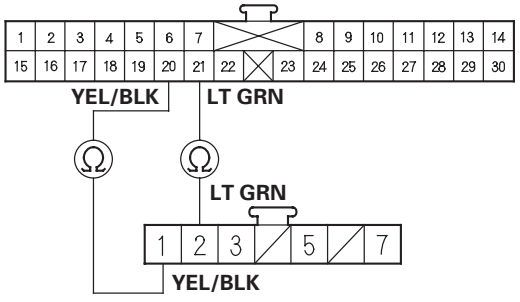
   NO—Replace the passenger's air mix control motor (see page 21-137), or repair the passenger's air mix control linkage or door. ■
6. Disconnect the passenger's air mix control motor 7P connector.
7. Disconnect the climate control unit 30P connector.

(cont'd)

DTC Troubleshooting (cont'd)

8. Check for continuity between the following terminals of climate control unit 30P connector and the passenger's air mix control motor 7P connector.
   30P: 7P:
   No. 20 No. 1
   No. 21 No. 2

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



PASSENGER'S AIR MIX CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

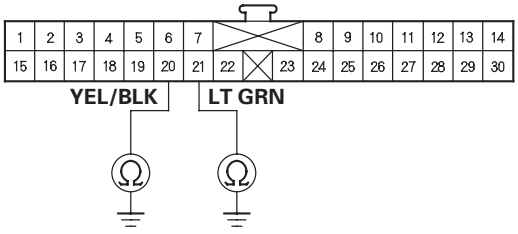
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire(s) between the climate control unit and the passenger's air mix control motor. ■

9. Check for continuity between body ground and climate control unit 30P connector No. 20 and No. 21 terminals individually.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the passenger's air mix control motor. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC B1239 or DTC indicator O: An Open or Short in the Mode Control Motor Circuit

1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1239 or O indicated?

   YES—Go to step 4.

   NO—Intermittent failure, check for loose wires or poor connections on the mode control motor circuit. ■
4. Turn the ignition switch OFF.
5. Test the mode control motor (see page 21-56).

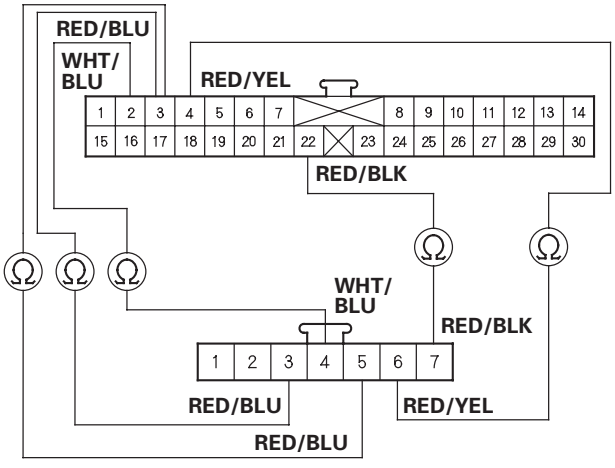
   Is the mode control motor OK?

   YES—Go to step 6.

   NO—Replace the mode control motor (see page 21-56). ■
6. Disconnect the mode control motor 7P connector.
7. Disconnect the climate control unit 30P connector.
8. Check for continuity between the following terminals of climate control unit 30P connector and the mode control motor 7P connector.

30P:	7P:
No. 2	No. 4
No. 3	No. 3
No. 3	No. 5
No. 4	No. 6
No. 22	No. 7

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



MODE CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 9.

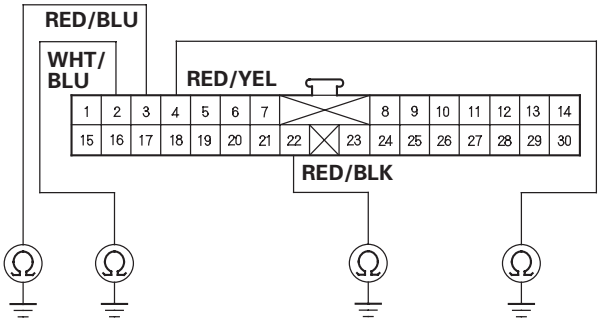
NO—Repair open in the wires between the climate control unit and the mode control motor. ■

(cont'd)

DTC Troubleshooting (cont'd)

9. Check for continuity between body ground and the climate control unit 30P connector No. 2, 3, 4, and 22 terminals individually.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wires between the climate control unit and the mode control motor. ■

NO—Go to step 10.

10. Check for continuity between the climate control unit 30P connector terminals as follows.

From terminal	To terminals
2	3, 4, 22
3	4, 22
4	18, 22

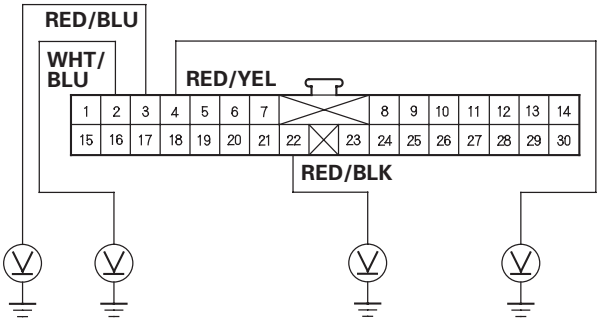
Is there continuity?

YES—Repair the short in the wires. ■

NO—Go to step 11.

11. Turn the ignition switch ON (II), and check the same terminals for voltage to body ground.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there any voltage?

YES—Repair short to power in the wires between the climate control unit and the mode control motor. This short may also damage the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO—Check for loose wires or poor connections at the climate control unit 30P connector and at the mode control motor 7P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC B1240 or DTC indicator P: A Problem in the Mode Control Linkage, Doors, or Motor

1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1240 or P indicated?

   YES—Go to step 4.

   NO—Intermittent failure, check for loose wires or poor connections on the mode control motor circuit. ■
4. Turn the ignition switch OFF.
5. Test the mode control motor (see page 21-56).

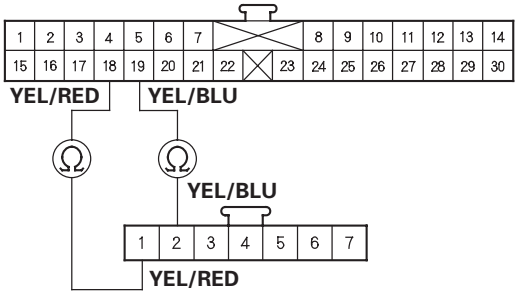
   Is the mode control motor OK?

   YES—Go to step 6.

   NO—Replace the mode control motor (see page 21-56), or repair the mode control linkage or doors. ■
6. Disconnect the front mode control motor 7P connector.
7. Disconnect the climate control unit 30P connector.
8. Check for continuity between the following terminals of climate control unit 30P connector and the front mode control motor 7P connector.

30P:	7P:
No. 18	No. 1
No. 19	No. 2

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



MODE CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 9.

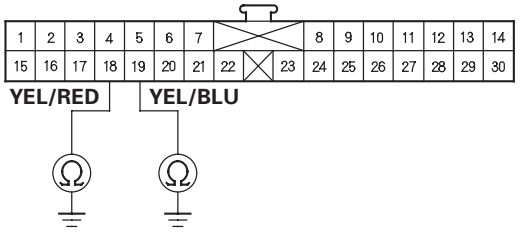
NO—Repair open in the wire(s) between the climate control unit and the mode control motor. ■

(cont'd)

DTC Troubleshooting (cont'd)

9. Check for continuity between body ground and climate control unit 30P connector No. 18 and No. 19 terminals individually.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the front mode control motor. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC B1241 or DTC indicator Q: A Problem in the Blower Motor Circuit

1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

   Is DTC B1241 or Q indicated?

   YES—Go to step 4.

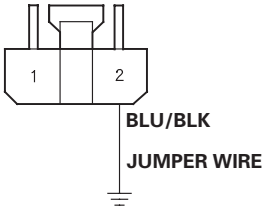
   NO—Intermittent failure, check for loose wires or poor connections on the blower motor circuit. ■
4. Turn the ignition switch OFF.
5. Check the No. 21 (40 A) fuse in the under-hood fuse/relay box, and the No. 30 (7.5 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Go to step 6.

   NO—Replace the fuses, and recheck. If the fuses blow again, check for a short in the No. 21 (40 A) and No. 30 (7.5 A) fuses circuit. ■
6. Connect the blower motor 2P connector No. 2 terminal to body ground with a jumper wire.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

7. Turn the ignition switch ON (II).

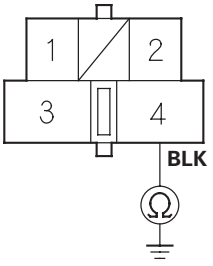
   Does the blower motor run?

   YES—Go to step 8.

   NO—Go to step 23.

8. Turn the ignition switch OFF.
9. Disconnect the jumper wire.
10. Disconnect the power transistor 4P connector.
11. Check for continuity between the power transistor 4P connector No. 4 terminal and body ground.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

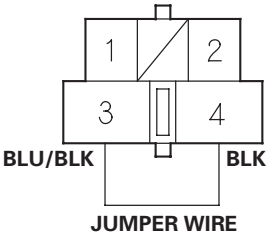
Is there continuity?

YES—Go to step 12.

NO—Check for an open in the wire between the power transistor and body ground. If the wire is OK, check for poor ground at G402 (see page 22-68). ■

12. Connect the power transistor 4P connector No. 3 and No. 4 terminals with a jumper wire.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

13. Turn the ignition switch ON (II).

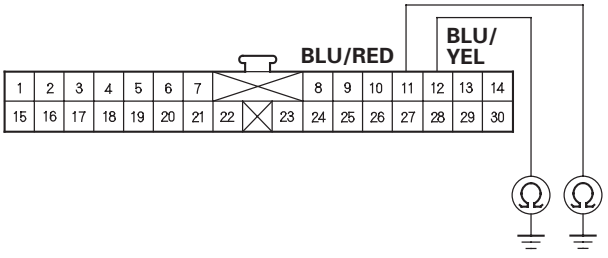
Does the blower motor run at high speed?

YES—Go to step 14.

NO—Repair open in the BLU/BLK wire between the power transistor and the blower motor. ■

14. Turn the ignition switch OFF.
15. Disconnect the jumper wire.
16. Disconnect the climate control unit 30P connector.
17. Check for continuity between body ground and the climate control unit 30P connector No. 11 and No. 12 terminals individually.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wires between the climate control unit and the power transistor. ■

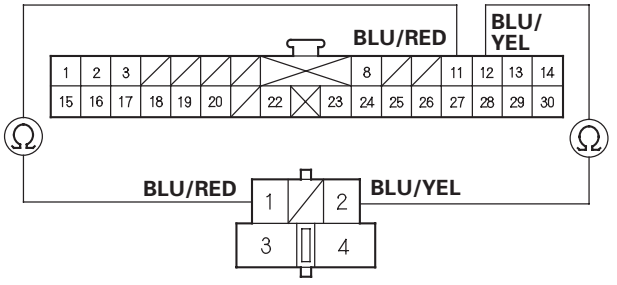
NO—Go to step 18.

(cont'd)

DTC Troubleshooting (cont'd)

18. Check for continuity between the following terminals of the climate control unit 30P connector and the power transistor 4P connector.
    30P: 4P:
    No. 11 No. 1
    No. 12 No. 2

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



POWER TRANSISTOR 4P CONNECTOR
Wire side of female terminals

Is there continuity?

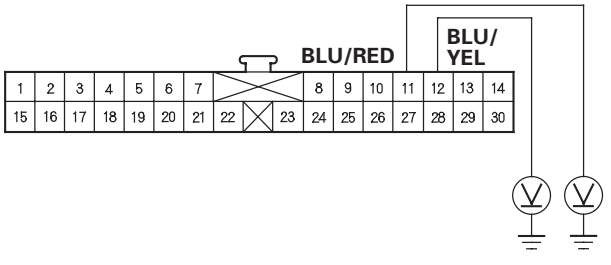
YES—Go to step 19.

NO—Repair open in the wires between the climate control unit and the power transistor. ■

19. Start the engine.

20. Measure the voltage between body ground and the climate control unit 30P connector No. 11 and No. 12 terminals individually.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there voltage?

YES—Repair short to power in the wires. ■

NO—Go to step 21.

21. Reconnect the climate control unit 30P connector.

22. Test the power transistor (see page 21-54).

Is the power transistor OK?

YES—Check for loose wires or poor connections at the climate control unit 30P connector and at the power transistor 4P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

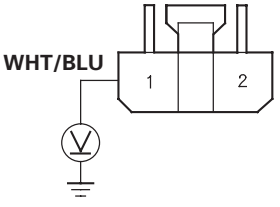
NO—Replace the power transistor. ■

23. Disconnect the jumper wire.

24. Disconnect the blower motor 2P connector.

25. Measure the voltage between the blower motor 2P connector No. 1 terminal and body ground.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Replace the blower motor. ■

NO—Go to step 26.

26. Turn the ignition switch OFF.

27. Remove the blower motor relay from the under-hood fuse/relay box, and test it (see page 22-75).

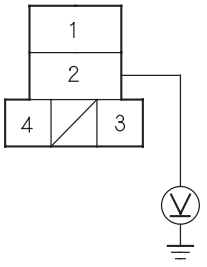
Is the relay OK?

YES—Go to step 28.

NO—Replace the blower motor relay. ■

28. Measure the voltage between the blower motor relay 4P socket No. 2 terminal and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there battery voltage?

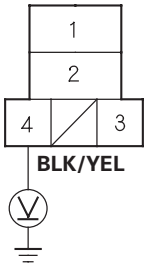
YES—Go to step 29.

NO—Replace the under-hood fuse/relay box (see page 22-72). ■

29. Turn the ignition switch ON (II).

30. Measure the voltage between the blower motor relay 4P socket No. 4 terminal and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there battery voltage?

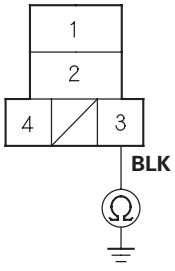
YES—Go to step 31.

NO—Repair open in the wire between the No. 30 (7.5 A) fuse in the under-dash fuse/relay box and the blower motor relay. ■

31. Turn the ignition switch OFF.

32. Check for continuity between the blower motor relay 4P socket No. 3 terminal and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there continuity?

YES—Repair open in the WHT/BLU wire between the blower motor relay and the blower motor. ■

NO—Check for an open in the wire between the blower motor relay and body ground. If the wire is OK, check for poor ground at G202 (see page 22-68). ■

Recirculation Control Motor Circuit Troubleshooting

1. Check the No. 30 (7.5 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 2.

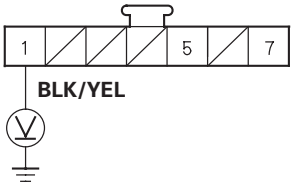
   NO—Replace the fuse, and recheck. If the fuse blows again, check for a short in the No. 30 (7.5 A) fuse circuit. ■

2. Disconnect the recirculation control motor 7P connector.

3. Turn the ignition switch ON (II).

4. Measure the voltage between the recirculation control motor 7P connector No. 1 terminal and body ground.

RECIRCULATION CONTROL MOTOR 7P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 5.

NO—Repair open in the wire between the No. 30 (7.5 A) fuse in the under-dash fuse/relay box and the recirculation control motor. ■

5. Turn the ignition switch OFF.

6. Test the recirculation control motor (see page 21-57).

   Is the recirculation control motor OK?

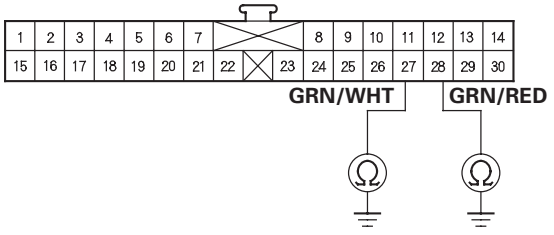
   YES—Go to step 7.

   NO—Replace the recirculation control motor (see page 21-57), or repair the recirculation control linkage or door. ■

7. Disconnect the climate control unit 30P connector.

8. Check for continuity between body ground and the climate control unit 30P connector No. 27 and No. 28 terminals individually.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

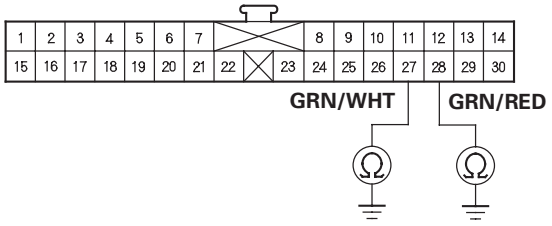
Is there continuity?

YES—Repair short to body ground in the wires between the climate control unit and the recirculation control motor. ■

NO—Go to step 9.

9. Turn the ignition switch ON (II), and check the same terminals for voltage to body ground.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there any voltage?

YES—Repair short to power in the wires between the climate control unit and the recirculation control motor. This short may also damage the climate control unit. Repair the short to power before replacing the climate control unit. ■

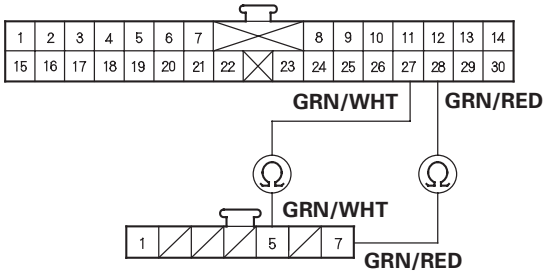
NO—Go to step 10.

10. Turn the ignition switch OFF.

11. Check for continuity between the following terminals of the climate control unit 30P connector and the recirculation control motor 7P connector.

30P:	7P:
No. 27	No. 5
No. 28	No. 7

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



RECIRCULATION CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 30P connector and at the recirculation control motor 7P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wires between the climate control unit and the recirculation control motor. ■

Navigation Communication Line Circuit Troubleshooting

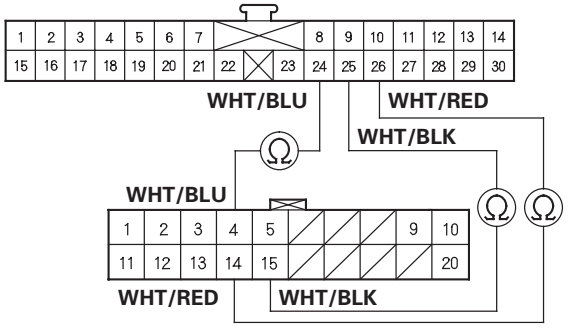
1. Disconnect navigation unit connector A (20P).

2. Disconnect the climate control unit 30P connector.

3. Check for continuity between the following terminals of the climate control unit 30P connector and navigation unit connector A (20P).

30P	20P
No. 24	No. 4
No. 25	No. 15
No. 26	No. 14

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



NAVIGATION UNIT CONNECTOR A (20P)
Wire side of female terminals

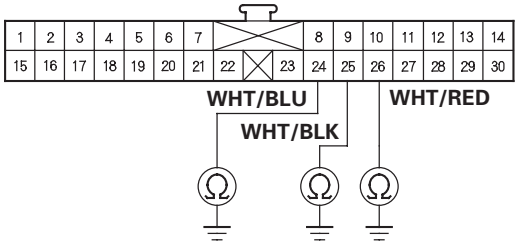
Is there continuity?

YES—Go to step 4.

NO—Repair open in the wires between the climate control unit and the navigation unit. ■

4. Check for continuity between body ground and the climate control unit 30P connector No. 24, 25, and 26 terminals individually.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wires between the climate control unit and the navigation unit. ■

NO—Check for loose wires or poor connections at the climate control unit 30P connector and at the navigation unit connector A (20P). If the connections are good, substitute a known-good climate control unit and/or navigation unit, and recheck. If the symptom/indication goes away, replace the original climate control unit and/or navigation unit. ■

Climate Control Power and Ground Circuit Troubleshooting

1. Check the No. 30 (7.5 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 2.

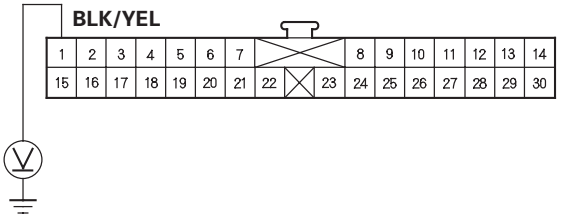
   NO—Replace the fuse, and recheck. If the fuse blows again, check for a short in the No. 30 (7.5 A) fuse circuit. ■

2. Disconnect the climate control unit 30P connector.

3. Turn the ignition switch ON (II).

4. Measure the voltage between the climate control unit 30P connector No. 1 terminal and body ground.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there battery voltage?

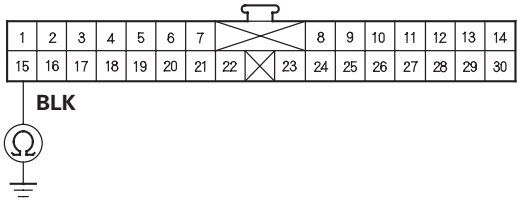
YES—Go to step 5.

NO—Repair an open in the wire between the No. 30 (7.5 A) fuse in the under-dash fuse/relay box and the climate control unit. ■

5. Turn the ignition switch OFF.

6. Check for continuity between the climate control unit 30P connector No. 15 terminal and body ground.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Check for loose wires and poor connections at the climate control unit 30P connector. If connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Check for an open in the wire between the climate control unit and body ground. If the wire is OK, check for poor ground at G402 (see page 22-68). ■

A/C Pressure Switch Circuit Troubleshooting

NOTE:
- Do not use this troubleshooting procedure if any of the following items are operative; condenser fan, radiator fan, A/C compressor. Refer to the symptom troubleshooting index.
- Before doing any symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Check for body DTCs using B-CAN system diagnosis test mode A troubleshooting (see page 22-99).

   Are there any DTCs indicated?

   YES—Do the appropriate troubleshooting for the DTC indicated. ■

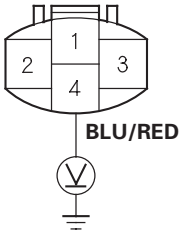
   NO—Go to step 2.

2. Disconnect the A/C pressure switch 4P connector.

3. Turn the ignition switch ON (II).

4. Measure the voltage between the A/C pressure switch 4P connector No. 4 terminal and body ground.

A/C PRESSURE SWITCH 4P CONNECTOR



Wire side of female terminals

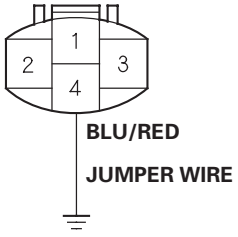
Is there 5 V or more?

YES—Go to step 5.

NO—Go to step 19.

5. Connect the A/C pressure switch 4P connector No. 4 terminal to body ground with the jumper wire.

A/C PRESSURE SWITCH 4P CONNECTOR



Wire side of female terminals

6. Start the engine

   Does the compressor and fans come on?

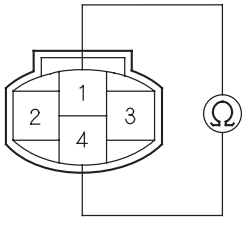
   YES—Go to step 7.

   NO—Check the connection of under-hood fuse/relay box connector H (18P) No. 3 terminal. If the connection is OK, replace the under-hood fuse/relay box (see page 22-72). ■

7. Disconnect the jumper wire, and turn the ignition switch OFF.

8. Check for continuity between the A/C pressure switch No. 1 and No. 4 terminals.

A/C PRESSURE SWITCH



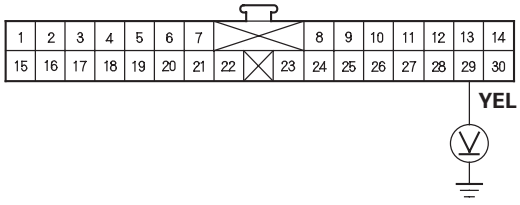
Is there continuity?

YES—Go to step 9.

NO—Go to step 18.

9. Reconnect the A/C pressure switch 4P connector.
10. Disconnect climate control unit 30P connector.
11. Turn the ignition switch ON (II).
12. Measure the voltage between the climate control unit 30P connector No. 29 terminal and body ground.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

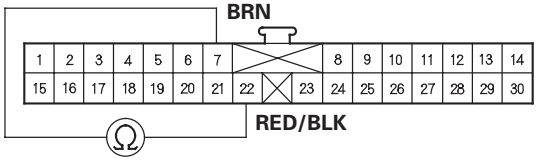
Is there 5 V or more?

YES—Go to step 13.

NO—Repair the open in the wire between the climate control unit and the A/C pressure switch. ■

13. Turn the ignition switch OFF.
14. Measure the evaporator temperature sensor resistance between the climate control unit 30P connector No. 7 and No. 22 terminals.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is the resistance less than 24 kΩ ?

YES—Go to step 15.

NO—Test the evaporator temperature sensor (see page 21-53).

15. Reconnect the climate control unit 30P connector.
16. Turn the ignition switch ON (II).
17. Check that blower motor operates at all speeds.

Does the blower motor operate at all speeds?

YES—Check for loose wires or poor connections at the climate control unit 30P connector and at the A/C pressure switch 4P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/ indication goes away, replace the original climate control unit. ■

NO—Repair the problem in the blower motor circuit. ■

(cont'd)

A/C Pressure Switch Circuit Troubleshooting (cont'd)

18. Check for proper A/C system pressure.

    Is the pressure within specifications?

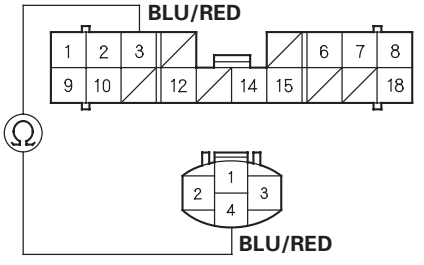
    YES—Replace the A/C pressure switch. ■

    NO—Repair the A/C pressure problem. ■

19. Disconnect under-hood relay box connector H (18P).

20. Check for continuity between the A/C pressure switch connector No. 4 terminal and under-hood relay box connector H (18P) No. 3 terminal.

UNDER-HOOD RELAY BOX CONNECTOR H (18P)
Wire side of female terminals



A/C PRESSURE SWITCH 4P CONNECTOR
Wire side of female terminals

Is there continuity?

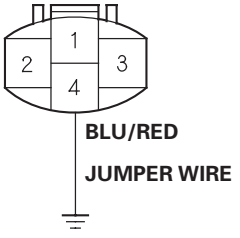
YES—Go to step 21.

NO—Repair open in the wire between the relay control module and the A/C pressure switch. ■

21. Reconnect under-hood relay box connector H (18P).

22. Connect the A/C pressure switch connector No. 4 terminal to body ground with a jumper wire.

A/C PRESSURE SWITCH 4P CONNECTOR



Wire side of female terminals

23. Start the engine.

    Do the A/C compressor and fans come on?

    YES—Replace the relay control module. ■

    NO—Check for loose wires or poor connections. If the connections are good, check the grounds. If the grounds are good, replace the relay control module. ■

In-car Temperature Sensor Test

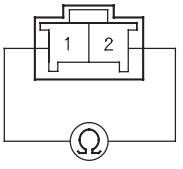
1. Remove the in-car temperature sensor (see page 21-133).

2. Test the in-car temperature sensor while holding it in front of the dashboard center vent.

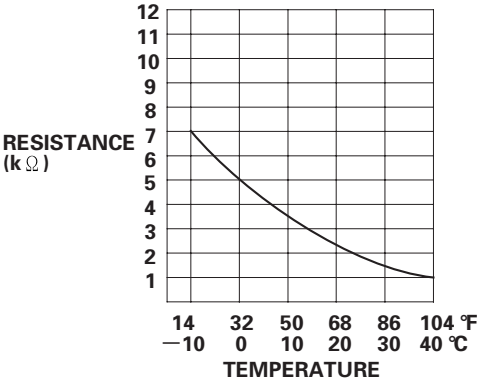
   - Measure the resistance with the system set to Max Cool.
   - Measure the resistance with the system set to Max Hot.

3. Compare the resistance reading between the No. 1 and No. 2 terminals of the in-car temperature sensor with the specifications shown in the graph; the resistance should be within the specifications.

IN-CAR TEMPERATURE SENSOR



Terminal side of male terminals

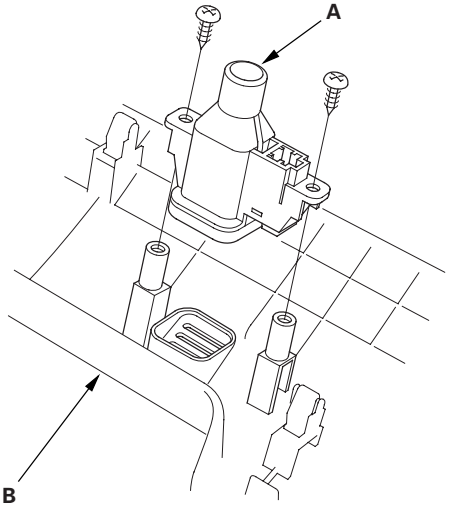


4. If the resistance is not as specified, replace the in-car temperature sensor (see page 21-133).

In-car Temperature Sensor Replacement

1. Remove the driver's dashboard lower cover (see page 20-83).

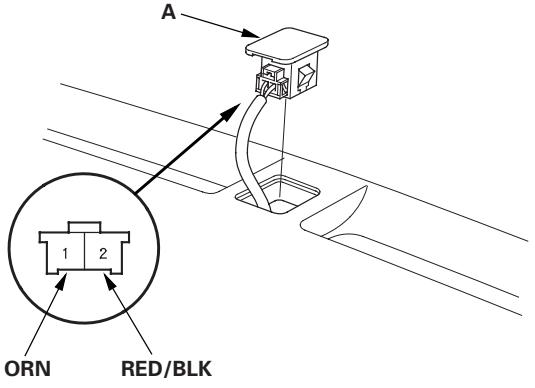
2. Remove the self-tapping screws and the in-car temperature sensor (A) from the driver's dashboard lower cover (B).



3. Install the sensor in the reverse order of removal. Be sure to connect the air hose securely.

Sunlight Sensor Test

1. Remove the sunlight sensor (A) from the dashboard.



2. Turn the ignition switch ON (II). Measure the voltage between the terminals with the (+) probe on the No. 1 terminal and the (−) probe on the No. 2 terminal with the connector connected.

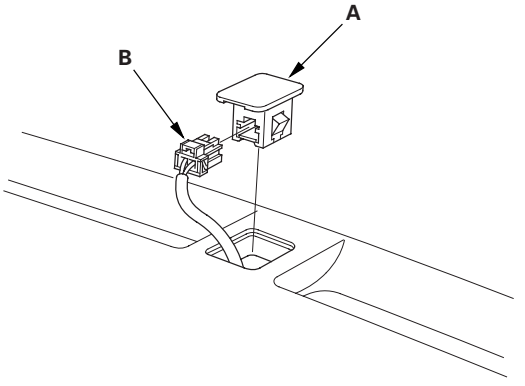
   NOTE: The voltage readings will not change under the light of a flashlight or a fluorescent lamp.

   Voltage should be:
   - 3.6—3.7 V or more with the sensor out of direct sunlight.
   - 3.3—3.5 V or less with the sensor in direct sunlight.

3. If the voltage is not as specified, replace the sunlight sensor (see page 21-134).

Sunlight Sensor Replacement

1. Remove the sunlight sensor (A) from the dashboard, then disconnect the connector (B). Be careful not to damage the sensor and the dashboard.



2. Install the sensor in the reverse order of removal.

Driver's Air Mix Control Motor Test

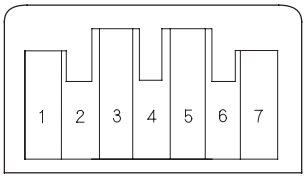
NOTE: Before testing, check for HVAC DTCs (see page 21-8).

1. Disconnect the 7P connector from the driver's air mix control motor.

   NOTICE
   Incorrectly applying power and ground to the driver's air mix control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the driver's air mix control motor, and ground the No. 2 terminal; the driver's air mix control motor should run, and stop at Max Cool. If it doesn't, reverse the connections; the driver's air mix control motor should run, and stop at Max Hot. When the driver's air mix control motor stops running, disconnect battery power immediately.

DRIVER'S AIR MIX CONTROL MOTOR



3. If the driver's air mix control motor did not run in step 2, remove it, then check the driver's air mix control linkage and door for smooth movement.

   - If the linkage and door move smoothly, replace the driver's air mix control motor (see page 21-135).
   - If the linkage or door sticks or binds, repair them as needed.
   - If the driver's air mix control motor runs smoothly, go to step 4.

4. Measure the resistance between the No. 5 and No. 7 terminals. It should be between 4.2 to 7.8 kΩ.

5. Reconnect the driver's air mix control motor 7P connector, then turn the ignition switch ON (II).

6. Using the backprobe set, measure the voltage between the No. 3 and No. 7 terminals.

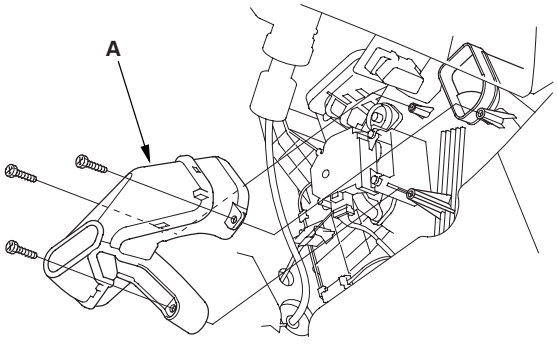
   Max Cool: About 0.5 V
   Max Hot: About 4.5 V

7. If either the resistance or voltage readings are not as specified, replace the driver's air mix control motor (see page 21-135).

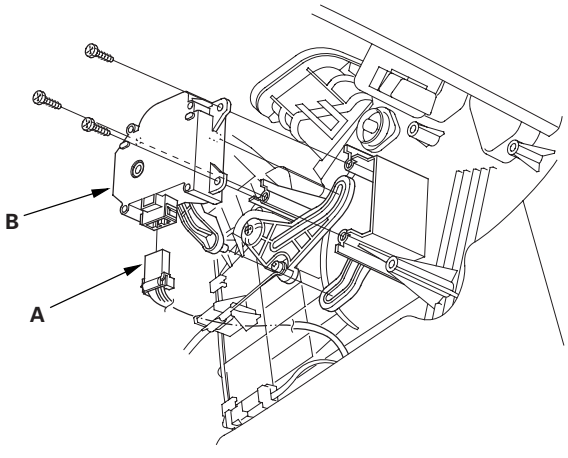
Driver's Air Mix Control Motor Replacement

1. Remove the driver's dashboard lower cover (see page 20-83).

2. Remove the self-tapping screws and the duct (A).



3. Disconnect the 7P connector (A) from the driver's air mix control motor (B). Remove the self-tapping screws and the driver's air mix control motor from the heater unit.



4. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

Passenger's Air Mix Control Motor Test

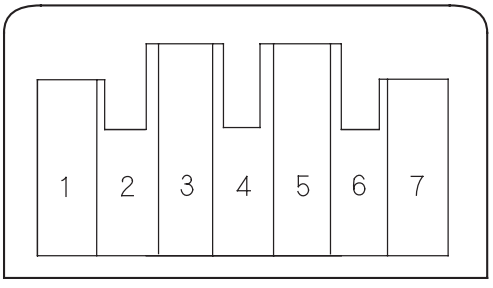
NOTE: Before testing, check for HVAC DTCs (see page 21-8).

1. Disconnect the 7P connector from the passenger's air mix control motor.

   NOTICE
   Incorrectly applying power and ground to the passenger's air mix control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the passenger's air mix control motor, and ground the No. 2 terminal; the passenger's air mix control motor should run, and stop at Max Cool. If it doesn't, reverse the connections; the passenger's air mix control motor should run, and stop at Max Hot. When the passenger's air mix control motor stops running, disconnect battery power immediately.

PASSENGER'S AIR MIX CONTROL MOTOR



3. If the passenger's air mix control motor did not run in step 2, remove it, then check the passenger's air mix control linkage and door for smooth movement.

   - If the linkage and door move smoothly, replace the passenger's air mix control motor (see page 21-137).
   - If the linkage or door sticks or binds, repair them as needed.
   - If the passenger's air mix control motor runs smoothly, go to step 4.

4. Measure the resistance between the No. 5 and No. 7 terminals. It should be between 4.2 to 7.8 kΩ.

5. Reconnect the passenger's air mix control motor 7P connector, then turn the ignition switch ON (II).

6. Using the backprobe set, measure the voltage between the No. 3 and No. 7 terminals.

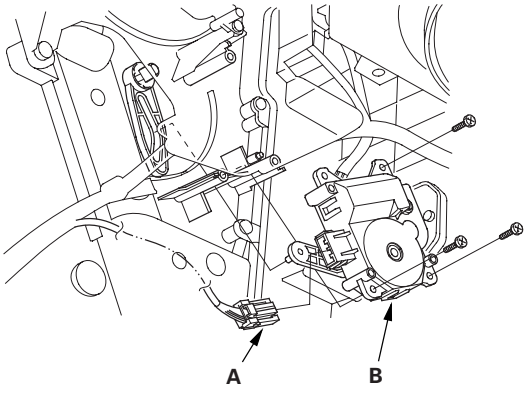
   Max Cool: About 1.5 V
   Max Hot: About 4.5 V

7. If either the resistance or voltage readings are not as specified, replace the passenger's air mix control motor (see page 21-137).

Passenger's Air Mix Control Motor Replacement

1. Open the glove box. Remove the damper and the glove box stop on each side, then let the glove box hang down (see page 20-85).

2. Disconnect the 7P connector (A) from the passenger's air mix control motor. Remove the self-tapping screws and the passenger's air mix control motor (B) from the heater unit.

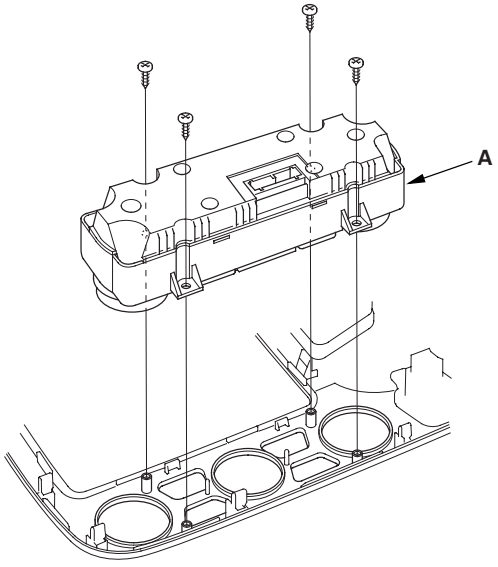


3. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

Climate Control Unit Removal/ Installation

1. Remove the instrument panel (see page 20-81).

2. Remove the self-tapping screws and the climate control unit (A).



3. Install the control unit in the reverse order of removal. After installation, operate the various functions to see whether works properly.

4. Run the self-diagnostic function to confirm that there are no problems in the system (see page 21-83).

SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If electrical maintenance is required)

The Ridgeline SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the sides of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items requires special precautions and tools, and should be done by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work should be done by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.

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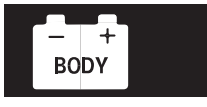
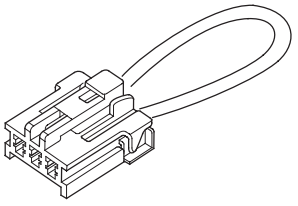


Special Tools

Ref. No.	Tool Number	Description	Qty
①	07WAZ-001010A	MPCS (MCIC) Service Connector	1
②	07TAZ-001020A	Back Probe Adaptor	1



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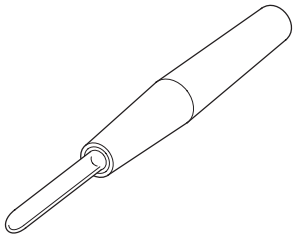


②

General Troubleshooting Information

Tips and Precautions

Before Troubleshooting

1. Check applicable fuses in the appropriate fuse/relay box.

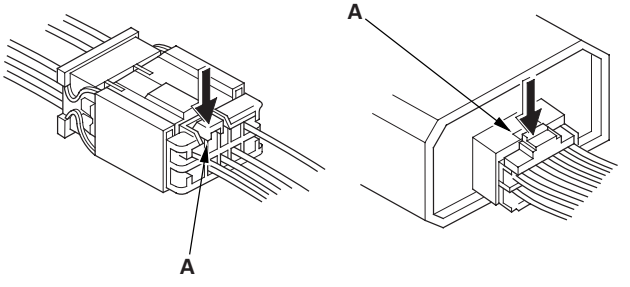
2. Check the battery for damage, state of charge, and clean and tight connections.

NOTICE

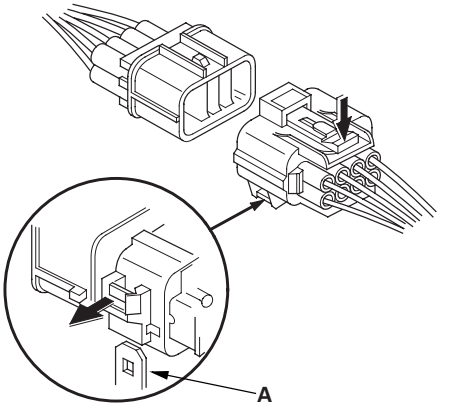
- Do not quick-charge a battery unless the battery ground cable has been disconnected, otherwise you will damage the alternator diodes.
- Do not attempt to crank the engine with the battery ground cable loosely connected or you will severely damage the wiring.

Handling Connectors

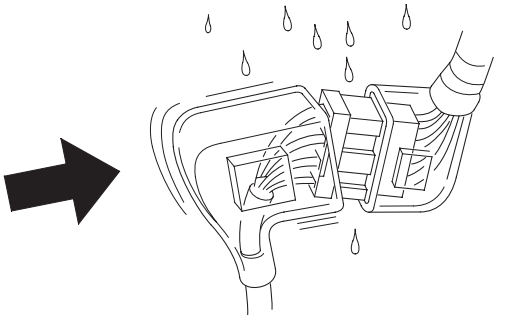
- Make sure the connectors are clean and have no loose wire terminals.
- Make sure multiple cavity connectors are packed with dielectric grease (except watertight connectors).
- All connectors have push-down release type locks (A).



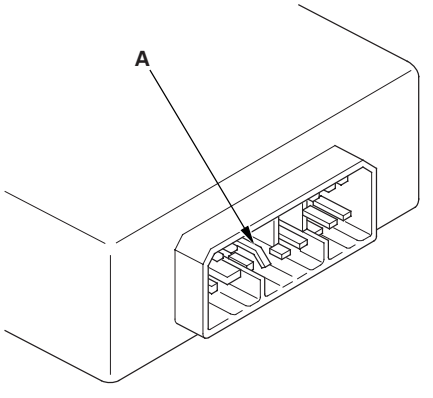
- Some connectors have a clip on their side used to attach them to a mount bracket on the body or on another component. This clip has a pull type lock.
- Some mounted connectors cannot be disconnected unless you first release the lock and remove the connector from its mount bracket (A).



- Never try to disconnect connectors by pulling on their wires; pull on the connector halves instead.
- Always reinstall plastic covers.



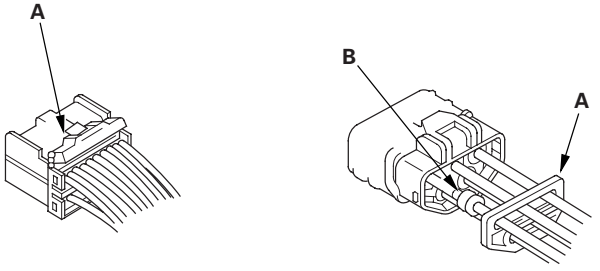
- Before connecting connectors, make sure the terminals (A) are in place and not bent.



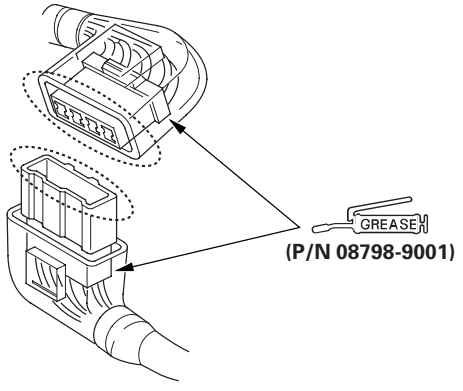
(cont'd)

General Troubleshooting Information (cont'd)

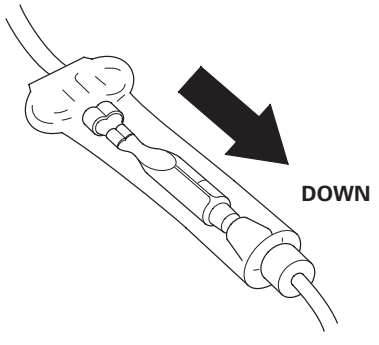
- Check for loose retainer (A) and rubber seals (B).



- The backs of some connectors are packed with dielectric grease. Add grease if necessary. If the grease is contaminated, replace it.

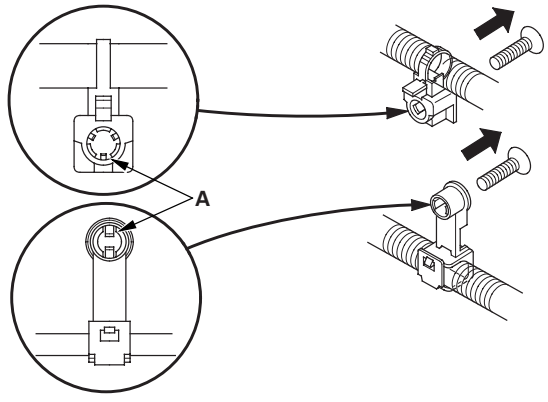


- Insert the connector all the way and make sure it is securely locked.
- Position wires so that the open end of the cover faces down.

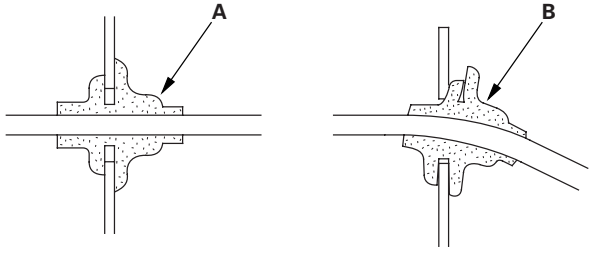


Handling Wires and Harnesses

- Secure wires and wire harnesses to the frame with their respective wire ties at the designated locations.
- Remove clips carefully; don't damage their locks (A).

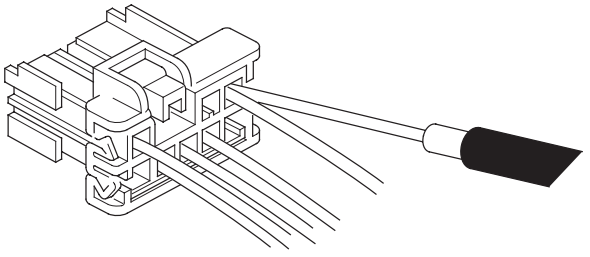


- After installing harness clips, make sure the harness doesn't interfere with any moving parts.
- Keep wire harnesses away from exhaust components and other hot parts, from sharp edges of brackets and holes, and from exposed screws and bolts.
- Seat grommets in their grooves properly (A). Do not leave grommets distorted (B).

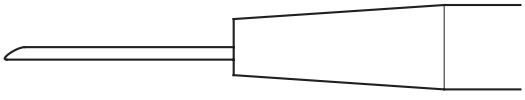


Testing and Repairs

- Do not use wires or harnesses with broken insulation. Replace them or repair them by wrapping the break with electrical tape.
- Never attempt to modify, splice, or repair SRS wiring. If there is an open or damage is SRS wiring or terminals, replace the harness.
- After installing parts, make sure that no wires are pinched under them.
- When using electrical test equipment, follow the manufacturer's instructions and those described in this manual.
- If possible, insert the probe of the tester from the wire side (except waterproof connector).



- Use back probe adaptor 07TAZ-001020A.



- Refer to the instructions in the Honda Terminal Kit for identification and replacement of connector terminals.

Five-step Troubleshooting

1. Verify The Complaint:
   Turn on all the components in the problem circuit to verify the customer complaint. Note the symptoms. Do not begin disassembly or testing until you have narrowed down the problem area.

2. Analyze The Schematic:
   Look up the schematic for the problem circuit. Determine how the circuit is supposed to work by tracing the current paths from the power feed through the circuit components to ground. If several circuits fail at the same time, the fuse or a ground is a likely cause.

   Based on the symptoms and your understanding of the circuit operation, identify one or more possible causes of the problem.

3. Isolate The Problem By Testing The Circuit:
   Make circuit tests to check the diagnosis you made in step 2. Keep in mind that a logical, simple procedure is the key to efficient troubleshooting. Test for the most likely cause of failure first. Try to make tests at points that are easily accessible.

4. Fix The Problem:
   Once the specific problem is identified, make the repair. Be sure to use proper tools and safe procedures.

5. Make Sure The Circuit Works:
   Turn on all components in the repaired circuit in all modes to make sure you've fixed the entire problem. If the problem was a blown fuse, be sure to test all of the circuits on the fuse. Make sure no new problems turn up and the original problem does not recur.

(cont'd)

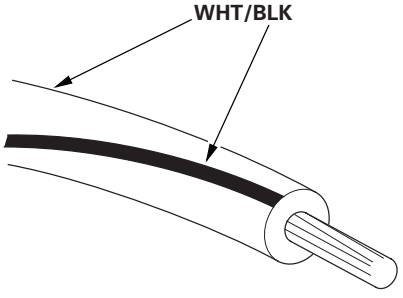
General Troubleshooting Information (cont'd)

Wire Color Codes

The following abbreviations are used to identify wire colors in the circuit schematics:

WHT	White
YEL	Yellow
BLK	Black
BLU	Blue
GRN	Green
RED	Red
ORN	Orange
PNK	Pink
BRN	Brown
GRY	Gray
PUR	Purple
LT BLU	Light Blue
LT GRN	Light Green

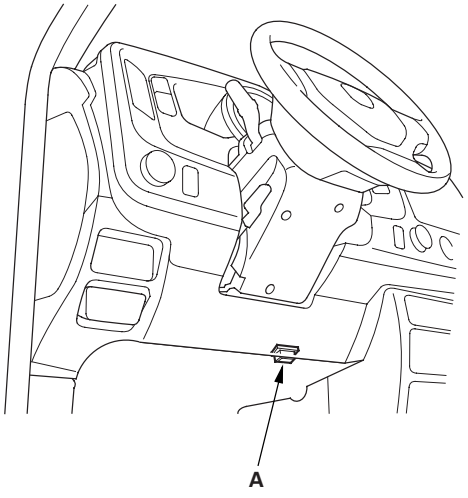
The wire insulation has one color or one color with another color stripe. The second color is the stripe.



How to Check for DTCs with the Honda Diagnostic System (HDS)

NOTE: For specific operations, refer to the user's manual that came with the Honda Diagnostic System (HDS).

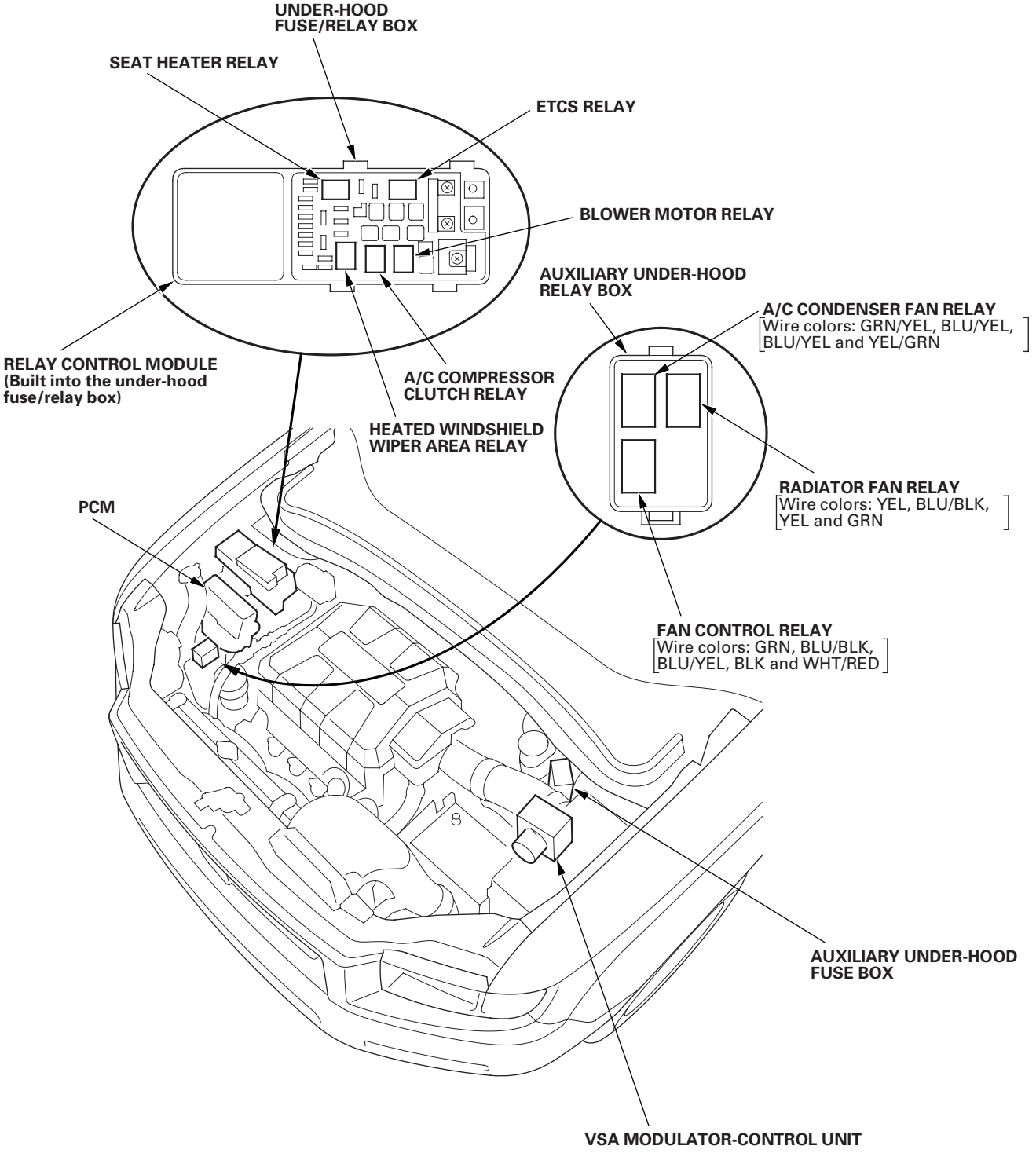
1. Connect the HDS to the Data Link Connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle. If it doesn't, troubleshoot the DLC circuit (see page 11-194).
4. Enter BODY ELECTRICAL, then select the TEST MODE menu.
5. Check for DTCs with the HDS.
6. If any DTCs are indicated, note them, and go to the indicated DTC troubleshooting.

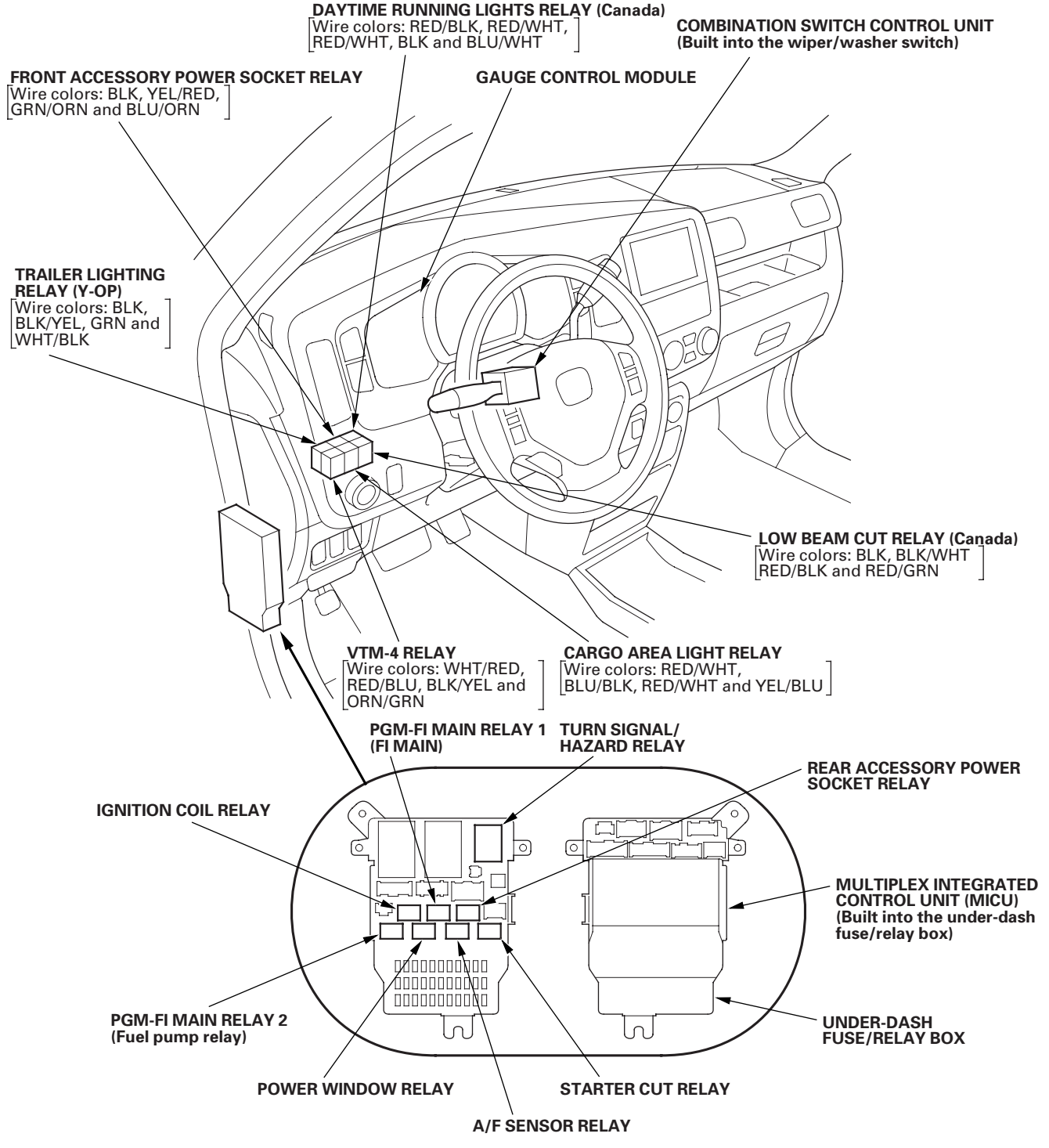
Relay and Control Unit Locations

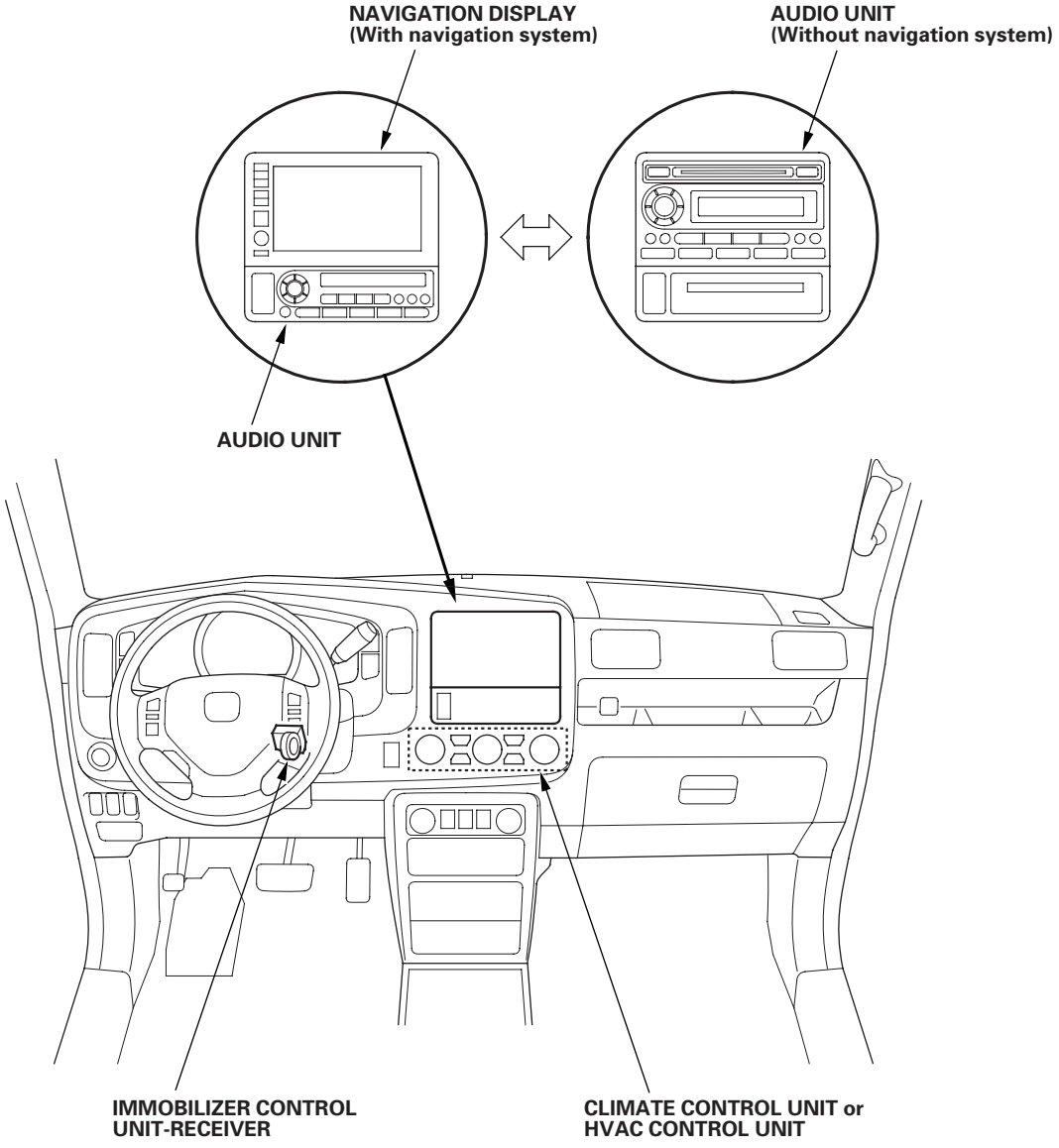
Engine Compartment



Relay and Control Unit Locations

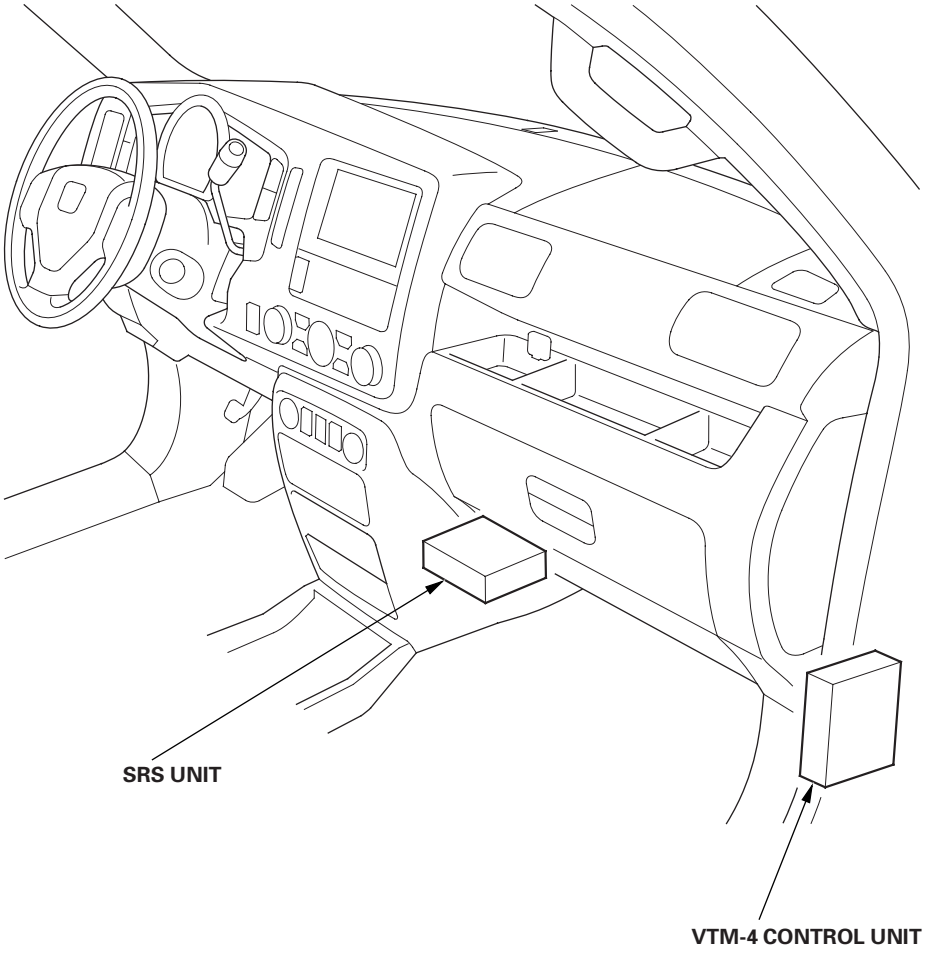
Dashboard



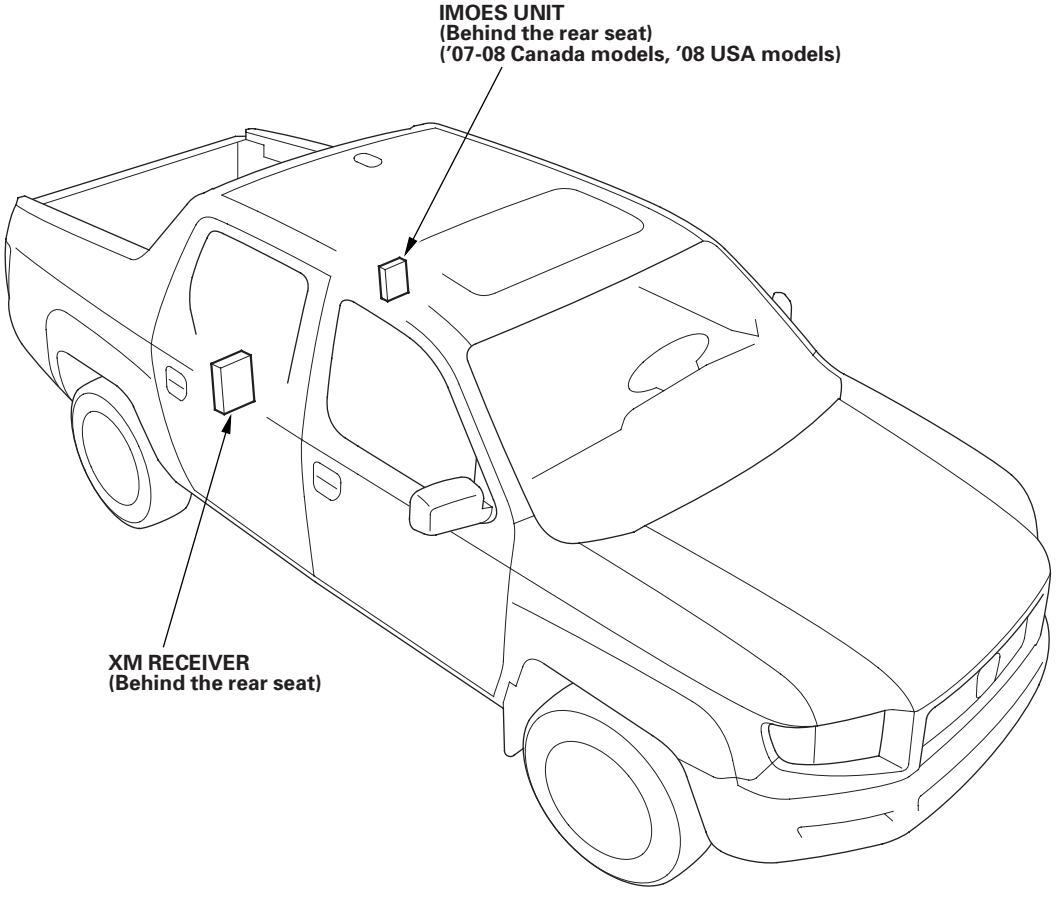

NAVIGATION DISPLAY
(With navigation system)
AUDIO UNIT
(Without navigation system)
AUDIO UNIT
IMMOBILIZER CONTROL
UNIT-RECEIVER
CLIMATE CONTROL UNIT or
HVAC CONTROL UNIT

(cont'd)

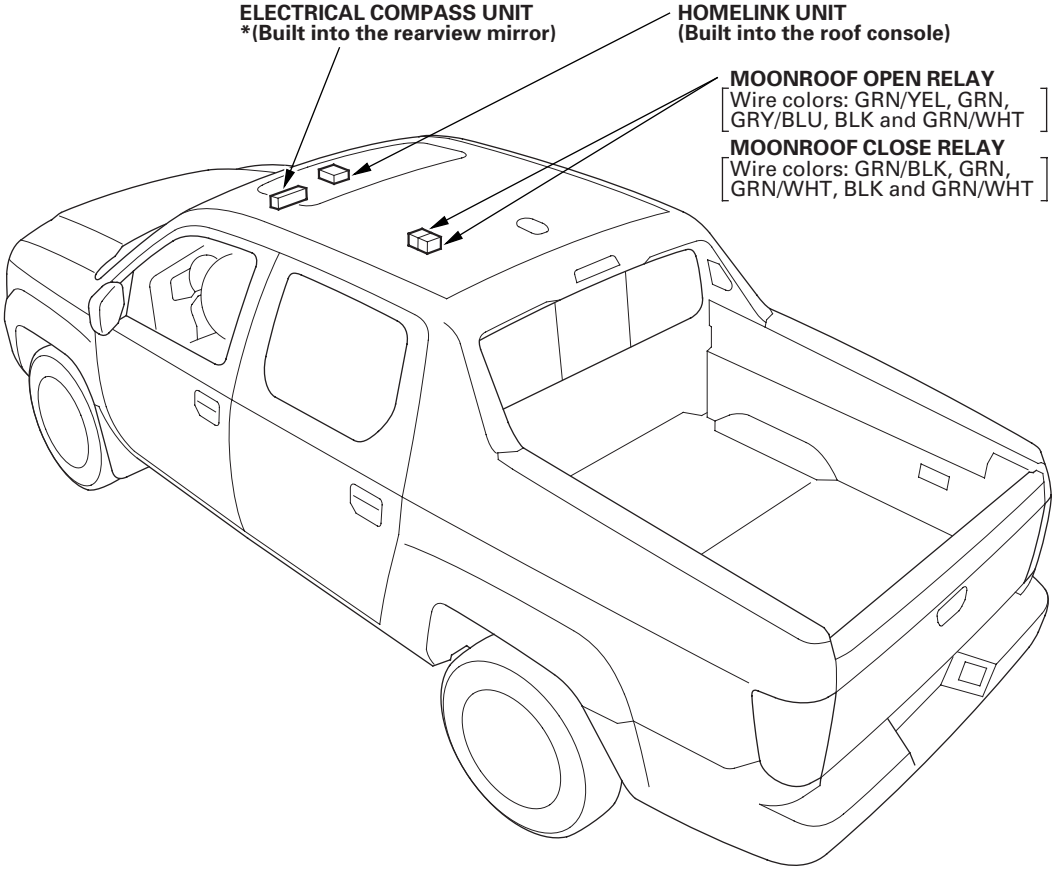
Dashboard (cont'd)



Rear Seat-back



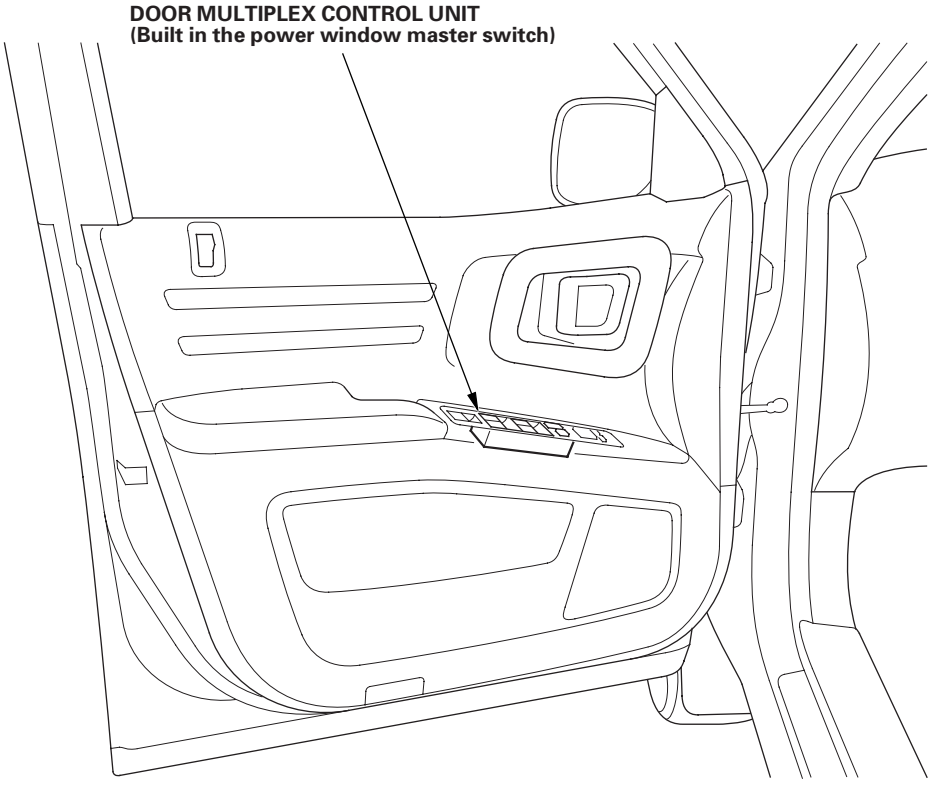
Roof



*: RTL, RTS, and EXL models

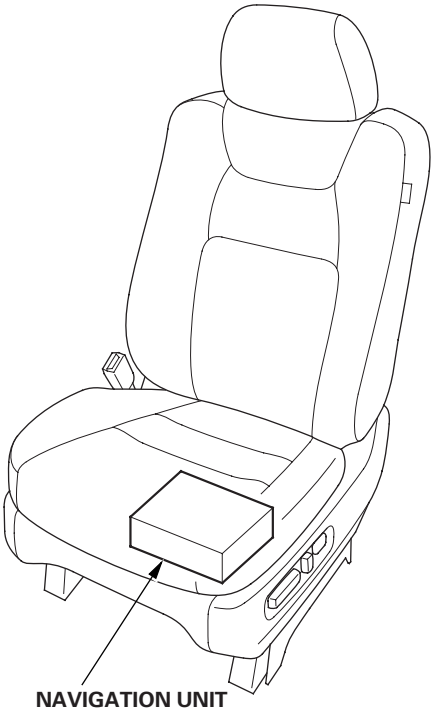
Door

Driver's Door

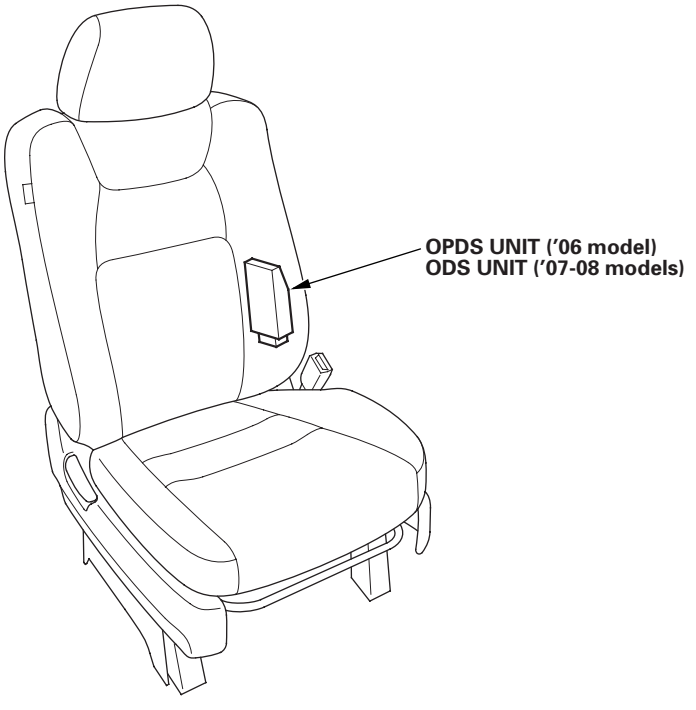


Seat

Driver's Seat



Passenger's Seat



Connector Index

Identification numbers have been assigned to in-line connectors, junction connectors, and terminals. The number is preceded by the letter "C" for connectors "G" for ground terminals or "T" for non-ground terminals.

Harness	Location			
	Engine Compartment	Dashboard	Others (Floor, Seat, Door, Trunk, and Roof)	Notes
Starter cable	T1, T2, T5 and (+)			(see page 22-16)
Battery ground cable	G1 and (−)			(see page 22-16)
Engine ground cable A	G2, T4			(see page 22-16)
Engine ground cable B	T3 and (−)			(see page 22-16)
Alternator +B cable	T101, T102			(see page 22-16)
Engine wire harness	C101 through C105, and C151, G101 and G102			(see page 22-18)
Shift solenoid/torque converter clutch solenoid wire harness	C151			(see page 22-20)
Right engine compartment wire harness	C101 and C102, G201 and G202	C201 through C206		(see page 22-22)
Left engine compartment wire harness	G301 and G302	C203, C301 and C302		(see page 22-26)
Dashboard wire harness (left branch)		C204 through C206, C301, C302, C401 through C403, C451, C452, G401, G403		(see page 22-28)
Dashboard wire harness (right branch)		C202, C404 through C409, G402, G404 and G405		(see page 22-32)
Floor wire harness (left branch)		C402 and C403, C501 and C502	C503 C506, C509, C510 and C511, G502	(see page 22-36)
Floor wire harness (right branch)		C201, C404 through C406	C504, C505, C507 and C508, G501	(see page 22-38)
In-Bed trunk subharness			C601	(see page 22-52)
Rear wire harness			C509, C510, C601 through C603, G601 and G602	(see page 22-42)
Roof wire harness		C401, C501	G551	(see page 22-40)
Driver's door wire harness			C453 through C455	(see page 22-44) *1
Driver's door wire harness			C453 and C454	(see page 22-46) *2
Driver's door subharness		C502	C453 and C454	(see page 22-44) *1
Driver's door subharness		C502	C453 and C454	(see page 22-46) *2
Security indicator subharness			C455	(see page 22-44) *1
Front passenger's door wire harness		C408		(see page 22-48)
Right rear door wire harness			C507	(see page 22-50)
Left rear door wire harness			C506	(see page 22-49)
Cable reel subharness				(see page 22-51)
A/C wire harness		C407		(see page 22-53)
Driver's seat wire harness			C503, C851 and C852	(see page 22-54)
Power lumber support subharness			C851	(see page 22-54)
Recline motor subharness			C852	(see page 22-54)
Seat position sensor harness ('07-08 models)			C511	(see page 22-54)
Front passenger's seat wire harness			C504, C801	(see page 22-56)
OPDS unit wire harness ('06 model)			C801	(see page 22-56)
ODS unit wire harness ('07-08 models)			C801	(see page 22-56)
Center console subharness			C505	(see page 22-58)
Ignition switch harness				(see page 22-57)
Rear differential subharness A			C602	(see page 22-59)
Rear differential subharness B			C603	(see page 22-59)

* 1:RTS, RTL, and EXL models
* 2:RT, RTX, and LX models

Connector to Harness Index

Starter Cable

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
T1 T2 T5	1 4 2		Right side of engine compartment Middle of engine compartment Left side of engine compartment	Under-hood fuse/relay box Starter motor Auxiliary under-hood fuse box	
(+)			Battery	Battery positive terminal	

Alternator +B Cable

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
T101	9		Right side of engine compartment	Under-hood fuse/relay box	
T102	6		Front of engine compartment	Alternator B terminal	

Battery Ground Cable

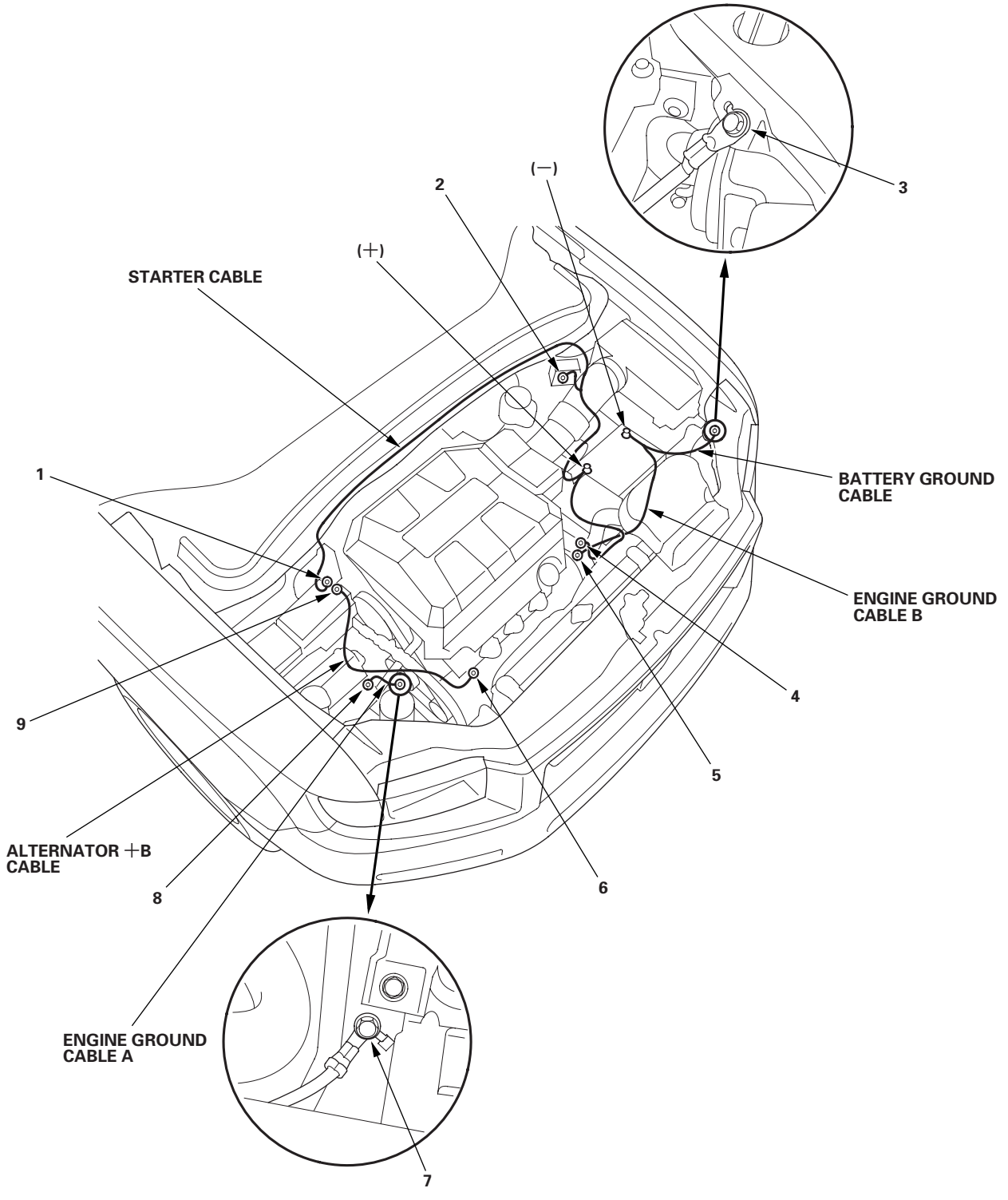
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
G1	3		Left side of engine compartment	Body ground, via engine ground cable	
(−)			Battery	Battery negative terminal	

Engine Ground Cable A

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
G2	7		Right side engine compartment	Body ground, via engine ground cable	
T4	8		Right side engine compartment	Right side engine mount	

Engine Ground Cable B

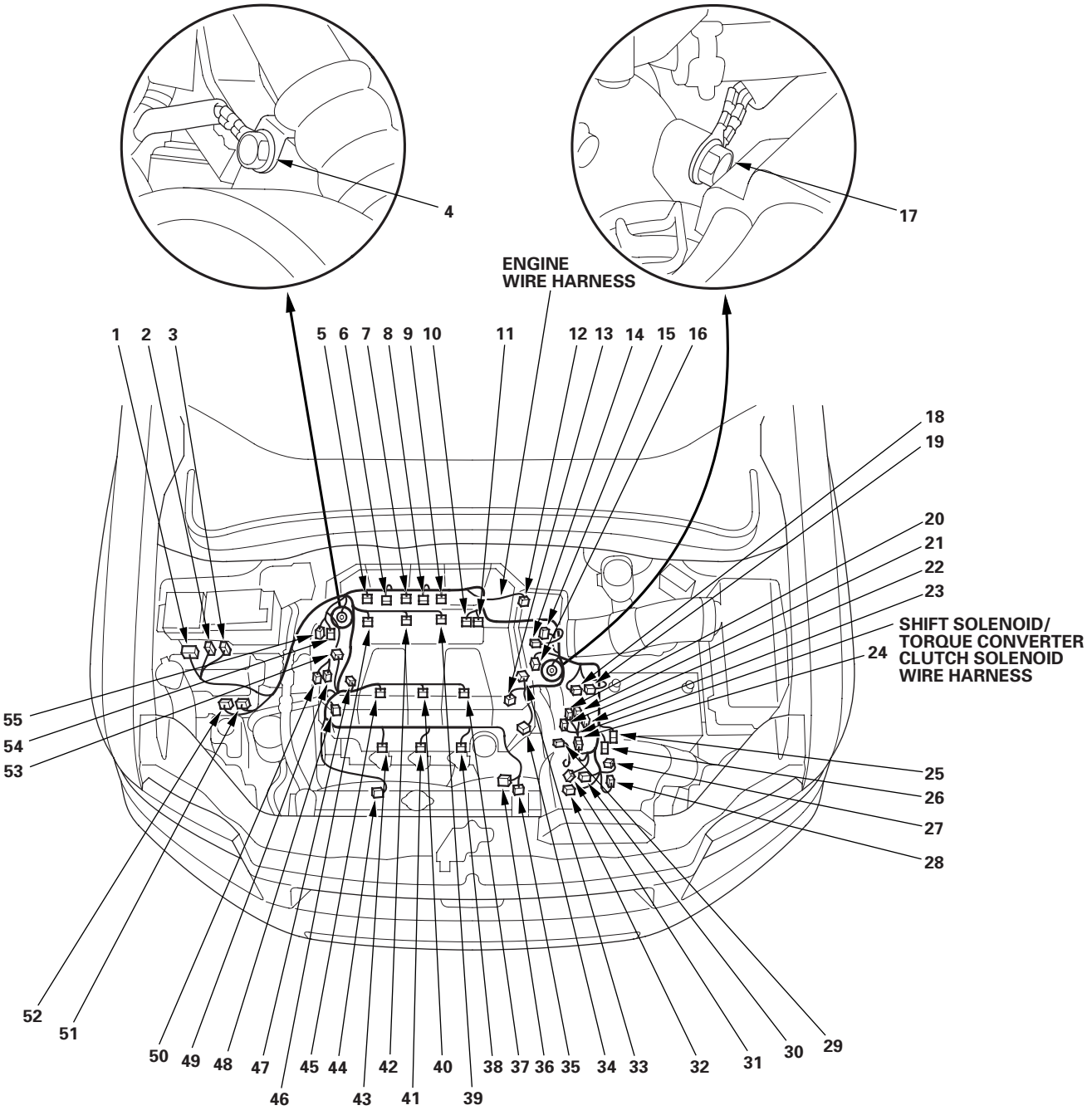
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
T3	5		Left side of engine compartment	Transmission housing	
(−)			Battery	Battery negative terminal	


(−)
2
3
(+)
STARTER CABLE
1
BATTERY GROUND CABLE
ENGINE GROUND CABLE B
4
9
5
ALTERNATOR +B CABLE
8
6
ENGINE GROUND CABLE A
7

Connector to Harness Index (cont'd)

Engine Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
A/F sensor, front (Bank 2, sensor 2)	36	8	Cylinder head		
A/F sensor, rear (Bank 1, sensor 1)	10	8	Exhaust manifold (front bank)		
Alternator	44	4	Middle of engine compartment		
A/T clutch pressure control valve A	26	2	Transmission housing		
A/T clutch pressure control valve B	25	2	Transmission housing		
A/T clutch pressure control valve C	18	2	Transmission housing		
ATF temperature sensor	27	2	Transmission housing		
CMP sensor	48	3	Right side of engine compartment		
CKP sensor	54	6	Right side of engine compartment		
ECT sensor 1	13	2	Left side of engine compartment		
ECT sensor 2	16	2	Left side of engine compartment		
EGR valve and valve position sensor	34	6	Middle of engine compartment		
Engine oil pressure switch	49	1	Right side of engine compartment		
EVAP canister purge valve	12	2	Middle of engine compartment		
IAT sensor	33	2	Middle of engine compartment		
Ignition coil No. 1	5	3	Middle of engine compartment		
Ignition coil No. 2	7	3	Middle of engine compartment		
Ignition coil No. 3	9	3	Middle of engine compartment		
Ignition coil No. 4	43	3	Middle of engine compartment		
Ignition coil No. 5	41	3	Middle of engine compartment		
Ignition coil No. 6	38	3	Middle of engine compartment		
Injector No. 1	46	2	Middle of engine compartment		
Injector No. 2	42	2	Middle of engine compartment		
Injector No. 3	39	2	Middle of engine compartment		
Injector No. 4	45	2	Middle of engine compartment		
Injector No. 5	40	2	Middle of engine compartment		
Injector No. 6	37	2	Middle of engine compartment		
Input shaft (mainshaft) speed sensor	31	3	Transmission housing		
Intake manifold tuning (IMT) actuator	53	5	Right side of engine compartment		
Knock sensor	47	1	Right side of engine compartment		
Manifold absolute pressure (MAP) sensor	14	3	Middle of engine compartment		
Output shaft (countershaft) speed sensor	30	3	Transmission housing		
PCM connector B	52	44	Right side of engine compartment		
PCM connector C	51	44	Right side of engine compartment		
Rocker arm oil pressure switch (VTEC oil pressure switch)	50	2	Right side of engine compartment		
Rocker arm control solenoid valve (VTEC solenoid valve)	55	1	Right side of engine compartment		
Secondary heated oxygen sensor (SHO2), front (Bank 2, Sensor 2)	35	4	Middle of engine compartment		
Secondary heated oxygen sensor (SHO2), rear (Bank 1, Sensor 2)	11	4	Middle of engine compartment		
Starter solenoid	29	1	Left side of engine compartment		
Throttle body	15	6	Left side of engine compartment		
Transmission range switch	28	10	Transmission housing		
3rd clutch transmission fluid pressure switch	32	1	Transmission housing		
4th clutch transmission fluid pressure switch	19	1	Transmission housing		


4
17
ENGINE
WIRE HARNESS
1 2 3
5 6 7 8 9 10
11
12 13 14 15 16
18
19
20
21
22
23
24
SHIFT SOLENOID/
TORQUE CONVERTER
CLUTCH SOLENOID
WIRE HARNESS
25
26
27
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(cont'd)

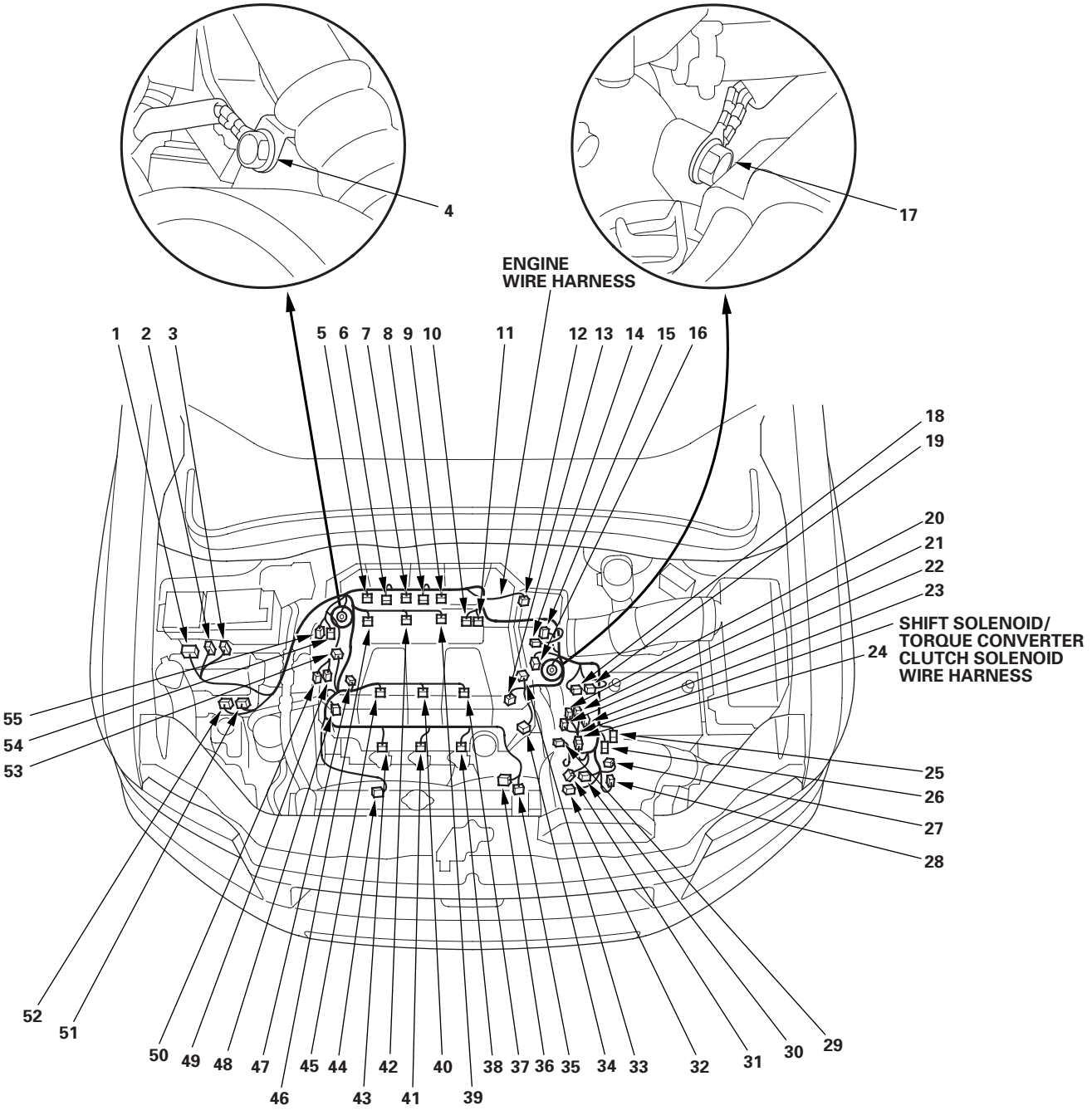
Connector to Harness Index (cont'd)

Engine Wire Harness (cont'd)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
C101	1	23	Right side of engine compartment	Right engine compartment wire harness (see page 22-22)	
C102	3	2	Right side of engine compartment	Right engine compartment wire harness (see page 22-22)	
C103 (Junction connector)	6	24	Middle of engine compartment		
C104 (Junction connector)	8	24	Middle of engine compartment		
C105 (Junction connector)	2	24	Right side of engine compartment		
C151	24	5	Left side of engine compartment	Shift solenoid/Torque converter clutch solenoid wire harness	
G101	17		Left side of engine compartment	Body ground, via engine wire harness	
G102	4		Right side of engine compartment	Body ground, via engine wire harness	

Shift Solenoid/Torque Converter Clutch Solenoid Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Shift solenoid valve A	22	1	Left side of engine compartment		
Shift solenoid valve B	23	1	Left side of engine compartment		
Shift solenoid valve C	20	1	Left side of engine compartment		
Torque converter clutch solenoid valve	21	1	Left side of engine compartment		
C151	24	5	Left side of engine compartment	Engine wire harness	


4
17
ENGINE
WIRE HARNESS
1 2 3
5 6 7 8 9 10
11
12 13 14 15 16
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23
24
SHIFT SOLENOID/
TORQUE CONVERTER
CLUTCH SOLENOID
WIRE HARNESS
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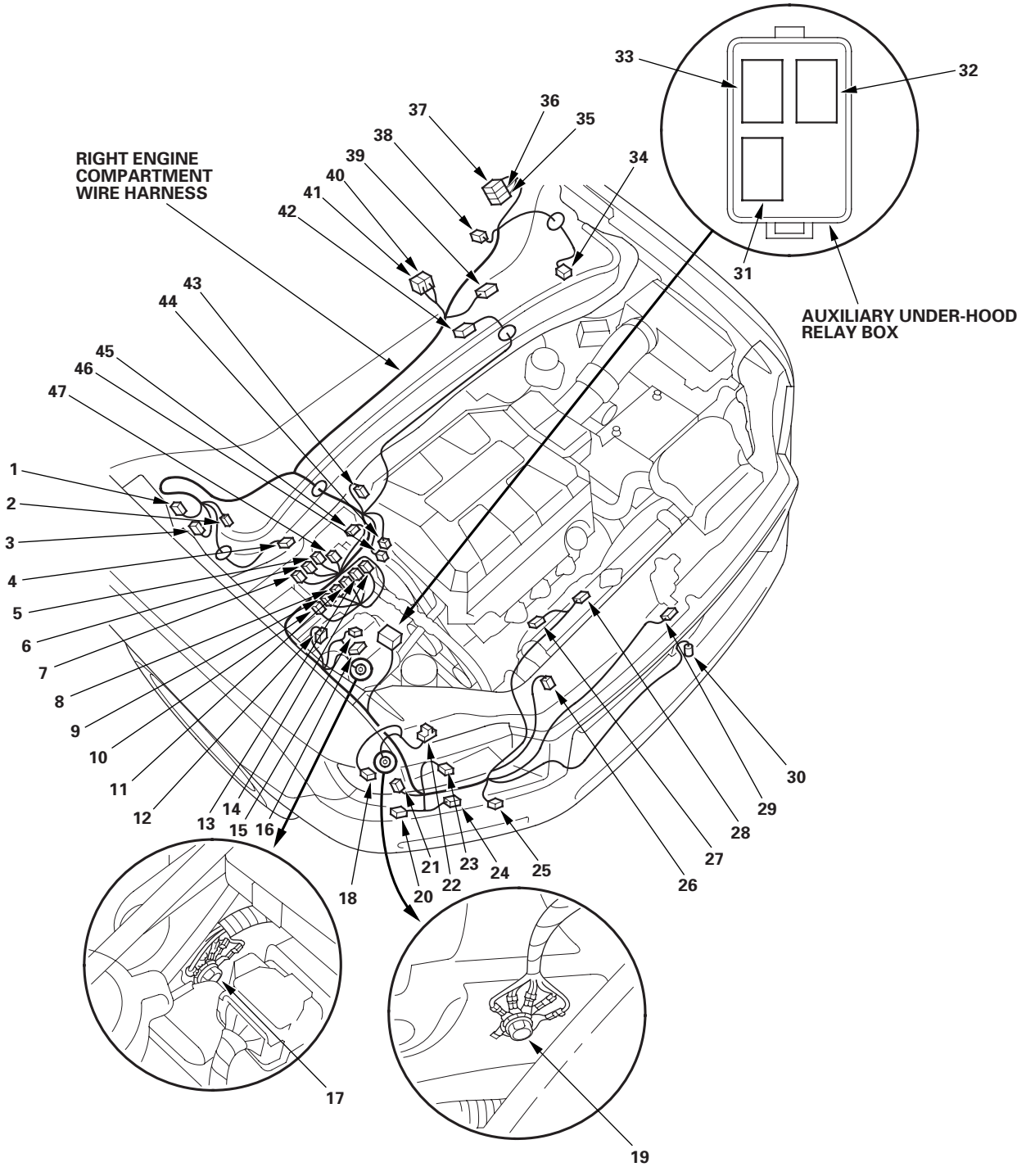
Connector to Harness Index (cont'd)

Right Engine Compartment Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
A/C compressor clutch	26	1	Behind middle of front bumper		
A/C condenser fan motor	27	2	Behind middle of front bumper		
A/C condenser fan relay	33	5	Right side of engine compartment		
A/C pressure switch	44	4	Right side of engine compartment		
Accelerator pedal position sensors 1 and 2 (APP 1, APP 2)	45	6	Right side of engine compartment		
Diode (for A/C)	2	4	Under right side of dash		
Fan control relay	31	5	Right side of engine compartment		
Horn (high)	23	1	Behind middle of front bumper		
Left front initiator	34	3	Left side of engine compartment		
Optional connector (for fog light)	21	2	Behind middle of front bumper		
Outside air temperature sensor	30	2	Behind middle of front bumper		
PCM connector A	12	44	Right side of engine compartment		
Power steering pressure (PSP) switch	43	2	Right side of engine compartment		
Radiator fan motor	28	2	Behind middle of front bumper		
Radiator fan relay	32	4	Right side of engine compartment		
Right front initiator	4	3	Right side of engine compartment		
Right front turn signal/parking light	18	3	Behind right headlight		
Right front wheel sensor	46	2	Right side of engine compartment		
Right headlight	22	3	Behind right headlight		
SRS right front impact sensor	25	2	Behind middle of front bumper		
Security hood switch	29	2	Behind middle of front bumper		*
Under-dash fuse/relay box connector B (see page 22-61)	37	6	Under left side of dash		
Under-dash fuse/relay box connector C (see page 22-61)	35	12	Under left side of dash		
Under-dash fuse/relay box connector D (see page 22-61)	36	17	Under left side of dash		
Under-hood fuse/relay box connector A (ELD unit) (see page 22-60)	6	3	Right side of engine compartment		
Under-hood fuse/relay box connector B (see page 22-60)	10	1	Right side of engine compartment		
Under-hood fuse/relay box connector C (see page 22-60)	9	2	Right side of engine compartment		
Under-hood fuse/relay box connector D (see page 22-60)	5	9	Right side of engine compartment		
Under-hood fuse/relay box connector E (see page 22-60)	47	16	Right side of engine compartment		
Under-hood fuse/relay box connector F (see page 22-60)	8	20	Right side of engine compartment		
Under-hood fuse/relay box connector G (see page 22-60)	7	2	Right side of engine compartment		
Under-hood fuse/relay box connector H (see page 22-60)	11	18	Right side of engine compartment		
Under-hood fuse/relay box connector J (see page 22-60)	14	10	Right side of engine compartment		
Under-hood fuse/relay box connector K (see page 22-60)	13	5	Right side of engine compartment		
Washer fluid level switch	24	2	Behind middle of front bumper		
Windshield washer motor	20	2	Behind middle of front bumper		
Windshield wiper motor	42	5	Left side of engine compartment		

*: RTS, RTL, and EXL models


RIGHT ENGINE COMPARTMENT WIRE HARNESS
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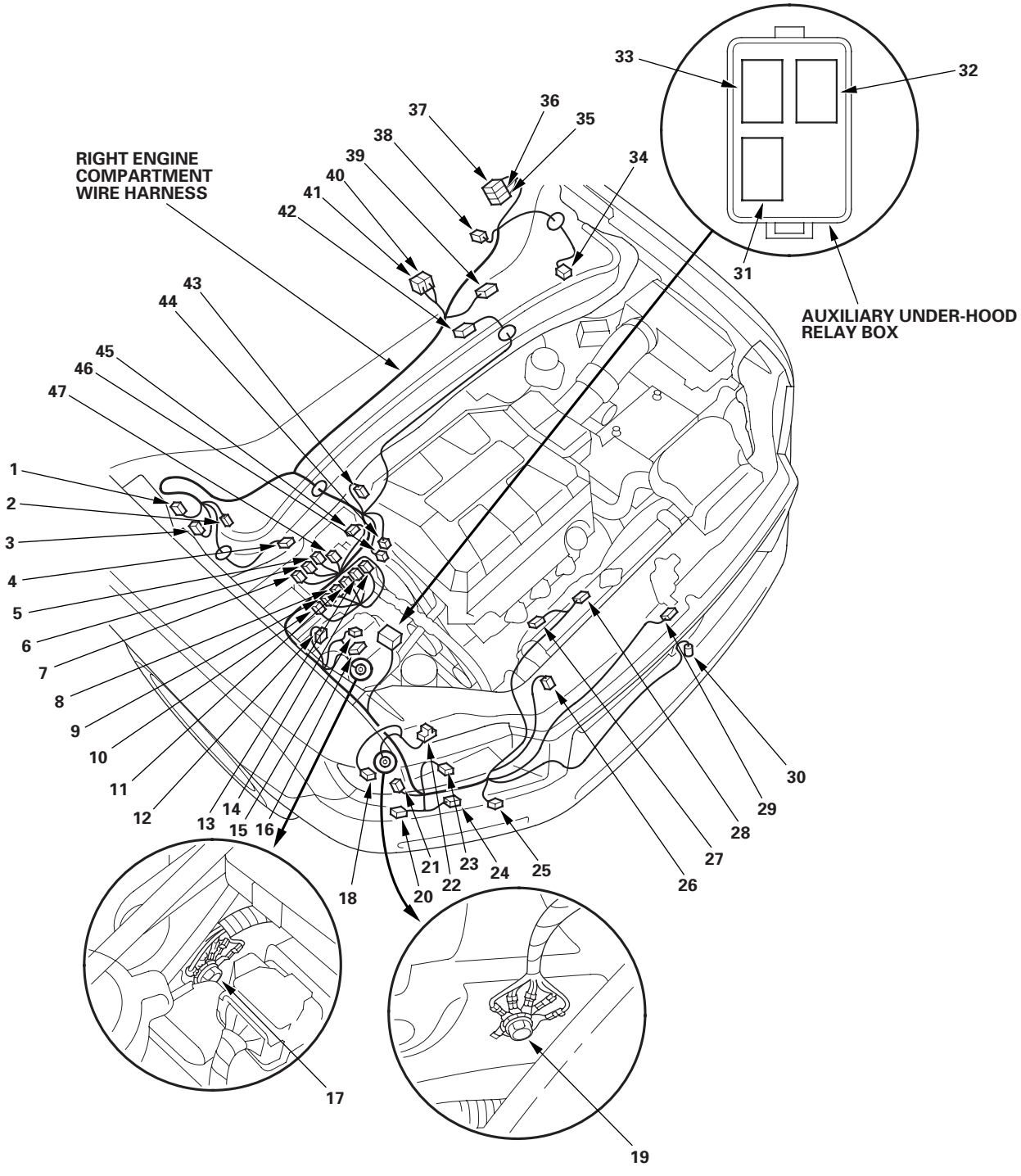
Connector to Harness Index (cont'd)

Right Engine Compartment Wire Harness (cont'd)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
C101	15	23	Right side of engine compartment	Engine wire harness (see page 22-18)	
C102	16	2	Right side of engine compartment	Engine wire harness (see page 22-18)	
C201	1	10	Under right side of dash	Floor wire harness (see page 22-38)	
C202	3	4	Under right side of dash	Dashboard wire harness (see page 22-32)	
C203	39	12	Under left side of dash	Left engine compartment wire harness (see page 22-26)	
C204	40	34	Under left side of dash	Dashboard wire harness (see page 22-28)	
C205	41	14	Under left side of dash	Dashboard wire harness (see page 22-28)	
C206	38	3	Under left side of dash	Dashboard wire harness (see page 22-28)	
G201	19		Right side of engine compartment	Body ground, via right engine compartment wire harness	
G202	17		Right side of engine compartment	Body ground, via right engine compartment wire harness	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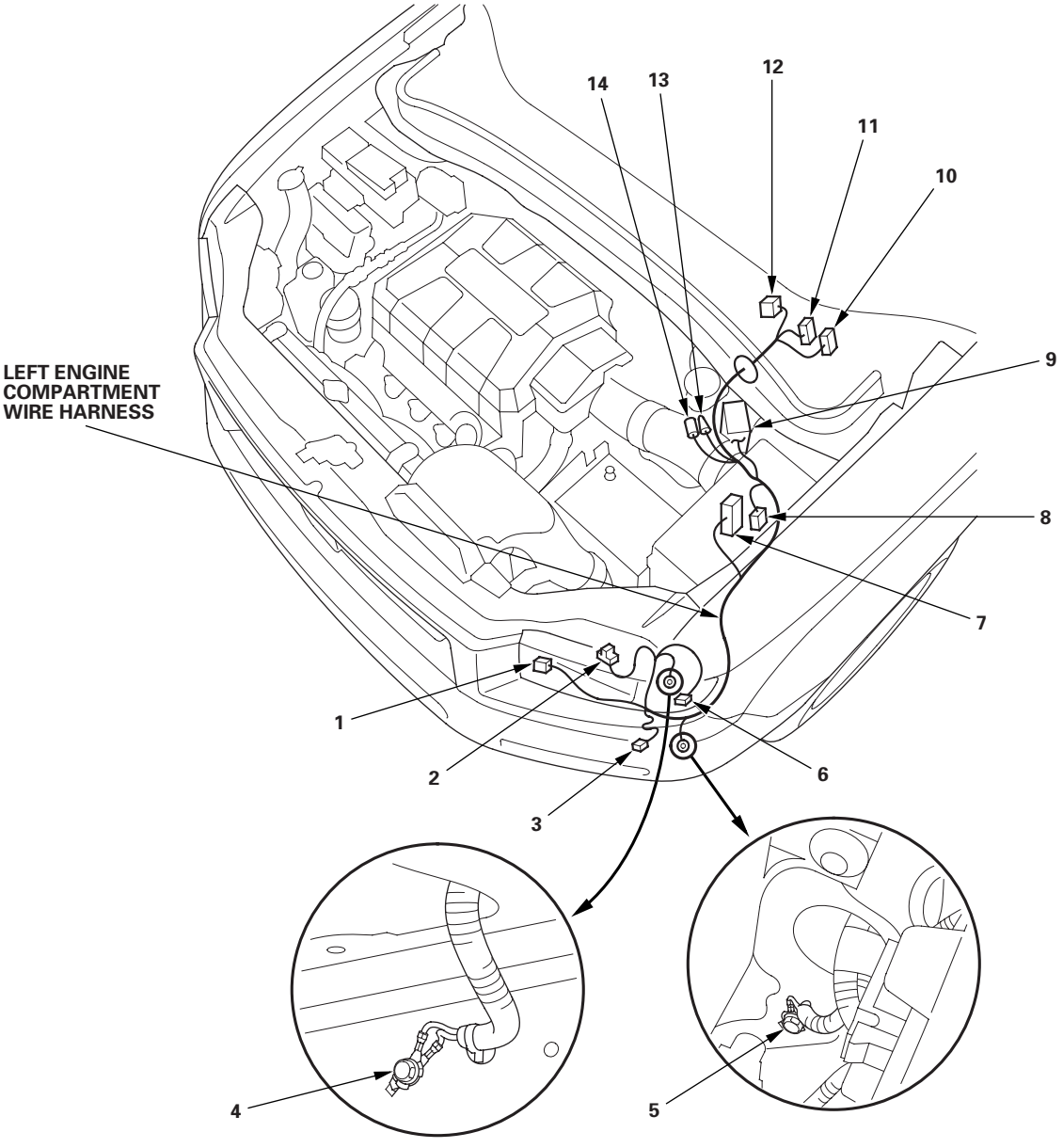
Connector to Harness Index (cont'd)

Left Engine Compartment Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Auxiliary under-hood fuse box	9		Left side of engine compartment		
Brake fluid level switch (−)	13	1	Left side of engine compartment		
Brake fluid level switch (+)	14	1	Left side of engine compartment		
Horn (low)	1	1	Behind middle of front bumper		
Left front turn signal/parking light	6	3	Behind left headlight		
Left front wheel sensor	8	2	Left side of engine compartment		
Left headlight	2	3	Behind left headlight		
SRS left front impact sensor	3	2	Left side of engine compartment		
VSA modulator-control unit	7	46	Left side of engine compartment		
C203	12	12	Under left side of dash	Right engine compartment wire harness (see page 22-22)	
C301	10	4	Under left side of dash	Dashboard wire harness (see page 22-28)	
C302	11	23	Under left side of dash	Dashboard wire harness (see page 22-28)	
G301	4		Left side of engine compartment	Body ground, via left engine compartment wire harness	
G302	5		Left side of engine compartment	Body ground, via left engine compartment wire harness	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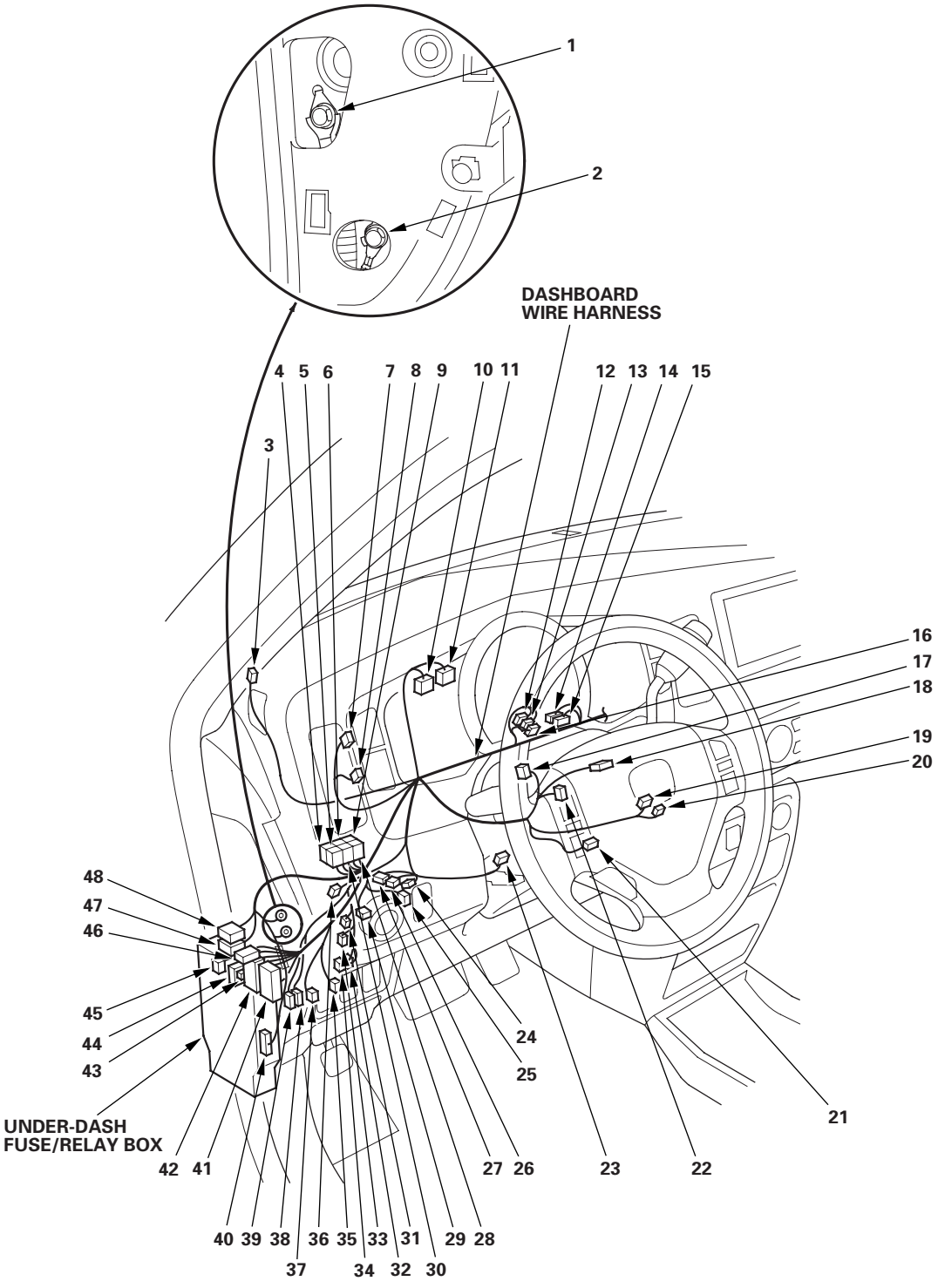
Connector to Harness Index (cont'd)

Dashboard Wire Harness (Left branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Back-up lights diode	16	2	Middle of dash		* 4
Brake pedal position switch	24	4	Under left side of dash		
Cable reel connector A	18	13	In steering column cover		
Cargo area light relay	30	4	Under left side of dash		
Cargo area light switch	25	5	Under left side of dash		
Combination switch	22	12	In steering column cover		
Condenser (Brake light)	36	2	Under left side of dash		
Cruise control main switch	37	5	Under left side of dash		
D3 switch/park pin switch/shift lock solenoid	17	6	In steering column cover		
Dash lights brightness controller	7	6	Under left side of dash		
Daytime running lights relay	9	5	Under left side of dash		Canada
Driver's airbag inflator	23	4	Under left side of dash		
Front accessory power socket relay	6	4	Under left side of dash		
Gauge control module connector A	11	20	Behind gauges		
Gauge control module connector B	10	14	Behind gauges		
Headlight switch	29	6	Under left side of dash		
Ignition key switch	20	6	In steering column cover		
Immobilizer control unit-receiver	19	7	In steering column cover		
Left tweeter	3	2	Under left side of dash		
Low beam cut relay	28	5	Under left side of dash		Canada
Moonroof switch	8	6	Under left side of dash		* 1
Parking brake switch	33	1	Under left side of dash		
Steering angle sensor	21	5	In steering column cover		
TPMS control unit connector A	27	20	Under left side of dash		
TPMS control unit connector B	26	14	Under left side of dash		
Trailer back-up light connector	31	4	Under left side of dash		* 2
Trailer converter	13	10	Middle of dash		* 2
Trailer electric brake connector	31	4	Under left side of dash		* 3
Trailer lighting relay	4	4	Under left side of dash		* 3
Trailer lighting relay	4	4	Under left side of dash		* 2
Trailer connector A	13	10	Middle of dash		* 3
Trailer electric brake connector	12	4	Middle of dash		* 2
Under-dash fuse/relay box connector N (see page 22-61)	41	45	Left kick panel		
Under-dash fuse/relay box connector P (MICU) (see page 22-61)	40	30	Left kick panel		
Under-dash fuse/relay box connector R (see page 22-61)	43	2	Left kick panel		
Under-dash fuse/relay box connector S (see page 22-61)	44	2	Left kick panel		
Under-dash fuse/relay box connector X (see page 22-61)	41	39	Left kick panel		
VSA OFF switch	35	10	Under left side of dash		
VTM-4 relay	5	4	Under left side of dash		

* 1: With moonroof
* 2: '07-08 models: RTX
* 3: Optional, Except RTX models
* 4: '07-08 models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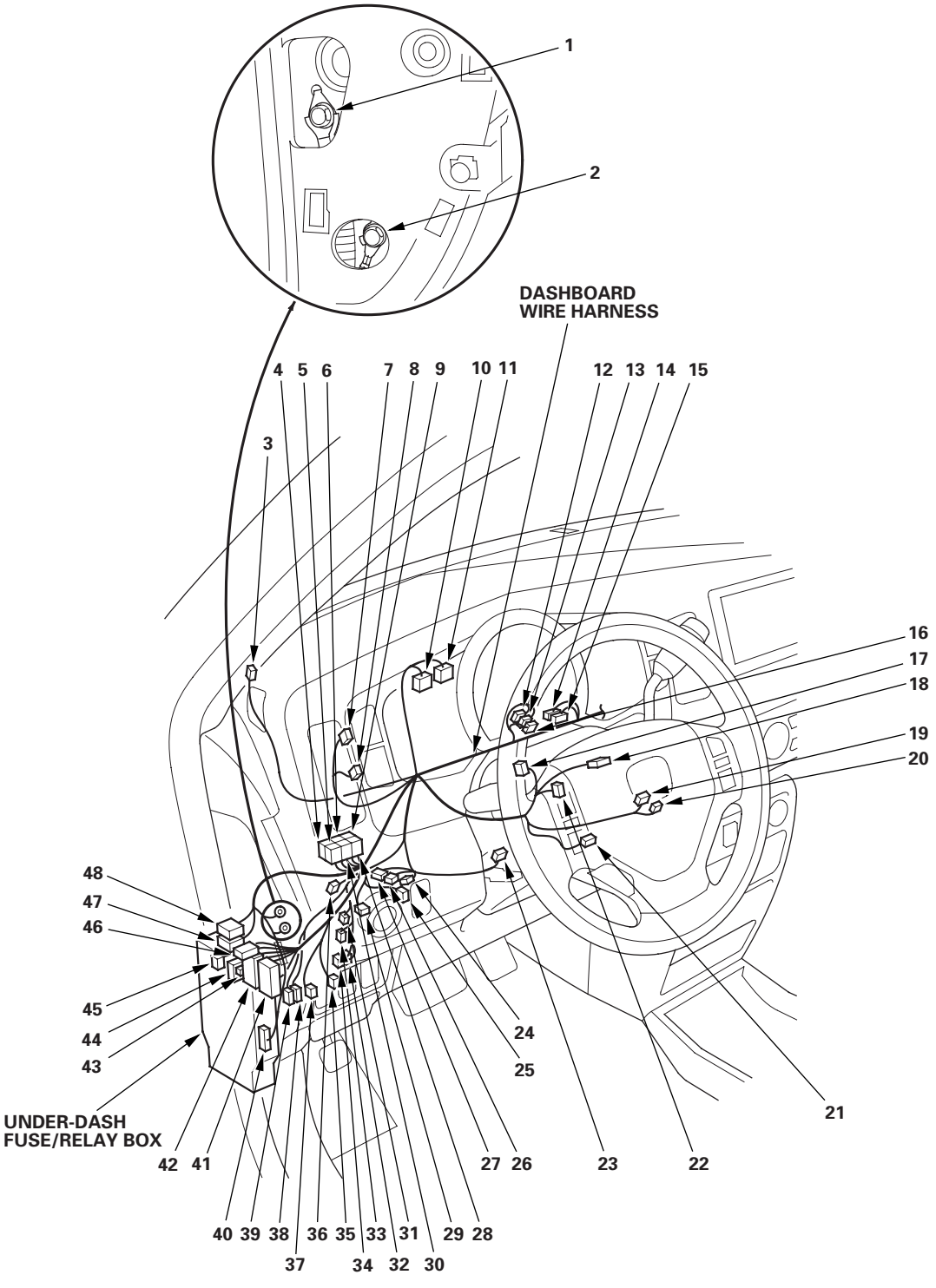
(cont'd)

Connector to Harness Index (cont'd)

Dashboard Wire Harness (Left branch) (cont'd)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
C204	39	34	Under left side of dash	Right engine compartment wire harness (see page 22-22)	
C205	38	14	Under left side of dash	Right engine compartment wire harness (see page 22-22)	
C206	45	3	Under left side of dash	Right engine compartment wire harness (see page 22-22)	
C301	32	4	Under left side of dash	Left engine compartment wire harness (see page 22-26)	
C302	34	23	Under left side of dash	Left engine compartment wire harness (see page 22-26)	
C401	46	23	Under left side of dash	Roof wire harness (see page 22-40)	
C402	47	24	Under left side of dash	Floor wire harness (see page 22-36)	
C403	48	16	Under left side of dash	Floor wire harness (see page 22-36)	
C451 (Junction connector)	14	22	Under right side of dash		
C452 (Junction connector)	15	22	Under right side of dash		
G401	1		Under left side of dash	Body ground, via dashboard wire harness	
G403	2		Under left side of dash	Body ground, via dashboard wire harness	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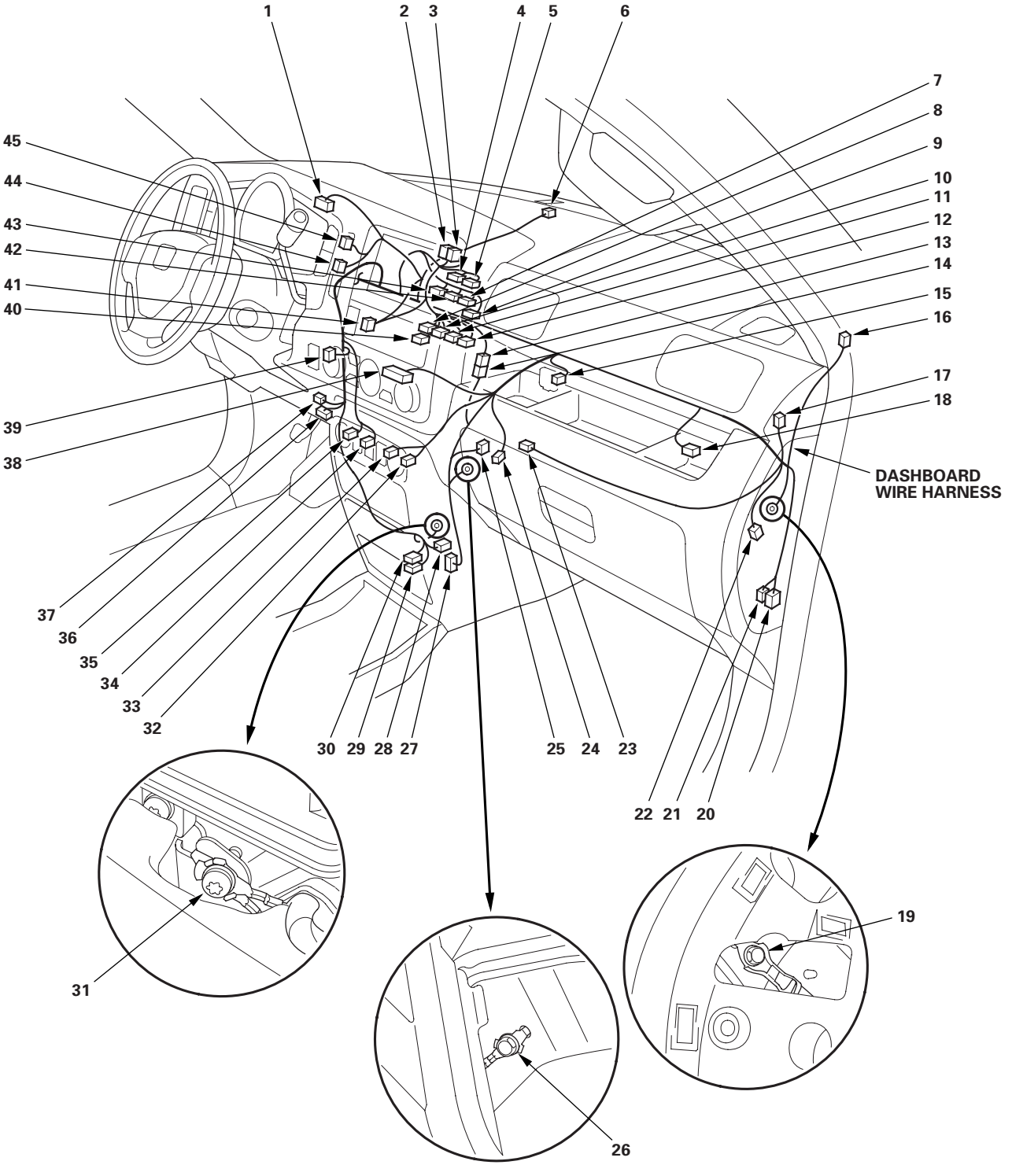
Connector to Harness Index (cont'd)

Dashboard Wire Harness (Right branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Antenna lead	17	3	Behind right side of dash		
Audio unit (antenna lead)	8	3	Middle of dash		* 5
Audio unit (antenna lead)	40	3	Middle of dash		* 6
Audio unit connector A	10	20	Middle of dash		* 1
Audio unit connector A	43	20	Middle of dash		* 2
Audio unit connector B	11	14	Middle of dash		* 1
Audio unit connector B	42	14	Middle of dash		* 2
Audio unit connector C	9	8	Middle of dash		* 1
Audio unit connector C	7	8	Middle of dash		* 2
Audio unit connector D	12	6	Middle of dash		* 1
Auxiliary jack	15	5	Behind right side of dash		* 1
CD changer connector A	3	14	Middle of dash		* 1
CD changer connector B	2	18	Middle of dash		* 1
Climate control unit/HVAC control unit	38	30	Middle of dash		
Data link connector (DLC)	36	16	Middle of dash		
Driver's front accessory power socket	35	2	Middle of dash		
Driver's seat heater switch	34	6	Middle of dash		
Front passenger's airbag inflator	24	4	Behind right side of dash		
Gauge control module connector C	1	20	Behind gauge		
Glove box light	23	2	Behind right side of dash		
Hazard warning switch	41	5	Middle of dash		* 3
Hazard warning switch/front passenger's airbag cutoff indicator	41	6			* 4
Heated windshield wiper area	18	2	Behind right side of dash		
In-bed trunk lid main switch	25	2	Behind right side of dash		
In-car temperature sensor	37	2	Middle of dash		
Interior light switch	39	6	Middle of dash		
Navigation display connector A	4	20	Middle of dash		* 1
Navigation display connector B	5	10	Middle of dash		* 1
Passenger's front accessory power socket	32	2	Middle of dash		
Passenger's seat heater switch	33	6	Middle of dash		
Right tweeter	16	2	Behind right side of dash		
SRS unit connector A	28	28	Under console panel		
Select/reset switch (gauge)	44	6	Middle of dash		
Sunlight sensor	6	2	Middle of dash		
VTM-4 LOCK switch	45	5	Middle of dash		

* 1: With navigation system
* 2: Without navigation system
* 3: '06 model
* 4: '07-08 models
* 5: '07-08 models with navigation system
* 6: '07-08 models without navigation system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DASHBOARD
WIRE HARNESS

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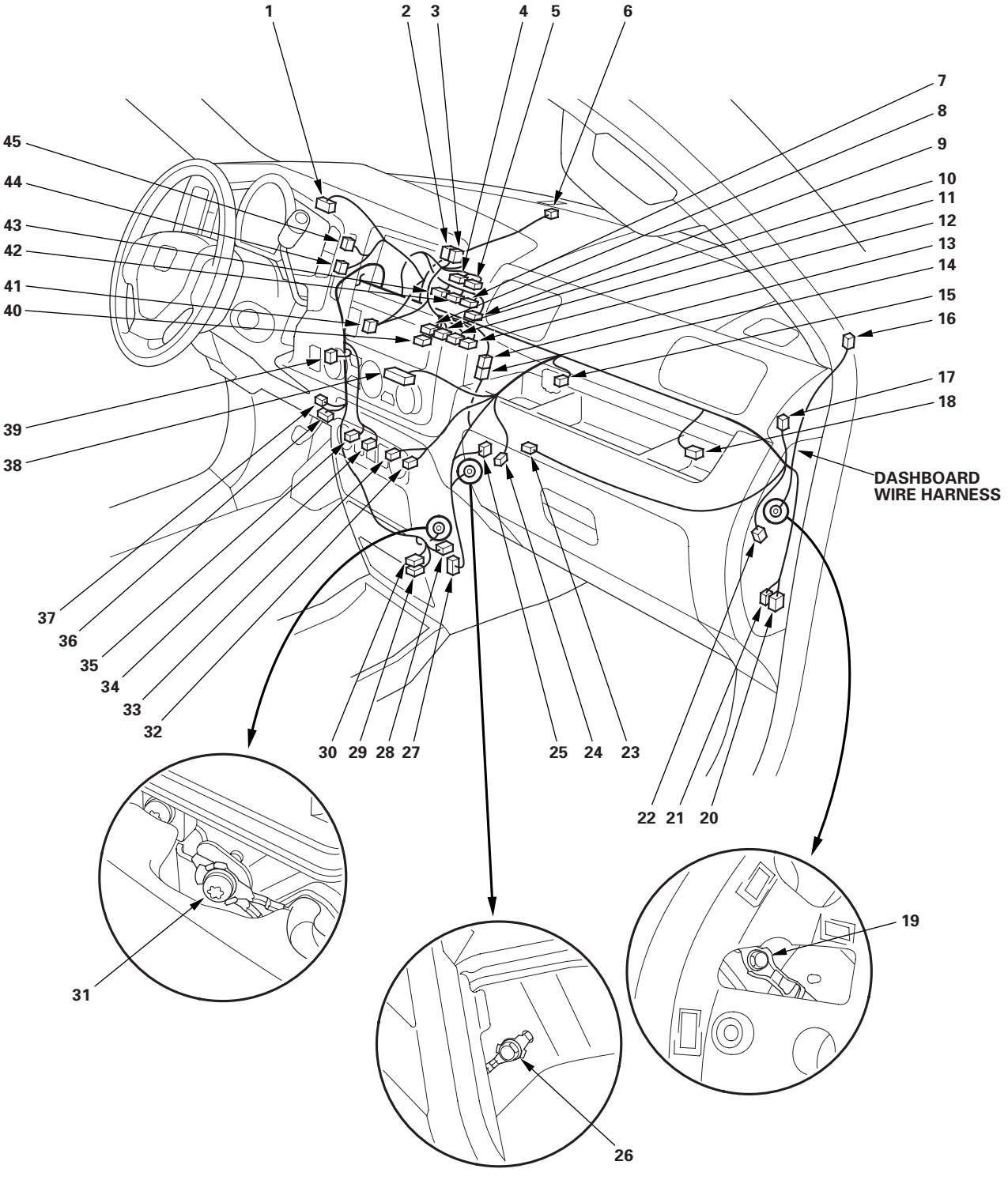
Connector to Harness Index (cont'd)

Dashboard Wire Harness (Right branch) (cont'd)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
C202	21	4	Right kick panel	Right engine compartment wire harness (see page 22-22)	
C404	20	23	Right kick panel	Floor wire harness (see page 22-38)	
C405	30	20	Under right side of dash	Floor wire harness (see page 22-38)	
C406	29	6	Under right side of dash	Floor wire harness (see page 22-38)	
C407	27	22	Under right side of dash	A/C wire harness (see page 22-53)	
C408	22	23	Under right side of dash	Front passenger's door wire harness (see page 22-48)	
C409	13	2	Middle of dash	Dashboard wire harness (Right branch)	*
C409	14	2	Middle of dash	Dashboard wire harness (Right branch)	*
G402	19		Right kick panel	Body ground, via dashboard wire harness	
G404	26		Under right side of dash	Body ground, via dashboard wire harness	
G405	31		Under right side of dash	Body ground, via dashboard wire harness	

*: '07-08 models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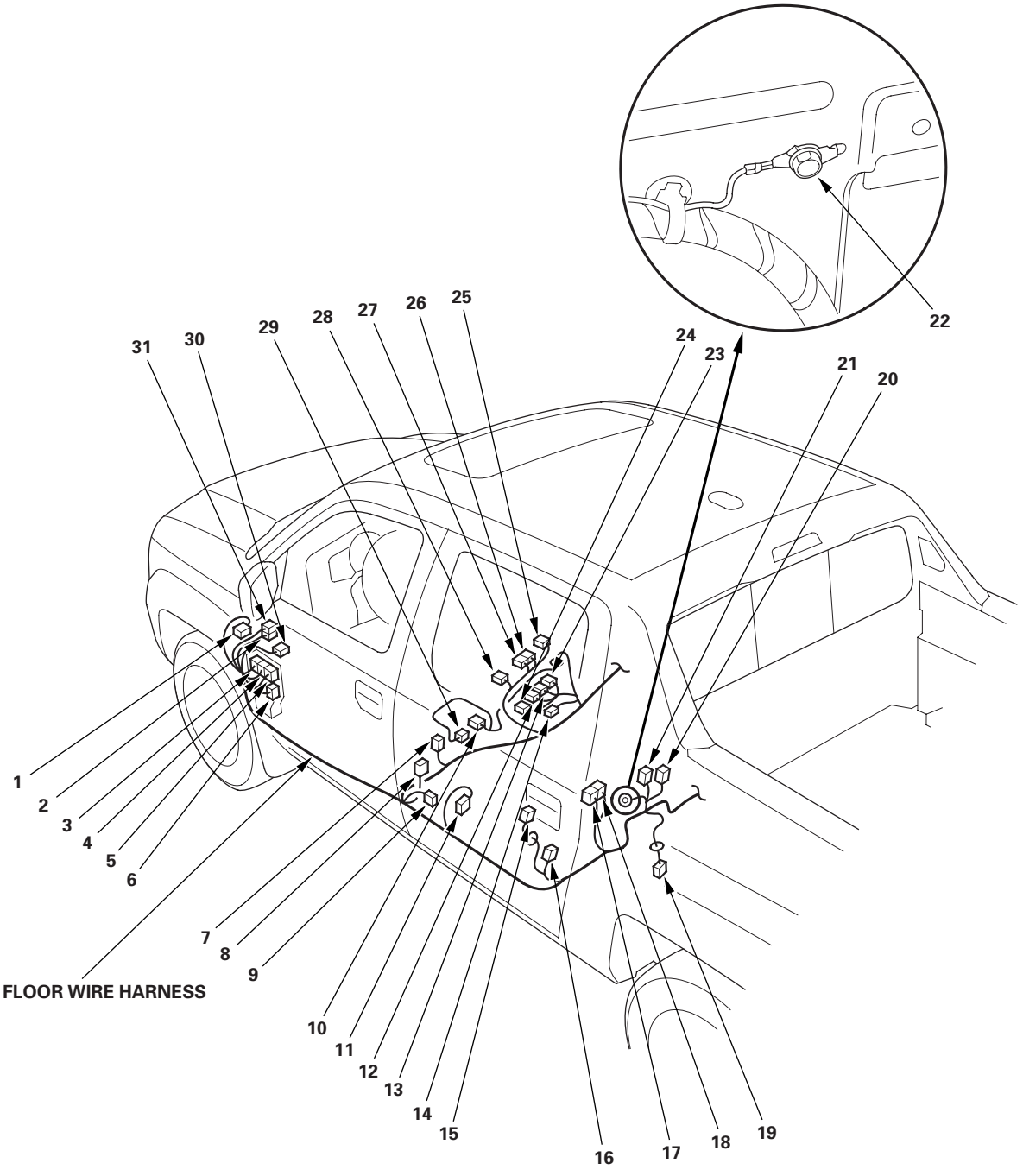
DASHBOARD
WIRE HARNESS

Connector to Harness Index (cont'd)

Floor Wire Harness (Left branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's door switch	7	1	Left B-pillar		
Driver's seat belt buckle switch	27	3	Under driver's seat		* 3
Driver's seat belt buckle switch	27	6	Under driver's seat		* 5
Driver's seat belt tensioner	8	4	Left B-pillar		
Driver's side airbag inflator	28	2	Under driver's seat		
EVAP canister vent shut valve	29	2	Under left side of floor		
Fuel pump/fuel gauge sending unit	19	5	Fuel tank		
Fuel tank pressure (FTP) sensor	10	3	Under left side of floor		
Imoes unit	21	5	Left cabin back panel		* 6
Left rear door switch	15	1	Left C-pillar		
Left side impact sensor (first)	9	2	Under driver's seat		
Left side impact sensor (second)	16	2	Left C-pillar		
Navigation service check connector	14	2	Under driver's seat		* 1
Navigation unit connector A	12	20	Under driver's seat		* 1
Navigation unit connector B	13	14	Under driver's seat		* 1
Navigation unit connector C	23	8	Under driver's seat		* 1
Navigation unit connector (GPS antenna)	24	2	Under driver's seat		* 1
Subwoofer	20	2	Left cabin back panel		
Under-dash fuse/relay box connector E (see page 22-61)	4	16	Left kick panel		
Under-dash fuse/relay box connector F (see page 22-61)	3	14	Left kick panel		
Under-dash fuse/relay box connector H (see page 22-61)	5	14	Left kick panel		
Under-dash fuse/relay box connector Q (MICU) (see page 22-61)	6	14	Left kick panel		
C402	31	24	Left kick panel	Dashboard wire harness (see page 22-28)	
C403	2	16	Left kick panel	Dashboard wire harness (see page 22-28)	
C501	1	4	Left kick panel	Roof wire harness (see page 22-40)	
C502	30	4	Left kick panel	Driver's door subharness RTS, RTL, and EXL models: (see page 22-44). RT, RTX, and LX models: (see page 22-46).	
C503	26	12	Under driver's seat	Driver's seat wire harness (see page 22-54)	* 2
C503	26	8	Under driver's seat	Driver's seat wire harness (see page 22-54)	* 3
C503	26	13	Under driver's seat	Driver's seat wire harness (see page 22-54)	* 4
C506	11	12	Left B-pillar	Left rear door wire harness (see page 22-49)	
C509	17	23	Left cabin back panel	Rear wire harness (see page 22-42)	
C510	18	16	Left cabin back panel	Rear wire harness (see page 22-42)	
C511	25	2	Under driver's seat	Seat position sensor harness (see page 22-54)	* 5
G502	22		Left cabin back panel	Body ground, via floor wire harness	

* 1: With navigation system
* 2: '06 model: RTL
'06 model: EXL
* 3: '06 model: RT and RTS
'06 model: LX
* 4: '07-08 models: RTS and RTL
'07-08 models: EXL
* 5: '07-08 models: RT and RTX
'07-08 models: LX
* 6: '07-08 Canada models, '08 USA models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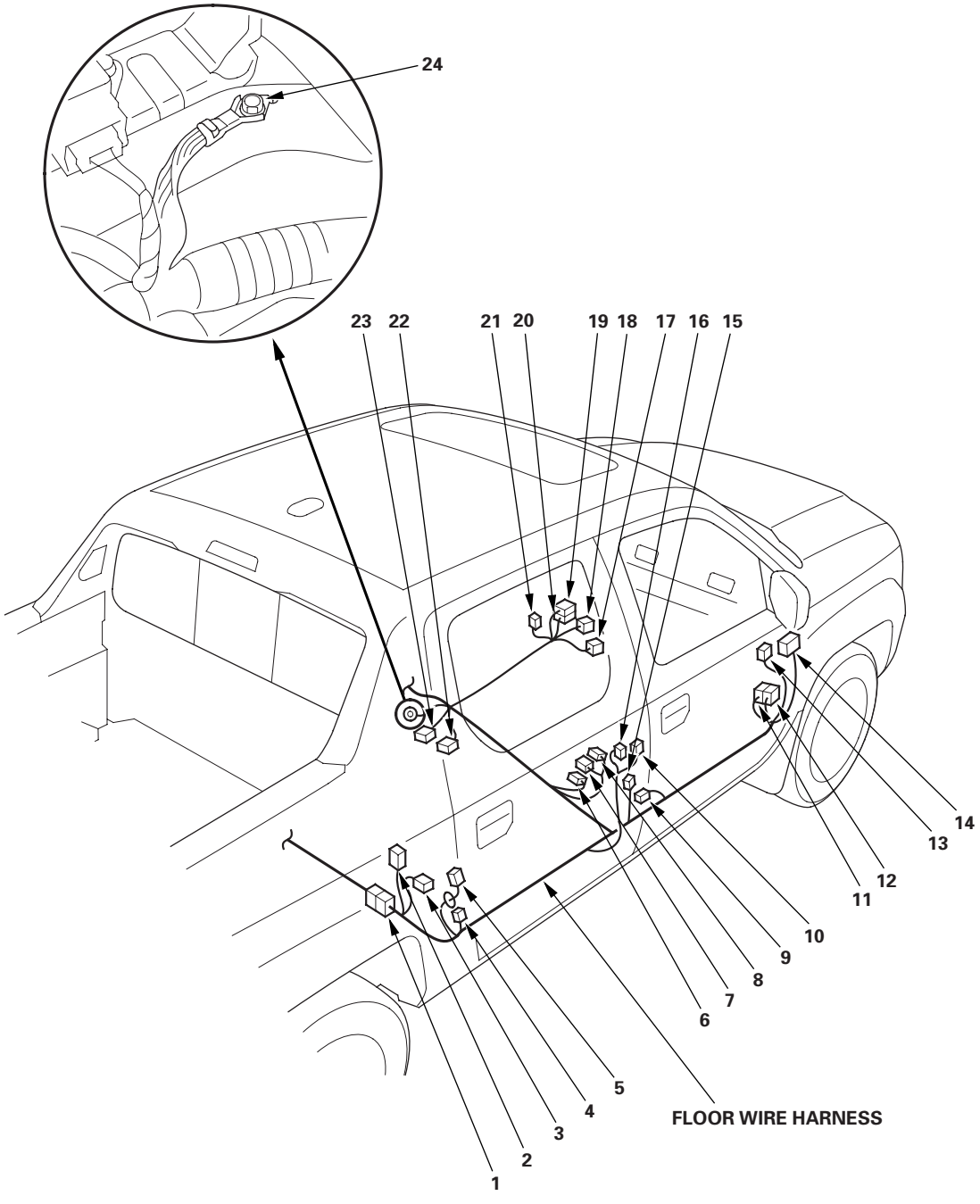
FLOOR WIRE HARNESS

Connector to Harness Index (cont'd)

Floor Wire Harness (Right branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Back power window motor	2	6	Right cabin back panel		
Front passenger's door switch	10	1	Right B-pillar		
Front passenger's side airbag inflator	8	2	Under front passenger's seat		
Front passenger's seat belt tensioner	15	4	Right B-pillar		
GPS antenna	21	2	Under middle of dash		*
Right rear door switch	5	1	Right C-pillar		
Right side impact sensor (first)	9	2	Under front passenger's seat		
Right side impact sensor (second)	4	2	Right C-pillar		
Rollrate sensor	6	2	Under front passenger's seat		
SRS unit connector B	17	28	Under middle of dash		
SRS unit connector C	18	28	Under middle of dash		
VTM-4 control unit connector A	11	22	Right kick panel		
VTM-4 control unit connector B	12	12	Right kick panel		
XM receiver	3	14	Right cabin back panel		
Yaw rate-lateral acceleration sensor	23	4	Under center console		
C201	13	10	Right kick panel	Right engine compartment wire harness (see page 22-22)	
C404	14	23	Right kick panel	Dashboard wire harness (see page 22-32)	
C405	19	20	Under middle of dash	Dashboard wire harness (see page 22-32)	
C406	20	6	Under middle of dash	Dashboard wire harness (see page 22-32)	
C504	7	10	Under front passenger's seat	Front passenger's seat wire harness (see page 22-56)	
C505	22	6	Under center console	Center console subharness (see page 22-58)	
C507	16	12	Right B-pillar	Right rear door wire harness (see page 22-50)	
C508	1	4	Right cabin back panel	Floor wire harness	
G501	24		Under center console	Body ground, via floor wire harness	

* : With navigation system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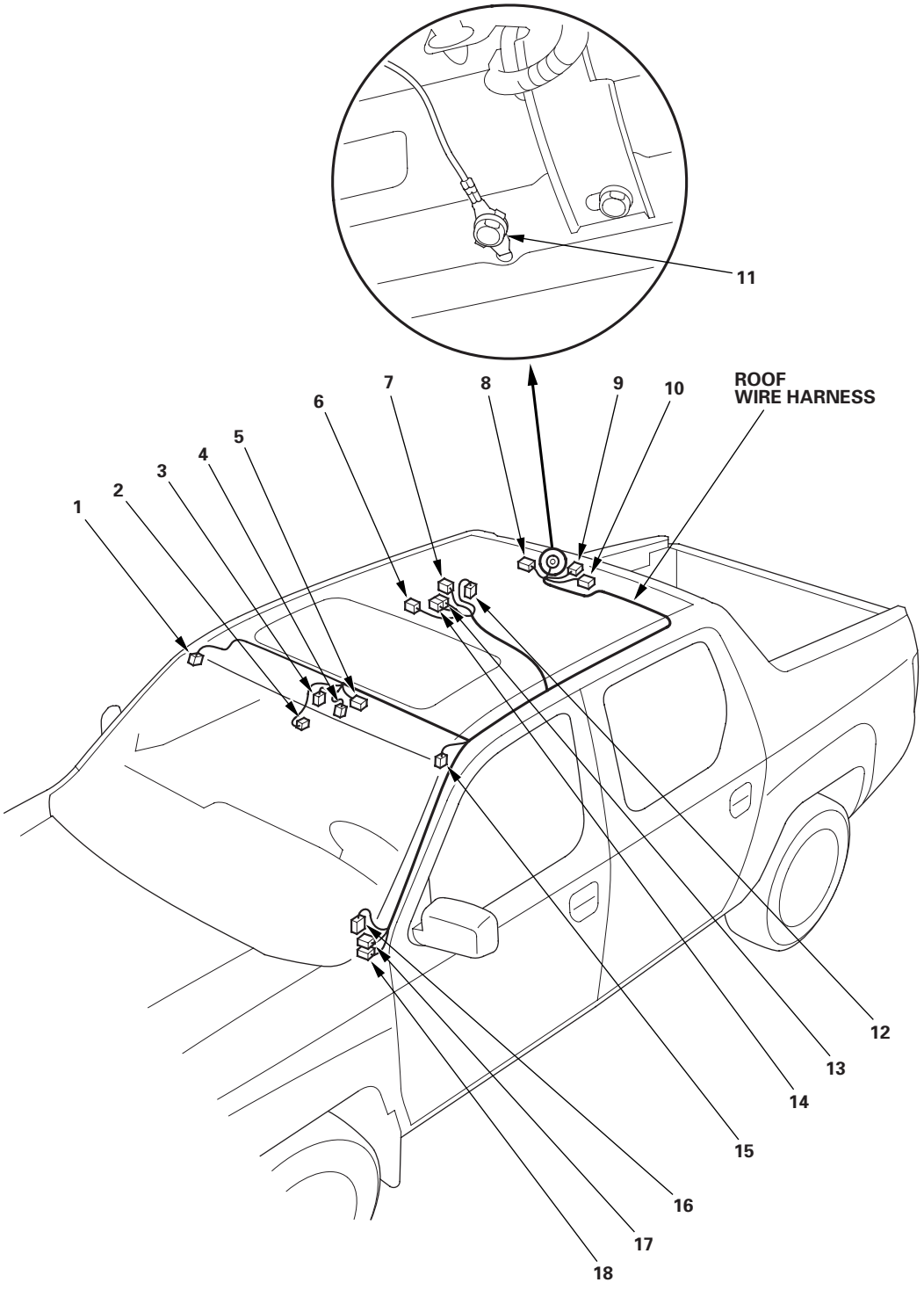
FLOOR WIRE HARNESS

Connector to Harness Index (cont'd)

Roof Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Ambient light	4	10	Roof		* 1
Automatic inside dimming mirror	5	4	Roof		Optional
Driver's vanity mirror light	15	2	Roof		* 3
Electrical compass unit	2	7	Roof		* 4
Front individual map light	3	3	Roof		
Front passenger's vanity mirror light	1	2	Roof		
High mount brake light	9	2	Roof		
Left side curtain airbag inflator	10	2	Roof		
Moonroof open relay	13	5	Roof		* 2
Moonroof close relay	14	5	Roof		* 2
Moonroof limit switch	7	4	Roof		* 2
Moonroof motor	6	2	Roof		* 2
Rear ceiling light	12	3	Roof		
Right side curtain airbag inflator	8	2	Roof		
Under-dash fuse/relay box connector W (see page 22-61)	17	5	Left kick panel		
C401	18	23	Left kick panel	Dashboard wire harness (see page 22-28)	
C501	16	4	Left kick panel	Floor wire harness (see page 22-36)	
G551	11		Roof	Body ground, via roof wire harness	

* 1: With HomeLink Remote Control System
* 2: With moonroof
* 3: '07-08 models
* 4: RTS, RTL, and EXL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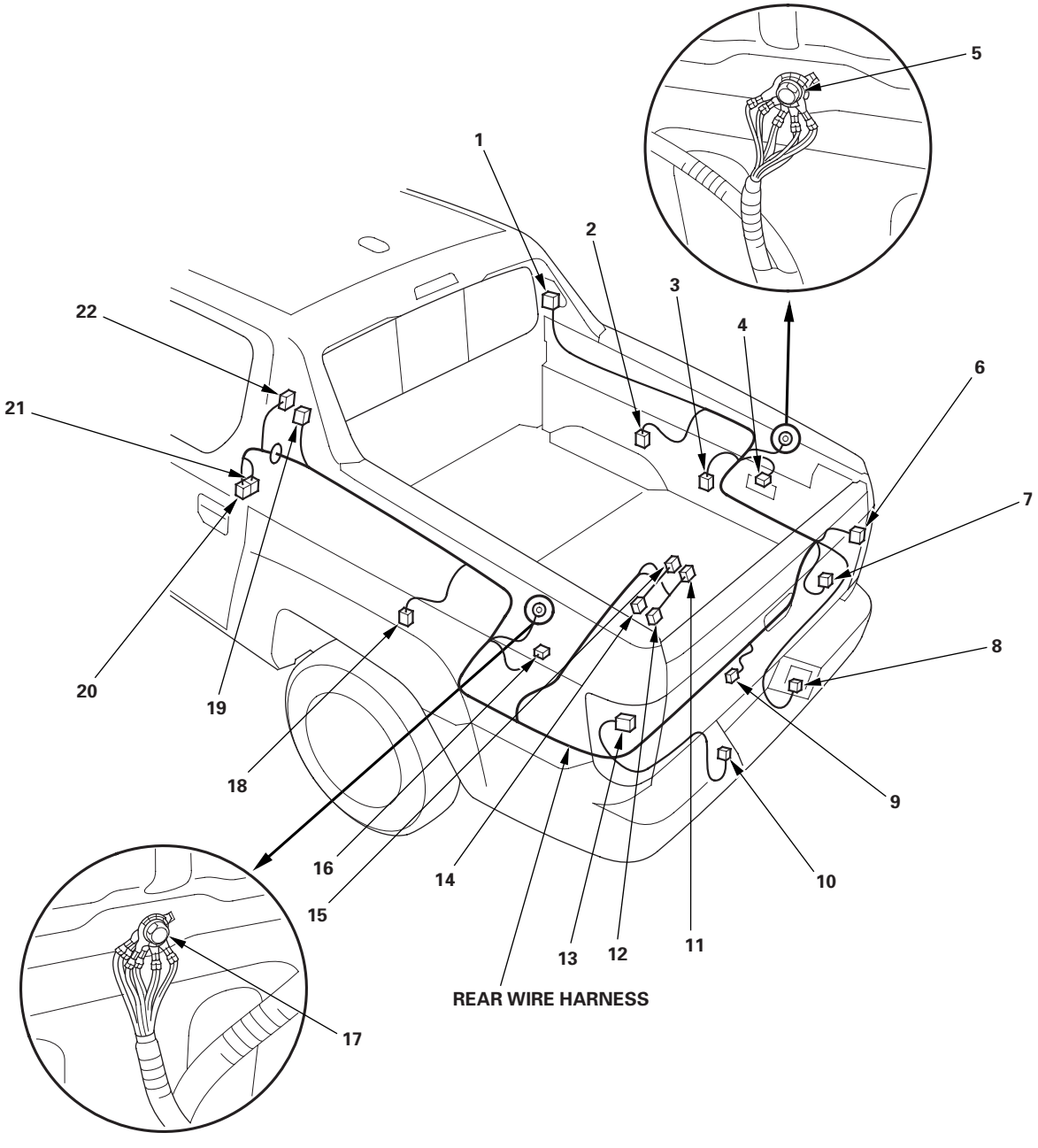
Connector to Harness Index (cont'd)

Rear Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Back power window position switch	22	2	Under floor		
Left back-up light/brake light/rear turn signal light/taillight	13	8	Left side of cargo area		
Left cargo area light 1	19	2	Left side of cargo area		
Left cargo area light 2	16	2	Left side of cargo area		
Left license plate light	10	2	Behind middle of rear bumper		
Left rear initiator	18	3	Left side of cargo area		
Left rear wheel sensor	12	2	Under floor		
Right back-up light/brake light/rear turn signal light/taillight	6	8	Right side of cargo area		
Right cargo area light 1	1	2	Right side of cargo area		
Right cargo area light 2	4	2	Right side of cargo area		
Right license plate light	8	2	Behind middle of rear bumper		
Right rear initiator	2	3	Right side of cargo area		
Right rear wheel sensor	11	2	Under floor		
Tailgate switch	7	2	Right side of cargo area		
Trailer lighting connector	9	10	Under floor		* 1
Trailer lighting connector	9	10	Under floor		* 2
C509	21	23	Left C-pillar	Floor wire harness (see page 22-36)	
C510	20	16	Left C-pillar	Floor wire harness (see page 22-36)	
C601	3	8	Right side of cargo area	In-Bed trunk subharness (see page 22-52)	
C602	14	2	Under floor	Rear differential subharness A (see page 22-59)	
C603	15	2	Under floor	Rear differential subharness B (see page 22-59)	
G601	17		Left side of cargo area	Body ground, via rear wire harness	
G602	5		Right side of cargo area	Body ground, via rear wire harness	

* 1:RTX model
* 2:Optional, Except RTX models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REAR WIRE HARNESS

Connector to Harness Index (cont'd)

Driver's Door Wire Harness (RTS, RTL, and EXL models)

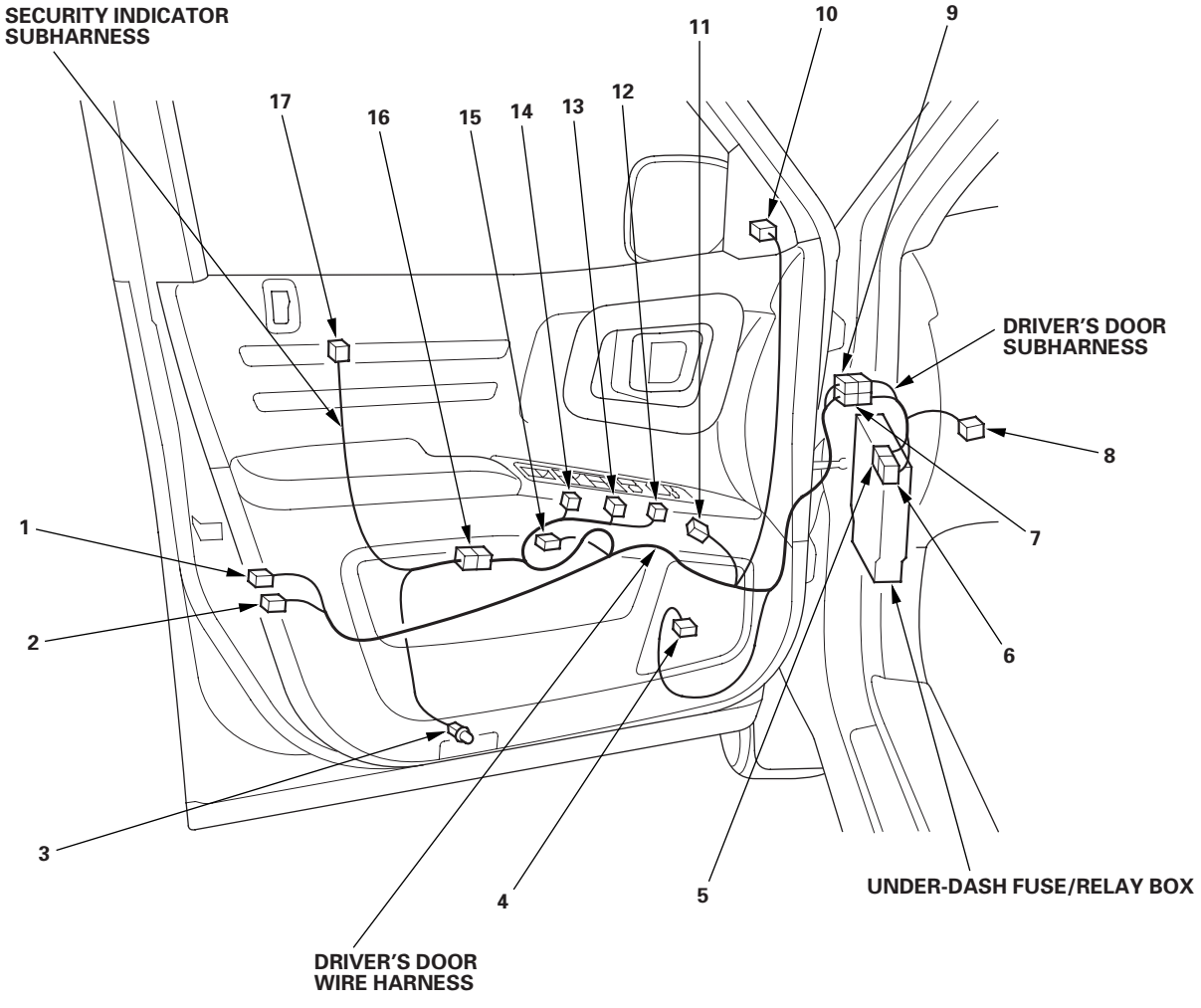
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Back power window switch	14	6	Driver's door		
Door multiplex control unit	13	23	Driver's door		
Driver's door key cylinder switch	15	3	Driver's door		
Driver's door lock actuator	2	2	Driver's door		
Driver's door lock knob switch	1	3	Driver's door		
Driver's door speaker	4	2	Driver's door		
Driver's power window motor	11	6	Driver's door		
Left power mirror actuator	10	8	Driver's door		
Power mirror switch	12	13	Driver's door		
C453	9	20	Driver's door	Driver's door subharness	
C454	7	17	Driver's door	Driver's door subharness	
C455	16	4	Driver's door	Security indicator subharness	

Driver's Door Subharness (RTS, RTL, and EXL models)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Under-dash fuse/relay box connector J (see page 22-61)	6	21	Left kick panel		
Under-dash fuse/relay box connector K (see page 22-61)	5	12	Left kick panel		
C453	9	20	Driver's door	Driver's door wire harness	
C454	7	17	Driver's door	Driver's door wire harness	
C502	8	4	Left kick panel	Floor wire harness (see page 22-36)	

Security Indicator Subharness (RTS, RTL, and EXL models)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's door courtesy light	3	2	Driver's door		
Security indicator	17	2	Driver's door		
C455	16	4	Driver's door	Driver's door wire harness	


SECURITY INDICATOR SUBHARNESS
17
16
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DRIVER'S DOOR SUBHARNESS
8
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6
1
2
3
4
5
UNDER-DASH FUSE/RELAY BOX
DRIVER'S DOOR WIRE HARNESS

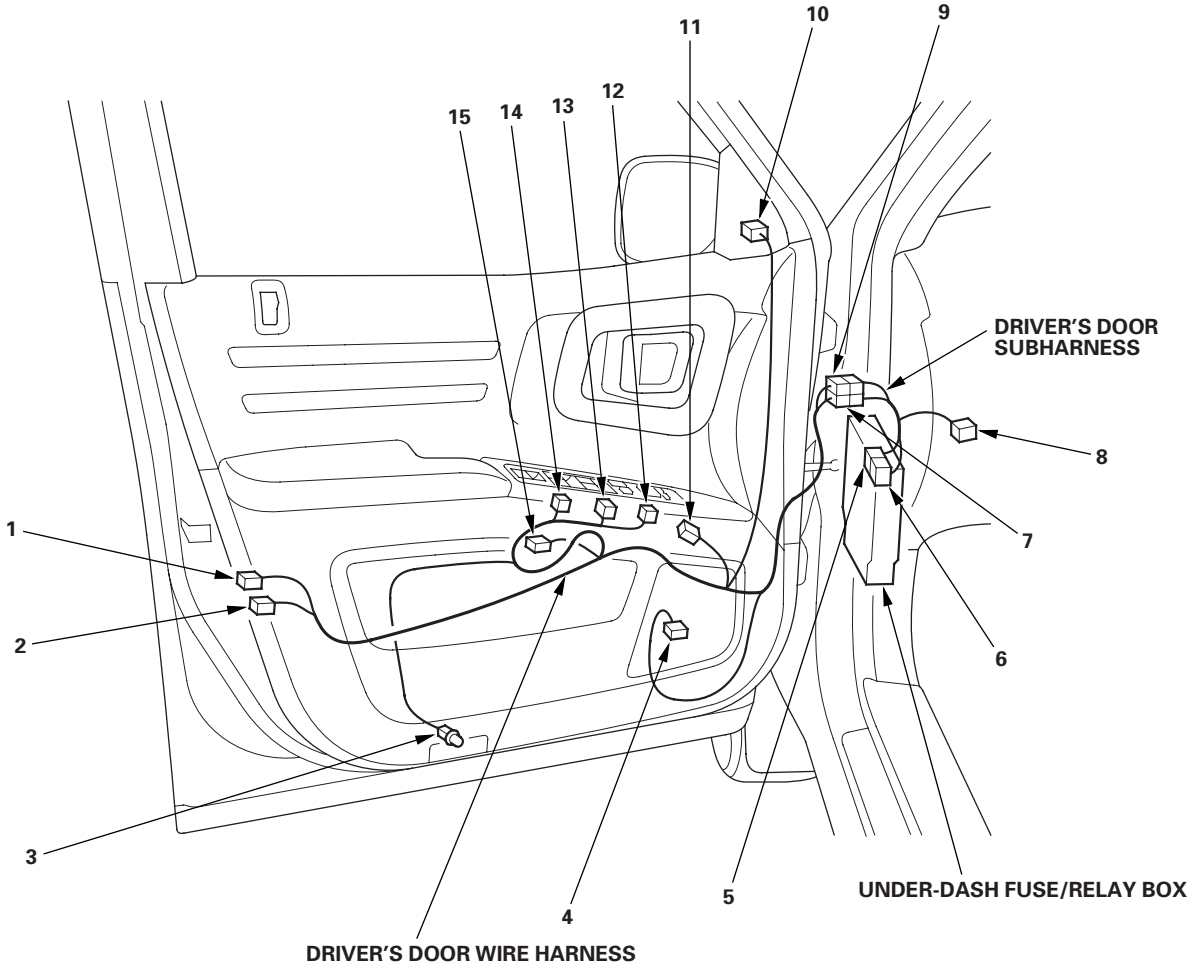
Connector to Harness Index (cont'd)

Driver's Door Wire Harness (RT, RTX, and LX models)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Back power window switch	14	6	Driver's door		
Door multiplex control unit	13	23	Driver's door		
Driver's door courtesy light	3	2	Driver's door		
Driver's door key cylinder switch	15	3	Driver's door		
Driver's door lock actuator	2	2	Driver's door		
Driver's door lock knob switch	1	3	Driver's door		
Driver's door speaker	4	2	Driver's door		
Driver's power window motor	11	6	Driver's door		
Left power mirror actuator	10	8	Driver's door		
Power mirror switch	12	13	Driver's door		
C453	9	20	Driver's door	Driver's door subharness	
C454	7	17	Driver's door	Driver's door subharness	

Driver's Door Subharness (RT, RTX, and LX models)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Under-dash fuse/relay box connector J (see page 22-61)	6	21	Left kick panel		
Under-dash fuse/relay box connector K (see page 22-61)	5	12	Left kick panel		
C453	9	20	Driver's door	Driver's door wire harness	
C454	7	17	Driver's door	Driver's door wire harness	
C502	8	4	Left kick panel	Floor wire harness (see page 22-36)	


11
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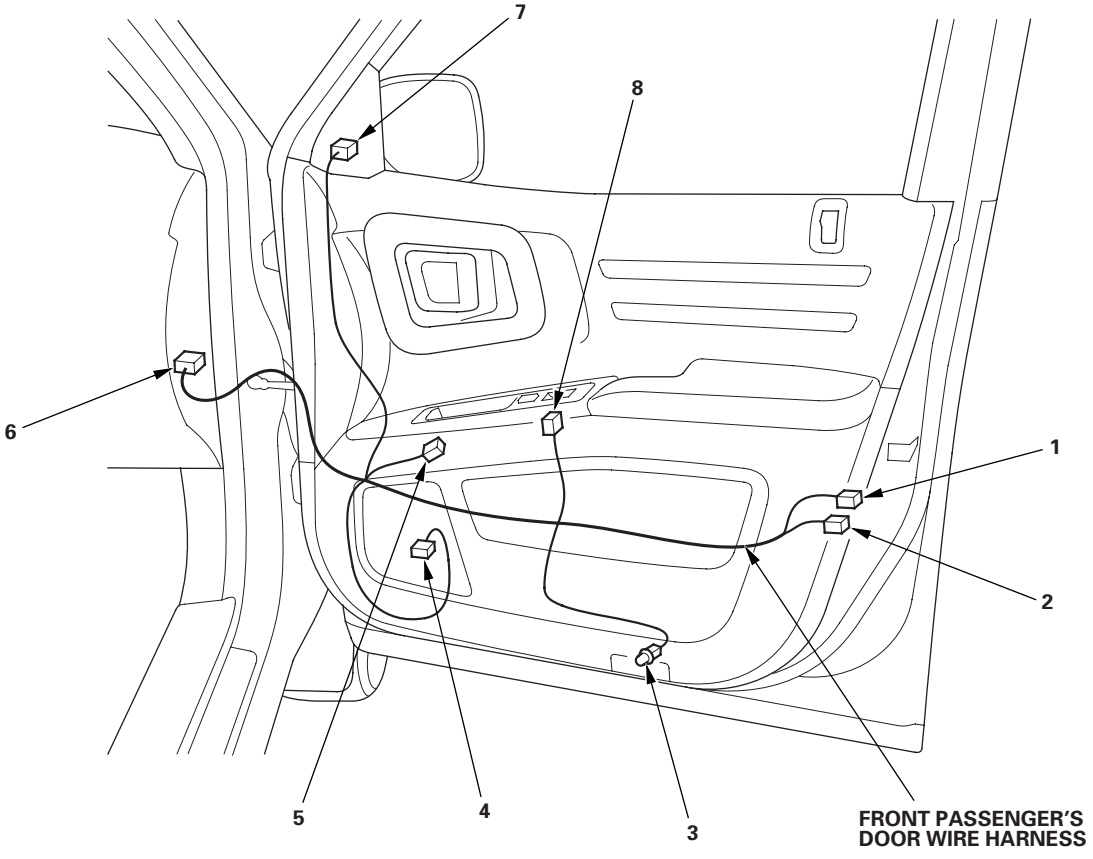
15
14
13
12
DRIVER'S DOOR
SUBHARNESS
8
1
7
2
6
3
5
UNDER-DASH FUSE/RELAY BOX
4
DRIVER'S DOOR WIRE HARNESS

Connector to Harness Index (cont'd)

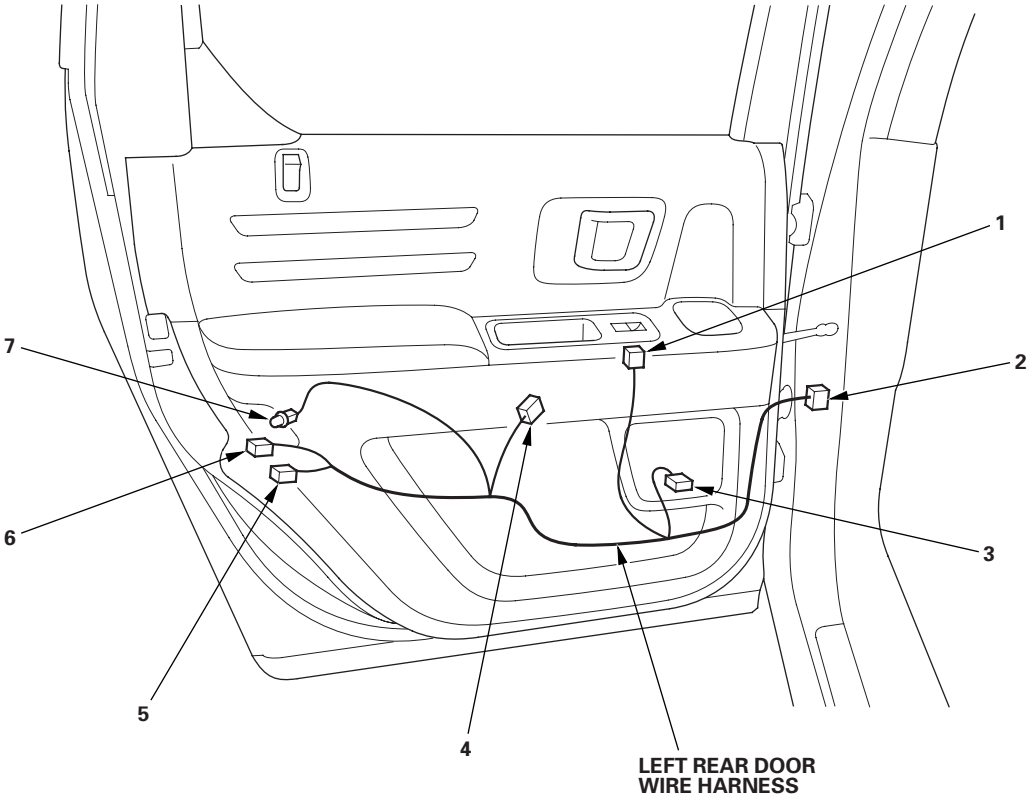
Front Passenger's Door Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Front passenger's door courtesy light	3	2	Front passenger's door		
Front passenger's door lock actuator	2	2	Front passenger's door		
Front passenger's door lock knob switch	1	3	Front passenger's door		
Front passenger's door speaker	4	2	Front passenger's door		
Front passenger's power window switch	8	10	Front passenger's door		
Front passenger's power window motor	5	6	Front passenger's door		
Right power mirror actuator	7	8	Front passenger's door		
C408	6	23	Under right side of dash	Dashboard wire harness (see page 22-32)	



Left Rear Door Wire Harness

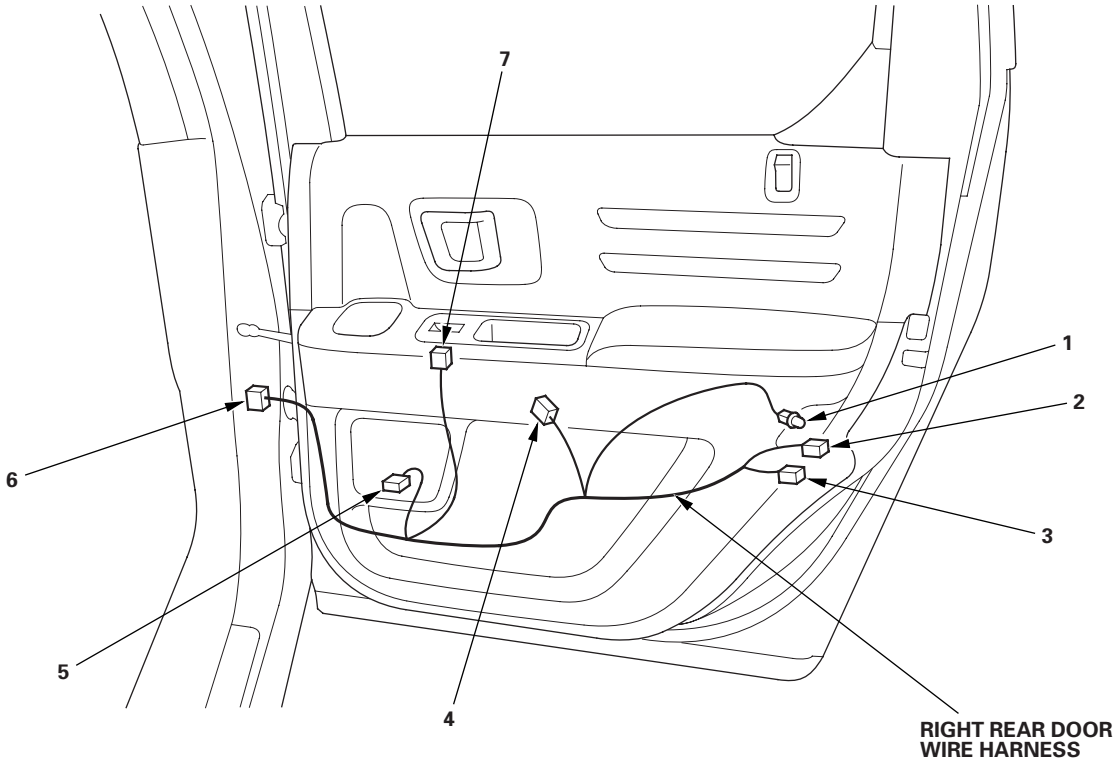
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Left rear door courtesy light	7	2	Left rear door		
Left rear door lock actuator	5	2	Left rear door		
Left rear door lock knob switch	6	3	Left rear door		
Left rear door speaker	3	2	Left rear door		
Left rear power window motor	4	6	Left rear door		
Left rear power window switch	1	6	Left rear door		
C506	2	12	Left B-pillar	Floor wire harness (see page 22-36)	



Connector to Harness Index (cont'd)

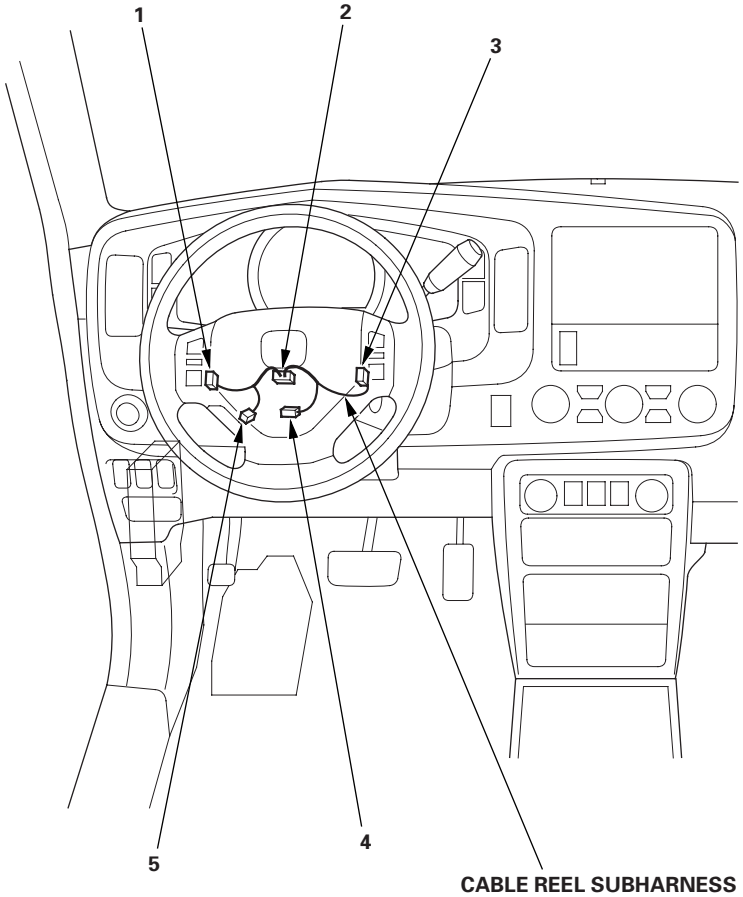
Right Rear Door Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Right rear door courtesy light	1	2	Right rear door		
Right rear door lock actuator	3	2	Right rear door		
Right rear door lock knob switch	2	3	Right rear door		
Right rear door speaker	5	2	Right rear door		
Right rear power window motor	4	6	Right rear door		
Right rear power window switch	7	6	Right rear door		
C507	6	12	Right B-pillar	Floor wire harness (see page 22-38)	



Cable Reel Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Audio remote switch	1	7	In steering column cover		
Cable reel connector B	2	13	In steering column cover		
Cruise control set/decel, resume/accel, cancel switch	3	7	In steering column cover		
Horn switch	4	1	In steering column cover		
Voice control switch	5	5	In steering column cover		



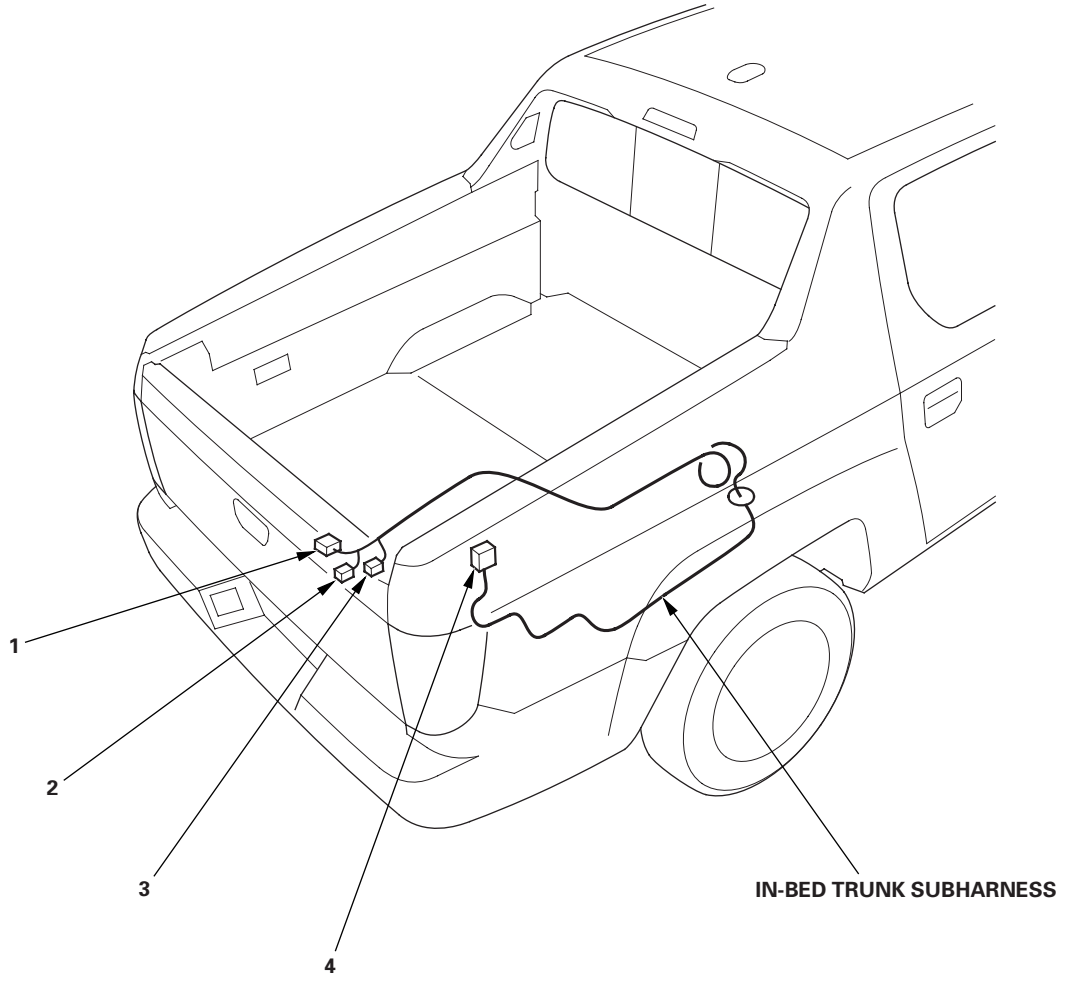
CABLE REEL SUBHARNESS

Connector to Harness Index (cont'd)

In-Bed Trunk Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
In-Bed trunk lid key cylinder switch	2	2	In-Bed trunk lid		*
In-Bed trunk lid actuator/latch switch	1	3	In-Bed trunk lid		
In-Bed trunk lid handle switch	3	2	In-Bed trunk lid		
C601	4	8	Right side of cargo area	Rear wire harness (see page 22-42)	

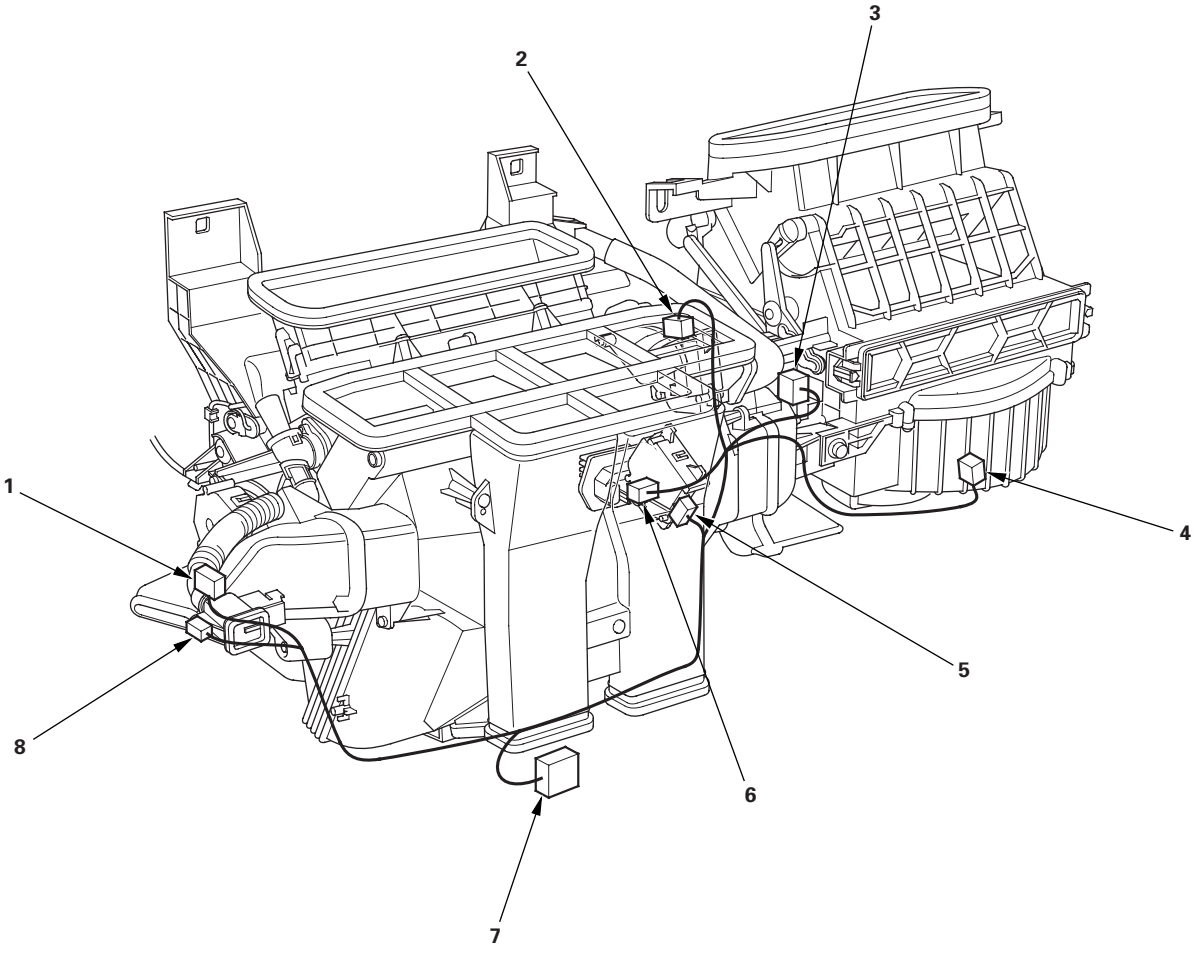
*: RTS, RTL, and EXL models



A/C Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Blower motor	4	2	Under middle of dash		
Driver's air mix control motor	1	7	Under middle of dash		
Evaporator temperature sensor	8	2	Under middle of dash		
Mode control motor	2	7	Under middle of dash		
Passenger's air mix control motor	5	7	Under middle of dash		*
Power transistor	6	4	Under middle of dash		
Recirculation control motor	3	7	Under middle of dash		
C407	7	22	Under middle of dash	Dashboard wire harness (see page 22-32)	

*: RTS, RTL, and EXL models



Connector to Harness Index (cont'd)

Driver's Seat Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's seat belt buckle switch	14	3	Under driver's seat		* 5
Driver's seat heater	12	4	Under driver's seat		* 1
Driver's seat position sensor	16	2	Under driver's seat		* 3
Front up-down motor	17	2	Under driver's seat		
Lumbar support switch	7	5	Left side of driver's seat		* 1
Power seat switch	9	12	Left side of driver's seat		
Rear up-down motor	6	2	Left side of driver's seat		
Slide motor	11	2	Under driver's seat		
C503	2	12	Under driver's seat	Floor wire harness (see page 22-36)	* 4
C503	2	8	Under driver's seat	Floor wire harness (see page 22-36)	* 2
C503	2	13	Under driver's seat	Floor wire harness (see page 22-36)	* 3
C851	13	2	Under driver's seat	Power lumbar support subharness	* 1
C852	10	2	Under driver's seat	Recline motor subharness	* 1

* 1: RTL and EXL
* 2: '06 model: RT and RTS
'06 model: LX
* 3: '07-08 models: RTS and RTL
'07-08 models: EXL
* 4: '06 model: RTL
'06 model: EXL
* 5: '06 model: RTL
'07-08 models: RTS, RTL, and EXL

Power Lumbar Support Subharness (RTL and EXL models)

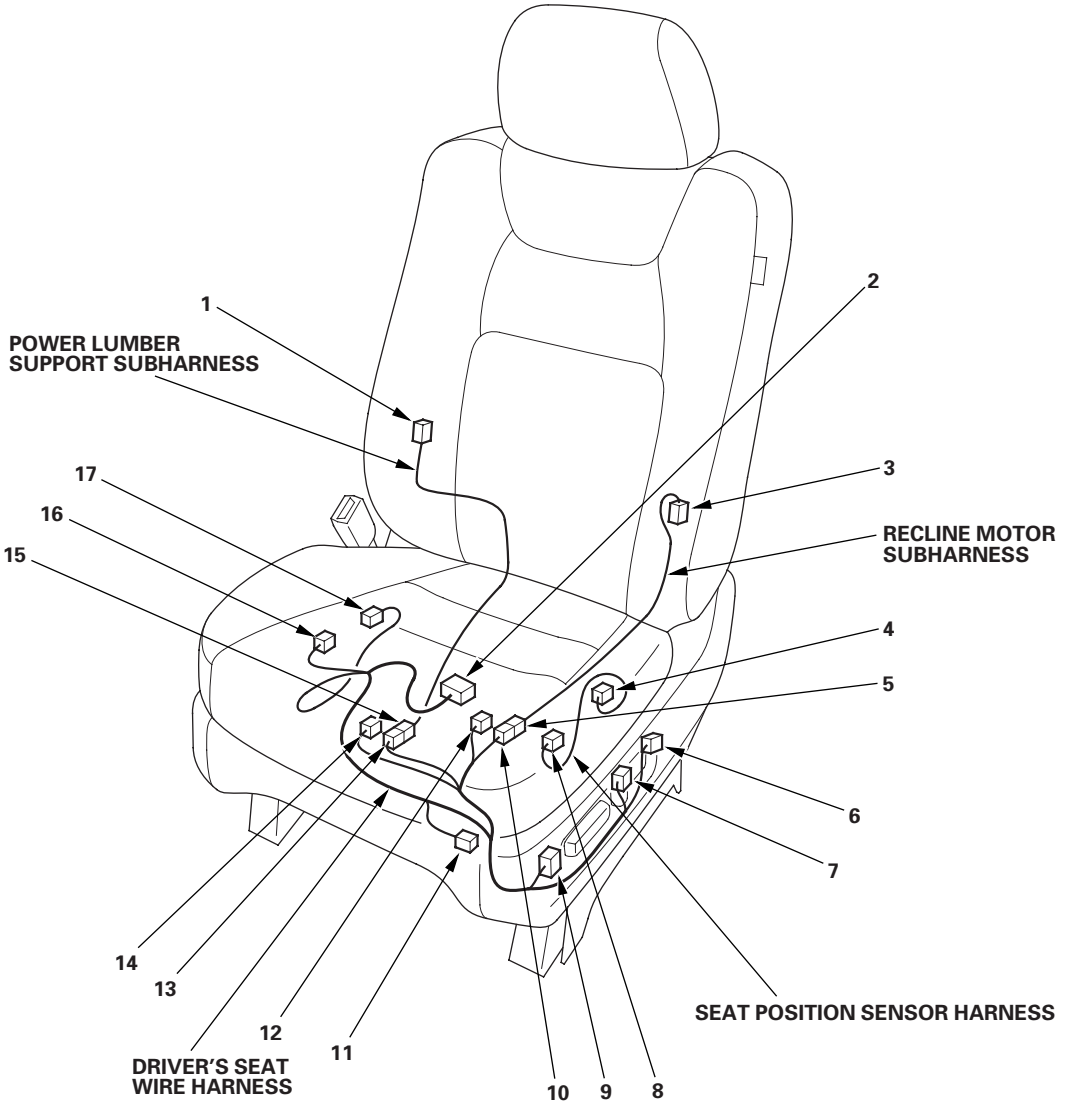
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Lumbar support motor	1	2	Right side of driver's seat back		
C851	15	2	Under driver's seat	Driver's seat wire harness	

Recline Motor Subharness (RTL and EXL models)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Recline motor	3	5	Left side of driver's seat back		
C852	5	2	Under driver's seat	Driver's seat wire harness	

Seat Position Sensor Harness ('07-08 models: RT and RTX; '07-08 models: LX)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
C511	8	2	Under driver's seat	Floor wire harness (see page 22-36)	
Driver's seat position sensor	4	2	Under driver's seat		


1
POWER LUMBER
SUPPORT SUBHARNESS
2
3
RECLINE MOTOR
SUBHARNESS
4
5
6
7
SEAT POSITION SENSOR HARNESS
8
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10
11
12
13
14
DRIVER'S SEAT
WIRE HARNESS
15
16
17

Connector to Harness Index (cont'd)

Front Passenger's Seat Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Front passenger's seat belt buckle switch	2	3	Under front passenger's seat		
Front passenger's seat heater	3	4	Under front passenger's seat		*
C504	6	10	Under front passenger's seat	Floor wire harness (see page 22-38)	
C801	4	4	Under front passenger's seat	OPDS unit harness ('06 model) or ODS unit harness ('07-08 models)	

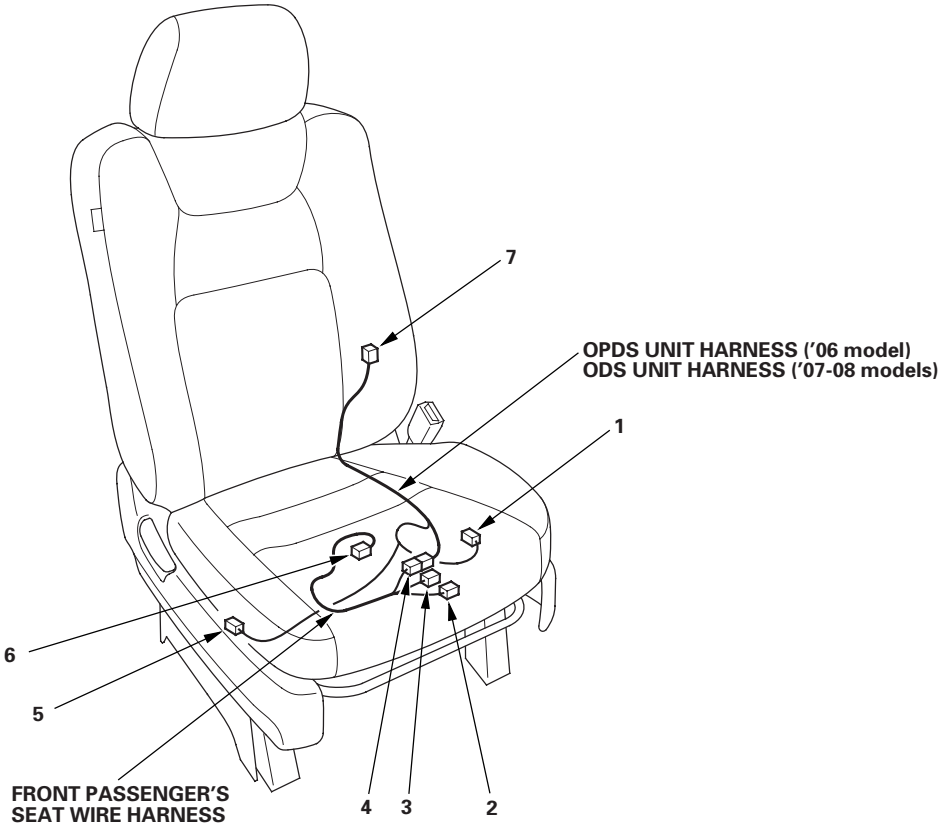
* RTL and EXL models

OPDS Unit Harness ('06 model)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
OPDS unit	7	8	Left side of front passenger's seat back		
C801	4	4	Under front passenger's seat	Front passenger's seat wire harness	

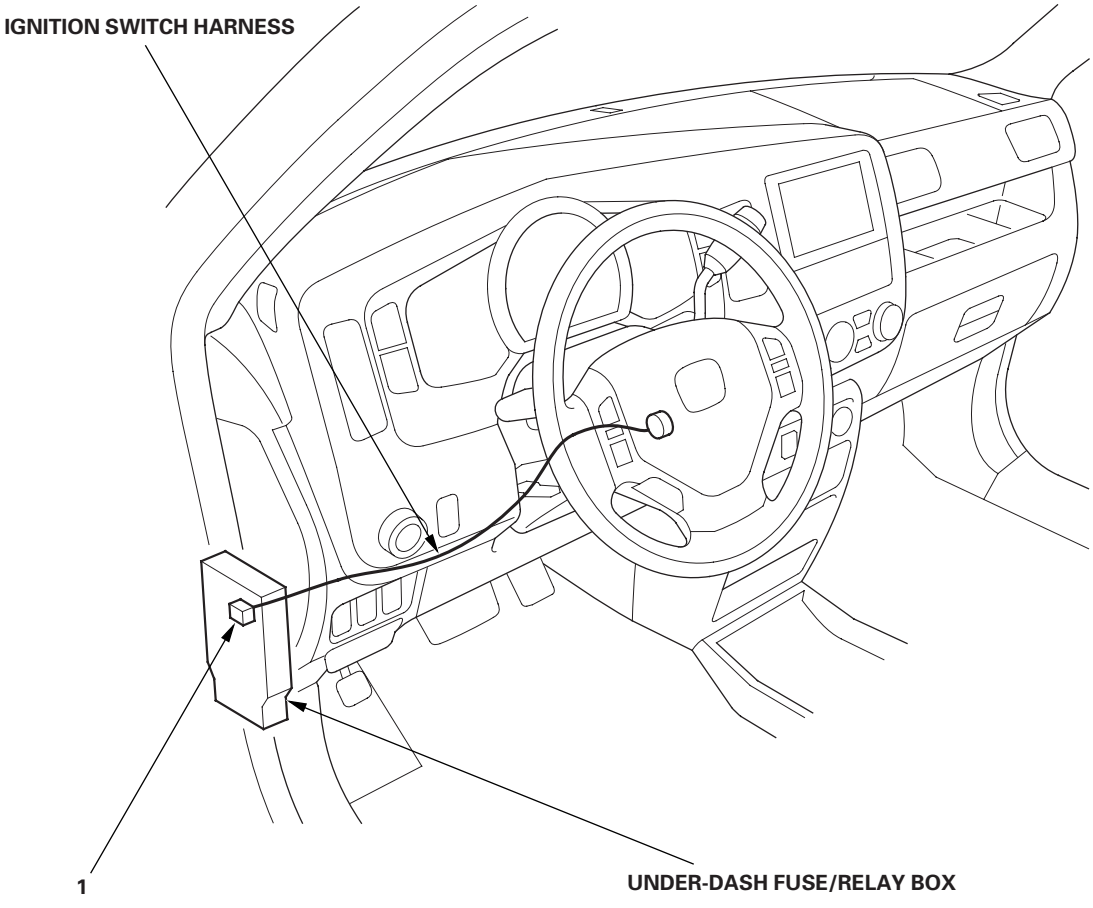
ODS Unit Harness ('07-08 models)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Inner side front passenger's seat weight sensor	1	3	Under front passenger's seat		
ODS unit	7	18	Left side of front passenger's seat back		
Outer side front passenger's seat weight sensor	5	2	Under front passenger's seat		
C801	4	4	Under front passenger's seat	Front passenger's seat wire harness	



Ignition Switch Harness

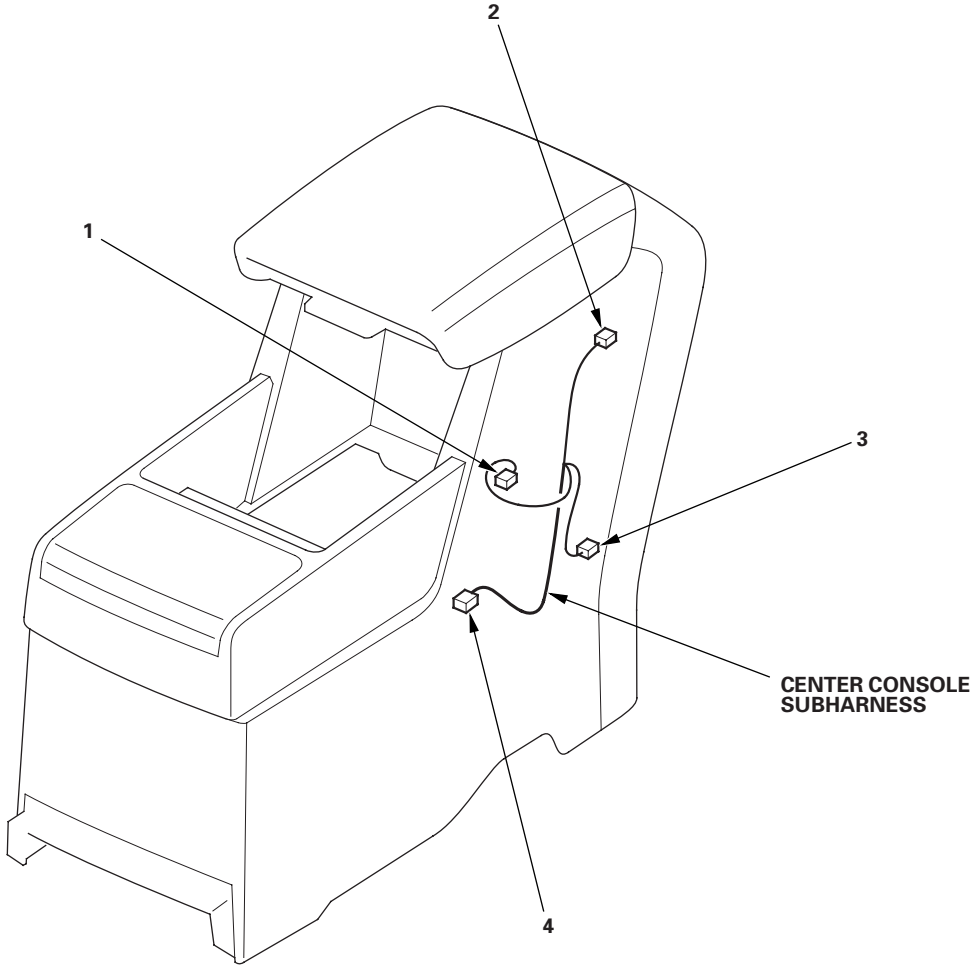
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Under-dash fuse/relay box connector A (see page 22-61)	1	6	Left kick panel		



Connector to Harness Index (cont'd)

Center Console Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Console Box Light 1	3	2	Center console		
Console Box Light 2	1	2	Center console		
Rear accessory power socket	2	2	Center console		
C505	4	6	Center console	Floor wire harness (see page 22-38)	

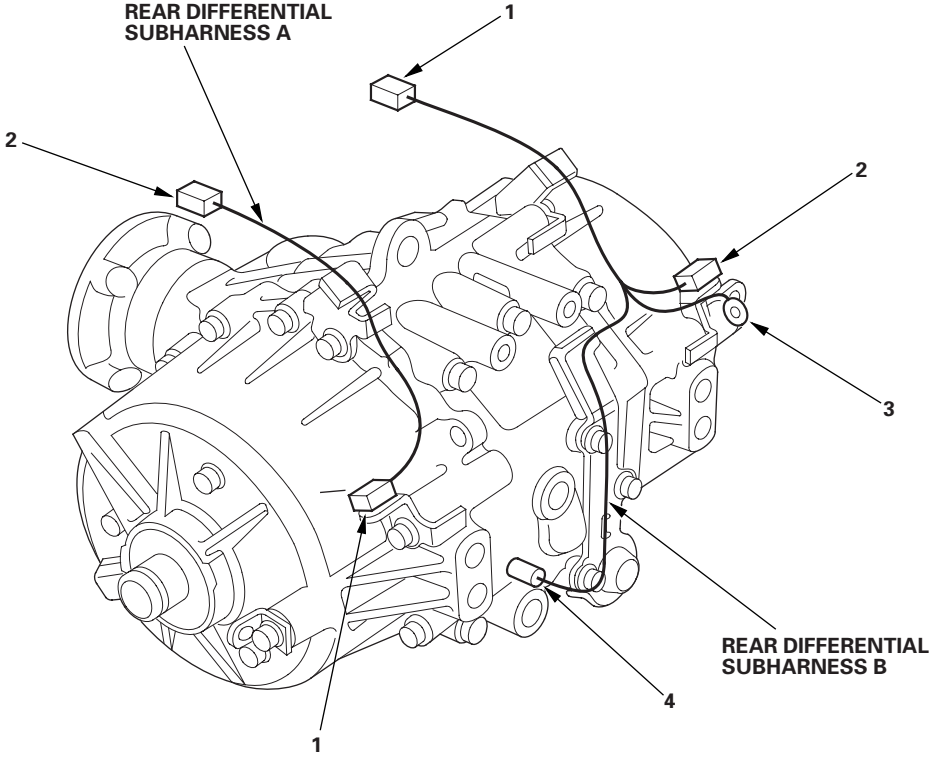


Rear Differential Subharness A

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Left clutch electromagnetic coil	1	2	Rear differential		
C602	2	2	Rear differential	Rear wire harness (see page 22-42)	

Rear Differential Subharness B

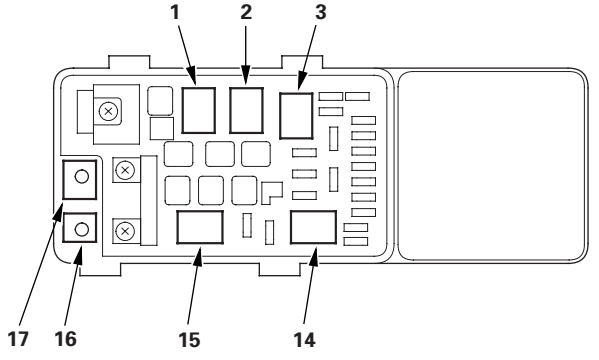
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Right clutch electromagnetic coil	2	2	Rear differential		
Differential oil temperature sensor	4	2	Rear differential		
C603	1	6	Rear differential	Rear wire harness (see page 22-42)	
T6	3		Rear differential	Rear differential housing	



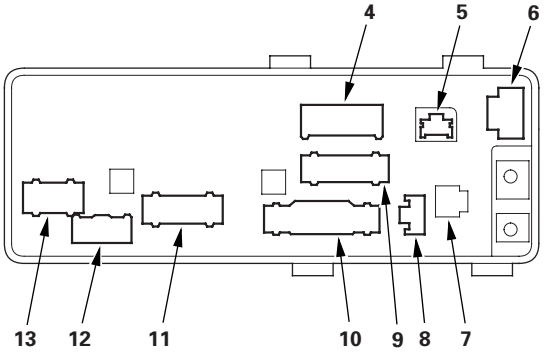
Connector to Fuse/Relay Box Index

Under-hood Fuse/Relay Box

Socket	Ref	Terminal	Connects to
A (ELD unit)	5	3	Right engine compartment wire harness (see page 22-22)
A/C compressor clutch relay	2	4	
B	7	1	Right engine compartment wire harness (see page 22-22)
Blower motor relay	1	4	
C	8	2	Right engine compartment wire harness (see page 22-22)
D	4	9	Right engine compartment wire harness (see page 22-22)
E	9	16	Right engine compartment wire harness (see page 22-22)
ETCS relay	15	4	
F	10	20	Right engine compartment wire harness (see page 22-22)
G	6	2	Right engine compartment wire harness (see page 22-22)
H	11	18	Right engine compartment wire harness (see page 22-22)
Heated windshield wiper area relay	3	4	
J	13	10	Right engine compartment wire harness (see page 22-22)
K	12	5	Right engine compartment wire harness (see page 22-22)
Seat heater relay	14	4	
T1	16		Starter cable (see page 22-16)
T101	17		Alternator +B cable (see page 22-16)



(Viewed from top)

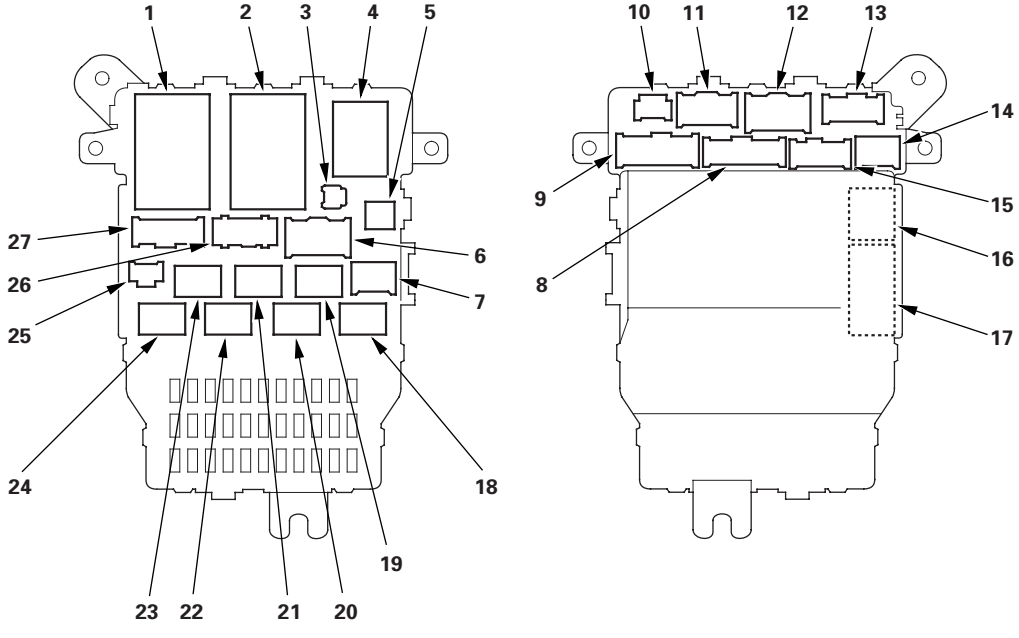


(Viewed from bottom)

Under-dash Fuse/Relay Box

Socket	Ref	Terminal	Connects to
A	6	6	Ignition switch harness (see page 22-57)
A/F sensor relay	20	4	
B	12	6	Right engine compartment wire harness (see page 22-22)
C	11	12	Right engine compartment wire harness (see page 22-22)
D	13	17	Right engine compartment wire harness (see page 22-22)
E	8	16	Floor wire harness (see page 22-36)
F	9	14	Floor wire harness (see page 22-36)
G	14	6	Not used
H	15	14	Floor wire harness (see page 22-36)
Ignition coil relay	23	4	
J	27	21	Driver's door subharness (see page 22-44) *1 Driver's door subharness (see page 22-46) *2
K	26	12	Driver's door subharness (see page 22-44) *1 Driver's door subharness (see page 22-46) *2
M	25	3	MICU service check connector
N	2	45	Dashboard wire harness (see page 22-28)
P (MICU)	17	30	Dashboard wire harness (see page 22-28)
PGM-FI main relay 1 (FI MAIN)	21	4	
PGM-FI main relay 2 (fuel pump)	24	4	
Power window relay	22	4	
Q (MICU)	16	14	Floor wire harness (see page 22-36)
R (MES connector)	3	2	Dashboard wire harness (see page 22-28)
Rear accessory power socket relay	19	4	
S	5	2	Dashboard wire harness (see page 22-28)
Starter cut relay	18	4	
T	7	6	Optional connector
Turn signal/hazard relay	4	6	
W	10	5	Roof wire harness (see page 22-40)
X	1	39	Dashboard wire harness (see page 22-28)

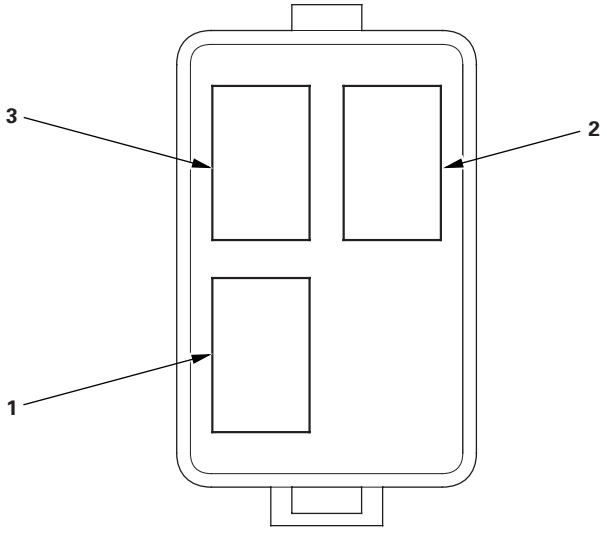
* 1:RTS, RTL, and EXL models
* 2:RT, RTX, and LX models



Connector to Fuse/Relay Box Index (cont'd)

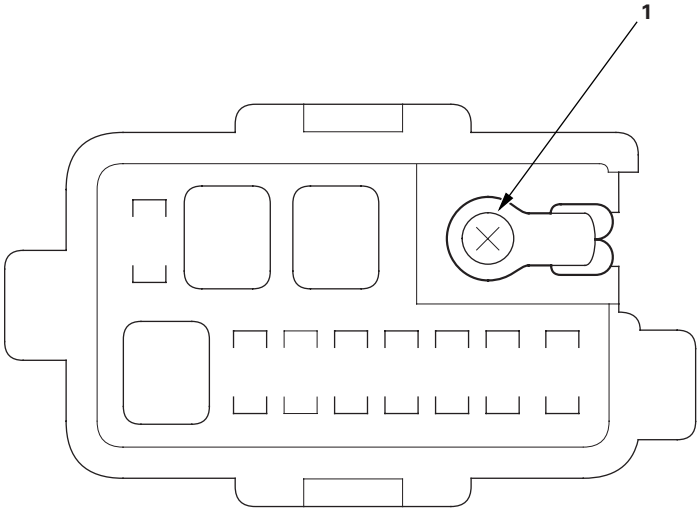
Auxiliary Under-hood Relay box

Socket	Ref	Terminal	Connects to
A/C condenser fan relay	3	4	Right engine compartment (see page 22-22)
Fan control relay	1	5	Right engine compartment (see page 22-22)
Radiator fan relay	2	4	Right engine compartment (see page 22-22)



Auxiliary Under-hood fuse Box

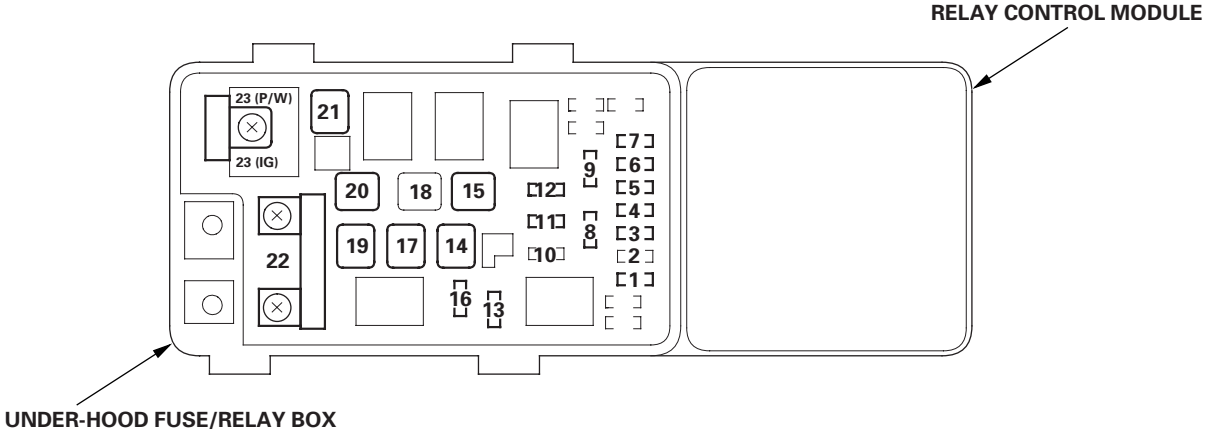
Socket	Ref	Terminal	Connects to
T5	1	———	Starter cable (see page 22-16)



Fuse to Components Index

Under-hood Fuse/Relay Box

Fuse Number	Amps	Component(s) or Circuit(s) Protected
1	10 A	Left headlight (low beam)
2	———	Not used
3	10 A	Left headlight (high beam)
4	15 A	Ambient light, Audio unit, Audio remote switch light, Dash lights brightness controller light, Cargo area light switch light, Console box light 2, Cruise control main switch light, Front side marker lights, Glove box light, Hazard warning switch light, HVAC control unit light/Climate control unit light, Interior light switch light, License plate light, Moonroof switch light, Navigation display unit, Navigation unit, Power mirror switch light, Relay control module, Seat heater switch lights, Select/reset switch light, Taillights, VSA OFF switch light, VTM-4 switch light
5	10 A	Right headlight (high beam)
6	10 A	Right headlight (low beam)
7	7.5 A	Relay control module
8	15 A	CMP sensor, CKP sensor A/B, Injectors, Data link connector, PCM, PGM-FI main relay 1, ETCS relay
9	15 A	PCM (via ETCS relay)
10	———	Not used
11	15 A	Seat heaters (via seat heater relay)
12	7.5 A	A/C compressor clutch (via A/C compressor clutch relay)
13	20 A	Brake lights, High mount brake light, MICU, PCM, Horns (via relay module), Relay control module
14	20 A	Heated windshield wiper area
15	40 A	No. 5 through No. 9 fuses in the under-dash fuse/relay box
16	15 A	Turn signal/hazard relay
17	40 A	No. 1 through No. 4 fuses in the under-dash fuse/relay box
18	———	Not used
19	30A	Radiator fan motor (via radiator fan relay)
20	30 A	A/C condenser fan motor (via A/C condenser fan relay)
21	40 A	Blower motor (via blower motor relay)
22	120 A (BAT)	Battery, Power distribution
	40 A (SEAT)	No. 12 through No. 17 fuses in the under-dash fuse/relay box
23	50 A (IG)	Ignition switch (BAT), No. 33 fuse in the under-dash fuse/relay box
	50 A (P/W)	Power window relay, No. 24 through No. 28 fuses in the under-dash fuse/relay box

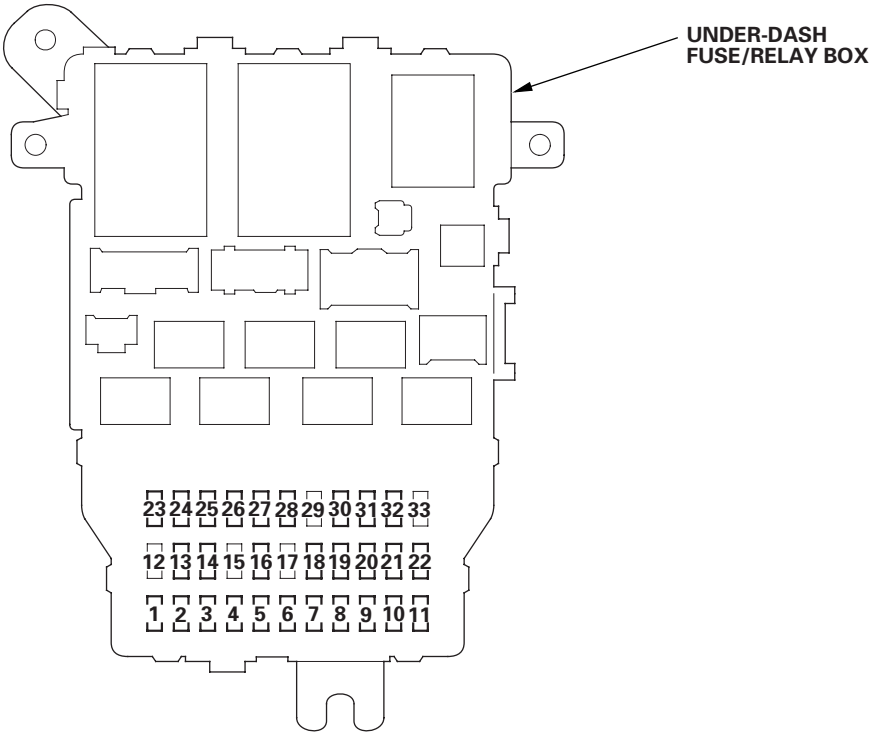


Under-dash Fuse/Relay Box

Fuse Number	Amps	Component(s) or Circuit(s) Protected
1	7.5 A	Cargo area light relay
2	15 A	Ignition coil (IG) relay
		Ignition coils (via ignition coil relay)
3	10 A	Daytime running lights relay (Canada), MICU
4	15 A	These components via A/F sensor relay: A/F sensors (Bank 1, Bank 2), EVAP canister vent shut valve, Secondary heated oxygen sensors (Bank 1, Bank 2), Vehicle speed sensor
5	20 A	Audio unit
6	10 A	Ambient light, Ceiling light, Console box light 1, Courtesy lights, Map lights, Vanity mirror lights
7	7.5 A	Combination switch control unit, Door multiplex control unit, Gauge control module, Ignition key light, Immobilizer control unit-receiver, Imoes unit ('07-08 Canada models, '08 USA models), Navigation display unit, Navigation unit, Security indicator, XM receiver, MICU
8	20 A	MICU
9	10 A	Rear accessory power socket (via accessory power socket relay)
10	7.5 A	ODS unit ('07-08 models), OPDS unit (2006 model), SRS unit
11	30 A	Windshield wiper motor
12	———	Not used
13	10A	Driver's power lumber support motor
14	20 A	Driver's power seat slide motor and front up-down motor
15	———	Not used
16	20 A	Driver's power seat recline motor and rear up-down motor
17	———	Not used
18	15 A	Alternator, Brake pedal position switch, Cruise control main switch, ELD unit, EVAP canister purge valve, PCM, VTM-4 relay
19	15 A	PCM, Immobilizer control unit-receiver, Imoes unit ('07-08 Canada models, '08 USA models)
		Fuel pump (via fuel pump relay)
20	7.5 A	Electrical compass, Windshield washer motor
21	7.5 A	Headlight switch, Combination switch control unit, Dash lights brightness controller, Door multiplex control unit, Front passenger's airbag cutoff indicator, Front passenger's power window switch indicator, Gauge control module, MICU, Relay control module, Shift lock solenoid, TPMS control unit, VTM-4 control unit, VTM-4 switch
22	10 A	SRS unit
23	7.5 A	Radiator fan relay (via A/C diode), PCM (via A/F sensor relay)
24	20 A	Left rear power window motor
25	20 A	Right rear power window motor
26	20 A	Front passenger's power window motor
27	20 A	Back power window motor
28	20 A	Power window master switch
29	———	Not used
30	7.5 A	A/C compressor clutch relay, A/C condenser fan relay, Blower motor relay, Fan control relay, Heated windshield wiper area relay, HVAC control unit/Climate control unit, Power mirror defoggers, power mirror actuators, Recirculation control motor, Seat heater relay, Trailer lighting relay (optional)
31	7.5 A	Steering angle sensor, Yaw rate-lateral acceleration sensor, VSA modulator-control unit
32	7.5A	Accessory power socket relays, Audio unit, Front accessory power socket relay, Gauge control module, Ignition key switch, MICU, Navigation display unit, Navigation unit
33	———	Not used

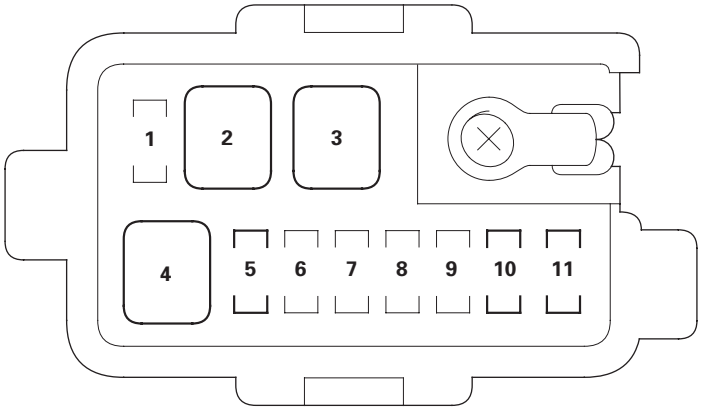
(cont'd)

Fuse to Components Index (cont'd)



Auxiliary Under-hood Fuse Box

Fuse Number	Amps	Component(s) or Circuit(s) Protected
1	7.5 A	Trailer lighting connector (+B BACK LT)
2	20 A	VSA modulator-control unit (+B SOL)
3	40 A	VSA modulator-control unit (+B MTR)
4	20 A	VTM-4 control unit (via VTM-4 relay)
5	15 A	Front accessory power sockets (via front accessory power socket relay)
6	20 A	Trailer lighting connector (+B BRAKE)
7	20 A	Trailer lighting connector (+B SMALL)
8	7.5 A	Trailer lighting connector (+B HAZ)
9	20 A	Trailer lighting connector (+B CHARGE)
10	7.5 A	TPMS control unit
11	20 A	Moonroof motor (via moonroof open and close relays)



Ground Distribution

Ground to Components Index

Ground	Component or circuit grounded
G1	Battery, Transmission housing
G2	Right side engine mount bracket
G101 and G102	A/T clutch pressure control solenoid valve A, B, C (BLK), CMP sensor (BRN/YEL), CKP sensor A/B (BRN/YEL), EGR valve (BLK), Ignition coils (BLK), PCM (PG1 and PG2 are BLK, and LG1 and LG2 are BRN/YEL), Transmission range switch (BLK), Rocker arm (VTEC) oil pressure switch (BRN/YEL)
	Shielding between PCM and these components have BRN/YEL wires: Rear A/F sensor (Bank 1, Sensor1), Front A/F sensor (Bank 2, Sensor1), Knock sensor, Rear secondary HO2S (Bank 1, Sensor2), Front secondary HO2S (Bank 2, Sensor2), Throttle actuator control module and throttle body
G201	Fan control relay, Radiator fan motor, Right front turn signal/side marker light, Right headlight, Security hood switch, Washer fluid level sensor, Windshield washer motor
G202	A/C pressure switch, Blower motor relay, ELD unit, Power steering pressure (PSP) switch, Relay control module (2 wires), Seat heater relay, Windshield wiper motor
G301	Brake fluid level switch, Left front turn signal/side marker light, Left headlight
G302	VSA control unit-modulator (2 wires)
G401	Automatic dimming inside mirror (optional), Cargo area light switch, Combination switch control unit, Condenser (Brake lights), Cruise control main switch, Daytime running lights relay (Canada), Electrical compass, Door multiplex control unit, Accessory power socket relays, Passenger's vanity mirror light, Heated windshield wiper area, Driver's vanity mirror ('07-08 models), Gauge control module, Ignition key switch, Low beam cut relay (Canada), Memory erase signal (MES) connector, Moonroof relays, Moonroof switch, D3 switch, Park pin switch, Driver's door key cylinder switch, Driver's door lock knob switch, Driver's power window motor, Trailer lighting connector (Brake), Trailer lighting relay (optional), TPMS control unit, VSA OFF switch
G402	Data link connector (DLC) (2 wires), Driver's accessory power socket, Front passenger's door lock knob switch, Front passenger's door lock switch, Front passenger's power window switch, Gauge control module, HVAC control unit/Climate control unit, Glove box light, Interior light switch, Navigation display unit, Passenger's accessory power socket, Power transistor, Right power mirror defogger, Seat heater switches, Select/reset switch, Trailer lighting converter (optional)
G403	MICU
G404	Audio unit
G405	SRS unit (2 wires)
G501	Door multiplex control unit, Driver's seat belt buckle switch, Driver's power seat adjustment switch (2 wires), Driver's seat heater, Front passenger's seat belt buckle switch, Front passenger's seat heater, Left power mirror defogger, Left rear door lock knob switch, Left rear power window switch, MICU (2 wires), Navigation unit, ODS unit ('07-08 models), OPDS unit ('06 model), Power lumbar support switch, Power mirror switch, Rear accessory power socket, Back power window main switch, Right rear door lock knob switch, Right rear power window switch, VTM-4 control unit (3 wires), XM receiver unit, Turn signal/Hazard relay
G502	Fuel pump/fuel gauge sending unit
G551	High mount brake light
G601	Left back-up light, Left brake light, Left cargo area lights, Left license plate light, Left rear turn signal light, Left taillight, Back power window position switch, Right clutch electromagnetic coil/differential oil temperature sensor, Trailer lighting connector (optional) (2 wires), In-bed trunk lid actuator/latch switch
G602	Right back-up light, Right brake light, Right cargo area lights, Right license plate light, Right rear turn signal light, Right taillight, In-bed trunk lid key cylinder switch, Tailgate switch, Trunk handle switch

DTC Troubleshooting

DTC B1055: Relay Control Module Lost Communication with MICU (MICU message)

DTC B1057: Relay Control Module Lost Communication with MICU (DOORSW message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Are DTCs B1055 and/or B1057 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the relay control module system is OK at this time. Check for loose or poor connections. ■
5. Check for DTCs with the HDS.

   B1055: Are DTCs B1106, B1157, and B1255 also indicated? B1057: Are DTCs B1105 and B1159 also indicated?

   YES—Do the MICU input test (see page 22-117). ■

   NO—Do the relay control module input test (see page 22-125). ■

DTC B1056: Relay Control Module Lost Communication with MICU (ALARM message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1056 indicated?

   YES—Go to relay control module input test (see page 22-125). ■

   NO—Intermittent failure, the relay control module system is OK at this time. Check for loose or poor connections. ■

DTC Troubleshooting (cont'd)

DTC B1058: Relay Control Module Lost Communication with Door Multiplex Control Unit (DRLOCKSW message)

DTC B1059: Relay Control Module Lost Communication with Door Multiplex Control Unit (PANIC message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Are DTCs B1058 and/or B1059 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the relay control module system is OK at this time. Check for loose or poor connections. ■
5. Check for DTCs with the HDS.

   B1058: Are DTCs B1006 and B1160 also indicated? B1059: Is DTC B1010 also indicated?

   YES—Go to door multiplex control unit input test (see page 22-123). ■

   NO—Go to relay control module input test (see page 22-125). ■

DTC B1060: Relay Control Module Lost Communication with Gauge Control Module (VPS/NE Message)

DTC B1061: Relay Control Module Lost Communication with Gauge Control Module (A/T Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Are DTCs B1060 and/or B1061 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose or poor connection between the relay control module and the gauge control module. ■
5. Check for DTCs with the HDS.

   B1060: Are DTCs B1011 and B1205 also indicated? B1061: Is DTC B1008 also indicated?

   YES—Do the gauge control module input test (see page 22-122). ■

   NO—Do the relay control module input test (see page 22-125). ■

DTC B1062: Relay Control Module Lost Communication with Combination Switch Control Unit (HLSW Message)

DTC B1063: Relay Control Module Lost Communication with Combination Switch Control Unit (WIPSW Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Are DTCs B1062 and/or B1063 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose or poor connection between the relay control module and the combination switch control unit. ■
5. Check for DTCs with the HDS.

   B1062: Are DTCs B1007 and B1155 also indicated? B1063: Is DTC B1156 also indicated?

   YES—Do the combination switch control unit input test (see page 22-124). ■

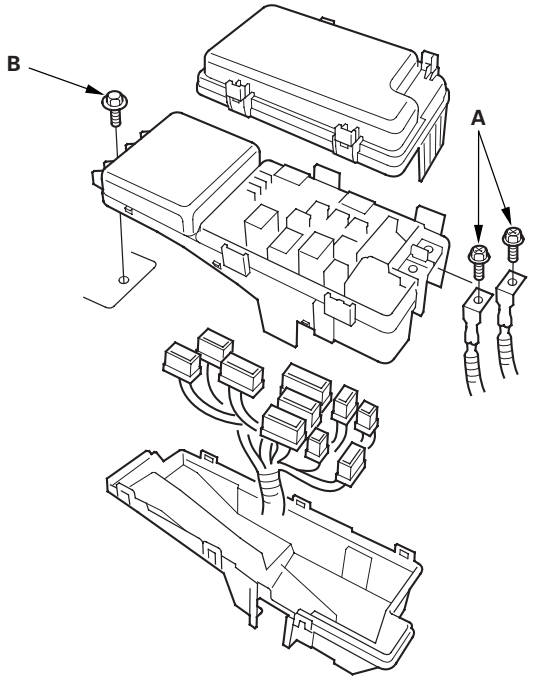
   NO—Do the relay control module input test (see page 22-125). ■

Under-hood Fuse/Relay Box

Removal and Installation

Removal

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped). Make sure the ignition switch is OFF.
2. Disconnect the negative battery cable, then disconnect the positive cable, and wait at least 3 minutes.
3. Remove the screws (A) for the alternator and battery cable terminals from the under-hood fuse/relay box.



4. Remove the mounting bolt (B) from the under-hood fuse/relay box.
5. Remove the bottom cover from the under-hood fuse/relay box.
6. Disconnect the connectors from the under-hood fuse/relay box.
7. If replacing the fuse/relay box, carefully remove the relays by prying under the base of the relay.

   NOTE: Do not use pliers. Pliers will damage the relays, which could cause the engine to stall or not start.

Installation

1. Install the relays and connect the connectors to the under-hood fuse/relay box, then install the under-hood fuse/relay box in the reverse order of removal.
2. Install the removed parts in the reverse order of removal.
3. Connect both the positive and negative cables to the battery.
4. Do the power window control unit reset procedure (see page 22-209).
5. Enter the anti-theft codes for the audio and the navigation system (if equipped). Set the clock (on vehicles without navigation).
6. Confirm that all systems work properly.

Under-dash Fuse/Relay Box

Removal and Installation

SRS components are located in this area. Review the SRS component locations (see page 24-14), and precautions and procedures (see page 24-16) before performing repairs or service.

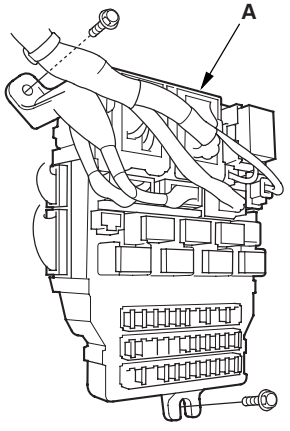
Removal

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped). Make sure the ignition switch is OFF.

2. Disconnect the negative battery cable, then disconnect the positive cable, and wait at least 3 minutes.

3. Remove the left front door sill trim and left kick panel (see page 20-60).

4. Disconnect the connectors from the fuse side of the under-dash fuse/relay box (A).



5. Remove the two mounting bolts and pull the fuse/relay box away from the body.

6. Disconnect the connectors and remove the under-dash fuse/relay box.

   NOTE: Some SRS harness connectors are spring-loaded lock type (see page 24-21).

7. If replacing the fuse/relay box, carefully remove the relays by prying under the base of the relay.

   NOTE: Do not use pliers. Pliers will damage the relays, which could cause the engine to stall or not start.

Installation

1. Install relays and connect the connectors to the under-dash fuse/relay box, then install the under-dash fuse/relay box in the reverse order of removal.

2. Install the removed parts in the reverse order of removal.

3. Connect both the positive cables and negative cables to the battery.

4. Do the power window control unit reset procedure (see page 22-209).

5. Enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock (on vehicles without navigation).

6. Confirm that all systems work properly.

Battery Test

⚠ WARNING

A battery can explode if you do not follow the proper procedure, causing serious injury to anyone nearby. Follow all procedures carefully and keep sparks and open flames away from the battery.

Use an ED-18™ Battery Tester, and follow the manufacturer's procedures. If you don't have one of these computerized testers, follow this conventional test procedure:

1. Be sure the temperature of the electrolyte is between 70 °F (21 °C) and 100 °F (38 °C).

2. Inspect the battery case for cracks or leaks.

   - If the case is damaged, replace the battery. ■
   - If the case looks OK, go to step 3.

3. Check the test indicator window.

   - If the test indicator window indicates the battery is charged, go to step 4.
   - If the test indicator window indicates a low charge, go to step 7.

4. Apply a 300 amp load for 15 seconds to remove the surface charge.

5. Wait 15 seconds, then apply a test load of 280 amps for 15 seconds.

6. Record battery voltage.

   - If voltage is above 9.6 V, the battery is OK. ■
   - If voltage is below 9.6 V, go to step 7.

7. Charge the battery on High (40 amps) until the test indicator window shows the battery is charged, plus an additional 30 minutes. If the battery charge is very low, it may be necessary to bypass the charger's polarity protection circuitry.

   - If the test indicator window indicates the battery is charged within three hours, repeat steps 4 through 6. If the battery is still below 9.6 V, replace the battery. ■
   - If the test indicator window indicates the battery is not charged within three hours, replace the battery. ■

Power Relay Test

Use this chart to identify the type of relay, then do the test listed for it.

NOTE: For the turn signal/hazard relay input test (see page 22-188).

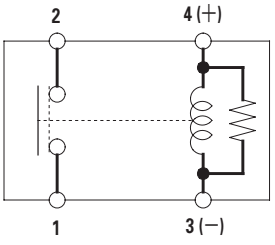
Relay	Test
A/C compressor clutch relay	Normally-open type
A/F sensor relay	
Rear accessory power socket relay	
Blower motor relay	
A/C condenser fan relay	
Ignition coil relay	
PGM-FI main relay 1 (FI MAIN), 2 (Fuel pump)	
Power window relay	
Radiator fan relay	
Heated windshield wiper area relay	
Seat heater relay	
Low beam cut relay (Canada)	
Cargo area light relay	
Front accessory power socket relay	
VTM-4 relay	
ETCS relay	
Starter cut relay	
Trailer lighting connector relay	
Daytime running lights relay (Canada)	Five-terminal type
Fan control relay	
Moonroof close relay	
Moonroof open relay	

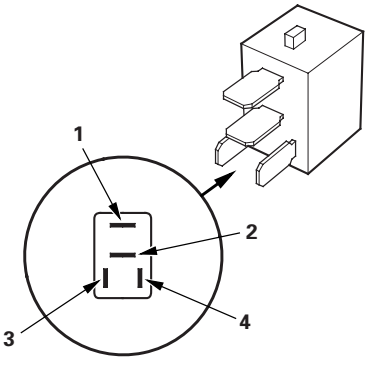
Normally-open type

Check for continuity between the terminals.

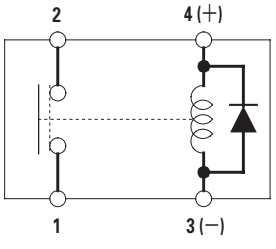
- There should be continuity between the No. 1 and No. 2 terminals when power is connected to the No. 4 terminal and ground the No. 3 terminal.
- There should be no continuity between the No. 1 and No. 2 terminals when power is disconnected.

Resistance type





Diode type



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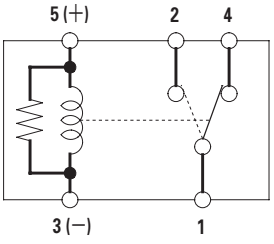
Power Relay Test (cont'd)

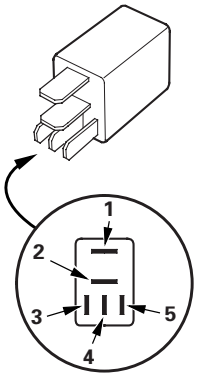
Five-terminal type B

Check for continuity between the terminals.

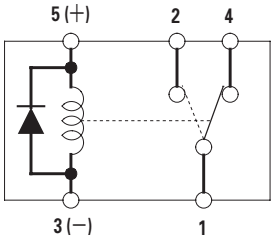
- There should be continuity between the No. 1 and No. 2 terminals when power is connected to the No. 5 terminal and ground the No. 3 terminal.
- There should be continuity between the No. 1 and No. 4 terminals when power is disconnected.

Resistance type





Diode type

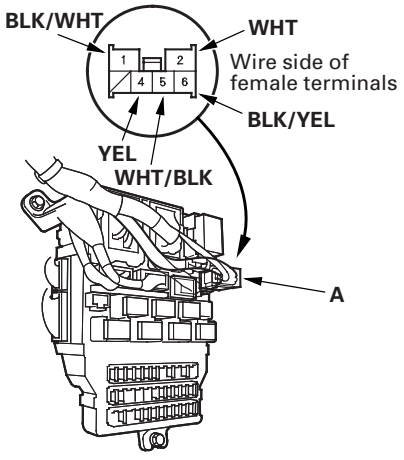


Ignition Switch

Test

SRS components are located in the area. Review the SRS component locations (see page 24-14), and precautions and procedures (see page 24-16) before performing repairs or servicing.

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped). Make sure the ignition switch is OFF.
2. Disconnect the battery negative cable.
3. Remove the left front door sill trim and left kick panel (see page 20-60).
4. Disconnect the 6P connector (A) from the under-dash fuse/relay box.



5. Check for continuity between the terminals in each switch position according to the table.

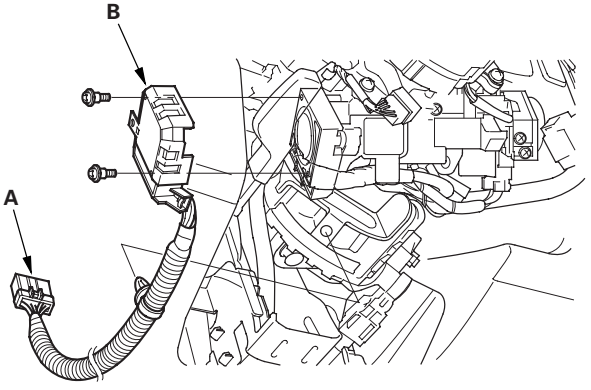
Terminal / Position	WHT/ BLK (ACC)	WHT (BAT)	BLK/ YEL (IG1)	YEL (IG2)	BLK/ WHT (ST)
O (LOCK)					
I (ACC)	○	○			
II (ON)	○	○	○	○	
III (START)		○	○		○

6. If the continuity checks do not agree with the table, replace the ignition switch (see page 22-77).
7. After reconnecting the battery, enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock (on vehicles without navigation).

Replacement

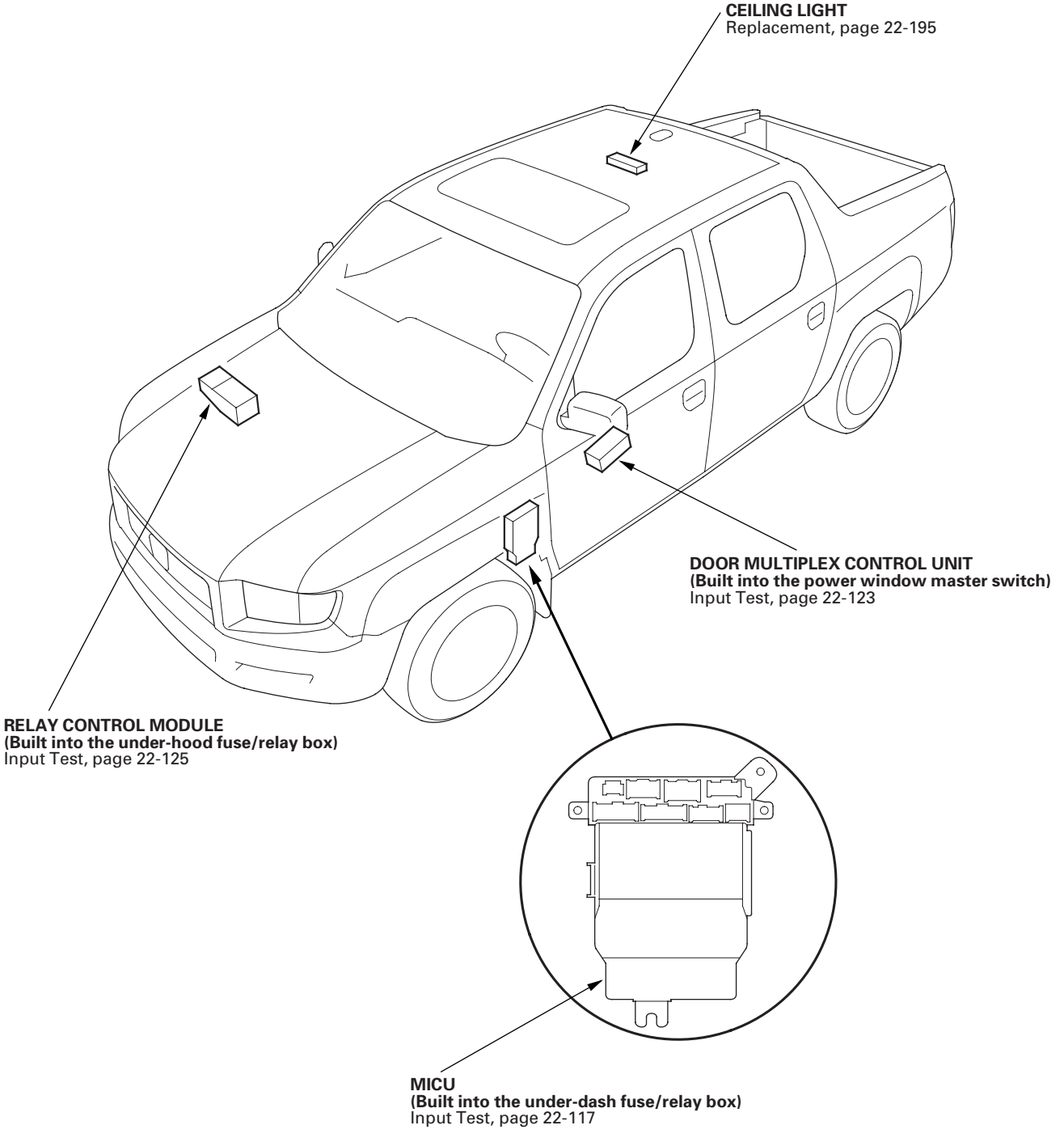
SRS components are located in the area. Review the SRS component locations (see page 24-14), and precautions and procedures (see page 24-16) before performing repairs or servicing.

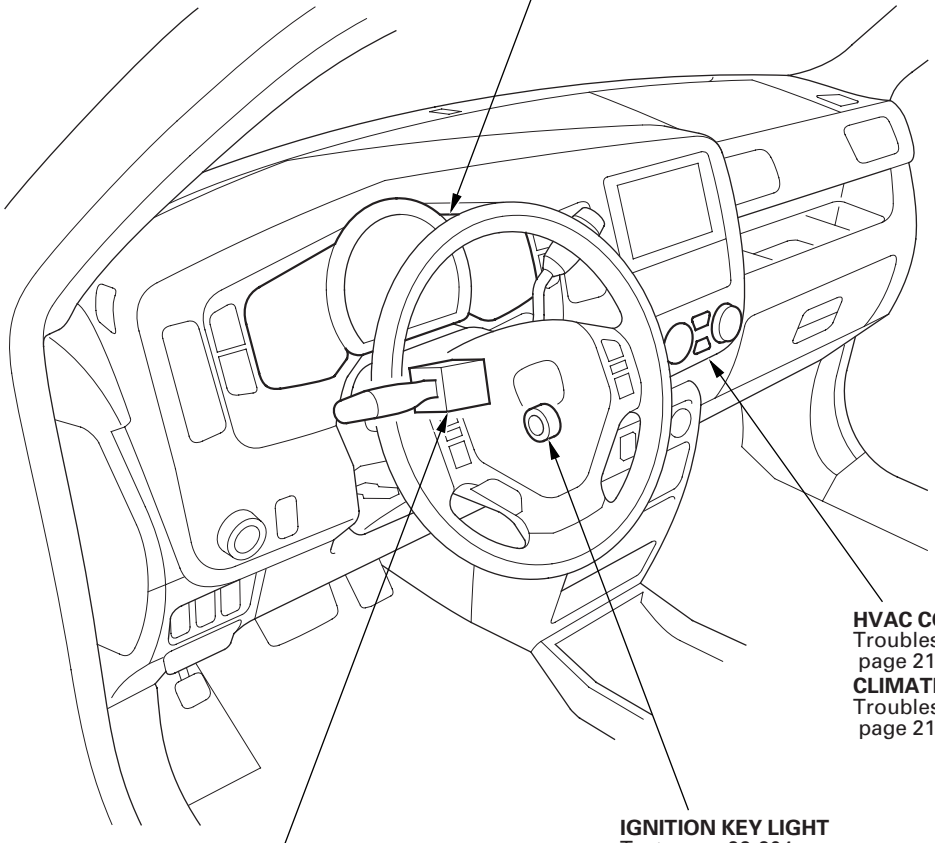
1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped). Make sure the ignition switch is OFF.
2. Disconnect the battery negative cable.
3. Remove the left front door sill trim and left kick panel (see page 20-60).
4. Disconnect the 6P connector (A) from the under-dash fuse/relay box.



5. Remove the two screws and the ignition switch (B).
6. Install the reverse order of removal.
7. After reconnecting the battery, enter the anti-theft codes for the audio system and the navigation system (if equipped). Set the clock (on vehicles without navigation).
8. Confirm that all system work properly.
9. Do the power window control unit reset procedure (see page 22-209).

Component Location Index




GAUGE CONTROL MODULE
Self-diagnostic Procedure, page 22-244
Input Test, page 22-122
HVAC CONTROL UNIT
Troubleshooting,
page 21-8
CLIMATE CONTROL UNIT
Troubleshooting,
page 21-83
IGNITION KEY LIGHT
Test, page 22-204
COMBINATION SWITCH CONTROL UNIT
(Built into the combination switch)
Input Test, page 22-124

General Troubleshooting Information

Troubleshooting CAN Circuit Related Problems

NOTE: Check the PCM for DTCs and troubleshoot PCM (see page 11-3) or F-CAN loss of communication errors first.

Using the HDS (Preferred method)

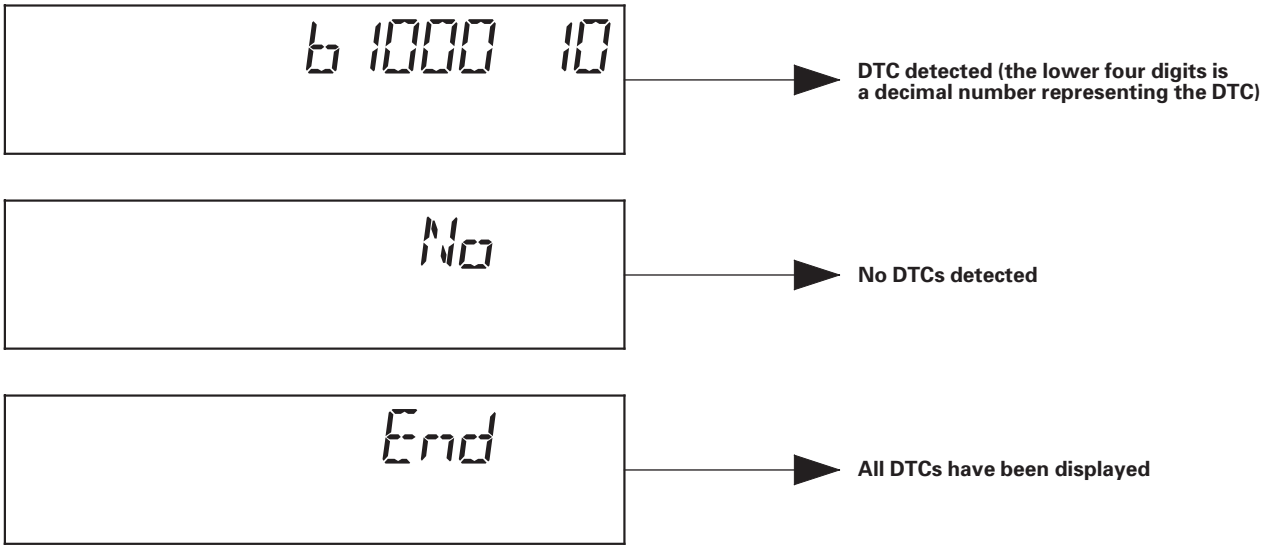
1. Go to B-CAN System Diagnosis Test Mode A to check for ''Connected units'' and DTCs (see page 22-99).
2. If no DTCs are retrieved, go to B-CAN System Diagnosis Test Mode C (see page 22-101) or D (see page 22-102).

Without HDS (Use only if the HDS is unavailable)

1. Check for communication circuit problems using B-CAN System Diagnostic Test Mode 1 and Mode 2 (see page 22-103).
2. Check for DTCs (see page 22-103).
3. Sort, and then troubleshoot the DTCs in the order.
   - 1 Battery voltage DTCs
   - 2 Internal error DTCs
   - 3 Loss of communication DTCs
     (beginning with the lowest number first; for example, if B1006 and B1059 are retrieved, troubleshoot B1006 first)
   - 4 Signal error DTCs
4. If no DTCs are retrieved, use B-CAN System Diagnostic Test Mode 2 to check all inputs related to failure (see page 22-103).

How to display DTCs on the gauge control module

While in Test Mode 1, the DTCs which have been detected and stored individually by various B-CAN (Body-controller Area Network) units, will be shown one by one on the multi-information display when the communication between the MICU and the gauge control module is normal. To scroll through the DTCs, press the select/reset switch on the gauge control module.



The unit that has stored the code can be identified by the number shown on the multi-information display.

MICU	10
Relay control module	11
Door multiplex control unit	30
Gauge control module	50
HVAC control unit/climate control unit	51
Combination switch control unit	70

How to clear the DTC

While in Test Mode 1, press and hold down the SELECT/RESET switch button for more than 10 seconds.

(cont'd)

General Troubleshooting Information (cont'd)

Loss of Communication DTC cross-reference chart

When an ECU is unable to communicate with the other ECUs on the CAN circuit, the other control units will set loss of communication DTCs. Use this chart to find the control unit that is not communicating.

1. Find the Transmitting Control Unit that is in the same row as all of the loss of communication DTCs retrieved.
2. Do the input test for the transmitting control unit.

BUS OFF and Internal Error Codes

DTC Type	Related Unit					
	MICU	Relay Control Module	Door Multiplex Control Unit	Combination Switch Control Unit	Gauge Control Module	HVAC Control Unit or Climate Control Unit
BUS OFF	B1000	B1050	B1100	B1250	B1150	B1200
ECU (CPU) Error	B1001					
ECU (EEPROM) Error	B1002		B1102		B1152	B1202

Transmitting Control Unit	Message	Receiving Unit/Loss of Communication DTC					
		MICU	Relay Control Module	Door Multiplex Control Unit	Combination Switch Control Unit	Gauge Control Module	HVAC Control Unit or Climate Control Unit
MICU	ALARM		B1056				
	MICU		B1055	B1106	B1255	B1157	
	DOOR SWITCH		B1057	B1105		B1159	
Relay Control Module	RELAY CONTROL MODULE	B1005				B1158	
Door Multiplex Control Unit	PANIC	B1010	B1059				
	DRIVER'S DOOR LOCK SWITCH	B1006	B1058			B1160	
Combination Switch Control Unit	HEADLIGHT SWITCH	B1007	B1062			B1155	
	WIPER SWITCH		B1063			B1156	
Gauge Control Module	VSP/NE	B1011	B1060				B1205
	A/T	B1008	B1061				
	ENGTEP						B1206
PCM	ENG					B1168	
	AT					B1169	
TPMS Control Unit	TPMS					B1173	
VSA Modulator-control Unit	VSA					B1170	

DTC Troubleshooting Index

NOTE: Check the PCM for DTCs and troubleshoot PCM or F-CAN loss of communication errors first (see page 11-3), then record all DTCs, and sort them by DTC type using the DTC troubleshooting index, then troubleshoot the DTC(s) in this order:

- Battery voltage DTCs
- Internal error DTCs
- Loss of communication DTCs (beginning with the lowest number first; for example, if B1006 and B1059 are retrieved, troubleshoot B1006 first).
- Signal error DTCs

DTC	Description	ECU	DTC type	Page
B1000	Communication bus line error (BUS-OFF)	MICU	Loss of Communication	(see page 22-108)
B1001	MICU internal error (CPU error)	MICU	Internal Error	(see page 22-111)
B1002	MICU internal error (EEPROM error)	MICU	Internal Error	(see page 22-111)
B1005	MICU lost communication with Relay Control Module	MICU	Loss of Communication	(see page 22-111)
B1006	MICU lost communication with Door Multiplex Control Unit (DRLOCKSW message)	MICU	Loss of Communication	(see page 22-112)
B1007	MICU lost communication with Combination Switch Control Unit (HLSW message)	MICU	Loss of Communication	(see page 22-112)
B1008	MICU lost communication with Gauge Control Module (A/T message)	MICU	Loss of Communication	(see page 22-113)
B1010	MICU lost communication with Door Multiplex Control Unit (PANIC message)	MICU	Loss of Communication	(see page 22-113)
B1011	MICU lost communication with gauge control module (VSP/NE message)	MICU	Loss of Communication	(see page 22-114)
B1026	Front passenger's door lock switch LOCK/UNLOCK signal error	MICU	Signal Error	(see page 22-133)
B1032	MICU collision detection signal (CDS) input failure	MICU	Signal Error	(see page 24-165)
B1050	Communication bus line error (BUS-OFF)	Relay Control Module	Loss of Communication	(see page 22-110)
B1055	Relay Control Module lost communication with MICU (MICU message)	Relay Control Module	Loss of Communication	(see page 22-69)
B1056	Relay Control Module lost communication with MICU (ALARM message)	Relay Control Module	Loss of Communication	(see page 22-69)
B1057	Relay Control Module lost communication with MICU (DOORSW message)	Relay Control Module	Loss of Communication	(see page 22-69)
B1058	Relay Control Module lost communication with Door Multiplex Control Unit (DRLOCKSW message)	Relay Control Module	Loss of Communication	(see page 22-70)
B1059	Relay Control Module lost communication with Door Multiplex Control Unit (PANIC message)	Relay Control Module	Loss of Communication	(see page 22-70)
B1060	Relay Control Module lost communication with Gauge Control Module (VSP/NE message)	Relay Control Module	Loss of Communication	(see page 22-70)
B1061	Relay Control Module lost communication with Gauge Control Module (A/T message)	Relay Control Module	Loss of Communication	(see page 22-70)
B1062	Relay Control Module lost communication with Combination Switch Control Unit (HLSW message)	Relay Control Module	Loss of Communication	(see page 22-71)

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC	Description	ECU	DTC type	Page
B1063	Relay Control Module lost communication with Combination Switch Control Unit (WIPSW message)	Relay Control Module	Loss of Communication	(see page 22-71)
B1075	Headlight switch signal error	Relay Control Module	Signal Error	(see page 22-168)
B1076	Windshield wiper signal error	Relay Control Module	Signal Error	(see page 22-228)
B1077	Windshield wiper (As) signal error	Relay Control Module	Signal Error	(see page 22-230)
B1078	Daytime Running Lights Signal Error	Relay Control Module	Signal Error	(see page 22-170)
B1080	Power supply circuit (IG1 line) input error for Relay Control Module and MICU	Relay Control Module	Battery voltage	(see page 22-114)
B1100	Communication bus line error (BUS-OFF)	Door Multiplex Control Unit	Loss of Communication	(see page 22-110)
B1102	Door Multiplex Control Unit internal error (EEPROM error)	Door Multiplex Control Unit	Internal Error	(see page 22-115)
B1105	Door Multiplex Control Unit lost communication with MICU (DOORSW message)	Door Multiplex Control Unit	Signal Error	(see page 22-116)
B1106	Door Multiplex Control Unit lost communication with MICU (MICU message)	Door Multiplex Control Unit	Signal Error	(see page 22-116)
B1125	Driver's power window motor A pulse error	Door Multiplex Control Unit	Signal Error	(see page 22-214)
B1126	Driver's power window motor B pulse error	Door Multiplex Control Unit	Signal Error	(see page 22-215)
B1127	Driver's door lock key cylinder switch LOCK/UNLOCK signal error	Door Multiplex Control Unit	Signal Error	(see page 22-134)
B1128	Driver's door lock switch LOCK/UNLOCK signal error	Door Multiplex Control Unit	Signal Error	(see page 22-136)
B1129	Driver's door lock knob switch LOCK/UNLOCK signal error	Door Multiplex Control Unit	Signal Error	(see page 22-137)
B1140	Driver's power window position detect circuit error	Door Multiplex Control Unit	Signal Error	(see page 22-216)
B1150	Communication bus line error (BUS-OFF)	Gauge Control Module	Loss of Communication	(see page 22-110)
B1152	Gauge Control Module internal error (EEPROM error)	Gauge Control Module	Internal Error	(see page 22-254)
B1155	Gauge Control Module lost communication with Combination Switch Control Unit (HLSW message)	Gauge Control Module	Loss of Communication	(see page 22-254)
B1156	Gauge Control Module lost communication with Combination Switch Control Unit (WIPSW message)	Gauge Control Module	Loss of Communication	(see page 22-254)
B1157	Gauge Control Module lost communication with MICU (MICU message)	Gauge Control Module	Loss of Communication	(see page 22-255)
B1158	Gauge Control Module lost communication with Relay Control Module (RM message)	Gauge Control Module	Loss of Communication	(see page 22-255)
B1159	Gauge Control Module lost communication with MICU (DOORSW message)	Gauge Control Module	Loss of Communication	(see page 22-255)

DTC	Description	ECU	DTC type	Page
B1160	Gauge Control Module lost communication with Door Multiplex Control Unit (DRLOCKSW message)	Gauge Control Module	Loss of Communication	(see page 22-256)
B1168	Gauge Control Module lost communication with PCM (ENG messages)	Gauge Control Module	Loss of Communication	(see page 22-257)
B1169	Gauge Control Module lost communication with PCM (A/T messages)	Gauge Control Module	Loss of Communication	(see page 22-257)
B1170	Gauge Control Module lost communication with VSA modulator-control unit (VSA messages)	Gauge Control Module	Loss of Communication	(see page 22-258)
B1173	Gauge Control Module lost communication with TPMS control unit (TPMS messages)	Gauge Control Module	Loss of Communication	(see page 22-259)
B1175	Fuel level sensor (Fuel gauge sending unit) signals input error	Gauge Control Module	Signal Error	(see page 22-260)
B1177	Abnormal battery voltage	Gauge Control Module	Battery voltage	(see page 22-261)
B1178	F-CAN communication line error	Gauge Control Module	Loss of Communication	(see page 22-262)
B1200	Communication bus line error (BUS-OFF)	Climate Control Unit	Loss of communication	(see page 22-110)
B1202	Climate (HVAC) control unit internal error (EEPROM error)	Climate Control Unit	Internal error	(see page 21-100)
		HVAC Control Unit		(see page 21-20)
B1205	Climate (HVAC) control unit lost communication with gauge control module (VSP/NE message)	Climate Control Unit	Loss of communication	(see page 21-100)
		HVAC Control Unit		(see page 21-20)
B1206	Climate (HVAC) control unit lost communication with gauge control module (ENGTEMP message)	Climate Control Unit	Loss of communication	(see page 21-100)
		HVAC Control Unit		(see page 21-20)
B1207	Climate (HVAC) control unit lost communication with gauge control module (ILLUMI message)	Climate Control Unit	Loss of communication	(see page 21-100)
		HVAC Control Unit		(see page 21-20)
B1225	An open in the in-car temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-101)
B1226	A short in the in-car temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-103)
B1227	An open in the outside air temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-104)
		HVAC Control Unit		(see page 21-21)
B1228	A short in the outside air temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-105)
		HVAC Control Unit		(see page 21-22)
B1229	An open in the sunlight sensor circuit	Climate Control Unit	Signal Error	(see page 21-106)

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DTC Troubleshooting Index (cont'd)

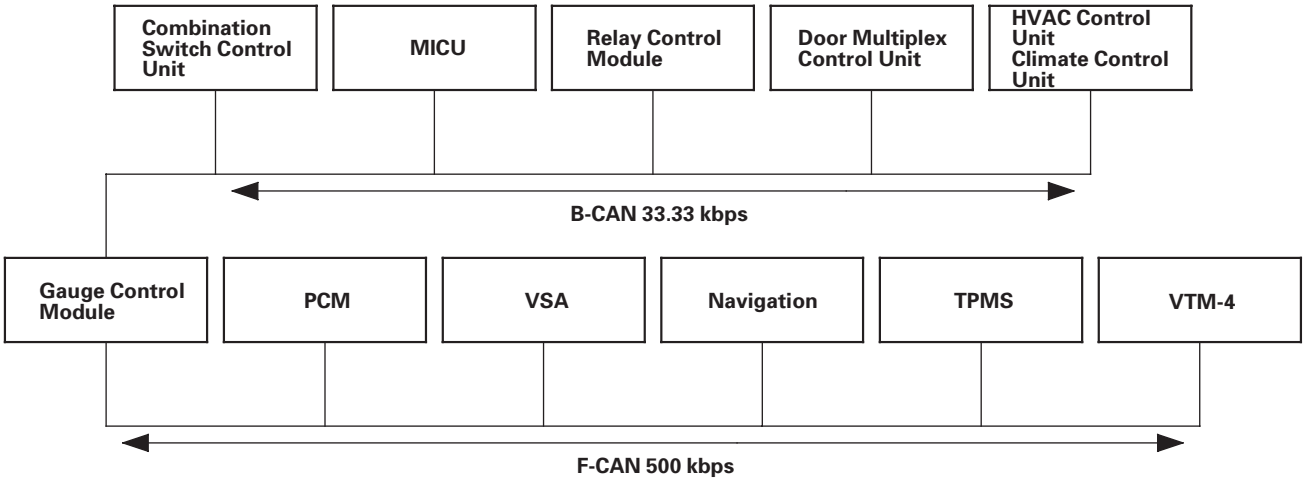
DTC	Description	ECU	DTC type	Page
B1230	A short in the sunlight sensor circuit	Climate Control Unit	Signal Error	(see page 21-107)
B1231	An open in the evaporator temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-108)
		HVAC control unit	Signal Error	(see page 21-23)
B1232	A short in the evaporator temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-110)
		HVAC control unit	Signal Error	(see page 21-25)
B1233	An open in the driver's air mix control motor circuit	Climate Control Unit	Signal Error	(see page 21-111)
		HVAC control unit	Signal Error	(see page 21-26)
B1234	A short in the driver's air mix control motor circuit	Climate Control Unit	Signal Error	(see page 21-112)
		HVAC control unit	Signal Error	(see page 21-27)
B1235	A problem in the driver's air mix control linkage, doors, or motor	Climate Control Unit	Signal Error	(see page 21-113)
		HVAC control unit	Signal Error	(see page 21-28)
B1236	An open in the passenger's air mix control motor circuit	Climate Control Unit	Signal Error	(see page 21-115)
B1237	A short in the passenger's air mix control motor circuit	Climate Control Unit	Signal Error	(see page 21-116)
B1238	A problem in the passenger's air mix control linkage, doors, or motor	Climate Control Unit	Signal Error	(see page 21-117)
B1239	An open or short in the mode control motor circuit	Climate Control Unit	Signal Error	(see page 21-119)
		HVAC control unit	Signal Error	(see page 21-30)
B1240	A problem in the mode control linkage, doors, or motor	Climate Control Unit	Signal Error	(see page 21-121)
		HVAC control unit	Signal Error	(see page 21-32)
B1241	A problem in the blower motor circuit	Climate Control Unit	Signal Error	(see page 21-122)
		HVAC control unit	Signal Error	(see page 21-33)
B1250	Communication bus line error (BUS-OFF)	Combination Switch Control Unit	Loss of Communication	(see page 22-110)
B1255	Combination Switch Control Unit lost communication with MICU (MICU message)	Combination Switch Control Unit	Loss of Communication	(see page 22-171)
B1275	Headlight switch OFF position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-171)
B1276	Headlight switch parking (SMALL) position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-172)
B1278	Headlight switch ON position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-172)
B1279	Headlight switch dimmer position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-173)
B1280	Turn signal switch circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-173)
B1281	Windshield wiper switch MIST position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-232)
B1282	Windshield wiper switch INT (AUTO) position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-232)
B1283	Windshield wiper switch LOW position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-232)
B1284	Windshield wiper switch HIGH position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-232)

System Description

Body Controller Area Network (B-CAN) and Fast Controller Area Network (F-CAN)

The body controller area network (B-CAN) and the fast controller area network (F-CAN) share information between multiple electronic control units (ECUs). B-CAN communication moves at a slower speed (33.33 kbps) for convenience related items and for other functions. F-CAN information moves at a faster speed (500 kbps) for ''real time'' functions such as fuel and emissions data. To allow both systems to share information, the gauge control module translates information from B-CAN to F-CAN and from F-CAN to B-CAN.

The ECUs on the B-CAN and the F-CAN transmit and receive information in the form of structured messages that may be received by several different ECUs on the network at one time. These messages are transmitted and received across a communication circuit that consists of a single wire that is shared by all the ECUs on the circuit. Since messages on the F-CAN are typically of higher importance, a second wire is used for communication circuit integrity monitoring. A backup circuit is also added to the headlight and wiper circuits on the B-CAN in the event of a network wire or ECU failure that would effect the operation of the system.



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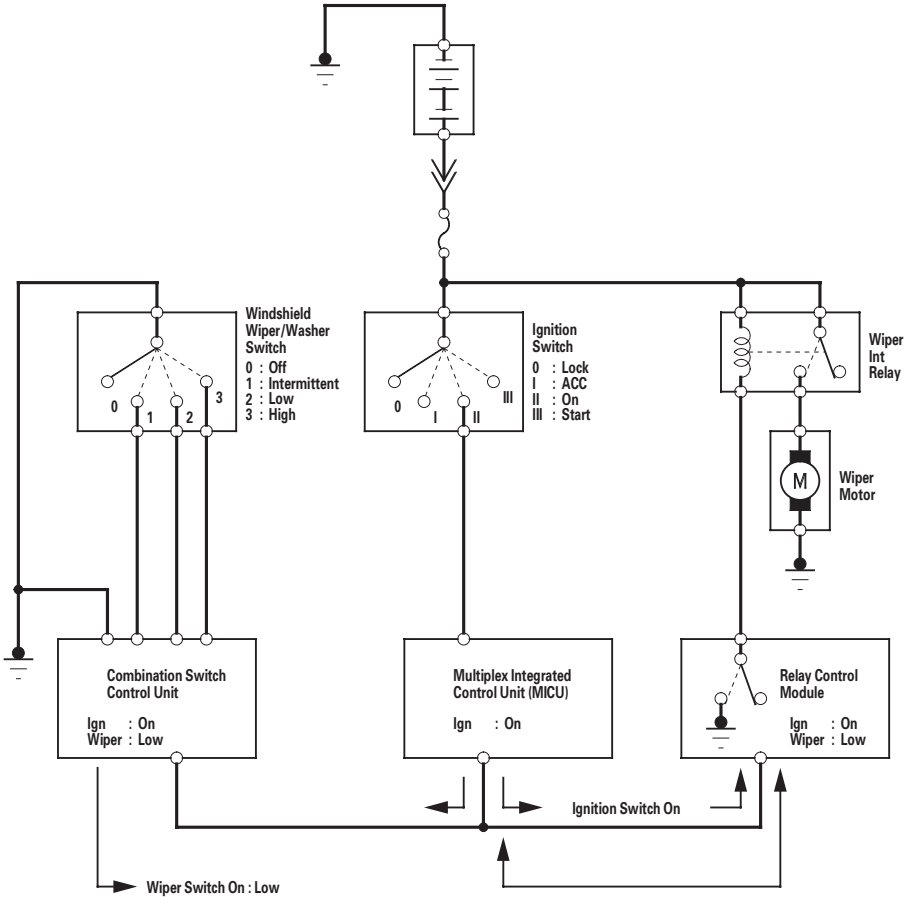
System Description (cont'd)

Messages are transmitted by an ECU (that monitors an input) over the communication circuit. ECUs that use the message (information related to that input) are the receivers. For example, the combination switch control unit monitors the wiper switch. When the wiper switch is placed in the low speed position, the combination switch control unit transmits that message on the communication circuit. The relay control module receives the message and turns on the wipers by providing a ground for the relay.



Connected ECUs

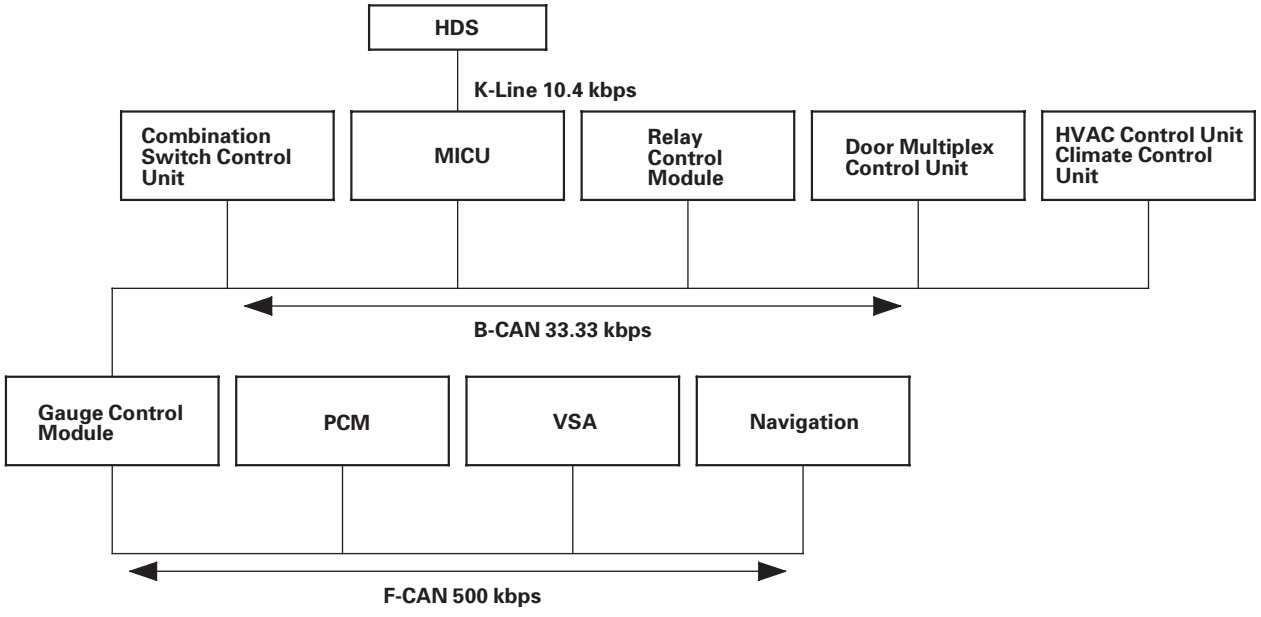
Several ECUs are connected to each of the two networks. The gauge control module is part of both networks since it is the ''gateway'' between them. Here is a list of ECUs and the network they are connected to.

B-CAN ECUs

- Gauge control module
- Relay control module
- Multiplex integrated control unit (MICU)
- Door multiplex control unit
- Combination switch control unit
- HVAC control unit/climate control unit

F-CAN ECUs

- Gauge control module
- PCM
- VSA (vehicle stability assist)
- Navigation
- TPMS
- VTM-4



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System Description (cont'd)

Network ''Loss of Communication'' Error Checking

The B-CAN and the F-CAN send messages to each other to check the integrity of the network communication circuit. They do this by sending a specific digital message out after an event. For example, after turning the ignition switch to ON (II). All the ECUs on the communication circuit expect to receive a message from other specific units within a specified amount of time. If the message is not received, the ECU will transmit a DTC reporting that it did not receive the message.

Examples of a communication circuit test

Normal circuit

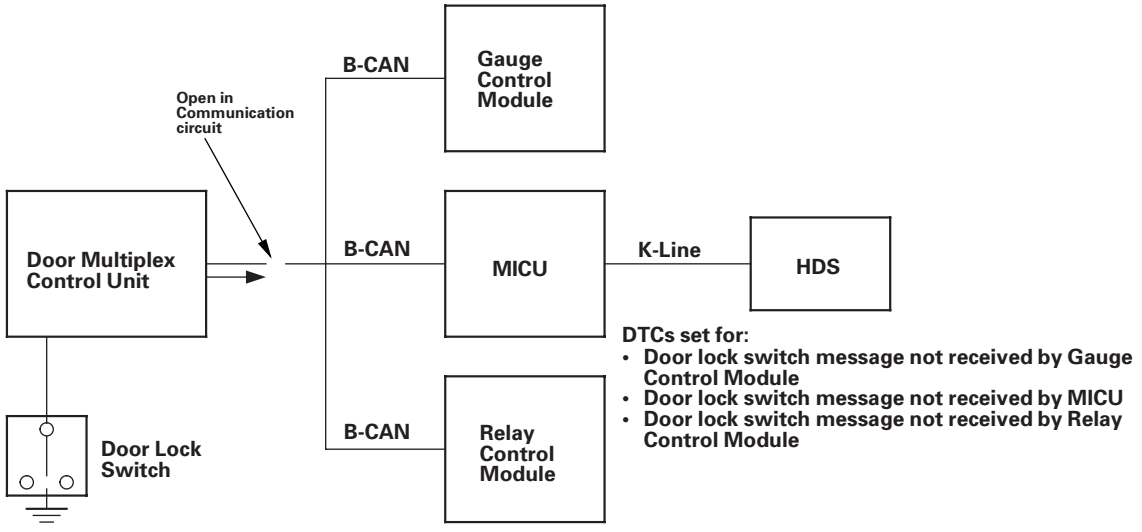
1. Ignition switch is turned ON (II).
2. The door multiplex control unit transmits a door switch message.
3. The multiplex integrated control unit (MICU), relay control module, and gauge control module receive the door lock switch message.
4. The communication circuit test is passed.

Since the door lock switch message was received by all the ECUs expecting to receive a message, the communication circuit between those units is OK. There are multiple messages sent and received by each ECU during this time to insure that the communication circuit is intact.

Failed circuit

5. Ignition switch is turned ON (II).
6. The door multiplex control unit transmits a door switch message.
7. The multiplex integrated control unit (MICU), relay control module, and gauge control module expect to receive the door lock switch message, but since there is a break in the communication circuits, it is not received.

8. Each ECU that expects to receive the door lock switch message from the door multiplex control unit will transmit DTCs for the message that it did not receive.



Since there is a break in the communication circuit, the door lock switch message could not be received by the gauge control module, multiplex integrated control unit (MICU), or the relay control module. Each of these units will set ''loss of communication'' error codes for the message(s) they did not receive. There may be multiple communication DTCs if the unit that has become disconnected from the network would normally transmit multiple messages during the communication line test. For example, the door multiplex control unit sends the keyless panic message and door lock switch message during the communication circuit test.

Diagnostic Trouble Codes (DTC)

There are three types of DTCs used by the CAN networks.

Internal error DTCs	The ECUs run internal checks. If one finds that there is an internal ECU problem, it will set an internal error DTC. Confirm that the battery and charging system are OK. If so, this indicates that the ECU needs to be replaced.
Loss of communication DTCs	Loss of communication DTCs (and Bus-off DTCs) are set when there is a problem with the communication between ECUs. This could be in the connections, the wiring, or the ECU (as called out in the DTC Troubleshooting).
Signal error DTCs	The ECUs can run diagnostics on some input circuits to determine if those circuits are functioning properly (no opens or shorts). If a circuit fails the diagnostic test, a DTC will set. (NOTE: Not all input circuits are tested for errors.)

(cont'd)

System Description (cont'd)

B-CAN System Unit Input/Output Device controlled

Combination Switch Control Unit	
Switch/Signal input	**Device controlled**
Dimmer switch, Lighting switch, Passing switch, Turn signal switch, Wiper/washer switch, Intermittent dwell time controller	None

Relay Control Module	
Switch/Signal input	**Device controlled**
Daytime running lights control (Canada), Hood switch, horn switch, Windshield wiper motor, Auto stop switch, Windshield wiper fail-safe, A/C pressure switch, Wiper back-up switch, Headlight back up switch	Daytime running lights control (Canada), Headlight, Parking light, Horn, Windshield washer motor, Windshield wiper motor

Door Multiplex Control Unit	
Switch/Signal input	**Device controlled**
Driver's door key cylinder switch (lock/unlock), Driver's door lock knob switch (lock/unlock), Driver's door lock switch, Driver's power window switches (up, down, auto up, auto down), Passenger's power window switches (up, down), Driver's power window motor pulser, Key-off timer, Keyless transmitter signal	Driver's power window motor, Power window relay control

MICU	
Switch/Signal input	**Device controlled**
Brake pedal position switch, Door switches, Ignition key cylinder switch, Park pin switch, Passenger's door lock knob switches (unlock), Passenger's door lock switch, Seat belt switch (unbuckled), Transmission range switch (P, R), In-bed trunk lid latch switch, Trunk key cylinder switch, Heated windshield wiper area	Door lock actuators, Hazard warning lights, Interior lights, Ignition key light, Key interlock solenoid, Turn signal lights, Door courtesy lights, Key-off timer, Back-up lights

Gauge Control Module	
Switch/Signal Input	**Device Controlled**
Dash lights brightness controller, Daytime running lights signal (Canada), Engine oil pressure switch, Washer fluid level switch, Parking brake switch, Brake fluid level switch, Fuel gauge sending unit, Select/Reset switch, Cruise control combination switch (set, cancel, resume, master), VSA OFF switch, A/T park position, MET INH from PCM	Dash lights, Fuel gauge, Gauge lights, Indicator, LEDs, Speedometer, Tachometer, ECT gauge, Warning buzzer, Odometer/Outside air temperature display

HVAC Control Unit/Climate Control Unit	
Switch/Signal Input	**Device Controlled**
Evaporator temperature sensor, In-car temperature sensor, Outside air temperature sensor, Sunlight sensor, Air mix motor position (Driver's, Passenger's, and Rear), Mode motors position, Blower motor control feedback	Air mix control motors (Driver's/Passenger's/Rear), Blower motor transistor, Mode control motors, Recirculation motor

HDS Inputs and Commands

Certain inputs happen so quickly that the HDS cannot update fast enough. Hold the switch that is being tested while monitoring the Data List. This should give the HDS time to update the signal on the Data List.
Because the HDS software is updated to support the release for newer vehicles it is not uncommon to see system function tests that are not supported.
Make sure that the most current software is loaded.

Input:

System Menu	Data List	Data List Indication
Gauge	Cruise Control Main Switch	OFF/ON
	Cruise Control Set Switch	OFF/ON
	Cruise Control Resume Switch	OFF/ON
	Washer Fluid Lever Switch	OFF/ON
	Engine Oil Pressure Switch	OFF/ON
	VSA Off Switch	OFF/ON
	Gauge Select/Reset Switch	OFF/ON
	Parking Brake Switch	OFF/ON
	Brake Fluid Level Switch	OFF/ON
	Fuel Sending Unit Input 1	0-4 Failure 5-68 0—297 deg 69-77 Failure
	Fuel Sending Unit Input 2	
	VSA Active Indicator	OFF/ON
	VSA Indicator (Warning)	OFF/ON
	ABS Indicator	OFF/ON
	Cruise Control Main Switch Indicator	OFF/ON
	MIL Indicator	OFF/ON
	DRL Indicator	OFF/ON
	Low Oil Pressure Indicator	OFF/ON
	Charging System Indicator	OFF/ON
	Smart Maintenance Required Indicator	OFF/ON
	High Beam Indicator	OFF/ON
	Parking Light ON Indicator	OFF/ON
	Low Fuel Warning Indicator	OFF/ON
	Security Indicator	OFF/ON
	Seat Belt Indicator	OFF/ON
	Low Tire Pressure Indicator	OFF/ON
	TPMS Indicator	OFF/ON
	Door Open Indicator	OFF/ON
	Smart Maintenance Change Oil Indicator	OFF/ON
	Fuel Fill Cap Caution	
	Brake Pedal Position Switch	OFF/ON
	Ignition Key Cylinder Switch	OFF/ON
	Driver's Seat Belt Buckle Switch	OFF/ON
	Driver's Door Switch	OFF/ON
	Front Passenger's Door Switch	OFF/ON
	Driver's Rear Door Switch	OFF/ON
	Passenger's Rear Door Switch	OFF/ON
	In-Bed Trunk Switch	OFF/ON
	Trunk Lid Release Command	OFF/ON

(cont'd)

System Description (cont'd)

HDS Inputs and Commands

Input:

System Menu	Data List	Data List Indication
Lighting	Headlight Switch (OFF)	OFF/ON
	Headlight Switch (PARKING)	OFF/ON
	Headlight Switch (HEADLIGHT)	OFF/ON
	Headlight Switch (HIGH BEAM)	OFF/ON
	Headlight Switch (PASSING)	OFF/ON
	Turn Signal Switch (LEFT)	OFF/ON
	Turn Signal Switch (RIGHT)	OFF/ON
	Driver's Door Switch	OFF/ON
	Tailgate Switch (SWING)	OFF/ON
	Cargo Light Switch	OFF/ON
	Ignition Key Cylinder Light Command	OFF/ON
	Interior Light Command	OFF/ON
	Left Turn Signal Command	OFF/ON
	Right Turn Signal Command	OFF/ON
	Cargo Light Command	OFF/ON
	Headlight Switch (BACK-UP)	OFF/ON
	Ignition Switch (IG1)	OFF/ON
	Headlight Command	OFF/ON
	Headlight High Beam Command	OFF/ON
	Parking Light Command	OFF/ON
Door	Driver's Door Switch	OFF/ON
	Front Passenger's Door Switch	OFF/ON
	Driver's Rear Door Switch	OFF/ON
	Passenger's Rear Door Switch	OFF/ON
	Front Passenger's Door Lock Switch (LOCK)	OFF/ON
	Front Passenger's Door Lock Switch (UNLOCK)	OFF/ON
	Front Passenger's Door Lock Knob Switch (UNLOCK)	OFF/ON
	Driver's Rear Door Switch (UNLOCK)	OFF/ON
	Passenger's Rear Door Switch (UNLOCK)	OFF/ON
	Door LOCK Command	OFF/ON
	Door UNLOCK Command	OFF/ON
	Driver's Door UNLOCK Command	OFF/ON
	Driver's Door Key Cylinder Switch (LOCK)	OFF/ON
	Driver's Door Key Cylinder Switch (UNLOCK)	OFF/ON
	Driver's Door Lock Switch (LOCK)	OFF/ON
	Driver's Door Lock Switch (UNLOCK)	OFF/ON
	Driver's Door Lock Knob Switch (LOCK)	OFF/ON
	Driver's Door Lock Knob Switch (UNLOCK)	OFF/ON
	Driver's Rear Door Knob Switch (LOCK)	OFF/ON
	Left Rear Door Lock Command	OFF/ON
	Left Rear Door Unlock Command	OFF/ON

HDS Inputs and Commands

Input:

System Menu	Data List	Data List Indication
Keyless	Driver's Door Switch	OFF/ON
	Front Passenger's Door Switch	OFF/ON
	Driver's Rear Door Switch	OFF/ON
	Passenger's Rear Door Switch	OFF/ON
	In-Bed Trunk Switch	OFF/ON
	Front Passenger's Door Lock Switch (LOCK)	OFF/ON
	Front Passenger's Door Lock Switch (UNLOCK)	OFF/ON
	Front Passenger's Door Lock Knob Switch (UNLOCK)	OFF/ON
	Driver's Rear Door Switch (UNLOCK)	OFF/ON
	Passenger's Rear Door Switch (UNLOCK)	OFF/ON
	Trunk Handle Switch	OFF/ON
	Trunk Key Cylinder (UNLOCK)	OFF/ON
	Door Lock Command	OFF/ON
	Door Unlock Command	OFF/ON
	Trunk Lid Release Command	OFF/ON
	Driver's Door Key Cylinder Switch (LOCK)	OFF/ON
	Driver's Door Key Cylinder Switch (LOCK)	OFF/ON
	Driver's Door Key Cylinder Switch (UNLOCK)	OFF/ON
	Driver's Door Lock Switch (LOCK)	OFF/ON
	Driver's Door Lock Switch (UNLOCK)	OFF/ON
	Driver's Door Lock Knob Switch (LOCK)	OFF/ON
	Driver's Door Lock Knob Switch (UNLOCK)	OFF/ON
	Ignition Switch (IG1)	OFF/ON
	Driver's Rear Door Knob Switch (LOCK)	OFF/ON
	Driver's Rear Door Lock Command	OFF/ON
	Passenger's Rear Door Unlock Command	OFF/ON
Power windows	Driver's Door Switch	OFF/ON
	Front Passenger's Door Switch	OFF/ON
	Moonroof Timer Command	OFF/ON
	P/W Main Switch	OFF/ON
	P/W Master Switch (Driver's window AUTO)	OFF/ON
	P/W Master Switch (Driver's window UP)	OFF/ON
	P/W Master Switch (Driver's window DOWN)	OFF/ON
	P/W Master Switch (Front Passenger's window UP)	OFF/ON
	P/W Master Switch (Front Passenger's window DOWN)	OFF/ON
	P/W Master Switch (Left Rear window UP)	OFF/ON
	P/W Master Switch (Left Rear window DOWN)	OFF/ON
	P/W Master Switch (Right Rear window UP)	OFF/ON
	P/W Master Switch (Right Rear window DOWN)	OFF/ON
	Driver's P/W Motor Pulse A	NONE, DETECT
	Driver's P/W Motor Pulse B	NONE, DETECT
	Driver's P/W Motor Command	OFF, UP, DOWN
	Front Passenger's P/W Motor Command	OFF, UP, DOWN
	Left Rear P/W Motor Command	OFF, UP, DOWN
	Right Rear P/W Motor Command	OFF, UP, DOWN
	P/W Relay Command	OFF/ON
Wipers	Windshield Wiper Switch (LOW)	OFF/ON
	Windshield Wiper Switch (HIGH)	OFF/ON
	Windshield Wiper Switch (MIST)	OFF/ON
	Windshield Washer Switch	OFF/ON
	Intermittent Wiper Dwell Timer	0—255
	Brake Pedal Position Switch	OFF/ON
	Windshield Wiper Motor PARK Switch	OFF/ON
	Windshield Wiper Switch (BACK-UP)	OFF/ON
	Windshield Wiper Motor HI Command	OFF/ON
	Windshield Wiper Motor LO Command	OFF/ON
	Windshield Washer Motor Command	OFF/ON

(cont'd)

System Description (cont'd)

HDS Inputs and Commands

Input:

System Menu	Data List	Data List Indication
Security	Ignition Key Cylinder Switch	OFF/ON
	Driver's Door Switch	OFF/ON
	Front Passenger's Door Switch	OFF/ON
	Driver's Rear Door Switch	OFF/ON
	Passenger's Rear Door Switch	OFF/ON
	In-Bed Trunk Switch	OFF/ON
	Front Passenger's Door Lock Switch (LOCK)	OFF/ON
	Front Passenger's Door Lock Switch (UNLOCK)	OFF/ON
	Front Passenger's Door Lock Knob Switch (UNLOCK)	OFF/ON
	Driver's Rear Door Lock Knob Switch (UNLOCK)	OFF/ON
	Passenger's Rear Door Lock Knob Switch (UNLOCK)	OFF/ON
	Trunk Handle Switch	OFF/ON
	Trunk Key Cylinder (UNLOCK)	OFF/ON
	Radio Switch	OFF/ON
	Door LOCK Command	OFF/ON
	Door UNLOCK Command	OFF/ON
	Driver's Door UNLOCK Command	OFF/ON
	Trunk Lid Release Command	OFF/ON
	Driver's Door Key Cylinder Switch (LOCK)	OFF/ON
	Driver's Door Key Cylinder Switch (UNLOCK)	OFF/ON
	Driver's Door Lock Switch (LOCK)	OFF/ON
	Driver's Door Lock Switch (UNLOCK)	OFF/ON
	Driver's Door Lock Knob Switch (LOCK)	OFF/ON
	Driver's Door Lock Knob Switch (UNLOCK)	OFF/ON
	Hood Switch	OFF/ON
	Ignition Switch (IG1)	OFF/ON
	Headlight Command	OFF/ON
	Headlight High Beam Command	OFF/ON
	Parking Light Command	OFF/ON
	Horn Command	OFF/ON
	Driver's Rear Door Knob Switch (LOCK)	OFF/ON
	In-bed trunk lid latch	OFF/ON
	Driver's Rear Door Lock Command	OFF/ON
	Passenger's Rear Door Unlock Command	OFF/ON

Output:

System Menu	Data List	Data List Indication	Operation Time
Gauge	Speedometer displays value inputted	Speedometer	
	Tachometer displays value inputted	Tachometer	
	Fuel gauge displays value inputted	Fuel Level Gauge	
	Temperature gauge displays value inputted	Engine Temperature Gauge	
	Turns VSA activation indicator on/off	VSA/TCS Activation Indicator	Illuminates for 10 sec.
	Turns VSA indicator on/off	VSA/TCS Indicator	Illuminates for 10 sec.
	Turns ABS indicator on/off	ABS Indicator	Illuminates for 10 sec.
	Turns cruise indicator on/off	Cruise Activation Indicator	Illuminates for 10 sec.
	Turns MIL on/off	MIL Status	Illuminates for 10 sec.
	Turns DRL indicator on/off	Daytime Running Light indicator (Canada)	Illuminates for 10 sec.
	Turns low oil pressure indicator on/off	Engine Oil Pressure Indicator	Illuminates for 10 sec.
	Turns charging system indicator on/off	Charging System Indicator	Illuminates for 10 sec.
	Turns maintenance required indicator on/off	Maintenance Required Indicator	Illuminates for 10 sec.
	Turns high beam indicator on/off	High Beam Indicator	Illuminates for 10 sec.
	Turns light-on indicator on/off	Light On Indicator	Illuminates for 10 sec.
	Turns security indicator on/off	Security Indicator	Illuminates for 10 sec.
	Display inputted value	Trip Meter	
	Turns A/T P position indicator on/off	A/T Gear Position Indicator (P)	Illuminates for 10 sec.
	Turns A/T R position indicator on/off	A/T Gear Position Indicator (R)	Illuminates for 10 sec.
	Turns A/T N position indicator on/off	A/T Gear Position Indicator (N)	Illuminates for 10 sec.
	Turns A/T D position indicator on/off	A/T Gear Position Indicator (D)	Illuminates for 10 sec.
	Turns A/T 2 position indicator on/off	A/T Gear Position Indicator (2)	Illuminates for 10 sec.
	HVAC/climate control and audio illumination brightness to inputted value	Illumination Brightness Control	
	Turns key-in beeper on/off	Key Alarm Chime	Sounds alarm for 10 sec.
	Turns light-on beeper on/off	Headlight Alarm Chime	Sounds alarm for 10 sec.
	Turns seat belt reminder beeper on/off	Seat belt Reminder Chime	Sounds alarm for 10 sec.
Lighting	Turns ignition key cylinder light on/off	Ignition Key Cylinder Light Command	Illuminates for 30 sec.
	Turns interior light on/off	Interior Light Command	Illuminates for 30 sec.
	Turns left turn signal lights on/off	Left Turn Signal Command	Blinks for 5 sec.
	Turns right turn signal lights on/off	Right Turn Signal Command	Blinks for 5 sec.
	Turns headlight on/off	Headlight Command	Operates for 15 sec.
	Turns headlight high beam on/off	Headlight High Beam Command	Operates for 15 sec.
	Turns parking lights on/off	Parking Light Command	Operates for 15 sec.
	Turns daytime running lights on/off	Daytime Running Light Signal (Canada)	Operates for 15 sec.
	Turns cargo area lights on/off	Cargo Area Light	Illuminates for 30 sec.

(cont'd)

System Description (cont'd)

Output:

System Menu	Data List	Data List Indication	Operation Time
Power window	Runs driver's window up	Driver's Window Up	Drives for 3 sec.
	Runs driver's window down	Driver's Window Down	Drives for 3 sec.
	Runs front passenger's window up	Front Passenger's Window Up	Drives for 3 sec.
	Runs front passenger's window down	Front Passenger's Window Down	Drives for 3 sec.
	Runs left rear window up	Left Rear Window Up	Drives for 3 sec.
	Runs left rear window down	Left Rear Window Down	Drives for 3 sec.
	Runs right rear window up	Right Rear Window Up	Drives for 3 sec.
	Runs right rear window down	Right Rear Window Down	Drives for 3 sec.
	Turns power window relay on/off	Power Window Relay	Drives for 3 sec.
Wiper	Turns wiper low speed on/off	Windshield Wiper Motor Low Command	Operates for 5 sec.
	Turns wiper high speed on/off	Windshield Wiper Motor High Command	Operates for 5 sec.
	Turns windshield washer on/off	Windshield Washer Command	Operates for 5 sec.
Security	Turn horns on/off	Horn Command	Operates horn for 1 sec.
A/C	Turn heated windshield wiper area relay on/off	Heated Windshield Wiper Area	Operates a relay for 60 sec.

Troubleshooting - B-CAN System Diagnosis Test Mode A

Check the PCM for DTCs and troubleshoot PCM (see page 11-3) or F-CAN loss of communication errors first, then perform this diagnosis first if the symptom is related to the B-CAN system.
Perform this diagnosis first if the symptom is related to the B-CAN system.

NOTE: Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures.

1. Compare the symptom with this list of B-CAN related systems:

   - Gauge control module
   - Exterior lights
   - Turn signals
   - Entry light control
   - Interior lights
   - Safety indicators
   - Heated windshield wiper area
   - Horns (security and panic)
   - Chimes (key, seat belt, lights-on, and parking brake)
   - Power windows
   - Power window/moonroof timer
   - Wiper/washer
   - Security
   - Keyless entry
   - Power door locks
   - Climate control/HVAC control
   - Key interlock
   - Dash light brightness

   Is the symptom related to the B-CAN system?

   YES—Go to step 2.

   NO—Go to the system troubleshooting for the system with the symptom. ■

2. Connect the HDS to the data link connector, then turn the ignition switch ON (II).

3. From the BODY ELECTRICAL SYSTEM SELECTION MENU, select UNIT INFORMATION, and then select CONNECTED UNIT listed to see if the following control units are communicating with the HDS.

   - MICU
   - Door multiplex control unit
   - Gauge control module
   - Combination switch control unit
   - Relay control module
   - Climate control unit/HVAC control unit

   NOTE:
   - On gauge control modules produced before April 2005, stored gauge control gauge module DTCs cannot be read using the HDS. On cars with these gauge control modules; ''Not Available'' will be in the CONNECTED UNIT STATUS. Gauge control module DTCs can be displayed (see page 22-81), and all B-CAN DTCs can be cleared using test mode 1 (see page 22-103).
   - If one or more of the units are communicating with the HDS, DETECT will be displayed.
   - If the unit is not communicating or the vehicle is not equipped, ''Not Available'' will be displayed.

   Are all control units communicating with the HDS?

   YES—Go to step 4.

   NO—If any of the control units are not communicating, go to B-CAN System Diagnosis Test Mode B (see page 22-100). If all units are not communicating or only the MICU is communicating, go to DTC B1000 troubleshooting (see page 22-108). ■

(cont'd)

Troubleshooting - B-CAN System Diagnosis Test Mode A (cont'd)

4. Select the system that has the problem from the BODY ELECTRICAL menu, then select DTCs.

   Are any DTCs indicated?

   YES—Go to step 5.

   NO—If the problem is related to one of the following items, go to B-CAN System Diagnosis Test Mode C (see page 22-101) if the system does not stop or turn off. Go to Test Mode D (see page 22-102) if the system does not run or turn on.

   - Exterior lights
   - Turn signals
   - Entry light control
   - Interior lights
   - Horns (security and panic)
   - Power windows
   - Wiper/washer

   If the problem is related to one of the following items, go to the troubleshooting for that individual system. ■

   - Gauge control module
   - Safety indicators
   - Chimes (key, seat belt and lights-on)
   - Heated windshield wiper area (climate control)
   - Security
   - Keyless entry
   - Climate control
   - Key interlock
   - Dash light brightness
   - Audio system
   - Navigation

5. Record all DTCs, and sort them by DTC type.

6. Troubleshoot the DTC(s) in this order:

   - Battery voltage DTCs.
   - Internal error DTCs.
   - Loss of communication DTCs. Begin troubleshooting with the lowest number first (Example: if DTC B1006 and B1058 are retrieved, begin by troubleshooting B1006).
   - Signal error DTCs.

Troubleshooting - B-CAN System Diagnosis Test Mode B

Perform this diagnosis if any of the control units are not communicating (Not Available is displayed in the HDS) as found by the B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Using the HDS, select the system that has the symptom from the BODY ELECTRICAL menu.

2. Select DTCs, and then check for loss of communication DTCs.

   Are any loss of communication DTCs indicated?

   YES—Go to step 3.

   NO—Replace the MICU. ■

3. Perform the input test for the unit not communicating with the HDS.

Unit not communicating
MICU (see page 22-117)
Door multiplex control unit (see page 22-123)
Gauge control module (see page 22-122)
Relay control module (see page 22-125)
Combination switch control unit (see page 22-124)
HVAC control unit (see page 21-17)
Climate control unit (see page 21-96)

Troubleshooting - B-CAN System Diagnosis Test Mode C

Perform this diagnosis if a component that is controlled by the B-CAN system does not stop or turn off.

NOTE:
- If the component does not turn on, go to B-CAN System Diagnosis Test Mode D (see page 22-102).
- See the B-CAN system unit input/output index for a list of input and output devices and the control units that monitor the input and controls the output devices (see page 22-92).
- Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures.

1. Check for DTCs by selecting the TEST MODE menu from the HDS.

   Are any DTCs indicated?

   YES—Go to B-CAN System Diagnosis Test Mode A (see page 22-99). ■

   NO—Go to step 2.

2. Turn off the switch that controls the malfunctioning component.

3. Select DATA LIST from the TEST MODE menu, and check the input of the switch that controls the component.

   Does the HDS indicate the switch is OFF?

   YES—Go to step 4.

   NO—Go to step 6.

4. In the DATA LIST, check the output signal of the malfunctioning component.

   Is the output signal OFF?

   YES—Go to step 5.

   NO—Replace the control unit that controls the device that will not turn OFF (see page 22-92). ■

5. Check the relay, if applicable, then check for a short in the wire between the relay and the component, the relay and control unit, or the component and control unit.

   Are the relay and the wire harness OK?

   YES—Replace the control unit that controls the component that will not turn OFF. ■

   NO—Replace the relay or repair the wire harness. ■

6. Check the switch, then check for a short in the wire between the switch and the control unit that monitors the switch.

   Is the switch and wire harness OK?

   YES—Replace the control unit that monitors the switch. ■

   NO—Replace the switch or repair the wire harness. ■

Troubleshooting - B-CAN System Diagnosis Test Mode D

Perform this diagnosis if a component that is controlled by the B-CAN system does not run or come on.

NOTE:
- If the component does not turn off or stop, go to B-CAN System Diagnosis Test Mode C (see page 22-101).
- See the B-CAN system unit input/output index for a list of input and output devices and the control units that monitor the input and controls the output devices (see page 22-92).
- Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures.

1. Check the fuse of the malfunctioning output device.

   Is the fuse OK?

   YES—Go to step 2.

   NO—Replace the fuse and recheck. ■

2. Check for DTCs by selecting the TEST MODE menu from the HDS.

   Are any DTCs indicated?

   YES—Go to B-CAN System Diagnosis Test Mode A (see page 22-99). ■

   NO—Go to step 3.

3. Turn ON the switch that controls the malfunctioning component.

4. Select DATA LIST from the TEST MODE menu, and check output signal for the malfunctioning component.

   Is there an output signal?

   YES—Go to step 5.

   NO—Go to step 9.

5. Check the relay and ground, then check for an open or a short in the circuit for the malfunctioning component.

   Are the relay and circuit OK?

   YES—Go to step 6.

   NO—Replace the relay or repair the wire circuit. ■

6. Perform the function test for the malfunctioning component.

   Does the output device pass the function test?

   YES—Go to step 7.

   NO—Replace the component. ■

7. With the malfunctioning output device connected, connect a voltmeter between the malfunctioning output device and body ground on the wire that the control unit uses to control the output device circuit.

8. Select MISC. TEST from the TEST MODE menu, and do the forced operation test of the malfunctioning component.

   Is there a change in voltage (12 V to 0 V or 0 V to 12 V)?

   YES—Replace the component. ■

   NO—Replace the control unit that controls the malfunctioning component. ■

9. Select DATA LIST from the TEST MODE menu, and make sure the switch signal input for the malfunctioning system indicates a change when operated.

   Does the switch input indicated ON when the switch is ON?

   YES—Replace the control unit that controls the malfunctioning component. ■

   NO—Go to step 10.

10. Check the switch and its ground (if applicable), then check for an open or a short in the wire between the switch and the control unit that monitors it.

    Is the switch and the wire harness OK?

    YES—Replace the control unit that monitors the switch. ■

    NO—Replace the switch or repair the wire harness. ■

Troubleshooting - B-CAN System Diagnosis Test Mode 1 and Test Mode 2 (without the HDS)

Special Tools Required
MPCS (MCIC) service connector 07WAZ-001010A

Test Mode 1

Check the PCM for DTCs and troubleshoot PCM or F-CAN loss of communication errors first (see page 11-3), then perform this diagnosis if the HDS is not available.

1. Check the No. 7 (7.5 A) fuse and No. 21 (7.5 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

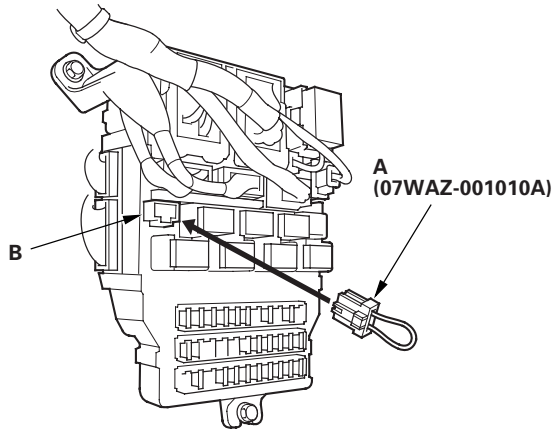
   YES—Go to step 2.

   NO—Find and repair the cause of the blown fuse. ■

2. Remove the left kick panel (see page 20-60).

3. Turn the ignition switch ON (II), and move the interior lights switch to the middle (door) position.

4. Connect the MPCS service connector (A) to the MCIC socket (B) in the under-dash fuse/relay box.



5. Wait 5 seconds, and watch the map lights. When the front and rear map lights flash quickly once, and then go off, the system is in Test Mode 1.

6. Check for B-CAN DTCs indicated by the gauge control module odometer/trip meter display while still in Test Mode 1. Push the odometer trip meter select/switch button to display the next code. After you get to the last code, the display shows END. If no DTCs are stored, the display will read NO.

   Are any DTCs indicated?

   YES—Go to step 7.

   NO—Go to step 10.

7. Record all DTCs and sort them.

8. Troubleshoot the DTCs in this order:

   - Battery voltage DTCs
   - Internal error DTCs
   - Loss of communication DTCs (begin with the lowest number first; for example, if B1006 and B1059 are retrieved, troubleshoot B1006 first)
   - Signal error DTCs

9. Clear the DTCs by pressing and holding the select/reset knob for about 13 seconds. You will hear a beep to confirm the code have been cleared. Operate the devices that failed, and recheck for codes.

Test Mode 2

10. Remove the MPCS service connector from the under-dash fuse/relay box socket for 5—10 seconds, then re-insert it to enter Mode 2. When the system enters Mode 2, the front and rear map lights will flash two times quickly and then go off.

    NOTE: If the MPCS connector is disconnected for too short or too long of a time, or the ignition switch is turned OFF, the system will return to Test Mode 1.

11. The following tables list the circuits that can be checked in Test Mode 2. Operate the switch that is most closely related to the problem. If the circuit is OK, the map lights will blink once. If the circuit is faulty, there will be no indication.

(cont'd)

Troubleshooting - B-CAN System Diagnosis Test Mode 1 and Test Mode 2 (without the HDS) (cont'd)

MICU

Item
Driver's door switch (OPEN)
Front passenger's door switch (OPEN)
Left rear door switch (OPEN)
Right rear door switch (OPEN)
Ignition key switch (inserted)
Front passenger's door lock knob switch (UNLOCK) *2
Left rear door lock knob switch (UNLOCK) *2
Right rear door lock knob switch (UNLOCK) *2
Audio security ground (disconnected)
Driver's seat belt switch (unbuckled)
Brake pedal position switch (ON; brake pedal pressed)
Tailgate switch (OPEN)
In-Bed trunk lid key cylinder switch (OPEN)
In-Bed trunk lid key cylinder switch

RELAY CONTROL MODULE

Item
Windshield wiper switch (AUTO STOP/PARK)
Hood switch (open) *2
A/C pressure switch/thermal protector (A/C ON)

COMBINATION SWITCH CONTROL UNIT

Item
Turn signal switch (LEFT)
Turn signal switch (RIGHT)
Combination light switch (ON; each position)
Dimmer switch (ON)
Passing switch (ON)
Windshield wiper switch (ON)
Intermittent wiper dwell timer
Windshield washer switch (ON)

POWER WINDOW MASTER SWITCH (DOOR MULTIPLEX CONTROL UNIT)

Item
Power window master switch (Driver's power window UP)
Power window master switch (Driver's power window DOWN)
Power window master switch (Driver's power window AUTO UP)
Power window master switch (Driver's power window AUTO DOWN)
Power window master switch (Front passenger's power window UP)
Power window master switch (Front passenger's power window DOWN)
Power window master switch (Left rear power window UP)
Power window master switch (Left rear power window DOWN)
Power window master switch (Right rear power window UP)
Power window master switch (Right rear power window DOWN)
Driver's door key cylinder switch *1 (LOCK)
Driver's door key cylinder switch *1 (UNLOCK)
Driver's door lock switch (LOCK)
Driver's door lock switch (UNLOCK)
Driver's door lock knob switch (LOCK)
Driver's door lock knob switch (UNLOCK)
Passenger's power window switch
Passenger's power window switch (UP)
Passenger's power window switch (DOWN)

* 1: A second key is necessary to check the key cylinder inputs.
  Be sure to rotate the key cylinder switch two times to each position (lock and lock, unlock and unlock) to ensure the door lock knob switch is in the appropriate position.
* 2: With security

GAUGE CONTROL MODULE

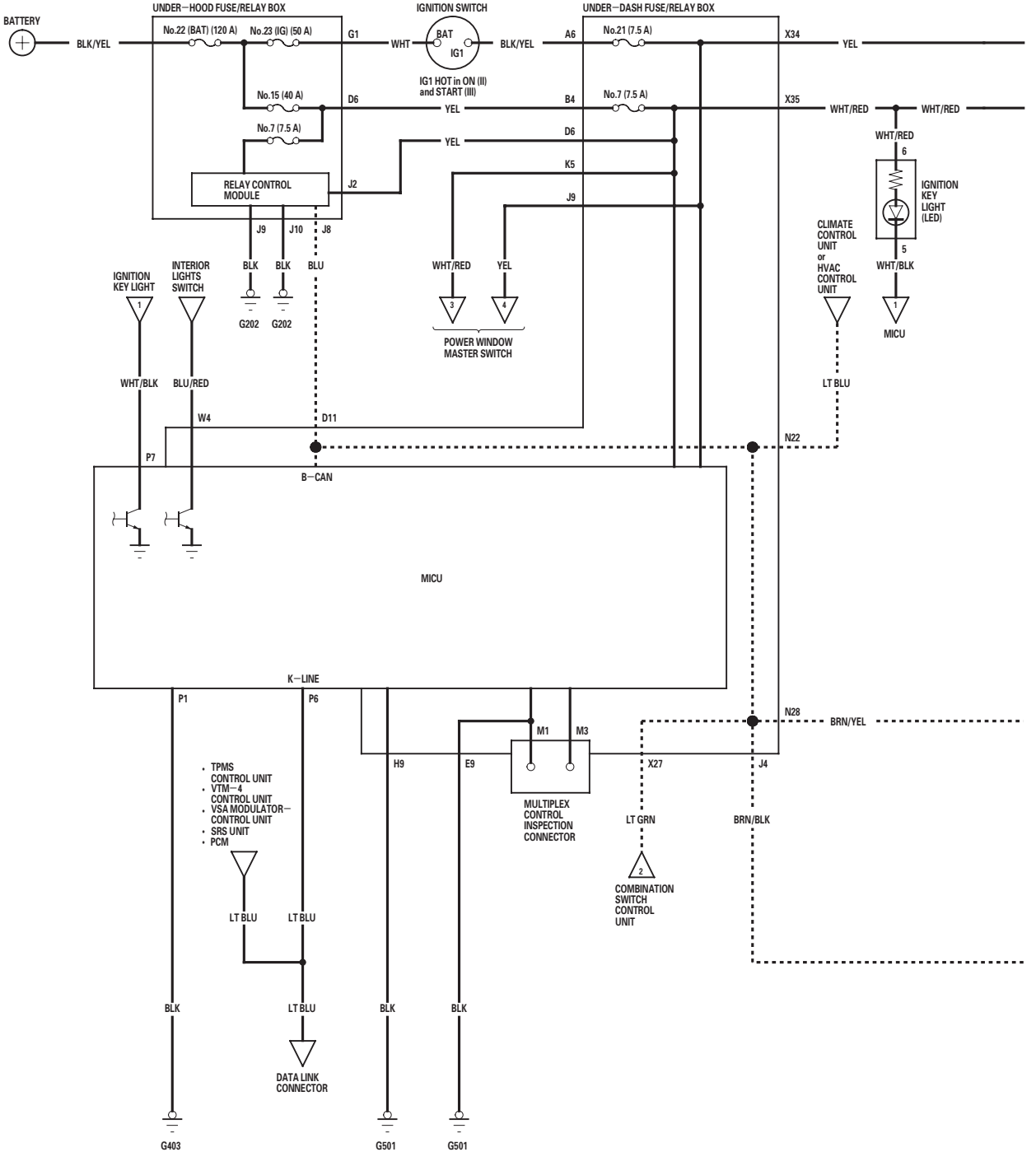
Item
Parking brake switch (ON; parking brake applied)
Cruise control main SET/RESUME/CANCEL switch (ON; switch pressed)
Gauge illumination full bright
Select switch button (ON)
Reset switch button (ON)
Transmission range switch (P, R, N, D)
Washer fluid level switch (fluid removed)
Brake fluid level switch (fluid removed)
VSA-OFF switch
Cargo area light switch (ON)

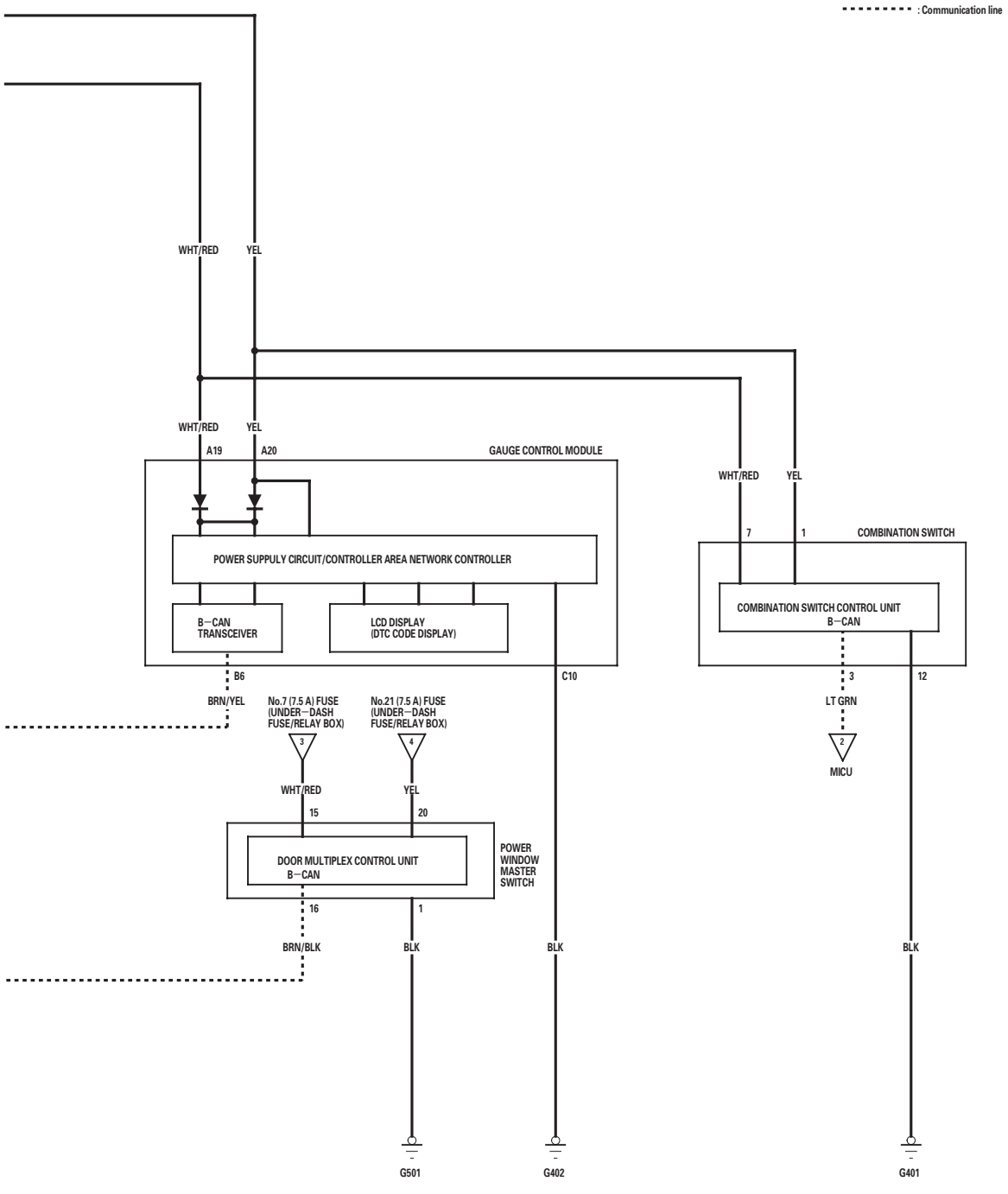
Do the map lights indicate proper switch operation?

YES—Go to function and input test for the system related to the failure. ■

NO—Repair the open, short, or replace the faulty switch. ■

Circuit Diagram




: Communication line
WHT/RED
YEL
WHT/RED
YEL
A19
A20
GAUGE CONTROL MODULE
POWER SUPPULY CIRCUIT/CONTROLLER AREA NETWORK CONTROLLER
B—CAN TRANSCEIVER
LCD DISPLAY (DTC CODE DISPLAY)
B6
BRN/YEL
C10
No.7 (7.5 A) FUSE (UNDER—DASH FUSE/RELAY BOX)
No.21 (7.5 A) FUSE (UNDER—DASH FUSE/RELAY BOX)
3
4
WHT/RED
YEL
15
20
DOOR MULTIPLEX CONTROL UNIT B—CAN
POWER WINDOW MASTER SWITCH
16
1
BRN/BLK
BLK
BLK
G501
G402
WHT/RED
YEL
7
1
COMBINATION SWITCH
COMBINATION SWITCH CONTROL UNIT B—CAN
3
12
LT GRN
2
MICU
BLK
G401

DTC Troubleshooting

DTC B1000: Communication Bus Line Error (BUS-OFF)

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1000 indicated?

   YES—Go to step 5.

   NO—Intermittent failure. The communication bus line is OK at this time. Check for loose or poor connections, or worn/shorted wires. If the connections are good, check the battery condition (see page 22-74) and the charging system. ■
5. Check for DTCs with the HDS.

   Are DTCs B1005, B1006, B1007, B1008, B1010, and B1011 also indicated?

   YES—Go to step 6.

   NO—Faulty MICU; replace the under-dash fuse/relay box. ■
6. Turn the ignition switch OFF.
7. Disconnect the appropriate connector at each control unit in the table one at a time. Clear the DTC, then recheck for DTCs after each unit is disconnected.

Control Unit	Connector
Gauge Control Module	Connector B (14P)
Relay Control Module	Connector J (10P)
Door Multiplex Control Unit	Power window master switch connector (23P)
Combination Switch Control Unit	Connector (12P)
HVAC Control Unit/ Climate Control Unit	Connector (30P)

   Is DTC B1000 indicated with each individual unit disconnected?

   YES—Go to step 8.

   NO—Check the power and grounds to the control unit that was disconnected when B1000 did not reset. If OK, replace the control unit. ■
8. Disconnect all of the appropriate connectors for each of the units in the table.

Control Unit	Appropriate Connector
Gauge Control Module	Connector B (14P)
Relay Control Module	Connector J (10P)
Door Multiplex Control Unit	Power window master switch connector (23P)
Combination Switch Control Unit	Connector (12P)
HVAC Control Unit/ Climate Control Unit	Connector (30P)

9. Disconnect under-dash fuse/relay box connectors D (17P), J (21P), N (45P), X (39P), and P (30P).

10. Check for continuity between each of the under-dash fuse/relay box terminals listed in the table and body ground.

Connected Control Unit	Under-dash fuse/ relay box terminal
Gauge Control Module	N28
Relay Control Module	D11
Door Multiplex Control Unit	J4
Combination Switch Control Unit	X27
HVAC Control Unit/ Climate Control Unit	N22

Is there continuity?

YES—Repair the short to ground in the wire between the under-dash fuse/relay box and the affected control unit. ■

NO—Go to step 11.

11. Check for voltage between each of the under-dash fuse/relay box terminals listed in the table and body ground.

Connected Control Unit	Under-dash fuse/ relay box terminal
Gauge Control Module	N28
Relay Control Module	D11
Door Multiplex Control Unit	J4
Combination Switch Control Unit	X27
HVAC Control Unit/ Climate Control Unit	N22

Is there less than 0.1 V?

YES—Replace the under-dash fuse/relay box. ■

NO—Repair the short to power in the wire between the under-dash fuse/relay box and the affected control unit. ■

DTC Troubleshooting (cont'd)

DTC B1050: Communication Bus Line Error

DTC B1100: Communication Bus Line Error

DTC B1150: Communication Bus Line Error

DTC B1200: Communication Bus Line Error

DTC B1250: Communication Bus Line Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Are DTCs B1050, B1100, B1150, B1200, and/or B1250 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections at the MICU and B-CAN connected units in the table. ■

5. Check for DTCs with the HDS.

Under-dash fuse/ relay box connector	B-CAN connected unit connector
Connector D (17P) No. 11 terminal	Under-hood fuse/relay box connector J (10P) No. 8 terminal
Connector J (21P) No. 4 terminal	Door multiplex control unit 23P Connector No. 16 terminal
Connector N (45P) No. 28 terminal	Gauge control module connector B (14P) No. 6 terminal
Connector N (45P) No. 22 terminal	HVAC control unit 30P connector No. 11 terminal or climate control unit 30P connector No. 30 terminal
Connector X (39P) No. 27 terminal	Combination switch control unit 12P connector No. 3 terminal

Is DTC B1000 also indicated?

YES—Troubleshoot DTC B1000. ■

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections at the MICU and B-CAN connected units in the table. ■

DTC B1001: MICU Internal Error (CPU Error)

DTC B1002: MICU Internal Error (EEPROM Error)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Operate the door lock (LOCK/UNLOCK).
4. Check for DTCs with the HDS.

   Are DTCs B1001 and/or B1002 indicated?

   YES—Faulty MICU; replace the under-dash fuse/relay box. ■

   NO—Intermittent failure, the MICU is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-74) and the charging system. ■

DTC B1005: MICU Lost Communication with the Relay Control Module

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1005 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the relay control module is OK at this time. Check for loose or poor connection at the relay control module connector J (10P), and at the under-dash fuse/relay box connector D (17P). If the connections are good, check the battery condition (see page 22-74) and the charging system. ■

5. Check for DTCs with the HDS.

   Is DTC B1158 also indicated?

   YES—Go to Relay Control Module Input Test (see page 22-125). ■

   NO—Check for an open in the communication circuit between the MICU and the relay control module. If the circuit is OK, the MICU is faulty; replace the under-dash fuse/relay box. If the circuit is bad, repair the open. ■

DTC Troubleshooting (cont'd)

DTC B1006: MICU Lost Communication with the Door Multiplex Control Unit (DRLOCKSW Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1006 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the door multiplex control unit is OK at this time. Check for loose or poor connection at the door multiplex connector (23P), and at the under-dash fuse/relay box connector J (21P). If the connections are good, check the battery condition (see page 22-74) and the charging system. ■
5. Check for DTCs with the HDS.

   Are DTCs B1058 and B1160 also indicated?

   YES—Go to Door Multiplex Control Unit Input Test (see page 22-123). ■

   NO—Check for an open in the communication circuit between the MICU and the door multiplex control unit. If the circuit is OK, the MICU is faulty; replace the under-dash fuse/relay box. If the circuit is bad, repair the open. ■

DTC B1007: MICU Lost Communication with the Combination Switch Control Unit (HLSW Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1007 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the MICU is OK at this time. Check for loose or poor connection at the combination switch control unit connector (12P), and at the under-dash fuse/relay box connector X (39P). If the connections are good, check the battery condition (see page 22-74) and the charging system. ■
5. Check for DTCs with the HDS.

   Are DTCs B1062 and B1155 also indicated?

   YES—Go to the Combination Switch Control Unit Input Test (see page 22-124). ■

   NO—Check for an open in the communication circuit between the MICU and the combination switch control unit. If the circuit is OK, the MICU is faulty; replace the under-dash fuse/relay box. If the circuit is bad, repair the open. ■

DTC B1008: MICU Lost Communication with the Gauge Control Module (A/T Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1008 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the gauge control module is OK at this time. Check for loose or poor connections at the gauge control module connector B (14P), and at the under-dash fuse/relay box connector N (45P). If the connections are good, check the battery condition (see page 22-74) and the charging system. ■
5. Check for DTCs with the HDS.

   Is DTC B1061 also indicated?

   YES—Go to the Gauge Control Module Input Test (see page 22-122). ■

   NO—Check for an open in the communication circuit between the MICU and the gauge control module. If the circuit is OK, the MICU is faulty; replace the under-dash fuse/relay box. If the circuit is bad, repair the open. ■

DTC B1010: MICU Lost Communication with the Door Multiplex Control Unit (PANIC Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN system Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Check for DTCs with the HDS.

   Is DTC B1010 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the door multiplex control unit is OK at this time. Check for loose or poor connections at the door multiplex control unit connector (23P), and at under-dash fuse/relay box connector J (21P). If the connections are good, check the battery condition (see page 22-74) and the charging system. ■
4. Check for DTCs with the HDS.

   Is DTC B1059 also indicated?

   YES—Go to the Door Multiplex Control Unit Input Test (see page 22-123). ■

   NO—Check for an open in the communication circuit between the MICU and the door multiplex control unit. If the circuit is OK, the MICU is faulty; replace the under-dash fuse/relay box. If the circuit is bad, repair the open. ■

DTC Troubleshooting (cont'd)

DTC B1011: MICU Lost Communication with the Gauge Control Module (VSP/NE Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN system Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Check for DTCs with the HDS.

   Is DTC B1011 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the gauge control module is OK at this time. Check for loose or poor connections at gauge control module connector B (14P), and at under-dash fuse/relay box connector N (45P). If the connections are good, check the battery condition (see page 22-74) and the charging system. ■
4. Check for DTCs with the HDS.

   Are DTCs B1060 and B1205 also indicated?

   YES—Go to the Gauge Control Module Input Test (see page 22-122). ■

   NO—Check for an open in the communication circuit between the MICU and the gauge control module. If the circuit is OK, the MICU is faulty; replace the under-dash fuse/relay box. If the circuit is bad, repair the open, or short to power or ground. ■

DTC B1080: Power Supply Circuit (IG1 Line) Input Error for Relay Control Module and MICU

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Check for DTCs with the HDS.

   Is DTC B1080 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, check for loose or poor connections at relay control module connector J (10P) and at under-dash fuse/relay box connector D (17P). If the connections are OK, check the battery condition (see page 22-74) and the charging system. ■
4. Check the MICU IG1 power supply No. 21 (7.5 A) fuse in the under-dash fuse/relay box.

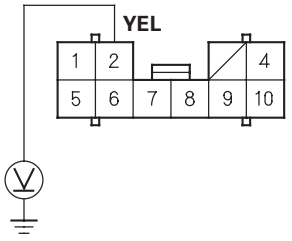
   Is the fuse OK?

   YES—Go to step 5.

   NO—Replace the fuse and recheck for DTCs. ■
5. Turn the ignition switch OFF.
6. Disconnect the under-hood fuse/relay box connector J (10P), and inspect for loose or bent pins. If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
7. Reconnect the under-hood fuse/relay box connector J (10P).
8. Turn the ignition switch ON (II).

9. Measure voltage between the No. 2 terminal of under-hood fuse/relay box connector J (10P) and body ground.

UNDER-HOOD FUSE/RELAY BOX CONNECTOR J (10P)



Wire side of female terminals

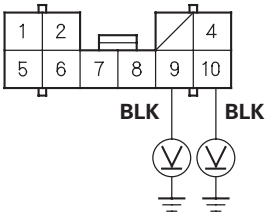
Is there battery voltage?

YES—Go to step 10.

NO—Repair an open in the wire between the under-hood fuse/relay box and the under-dash fuse/relay box. ■

10. Check the voltage between the No. 9 and No. 10 terminals of under-hood fuse/relay box connector J (10P) and body ground.

UNDER-HOOD FUSE/RELAY BOX CONNECTOR J (10P)



Wire side of female terminals

Is there less than 1 V?

YES—Faulty relay control module; replace the under-hood fuse/relay box. ■

NO—Repair an open in the wires between the under-hood fuse/relay box and G202. If the wires are OK, inspect G202. ■

DTC B1102: Door Multiplex Control Unit Internal Error (EEPROM Error)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Operate the power window (UP/DOWN).
4. Check for DTCs with the HDS.

Is DTC B1102 indicated?

YES—Faulty door multiplex control unit; replace the power window master switch. ■

NO—Intermittent failure, the door multiplex control unit is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-74) and the charging system. ■

DTC Troubleshooting (cont'd)

DTC B1105: Door Multiplex Control Unit Lost Communication with MICU (DOORSW Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1105 indicated?

   YES—Go to step 5.

   NO—Intermittent failure. The system is OK at this time. Check for loose or poor connections. ■
5. Check for DTCs with the HDS.

   Are DTCs B1057 and B1159 also indicated?

   YES—Go to the MICU input test (see page 22-117). ■

   NO—Go to the Door Multiplex Control Unit Input Test (see page 22-123). ■

DTC B1106: Door Multiplex Control Unit Lost Communication with MICU (MICU message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1106 indicated?

   YES—Go to step 5.

   NO—Intermittent failure. The system is OK at this time. Check for loose or poor and connections. ■
5. Check for DTCs with the HDS.

   Are DTCs B1055, B1157, and B1255 also indicated?

   YES—Go to the MICU input test (see page 22-117). ■

   NO—Go to the Door Multiplex Control Unit Input Test (see page 22-123). ■

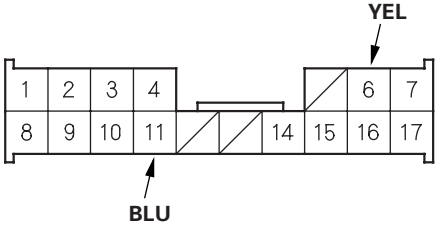
MICU Input Test

NOTE: Check the No. 22 (120 A), No. 23 (50 A), No. 15 (40 A) fuse in the under-hood fuse/relay box before troubleshooting.

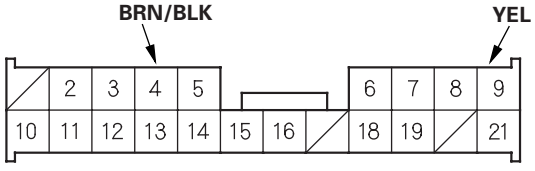
1. Before troubleshooting the multiplex integrated control system, troubleshoot the B-CAN System Diagnosis Test mode A (see page 22-99).
2. Turn the ignition switch OFF.
3. Remove the left front door sill trim and left kick panel (see page 20-60).
4. Disconnect the under-dash fuse/relay box connectors.

   NOTE: All connector views are wire side of female terminals.

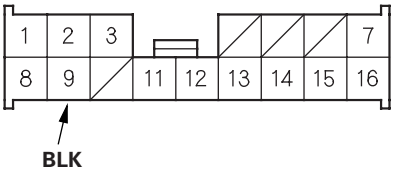
CONNECTOR D (17P)



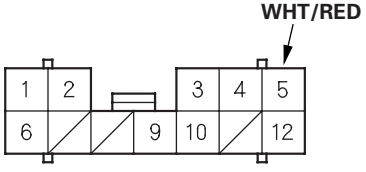
CONNECTOR J (21P)*



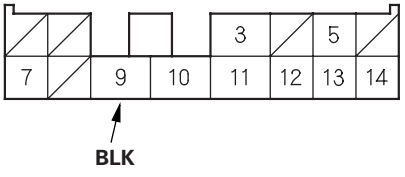
CONNECTOR E (16P)



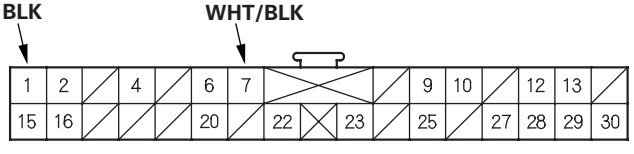
CONNECTOR K (12P)*



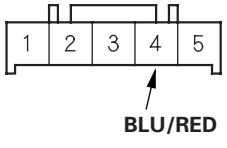
CONNECTOR H (14P)



CONNECTOR P (30P)



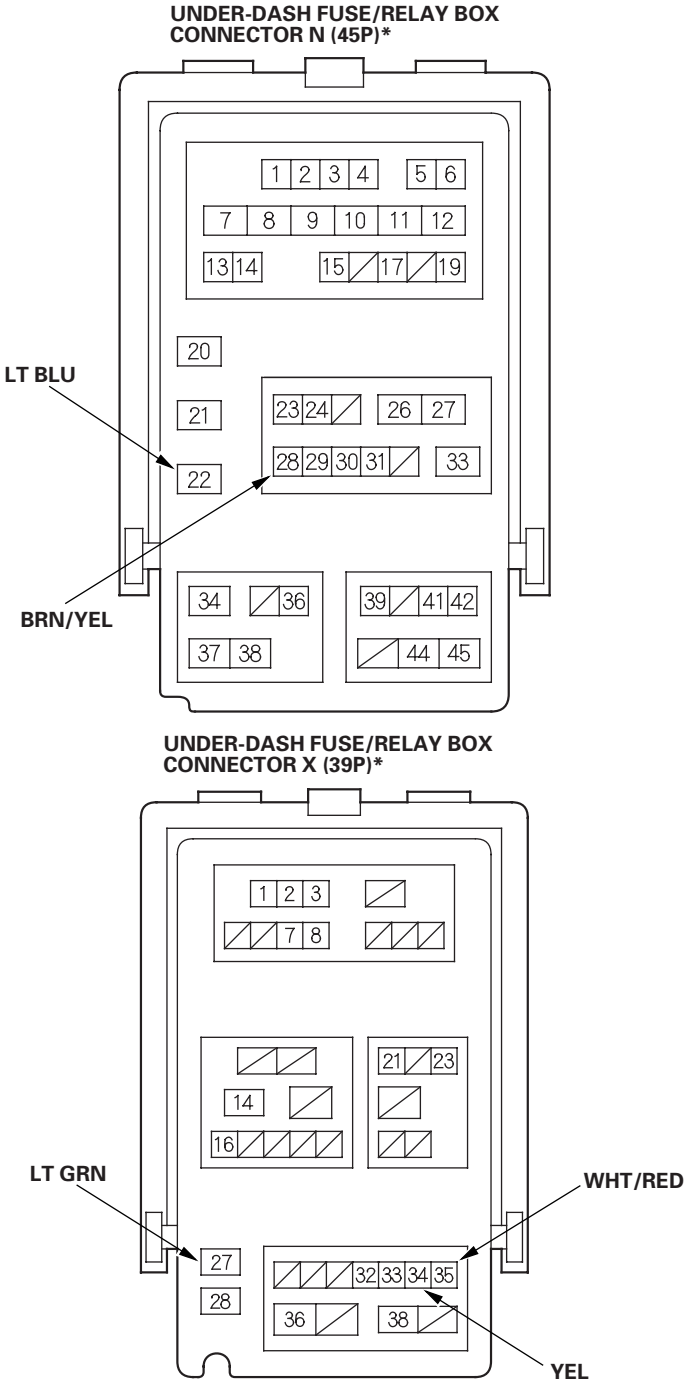
CONNECTOR W (5P)



***Connector view shown rotated 180 ° (upside down) from actual position in the under-dash fuse/relay box.**

(cont'd)

MICU Input Test (cont'd)



*Connector view shown rotated 180 ° (upside down) from actual position in the under-dash fuse/relay box.

5. Inspect the connector and socket terminals to be sure they are all making good contact.

   • If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   • If the terminals look OK, go to step 6.

6. With the connectors still disconnected from the under-dash fuse/relay box, make these input tests at the connector(s).

   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, go to step 7.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
P7	WHT/BLK	Under all conditions	Attach to ground: The ignition key light should come on.	• Blown No. 7 (7.5 A) fuse in the under-dash fuse/relay box • Faulty LED • An open in the wire
W4	BLU/RED	Interior lights switch in the middle position, all doors closed	Attach to ground: The individual map lights should come on.	• Blown No. 6 (10 A) fuse in the under-dash fuse/relay box • Faulty map light • An open in the wire
D11	BLU	Under all conditions	Check for continuity between the D11 terminal and the relay control module connector J (10P) No. 8 terminal: There should be continuity.	An open in the wire
		Relay control module connector J (10P) disconnected	Check for continuity to ground: There should be no continuity.	Short to ground
J4	BRN/BLK	Under all conditions	Check for continuity between the J4 terminal and the power window master switch connector (23P) No. 16 terminal: There should be continuity.	An open in the wire
		Power window master switch (Door multiplex control unit) connector (23P) disconnected	Check for continuity to ground: There should be no continuity.	Short to ground

(cont'd)

MICU Input Test (cont'd)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
N22	LT BLU	Under all conditions	Check for continuity between the N22 terminal and the HVAC control unit connector (30P) No. 11 terminal (or climate control unit) connector (30P) No. 30 terminal: There should be continuity.	An open in the wire
		HVAC control unit (or climate control unit) connector (30P) disconnected	Check for continuity to ground: There should be no continuity.	Short to ground
N28	BRN/YEL	Under all conditions	Check for continuity between the N28 terminal and the gauge control module connector B (14P) No. 6 terminal: There should be continuity.	An open in the wire
		Gauge control module connector B (14P) disconnected	Check for continuity to ground: There should be no continuity.	Short to ground
X27	LT GRN	Under all conditions	Check for continuity between the X27 terminal and the combination switch connector (12P) No. 3 terminal: There should be continuity.	An open in the wire
		Combination switch connector (12P) disconnected	Check for continuity to ground: There should be no continuity.	Short to ground

7. Reconnect the connectors to the under-dash fuse/relay box, and make sure these input tests at the appropriate connectors on the under-dash fuse/relay box.

   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, the MICU must be faulty, replace the under-dash fuse/relay box assembly.

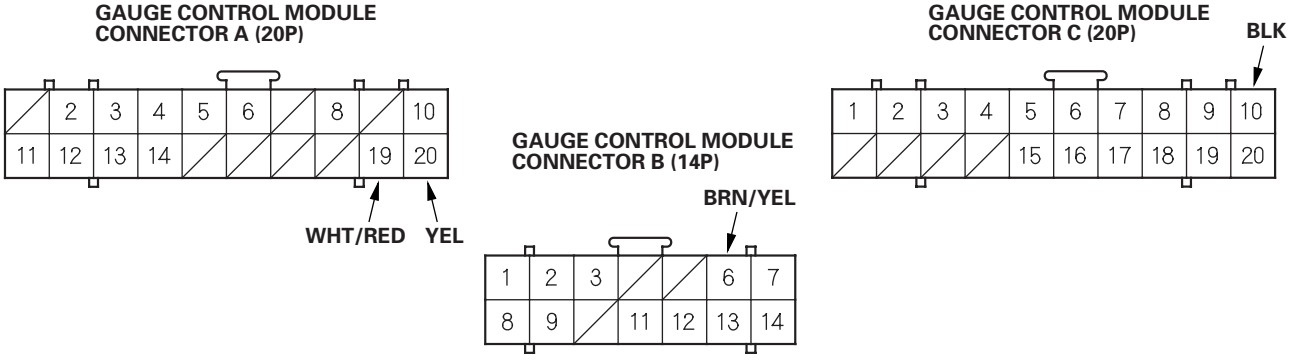
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
E9 . H9	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G501) • An open in the wire
P1	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G403) • An open in the wire
D6 . J9 . X34	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 21 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
K5 . X35	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 7 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire

Gauge Control Module Input Test

NOTE: Check the No. 22 (120 A), No. 23 (50 A), No. 15 (40 A) fuse in the under-hood fuse/relay box before troubleshooting.

1. Before troubleshooting the multiplex integrated control system, troubleshoot the B-CAN System Diagnosis Test mode A (see page 22-99).
2. Turn the ignition switch OFF.
3. Remove the gauge control module (see page 22-263).
4. Disconnect connectors from the gauge control module.
5. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 6.

   NOTE: All connectors are wire side of female terminals.



6. Reconnect connectors A and C to the gauge control module, and make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, replace the gauge control module.

Cavity	Wire	Test Condition	Test: Desired result	Possible cause if result is not obtained
C10	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G402) • An open in the wire
A19	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 7 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
A20	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 21 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
B6	BRN/YEL	Under all conditions	Check for continuity between the B6 terminal and the under-dash fuse/relay box connector N (45P) No. 28 terminal: There should be continuity.	An open in the wire

Door Multiplex Control Unit Input Test

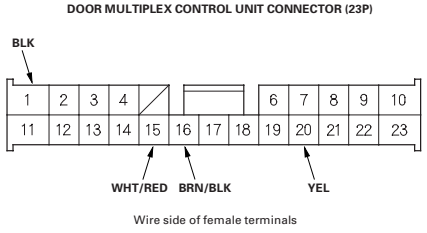
NOTE: Check the No. 22 (120 A), No. 23 (50 A), No. 15 (40 A) fuse in the under-hood fuse/relay box before troubleshooting.

1. Before troubleshooting the multiplex integrated control system, troubleshoot the B-CAN System Diagnosis Test mode A (see page 22-99).

2. Turn the ignition switch OFF.

3. Remove the power window master switch (see page 22-221).

4. Disconnect the 23P connector from the power window master switch.



5. Inspect the connector and socket terminals to be sure they are all making good contact.

   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 6.

6. With the connector still disconnected, make these input tests at the connector.

   - If the test indicates a problem, find and correct the cause, then recheck the system.
   - If the input tests prove OK, go to step 7.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
16	BRN/BLK	Under all conditions	Check for continuity between No. 16 terminal and the under-dash fuse/relay box connector J (21P) No. 4 terminal: There should be continuity.	An open in the wire

7. Reconnect the connector to the door multiplex control unit, and make these input tests at the connector.

   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the door multiplex control unit must be faulty, replace the power window master switch.

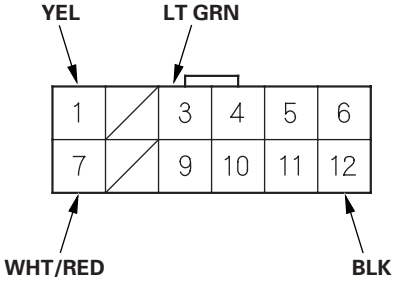
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G501) • An open in the wire
15	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 7 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
20	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 21 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire

Combination Switch Control Unit Input Test

NOTE: Check the No.22 (120 A) No. 23 (50 A), No. 15 (40 A) fuse in the under-hood fuse/relay box before troubleshooting.

1. Before troubleshooting the multiplex integrated control system, troubleshoot the B-CAN System Diagnosis Test mode A (see page 22-99).
2. Turn the ignition switch OFF.
3. Remove the steering column covers (see page 17-24).
4. Disconnect the 12P connector from the combination switch

COMBINATION SWITCH CONTROL UNIT 12P CONNECTOR



Wire side of female terminals

5. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 6.
6. Reconnect all the connector to the control unit, and make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the combination switch control unit must be faulty, replace the combination switch.

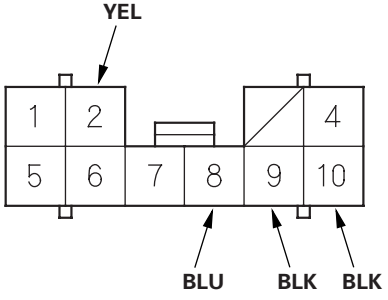
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
12	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G401) • An open in the wire
7	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 7 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
1	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 21 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
3	LT GRN	Under all conditions	Check for continuity between No. 3 terminal and the under-dash fuse/relay box connector X (39P) No. 27 terminal: There should be continuity.	An open in the wire

Relay Control Module Input Test

NOTE: Check the No. 22 (120 A), No. 23 (50 A), N0. 15 (40 A) fuse in the under-hood fuse/relay box before troubleshooting.

1. Before troubleshooting the multiplex integrated control system, troubleshoot the B-CAN System Diagnosis Test mode A (see page 22-99).
2. Turn the ignition switch OFF.
3. Check the No. 7 (7.5 A) fuse in the under-hood fuse/relay box.
4. Remove the under-hood fuse/relay box under cover (see page 22-72).
5. Disconnect the under-hood fuse/relay box connector J (10P).

UNDER-HOOD FUSE/RELAY BOX CONNECTOR J (10P)

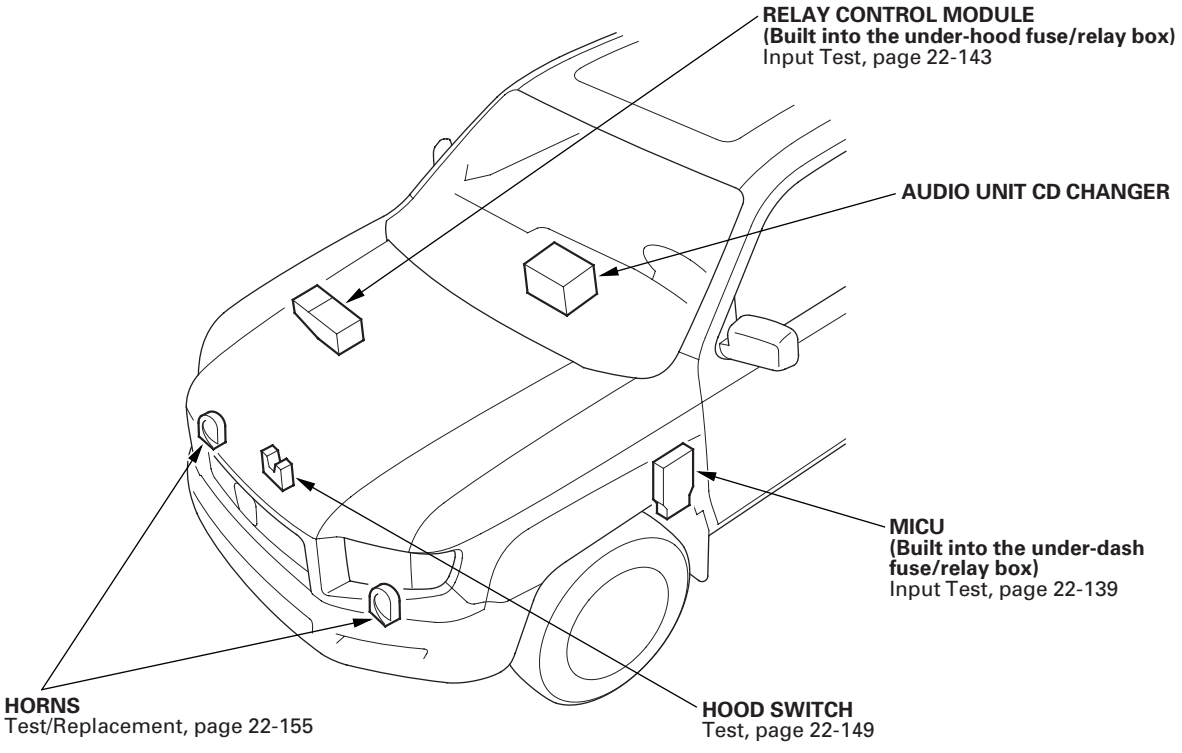


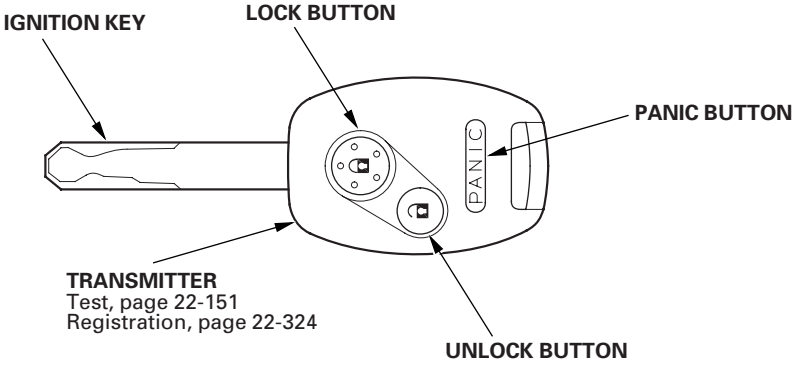
Wire side of female terminals

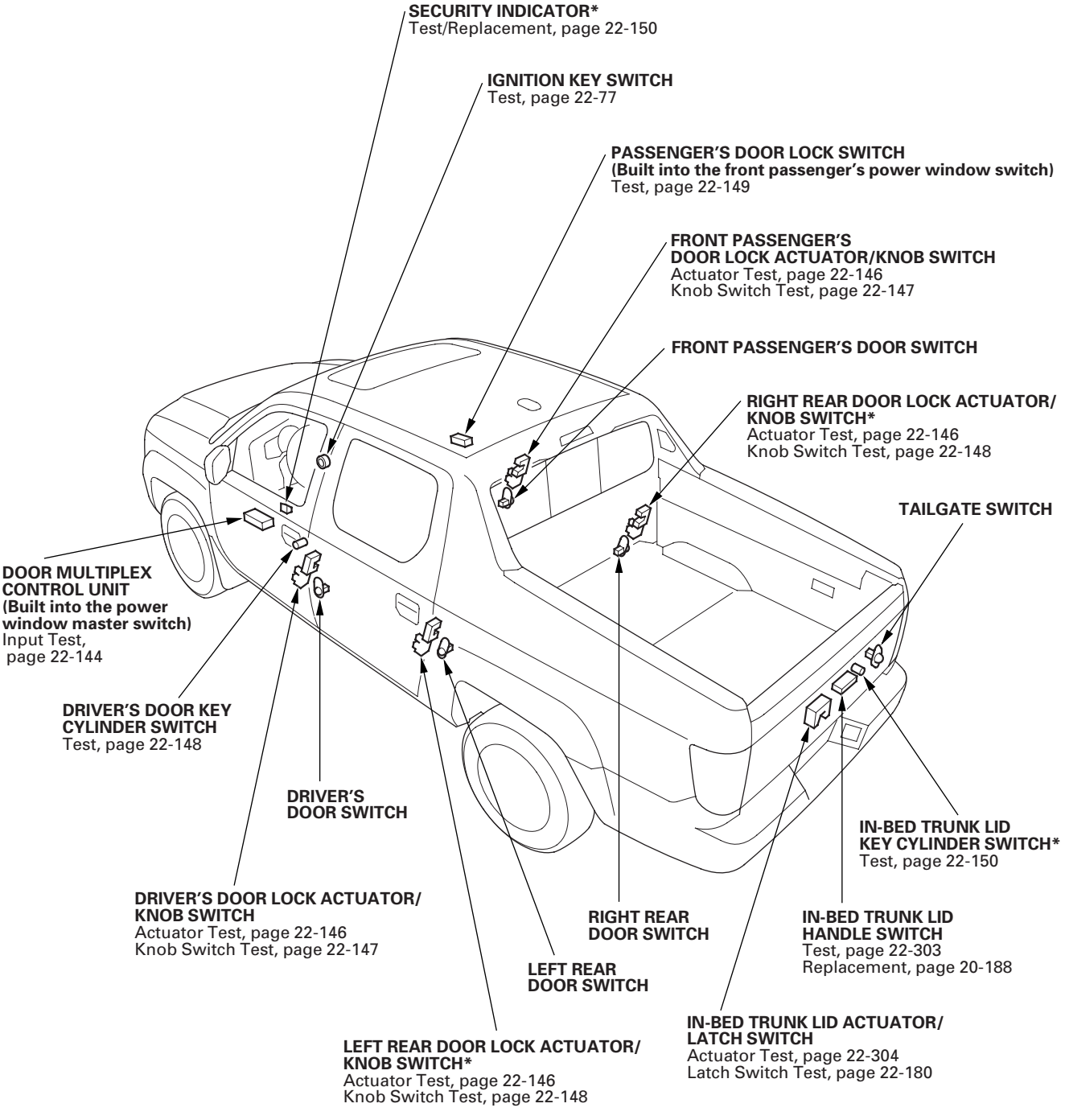
6. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 7.
7. Reconnect the connector to the under-hood fuse/relay box, and make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the relay control module must be faulty, replace the under-hood fuse/relay box.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
J9 . J10	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G202) • An open in the wire
J2	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 21 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
J8	BLU	Under all conditions	Check for continuity between J8 terminal and the under-dash fuse/relay box connector D (17P) No. 11 terminal: There should be continuity.	An open in the wire

Component Location Index







***: RTL, RTS, and EXL models**

System Description

Security Alarm System

NOTE: This applies to RTS and RTL (USA) or EXL (Canada).

The security alarm system is armed automatically after the doors, hood, and trunk are closed and locked. For the system to arm, the ignition switch must be off, the key must be removed, and the MICU must receive signals that the doors, hood, in-bed trunk are closed and locked. The alarm can be disarmed at any time by unlocking the driver's door with the key or pressing the UNLOCK button on the remote transmitter.

When everything is closed and locked, the only inputs that are grounded, and have 0 V, are the driver's door lock knob switch (LOCK position), and the audio unit or CD changer. In other words, all of the other switches are open, and have about 5 V with system awake and 1 V in sleep mode, including the key cylinder switches. The security indicator in the driver's door panel begins to flash immediately after the vehicle is completely closed and locked, and 15 seconds later, the security system arms and the security indicator flashes on for a shorter amount of time than before. If the security indicator does not flash, the system is not arming. A beep sounds and parking lights flash to confirm the security alarm system is armed if the LOCK button is pressed a second time within 5 seconds.

If one of the switches is misadjusted or shorted internally, or there is a short in the circuit, the security system will not arm. As long as the control unit continues to receive a ground signal (0 V), it senses that the vehicle is not closed and locked, and the system will not arm. A switch that is slightly misadjusted can cause the alarm to sound for no apparent reason. In this case, a significant change in outside air temperature, the vibration of a passing truck, or someone bumping into the vehicle could cause the alarm to sound. There is no glass breakage or motion detector feature.

If anything is opened or improperly unlocked after the system is armed, the control unit receives a ground signal from that switch, and the 1—5 V reference drops to 0 V. If the audio unit or CD changer is disconnected, the input loses its ground, and the input voltage goes to 1—5 V. The system sounds the alarm when any of these occur:

- A door or the in-bed trunk is forced open
- A door is unlocked without using the key or the remote transmitter
- The hood is opened
- The audio unit or CD changer is disconnected
- The remote panic is operated

When the system sounds the alarm, the horns sound and the exterior lights flash for 2 minutes. The alarm can be stopped at any time by unlocking the driver's door with the key or by pressing any button on the remote transmitter.

Panic Mode

The panic mode sounds the alarm in order to attract attention. When the PANIC button on the remote transmitter is pressed and held for 2 seconds, the alarm sounds and the exterior lights flash for about 20 seconds.

The panic mode can be cancelled at any time by pressing any button on the remote transmitter or by turning the ignition switch ON (II). The panic mode will not function if the ignition switch is ON (II).

Keyless Entry System

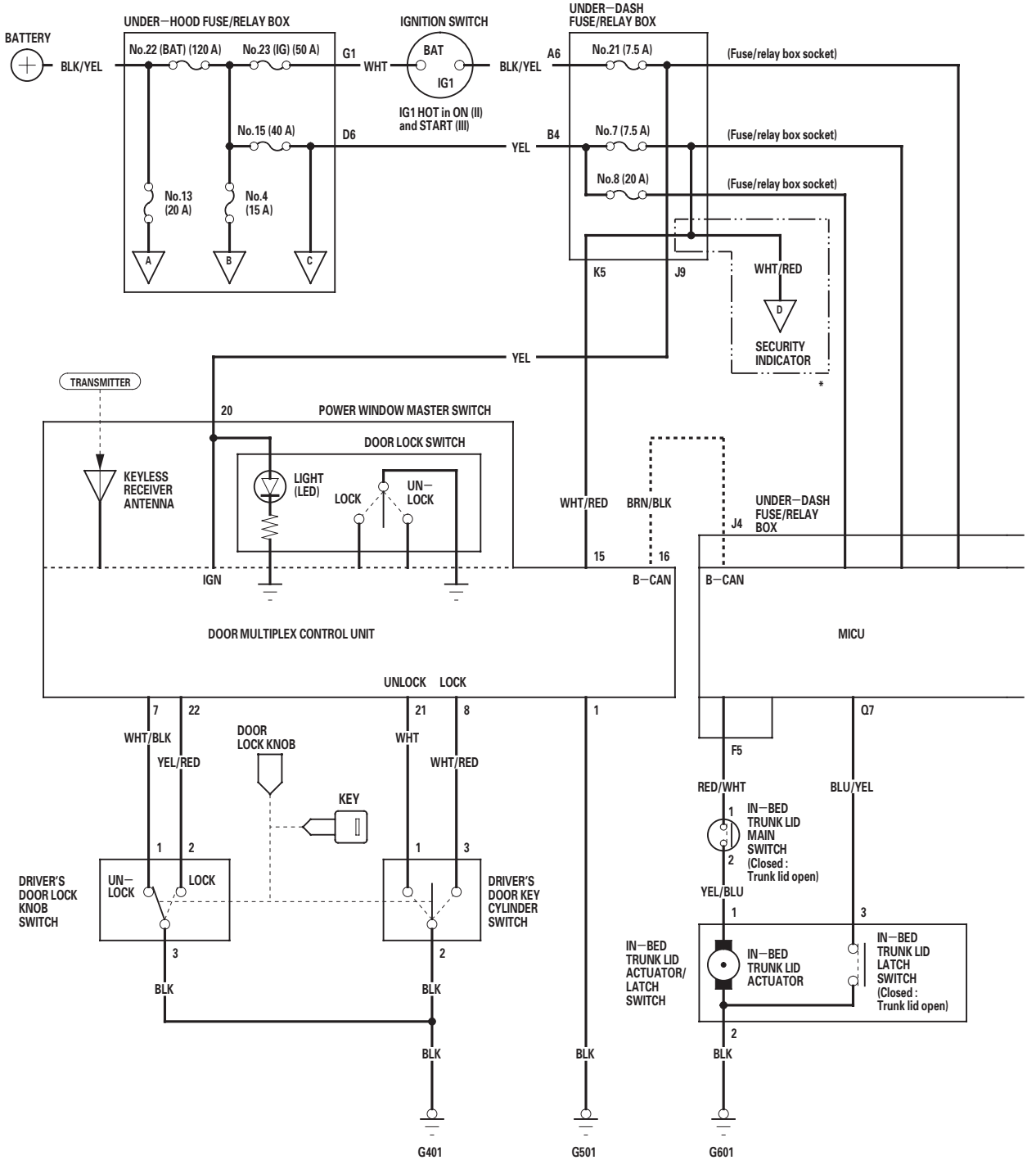
The keyless entry system is integrated with the MICU. The multiplex integrated control unit (MICU) receives LOCK, UNLOCK and PANIC signals from the door multiplex control unit (keyless receiver).

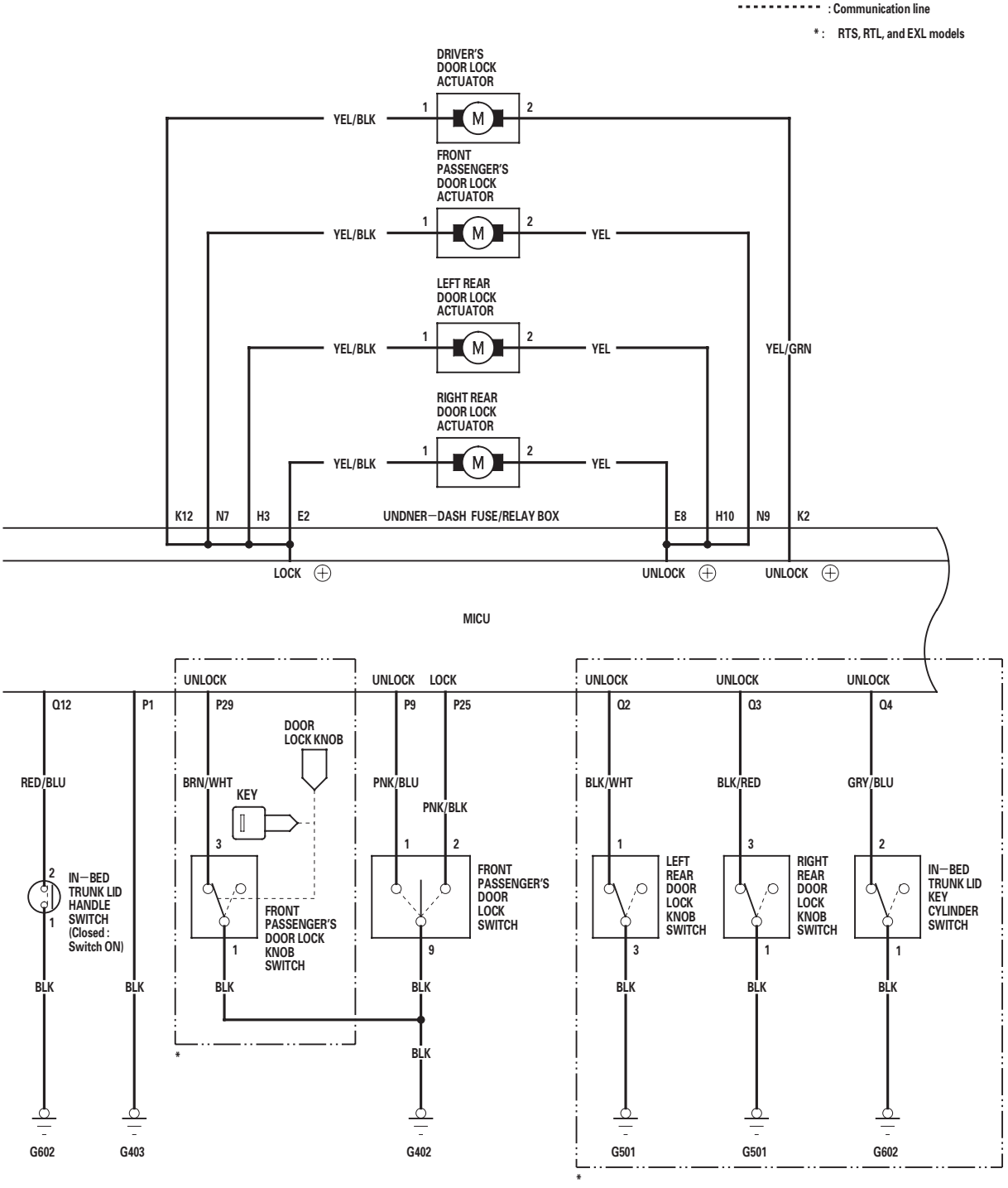
The keyless entry system allows you to lock and unlock the vehicle with the remote transmitter. When you press the LOCK button, all doors lock. When you press the UNLOCK button once, only the driver's door unlocks. The other doors will unlock at the second time you press the button. The doors will not lock with the remote transmitter if a door is not fully closed, or if the key is in the ignition switch.

If the UNLOCK button is pressed, released, then pressed and held, the windows will start to open. The windows stop if the button is released. See Power Windows and troubleshooting for more information.

When the switch for the ceiling light is in the center position, the ceiling light will come on as the UNLOCK button is pressed. If a door is not opened, the light will go off in about 30 seconds, and the doors will relock. If the doors are locked with the remote transmitter within 30 seconds, the light will go off immediately.

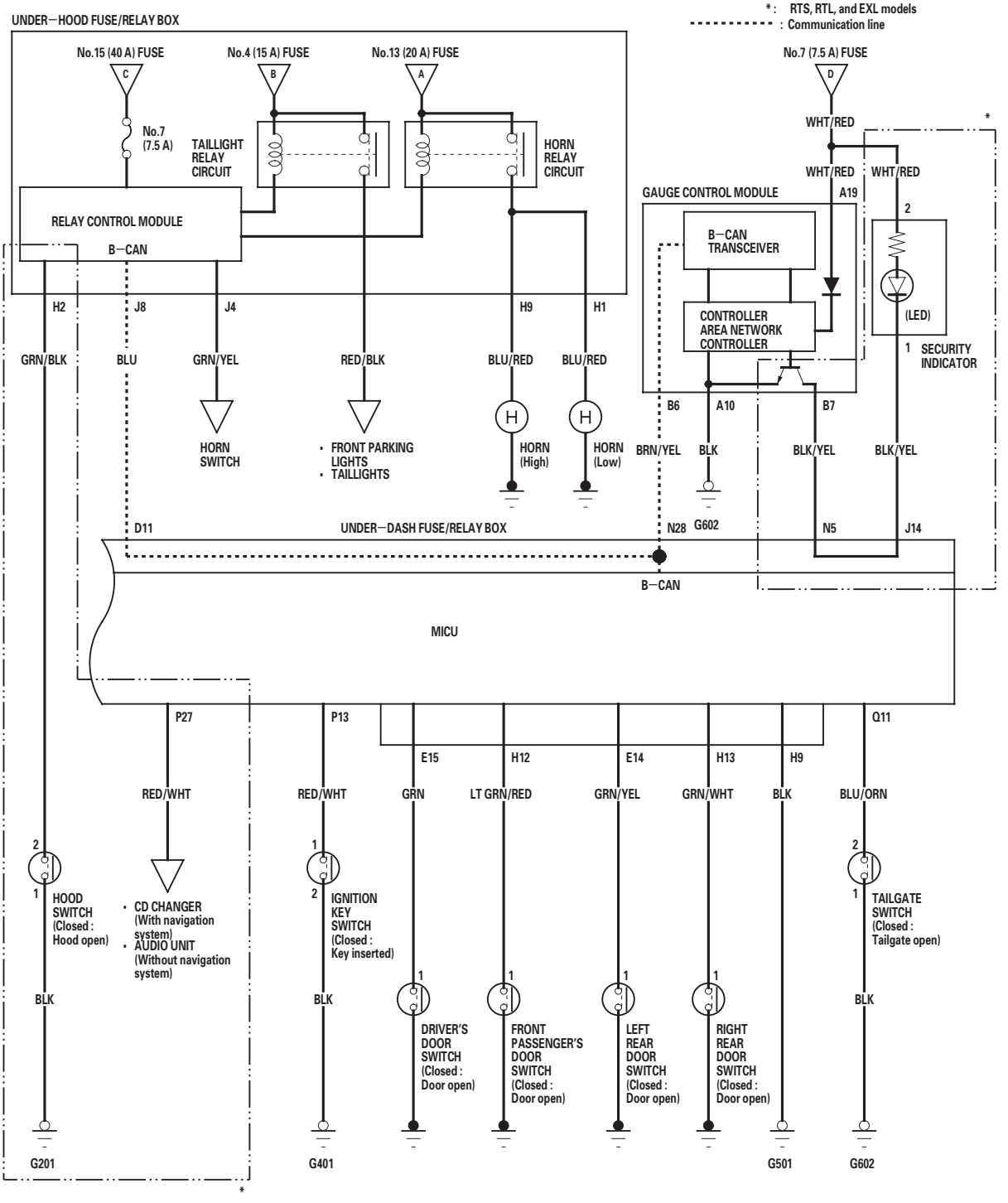
Circuit Diagram




: Communication line
*: RTS, RTL, and EXL models
DRIVER'S DOOR LOCK ACTUATOR
FRONT PASSENGER'S DOOR LOCK ACTUATOR
LEFT REAR DOOR LOCK ACTUATOR
RIGHT REAR DOOR LOCK ACTUATOR
YEL/BLK
YEL
YEL/GRN
K12 N7 H3 E2 UNDNER—DASH FUSE/RELAY BOX E8 H10 N9 K2
LOCK
UNLOCK
UNLOCK
MICU
UNLOCK
UNLOCK LOCK
UNLOCK
UNLOCK
UNLOCK
Q12 P1 P29 P9 P25 Q2 Q3 Q4
RED/BLU
BRN/WHT
PNK/BLU
PNK/BLK
BLK/WHT
BLK/RED
GRY/BLU
DOOR LOCK KNOB
KEY
IN—BED TRUNK LID HANDLE SWITCH (Closed : Switch ON)
FRONT PASSENGER'S DOOR LOCK KNOB SWITCH
FRONT PASSENGER'S DOOR LOCK SWITCH
LEFT REAR DOOR LOCK KNOB SWITCH
RIGHT REAR DOOR LOCK KNOB SWITCH
IN—BED TRUNK LID KEY CYLINDER SWITCH
BLK
G602 G403 G402 G501 G501 G602

(cont'd)

Circuit Diagram (cont'd)



DTC Troubleshooting

DTC B1026: Front Passenger's Door Lock Switch LOCK/UNLOCK Signal Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN system diagnosis test mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Operate the front passenger's door lock switch several times.
4. Check for DTCs with the HDS.

   Is DTC B1026 indicated?

   YES—Go to step 5.

   NO—Intermittent failure. The front passenger's door lock system is OK at this time. Check for loose or poor connections. ■
5. With the front passenger's door lock switch in the neutral position, select SECURITY from the HDS and enter the DATA LIST.
6. Check the ON/OFF information of the FRONT PASSENGER'S DOOR LOCK SWITCH (LOCK) and FRONT PASSENGER'S DOOR LOCK SWITCH (UNLOCK) in the DATA LIST.

   Are both information indicators OFF?

   YES—Go to step 7.

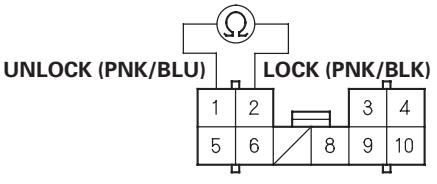
   NO—Go to step 12.
7. Push the front passenger's door lock switch to the LOCK and UNLOCK positions, and check the ON/OFF information of the FRONT PASSENGER'S DOOR LOCK SWITCH (LOCK) and FRONT PASSENGER'S DOOR LOCK SWITCH (UNLOCK) in the DATA LIST.

   Does the FRONT PASSENGER'S DOOR LOCK SWITCH (LOCK) (FRONT PASSENGER'S DOOR LOCK SWITCH (UNLOCK)) information indicate ON when the door lock switch is pushed in each switch position, and OFF when the door lock switch is released?

   YES—Faulty MICU, replace the under-dash fuse/relay box. ■

   NO—Go to step 8.
8. Remove the front passenger's door panel (see page 20-7).
9. Disconnect the 10P connector from the front passenger's window/door lock switch.
10. Disconnect the 30P connector from the under-dash fuse/relay box connector P.
11. Check for continuity between the No. 1 and No. 2 terminals of the front passenger's window/door lock switch 10P connector.

FRONT PASSENGER'S WINDOW/ DOOR LOCK SWITCH 10P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire. ■

NO—Faulty front passenger's door lock switch. ■

(cont'd)

DTC Troubleshooting (cont'd)

12. Remove the front passenger's door panel (see page 20-7).

13. Disconnect the 10P connector from the front passenger's window/door lock switch.

14. Check the ON/OFF information of the FRONT PASSENGER'S DOOR LOCK SWITCH (LOCK) and FRONT PASSENGER'S DOOR LOCK SWITCH (UNLOCK) in the DATA LIST.

    Are both information indicators OFF?

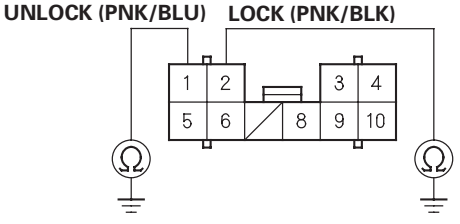
    YES—Faulty front passenger's door lock switch; replace it. ■

    NO—Go to step 15.

15. Turn the ignition switch OFF.

16. Check for continuity between the No. 1 (UNLOCK) and No. 2 (LOCK) terminals of the front passenger's door lock switch 10P connector and body ground.

FRONT PASSENGER'S WINDOW/ DOOR LOCK SWITCH 10P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire and recheck. ■

NO—Faulty MICU; replace the under-dash fuse/ relay box. ■

DTC B1127: Driver's Door Key Cylinder Switch LOCK/UNLOCK Signal Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.

2. Turn the ignition switch OFF, and then back ON (II).

3. Operate the driver's door key cylinder several times.

4. Check for DTCs with the HDS.

   Is DTC B1127 indicated?

   YES—Go to step 5.

   NO—Intermittent failure. The driver's door key cylinder system is OK at this time. Check for loose or poor connections. ■

5. With the driver's door key cylinder in the neutral position, select SECURITY with the HDS, and enter the DATA LIST.

6. Check the ON/OFF information of the DRIVER'S DOOR KEY CYLINDER SWITCH (LOCK) and DRIVER'S DOOR KEY CYLINDER SWITCH (UNLOCK) in the DATA LIST.

   Are both information indicators OFF?

   YES—Go to step 7.

   NO—Go to step 8.

7. Turn the driver's door key cylinder to the LOCK and UNLOCK positions with the ignition key and check the ON/OFF information of the DRIVER'S DOOR KEY CYLINDER SWITCH (LOCK) and DRIVER'S DOOR KEY CYLINDER SWITCH (UNLOCK) in the DATA LIST.

   Is the DRIVER'S DOOR KEY CYLINDER SWITCH (LOCK) (DRIVER'S DOOR KEY CYLINDER SWITCH (UNLOCK)) information indicator ON when the key cylinder is in the LOCK (UNLOCK) position, and OFF when the key is in the neutral or opposite position?

   YES—Substitute the door multiplex control unit and retest. ■

   NO—Faulty driver's door key cylinder switch or a short between the WHT/RED and/or WHT wires. ■

8. Remove the driver's door panel (see page 20-7).

9. Disconnect the driver's door key cylinder switch 3P connector.

10. Check the ON/OFF information of the DRIVER'S DOOR KEY CYLINDER SWITCH (LOCK) and DRIVER'S DOOR KEY CYLINDER SWITCH (UNLOCK) in the DATA LIST.

    Are both information indicators OFF?

    YES—Faulty driver's door key cylinder switch. Replace the it. ■

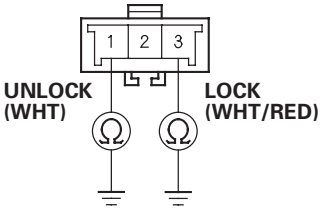
    NO—Go to step 11.

11. Turn the ignition switch OFF.

12. Disconnect the driver's door multiplex control unit 23P connector.

13. Check for continuity between the No. 3 (LOCK) and No. 1 (UNLOCK) terminals of the driver's door key cylinder switch 3P connector and body ground.

DRIVER'S DOOR KEY CYLINDER SWITCH 3P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Repair a short in the WHT/RED (LOCK) or WHT (UNLOCK) wire. ■

NO—Faulty door multiplex control unit; replace the power window master switch. ■

DTC Troubleshooting (cont'd)

DTC B1128: Driver's Door Lock Switch LOCK/ UNLOCK Signal Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN system diagnosis test mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Operate the driver's door look switch several times.
4. Check for DTCs with the HDS.

   Is DTC B1128 indicated?

   YES—Faulty driver's door lock switch; replace the power window master switch. ■

   NO—Intermittent failure. The driver's door lock switch system is OK at this time. Check for loose or poor connections. ■

DTC B1129: Driver's Door Lock Knob Switch LOCK/UNLOCK Signal Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN system diagnosis test mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Operate the driver's door lock knob switch several times.
4. Check for DTCs with the HDS.

   Is DTC B1129 indicated?

   YES—Go to step 5.

   NO—Intermittent failure. The driver's door lock knob switch system is OK at this time. Check for loose or poor connections. ■
5. Select SECURITY from the BODY ELECTRICAL SYSTEM SELECT menu, and enter the DATA LIST.

   Check the ON/OFF information of the DRIVER'S DOOR LOCK KNOB SWITCH (LOCK) and DRIVER'S DOOR LOCK KNOB SWITCH (UNLOCK) in the DATA LIST.

   Does the DRIVER'S DOOR LOCK KNOB SWITCH (LOCK) information indicator ON and DRIVER'S DOOR LOCK KNOB SWITCH (UNLOCK) information indicate OFF with the driver's door lock knob switch in LOCK position, and does the DRIVER'S DOOR LOCK KNOB SWITCH (LOCK) information indicate OFF and DRIVER'S DOOR LOCK KNOB SWITCH (UNLOCK) information indicate ON with the driver's door lock knob switch in the UNLOCK position?

   YES—Faulty door multiplex control unit; replace the power window master switch. ■

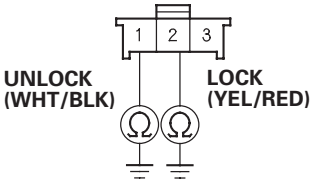
   NO—Go to step 6.
6. Remove the driver's door panel (see page 20-7).
7. Disconnect the driver's door lock knob switch 3P connector.
8. Check the ON/OFF information of the DRIVER'S DOOR LOCK KNOB SWITCH (LOCK) and DRIVER'S DOOR LOCK KNOB SWITCH (UNLOCK) in the DATA LIST.

   Are both information indicators OFF?

   YES—Check for an open in the driver's door lock knob switch (LOCK) wire or the driver's door lock knob switch (UNLOCK) wire between the door multiplex control unit and the driver's door lock knob switch. If OK, replace the driver's door lock actuator. ■

   NO—Go to step 9.
9. Turn the ignition switch OFF.
10. Disconnect power window master switch 23P connector.
11. Check for continuity between the No. 2 (LOCK) and No. 1 (UNLOCK) terminals of the driver's door lock knob switch 3P connector and body ground.

DRIVER'S DOOR LOCK KNOB SWITCH 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short in the YEL/RED (LOCK) or WHT/BLK (UNLOCK) wire. ■

NO—Faulty door multiplex control unit replace the power window master switch. ■

Symptom Troubleshooting

1. Troubleshoot the keyless/power door locks/security alarm system by the symptom index.

Symptom	Location	Possible cause
The door(s) will not lock or unlock.	1. Check for B-CAN troubleshooting test mode A (see page 22-99). 2. Do the control unit input test (see page 22-139). 3. Do the transmitter test (see page 22-151). 4. Do the transmitter registration (see page 22-324). 5. Do the ignition switch test (see page 22-77). 6. Do the ignition key switch test (see page 22-204).	NOTE: If the key in the ignition key switch or the ignition is ON (II), the door lock system does not function.
The door(s) will not lock.	1. Do the control unit input test (see page 22-139). 2. Do the door lock knob switch test (see page 22-147).	Door switch test (Door open: switch closed, Door closed: switch open).
The door(s) will not unlock.	1. Do the control unit input test (see page 22-139). 2. Do the door lock knob switch test (see page 22-147).	Door switch test (Door open: switch closed, Door closed: switch open).
Transmitter will not program.	1. Check for B-CAN troubleshooting test mode A (see page 22-99). 2. Do the control unit input test (see page 22-139). 3. Do the transmitter test (see page 22-151). 4. Do the ignition switch test (see page 22-77).	
Door(s) will relock even if the door is opened once after locking with remote.		Driver's door switch test (Door open: switch closed, Door closed: switch opened).
Door(s) will lock and unlock with the remote even if the ignition switch is ON (II).	Do the ignition switch test (see page 22-77).	NOTE: If the ignition switch ON (II), the door lock system does not function.
Door will lock or unlock with the remote even if the ignition switch is ON (II).	Do the ignition key switch test (see page 22-204).	NOTE: If the key is in the ignition key switch, the door lock system does not function.
Sometimes door(s) will not lock or unlock.	1. Do the key cylinder test (see page 22-148). 2. Do the in-bed trunk lid latch switch test (see page 22-180).	Door switch test (Door open: switch closed, Door closed: switch open).

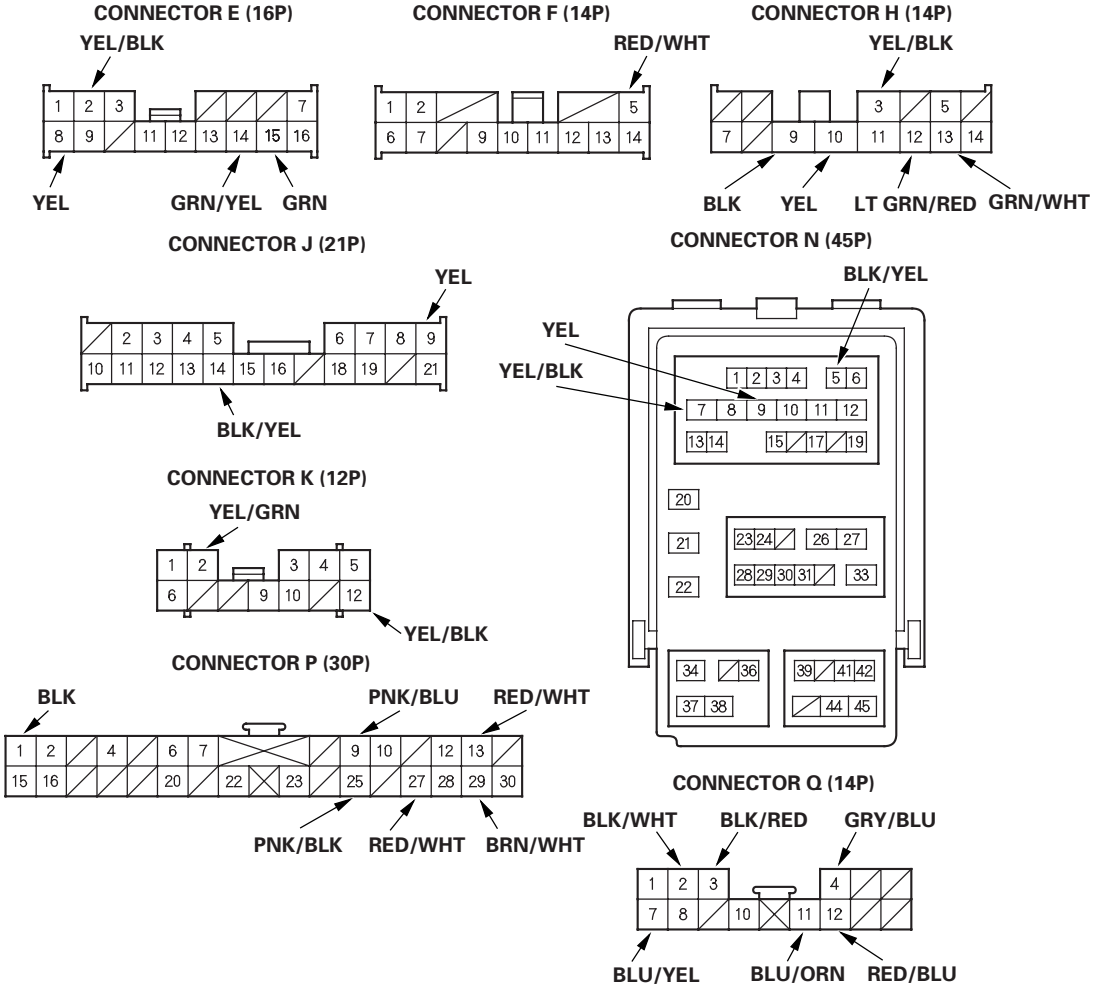
Control Unit Input Test

NOTE: Before troubleshooting the keyless entry/security control system, troubleshoot the multiplex integrated control system first using B-CAN System Diagnosis Test Mode A (see page 22-99).
Make sure the ignition switch OFF before troubleshooting the under-dash fuse/relay box.

MICU

1. Turn the ignition switch OFF.
2. Remove the left front door sill trim and left kick panel (see page 20-60).
3. Disconnect the under-dash fuse/relay box connectors.

   NOTE: All connector views are wire side of female terminals.



4. Inspect the connector and socket terminals to be sure they are all making good contact.

   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 5.

(cont'd)

Control Unit Input Test (cont'd)

5. With the connectors still disconnected, make these input tests at the connectors.

   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
K2 K12	YEL/GRN YEL/BLK	Connect the battery positive terminal to K12 (K2) terminal, and K2 (K12) terminal to H9 terminal	Check actuator operation: The driver's door lock actuator should lock (unlock).	• Faulty driver's door lock actuator • An open in the wire
N7 N9	YEL/BLK YEL	Connect the battery positive terminal to N7 (N9) terminal, and N9 (N7) terminal to H9 terminal	Check actuator operation: The front passenger's door lock actuator should lock (unlock).	• Faulty front passenger's door lock actuator • An open in the wire
H3 H10	YEL/BLK YEL	Connect the battery positive terminal to H3 (H10) terminal, and H10 (H3) terminal to H9 terminal	Check actuator operation: The left rear door lock actuator should lock (unlock).	• Faulty left rear door lock actuator • An open in the wire
E2 E8	YEL/BLK YEL	Connect the battery positive terminal to E2 (E8) terminal, and E8 (E2) terminal to H9 terminal	Check actuator operation: The right rear door lock actuator should lock (unlock).	• Faulty right rear door lock actuator • An open in the wire
F5	RED/WHT	Connect the battery positive terminal to F5 terminal with the trunk lid main switch ON	Check actuator operation: The in-bed trunk lid actuator should unlock.	• Poor ground (G601) • Faulty in-bed trunk lid main switch • Faulty in-bed trunk lid actuator • An open in the wire
J14	BLK/YEL	Under all conditions	Attach to ground: The security indicator should come on.	• Blown No. 7 (7.5 A) fuse in the under-dash fuse/relay box • Faulty security indicator • An open in the wire
N5	BLK/YEL	Under all conditions	Check for continuity between the N5 terminal and the gauge control module connector B (14P) No. 7 terminal: There should be continuity.	An open in the wire
		Gauge control module connector B (14P) disconnected	Check for continuity to ground: There should be no continuity.	Short to ground

6. Reconnect all connectors to the under-dash fuse/relay box. Turn the ignition switch ON (II), and make these input tests at the appropriate connectors on the under-dash fuse/relay box.

   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, go to step 7.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
P1	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G403) • An open in the wire
H9	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G501) • An open in the wire
P29*	BRN/WHT	Front passenger's door lock knob switch unlocked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G402) • Faulty front passenger's door lock knob switch • An open in the wire
		Front passenger's door lock knob switch locked	Check for voltage to ground: There should be 5 V or more.	• Faulty front passenger's door lock knob switch • Short to ground
P9	PNK/BLU	Front passenger's door lock switch unlocked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G402) • Faulty front passenger's door lock switch • An open in the wire
		Front passenger's door lock switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Faulty front passenger's door lock switch • Short to ground
P25	PNK/BLK	Front passenger's door lock switch locked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G402) • Faulty front passenger's door lock switch • An open in the wire
		Front passenger's door lock switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Faulty front passenger's door lock switch • Short to ground
Q2*	BLK/WHT	Left rear door lock knob switch unlocked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G501) • Faulty left rear door lock knob switch • An open in the wire
		Left rear door lock knob switch locked	Check for voltage to ground: There should be 5 V or more.	• Faulty left rear door lock knob switch • Short to ground
Q3*	BLK/RED	Right rear door lock knob switch unlocked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G501) • Faulty right rear door lock knob switch • An open in the wire
		Right rear door lock knob switch locked	Check for voltage to ground: There should be 5 V or more.	• Faulty right rear door lock knob switch • Short to ground
Q12	RED/BLU	In-bed trunk lid handle switch ON	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G602) • Faulty in-bed trunk lid handle switch • An open in the wire
		In-bed trunk lid handle switch OFF	Check for voltage to ground: There should be 5 V or more.	• Faulty in-bed trunk lid handle switch • Short to ground

* RTS, RTL, and EXL models

(cont'd)

Control Unit Input Test (cont'd)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
Q4 *1	GRY/BLU	In-bed trunk lid key cylinder switch unlocked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G602) • Faulty In-bed trunk lid key cylinder switch • An open in the wire
		In-bed trunk lid key cylinder switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Faulty In-bed trunk lid key cylinder switch • Short to ground
P27 *1	RED/WHT	Under all conditions	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G404) • Faulty connections at the audio unit • Faulty CD changer (with navigation system) • Faulty audio unit (without navigation system) • An open in the wire
P13	RED/WHT	Ignition key inserted into the ignition switch	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G401) • Faulty ignition key switch • An open in the wire
		Ignition switch OFF and ignition key removed from the ignition switch *2	Check for voltage to ground: There should be 5 V or more.	• Faulty ignition key switch • Short to ground
E15	GRN	Driver's door open	Check for voltage to ground: There should be less than 1 V.	• Faulty driver's door switch • An open in the wire
		Driver's door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door switch • Short to ground
H12	LT GRN/RED	Front passenger's door open	Check for voltage to ground: There should be less than 1 V.	• Faulty front passenger's door switch • An open in the wire
		Front passenger's door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty front passenger's door switch • Short to ground
E14	GRN/YEL	Left rear door open	Check for voltage to ground: There should be less than 1 V.	• Faulty left rear door switch • An open in the wire
		Left rear door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty left rear door switch • Short to ground
H13	GRN/WHT	Right rear door open	Check for voltage to ground: There should be less than 1 V.	• Faulty right rear door switch • An open in the wire
		Right rear door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty right rear door switch • Short to ground
Q7	BLU/YEL	In-bed trunk lid open	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G601) • Faulty In-bed trunk lid latch switch • An open in the wire
		In-bed trunk lid closed	Check for voltage to ground: There should be 5 V or more.	• Faulty In-bed trunk lid latch switch • Short to ground
Q11	BLU/ORN	Tailgate open	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G602) • Faulty tailgate switch • An open in the wire
		Tailgate closed	Check for voltage to ground: There should be 5 V or more.	• Faulty tailgate switch • Short to ground

* 1: RTS, RTL, and EXL models
* 2: After testing, insert the key into the ignition switch and turn the ignition switch ON (II) before continuing to the next step.

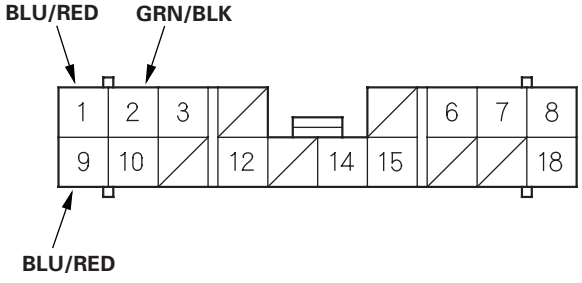
Relay Control Module

7. Turn the ignition switch OFF.

8. Remove the under-hood fuse/relay box (see page 22-72).

9. Remove the under cover from the under-hood fuse/relay box, and disconnect the connector H (18P).

UNDER-HOOD FUSE/RELAY BOX CONNECTOR H (18P)



Wire side of female terminals

10. Inspect the connector and socket terminals to be sure they are all making good contact.

    • If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
    • If the terminals look OK, go to step 11.

11. With the connector still disconnected, make these input tests at the connectors.

    • If any test indicates a problem, find and correct the cause, then recheck the system.
    • If all the input tests prove OK, go to step 12.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
H1 . H9	BLU/RED	Under all conditions	Connect the battery power to the H1 (H9) terminal momentarily: There horn should sound.	• Faulty horn • An open in the wire

12. Reconnect the connector to the under-hood fuse/relay box, turn the ignition switch ON (II) and make the input test at the appropriate connector on the under-hood fuse/relay box.

    • If a test indicates a problem, find and correct the cause, then recheck the system.
    • If the input test proves OK, go to step 13.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
H2	GRN/BLK	Hood open	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G201) • Faulty hood switch • An open in the wire
		Hood closed	Check for voltage to ground: There should be 5 V or more.	• Faulty hood switch • Short to ground

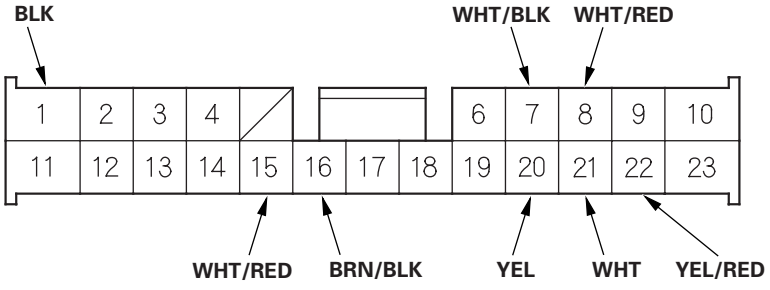
(cont'd)

Control Unit Input Test (cont'd)

Door Multiplex Control Unit

13. Turn the ignition switch OFF.
14. Remove the power window master switch (see page 22-221).
15. Disconnect the 23P connector from the power window master switch.

DOOR MULTIPLEX CONTROL UNIT CONNECTOR (23P)



Wire side of female terminals

16. Inspect the connector and socket terminals to be sure they are all making good contact.
    - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
    - If the terminals look OK, go to step 17.
17. With the connector still disconnected, make these input tests at the connector.
    - If the test indicates a problem, find and correct the cause, then recheck the system.
    - If the input tests prove OK, go to step 18.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
16	BRN/BLK	Under all conditions	Check for continuity between the No. 16 terminal and under-dash fuse/relay box connector J (21P) No. 4 terminal: There should be continuity.	An open in the wire
			Check for continuity between the No. 16 terminal and body ground: There should be no continuity.	A short in the wire

18. Reconnect the connector to the door multiplex control unit. Turn the ignition switch ON (II) and make these input tests at the connectors.

    • If any test indicates a problem, find and correct the cause, then recheck the system.
    • If all the input tests prove OK, go to step 19.

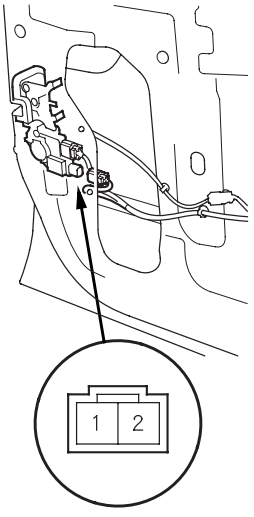
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G501) • An open in the wire
15	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 7 (7.5 A) fuse in the under-dash fuse/relay box. • An open in the wire
20	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 21 (7.5 A) fuse in the under-dash fuse/relay box. • An open in the wire
7	WHT/BLK	Driver's door lock knob switch unlocked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G401) • Faulty driver's door lock knob switch • An open in the wire
		Driver's door lock knob switch locked	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door lock knob switch • Short to ground
22	YEL/RED	Driver's door lock knob switch locked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G401) • Faulty driver's door lock knob switch • An open in the wire
		Driver's door lock knob switch unlocked	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door lock knob switch • Short to ground
8	WHT/RED	Driver's door key cylinder switch in LOCK	Check for voltage to ground: There should be less than 1 V.	• Faulty driver's door key cylinder switch • Poor ground (G401) • An open in the wire
		Driver's door key cylinder switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Short to ground • Faulty driver's door key cylinder switch
		Driver's door key cylinder switch in UNLOCK	Check for voltage to ground: There should be 5 V or more.	
21	WHT	Driver's door key cylinder switch in UNLOCK	Check for voltage to ground: There should be less than 1 V.	• Faulty driver's door key cylinder switch • Poor ground (G401) • An open in the wire
		Driver's door key cylinder switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Short to ground • Faulty driver's door key cylinder switch
		Driver's door key cylinder switch in LOCK	Check for voltage to ground: There should be 5 V or more.	

19. If all the input tests prove OK, and no DTCs were found during multiplex integrated control system troubleshooting (B-CAN System Diagnostic Test Mode A) (see page 22-99), go to the B-CAN system input and output index (see page 22-92). If multiple failures are found on more than one control unit, replace the under-dash fuse/relay box (includes the MICU). If input failures are related to a particular control unit, replace that control unit.

Door Lock Actuator Test

Driver's door

1. Remove the driver's door panel (see page 20-7).
2. Disconnect the 2P connector from the actuator.



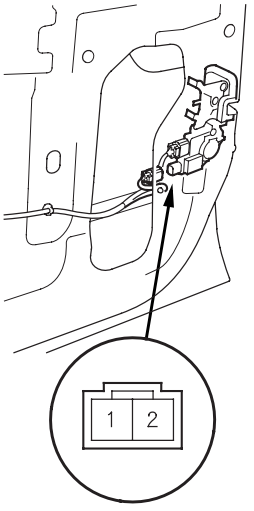
3. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

Terminal / Position	1	2
LOCK	⊕	⊖
UNLOCK	⊖	⊕

4. If the actuator does not operate as specified, replace it.

Passenger's door

1. Remove the passenger's door panel.
   - Front door panel (see page 20-7)
   - Rear door panel (see page 20-14)
2. Disconnect the 2P connector from the actuator.



3. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

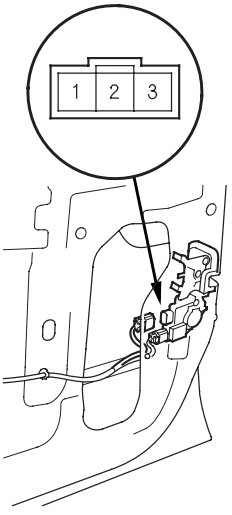
Terminal / Position	1	2
LOCK	⊕	⊖
UNLOCK	⊖	⊕

4. If the actuator does not operate as specified, replace it.

Door Lock Knob Switch Test

Driver's Door

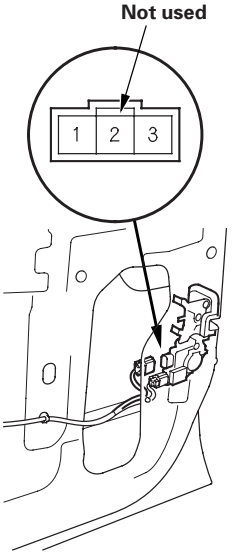
1. Remove the driver's door panel (see page 20-7).
2. Disconnect the 3P connector from the actuator.



3. Check for continuity between the terminals.
   - There should be continuity between the No. 2 and No. 3 terminals when the door lock knob switch is in the LOCK position and no continuity when the switch is in the UNLOCK position.
   - There should be continuity between the No. 1 and No. 3 terminals when the door lock knob switch is in the UNLOCK position and no continuity when the switch is in the LOCK position.
4. If the continuity is not as specified, replace the door lock actuator.

Front Passenger's Door (RTS, RTL, and EXL models)

1. Remove the front passenger's door panel (see page 20-7).
2. Disconnect the 3P connector from the actuator.



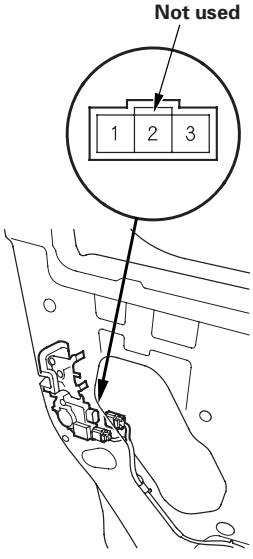
3. Check for continuity between the terminals. There should be continuity between the No. 1 and No. 3 terminals when the door lock knob switch in the UNLOCK position and no continuity when the switch is in the LOCK position.
4. If the continuity is not as specified, replace the door lock actuator.

(cont'd)

Door Lock Knob Switch Test (cont'd)

Rear Door (RTS, RTL, and EXL models)

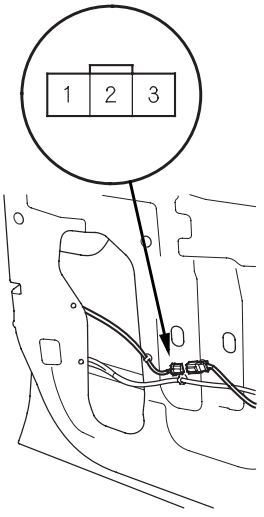
1. Remove the left or right rear door panel (see page 20-14).
2. Disconnect the 3P connector from the actuator.



3. Check for continuity between the terminals. There should be continuity between the No. 1 and No. 3 terminals when the door lock knob switch is UNLOCK position and no continuity when the switch is in the LOCK position.
4. If the continuity is not as specified, replace the door lock actuator.

Door Key Cylinder Switch Test

1. Remove the driver's door panel (see page 20-7).
2. Disconnect the 3P connector from the key cylinder switch.

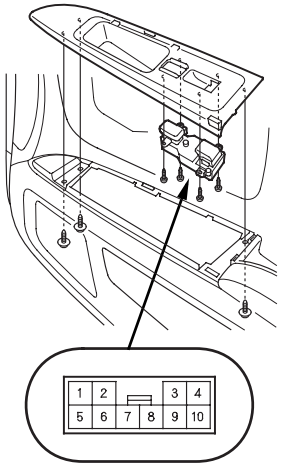


3. Check for continuity between the terminals.
   - There should be continuity between the No. 2 and No. 3 terminals when the door key cylinder switch is in LOCK position.
   - There should be no continuity between the No. 2 and No. 3 terminals when the door key cylinder switch is in the neutral or UNLOCK position.
   - There should be continuity between the No. 1 and No. 2 terminals when the door key cylinder switch is in UNLOCK position.
   - There should be no continuity between the No. 1 and No. 2 terminals when the door key cylinder switch is in the neutral or LOCK position.
4. If the continuity is not as specified, replace the door key cylinder assembly (see page 20-8).

Door Lock Switch Test

Passenger's Door Lock Switch

1. Remove the front passenger's door panel (see page 20-7).



2. Check for continuity between the terminals.
   - There should be continuity between the No. 2 and No. 9 terminals when the door lock switch is in LOCK position. There should be no continuity between the No. 2 and No. 9 terminals when the door lock switch is in the neutral position.
   - There should be continuity between the No. 1 and No. 9 terminals when the door lock switch is in UNLOCK position. There should be no continuity between the No. 1 and No. 9 terminals when the door lock switch is in the neutral position.

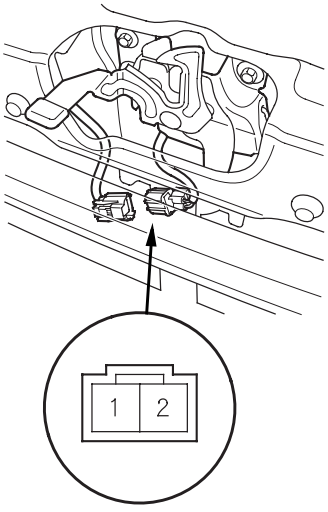
3. If the continuity is not as specified, replace the door lock switch.

Hood Switch Test

RTS, RTL, and EXL models

1. Open the hood.

2. Disconnect the 2P connector from the hood switch.



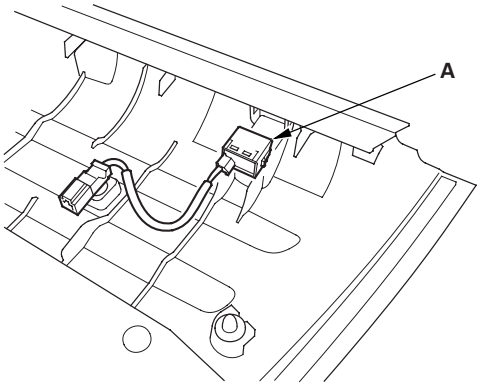
3. Check for continuity between the terminals. There should be continuity between the No. 1 and No. 2 terminals when the hood is opened (lever released). There should be no continuity between the No. 1 and No. 2 terminals when the hood is closed (lever pushed down).

4. If the continuity is not as specified, replace the hood latch (see page 20-185).

Security Indicator Test/ Replacement

RTS, RTL, and EXL models

1. Remove the driver's door panel (see page 20-7).
2. Remove the security indicator (A) from the door panel.

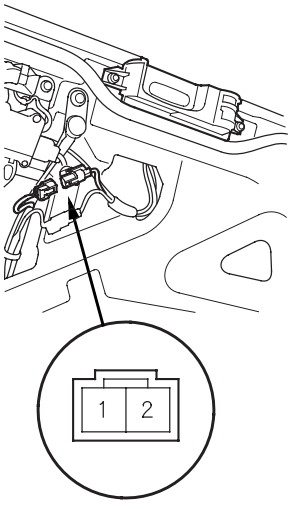


3. Test the indicator by connecting battery power to the No. 2 terminal and grounding the No.1 terminal. The LED should come on.
4. If the LED does not come on, replace the security indicator.

In-Bed Trunk Lid Key Cylinder Switch Test

RTS, RTL, and EXL models

1. Remove the in-bed trunk lid inner cover (see step 2 on page 20-187).
2. Disconnect the 2P connector from the key cylinder switch.



3. Check for continuity between the terminals. There should be continuity between the No. 1 and No. 2 terminals when the in-bed trunk lid key cylinder switch is in UNLOCK position. There should be no continuity between the No. 1 and No. 2 terminals when the in-bed trunk lid key cylinder switch is in the released (neutral) position.
4. If the continuity is not as specified, replace the in-bed trunk lid key cylinder switch.

Transmitter Test

NOTE:
- If the doors unlock or lock with the transmitter, but the LED on the transmitter does not come on, the LED is faulty; replace the transmitter.
- If any door is open, you cannot lock the doors with the transmitter.
- If you unlocked the doors with the transmitter, but do not open any of the doors within 30 seconds, the doors relock automatically.
- The doors do not lock or unlock with the transmitter if the ignition key is inserted in the ignition switch.

With HDS

1. Press the lock or unlock button five or six times to reset the transmitter.

   - If the locks work, the transmitter is OK.
   - If any of the transmitter buttons do not work, replace the transmitter, then reprogram and register the transmitter (see page 22-324).
   - If the locks don't work, go to step 2.

2. Connect the HDS to the data link connector.

3. Select the KEYLESS from the BODY ELECTRICAL menu, then enter the KEYLESS CHECK.

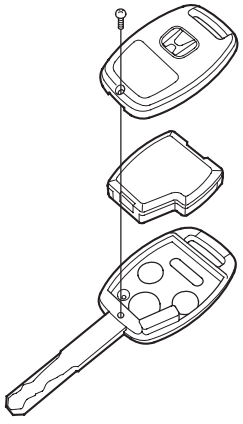
4. Press the lock, unlock, trunk, or panic button and check the response on the screen of the HDS.

   NOTE: The door lock actuators may or may not cycle when receiving input from the transmitter.

   - If KEYLESS ENTRY TRANSMITTER CODE IS RECEIVED is indicated, the transmitter is OK.
   - If DIFFERENT KEYLESS ENTRY TRANSMITTER CODE IS RECEIVED is indicated, the transmitter is not registered to the vehicle, if necessary, reprogram and register the transmitter (see page 22-324).
   - If KEYLESS ENTRY TRANSMITTER CODE IS NOT RECEIVED is indicated, go to step 5.

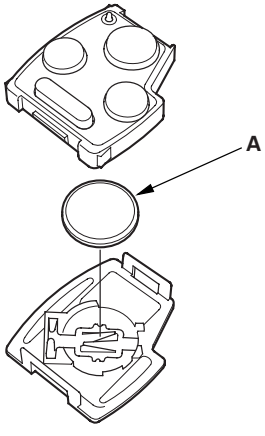
5. Open the transmitter and check for water damage.

   - If you find any water damage, replace the transmitter, then reprogram and register the transmitter (see page 22-324).
   - If there is no water damage, go to step 6.



6. Replace the transmitter battery (A) with a new one, and press lock or unlock button and check the receive condition on the screen of the HDS.

   - If KEYLESS ENTRY TRANSMITTER CODE IS RECEIVED is indicated, the transmitter is OK.
   - If KEYLESS ENTRY TRANSMITTR CODE IS NOT RECEIVED is indicated, go to step 7.



(cont'd)

Transmitter Test (cont'd)

7. Use a different known-good keyless transmitter and repeat steps 3 and 4.

   NOTE: The keyless transmitter does not need to be programmed to the vehicle for this test.

   - If (DIFFERENT) KEYLESS ENTRY TRANSMITTER CODE IS RECEIVED is indicated, replace the keyless transmitter and do the immobilizer system registration (see page 22-324).
   - If KEYLESS ENTRY TRANSMITTER CODE IS NOT RECEIVED is indicated, the immobilizer-keyless control unit is faulty, replace it and do the immobilizer system registration (see page 22-324).

Without HDS

1. Start the engine.

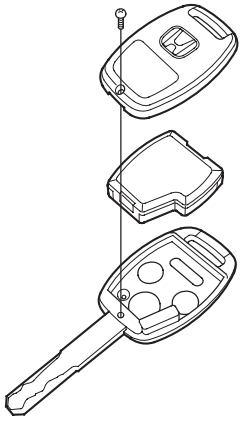
   - If the engine does not start, go to the immobilizer system troubleshooting (see page 22-320).
   - If the engine starts, go to step 2.

2. Press the lock or unlock button five or six times to reset the transmitter.

   - If the locks work, the transmitter is OK.
   - If the locks don't work, go to step 3.

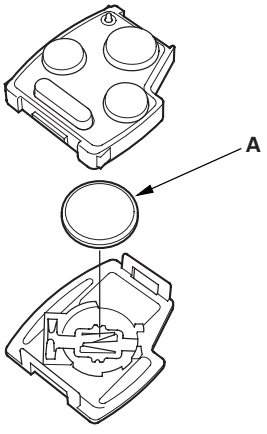
3. Open the transmitter and check for water damage.

   - If you find any water damage, replace the transmitter.
   - If there is no water damage, go to step 4.



4. Replace the transmitter battery (A) with a new one, and try to lock and unlock the doors with the transmitter by pressing the lock or unlock button five or six times.

   - If the doors lock and unlock, the transmitter is OK.
   - If the doors don't lock and unlock, go to step 5.



5. Reprogram and register the transmitter (see page 22-324), then try to lock and unlock the doors.

   - If the doors lock and unlock, the transmitter is OK.
   - If the doors don't lock and unlock, substitute a known-good transmitter and recheck (see page 22-324). If still not operating, replace the immobilizer-keyless control unit.

Keyless Transmitter Programming/ Deleting - Manual Method

NOTE: The keyless transmitter attaches to the ignition key and is separate from the immobilizer transponder. It is not necessary to use the HDS when replacing or deleting an existing transmitter.

- Adding a key (transponder) can only be done with the HDS. If the key being added has a new remote transmitter, it can be programmed with the HDS at the end of the ''ADD A KEY'' function (see page 22-324).
- If one or all keys (transponder) are lost, the remote transmitters must be deleted manually. This will assure that all of the old keyless transmitters have been cleared from the immobilizer/keyless control unit memory.
- When replacing the immobilizer/keyless control unit, you must have all of the remote transmitters that need to be programmed to the car.
- The immobilizer/keyless control unit can only store 5 keyless transmitters.
- During programming, pushing the same remote button 5 times will delete all other remotes.

Adding a remote transmitter

Turn the ignition switch ON (II), push the transmitter's lock or unlock button within 4 seconds and turn the ignition switch OFF (0), turn it back ON (II) within 4 seconds and back OFF (0). Repeat this 2 more times and the locks should cycle when the transmitter button is pushed. Turn the ignition switch OFF (0) and remove the key. Wait 10 seconds and verify that all remotes function properly.

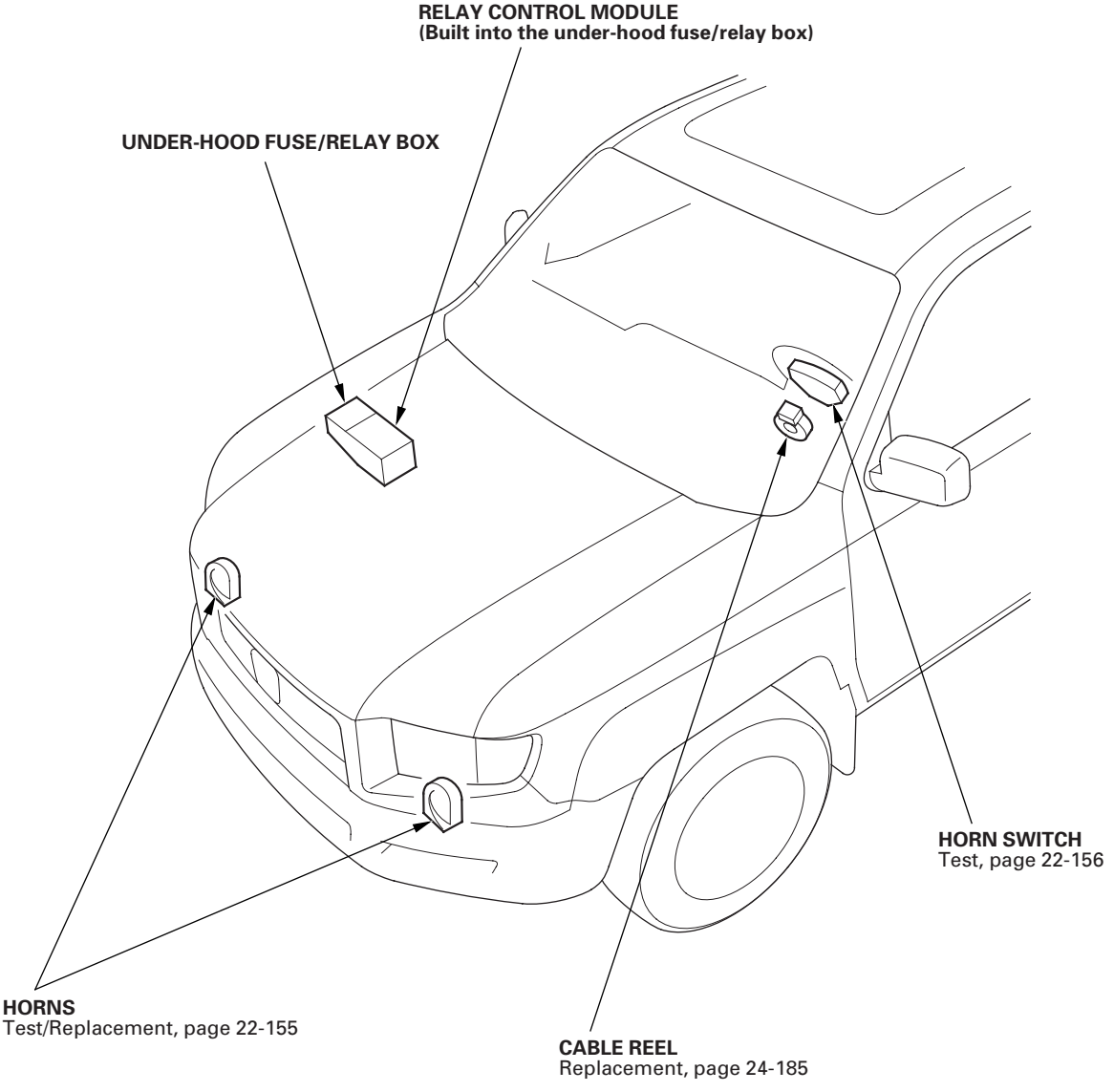
Adding multiple remote transmitters

Turn the ignition switch ON (II), push the transmitter's lock or unlock button within 4 seconds and turn the ignition switch OFF (0), turn it back ON (II) within 4 seconds and back OFF (0). Repeat this 2 more times and the locks should cycle when the transmitter button is pushed. Push the lock or unlock button on each remote to be programmed within 4 seconds of each other. Turn the ignition switch OFF (0) and remove the key. Wait 10 seconds and verify that all remotes being programmed are functioning properly.

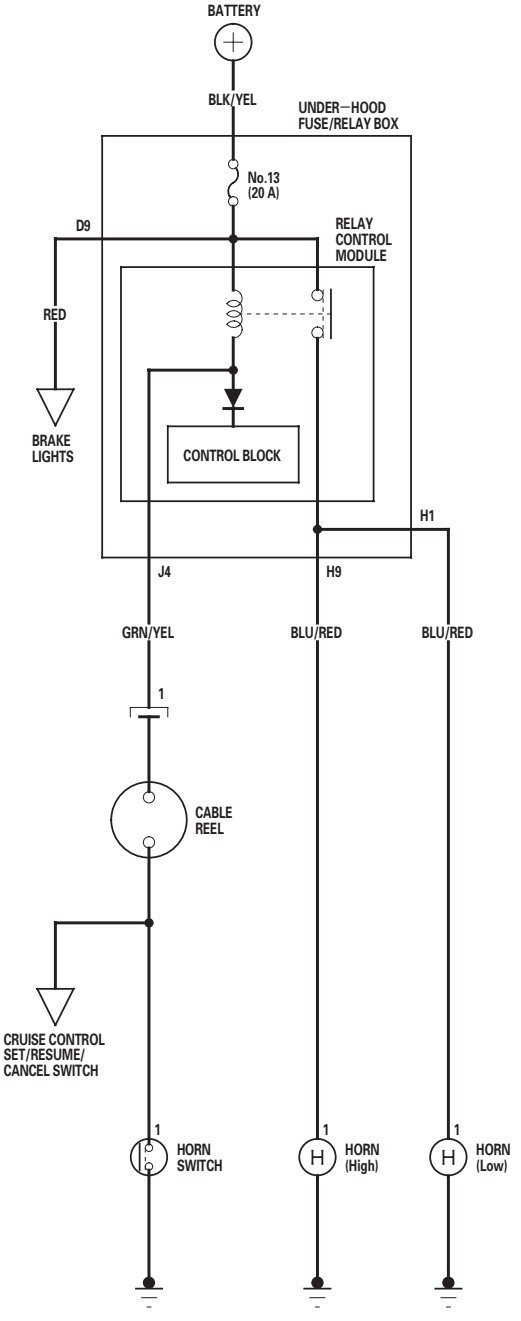
Deleting remotes

Turn the ignition switch ON (II), push the transmitter's lock or unlock button within 4 seconds and turn the ignition switch OFF (0), turn it back ON (II) within 4 seconds and back OFF (0). Repeat this 2 more times and the locks should cycle when the transmitter button is pushed. Push the same button 5 more times. This will leave only the current remote programmed in the immobilizer/keyless control unit.

Component Location Index

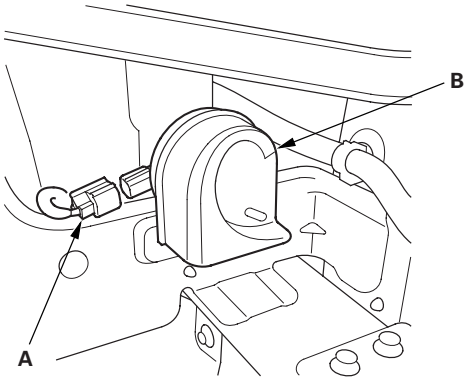


Circuit Diagram

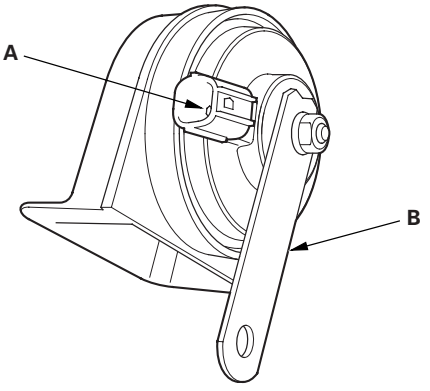


Horn Test/Replacement

1. Remove the front bulkhead cover (see page 20-171).
2. Disconnect the 1P connector (A) from each horn (B).



3. Test the horn by connecting battery power to the terminal (A) and grounding the bracket (B). The horn should sound.

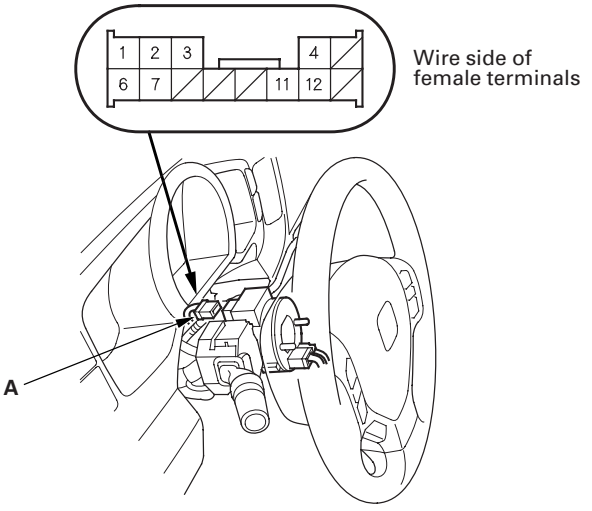


4. If it fails to sound, replace it.

Horn Switch Test

1. Remove the steering column covers (see page 17-24).

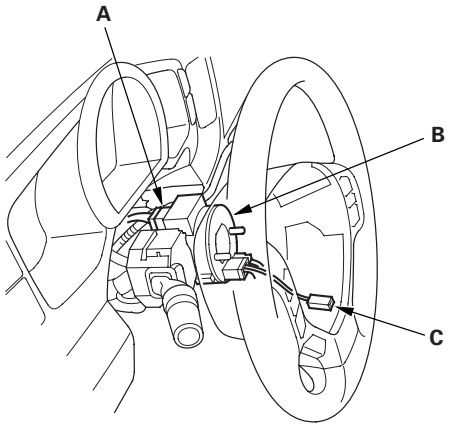
2. Disconnect the 13P connector (A) from the cable reel.



3. Using a jumper wire, connect the No. 1 terminal of the dashboard wire harness 13P connector to body ground.

   - If the horns sound, go to step 4.
   - If the horns don't sound, check these items:
     – No. 13 (20 A) fuse in the under-hood fuse/relay box.
     – Relay control module in the under-hood fuse/relay box.
     – Horns (see page 22-155).
     – An open in the wire.

4. Reconnect the cable reel 13P connector (A) to the dashboard wire harness.

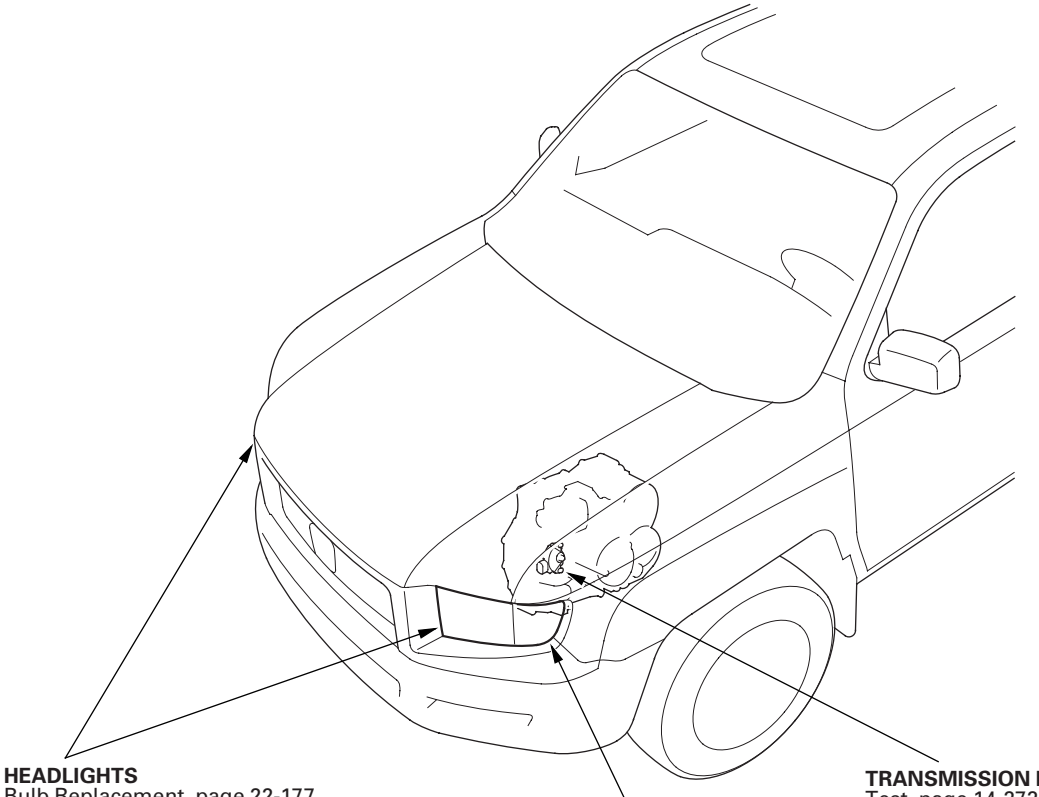


5. Remove the driver's airbag assembly (see page 24-174), and disconnect the horn switch 1P positive terminal from the cable reel (B).

6. Using a jumper wire, connect the cable reel side 1P connector (C) to body ground, and turn the wheel side to side.

   - If the horns sound, replace the driver's airbag assembly.
   - If the horns don't sound or sounds intermittently, replace the cable reel.

Component Location Index



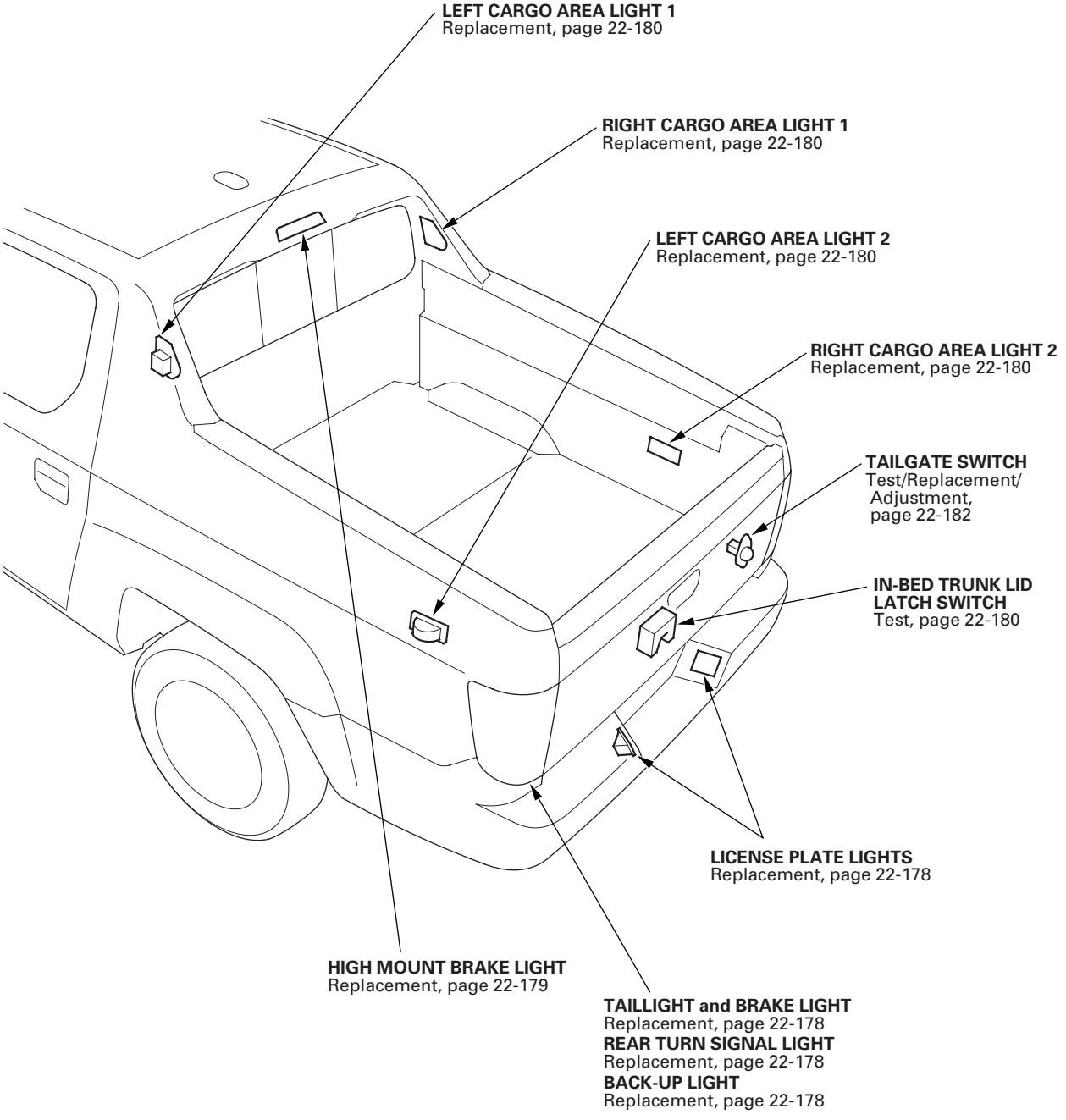
HEADLIGHTS
Bulb Replacement, page 22-177
Replacement, page 22-176
Adjustment, page 22-175

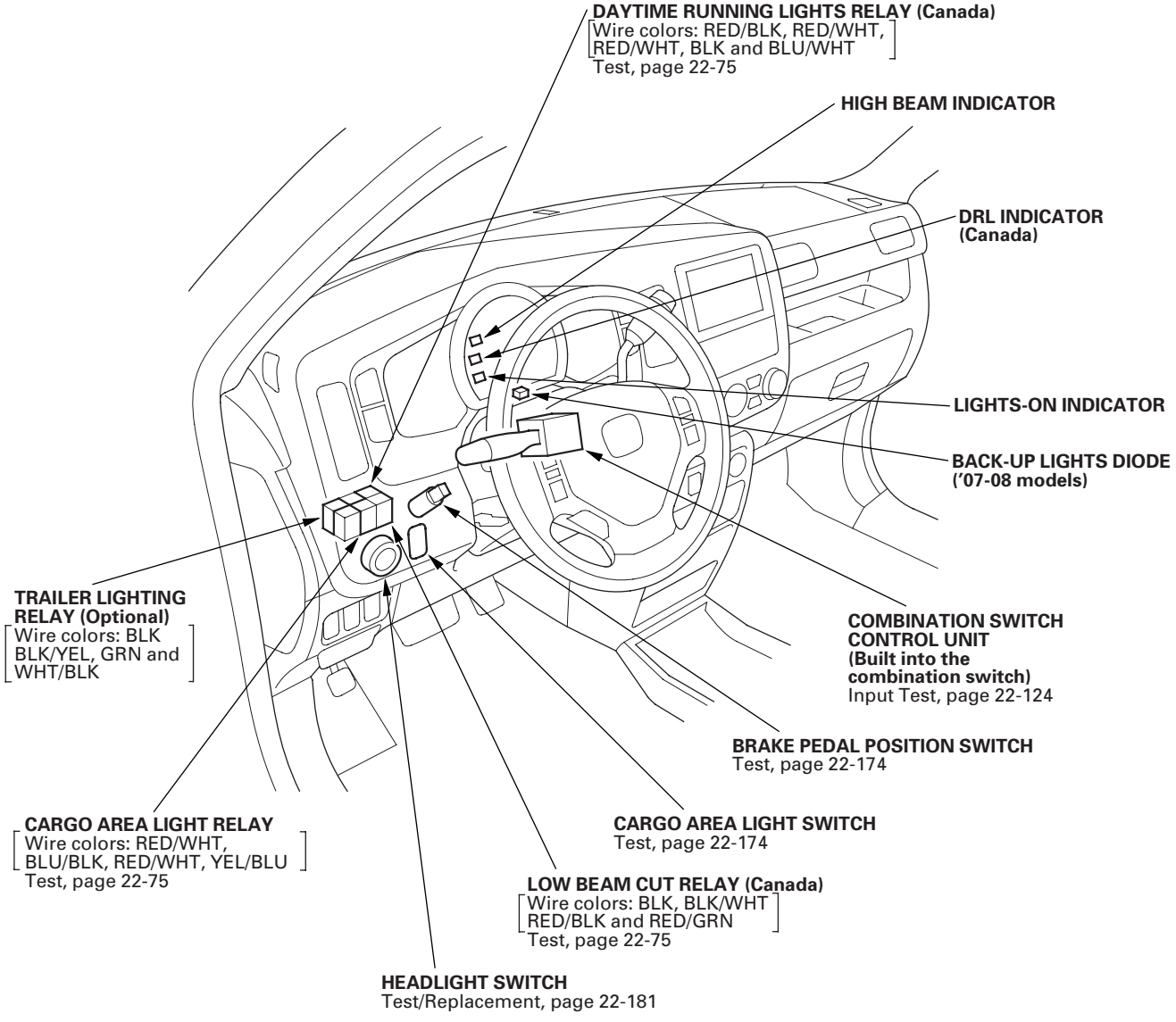
TRANSMISSION RANGE SWITCH
Test, page 14-272
Replacement, page 14-273

FRONT TURN SIGNAL/SIDE MARKER LIGHTS
Bulb Replacement, page 22-177
Replacement, page 22-176

(cont'd)

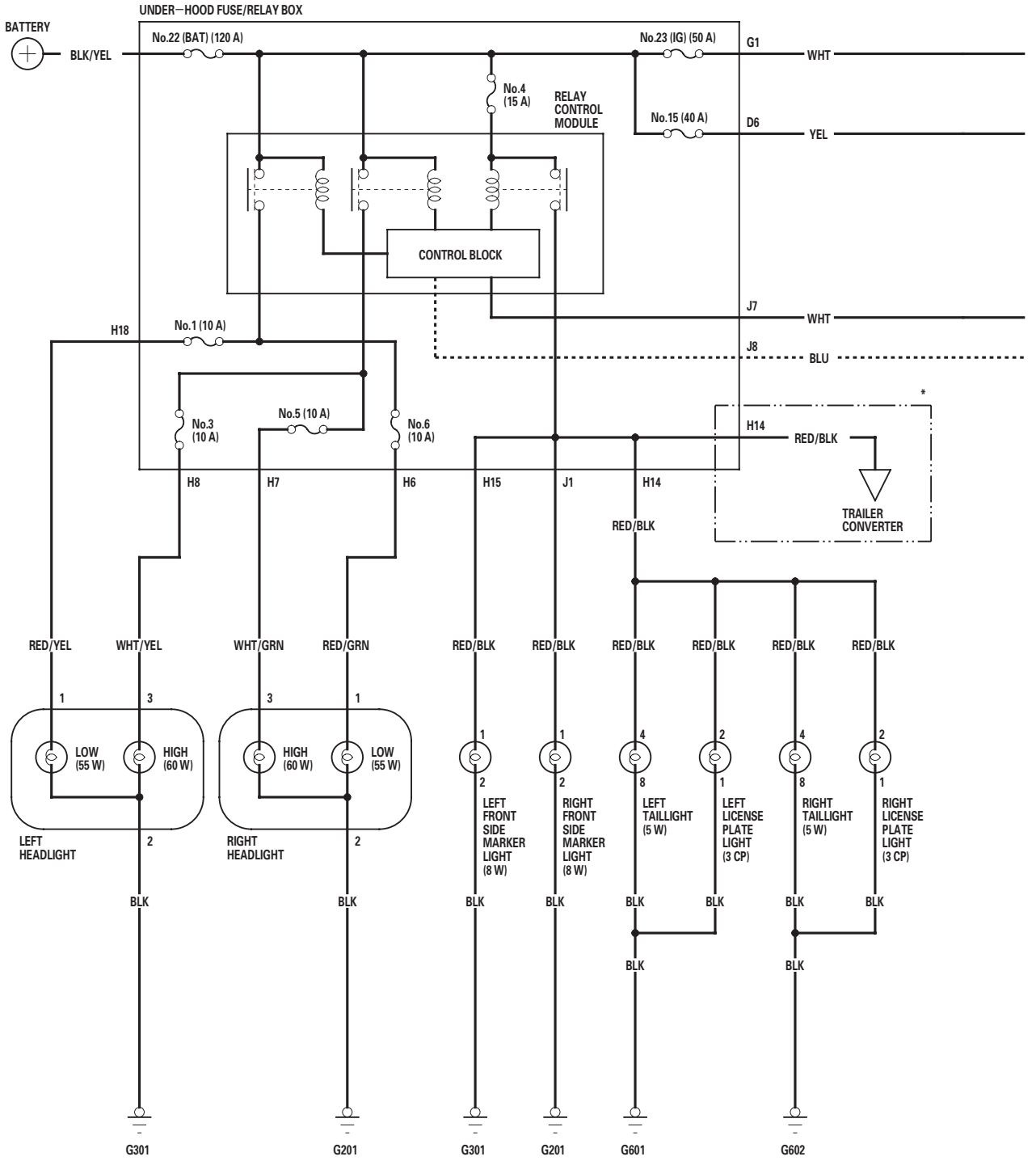
Component Location Index (cont'd)

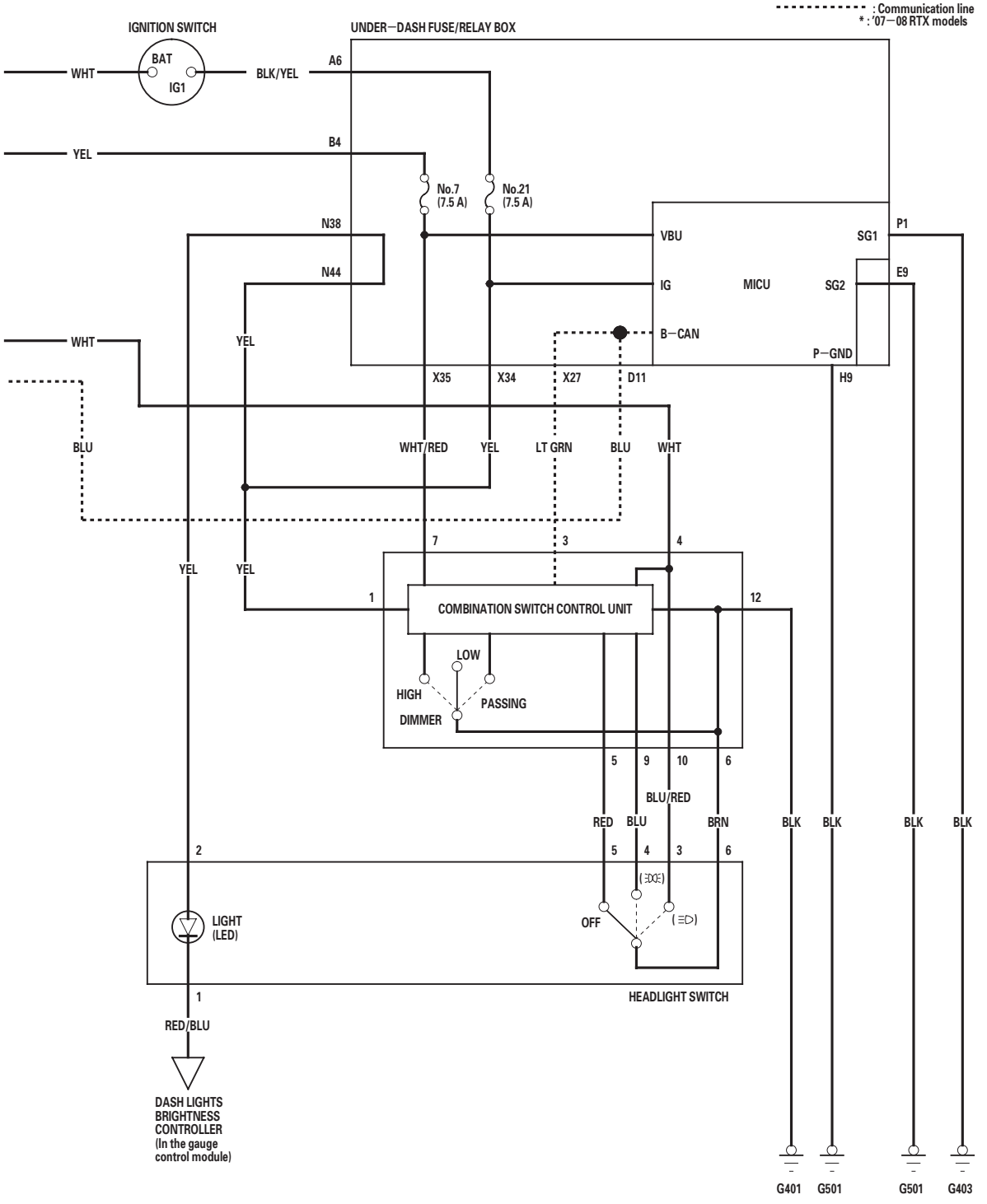



DAYTIME RUNNING LIGHTS RELAY (Canada)
[Wire colors: RED/BLK, RED/WHT, RED/WHT, BLK and BLU/WHT]
Test, page 22-75
HIGH BEAM INDICATOR
DRL INDICATOR (Canada)
LIGHTS-ON INDICATOR
BACK-UP LIGHTS DIODE ('07-08 models)
TRAILER LIGHTING RELAY (Optional)
[Wire colors: BLK BLK/YEL, GRN and WHT/BLK]
COMBINATION SWITCH CONTROL UNIT (Built into the combination switch)
Input Test, page 22-124
BRAKE PEDAL POSITION SWITCH
Test, page 22-174
CARGO AREA LIGHT RELAY
[Wire colors: RED/WHT, BLU/BLK, RED/WHT, YEL/BLU]
Test, page 22-75
CARGO AREA LIGHT SWITCH
Test, page 22-174
LOW BEAM CUT RELAY (Canada)
[Wire colors: BLK, BLK/WHT RED/BLK and RED/GRN]
Test, page 22-75
HEADLIGHT SWITCH
Test/Replacement, page 22-181

Circuit Diagram

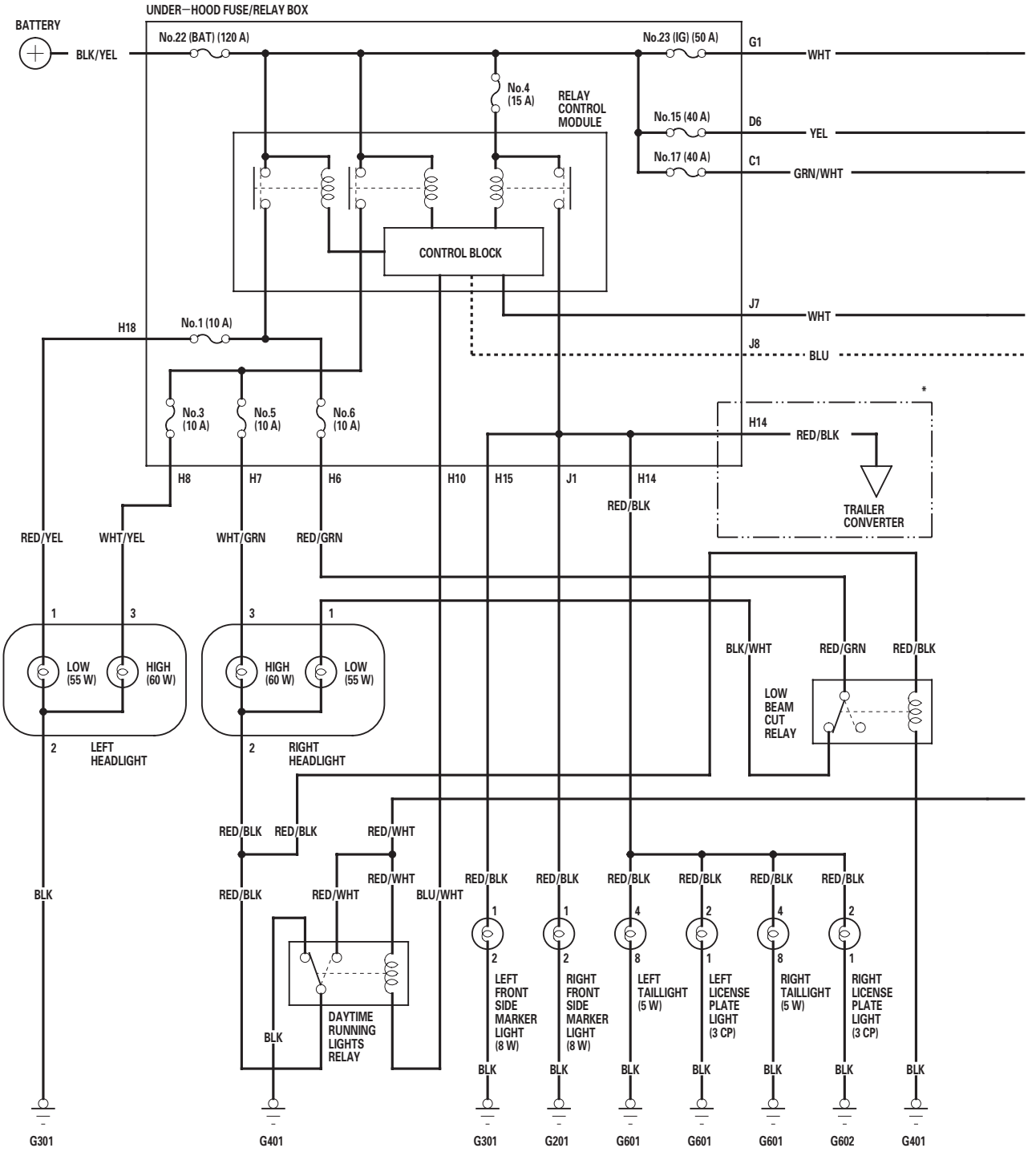
USA models

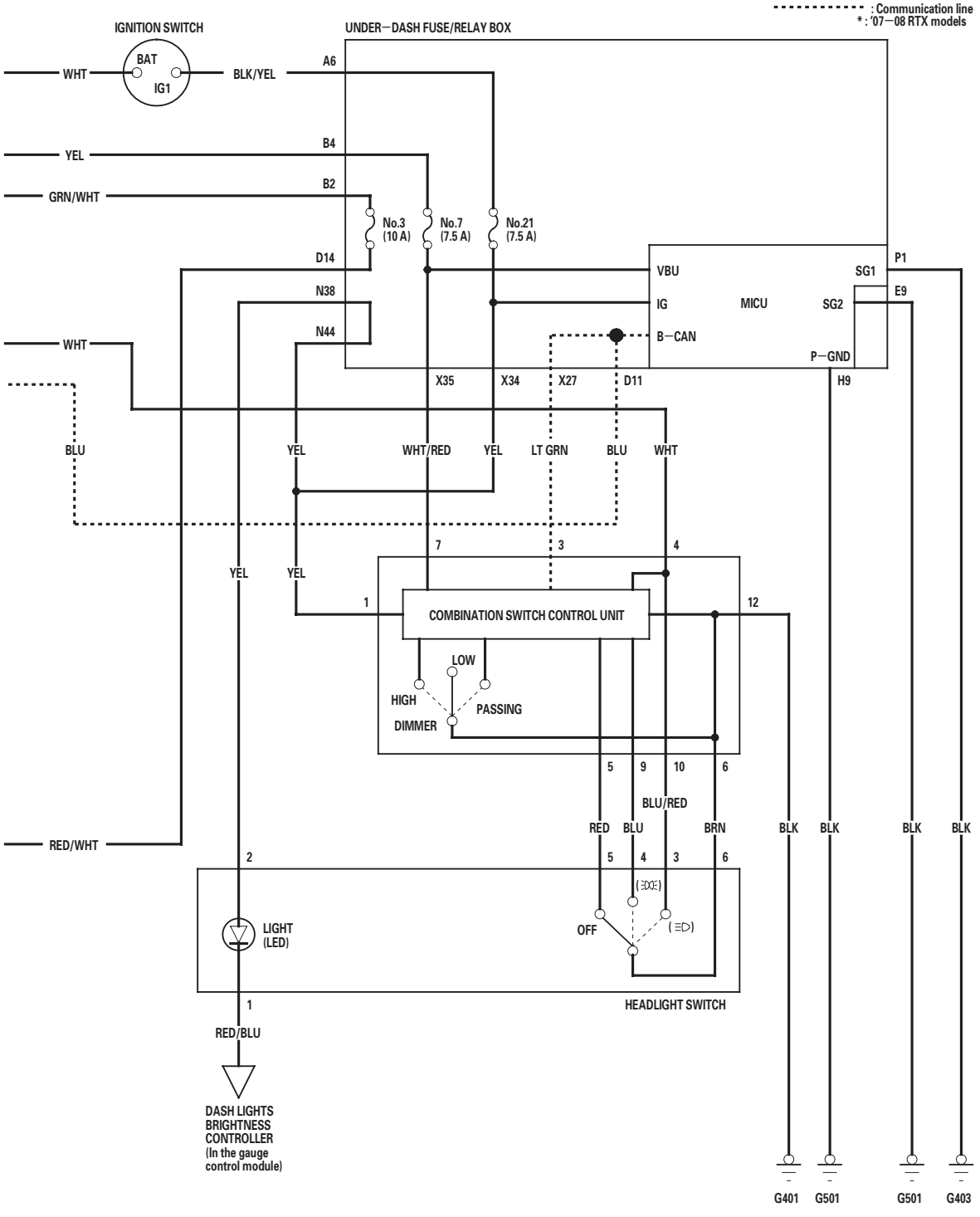



: Communication line
* : '07—08 RTX models
IGNITION SWITCH
BAT
IG1
WHT
BLK/YEL
UNDER—DASH FUSE/RELAY BOX
A6
B4
YEL
No.7 (7.5 A)
No.21 (7.5 A)
N38
N44
VBU
IG
MICU
B—CAN
SG1
SG2
P—GND
P1
E9
H9
X35
X34
X27
D11
WHT
YEL
BLU
WHT/RED
YEL
LT GRN
BLU
WHT
7
3
4
1
12
COMBINATION SWITCH CONTROL UNIT
LOW
HIGH
PASSING
DIMMER
5
9
10
6
BLU/RED
RED
BLU
BRN
BLK
BLK
BLK
BLK
2
5
4
3
6
LIGHT (LED)
OFF
HEADLIGHT SWITCH
1
RED/BLU
DASH LIGHTS BRIGHTNESS CONTROLLER (In the gauge control module)
G401
G501
G501
G403

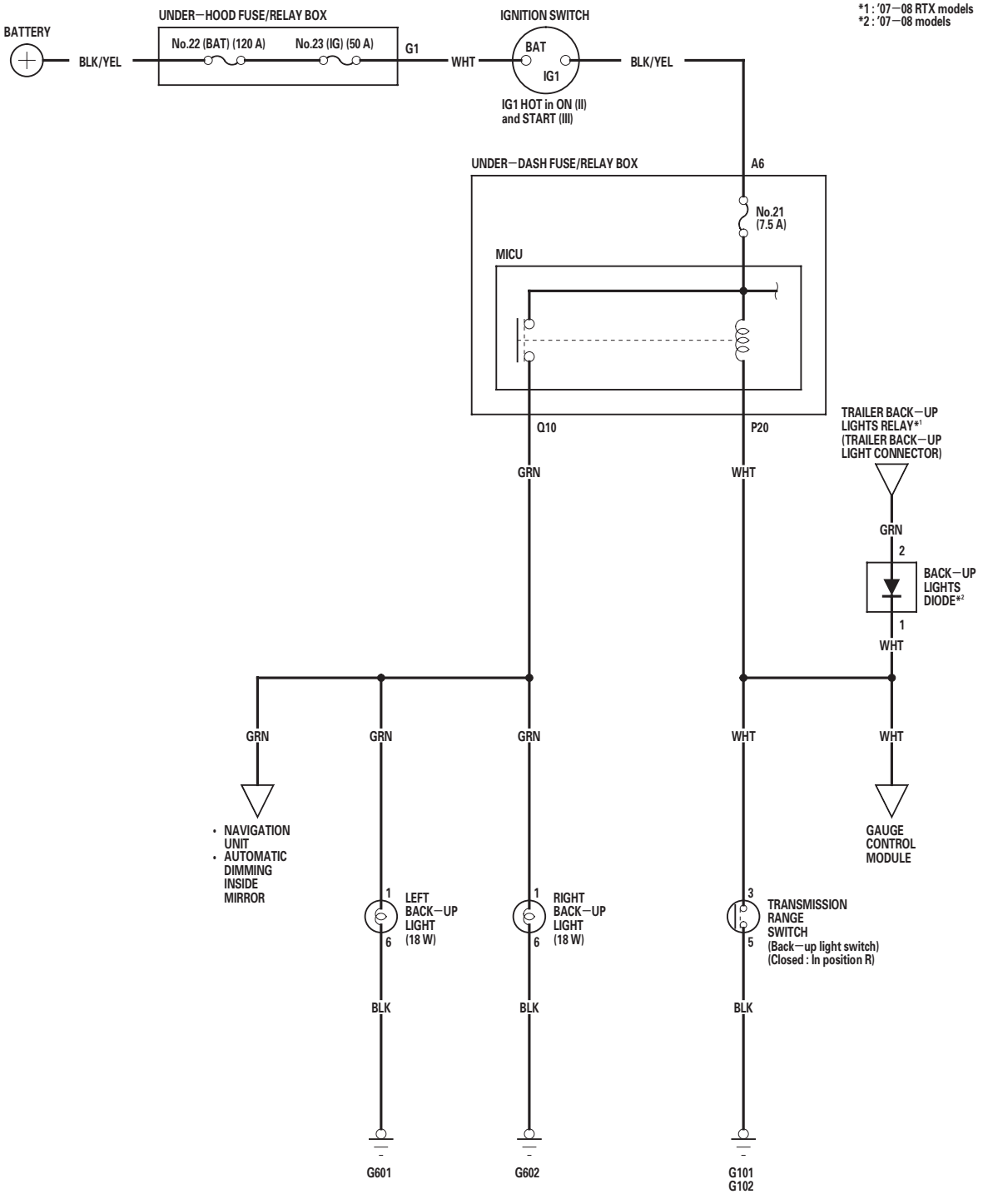
Circuit Diagram (cont'd)

Canada models



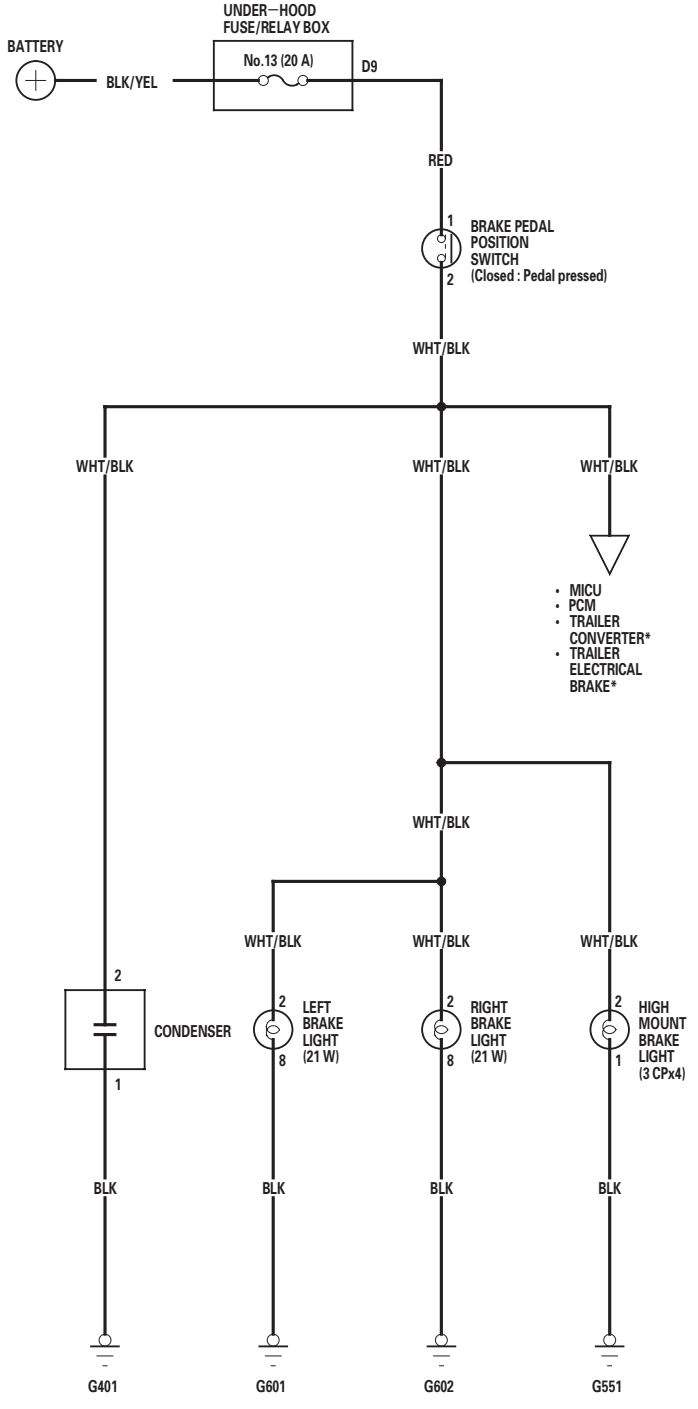

: Communication line
* : '07–08 RTX models
IGNITION SWITCH
BAT
IG1
WHT
BLK/YEL
UNDER–DASH FUSE/RELAY BOX
A6
B4
YEL
B2
GRN/WHT
No.3 (10 A)
No.7 (7.5 A)
No.21 (7.5 A)
D14
N38
N44
WHT
VBU
IG
B–CAN
MICU
SG1
SG2
P–GND
P1
E9
H9
X35
X34
X27
D11
BLU
YEL
WHT/RED
YEL
LT GRN
BLU
WHT
7
3
4
YEL
YEL
1
COMBINATION SWITCH CONTROL UNIT
12
LOW
HIGH
PASSING
DIMMER
5
9
10
6
BLU/RED
RED
BLU
BRN
BLK
BLK
BLK
BLK
RED/WHT
2
5
4
3
6
LIGHT (LED)
OFF
HEADLIGHT SWITCH
1
RED/BLU
DASH LIGHTS BRIGHTNESS CONTROLLER (In the gauge control module)
G401
G501
G501
G403

Circuit Diagram - Back-up Lights

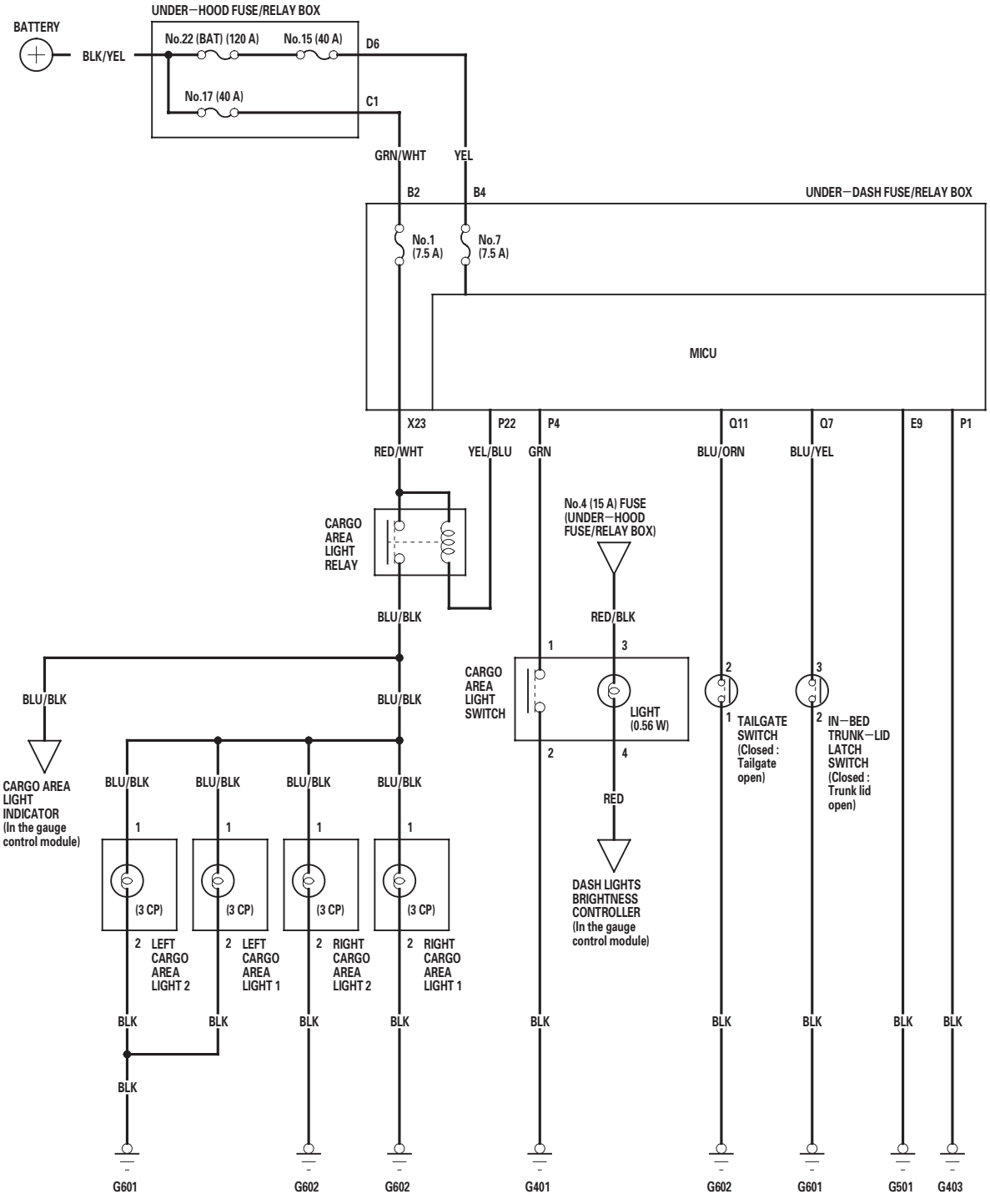


Circuit Diagram - Brake Lights

* : '07—08 RTX models

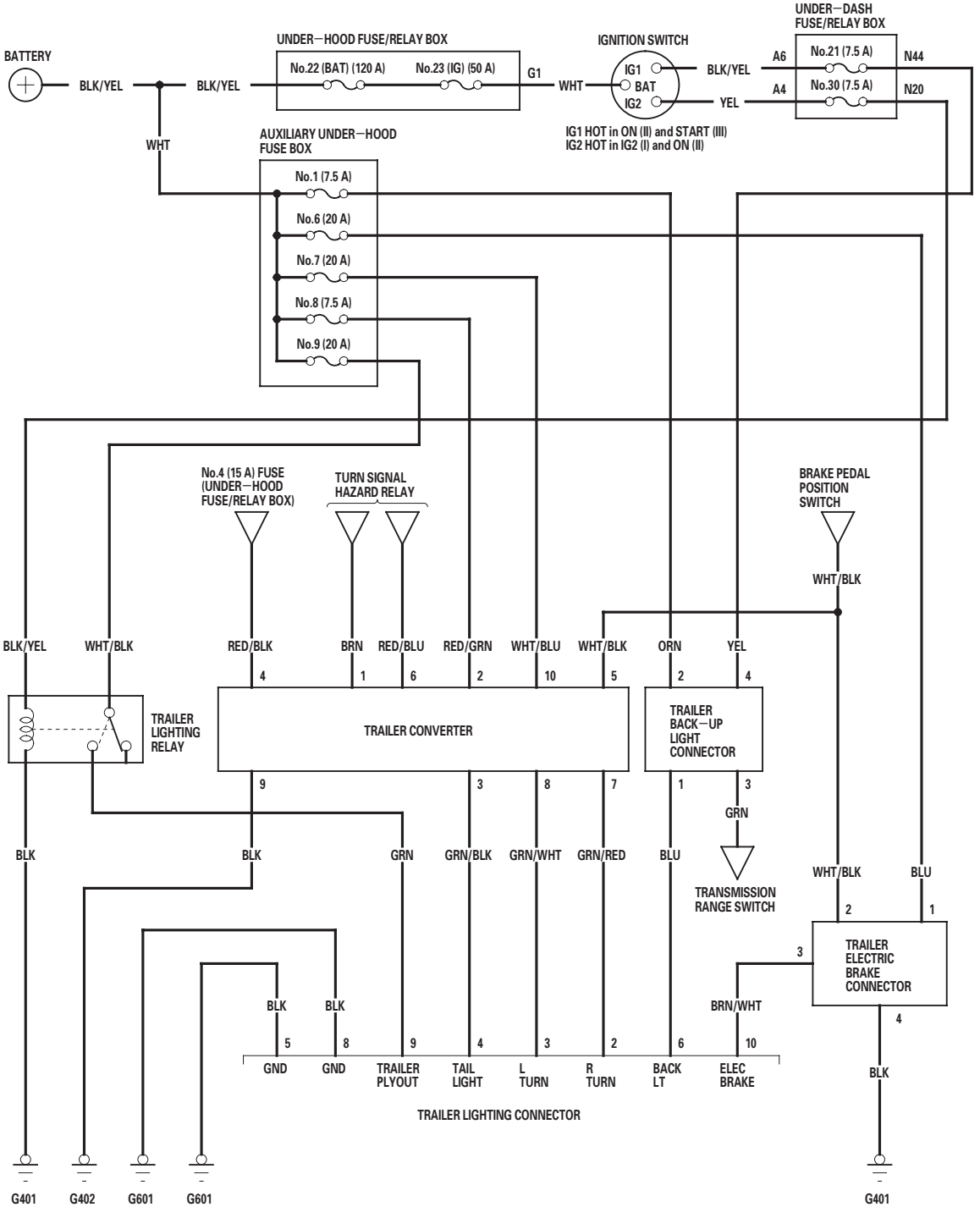


Circuit Diagram - Cargo Area Lights



Circuit Diagram - Trailer Lights

'07-08 RTX models



DTC Troubleshooting

DTC B1075: Headlight SWITCH Signal Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the headlights switch from the OFF position to the ON position.
3. Check for DTCs with the HDS.

   Is DTC B1075 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the headlight circuit is OK at this time. Check for loose or poor connections at under-hood fuse/relay box connector J (10P), and at the combination switch connector. ■
4. With the headlight switch OFF, select LIGHTING SYSTEM from the HDS, and enter the DATA LIST.
5. Check the ON/OFF information of the HEADLIGHT SWITCH (BACK-UP) in the DATA LIST.

   Is the information indicator OFF?

   YES—Go to step 6.

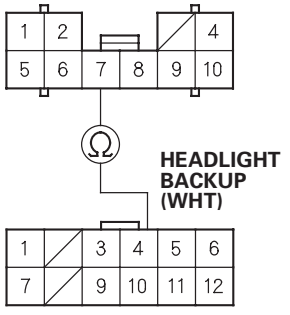
   NO—Go to step 10.
6. Turn the headlight switch ON.
7. Check the ON/OFF information of the HEADLIGHT SWITCH (BACK-UP) in the DATA LIST.

   Is the information indicator ON?

   YES—Faulty relay control module; replace the under-hood fuse/relay box. ■

   NO—Go to step 8.
8. Disconnect the under-hood fuse/relay box connector J (10P) and the combination switch 12P connector.
9. Check for continuity between the No. 7 terminal of under-hood fuse/relay box connector J (10P) and the No. 4 terminal of the combination switch 12P connector.

UNDER-HOOD FUSE/RELAY BOX CONNECTOR J (10P)
Wire side of female terminals



COMBINATION SWITCH 12P CONNECTOR
Wire side of female terminals

Is there continuity?

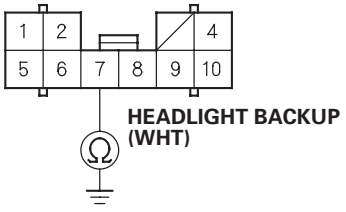
YES—Faulty combination switch control unit or relay control module; substitute a known-good combination switch and retest. If the DTC is no longer present, replace the original combination switch. If the DTC is still present, the relay control module is faulty, replace the under-hood fuse/relay box. ■

NO—Repair an open in the WHT wire. ■

10. Disconnect under-hood fuse/relay box connector J (10P).

11. Check for continuity between the No. 7 terminal of under-hood fuse/relay box connector J (10P) and body ground.

UNDER-HOOD FUSE/RELAY BOX CONNETOR J (10P)



Wire side of female terminals

Is there continuity?

YES—Repair the short in the WHT wire. ■

NO—Faulty relay control module; replace the under-hood fuse/relay box. ■

DTC Troubleshooting (cont'd)

DTC B1078: Daytime Running Lights Signal Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

Before troubleshooting, check the No. 3 (10 A) and No. 5 (10 A) fuses in the under-hood fuse/relay box, and headlight bulbs.

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Press the parking brake pedal.
4. Check for DTCs with the HDS.

   Is DTC B1078 indicated?

   YES—Go to step 5.

   NO—Intermittent failure. The daytime running lights system is OK at this time. Check for loose or poor connections. ■
5. Turn the headlights (high beam) ON.

   Do both headlights come on?

   YES—Go to step 6.

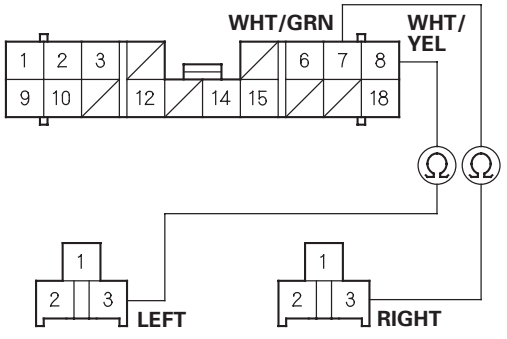
   NO—Go to step 9.
6. Turn the headlight switch OFF.
7. Select LIGHTING SYSTEM from the HDS, and enter the DATA LIST.
8. Check the ON/OFF information of the DRL Command in the DATA LIST.

   Is the information indicator ON?

   YES—Check the BLU/WHT wire between under-hood fuse/relay box connector H (18P) No. 10 terminal and the daytime running lights relay for an open/short. If OK, replace the daytime running lights relay. ■

   NO—Go to relay control module input test (see page 22-125). ■
9. Check for continuity between the No. 3 terminal of the headlight 3P connectors and the No. 7 (right headlight) or No. 8 (left headlight) terminals of the under-hood fuse/relay box connector H (18P).

UNDER-HOOD FUSE/RELAY BOX CONNECTOR H (18P)
Wire side of female terminals



HEADLIGHT 3P CONNECTORS
Wire side of female terminals

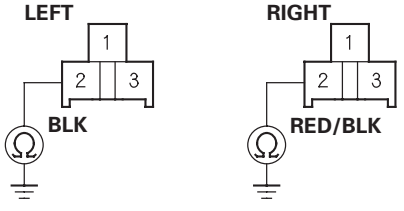
Is there continuity?

YES—Go to step 10.

NO—Repair an open in the wire. ■

10. Check for continuity between the No. 2 terminal of the left headlight 3P connector and body ground.

HEADLIGHT 3P CONNECTORS



Wire side of female terminals

Is there continuity?

YES—Faulty relay control module; replace the under-hood fuse/relay box. ■

NO—Check the daytime running lights relay (left headlight only) (see page 22-75). If the relay is OK, repair an open in the wire or poor ground (G301 left side or G401 right side). ■

DTC B1255: Combination Switch Control Unit Lost Communication With MICU (MICU message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Check for DTCs with the HDS.

   Is DTC B1255 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, MICU is OK at this time. Check for loose or poor connection at combination switch control unit connector (12P), and at under-dash fuse/relay box connector X (39P). If the connections are good, check the battery condition (see page 22-74) and the charging system. ■
4. Check for DTCs with the HDS.

   Are DTCs B1055, B1106, and B1157 also indicated?

   YES—Go to MICU input test (see page 22-117). ■

   NO—The combination switch control unit is faulty; replace the combination switch. ■

DTC B1275: Headlight Switch OFF Position Circuit Malfunction

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II), and wait for 2 seconds.
3. Turn the parking (SMALL) light switch ON and wait for 2 seconds.
4. Turn the headlight switch (LOW) ON and wait for 2 seconds.
5. Change the dimmer switch position from low beam to high beam and wait for 2 seconds.
6. Check for DTCs with the HDS.

   Is DTC B1275 indicated?
   YES—Go to step 7.
   NO—Intermittent failure, the headlight switch and the combination switch control unit are OK at this time. Check for loose or poor connections at the headlight switch connector, and at the combination switch connector. ■
7. With the headlight switch OFF select LIGHTING SYSTEM with the HDS, and enter DATA LIST.
8. Check the ON/OFF information of the HEADLIGHT SWITCH OFF in the DATA LIST.

   Is the information indicator ON, and change to OFF when the headlight switch is put to the PARKING and the HEADLIGHT positions?
   YES—Faulty combination switch control unit. Replace the combination switch. ■
   NO—Go to step 9.
9. Do the headlight switch test (see page 22-181).

   Is the headlight switch test OK?
   YES—Repair the wire between the No. 5 terminal of the headlight switch 6P connector and the No. 5 terminal of the combination switch 12P connector. ■
   NO—The combination switch control unit is faulty; replace the combination switch. ■

DTC Troubleshooting (cont'd)

DTC B1276: Headlight Switch Parking (SMALL) Position Circuit Malfunction

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II), and wait for 2 seconds.
3. Turn the parking (SMALL) light switch ON and wait for 2 seconds.
4. Turn the headlight switch (LOW) ON and wait for 2 seconds.
5. Change the dimmer switch position from low beam to high beam and wait for 2 seconds.
6. Check for DTCs with the HDS.

   Is DTC B1276 indicated?
   YES—Go to step 7.
   NO—Intermittent failure, the headlight switch and the combination switch control unit are OK at this time. Check for loose or poor connections at the headlight switch connector, and at the combination switch connector. ■
7. With the headlight switch in the PARKING position, select LIGHTING SYSTEM with the HDS, and enter DATA LIST.
8. Check the ON/OFF information of the HEADLIGHT SWITCH PARKING in the DATA LIST.

   Is the information indicator ON, and change to OFF when the headlight switch is put to the OFF and the HEADLIGHT positions?
   YES—Faulty combination switch control unit. Replace the combination switch. ■
   NO—Go to step 9.
9. Do the headlight switch test (see page 22-181).

   Is the headlight switch test OK?
   YES—Repair the wire between the No. 4 terminal of the headlight switch 6P connector and the No. 9 terminal of the combination switch 12P connector. ■
   NO—Replace the headlight switch. ■

DTC B1278: Headlight Switch ON Position Circuit Malfunction

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II), and wait for 2 seconds.
3. Turn the parking (SMALL) light switch ON and wait for 2 seconds.
4. Turn the headlight switch (LOW) ON and wait for 2 seconds.
5. Change the dimmer switch position from low beam to high beam and wait for 2 seconds.
6. Check for DTCs with the HDS.

   Is DTC B1278 indicated?
   YES—Go to step 7.
   NO—Intermittent failure, the headlight switch and the combination switch control unit are OK at this time. Check for loose or poor connections at the headlight switch connector, and at the combination switch connector. ■
7. With the headlight switch in the HEADLIGHT position, select LIGHTING SYSTEM with the HDS, and enter DATA LIST.
8. Check the ON/OFF information of the HEADLIGHT SWITCH ON in the DATA LIST.

   Is the information indicator ON, and change to OFF when the headlight switch is put to the OFF and the PARKING positions?
   YES—Faulty combination switch control unit. Replace the combination switch. ■
   NO—Go to step 9.
9. Do the headlight switch test (see page 22-181).

   Is the headlight switch test OK?
   YES—Repair the wire between the No. 3 terminal of the headlight switch 6P connector and the No. 10 terminal of the combination switch 12P connector. ■
   NO—Replace the headlight switch. ■

DTC B1279: Headlight Switch DIMMER Position Circuit Malfunction

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF and then back ON (II), then turn the headlight switch ON.
3. Change the dimmer switch from low beam to high beam and wait for 2 seconds.
4. Pull and hold the dimmer switch lever and keep the passing switch position for more than 2 seconds.
5. Check for DTCs with the HDS.

   Is DTC B1279 indicated?

   YES—Faulty combination switch control unit, replace the combination switch. ■

   NO—Intermittent failure, the combination switch control unit is OK at this time. Check for loose or poor connections at the combination switch connector. ■

DTC B1280: Turn Signal Switch Circuit Malfunction

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Turn the turn signal switch to the left turn position and wait for 2 seconds.
4. Turn the turn signal switch to the right turn position and wait for 2 seconds.
5. Check for DTCs with the HDS.

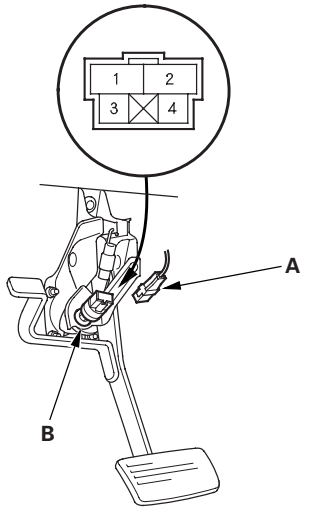
   Is DTC B1280 indicated?

   YES—Faulty combination switch control unit, replace the combination switch. ■

   NO—Intermittent failure, the combination switch control unit is OK at this time. Check for loose or poor connections at the combination switch connector. ■

Brake Pedal Position Switch Test

1. Disconnect the 4P connector (A) from the brake pedal position switch (B).



2. Check for continuity between the No. 1 and No. 2 terminals.

   - There should be continuity when the brake pedal is pressed.
   - There should be no continuity when the brake pedal is released.

3. Check for continuity between the No. 3 and No. 4 terminals.

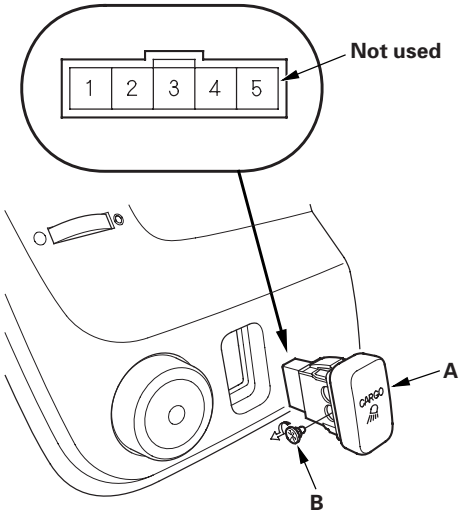
   - There should be no continuity when the brake pedal is pressed.
   - There should be continuity when the brake pedal is released.

4. If necessary, adjust or replace the switch, or adjust the pedal height (see page 19-6).

Cargo Area Light Switch Test

1. Remove the dashboard lower cover (see page 20-83).

2. Push the cargo area light switch (A) from behind the dashboard lower panel.



3. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal	1	2	3		4
OFF			○	○	○
ON	○	○	○	○	○

4. If the continuity is not as specified, replace the bulb (B) or the cargo area light switch.

Headlight Adjustment

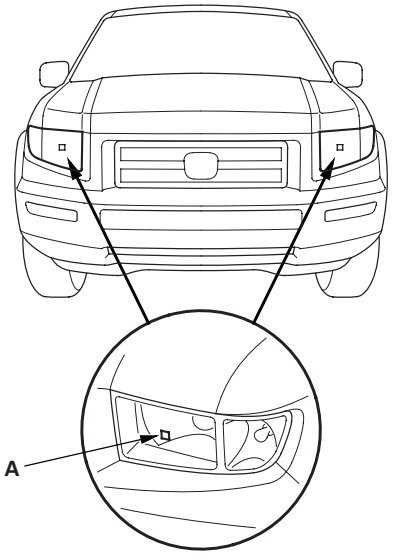
⚠CAUTION

Headlights become very hot during use; do not touch them or any attaching hardware immediately after they have been turned off.

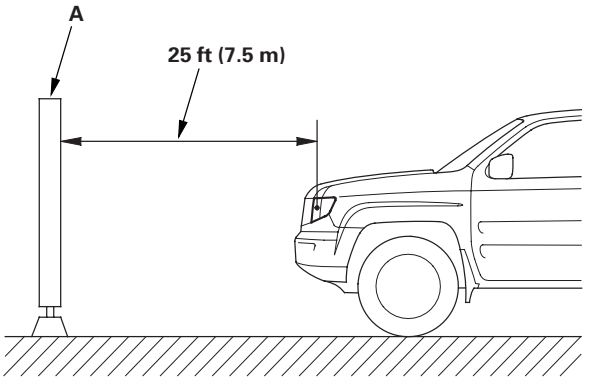
Before adjusting the headlights:

- Park the vehicle on a level surface.
- Make sure the tire pressures are correct.
- The driver or someone who weighs the same should sit in the driver's seat.

1. Clean the outer lens so that you can see the center (A) of the headlights.



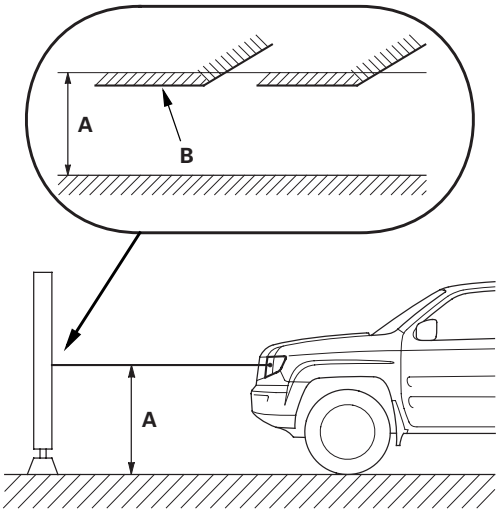
2. Park the vehicle in front of a wall or a screen (A).



3. Turn the low beams on.

4. Determine if the headlights are aimed properly.

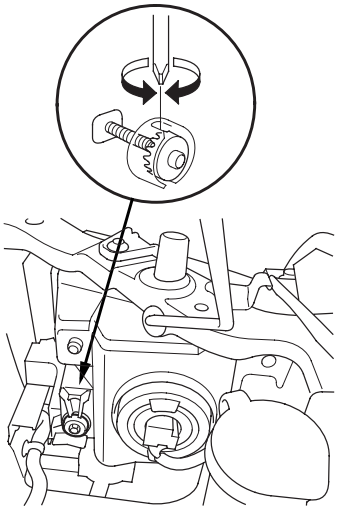
   Vertical adjustment:
   Measure the height of the headlights (A). The lights should reflect 2.1 in (52 mm.) below headlight height (B).



(cont'd)

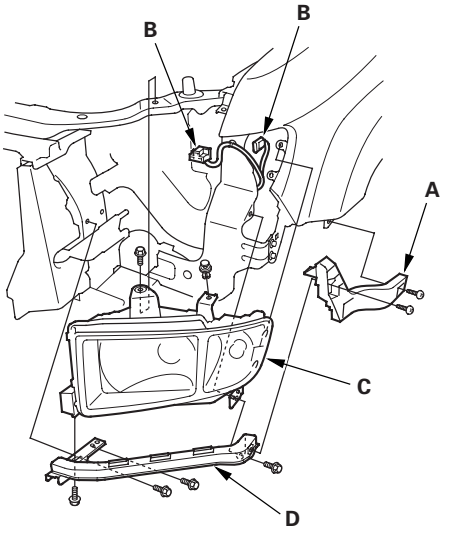
Headlight Adjustment (cont'd)

5. If necessary, open the hood and adjust the headlights to local requirements by turning the vertical adjuster.



Headlight Replacement

1. Remove the front bumper (see page 20-132).
2. Remove the corner cover (A).



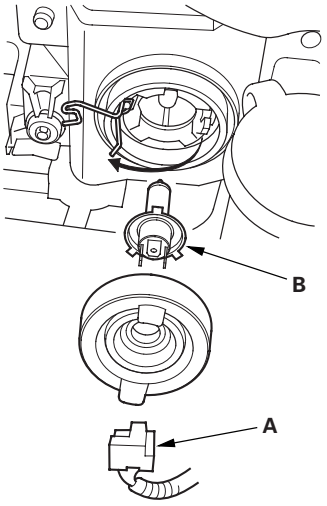
3. Remove the connectors (B) from the headlight assembly (C).
4. Remove the five mounting bolts and clip, then remove the headlight.
5. Remove the bolt and the corner upper beam (D) from the headlight.
6. Install the headlight in the reverse order of removal.
7. After replacement, adjust the headlight to local requirement.

Bulb Replacement

Headlight

1. Disconnect the 3P connector (A) from the headlight.

   Headlight (high/low): 60/55 W



2. Turn the bulb socket (B) 45 ° counterclockwise to remove the bulb.

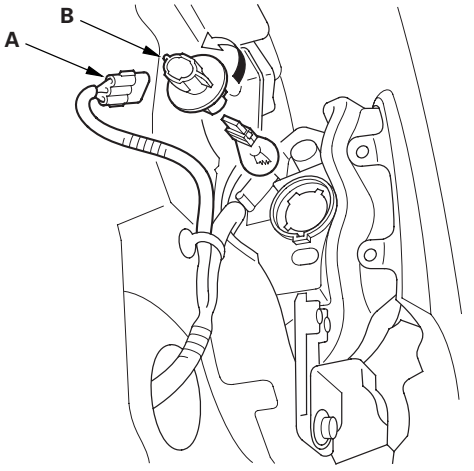
3. Install a new bulb in the reverse order of removal.

Front Turn Signal/Side Marker Lights

1. Remove the inner fender (see page 20-178).

2. Disconnect the 3P connector (A) from the front turn signal/side marker light.

   Front Turn Signal/Side Marker Lights: 28/8 W



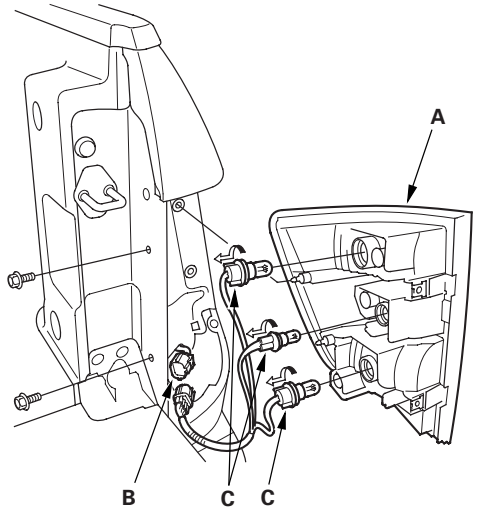
3. Turn the bulb socket (B) 45 ° counterclockwise to remove the bulb.

4. Install a new bulb in the reverse order of removal.

Taillight Replacement

1. Open the tailgate.
2. Remove the two bolts from the taillight (A).

Brake/Taillight: 21/5 W
Turn signal Light: 21 W
Back-up Light: 18 W

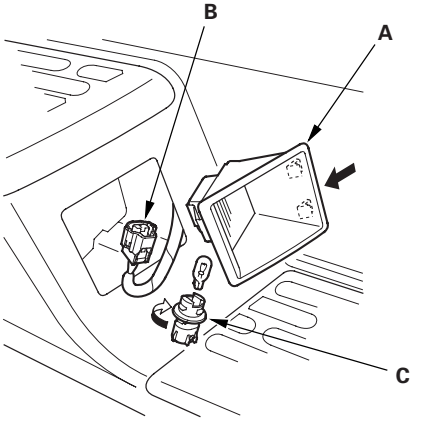


3. Carefully pull out the taillight, and disconnect the connector (B) from the taillight.
4. Turn the bulb sockets (C) 45 ° counterclockwise to remove the bulb.
5. Install the taillight in the reverse order of removal.

License Plate Light Replacement

1. Remove the license plate light (A), and disconnect the 2P connector (B) from the light.

License Plate Light: 3 CP x 2

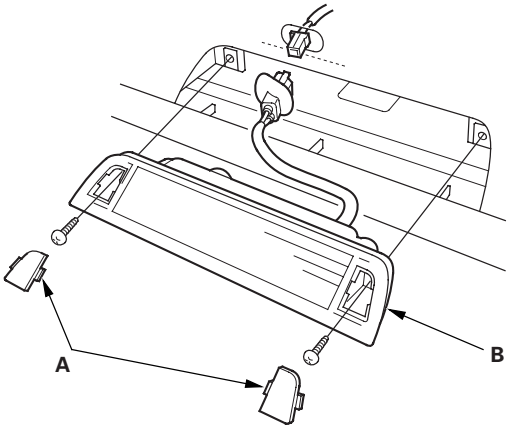


2. Turn the bulb socket (C) 45 ° counterclockwise to remove the bulb.
3. Install the light in the reverse order of removal.

High Mount Brake Light Replacement

1. Remove the covers (A) and screws from the high mount brake light (B).

   High Mount Brake Light: 3 CP x 4



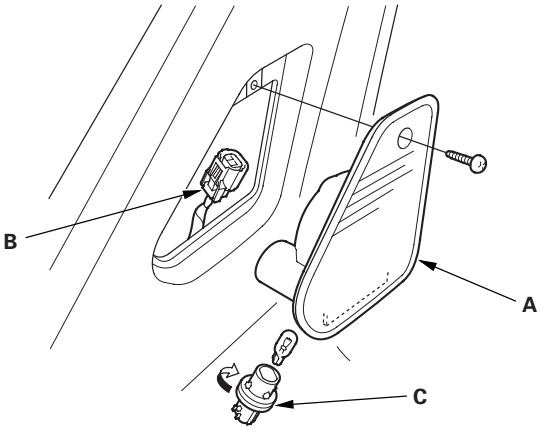
2. Install the light in order reverse of removal.

Cargo Area Light Replacement

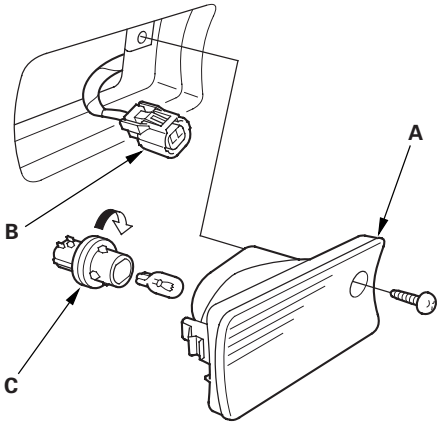
1. Remove the screw and cargo area light (A).

   Cargo Area Light: 3 CP

   Cargo Area Light 1



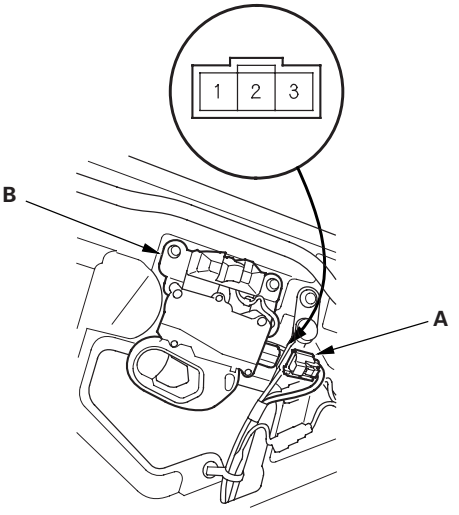
   Cargo Area Light 2



2. Disconnect the 2P connector (B) from the light.
3. Turn the bulb socket (C) 45 ° counterclockwise to remove the bulb.
4. Install the light in the reverse order of removal.

In-Bed Trunk Lid Latch Switch Test

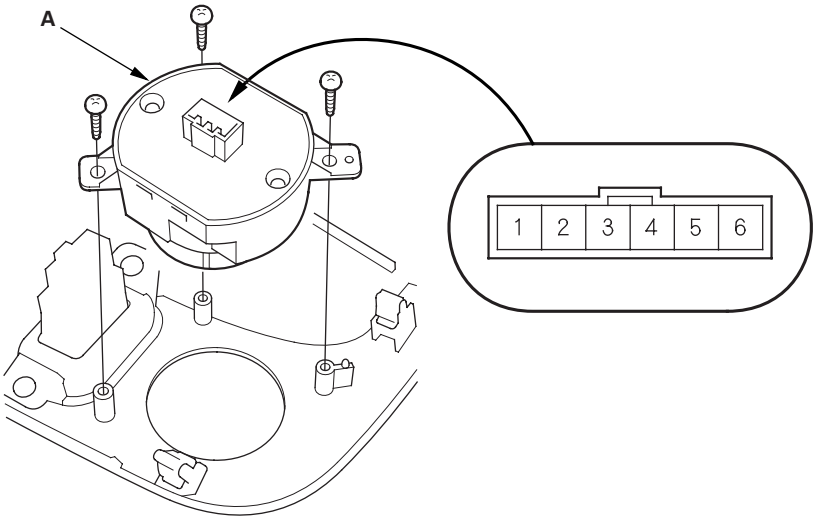
1. Open the in-bed trunk lid.
2. Disconnect the 3P connector (A) from the in-bed trunk lid latch switch (B).



3. Check for continuity between the No. 2 and No. 3 terminals.
   - There should be continuity with the in-bed trunk lid latch unlatched (trunk open).
   - There should be no continuity with the in-bed trunk lid latch latched (trunk closed).
4. If the continuity is not as specified, replace the in-bed trunk lid latch switch.

Headlight Switch Test/Replacement

1. Remove the instrument panel (see page 20-81).
2. Remove the screws, then remove the headlight switch (A).



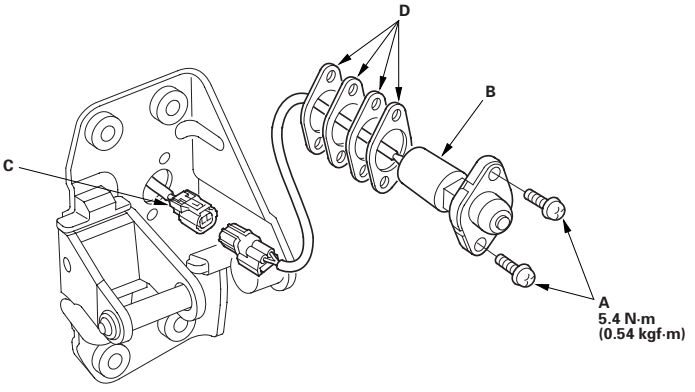
3. Inspect the connector terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals are OK, check for continuity between the terminals in each switch position according to the tables.
     – If continuity is not as specified, replace the switch.

Position \ Terminal	1		2	3	4	5	6
OFF	○	○	○			○	○
	○	○	○		○		○
	○	○	○	○			○

Tailgate Switch Test/Replacement/Adjustment

Test/Replacement

1. Open the tailgate in swing mode.
2. Remove the tailgate mounting screws (A), and pull-out the tailgate switch (B).



3. Disconnect the tailgate switch 2P connector (C). Remove the switch and note the number of adjustment shims (D).

   NOTE: The maximum number of shims allowed is 4.

4. Check continuity between the No. 1 and No. 2 terminals of the connector. There should be continuity when the tailgate is opened.
5. Install the new tailgate switch in reverse order of removal with the original mounting screws, and the same number of shims removed, and then check the adjustment.

Adjustment

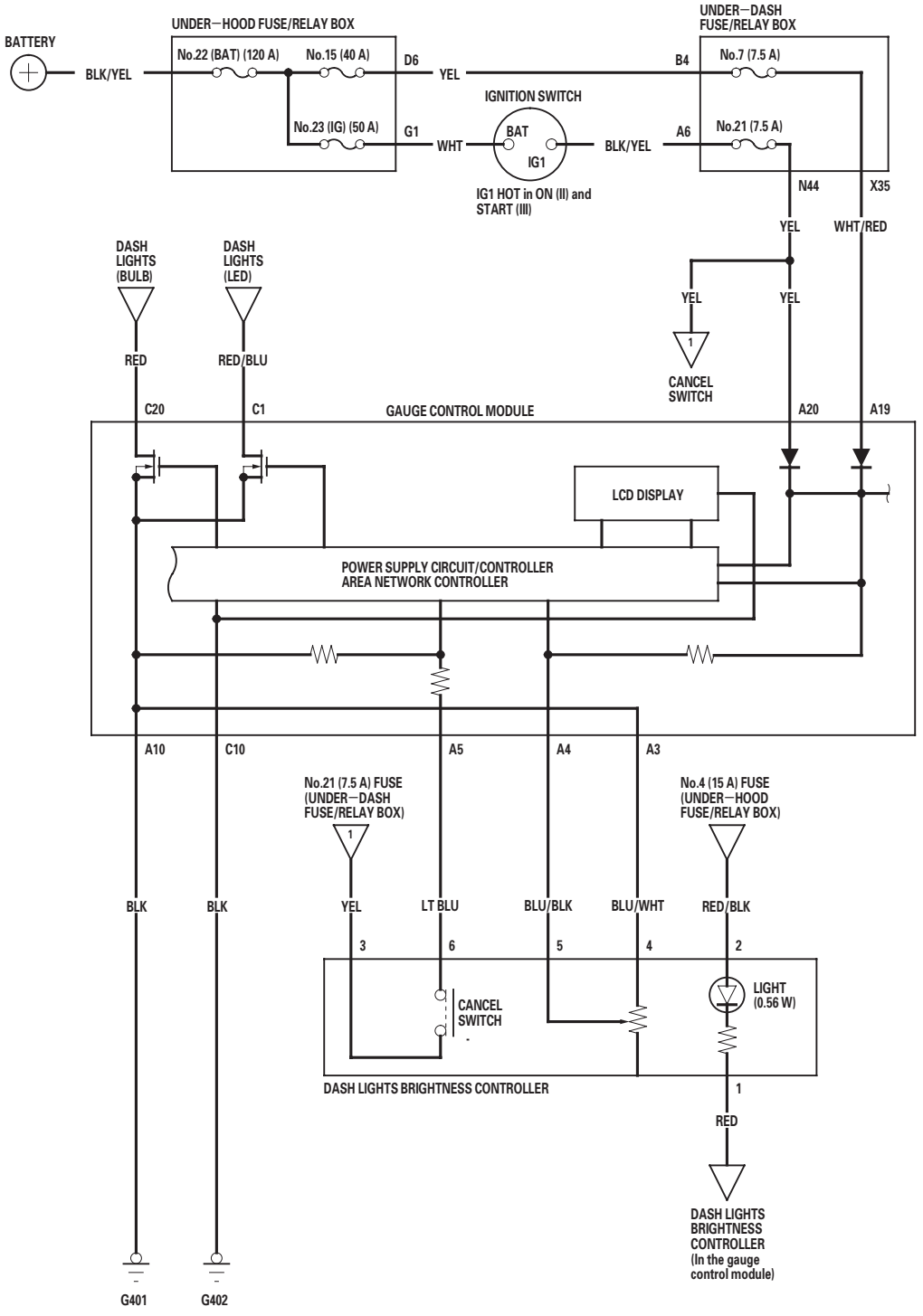
1. Fully close the tailgate switch mode to see if the cargo area lights go off. If the lights stay on, remove the switch and add a shim, then go to step 2. If the lights go off, go to step 2.

   NOTE: The maximum number of shims allowed is 4.

2. Open the tailgate in swing mode.
3. Close the tailgate, but do not latch it.
4. Release the tailgate, it should push open a little and the cargo area lights should come on. If the lights do not come on, remove a shim and retest.
5. Fully close the tailgate, and open it in down mode. The cargo area lights should not come on or flicker.
6. With the tailgate in down mode, push down on the tailgate. The cargo area lights should not come on or flicker.
7. Lift up on the tailgate slightly and let it drop or bounce. The cargo area lights should not come on or flicker.
8. If the cargo area lights flickered or came on in steps 5 through 7, add a shim and retest.
9. Once the adjustment is completed, remove and discard the original mounting screws one at a time, and replace them with new screws. Tighten the screws to the specified torque.

Dash Lights Brightness Controller

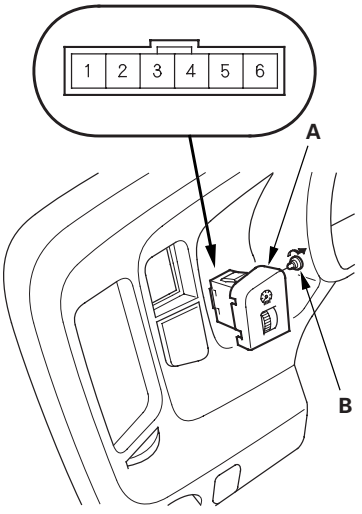
Circuit Diagram



Dash Lights Brightness Controller

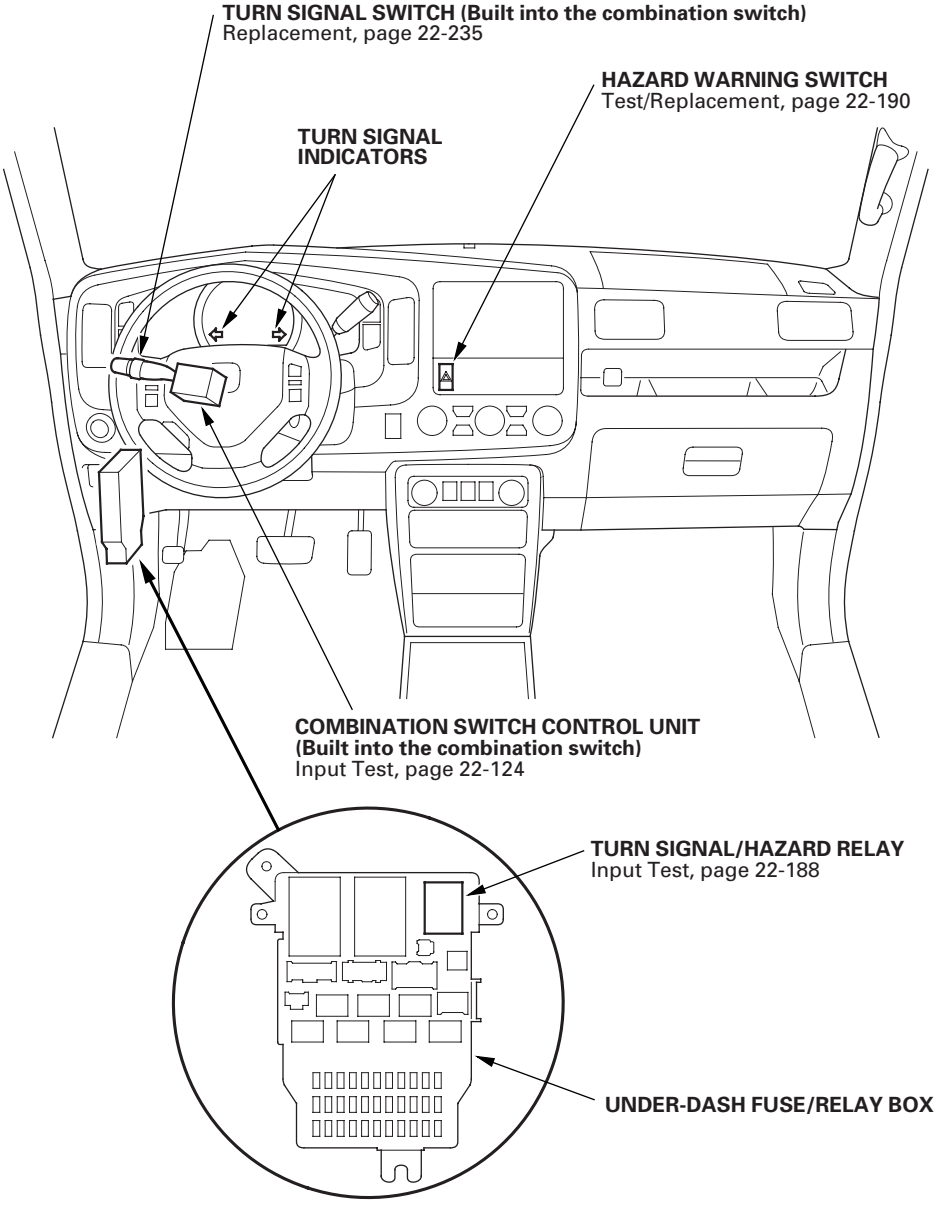
Controller Test

1. Remove the instrument panel (see page 20-81).
2. Remove the switch (A) from the instrument fascia.

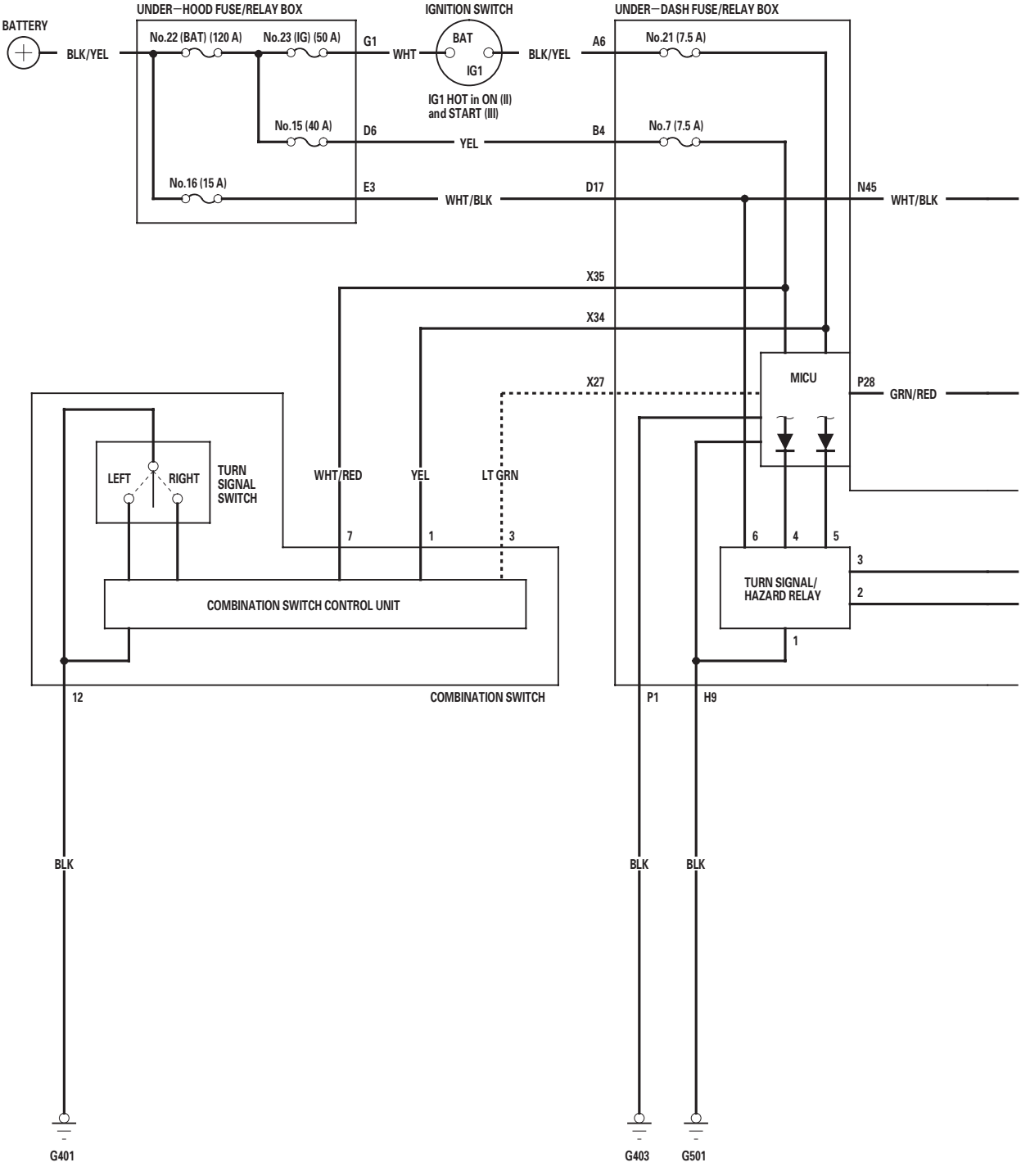


3. Measure the resistance between the No. 4 and No. 5 terminals while rotating the adjusting dial. The resistance should vary from 0 to 20 kΩ as the dial is rotated.
4. Check for continuity between the No. 3 and No. 6 terminals with the dial rotated to CANCEL position. There should be no continuity.
5. If necessary, check the illumination bulb (B).

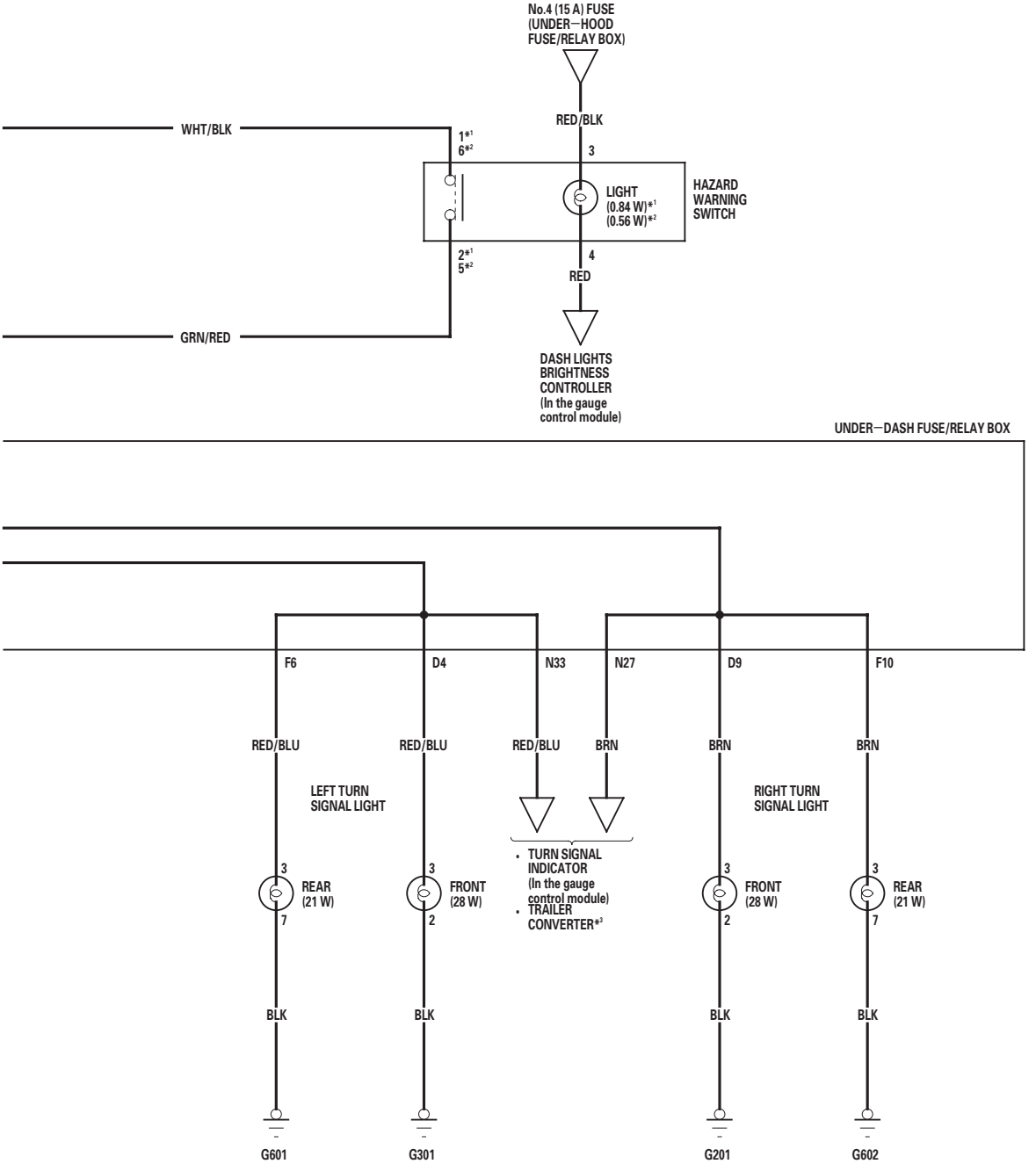
Component Location Index



Circuit Diagram

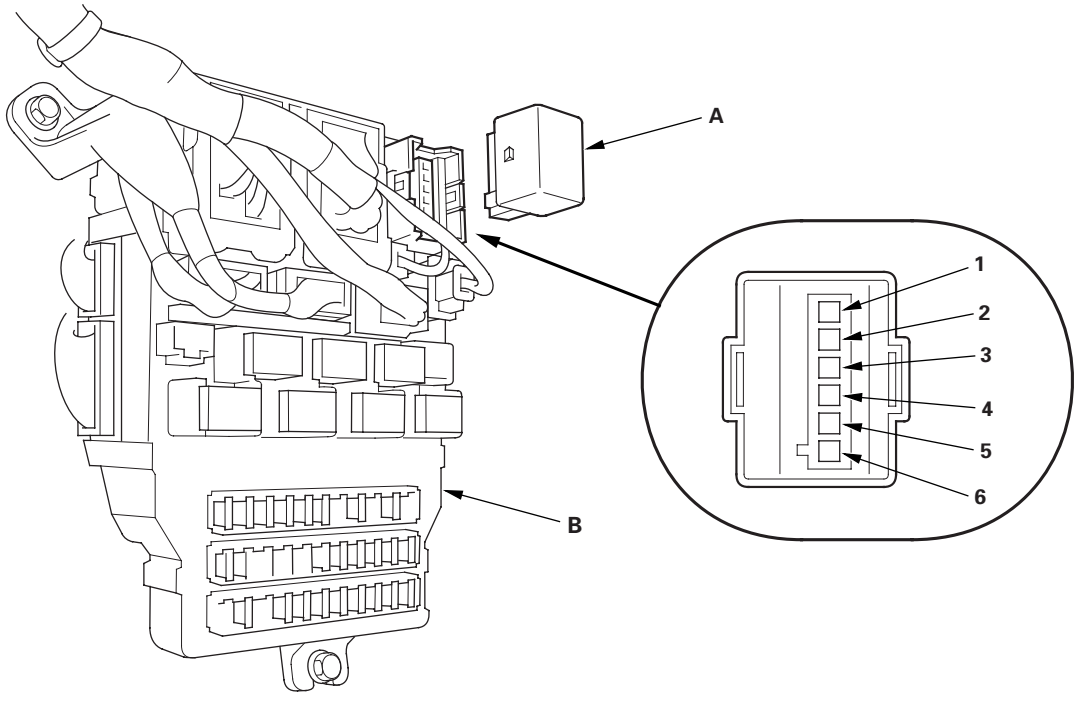


: Communication line
*1 : '06 model
*2 : '07—08 models
*3 : '07—08 RTX models



Turn Signal/Hazard Relay Input Test

1. Remove the turn signal/hazard relay (A) from the under-dash fuse/relay box (B).



2. Inspect the relay and fuse/relay box socket terminals to be sure they are all making good contact.

   - If the terminals are bent, loose, or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 3.

3. Make these input tests at the fuse/relay box.

   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, the turn signal/hazard relay must be faulty; replace it.

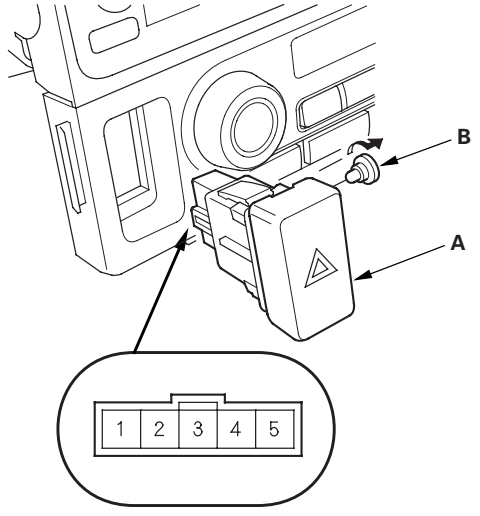
Cavity	Test condition	Test: Desired result	Possible cause if result is not obtained
6	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 16 (15 A) fuse in the under-hood fuse/relay box • Faulty under-dash fuse/relay box • An open in the wire
1	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501) • Faulty under-dash fuse/relay box • An open in the wire
2	Connect the No. 6 terminal to the No. 2 terminal with a jumper wire.	Check the turn signal lights operation: The left turn signal lights and indicator should come on.	• Blown bulb • Poor ground (G601, G301) • An open in the wire
3	Connect the No. 6 terminal to the No. 3 terminal with a jumper wire.	Check the turn signal lights operation: The right turn signal lights and indicator should come on.	• Blown bulb • Poor ground (G201, G602) • An open in the wire
4	Ignition switch ON (II) and turn signal switch in Left position.	Check for voltage to ground: There should be about 10 V.	• Poor ground (G501) • Faulty turn signal switch • Faulty under-dash fuse/relay box • An open in the wire • Faulty combination switch control unit* • Faulty MICU*
5	Ignition switch ON (II) and turn signal switch in Right position.	Check for voltage to ground: There should be about 10 V.	
4 5	Hazard warning switch ON	Check for voltage to ground: There should be about 10 V.	• Poor ground (G501) • Blown No. 16 (15 A) fuse in the under-hood fuse/relay box • Faulty under-dash fuse/relay box • Faulty hazard warning switch • An open in the wire • Faulty MICU*

* : Go to B-CAN System Diagnosis Test Mode A (see page 22-99).

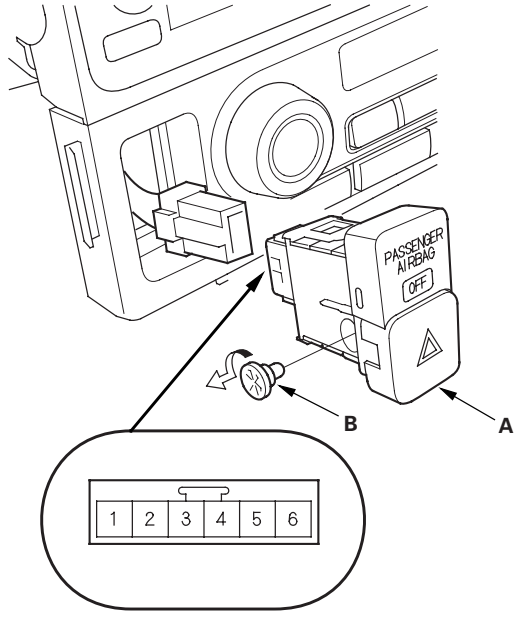
Hazard Warning Switch Test/Replacement

1. Remove the audio unit (see page 23-57).
2. Remove the switch (A) from the center pocket.

'06 model



'07-08 models



3. Check for continuity between the terminals in each switch position according to the table.

'06 model

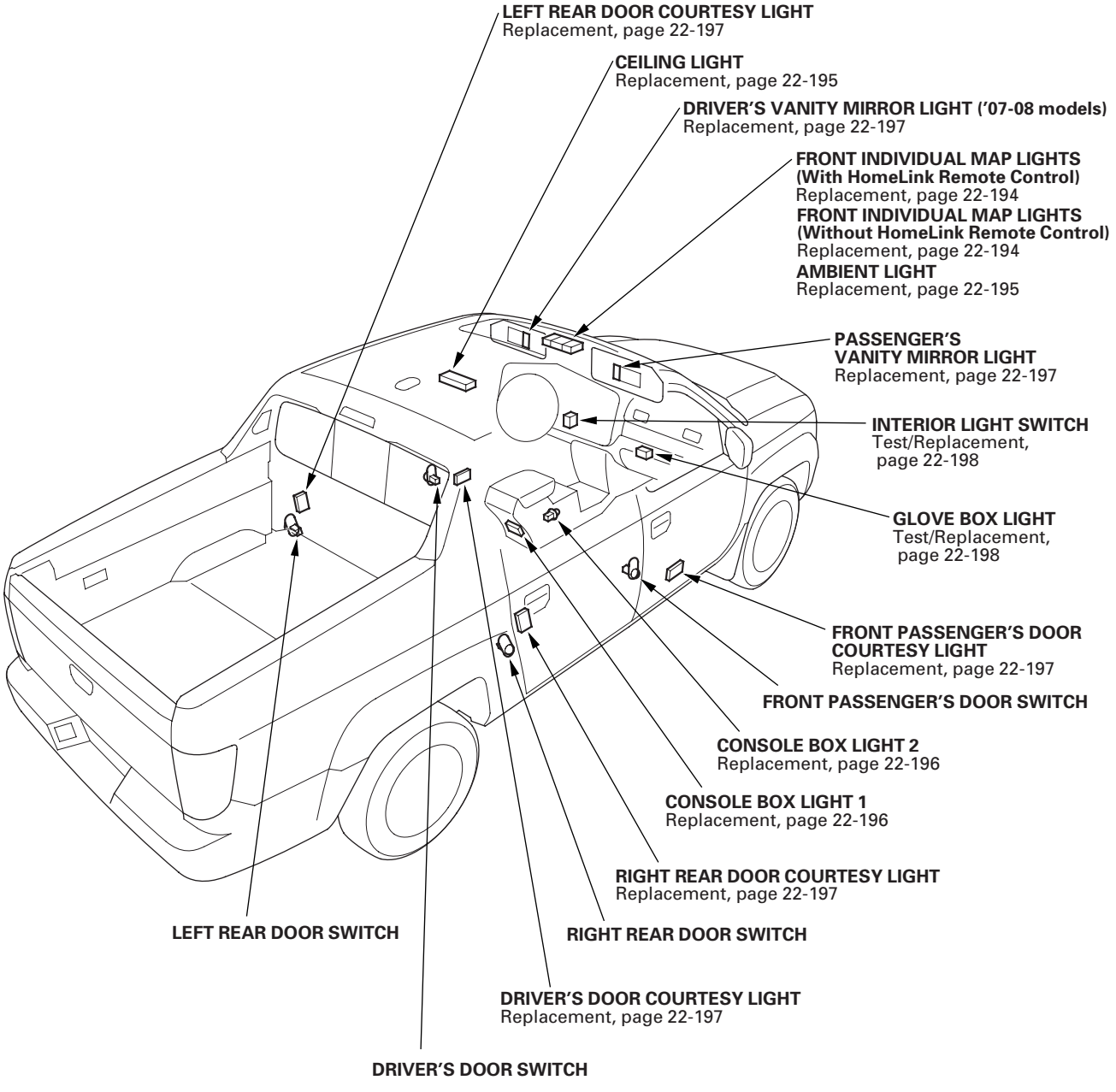
Terminal / Position	1	2	3		4
OFF			○	○	○
ON	○	○	○	○	○

'07-08 models

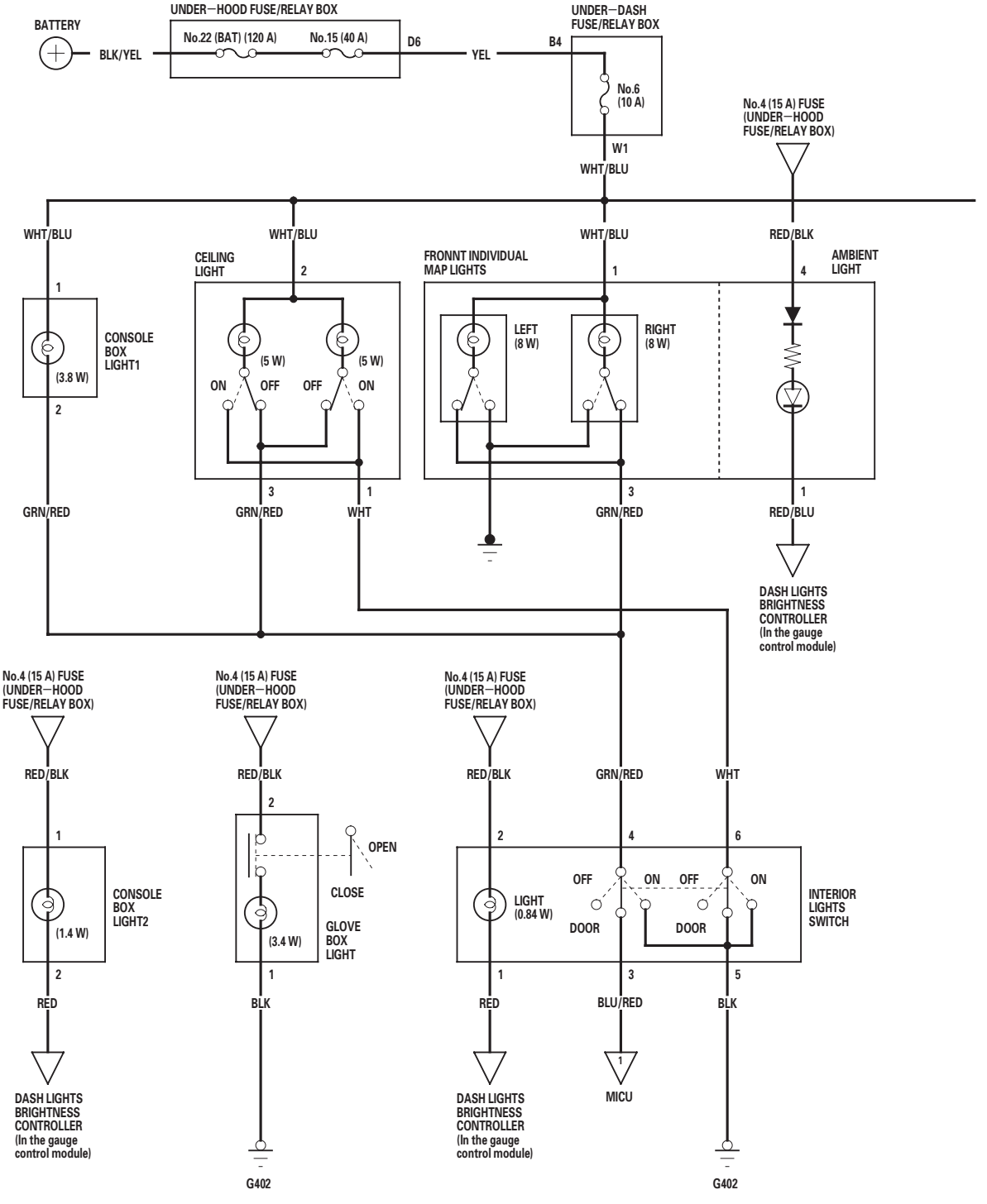
Terminal / Position	3		4	5	6
OFF	○	○	○		
ON	○	○	○	○	○

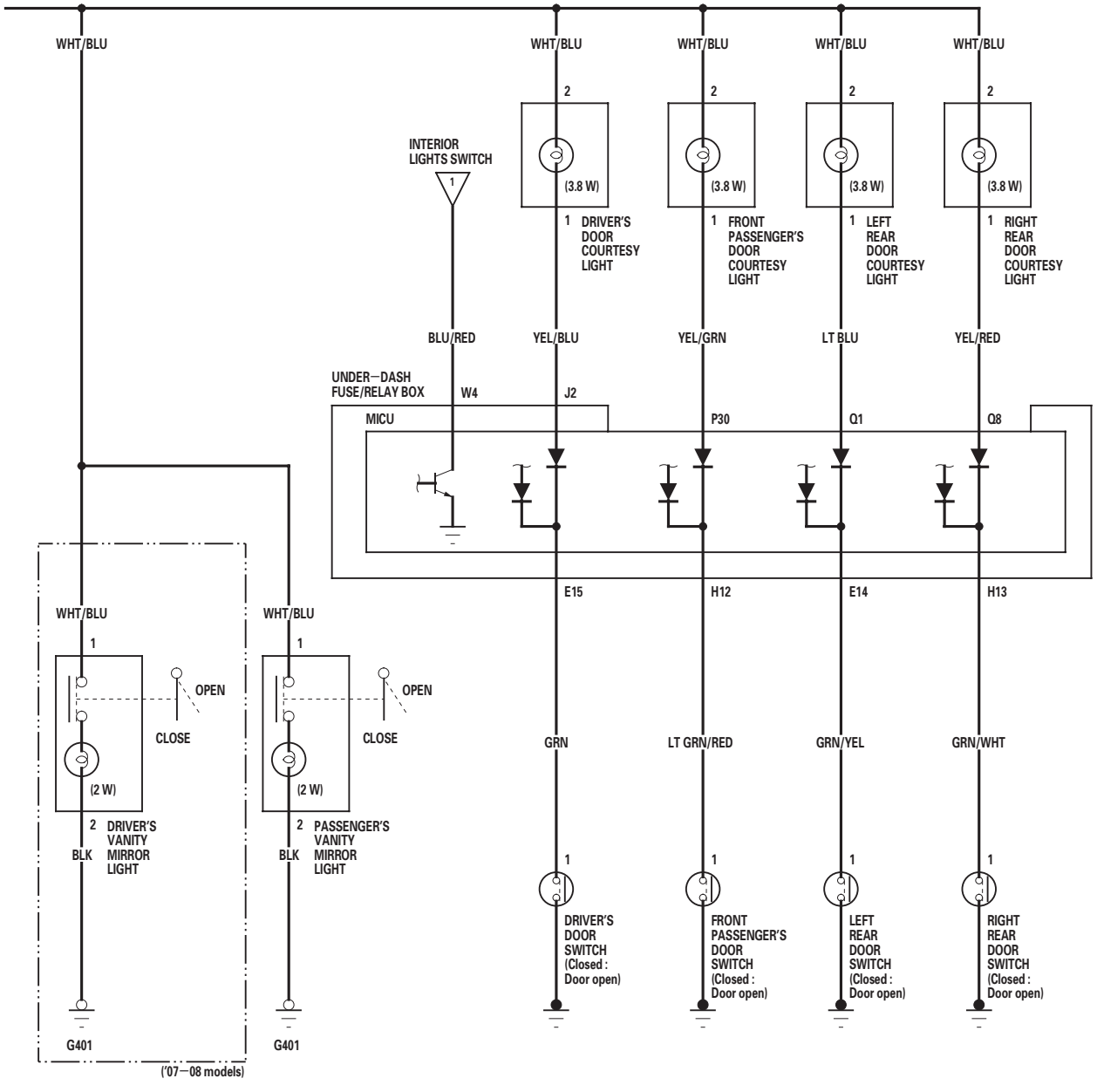
4. If the continuity is not as specified, replace the bulb (B) or the switch.

Component Location Index



Circuit Diagram



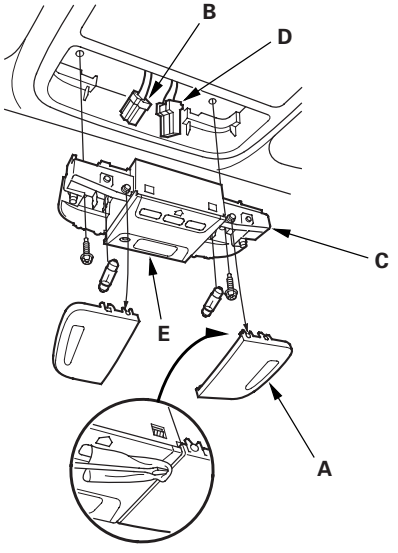

WHT/BLU
WHT/BLU
WHT/BLU
WHT/BLU
WHT/BLU
INTERIOR LIGHTS SWITCH
1
2
(3.8 W)
1 DRIVER'S DOOR COURTESY LIGHT
1 FRONT PASSENGER'S DOOR COURTESY LIGHT
1 LEFT REAR DOOR COURTESY LIGHT
1 RIGHT REAR DOOR COURTESY LIGHT
BLU/RED
YEL/BLU
YEL/GRN
LT BLU
YEL/RED
UNDER—DASH FUSE/RELAY BOX
W4
J2
MICU
P30
Q1
Q8
E15
H12
E14
H13
WHT/BLU
WHT/BLU
1
OPEN
CLOSE
(2 W)
2 DRIVER'S VANITY MIRROR LIGHT
BLK
2 PASSENGER'S VANITY MIRROR LIGHT
BLK
G401
G401
('07—08 models)
GRN
LT GRN/RED
GRN/YEL
GRN/WHT
DRIVER'S DOOR SWITCH (Closed : Door open)
FRONT PASSENGER'S DOOR SWITCH (Closed : Door open)
LEFT REAR DOOR SWITCH (Closed : Door open)
RIGHT REAR DOOR SWITCH (Closed : Door open)

Front Individual Map Light Replacement

With HomeLink Remote Control System

1. Carefully pry off the lens (A) with a small screwdriver.

Front Map Light: 8 W x 2

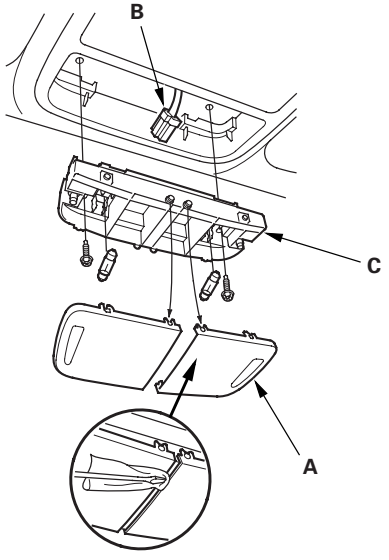


2. Remove the two mounting screws.
3. Disconnect the 3P connector (B) from the housing (C).
4. Disconnect the 10P connector (D) from the ambient light (E).
5. Install the light in the reverse order of removal.

Without HomeLink Remote Control System

1. Carefully pry off the lens (A) with a small screwdriver.

Front Map Light: 8 W x 2

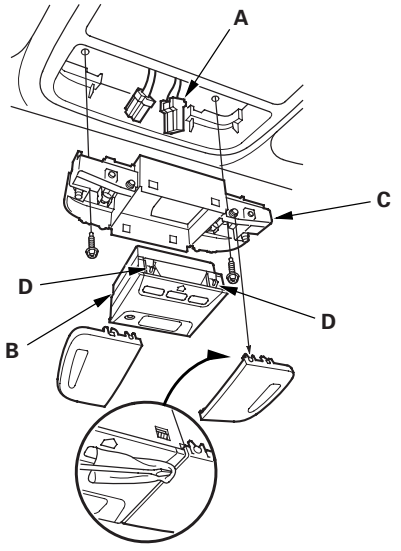


2. Remove the two mounting screws.
3. Disconnect the 3P connector (B) from the housing (C).
4. Install the light in the reverse order of removal.

Ambient Light Replacement

With HomeLink Remote Control System

1. Remove the front individual map light (see page 22-194).
2. Disconnect the 10P connector (A) from the roof console.

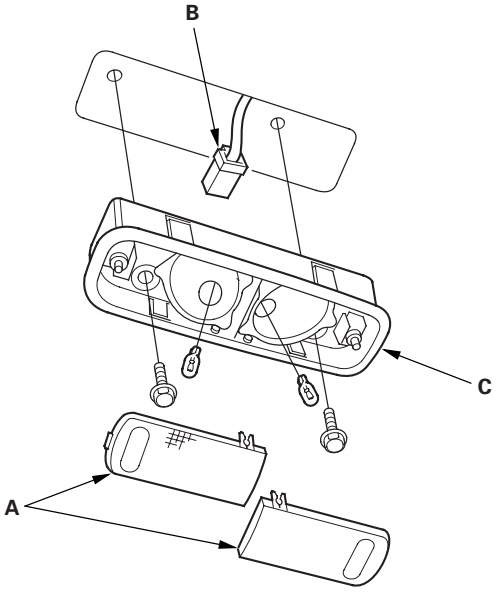


3. Carefully pry off the ambient light assembly (B) from the map light housing (C) while pressing in on the retaining tabs (D).
4. Install in the reverse order removal.

Ceiling Light Replacement

1. Turn the light switch OFF.
2. Carefully pry off the lens (A) with a small screwdriver.

Ceiling Light: 5 W x 2



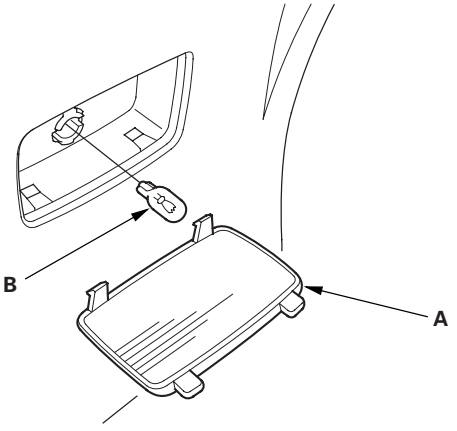
3. Remove the two mounting screws.
4. Disconnect the 3P connector (B) from the housing (C).
5. Install in the reverse order of removal.

Console Box Light Replacement

Console Box Light 1

1. Carefully pry off the lens (A) with a small screwdriver.

   Center Console Light 1: 3.8 W

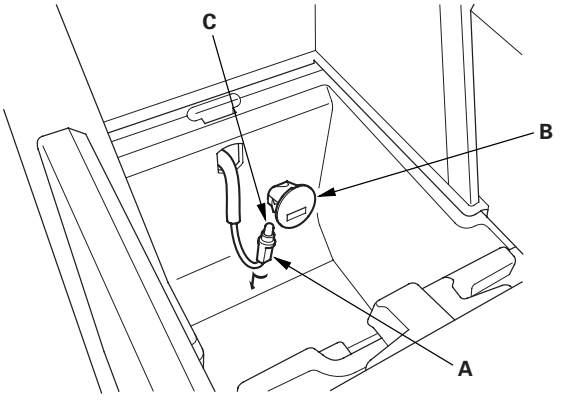


2. Remove the bulb (B) from the socket.

Console Box Light 2

1. Remove the center console (see page 20-76).
2. Carefully pry the console box light out of the center console.
3. Twist the socket (A) to remove it from the console box light (B).

   Console Box Light 2: 1.4 W

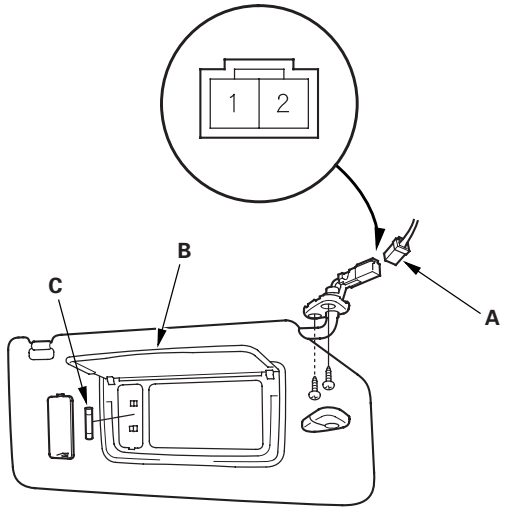


4. Remove the bulb (C) from the socket.
5. Install the light in the reverse order of removal.

Vanity Mirror Light Test

1. Open the sunvisor.
2. Remove the sunvisor (see page 20-70).
3. Disconnect the 2P connector (A) from the vanity mirror light.

   Vanity mirror light: 2 W

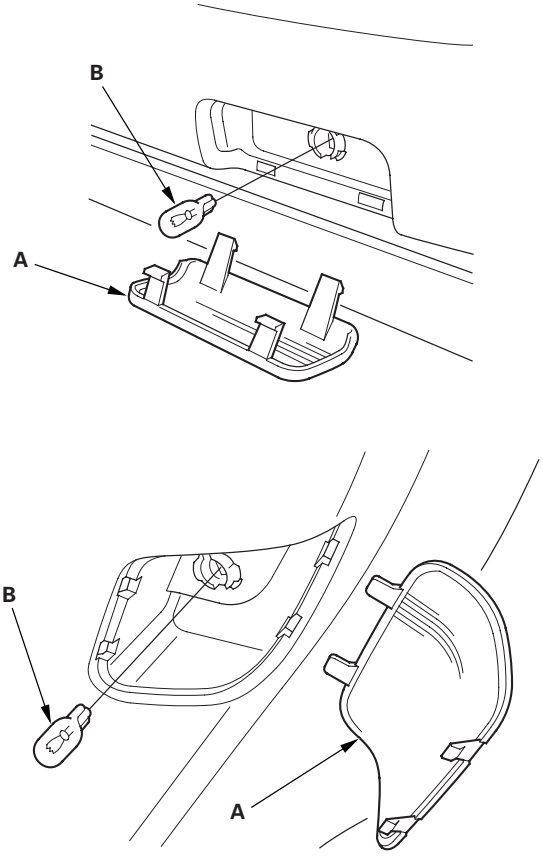


4. Check for continuity between the No. 1 and No. 2 terminals.
   - With the vanity mirror cover (B) opened, there should be continuity.
   - With the vanity mirror cover closed, there should be no continuity.
5. If the continuity is not as specified, replace the bulb (C) or the sunvisor.

Courtesy Light Replacement

1. Carefully pry off the lens (A) with a small screwdriver.

   Front Door Courtesy light: 3.8 W
   Rear Door Courtesy light: 3.8 W

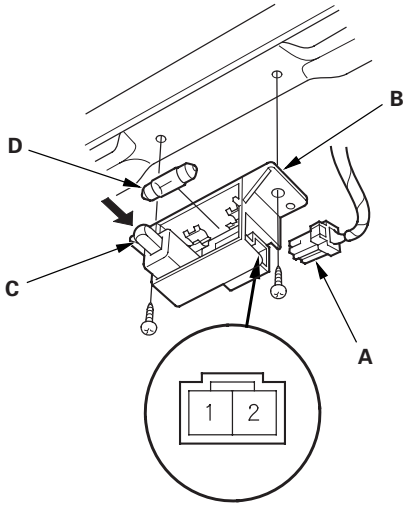


2. Remove the bulb (B) from the socket.

Glove Box Light Test/Replacement

1. Remove the glove box (see page 20-85).
2. Disconnect the 2P connector (A) from the glove box light (B).

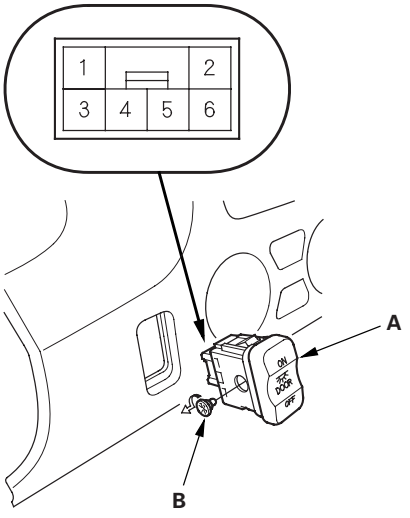
   Glove Box Light: 3.4 W



3. Check for continuity between the No. 1 and No. 2 terminals.
   - With the button (C) released, there should be continuity.
   - With the button (C) pressed, there should be no continuity.
4. If the continuity is not as specified, check the bulb (D). If the bulb is OK, replace the light.

Interior Light Switch Test/ Replacement

1. Remove the instrument panel (see page 20-81).
2. Push out the interior light switch (A) from behind the dashboard lower cover.

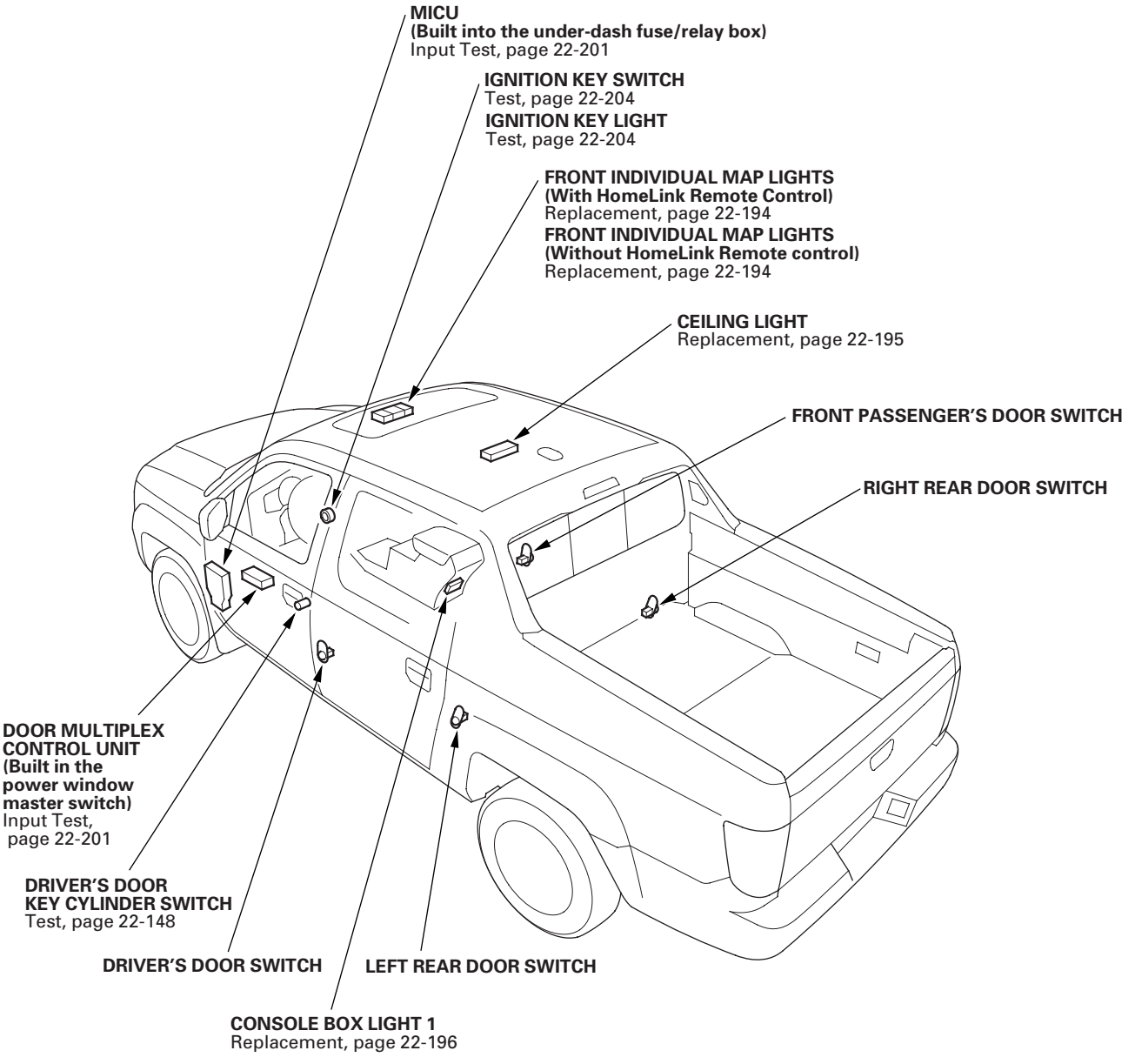


3. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal	1		2	3	4	5	6
OFF	○	○	○				
MIDDLE	○	○	○	○	○	○	○
ON	○	○	○		○	○	○

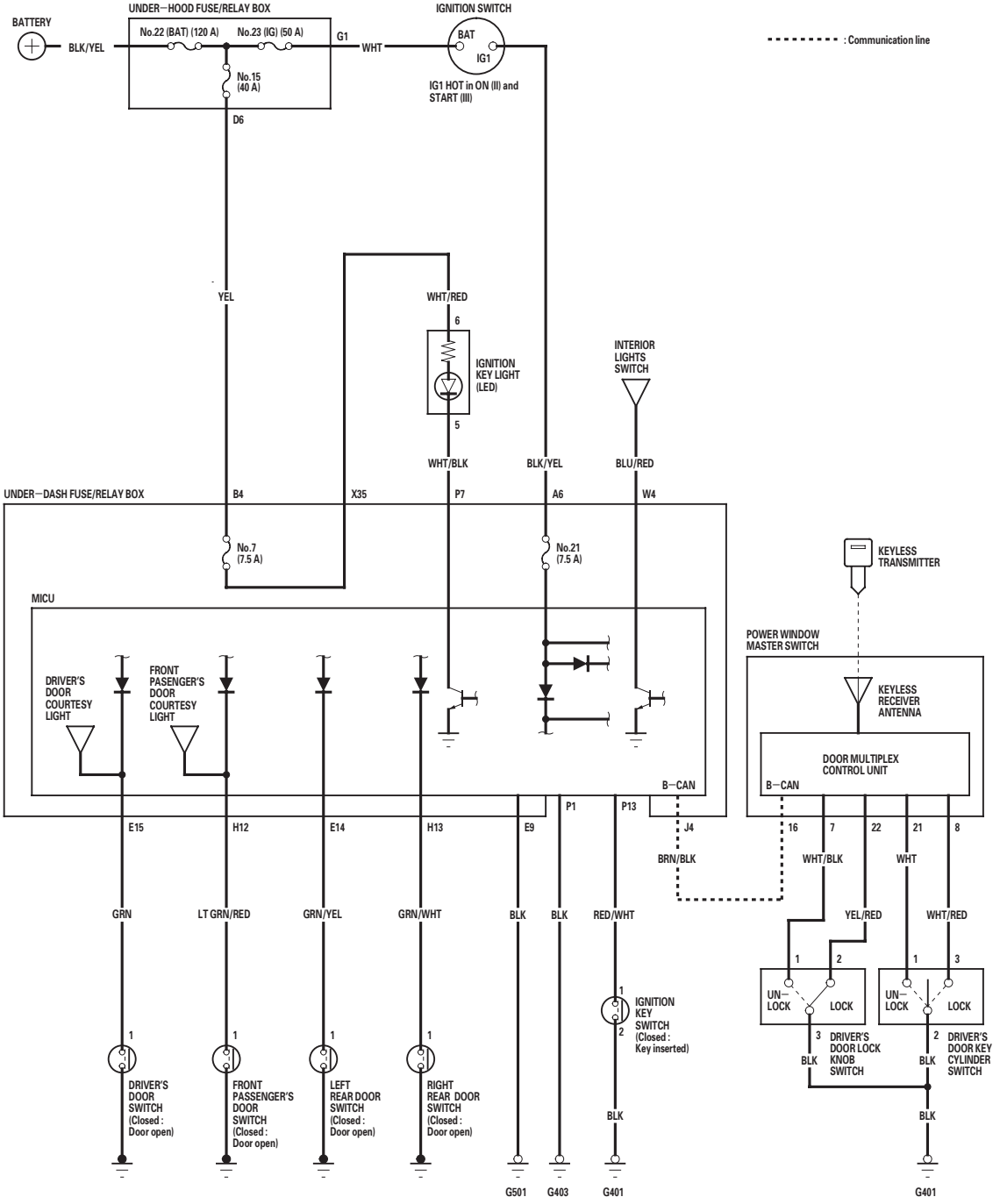
4. If the continuity is not as specified, replace the bulb (B) or the interior light switch.

Component Location Index



Entry Lights Control System

Circuit Diagram



Control Unit Input Test

NOTE: Make sure the ignition switch is OFF before disconnecting the under-dash fuse/relay box connectors.

1. Before testing the entry light control functions, troubleshoot the multiplex integrated control system using B-CAN System Diagnosis Test Mode A (see page 22-99).

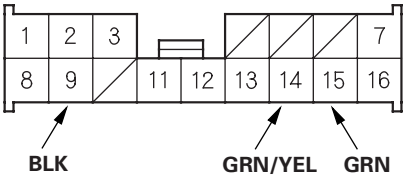
Multiplex Integrated Control Unit

2. Remove the left front door fill trim and left kick panel (see page 20-60).

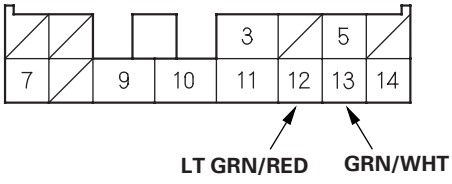
3. Disconnect the under-dash fuse/relay box connectors.

   NOTE: All connector views are wire side of female terminals.

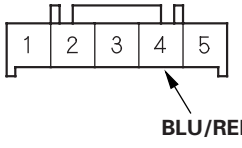
UNDER-DASH FUSE/RELAY BOX CONNECTOR E (16P)



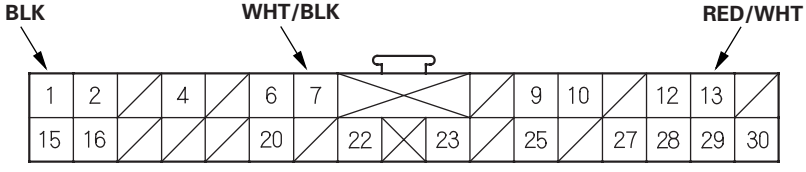
UNDER-DASH FUSE/RELAY BOX CONNECTOR H (14P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR W (5P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR P (30P)



4. Inspect the connector terminals to be sure they are all making good contact.

   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 5.

(cont'd)

Control Unit Input Test (cont'd)

5. With the under-dash fuse/relay box connectors still disconnected, make these input tests at the appropriate connector.

   • If any test indicates a problem, find and correct the cause, the recheck the system.
   • If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
P7	WHT/BLK	Under all conditions	Attach to ground: Ignition key light should come on.	• Blown No. 7 (7.5 A) fuse in the under-dash fuse/relay box • Faulty ignition key light (LED) • An open in the wire
W4	BLU/RED	Interior light switch in middle (DOOR) position	Attach to ground: Front and rear map light(s) should come on.	• Blown No. 6 (10 A) fuse in the under-dash fuse/relay box • Blown bulb • Faulty map light • An open in the wire

6. Reconnect the connectors to the under-dash fuse/relay box. Turn the ignition switch ON (II), and make these input tests at the appropriate connectors on the under-dash fuse/relay box.

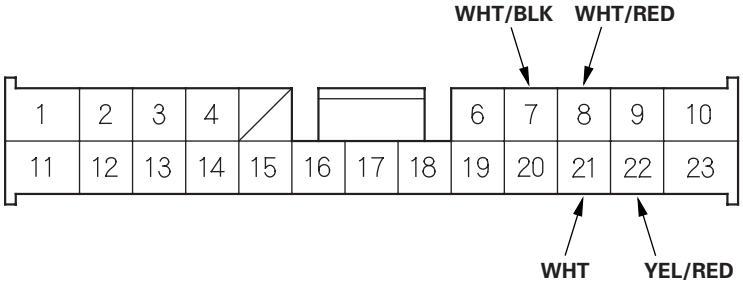
   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, go to step 7.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
P1	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G403) • An open in the wire
E9	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G501) • An open in the wire
E15	GRN	Driver's door open	Check for voltage to ground: There should be less than 1 V.	• Faulty driver's door switch • An open in the wire
		Driver's door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door switch • Short to ground
H12	LT GRN/RED	Front passenger's door open	Check for voltage to ground: There should be less than 1 V.	• Faulty front passenger's door switch • An open in the wire
		Front passenger's door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty front passenger's door switch • Short to ground
E14	GRN/YEL	Left rear door open	Check for voltage to ground: There should be less than 1 V.	• Faulty left rear door switch • An open in the wire
		Left rear door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty left rear door switch • Short to ground
H13	GRN/WHT	Right rear door open	Check for voltage to ground: There should be less than 1 V.	• Faulty right rear door switch • An open in the wire
		Right rear door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty right rear door switch • Short to ground
P13	RED/WHT	Ignition key inserted into the ignition switch	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G401) • Faulty ignition key switch • An open in the wire
		Ignition switch OFF and the ignition key removed from the ignition switch	Check for voltage to ground: There should be 5 V or more.	• Faulty ignition key switch • Short to ground

Door Multiplex Control Unit

7. Turn the ignition switch OFF.
8. Remove the driver's door panel (see page 20-7).
9. Disconnect the 23P connector from the door multiplex control unit.
10. Inspect the connector and socket terminals to be sure they are all making good contact.
    - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
    - If the terminals look OK, go to step 11.

DOOR MULTIPLEX CONTROL UNIT 23P CONNECTOR



Wire side of female terminals

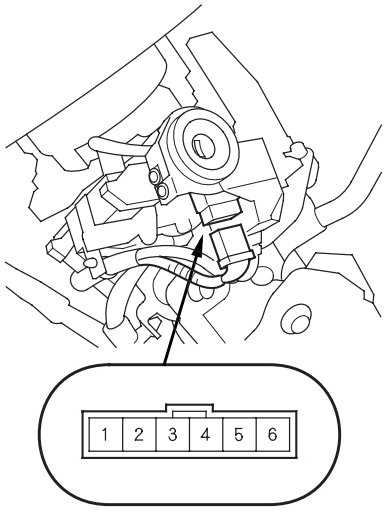
11. Reconnect the connector to the door multiplex control unit. Turn the ignition switch ON (II), and make these input tests at the appropriate connector.
    - If any test indicates a problem, find and correct the cause, then recheck the system.
    - If all the input tests prove OK, the MICU must be faulty; replace the under-dash fuse/relay box.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
7	WHT/BLK	Driver's door lock knob switch in UNLOCK	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G401) • Faulty driver's door lock knob switch • An open in the wire
		Driver's door lock knob switch in LOCK	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door lock knob switch • Short to ground
22	YEL/RED	Driver's door lock knob switch in LOCK	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G401) • Faulty driver's door lock knob switch • An open in the wire
		Driver's door lock knob switch in UNLOCK	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door lock knob switch • Short to ground
8	WHT/RED	Driver's door key cylinder switch in LOCK	Check for voltage to ground: There should be less than 1 V.	• Faulty driver's door key cylinder switch • Poor ground (G401) • An open in the wire
		Driver's door key cylinder switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Short to ground • Faulty driver's door key cylinder switch
		Driver's door key cylinder switch in UNLOCK	Check for voltage to ground: There should be 5 V or more.	
21	WHT	Driver's door key cylinder switch in UNLOCK	Check for voltage to ground: There should be less than 1 V.	• Faulty driver's door key cylinder switch • Poor ground (G401) • An open in the wire
		Driver's door key cylinder switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Short to ground • Faulty driver's door key cylinder switch
		Driver's door key cylinder switch in LOCK	Check for voltage to ground: There should be 5 V or more.	

Ignition Key Switch Test

1. Remove the steering column upper and lower covers (see page 17-24).

2. Disconnect the 6P connector.



3. Check for continuity between the No. 1 and No. 2 terminals.

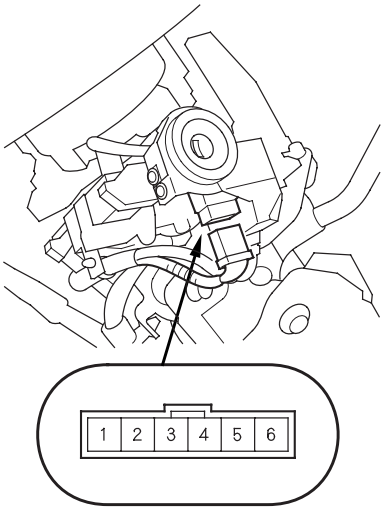
   - There should be continuity with the key in the ignition switch.
   - There should be no continuity with the key removed.

4. If the continuity is not as specified, replace the ignition switch.

Ignition Key Light Test

1. Remove the steering column upper and lower covers (see page 17-24).

2. Disconnect the 6P connector.

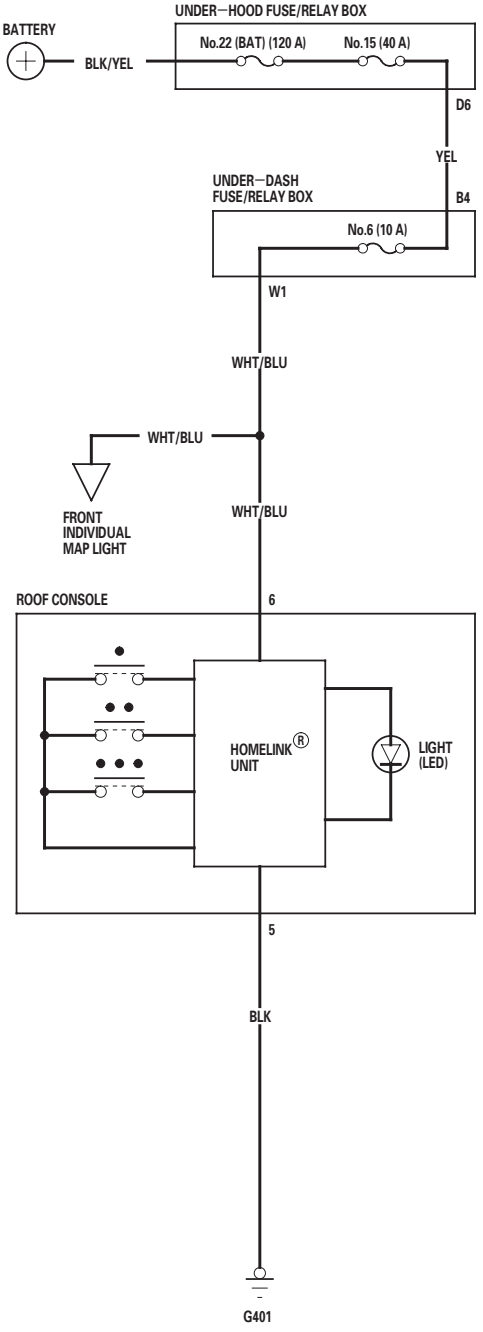


3. The LED should come on when power is connected to the No. 6 terminal and ground is connected to No. 5 terminal.

4. If the LED does not come on, replace the ignition switch.

HomeLink Remote Control System

Circuit Diagram



Test

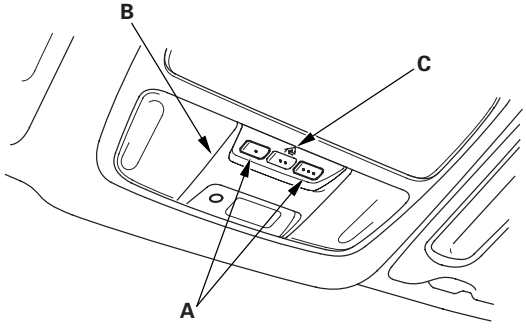
If the HomeLink will not open the customer's garage, do the following procedures.

1. Press any of the buttons on the HomeLink unit.
   - If the red indicator come on, go to step 3.
   - If the red indicator does not come on, go to step 2.

2. Measure voltage between the No. 6 (+) and No. 5 (–) terminals of the roof console 10P connector. There should be battery voltage.
   - If the voltage is not as specified, check for these problems:
     – A blown No. 6 (10 A) fuse in the under-dash fuse/relay box.
     – A faulty under-dash fuse/relay box.
     – An open in the WHT/BLU wire between the under-dash fuse/relay box and roof console.
     – An open in the BLK wire between the roof console and G401.
   - If the voltage is specified, go to step 3.

3. Make sure the Genie remote transmitter (test remote) has fresh batteries.

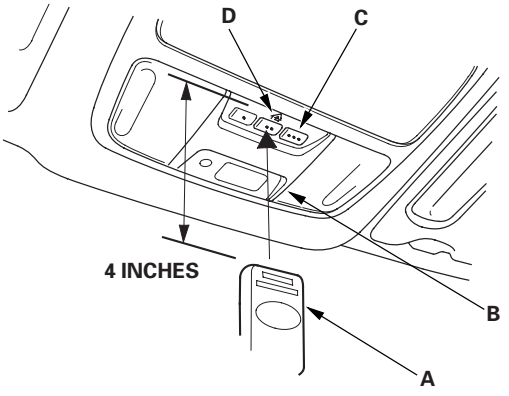
4. Clear any previously learned codes by pressing and holding the two outside buttons (A) on the HomeLink unit (B) for about 20 seconds. When the red indicator (C) on the unit starts blinking, release the buttons.



(cont'd)

Test (cont'd)

5. Point the test remote transmitter (A) straight up exactly 101.6 mm (4.0 in.) away from the HomeLink unit (B).

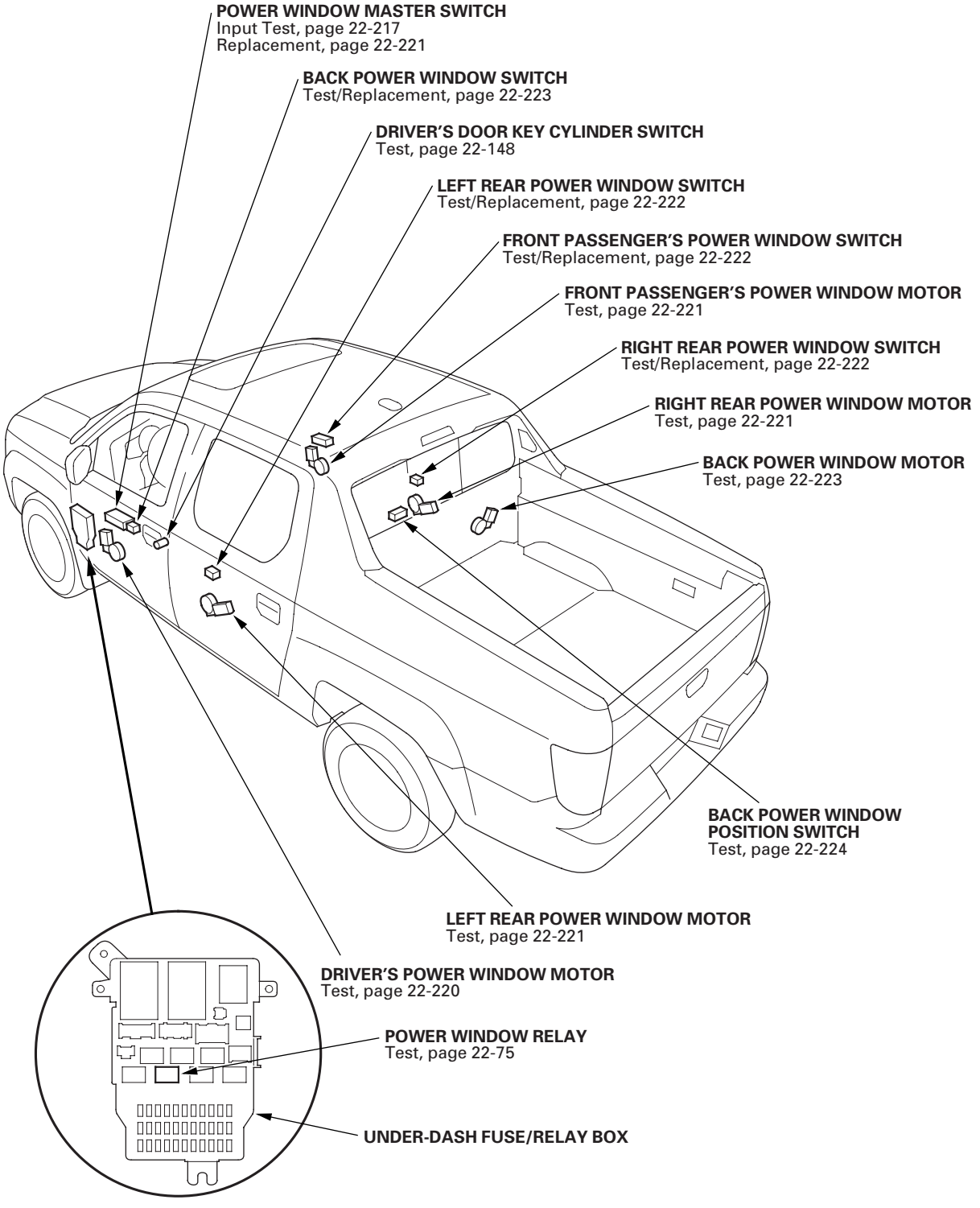


6. Press and hold the button on the test remote transmitter and one of the buttons (C) on the HomeLink unit at the same time.

7. Wait about 20 seconds while watching the red indicator (D) on the HomeLink unit.

   - If the red indicator starts out blinking slowly and then blinks faster, the unit is OK. Release the buttons, then clear the learned code (see step 1). Explain to the customer that garage door remote transmitters come in two types: fixed code and rolling code. Each type has its own programming method, and each method is covered in the owner's manual. If the customer has concerns about the HomeLink unit, have the customer contact the HomeLink the assistance desk at 1-800-355-3515. On the internet, go to www.homelink.com.
   - If the red indicator does not blink, replace the HomeLink unit (see page 22-195).

Component Location Index

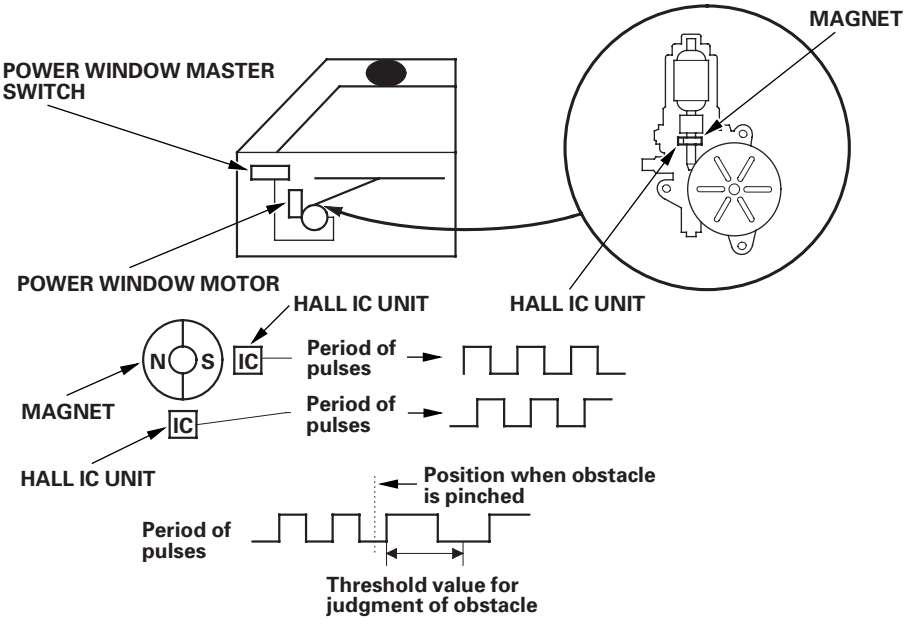


System Description

Auto Reverse Operation

The system is composed of the power window master switch and the driver's power window motor.

The driver's power window motor incorporates a pulser which generates pulses during the motor's operation and sends the pulses to the driver's power window control unit. As soon as the power window control unit detects no pulses from the pulser, the driver's power window control unit makes the power window motor stop and reverse. If the window is more than halfway closed, it will reverse to half open position. If the window is less than halfway closed, it will stop and reverse about 2 inches. This is to prevent pinching an obstacle during auto-up operation. The auto reverse operation is not active when the switch is held in the up position.



Key Cylinder Operation
With the key inserted in the driver's door key cylinder, turn the key in either direction and release it, turn it a second time and hold it within 10 seconds to operate the windows (clockwise to open, counterclockwise to close). The windows stop moving when the key is released. The auto reverse operation is not active when closing the windows with the key cylinder. The key cylinder switch operation is not active until the key is removed from the ignition and the driver's door is opened. Opening the driver's cancels the key off timer.

Keyless Operation
By pressing the UNLOCK button of the keyless transmitter a second time and hold within 10 seconds, the windows open. The windows stop moving when the UNLOCK button is released. The windows do not close with the LOCK button. The keyless window operation with the remotes will not work until the key has been removed from the ignition, and the driver's door has been opened. This cancels the key off timer.

Resetting the Power Window Control Unit

Resetting the driver's power window is required when any of the following have occurred:

- Power window regulator replacement or repair
- Power window motor replacement or repair
- Window run channel replacement or repair
- Driver's door glass replacement or repair
- Power is removed from a power window control unit while the power window timer is ON.

Using the HDS

1. Connect the HDS to the DLC.
2. Turn the ignition switch ON (II), then enter the mileage at the prompts.
3. Select ''BODY ELECTRICAL'' from the ''System Selection menu.''
4. From the ''BODY ELECTRICAL'' System Select menu, select ''Power Windows''.
5. From the ''Mode menu'', select ''Adjustments''.
6. From the ''Adjustment'' menu, select ''Window P Reset'' for driver's side window.
7. Follow the prompts on the screen.
8. Confirm that the power window control unit is reset by using the driver's power window AUTO UP and AUTO DOWN function.

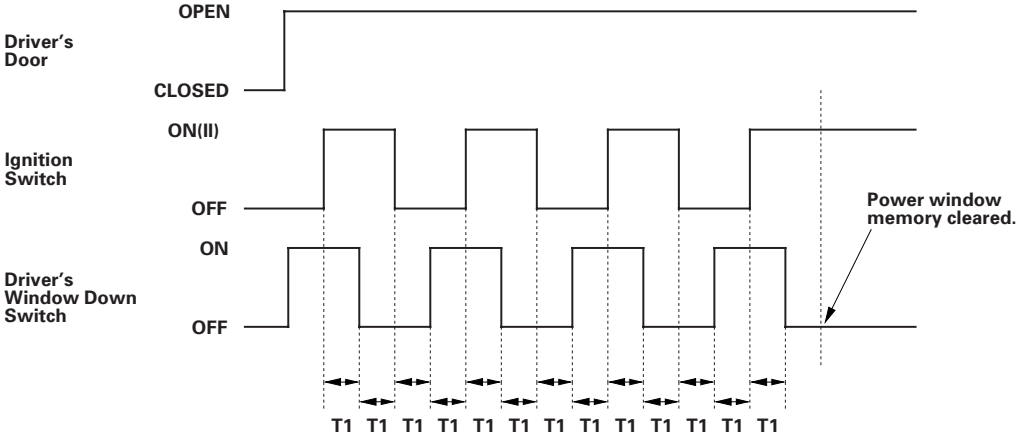
(cont'd)

Resetting the Power Window Control Unit (cont'd)

Without the HDS

1. Turn the ignition switch ON (II).
2. Move the driver's power window all the way down by using the driver's power window DOWN switch.
3. Open the driver's door.

   NOTE: Steps 4—7 must be done within 5 seconds of each other.

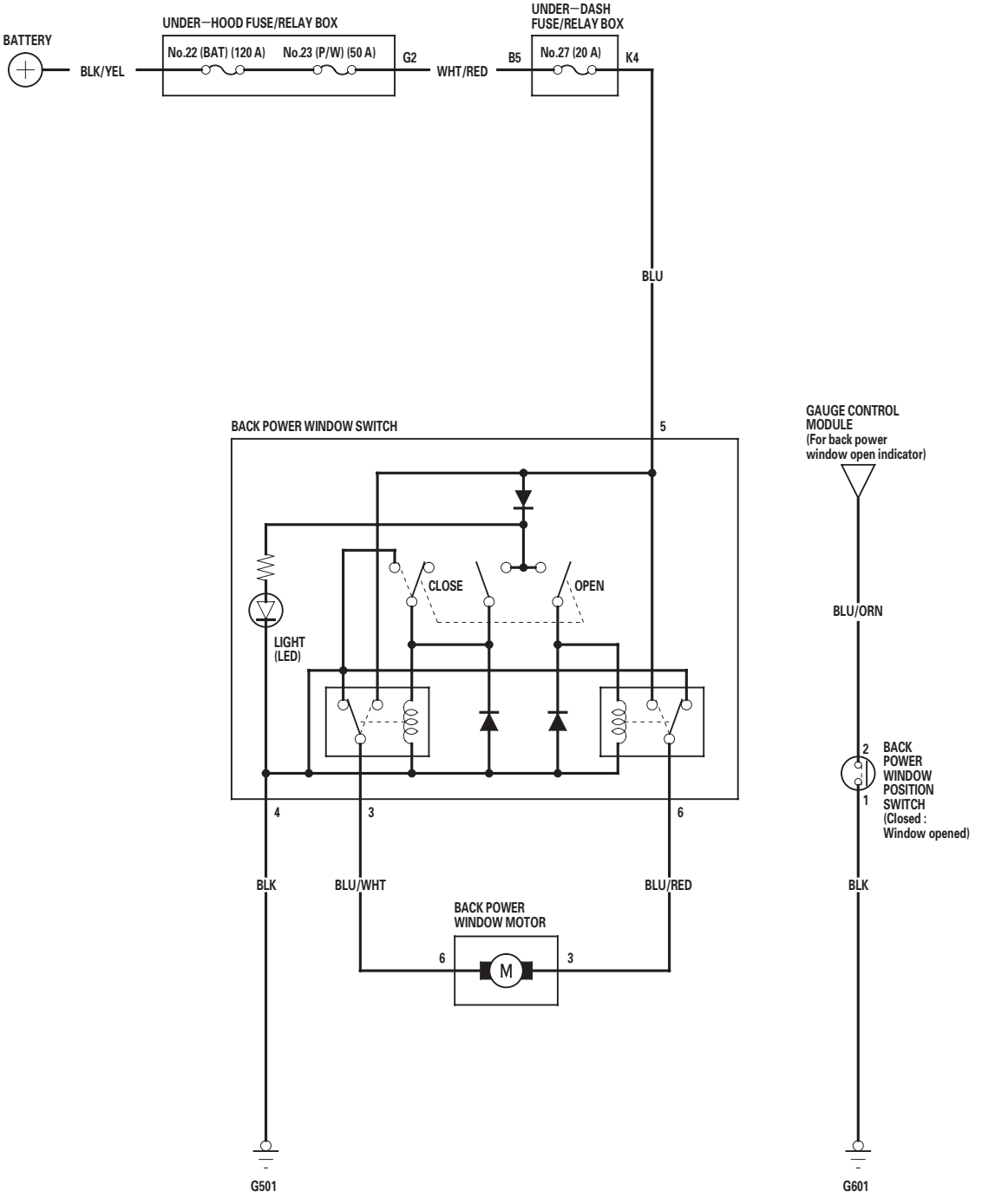


4. Turn the ignition switch OFF.
5. Push and hold the driver's power window DOWN switch.
6. Turn the ignition switch ON (II).
7. Release the driver's power window DOWN switch.
8. Repeat step 4—7 three more times.
9. Wait 1 second.
10. Confirm that AUTO UP and AUTO DOWN do not work. If AUTO UP and DOWN work, go back to step 1.
11. Move the driver's power window all the way down by using the driver's power window DOWN switch.
12. Pull up and hold the driver's power window UP switch until the window reaches the fully closed position, then continue to hold the switch for 1 second.
13. Confirm that the power window control unit is reset by using the driver's power window AUTO UP and AUTO DOWN function.

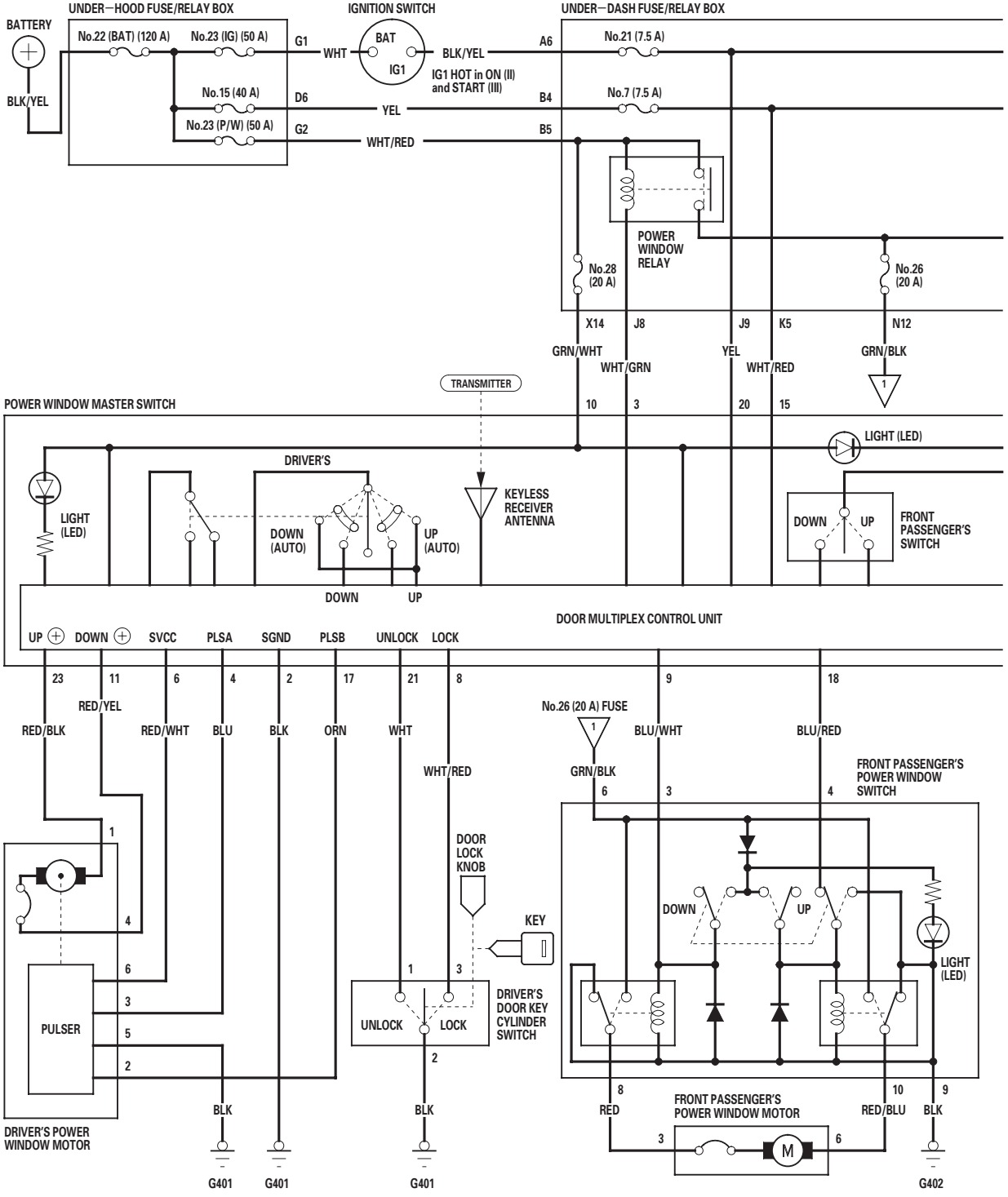
    If the window still does not work in AUTO, repeat the procedure several times, paying close attention to the 5 second time limit between steps. If it still does not work, go to B-CAN System Diagnosis Test Mode A (see page 22-99).

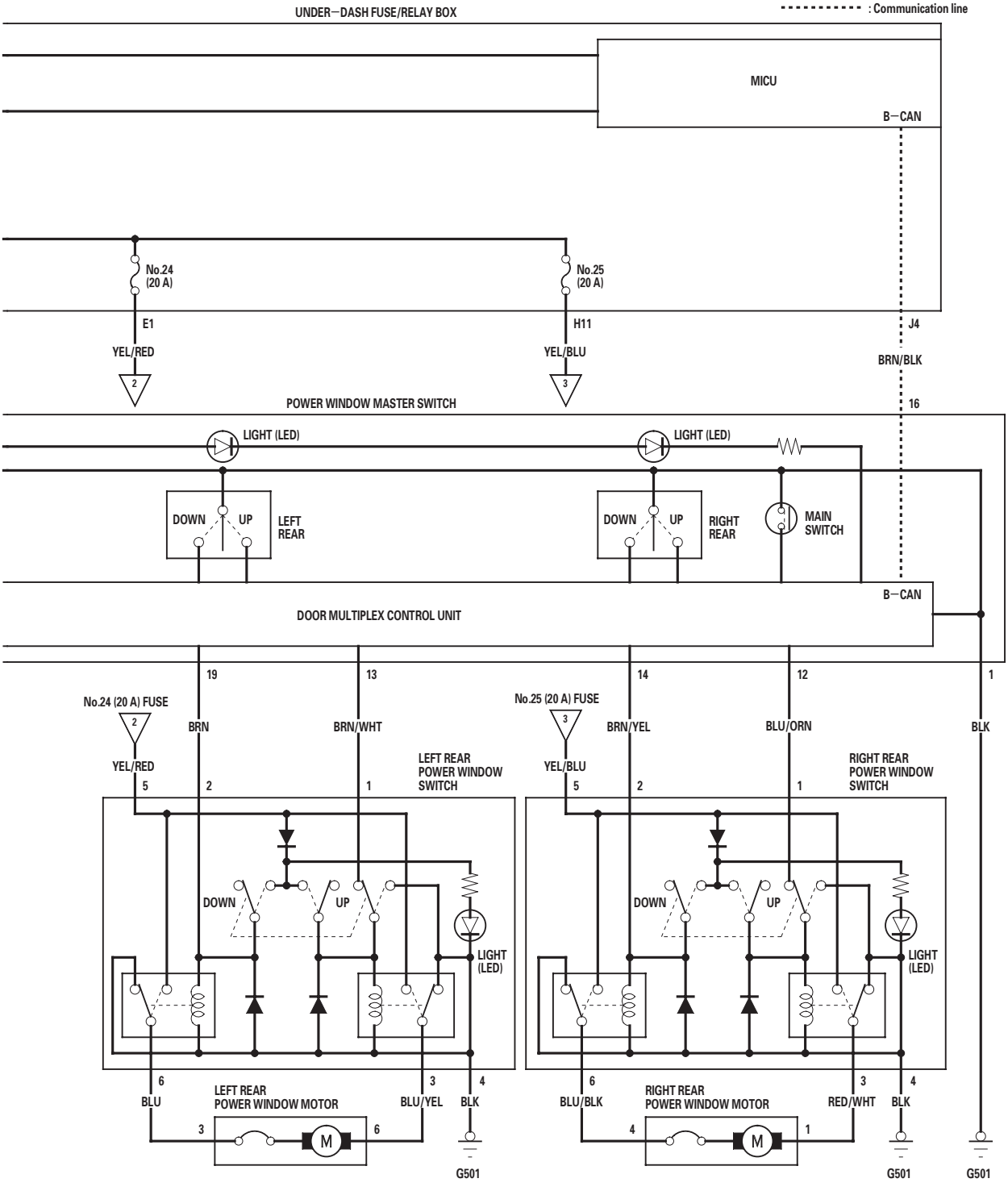
Circuit Diagram

Back Power Window



Circuit Diagram (cont'd)




: Communication line
UNDER—DASH FUSE/RELAY BOX
MICU
B—CAN
No.24 (20 A)
No.25 (20 A)
E1
H11
J4
YEL/RED
YEL/BLU
BRN/BLK
2
3
16
POWER WINDOW MASTER SWITCH
LIGHT (LED)
LIGHT (LED)
DOWN
UP
LEFT REAR
DOWN
UP
RIGHT REAR
MAIN SWITCH
B—CAN
DOOR MULTIPLEX CONTROL UNIT
19
13
14
12
1
No.24 (20 A) FUSE
No.25 (20 A) FUSE
BRN
BRN/WHT
BRN/YEL
BLU/ORN
BLK
YEL/RED
YEL/BLU
5
2
1
LEFT REAR POWER WINDOW SWITCH
RIGHT REAR POWER WINDOW SWITCH
DOWN
UP
LIGHT (LED)
6
3
4
BLU
BLU/YEL
BLK
BLU/BLK
RED/WHT
LEFT REAR POWER WINDOW MOTOR
RIGHT REAR POWER WINDOW MOTOR
M
G501

DTC Troubleshooting

DTC B1125: Driver's Power Window Motor A Pulse Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Turn the ignition switch ON (II).
2. Open and close the driver's power window by using the driver's switch manually.
3. Select the POWER WINDOWS from the BODY ELECTRICAL SYSTEM SELECT menu and enter DATA LIST.
4. While the window is moving, check the DETECT/ NONE information of the DRIVER'S POWER WINDOW MOTOR PULSE A in the DATA LIST.

   Does the information indicator display DETECT?

   YES—Faulty door multiplex control unit, replace the power window master switch. ■

   NO—Go to step 5.
5. Do the driver's power window motor pulser test (see page 22-220).

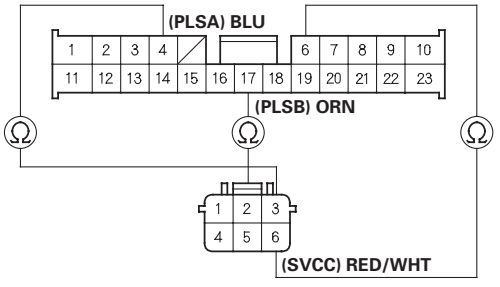
   Is it OK?

   YES—Go to step 6.

   NO—Replace the driver's power window motor. ■
6. Disconnect the 23P connector from the power window master switch, and the 6P connector from the driver's power window motor.
7. Check for continuity between the power window master switch 23P connector and driver's power window motor 6P connector as follows.

POWER WINDOW MASTER SWITCH	DRIVER'S POWER WINDOW MOTOR
No. 4	No. 3
No. 6	No. 6
No. 17	No. 2

POWER WINDOW MASTER SWITCH 23P CONNECTOR
Wire side of female terminals



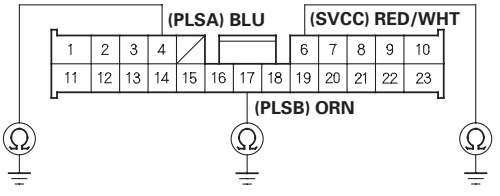
DRIVER'S POWER WINDOW MOTOR 6P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 8.

NO—Repair an open in the wire. ■
8. Check for continuity between the power window master switch 23P connector No. 4, No. 6, and No. 17 terminals and body ground individually.

POWER WINDOW MASTER SWITCH 23P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire. ■

NO—Substitute a known-good power window master switch, and recheck. If the DTC is gone, the original door multiplex control unit is faulty; replace the power window master switch. If the DTC is still indicated, replace the driver's power window motor. ■

DTC B1126: Driver's Power Window Motor B Pulse Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Turn the ignition switch ON (II).
2. Open and close the power window by using the driver's switch manually.
3. Select the POWER WINDOWS from the BODY ELECTRICAL SYSTEM SELECT menu and enter DATA LIST.
4. While the window is moving, check the DETECT/ NONE information of the DRIVER'S POWER WINDOW MOTOR PULSE B in the DATA LIST.

   Does the information indicator display DETECT?

   YES—The door multiplex control unit is faulty; replace the power window master switch. ■

   NO—Go to step 5.

5. Do the driver's power window motor pulser test (see page 22-220).

   Is it OK?

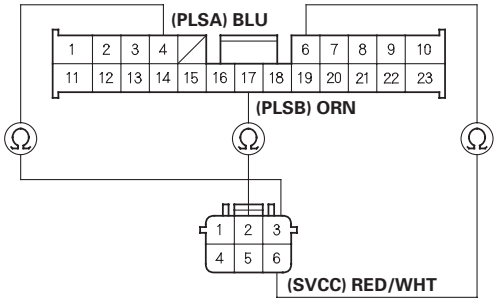
   YES—Go to step 6.

   NO—Replace the driver's power window motor. ■

6. Disconnect the 23P connector from the power window master switch, and the 6P connector from the driver's power window motor.
7. Check for continuity between the power window master switch 23P connector and driver's power window motor 6P connector as follows.

POWER WINDOW MASTER SWITCH	DRIVER'S POWER WINDOW MOTOR
No. 4	No. 3
No. 6	No. 6
No. 17	No. 2

POWER WINDOW MASTER SWITCH 23P CONNECTOR
Wire side of female terminals



DRIVER'S POWER WINDOW MOTOR 6P CONNECTOR
Wire side of female terminals

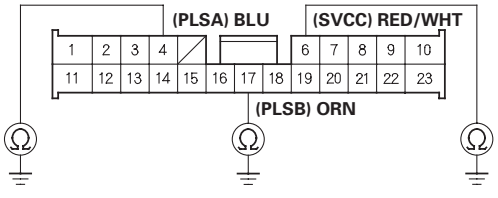
Is there continuity?

YES—Go to step 8.

NO—Repair an open in the wire. ■

8. Check for continuity between the power window master switch 23P connector No. 4, No. 6, and No. 17 terminals and body ground individually.

POWER WINDOW MASTER SWITCH 23P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire. ■

NO—Substitute a known-good power window master switch, and recheck. If the DTC is gone, the original door multiplex control unit is faulty; replace the power window master switch. If the DTC is still indicated, replace the driver's power window motor. ■

DTC Troubleshooting (cont'd)

DTC B1140: Driver's Power Window Position Detect Circuit Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Open and close the driver's power window by using the driver's power window switch.
4. Check for DTCs with the HDS.

   Is DTC B1125 or B1126 indicated?

   YES—Troubleshoot the DTC B1125 (see page 22-214) or B1126 (see page 22-215). ■

   NO—Go to step 5.
5. Reset the power window control unit (see page 22-209).
6. Check for DTCs with the HDS.

   Is DTC B1140 indicated?

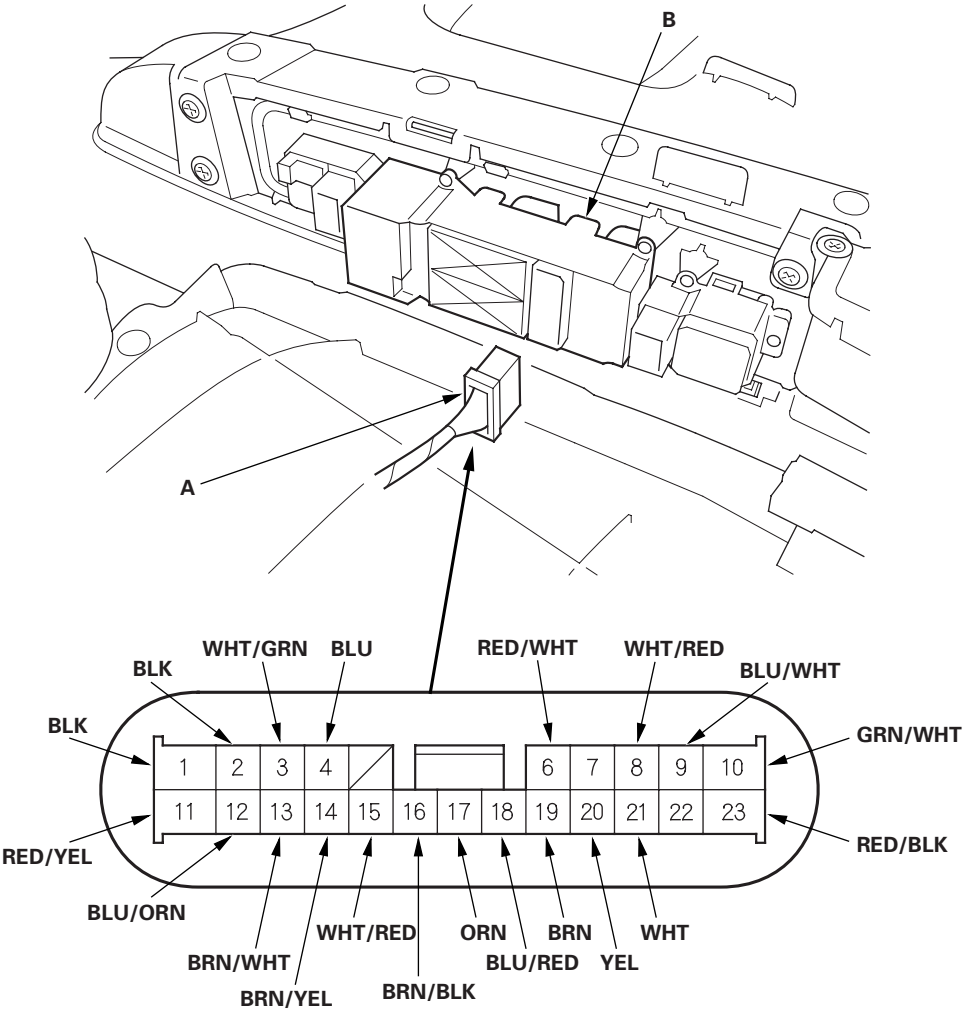
   YES—Faulty door multiplex control unit; replace the power window master switch. ■

   NO—Intermittent failure. The system is OK at this time. Check for loose or poor connections. ■

Master Switch Input Test

NOTE: Make sure the ignition switch is OFF before disconnecting the connectors.

1. Before testing the power windows, troubleshoot the multiplex integrated control system using B-CAN System Diagnosis Test Mode A (see page 22-99).
2. Turn the ignition switch OFF.
3. Remove the power window master switch (see page 22-221).
4. Disconnect the 23P connector (A) from the power window master switch (B).



Wire side of female terminals

(cont'd)

Master Switch Input Test (cont'd)

5. Inspect the connector and socket terminals to be sure they are all making good contact.

   • If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   • If the terminals look OK, go to step 6.

6. With the connector still disconnected, make these input tests at the connector.

   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, go to step 7.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1 . 2	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G401, G501) • An open in the wire
10	GRN/WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 28 (20 A) fuse in the under-dash fuse/relay box • Faulty under-dash fuse/relay box • An open in the wire
15	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 7 (7.5 A) fuse in the under-dash fuse/relay box • Faulty under-dash fuse/relay box • An open in the wire
20	YEL	Ignition switch ON (II)	Check the voltage to ground: There should be battery voltage.	• Blown No. 21 (7.5 A) fuse in the under-dash fuse/relay box • Faulty under-dash fuse/relay box • An open in the wire

7. Reconnect the connector to the power window master switch, turn the ignition switch ON (II) and make these input tests at the connector.

   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, the control unit must be faulty; replace the power window master switch, and go to step 8.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
6	RED/WHT	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Faulty power window master switch • Short to ground in the wire
4	BLU	Ignition switch ON (II), and the driver's power window switch moving up or down	Check for voltage between the No. 4 and No. 1 terminals: There should be 0 V to about 5 V—0 V to about 5 V repeatedly (a digital voltmeter reads about 2.5 V while the window moves).	• Blown No. 7 (7.5 A) fuse in the under-dash fuse/relay box • Blown No. 28 (20 A) fuse in the under-dash fuse/relay box • An open in the wire (RED/WHT, BLU, ORN) • Short to ground in the wire • Faulty driver's power window motor • Faulty power window master switch
17	ORN	Ignition switch ON (II), and the driver's power window switch moving up or down	Check for voltage between the No. 17 and No. 1 terminals: There should be 0 V to about 5 V—0 V to about 5 V repeatedly (a digital voltmeter reads about 2.5 V while the window moves).	

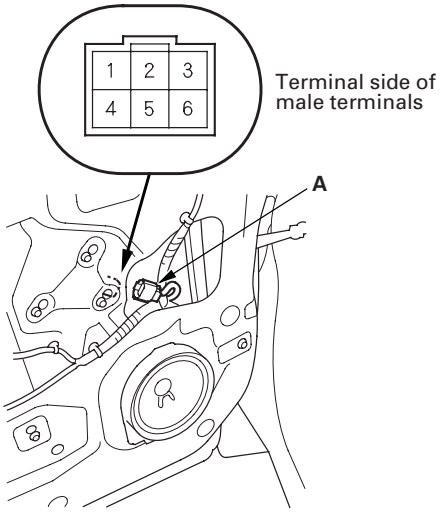
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
11	RED/YEL	Connect the No. 10 and No. 11 terminals with a jumper wire, and connect the No. 23 terminal to body ground.	Check for driver's window operation: The window should go down.	• Blown No. 28 (20 A) fuse in the under-dash fuse/relay box • Faulty driver's power window motor • An open in the wire
23	RED/BLK	Connect the No. 10 and No. 23 terminals with a jumper wire, and connect the No. 11 terminal to body ground.	Check for driver's window operation: The window should go up.	
18	BLU/RED	Connect the No. 10 and No. 18 terminals with a jumper wire.	Check for front passenger's window operation: The window should go up.	• Blown No. 26 (20 A) fuse in the under-dash fuse/relay box • Faulty front passenger's power window motor • Faulty front passenger's power window switch • Poor ground (G402) • An open in the wire
9	BLU/WHT	Connect the No. 10 and No. 9 terminals with a jumper wire.	Check for front passenger's window operation: The window should go down.	
13	BRN/WHT	Connect the No. 10 and No. 13 terminals with a jumper wire.	Check for left rear window operation: The window should go up.	• Blown No. 24 (20 A) fuse in the under-dash fuse/relay box • Faulty left rear power window motor • Faulty left rear power window switch • Poor ground (G501) • An open in the wire
19	BRN	Connect the No. 10 and No. 19 terminals with a jumper wire.	Check for left rear window operation: The window should go down.	
12	BLU/ORN	Connect the No. 10 and No. 12 terminals with a jumper wire.	Check for right rear window operation: The window should go up.	• Blown No. 25 (20 A) fuse in the under-dash fuse/relay box • Faulty right rear power window motor • Faulty right rear power window switch • Poor ground (G501) • An open in the wire
14	BRN/YEL	Connect the No. 10 and No. 14 terminals with a jumper wire.	Check for right rear window operation: The window should go down.	
3	WHT/GRN	Ignition switch ON (II)	Check for voltage to ground: There should be less than 1 V.	• Blown No. 23 (P/W) (50 A) fuse in the under-hood fuse/relay box • Faulty power window relay • Faulty under-dash fuse/relay box • An open in the wire
8	WHT/RED	Driver's door key cylinder switch in LOCK	Check for voltage to ground: There should be less than 1 V.	• Faulty driver's door key cylinder switch • Poor ground (G401) • An open in the wire
		Driver's door key cylinder switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Short to ground • Faulty driver's door key cylinder switch
		Driver's door key cylinder switch in UNLOCK	Check for voltage to ground: There should be 5 V or more.	
21	WHT	Driver's door key cylinder switch in UNLOCK	Check for voltage to ground: There should be less than 1 V.	• Faulty driver's door key cylinder switch • Poor ground (G401) • An open in the wire
		Driver's door key cylinder switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Short to ground • Faulty driver's door key cylinder switch
		Driver's door key cylinder switch in LOCK	Check for voltage to ground: There should be 5 V or more.	
16	BRN/BLK	Under all conditions	Check for continuity between the No. 16 terminal and under-dash fuse/relay box connector J terminal No. 4: There should be continuity.	An open in the wire

8. Reset the power window control unit (see page 22-209).

Driver's Power Window Motor Test

Motor Test

1. Remove the door panel (see page 20-7).
2. Disconnect the 6P connector (A) from the power window motor.



3. Test the motor in each direction by connecting battery power and ground according to the table. When the motor stops running, disconnect one lead immediately.

Terminal / Direction	1	4
UP	⊕	⊖
DOWN	⊖	⊕

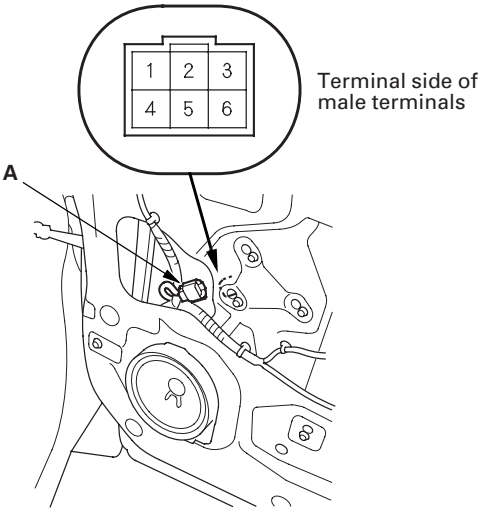
4. If the motor does not run or fails to run smoothly, replace it.

Pulser Test

5. Reconnect the 6P connector to the power window motor.
6. Check for voltage between the terminals.
   - There should be battery voltage between the No. 6 (+) and No. 5 (−) terminals when the ignition switch is ON (II).
   - Connect an analog voltmeter between the No. 3 (+) and No. 5 (−) terminals, and run the window motor down or up. The voltmeter needle should move back and forth alternately (a digital voltmeter should show the average voltage between 0—5 V).
   - Connect an analog voltmeter between the No. 2 (+) and No. 5 (−) terminals, and run the window motor at down or up. The voltmeter needle should move back and forth alternately (a digital voltmeter should show the average voltage between 0—5 V).
7. If the voltage is not as specified, do the power window master switch input test (terminals No. 4, No. 6 and No. 17) (see page 22-217).
8. If the switch test is OK, replace the power window motor.
9. Reset the power window control unit (see page 22-209).

Passenger's Power Window Motor Test

1. Remove the door panel (see page 20-7).
2. Disconnect the 6P connector (A) from the power window motor.



3. Test the motor by connecting battery power and ground according to the table. When the motor stops running, disconnect one lead immediately.

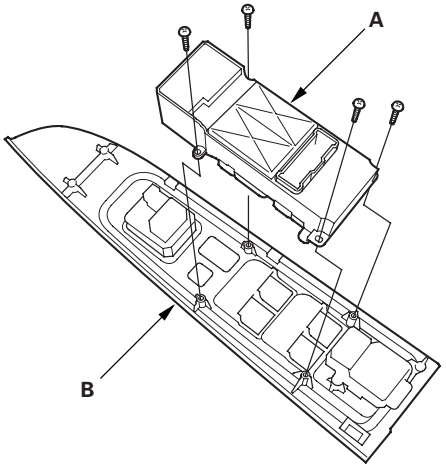
Terminal / Direction	3 4*	6 1*
UP	⊕	⊖
DOWN	⊖	⊕

***: Right rear power window motor**

4. If the motor does not run or fails to run smoothly, replace it.

Master Switch Replacement

1. Remove the driver's door panel (see page 20-7).
2. Remove the four mounting screws, then remove the master switch (A) from the switch panel (B).

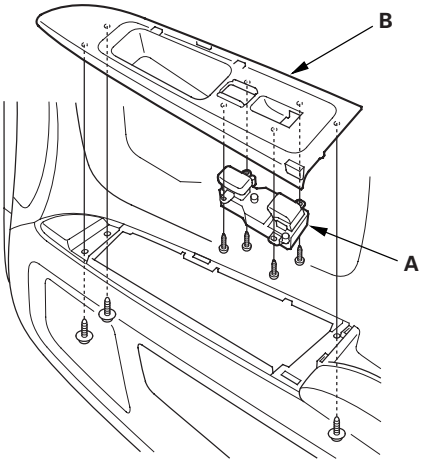


3. Install in the reverse order of removal.
4. Reset the power window control unit (see page 22-209).

Passenger's Power Window Switch Test/Replacement

Front Passenger's

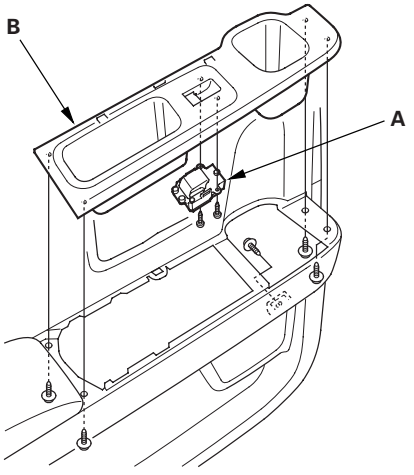
1. Remove the front passenger's door panel (see page 20-7).
2. Remove the four mounting screws, then remove the power window switch (A) from the switch panel (B).



3. Swap the power window switch with another known-good switch and test. If the original power window switch is faulty; replace it.
4. Install in the reverse order of removal.

Rear

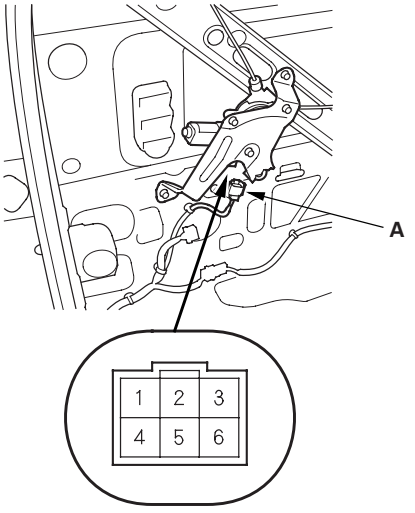
1. Remove the rear door panel (see page 20-14).
2. Remove the two mounting screws, then remove the power window switch (A) from the switch panel (B).



3. Swap the rear power window switch with another known-good switch and test. If the original power window switch is faulty; replace it.
4. Install in the reverse order of removal.

Back Power Window Motor Test

1. Remove the rear panel trim (see page 20-69).
2. Disconnect the 6P connector (A) from the back window motor.



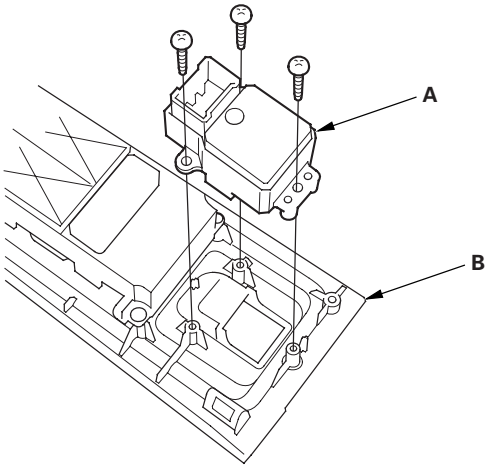
3. Test the motor by connecting battery power and ground according to the table. When the motor stops running, disconnect one lead immediately.

Terminal / Direction	3	6
OPEN	⊕	⊖
CLOSE	⊖	⊕

4. If the motor does not run or fails to run smoothly, replace it.

Back Power Window Switch Test/ Replacement

1. Remove the driver's door panel (see page 20-7).
2. Remove the three mounting screws, then remove the back power window switch (A) from the switch panel (B).

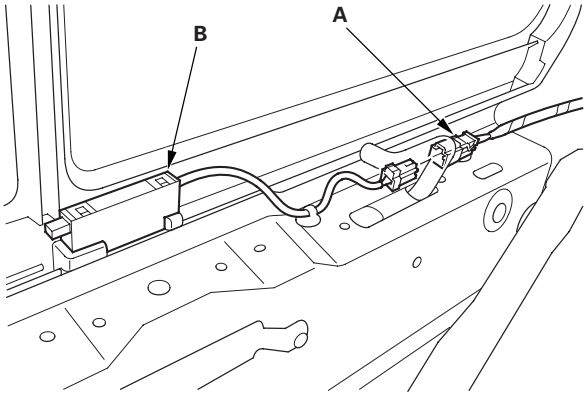


3. Swap the back power window switch with another known-good switch and test. If the original back power window switch is faulty; replace it.
4. Install in the reverse order of removal.
5. Reset the power window control unit (see page 22-209).

Back Power Window Position Switch Test

1. Remove the rear panel trim (see page 20-69).

2. Disconnect the 2P connector (A) from the back power window position switch (B).

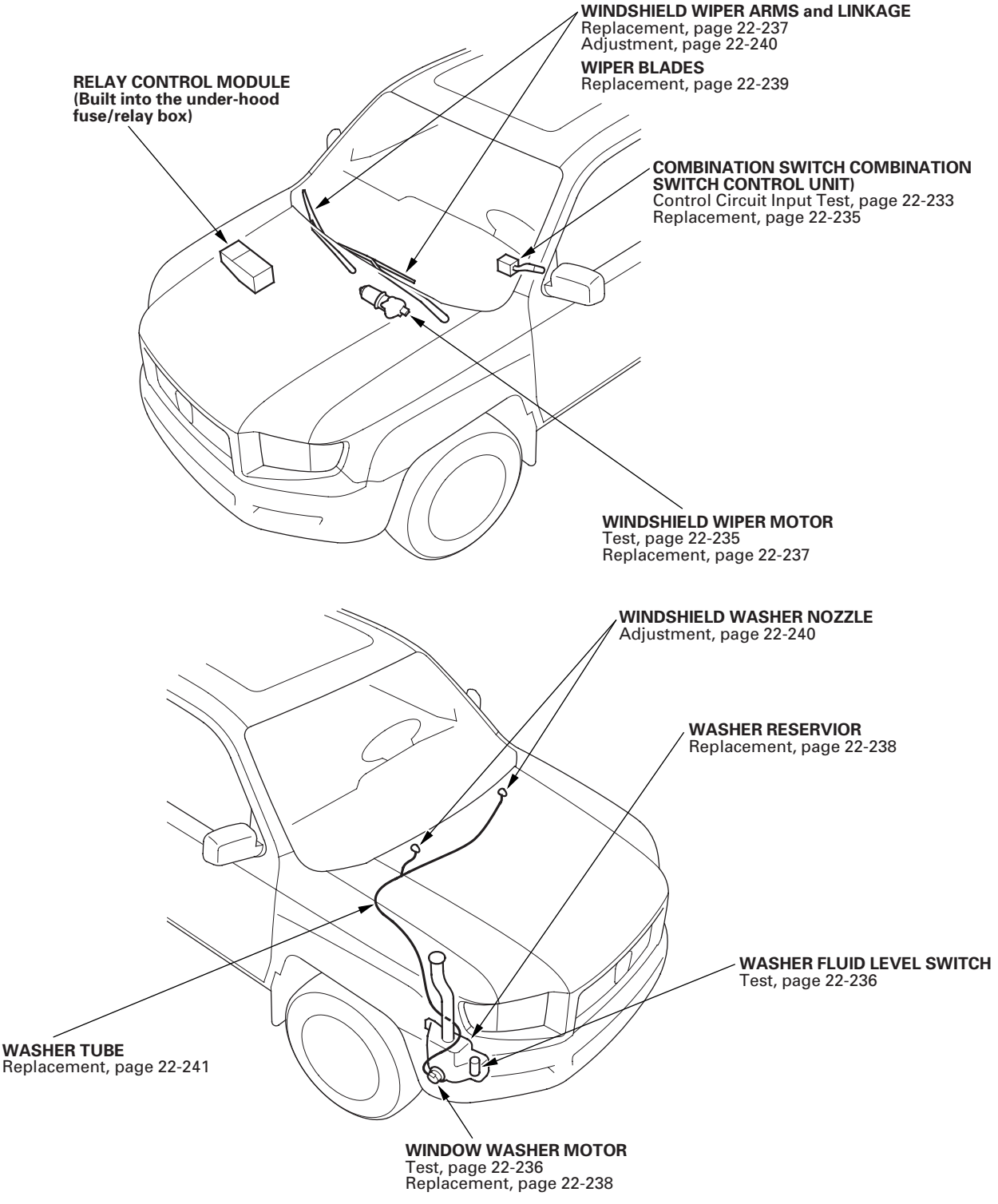


3. Check for continuity between the terminals.

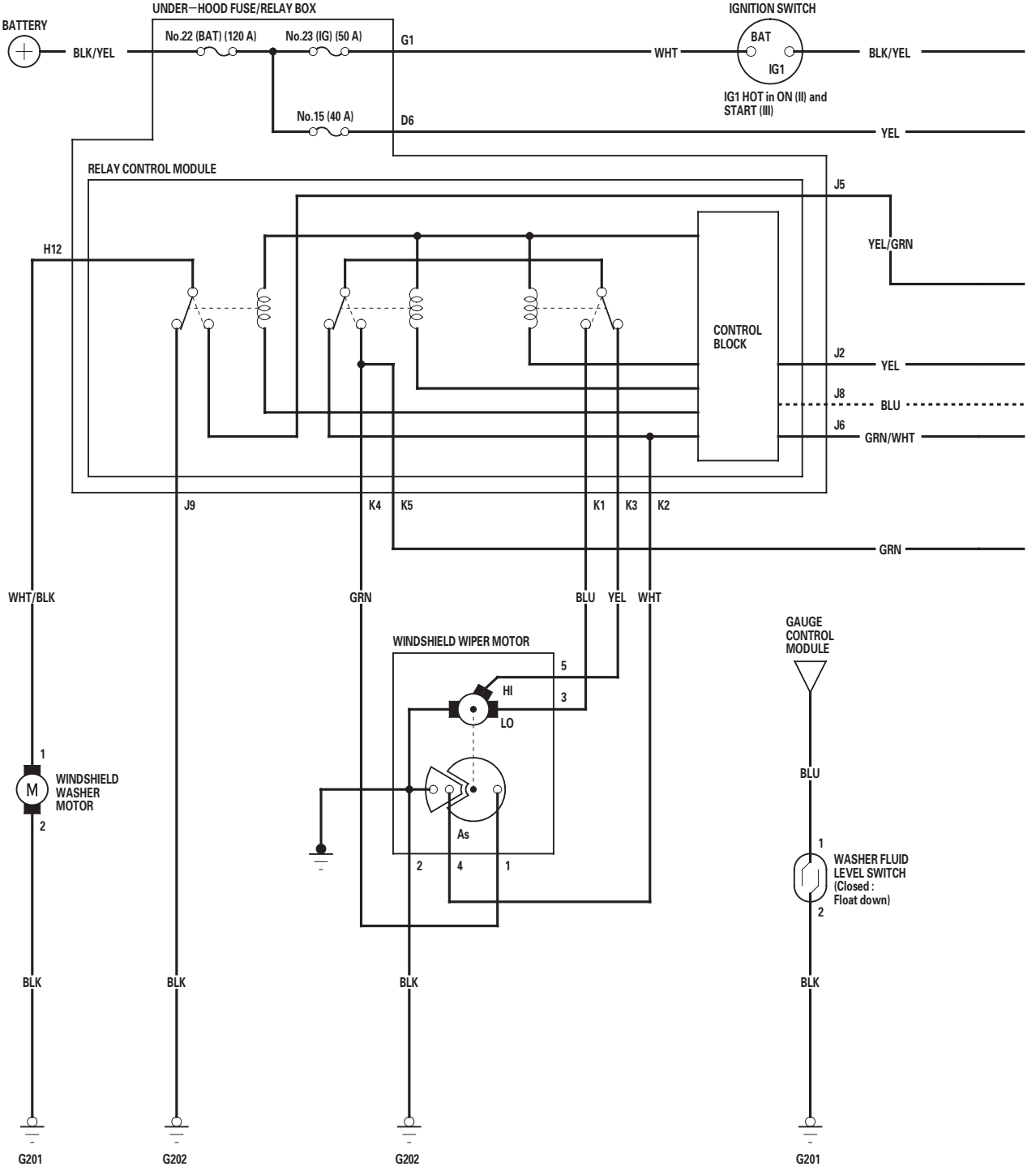
   - There should be continuity between the No. 1 and No. 2 terminals when the back power window middle glass is opened.
   - There should not be continuity between the No. 1 and No. 2 terminals when the back power window is closed.

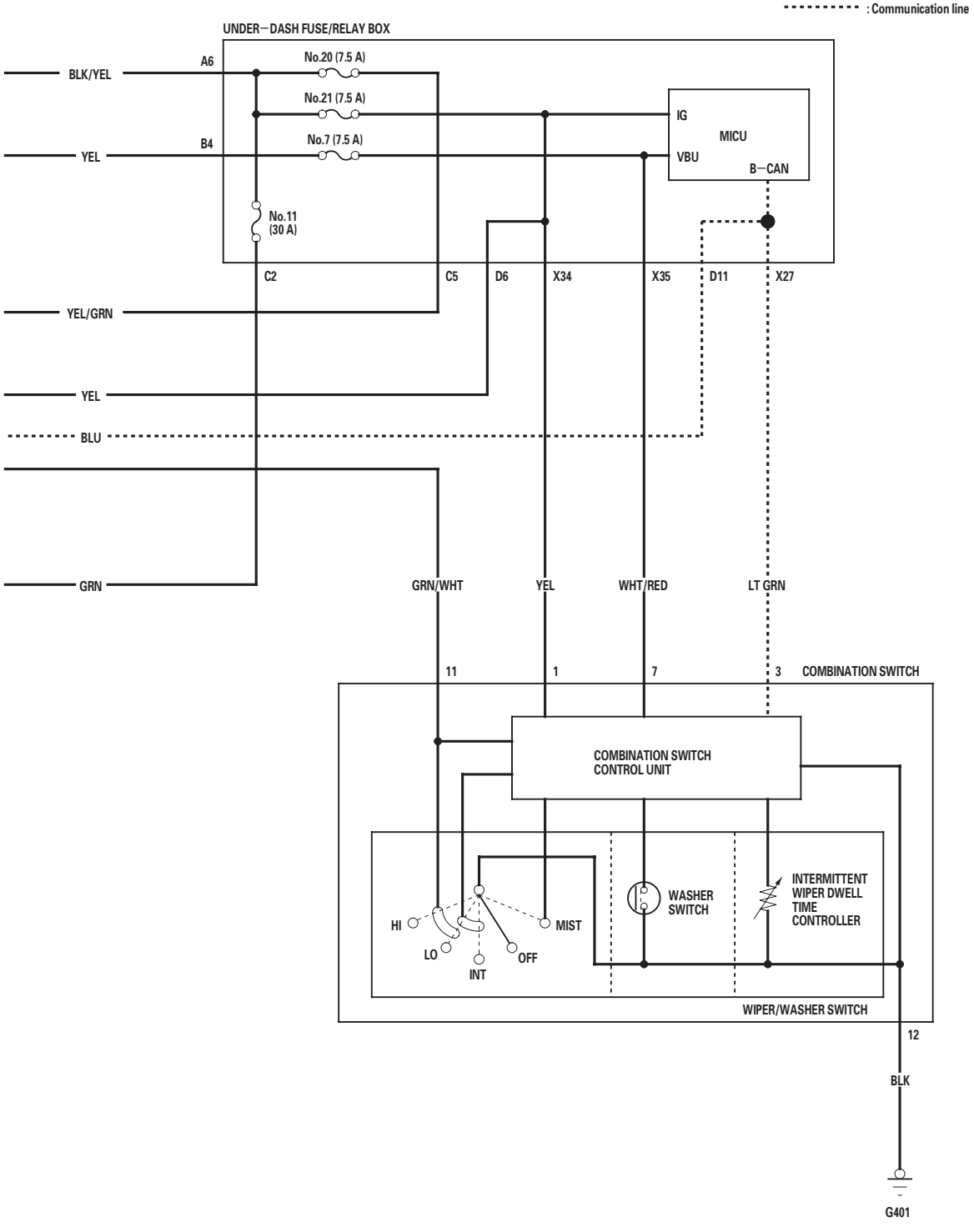
4. If the continuity is not as specified, replace the switch.

Component Location Index



Circuit Diagram




: Communication line
UNDER—DASH FUSE/RELAY BOX
BLK/YEL
A6
No.20 (7.5 A)
No.21 (7.5 A)
YEL
B4
No.7 (7.5 A)
No.11
(30 A)
IG
MICU
VBU
B—CAN
C2
C5
D6
X34
X35
D11
X27
YEL/GRN
YEL
BLU
GRN
GRN/WHT
YEL
WHT/RED
LT GRN
11
1
7
3
COMBINATION SWITCH
COMBINATION SWITCH
CONTROL UNIT
HI
LO
INT
OFF
MIST
WASHER
SWITCH
INTERMITTENT
WIPER DWELL
TIME
CONTROLLER
WIPER/WASHER SWITCH
12
BLK
G401

DTC Troubleshooting

DTC B1076: Windshield Wiper Signal Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Turn the wiper switch to INT, LOW, then HIGH for at least 2 seconds each.
4. Check for DTCs with the HDS.

   Is DTC B1076 indicated?

   YES—Go to step 5.

   NO—Intermittent failure. The windshield wiper system is OK at this time. Check for loose or poor connections. ■
5. With the wiper/washer switch OFF, select WINDSHIELD WIPERS from the BODY ELECTRICAL SYSTEM SELECT menu, and enter the DATA LIST.
6. Check the ON/OFF information of the WINDSHIELD WIPER SWITCH (BACK-UP) in the DATA LIST.

   Is the information indicator OFF?

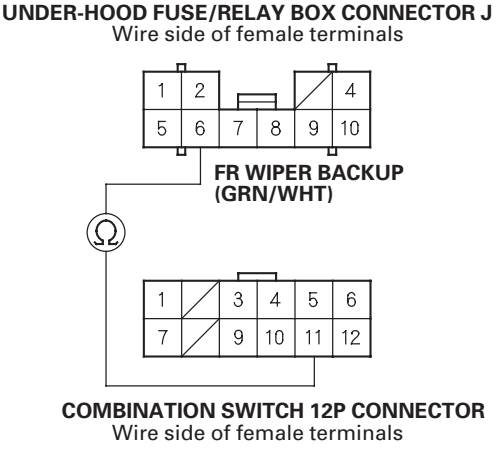
   YES—Go to step 7.

   NO—Go to step 11.
7. Turn the wiper switch ON (low or high).
8. Check the ON/OFF information of the WINDSHIELD WIPER SWITCH (BACK-UP) in the DATA LIST.

   Is the information indicator ON?

   YES—Faulty relay control module; replace the under-hood fuse/relay box. ■

   NO—Go to step 9.
9. Disconnect the under-hood fuse/relay box connector J (10P) and the combination switch 12P connector.
10. Check for continuity between the No. 6 terminal of the under-hood fuse/relay box connector J (10P) and the No. 11 terminal of the combination switch (combination switch control unit) 12P connector.



Is there continuity?

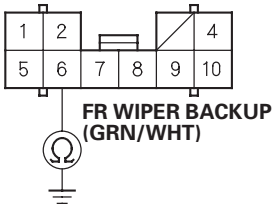
YES—Faulty combination switch control unit; replace the combination switch. ■

NO—Repair an open in the GRN/WHT wire. ■

11. Disconnect under-hood fuse/relay box connector J (10P).

12. Check for continuity between the No. 6 terminal of under-hood fuse/relay box connector J (10P) and body ground.

UNDER-HOOD FUSE/RELAY BOX CONNETOR J (10P)



Wire side of female terminals

Is there continuity?

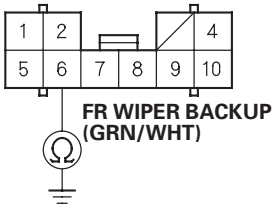
YES—Go to step 13.

NO—Faulty relay control module; replace the under-hood fuse/relay box. ■

13. Disconnect the combination switch 12P connector.

14. Check for continuity between the No. 6 terminal of under-hood fuse/relay box connector J (10P) and body ground.

UNDER-HOOD FUSE/RELAY BOX CONNETOR J (10P)



Wire side of female terminals

Is there continuity?

YES—Repair a short in the GRN/WHT wire. ■

NO—The combination switch control unit is faulty; replace the combination switch. ■

DTC Troubleshooting (cont'd)

DTC B1077: Windshield Wiper (As) Signal Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Turn the wiper switch to LOW, then HIGH for at least 15 seconds in each position.
4. Check for DTCs with the HDS.

   Is DTC B1077 indicated?

   YES—Go to step 5.

   NO—Intermittent failure. The windshield wiper system is OK at this time. Check for loose or poor connections. ■
5. Turn the ignition switch OFF.
6. Do the wiper motor test (see page 22-235).

   Does the wiper motor operate correctly?

   YES—Go to step 7.

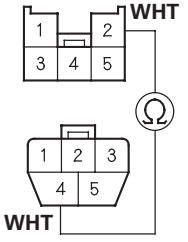
   NO—Replace the windshield wiper motor and recheck. ■
7. Turn the ignition switch ON (II).
8. Turn the wiper switch to LOW, then HIGH and check wiper operation.

   Do the wipers operate normally?

   YES—Go to step 9.

   NO—Go to step 12.
9. Disconnect under-hood fuse/relay box connector K (5P) and the windshield wiper motor 5P connector.
10. Check for continuity between the No. 4 terminal of the windshield wiper motor 5P connector and No. 2 terminal of under-hood fuse/relay box connector K (5P).

UNDER-HOOD FUSE/RELAY BOX CONNECTOR K (5P)
Wire side of female terminals



WINDSHIELD WIPER MOTOR 5P CONNECTOR
Wire side of female terminals

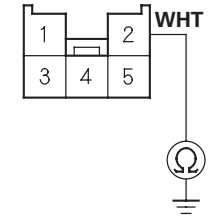
Is there continuity?

YES—Go to step 11.

NO—Repair an open in the WHT wire. ■

11. Check for continuity between the No. 2 terminal of under-hood fuse/relay box connector K (5P) and body ground.

UNDER-HOOD FUSE/RELAY BOX CONNECTOR K (5P)



Wire side of female terminals

Is there continuity?

YES—Repair a short in the WHT wire. ■

NO—Faulty relay control module; replace the under-hood fuse/relay box. ■

12. Turn the ignition switch OFF.

13. Check the No. 11 (30 A) fuse in the under-dash fuse/relay box.

    Is the fuse OK?

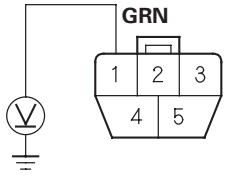
    YES—Go to step 14.

    NO—Replace the blown fuse and recheck the system. If the fuse is blown again, check for a short on the GRN wire between the under-dash fuse/relay box and the windshield wiper motor. ■

14. Turn the ignition switch ON (II).

15. Measure voltage between the No. 1 terminal of the windshield wiper motor 5P connector and body ground.

WINDSHIELD WIPER MOTOR 5P CONNECTOR



Wire side of female terminals

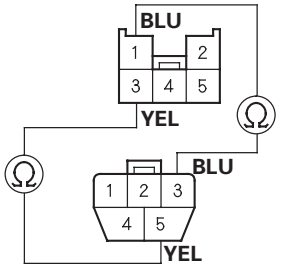
Is there battery voltage?

YES—Go to step 16.

NO—Repair an open in the GRN wire. ■

16. Check for continuity between the No. 3 and No. 5 terminals of the windshield wiper motor 5P connector and the No. 1 and No. 3 terminals of under-hood fuse/relay box connector K (5P).

UNDER-HOOD FUSE/RELAY BOX CONNECTOR K (5P)
Wire side of female terminals



WINDSHIELD WIPER MOTOR 5P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Faulty relay control module; replace the under-hood fuse/relay box. ■

NO—Repair an open in the BLU or YEL wire. ■

DTC Troubleshooting (cont'd)

DTC B1281: Windshield Wiper Switch MIST Position Circuit Malfunction

DTC B1282: Windshield Wiper Switch INT (AUTO) Position Circuit Malfunction

DTC B1283: Windshield Wiper Switch LOW Position Circuit Malfunction

DTC B1284: Windshield Wiper Switch HIGH Position Circuit Malfunction

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Turn the windshield wiper switch to MIST, and wait for 2 seconds.
4. Turn the windshield wiper switch OFF, and wait for 2 seconds.
5. Turn the windshield wiper switch to INT (AUTO), and wait for 2 seconds.
6. Turn the windshield wiper switch to LOW, and wait for 2 seconds.
7. Turn the windshield wiper switch to HIGH, and wait for 2 seconds.
8. Check for DTCs with the HDS.

   Is DTC B1281, B1282, B1283, and/or B1284 indicated?

   YES—Faulty combination switch control unit. Replace the combination switch. ■

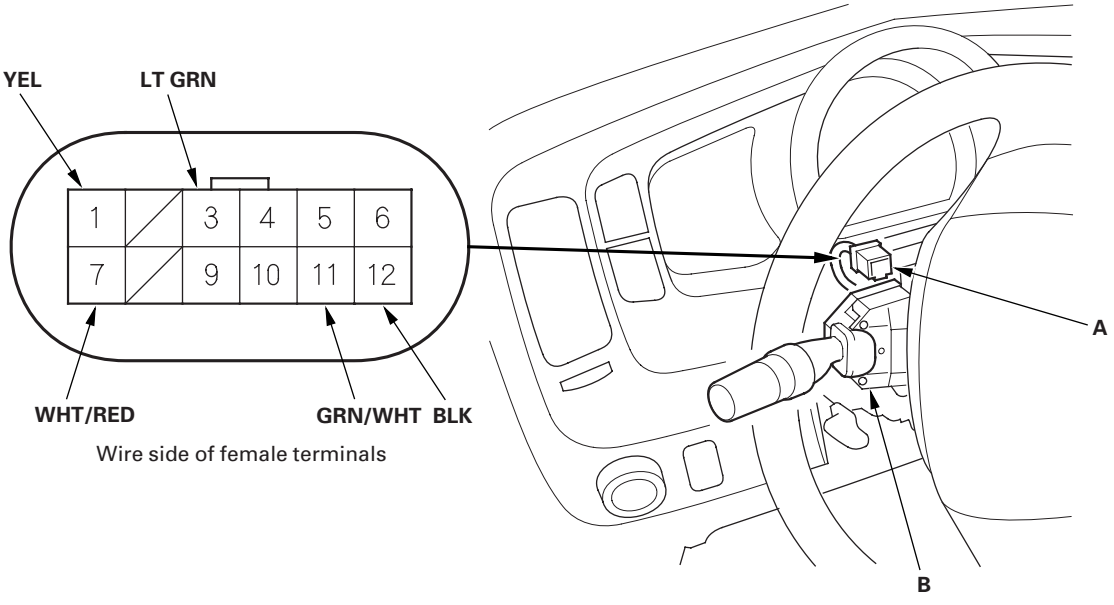
   NO—Intermittent failure, the windshield wiper/washer switch and the combination switch control unit are OK at this time. Check for loose or poor connections. ■

Combination Switch Control Unit Input Test

1. Before troubleshooting the wiper/washer system, troubleshoot B-CAN System Diagnosis Test Mode A (see page 22-99).

2. Remove the steering column covers (see page 17-24).

3. Remove the self-tapping screws, then disconnect the 12P connector (A) from the combination switch (B).



4. Inspect the connector and socket terminals to be sure they are all making good contact.

   • If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   • If the terminals look OK, go to step 5.

5. With the connector still disconnected, make these input tests at the connector.

   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
3	LT GRN	Under all conditions	Check for continuity between the No. 3 terminal and under-dash fuse/relay box connector X (39P) No. 27 terminal: There should be continuity.	An open in the wire
		Disconnect the under-dash fuse/relay box connector X (39P)	Check for continuity between the No. 3 terminal and body ground: There should be no continuity.	A short in the wire

(cont'd)

Combination Switch Control Unit Input Test (cont'd)

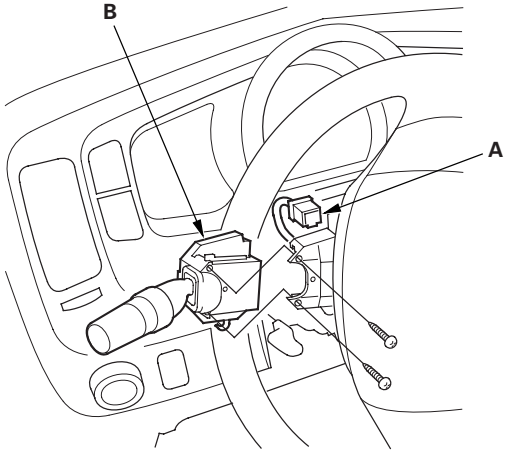
6. Reconnect the 12P connector to the combination switch, turn the ignition switch ON (II) and make these input tests at the connector.

   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, replace the combination switch control unit.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
12	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G401) • An open in the wire
7	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 15 (40 A) fuse in the under-hood fuse/relay box • Blown No. 7 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
1	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 21 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
11	GRN/WHT	Wiper switch on low and high	Check for voltage to ground: There should be less than 1 V.	• Faulty combination control unit • Poor ground (G401)
		Wiper switch OFF	Check for voltage to ground: There should be more than 5 V.	Open in the wire

Combination Switch Replacement

1. Remove the dashboard lower cover (see page 20-83).
2. Remove the steering column covers (see page 17-24).
3. Disconnect the dashboard wire harness 12P connector (A) from the combination switch control unit (B).



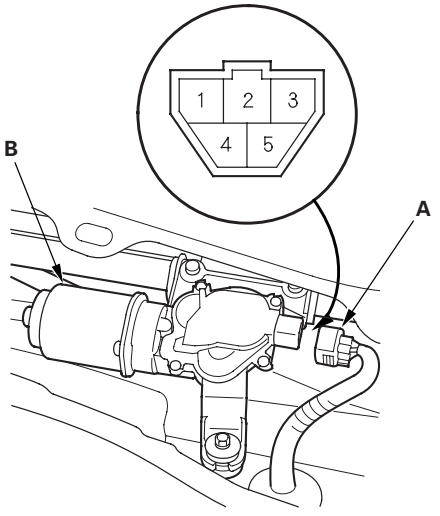
4. Remove the two screws, then slide out the combination switch control unit.

Wiper Motor Test

1. Remove the wiper arms (see page 22-237).

   NOTE: Carefully remove the wiper arms so that they do not touch the hood.

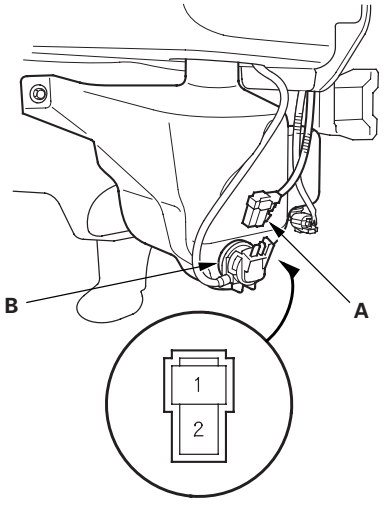
2. Remove the hood seal and cowl cover (see page 20-173).
3. Disconnect the 5P connector (A) from the wiper motor (B).



4. Test the motor by connecting battery power to the No. 3 terminal and ground to the No. 2 terminal of the wiper motor 5P connector. The motor should run at low speed. If the motor does not run or fails to run smoothly, replace the motor.
5. Test the motor by connecting battery power to the No. 5 terminal and ground to the No. 2 terminal of the wiper motor 5P connector. The motor should run at high speed. If the motor does not run or fails to run smoothly, replace the motor.
6. Connect an analog voltmeter between the No. 1 (+) and No. 4 (−) terminals, and run the motor at low or high speed. The voltmeter should indicate 12 V and 4 V or less alternately. If it does not, replace the motor.

Washer Motor Test

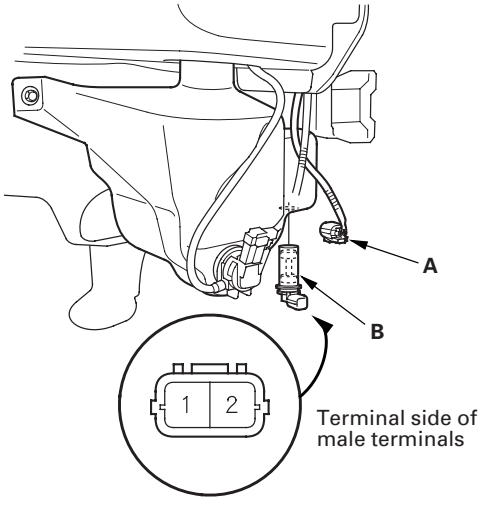
1. Remove the right inner fender (see page 20-178).
2. Disconnect the 2P connector (A) from the washer motor (B).



3. Test the motor by connecting battery power to the No. 1 terminal and ground the No. 2 terminal of the washer motor. The motor should run.
   - If the motor does not run or fails to run smoothly, replace it.
   - If the motor runs smoothly, but little or no washer fluid is pumped, check for a disconnected or blocked washer hose, or a clogged washer motor outlet.

Washer Fluid Level Switch Test

1. Remove the right inner fender (see page 20-178).
2. Disconnect the 2P connector (A) from the washer fluid level switch (B).



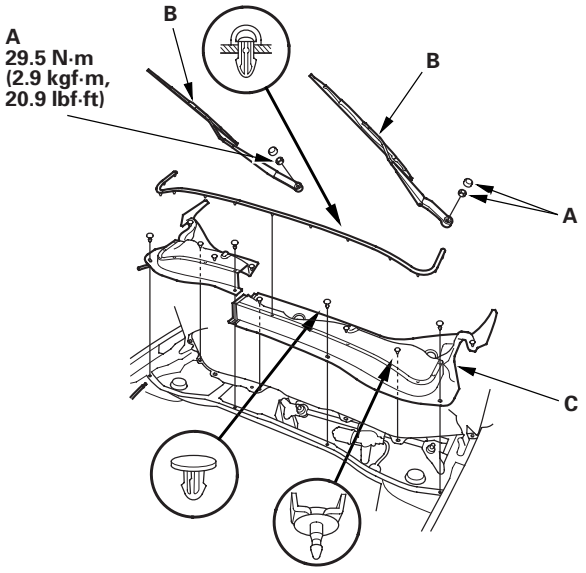
3. Remove the washer fluid level switch from the washer reservoir.

   NOTE: Fluid may flow out of the opening.

4. Check for continuity between the No. 1 and No. 2 terminals in each float position.
   - There should be continuity when the float is down.
   - There should be no continuity when the float is up.
5. If the continuity is not as specified, replace the switch.

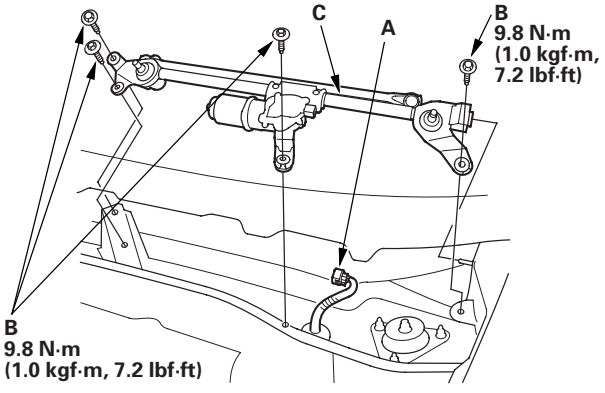
Wiper Motor Replacement

1. Open the hood. Remove the caps, nuts (A), and the windshield wiper arms (B).



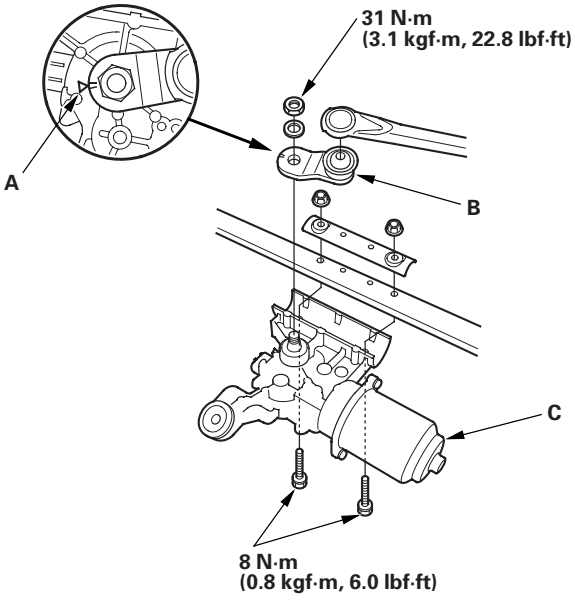
2. Remove the cowl covers (C).

3. Disconnect the 5P connector (A) from the wiper motor.



4. Remove the four bolts (B) and wiper linkage assembly (C).

5. Scribe a mark (A) across the link and windshield wiper linkage to show the original adjustment. Separate the windshield wiper linkage (B) from the wiper motor (C).

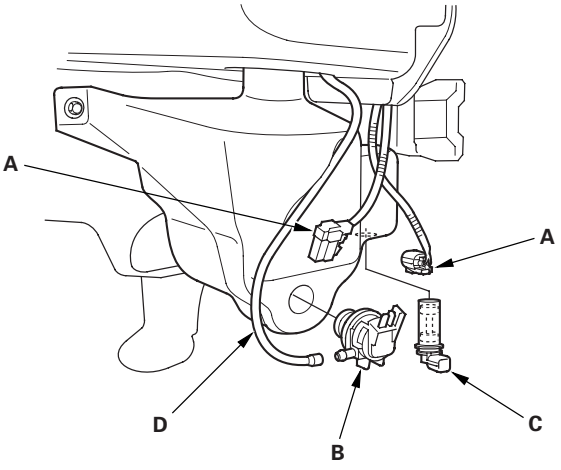


6. Install in the reverse order of removal, and note these items:

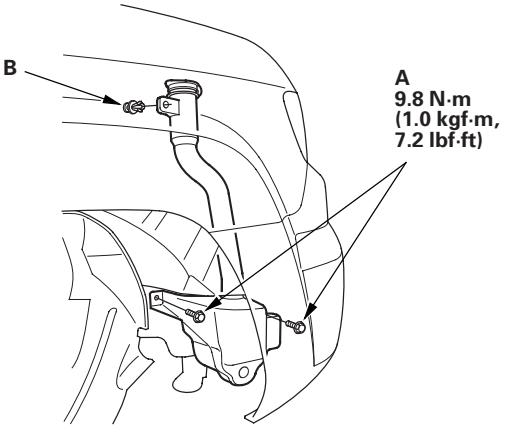
   - Apply multipurpose grease to the moving parts.
   - Before reinstalling the wiper arms, turn the wiper switch ON, then OFF to return the wiper shafts to the park position.
   - If necessary, replace any damaged clips.
   - Check the wiper motor operation.

Washer Reservoir Replacement

1. Remove the right inner fender (see page 20-178).
2. Disconnect the 2P connectors (A) from the washer motor (B) and the washer fluid level switch (C).



3. Disconnect the windshield washer tube (D).
4. Remove the bolts (A) and the clip (B), then remove the washer reservoir.

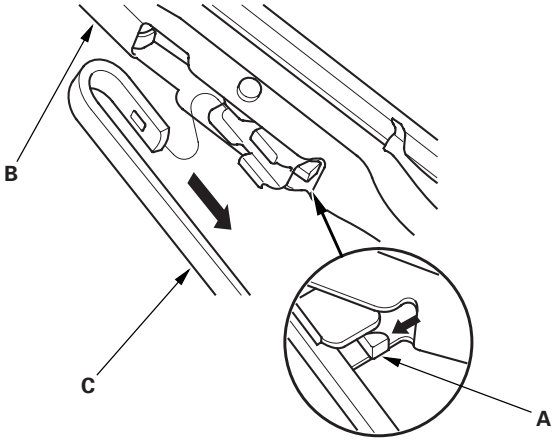


5. Install in the reverse order of removal.

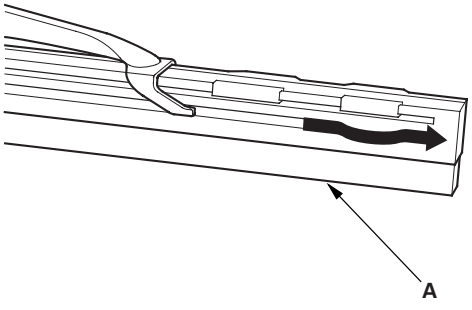
Wiper Blade Replacement

1. Lift the windshield wiper arm off the windshield, raising the driver's side first, then the passenger's side.

2. Press and hold the tab (A) and slide the wiper blade (B) toward the tab until it releases from the wiper arm (C).



3. Slide out the old rubber (A).



4. Install a new rubber in the reverse order of removal.

5. Install the wiper blades onto the windshield wiper arms in the reverse order of removal.

6. Test by turning on the wipers. If the blades slip, turn off the wipers and seat the attachments more firmly.

Wiper Arm/Nozzle Adjustment

Windshield

Wiper arms park position

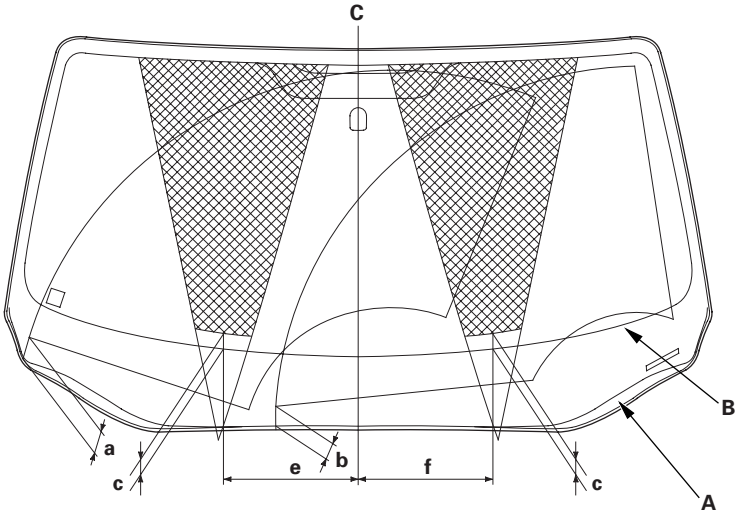
1. When the wiper arms stop at the park (automatic stop) position, confirm that they are at the standard position.

   a: Position at about 2.0 in. (52 mm) from the top of cowl cover (A)
   b: Position at about 1.7 in. (43 mm) from the top of cowl cover (A)

Washer nozzle position

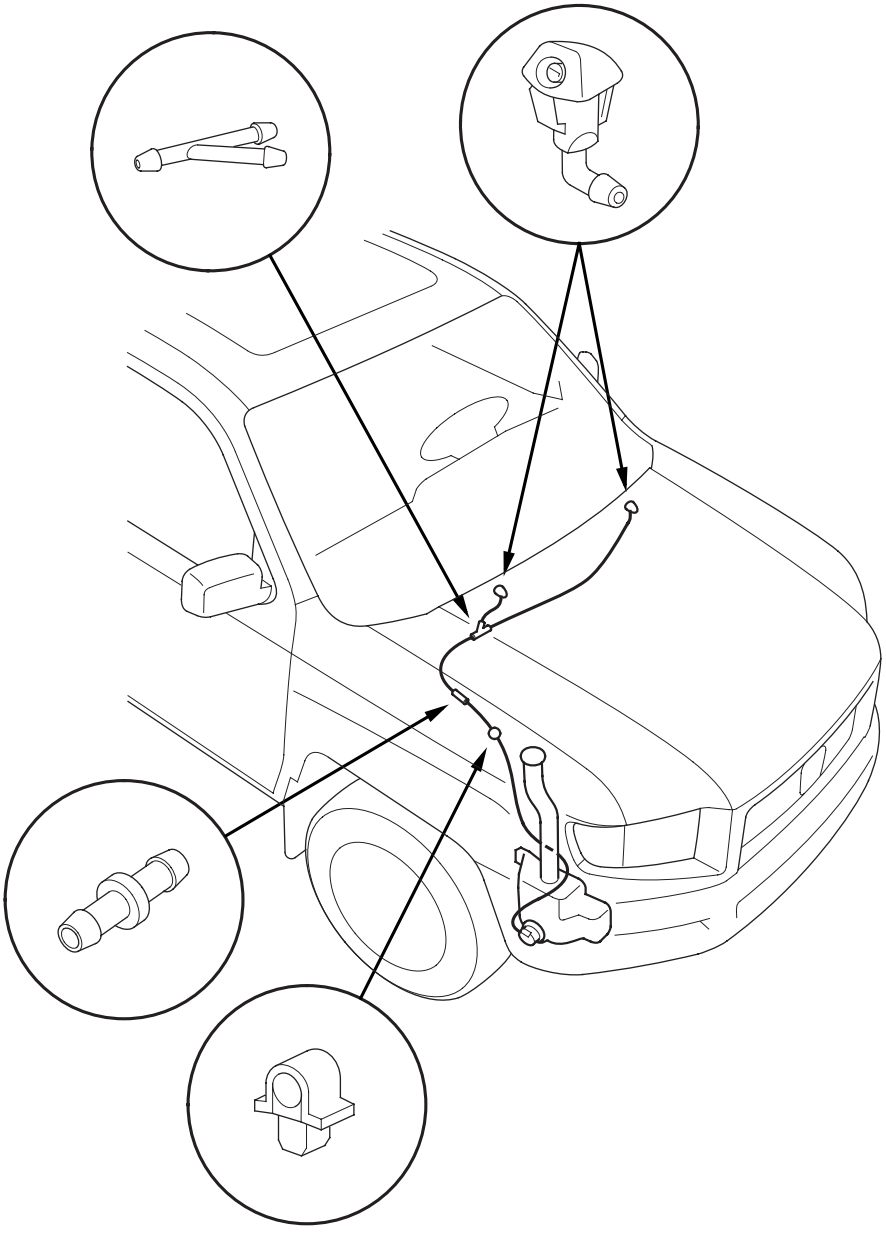
2. When you turn on the washers, confirm 50 % or more of the washer fluid lands within the spray area. If the spray area is not within the standard positions, adjust the nozzles.

   c: Position at about 1.5 in. (37.5 mm) from the top of the black ceramic area (B) at the lower windshield
   d: Position at about 1.5 in. (37.5 mm) from the top of the black ceramic area (B) at the lower windshield
   e: Position at about 12.2 in. (311 mm) from the windshield center line (C)
   f: Position at about 12.2 in. (311 mm) from the windshield center line (C)

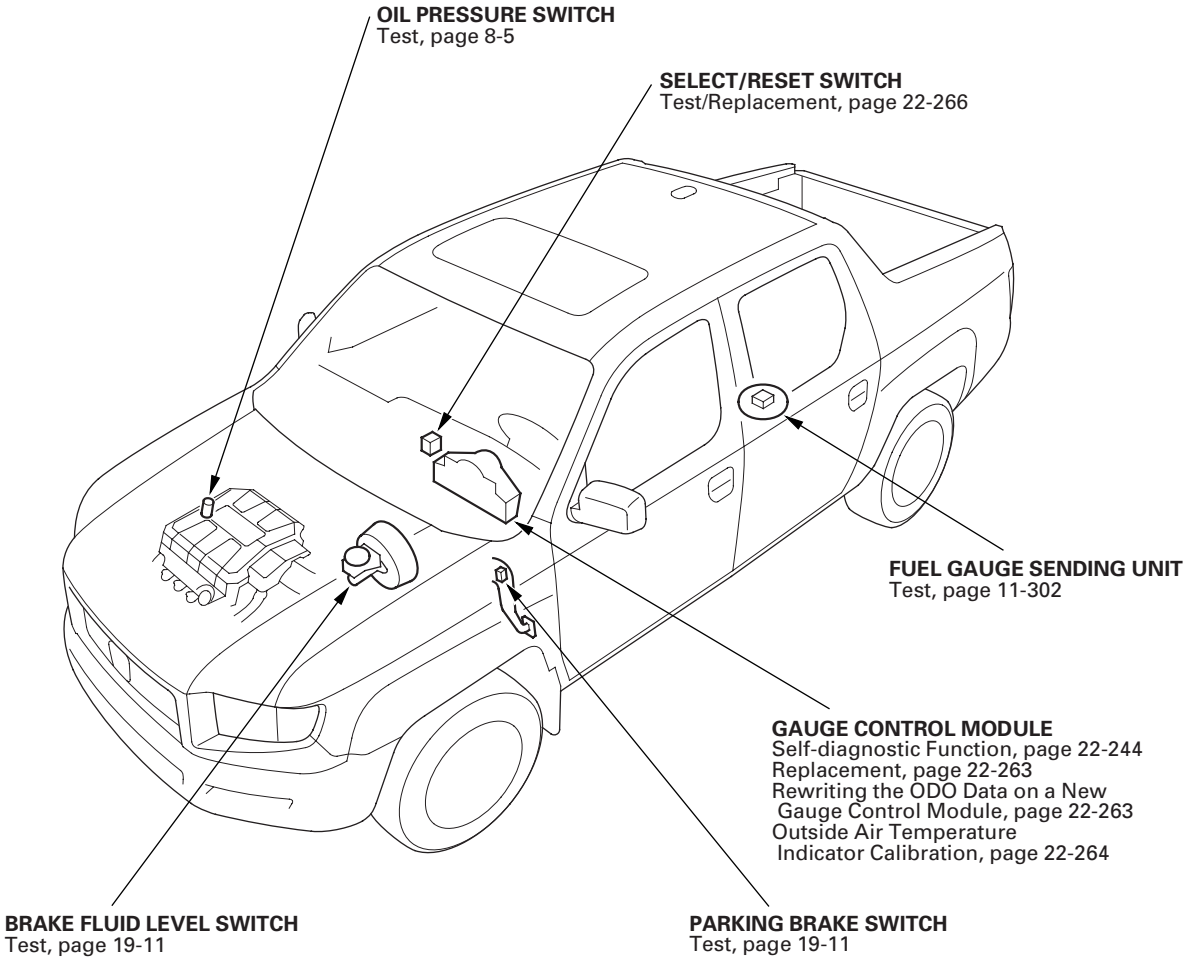


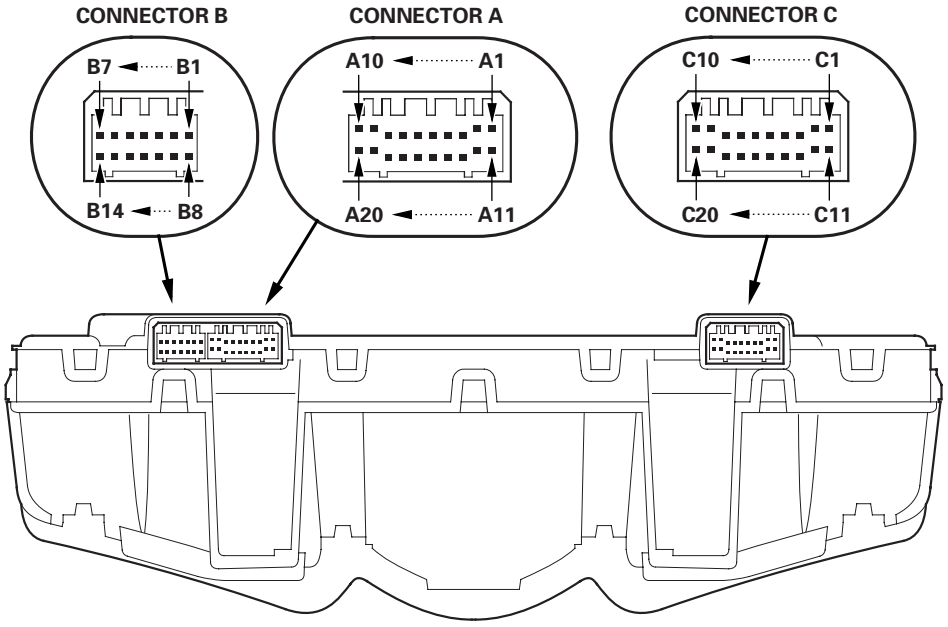
Washer Tube Replacement

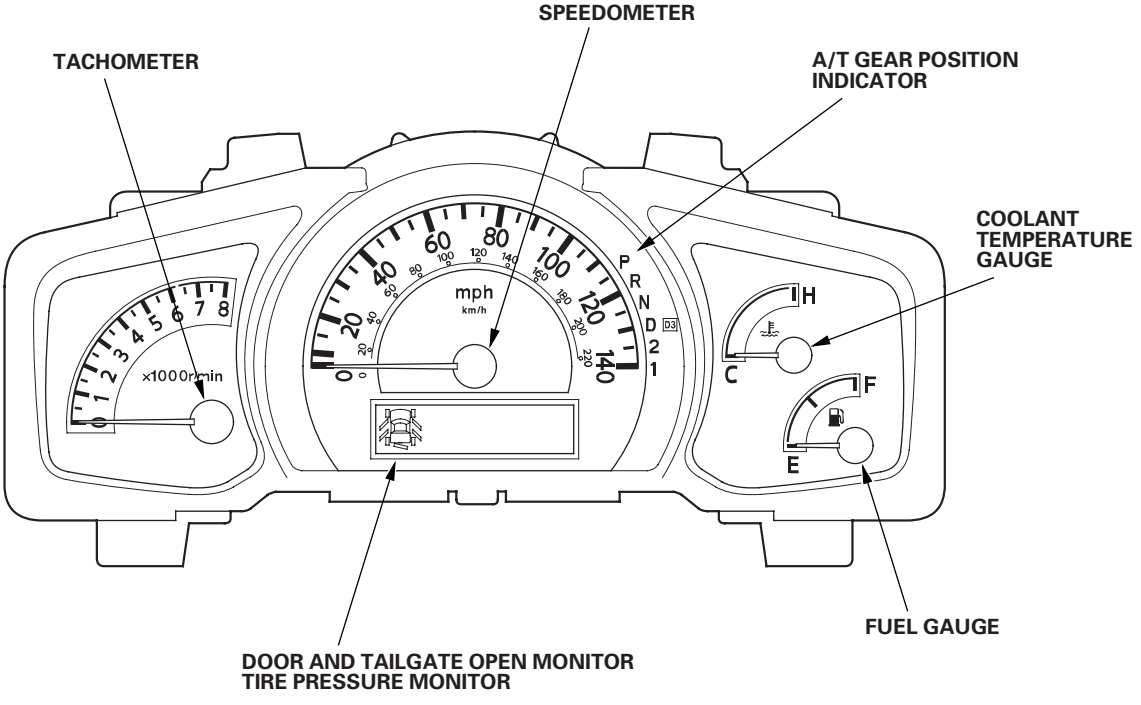
1. Remove the right inner fender (see page 20-178).
2. Remove the washer nozzles and clip, then remove the tubes.



Component Location Index




CONNECTOR B
B7
B1
B14
B8
CONNECTOR A
A10
A1
A20
A11
CONNECTOR C
C10
C1
C20
C11


SPEEDOMETER
TACHOMETER
A/T GEAR POSITION INDICATOR
COOLANT TEMPERATURE GAUGE
mph
km/h
x1000r/min
P
R
N
D
2
1
H
C
F
E
FUEL GAUGE
DOOR AND TAILGATE OPEN MONITOR
TIRE PRESSURE MONITOR

Self-diagnostic Function

Before troubleshooting the gauge system, refer to multiplex integrated control system B-CAN System Diagnosis Test Mode A (see page 22-99).

The gauge control module has a self-diagnostic function shown.

- The beeper drive circuit check.
- The indicator drive circuit check.
- The switch input test.
- The LCD segments check.
- The gauges drive circuit check (Speedometer, Tachometer, Fuel gauge, Coolant temperature gauge).
- The communication line check (of the body-controller area network (B-CAN) communication line and the fast-controller area network (F-CAN) communication line between the gauges).

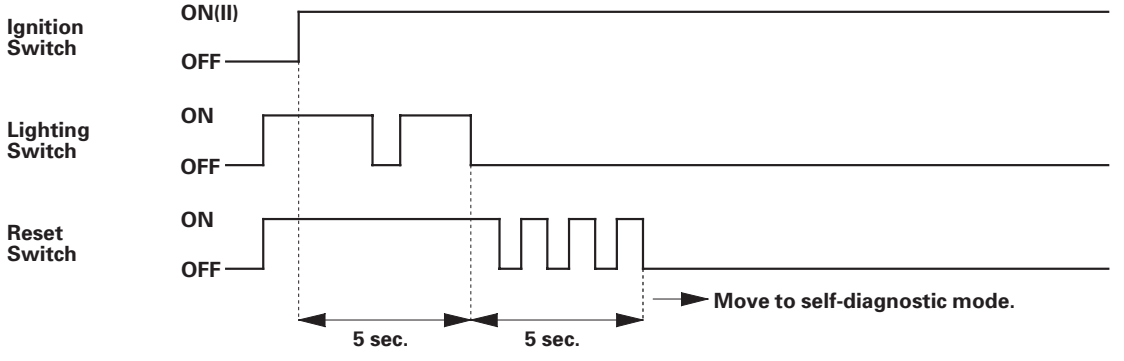
NOTE:
Indicators are also controlled via the communication line.

Entering the self-diagnostic function

Before doing the self-diagnostic function, check the No. 7 (7.5 A) fuse, the No. 21 (7.5 A) fuse and the No. 32 (7.5 A) in the under-dash fuse/relay box.

1. Push and hold the RESET switch button.
2. Turn the lighting switch (≡DC≡) ON.
3. Turn the ignition switch ON (II).
4. Within 5 sec., turn the lighting switch (≡DC≡) OFF, then ON and OFF again.
5. Within 5 sec., release the RESET switch button, and then push and release the button three times repeatedly.

NOTE:
- While in the self-diagnostic mode, the dash lights brightness controller operates normally.
- While in the self-diagnostic mode, the RESET button is used to start the Beeper Drive Circuit Test and the Gauge Drive Circuit Check.
- If the vehicle speed exceeds 1.2 mph (2 km/h) or the ignition switch is turned OFF, the self-diagnostic mode ends.



The Indicator Drive Circuit Check

When entering the self-diagnostic mode, the following indicators blink:
Seat belt indicators, charging system indicators, low fuel indicator, oil pressure indicator, high beam indicator, DRL indicator (Canada models), VSA indicator, VSA activation indicator, brake system indicator, lights on indicator, A/T gear position indicator, ABS indicator, cruise control indicator, mulfunction indicator lamp, in-bed trunk lid open indicator, transmission fluid temperature indicator, TPMS indicator, D3 indicator, washer fluid level indicator, smart maintenance indicator, back window open indicator and TPMS malfunction indicator.

Switch Input Check

After the intermittent beeper sounds at the initial stage of self-diagnostic, a beeper sounds continuously while any of the following switch inputs are switched from OFF to ON:
Parking brake switch, VSA OFF switch, cruise control master, SET, RESUME, CANCEL switches, select switch, reset switch, and dash lights brightness controller cancel switch.

The Beeper Drive Circuit Check

When entering the self-diagnostic mode, the beeper sounds five times.

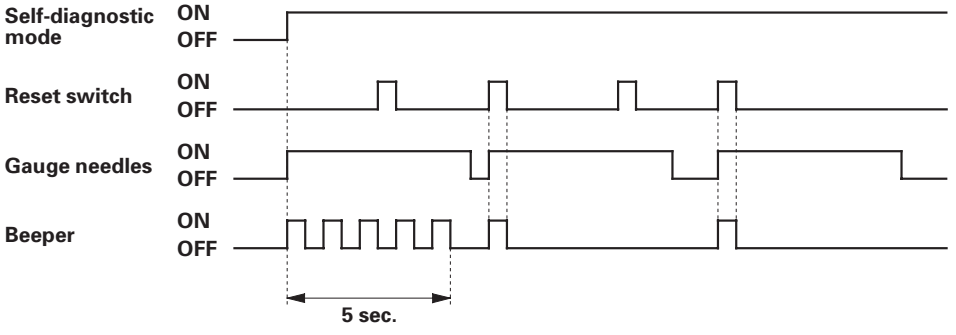
The LCD Segment Check

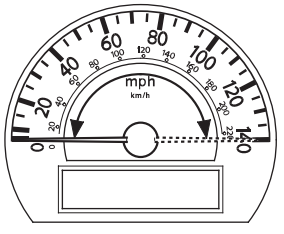
When entering the self-diagnostic mode, all the segments blink five times.

The Gauge Drive Circuit Check

When entering the self-diagnostic mode, the speedometer, the tachometer, the fuel gauge, and the coolant temperature gauge needles sweep from the minimum position to maximum position, then return to the minimum position.

NOTE:
After the beeper stops sounding and the gauge needles return to the minimum position, pushing the reset switch starts the Beeper Drive Circuit Check (one beep) and the Gauge Drive Circuit Check again.
The check cannot be started again until the gauge needles return to the minimum position.





The needles sweep from the minimum position to the maximum position, then return to the minimum position.

If a needle fails to sweep or the beeper does not sound, replace the gauge control module.

(cont'd)

Self-diagnostic Function (cont'd)

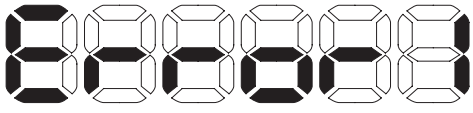
The Communication Line Check

While in the self-diagnostic mode, the Communication Line Check starts after the LCD Segments Check.
If all segments come on, the communication line is OK. If there is a communication line error, the word ''Error'' will be indicated on the information display followed by a number.

- If the word ''Error 1'' is indicated, there is a malfunction in the communication line between the gauge control module and the fast-controller area network (F-CAN). Check for DTCs in the PCM and troubleshoot any DTCs found. If no DTCs are found, go to B-CAN System Diagnosis Test Mode A (see page 22-99).
- If the word ''Error 2'' is indicated, there is a malfunction in the communication line between the gauge control module and the body-controller area network (B-CAN). Go to B-CAN System Diagnosis Test Mode A (see page 22-99). (B1155 to B1160).
- If the word ''Error 3'' is indicated, there is a malfunction in the communication line between the gauge control module and the body-controller area network (B-CAN) and the fast-controller area network (F-CAN). Check for DTCs in the PCM and troubleshoot any DTCs found. If no DTCs are found, go to B-CAN System Diagnosis Test Mode A (see page 22-99).

Normal:

Faulty (example Error 1):

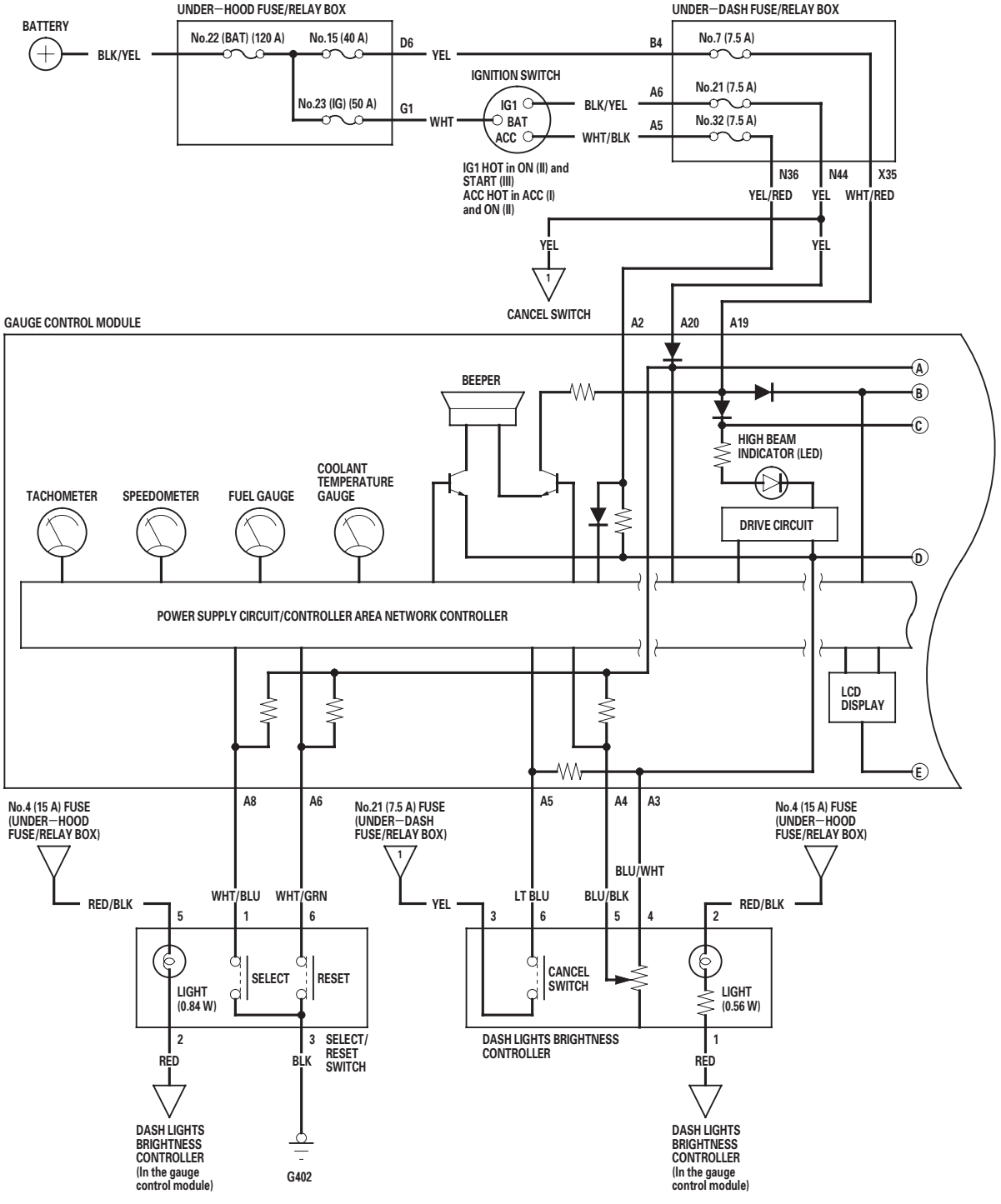


If any communication line errors are found, go to B-CAN System Diagnosis Test Mode A (see page 22-99).

Ending the self-diagnostic function

Turn the ignition switch OFF.
NOTE: If the vehicle speed exceeds 1.2 mph (2 km/h), the self-diagnostic function ends.

Circuit Diagram



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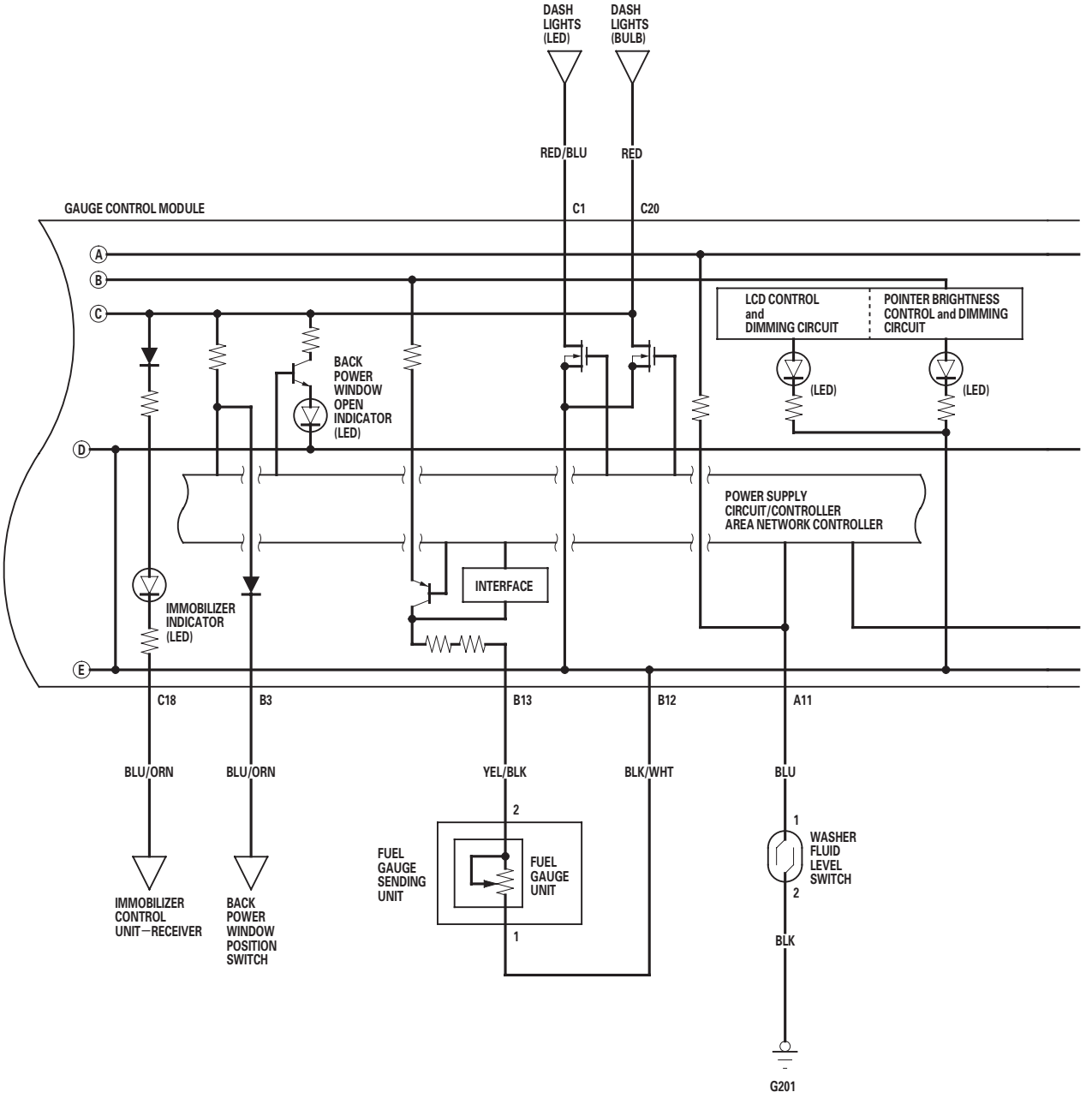
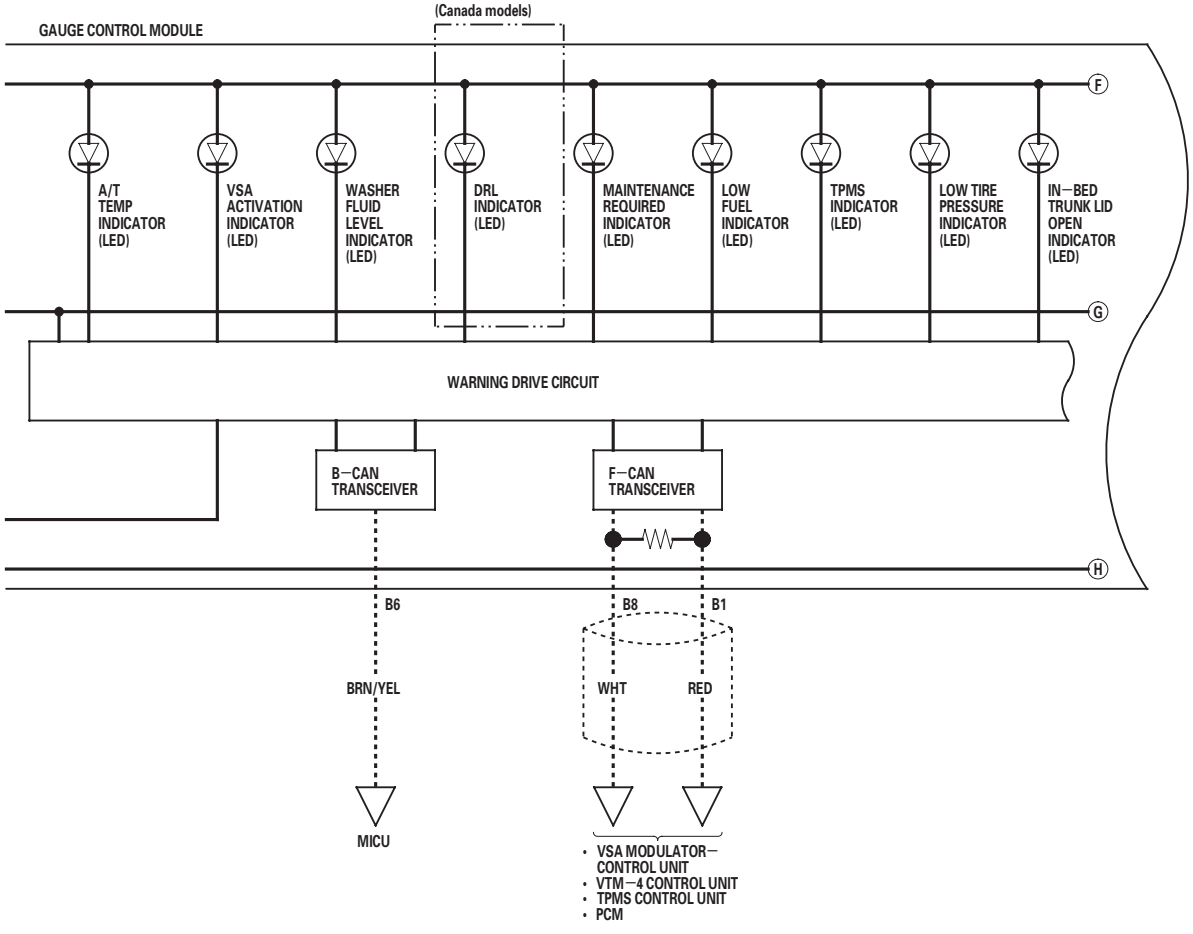
Circuit Diagram (cont'd)

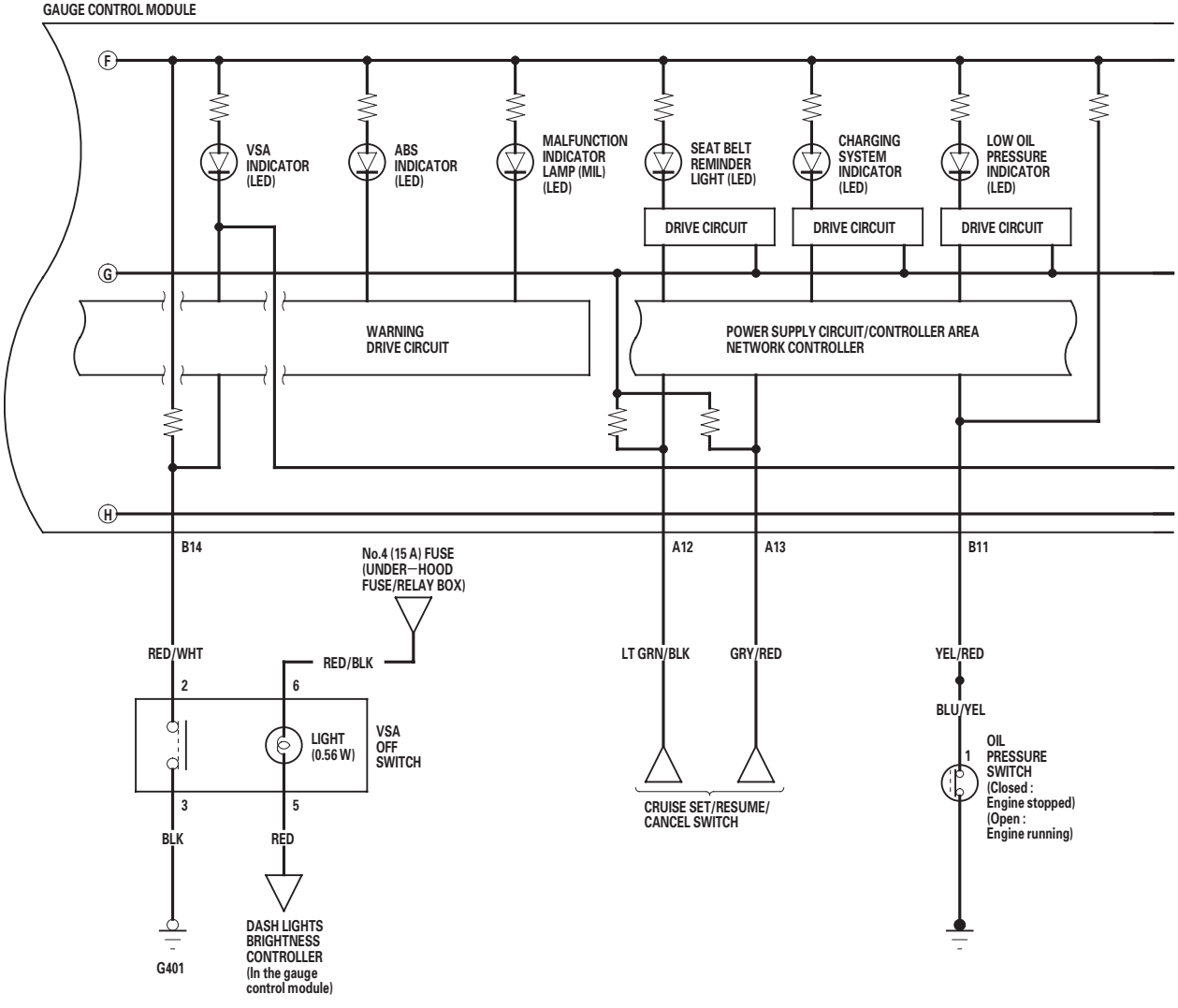


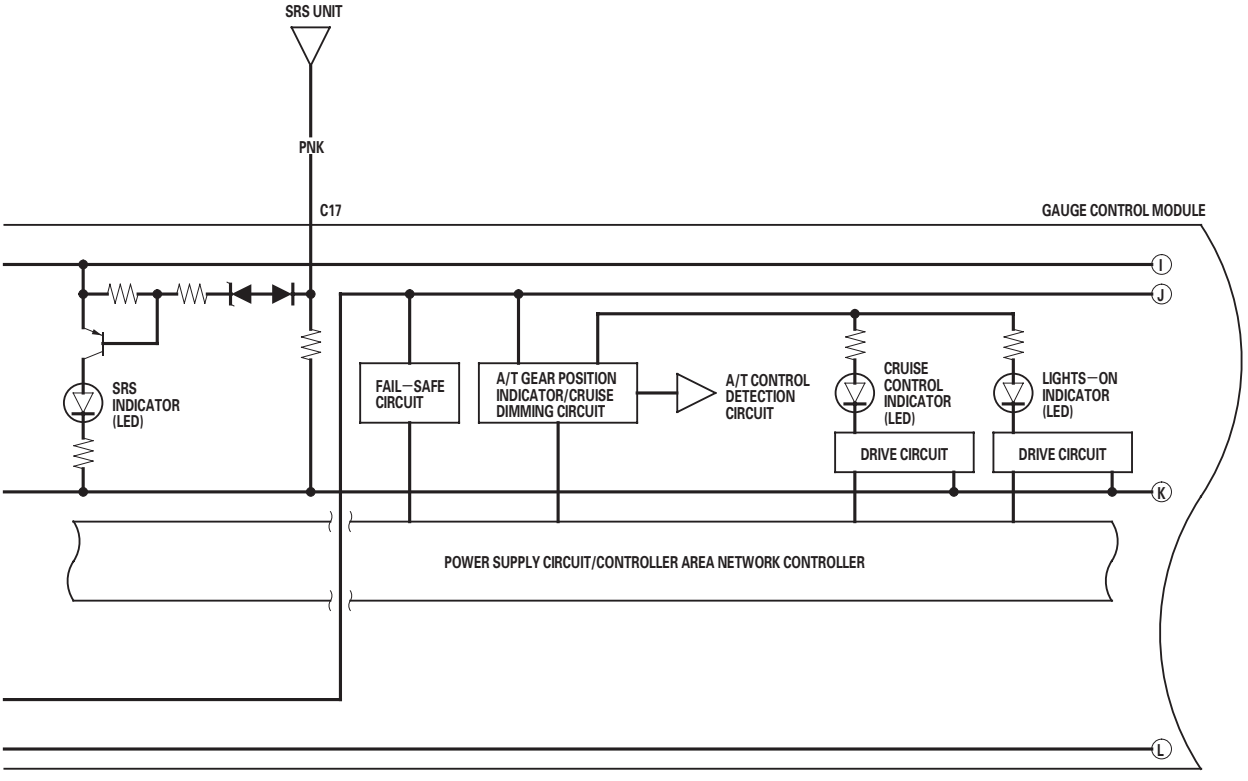
: Communication line
: Shielding



(cont'd)

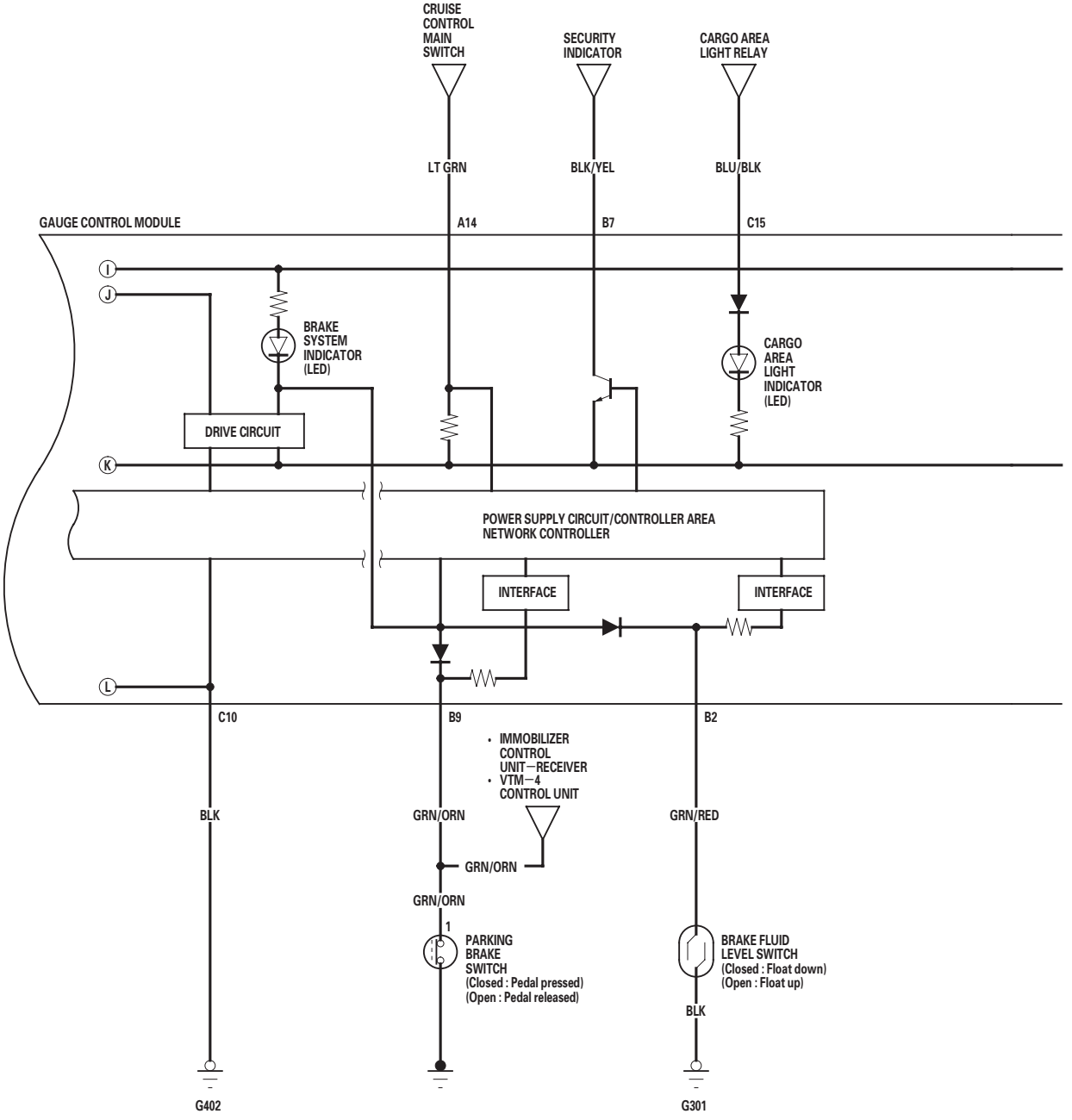
Circuit Diagram (cont'd)



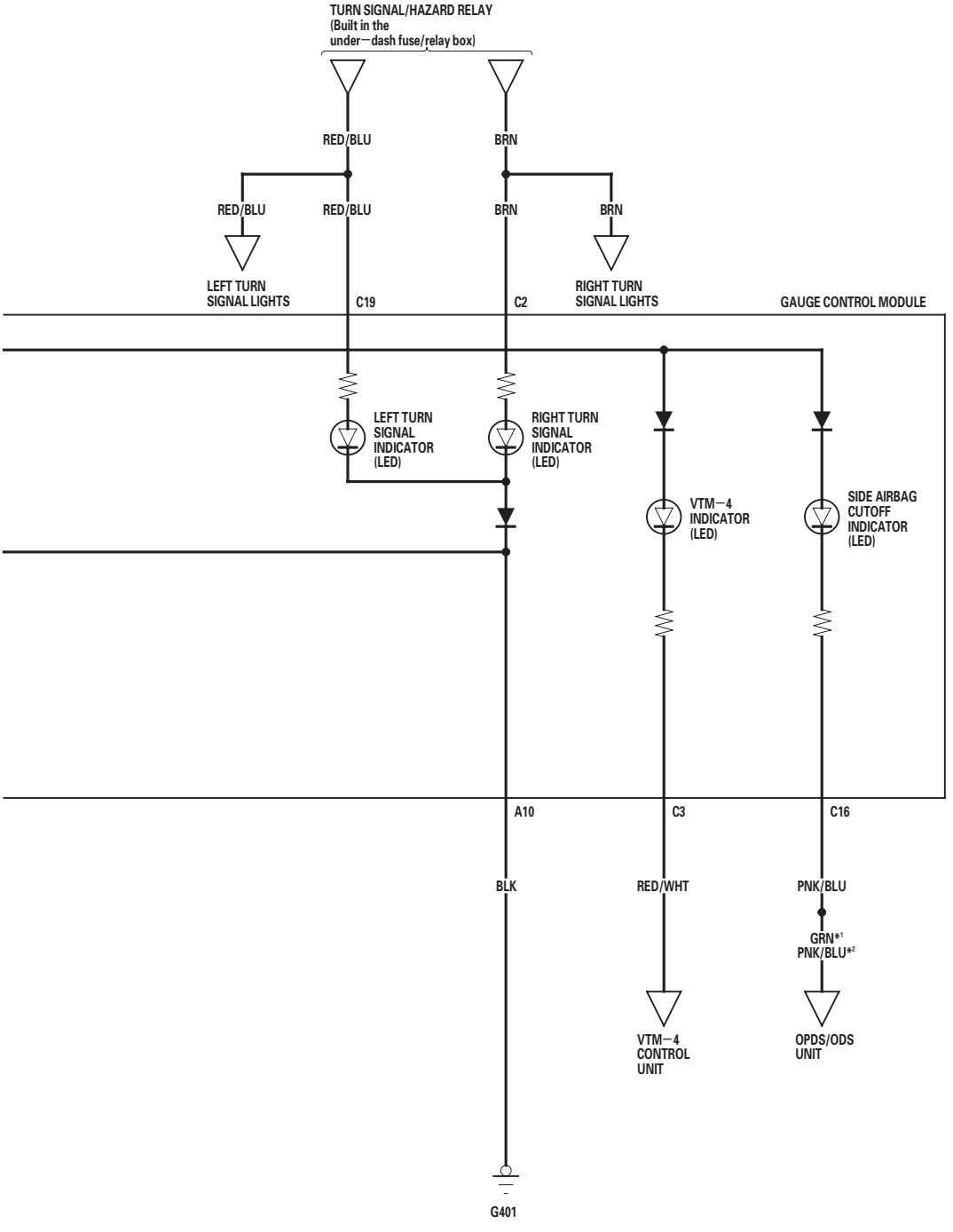

SRS UNIT
PNK
C17
GAUGE CONTROL MODULE
I
J
K
L
SRS INDICATOR (LED)
FAIL—SAFE CIRCUIT
A/T GEAR POSITION INDICATOR/CRUISE DIMMING CIRCUIT
A/T CONTROL DETECTION CIRCUIT
CRUISE CONTROL INDICATOR (LED)
LIGHTS—ON INDICATOR (LED)
DRIVE CIRCUIT
DRIVE CIRCUIT
POWER SUPPLY CIRCUIT/CONTROLLER AREA NETWORK CONTROLLER

(cont'd)

Circuit Diagram (cont'd)



*1 : '06 model
*2 : '07—08 models



DTC Troubleshooting

DTC B1152: Gauge Control Module Internal Error (EEPROM Error)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1152 indicated?

   YES—Go to step 5.

   NO—Intermittent failure. The gauge control module is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-74), and the charging system. ■
5. Disconnect the gauge control module connectors, then reconnect them.
6. Check for DTCs with the HDS.

   Is DTC B1152 still indicated?

   YES—Faulty gauge control module; replace the gauge control module (see page 22-263). ■

   NO—Intermittent failure. The gauge control module is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-74), and the charging system. ■

DTC B1155: Gauge Control Module Lost Communication with the Combination Switch Control Unit (HLSW Message)

DTC B1156: Gauge Control Module Lost Communication with the Combination Switch Control Unit (WIPSW Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Aer DTCs B1155 and/or B1156 indicated?

   YES—Go to step 5.

   NO—Intermittent failure. The gauge control module is OK at this time. Check for loose or poor connections. ■
5. Check for DTCs with the HDS.

   Are DTCs B1007, B1062, and B1063 also indicated?

   YES—Go to combination switch control unit input test (see page 22-124). ■

   NO—Go to gauge control module input test (see page 22-122). ■

DTC B1157: Gauge Control Module Lost Communication with MICU (MICU Message)

DTC B1159: Gauge Control Module Lost Communication with MICU (DOORSW Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Are DTCs B1157 and/or B1159 indicated?

   YES—Go to step 5.

   NO—Intermittent failure. The gauge control module is OK at this time. Check for loose or poor connections. ■
5. Check for DTCs with the HDS.

   Are DTCs B1055, B1057, B1105, B1106, and B1255 also indicated?

   YES—Go to MICU input test (see page 22-117). ■

   NO—Go to gauge control module input test (see page 22-122). ■

DTC B1158: Gauge Control Module Lost Communication with Relay Control Module (RM Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1158 indicated?

   YES—Go to step 5.

   NO—Intermittent failure. The gauge control module is OK at this time. Check for loose or poor connections. ■
5. Check for DTCs with the HDS.

   Is DTC B1005 also indicated?

   YES—Go to relay control module input test (see page 22-125). ■

   NO—Go to gauge control module input test (see page 22-122). ■

DTC Troubleshooting (cont'd)

DTC B1160: Gauge Control Module Lost Communication with the Door Multiplex Control Unit (DRLOCKSW Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1160 indicated?

   YES—Go to step 5.

   NO—Intermittent failure. The gauge control module is OK at this time. Check for loose or poor connections. ■
5. Check for DTCs with the HDS.

   Are DTCs B1006 and B1058 also indicated?

   YES—Go to door multiplex control unit input test (see page 22-123). ■

   NO—Go to gauge control module input test (see page 22-122). ■

DTC B1168: Gauge Control Module Lost Communication with PCM (ENG Messages)

DTC B1169: Gauge Control Module Lost Communication with PCM (A/T Messages)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Start and run the engine for at least 5 seconds then turn the engine off.
4. Check for DTCs with the HDS.

   Are DTCs B1168 and/or B1169 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the F-CAN communication line is OK at this time. Check for DTCs in the PCM with the HDS. If F-CAN DTCs are present, check for loose or poor connections at the gauge control module and the PCM. If the connections are good, check the battery condition (see page 22-74) and the charging system, then clear all DTCs. ■
5. Check for DTCs in the PCM with the HDS.

   Are any DTCs indicated?

   YES—Go to the PCM indicated DTCs troubleshooting. ■

   NO—Go to step 6.
6. Do the gauge control module input test (see page 22-122).

   Are all inputs OK?

   YES—Go to step 7.

   NO—Repair the faulty input, then recheck the DTCs. ■
7. Substitute a known-good gauge control module.
8. Clear the DTCs with the HDS.
9. Turn the ignition switch OFF, and then back ON (II).
10. Start and run the engine for at least 5 seconds then turn the engine off.
11. Check for DTCs with the HDS.

    Are DTCs B1168 and/or B1169 indicated?

    YES—Substitute a known-good PCM and retest. If the symptom/indication goes away, replace the original PCM. ■

    NO—The original gauge control module is faulty; replace it (see page 22-263). ■

DTC Troubleshooting (cont'd)

DTC B1170: Gauge Control Module Lost Communication with VSA Modulator - Control Unit (VSA Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Check for DTCs with the HDS.

   Is DTC B1170 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the F-CAN communication line is OK at this time. Check for DTCs in the PCM and the VSA modulator-control unit with the HDS. If F-CAN DTCs are present, check for a loose VSA ground or poor connections at the VSA modulator-control unit or gauge control module. If the connections are good, check the battery condition (see page 22-74) and the charging system, then clear all DTCs. ■
4. Check for DTCs in the PCM or VSA with the HDS.

   Are any DTCs indicated?

   YES—Go to the PCM or VSA indicated DTCs troubleshooting. ■

   NO—Go to step 5.
5. Do the gauge control module input test (see page 22-122).

   Are all inputs OK?

   YES—Go to step 6.

   NO—Repair the faulty input, then recheck the DTCs. ■
6. Substitute a known-good gauge control module.
7. Clear the DTCs with the HDS.
8. Turn the ignition switch OFF, and then back ON (II).
9. Check for DTCs with the HDS.

   Is DTC B1170 indicated?

   YES—Recheck the PCM for DTCs, then recheck the VSA modulator-control unit for DTCs. ■

   NO—The original gauge control module is faulty; replace it (see page 22-263). ■

DTC B1173: Gauge Control Module Lost Communication with TPMS Control Unit (TPMS Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Check for DTCs with the HDS.

   Is DTC B1173 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the F-CAN communication line is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-74), and the charging system. ■
4. Check for DTCs in the TPMS with the HDS.

   Are any DTCs indicated?

   YES—Go to the TPMS indicated DTCs troubleshooting. ■

   NO—Go to step 5.
5. Do the gauge control module input test (see page 22-122).

   Are all inputs OK?

   YES—Go to step 6.

   NO—Repair the faulty input, then recheck the DTCs. ■
6. Substitute a known-good gauge control module.
7. Clear the DTCs with the HDS.
8. Turn the ignition switch OFF, and then back ON (II).
9. Check for DTCs with the HDS.

   Is DTC B1173 indicated?

   YES—Check for loose or poor connections at the TPMS control unit. If continuities are good, replace the TPMS control unit. ■

   NO—The original gauge control module is faulty; replace it (see page 22-263). ■

DTC Troubleshooting (cont'd)

DTC B1175: Fuel Level Sensor (Fuel Gauge Sending Unit) Signals Input Error

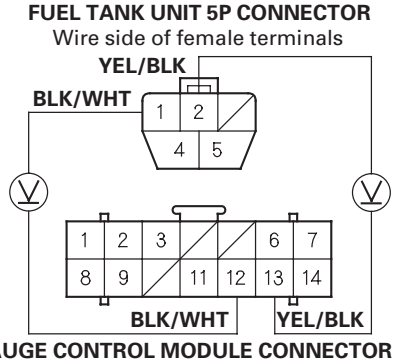
NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Check for DTCs with the HDS.

   Is DTC B1175 indicated?

   YES—Go to step 4.

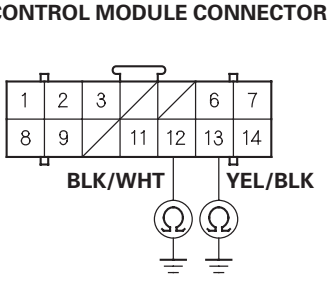
   NO—Intermittent failure, the fuel level sensor circuit is OK at this time. Check for loose or poor connections. ■
4. Disconnect the fuel pump 5P connector and gauge control module connector B (14P) and check for loose or damaged terminals.
5. Turn the ignition switch ON (II).
6. Reconnect the connectors, check for voltage between the No. 12 and No. 13 terminals of gauge control module connector B (14P) and No. 1 and No. 2 terminals of the fuel tank unit 5P connector.



   Is there less than 1 V?

   YES—Go to step 7.

   NO—Repair the loose connection or open in the BLK/WHT or YEL/BLK wire between the gauge control module and fuel tank unit. ■
7. Turn the ignition switch OFF.
8. Check for continuity between gauge control module connector B (14P) No. 12 and No. 13 terminals and body ground.



   Is there continuity?

   YES—Go to step 9.

   NO—Repair the short in the wire between the gauge control module and the fuel tank unit. ■
9. Do the fuel gauge sending unit test (see page 11-302).

   Is the fuel gauge sending unit OK?

   YES—Substitute a known-good gauge control module and retest. If the symptom/indication goes away, replace the gauge control module. ■

   NO—Replace the fuel tank unit. ■

DTC B1177: Abnormal Battery Voltage

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON.
3. Check for DTCs with the HDS.

   Is DTC B1177 indicated?

   YES—Go to step 5.

   NO—Go to step 4.
4. Crank the engine.

   Is DTC B1177 indicated?

   YES—Go to step 5.

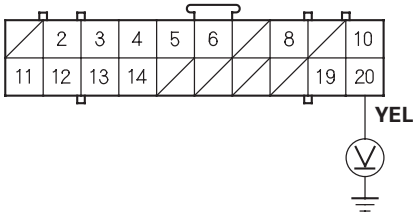
   NO—Intermittent failure. The gauge control module and power supply voltage (IG1) that is supplied to the gauge control module are OK at this time. The battery may have been discharged, and recovered. ■
5. Check the battery (see page 22-74) and the charging system.

   Is the battery condition normal and the charging system OK?

   YES—Go to step 6.

   NO—Abnormal battery condition that needs a recharge or replacement, or a charging system repair. ■
6. With gauge control module connector A (20P) still connected, and the ignition switch ON (II), check the voltage between the No. 20 terminal and body ground.

GAUGE CONTROL MODULE CONNECTOR A (20P)



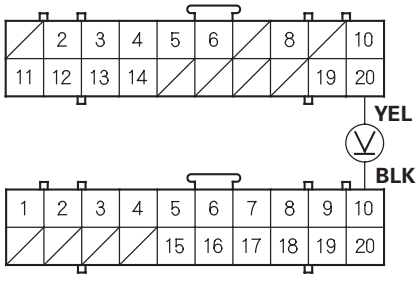
Wire side of female terminals

Is there battery voltage?

YES—Go to step 7.

NO—Repair an open or high resistance in the YEL wire between the gauge control module and under-dash fuse/relay box. ■
7. Check for voltage between the No. 20 terminal of gauge control module connector A (20P) and No. 10 terminal of gauge control module connector C (20P).

GAUGE CONTROL MODULE CONNECTOR A (20P)
Wire side of female terminals



GAUGE CONTROL MODULE CONNECTOR C (20P)
Wire side of female terminals

Is there battery voltage?

YES—Faulty gauge control module; replace the gauge control module (see page 22-263). ■

NO—Repair an open or high resistance in the BLK wire between the gauge control module and ground (G402). ■

DTC Troubleshooting (cont'd)

DTC B1178: F-CAN Communication Line Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Start and run the engine for at least 5 seconds then turn the engine off.
4. Check for DTCs with the HDS.

   Is DTC B1178 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the F-CAN communication line is OK at this time. Check for DTCs in the PCM with the HDS. If F-CAN DTCs are present, check for loose or poor connections at the gauge control module and the PCM. If the connections are good, check the battery condition (see page 22-74) and the charging system, then clear all DTCs. ■
5. Disconnect the gauge control module connectors, then reconnect them.
6. Check for DTCs with the HDS.

   Is DTC B1178 still indicated?

   YES—Go to step 7.

   NO—Intermittent failure. The F-CAN communication line is OK at this time. Check for DTCs in the PCM with the HDS. If F-CAN DTCs are present, check for loose or poor connections at the gauge control module and the PCM. If the connections are good, check the battery condition (see page 22-74), and the charging system.
7. Check for DTCs in the PCM with the HDS.

   Are any DTCs indicated?

   YES—Go to the indicated PCM DTCs troubleshooting. ■

   NO—Go to step 8.
8. Do the gauge control module input test (see page 22-122).

   Are all inputs OK?

   YES—Go to step 9.

   NO—Repair the faulty input, then recheck the DTCs. ■
9. Substitute a known-good gauge control module.
10. Clear the DTCs with the HDS.
11. Turn the ignition switch OFF, and then back ON (II).
12. Start and run the engine for at least 5 seconds then turn the engine off.
13. Check for DTCs with the HDS.

    Is DTC B1178 indicated?

    YES—Substitute a known-good PCM and retest. If the symptom/indication goes away, replace the original PCM. ■

    NO—The original gauge control module is faulty; replace it (see page 22-263). ■

Rewriting the ODO Data and Transferring the Maintenance Minder on a New Gauge Control

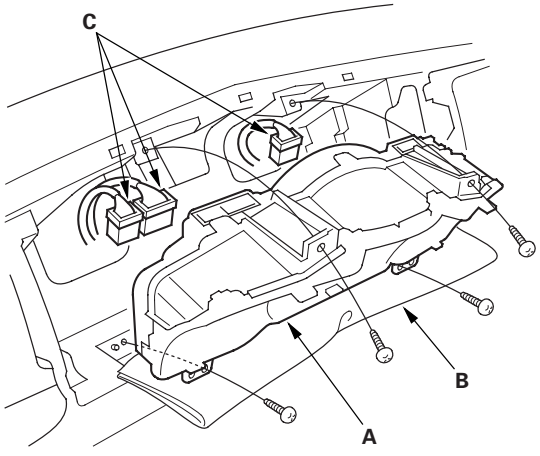
NOTE:
- If the HDS retrieves the ODO data from the gauge control module, the ODO value on the multi-information display will appear as ''— — —'', making the ODO function unusable, and the HDS will be unable to retrieve additional ODO values.
- Rewriting is not possible on a gauge control module that does not communicate.
- Obtain a new gauge control module before starting the rewriting process.

1. Before replacing the gauge control module, connect the HDS to the data link connector.
2. Select GAUGES from the BODY ELECTRICAL SYSTEM SELECT menu display.
3. Select ''GAUGE CONTROL MODULE REPLACEMENT (ODO REWRITE etc)'' from the Adjustment Menu, and follow the instructions on the display to retrieve the ODO value.
4. Replace the gauge control module.
5. Follow the instructions on the display to write the new ODO value to the new gauge control module.

Gauge Control Module Replacement

NOTE: Before replacing the gauge control module, do the ''Rewriting the ODO Data and Transfering the Maintenance Minder on a New Gauge Control Module'' (see page 22-263).

1. Remove the instrument panel (see page 20-81).
2. Remove the screws from the gauge control module (A), and spread a protective cloth (B) on the upper column cover.



3. Disconnect the connectors (C), and remove the gauge control module.
4. Install the gauge in the reverse order of removal.

Outside Air Temperature Indicator Calibration

NOTE: To test the outside air temperature sensor (see page 21-52).

Description

The outside temperature sensor is located behind the center of the front bumper. The gauge control module uses measurements from this sensor to display the outside air temperature.
Because of the location of the sensor, it may be affected by heat reflection from the road, engine and radiator heat or hot exhaust from surrounding traffic.
These conditions can heat soak the outside air temperature sensor and cause inaccurate readings.
Logic has been written into the gauge control module to help prevent abnormal or fluctuating outside air temperature indicator readings.

Outside Air Temperature Indicator Logic

Initial outside air temperature indication after the ignition switch is turned ON (II).

- If the engine coolant temperature is 140 ℉ (60 ℃) or higher when the ignition switch is turned ON (II), the outside air temperature indicated the last time the key was turned off will be displayed regardless of the current temperature measured by the outside air temperature sensor.
- If the engine coolant temperature is 139 ℉ (59 ℃) or lower when the ignition switch is turned ON (II), the current temperature measured by the outside air temperature sensor will be indicated.

Update to the outside air temperature indicator while driving

If the temperature measured by the outside air temperature sensor is greater than the temperature on the outside air temperature indicator, the outside temperature indicator will increase by 1.8 ℉ (1 ℃) per minute after the vehicle speed is greater than 19 mph (30 km/h) for more than 1 minute and 30 seconds. It will continue to increase until the current outside air temperature is indicated. So, the first change to the outside air temperature indicator is 1 minute and 30 seconds after the vehicle speed is greater than 19 mph (30 km/h). If the vehicle speed drops below 19 mph (30 km/h), the indicator will not update again until the vehicle speed is increased to 19 mph (30 km/h) or more for more than 1 minute and 30 seconds again.
If the outside air temperature is less than the indicated temperature, the temperature will decrease 1 ℉ every 1.1 seconds (1 ℃ every 2 seconds) every 2 seconds until the current outside air temperature is indicated regardless of vehicle speed.

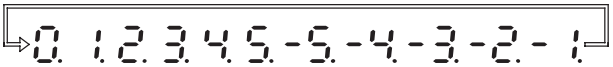
Troubleshooting

If the indicator displays ''— — —'' for more than 2 seconds after selecting the outside air temperature display mode, check the outside temperature sensor or gauge control module self-diagnosis (see page 22-244).

Calibration

The outside air temperature indicator's displayed temperature can be recalibrated ±5 °F (or ±3 °C) to meet the customer's expectations.

1. Turn the ignition switch ON (II).
2. Select the odometer/trip A or odometer/trip B display.
3. Press and hold the RESET switch for 10 seconds. While you continue to hold the button, the display will scroll through temperature settings from +5 °F to −5 °F (or +3 °C to −3 °C) as shown.



4. When the desired correction value appears on the display, release the button, and the recalibrated outside air temperature will be displayed. Each time a desired correction valve is entered, it replaces the previous valve.

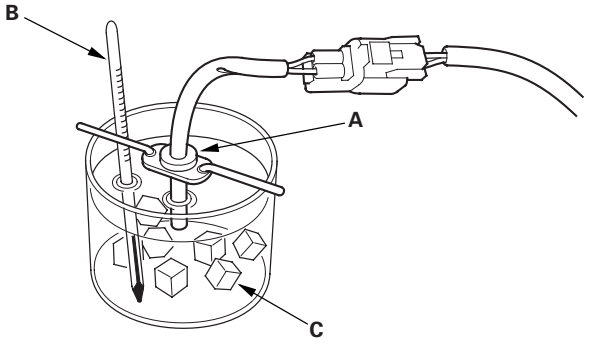
Example:
Incorrect value = 68 °F (20 °C)

Desired correction valve = +2 °F (+1 °C)
Correct valve = 70 °F (21 °C)

Desired correction valve = −2 °F (−1 °C)
Correct valve = 66 °F (19 °C)

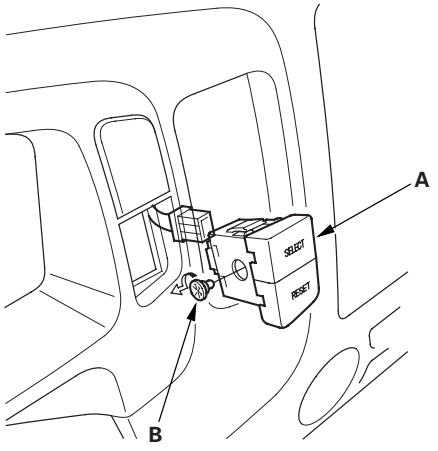
NOTE: The recalibration temperature is not the value the sensor sees. Therefore the temperature can only be adjusted ± degrees from the sensor.

NOTE: To recalibrate the display to the true temperature, remove the outside air temperature sensor (A), but leave it connected. Submerge the sensor and a thermometer (B) in a container of ice water (C). Select the calibration mode as described above, then recalibrate the display to the true temperature.



Select/Reset Switch Test/Replacement

1. Remove the instrument panel (see page 20-81).
2. Carefully push out the select/reset switch (A) from behind the instrument panel.

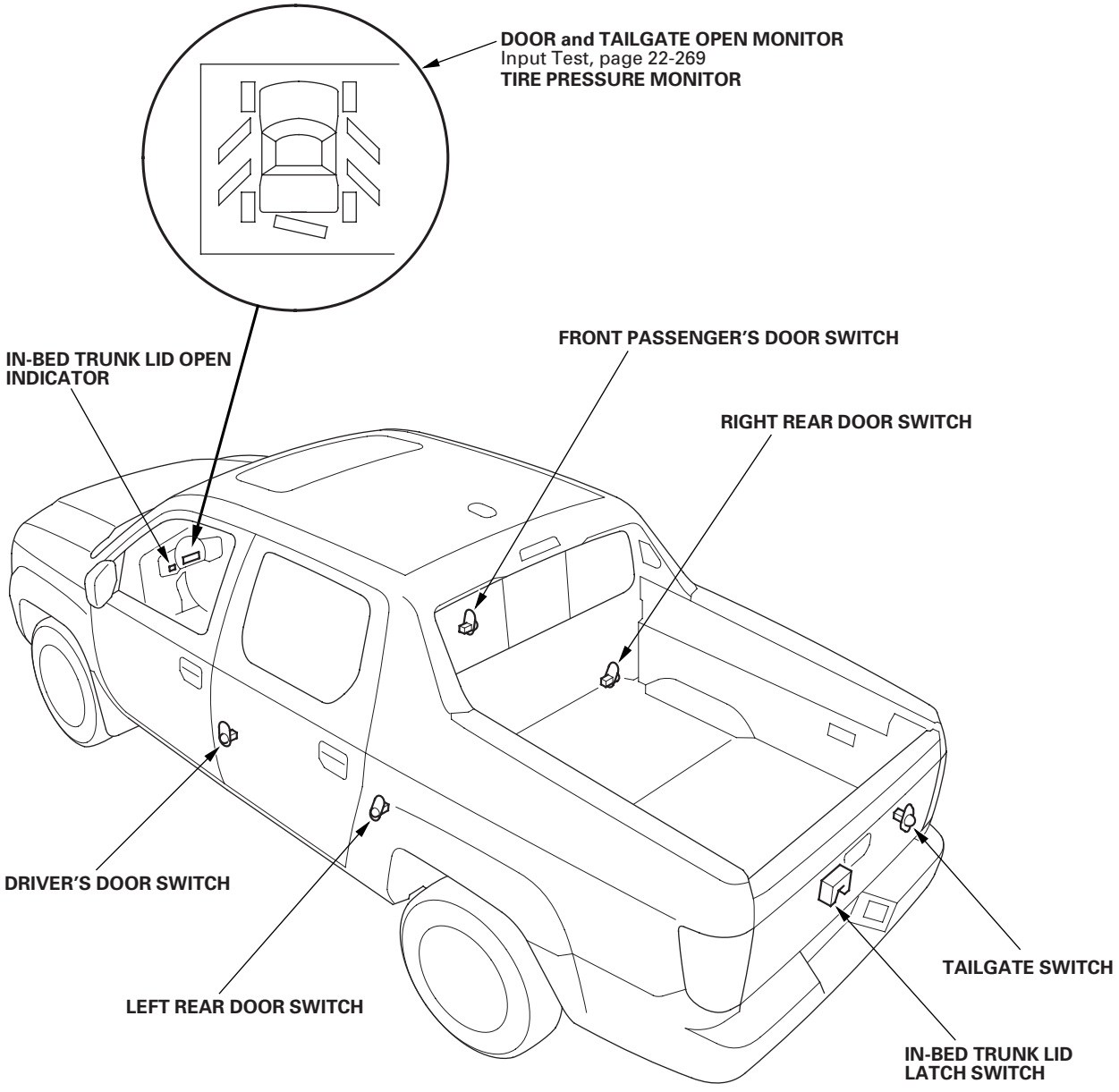


3. Check for continuity between the terminals in each switch position according to the table.

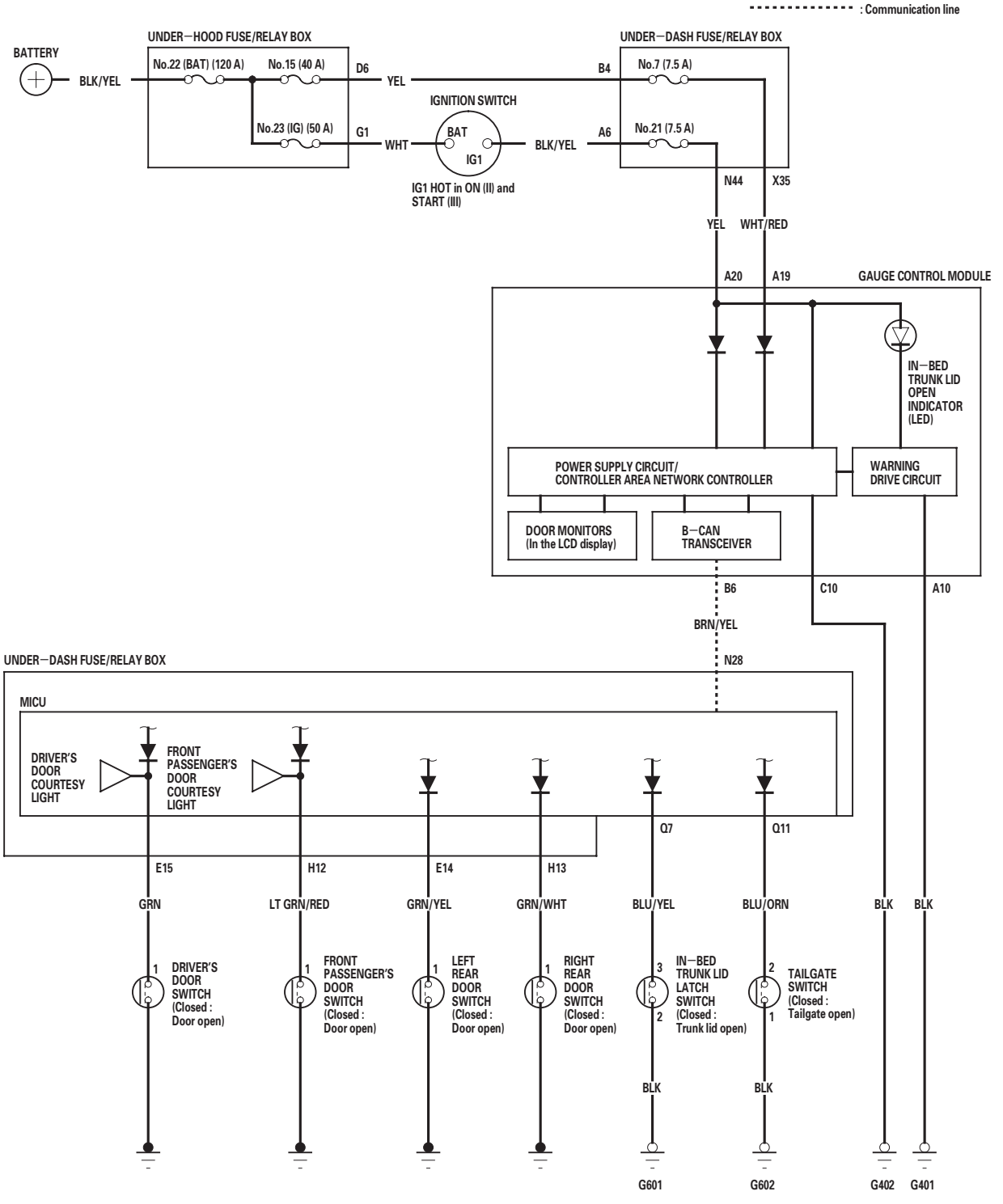
Terminal / Position	2		5	3	1	6
SELECT	○	○	○	○	○	
RESET				○		○

4. If the continuity is not as specified, replace the illumination bulb (B) or the switch.

Component Location Index



Circuit Diagram



Control Unit Input Test

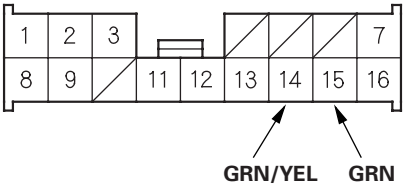
NOTE: Before troubleshooting the safety indicator system, troubleshoot the multiplex integrated control system first using B-CAN System Diagnosis Test Mode A (see page 22-99).

MICU

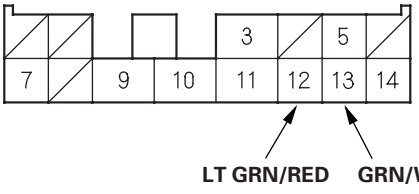
1. Turn the ignition switch OFF.
2. Remove the left front door sill trim and left kick panel (see page 20-60).
3. Disconnect under-dash fuse/relay box connectors E, H and Q (see page 22-61).

   NOTE: All connectors are wire side of female terminals.

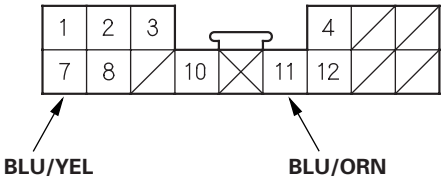
UNDER-DASH FUSE/RELAY BOX CONNECTOR E (16P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR H (14P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR Q (14P)



4. Inspect the connector and socket terminals to be sure they are all making good contact.

   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 5.

(cont'd)

Control Unit Input Test (cont'd)

5. Reconnect the connectors to the under-dash fuse/relay box. Turn the ignition switch ON (II) and make these input tests at the appropriate connectors on the under-dash fuse/relay box.

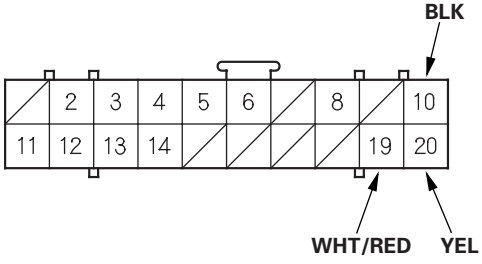
   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
E15	GRN	Driver's door open	Check for voltage to ground: There should be less than 1 V.	• Faulty driver's door switch • An open in the wire
		Driver's door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door switch • Short to ground
H12	LT GRN/ RED	Front passenger's door open	Check for voltage to ground: There should be less than 1 V.	• Faulty front passenger's door switch • An open in the wire
		Front passenger's door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty front passenger's door switch • Short to ground
E14	GRN/YEL	Left rear door open	Check for voltage to ground: There should be less than 1 V.	• Faulty left rear door switch • An open in the wire
		Left rear door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty left rear door switch • Short to ground
H13	GRN/WHT	Right rear door open	Check for voltage to ground: There should be less than 1 V.	• Faulty right rear door switch • An open in the wire
		Right rear door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty right rear door switch • Short to ground
Q7	BLU/YEL	In-bed trunk lid open	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G601) • Faulty in-bed trunk lid latch switch • An open in the wire
		In-bed trunk lid closed	Check for voltage to ground: There should be 5 V or more.	• Faulty in-bed trunk lid latch switch • Short to ground
Q11	BLU/ORN	Tailgate open	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G602) • Faulty tailgate latch switch • An open in the wire
		Tailgate closed	Check for voltage to ground: There should be 5 V or more.	• Faulty tailgate latch switch • Short to ground

Gauge Control Module

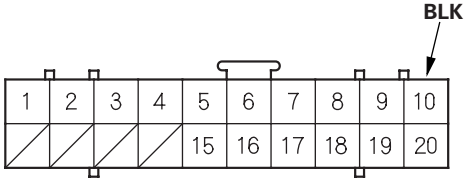
6. Turn the ignition switch OFF.
7. Remove the gauge control module (see page 22-263).
8. Disconnect the gauge control module connectors A (20P) and C (20P).

GAUGE CONTROL MODULE CONNECTOR A (20P)



Wire side of female terminals

GAUGE CONTROL MODULE CONNECTOR C (20P)



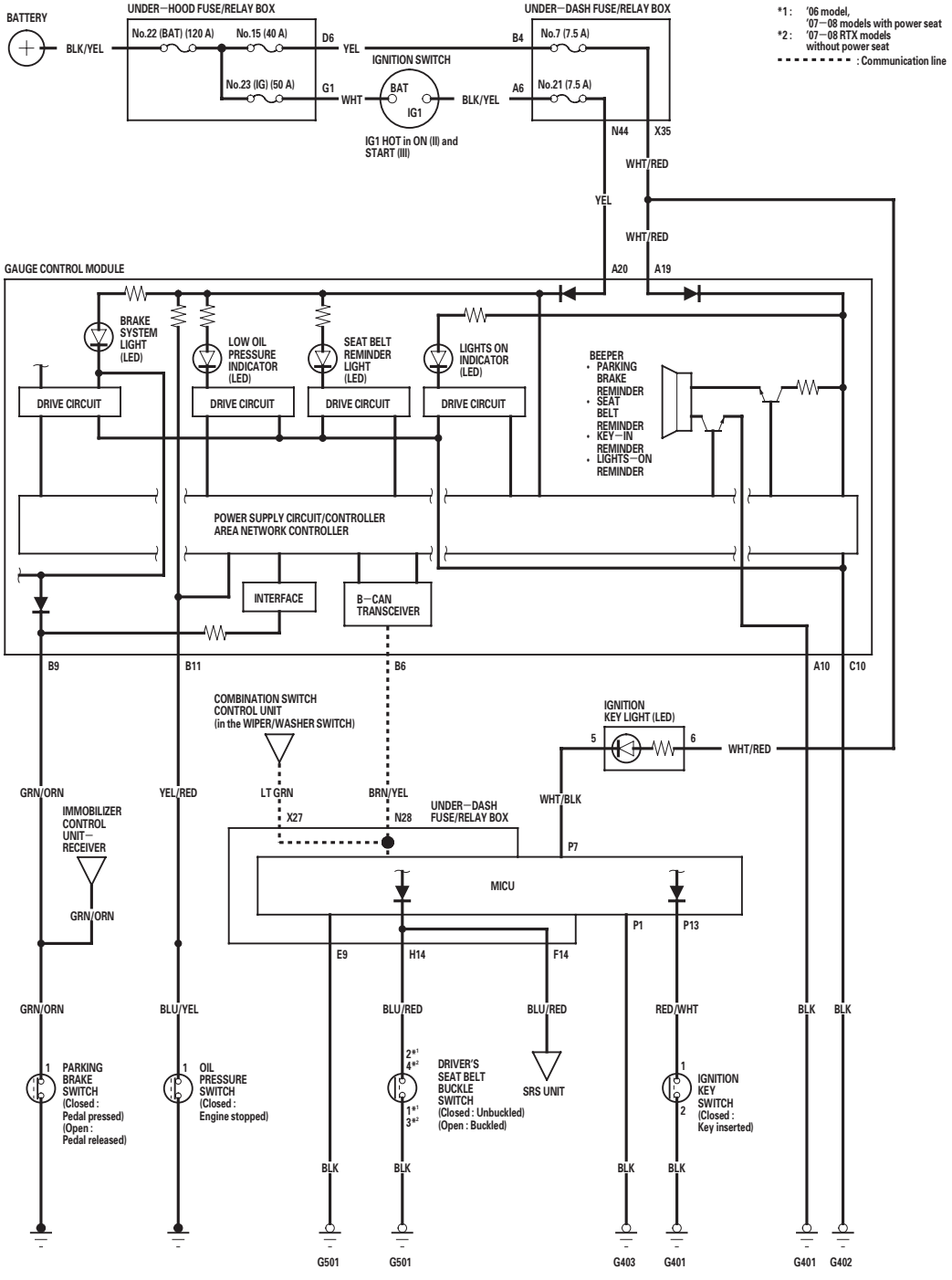
Wire side of female terminals

9. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 10.
10. Reconnect the connectors to the gauge control module, turn the ignition switch ON (II), and make these input tests at the connector.
    - If any test indicates a problem, find and correct the cause, then recheck the system.
    - If all the input tests prove OK, go to step 11.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
C10	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G402) • An open in the wire
A10	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G401) • An open in the wire
A19	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 7 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
A20	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 21 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire

11. If all the input tests prove OK, and no DTCs were found during multiplex integrated control system troubleshooting (B-CAN System Diagnostic Test Mode A), go to the B-CAN system input and output index (see page 22-92). If multiple failures are found on more than one control unit, replace the under-dash fuse/relay box (includes the MICU). If input failures are related to particular control unit, replace the control unit.

Circuit Diagram



Control Unit Input Test

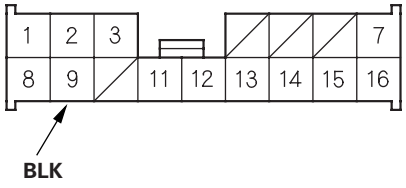
NOTE: Before troubleshooting the reminder systems, key light timer, and engine oil pressure indicator system, troubleshoot the multiplex integrated control system first using B-CAN System Diagnosis Test Mode A (see page 22-99).

MICU

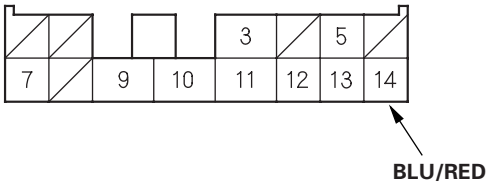
1. Turn the ignition switch OFF.
2. Remove the left front door sill trim and left kick panel (see page 20-60).
3. Disconnect under-dash fuse/relay box connectors E, H, and P (see page 22-61).

   NOTE: All connectors are wire side of female terminals.

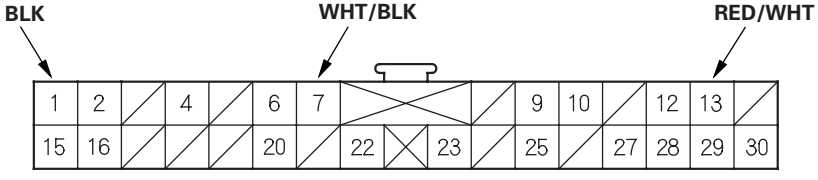
UNDER-DASH FUSE/RELAY BOX CONNECTOR E (16P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR H (14P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR P (30P)



4. Inspect the connector and socket terminals to be sure they are all making good contact.

   • If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   • If the terminals look OK, go to step 5.

5. With the connectors still disconnected, make these input tests at the appropriate connectors on the under-dash fuse/relay box.

   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
P7	WHT/BLK	Under all conditions	Attach to ground: The ignition key light should come on.	• Blown No. 7 (7.5 A) fuse in the under-dash fuse/relay box • Faulty ignition key light • An open in the wire

(cont'd)

Control Unit Input Test (cont'd)

6. Reconnect the connectors to the under-dash fuse/relay box. Turn the ignition switch ON (II) and make these input tests at the appropriate connectors on the under-dash fuse/relay box.

   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, go to step 7.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
E9	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G501) • An open in the wire
P1	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G403) • An open in the wire
H14	BLU/RED	Driver's seat belt unbuckled	Check for voltage to ground: There should be less than 1 V.	• Faulty driver's seat belt switch • Poor ground (G501) • An open in the wire
		Driver's seat belt buckled	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's seat belt switch • Short to ground
P13	RED/WHT	Ignition key in the ignition switch	Check for voltage to ground: There should be less than 1 V.	• Faulty ignition key switch • Poor ground (G401) • An open in the wire
		Ignition key out of the ignition switch	Check for voltage to ground: There should be 5 V or more.	• Faulty ignition key switch • Short to ground

Gauge Control Module

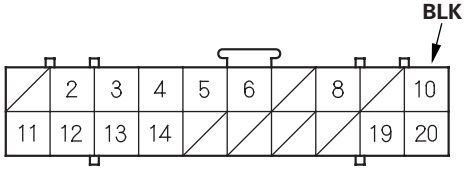
7. Turn the ignition switch OFF.

8. Remove the gauge control module (see page 22-263).

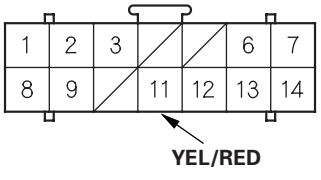
9. Disconnect gauge control module connectors A (20P), B (14P) and C (20P).

   NOTE: All connectors are wire side of female terminals.

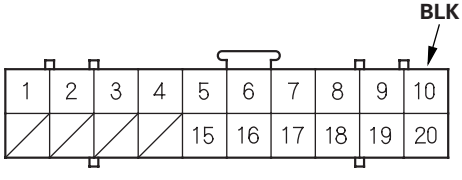
GAUGE CONTROL MODULE CONNECTOR A (20P)



GAUGE CONTROL MODULE CONNECTOR B (14P)



GAUGE CONTROL MODULE CONNECTOR C (20P)



10. Inspect the connector and socket terminals to be sure they are all making good contact.

    • If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
    • If the terminals look OK, go to step 11.

11. Reconnect the connectors at the under-dash fuse/relay box and the gauge control module.

    • If any test indicates a problem, find and correct the cause, then recheck the system.
    • If the input tests prove OK, go to step 12.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
B11	YEL/RED	Engine OFF	Check for voltage to ground: There should be less than 1 V.	• Faulty oil pressure switch • An open in the wire
		Engine running	Check for voltage to ground: There should be 5 V or more.	• Mechanical problem in the engine • Faulty oil pressure switch • An open in the wire
A10	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G401) • An open in the wire
C10	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G402) • An open in the wire

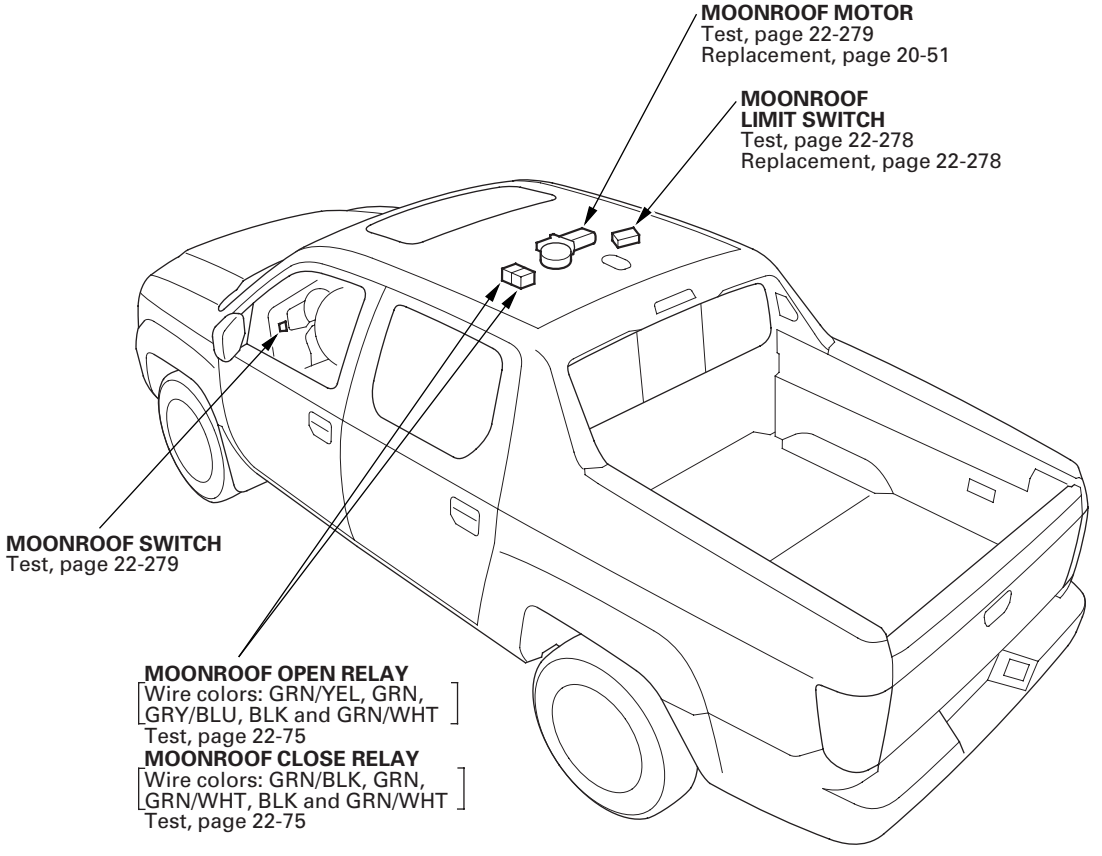
12. Do the Gauge Self-diagnostic Procedure (see page 22-244).

    • If the beeper sounds and the seat belt reminder light flashes, go to step 13.
    • If the beeper does not sound or the seat belt reminder light does not flash, replace the gauge control module.

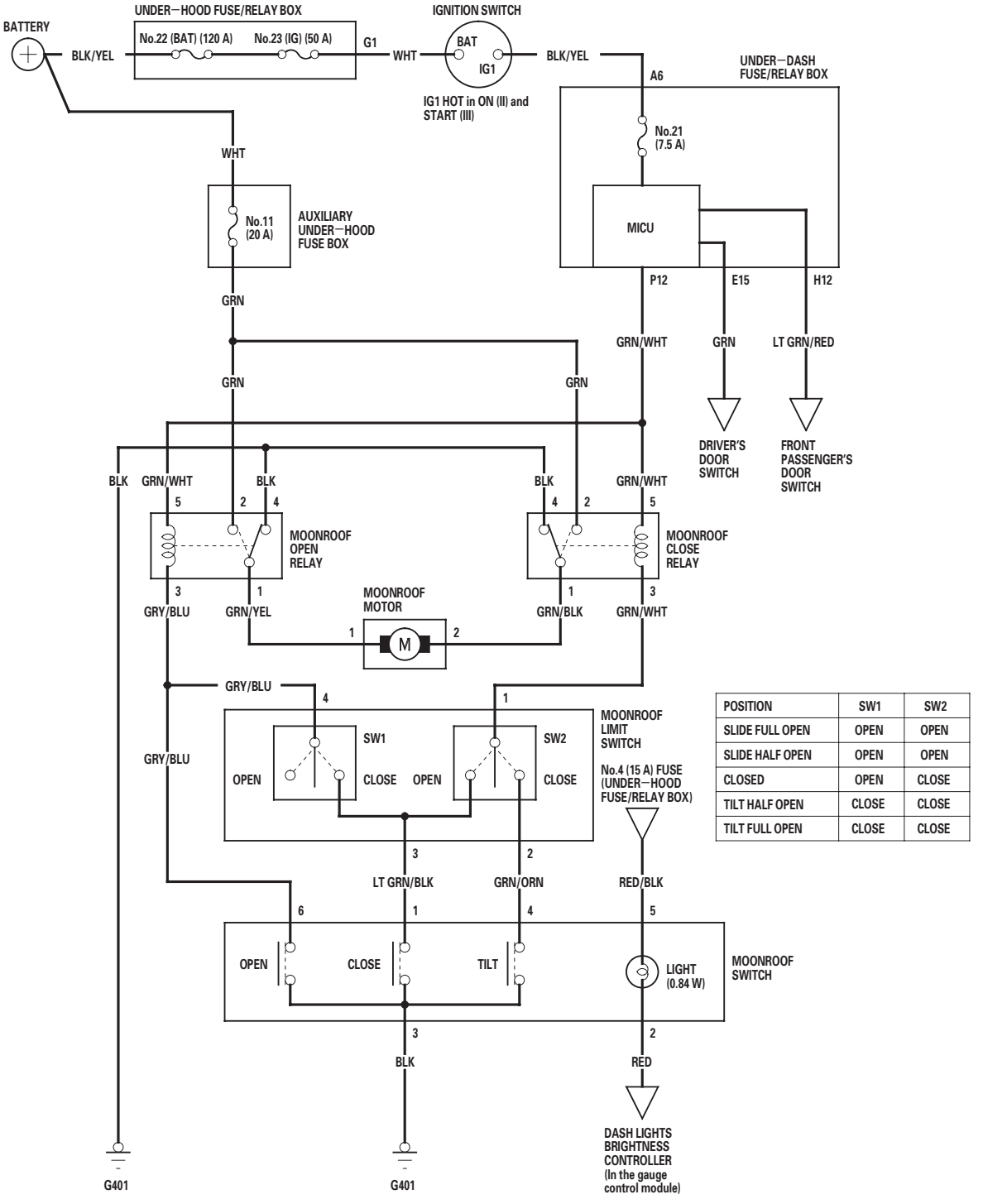
13. Substitute a known-good gauge control module and recheck the system.

    • If the symptom is gone, the gauge control module is faulty; replace it.
    • If the symptom is still present, the MICU is faulty; replace the under-dash fuse/relay box.

Component Location Index



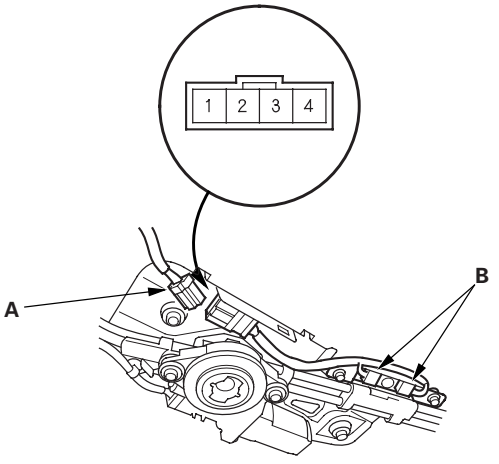
Circuit Diagram



POSITION	SW1	SW2
SLIDE FULL OPEN	OPEN	OPEN
SLIDE HALF OPEN	OPEN	OPEN
CLOSED	OPEN	CLOSE
TILT HALF OPEN	CLOSE	CLOSE
TILT FULL OPEN	CLOSE	CLOSE

Limit Switch Test

1. Remove the headliner (see page 20-70).
2. Disconnect the 4P connector (A) from the moonroof limit switch (B).



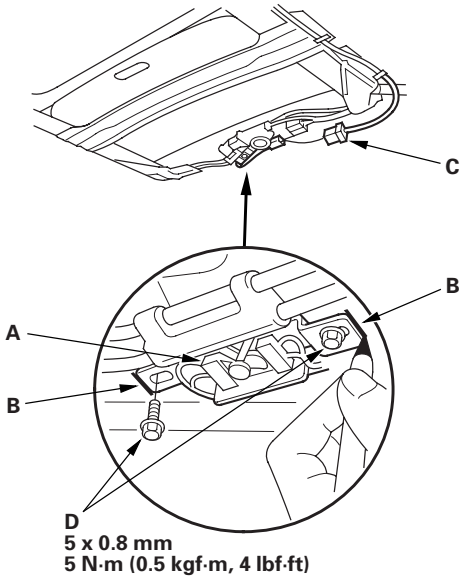
3. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal	1	2	3	4
TILT	○	○	○	○
OPEN	○		○	
CLOSE	○	○		

4. If the continuity is not as specified, adjust the moonroof limit switch (see page 20-57), then repeat step 3.
   If the continuity is still not as specified after the adjustment, replace the moonroof limit switch.

Limit Switch Replacement

1. Remove the headliner (see page 20-70).
2. Mark the position of the moonroof limit switch (A) on the moonroof fame (B).



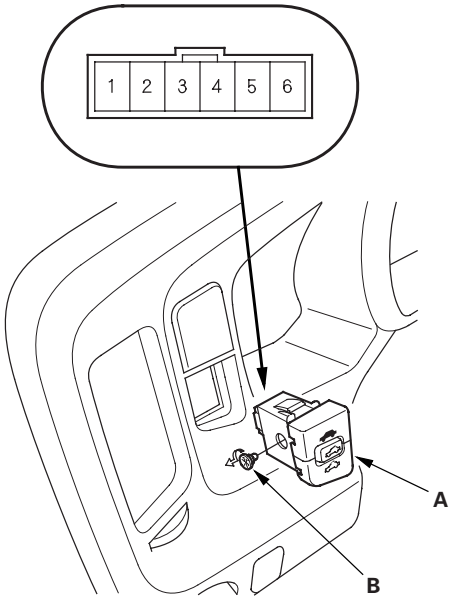
3. Disconnect the 4P connector (C) from the moonroof limit switch.
4. Remove the two mounting bolts (D).
5. Install the switch in the reverse order of removal.
6. Adjust the moonroof limit switch as needed (see page 20-57).

Switch Test

NOTE: The moonroof can still be operated for about 10 minutes after the ignition switch is turned from the ''II'' to the ''I'' or ''O'' positions, as long as none of the doors are opened. This provides a convenience to parked occupants while offering a degree of security against unwanted or accidental moonroof operation.

1. Remove the instrument panel (see page 20-81).

2. Carefully push out the moonroof switch (A) from behind the dashboard lower cover.



3. Check for continuity between the terminals in each switch position according to the table.

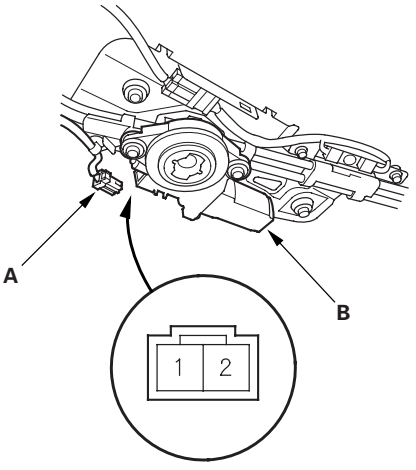
Terminal / Position	2		5	1	3	4	6
CLOSE				○—○			
TILT	○—◊	◊—○			○—○		
OPEN					○—○		○—○

4. If the continuity is not as specified, replace the bulb (B) or the switch.

Moonroof Motor Test

1. Remove the headliner (see page 20-70).

2. Disconnect the 2P connector (A) from the moonroof motor (B).



3. Check the motor by connecting power and ground according to the table.

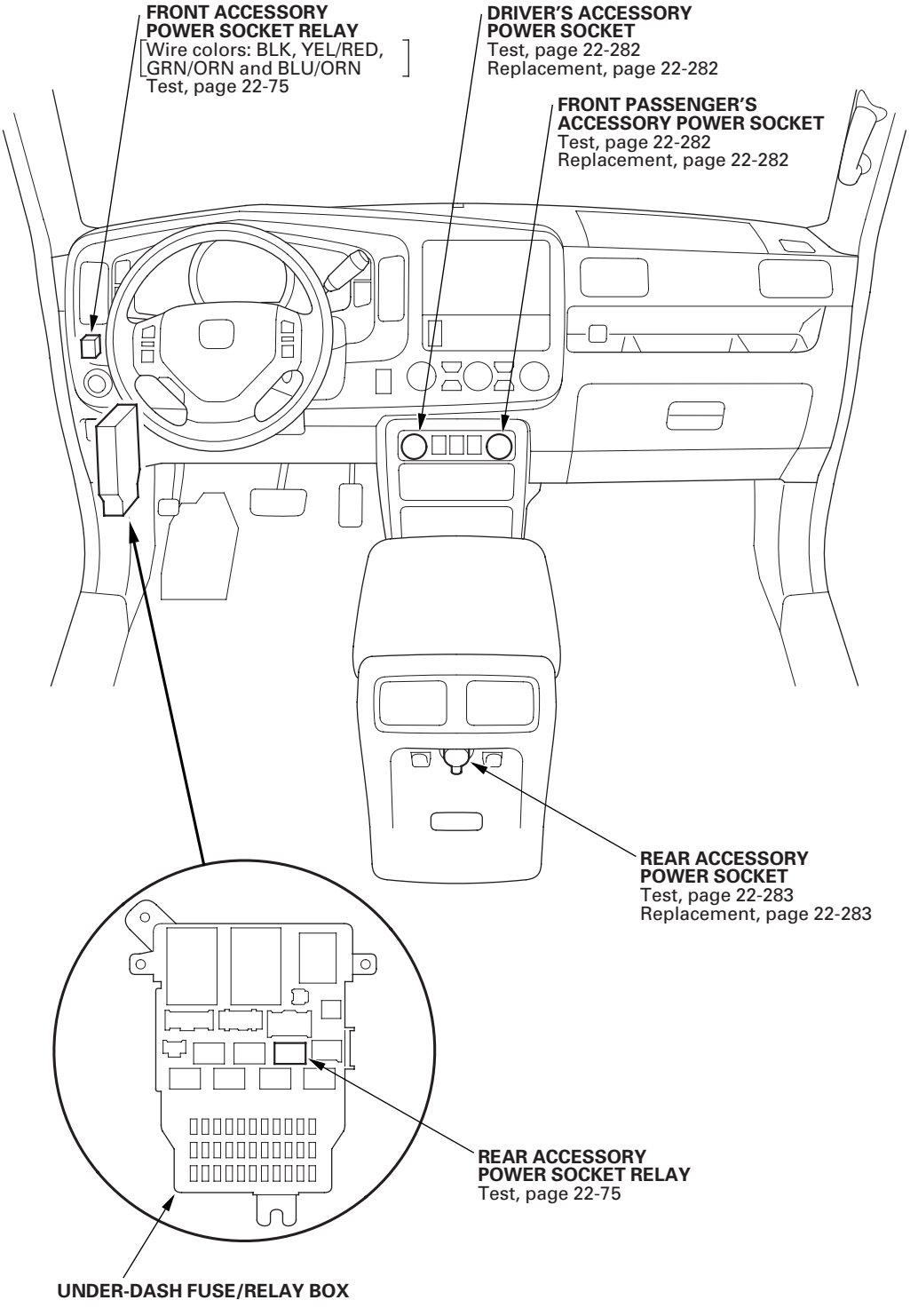
Terminal / Position	1	2
OPEN	⊕	⊖
CLOSE	⊖	⊕

4. If the motor does not run, replace it.

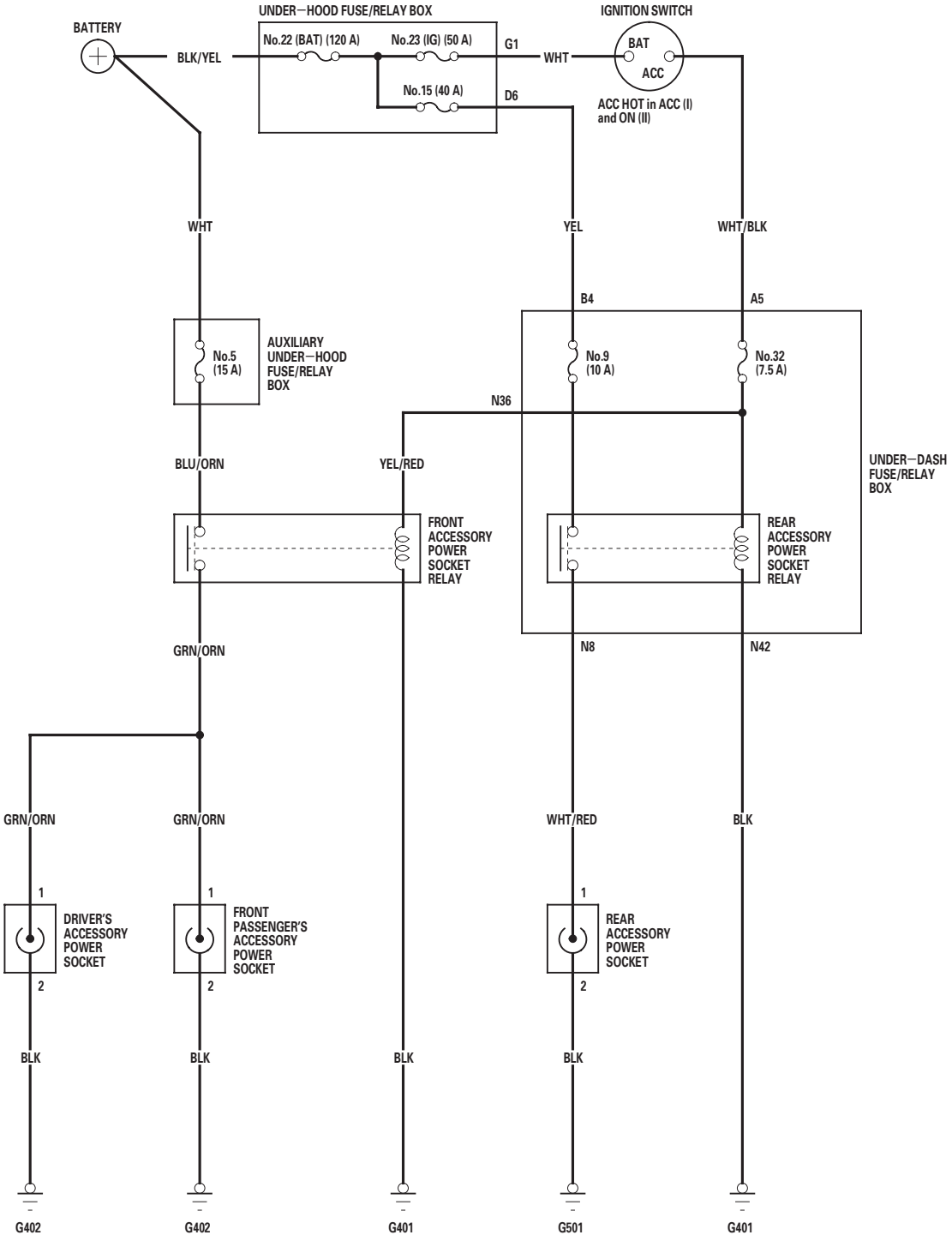
   NOTE: See closing force check (see page 20-58) for motor clutch test.

Accessory Power Sockets

Component Location Index



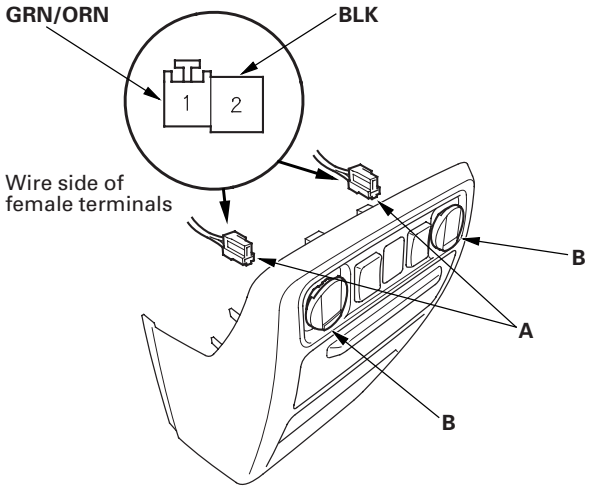
Circuit Diagram



Driver's and Front Passenger's Accessory Power Socket Test/Replacement

1. Remove the center lower console (see page 20-84).

2. Disconnect the 2P connectors (A) from the accessory power sockets (B).



3. Inspect the connector terminals to be sure they are all making good contact.

   - If the terminals are bent, loose, or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 4.

4. Turn the ignition switch to ACC (I).

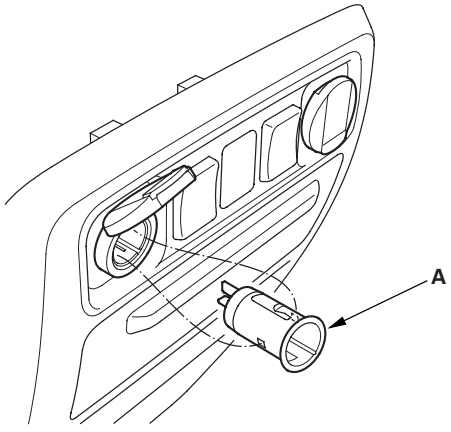
5. Check for voltage between the accessory power socket 2P connector No. 1 terminal and body ground. There should be battery voltage.

   - If there is battery voltage, go to step 6.
   - If there is no battery voltage, check for:
     – Blown No. 5 (15 A) fuse in the auxiliary under-hood fuse/relay box.
     – Blown No. 32 (7.5 A) fuse in the under-dash fuse/relay box.
     – Faulty front accessory power socket relay.
     – Poor ground (G 402).
     – An open in the wire.

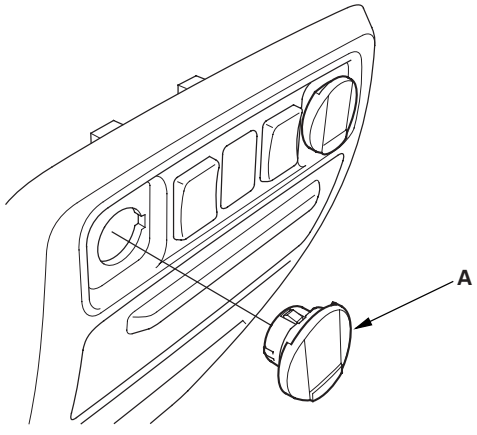
6. Check for continuity between the No. 2 terminal and body ground. There should be continuity.

   - If there is continuity, go to step 7.
   - If there is no continuity, check for:
     – Poor ground (G 402).
     – An open in the wire.

7. Remove the socket (A).



8. Remove the housing (A) from the panel.



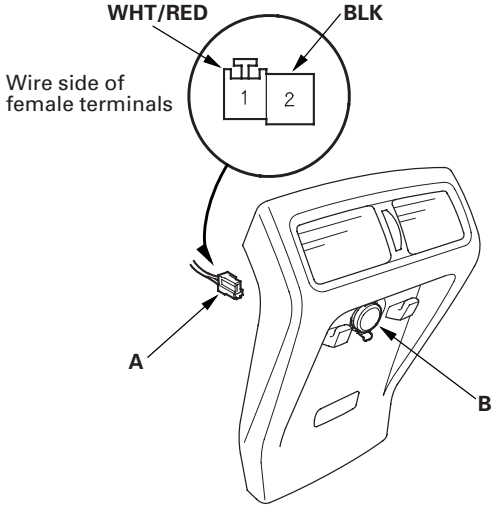
9. Install the power socket in the reverse order of removal.

Rear Accessory Power Socket Test/Replacement

NOTE: Before troubleshooting the rear accessory power socket, perform the multiplex integrated control system troubleshooting using B-CAN System Diagnosis Test Mode A (see page 22-99).

1. Remove the console rear trim (see page 20-80).

2. Disconnect the 2P connector (A) from the accessory power socket (B).



3. Inspect the connector terminals to sure they are all making good contact.

   • If the terminals are bent, loose, or corroded, repair them as necessary and recheck the system.
   • If the terminals look OK, go to step 4.

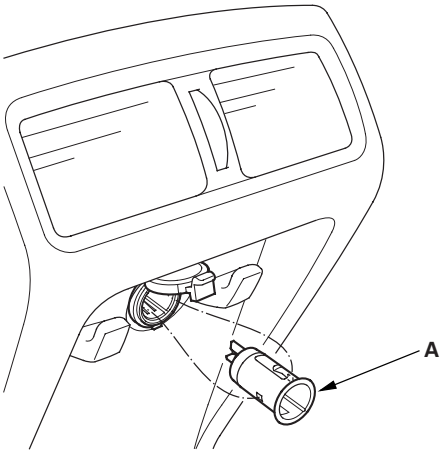
4. Turn the ignition switch to ACC (I).

5. Check for voltage between the power accessory socket 2P connector No. 1 terminal and body ground. There should be battery voltage.

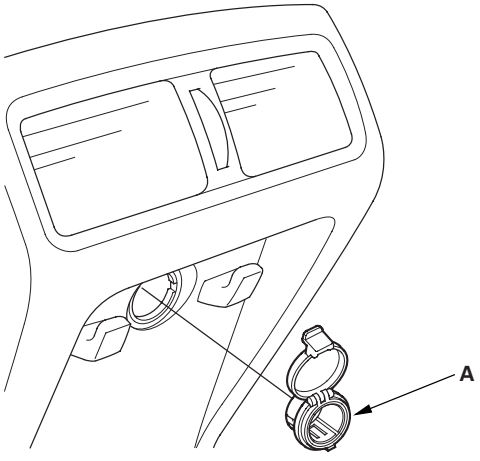
   • If there is battery voltage, go to step 6.
   • If there is no battery voltage, check for:
     – Blown No. 9 (10 A) fuse in the under-dash fuse/relay box.
     – Blown No. 32 (7.5 A) fuse in the under-dash fuse/relay box.
     – Faulty rear accessory power socket relay.
     – Poor ground (G 401).
     – An open in the wire.

6. Check for continuity between the No. 2 terminal and body ground. There should be continuity.
   • If there is continuity, go to step 7.
   • If there is no continuity, check for:
     – Poor ground (G 501).
     – An open in the wire.

7. Remove the socket (A).

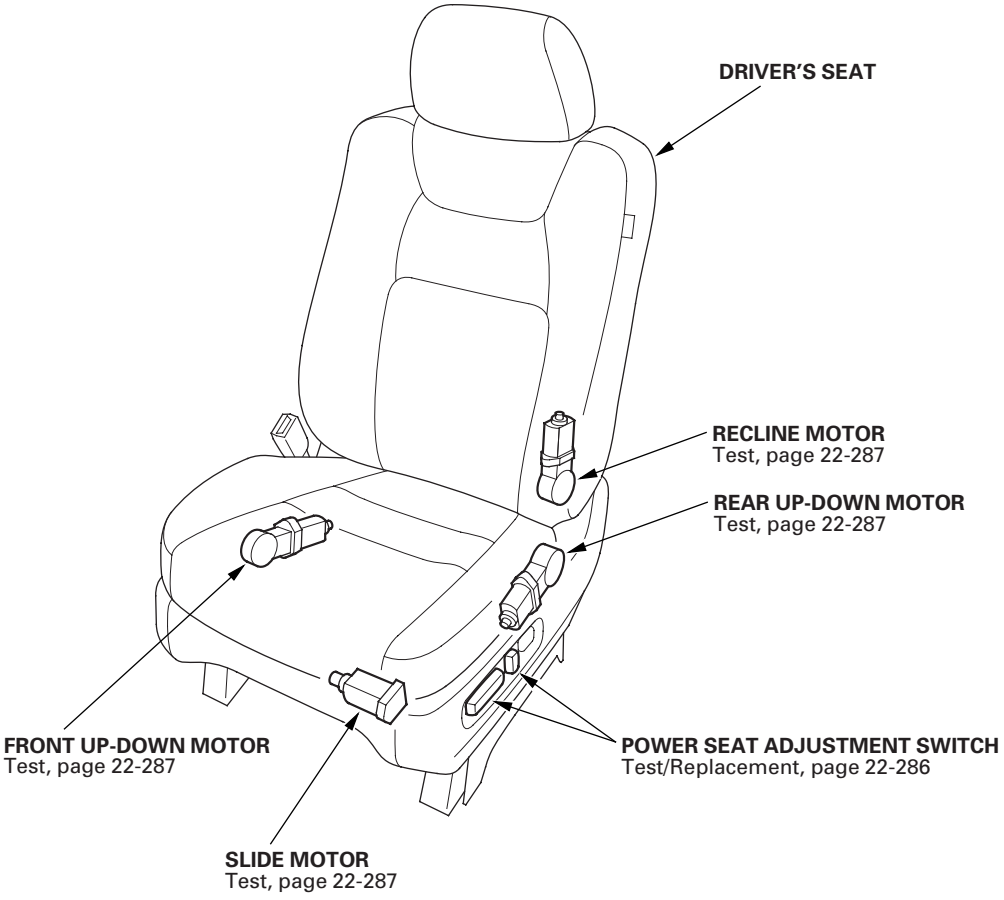


8. Remove the housing (A) from the panel.

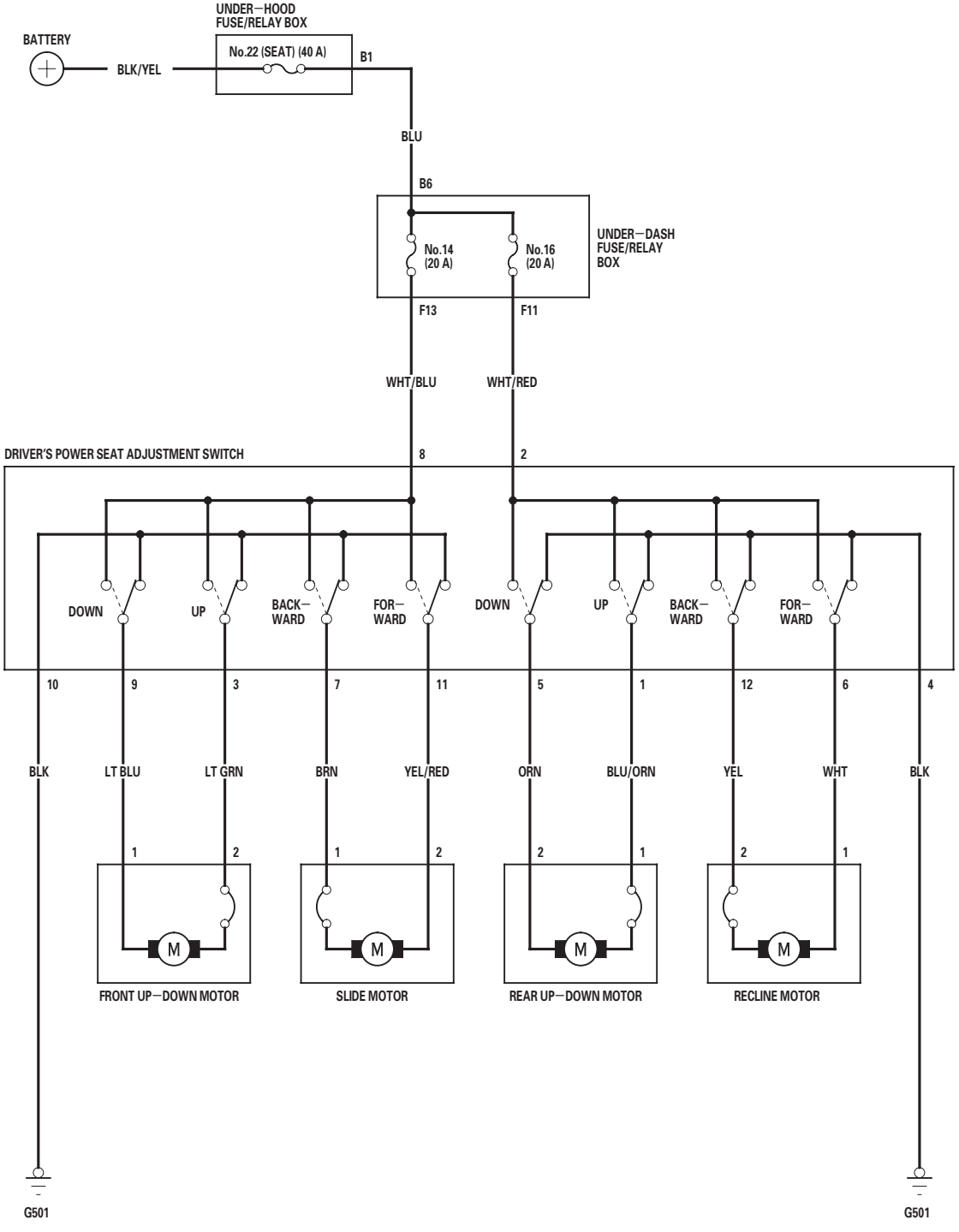


9. Install the power socket in the reverse order of removal.

Component Location Index

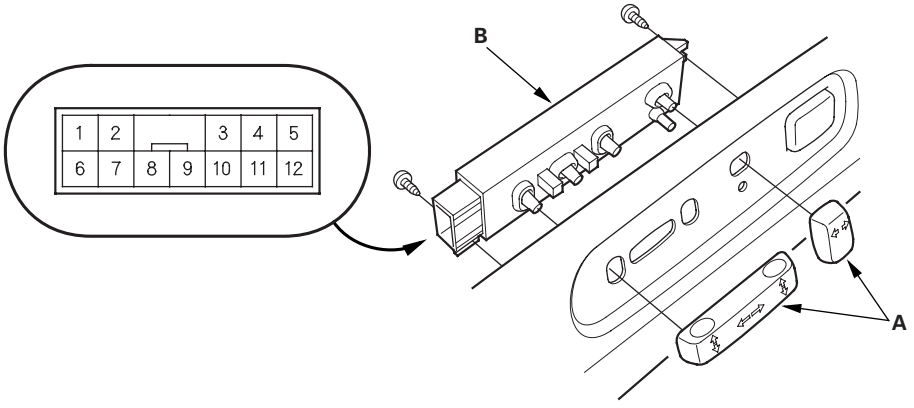


Circuit Diagram



Power Seat Adjustment Switch Test/Replacement

1. Remove the power seat adjustment switch knobs (A) and recline cover from the driver's power seat (see step 7 on page 20-101), then remove the two screws and the power seat adjustment switch (B).



2. Disconnect the 12P connector from the power seat adjustment switch.

3. Reinstall the adjustment switch knobs to the switch.

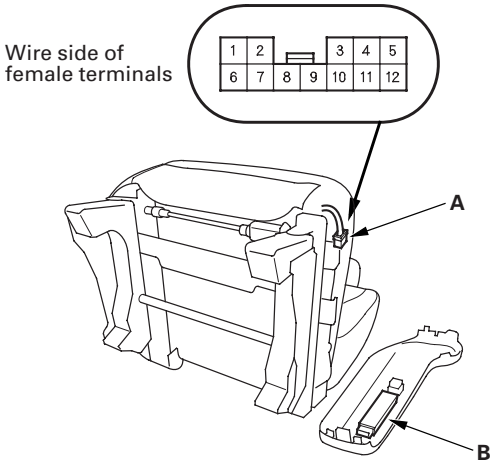
4. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal		1	2	3	4	5	6	7	8	9	10	11	12
SLIDE SWITCH	Forward							○	○		○	○	
	Backward							○	○		○	○	
RECLINE SWITCH	Forward		○		○		○						○
	Backward		○		○		○						○
FRONT UP-DOWN SWITCH	UP			○					○	○	○		
	DOWN			○					○	○	○		
REAR UP-DOWN SWITCH	UP	○	○		○	○							
	DOWN	○	○		○	○							

5. If the continuity is not as specified, replace the switch.

Motor Test

1. Remove the driver's seat (see page 20-97).
2. Remove the power seat adjustment switch knobs and recline cover from the seat (see step 7 on page 20-101).
3. Disconnect the 12P connector (A) from the power seat adjustment switch (B).



4. Test each motor by applying battery voltage and body ground to the 12P connector terminals.

Slide motor

Terminal / Position	7	11
Forward	⊖	⊕
Backward	⊕	⊖

Recline motor

Terminal / Position	6	12
Forward	⊕	⊖
Backward	⊖	⊕

Front up-down motor

Terminal / Position	3	9
UP	⊕	⊖
DOWN	⊖	⊕

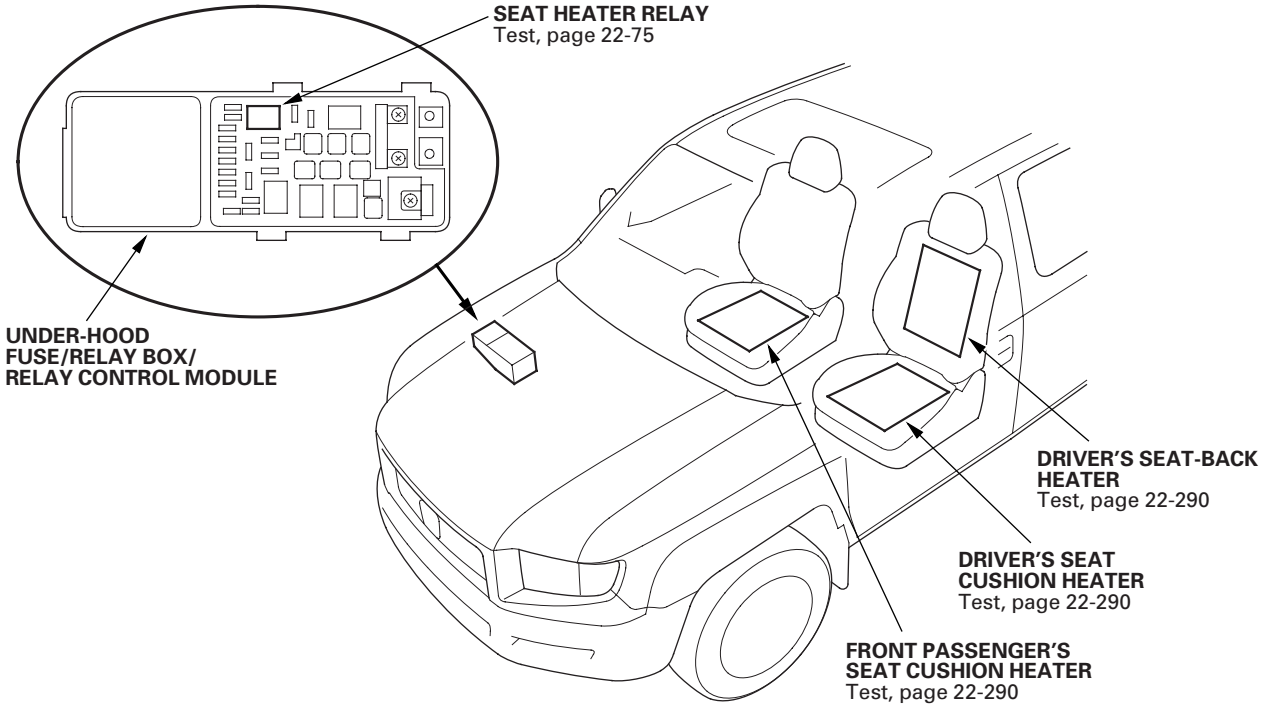
Rear up-down motor

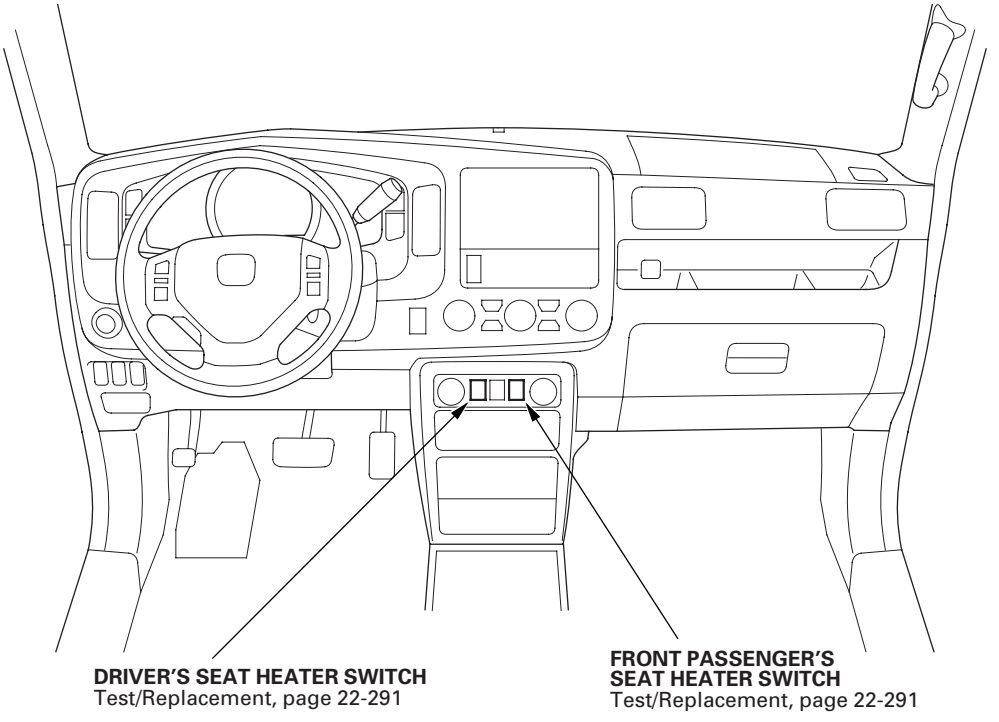
Terminal / Position	1	5
UP	⊕	⊖
DOWN	⊖	⊕

5. If the motor does not run or fails to run smoothly, check for an open in the driver's seat wire harness and recline motor subharness. If the harness is OK, replace the motor.

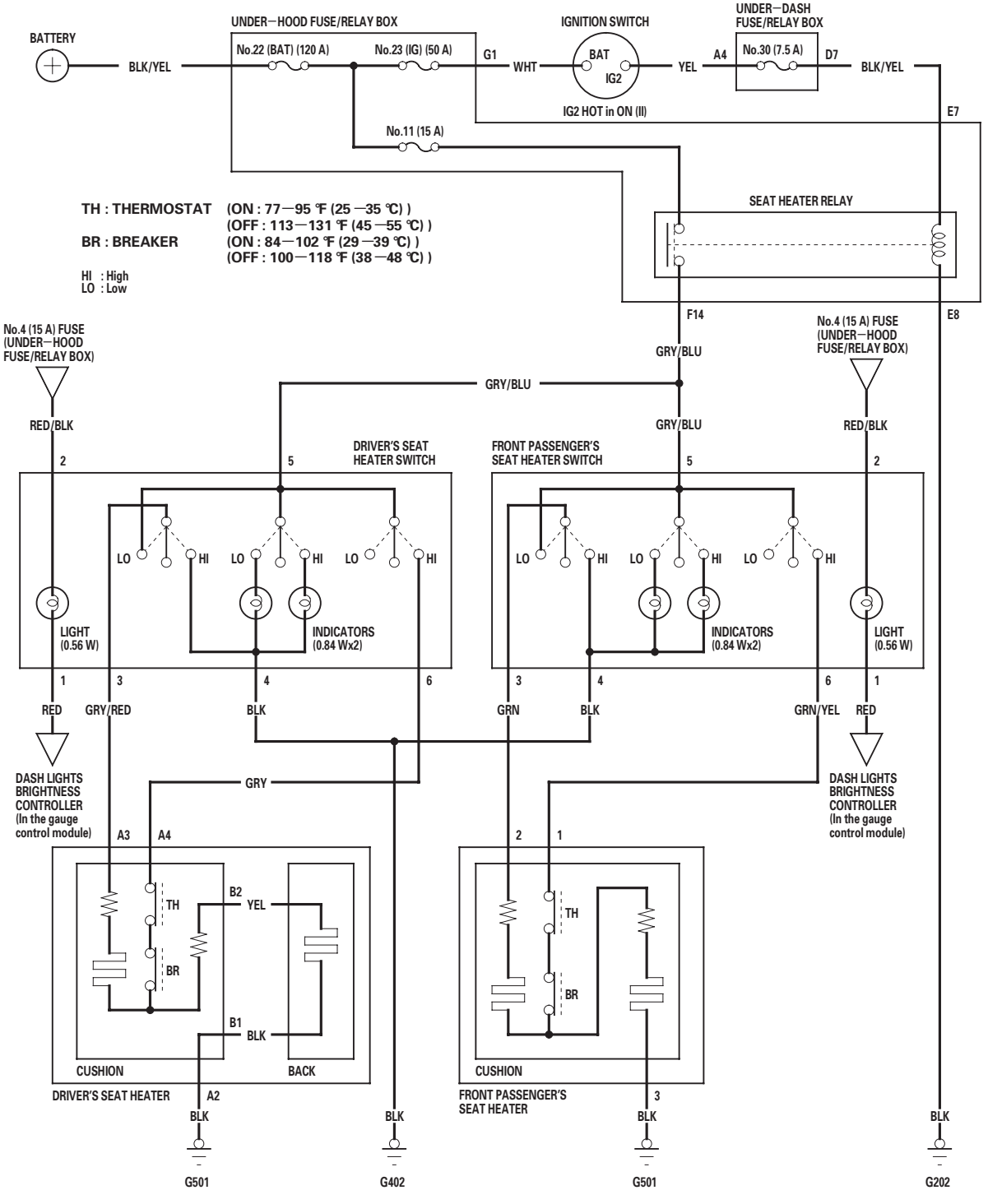
- Recline motor (see page 20-103).
- Other motors:
  – '06 model (see page 20-108)
  – '07-08 models (see page 20-109)

Component Location Index





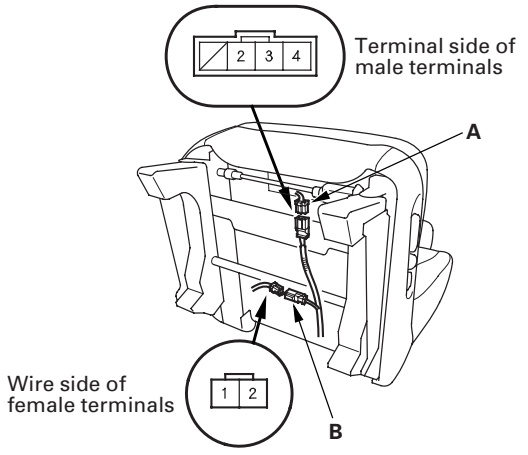
Circuit Diagram



Seat Heater Test

Driver's Seat

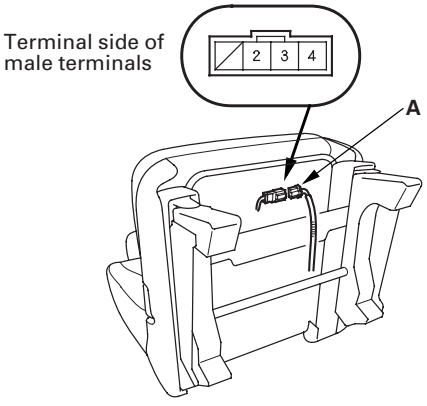
1. Remove the driver's seat (see page 20-97).
2. Disconnect the 4P connector (A) and 2P connector (B) from the seat heater.



3. Check for continuity between the B1 and B2 terminals of the seat-back heater 2P connector. There should be continuity.
4. Check for continuity between the A2 and B1 terminals, the A3 and A4 terminals, and the A3 and B2 terminals. There should be continuity.
5. If the continuity check is not as specified, replace the appropriate seat heater.

Front Passenger's Seat

1. Remove the passenger's seat (see page 20-97).
2. Disconnect the 4P connector (A) from the seat heater.

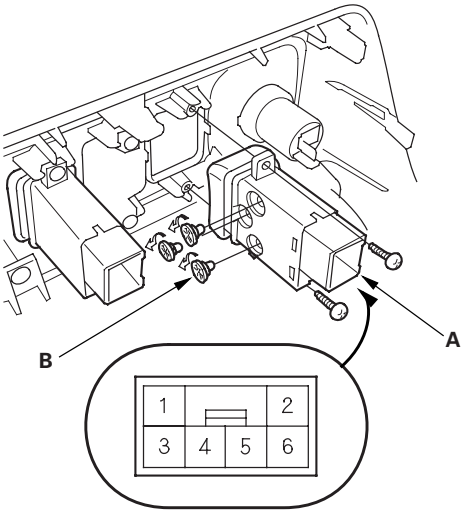


3. Check for continuity between the No. 1 and No. 3 terminals, and No. 1 and No. 2 terminals of the 4P connector. There should be continuity.
4. If the continuity is not as specified, replace the seat heater.

Switch Test/Replacement

1. Remove the dashboard center lower cover (see page 20-84).

2. Remove the two screws and the switch (A).



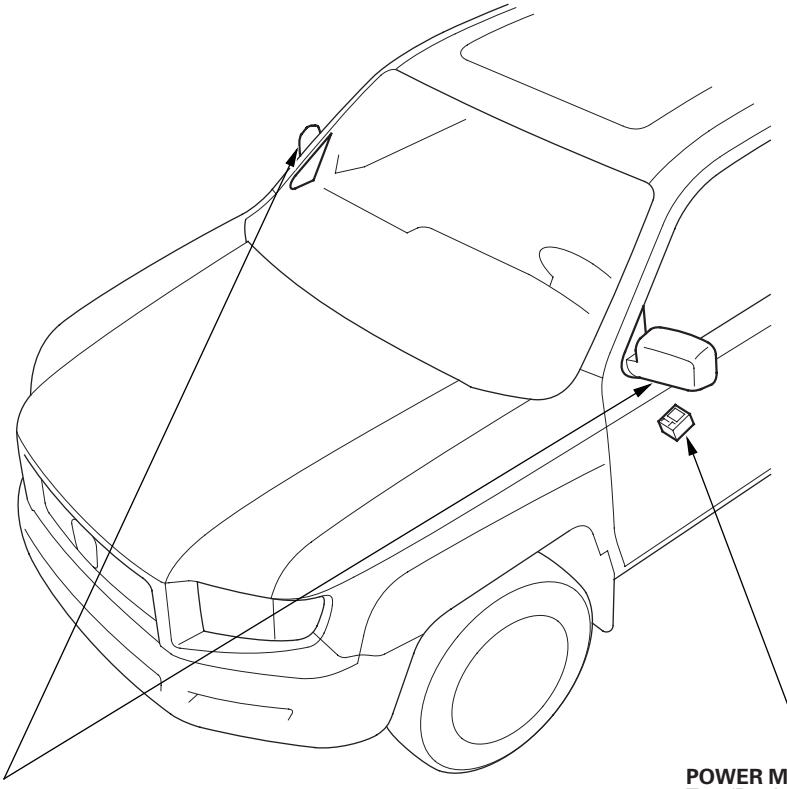
3. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal		1		2	3	4		5	6
ON	HIGH	○	○	○	○	○	○	○	○
	LOW	○	○	○		○	○	○	
OFF		○	○	○					

4. If the continuity check is not as specified, replace the illumination bulbs (B) or the switch.

Power Mirrors

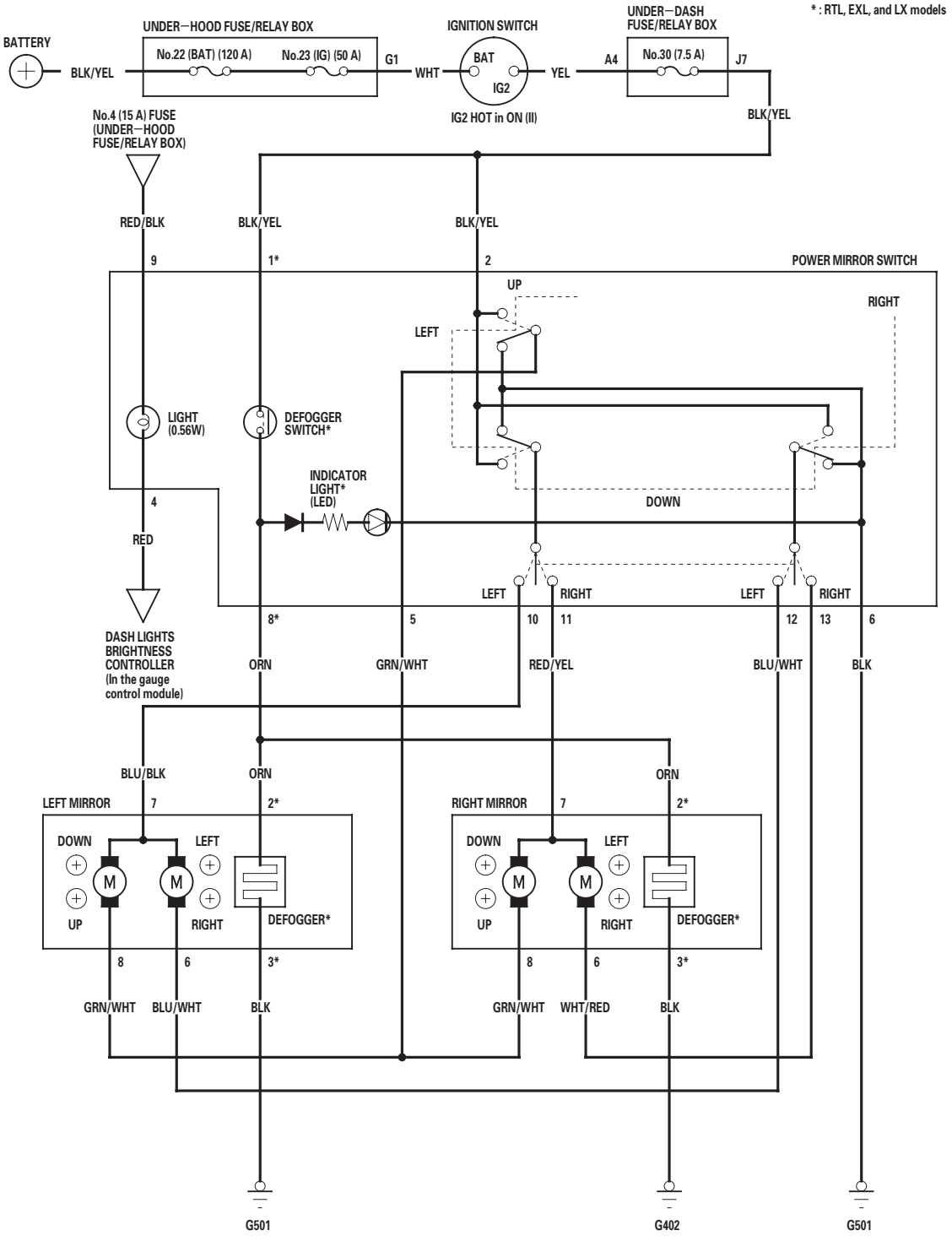
Component Location Index



POWER MIRRORS
Function Test, page 22-294
Replacement, page 20-27
Power Mirror Actuator Test, page 22-296
Mirror Actuator Replacement, page 22-297

POWER MIRROR SWITCH
Test/Replacement, page 22-295

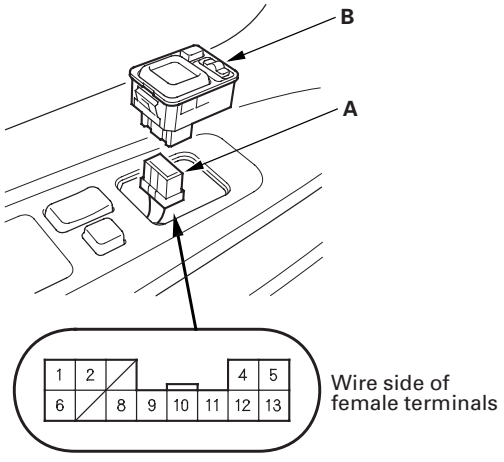
Circuit Diagram



Power Mirror Switch Function Test

1. Remove the driver's door panel (see page 20-7).

2. Disconnect the 13P connector (A) from the power mirror switch (B), and inspect the terminals. If OK, go to step 3.



3. Choose the appropriate test based on the symptom:

   - Both mirrors don't work, go to step 4.
   - Left mirror doesn't work, go to step 6.
   - Right mirror doesn't work, go to step 7.
   - Defoggers don't work, go to step 8.

Both mirrors

4. Reconnect the power mirror switch connector, and check for voltage between the No. 2 terminal and body ground with the ignition switch ON (II) while operating the power mirror switch.
   There should be battery voltage.

   - If there is no battery voltage, check for:
     – Blown No. 30 (7.5 A) fuse in the under-dash fuse/relay box.
     – An open in the BLK/YEL wire.
   - If there is battery voltage, go to step 5.

5. Check for voltage between the No. 6 terminal and body ground while operating the power mirror switch.
   There should be less than 1 V.

   - If there is more than 1 V, check for:
     – An open in the BLK wire.
     – Poor ground (G 501).
   - If there is less than 1 V, check both mirrors individually as described in step 6 and 7.

Left mirror

6. Connect the No. 2 terminal to the No. 10 terminal, and the No. 5 (or No. 12) terminal to body ground with jumper wires. The left mirror should tilt down (or swing left) with the ignition switch ON (II).

   - If the mirror does not tilt down (or does not swing left), check for an open in the GRN/WHT (or BLU/WHT) wire between the left mirror and the 13P connector. If the wire is OK, check the left mirror actuator.
   - If the mirror neither tilts down nor swings left, check for an open in the BLU/BLK wire.
   - If the mirror works properly, check the mirror switch.

Right mirror

7. Connect the No. 2 terminal to the No. 11 terminal, and the No. 5 (or No. 13) terminal to body ground with jumper wires. The right mirror should tilt down (or swing left) with the ignition switch ON (II).

   - If the mirror does not tilt down (or does not swing left), check for an open in the GRN/WHT (or WHT/RED) wire between the right mirror and the 13P connector. If the wire is OK, check the right mirror actuator.
   - If the mirror neither tilts down nor swings left, check for an open in the RED/YEL wire.
   - If the mirror works properly, check the mirror switch.

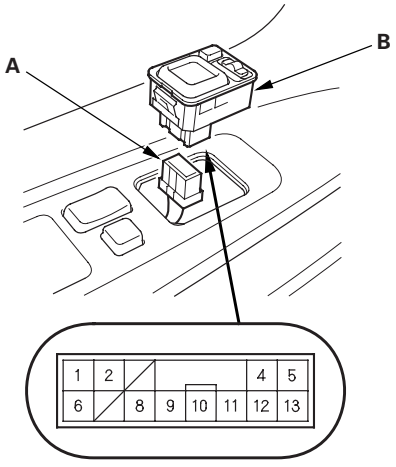
Defogger (USA models: RTL, Canada models: LX, EXL)

8. Connect the No. 1 and No. 8 terminals with a jumper wire, and check for voltage between the No. 1 terminal and body ground. There should be battery voltage and both mirrors should warm up with the ignition switch ON (II).

   - If there is no voltage or neither warms up, check for:
     – An open in the BLK/YEL and ORN wires.
     – Blown No. 30 (7.5 A) fuse in the under-dash fuse/relay box.
     – Poor ground (G 402, G501).
   - If only one fails to warm up, check its defogger.
   - If both warm up, check the defogger switch.

Power Mirror Switch Test/Replacement

1. Disconnect the 13P connector (A) from the power mirror switch (B).



2. Check for continuity between the terminals in each switch position according to the table.

Mirror Switch:

	Terminal / Position	2	5	6	10	11	12	13
L	UP	○	○	○	○		○	
	DOWN	○		○	○		○	
	LEFT	○	○		○			
	RIGHT	○		○	○		○	
R	UP	○	○	○		○		○
	DOWN	○		○		○		○
	LEFT	○	○			○		
	RIGHT	○		○		○		○

Defogger Switch:

Terminal / Position	1	8	6
ON	○	○	○
OFF		○	○

3. If the continuity is not as specified, remove the screws and replace the power mirror switch.

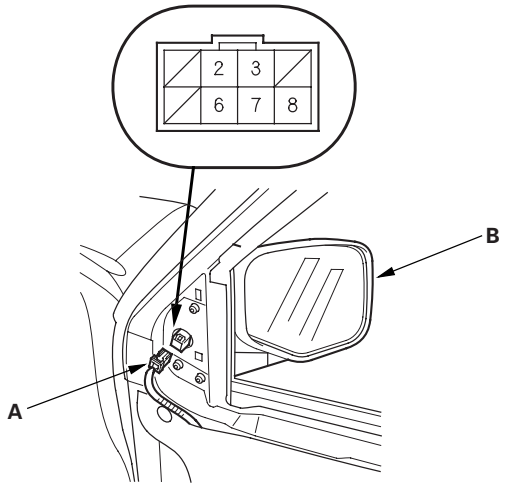
Power Mirror Actuator Test

NOTE: The power mirror actuator can be tested by using the HDS by following these steps:

- Select BODY ELECTRICAL from the SYSTEM SELECT MENU.
- Select FUNCTION TESTS, and then the appropriate power mirror function test.

1. Remove the door panel (see page 20-7) and the mirror mount cover (see page 20-27).

2. Disconnect the 8P connector (A) from the power mirror actuator (B).



3. Check actuator operation by connecting power and ground according to the table.

Terminal / Position	6	7	8
TILT UP		⊖	⊕
TILT DOWN		⊕	⊖
SWING LEFT	⊖	⊕	
SWING RIGHT	⊕	⊖	

4. If the mirror fails to work properly, replace the mirror actuator.

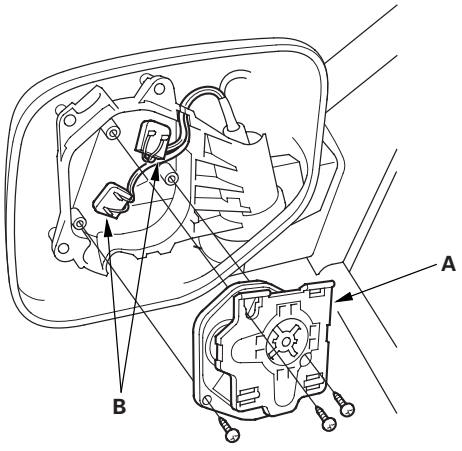
Defogger Test

5. Reconnect the 8P connector to the mirror actuator, turn the ignition switch ON (II) and the mirror defogger switch is ON.

6. Measure voltage between the No. 2 and No. 3 terminals of the 8P connector. There should be battery voltage. If there is no voltage, check for an open in the wire. If voltage is as specified and the mirror fails to warm up, replace the mirror defoggers.

Power Mirror Actuator Replacement

1. Remove the mirror (see page 20-28).
2. Remove the three screws from the actuator (A).

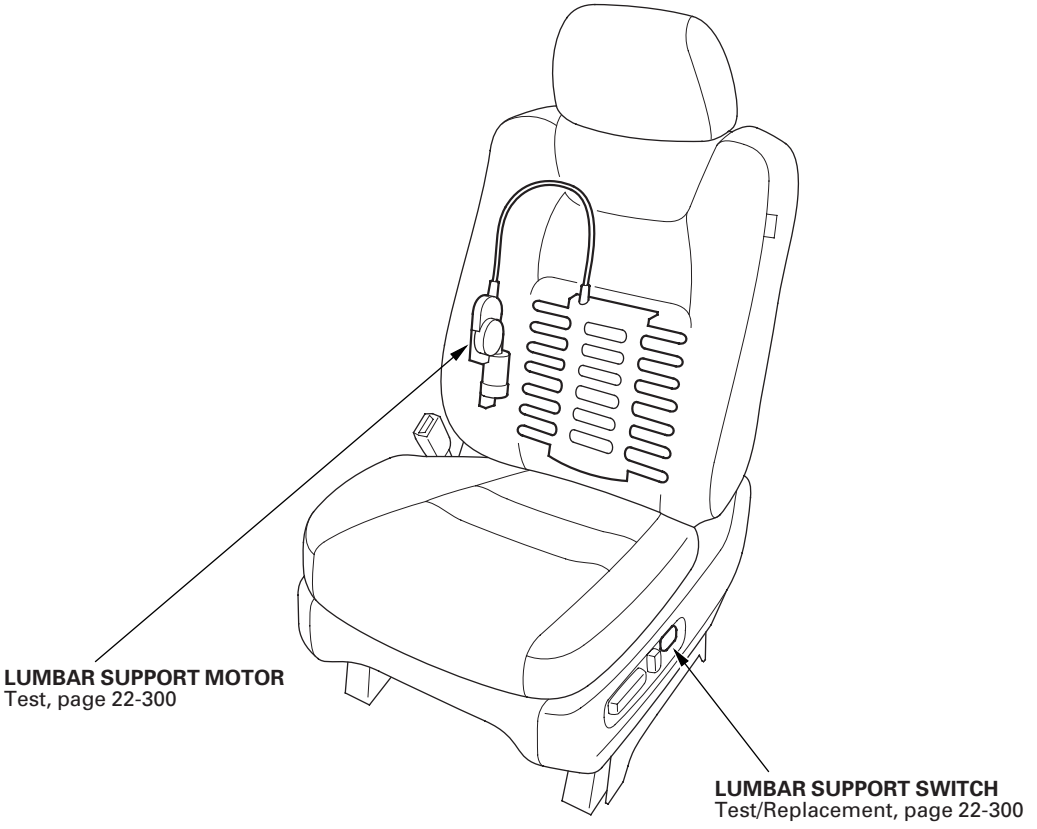


3. Record the connector locations, then disconnect the connectors (B) and remove the actuator.
4. Install in the reverse of removal.
5. Operate the power mirror to check that the actuator works smoothly.

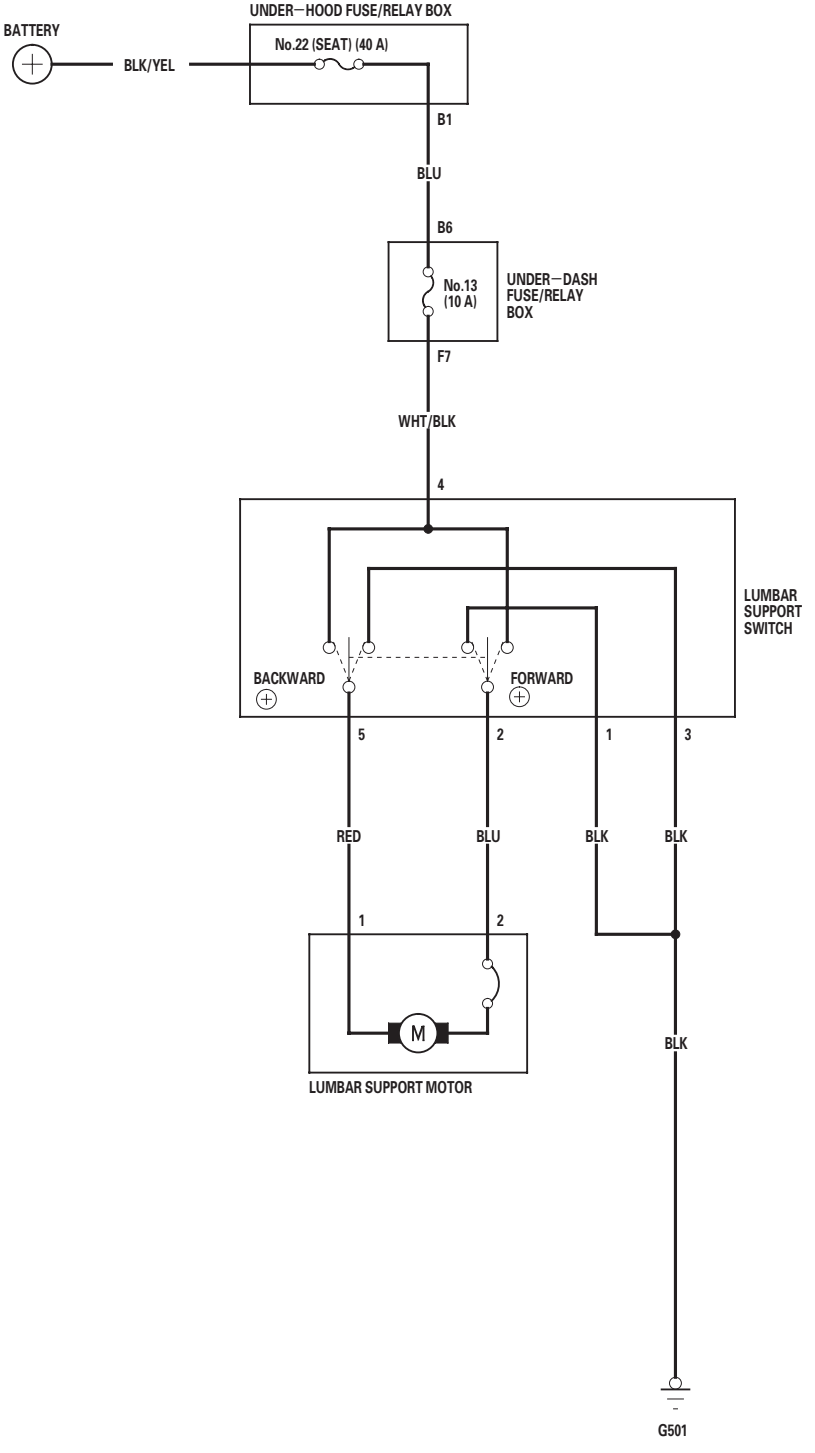
Power Lumbar Support

Component Location Index

Driver's side shown



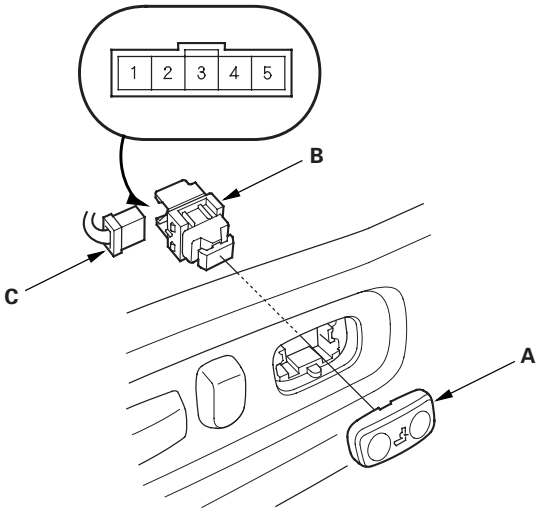
Circuit Diagram



Power Lumbar Support

Switch Test/Replacement

1. Separate the lumbar support switch cover (A) from the switch (B).



2. Disconnect the 5P connector (C) from the switch.

3. Check for continuity between the terminals in each switch position according to the table.

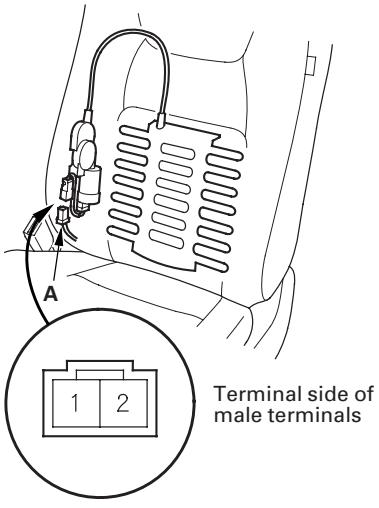
Terminal / Position	1	2	3	4	5
Forward		○		○	
		○	○	○	○
Backward	○	○		○	○

4. If the continuity is not as specified, replace the switch.

Motor Test

1. Remove the front seat (see page 20-97).

2. Disconnect the 2P connector (A) from the lumbar support motor.



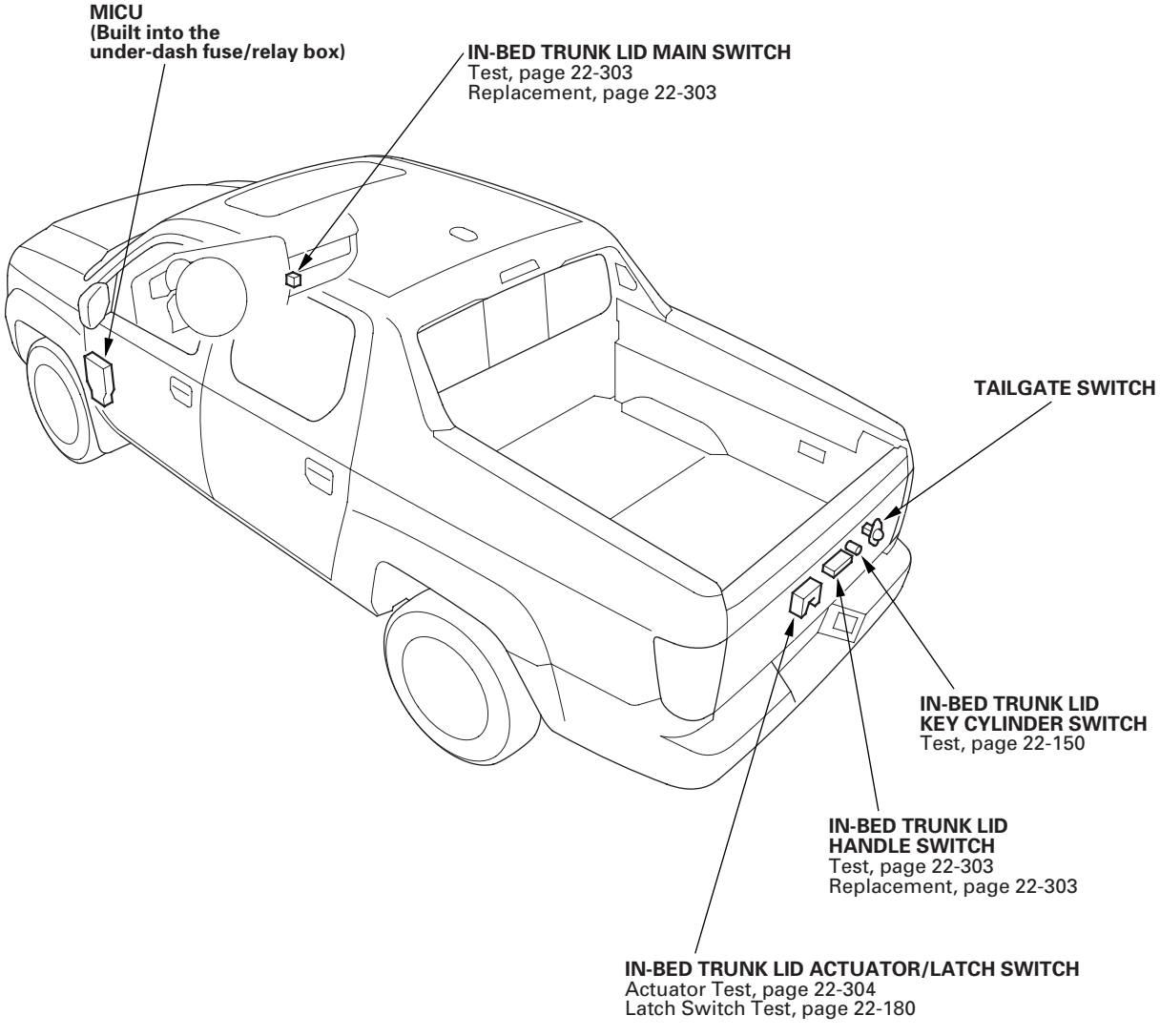
3. Test each motor by applying battery voltage and body ground to the terminals.

Terminal / Position	1	2
Forward	⊖	⊕
Backward	⊕	⊖

4. If the motor does not run or fails to run smoothly, replace the lumbar support actuator (see page 20-110).

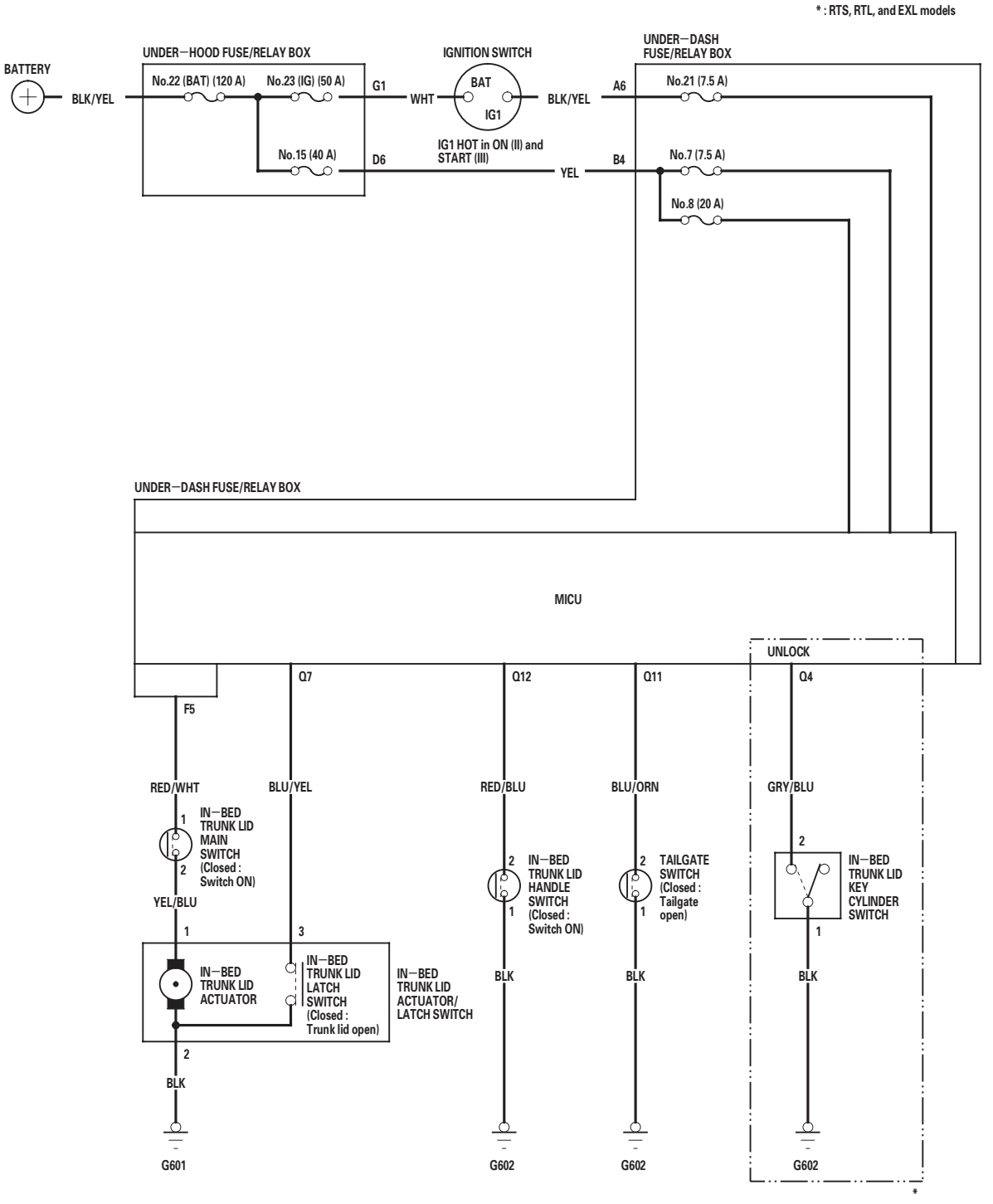
In-Bed Trunk Lid Opener

Component Location Index



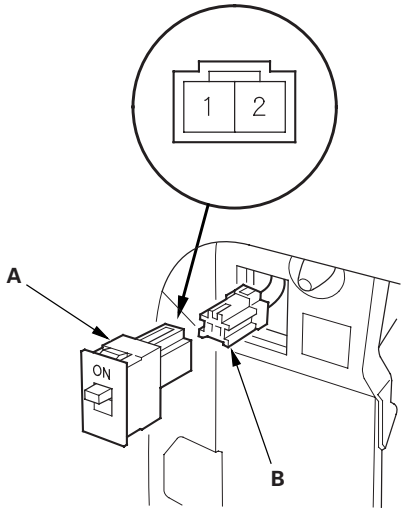
In-Bed Trunk Lid Opener

Circuit Diagram



Main Switch Test/Replacement

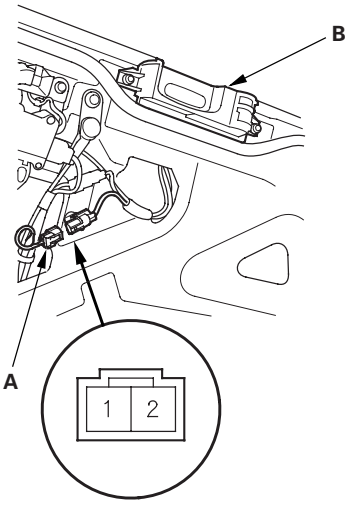
1. Remove the glove box (see page 20-85).
2. Carefully push the main switch (A) out.



3. Disconnect the 2P connector (B) from the main switch.
4. Check for continuity between the No. 1 and No. 2 terminals.
   - With the main switch ON, there should be continuity.
   - With the main switch OFF, there should be no continuity.
5. If the continuity check is not as specified, replace the main switch.

In-Bed Trunk Lid Handle Switch Test/Replacement

1. Open the in-bed trunk lid, and remove the in-bed trunk lid inner cover (see step 2 on page 20-187).
2. Disconnect the 2P connector (A) from the in-bed trunk lid handle switch (B).

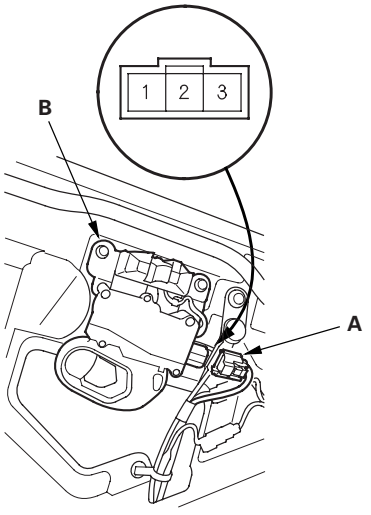


3. Check for continuity between the No. 1 and No. 2 terminal.
   - With the handle pushed, there should be continuity.
   - With the handle released, there should be no continuity.
4. If the continuity check is not as specified, replace the switch (see page 20-188).

In-Bed Trunk Lid Actuator Test

1. Remove the in-bed trunk lid trim (see page 20-166).

2. Disconnect the 3P connector (A) from the in-bed trunk lid actuator/latch switch (B).



3. Check in-bed trunk lid actuator operation by connecting power and ground according to the table. To prevent damage to the in-bed trunk lid opener solenoid, apply battery voltage only momentarily.

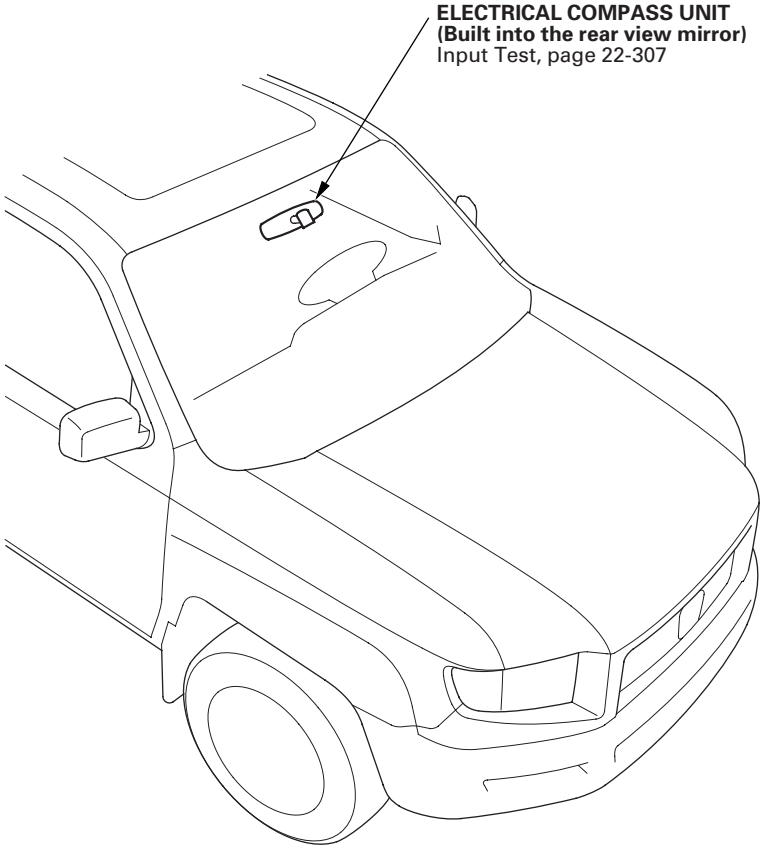
Terminal / Position	1	2
LOCK	⊖	⊕
UNLOCK	⊕	⊖

4. If the in-bed trunk lid actuator does not work as specified, replace it.

Electrical Compass

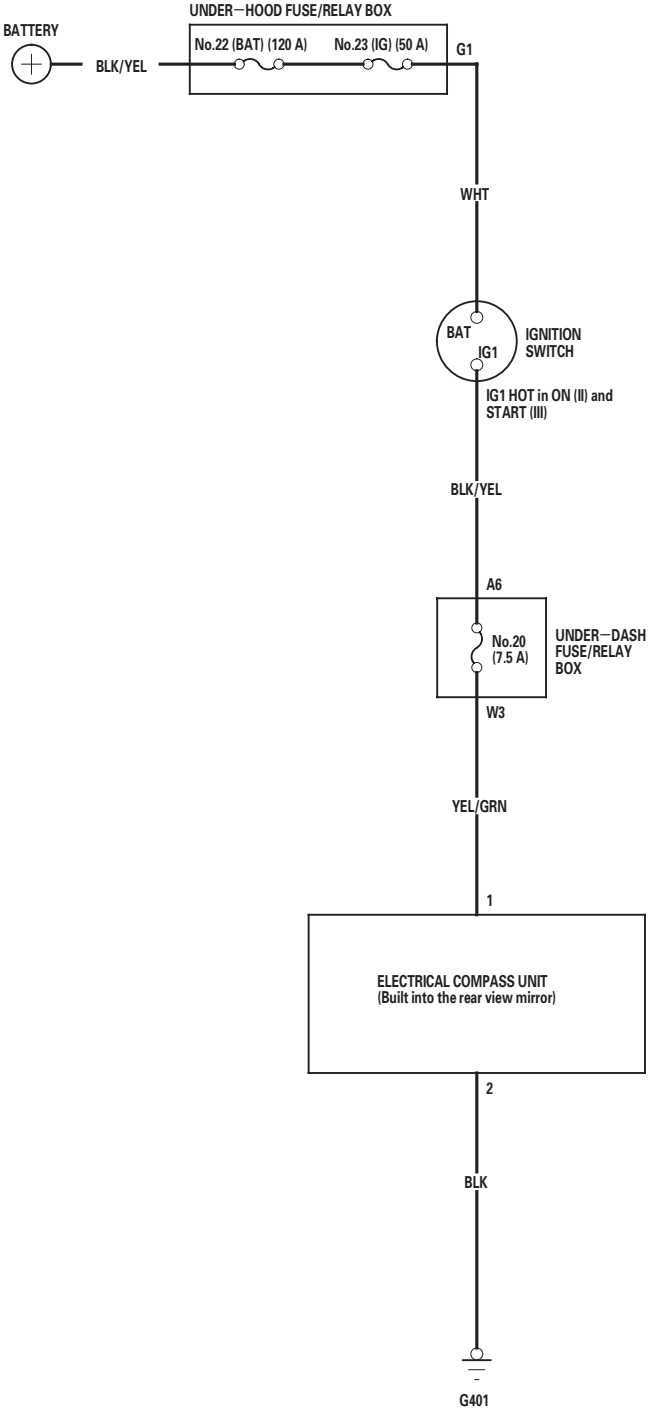
Component Location Index

RTL, RTS, and EXL models



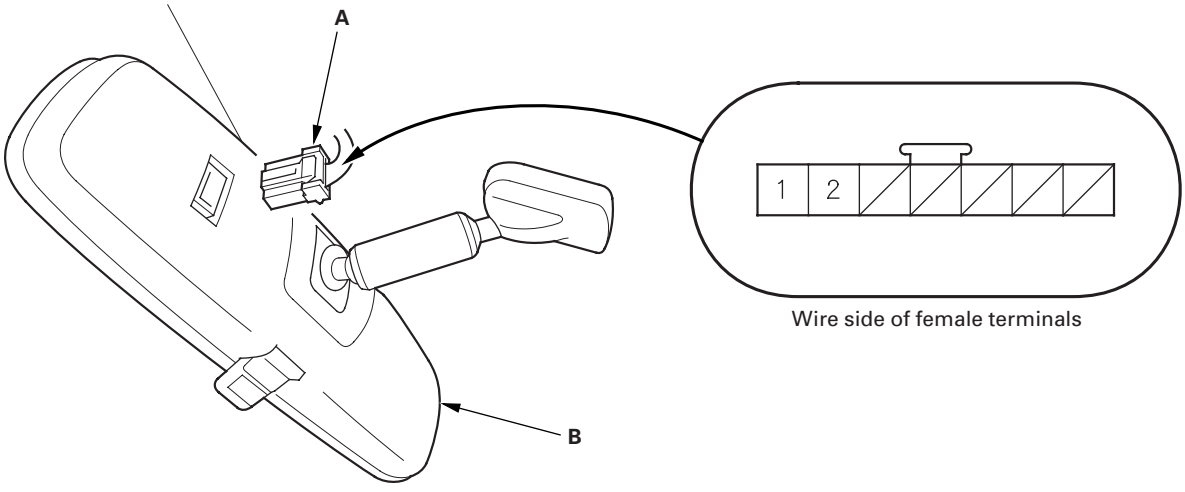
Electrical Compass

Circuit Diagram



Electrical Compass Unit Input Test

1. Disconnect the 7P connector (A) from the electrical compass (B).



2. Inspect the connector and socket terminals to be sure they are all making good contact.

   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 3.

3. Reconnect the connector, and make these input tests at the connector.

   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the electrical compass unit must be faulty; replace it.

Cavity	Wire	Test Condition	Test: Desired result	Possible cause if desired result is not obtained
2	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G401) • An open in the wire
1	YEL/GRN	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 20 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire

Electrical Compass Calibration

1. Briefly press the button to toggle the display ''ON/OFF''.

   NOTE: The compass display will default ''ON'' at each new ignition cycle.

2. With the BLUE CENTER LED displayed, press and hold the button for six seconds, or until a RED CENTER LED is displayed in the compass window, then release the button. While the RED CENTER LED is ''ON'' release the button. The compass is now in calibration mode. To calibrate, drive the vehicle in circles at less then 5 mph (8 km/h) until a BLUE CENTER LED is displayed. Typically 2—5 circles are required.

3. Find your current location and determine the correct zone number, for your geographic area, from the table ''DISPLAY REFERENCE FOR ZONE''. Press and hold the button for three seconds (until ALL DIRECTION BLUE LEDs BLINK), then release the button. The BLINKING LED(s) displayed is/are the current zone value. (see the table ''DISPLAY REFERENCE FOR ZONE'')

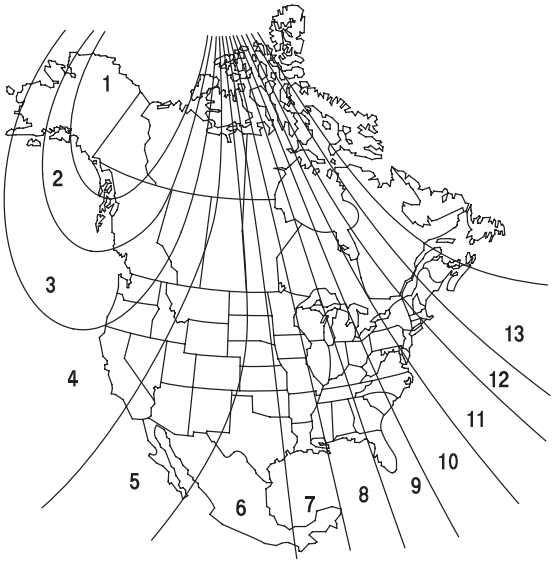
DISPLAY REFERENCE FOR ZONE

1	E	6	W S
2	S	7	W S E
3	S E	8	N
4	W	9	N E
5	W E	10	N S
11	N S E		
12	W N		
13	W N E		
14	W N S		
15	W N S E		

4. If a new zone value is desired, briefly press the button to increment the displayed value (Range 1—15) until you find your desired zone setting. No button activity for four seconds ends the zone entry mode. The compass display will return to normal operation and the new zone number will be set.

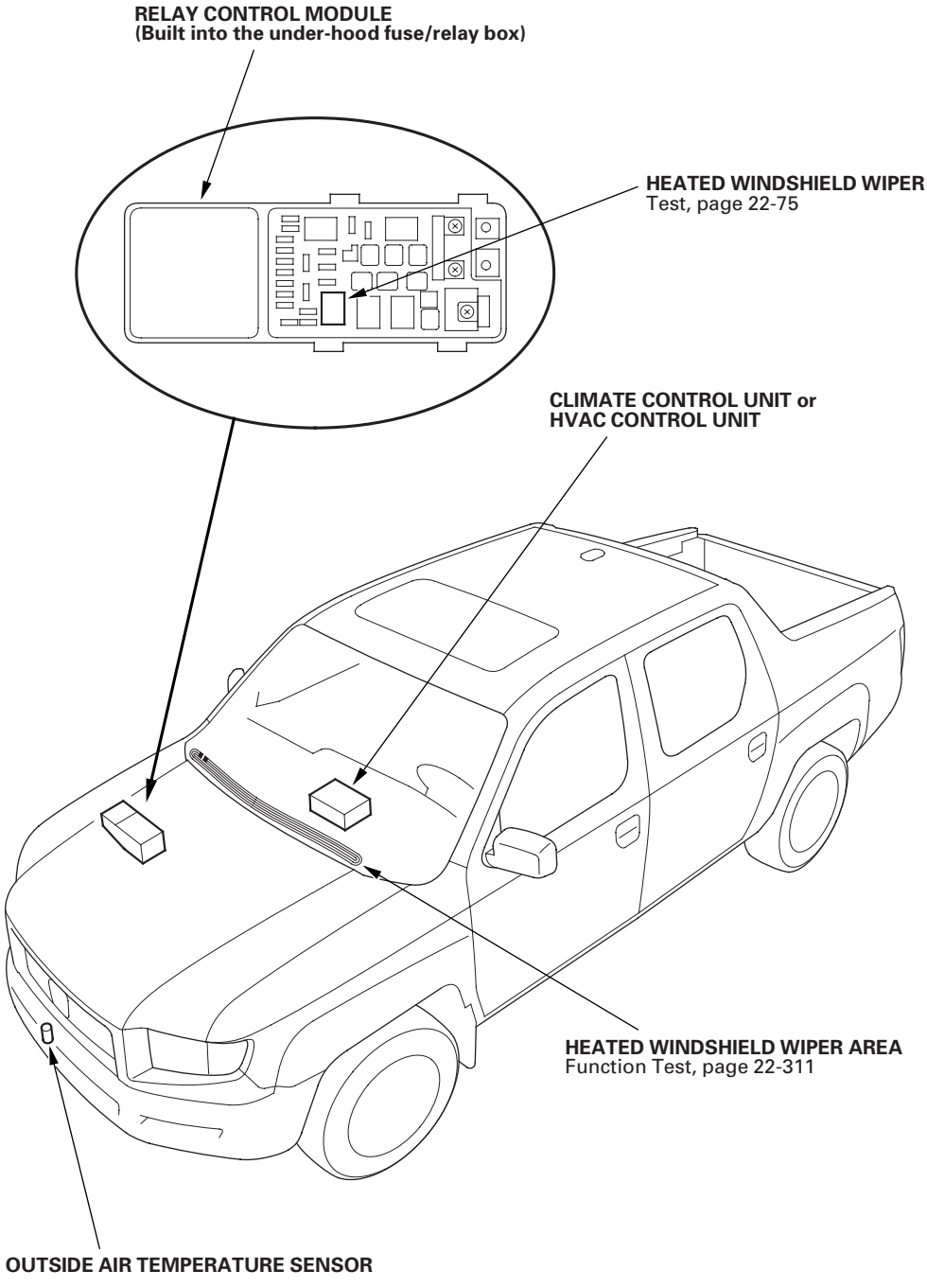
   NOTE: See the table ''DISPLAY REFERENCE FOR ZONE''.

5. Zone selection is required to compensate for the difference between magnetic North and geographic North. This deviation is referred to as declination and can be compensated for by selecting the zone that corresponds with your area.
   See this illustration. Each zone represents about 5 degrees of declination.



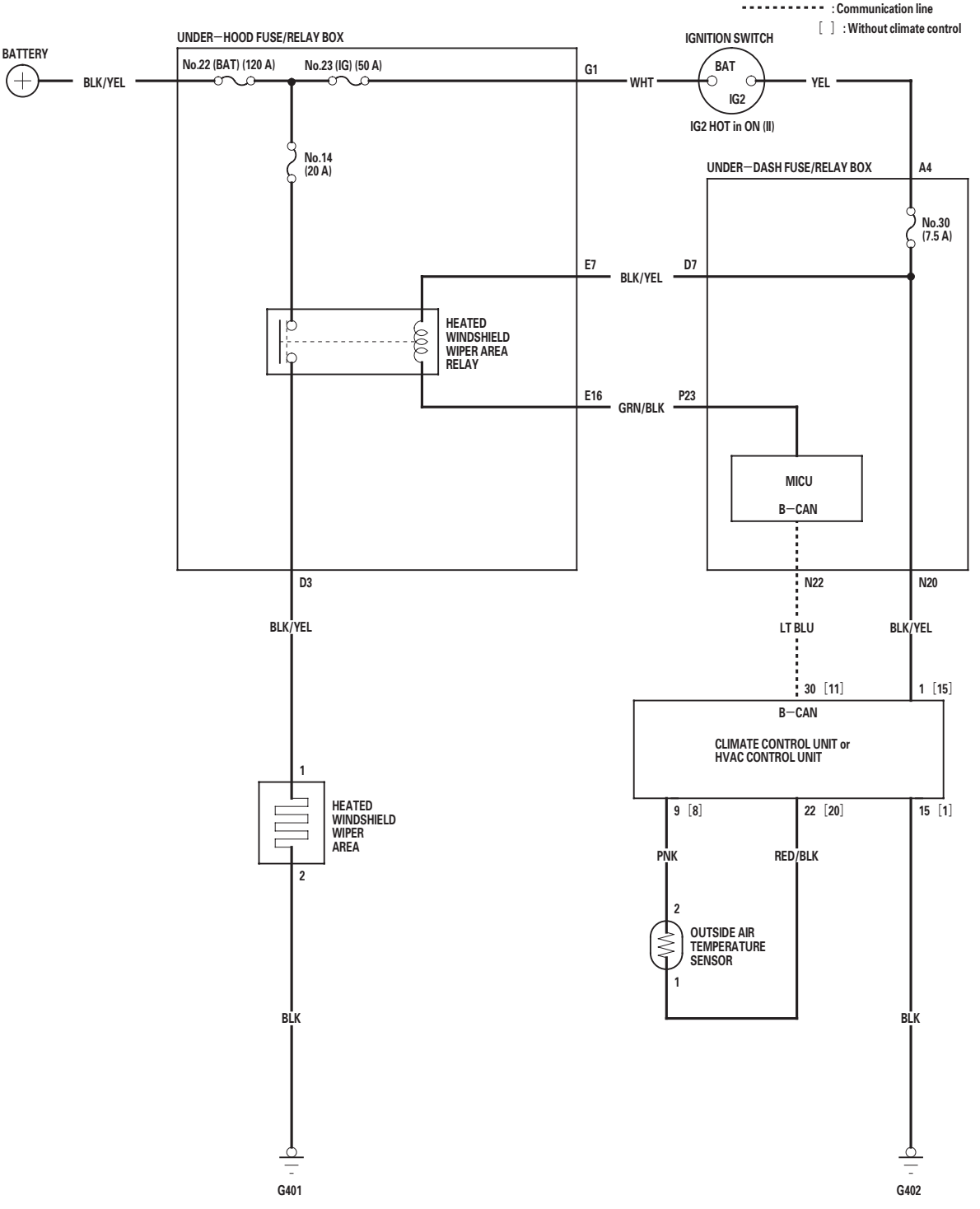
Heated Windshield Wiper Area

Component Location Index



Heated Windshield Wiper Area

Circuit Diagram



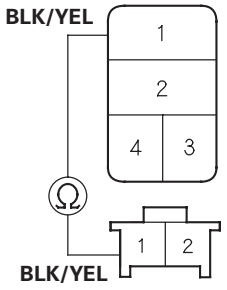
Function Test

Before troubleshooting the heated windshield wiper area circuit, do the multiplex integrated control system troubleshooting using B-CAN System Diagnosis Test Mode A (see page 22-99).

NOTE: Before testing, check the No. 14 (20 A) fuse in the under-hood fuse/relay box, No. 30 (7.5 A) fuse in the under-dash fuse/relay box and the heated windshield wiper area relay in the under-hood fuse/relay box.

1. Disconnect the heated windshield wiper area relay from the under-hood fuse/relay box.
2. Remove the glove box (see page 20-85).
3. Disconnect the heated windshield wiper area 2P connector.
4. Check for continuity between the No. 1 terminal of the heated windshield wiper area relay 4P socket and front window defogger 2P connector No. 1 terminal.

HEATED WINDSHIELD WIPER AREA RELAY 4P SOCKET

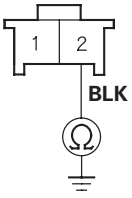


HEATED WINDSHIELD WIPER AREA 2P CONNECTOR

Terminal side of female terminals

5. There should be continuity.
   - If there is no continuity, check for:
     – An open in the BLK/YEL wire between the heated windshield wiper area relay and heated windshield wiper area.
   - If there is continuity, go to step 6.
6. Check for continuity between the heated windshield wiper area 2P connector No. 2 terminal and body ground.

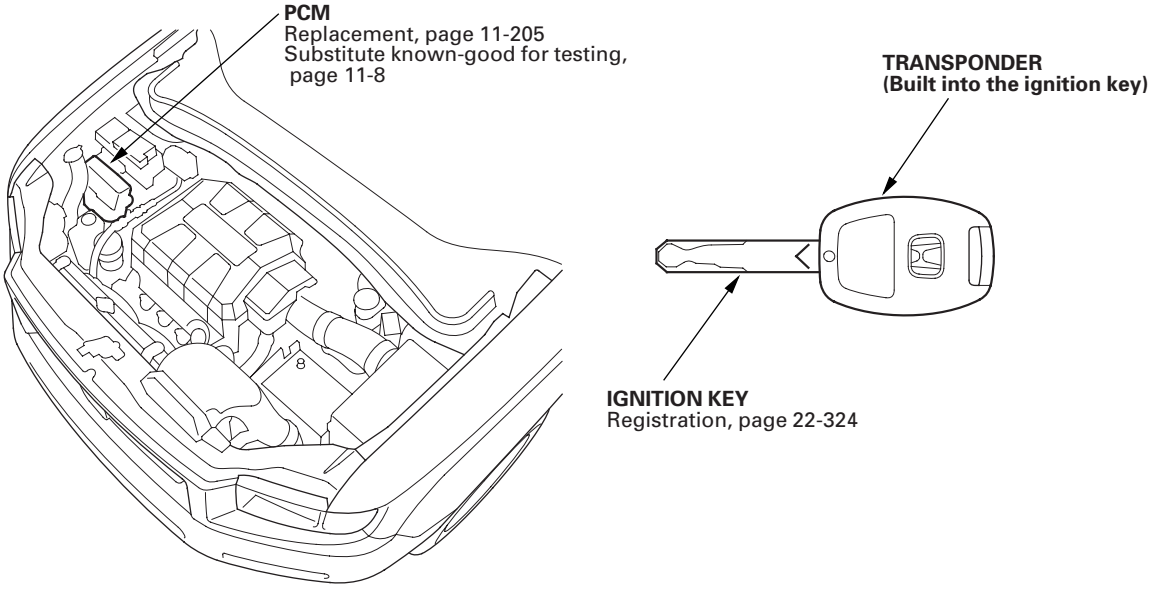
HEATED WINDSHIELD WIPER AREA 2P CONNECTOR

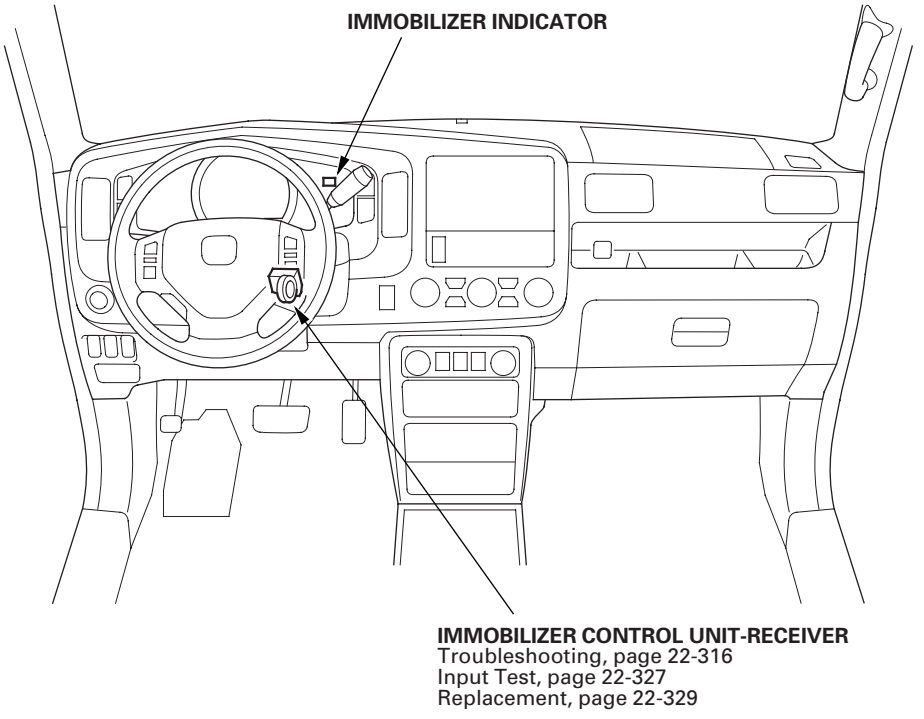


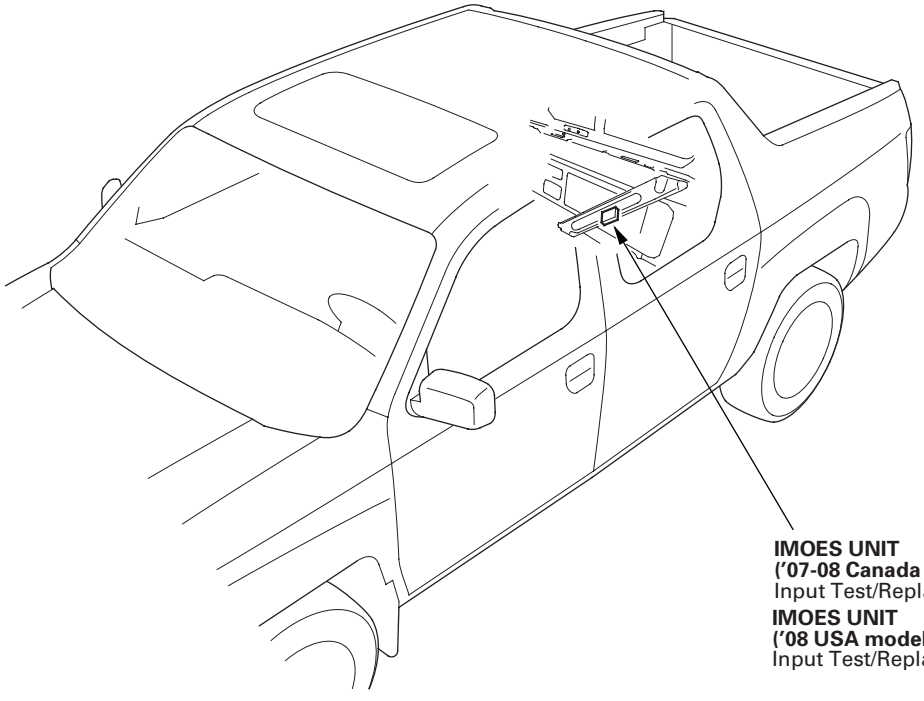
Terminal side of female terminals

7. If there is no continuity, check for an open in the wiper or poor ground (G401).
   - If there is continuity, check for:
     – Faulty climate control unit (or heater control panel).
     – An open in the heated windshield wiper area wire. Repair the heated windshield wiper area wire or replace the windshield.

Component Location Index







IMOES UNIT
('07-08 Canada models)
Input Test/Replacement, page 22-325

IMOES UNIT
('08 USA models)
Input Test/Replacement, page 22-326

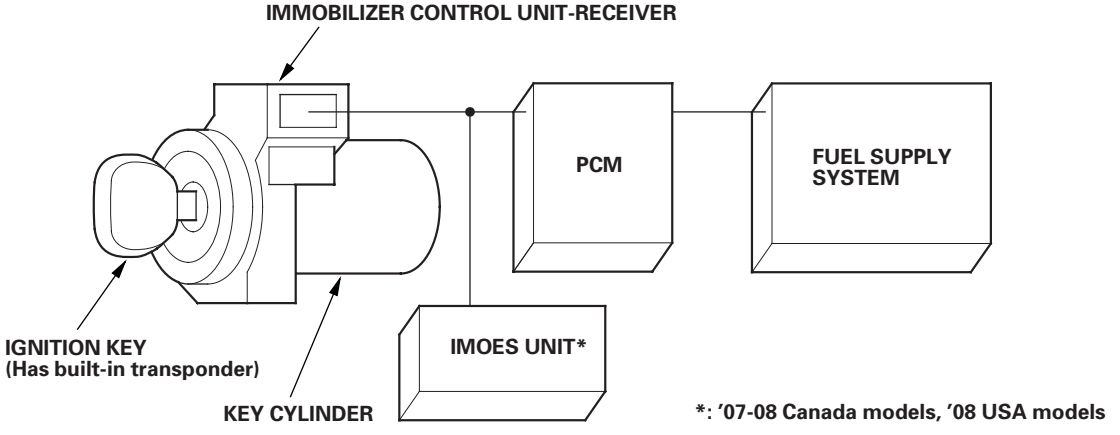
Immobilizer System

System Description

The vehicle is equipped with an immobilizer system that will disable the vehicle unless a programmed ignition key is used.
This system consists of a transponder, an immobilizer control unit-receiver, immobilizer indicator, imoes unit ('07-08 Canada models, '08 USA models), and the PCM.

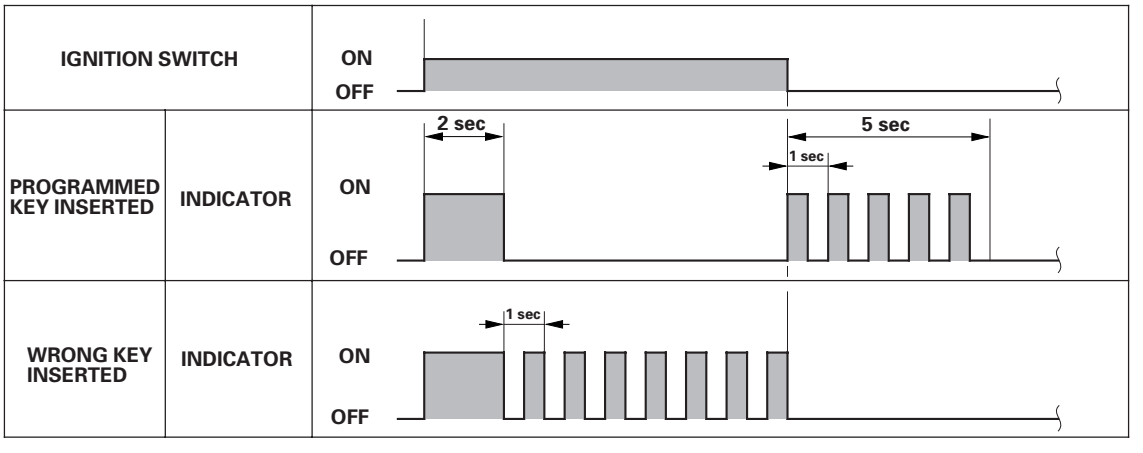
'07 USA models: When the immobilizer key (programmed by the HDS) is inserted into the ignition switch and turned to the ON (II) position, the immobilizer control unit-receiver sends power to the transponder in the ignition key. The transponder then sends a coded signal back to the immobilizer control unit-receiver which then sends a coded signal to the PCM to supply power to the fuel pump circuit.

'07-08 Canada models, '08 USA models: When the immobilizer key is inserted into the ignition switch and turned to the ON (II) position, the immobilizer control unit-receiver sends power to the transponder in the ignition key. The transponder then sends a coded signal back to the immobilizer control unit-receiver which sends a coded signal to the imoes unit, which confirms the code and signals the PCM to supply power to the fuel pump circuit. A handshake with the HDS is required at PCM or imoes unit repair or replacement, and all keys are required at immobilizer control unit-receiver repair or replacement.

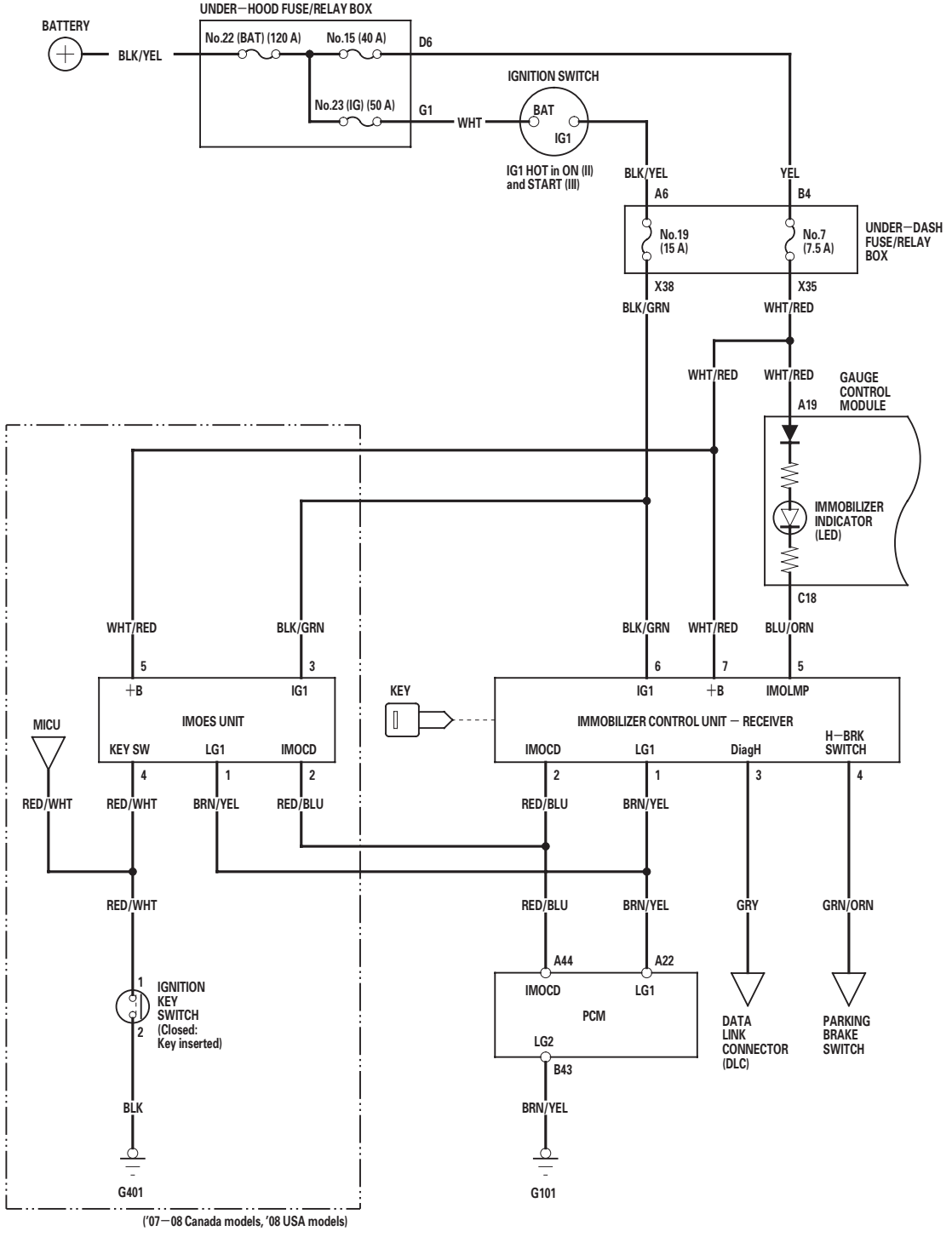


- If a programmed key has been used, the immobilizer indicator will come on for about 2 seconds, then go off.
- If the wrong key has been used or the code was not received or recognized by the unit, the indicator will come on for about 2 seconds, then it will blink until the ignition switch is turned OFF.
- If the ignition switch is turned OFF, the indicator will blink 5 seconds to signal that the unit has reset correctly, then the indicator will go off.

IMMOBILIZER INDICATOR BLINKING PATTERN:



Circuit Diagram



Symptom Troubleshooting Information

General Check before Troubleshooting

Before troubleshooting the immobilizer system, check the following general items and solve any if applicable:

- The battery is low; charge the battery fully, then troubleshoot the immobilizer system.
- The ignition key is not a genuine Honda part; use the Honda- approved key blank, register the key, then troubleshoot the immobilizer system.
- A key ring, or keys, or a key case is used; remove the key from it, and troubleshoot the immobilizer system with a key only.
- An aftermarket electrical part is attached; remove it, then troubleshoot the immobilizer system.

Symptom Troubleshooting Using the Immobilizer Indicator Lighting Pattern

The pattern of the immobilizer indicator light can help troubleshooting the condition of the immobilizer system. Following are descriptions of the five possible patterns:

Normal operation (Lighting pattern 1)
When the ignition switch is turned ON (II) and the immobilizer code is identified, the immobilizer indicator comes on for 2 seconds, then goes off.
The immobilizer indicator blinks five times when the ignition switch is turned OFF.

+B line open (Lighting pattern 2)
When the ignition switch is turned ON (II) and the immobilizer code is identified, the immobilizer indicator comes on for 2 seconds, then goes off.
The immobilizer indicator goes off when the ignition switch is turned OFF.

Immobilizer code is not identified (Lighting pattern 3)
When the ignition switch is turned ON (II) but the immobilizer code is not identified, the immobilizer indicator comes on for 2 seconds, then blinks. The state of the immobilizer key registration and the IMOCD line can be checked by doing a SYSTEM CHECK and STATUS LOG CHECK with the HDS (see page 22-322).
The immobilizer indicator goes off when the ignition switch is turned OFF.

Immobilizer indicator does not come on (Lighting pattern 4)
If the immobilizer indicator does not come on when the ignition switch is turned ON (II), check the following items:

- Check that there is battery voltage on the +B line.
- Check that the LG1 line is grounded through the PCM.
- Check for continuity between the immobilizer control unit-receiver and the gauge control module (IMOLMP line).
- Gauge control module

Immobilizer indicator does not go off (Lighting pattern 5)
If the immobilizer indicator does not go off after the ignition switch is turned ON (II), check for a short to ground in the immobilizer circuit between the gauge module and the immobilizer control unit-receiver (IMOLMP line).

Symptom Troubleshooting Using Malfunctioning Circuit Functions

If a malfunction occurs in the immobilizer circuit, use the following table to cross-reference the malfunctioning function to the line(s) that should be checked:

Line error / Function	+B line open	IG1 line open	GND (LG1) line open	S-NET line open	Immobilizer Indicator line open	Immobilizer Indicator line short
Immobilizer Indicator	No blinking when ignition switch OFF	Does not come on	Does not come on	Blinking	Does not come on	Does not go off
Engine start	Possible	Impossible	Impossible	Impossible	Possible	Possible
Key registration	Impossible	Impossible	Impossible	Impossible	Possible	Possible
Tester communication	Possible	Impossible	Impossible	Possible	Possible	Possible

System Check and Status Log

Note: The HDS can be used to:
- Check the state of the immobilizer key registration and the IMOCD line by doing a SYSTEM CHECK.
- Check the number of times the immobilizer control unit-receiver doesn't permit the engine to run by checking the STATUS LOG.

1. Connect the HDS to the data link connector, then turn the ignition switch ON (II) and follow the prompts to the MAIN MENU.

   NOTE: If the HDS does not communicate with the vehicle, go to the DLC circuit troubleshooting (see page 11-194).

2. At the MAIN MENU, enter IMMOBILIZER, then select the IMMOBILIZER SET UP.

3. Do the SYSTEM CHECK. If there is a system check number, do the troubleshooting for the item indicated (see page 22-322).

4. Check the status log using the HDS. Troubleshoot the line with the highest counts (see page 22-323). If all the lines are ''0'' zero, the problem may not be caused by the immobilizer system, check for ignition or fuel problems.

   NOTE: Once repaired, clear the status log by removing the No. 7 (7.5 A) fuse in the under-dash fuse/relay box or disconnecting the battery.

Symptom Troubleshooting

1. Troubleshoot the immobilizer system by the order of the priority shown:

Order of Priority	Symptom	Possible cause
1	Immobilizer indicator blinks.	Symptom troubleshooting (see page 22-319).
2	Engine does not start with the immobilizer key.	Symptom troubleshooting (see page 22-320).
3	Immobilizer indicator does not come on.	Check the MIL indication. • If the MIL comes on, go to the PGM-FI system MIL circuit troubleshooting (see page 11-184). • If the MIL does not come on, go to the gauge control module self-diagnostic function (see page 22-244).
4	Immobilizer indicator does not go off.	Symptom troubleshooting (see page 22-321).

Immobilizer indicator blinks

NOTE: Before troubleshooting, check the following general items and solve any if applicable:

- The battery is low; charge the battery fully, then troubleshoot the immobilizer system.
- The ignition key is not a genuine Honda part; use the Honda-approved key blank, register the key, then troubleshoot the immobilizer system.
- A key ring, keys, or a key case is being used; remove the key from it, and troubleshoot the immobilizer system with only a key.
- An aftermarket electrical part is attached; remove it, then troubleshoot the immobilizer system.

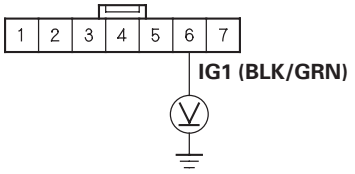
1. Turn the ignition switch OFF.
2. Connect the HDS, then turn the ignition switch ON (II), and follow the prompts to the MAIN MENU.
3. At the MAIN MENU enter the IMMOBILIZER, then select the IMMOBILIZER SETUP.
4. Select the SYSTEM CHECK.

   Is the SYSTEM CHECK indicated?

   YES—Troubleshoot the immobilizer system according to the result of the SYSTEM CHECK (see page 22-322).■

   NO—Go to step 5.
5. Turn the ignition switch OFF.
6. Remove the driver's dashboard lower cover (see page 20-83) and steering column covers (see page 17-24).
7. Turn the ignition switch ON (II).
8. Measure voltage between the immobilizer control unit-receiver 7P connector No. 6 terminal and body ground.

IMMOBILIZER CONTROL UNIT-RECEIVER 7P CONNECTOR



Wire side of female terminals

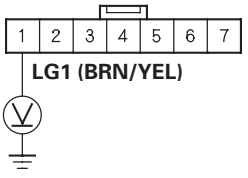
Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the BLK/GRN wire between the under-dash fuse-relay box and the immobilizer control unit-receiver.■

9. Measure voltage between the immobilizer control unit-receiver 7P connector No. 1 terminal and body ground.

IMMOBILIZER CONTROL UNIT-RECEIVER 7P CONNECTOR



Wire side of female terminals

Is there 0.5 V or more?

YES—Repair poor connection or open between the immobilizer control unit-receiver 7P connector No. 1 terminal and PCM A connector (44P) No. 22 terminal.■

NO—Replace the immobilizer control unit-receiver.■

Symptom Troubleshooting (cont'd)

Engine does not start with the immobilizer key

NOTE: Before troubleshooting, check the following general items and solve any if applicable:

- The battery is low; charge the battery fully, then troubleshoot the immobilizer system.
- The ignition key is not a genuine Honda part; use the Honda-approved key blank, register the key, then troubleshoot the immobilizer system.
- A key ring, keys, or a key case is being used; remove the key from it, and troubleshoot the immobilizer system with only a key.
- An aftermarket electrical part is attached; remove it, then troubleshoot the immobilizer system.

1. Try to start the engine.

   Does the engine start?

   YES—Intermittent failure, the vehicle is OK at this time. Check status log. ■

   NO—Go to step 2.

2. Turn the ignition switch OFF.

3. Turn the ignition switch ON (II), and check the immobilizer indicator light operation.

   Does the indicator come on for 2 seconds, then go off?

   YES—Go to step 4.

   NO—Go to the immobilizer indicator blinks troubleshooting (see page 22-319). ■

4. Turn the ignition switch to START (III).

   Does the starter motor run?

   YES—Go to step 5.

   NO—Go to Starting System and check the starter motor. ■

5. Try to start the engine with the immobilizer key.

   Does the engine start?

   YES—Go to step 6.

   NO—Go to the PGM-FI System Symptom Troubleshooting. ■

6. Wait for a few minutes with the engine running.

   Does the engine stop?

   YES—Go to the PGM-FI System Symptom Troubleshooting. ■

   NO—The system is OK at this time. ■

Immobilizer indicator does not go off

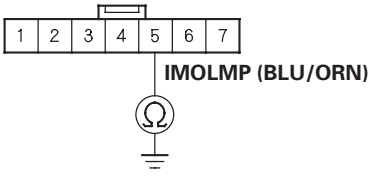
1. Turn the ignition switch OFF.
2. Connect the HDS to the data link connector.
3. Turn the ignition switch ON (II), and follow the prompts to the MAIN MENU.
4. At the MAIN MENU enter the IMMOBILIZER, then select the IMMOBILIZER INFORMATION.
5. Do the SYSTEM CHECK with the HDS.

   Is N-1 OK indicated?

   YES—Go to step 6.

   NO—Substitute a known-good immobilizer control unit-receiver, then register it and recheck. If the symptom goes away, replace the original immobilizer control unit-receiver. ■
6. Disconnect the immobilizer control unit-receiver 7P connector, disconnect gauge control module connector C (20P) and check for continuity to ground at terminal No. 5 of the immobilizer control unit-receiver.

IMMOBILIZER CONTROL UNIT-RECEIVER 7P CONNECTOR



Wire side of female terminals

Is there continuity to ground?

YES—Repair the short to ground on the BLU/ORN (IMOLMP) wire. ■

NO—Replace the gauge control module. ■

System Check

1. Connect the HDS to the data link connector.
2. Turn the ignition switch ON (II).
3. Monitor the System Check in the Immobilizer Info with the HDS.
4. If the HDS displays the ''Immobilizer system is normal'', the immobilizer system is OK. If the HDS displays any other messages, check as follows:

Status Log No.	System Check	Possible Failures
A-1	Immobilizer system is not normal	• This key is not registered in the immobilizer unit. Try to register keys by using ''KEYS''. • The communication was not good between the antenna and the immobilizer key by influence of metal such as key chains. • The communication was not good between the antenna and the immobilizer key by battery voltage low.
A-2	Immobilizer system is not normal	• Intermittent interruption between transponder and immobilizer unit. • The immobilizer key type is different. It is not for this vehicle but for another one or for other company's one. • Key failure (transponder failure) • The communication was not good between the antenna and the immobilizer key by influence of metal such as key chains. • The communication was not good between the antenna and the immobilizer key by battery voltage low.
A-3	Immobilizer system is not normal	• The ignition switch was turned on with a non-immobilizer key. • The immobilizer key type is different. It is not for this vehicle but for another one or for other company's one. • Key failure (transponder failure) • The communication was not good between the antenna and the immobilizer key by influence of metal such as key chains. • The communication was not good between the antenna and the immobilizer key by battery voltage low. • Immobilizer unit failure
B-1	Immobilizer system is not normal	• The PCM was not registered. Try to register the PCM by using ''REPLACE PCM''. • The communication was not good between the PCM and the immobilizer unit by battery voltage low. • The communication was not good between the immobilizer unit and the PCM by influence of some noise.
B-2	Immobilizer system is not normal	• The PCM was not registered. Try to register the PCM by using ''REPLACE PCM''. • The communication was not good between the PCM and the immobilizer unit by battery voltage low. • The communication was not good between the immobilizer unit and the PCM by influence of some noise.
C-1	Immobilizer system is not normal	The imoes unit was not registered. Try to register the imoes unit by using ''REPLACE MICU/IMOES''.
C-2	Immobilizer system is not normal	• The imoes unit was not registered. Try to register the imoes unit by using ''REPLACE MICU/IMOES''. • The communication was not good between the immobilizer control unit-receiver and the imoes unit by influence of some noise.
D-1	Immobilizer system is not normal	• Harness short from the PCM to the immobilizer unit. (S-net line short (IMOCD)) • The communication was not good between the PCM and the immobilizer unit by battery voltage low. • The communication was not good between the immobilizer unit and the PCM by influence of some noise. • Immobilizer unit failure • PCM failure
D-2	Immobilizer system is not normal	• Blown fuse • Harness open from the immobilizer control unit-receiver and the imoes unit. • The communication was not good between the immobilizer control unit-receiver and the imoes by influence of some noise.
D-3	Immobilizer system is not normal	• Blown fuse • Harness open from the PCM to the immobilizer unit. • The communication was not good between the PCM and the immobilizer unit by battery voltage low. • The communication was not good between the immobilizer unit and the PCM by influence of some noise. • Immobilizer unit failure • PCM failure

Status Log

If you suspect there is a immobilizer system problem, check the status log.

1. Connect the HDS to the data link connector.
2. Turn the ignition switch ON (II).
3. On the HDS screen, select Honda systems, select immobilizer set-up, select immobilizer information, then select status log.
4. Check the status log count. Troubleshoot the status with the highest count first. If no counts are listed, the immobilizer system is OK. Continue with normal symptom troubleshooting.

Status Log No.	Detected Item	Probable Cause
A-1	KEY CODE MISMATCH (Code format normal, but code data is mismatch)	1. The key was not registered 2. Interference from metal such as key chains 3. Low battery voltage
A-2	KEY CODE MISMATCH (Code format failure)	1. Ignition switch was turned on with another type of immobilizer key or aftermarket key 2. Interference from metal such as key chains 3. Low battery voltage
A-3	KEY CODE MISMATCH (No key code or non-immobilizer key)	1. Ignition switch was turn on with another type of immobilizer key or aftermarket key 2. Interference from metal such as key chains 3. Low battery voltage 4. Key failure 5. Immobilizer control unit-receiver failure
B-1	PCM CODE MISMATCH (Code format normal, but code data is mismatch)	1. PCM was not registered correctly 2. Low battery voltage 3. Poor or loose terminal connections at the immobilizer control unit-receiver 4. Communication line electrical noise
B-2	PCM MISMATCH (Code format failure)	1. PCM was not registered correctly 2. Low battery voltage 3. Poor or loose terminal connections at the immobilizer control unit-receiver 4. Communication line electrical noise
D-1	SECURITY-NET LINE PROBLEM (Short to ground) IMOCD (S-NET)	1. Low battery voltage 2. Poor or loose terminal connections at the immobilizer control unit-receiver and the PCM 3. Communication line electrical noise
D-3	SECURITY-NET LINE PROBLEM (Open line or PCM failure) IMOCD (S-NET)	1. Open or short in the harness from the PCM to the immobilizer control unit-receiver 2. Low battery voltage 3. Poor or loose terminal connections at the immobilizer control unit-receiver and the PCM 4. Communication line electrical noise

Registration for Immobilizer System

1. Turn the ignition switch ON (II).
2. Connect the HDS to the data link connector.
3. Select IMMOBILIZER from the SYSTEM SELECT menu.
4. Select the suitable menu from the HDS indications as follows.

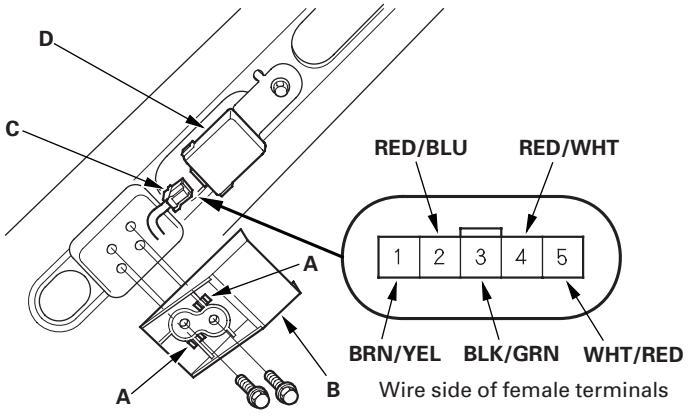
NOTE: The immobilizer control unit-receiver can store up to six transponder codes.

Added or replaced part	Necessary operation after entering the Immobilizer Setup menu by the HDS	Prepared part(s) when registered	Information needed
Replace any of the keys	Select ''KEYS'', then ''REWRITE KEYS''	• All registered keys • All new keys	HDS 1st password
Add a key	Select ''Keys'', then ''Add 1 Key''	• A registered key • A new key	HDS 1st password
Add keys	Select ''Add and Delete Keys'', then ''Delete or Add Multiple Keys''	• All registered keys • All new keys	HDS 1st password
Deleting the registration of lost keys	Select ''KEYS'', then ''REWRITE KEYS''	All new keys	HDS 1st password
All keys are lost. Replace all keys.	Select ''KEYS'', then ''ALL KEYS LOST''	All new keys	PCM code
The immobilizer control unit-receiver is replaced.	Select ''REPLACE IMMOBI UNIT''	All registered keys	PCM code
PCM is replaced.	Select ''REPLACE ECM/PCM''	One registered key	PCM code
The steering lock assembly is replaced (also all transponder is replaced and registered).	Select ''KEYS'', then ''ALL KEYS LOST''	All registered keys	PCM code
Replace the imoes unit ('07-08 Canada models, '08 USA models)	Select ''Replace IMOES''	One registered key	PCM code

Imoes Unit Input Test/Replacement

'07-08 Canada models

1. Remove the rear panel insulator (see page 20-69).
2. '08 model: Remove the two bolts, tabs (A), and the cover (B).



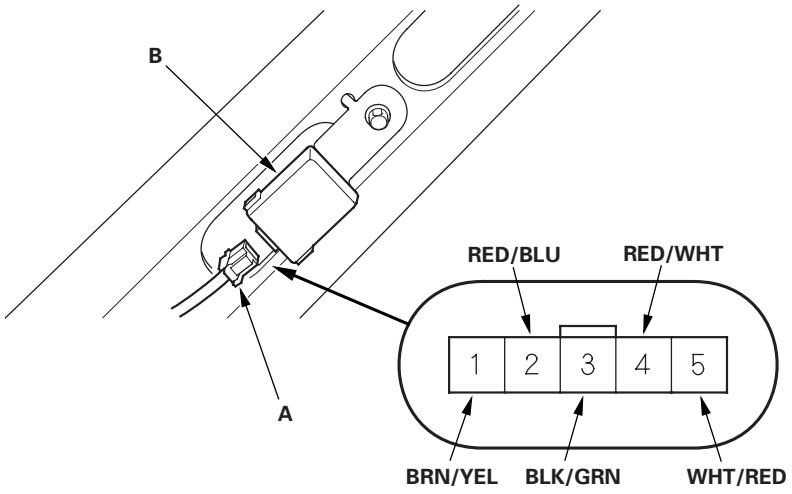
3. Disconnect the 5P connector (C) from the imoes unit (D).
4. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 5.
5. Reconnect the connector to the imoes unit, and make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the imoes unit must be faulty; replace it.

Cavity	Wire (Signal)	Test Condition	Test: Desired result	Possible cause if desired result is not obtained
1	BRN/YEL (LG1)	Under all conditions	Check for continuity to ground: There should be continuity.	• Faulty PCM or disconnect connector • An open in the wire
5	WHT/RED (+B)	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 7 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
3	BLK/GRN (IG1)	Ignition switch ON (II).	Check for voltage to ground: There should be battery voltage.	• Blown No. 19 (15 A) fuse in the under-dash fuse/relay box • An open in the wire
2	RED/BLU (IMOCD)	Under all conditions NOTE: Test with imoes unit, PCM, and immobilizer control unit-receiver disconnected.	Check for continuity to ground: There should be no continuity.	• Faulty immobilizer control unit-receiver • Faulty PCM • An open in the wire
			Check for continuity between the No. 2 terminal, PCM connector A (44P) No. 44 terminal, and immobilizer control unit-receiver No. 2 terminals: There should be continuity	
4	RED/WHT (KEY SW)	Ignition key removed from the ignition switch	Check for voltage to ground: There should be battery voltage	• Faulty PCM • Faulty ignition key switch • A short to ground in the wire
		Ignition key inserted in the ignition switch	Check for voltage to ground: There should be less than 1 V.	• Faulty ignition key switch • An open in the wire • Poor ground (G401)

Imoes Unit Input Test (cont'd)

'08 USA models

1. Remove the rear panel insulator (see page 20-69).
2. Disconnect the 5P connector (A) from the imoes unit (B).



Wire side of female terminals

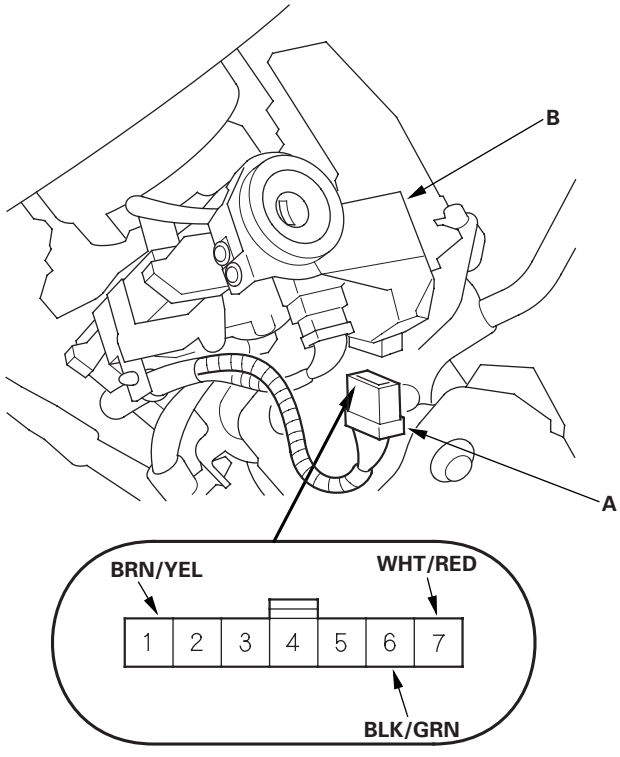
3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 4.
4. Reconnect the connector to the imoes unit, and make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the imoes unit must be faulty; replace it.

Cavity	Wire (Signal)	Test Condition	Test: Desired result	Possible cause if desired result is not obtained
1	BRN/YEL (LG1)	Under all conditions	Check for continuity to ground: There should be continuity.	• Faulty PCM or disconnect connector • An open in the wire
5	WHT/RED (+B)	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 7 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
3	BLK/GRN (IG1)	Ignition switch ON (II).	Check for voltage to ground: There should be battery voltage.	• Blown No. 19 (15 A) fuse in the under-dash fuse/relay box • An open in the wire
2	RED/BLU (IMOCD)	Under all conditions NOTE: Test with imoes unit, PCM, and immobilizer control unit-receiver disconnected.	Check for continuity to ground: There should be no continuity.	• Faulty immobilizer control unit-receiver • Faulty PCM • An open in the wire
			Check for continuity between the No. 2 terminal, PCM connector A (44P) No. 44 terminal, and immobilizer control unit-receiver No. 2 terminals: There should be continuity	
4	RED/WHT (KEY SW)	Ignition key removed from the ignition switch	Check for voltage to ground: There should be battery voltage	• Faulty PCM • Faulty ignition key switch • A short to ground in the wire
		Ignition key inserted in the ignition switch	Check for voltage to ground: There should be less than 1 V.	• Faulty ignition key switch • An open in the wire • Poor ground (G401)

Immobilizer Control Unit-Receiver Input Test

NOTE: Before troubleshooting check the No. 7 (7.5 A) and No. 19 (15 A) fuses in the under-dash fuse/relay box.

1. Remove the driver's dashboard lower cover (see page 20-83).
2. Remove the steering column covers (see page 17-24).
3. Disconnect the 7P connector (A) from the immobilizer control unit-receiver (B).



Wire side of female terminals

4. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 5.

(cont'd)

Immobilizer Control Unit-Receiver Input Test (cont'd)

5. Reconnect the connector to the immobilizer control unit-receiver, and make these input tests at the connector.

   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the immobilizer control unit-receiver must be faulty; replace it.

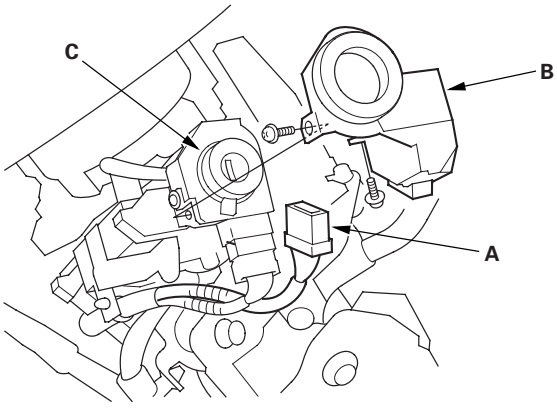
Cavity	Wire (Signal)	Test condition	Test: Desired result	Possible cause if desired result is not obtained
1	BRN/YEL (LG1)	Under all conditions	Measure voltage to ground: There should be less than 0.5 V.	• Poor ground (G101) • An open in the wire • Faulty PCM
7	WHT/RED (+B)	Under all conditions	Measure voltage between immobilizer control unit-receiver 7P connector No. 7 terminal and body ground: There should be battery voltage.	• Blown No. 7 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
6	BLK/GRN (IG1)	Ignition switch ON (II)	Measure voltage to ground: There should be battery voltage.	• Blown No. 19 (15 A) fuse in the under-dash fuse/relay box • An open in the wire
2	RED/BLU (IMOLD) (S-NET)	PCM, imoes unit, and immobilizer control unit-receiver connectors disconnected	Should have continuity between PCM, imoes unit and immobilizer control unit-receiver. Should not have continuity to ground.	• Open circuit • Short to ground

Immobilizer Control Unit-Receiver Replacement

1. Remove the driver's dashboard lower cover (see page 20-83).

2. Remove the steering column covers (see page 17-24).

3. Disconnect the 7P connector (A) from the immobilizer control unit-receiver (B).



4. Remove the two screws and the immobilizer control unit-receiver from the ignition key cylinder (C).

5. Install the immobilizer control unit-receiver in the reverse order of removal.

6. After replacement, check the immobilizer system.

SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If Audio, Navigation, and Telematics maintenance is required)

The Ridgeline SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the sides of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items requires special precautions and tools, and should be done by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work should be done by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.

Audio, Navigation, and Telematics

Audio, Navigation, and Telematics
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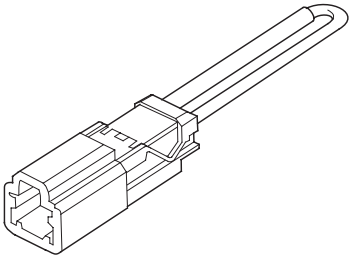
Special Tools

Ref. No.	Tool Number	Description	Qty
①	07PAZ-0010100	SCS Service Connector	1
②	07AAZ-SDBA100	Diagnostics CD	1
③	07AAZ-SDBA200 (ABEX-TCD-725B)	Skip Test CD	1
④	07AAZ-SDBA300 (ABEX-TCD-721)	Skip Test CD	1



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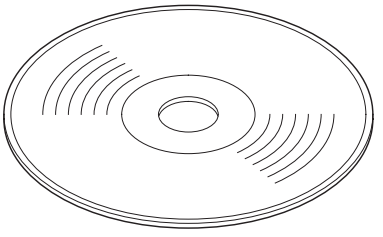

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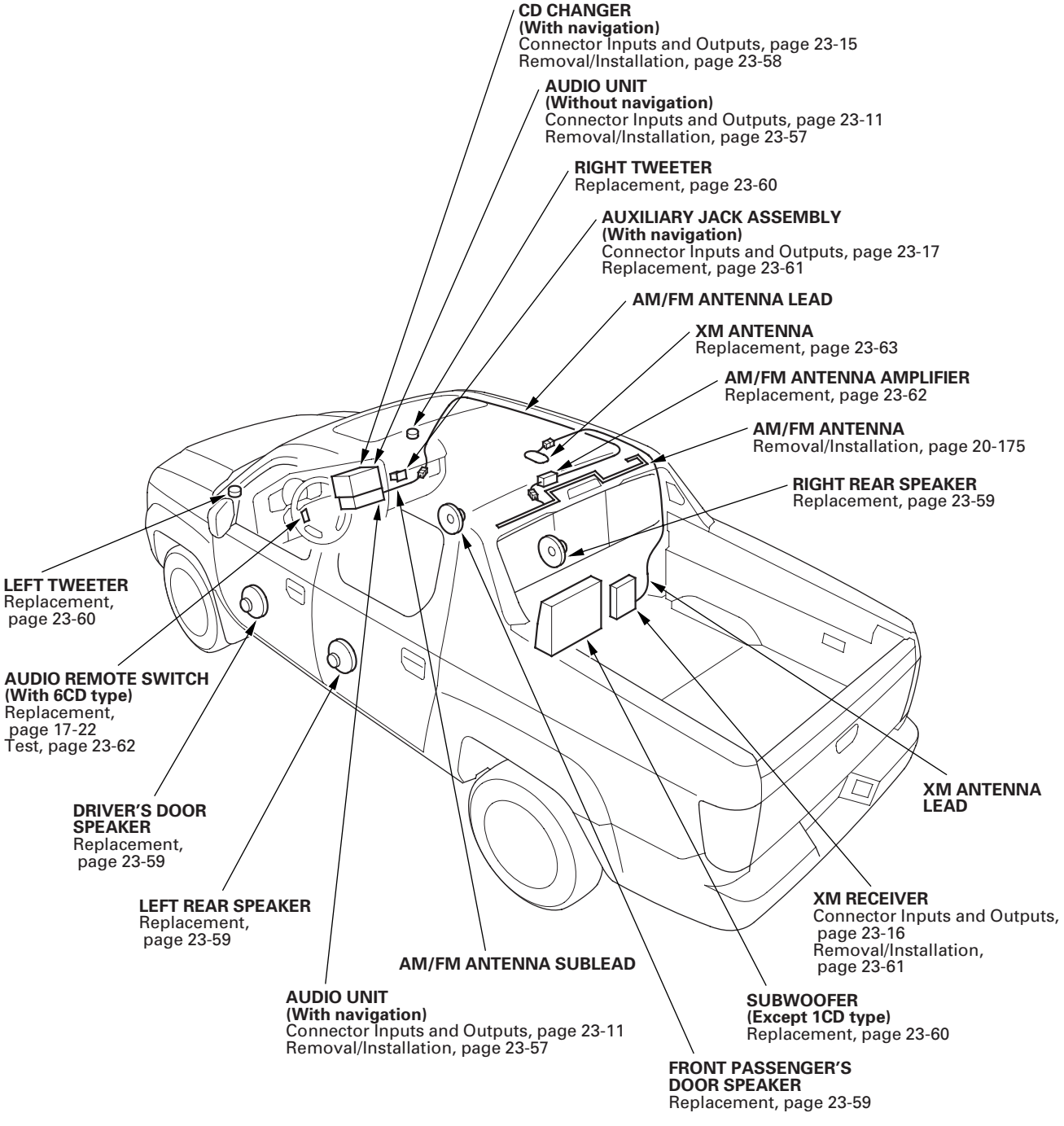
Component Location Index



Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Poor AM or FM radio reception or interference	Symptom Troubleshooting (see page 23-24)	• AM/FM antenna lead and/or sublead short or open in the wire • AM/FM antenna open
Power switch will not turn ON (No information display and no sound)	Symptom Troubleshooting (see page 23-27)	
Radio stays powered with the ignition switch OFF	Symptom Troubleshooting (see page 23-28)	
No sound is heard from speaker(s) (display is normal)	Symptom Troubleshooting (see page 23-28)	
Audio system sound is weak or distorted (display is normal)	Symptom Troubleshooting (see page 23-30)	
Audio unit button illumination does not work	Symptom Troubleshooting (see page 23-31)	
Radio preset memory is lost	Symptom Troubleshooting (see page 23-32)	• Battery condition • Battery cable condition
Volume does not change	Symptom Troubleshooting (see page 23-43)	
Radio tuner does not change stations	Symptom Troubleshooting (see page 23-44)	
Audio remote switch does not work properly	Symptom Troubleshooting (see page 23-46)	
Poor or no sound with XM radio (Audio unit does display XM channels)	Symptom Troubleshooting (see page 23-32)	
XM radio display is blank and no station information is displayed	Symptom Troubleshooting (see page 23-35)	
XM radio preset memory is lost	Symptom Troubleshooting (see page 23-41)	
Error code: XM NO SIGNAL or XM ANTENNA is displayed	Symptom Troubleshooting (see page 23-39)	
Unable to select CD changer	Symptom Troubleshooting (see page 23-48)	
Poor or no sound with audio disc changer	Symptom Troubleshooting (see page 23-49)	
Audio disc does not eject	Symptom Troubleshooting (see page 23-42)	
Audio disc changer does not load all six discs	Symptom Troubleshooting (see page 23-42)	Tire pressure (over-inflated), disc smudged, dirty, or scratched
Audio disc changer does not move between discs	Symptom Troubleshooting (see page 23-43)	
Audio disc does not load	Symptom Troubleshooting (see page 23-44)	
Audio disc does not play	Symptom Troubleshooting (see page 23-45)	
Audio disc skips	Symptom Troubleshooting (see page 23-45)	Tire pressure (over-inflated), disc smudged, dirty, or scratched

System Description

Overview

The audio Unit acts as the ''processor'' for all audio functions. Selection of the audio functions can be done from the front panel, the audio remote (on steering wheel), or by using the navigation voice control system. The audio display provides the current front audio status. For vehicles with the navigation option, additional audio information is available by touching the audio button on the Navigation Audio Screen (See the owner's manual and the navigation user's guide for more details.)

The CD changer, XM receiver, and navigation unit send their signals to the audio unit. In addition, they communicate with the audio unit via the GA-Net bus. Any open connection in the G-Net bus circuit will cause audio and navigation functions to become inoperative.

For vehicles with the navigation option, pressing the ''open/close'' switch on the navigation display panel accesses the CD changer unit.

A security signal is daisy-chained between the audio and navigation components for integration into the vehicle's alarm system.

(cont'd)

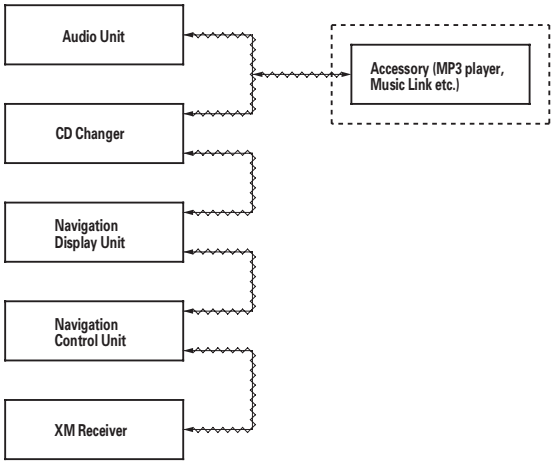
System Description (cont'd)

The optional navigation system provides voice control for the audio, XM, and CD player. The GA-Net (audio unit) communicates the voice control commands. When using the TALK/BACK button, the audio is muted on all speakers and you hear navigation sound on the front channels. When using the navigation or route guidance (RG), the front speakers provides the navigation sound. The GA-Net bus passes the muting commands. For more information, see the navigation section. The outline of the interruption function is shown in this table.

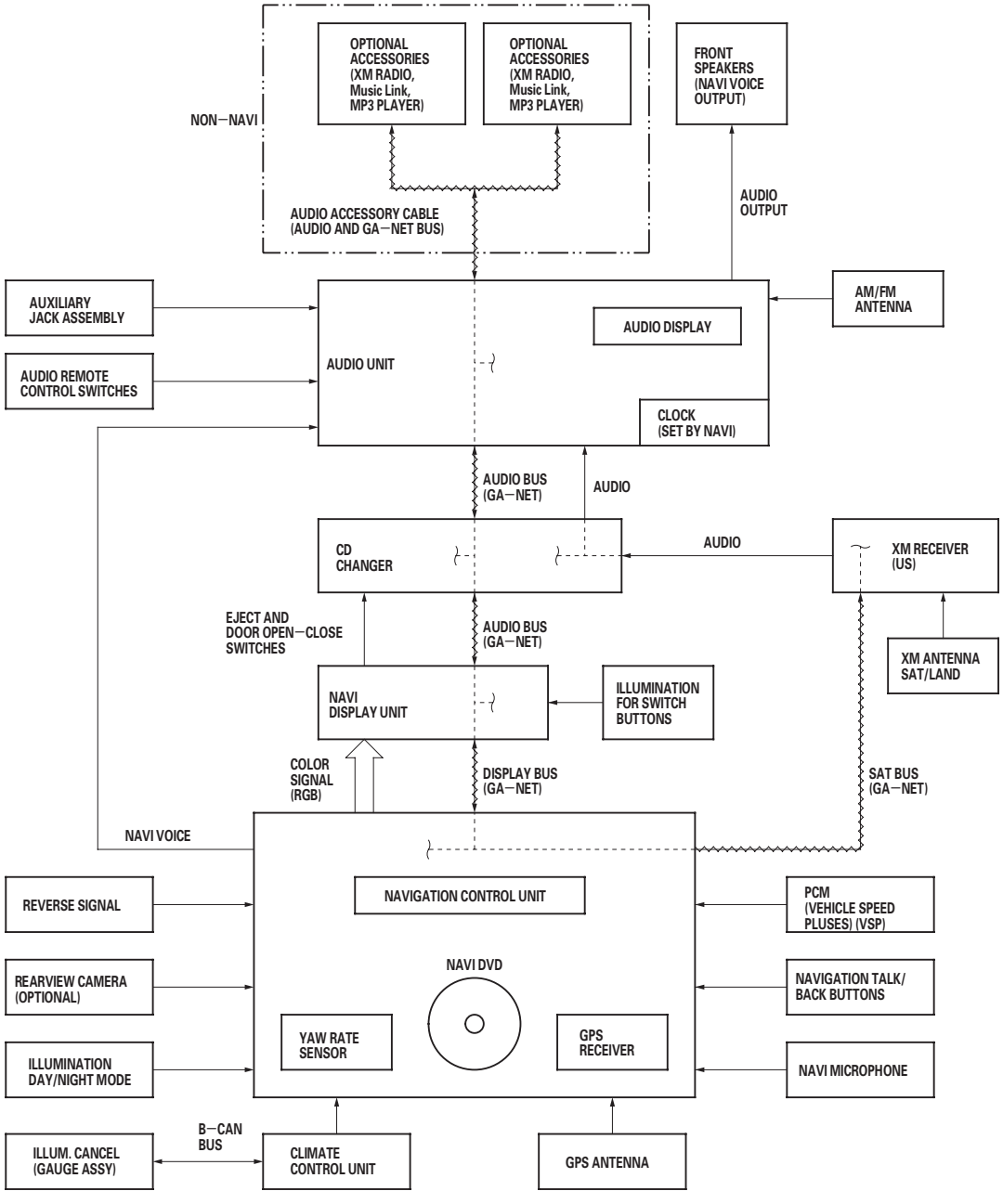
Contents	Audio output				
	Left front CH	Right front CH	Right rear CH	Left rear CH	Subwoofer CH
TALK/BACK Buttons	Navigation voice output	Navigation voice output	Muted	Muted	Muted
Route guidance	Navigation voice output	Navigation voice output	Audio	Audio	Audio

GA-Net Bus Configuration

The GA-Net bus passes audio and navigation commands throughout the navigation and audio components. These commands include navigation touch screen and hard button signals, audio/XM selections by voice, and XM station and music title names. Because the entire bus is ''daisy chained'' between components (see diagram), any open or short in the GA-Net bus harness will cause any or all of these functions to become inoperative. The addition of any audio accessory must maintain the continuity of the GA-Net bus by installing the ''Y'' cable included with the accessory kit.



System Diagram



(cont'd)

System Description (cont'd)

NOTE: All items may not apply to this vehicle. See the Owner's Manual for more information.

Audio Glossary

Item	Definition
Active Noise Control	The active noise control system cancels some of the vehicle noise. This occurs in the 1,500—2,400 rpm range. Microphones detect the low frequency sound, and the system outputs a canceling sound from the audio speaker.
AM (Amplitude Modulation)	The type of transmission used in the standard radio broadcast band from 530 to 1,705 kHz.
Amplifier	A device that increases the level of a signal by increasing the current or voltage.
Antenna	A device used to send or receive electromagnetic waves through the air.
ATA (PC Card)	A type of card that has been tested for use in playing WMA, and MP3 music files in the PC card slot. Sizes of up to 1 GB have been tested.
Auxiliary Jack	Allows the customer to use a portable audio device to input music recordings.
Audio Remote switch	The switches on the steering wheel that control the audio system.
Balance	A control that changes the relative volume of the left and right channels.
Band	A range of frequencies between two definite limits. Bands are assigned by the Federal Communications Commission for specific uses.
Bass	An adjustment for the low frequency sounds of around 160 Hz and below.
Byte	A unit of storage for computer files and memory. A CD holds approximately 700 million bytes.
Cassette	Audio or video magnetic tape container having two reels. Customers can insert it for recording or play back.
Compact Flash	A standard for small-size (3 x 4 cm), memory cards used in mobile computers, PDAs, digital cameras. Compact flash memory cards are available in size of 32 MB up to 4 GB or more and can be played in the audio PC slot. Sizes above 1 GB has not been tested.
CD (Compact Disc)	A 4.5-inch plastic disc containing digital audio recording that is played optically on a laser equipped player. Never use discs with a paper label. In a hot car, labels can curl up and jam the unit.
CD (audio disc) Changer	CD player that can store and play more than one CD. Two types are available. Some units accept CDs fed into the changer one at a time, and others accept a magazine (with CD's stacked in a container).
CD player	A component designed to play compact disc CD recording using a laser optical pickup. The signal from a CD player usually requires amplification.
Distortion	Inexact reproduction of an audio signal caused by playing music at levels the audio system cannot handle.
Dolby (noise reduction)	A processing system developed by Dolby Laboratories that reduces the background noise on recording media. The result is a clearer playback from the audio system.
DVD (Digital Versatile Disc)	A 4.5-inch CD-like format used for storing movies with digital audio and video features. The DVD-A format is a DVD format designed for DVD audio systems. Some vehicles can play DVD and DVD-A formats.
Equalizer	A device that changes the relative volume of individual frequency bands to suit personal tastes of the listener.
Fader	The control that adjusts the relative volume levels of front and rear speakers in a four-speaker system.
Format	To prepare a PC card to receive files, this function is performed on a PC. Always choose either FAT or FAT32 as the NTSF format is not accepted by the system. Pick the default sectors for the format method selected.
FM (Frequency Modulation)	The modulation used for radio and television sound transmission in most of the world. Less prone to interference than AM. The FM broad cast band covers roughly 87 to 108 MHz.

Audio Glossary

Item	Definition
GA-Net	The GA-Net allows the audio unit to communicate with all the audio and navigation components in a vehicle. If there is an open in the GA-Net, components or the entire audio and navigation system may appear inoperative.
GB (Gigabyte)	A unit of memory or disk storage equal to billion bytes (1000 million bytes).
HDD	Abbreviation for hard disc drive. They are sensitive to heat and it is not recommended that they be used in the PC card slot for playing audio files.
Hertz (HZ)	The unit of frequency equal to one cycle per second (cps). One kilohertz (kHz) equals 1,000 cps; one megahertz (MHz) equals 1 million cps.
Integrated Amplifier	A component that combines a pre amp and a power amp into a single unit. A receiver combines an integrated amp and a tuner into a single unit.
Jewel Case	The hard plastic case that contains a compact disc or DVD. Always use a jewel case to prevent scratches on the underside of a CD or DVD.
LCD (Liquid Crystal Display)	A type of digital display that changes reflectance or transmittance when an electrical field is applied to it.
Memory	Circuitry or devices that hold information in electrical or magnetic form, such as the AM/FM radio presets.
MB (Megabyte)	One million bytes. Written as 1 MB. Megabytes are used s a measure of digital storage space. For example, a CD can hold 650 MB.
Mic	An abbreviation for microphone. For vehicles with navigation, the microphone accepts navigation voice commands to control audio and navigation functions.
MP3 music files	MP3 is an audio coding format. MP3 is a poplar audio compression format on the Internet and computers. CDs, and PC card with these files can be played on some vehicle's audio system.
Mute	When the navigation gives guidance, the front speakers are muted (no music). When you use the voice control system, all of the speakers are muted.
Noise	Unwanted random sounds like buzzing, hiss, pops, static, whine, etc.
PC Card	The slot used for playing MP3 and WMA music files. The PC card is usually a combination of a small flash card in a PCMCIA adaptor that slides into the slot. The ATA, SD, and compact flash types of cards have been tested up to 1 GB.
PCMCIA	A computer standard for the slot that the PC card slides into. Another term for the PC card slot.
Processor	The part of an audio device that performs task/calculations. In the audio unit the processor handles muting to allow the navi to speak voice commands, and the decoding/playback of the sound files etc.
Radio	A head unit that combines a tuner, a preamplifier, and often a power-amplifier.
SCF (Cold Start Fix) screens	These screens are displayed if the system requires a GPS initialization. The vehicle should be moved outside into an open area away from buildings/power lines.
SD (Secure Digital) card	This compact type of memory card allows for fast data transfer and has built-in security functions. SD cards have a small write-protection switch on the side.
Shield	A metallic foil or braided wire layer surrounding conductors which are designed to prevent electrostatic or electromagnetic interference (noise) from external sources such as buzzing, or popping sounds heard on the speakers.
Speaker (Loudspeaker)	A device that converts electrical energy into acoustical energy (sound).
Stereo	A recording of at least two channels where you can hear sound or music from the left or right side.
Speed-sensitive Volume Compensation (SVC)	The SVC increases the audio volume to compensate for increased interior noise when the vehicle drives at freeway speeds.
Subwoofer	A loudspeaker made to reproduce the lowest audio frequencies, approx 25 Hz to 125 Hz.

(cont'd)

System Description (cont'd)

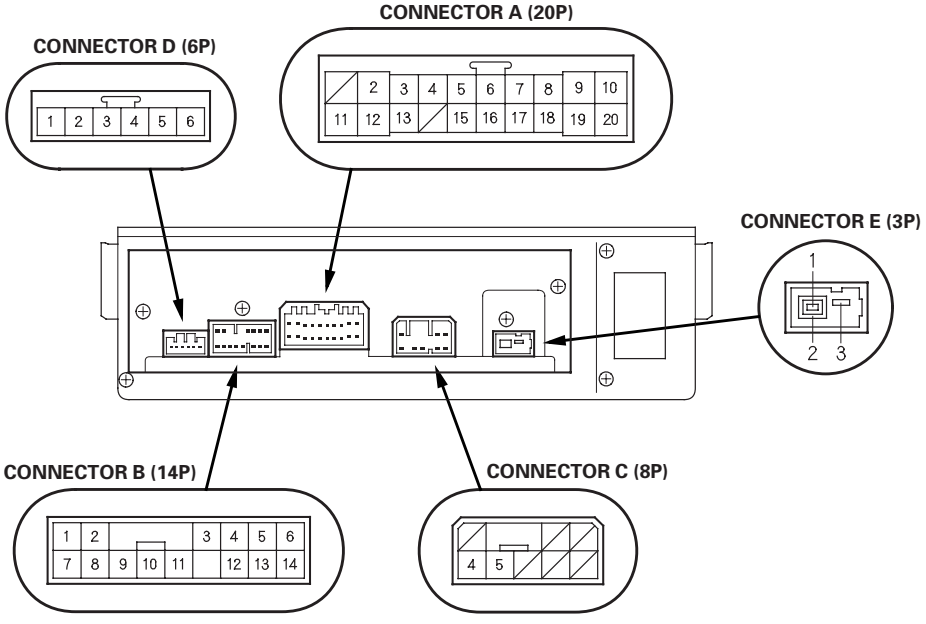
Audio Glossary

Item	Definition
Track	A sound recording on a CD, tape, or PC card.
Treble	An adjustment to control the ''volume'' of the high frequency sounds.
Tuner	A component (or part of a component) that receives radio signals and selects one broadcast from many.
Tweeter	A speaker designed to reproduce the higher frequencies (treble) only.
Voice Coil	A coil of wire wrapped around a tube and then attached to the speaker cone or diaphragm. When an audio signal is applied, the coil becomes an electromagnet and interacts with the permanent magnet causing the cone or diaphragm to vibrate. We interpret this vibration as sound.
Volume Control	Allows you to control the loudness of the music.
WMA music file	Windows Media Audio File. This is an accepted format for music files to be played on either a CD-R, a CD-RW, or a PC card.
Woofer	A speaker that is designed to reproduce bass frequencies only.
XM Radio	Satellite based radio transmission, which also uses a ground based repeater network to ensure seamless reception. The channels originate from XM's broadcast center, in Washington, DC, and uplink to two satellites. These satellites transmit the signal across the entire continental United States.
XM Receiver	The external component that receives and processes the XM signals from the XM satellites, and terrestrial (land) stations. The audio unit communicates to the XM receiver over the GA-Net bus.

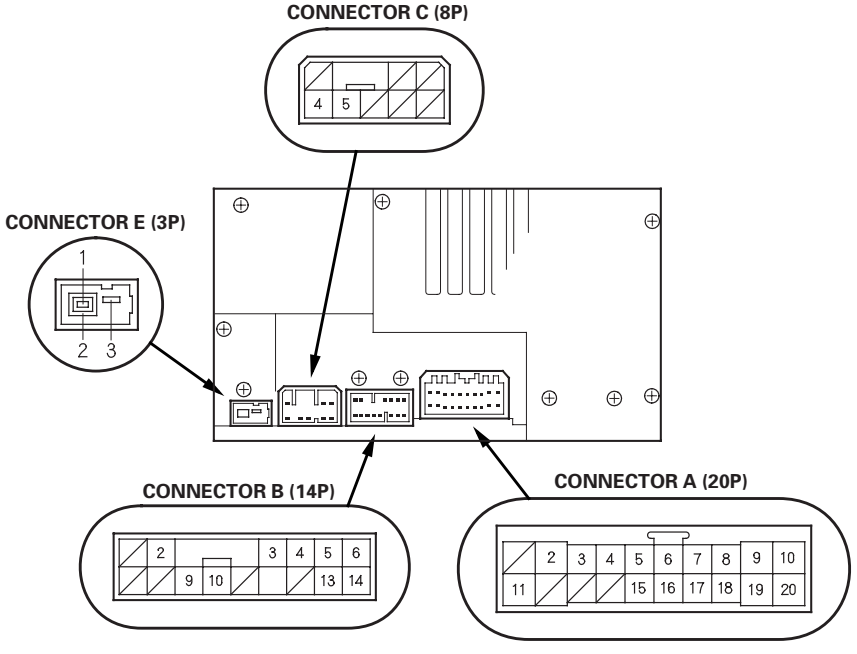
Audio Unit Connector for Inputs and Outputs

When replacing an audio unit connector, match the wires to the cavities listed in the following tables.

With navigation



Without navigation/6CD type



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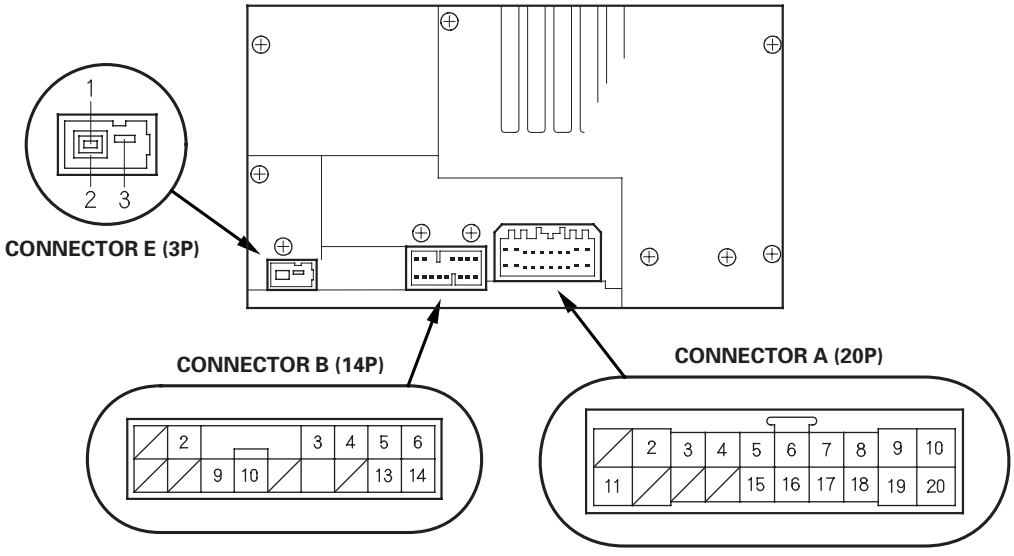
System Description (cont'd)

Without navigation/1CD type



AUDIO CONNECTOR A (20P)

Cavity	Wire	Connect to
A1	———	Not used
A2	YEL/RED	ACC (main stereo power supply)
A3	GRN/RED	Audio remote switch
A4	GRN/WHT*	Navigation display (SCTY)
	RED/WHT	MICU (SCTY)
A5	RED/BLU	Right rear speaker (+)
A6	BRN/WHT	Left rear speaker (+)
A7	BLU	Front passenger's door speaker (+), Right tweeter (+)
A8	LT GRN	Driver's door speaker (+), Left tweeter (+)
A9	RED/BLK	Lights-on signal
A10	WHT	Constant power
A11	BRN	Audio remote switch ground
A12	BLU/RED*	Navigation unit (RG GND)
A13	WHT*	Navigation unit (RG L+)
A15	YEL	Right rear speaker (−)
A16	RED/YEL	Left rear speaker (−)
A17	RED	Front passenger's door speaker (−), Right tweeter (−)
A18	PUR	Driver's door speaker (−), Left tweeter (−)
A19	RED	Dash lights brightness controller
A20	BLK	Ground (G404)

*: With navigation

AUDIO CONNECTOR B (14P) With navigation

Cavity	Wire	Connect to
B1	YEL	CD changer (+B GA-NET)
B2	PUR	CD changer (SYSTEM ACC)
B3	GRN/BLK*	CD changer (AUD BUS GA-NET shield)
B4	LT GRN*	CD changer (AUD shield)
B5	BLK	CD changer (AUD R+)
B6	GRN	CD changer (AUD L+)
B7	BLU	CD changer (+B GA-NET2)
B8	GRN/BLK	CD changer (ILL+)
B9	RED/BLU	CD changer (AUD BUS+ GA-NET)
B10	YEL	CD changer (AUD BUS− GA-NET)
B11	GRN/RED	CD changer (Ground)
B12	GRN	CD changer (GA-NET ILL CTRL)
B13	RED	CD changer (AUD R−)
B14	WHT	CD changer (AUD L−)

AUDIO CONNECTOR B (14P)
Without navigation/With XM radio

Cavity	Wire	Connect to
B1	———	Not used
B2	ORN	XM receiver (SAT SYSTEM ACC)
B3	BRN*	XM receiver (SAT BUS (GA-NET) shield)
B4	GRY*	XM receiver (SAT shield GND)
B5	WHT	XM receiver (SAT R+)
B6	RED	XM receiver (SAT L+)
B9	BLU	XM receiver (SAT BUS+ (GA-NET))
B10	PNK	XM receiver (SAT BUS− (GA-NET))
B13	BLK	XM receiver (SAT R−)
B14	GRN	XM receiver (SAT L−)

*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

(cont'd)

System Description (cont'd)

AUDIO CONNECTOR C (8P) Without Navigation/6CD type

Cavity	Wire	Connect to
C4	YEL/BLK	SUBWOOFER (RR WOOFER+)
C5	LT GRN/RED	SUBWOOFER (RR WOOFER−)

AUDIO CONNECTOR D With Navigation

Cavity	Wire	Connect to
D1	YEL	AUXILIARY JACK ASSEMBLY (AUX DET)
D2	BLU	AUXILIARY JACK ASSEMBLY (AUX ground)
D3	BRN	AUXILIARY JACK ASSEMBLY (R CH)
D4	RED	AUXILIARY JACK ASSEMBLY (S ground)
D5	WHT	AUXILIARY JACK ASSEMBLY (L CH)
D6	LT GRN/RED*	AUXILIARY JACK ASSEMBLY (AUX ground shield)

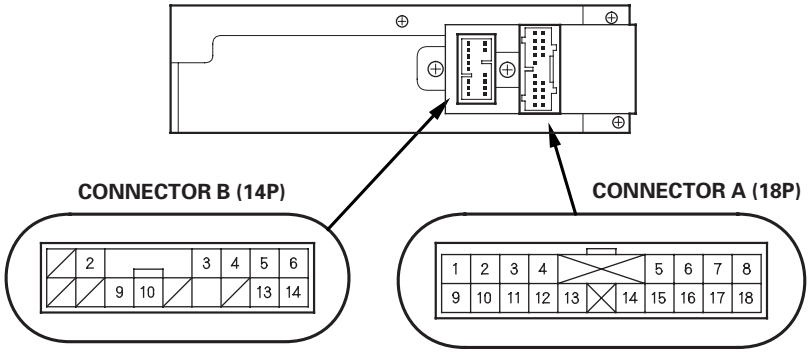
*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

CONNECTOR E (3P)

Cavity	Wire	Connect to
1	———	AM/FM Antenna Amplifier (SIG)
2	———	AM/FM Antenna Amplifier (SH (AM/FM))
3	———	AM/FM Antenna Amplifier (SWD +B)

CD Changer Connector for Inputs and Outputs (With Navigation System)

When replacing a CD changer connector, match the wires to the cavities listed in the following tables.



Cavity	Wire	Connect to
A1	WHT	Audio unit (AUD L−)
A2	RED	Audio unit (AUD R−)
A3	GRN	Audio unit (GA-NET ILL CTRL)
A4	GRN/RED	Navigation display (CD EJECT)
A5	RED/BLU	Audio unit (AUD BUS+ (GA-NET))
A6	PUR	Audio unit (SYSTEM ACC)
A7	YEL	Audio unit (+B GA-NET)
A8	YEL	Navigation display (NAVI SCTY2)
A9	GRN	Audio unit (AUD L+)
A10	BLK	Audio unit (AUD R+)
A11	LT GRN *	Audio unit (AUD shield)
A12	GRN	Navigation display (DISP OPEN)
A13	GRN/RED	Audio unit (Ground)
A14	GRN/BLK *	Audio unit (AUD BUS (GA-NET) shield)
A15	YEL	Audio unit (AUD BUS− (GA-NET))
A16	GRN/BLK	Audio unit (ILL+)
A17	BLU	Audio unit (+B GA-NET2)
A18	RED/WHT	MICU (SCTY IN)

*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

Cavity	Wire	Connect to
B2	ORN *1	XM receiver (SAT SYSTEM ACC)
B3	LT GRN *2	Navigation display (AUDIO BUS (GA-NET) shield)
B4	GRY *1, *2	XM receiver (SAT shield)
B5	WHT *1	XM receiver (SAT R+)
B6	RED *1	XM receiver (SAT L+)
B9	WHT	Navigation display (AUDIO BUS+ (GA-NET))
B10	BLU/RED	Navigation display (AUDIO BUS− (GA-NET))
B13	BLK *1	XM receiver (SAT R−)
B14	GRN *1	XM receiver (SAT L−)

*1: With XM radio

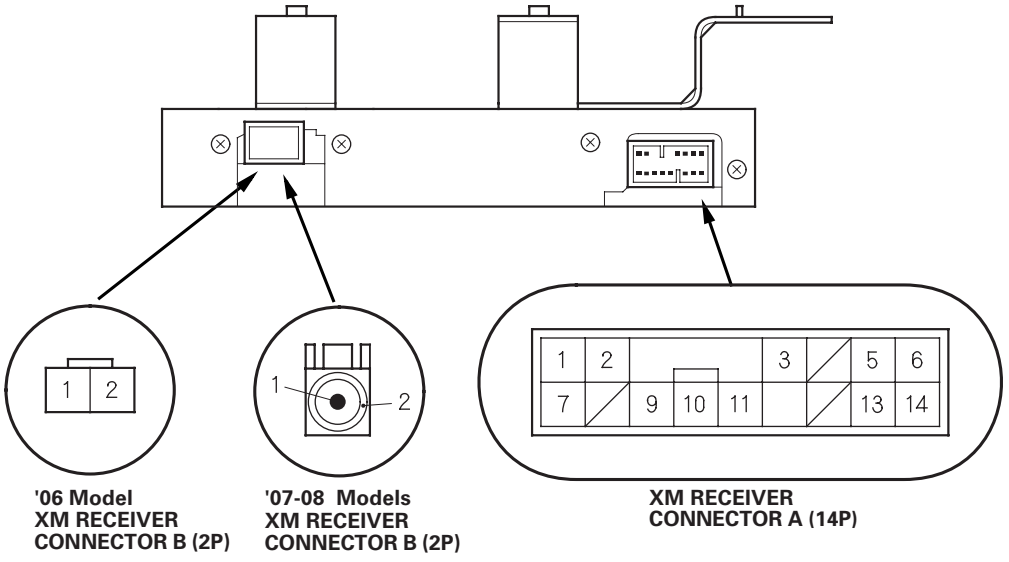
*2: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

(cont'd)

System Description (cont'd)

XM Receiver Connector for Inputs and Outputs

When replacing a XM receiver connector, match the wires to the cavities listed in the following tables.



XM RECEIVER CONNECTOR A (14P) With navigation

Cavity	Wire	Connect to
A1	WHT/RED	Constant power
A2	ORN	CD changer (SAT SYSTEM ACC)
A3	BRN*	Navigation unit (SAT BUS (GA-NET) shield)
A5	WHT	CD changer (SAT R+)
A6	RED	CD changer (SAT L+)
A7	WHT/RED	Constant power
A9	BLU	Navigation unit (SAT BUS+ (GA-NET))
A10	PNK	Navigation unit (SAT BUS− (GA-NET))
A11	BLK	Ground (G501)
A13	BLK	CD changer (SAT R−)
A14	GRN	CD changer (SAT L−)

*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

XM RECEIVER CONNECTOR A (14P) Without navigation

Cavity	Wire	Connect to
A1	WHT/RED	Constant power
A2	ORN	Audio unit (SAT SYSTEM ACC)
A3	BRN*	Audio unit (SAT BUS (GA-NET) shield)
A5	WHT	Audio unit (SAT R+)
A6	RED	Audio unit (SAT L+)
A7	WHT/RED	Constant power
A9	BLU	Audio unit (SAT BUS+ (GA-NET))
A10	PNK	Audio unit (SAT BUS− (GA-NET))
A11	BLK	Ground (G501)
A13	BLK	Audio unit (SAT R−)
A14	GRN	Audio unit (SAT L−)

XM RECEIVER CONNECTOR B (2P)
With or Without navigation ('06 model)

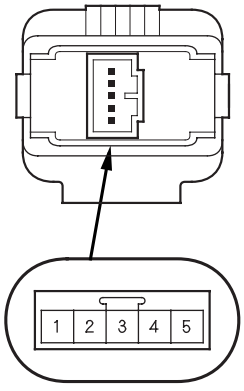
Cavity	Wire	Connect to
B1	———	Terrestrial signal antenna
B2	———	Satellite signal antenna

XM RECEIVER CONNECTOR B (2P)
With or Without navigation ('07-08 models)

Cavity	Wire	Connects to
B1	———	XM antenna (SAT/TER)
B2	———	XM antenna (SAT/TER SH)

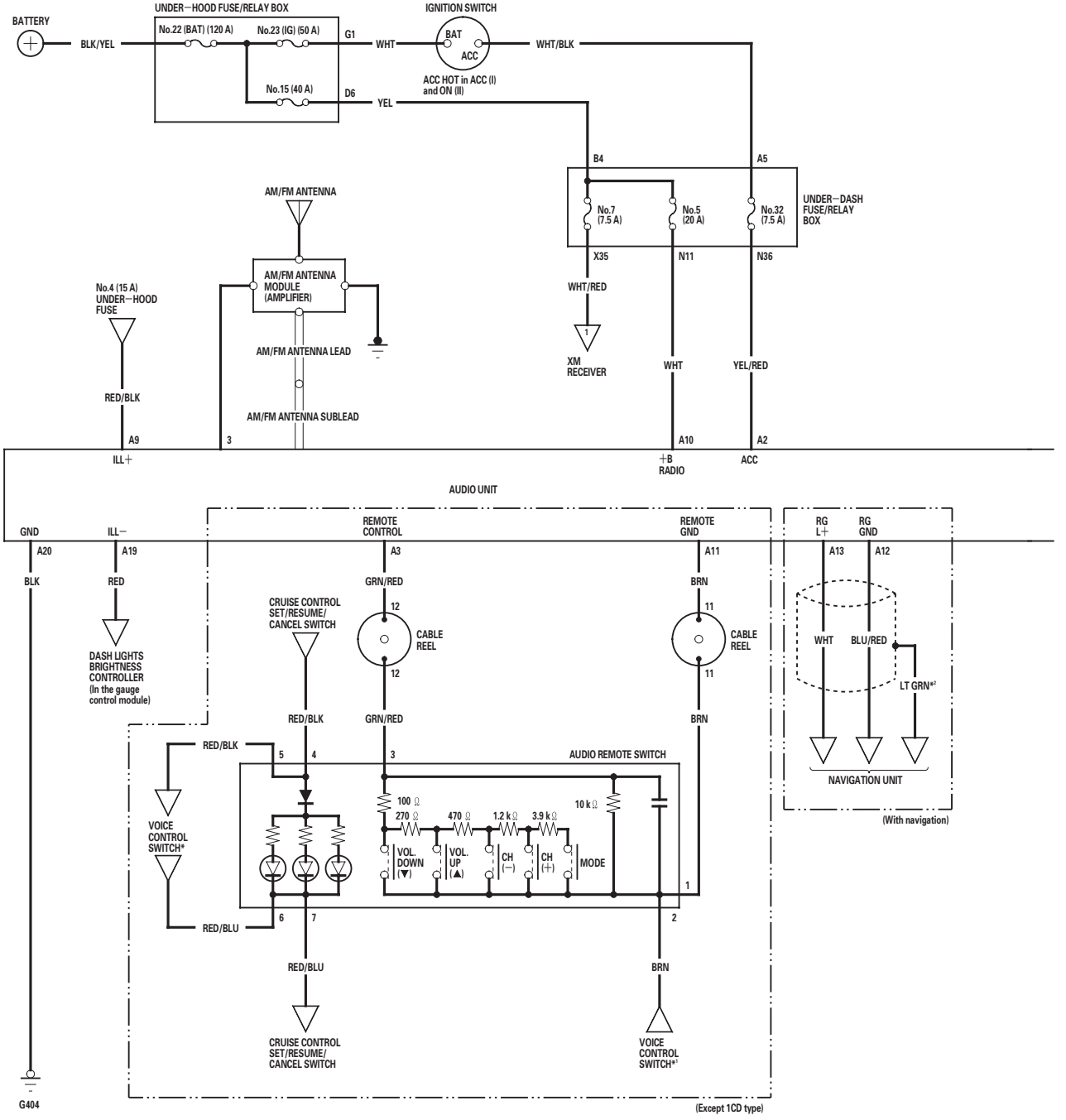
Auxiliary Jack Assembly Connector for Inputs and Outputs

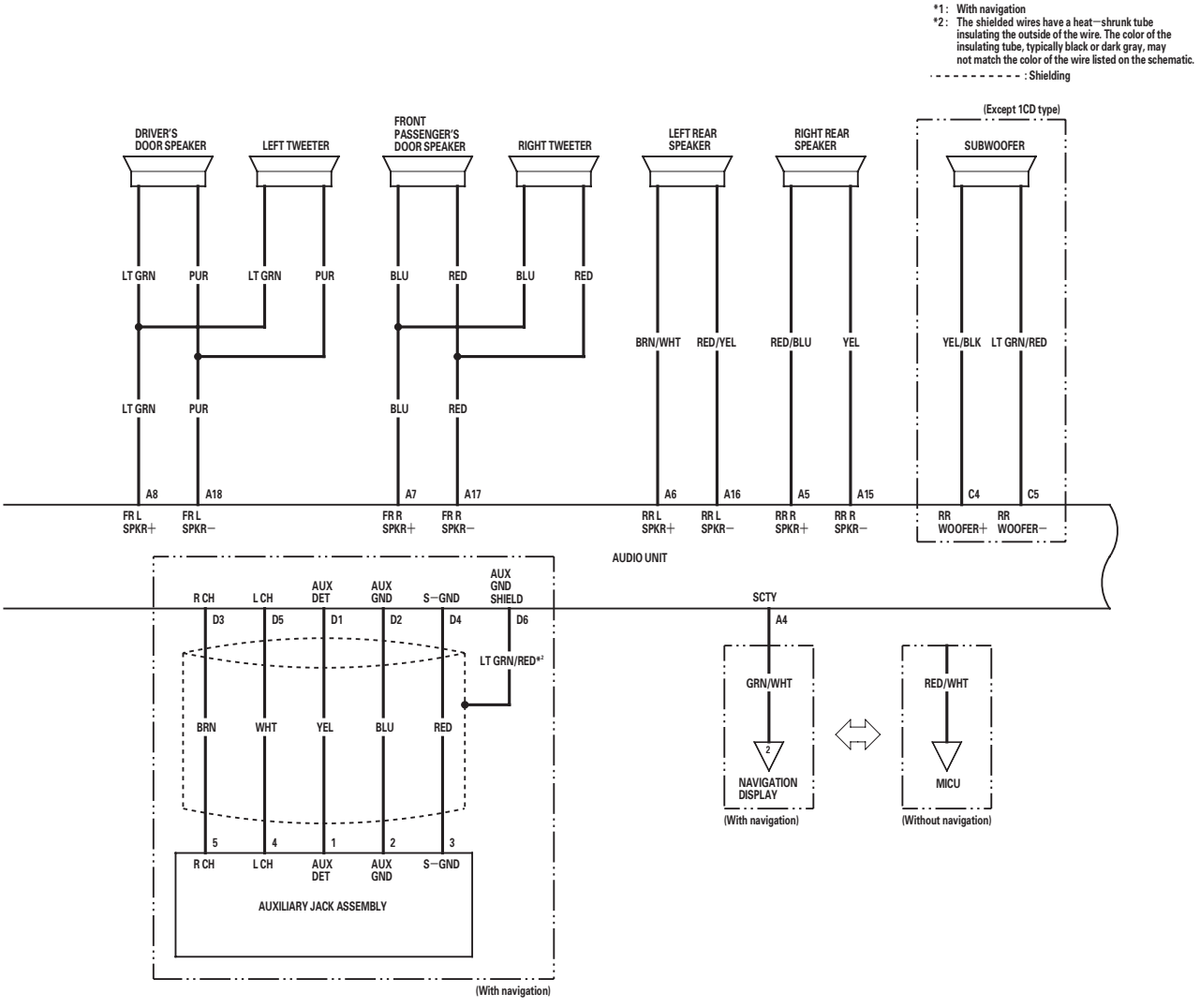
When replacing an auxiliary jack assembly connector, match the wires to the cavities listed in the following table.



Cavity	Wire	Connect to
1	YEL	Audio unit (AUX DET)
2	BLU	Audio unit (AUX ground)
3	RED	Audio unit (S ground)
4	WHT	Audio unit (L CH)
5	BRN	Audio unit (R CH)

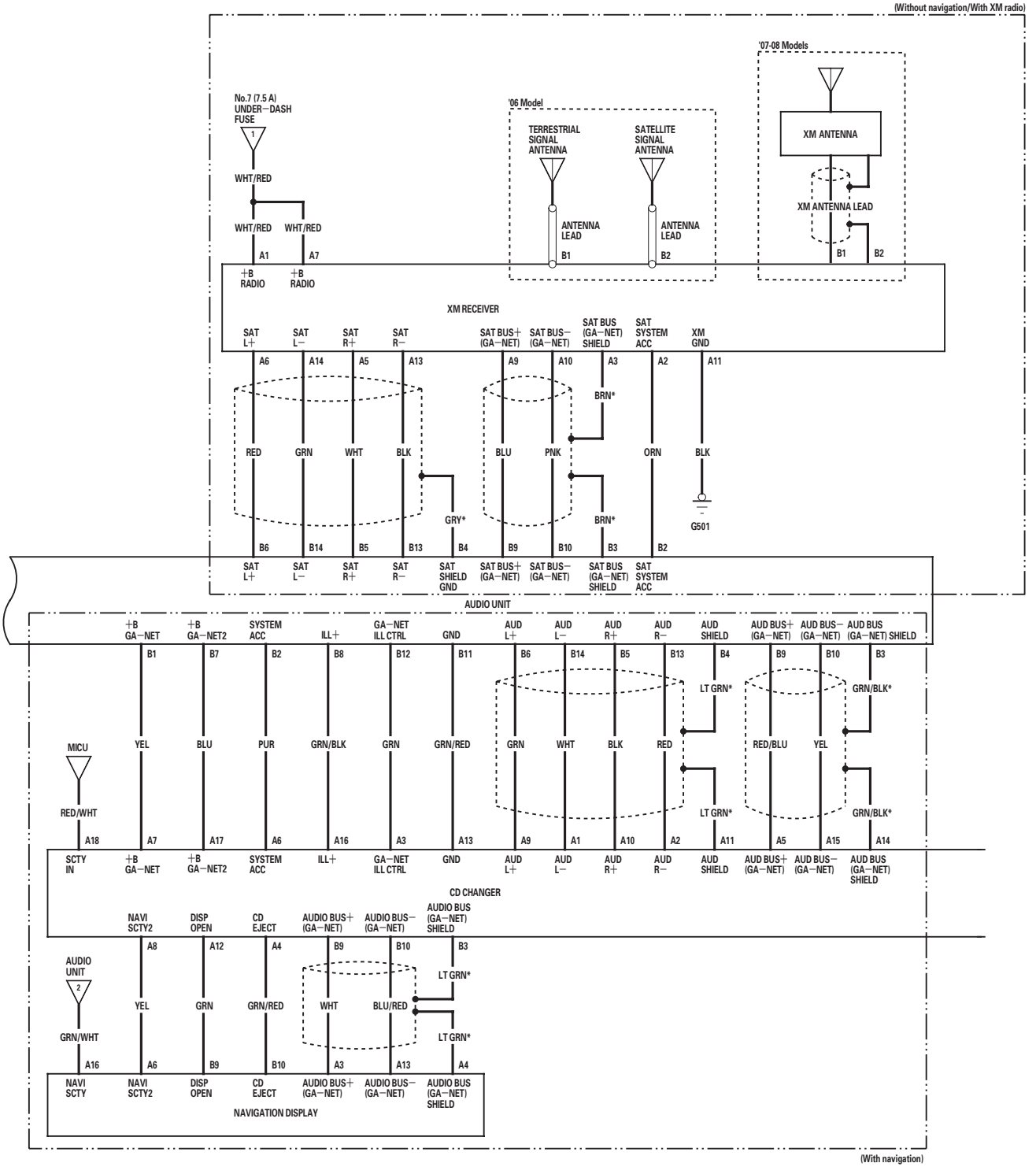
Circuit Diagram




*1: With navigation
*2: The shielded wires have a heat—shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.
: Shielding
(Except 1CD type)
DRIVER'S DOOR SPEAKER
LEFT TWEETER
FRONT PASSENGER'S DOOR SPEAKER
RIGHT TWEETER
LEFT REAR SPEAKER
RIGHT REAR SPEAKER
SUBWOOFER
LT GRN
PUR
LT GRN
PUR
BLU
RED
BLU
RED
BRN/WHT
RED/YEL
RED/BLU
YEL
YEL/BLK
LT GRN/RED
A8
A18
A7
A17
A6
A16
A5
A15
C4
C5
FR L SPKR+
FR L SPKR−
FR R SPKR+
FR R SPKR−
RR L SPKR+
RR L SPKR−
RR R SPKR+
RR R SPKR−
RR WOOFER+
RR WOOFER−
AUDIO UNIT
R CH
L CH
AUX DET
AUX GND
S−GND
AUX GND SHIELD
SCTY
D3
D5
D1
D2
D4
D6
A4
LT GRN/RED*2
GRN/WHT
RED/WHT
BRN
WHT
YEL
BLU
RED
2
NAVIGATION DISPLAY
MICU
(With navigation)
(Without navigation)
5
4
1
2
3
R CH
L CH
AUX DET
AUX GND
S−GND
AUXILIARY JACK ASSEMBLY
(With navigation)

(cont'd)

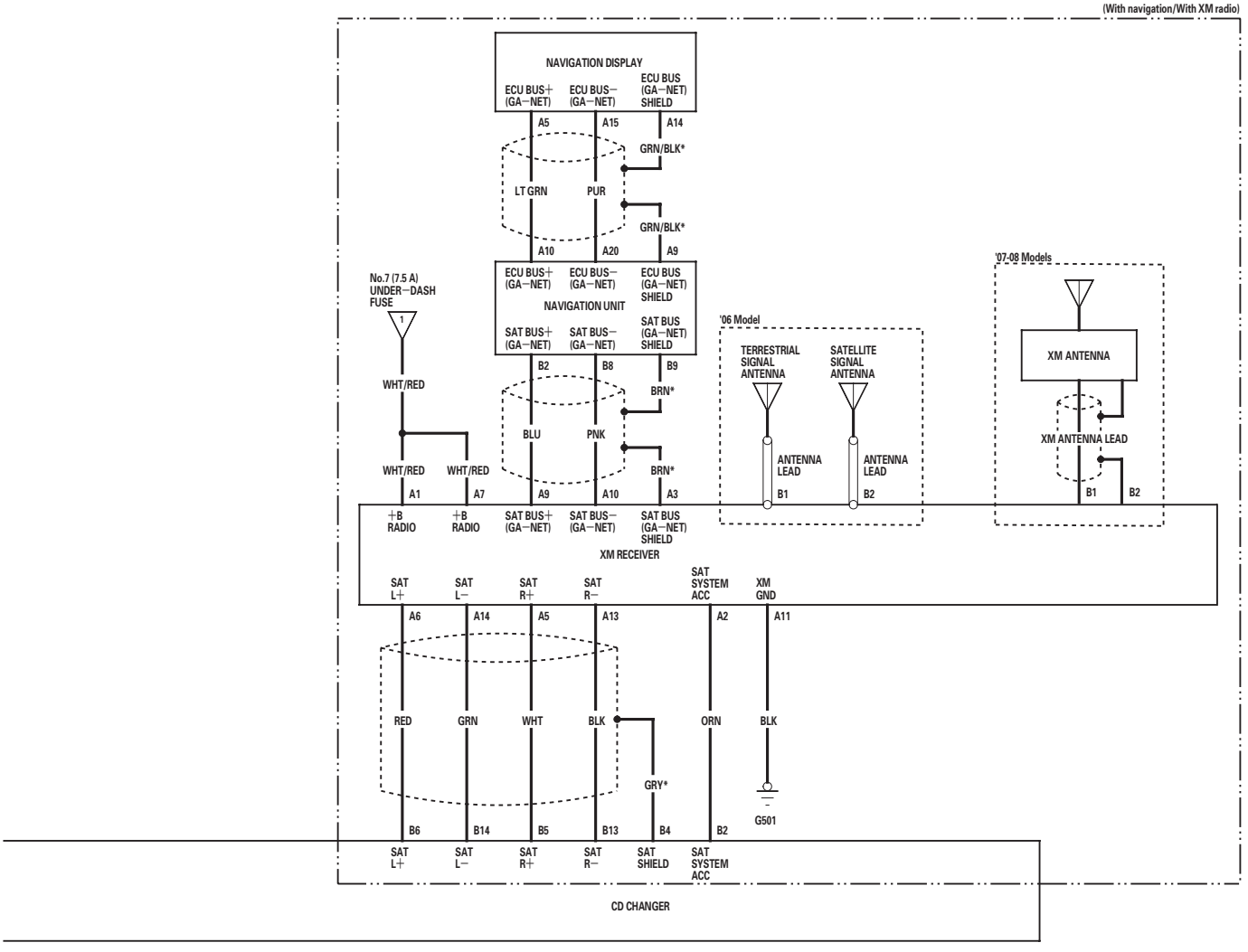
Circuit Diagram (cont'd)



*: The shielded wires have a heat—shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

: Shielding

(With navigation/With XM radio)



Self-diagnostic Function

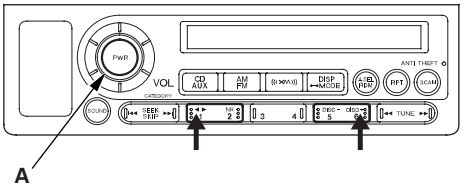
The audio system has a self-diagnostic function. To run the self-diagnostic function, do the following:

How to check for audio display condition

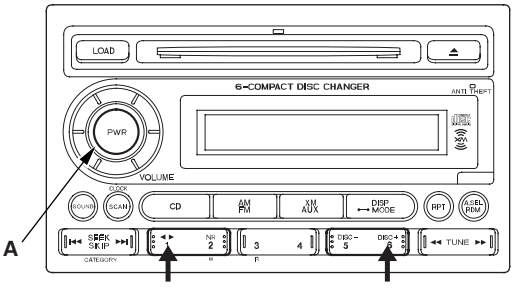
NOTE: The audio unit must be in the code enter screen before doing the self-diagnostic function.

1. Turn the ignition switch to the ACC (I) or ON (II) position.
2. Turn off the audio unit.
3. Push and hold the ''No. 1'' and ''DISC No. 6'' buttons. While holding the buttons, push the ''VOL push PWR'' knob (A) to ON. Release the buttons and the self-diagnostic function begins.

With navigation



Without navigation



4. By pressing a preset button, the input triggers the diagnostic mode that is assigned to that preset switch.

   ''No. 3'' button
   Entire LCD lighting mode: Turns on the entire LCD to show the presence or absence of an LCD segment failure.

   ''No. 4'' button
   Entire LCD light-out mode: Turns off the entire LCD to show the presence or absence of an LCD failure.

5. The self-diagnostic function ends when you turn the audio unit off, or turn the ignition switch off.

Error Codes

The audio system displays error codes when a problem is detected with the CD disc changer, the audio disc, the XM radio, or the anti-theft code.

CD Error Codes

Error Code Displayed	Possible Cause	Solution
CD DISC ERROR	Cannot read disc.	Eject the disc and try another one.
DISC ERROR	There is a problem with the disc player. A common problem is disc labels coming off the disc while in the player.	Try to eject the disc and try another one. If there is still a problem, replace the audio unit.
CD HEAT ERROR	Disc player is hot. This can happen if the vehicle is parked out in the hot sun all day.	Park the vehicle in a cooler place for a while and try the disc player again. If the error code is still present, try another disc. If the error code is still present, replace the audio unit.
LOADING	XM radio is acquiring audio or program information.	Wait until the radio receives the information.

XM Error Codes

Error Code Displayed	Possible Cause	Solution
XM OFF AIR	XM channel not in service.	Try another XM channel.
XM NO SIGNAL	Loss of signal.	Both terrestrial and satellite antennas have lost signal. Park the vehicle outside with a clear view of the southern horizon.
XM UPDATING	XM radio is receiving information update from the network.	This message will disappear once the update finishes.
XM ANTENNA	XM antenna error.	Repair the open or short in the terrestrial or satellite antenna. Remove the XM antenna and recheck. If the error is gone, replace the original XM antenna harness. If the error is still present, replace the antenna lead.
———	No signal from XM.	Check a known-good vehicle with XM radio. If the known-good vehicle has the same symptoms, contact XM Satellite Radio at (800) 852—9696.

Audio Unit Error Codes

Error Code Displayed	Possible Cause	Solution
CODE ERROR E	Anti-theft code mismatch (1^{st} try).	Enter the correct anti-theft code.
CODE ERROR 1	Anti-theft code mismatch (10^{th} try).	Remove fuse No. 5 (20 A) in the under-dash fuse/relay box, then reinsert it. You will have 10 more tries to enter the correct anti-theft code.

Symptom Troubleshooting

Poor AM or FM radio reception or interference

NOTE:
- Check the vehicle battery condition first.
- Check the radio reception in an open area. Poor reception/interference can be caused by any of these conditions:
  – The radio station is far away.
  – Atmospheric conditions are unfavorable.
  – A tall buildings, mountains, or a high-voltage power lines are nearby.
  – Aftermarket window tint.

1. Turn the ignition switch ON (II).
2. Do the seek stop test (see page 23-55).

   Is the test vehicle within 10 % of the known-good vehicle?

   YES—Multipath interference or weak station. Operation is normal. ■

   NO—Go to step 3.
3. Check if the radio reception/interference is the same in several locations.

   Is the reception/interference the same?

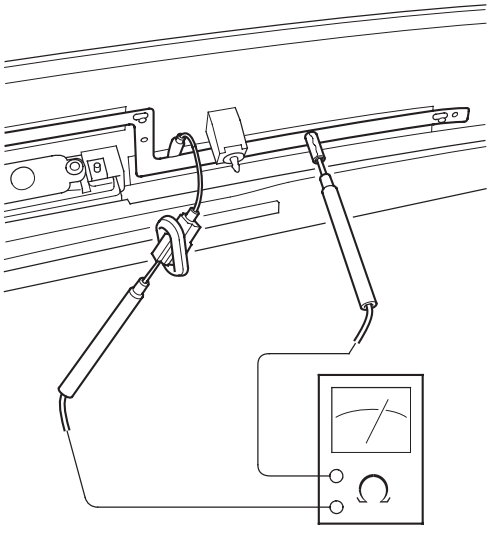
   YES—Go to step 4.

   NO—Multipath interference or weak station. Operation is normal. ■
4. Check the reception/interference while the engine is running.

   Is there noise (static or whine) only with the engine running?

   YES—Check the antenna and radio grounds. If OK, check the charging system and the ignition system. ■

   NO—Go to step 5.
5. Tune the ignition switch OFF.
6. Remove the rear roof trim (see page 20-175).
7. Touch one tester probe to the antenna element 1P connector No. 1 terminal, and the other tester probe at the antenna element to check for continuity. Replace if there is no continuity.



8. Remove the audio unit (see page 23-57). Check that the AM/FM antenna sub-lead and main-lead are properly connected.

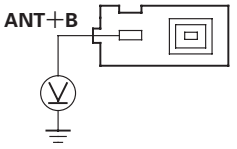
   Are they connected properly?

   YES—Go to step 9.

   NO—Reconnect the connector, and recheck the function. ■
9. Disconnect the antenna cable 3P connector from the antenna amplifier (see page 23-62).
10. Tune the ignition switch ON (II).
11. Turn on the audio unit and select AM or FM.

12. Measure the voltage between the antenna cable connector No. 3 terminal at the AM/FM antenna AMPLIFIER lead and body ground.

AM/FM ANTENNA AMPLIFIER 3P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 17.

NO—Go to step 13.

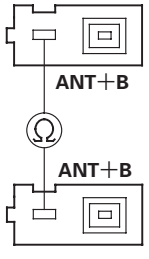
13. Tune the ignition switch OFF.

14. Disconnect the audio unit connector E (3P).

NOTE: Eject all the CDs before removing the audio unit and CD changer to prevent damaging the CD player's load mechanism.

15. Check for continuity between the audio unit connector E (3P) No. 3 terminal and the AM/FM antenna amplifier 3P connector No. 3 terminal.

AUDIO UNIT CONNECTOR E (3P)
Terminal side of female terminals



AM/FM ANTENNA AMPLIFIER CONNECTOR
Terminal side of female terminals

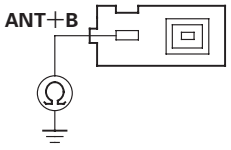
Is there continuity?

YES—Go to step 16.

NO—Repair open in the wire between the audio unit and the AM/FM antenna amplifier, and check the antenna lead and/or sublead connections. ■

16. Check for continuity between audio unit connector E (3P) No. 3 terminal and body ground.

AUDIO UNIT 3P CONNECTOR E (3P)



Terminal side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between the audio unit and AM/FM antenna. ■

NO—Replace the audio unit (see page 23-57). ■

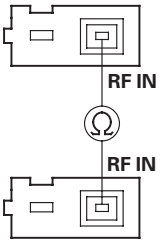
17. Tune the ignition switch OFF.

18. Disconnect the audio unit connector E (3P).

NOTE: Eject all the CDs before removing the audio unit and CD changer to prevent damaging the CD player's load mechanism.

19. Check for continuity between the audio unit connector E (3P) No. 1 terminal and the AM/FM antenna amplifier 3P connector No. 1 terminal.

AUDIO UNIT CONNECTOR E (3P)
Terminal side of female terminals



AM/FM ANTENNA AMPLIFIER 3P CONNECTOR
Terminal side of female terminals

Is there continuity?

YES—Go to step 20.

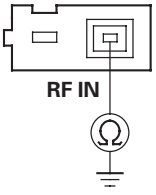
NO—Replace the AM/FM antenna lead and/or sublead. ■

(cont'd)

Symptom Troubleshooting (cont'd)

20. Check for continuity between the audio unit connector E (3P) No. 1 terminal and body ground.

AUDIO UNIT CONNECTOR E (3P)



Terminal side of female terminals

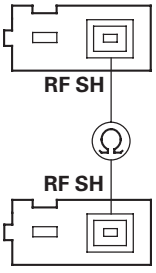
Is there continuity?

YES—Replace the AM/FM antenna lead and/or sublead. ■

NO—Go to step 21.

21. Check for continuity between the audio unit connector E (3P) No. 2 terminal and the AM/FM antenna amplifier 3P connector No. 2 terminal.

AUDIO UNIT CONNECTOR E (3P)
Terminal side of female terminals



AM/FM ANTENNA AMPLIFIER 3P CONNECTOR
Terminal side of female terminals

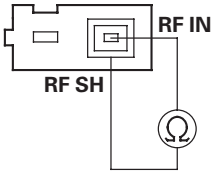
Is there continuity?

YES—Go to step 22.

NO—Replace the AM/FM antenna lead and/or sublead. ■

22. Check for continuity between the audio unit connector E (3P) No. 1 and No. 2 terminals.

AUDIO UNIT CONNECTOR E (3P)



Terminal side of female terminals

Is there continuity?

YES—Replace the AM/FM antenna lead and/or sublead. ■

NO—Replace the AM/FM antenna amplifier (see page 23-62), and recheck. If the reception is still poor, replace the audio unit (see page 23-57). ■

Power switch will not turn ON (No information display and no sound)

NOTE:
- Check the vehicle battery condition first.
- Always check the connectors for poor connections or loose terminals.

1. Turn the ignition switch ON (II).
2. Push the power switch ON to see if audio unit turns ON.

   Does the audio unit display operate properly, and does the audio unit sound normal?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Go to step 3.
3. Turn the ignition switch OFF.
4. Check the No. 5 (20 A) fuse and No. 32 (7.5 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Go to step 5.

   NO—Replace the fuse, and recheck. ■
5. Remove the audio unit (see page 23-57). Check that the audio unit is properly connected.

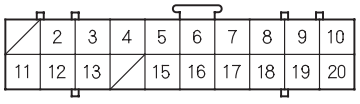
   Is it connected properly?

   YES—Go to step 5.

   NO—Reconnect the connector, and recheck the function. ■
6. Disconnect the audio unit connector A (20P).

   NOTE: Eject all the CDs before removing the audio unit and CD changer to prevent damaging the CD player's load mechanism.
7. Turn the ignition switch ON (II).
8. Measure the voltage between the No. 2 and No. 10 terminals of the audio unit connector A (20P) and body ground.

AUDIO UNIT CONNECTOR A (20P)

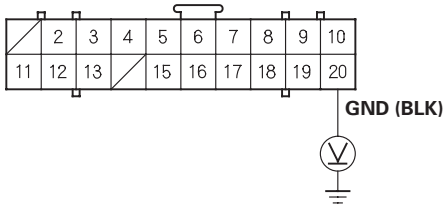


Wire side of female terminals

   Is there battery voltage?

   YES—Go to step 9.
   NO—Repair any open in the wire(s) between the No. 5 (20 A) fuse and No. 32 (7.5 A) in the under-dash fuse/relay box and the audio unit. ■
9. Turn the ignition switch OFF.
10. Reconnect the audio unit connector A (20P).
11. Turn the ignition switch ON (II).
12. Measure the voltage between audio unit connector A (20P) No. 20 terminal and body ground while pressing and releasing the audio unit power switch several times.

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

   Is there less than 0.1 V?

   YES—Replace the audio unit (see page 23-57). ■
   NO—Repair open in the wire between the audio unit connector A (20P) No. 20 terminal and body ground (G404). ■

Symptom Troubleshooting (cont'd)

Radio stays powered with the ignition switch OFF

NOTE:
- Check the vehicle battery condition first.
- Always check for aftermarket accessories plugged into the vehicle accessory power sokets.

1. Turn the ignition switch ON (II).
2. Push the power switch OFF or turn the ignition switch OFF to see if the audio unit turns OFF.

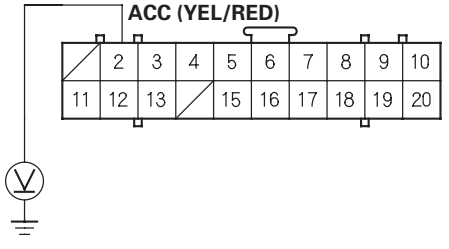
   Is the audio unit OFF?

   YES—Operation is normal. ■

   NO—Go to step 3.
3. Turn the ignition switch OFF.
4. Remove the audio unit (see page 23-57). Disconnect the audio unit connector A (20P).

   NOTE: Eject all the CDs before removing the audio unit and CD changer to prevent damaging the CD player's load mechanism.
5. Measure the voltage between the No. 2 terminal of the audio unit connector A (20P) and body ground.

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there battery voltage?

YES—Check for short to power on YEL/RED wire. ■

NO—Replace the audio unit (see page 23-57). ■

No sound is heard from speaker(s) (display is normal)

NOTE:
- Check the vehicle battery condition first.
- Set the fader and balance positions to the center.
- Before doing symptom troubleshooting, do the power switch will not turn ON troubleshooting (see page 23-27).
- Always check the connector for poor connections or loose terminals.

1. Turn the ignition switch ON (II).
2. Turn on the audio unit and check that the volume button is not set the MIN level.

   Is it at the MIN level?

   YES—Raise the volume level, and recheck the function. ■

   NO—
   - With navigation: Go to step 2.
   - Without navigation: Go to step 3.
3. Check the NAVIGATION MUTE COMMAND.

   Is the NAVIGATION MUTE MODE set?

   YES—Cancel the NAVIGATION MUTE MODE by pressing the voice command back button, and recheck the function. ■

   NO—Go to step 3.
4. Check to see if there is a specific speaker(s) that has no sound.

   Is there a specific speaker?

   YES—Go to step 5.

   NO—Go to step 8.
5. Turn the ignition switch OFF.

6. Check the speaker(s) with no sound for any damage.

   Is there any damage?

   YES—Substitute the speaker and recheck. ■

   NO—Go to step 7.

7. Remove the speaker(s) with no sound (see page 23-59), and disconnect its connector.

8. Check the speaker 2P connector for a loose or poor connection.

   Reconnect the speaker 2P connector and recheck the symptom; does it still fail?

   YES—Go to step 9.

   NO—Operation is normal. ■

9. Measure the resistance between the No. 1 and No. 2 terminals of the speaker connector.

   Is there about 4 Ω ?

   YES—Go to step 10.

   NO—Faulty speaker(s). ■

10. Reconnect the speaker, and remove the audio unit (see page 23-57). Disconnect the audio unit connector A (20P) and C (8P).

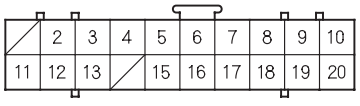
    NOTE: Eject all the CDs before removing the audio unit and CD changer to prevent damaging the CD player's load mechanism.

11. Measure the resistance between following terminals of audio unit connector A (20P) according to table.

Speaker	Terminal	Wire color
Driver's door speaker, Left tweeter	A8 (+)	LT GRN
	A18 (−)	PUR
Front passenger's door speaker, Right tweeter	A7 (+)	BLU
	A17 (−)	RED
Left rear speaker	A6 (+)	BRN/WHT
	A16 (−)	RED/YEL
Right rear speaker	A5 (+)	RED/BLU
	A15 (−)	YEL
Subwoofer*	C4 (+)	YEL/BLK
	C5 (−)	LT GRN/ RED

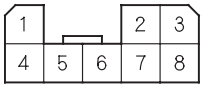
*: Except 1CD type

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

AUDIO UNIT CONNECTOR C (8P)
(Except 1CD type)



Wire side of female terminals

Is there more than 4 Ω ?

YES—Go to step 12.

NO—Repair open in the wire between the audio unit and speaker. ■

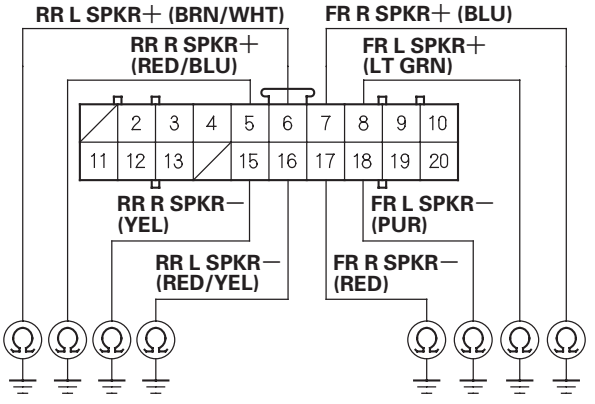
12. Disconnect the speaker 2P connector.

(cont'd)

Symptom Troubleshooting (cont'd)

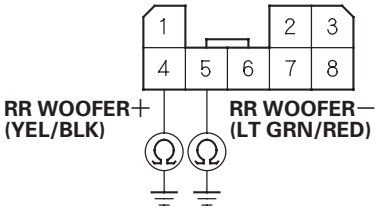
13. Check for continuity between body ground and audio unit connector A (20P) No. 5, 6, 7, 8, 15, 16, 17 terminals and 18 individually and between body ground and audio unit connector C (8P) terminals No. 4 and No. 5 individually.

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

AUDIO UNIT CONNECTOR C (8P)
(Except 1CD type)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the audio unit and speaker. ■

NO—Substitute a known-good audio unit and recheck. If the symptom/ indication goes away, replace the original audio unit. ■

Audio system sound is weak or distorted (display is normal)

NOTE: Check the vehicle battery condition first.

1. Turn the ignition switch ON (II).

2. Turn on the audio unit and check for sound in each mode (AM, FM, XM, and CD).

   Is there sound from the speakers, and is the sound quality normal in each mode?

   YES—Intermittent failure. The system is OK at this time. Check for loose connection at the audio unit, and each speaker. ■

   NO—Speakers all work, sound quality is poor. ■

   - If sound quality is poor only with the XM radio, or the XM radio does not function, go to poor or no sound with XM radio (see page 23-32).
   - If the sound quality is poor only with AM or FM, go to poor radio reception or interference (see page 23-24).
   - If sound is poor in all modes, go to sound quality diagnosis (see page 23-51).

Audio unit button illumination does not work

NOTE: Check the vehicle battery condition first.

1. Turn the ignition switch ON (II).
2. Turn the headlight switch to the parking light position.
3. Check the illumination of the audio unit buttons.

   Are the buttons illuminated?

   YES—Intermittent problem: the audio unit is OK at this time. Check for loose or poor connections at audio unit connector A (20P). ■

   NO—Go to step 4.

4. Check the illumination of several other buttons not related to the audio system.

   Are the buttons illuminated?

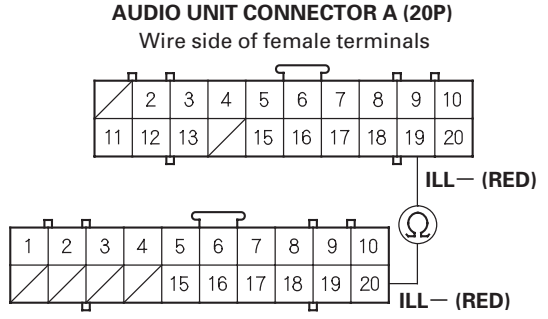
   YES—Go to step 5.

   NO—Troubleshoot the interior lights. Start by checking the No. 4 (15 A) fuse in the under-hood fuse/relay box. If the fuse is OK, check for an open in the wire between the under-hood fuse/relay box and the audio unit. ■

5. Turn the ignition switch OFF.
6. Disconnect audio unit connector A (20P).

   NOTE: Eject all the CDs before removing the audio unit and CD changer to prevent damaging the CD player's load mechanism.

7. Disconnect gauge control module connector A (30P).
8. Check for continuity between audio unit connector A (20P) No. 19 terminal and gauge control module connector C (20P) No. 20 terminal.

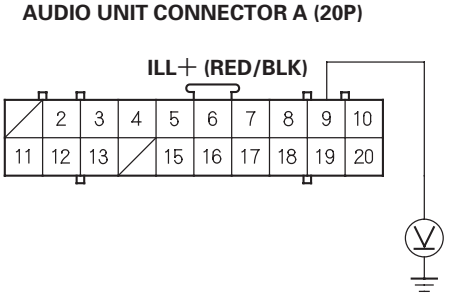


   Is there continuity?

   YES—Go to step 9.

   NO—Repair open in the wire between the gauge control module and the audio unit. ■

9. Turn the ignition switch ON (II).
10. With the headlight switch still on, measure the voltage between audio unit connector A (20P) No. 9 terminal and body ground.



   Is there battery voltage?

   YES—Check the connections at the audio unit connector A (20P). If all connections are OK, replace the audio unit. ■

   NO—Repair open in the wire between the under-hood fuse/relay box and the audio unit. ■

Symptom Troubleshooting (cont'd)

Radio preset memory is lost

NOTE:
- Check the vehicle battery condition first.
- If only XM stations are lost, go to XM radio preset memory is lost (see page 23-41).

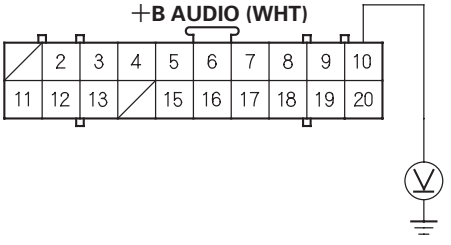
1. Turn the ignition switch ON (II).
2. Turn on the audio unit and set each of the radio station preset buttons.

   Does each button set properly?

   YES—Go to step 4.

   NO—Go to step 3.
3. Measure the voltage between audio unit connector A (20P) No. 10 terminal and body ground.

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

   Is there battery voltage?

   YES—Go to step 4.

   YES—Repair open in the wire between the No. 5 (7.5 A) fuse and under-dash fuse/relay box and audio unit connector A (20P) No. 10 terminal. ■
4. Turn off the ignition switch for 1 minute, then turn it back to ON (II).
5. Test the preset buttons for proper recall operation.

   Do the preset buttons recall the set radio stations?

   YES—System is normal at this time. Check connections at the audio unit. ■

   NO—Replace the audio unit. ■

Poor or no sound with XM radio (Audio unit does display XM channels)

NOTE:
- Check the vehicle battery condition first.
- Check the radio reception in an open area. Poor reception/interference can be caused by tall buildings, mountains, or nearby high-voltage power lines.
- If you can only tune to channel 000, 001, 174, and 247, make sure the audio unit is set to channel mode (see owner's manual), if it is set to channel mode, call XM satellite Radio customer support and check the account activation status.

1. Turn the ignition switch ON (II).
2. Turn on the audio unit, and select XM radio.
3. Check for an error message on the display.

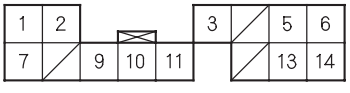
   Are there any messages displayed?

   YES—Go to error code list (see page 23-23). ■

   NO—
   - With navigation: Go to step 7.
   - Without navigation: Go to step 4.
4. Turn the ignition switch OFF.
5. Disconnect audio unit connector B (14P) and the XM receiver connector A (14P).
6. Check for continuity between XM receiver connector A (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and audio unit connector B (14P) No. 4 terminal (the harness shield).

XM receiver connector	Wire color
A6	RED
A14	GRN
A5	WHT
A13	BLK

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

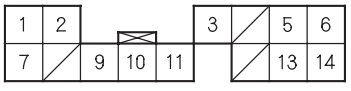
YES—Repair short in the wire between the audio unit and the XM receiver or short between the shield wire (replace the appropriate shielded harness). ■

NO—Go to step 6.

7. Check for continuity between XM receiver connector A (14P) and audio unit connector B (14P) according to the table.

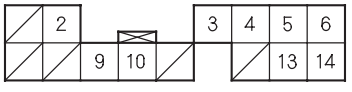
XM receiver connector	Audio unit connector	Wire color
A6	B6	RED
A14	B14	GRN
A5	B5	WHT
A13	B13	BLK
A9	B9	BLU
A10	B10	PNK
A2	B2	ORN

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

AUDIO UNIT CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good XM receiver, then reconnect all connector and recheck. If the symptom/indication goes away, replace the original XM receiver. If symptom/indication is still present, replace the audio unit. ■

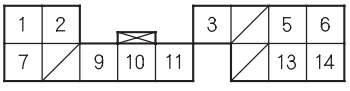
NO—Repair open in the wire between audio unit and XM receiver. ■

8. Disconnect CD changer connector B (14P) and XM receiver connector A (14P).

9. Check for continuity between XM receiver connector A (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and CD changer connector B (14P) No. 4 terminal (the harness shield).

XM receiver connector	Wire color
A6	RED
A14	GRN
A5	WHT
A13	BLK
A2	ORN

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the CD changer and the XM receiver or a short between the shield wire (replace the appropriate shielded harness). ■

NO—Go to step 10.

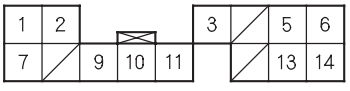
(cont'd)

Symptom Troubleshooting (cont'd)

10. Check for continuity between XM receiver connector A (14P) and CD changer connector B (14P) according to the table.

XM receiver connector	CD changer connector	Wire color
A6	B6	RED
A14	B14	GRN
A5	B5	WHT
A13	B13	BLK
A2	B2	ORN

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

YES—Go to step 11.

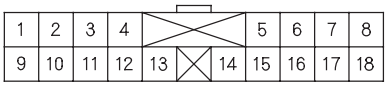
NO—Repair open in the wire between CD changer and XM receiver. ■

11. Disconnect CD changer connector A (18P) and audio unit connector B (14P).

12. Check for continuity between CD changer connector A (18P) and body ground according to the table.
Check for continuity between the same terminals listed in the table and the XM receiver connector A (18P) No. 11 terminal (the harness shield).

CD changer connector	Wire color
A9	GRN
A1	WHT
A10	BLK
A2	RED

CD CHANGER CONNECTOR A



Terminal side of female terminals

Is there continuity?

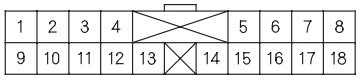
YES—Repair short between the CD changer and the audio unit, or replace the appropriate shield harness. ■

NO—Go to step 13.

13. Check for continuity between the CD changer connector A (18P) and audio unit connector B (14P) according to the table.

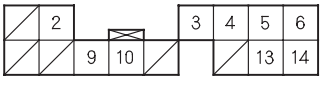
CD changer connector	Audio unit connector	Wire color
A9	B6	GRN
A1	B14	WHT
A10	B5	BLK
A2	B13	RED

CD CHANGER CONNECTOR A



Terminal side of female terminals

AUDIO UNIT CONNECTOR B (14P)



Terminal side of female terminals

Is there continuity?

YES—Substitute a known-good XM receiver and retest. If the symptom/indicated goes away replace XM receiver. If the symptom/indicated is still present replace the audio unit. ■

NO—Repair open in the wire between the CD changer and the audio unit. ■

XM radio display is blank and no station information is displayed

NOTE:
- Check the vehicle battery condition first.
- Do not do this procedure if the CD changer and navigation display buttons are inoperative. Refer to the navigation system troubleshooting.

1. Check fuse No. 7 (7.5 A) in the under-dash fuse/relay box.

   Is the fuse OK?

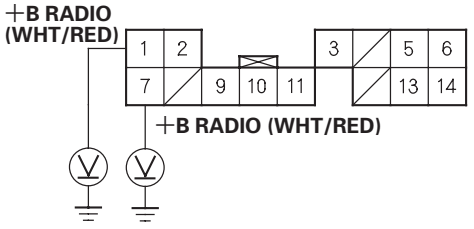
   YES—Go to step 2.

   NO—Replace the fuse, and recheck.■

2. Turn the ignition switch ON (II).

3. Measure the voltage between XM receiver connector A (14P) No. 1 and No. 7 terminals and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

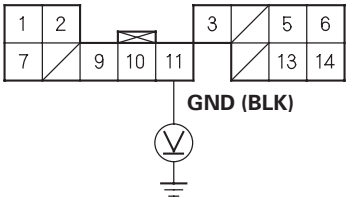
Is there battery voltage?

YES—Go to step 4.

NO—Repair open in the wire between fuse No. 7 (7.5 A) under-dash fuse/relay box and XM receiver connector A (14P) No. 1 and No. 7 terminals.■

4. Measure the voltage between XM receiver connector A (14P) No. 11 terminal and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there less than 0.1 V?

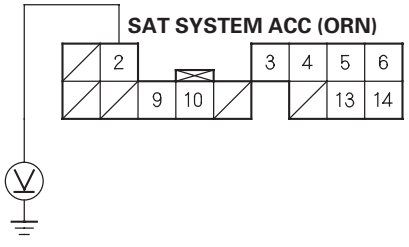
YES—
- With navigation: Go to step 12.
- Without navigation: Go to step 5.

NO—Repair open in the wire between XM receiver connector A (14P) No. 11 terminal and body ground (G501).■

5. Turn the ignition switch ON (II).

6. Measure the voltage between audio unit connector B (14P) No. 2 terminal and body ground.

AUDIO UNIT CONNECTOR B (14P)



Wire side of female terminals

Is there 10 V or more present?

YES—Go to step 7.

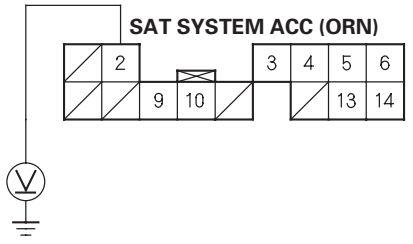
NO—Go to step 9.

(cont'd)

Symptom Troubleshooting (cont'd)

7. Measure the voltage between audio unit connector B (14P) No. 2 terminal and body ground.

AUDIO UNIT CONNECTOR B (14P)



Wire side of female terminals

Is there less than 0.5 V?

YES—Go to step 8.

NO—Substitute a known-good audio unit and recheck. If less than 0.5 V is present, replace the original audio unit. ■

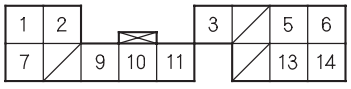
8. Turn the ignition switch OFF.

9. Disconnect audio unit connector B (14P) and XM receiver connector A (14P).

10. Check for continuity between XM receiver connector A (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and XM receiver connector A (14P) No. 3 terminal (the harness shield).

XM receiver connector	Wire color
A9	BLU
A10	PNK
A2	ORN

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

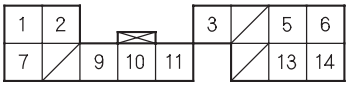
YES—Repair short in the wire between the audio unit and the XM receiver, or replace the appropriate shielded harness. ■

NO—Go to step 11.

11. Check for continuity between XM receiver connector A (14P) and audio unit connector B (14P) according to the table.

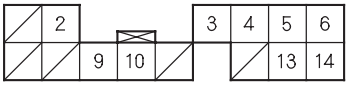
XM receiver connector	Audio unit connector	Wire color
A9	B9	BLU
A10	B10	PNK
A2	B2	ORN

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

AUDIO UNIT CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

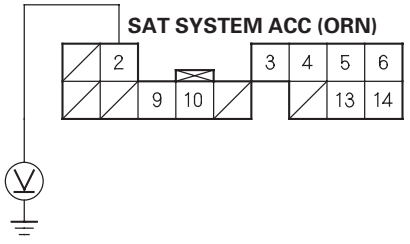
YES—Substitute a known-good XM receiver, then reconnect all the connectors and recheck. If the symptom/indication goes away, replace the original XM receiver. If symptom/indication is still present, replace the audio unit. ■

NO—Repair open in the wire between audio unit and XM receiver. ■

12. Turn the ignition switch ON (II).

13. Measure the voltage between CD changer connector B (14P) No. 2 terminal and body ground.

AUDIO UNIT CONNECTOR B (14P)



Wire side of female terminals

Is there 10 V or more present?

YES—Go to step 14.

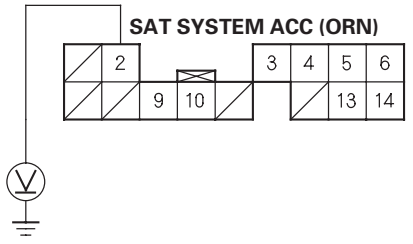
NO—Go to step 20.

(cont'd)

Symptom Troubleshooting (cont'd)

14. Measure the voltage between CD changer connector B (14P) No. 2 terminal and body ground.

CD CHANGER CONNECTOR B (14P)



Wire side of female terminals

Is there less than 0.5 V?

YES—Go to step 15.

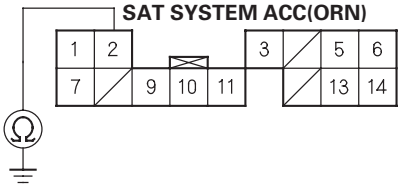
NO—Substitute a known-good CD changer and recheck. If 0.5 V or less are present, replace the original CD changer. ■

15. Turn the ignition switch OFF.

16. Disconnect CD changer connector B (14P) and XM receiver connector A (14P).

17. Check for continuity between XM receiver connector A (14P) No. 2 terminal and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

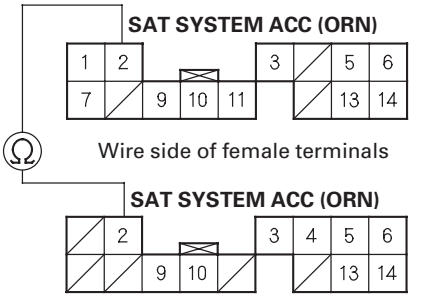
Is there continuity?

YES—Repair short in the wire between the CD changer and the XM receiver, or replace the appropriate shielded harness. ■

NO—Go to step 18.

18. Check for continuity between XM receiver connector A (14P) No. 2 terminal and CD changer connector B (14P) No. 2 terminal.

XM RECEIVER CONNECTOR A (14P)



CD CHANGER CONNECTOR B (14P)
Wire side of female terminals

Is there continuity?

YES—Go to step 19.

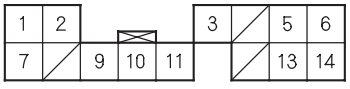
NO—Repair open in the wire between CD changer and XM receiver. ■

19. Disconnect the navigation control unit connector B (14P).

20. Check for continuity between XM receiver connector A (14P) and navigation unit connector B (14P) according to the table.

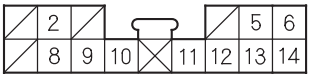
XM receiver connector	Navigation unit	Wire color
A9	B2	BLU
A10	B8	PNK

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

NAVIGATION UNIT CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good XM receiver and retest. ■

NO—Repair open in the wire between the XM receiver and the navigation unit. ■

Error code: XM NO SIGNAL or XM ANTENNA is displayed

NOTE:
- Check the vehicle battery condition first.
- Check XM radio reception in an open area. Poor reception/interference can be caused by tall buildings, mountains, or high-voltage power lines.

1. Park the vehicle outside with a clear view of the southern horizon.

   Does the XM radio receive a signal?

   YES—Reception interference operation is normal. ■

   NO—Go to step 2.

2. Check the XM antenna connector B (2P) at the XM receiver.

   Is the XM antenna connector B connected?

   YES—Go to step 3.

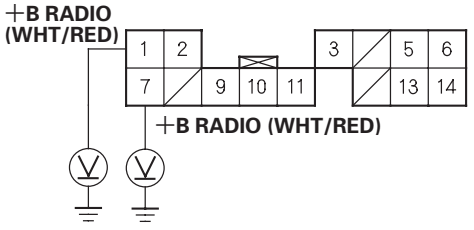
   NO—Reconnect XM connector B, recheck XM radio operation. If the signal is restored, operation is normal. If signal not restored go to step 3.

(cont'd)

Symptom Troubleshooting (cont'd)

3. Turn the ignition switch ON (II).
4. Turn on the audio unit select XM radio.
5. Measure the voltage between XM receiver connector A (14P) No. 1 and No. 7 terminals and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

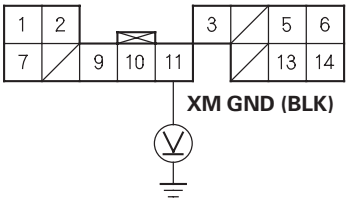
Is there battery voltage?

YES—Go to step 6.

NO—Repair open in the wire between fuse No. 7 (7.5 A) under-dash fuse/relay box and XM receiver connector A (14P) No. 1 and No. 7 terminals. ■

6. Measure the voltage between XM receiver connector A (14P) No. 11 terminal and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there less than 0.1 V?

YES—Go to step 7.

NO—Repair open in the wire between XM receiver connector A (14P) No. 11 terminal and body ground (G501). ■

7. Substitute a known-good XM antenna.

Does the XM radio receiver a signal?

YES—Replace the XM antenna. ■

NO—Substitute known-good XM antenna subharness. If XM radio receives signal, replace original XM antenna subharness. If the XM radio does not receive a signal, substitute a known-good XM receiver unit. ■

XM radio preset memory is lost

NOTE:
- Check the vehicle battery condition first.
- If you can only tune to channel 000, 001, 174, and 247, make sure the audio unit is set to channel mode, call XM Satellite Radio customer support and check the account activation status.

1. Turn the ignition switch ON (II).
2. Turn on the audio unit and set each of the XM radio channel preset buttons.

   Do each of the XM radio channel preset buttons set properly?

   YES—Go to step 3.

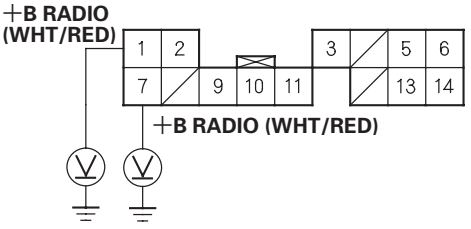
   NO—Replace the XM receiver (see page 23-61). ■
3. Turn the ignition switch OFF for 1 minute, then turn it back to ON (II).
4. Test all of the XM radio channel preset buttons for proper recall operation.

   Do the preset buttons recall the set radio stations?

   YES—System is normal at this time. Check connections at the XM receiver. ■

   NO—Go to step 5.
5. Turn the ignition switch ON (II).
6. Measure the voltage between XM receiver connector A (14P) No. 1 and No. 7 terminals and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

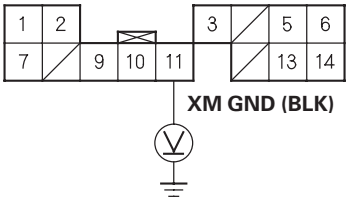
Is there battery voltage?

YES—Go to step 7.

NO—Repair open in the wire between the under-dash fuse/relay box and XM receiver connector A (14P) No. 1 and No. 7 terminals. ■

7. Measure the voltage between XM receiver connector A (14P) No. 11 terminal and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there less than 0.1 V?

YES—Replace the XM receiver (see page 23-61). ■

NO—Repair open in the wire between XM receiver connector A (14P) No. 11 terminal and body ground (G501). ■

Symptom Troubleshooting (cont'd)

Audio disc does not eject

NOTE:
- Check the vehicle battery condition first.
- Disc labels should not be used in the audio unit. They may damage the player mechanism.

1. Turn the ignition switch ON (II).

2. Turn on the audio unit.

   Does the system turn on?

   YES—Go to step 3.

   NO—Go to power switch will not turn ON (see page 23-27). ■

3. Check to see if the disc ejects correctly with no binding by pushing the EJECT button.

   Does the disc eject properly?

   YES—Operation is normal. ■

   NO—
   - With navigation: Replace CD changer (see page 23-58). ■
   - Without navigation: Replace audio unit (see page 23-57). ■

Audio disc changer does not load all six discs

NOTE:
- Check the vehicle battery condition first.
- Disc labels should not be used in the audio unit. They may damage the player mechanism.

1. Turn the ignition switch ON (II).

2. Turn on the audio unit and try loading six discs into the audio unit (in-dash disc changer) /CD changer.

   Does the audio unit accept all six discs?

   YES—Intermittent failure, the audio unit is OK at this time. Check for loose or poor connections. ■

   NO—Go to step 2.

3. Try loading the disc player with six known-good discs.

   Does the audio unit (in-dash disc changer) /CD changer. accept all six discs?

   YES—At least one of the original discs is faulty. ■

   NO—
   - With navigation: Replace CD changer (see page 23-58). ■
   - Without navigation: Replace audio unit. (see page 23-57). ■

Audio disc changer does not move between discs

NOTE:
- Check the vehicle battery condition first.
- Disc labels should not be used in the audio unit. They may damage the player mechanism.

1. Turn the ignition switch ON (II).

2. Turn on the audio unit and insert six discs into the audio unit (in-dash disc changer)/CD changer and see if the changer moves between discs.

   Does the changer operate normally?

   YES—Intermittent failure, the disc changer is OK at this time. Check for loose or poor connections. ■

   NO—Go to step 3.

3. Insert six known-good discs into the audio unit.

   Does the changer operate normally?

   YES—At least one of the original discs is faulty. ■

   NO—
   - With navigation: Replace CD changer (see page 23-58). ■
   - Without navigation: Replace audio unit. (see page 23-57). ■

Volume does not change

NOTE:
- Check the vehicle battery condition first.
- Set the fader and balance positions to the center.

1. Turn the ignition switch ON (II).

2. Turn on the audio unit and check for sound in each mode (AM, FM, XM, and disc).

   Is the sound normal?

   YES—Go to step 3.

   NO—Go to audio system sound is weak or distorted (see page 23-30), or no sound is heard from speakers (see page 23-28). ■

3. Operate the volume knob to see if the volume changes.

   Does the volume change?

   YES—Operation is normal. ■

   NO—Replace the audio unit (see page 23-57). ■

Symptom Troubleshooting (cont'd)

Radio tuner does not change stations

NOTE: Check the vehicle battery condition first.

1. Turn the ignition switch ON (II).
2. Turn on the audio unit and check the audio information on the display panel.

   Does the audio information display properly?

   YES—Go to step 3.

   NO—Go to power switch will not turn ON (see page 23-27). ■
3. Operate the tuning knob to see if the radio station changes.

   Does the radio station change?

   YES—Intermittent failure: the turning knob is OK at this time. Check for loose or poor connections. ■

   NO—Replace the audio unit (see page 23-57). ■

Audio disc does not load

NOTE:
- Check the vehicle battery condition first.
- Disc labels should not be used in the audio unit. They may damage the player mechanism.
- Make sure the CD disc is compatible with the system (see the owner's manual for more information).

1. Turn the ignition switch ON (II).
2. Turn on the audio unit and insert a known-good disc to see if the symptom can be duplicated.

   Does the disc load?

   YES—Operation is normal. If the disc loads normally, but will not play, go to audio disc does not play (see page 23-45). ■

   NO—Go to step 3.
3. Insert another disc.

   Does the disc load?

   YES—The original disc is faulty. ■

   NO—
   - With navigation: Replace CD changer (see page 23-58). ■
   - Without navigation: Replace audio unit. (see page 23-57). ■

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Audio disc does not play

NOTE: Check the vehicle battery condition first.

1. Turn the ignition switch ON (II).

2. Turn on the audio unit and try loading a disc.

   Does the disc load?

   YES—Go to step 3.

   NO—Go to audio disc does not load (see page 23-44). ■

3. Insert another disc to see if the symptom can be duplicated.

   Does the disc play?

   YES—Operation is normal. ■

   NO—Go to step 4.

4. Insert audio diagnostic CD (T/N 07AAZ-SDBA100) in the audio unit.

   Does the disc play?

   YES—The original disc is faulty or has an unreadable format. ■

   NO—
   - With navigation: Replace CD changer (see page 23-58). ■
   - Without navigation: Replace audio unit. (see page 23-57). ■

Special Tools Required
- Diagnostics CD 07AAZ-SDBA100
- Skip test CD 07AAZ-SDBA200 or 07AAZ-SDBA300

Audio disc skips

NOTE: Check the vehicle battery condition first.

1. Confirm the vehicles tires are properly inflated.

2. Check the customer's disc for scratches, fingerprints, and marks.

   NOTE: The following test should be performed with audio unit bass and treble set to the customer's listening performance. When comparing to known-good vehicles, comparison should be performed on same model and trim level.

3. Test drive to identify when the customer's disk skips. The audio diagnostic CD (T/N: 07AAZ-SDBA100) can be used if the customer's disk is not available. Use tracks 10—12.

   Does the disc skip?

   YES—Go to step 4.

   NO—Operation is normal. ■

4. Compare the customer's disk that skips to a known-good vehicle under the same conditions.

   Does the disk skip in the known-good vehicle under the same conditions?

   YES—Operation is normal. ■

   NO—Go to step 5.

   NOTE: The following test should be performed with vehicle parked and engine running.

(cont'd)

Symptom Troubleshooting (cont'd)

5. Insert the diagnostic skip test CD (07AAZ-SDBA300). Play tracks 2—11 and note the track number(s) the CD starts skipping. Do the same test on a known-good vehicle.

   Does the disk skip on same track(s) number as known-good vehicle?

   YES—Operation is normal. ■

   NO—Go to step 6.

6. Insert the diagnostic skip test CD (07AAZ-SDBA200). Play tracks 7—11 and tracks 13—15 and note the track number(s) where the CD starts skipping. Do the same test on a known-good vehicle.

   Does the disk skip on same track number(s) as known-good vehicle?

   YES—Operation is normal. ■

   NO—
   - With navigation: Replace CD changer (see page 23-58). ■
   - Without navigation: Replace audio unit. (see page 23-57). ■

Audio remote switch does not work properly

NOTE:
- Check the vehicle battery condition first.
- Always check for poor connections or loose terminals.

1. Test the radio remote switch (see page 23-62).

   Is the audio remote switch OK?

   YES—Go to step 2.

   NO—Replace the audio remote switch (see page 23-62). ■

2. Turn the ignition switch ON (II).

3. Turn on the audio unit and check the audio unit operation (volume up, volume down, CH (UP), CH (DOWN), MODE).

   Is the audio unit operation OK?

   YES—Go to step 4.

   NO—Replace the audio unit (see page 23-57), and recheck. ■

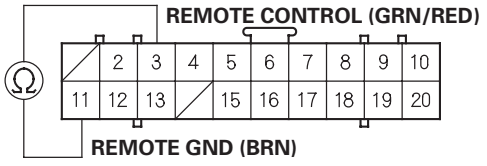
4. Turn the ignition switch OFF.

5. Remove the audio unit (see page 23-57).

   NOTE: Eject all the CDs before removing the audio unit and CD changer to prevent damaging the CD player's load mechanism.

6. Measure the resistance between the audio unit connector A (20P) No. 3 and No. 11 terminals as specified in the table.

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

AUDIO REMOTE SWITCH TABLE

Button held down	VOL DOWN	VOL UP	CH (−)	CH (+)	MODE	(NONE)
Resistance	about 100 Ω	about 357 Ω	about 775 Ω	about 1.7 kΩ	about 3.7 kΩ	about 10 kΩ

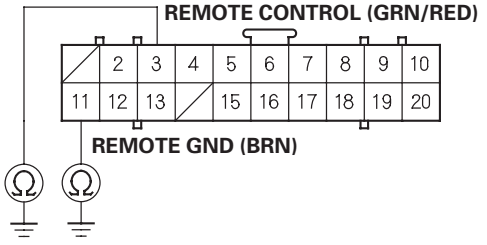
Is the resistance OK?

YES—Go to step 7.

NO—Repair open or high resistance in the circuit between the audio unit and the audio remote switch. If the wires are OK, replace the cable reel (see page 24-185). ■

7. Check for continuity between the No. 3 and No. 11 terminals of the audio unit connector A (20P) and body ground.

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Repair the short to body ground in the circuit between the audio unit and the audio remote switch. If the wires are OK, replace the cable reel (see page 24-185). ■

NO—Replace the audio unit (see page 23-57). ■

Symptom Troubleshooting (cont'd)

Unable to select CD changer

NOTE: Check the vehicle battery condition first.

1. Turn the ignition switch ON (II).

   Does the XM radio work?

   YES—Substitute a known-good CD changer, then reconnect all connectors and recheck. If the symptom/indication goes away, replace the original CD changer. ■

   NO—If the vehicle has a navigation system, go to system troubleshooting in the navigation section. If the vehicle does not have a navigation system, substitute a known-good CD changer. If the XM radio still does not work, substitute a known-good XM receiver. ■

Special Tools Required
Diagnostics audio disc 07AAZ-SDBA100

Poor or no sound with audio disc changer

NOTE: Check the vehicle battery condition first.

1. Insert audio diagnostic CD (T/N 07AAZ-SDBA100) in the CD changer.

   Is the CD sound quality normal?

   YES—The original disc is faulty. ■

   NO—Go to step 2.

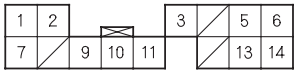
2. Disconnect CD changer connector B (14P) and the XM receiver connector A (14P).

   NOTE: Eject all the CDs before removing the audio unit and CD changer to prevent damaging the CD player's load mechanism.

3. Check for continuity between XM receiver connector A (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and CD changer connector B (14P) No. 4 terminal (the harness shield).

XM receiver connector	Wire color
A6	RED
A14	GRN
A5	WHT
A13	BLK

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

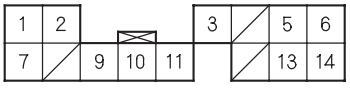
YES—Repair short in the wire between the CD changer and the XM receiver, or replace the affected shielded harness. ■

NO—Go to step 4.

4. Check for continuity between the XM receiver connector A (14P) and CD changer connector B (14P) according to the table.

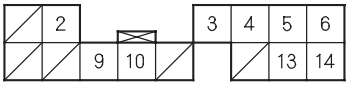
XM receiver connector	CD changer	Wire color
A6	B6	RED
A14	B14	GRN
A5	B5	WHT
A13	B13	BLK

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

CD CHANGER CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

YES—Go to step 5.

NO—Repair open in the wire between the CD changer and XM receiver. ■

(cont'd)

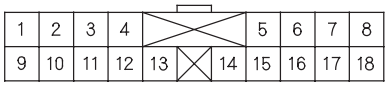
Symptom Troubleshooting (cont'd)

5. Disconnect CD changer connector A (18P) and audio unit connector B (14P).

6. Check for continuity between CD changer connector A (18P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and CD changer connector A (18P) No. 11 and No. 14 terminals (the harness shield).

CD changer	Wire color
A9	GRN
A1	WHT
A10	BLK
A2	RED

CD CHANGER CONNECTOR A(18P)



Wire side of female terminals

Is there continuity?

YES—Replace the appropriate shielded harness. ■

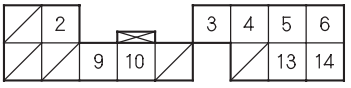
NO—Go to step 7.

7. Disconnect audio unit connector B (14P).

8. Check for continuity between CD changer connector A (18P) and audio unit connector B (14P) according to the table.

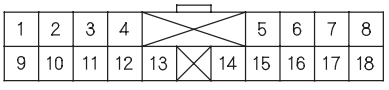
CD changer	Audio unit	Wire color
A9	B6	GRN
A1	B14	WHT
A10	B5	BLK
A2	B13	RED

AUDIO UNIT CONNECTOR B (14P)



Wire side of female terminals

CD CHANGER CONNECTOR A(18P)



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good CD changer, then reconnect all connectors and recheck. If the symptom/indication goes away, replace the original CD changer (see page 23-58). If the symptom/indication is still present, replace the audio unit (see page 23-57). ■

NO—Replace the appropriate shielded harness. ■

Sound Quality Diagnosis

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Use the following tests to check sound quality.

NOTE: Before beginning the following tests, write down the customer's bass, treble, fader and balance settings, then set them to their center positions for the testing.

Left/Right Channel ID

Do this test to confirm proper channel routing.

1. Insert audio diagnostic CD (T/N 07AAZ-SDBA100) into the CD player.

2. Play track No. 1 (left, both, right channel ID) at a normal, or slightly higher than normal, volume level.

3. The voice should be audible only from the channel or channels when indicated.

   - If the channel ID is correct for each side, go to phase test.
   - If the channel ID is not correct, check for
     – Shorted speaker wire
     – Faulty amplifier
     – Faulty audio unit

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Phase Test

Do this test to confirm proper speaker phasing.

1. Insert audio diagnostic CD (T/N 07AAZ-SDBA100) into the CD player.

2. Play track No. 2 (phase) at a normal, or slightly higher than normal, volume level.

3. The voice should sound centered and focused when it is in-phase.

4. The voice should sound diffused, and have ''less bass'' when it is out of phase.

   - If the voice changes from in-phase to out of phase as indicated by the prompt, the phasing is correct. Go to electrical noise test (see page 23-52).
   - If the voice always sounds out of phase, phasing is not correct. Check for
     – Crossed speaker wires
     – Faulty amplifier
     – Faulty audio unit

Sound Quality Diagnosis (cont'd)

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Electrical Noise Test

Do this test to check for electrical noise being induced into the audio system.

NOTE: Electrical noise may be caused by outside sources that cannot be handled by the audio system. Make sure you remove any cell phones and/or turn off any aftermarket device before beginning this test.

1. Insert audio diagnostic CD (T/N 07AAZ-SDBA100) into the CD player.
2. Play track No. 4 (digital zero) at a normal, or slightly higher than normal, volume level.
3. Operate any electrical device that may create electrical noise in the audio system, including starting the engine.
4. Play track No. 5 (near digital zero) at a normal, or slightly higher than normal, volume level.
5. Operate any electrical device that may create electrical noise in the audio system, including starting the engine.
6. Play track No. 6 (SNR) at a normal, or slightly higher than normal, volume level.
7. Operate any electrical device that may create electrical noise in the audio system, including starting the engine.

   - If no abnormal noise is heard, go to individual speaker test.
   - If the noise is present only during the SNR track, replace the audio unit.
   - If the noise is heard during the digital zero or near digital zero track, check for:
     – Poor ground for the audio unit, amplifier, engine or battery cable
     – Pinched or shorted speaker or amplifier wire
     – Faulty amplifier
     – Faulty audio unit
     – Other faulty components causing excessive electrical noise (ignition coils, alternator, door lock actuators, etc.). Disconnect any suspect components, and then replay the tracks that were originally noisy. If the noise is gone, check the component's circuit and the component.

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Individual Speaker Test

Do this test to identify a faulty speaker.

1. Insert audio diagnostic CD (T/N 07AAZ-SDBA100) into the CD player.
2. Play track No. 30 (steady 300 Hz tone) at a normal, or slightly higher than normal, volume level.
3. Listen to each speaker for poor sound compared to the other speakers. Use the audio unit's fader and balance settings to help isolate the channel with the problem.
   - If the sound quality produced by a specific speaker is poor, substitute it with a known-good speaker. If the poor sound quality continues, go to the sound balance test (see page 23-53).
   - If the sound quality is OK, go to the sound balance test (see page 23-53).

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Sound Balance Test

Perform this test to identify a faulty channel or speaker.

1. Insert audio diagnostic CD (T/N 07AAZ-SDBA100) into the CD player.
2. Confirm the bass and treble are set to the center positions.
3. Play track No. 3 (pink noise) at a normal, or slightly higher then normal, volume level.
4. A ''static'' type sound should be heard through all speakers.
5. Insert audio diagnostic CD (T/N 07AAZ-SDBA100) into the CD player of a known-good vehicle.
6. Set the bass and treble to the center position.
7. Play track No. 3 (pink noise) all the same level as was played in step 3.
8. Compare the sounds made by the two vehicles.
   - If the sounds made by the two vehicles are very similar, go to the Frequency Sweep Test (see page 23-54).
   - If the sound does not have as much bass, check the subwoofer and circuit.
   - If the sound does not have enough ''hiss,'' check the tweeters and their circuits.

Sound Quality Diagnosis (cont'd)

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Frequency sweep

Do this test to find rattles or reverberations that may cause a perception of poor sound quality.

1. Insert audio diagnostic CD (T/N 07AAZ-SDBA100) into the CD player.
2. Play track No. 13 (sweep from 500 Hz to 35 Hz) at a normal, or slightly higher than normal, volume level.
3. Listen to each speaker for poor sound quality or reverberations caused by specific frequencies. Use the voice-over to estimate the frequency that causes the vibration. Use the audio unit's fader and balance settings to help isolate the channel with the problem.
   - If vibrations or poor sound quality is heard, go to step 4.
   - If no vibrations or poor sound quality is heard, go to sound judging (see page 23-54).
4. Choose the appropriate track from No. 14 to 25 (small range frequency sweep) or 26 to 53 (single frequencies) to recreate the frequency that caused the poor sound quality or vibration located in step 3: this aids in diagnosis of the cause.

   NOTE: When you get to the track that recreates the problem, select the repeat function on the audio unit, this will help you isolate the cause.
5. Replace or insulate the source of the vibration or, if the speaker is the source of the poor sound quality, replace it.

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Sound judging

Do this test to compare overall sound quality, imaging, and dynamics between the customer's vehicle and a known-good vehicle. Only use a vehicle of the same model and trim level for this test.

1. In the customer's vehicle, set the bass, treble, fader, and balance settings to the customer's normal settings that were written down before beginning testing.
2. Insert audio diagnostic CD (T/N 07AAZ-SDBA100) into the CD player.
3. Play tracks No. 7 to 12 (sound quality, midland, dynamics, and imaging demonstration tracks) at a normal, or slightly higher than normal, volume level. Write down the volume setting being used.
4. Listen to areas of the track that stand out as being either very clear or poorer than other areas of the track.
5. Insert audio diagnostic CD (T/N 07AAZ-SDBA100) into the CD player of a known-good vehicle.
6. Play the tracks at the same volume level and the same bass, treble, balance, and fader settings as used in step 3 in the customer's vehicle.
7. Listen to the same area of the track that stood out as being either very clear or poorer than other areas of the track.

8. Compare the customer's vehicle's sound quality results the known-good vehicle's results.

   - If the sound quality in the customer's vehicle is comparable to the sound quality in the known-good vehicle, then the customer's vehicle is operating as designed.
   - If the sound quality is not comparable, check these items in order.
     – Loose or improperly installed speakers or other hardware that may become excited by the vibrations generated by the speakers
     – Poor power or ground to the stereo amplifier
     – Damaged speaker(s)
     – Faulty amplifier
     – Faulty audio unit

Seek Stop Test

Do this test to check the performance of the audio unit's AM and FM reception. Refer to symptom troubleshooting: audio sound weak or distorted, or no sound is heard from speakers (display is normal) (see page 23-28) before continuing with this test.

NOTE:
- Window tint, aftermarket theft-recovery devices and other aftermarket accessories may reduce radio reception.
- Changes in cloud cover and other atmosphere conditions will affect the ability of the audio unit to receive radio signals.

1. Park the customer's vehicle in an open area away from buildings or other obstructions.

2. Park a known-good vehicle (same year, model, and trim level) next to the customer's vehicle, facing the same direction.

3. Start the engine in the customer's vehicle, and turn on the radio.

4. Set the FM receiver to 87.7 MHz.

5. Press the ''Seek +'' button and record the first station that the audio unit locks onto.

6. Press the ''Seek +'' button repeatedly, and write down each station that the audio unit locks onto until the station recorded in step 5 is reached again.

7. Set the AM receiver to 530 kHz.

8. Press the ''Seek +'' button, and record the first station that the audio unit locks onto.

9. Press the ''Seek +'' button repeatedly, and write down each station that the audio unit locks onto until the station recorded in step 8 is reached again.

(cont'd)

Sound Quality Diagnosis (cont'd)

10. Turn the ignition switch to LOCK (0).

11. Start the engine in the known-good vehicle, and then perform steps 4 thru 10 on the known-good vehicle.

12. Compare the number of stations received in steps 6 and 9 in the customer's vehicle with the number of stations received in the known-good vehicle.

    - If the number of stations received is the same, or within 10 %, the audio unit's tuner performance is OK. The problem may be atmospheric conditions, multi path interference, or other obstructions to the radio signal.
    - If the customer's vehicle receives fewer stations by at least 10 %, go to step 2 of poor radio reception of interference (see page 23-24).

Audio Unit Removal/Installation

SRS components are located in this area. Review the SRS component locations (see page 24-14), and the precautions and procedures (see page 24-16) before doing repairs or service.

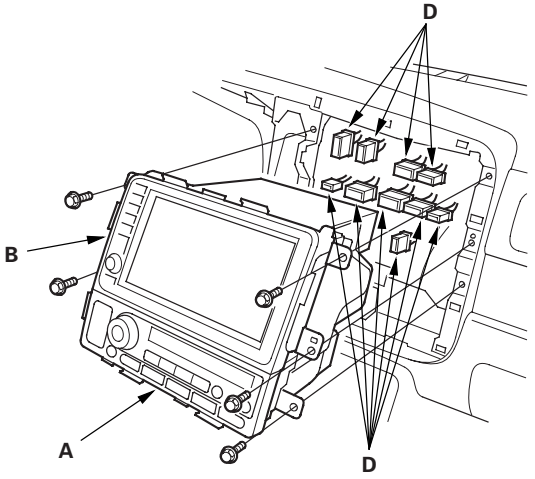
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.
- Lay a workshop towel under the parts when working on them to protect the face panel from scratches or other damage.
- Eject all the CDs before removing the audio unit and CD changer to prevent damaging the CD player's load mechanism.
- If you are replacing the audio unit, write down the audio presets (if possible), and enter them into the new audio unit.

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).

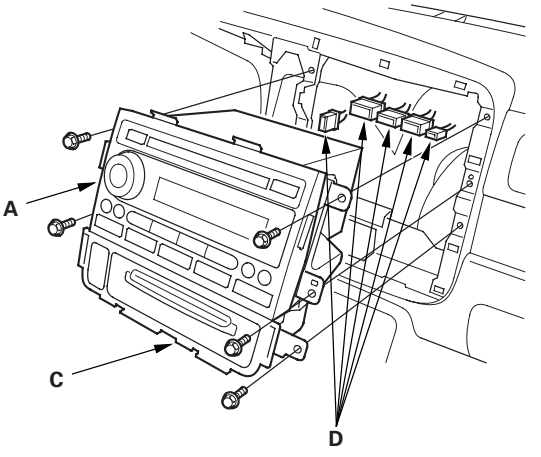
2. Remove the instrument panel (see page 20-81).

3. Remove the bolts, then pull out the audio unit (A) and navigation display (B) (with navigation) or center pocket (C) (without navigation).

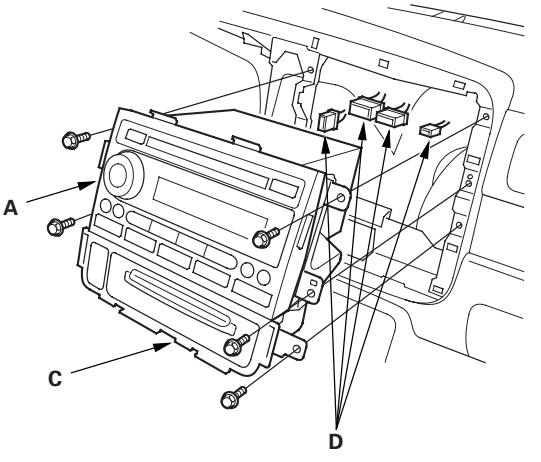
With navigation



Without navigation (6CD type)



Without navigation (1CD type)



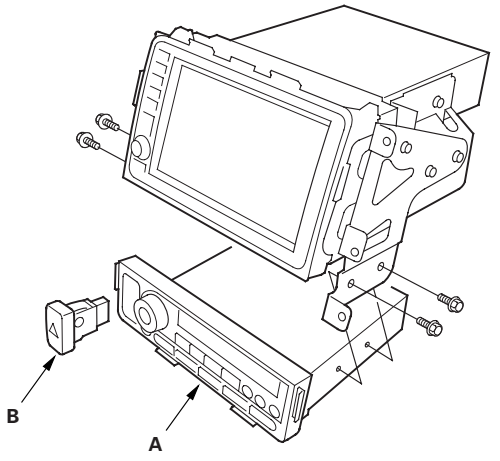
4. Disconnect the connectors (D), then remove the audio unit.

(cont'd)

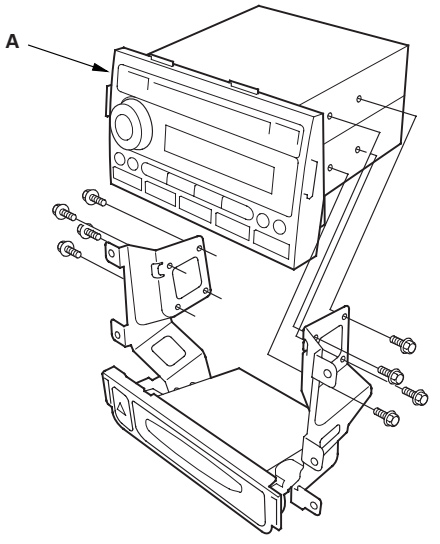
Audio Unit Removal/Installation (cont'd)

5. Remove the bolts, and the audio unit (A) and the hazard warning switch (B) (with navigation).

With navigation



Without navigation (6CD type and 1CD type)



6. Install the audio unit in the reverse order of removal, and note these items:
   - Make sure all connectors and antenna lead are secure.
   - Enter the anti-theft codes for the audio system and the navigation system (if equipped).
   - Set the clock (on vehicles without navigation).

7. Give the new anti-theft codes to the customer.

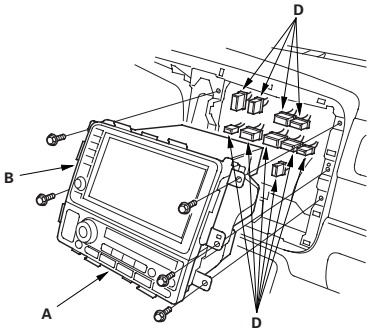
Audio Disc Changer Removal/ Installation

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.
- Lay a workshop towel under the parts when working on them to protect the face panel from scratches or other damage.
- Eject all the CDs before removing the audio unit and CD changer to prevent damaging the CD player's load mechanism.

1. Make sure you have the anti-theft codes for the audio system and the navigation system.

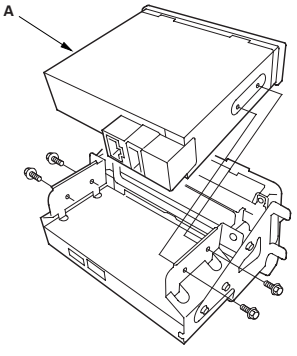
2. Remove the instrument panel (see page 20-81).

3. Remove the bolts, then pull out the audio unit (A) and navigation display (B).



4. Disconnect the connectors (D), then remove the audio unit.

5. Remove the bolts, and the CD changer (A).



6. Install the CD changer in the reverse order of removal, and note these items:
   - Make sure all connectors and the antenna lead are secure.
   - Enter the anti-theft codes for the audio system and the navigation system.

Speaker Replacement

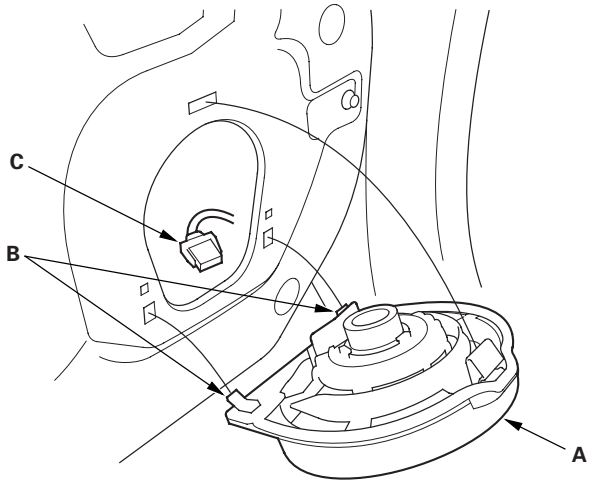
Front Door Speaker

1. Remove the front door panel (see page 20-7).

2. Pull the speaker (A) straight out, just enough to release the upper clips. Then lift the speaker straight up to release the lower clips (B).

NOTICE

If you pull the speaker out too far from the door, you will damage the lower clips.



3. Disconnect the 2P connector (C), and remove the speaker.

4. Install the speaker in the reverse order of removal.

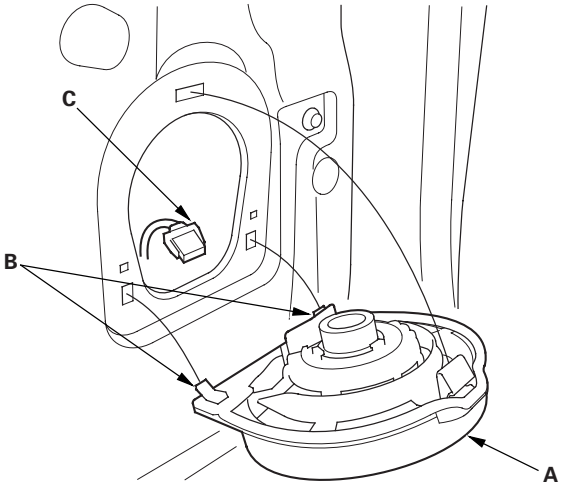
Rear Door Speaker

1. Remove the rear door panel (see page 20-14).

2. Pull the speaker (A) straight out, just enough to release the upper clips. Then lift the speaker straight up to release the lower clips (B).

NOTICE

If you pull the speaker out too far from the door, you will damage the lower clips.



3. Disconnect the 2P connector (C), and remove the speaker.

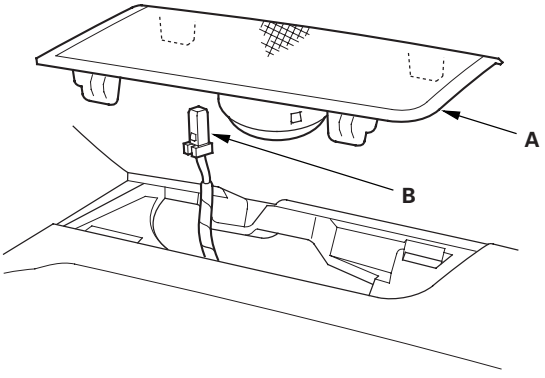
4. Install the speaker in the reverse order of removal.

(cont'd)

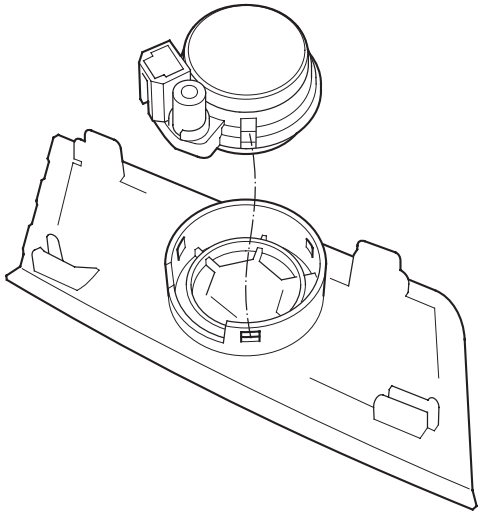
Speaker Replacement (cont'd)

Tweeter

1. Carefully pry the tweeter grille (A) out of the dashboard. Be careful not to damage the tweeter grille and the dashboard.



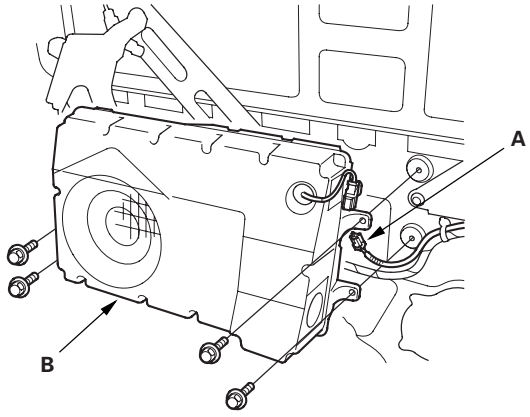
2. Disconnect the 2P connector (B) from the tweeter.
3. Remove the tweeter speaker from the speaker grille.



4. Install the tweeter in the reverse order of removal.

Subwoofer

1. Remove the rear panel insulator (see page 20-69).
2. Disconnect the 2P connector (A). Remove the bolts and the subwoofer (B).

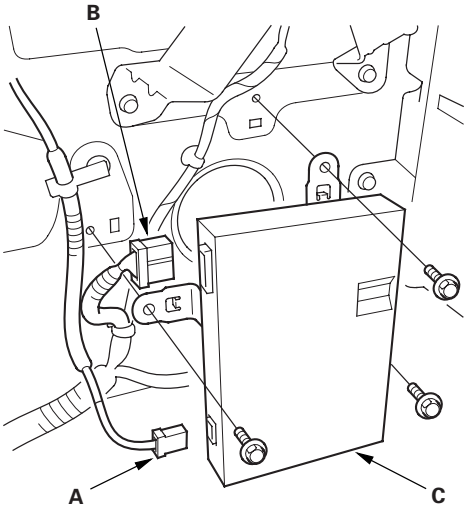


3. Install the subwoofer in the reverse order of removal.

XM Receiver Removal/Installation

1. Remove the rear panel insulator (see page 20-69).

2. Disconnect the antenna 2P connector (A) and 14P connector (B) from the XM receiver (C).

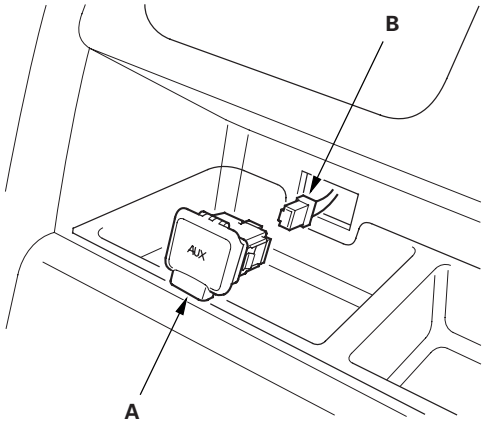


3. Remove the three nuts, and remove the XM receiver.

4. Install the XM receiver the reverse order of removal.

Auxiliary Jack Assembly Replacement

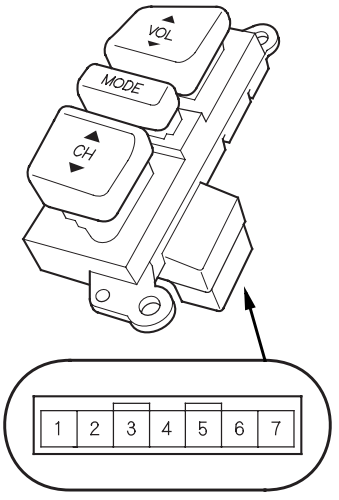
1. Carefully pull out the auxiliary jack assembly (A), then disconnect the 5P connector (B).



2. Install the auxiliary jack assembly in the reverse order of removal.

Audio Remote Switch Test

1. Remove the steering wheel (see page 17-21).
2. Remove the audio remote switch (see page 17-22).
3. Measure the resistance between the No. 1 and No. 3 terminals in each switch position according to the table.



Position	Resistance
OFF	About 10 kΩ
MODE	About 3.7 kΩ
CH (+)	About 1.7 kΩ
CH (−)	About 775 Ω
▲ (VOL. UP)	About 357 Ω
▼ (VOL. DOWN)	About 100 Ω

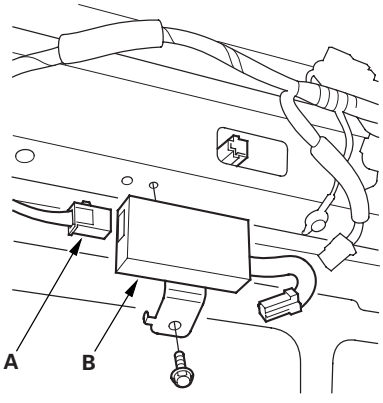
4. If the resistance is not as specified, replace the audio remote switch.
5. Use a diode tester between the terminals in each switch position according to the table.

Terminal	4		7
	○	▷	○

6. If the diode test is bad, replace the switch.

AM/FM Antenna Amplifier Replacement

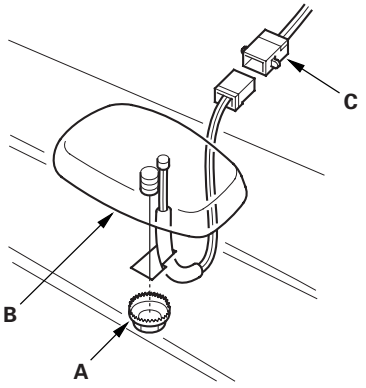
1. Remove the headliner (see page 20-70).
2. Disconnect the 3P connector (A) from the AM/FM antenna amplifier (B).



3. Disconnect the connector, then remove the bolt and AM/FM antenna amplifier.
4. Install the AM/FM antenna amplifier in the reverse order of removal.

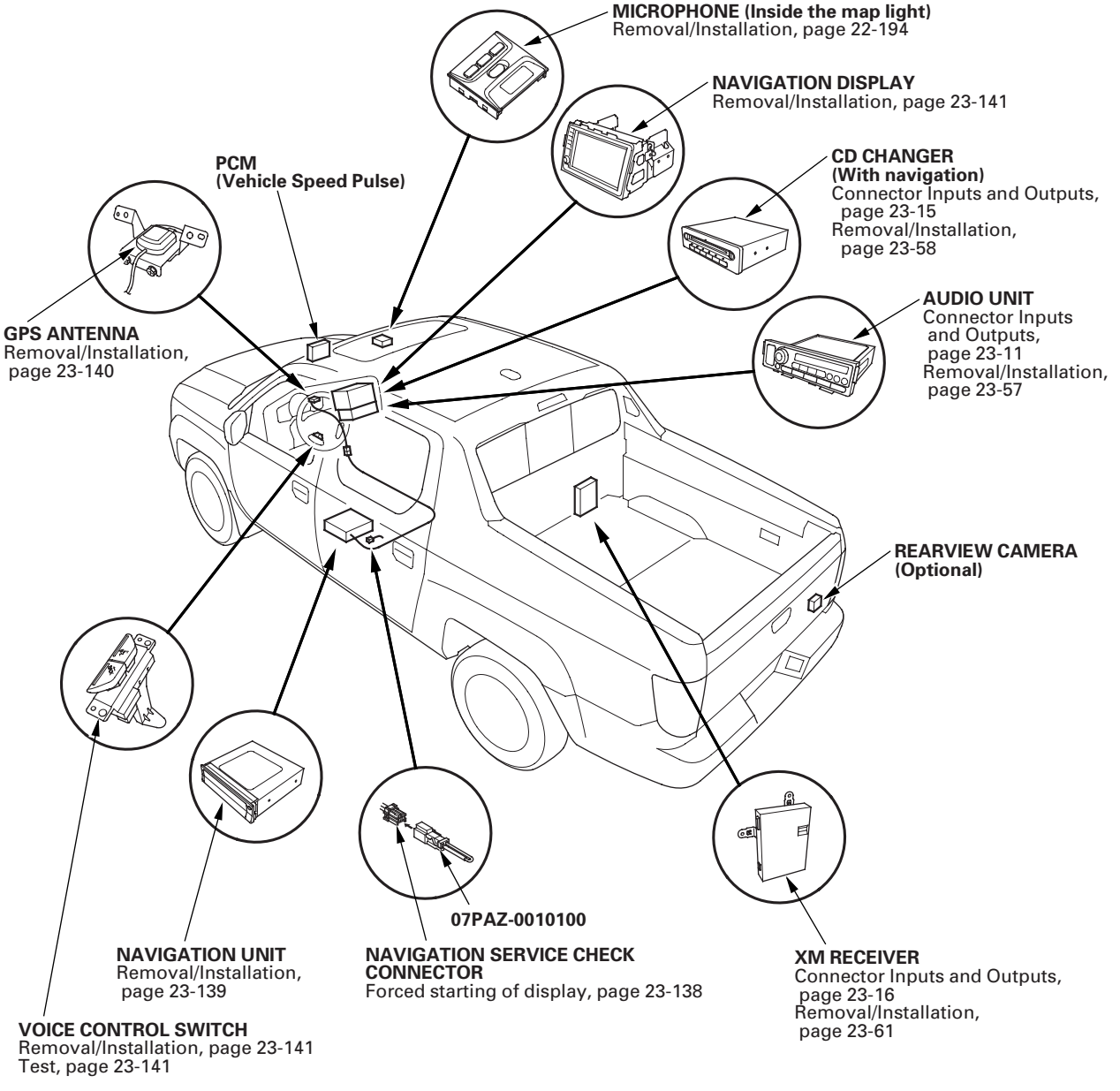
XM Antenna Replacement

1. Remove the headliner (see page 20-70).
2. Remove the nut (A) from the XM antenna (B).



3. Disconnect the connector (C) and remove the XM antenna.
4. Install the XM antenna in the reverse order of removal.

Component Location Index



General Troubleshooting Information

General Operation

Refer to the Navigation System Manual, for the navigation system operating procedures.

Anti-theft Feature

The navigation system and audio unit have a coded theft protection circuit. Make sure you have the anti-theft security codes before;

- Disconnecting the battery
- Disconnecting the navigation unit 8P connector
- Removing the No. 7 (7.5 A) fuse from the under-dash fuse/relay box

After service, reconnect power to the navigation unit, and turn the ignition switch ON (II). Enter the 4-digit anti-theft security codes, then select ''Done''.

If the code cannot be found, use the interactive Network (*i*N) to look it up. You can view the serial number in one of the Navi ECU diagnostic screen (see page 23-124). Altematively, you will need the serial number from the navigation unit under the driver's sea

When replacing the navigation unit, be sure to give the customer the new anti-theft security code.

Symptom Diagnosis

Certain circumstances and system limitations will result in occasional vehicle positioning errors. Some customers may think this indicates a problem with the navigation system when, in fact, the system is normal. Keep the following items in mind when interviewing customers about symptoms of the navigation system.

Self-Inertial Navigation Limitations

The limitations of the self-inertial portion of the navigation system (the yaw rate sensor and the vehicle speed signal) can cause some discrepancies between the vehicle's actual position and the indicated vehicle position (GPS vehicle position).

The following circumstances may cause vehicle positioning errors:

- Moving the vehicle with the engine stopped and the vehicle stopped, such as by ferry or tow truck, or if the vehicle is spun on a turn table.
- Tire slippage, changes in tire rolling diameters, and some driving situations may cause discrepancies in travel distances. Examples of this include:
  – Continuous tire slippage on a slippery surface.
  – Driving with snow chains mounted.
  – Abnormal tire pressure.
  – Incorrect tire size.
  – Frequent lane changes across a wide highway.
  – Continuous driving on a straight or gently curving highway.
  – Very bumpy roods.
- Tolerances in the system and map inaccuracies sometimes limit how precisely the vehicle position is indicated. Examples of this include:
  – Driving on roads not shown on the map (map matching is not possible).
  – Driving on a road that winds in one direction, such as a loop bridge, an interchange, or a spiral parking garage.
  – Driving on a road with a series of sharp hair-pin turns.
  – Driving near a gradual highway exit or transition.
  – Driving on one of two close parallel roads.
  – Making many 90 degree turns.
  – The direction to destination icon or ''Destination icon'' shown or the map may be up to several hundred feet away from the actual location.

Global Positioning System (GPS) Limitations

The GPS cannot detect the vehicle's position during the following instances:

- For the first 5 to 10 minutes after reconnecting the battery (This can take as long as 45 minutes).
- When the satellite signals are blocked by tall buildings, mountains, tunnels, large trees, or large trucks.
- When the GPS antenna is blocked by an object placed above it in the vehicle. The GPS antenna requires a clear unobstructed view of the sky.
- When there is no satellite signal output (signal output is sometimes stopped for satellite servicing).
- When the satellite signals are blocked by the operation of some electronic aftermarket accessories including, but not limited to non-OEM in-dash entertainment units (radio, CD players/changers, and Lo Jack), cell phones placed near navigation system and window tinting above the GPS antenna.

(cont'd)

General Troubleshooting Information (cont'd)

The accuracy of GPS is reduced during these instances:

- Metallic window tinting above the GPS antenna.
- When only three satellite signals can be received (four satellite signals are required for accurate positioning).
- When driving near high tension power lines.
- When the satellite signals are blocked by the operation of some electronic aftermarket accessories including, but not limited to non-OEM in-dash entertainment units (radio, CD players/changers, radar detectors and theft recovery systems) and cell phones placed near the navigation system.
- When the satellite control centers are experiencing problems.

Muting Logic

Whenever the navigation system is giving guidance, the front speakers are muted. When the voice control system is being used, all of the speakers are muted.

LCD Display Unit Limitations

- In cold temperatures, the display may stay dark for the first 2 or 3 minutes until it warms up.
- When the display is too hot because of direct summer sunlight, it will remain dark until the temperature drops.
- When the humidity is high and the interior temperature is low, the display may appear cloudy. The display will clear up after some use.
- Fingerprints on the touch panel may sometimes be noticeable because of the panel's low-reflection coating. Clean the screen with a soft damp cloth. You may use a mild cleaner intended for eye glasses or computer screens. To avoid scratching the panel, do not rub too hard, or use abrasive cleaners, or shop towels.
- The touch panel uses a resistive membrane that is unaffected by sunlight. If a touch switch does not function immediately, shift your finger slightly, and touch it again.

Symptom Duplication

- When the symptom can be duplicated, verify that it is not a characteristic of the system. Review the navigation system manual and compare it to a known-good vehicle (with the same software and database), under the same conditions. If the symptom is not the same, as the known-good follow the self-diagnostic procedures and the appropriate troubleshooting procedures.
- When the symptom does not reappear or only reappears intermittently, ask the customer about the conditions when the symptom occurred.
  – Always ask the customer to demonstrate the problem.
  – Try to establish possible user error or misunderstanding of the system.
  – Try to establish if outside interference may have been the cause.
  – Try to duplication the symptom under the same conditions the client experienced.
  – Vibration, temperature extremes, and moisture (dew, humidity) are factors that are difficult to duplicate.
  – Inspect the vehicle for after-market electronic devices (vehicle locators, amps, radar detectors, etc.) that may be hidden.

NOTICE

When interchanging navigation DVD/parts during diagnosis

When troubleshooting navigation system problems, ensure that the known-good vehicle is the same software version year and model as the vehicle being serviced. Mixing incompatible navigation DVDs or other system components can delay the troubleshooting process by causing side effects unrelated to the original problem.

Service Precautions

- If the navigation unit needs to be replaced, inform the customer that personal information in the navigation system may be lost. If possible, have the customer record their personal information before the unit is replaced. On 2007-2008 models you can back-up the navigation data and transfer it to a new navigation unit. See save users memory (see page 23-134).
- Check for service bulletins or service news articles that may relate to the customer's concern.
- Before disconnecting the battery, make sure you have the anti-theft codes for the audio system and the navigation system.
- Also obtain any PGM-FI or transmission DTCs and freeze frame data (which will be lost when the ECM/PCM loses power).
- The navigation unit is located under the driver's seat. The unit can be damaged if fluids leak down through the driver's seat, such as a spilled beverage.
- When the battery is disconnected, the internal GPS clock is reset to 0:00. The clock will reset to the correct time after the system finishes GPS initialization.

- After reconnecting the battery, you have to wait to get the initial signal from the satellite. It will take from 10 to 45 minutes.
- Before returning the vehicle to the customer's, enter the radio and navigation anti-theft security codes, and adjust the clock as necessary.
- Adjust the setup clock settings (time zone and daylight savings) in the navigation system.

System Initialization

If for any reason, you lose power to the navigation system (like the battery was disconnected), the navigation system will require initialization. Once completed, your system will be ready to use.

This initialization requires the following:
- Entering the 4-digit anti-theft security code to ''unlock'' the system
- GPS initialization (may not be needed depending of the length of time the system was without power)
- Map matching to align the GPS to a location on the map

Entering Security Code

Any time power is disconnected from the navigation unit, the 4-digit anti-theft code must be entered on the navigation system display. This 4-digit code can be found on a small code card that was given to the customer. Enter the 4-digit code, then select Done.

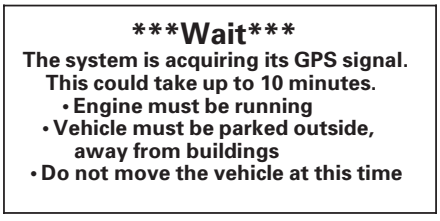
If the navigation system anti-theft code cannot be found, use the interactive Network (*i*N) to lock it up. You will need the serial number for the navigation unit to do this. You can view the serial number by entering the diagnostic mode. Select Unit Check from the main menu, then the Navi ECU diagnostic screen. This allows you to get the serial number without removing the navigation unit.

The *i*N may display more than one code for a given serial number. This is because serial numbers are not unique. You may have to try more than one 4-digit code. If no code is shown, or if the code(s) given do not work in the navigation unit, contact the Automobile Warranty department. If the code 0000 works, then replace the navigation unit.

When replacing the navigation unit or audio unit, be sure to give the client the new anti-theft security code.

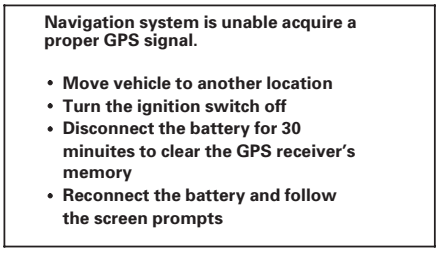
GPS initialization

Depending on the length of time the battery was disconnected, your system may require GPS initialization. If it does, the following screen appears:



If this procedure is not necessary, the system proceeds directly to the Disclaimer screen. During initialization, the system searches for all available GPS satellites, and obtains their orbital information. During this procedure the vehicle should be out in the open with a clear view of the sky.

If the navigation system finds the satellites properly, this box clears, and changes to the Disclaimer screen. If within 10 minutes the system fails to locate a sufficient number of satellites to locate your position, the following screen appears.



After 30 minutes with this screen displayed, turn off the engine, then restart the vehicle. If you now see the Disclaimer screen, the GPS initialization is complete.

NOTE:
- The average acquiring time is less than 10 minutes, but it can take as long as 45 minutes.
- If the system is still unable to acquire a signal, follow the instructions on the screen. If this screen appears again, go to troubleshooting for the GPS icon is white or not shown (see page 23-106).

(cont'd)

General Troubleshooting Information (cont'd)

Map Matching

This part of the initialization matches the GPS coordinates with a road on the map screen. To perform this part of the procedure, ensure that the navigation system is displaying a map, and drive the vehicle on a mapped road shown on the map screen. Do not enter a destination at this time. When the name of the current road you are driving on appears at the bottom of the screen, the entire procedure is complete. Your system is now ready to use.

Obtaining A Navigation DVD

If the Navigation DVD is lost or damaged, or you need a yearly updated DVD, you have 2 ways to purchase one. You can either call (888) 549-3798, or order on-line at www.honda.com.

Both methods require a credit card. The DVD for this model has a white label, and cannot be ordered through the parts system. The following DVDs will not work in this navigation system:

- Earlier model navigation DVDs (black label)
- Map software programs manufactured by other companies
- DVD movies, or DVDs containing audio recordings

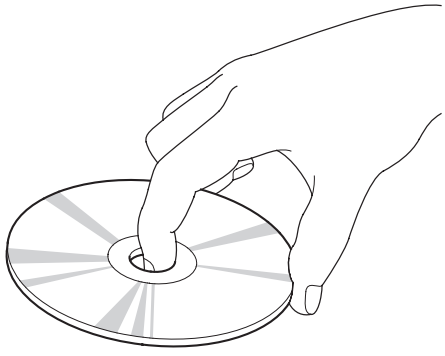
Update DVDs are available for purchase usually in the fall of each year. They may contain the following:

- Enhanced maps and points of interest (POI) coverage
- Fixes for minor software bugs
- Additional features

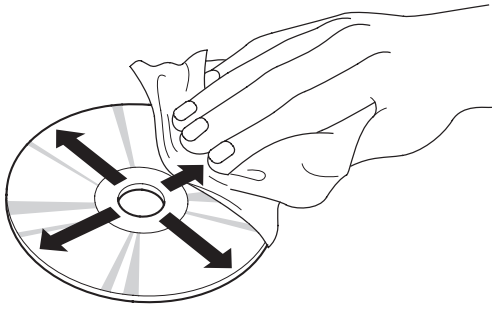
NOTE:
- Map matching must be done any time the DVD is removed or replaced.
- Always order navigation DVDs on an as-needed basis. During a typical model year, each color DVD may undergo a half a dozen software only version upgrades to fix minor issues on some or all models the DVD supports. This is normal. Usually only the letter at the end of the version number changes, while the database (maps and POIs) remain unchanged.
- Never promise your clients future free updates. There are no free programs for updating the navigation DVD. Update DVDs are generally available for purchase each fall. The on-time DVD order site provides information when an update for a particular color DVD is available.
- Damaged discs are not covered by warranty unless the disc is damaged by the navigation unit.

DVD Handing and Cleaning

To avoid damaging or leaving fingerprints on the DVD, always handle it by the edges and place it in a jewel case whenever it is outside the navigation unit. Deep scratches or fingerprints on the back of the DVD can cause intermittent rebooting or other system errors.



Smudges and fingerprints can be carefully removed using a mild cleaner and tissues designed to clean eyeglasses. To clean a DVD, use a clean soft cloth. Very gently wipe across the DVD from the center to the outside edge, never in a circular motion.



Do not place stabilizer rings or labels on the DVD.

Earliest DVD Version Application for Each Model

Each navigation system DVD contains a map/POI (point of interest) database and the navigation system software for each model that it supports. Inserting an older DVD can cause problems since it lacks the software to provide the specific features needed for that model. Unfortunately, the navigation software does not detect or warn you that the version is outdated, and it may even appear to operate.

NOTE: Replacing a DVD just because the version number is higher is not always justified. A higher software version does not necessarily mean it contains newer software for your model. The DVD contains software for all models that use the same color DVD, and a revised number may or may not have software fixes or upgrades for the model in question.

Typical warning symptoms that an outdated DVD is being used include:

- The Honda model navigation screen may display a Acura logo while booting up.
- A newly introduced model feature or current accessory may not display properly, and Extension will display instead.

  NOTE: Extension may be displayed when using Music Link, but should never be displayed when XM is selected.

- The current street (the street being driven on) may not appear properly at the bottom of the map screen display when the vehicle is driven on a main road.

  NOTE: If necessary, compare the operation to the navigation system of the same model and year vehicle that has a current DVD.

How to Identify Navigation DVD Versions, and How to Inspect A DVD for Damage

To determine the navigation version on a particular model, start the engine, then locate the navigation unit. Open the DVD door, and push the eject button to eject the DVD. Hold the DVD by the edges, and check for these items:

- The label color.
- Read the DVD version on the label, and note it on the repair order. The version number is near the bottom of the label text (for example, ver: 4.23A). You will need this version number:
  – To verify that the DVD version is appropriate for the vehicle.
  – Any time you call Tech Line regarding a navigation system issue.
  – To answer customer inquires concerning update or coverage issue.

    NOTE: Customers may obtain DVDs from sources outside the normal ordering process. If you determine this is the case, recommend that your customer purchase the appropriate DVD from the Honda Disc Fulfillment Center (see ORDERING A DVD).

  – Check the underside of the DVD for signs of mishandling. Deep scratches, swirl marks, or fingerprints can cause random lock-ups, reboots, and DVD read or format errors.

    NOTE: A damaged DVD is not covered under warranty unless the disc is damaged by the navigation unit. Damage by the navigation unit typically appears as circular scratches caused by something rubbing against the DVD as it spins. The damage may appear as arcs or complete circles on the DVD reading surface.

  – Verify that the underside of the DVD is silver, and not a copy with a blue color. Copies will not work properly and can cause other symptoms that mimic hardware problems.
- Incorrectly colored DVDs being put into navigation vehicles. This causes the system to either display error messages, or it causes system malfunctions that mimic a hardware problem. This result in the customer driving away with a malfunctioning navigation system.
- The DVD version provided to the customer is out-of date or incompatible with a particular model. This inconveniences your customer by delaying the repair, or by causing additional (and unnecessary) returns to your dealership.
- The customer experiences bugs or other issues that have already been resolved in later versions currently available at the fulfillment desk.

(cont'd)

General Troubleshooting Information (cont'd)

If the DVD is defective, or has any of the issues mentioned above, return the vehicle to your customer and recommend that they order the proper DVD from the Honda Disc Fulfillment Center (see ORDERING A DVD).

NOTE: If it is determined that the navigation unit is defective (through the appropriate service manual troubleshooting procedures) and the DVD will not eject, order a replacement navigation unit, and also order a DVD from the Honda Disc Fulfillment Center.

How to Answer Client Questions About Navigation Coverage

Some customers may ask questions regarding a city, address or POI (point of interest) covered by the navigation system. It is better to verify a coverage question on an actual vehicle than to disappoint your customer by promising coverage that may be incomplete or missing in their area. The following suggestions can be used to answer coverage inquiries from your customer.

Is my address covered by the navigation system?

Using a current production vehicle (of the same model), try entering the customer's address (street first) to see if their area is covered. Always enter the street first, because sometimes their city may be included in a neighboring township, or under some lager metropolitan city name. If the address is shown in a later year vehicle, but not your customer's vehicle, you might want to recommend that your customer purchase an update.

Is my city covered by the navigation system?

For general questions about whether a city is covered, view the map coverage link on the DVD order site. On the site, you enter a year and model, and then click on the Coverage link. You then select a state or province, and the cities are listed. Of course, this does not guarantee that the customer's road or address is in the system. Verifying on an actual production vehicle is always the best guarantee that your information is accurate.

The gas station on my corner is now a restaurant. Why is it still incorrect in the navigation system?

For POI-related customer questions, explain that businesses are constantly moving, and there can be a considerable lag in updating the millions of POIs in the system. The database is updated annually, and the best way to the verify whether the POI is accurate is verify the inquiry on a current production vehicle.

Answers to these and other questions regarding coverage can be found in these locations:

- In the Frequently Asked Questions section of the navigation system manual.
- At the on-line DVD order site, by clicking on the **FAQs** link (see ORDERING A DVD).

Precaution on Customer ''Sneak Previews''

Your client might request a look (or ''sneak preview'') at features in the latest navigation software. You should never preview a navigation DVD in a customer's vehicle. Inserting a new DVD installs the latest software from the DVD into the memory of the customer's navigation system. When the original DVD is reinstalled, the newer software remains in memory and is often incompatible with the customer's original DVD Map and POI database.

If your customer wishes to see the latest navigation coverage or software features, demonstrate it on an in-stock vehicle that already has the latest DVD version.

If, by chance, a newer version is located accidentally, either by the dealer or the customer, the only remedy is to enter the navigation diagnostic mode's Version screen and do a forced download. Refer to the *iN* for applicable patches that may need reinstalling.

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
No picture is displayed	Symptom Troubleshooting (see page 23-100)	• Navigation unit • Open/short between the audio unit, CD changer, Navigation display, Navigation control unit, or the XM receiver or the GA-Net bus • The wrong color DVD or version is installed • The DVD is damaged or dirty • Navigation display • Harness/fuses/switches
Picture is missing a color or tone or is an odd color	Symptom Troubleshooting (see page 23-101)	• Navigation unit • The wrong color DVD or version is installed • The DVD is damaged or dirty • Harness/fuses/switches
Picture has lines or rolls	Symptom Troubleshooting (see page 23-103)	• Navigation unit • Navigation display • Harness/fuses/switches
Navigation display buttons do not work or respond properly	Symptom Troubleshooting (see page 23-104)	• Navigation display • Open/short between the audio unit, CD changer, Navigation display, Navigation control unit, or the XM receiver or the GA-Net bus • The wrong color DVD or version is installed • The DVD is damaged or dirty • Harness/fuses/switches
GPS icon is white or not shown	Symptom Troubleshooting (see page 23-106)	• Navigation unit • The wrong color DVD or version is installed • The DVD is damaged or dirty • GPS antenna/cable • Harness/fuses/switches
Voice guidance cannot be heard, is broken up, or there is too much static	Symptom Troubleshooting (see page 23-107)	• Navigation unit • Audio unit • Harness/fuses/switches
Voice control does not work/respond	Symptom Troubleshooting (see page 23-108)	• Navigation unit • Microphone/steering buttons • The wrong color DVD or version is installed • The DVD is damaged or dirty • Harness/fuses/switches

(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
Vehicle position icon constantly leaves road, moves erratically, or is very far from actual position	Symptom Troubleshooting (see page 23-109)	• Navigation unit • GPS antenna/cable • PCM (speed and fuel pulses) • Harness/fuses/switches
DVD screen error messages	Symptom Troubleshooting (see page 23-110)	• Navigation unit • Navigation display • The wrong color DVD or version is installed • The DVD is damaged or dirty
System always comes up in in—line diagnostic mode	Symptom Troubleshooting (see page 23-110)	Software remedy, do not replace hardware
Navigation cannot control HVAC by voice command	Symptom Troubleshooting (see page 23-111)	• Navigation display • The wrong color DVD or version is installed • The DVD is damaged or dirty • HVAC control unit • Harness/fuses/switches
Display day/night mode does not work	Symptom Troubleshooting (see page 23-112)	• Navigation display • HVAC control unit • Gauge assembly (CAN) • The wrong color DVD or version is installed • The DVD is damaged or dirty • Harness/fuses/switches
System locks up or freezes constantly	Symptom Troubleshooting (see page 23-113)	• Navigation unit • Harness/fuses/switches • The wrong color DVD or version is installed • The DVD is damaged or dirty
Vehicle icon moves by itself or spins when parked	Symptom Troubleshooting (see page 23-113)	Navigation unit
Navigation display stays on with ignition switch OFF	Symptom Troubleshooting (see page 23-114)	• Harness/fuses/switches • Aftermarket accessory or cell phone installed

Symptom	Diagnostic procedure	Also check for
Navigation cannot control audio system	Symptom Troubleshooting (see page 23-115)	• Navigation display • Open/short between the audio unit, CD changer, Navigation display, Navigation control unit, or the XM receiver or the GA-Net bus • The wrong color DVD or version is installed • The DVD is damaged or dirty • Audio unit
Navigation cannot control XM radio	Symptom Troubleshooting (see page 23-116)	• Navigation display • Open/short between the audio unit, CD changer, Navigation display, Navigation control unit, or the XM receiver or the GA-Net bus • The wrong color DVD or version is installed • The DVD is damaged or dirty • Harness
Navigation frequently asks for anti-theft code and needs GPS initialization	Symptom Troubleshooting (see page 23-116)	• Navigation unit • Harness/fuses/switches/ unit grounds
CDs cannot be inserted and/or ejected	• Symptom Troubleshooting (see page 23-117) • Audio System Troubleshooting	• Navigation display • CD changer • Harness
Display can be opened and/or closed even when a CD is being inserted or ejected	Symptom Troubleshooting (see page 23-118)	• Navigation display • CD changer • Harness
OPEN/CLOSE function of the display does not work	Symptom Troubleshooting (see page 23-118)	• Navigation display • CD changer • Harness
Navigation display will not close	Symptom Troubleshooting (see page 23-119)	• Navigation display • CD changer • Harness
Navigation display does not open or opens part way	Symptom Troubleshooting (see page 23-119)	• Navigation display • CD changer • Harness
The Acura Globe Screen (not the Honda Globe Screen) appears every time the vehicle started	System diagnostic mode, version mode (see page 23-133)	• Wrong navigation unit installed in the car. Check the unit model number in the system diagnostic mode, version mode. • The wrong color DVD or version is installed • The DVD is damaged or dirty

(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
Address cannot be found or system gives poor routing	• See ''Answering client questions about navigation coverage'' in general troubleshooting • Verify proper operation and system limitations using the navigation system manual	• The wrong colored DVD or version is installed • Database limitations (address not in database)
Some set—up and information functions of the navigation system are grayed—out and do not work	Client did not select ''OK'' from Disclaimer screen	
Previous Destinations button is dim and not selectable in the Enter destination by screen (grayed-out)	The vehicle may be new, or the client deleted them. Enter a destination, and allow the system to route to it. After the trip, the Previous Destinations button will be selectable	See Owner's Manual for more details
Today's Destinations button is dim and not selectable in the Enter destination by screen (grayed-out)	The client has not entered a group of locations for Today's Destinations. This is normal. The button is only selectable if the client is using this function	
Time is not correct	Reset Time Adjustment in set-up	The wrong colored DVD or version is installed
The map will not display the Southern portion of the U.S. or the Northern parts of Canada	North American coverage is different for U.S./Canada markets. See the version diagnostic screen (see page 23-133) for details on coverage differences	The wrong colored DVD or version is installed
The DVD is scratched or dirty	See ''DVD Handling and Cleaning'' (see page 23-68)	Navigation unit
The wrong DVD was installed and now the system does not function properly	See ''Precaution client Sneak Previews'' (see page 23-70)	• Install the correct version DVD • Check on-line for service bulletins or other service information for the navigation system
A POI cannot be found	See ''How to answer client questions about navigation coverage'' (see page 23-70)	The DVD is scratched or dirty
A specific city cannot be found	See ''How to answer client questions about navigation coverage'' (see page 23-70)	The DVD is scratched or dirty
An In Line Diagnosis screen appears every time vehicle is started	See factory diagnostic screen ''In Line Diag'' (see page 23-110)	

System Description

Overview

The navigation system is a highly sophisticated, hybrid locating system.

The navigation unit uses global positioning system (GPS) satellite signals, internal yaw and vehicle speed inputs, and a map database to show where the vehicle is and to help guide a driver to a desired destination.

The navigation unit's GPS receiver receives signals from the GPS, a network of 24 satellites in orbit around the earth. By receiving signals from several of these satellites, the navigation system can determine the latitude, longitude, and elevation of the vehicle.

Signals from the system's yaw rate sensor (inside the navigation unit) detects turns, and the PCM vehicle speed pulse (VSP) and reverse signal enable the system to keep track of the vehicle's speed and direction of travel. The advantage of this hybrid system is that the system can track your position if either the GPS signal or the vehicle speed signal is missing. For instance, when in a tunnel (no GPS), the speed signal is used to update your position on the map. Alternately, while the vehicle is being transported on a ferry, GPS signals can show the vehicle position on the map as it crosses the water.

The navigation system uses the location, direction, and speed information to display the appropriate map and calculate a route to the destination entered. As you drive to a destination, the system provides both visual and audio guidance. Audio guidance is sent to the audio unit, and an RGB graphics color signal is sent to the navigation display.

This navigation system also has voice recognition that allows voice control of most of the navigation, audio, and climate control functions. The voice control switches (TALK and BACK buttons on the steering wheel) activate the voice control system. The microphone on the ceiling receives your voice commands. For more information on this feature, consult the navigation owner's guide.

The illumination signal is used by the navigation unit to automatically switch the display mode between the ''Night'' and ''Day'' display modes. When the headlights are on, the dash brightness control setting ''full brightness'' overrides the ''Night'' display mode, and allows a daytime navigation display with the lights on.

When the navigation system is giving voice guidance commands, the front speakers are muted. When the voice control system is used (TALK button pressed), all of the speakers are muted.

The GA-Net II bus passes information back and forth between the navigation display, the navigation unit, and the audio system components. The information passed on this bus are touch button commands, audio muting signal, audio (radio and XM), and any open in these bus line can affect the navigation system operation.

The clock on the audio display is set and maintained by the navigation unit. The time is automatically adjusted for daylight savings, and time zone changes while driving. The time can be adjusted in setup.

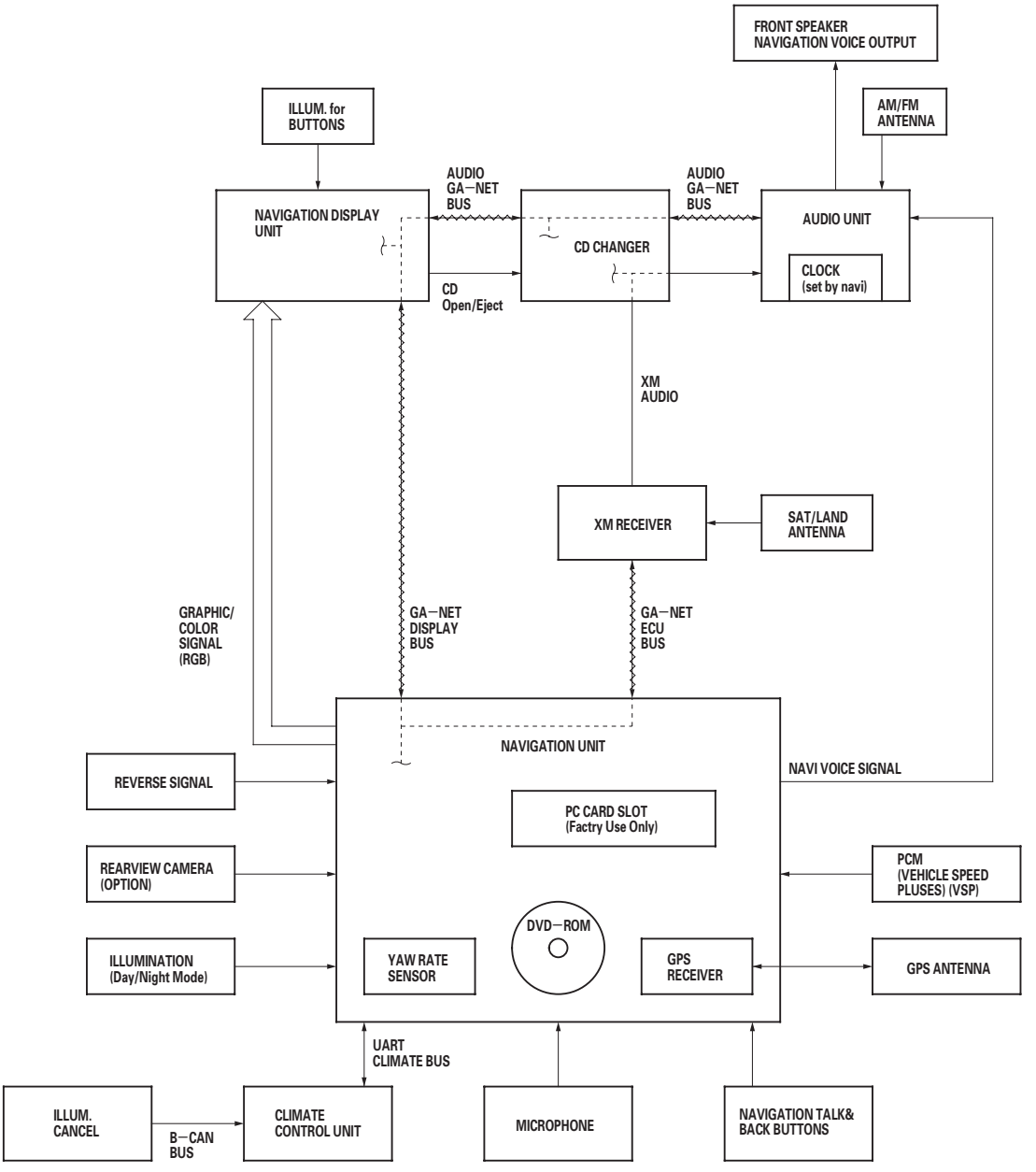
Additional information is available about the navigation components following the System Diagram. A glossary of terms that are used throughout this section follows the detailed information.

The Navigation Users Guide in the glove box covers all of the system functions and settings. Use this as a resource when evaluating a customer concern.

(cont'd)

System Description (cont'd)

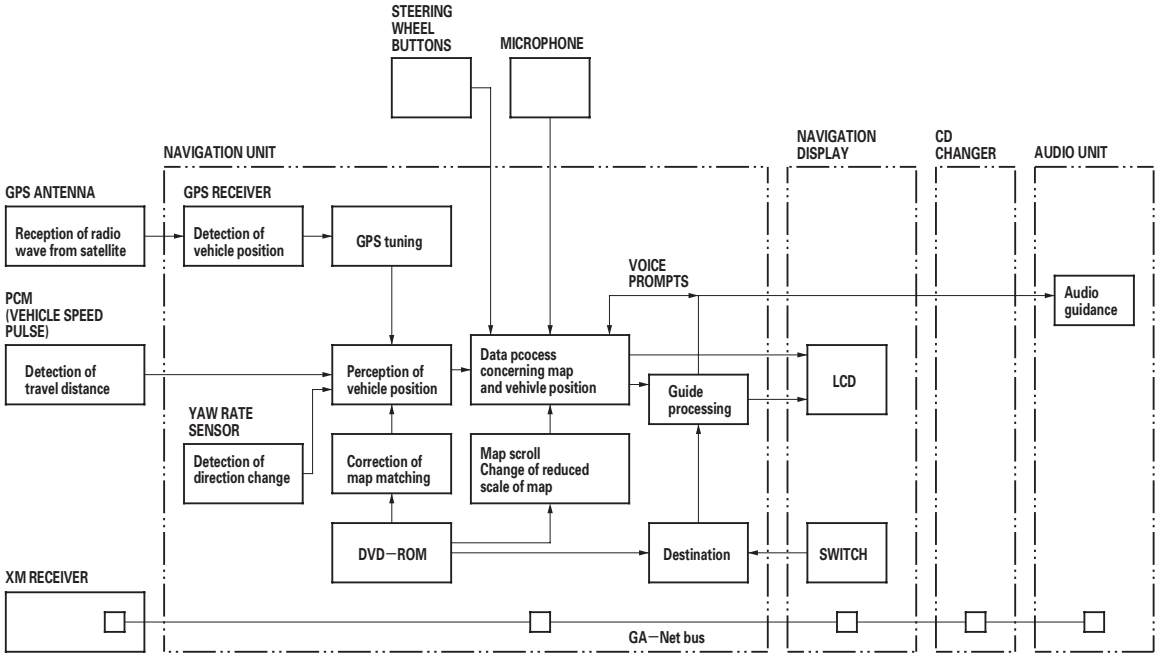
System Diagram



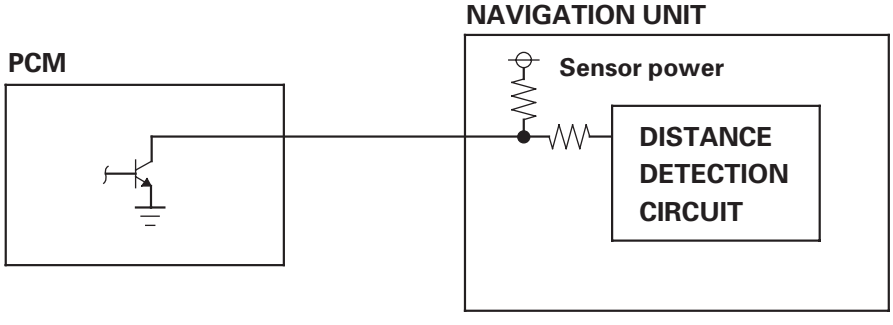
Navigation Function

The navigation system is composed of the navigation unit, the PCM (vehicle speed signal), the GPS antenna, microphone, voice control switch, audio unit, CD changer, XM receiver, climate control unit, and the navigation display.
These units communicate with each other on the GA-Net bus.

Function Diagram



Vehicle Speed Pulse
The vehicle speed pulse is sent by the PCM. The PCM receives a signal from the countershaft speed sensor, then it processes the signal and transmits it to the speedometer and other systems.



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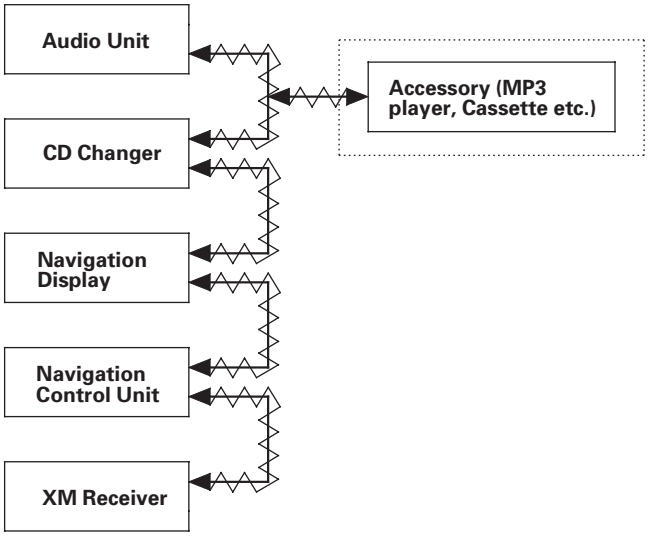
System Description (cont'd)

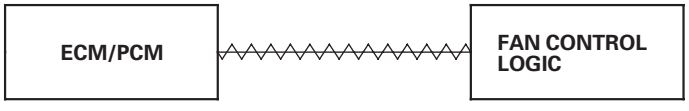
GA-Net Bus Configuration

The GA-Net bus passes audio and navigation commands throughout the navigation and audio components. These commands include navigation touch screen and hard button signals, audio/XM selections by voice, and XM station and music title names. Because the entire bus is ''daisy chained'' between components (see diagram below), any open or short in the GA-Net bus harness will cause any or all of these functions to become inoperative. The addition of any factory audio accessory must maintain the continuity of the GA-Net bus by installing the ''Y'' cable included with the accessory kit.



Charge Signal and Navigation Unit Cooling Fan Operation

The ECM/PCM sends a charge signal to the navigation unit via F-CAN. A thermister inside the navigation unit monitors the units internal temperature. This information combined with charge signal determines the control units internal cooling fan operation.

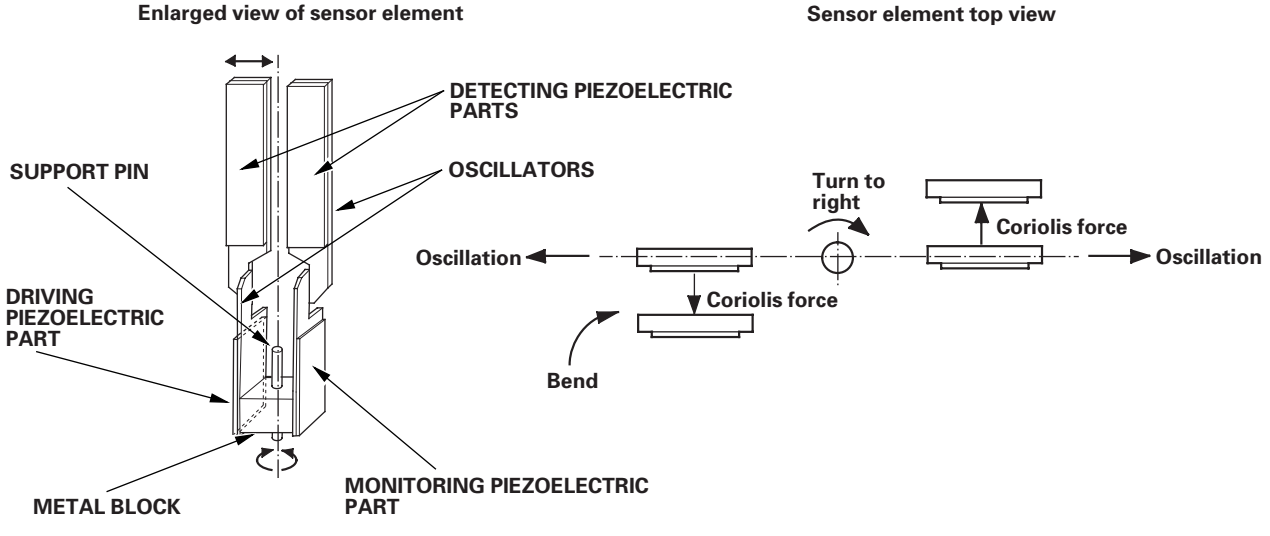


Yaw Rate Sensor
The yaw rate sensor (located in the navigation unit) detects the direction change (angular speed) of the vehicle. The sensor is an oscillation gyro built into the navigation unit.

Sensor Element Structure
The sensor element is shaped like a tuning fork, and it consists of the piezoelectric parts, the metal block, and the support pin. There are four piezoelectric parts: one to drive the oscillators, one to monitor and maintain the oscillation at a regular frequency, and two to detect angular velocity. The two oscillators, which have a 90-degree twist in the center, are connected at the bottom by the metal block and supported by the support pin. A detection piezoelectric part is attached to the top of each oscillator. The driving piezoelectric part is attached to the bottom of one oscillator, and the monitoring piezoelectric part is attached to the bottom of the other oscillator.

Oscillation Gyro Principles
The piezoelectric parts have ''electric/mechanical transfer characteristics.'' They bend vertically when voltage is applied to both sides of the parts, and voltage is generated between both sides of the piezoelectric parts when they are bent by an external force. The oscillation gyro functions by utilizing this characteristic of the piezoelectric parts and ''Coriolis force.'' (Coriolis force deflects moving objects as a result of the earth's rotation.) In the oscillation gyro, this force moves the sensor element when angular velocity is applied.

Operation
1. The driving piezoelectric part oscillates the oscillator by repeatedly bending and returning when an AC voltage of 6 kHz is applied to the part, The monitoring-side oscillator resonates because it is connected to the driving-side oscillator by the metal block.
2. The monitoring piezoelectric part bends in proportion to the oscillation and outputs voltage (the monitor signal). The navigation unit control circuit controls the drive signal to stabilize the monitor signal.
3. When the vehicle is stopped, the detecting piezoelectric parts oscillate right and left with the oscillators, but no signal is output because the parts are not bent (no angular force).
4. When the vehicle turns to the right, the sensor element moves in a circular motion with the right oscillator bending forward and the left oscillator bending rearward. The amount of forward/rearward bend varies according to the angular velocity of the vehicle.
5. The detecting piezoelectric parts output voltage (the yaw rate signal) according to the amount of bend. The amount of vehicle direction change is determined by measuring this voltage.



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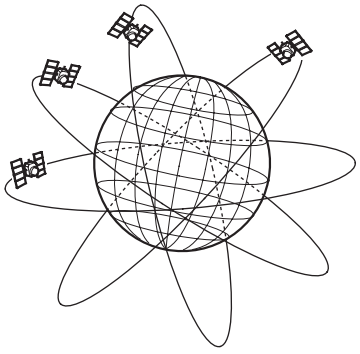
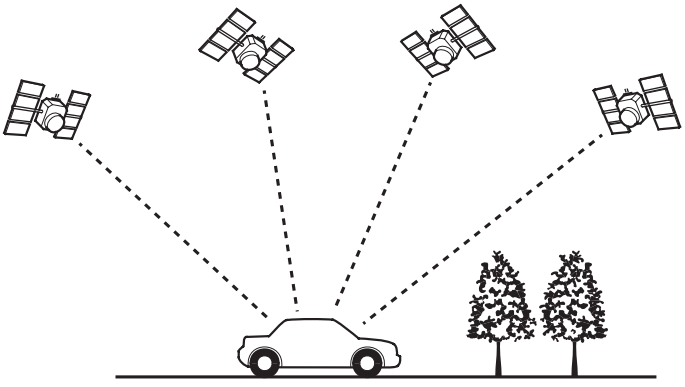
System Description (cont'd)

Global Positioning System (GPS)
The global positioning system (GPS) enables the navigation system to determine the current position of the vehicle by using the signals transmitted from the satellites in orbit around the earth. The satellites transmit the satellite identification signal, orbit information, transmission time signal, and other information. When the GPS receiver receives a signal from four or more satellites simultaneously, it calculates the current position of the vehicle based on the distance to each satellite and the satellite's positions in its respective orbit.

Position detection Image with GPS satellite



NOTE: Four satellites on each of six orbits.



Precision of GPS
The precision of the GPS varies according to the number of satellites from which signals are received and the view of the sky. The precision is indicated by the color and shape of the GPS icon shown on the display.

GPS ICON COLOR	NUMBER OF SATELLITES	CONDITION	DESCRIPTION
White GPS icon	None	Faulty	The GPS can't be utilized due to a faulty GPS receiver, open in the wire, or other fault or interference.
	2 or less	Impossible to detect vehicle position	GPS function is normal. The satellite signals received by the GPS are too few to detect the vehicle position.
Green GPS icon	3	Vehicle position detectable in 2 dimensions	The longitude and latitude of the vehicle position can be detected. (Less precise than detection in three dimensions)
	4 or more	Vehicle position detectable in 3 dimensions (elevation displayed)	The longitude, latitude and the altitude of the vehicle position can be detected. (More precise than detection in two dimensions)

GPS Antenna
The GPS antenna amplifies and transmits the signals received from the satellites to the GPS receiver.

GPS Receiver
The GPS receiver is built in the navigation unit. It calculates the vehicle position by receiving the signal from the GPS antenna. The vehicle position and signal reception condition is transmitted from the GPS receiver to the navigation control unit to adjust vehicle position.

Navigation Unit
The navigation unit calculates the vehicle position and guides you to the destination. The unit performs map matching correction, GPS correction, and distance tuning. It also controls the menu functions and the DVD-ROM drive, and interprets voice commands. With control of all these items, the navigation unit makes the navigation picture signal, then it transmits the signal to the navigation display and audio driving instructions to the audio unit.

Calculation of Vehicle Position
The navigation unit calculates the vehicle position (the driving direction and the current position) by receiving the directional change signals from the yaw rate sensor and the travel distance signals from the PCMs vehicle speed pulse (VSP) signal.

Map Matching Tuning
The map matching tuning is accomplished by indicating the vehicle position on the roads on the map. The map data transmitted from the DVD-ROM is checked against the vehicle position data, and the vehicle position is indicated on the nearest road. Map matching tuning does not occur when the vehicle travels on a road not shown on the map, or when the vehicle position is far away from a road on the map.

GPS Tuning
The GPS tuning is accomplished by indicating the vehicle position as the GPS's vehicle position. The navigation unit compares its calculated vehicle position data with the GPS vehicle position data. If there is large difference between the two, the indicated vehicle position is adjusted to the GPS vehicle position.

Distance Tuning
The distance tuning reduces the difference between the travel distance signal from the VSP and the distance data on the map. The navigation unit compares its calculated vehicle position data with the GPS vehicle position data. The navigation unit then decreases the tuning value when the vehicle position is always ahead of the GPS vehicle position, and it increases the tuning value when the vehicle position is always behind the GPS vehicle position.

Route Guidance
The navigation unit can calculate different routes to a selected destination. You have five options:
- Direct Route — Calculate a route that is the most direct.
- Easy Route — Calculate a route that minimizes the number of turns needed.
- Minimize Freeways — Calculate a route that avoids freeway travel. If that is not possible, keep the amount of freeway travel to a minimum.
- Mimimize Toll Roads — Calculate a route that avoids, or minimizes travel on toll roads.
- Maximize Freeways — Calculate a route that uses freeways as much as possible.

Audio Guidance
The navigation unit transmits audio driving instructions before entering an intersection or passing a junction. The audio instructions come through the audio unit to the front speakers.

NOTE: The front speakers are muted whenever the navigation system is giving guidance commands, and all of the speakers are muted when the voice control system is being used.

DVD-ROM
The map data (including all scale rates) is stored in the DVD-ROM. The map data includes:
- Road distances, road widths, speed limits, traffic regulations, passing time at junction, distances to junctions, and the driving instructions for audio guidance.
- Latitude and longitude GPS.

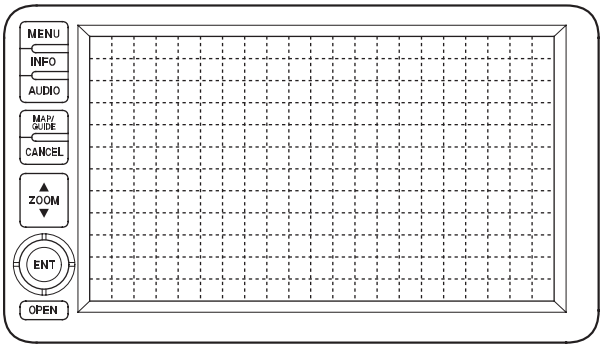
(cont'd)

System Description (cont'd)

Audio Unit
The audio unit receives the audio driving instructions from the navigation unit and transmits the instructions through the front speakers even when the audio system is in use.

NOTE: If the navigation volume is turned OFF, this feature is disabled.

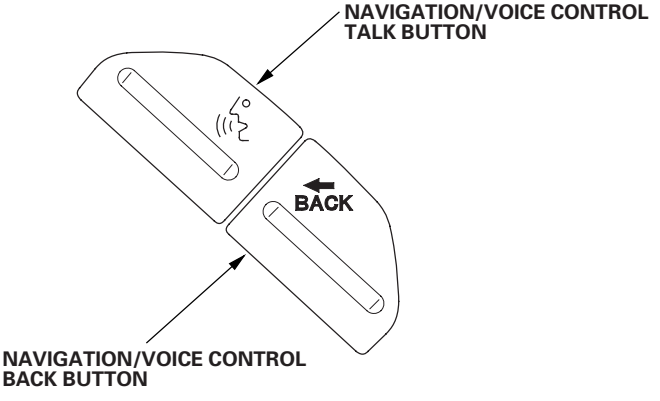
Navigation Display
The navigation display uses a liquid crystal display (LCD). The LCD is a 8-inch-diagonal, thin film transistor (TFT), stripe type with 336,960 picture elements. The color film and fluorescent light are laid out on the back of the liquid crystal film. The touch sensor on the front of the LCD consists of a touch sensitive resistive membrane with an infinite number of possible touch locations. To maintain compatibility with earlier display units, the sensing locations are confined to a grid of 20 vertical and 10 horizontal touch locations. This produces 200 total sensing zones. The navigation display transmits the signal from each operation key and the touch switches to the navigation unit over the GA-Net bus.



Microphone (MIC)
The microphone (on the ceiling, near the front map light) receives voice commands and transmits them to the navigation unit for interpretation.

Talk Button
Activates the voice control system in the navigation unit to accept voice commands.

Back Button
Returns the display to the previous screen (similar function as the CANCEL button).



Glossary
The following is a glossary of terms pertaining to the Voice Recognition Navigation System.

Item	Definition
Breadcrumbs	Off road tracking dots that can be followed on the map to retrace your route back to a mapped (digitized) road. This function can be turned on/off in Setup screen 1.
CPU	Central Processing Unit. The main device within the navigation unit that coordinates the rest of the electronic functions.
Database	This consists of the Map data, and the POI (Points Of Interest) data stored on the DVD.
DBW	Drive By Wire. Allows electrical control of the throttle without the need of a mechanical linkage.
DCA	Detailed coverage area, an area that is covered in the database digital mapping. For example, the 48 continuous United States are within the DCA. Hawaii and Alaska are outside of the DCA.
DTC	Diagnostic Trouble Codes. Use the HDS tablet to obtain, and troubleshoot the cause of these codes.
Dead Reckoning	The use of the speed signal, and yaw rate sensor to position the vehicle on the map even when tall buildings, or driving in a tunnel obscures the GPS signal.
Digitized Road	A road that appears on the navigation screen. The road name will appear at the bottom of the navigation screen. If the user drives ''off road'', the navigation system will display ''Not on a digitized road''. The ''breadcrumbs'' will appear after driving for 1/2 mile.
Disclaimer Screen	Screen containing cautionary information. It is meant to be read carefully and acknowledged by the customer when using the navigation system.
DVD or DVD-ROM	Digital Versatile Disk. The navigation program and database resides on this disk. See the Navigation Owner's Manual for information on how to order a replacement or an update DVD.
ECM	Engine Control Module. Typically referred to as the ECM.
FAQ	Frequently Asked Question. See the Navigation Owner's Manual for a list of the customer FAQs, and troubleshooting information.
GA-Net bus	Units communication line.
GPS	Global Positioning System. A network of 24 satellites in orbit around the earth. The navigation system can simultaneously receive signals from up to 12 satellites to accurately position the vehicle on the map.
HDS	Honda Diagnostic System. A hand held tablet PC used for diagnosing vehicle problems.
H/U	Head Unit. The navigation system display unit assembly in the dash.
Initialization	This refers to the period needed to re-acquire the GPS satellite orbital information whenever the navigation system power has been disconnected. This can take from 10 to 45 minutes.
LCD	Liquid Crystal Display (the navigation screen)
Map Matching	The received GPS information allows the navigation system to position the vehicle on the map. Map matching has occurred if the map screen is displaying the current street name in the bottom-shaded area.
Mic	Abbreviation for the microphone used for receiving voice commands. It is located near the map light in the ceiling.
MW	Maneuver Window. While on-route to a destination, this window displays information about the next maneuver.
Navi	Abbreviation for the Navigation System
Off Route	This occurs when the user leaves mapped roads. Off road tracking dots (''breadcrumbs'') are displayed if the option is enabled in the setup menu. The user can use them to return to a mapped road. The bottom of the navigation screen will say ''Not on a digitized road''. Breadcrumbs will appear after driving for 1/2 mile.

(cont'd)

System Description (cont'd)

Item	Definition
Outlying Areas	These are rural areas that typically have only their main roads mapped. All other roads are shown in light brown for reference only, since they have not been verified.
PC Card Slot	The PC Card (PCMCIA, type II) slot is for factory use only. Make sure that the sliding door is closed at all times. If opened, an error message is displayed on the screen.
PCM	Powertrain Control Module. This unit supplies the navigation system speed signal.
PCMCIA	A computer industry defined term referring to the PC Card slot standard.
PIN	Personal Identification Number. A random 4 digit number created by the customer to protect personal information.
POI	Point Of Interest. These are the businesses, schools etc. found under the ''places'' option on the main menu.
Polygon	Colored areas on the map screen denoting parks, schools etc. See the Navigation Owner's Manual ''Traveling to Your Destination'' for a list of the assigned colors.
QWERTY	Keyboard layout resembling the typewriter keys. The keyboard layout can be changed to an alphabetical layout in the Setup mode.
SCS connector	The 2-pin connector used to put the navigation system into the diagnostic mode.
Security Code	Code needed to activate the navigation system. You can obtain the security code from the ''IN'' by entering the navigation system control serial number. You can find the serial number on the diagnostic screens (Unit Check, Navi ECU), or on the underside of the control unit.
Touch Screen Buttons or Touch Sensor	The display panel has two layers of clear film on the screen panel. If you touch the screen panel, the films engage and the navigation display detects the touch point.
Tuning	A continual update of internal navigation system scaling factors. See the individual sensor tuning discussions under either ''System Description'', or ''System Diagnosis Mode'' (see page 23-120) in this manual.
Unverified Streets	These streets have not been verified for turn restrictions, one-way, etc. They are shown in light brown on the map. You can enter address destinations in these areas, but depending on your ''Unverified Routing'' choice in setup, voice guidance may end at the last verified street closest to your destination.
Verified Streets	These streets consist of the detailed metropolitan coverage areas, and all other inter-town connection roads. These roads are shown in black on the map.
VP	Vehicle Position. When in map mode, this circular icon shows the vehicle position on the map. Touch this icon to show the latitude, longitude, and elevation of your current position.
VR	Voice Recognition. This allows voice control of many of the navigation functions. The hardware consists of the microphone, steering wheel (Talk/Back) buttons, and the front speakers. See the overview for more information.
VSP	Vehicle Speed Pulse. This pulse signal coming from the PCM is used to update the Vehicle position on the map. These pulses do not indicate direction (forward or backward). When in reverse, the navigation receives a signal from the MICU and directs the VP to move backwards on the map.
VSS	Vehicle Speed Sensor. The counter shaft speed sensor reads the output shaft speed at the transmission and provides a speed pulse to the PCM. The PCM sends this pulse to the navigation system.
XM Satellite Radio	A satellite band radio system where signals are received from either a satellite or land based transmitters.
Yaw Sensor	This device is located in the navigation system control unit and senses the side-to-side twisting force generated when the vehicle turns. See a detailed description of how this sensor works in this manual.

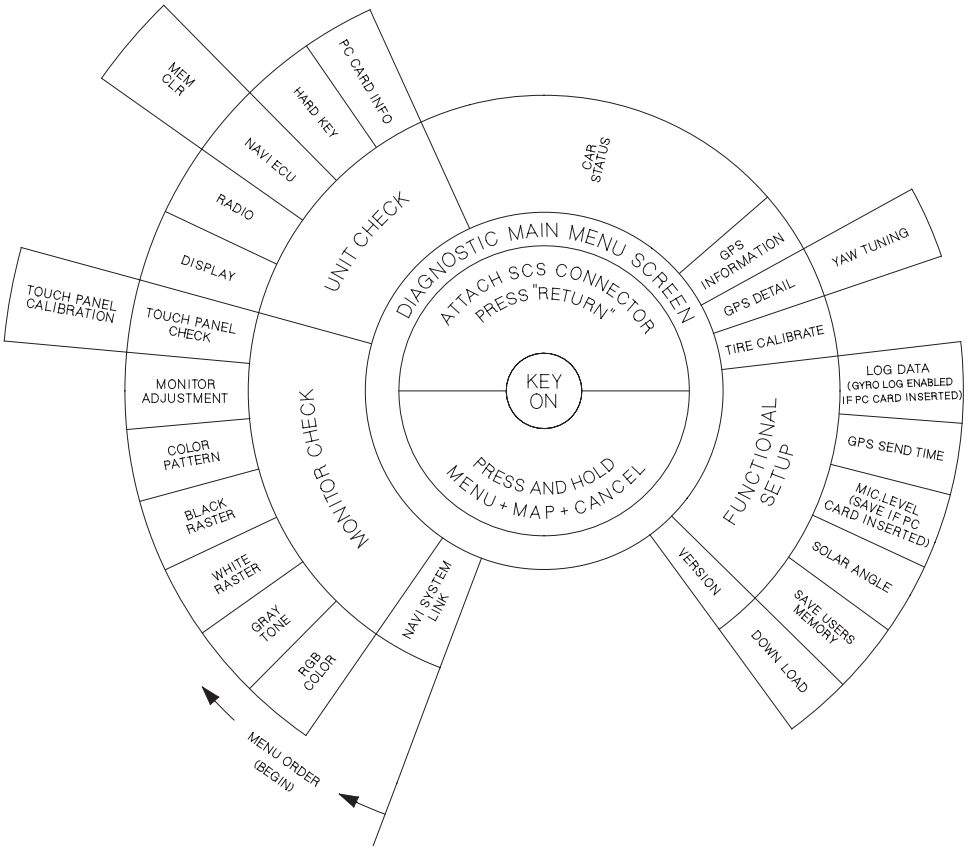
Item	Definition
Address Book	The HFL system can import a copy of the phone book from and approved HFL compatible phone and can display the imported phone book on the navigation screen as the address book. See the Owner's Manual for more information.
B-CAN	Body CAN Bus (see CAN)
Breadcrumbs (White dots)	Off road tracking dots that can be followed on the map to retrace your route back to a mapped (digitized) road. This function can be turned on/off in Setup screen 1.
CAN	Controller Area Network. This communication network allows processors in the vehicle to send/receive information. The fuel pulses used by the MID trip computer are received from the ECM/PCM using the F-CAN (Fast Controller Area Network) bus.
CSS	Countershaft (Output) Speed Sensor. This sensor reads the output shaft speed at the transmission and provides a speed pulse to the ECM/PCM.
Database	This consists of the Map data, and the POI (Points Of Interest) data stored on the DVD.
DBW	Drive By Wire. Allows electrical control of the throttle without the need of a mechanical linkage.
Dead Reckoning	The use of the speed signal, and yaw rate sensor to position the vehicle on the map even when tall buildings, or driving in a tunnel obscures the GPS signal.
F-CAN	Fast CAN Bus (see CAN)
Off-Road Tracking	See Breadcrumbs

(cont'd)

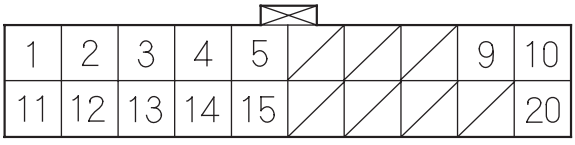
System Description (cont'd)

Diagnostic Function Diagram
This diagram shows the diagnostic slice of the System Function Diagram. It has the diagnostic features of the navigation system starting at the center and working outward in layers. The diagnostic starts at ''Key ON,'' and then displays the Diagnostic Main Menu (Select Diagnosis items) after:
The diagram shows the available menu choices starting at the button left and moving clockwise.
You will find a detailed explanation of each feature on the given page numbers.
In most cases, do not clear or change settings in any diagnostic screen unless instructed to do so in the explanation or by the factory. If the factory supplies you with a PCMCIA card to place in the PC slot, then the features specified in the diagram with ''Card'' are available.

- Starting the vehicle with the SCS connector plugged in to the navigation service check connector (see page 23-138) to get to the System Links screen, then selecting Return.
- Simultaneously pressing and holding the MENU, MAP/GUIDE, and CANCEL buttons.



Navigation Unit Inputs and Outputs for Connector A (20P)



Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT	R SIG (Red signal)	Red color signal	0.2 V AC average in RGB color diagnostic mode	If open: Red color missing (see ''RGB Color'' diagnostic). If short to ground: Red color missing (see ''RGB Color'' diagnostic).
2	RED	G SIG (Green signal)	Green color signal	0.2 V AC average in RGB color diagnostic mode	If open: Green color missing (see ''RGB Color'' diagnostic). If short to ground: Green color missing (see ''RGB Color'' diagnostic).
3	GRY*	SIG 1 SHIELD GND (Shield signal)	Shield for No. 1, 2, 11, 12, 13 terminals	0 V	If open: No change to display. If short to ground: No change to display.
4	WHT/BLU	SI (A/C Signal input)	A/C input signal	0—battery voltage pulses	If open: Voice control does not work. Will affect navi display dimming. If short to ground: Voice control does not work. Will affect navi display dimming.
5	RED/BLK	ILL (+) (Illumination positive)	Parking light on signal from dash and console lights, under-hood ''Relay fuse box''	Lights on = battery voltage, Lights off = 0 V	If open: When brightness = ''Auto'', night mode for the display is inoperative when lights on. If short to ground: Blows fuse 7 in under-dash fuse/ relay box.
9	GRN/BLK*	ECU BUS (GA-NET) SHIELD GND (Shield display bus)	Shield for display bus terminal No. 10, 20	0 V	If open: No change to display. If short to ground: No change to display.
10	LT GRN	ECU BUS (+) (GA-NET) (Display bus positive)	Data bus (+) GA-Net	0—5 V pulses average 2.5 V depends on bus traffic	If open: Navigation buttons and touch screen do not work. If short to ground: Navigation buttons XM radio, CD changer, and touch screen do not work.

*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

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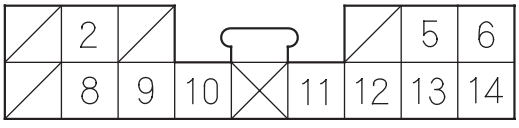
System Description (cont'd)

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
11	YEL	B SIG (Blue signal)	Blue color signal	0.2 V AC average in RGB color diagnostic mode	If open: Blue color missing (see ''RGB Color'' diagnostic). If short to ground: Blue color missing (see ''RGB Color'' diagnostic).
12	BRN	C SIG (Composite signal)	Composite video (vertical/horizontal) Synchronizing signal	0.2 V AC average in RGB color diagnostic mode	If open: Picture rolls horizontally, colors still visible. If short to ground: Picture rolls horizontally, colors still visible.
13	BLU	GND SIG (Ground signal)	Ground for color signal	0 V	If open: No change to display. If short to ground: No change to display.
14	WHT/RED	SO (A/C Signal output)	A/C output signal	0—battery voltage pulses	If open: A/C voice control does not work. Will affect navi display dimming. If short to ground: A/C voice control does not work. Will affect navi display dimming.
15	WHT/BLK	CLK (A/C Clock signal)	Time set sync signal	0—battery voltage pulses	If open: A/C voice control does not work. Will affect navi display dimming. If short to ground: A/C voice control does not work.
20	PUR	ECU BUS (—) (GA-NET) (Display bus negative)	Data bus (—) GA-Net	0—5 V pulses nominally 2.5 V (depends on BUS traffic)	If open: XM radio, Navigation buttons and touch screen do not work. If short to ground: XM radio, CD changer, and Navigation hard and touch buttons work OK.

Navigation Unit Inputs and Outputs for Connector B (14P)



Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
2	BLU	SAT BUS (+) (GA-NET)	Data bus (+) GA-Net	0—5 V pulses average 2.5 V depends on bus traffic	If open: XM radio does not work. If short to ground: XM radio, CD changer, Navigation buttons, and touch screen do not work.
5	WHT	RG L (+) (Route guidance voice left positive)	Left audio signal of voice guidance, and Voice Recognition (VR) prompts	Audio signal 0.004—0.04 V	If open: If voice activated, radio speakers buzz; if voice off, no effect. If short to ground: If voice activated, radio speakers buzz; if voice off, no effect.
6	BLU	MIC SIG (+) (Mic signal positive)	Microphone output signal positive	4—5 V (with TALK button pressed)	If open: No microphone signal shown in diagnostic screens: ''Navi System Link'' and Functional Setup ''Mic Level''. If short to ground: No microphone signal shown in diagnostic screens: ''Navi System Link'' and Functional Setup ''Mic Level''.
8	PNK	SAT BUS (—) (GA-NET)	Data bus (—) GA-Net	0—5 V pulses average 2.5 V depends on bus traffic	If open: XM radio does not work. If short to ground: XM radio, CD changer, Navigation buttons, and touch screen work OK.
9	BRN*	SAT BUS SH GND	Shield for No. 2, 8 terminals	0 V	If open: No effect on XM radio. If short to ground: No effect on XM radio.
10	GRY	STRG SW (Steering wheel switches)	Steering wheel switch output	4—5 V (Talk button pressed) 2.5—3 V (Back button pressed)	If open: Steering wheel ''Talk'', and ''Back'' switch/ buttons do not work. If short to ground: Steering wheel ''Talk'', and ''Back'' switch/buttons do not work.
11	LT GRN*	RG SHIELD GND (Shield route guidance)	Shield for No. 5, 12 terminals	0 V	If open: No effect on voice output. If short to ground: No effect on voice output.
12	BLU/RED	RG GND (Routs guidance ground)	Ground for voice guidance, and Voice Recognition (VR) prompts	0 V	If open: No effect on voice output. If short to ground: No effect on voice output.
13	LT BLU*	MIC SH (Mic shield)	Shield for No. 6, 14 terminals	0 V	If open: No effect on voice recognition. If short to ground: No effect on voice recognition.
14	PNK	MIC GND (Mic ground)	Ground for microphone signal	0 V	If open: No microphone signal shown in diagnostics: ''Navi System Link'' and Functional Setup ''Mic Level''. If short to ground: No effect on voice recognition.

*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

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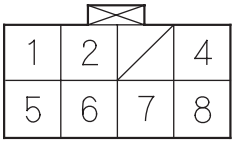
System Description (cont'd)

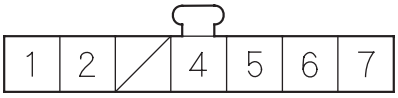
Navigation Unit Inputs and Outputs for Connector C (8P)



Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT/RED	+B (+B Power source)	Continuous power source	Battery voltage	If open: Display picture goes out (display back light still on). NOTE: System will reboot to ''enter code'' screen. If short to ground: Blows fuse No. 7 (7.5 A) in the under-dash fuse/relay box.
2	YEL/RED	ACC (Accessory)	Power source for accessories	Battery voltage at ACC (I)	If open: Display picture goes out (display back light still on). NOTE: When re-connected the system will reboot to ''enter code'' screen. If short to ground: Blows fuse No. 32 (7.5 A) in the under-dash fuse/relay box.
4	BLK	GND (Ground)	Ground for navigation unit	0 V	If open: No effect on system. If short to ground: No effect on system.
5	GRN	BACK LT (Back light)	Reverse signal of select lever from ''Multiplex Integrated Control Unit'' (A/T) or backup light switch (M/T)	In reverse, battery voltage: Otherwise 0 V	If open: Navigation never sees reverse. Diagnostic screen ''Car Status'', ''Back'' = 0. If short to ground: Blows fuse No. 21 (7.5 A) in the under-dash fuse/relay box.
6	BLU/WHT	VSP (Vehicle speed pulse)	Vehicle speed pulse signal from ECM/PCM	Stopped: 10—11 V DC Average 5 V DC, when moving	If open: No vehicle speed pulses. Diagnostic screen ''Car Status'', VSP Navi = 0. If short to ground: No vehicle speed pulses. Diagnostic screen ''Car Status'', VSP Navi = 0.
7	GRN/RED	DIAG + (Diagnostic positive)	Service check signal for navigation system	5—6 V	If open: No effect on system. If short to ground: System goes into diagnostic mode.
8	GRN/YEL	DIAG — (Diagnostic negative)	Ground for service check signal	0 V	If open: No effect on system. If short to ground: No effect on system.

Navigation Unit Inputs and Outputs for Connector D (7P) (OPTION)



Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT	CAMERA VCC (VCC supply)	Power source for rearview camera	7 V	If open: No rearview camera image. If short to ground: When put into reverse, the navigation screen goes black (backlight still operative). NOTE: If this wire is shorted to ground, the navigation unit can be permanently damaged.
2	RED	CAMERA GND (Ground)	Ground for rearview camera	0 V	If open: No change to rearview camera image. If short to ground: No change to rearview camera image. NOTE: If this wire is shorted to ground, the navigation unit can be permanently damaged.
4	YEL	VIDEO GND (Ground camera)	Ground for camera signal	0 V	If open: No change to rearview camera image. If short to ground: No change to rearview camera image.
5	BLK	VIDEO (Video camera)	Video signal for rearview camera	0.3 V	If open: No rearview camera image. If short to ground: When put into reverse, the navigation screen goes black (backlight still operative). NOTE: If this wire is shorted to ground, the navigation unit can be permanently damaged.
6	GRY*	CAMERA SH (Shield camera)	Shield for No. 1 to No. 7 terminals	0 V	If open: No change to rearview camera image. If short to ground: No change to rearview camera image.
7	GRN	CAMERA ADPT (Adaptive camera)	Control signal for rearview camera	0 V	If open: No change to rearview camera image. If short to ground: No change to rearview camera image. NOTE: If this wire is shorted to ground, the navigation unit can be permanently damaged.

*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

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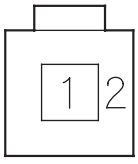
System Description (cont'd)

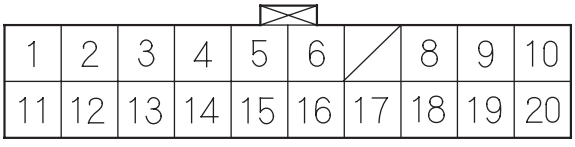
Navigation Unit Inputs and Outputs for Connector E (2P)



Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	———	GPS	GPS signal (5 V in, GPS signal out)	5 V	If open: GPS icon on screen is white, system links screen ANT shows ''NG.'' If short to ground: Same as open.
2	———	GPS SH	Shield for No. 1 terminal	0 V	If open: GPS icon on screen is white, system links screen ANT shows ''NG.'' If short to ground: No effect on system.

Navigation display Inputs and Outputs for Connector A (20P)



Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT/RED	+B (+B power source)	Continuous power source	Battery voltage	If open: Screen completely off (no backlight visible). If short to ground: Blows fuse No. 7 (7.5 A) in the under-dash fuse/relay box.
2	YEL/RED	ACC (Accessory)	Power source for accessory	Battery voltage at ACC (I)	If open: Display and buttons do not work. If short to ground: Blows fuse No. 32 (7.5 A) in the under-dash fuse/relay box.
3	WHT	AUDIO BUS (+) (GA-NET)	Data bus (+) GA-Net	0—5 V pulses average 2.5 V depends on bus traffic	If open: XM radio, Navigation buttons and touch screen do not work. If short to ground: XM radio, CD changer, Navigation buttons and touch screen do not work.
4	LT GRN*	AUDIO BUS (GA-NET) SH	Shield for No. 3, 13 terminals	0 V	If open: No change to display. If short to ground: No change to display.
5	LT GRN	ECU BUS (+) (GA-NET) (Display bus positive)	Data bus (+) GA-Net	0—5 V pulses average 2.5 V depends on bus traffic	If open: XM radio, Navigation buttons and touch screen do not work. If short to ground: XM radio, CD changer, Navigation buttons and touch screen do not work.
6	YEL	NAVI SCTY 2	Security signal to rear screen	0 V	If open: If security system set, it will not trip when screen is removed. If short to ground: The security system set, it will not trip when screen is removed.
8	WHT	R SIG (Red signal)	Red color signal	0.2 V AC average in RGB color diagnostic mode	If open: Red color missing (see ''RGB Color'' diagnostic). If short to ground: Red color missing (see ''RGB Color'' diagnostic).
9	RED	G SIG (Green signal)	Green color signal	0.2 V AC average in RGB color diagnostic mode	If open: Green color missing (see ''RGB Color'' diagnostic). If short to ground: Green color missing (see ''RGB Color'' diagnostic).
10	BLK	GND (Ground)	Ground for display unit	0 V	If open: No change to display. If short to ground: No change to display.

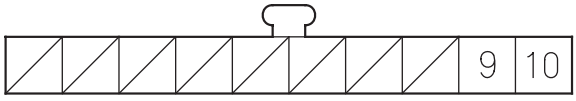
*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

(cont'd)

System Description (cont'd)

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
11	RED/BLK	ILL (+) (Illumination positive)	Parking light on signal from dash and console lights	Battery voltage if lights on: otherwise 0 V	If open: When brightness = ''Auto'', night mode for the display is inoperative when lights on. If short to ground: Blows fuse 7 in under-dash fuse/ relay box.
12	RED	ILL (—)	Ground for illumination light	With full dash lights brightness, 0 V	If open: When brightness = ''Auto'', night mode for the display is inoperative when lights on. If short to ground: No change to display.
13	BLU/RED	AUDIO BUS (—) (GA-NET)	Data bus (—) GA-Net	0—5 V pulses average 2.5 V depends on bus traffic	If open: XM radio, Navigation buttons and touch screen do not work. If short to ground: XM radio, CD changer, and the navigation hard and touch buttons work OK.
14	GRN/BLK	ECU BUS (GA-NET) SH GND (Shield display bus)	Shield for display bus terminal No. 5, 15	0 V	If open: No change to display. If short to ground: No change to display.
15	PUR	ECU BUS (—) (GA-NET) (Display bus negative)	Data bus (—) GA-Net	0—5 V pulses average 2.5 V depends on bus traffic	If open: XM radio, Navigation buttons and touch screen do not work. If short to ground: XM radio, CD changer, and the navigation hard and touch buttons work OK.
16	GRN/WHT	SECURITY 5	Security signal from CD changer	0 V	If open: The security system set, it will not trip when screen is removed. If short to ground: If security system set, it will not trip when screen is removed.
17	BLU	GND SIG (Ground signal)	Ground for color signal	0 V	If open: No change to display. If short to ground: No change to display.
18	YEL	B SIG (Blue signal)	Blue color signal	0.2 V AC average in RGB color diagnostic mode	If open: Blue color missing (see ''RGB Color'' diagnostic). If short to ground: Blue color missing (see ''RGB Color'' diagnostic).
19	BRN	C SIG (Composite signal)	Composite video (vertical/horizontal) synchronizing signal	0.2 V AC average in RGB color diagnostic mode	If open: Picture rolls horizontally, colors still visible. If short to ground: Picture rolls horizontally, colors still visible.
20	GRY	SIG SH GND (Shield signal)	Shield for No. 8, 9, 17, 18, 19 terminals	0 V	If open: No change to display. If short to ground: No change to display.

Navigation display Inputs and Outputs for Connector B (10P)



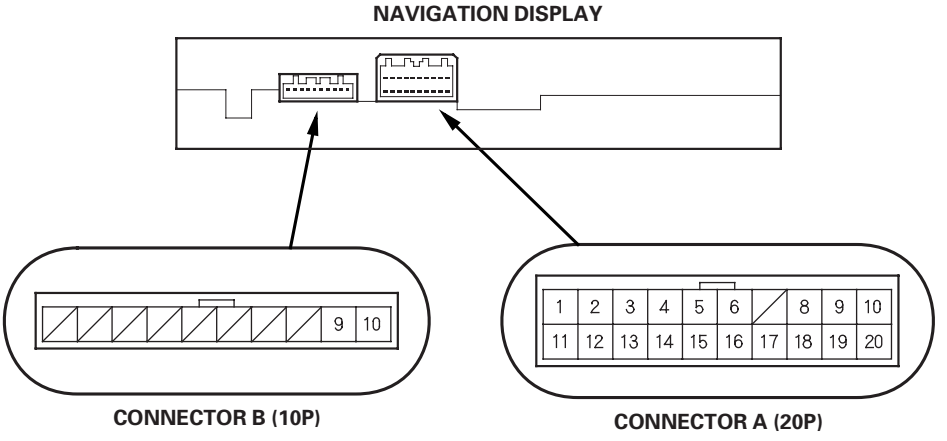
Wire side of female terminals

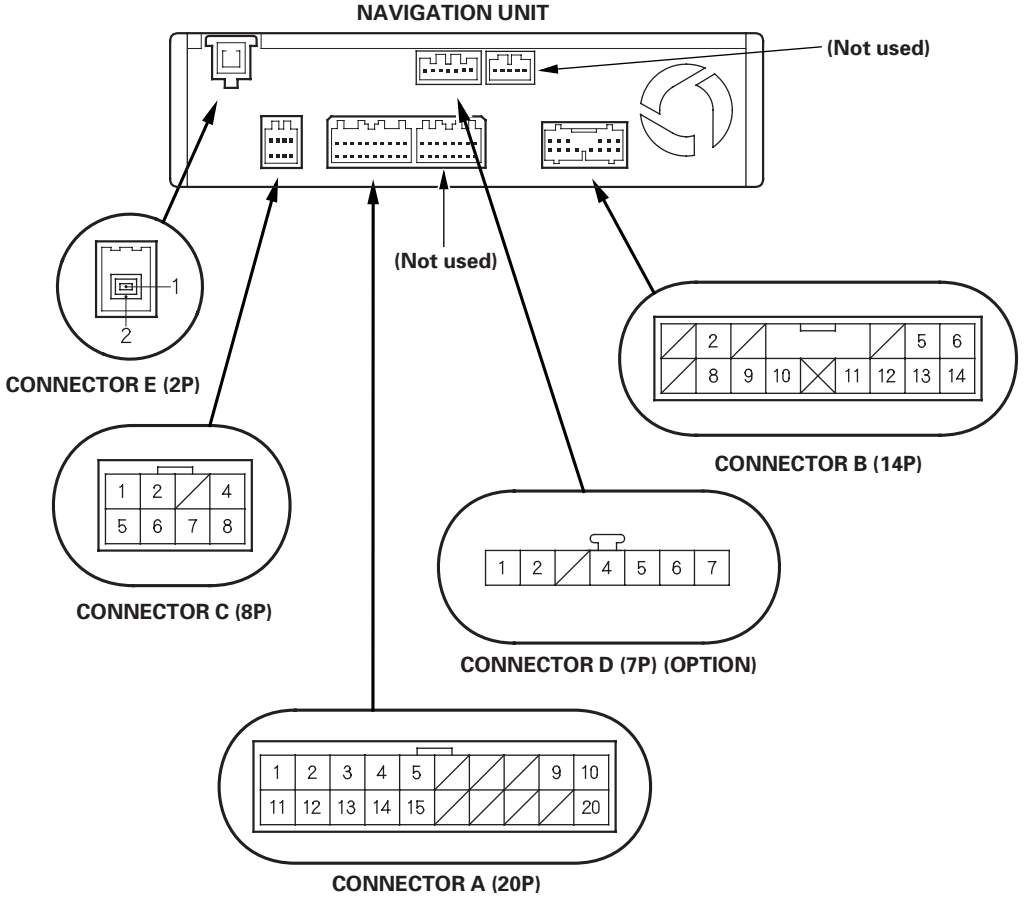
Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
9	GRN	DISP OPEN	Display open/close signal	0—3.3 V	If open: CD Eject/Load function does not work. If short to ground: CD Eject/Load function works.
10	GRN/RED	CD EJECT	CD eject signal	0—3.3 V	If open: Display can be opened or closed. If short to ground: Display cannot be opened or closed.

(cont'd)

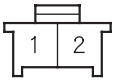
System Description (cont'd)

Navigation System Connector Locations

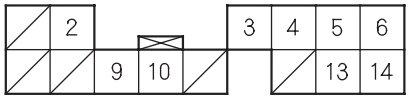




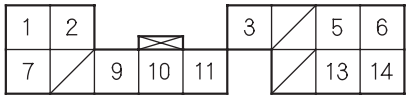
NAVIGATION SERVICE CHECK CONNECTOR



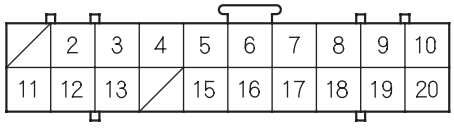
CD CHANGER CONNECTOR B (14P)



XM RECEIVER 14P CONNECTOR

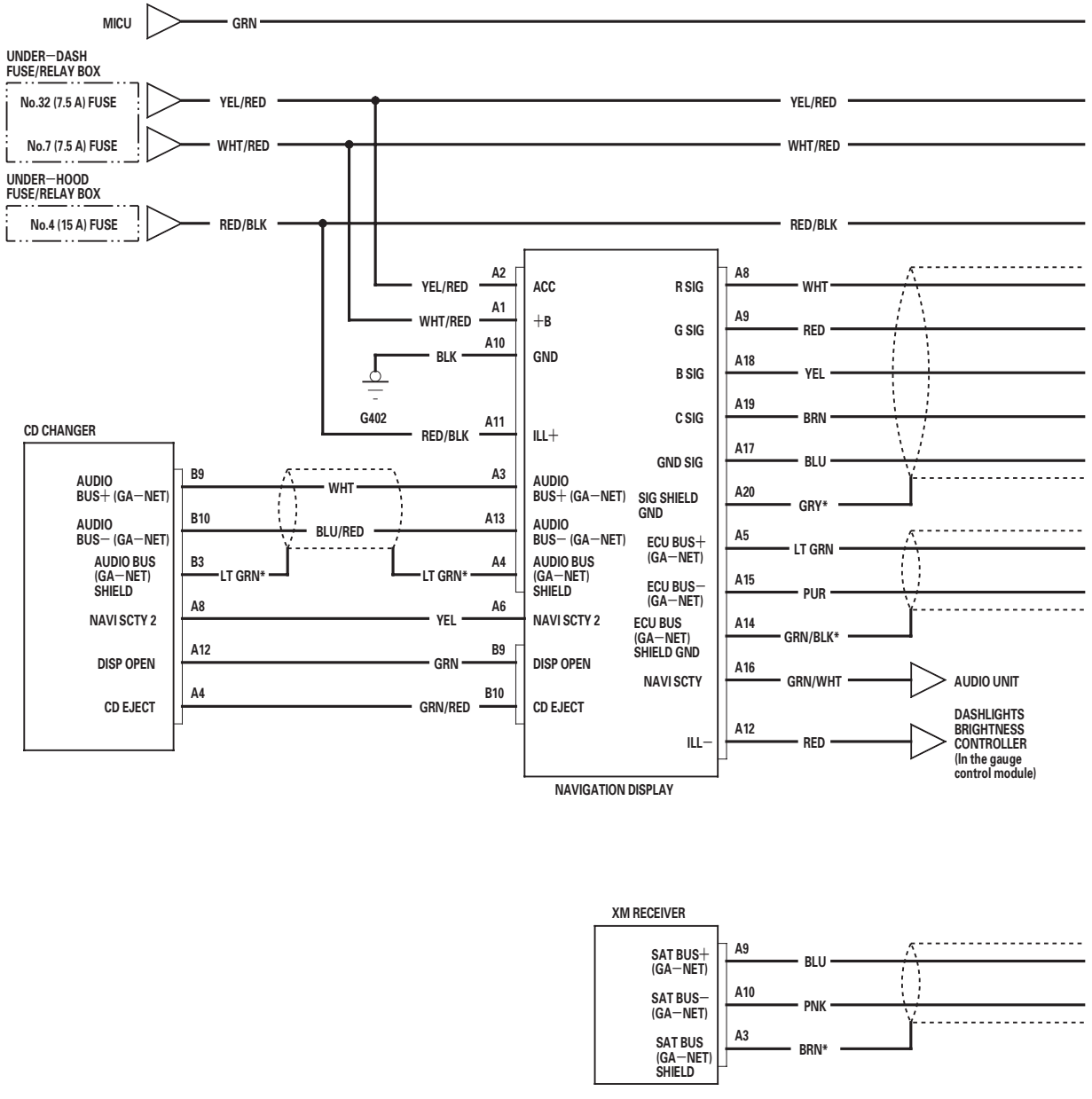


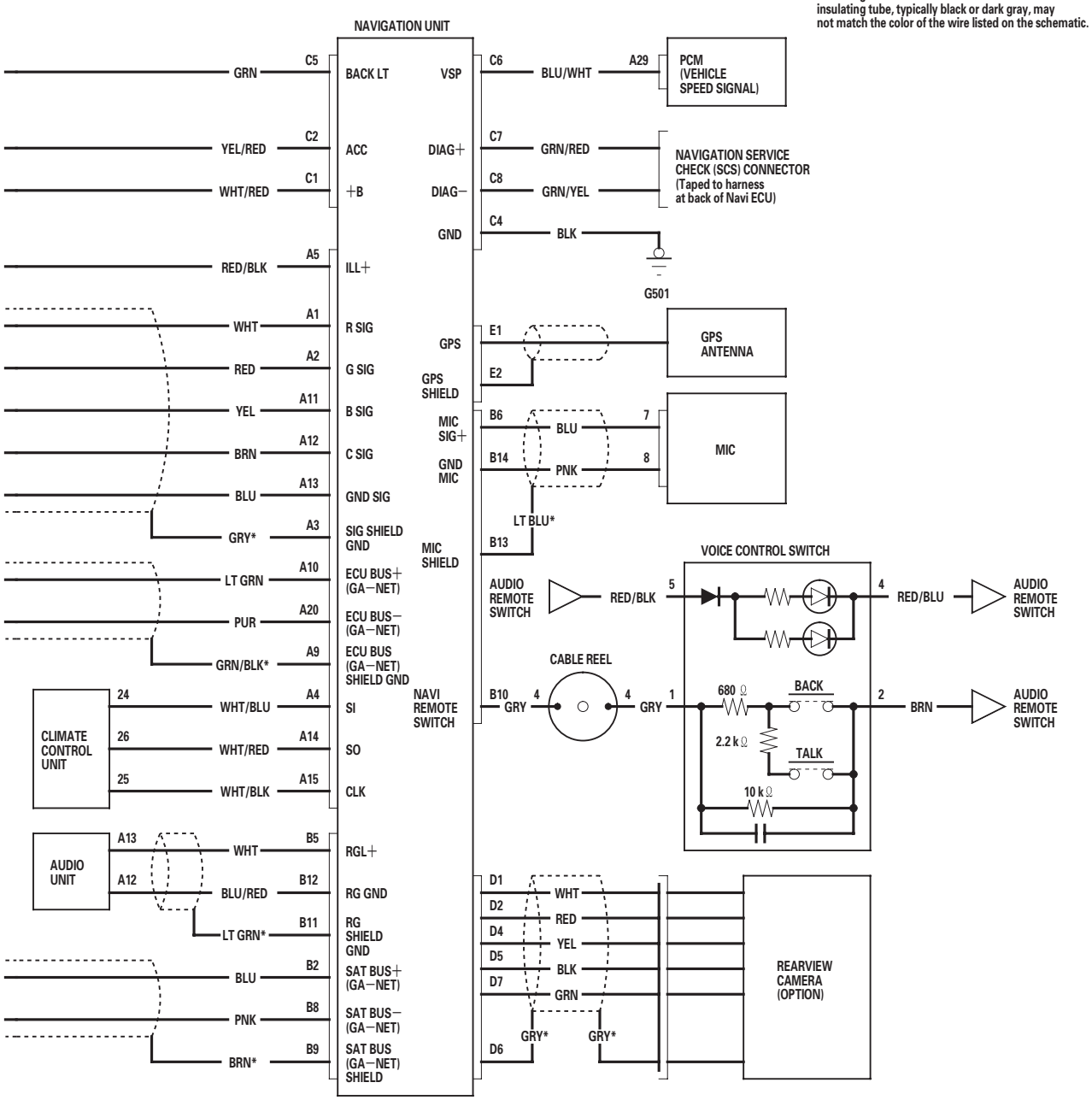
AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

Circuit Diagram




*: The shielded drain wires have a heat—shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.
NAVIGATION UNIT
GRN
C5
BACK LT
VSP
C6
BLU/WHT
A29
PCM (VEHICLE SPEED SIGNAL)
YEL/RED
C2
ACC
DIAG+
C7
GRN/RED
WHT/RED
C1
+B
DIAG−
C8
GRN/YEL
NAVIGATION SERVICE CHECK (SCS) CONNECTOR (Taped to harness at back of Navi ECU)
GND
C4
BLK
G501
RED/BLK
A5
ILL+
WHT
A1
R SIG
GPS
E1
GPS ANTENNA
RED
A2
G SIG
GPS SHIELD
E2
YEL
A11
B SIG
MIC SIG+
B6
BLU
7
MIC
BRN
A12
C SIG
GND MIC
B14
PNK
8
BLU
A13
GND SIG
LT BLU*
GRY*
A3
SIG SHIELD GND
B13
MIC SHIELD
VOICE CONTROL SWITCH
LT GRN
A10
ECU BUS+ (GA—NET)
AUDIO REMOTE SWITCH
RED/BLK
5
4
RED/BLU
AUDIO REMOTE SWITCH
PUR
A20
ECU BUS− (GA—NET)
GRN/BLK*
A9
ECU BUS (GA—NET) SHIELD GND
CABLE REEL
CLIMATE CONTROL UNIT
24
WHT/BLU
A4
SI
NAVI REMOTE SWITCH
B10
GRY
4
4
GRY
1
680 Ω
BACK
2
BRN
AUDIO REMOTE SWITCH
26
WHT/RED
A14
SO
2.2 kΩ
TALK
25
WHT/BLK
A15
CLK
10 kΩ
AUDIO UNIT
A13
WHT
B5
RGL+
D1
WHT
A12
BLU/RED
B12
RG GND
D2
RED
LT GRN*
B11
RG SHIELD GND
D4
YEL
D5
BLK
REARVIEW CAMERA (OPTION)
BLU
B2
SAT BUS+ (GA—NET)
D7
GRN
PNK
B8
SAT BUS− (GA—NET)
GRY*
GRY*
BRN*
B9
SAT BUS (GA—NET) SHIELD
D6

Symptom Troubleshooting

No picture is displayed

NOTE:
- Always make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.
- For problems with the rearview camera, do the rearview camera does not come on or work properly troubleshooting.
- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the audio system and the navigation system anti-theft codes.

1. Check the No. 7 (7.5 A) fuse and No. 32 (7.5 A) fuse in the under-dash fuse/relay box, and reinstall the fuse if it is OK.

   Is the fuse OK?

   YES—Go to step 2.
   NO—Replace the fuse and recheck. ■

2. Turn the ignition switch to ACC (I).

3. Operate the radio and listen to the audio.

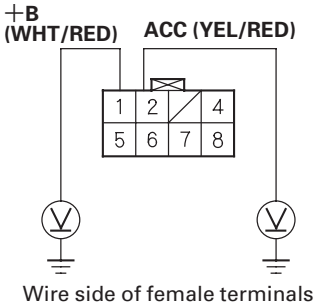
   Can you hear the audio?

   YES—Go to step 4.
   NO—Refer to audio system troubleshooting. ■

4. Turn the ignition switch ON (II).

5. Measure the voltage between body ground and navigation unit connector C (8P) terminals No. 1 and No. 2 individually.

NAVIGATION UNIT CONNECTOR C (8P)



Wire side of female terminals

Is there battery voltage?

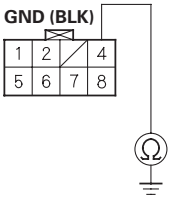
YES—Go to step 6.
NO—If the +B or ACC wire does not have voltage, repair open in the wire between the under-dash fuse/relay box and the navigation unit. ■

6. Turn the ignition switch OFF.

7. Disconnect the navigation unit connector C (8P).

8. Check for continuity between navigation unit connector C (8P) terminal No. 4 and body ground.

NAVIGATION UNIT CONNECTOR C (8P)



Wire side of female terminals

Is there continuity?

YES—Go to step 9.
NO—Repair open in the wire between the navigation unit and body ground (G501). ■

9. Reconnect the navigation unit connector C (8P).

10. Do the forced starting of the display (see page 23-138).

    Is the diagnosis menu of the picture diagnosis displayed?

    YES—Go into the Diagnostic mode and use the Navi System Link diagnostic (see page 23-121) to check the links. ■
    NO—Go to step 11.

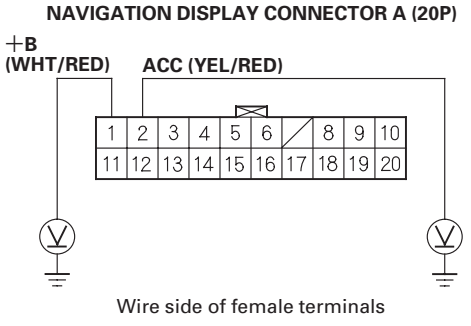
11. Shield the navigation display from the sun with your hand, and check that the display is back lit (only back light is ON.)

    Can you see the back light?

    YES—Replace the navigation unit (see page 23-139). ■
    NO—Go to step 12.

12. Turn the ignition switch ON (II).

13. Measure the voltage between body ground and navigation display connector A (20P) terminal No. 1 and No. 2 individually.



Is there battery voltage?

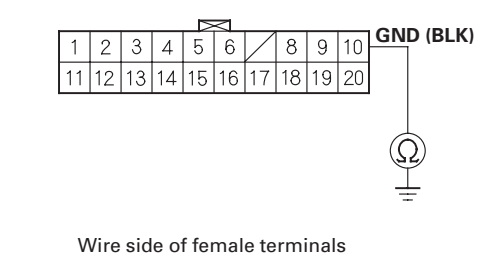
YES—Go to step 14.

NO—If the +B or ACC wire does not have voltage, Repair open in the wire between the under-dash fuse/relay box and the navigation unit. ■

14. Turn the ignition switch OFF.

15. Disconnect the navigation display connector A (20P).

16. Check for continuity between the navigation display connector A (20P) terminal No. 10 and body ground.



Is there continuity?

YES—Replace the navigation display unit. ■

NO—Repair open in the wire between the navigation display unit and body ground (G402). ■

Picture is missing a color or tone or is an odd color

NOTE:
- Always make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.
- Always check the navigation screen settings for brightness, contrast, black level and the color screen for map color and menu color.
- For problems with the rearview camera, do the rearview camera does not come on or work properly troubleshooting.
- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the audio system and the navigation system anti-theft codes.

1. Go into the Diagnostic Menu and use RGB Color test under Monitor Check (see page 23-122). Wiggle the harness and monitor the red, green, and blue circles.

   Are the red, green, and blue circles shown?

   YES—If the image flickers when you wiggle the harness, check for poor connections and pin fit. If the image does not change and the circles are OK. The system is OK at this time. ■

   NO—If any are missing, go to step 2.

2. Turn the ignition switch OFF.

3. Disconnect the navigation unit connector A (20P) and navigation display connector A (20P).

4. Check for loose terminals at navigation unit connector A (20P) and navigation display connector A (20P).

   Are there loose terminals?

   YES—Repair the terminal. ■

   NO—Go to step 5.

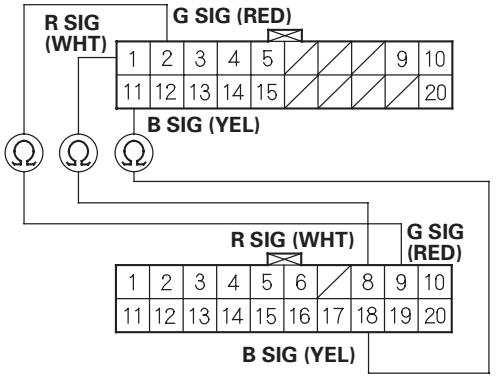
(cont'd)

Symptom Troubleshooting (cont'd)

5. Check for continuity between the appropriate terminals of navigation unit connector A (20P) to navigation display connector A (20P) based on the missing color(s).

Missing color circle	Navigation unit connector A (20P)	Navigation display connector A (20P)	Wire color
Blue	A11	A18	YEL
Green	A2	A9	RED
Red	A1	A8	WHT

NAVIGATION UNIT CONNECTOR A (20P)
Wire side of female terminals



NAVIGATION DISPLAY CONNECTOR A (20P)
Wire side of female terminals

Is there continuity?

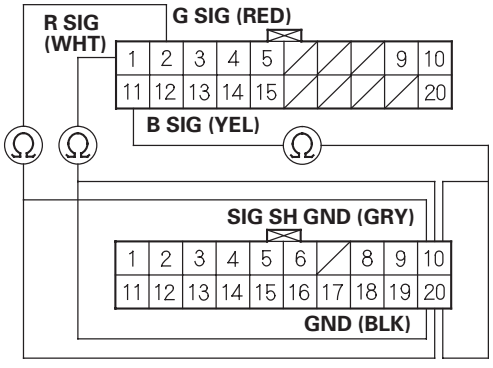
YES—Go to step 6.

NO—There is an open in the circuit between the navigation display and the navigation unit. Check for poor connections or loose terminals at the display and navigation units. If a poor connection or loose terminal is found, replace the affected shielded harness. ■

6. Check for continuity between the appropriate terminals of navigation unit connector A (20P) and navigation display connector A (20P) based on the missing color(s).

Missing color circle	Navigation unit connector A (20P)	Navigation display connector A (20P)
Blue	A11	A10, A20
Green	A2	A10, A20
Red	A1	A10, A20

NAVIGATION UNIT CONNECTOR A (20P)
Wire side of female terminals



NAVIGATION DISPLAY CONNECTOR A (20P)
Wire side of female terminals

Is there continuity?

YES—There is a short to body ground in the circuit between the navigation display and the navigation unit. Replace the affected shielded harness. ■

NO—Replace the navigation unit. If the problem is still unresolved, replace the navigation display. ■

Picture has lines or rolls

NOTE:
- Always make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.
- Always compare the screen image to a known-good vehicle. If the screen looks the same, inform the client that it is a characteristic of the system.
- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the audio system and the navigation system anti-theft codes.

1. Check for electronic aftermarket accessories (possibly hidden) mounted near the navigation display or the navigation unit.

   Are there any electronic accessories?

   YES—Disable the accessories, and recheck. ■

   NO—Go to step 2.

2. Start the vehicle and observe the navigation picture.

   Is the picture scrolling horizontally (left to right or right to left)?

   YES—Check for an open or short to ground in the C SIG wire from navigation unit connector A (20P) terminal No. 12 to navigation display connector A (20P) terminal No. 19. Also check for a short to ground between navigation display connector A (20P) terminal No. 19 and terminal No. 20. ■

   NO—Go to step 3.

3. Go into the Diagnostic mode and use RGB Color test under Monitor Check (see page 23-122).

   Is the picture missing a red, green or blue color circle?

   YES—Do the troubleshooting for the picture is missing a color or tone or is an odd color (see page 23-101). ■

   NO—Go to step 4.

4. Turn the ignition switch ON (II) and observe the navigation picture.

   Did the image improve?

   YES—Check for sources of electrical noise, such as poor battery connection, alternator, defective battery, aftermarket accessories or cell phone, poor pin fits at the display or control unit. ■

   NO—Go to step 5.

5. Substitute a known-good navigation display, and recheck.

   Is the picture OK?

   YES—Replace the navigation display. ■

   NO—Replace the navigation unit (see page 23-139). ■

Symptom Troubleshooting (cont'd)

Special Tools Required
SCS service connector 07PAZ-0010100

Navigation display buttons do not work or respond properly

NOTE:
- Always make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.
- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the audio system and the navigation system anti-theft codes.
- Make sure that the correct colored DVD and version are installed.
- Inspect the DVD for damage.

1. Turn the ignition switch ON (II).

   Does the navigation display turn on?

   YES—Go to step 2.

   NO—Refer to troubleshooting for no picture is displayed (see page 23-100). ■

2. Try several navigation buttons and touch screen buttons.

   Do all the buttons function properly?

   YES—The system is OK at this time. ■

   NO—
   - If all navigation hard buttons and touch screen buttons are inoperative, go to step 3.
   - If only some navigation buttons operate normally, while others do not, go into the Diagnostic mode and use Touch Panel diagnostic under Monitor Check (see page 23-122) and if necessary, Hard Key diagnostic under Unit Check (see page 23-124).

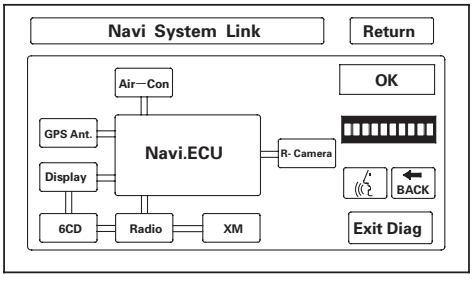
3. Try to load and play a CD in the CD changer.

   Does the CD display on the audio unit when the CD button is pushed?

   YES—Go to step 9.

   NO—Go to step 4.

4. Do the forced starting of the display (see page 23-138).



Are all the connections normal (green)?

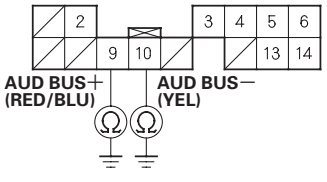
YES—Check the operation of the navigation screen, press Return. Then press Monitor Check. Then press Touch Panel Check. If any the buttons on the screen do not respond properly, replace the navigation display. ■

NO—
- The display, 6CD, radio and the XM are RED: Go to step 4.
- Only some of the links are RED: Go to step 9.

5. Remove the radio without disconnecting the connectors.

6. Check for continuity between B9 and B10 of the audio unit connector B (14P) and body ground.

AUDIO UNIT CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

YES—Go to step 7.

NO—Check all pin fits, and recheck operation. If the circuit is OK, substitute a navigation control unit. If there is no change, replace the navigation display unit. ■

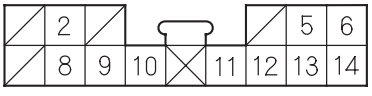
7. In this order, disconnect the connectors one at a time until you no longer have continuity to ground.

   - XM receiver A (14P) connector.
   - Navigation control unit B (14P) connector.
   - Navigation control unit A (20P) connector.
   - Navigation display A (20P) connector.
   - CD changer B (14P) connector.
   - CD changer A (18P) connector.
   - Audio unit B (14P) connector.

8. On the connector that you disconnected and lost continuity, check for continuity to ground on each terminal listed.

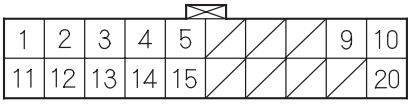
   - Navigation control unit B2 and B8.
   - Navigation control unit A10 and A20.
   - Navigation display A3 and A13.
   - CD changer A5 and A15.

NAVIGATION UNIT CONNECTOR B (14P)



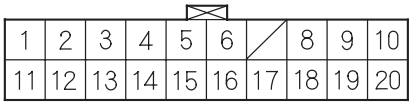
Wire side of female terminals

NAVIGATION UNIT CONNECTOR A (20P)



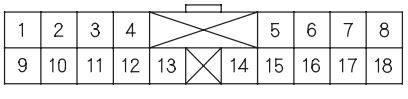
Wire side of female terminals

NAVIGATION DISPLAY CONNECTOR A (20P)



Wire side of female terminals

CD CHANGER CONNECTOR A (18P)



Wire side of female terminals

Is there continuity to ground?

YES—Replace the shorted harness. ■

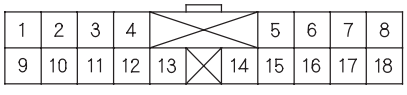
NO—Replace the unit that is shorted to ground. ■

9. Check for continuity between the CD changer connector B, navigation display connector A, and navigation control unit connector A according to the table.

CD changer connector	Navigation display connector	Wire color
B9	A3	WHT
B10	A13	BLU/RED

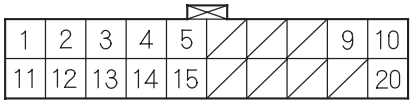
Navigation display connector	Navigation control unit connector	Wire color
A5	A10	LT GRN
A15	A20	PUR

CD CHANGER CONNECTOR A (18P)



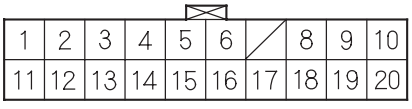
Wire side of female terminals

NAVIGATION UNIT CONNECTOR A (20P)



Wire side of female terminals

NAVIGATION DISPLAY CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Check all pin fits and recheck operation. If the circuit is OK, substitute a navigation control unit. If there is no change, replace the navigation display unit. ■

NO—Replace the faulty harness. ■

Symptom Troubleshooting (cont'd)

GPS icon is white or not shown

NOTE:
- Make sure the vehicle is parked outside and away from buildings.
- Refer to GPS Information (see page 23-127) for realtime satellite reception display.
- With good reception, the icon is normally green.

1. Check for metallic window tint on the windshield and electronic aftermarket accessories (possibly hidden) mounted near the GPS antenna or the navigation unit.

   Is there metallic window tint or electronic accessories?

   YES—Remove tint or the accessories and recheck. ■

   NO—Go to step 2.

2. Go into the Diagnostic Menu and use the ''Navi System Link'' test (see page 23-121) to check the GPS antenna.

   Is the ''GPS Ant'' icon red?

   YES—Use the ''Navi ECU'' test under Unit Check (see page 23-124) to check for a kinked, crushed, or disconnected GPS antenna wire. If necessary, try a known-good GPS antenna. If icon is still red, replace the navigation unit (see page 23-139). ■

   NO—Check that nothing is blocking the GPS antenna located behind the gauge assembly and recheck. Substitute a known-good navigation unit, and recheck. ■

   - If the system is gone, replace the GPS antenna.
   - If the system is still present, substitute a known-good navigation unit and recheck. If the symptom is gone, replace the original navigation unit (see page 23-139).

Voice guidance cannot be heard is broken up, or there is too much static

NOTE:
- Always check that the volume setting and voice feedback are turned ON.
- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the audio system and the navigation system anti-theft codes.
- After troubleshooting, enter the anti-theft codes for the audio system and the navigation system.
- Make sure the correct colored DVD and DVD version are installed.
- Inspect the DVD for damage.

1. Press the display unit SET-UP button.
2. Check the volume setting for the navigation system.

   Is it set to OFF?

   YES—Set the volume to an audible level. ■

   NO—Go to step 3.
3. Check the radio operation.

   Can you hear the radio?

   YES—Go to step 4.

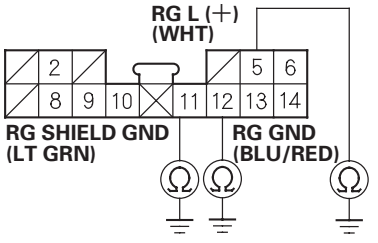
   NO—Troubleshoot the audio system. ■
4. Go into the Diagnostic Menu and use the ''Navi System Link'' test (see page 23-121) to check the radio.

   Is the ''Radio'' icon red?

   YES—Troubleshoot the audio system. ■

   NO—Go to step 5.
5. Turn the ignition switch OFF.
6. Disconnect the navigation unit connector B (14P) and the audio unit connector A (20P).
7. Check for continuity between body ground and navigation unit connector B (14P) terminals No. 5, No. 11, No. 12 individually.

NAVIGATION UNIT CONNECTOR B (14P)



Wire side of female terminals

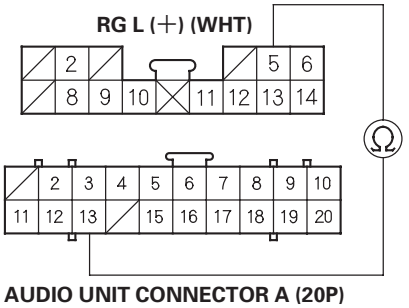
Is there continuity?

YES—Replace the affected shielded harness. ■

NO—Go to step 8.

8. Check for continuity between navigation unit connector B (14P) terminal No. 5 and the audio unit connector A (20P) terminal No. 13.

NAVIGATION UNIT CONNECTOR B (14P)
Wire side of female terminals



AUDIO UNIT CONNECTOR A (20P)
Wire side of female terminals

Is there continuity?

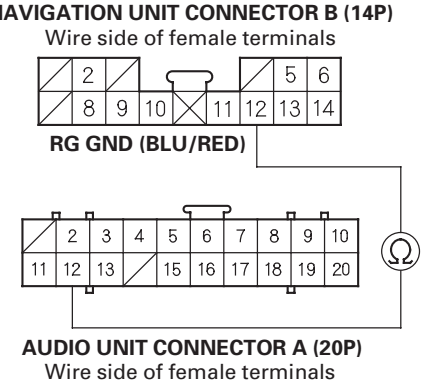
YES—Go to step 9.

NO—There is an open in the circuit between the navigation unit and audio unit. Check for poor connections or loose terminals at the audio and navigation units. If no poor connection or loose terminal is found, replace the affected shielded harness. ■

(cont'd)

Symptom Troubleshooting (cont'd)

9. Check for continuity between navigation unit connector B (14P) terminal No. 12 and the audio unit connector A (20P) terminal No. 12.



Is there continuity?

YES—Go to step 10.

NO—There is an open in the circuit between the navigation unit and audio unit. Check for poor connections or loose terminals at the audio and navigation units. If no poor connection or loose terminal is found, replace the affected shielded harness. ■

10. Substitute a known-good audio unit, and recheck.

Is the system OK?

YES—Replace the audio unit. ■

NO—Replace the navigation unit (see page 23-139). ■

Voice control does not work/respond

NOTE:
- Always make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.
- Before assuming that a voice complaint is hardware related, ensure that the voice control system is being operated correctly.
  - Make sure you are on the correct screen when trying to issue a voice command. For instance, the command ''Find the nearest Italian Restaurant'' only works on a Map screen. (See the Navigation System Manual for a complete list of allowed voice commands for the information being displayed.)
  - Close the windows and sunroof.
  - Set the fan speed to low (1 or 2).
  - Adjust the air flow from the air conditioning vents so that they do not blow against the microphone on the ceiling.
  - Pause after pressing the TALK button, then give a voice command clearly in a natural speaking voice. If the system cannot recognize your command, speak louder.
  - If the microphone picks up voices other than yours, the system may not interpret your voice commands correctly.
  - If you speak a command with something in your mouth, or your voice is too husky, the system may misunderstand your command.
- Always check the connectors for poor connections or loose terminals.
- Check for a loose roof console microphone; if it's loose, tighten it.
- Before troubleshooting, make sure you have the audio system and the navigation system anti-theft codes.
- After troubleshooting, enter the anti-theft codes for the audio system and the navigation system.
- Determine if the problem only happens to one person, or everyone who uses the system.
- If the system only has a problem with one person's voice, this should be considered a system limitation.

1. Go into the Diagnostic Menu and use the Mic Level test under Functional Setup (see page23-131) to check the operation of the TALK and BACK buttons.

   Are the TALK and BACK buttons operational?

   YES—Go to step 2.

   NO—Check for an open or short to ground on navigation unit connector B (14P) terminal No. 10. ■

2. Use the Mic Level diagnostic under Functional Setup (see page 23-131) to check the operation of the microphone.

   Is the microphone operational?

   YES—Check the operation of the voice control system (see the Navigation System Manual) and compare system operation with a known-good vehicle. ■

   NO—Check for a loose front map light (microphone) assembly. If OK, check for an open or short to ground on navigation unit connector B (14P) terminals No. 6 and No. 14. If the wire is OK, substitute a known-good microphone assembly. ■

Vehicle position icon constantly leaves road, moves erratically, or is very far from actual position

NOTE:
- This is not the same condition as when driving off-road (or on a fire or logging road). This condition is caused by a loss of map matching from a bad sensor input. Check for aftermarket or other objects that can block the GPS signal. Always perform Map matching (see page 23-68), before proceeding with the troubleshooting.
- Always make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.

1. Check the GPS icon on the navigation picture.

   Is the GPS icon on the map screen?

   YES—Do the troubleshooting for GPS icon is white or not shown (see page 23-106). ■

   NO—Go to step 2.

2. Go into the Diagnostic Menu and use the Yaw Rate test (see page 23-129) to check the yaw rate sensor.

3. Go into the Diagnostic Menu and use the Car Status test (see page 23-126) to check the vehicle speed pulse.

   Are the yaw rate sensor and vehicle speed pulse OK?

   YES—The problem may be a normal characteristic. Check to see if the problem occurs in the same place. If it does, the problem could be in the database. Compare to a known-good vehicle under the same conditions. If you can duplicate the problem, report it. Refer to the Customer Assistance section of the Navigation User's Guide, ''Reporting Errors''.

   NO—If the problem is the yaw rate sensor, replace the navigation unit (see page 23-139). If the problem is the vehicle speed pulse, troubleshoot the vehicle speed signal circuit. ■

Symptom Troubleshooting (cont'd)

DVD screen error messages

Diagnostic Test: Car Status

NOTE:
- Refer to the General Troubleshooting for a list of common DVD screen error messages and the probable causes (see page 23-137).
- The following Troubleshooting is for the error messages shown on the error message table (see page 23-137).

1. Check the DVD-ROM reading surface for scratches and finger prints.

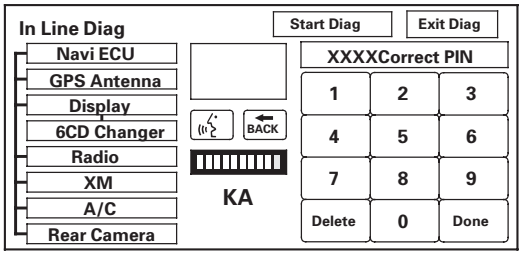
   Are there any scratches or finger prints on the DVD-ROM reading surface?

   YES—Clean or replace the DVD-ROM (see page 23-138).■

   NO—If the problem occurs occasionally when the system is cold, this is normal. If the problem occurs frequently when driving, replace the navigation unit (see page 23-139).■

System always comes up in in-line diagnostic mode

1. When a navigation control unit is powered up for the first time at the factory, the ''factory diagnosis'' screen (In Line Diag) appears. Normally the factory performs the steps necessary to verify proper operation and terminate the ''factory diagnostic''. Until the proper confirmation sequence is performed, the screen will appear every time the vehicle is started.



2. Follow the steps to prevent the screen from showing up in the future:

   - Hold down the buttons (Menu+Map/Guide+Cancel) for about 5 seconds (the ''Select Diagnosis Items'' screen will appear).
   - Hold down the Map/Guide button for 5—10 seconds (A screen with a ''Complete'' button, will appear).
   - Touch ''Complete'', and then the ''Return'' button (the system may re-boot).
   - Restart the vehicle, and confirm normal operation by completing the ''PDI of the navigation system'' Service Bulletin.

Navigation Cannot control HVAC by voice command

NOTE:
- Always check and resolve all CAN DTCs before troubleshooting the navigation system.
- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the navigation system anti-theft codes.
- After troubleshooting, enter the anti-theft codes for the navigation system.
- Verify that the correct navigation unit is installed for this model. Go into the Diagnostic mode and use Version (see page 23-120).
- Always make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.

1. Turn the ignition switch ON (II).

2. Check the navigation system function.

   Does the navigation system function normally in all other aspects of operation?

   YES—Go to step 3.
   NO—Refer to the navigation symptom troubleshooting. Resolve any other problems and then retest the system function. ■

3. Check the HVAC system function.

   Does the HVAC system function normally in all other aspects of operation?

   YES—Go to step 4.
   NO—Refer to HVAC symptom troubleshooting. Resolve any other problems and then retest the system function. ■

4. Go into the navigation diagnostic mode, then select Navi System (see page 23-120).

   Is the Air-con icon and link RED?

   YES—Go to step 5.
   NO—Substitute a known-good climate control unit, navigation control unit and navigation display control unit one at a time, in this order. Retest the system function after each unit substitution until the problem is resolved, then replace the malfunctioning unit. ■

5. Disconnect the climate control unit connector (30P) and the navigation control unit connector A (20P).

6. Check for continuity between the navigation control unit connector A (20P) and climate control unit connector (30P) as shown.

Climate control unit connector (30P) terminal	Wire Color	Navigation control unit connector A (20P) terminal	Desired test result
No. 26	WHT/ RED	No. 14	Continuity
No. 24	WHT/ BLU	No. 4	Continuity
No. 25	WHT/ BLK	No. 15	Continuity

   Is there continuity between all wires?

   YES—Go to step 7.
   NO—Repair open on the affected wire(s) between the climate control unit connector (30P) and the navigation control unit connector A (20P). ■

7. Check for continuity between each wire in the climate control unit connector (30P) as shown.

Climate control unit connector (30P) terminal	Wire Color	Check for continuity to all other terminals	Desired test result
No. 26	WHT/ RED		No continuity
No. 24	WHT/ BLU		No continuity
No. 25	WHT/ BLK		No continuity

   Is there continuity to any other wire?

   YES—Repair short between the affected wire(s) between the climate control unit connector (30P) and the navigation control unit connector A (20P). ■
   NO—Go to step 8.

(cont'd)

Symptom Troubleshooting (cont'd)

8. Check each wire for continuity to body ground as shown.

Climate control unit connector (30P) terminal	Wire Color	Body ground	Desired test result
No. 26	WHT/ RED	Ground	No continuity
No. 24	WHT/ BLU	Ground	No continuity
No. 25	WHT/ BLK	Ground	No continuity

Is there continuity to ground on any wire?
YES—Repair short to ground on the affected wire(s). ■
NO—Go to step 9.

9. Turn the ignition switch ON (II).

10. Check each wire for short to power as shown.

Climate control unit connector (30P) terminal	Wire Color	Body ground	Desired test result
No. 26	WHT/ RED	Ground	0.2 V or less
No. 24	WHT/ BLU	Ground	0.2 V or less
No. 25	WHT/ BLK	Ground	0.2 V or less

Is there more than 0.2 V to ground on any wire?
YES—Repair the short to power on the affected wire(s). ■
NO—Go to step 11.

11. Turn the ignition switch OFF.

12. Substitute and a known-good climate control unit, reconnect all connectors disconnected during testing and retest the system function.
Does the problem go away?
YES—Replace the original climate control unit. ■
NO—Go to step 13.

13. Substitute a known-good navigation control unit and retest the system function.
Does the problem go away?
YES—Replace the original navigation control unit. ■
NO—Substitute a known-good navigation display unit with the same navigation software loaded. If the problem goes away, replace the original navigation display unit. ■

Display day/night mode does not work

NOTE:
- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the navigation system anti-theft codes.
- After troubleshooting, enter the anti-theft codes for the navigation system.
- Always check for and resolve all CAN DTCs before troubleshooting the navigation system.
- Verify that the correct navigation unit is installed for this model. Go into the Diagnostic mode and use Version. (see page 23-133).
- Always make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.
- Full brightness on the instrument panel brightness control causes the system to stay in the day mode, even when the lights are on.

1. Adjust the A/C using voice command.
Can you control the A/C by voice command?
YES—Go to step 2.
NO—Do navigation cannot control A/C by voice troubleshooting.
2. Make sure the instrument panel brightness control is not on full brightness. Turn the headlights on, and adjust the dash brightness to the middle range.
3. Change the day/night mode under Set-up to Auto and recheck.
Does the display change to day and night modes when turning the headlights on and off?
YES—Intermittent failure. The system is OK at this time. Check for loose or poor connections. ■
NO—Go to step 4.
4. Go into the Diagnostic Menu and use the Car Status test to check for an ILL and illum cancel signals (see page 23-126).
Is the ILL signals OK?
YES—Go to step 5. ■
NO—Check the ILL+ circuit between the navigation unit and No. 4 (15 A) fuse in the under-hood fuse/relay box. ■
5. Check the illum cancel signal.
Is the illum cancel signal OK?
YES—The system is OK at this time.
NO—Substitute a known-good navigation unit, HVAC unit, and gauge unit, one at a time, in this order. Retest the system function after each unit substitution until the problem is resolved, then replace the malfunctioning unit.

System locks up or freezes constantly

NOTE:
- Always make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.

1. Turn the ignition switch ON (II).

2. Remove the DVD and check the DVD reading surface for scratches and finger prints.

   Are there any scratches or finger prints on the DVD-ROM reading surface?

   YES—Clean or replace the DVD-ROM (see page 23-138) and recheck. ■

   NO—Go to step 2.

3. Turn the ignition switch OFF, and then back ON (II).

   Does the system reboot?

   YES—The system is OK at this time. Go into the Diagnostic mode and use the ''Unit Check'' diagnostic (see page 23-126) to check the navigation unit and display panel control unit status. If any status are NG, replace the affected units. ■

   NO—Replace the navigation unit. ■

Vehicle icon moves by itself or spins when parked

NOTE:
- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the navigation system anti-theft codes.
- After troubleshooting, enter the anti-theft code, and initialize the navigation system.

1. Start the engine.

2. From the main menu, select places, then select any destination, and begin the trip.

3. With the vehicle parked, watch the vehicle icon on the display.

   Does the vehicle position icon move by itself?

   YES—Go to step 4.

   NO—The system is OK at this time. ■

4. Go into the Diagnostic mode and select ''Demo Mode'', under Functional Setup.

   Is ''Demo Mode'' set to ''ON''?

   YES—Set the Demo mode to ''OFF''. ■

   NO—Replace the navigation unit (see page 23-139). ■

Symptom Troubleshooting (cont'd)

Navigation display stays on with ignition switch OFF

NOTE:
- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the navigation system anti-theft code.
- After troubleshooting, re-enter the anti-theft code, and re-initialize the navigation system.
- Check for aftermarket accessories that use the same power circuit. A feedback can cause this problem.

1. Remove the key from the ignition.

   Does the navigation screen stay on?

   YES—Go to step 2.

   NO—Intermittent failure. The system is OK at this time. Check for loose or poor connections. ■

2. The vehicle may have been used as a demonstration vehicle at an event like an auto show. In these events, power is often jumpered to the navigation system so that the ignition key is not needed in the vehicle. At the end of the show, the jumper wire may not have been removed. Check the navigation unit connector C (8P) for a ''non-factory'' jumper wire in series with the factory cable.

   Is there a jumper wire?

   YES—Remove the jumper wire, and re-test. Return the jumper wire to Tech Line. ■

   NO—Go to step 3.

3. The navigation display or navigation unit may have been jumpered to allow the navigation system to run without the ignition key.

   Does the system function with the ignition switch off?

   YES—Go to step 4.

   NO—Go to step 5.

4. Remove the navigation display and check to see if the display unit connector A (20P) has a non-factory jumper wire in series with the factory connector.

   Is there a jumper wire?

   YES—Remove the jumper wire, and re-test. ■

   NO—Go to step 5.

5. Check if the audio unit works.

   Does the audio unit work with the ignition switch off?

   YES—Troubleshoot the ACC circuit for a short to power with another circuit. ■

   NO—Replace the navigation unit (see page 23-139). ■

Navigation cannot control audio system

NOTE:
- Always make sure the correct DVD color and version are install.
- Check any official Honda service website for more service information about the navigation system.

1. Make sure the anti-theft code for the audio system is entered.

2. Go into the Diagnostic Menu and use the Navi System Link test (see page 23-121).

   Are Radio and 6CD icons red?

   YES—Do the troubleshooting for the voice guidance cannot be heard (see page 23-107). ■

   NO—Go to step 3.

3. Substitute a known-good navigation unit (see page 23-139), and recheck.

   Can the navigation control audio system?

   YES—Replace the navigation unit (see page 23-139). ■

   NO—Do the audio system troubleshooting. ■

Symptom Troubleshooting (cont'd)

Navigation cannot control XM radio

NOTE:
- Always make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.

1. Go into the Diagnostic Menu and use the Navi System Link test (see page 23-121).

   Is the XM icon red?

   YES—Check the connector at the XM receiver and navigation unit 20P connector. ■

   NO—Go to step 2.

2. Substitute a known-good navigation unit (see page 23-139), and recheck.

   Can the navigation control the XM radio?

   YES—Replace the navigation unit (see page 23-139). ■

   NO—Do the audio system troubleshooting. ■

Navigation frequently asks for anti-theft code and needs GPS initialization

NOTE:
- Always make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.

1. Check for battery voltage on navigation unit connector C (8P) terminals No. 1 and No. 2.

   Is there battery voltage?

   YES—Replace the navigation unit. ■

   NO—Repair the circuits. ■

CDs cannot be inserted and/or ejected

1. Press the OPEN/CLOSE button to open the navigation display.
2. Remove the navigation display.
3. Check voltage on CD changer connector A (18P) terminal No. 12 to body ground.

   Is there battery voltage?

   YES—Go to step 4.

   NO—Check the connections at the CD changer. If OK, replace the CD changer. ■
4. Disconnect the CD changer connector A (18P) and Navigation display connector B (10P). Check for continuity between connector A terminal No. 12 and connector B terminal No. 9.

   Is there continuity?

   YES—Substitute a known-good navigation display. If the problem is repaired, replace the navigation display. ■

   NO—Repair open in the wire between the CD change and the navigation display. ■

Symptom Troubleshooting (cont'd)

Display can be opened and/or closed even when a CD is being inserted or ejected

1. Go into the Diagnostic Menu and use the ''Navi System Link'' test (see page 23-121) to check the connection between the navigation display and the CD changer.

   Is the ''6 CD'' icon red?

   YES—Go to step 2.

   NO—Go to step 3.

2. Check to see if the navigation display connector B (10P) and the CD changer connector A (18P) are connected securely.

   Are the connectors connected securely?

   YES—Check open in the wire between the navigation display connector B (10P) terminal No. 10 and the CD changer connector A (18P) terminal No. 4. If open, repair the wire. ■

   NO—Reconnect the connectors. ■

3. Substitute a known-good navigation display, and check to see if the display and the CD changer work normally.

   Do the display and the CD changer work normally?

   YES—Replace the navigation display (see page 23-141). ■

   NO—Replace the CD changer (see page 23-58). ■

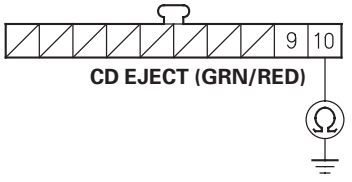
OPEN/CLOSE function of the display does not work

1. Turn the ignition switch OFF.

2. Disconnect the navigation display connector B (10P) and CD changer connector A (18P).

3. Check for continuity between navigation display connector B (10P) terminal No. 10 and body ground.

NAVIGATION DISPLAY CONNECTOR B (10P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between navigation display connector B (10P) terminal No. 10 and CD changer connector A (18P) terminal No. 4. ■

NO—Go to step 4.

4. Substitute a known-good navigation display, and check to see if the display opens and closes normally.

   Does the display work normally?

   YES—Replace the navigation display (see page 23-141). ■

   NO—Replace the CD changer (see page 23-58). ■

Navigation display will not close

1. Check the CD door. Look for foreign objects, stuck CD, broken or sticking door.

   Is the CD door OK?

   YES—Go to step 2.

   NO—Repair/replace the CD changer. ■

2. Remove the CD changer (see page 23-58). Check the voltage on the navigation display connector B (10P) terminal No. 10.

   Is there about 3.0 V?

   YES—Check the connections on connector B (10P) terminal No. 10 at the navigation display unit. If OK, substitute a known-good navigation display and recheck. If the problem is repaired, replace the navigation display (see page 23-141). ■

   NO—Go to step 3.

3. Disconnect the navigation display connector B (10P) and the CD changer connector A (18P). Check for continuity to body ground on terminal No. 4 of the CD changer connector.

   Is there continuity?

   YES—Repair short in the wire between the navigation display and the CD changer. ■

   NO—Replace the CD changer (see page 23-58). ■

Navigation display does not open or opens part way

1. Press the Open/Close button.

   Does a beep sound?

   YES—Check the navigation display for foreign objects. If there are none, substitute a known-good navigation display and recheck. If the problem is repaired, replace the original navigation display (see page 23-141). ■

   NO—Remove the navigation display and check for loose connections to the display. If the connections are OK, substitute a known-good navigation display and recheck. If the problem is repaired, replace the navigation display (see page 23-141). ■

System Diagnostic Mode

Start-up procedure and Diagnosis Menu

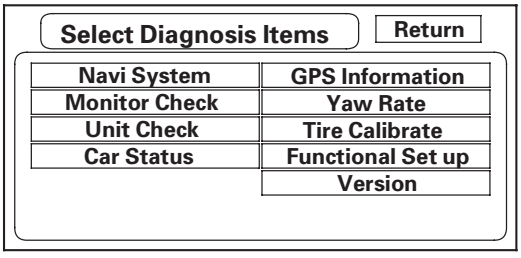
There are two ways to enter the diagnostic mode:

1. Connect the SCS service connector to the navigation service connector located in the trunk. Turn the ignition switch to the ON (II) position. The display will go directly to the diagnostic menu screen.

   NOTE: When finished troubleshooting, make sure to remove the SCS service connector.

2. Turn the ignition switch ON (II). Use the navigation display hard buttons, press and hold the 3 buttons (Menu, Map/Guide, and cancel), and keep them pressed for about 5 seconds. The display screen will go directly to the Select Diagnosis Items menu.

DIAGNOSTIC MENU SCREEN



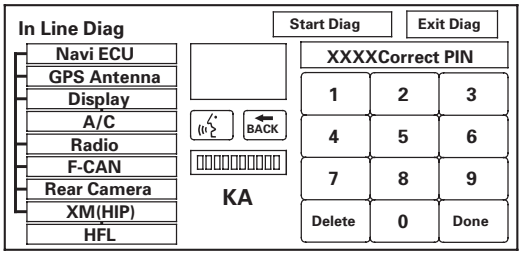
3. After the display changes to the Diagnostic items menu, select the item you want to check, and the diagnostic will start. To return to the previous screen, select ''Return''.

   - Navi System (Link)
   - Monitor Check
   - Unit Check
   - Car Status
   - F-CAN (System link)
   - GPS Information
   - Yaw Rate
   - Tire Calibrate
   - Functional Setup
   - Version

Factory diagnostic screen ''In Line Diag''

NOTE: If the vehicle left the factory in the factory diagnosis mode, you will see this screen every time you turn on the ignition.

When a navigation control unit is powered up for the first time at the factory, the ''factory diagnosis'' screen (In Line Diag) shows up. Normally the factory performs the steps necessary to verify proper operation and terminate the ''factory diagnostic''.
Until the proper confirmation sequence is performed, the screen will show up every time the vehicle is started.



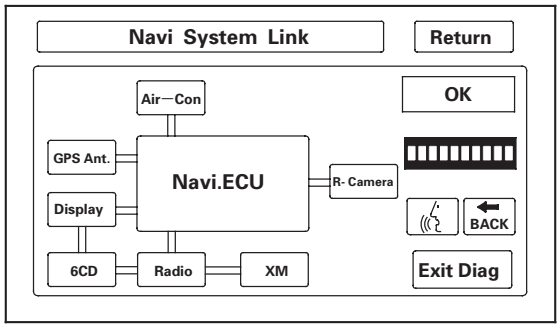
Follow the steps below to prevent the screen from showing up in the future:

- Hold down the buttons (Menu + Map/Guide + Cancel) for about 5 seconds (the ''Select Diagnosis items'' screen will appear).
- Hold down the Map/Guide button for 5—10 seconds (A screen with a ''Complete'' button, will appear).
- Touch ''Complete'', and then the ''Return'' button (the system may re-boot).
- Restart the vehicle, and confirm normal operation by completing the ''TQI of the Navigation System'' Service Bulletin.

Navi System Link

- This diagnostic tests the cables connecting the navigation components. Ensure that the ignition switch is in the ON (II) position. When the diagnostic begins, you hear a ''bong'' sound. The system is in a ''Detecting'' mode, and is waiting for all items in white to be tested. This includes the voice control switch (TALK/BACK buttons), and microphone. Press the TALK button on the steering wheel, and in a normal voice, say ''testing''. The talk indicator on the screen should turn green, and the voice level indicator should move to at least the 6th bar to pass. Next, press the BACK button. The ''Cancel'' indicator should turn green.
- If all of the communication lines connecting the system components, and the TALK/BACK buttons/ microphone check out OK (all block diagram items green), then the ''OK'' indicator turns green.
- If there is a problem with the system, the faulty system component item turns red, and the screen will show ''NG'' in red. Use the troubleshooting index, and other diagnostic screens to help locate the problem.
- The indication on the screen may not change until you cycle the ignition switch. After repairing the affected cable or system, repeat this diagnostic. NOTE: Green boxes and green ''OK'' indicate that the communications lines (cables) are intact. This diagnostic does not necessarily imply that the individual components are functioning properly. For instance, the GPS antenna wire may be crushed, but still show as ''green''. A road test, or other diagnostic may be necessary to find the problem. The rearview camera feature is optional. If the camera is not installed, the ''rear camera'' icon is yellow/orange. When the camera is installed the icon is green. If the icon is not green with the rearview camera installed, check for opens or shorts in the rearview camera cable.
- Select ''Return'' to return to the Diagnostic Menu or the ''Exit Diag'' button to exit.

NOTE:
- The Mic Level indicator must reach the 6th bar or greater to pass the test.
- If the XM link is red or flashing red, go to audio system symptom troubleshooting, or see XM (HIP) diagnostic screen.



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System Diagnostic Mode (cont'd)

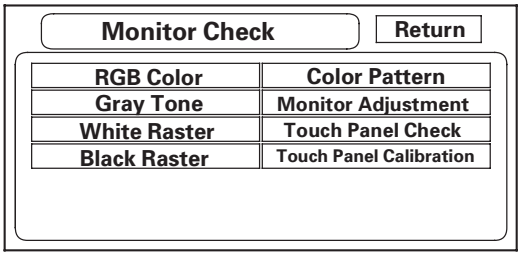
Monitor Check

Overview of navigation display

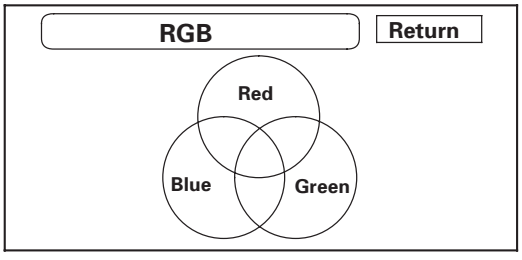
- The illumination input from the gauge brightness control provides back lighting for the buttons surrounding the screen and the illumination ON and OFF signal for the display backlighting.
- The illumination cancel signal is provided by the gauge via B-CAN to the HVAC unit, then to the navigation unit via the U-ART bus.
- The navigation display communicates with the navigation unit over its own GA-Net bus. Information is sent to the navigation unit whenever the user activates the touch screen, or buttons. Information sent by the navigation unit to the navigation display includes commands to control the LCD back light.
- The security system protects the navigation display by daisy-chaining the security signal through it, and then passing the signal to the audio unit.
- The illumination input from the gauge brightness control provides back lighting for the buttons surrounding the screen.

These screens allow you to troubleshoot the navigation display. Select the item you want to troubleshoot, and follow the diagnostic instructions.

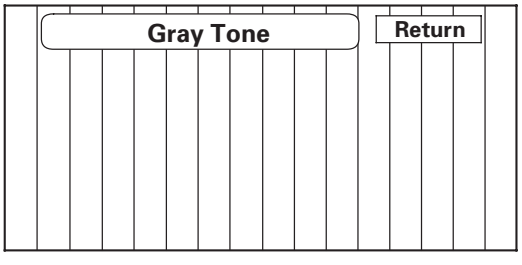
- RGB Color
- Gray Tone
- White Raster
- Black Raster
- Color Pattern
- Monitor Adjustment
- Touch Panel Check
- Touch Panel Calibration



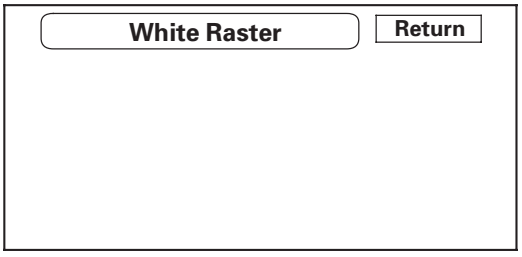
RGB Color
This screen verifies that the navigation display is receiving the video (R, G, B and Composite sync) signals properly. The three primary colors should all be shown without distortion. The combination of all three should produce a central white section. If any of the colors are missing, troubleshoot the color signal (see page 23-101). If the picture has lines in it, or scrolls horizontally or vertically, troubleshoot for a Composite sync problem (see page 23-103).



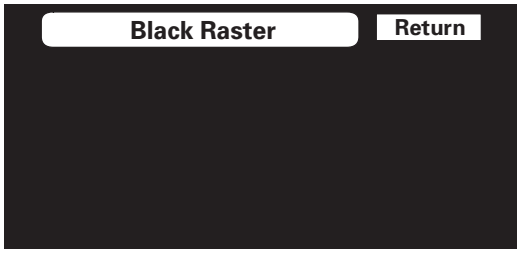
Gray Tone
This screen looks for problems with contrast. You should be able to see the changes from bar to bar across the scale. It is normal for the 2 bars on either side to appear the same.



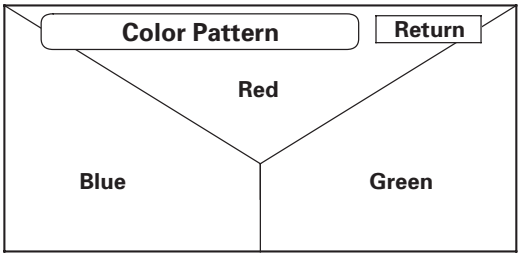
White Raster
The entire display must be white.



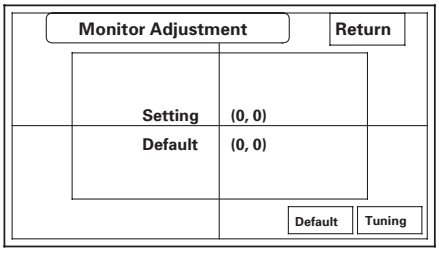
Black Raster
The entire display must be black.



Color Pattern
The chart below shows the colors being used for the Map and Menu screens. This is for factory use only. To check the color signal use the ''RGB'' test.

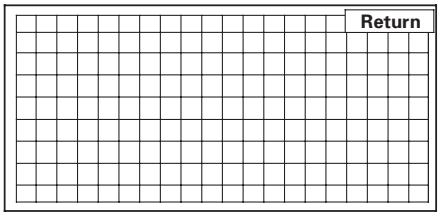


Monitor Adjustment
This allows you to center the navigation display. Use the joystick to move the picture up/down or left/right. It is unlikely that you will ever need to adjust the monitor position. The ''Default'' button will reset the display position to factory specifications. The factory default is 0, 0.



Touch Panel Check
The panel touch sensing system consists of a touch sensitive resistive membrane covering the display. Contrary to other systems using infrared beams, the screen has to be physically ''touched'' to make it work. The display has the capability of an almost infinite number of touch locations. However, to be compatible with earlier systems, the software only senses the locations shown on the diagnostic screen below. Every possible touch button position is shown on this diagnostic screen. Touching one of these areas should cause its color to reverse, and sound a ''beep''. If the touch locations are off slightly (by less than one touch location), use the ''Touch Panel Calibration'' diagnosis to re-align the touch ''zones'' with the screen image. If any areas of the screen either don't respond, or respond at some other location when touched, then replace the navigation display.

NOTE: Unlike earlier screens that used infrared sensors, direct sunlight will not affect this test.



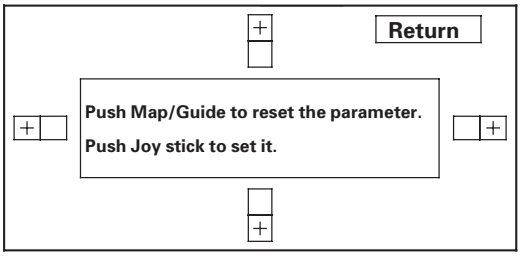
(cont'd)

System Diagnostic Mode (cont'd)

Touch Panel Calibration
The display screen uses a touch sensitive membrane instead of fixed infrared ''beams''. This means that every location of the entire surface of the display is touch sensitive.
For the display to be compatible with earlier navi systems, the system software creates ''touch zones'' emulating the touch ''switches'' created by the intersections of 20 vertical and 10 horizontal infrared beams. This diagnostic allows alignment of these artificially created ''zones'' with the location of the button images on the screen.

Normally this should never need adjustment, and it is used only to adjust the touch locations for parallax (the touch locations appear different when viewed at an angle). However, if an adjustment is necessary, follow this procedure:

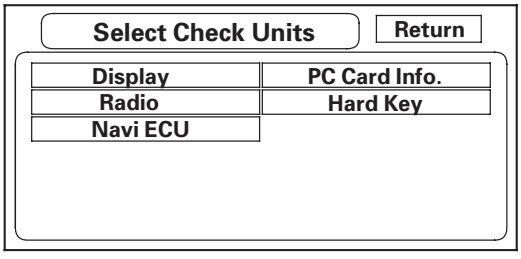
- The screen consists of four test areas consisting of a ''+'' button and an adjacent box with a black border. Touch the four ''+'' buttons to verify alignment. If, when you touch a ''+'' button, the adjacent box becomes yellow, then do the following. Continue to hold the ''+'' button, and simultaneously move the joystick to shift the screen slightly from side to side, or up and down. The adjustment is complete when you can touch all four ''+'' boxes and none of the adjacent boxes becomes yellow.
- To store any changes you make, push in the joystick.
- To reset the touch zones to the factory default, touch the Map/Guide button.
- Press Return to exit the diagnostic.



Unit Check

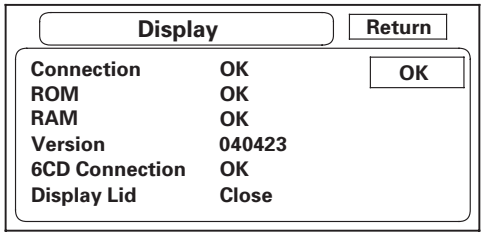
To start the test, select the item you want to check.

- Display
- Radio
- Navi ECU
- PC Card Info
- Hard Key

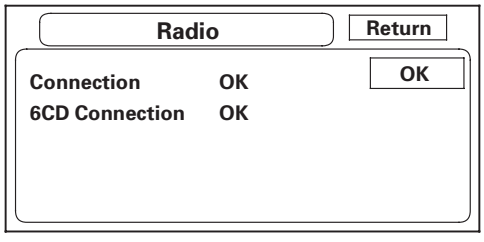


Display
This performs additional checks on the communication bus between the control unit and the display. In addition, the internal electronics and touch screen functionality are confirmed.

- When the connection is NG, first check for loose terminals at the navigation unit, the navigation display, the audio unit, and the CD changer connections. Next check for an open or short in the communication line between the navigation unit, the navigation display, the audio unit, and the CD changer. If you find the line to have an open or short, replace the affected shielded harness.
- If the ROM or RAM is NG, replace the navigation display.
- The version represents the software version in the display.
- Six CD connection checks the status of the connection between the CD changer and the audio unit. An NG represents an open in that circuit.
- Display Lid indicates if the front display panel is Open or Closed. This should always say, ''Close''.

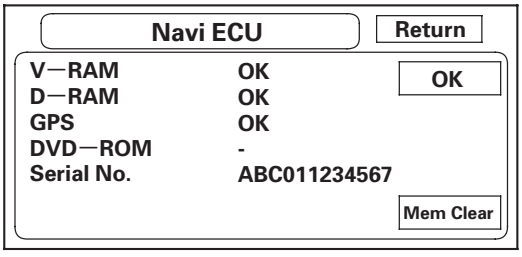


Radio
If the NG is indicated, check for loose audio unit connectors.



Navi ECU
This screen looks for problems with the navigation unit. When you initiate this diagnostic, the navigation unit may delay up to a minute while the diagnostic runs.

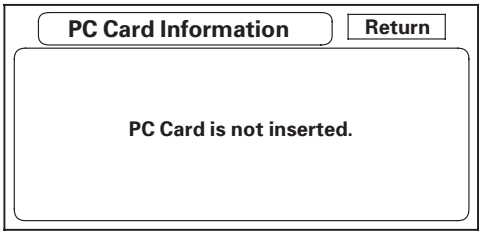
- If ''V-RAM'' or ''D-RAM'' is NG, then replace the navigation unit.
- If ''GPS'' indicates ''NG (ANT)'', then check the entire GPS antenna wire from the navigation unit to the antenna. If the wire is crushed or damaged, try a known good antenna. If this diagnostic reads OK, then order a new GPS antenna. If the diagnostic still reads NG (ANT), then replace the navigation unit.
- ''DVD ROM'' represents the database version on the DVD. You can also find this information in Setup by selecting System Information.
- ''Serial No.'' should be the same as the serial number found on the underside of the navigation unit. You need this number to obtain the security code from the Interactive Network (iN) system.
- Mem Clear is for factory use, and should never be used unless instructed by the factory. Accidental selection will erase the customer's personal data, PINS, and settings. If selected, a popup box appears asking if you want to clear the memory. If so, select ''Yes''.



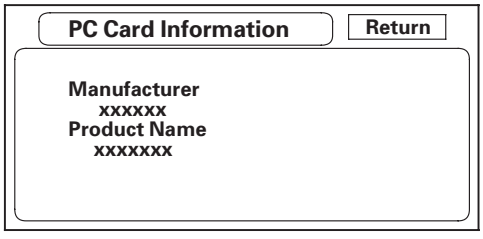
(cont'd)

System Diagnostic Mode (cont'd)

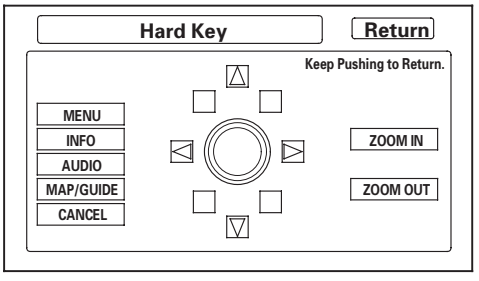
PC Card info
There is no PC Card in the PC slot, and the screen should say, ''PC Card is not inserted''. Do not insert any card or object into the slot.



If the factory provides a PC card and instructs you to insert a card, then the screen displays the Manufacturer, and Product Name as shown in the following screen.



Hard Key
This diagnostic checks the status of each of the hard buttons surrounding the navigation display. When you press each hard button, the corresponding item on the screen should flash ''blue''. Touch the return key, or press and hold the joystick to exit.



Car Status

Use this screen to confirm that navigation unit is properly receiving input signals. Signals equal to (0) are OFF, and signals equal to (1) are ON. If the value on the display does not match the actual vehicle status, then check the wire carrying the signal.

- VSP-Vehicle Speed Pulse from PCM
  (Pin 6 of 8-Pin C-connector)
  a) OFF (0) when vehicle is not moving
  b) ON (1) when vehicle is moving

The VSP comes from the PCM as a dedicated signal. Internally, the navigation unit compares the actual VP on the map against street data to adjust the pulse to speed scaling factor. As this scaling factor becomes more accurate, the ''Level'' gradually increases from 0 to 10.

- BACK-Reverse indication from taillight relay
  (Pin 5 of 8-Pin C-connector)
  a) OFF (0) when shift lever is in any position other than reverse
  b) ON (1) when shift lever is in reverse

The Back signal is used by the navigation unit to allow the map screen to show the VP moving backwards when in reverse and to trigger the optional rear view camera. This signal is needed because the Speed Pulse does not provide any directional information to the system.

- ILL CANCEL
  a) OFF (0) when the gauge assembly brightness control is not set to maximum brightness.
  b) ON (1) when the gauge assembly brightness knob is at full bright.

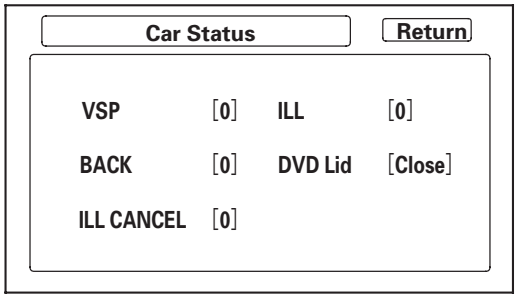
The illumination cancel signal comes from the HVAC unit. The HVAC unit gets the signal off of B-CAN from the gauge assembly and sends it to the Navi ECU using the U-ART communication bus between A/C and Navi (Pins 4, 14, and 15 in the 20-Pin A navigation control unit connector).

- ILL-Illumination Indication
  (Pin 12 of navigation unit 20-Pin A-connector)
  a) OFF (0) when parking lights, or headlights are off
  b) ON (1) when parking lights, or headlights are on

The navigation unit uses the signal to determine whether to put the navigation screen into the Day or Night brightness mode. (Setup screen 1)

- DVD Lid-senses if the DVD door is open
  a) (Close) when the door is closed
  b) (Open) when the door is open

The navigation unit has a microswitch to detect this. If open is indicated when the door is closed, replace the navigation unit.



GPS Information

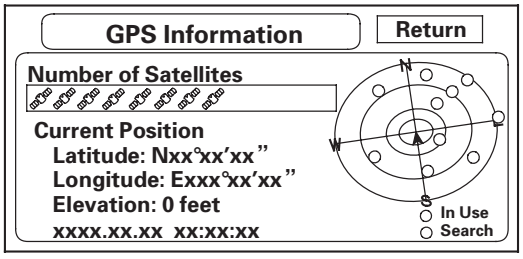
This screen shows the current status of GPS reception. The circular diagram shows the current location of the GPS satellites (yellow numbers) as they would appear in the sky. The outer circle represents the horizon (0 degrees elevation). The middle and inner circles represents 30 and 60 degrees respectively. The very center of the diagram (90 degrees elevation) is directly overhead. Nearby obstructions, like tall buildings, will block satellites in that direction. That is why it is necessary to be in an open area to troubleshoot GPS reception issues. The satellites shown on the diagram correspond to the ''PRN'' number in the ''GPS Details'' screen. There are always 24 ''active'' GPS satellites in orbit. Because satellites fail, and have to be removed from service, spares are always parked in orbit, ready to be activated. This is why the PRN (satellite ID number) can be greater than 24.

NOTE:

- To use this screen for troubleshooting, the vehicle should be outside, away from buildings, tall trees, and high-tension wires for at least 10 minutes with the engine running.
- Metallic window tinting on the front window or after-market electronic accessories mounted near the navigation unit, GPS antenna or navigation display can interfere with GPS acquisition.
- The ''Number of Satellites'' box shows the number of acquired satellites (maximum of 12). It should contain 3 or more icons. If not, troubleshoot for ''GPS icon is white or not shown'' (see page 23-106).
- The ''Current Position'' shows latitude, longitude, and elevation (in meters). If there are less than 4 satellites, the elevation can be grossly inaccurate.
- The Date/Time field shows the current date, and also a time that includes daylight savings and other offsets entered by the customer in Setup function ''Adjust Time Zone/Clock''.

(cont'd)

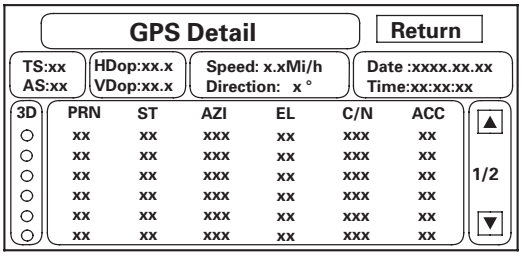
System Diagnostic Mode (cont'd)



NOTE:
Push and hold the ''Map/Guide'' button, and the ''dots'' on the diagram are replaced with the ''PRN'' # (satellite numbers). These numbers correspond to the numbers in the ''PRN'' column on the ''GPS details'' screen.

GPS Detail

By pressing and holding the MENU button for 10 seconds, a GPS Detail screen appears. This screen displays real time incoming satellite positional data. Most of the information shown on this screen is for factory use, however some of the data can indicate partial GPS signal interference.



- The box TS/AS and HDop/VDop is for factory use.
- The Speed and Direction information is updated in real time when driving, and can be used to detect intermittent speed sensor problems.
- The Date/Time Information is the same as in Setup screen 2 ''Adjust Time Zone/Clock''.
- If the ''3D'' icon is shown above the yellow dots, this implies that at least 4 satellites are available for map positioning, and the ''GPS'' indicator on the map screen will be green. See the Global Positioning System detailed explanation in the ''System Description'' (see page 23-80).
- If the row of data in the table below begins with a ''yellow dot'', the AZI and EL fields can be used to locate each satellite ''PRN'' # on the circular GPS diagram (see prior screen).

NOTE: The data shown in the GPS Detail screen is an example only.

Column	Description	Problem indication
Active	Active satellites (Yellow Dot)	If ''3D'' is missing follow GPS icon is white or not shown (see page 23-106).
PRN	The satellite ID number	
ST	The status: 0 = cannot view or searching, 2 = acquiring	If all 0, then, follow GPS icon is white or not shown troubleshooting (see page 23-106).
AZI	Azimuth, the angle (0—360) clockwise from north	
EL	Elevation from the horizon (90 deg is overhead)	
C/N	N/A	Healthy signal is 49—52, no signal: 27—33
ACC	N/A	

Yaw Rate

This diagnostic checks the yaw rate sensor in the control unit. This device detects when the vehicle turns, and repositions the vehicle position icon on the map screen. For more detailed information, see the yaw rate sensor theory of operation under ''System Description'' (see page 23-79).

- ''Sensor'' indicates the voltage output from the yaw rate sensor. It should indicate about 2.500 V when stopped.
- ''Offset'' is the reference voltage or standard within the yaw rate sensor. It also should indicate about 2.500 V when stopped.
- A ''sensor'' output voltage LOWER than the ''Offset'' voltage indicates that the vehicle is turning to the right.
  A ''sensor'' output voltage HIGHER than the ''Offset'' voltage indicates that the vehicle is turning to the left.
- The yaw rate offset and sensor should both indicate about 2.500 V when stopped. If either reads zero or 5.000 V, replace the navigation control unit.
- The yaw rate offset and sensor should be within +/— 0.01 V of each other when stopped. The sensor value should change relative to the offset as the car is turned while driving. If not, replace the navigation unit.

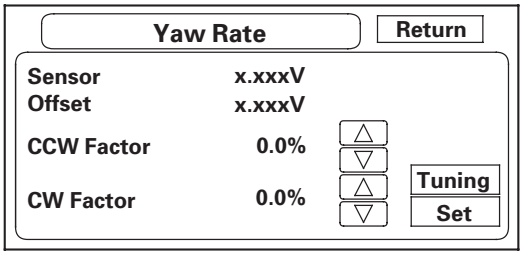
Example: Vehicle stopped

Normal		**Abnormal**	
Offset	2.526 V	Offset	2.526 V
Sensor	2.516—2.536 V	Sensor	2.623 V

Example: Vehicle turning

Normal		**Abnormal**	
Offset	2.526 V	Offset	2.526 V
Sensor	2.678 V (right turn) 2.478 V (left turn)	Sensor	2.623 V (no change on turns)

The settings ''CCW Cal Factor'', ''CW Cal Factor'', and ''Set'' are for factory use only. THIS SHOULD NEVER BE USED.
NOTE: Do not try to adjust the yaw rate sensor without instructions from American Honda. See next paragraph for tuning.



(cont'd)

System Diagnostic Mode (cont'd)

Yaw Rate Tuning

This diagnostic allows you to graphically display problems with the yaw rate sensor.

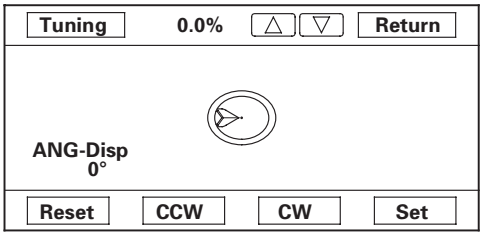
- The ''ANG-Disp'' value accumulates any differences between the ''offset'', and ''sensor'' voltages (see Yaw Rate diagnostic). When the sensor is healthy, the random changes in these two voltage generally cancels out, so the value is 0. However if one voltage is consistently higher than the other, then the ''ANG-Disp'' value accumulates the constant change.
- The ''Reset'' button temporarily clears the angular accumulation (ANG-Disp), and clears the display dots.
- Do not touch the ''CCW'' or ''CW'', or ''Set'' buttons. These are used for factory setup only.

For gross problems with the sensor, the stationary test usually confirms whether the sensor is defective. For yaw rate issues related to driving, do the road test described below.

1. Stationary test: If the ''VP'' icon spins in place and the ''ANG-Disp'' value slowly increases or decreases in value, the yaw rate sensor is defective. Replace the Navigation control unit.

2. Road test: Drive the vehicle on a very straight road. Enter the diagnostic mode, select ''Yaw rate'', and touch the ''Tuning'' button. While driving down a straight road, the white ''dots'' should trace a straight line across the screen. However, if you are driving on a straight road, and you notice the dots constantly dropping down or heading up as you drive, the navigation control unit's yaw sensor is defective. You can touch ''Reset'' to clear ''ANG-Disp'', and dotted line.

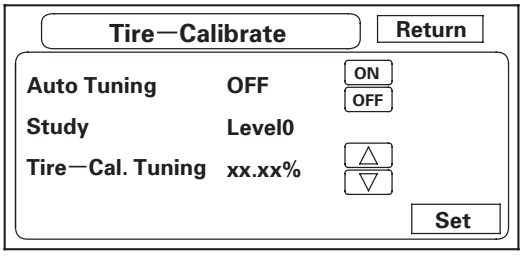
3. If either test fails, please enter ''Yaw rate sensor defective'' for the problem description, on the ''Navigation core return form''.



Tire Calibrate

As the vehicle moves, the navigation system receives speed pulses from the PCM. These pulses are converted using a conversion factor to a mph speed that moves the vehicle position (VP) on the map. The navigation system has an internal tuning function that generates and refines this factor based on actual driving. The ''Level'' indicates the status of the tuning. At navigation initialization, it begins at 0, and increases to 10 as the navigation system is used.

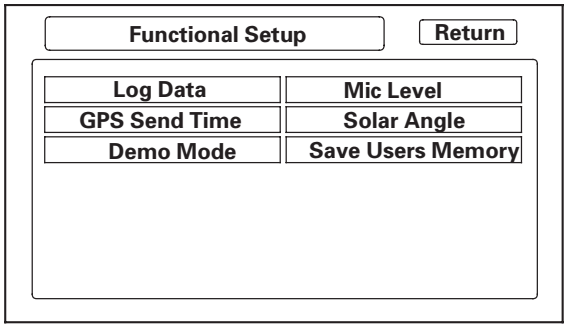
- The ''Auto Tuning'' is factory set to ''ON'', and should remain on.
- The ''Study'' indicates the tuning status. If it is less than 10, the unit is still calibrating.
- The ''Tire-Cal. Tuning'' and ''Set'' should not be used. It is for factory use only.



Functional Setup

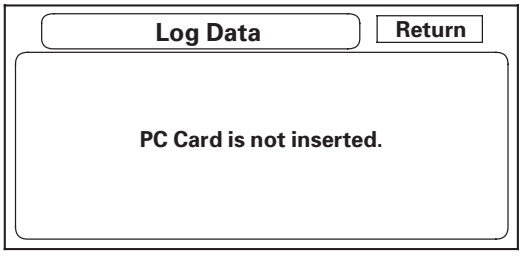
Select the item you want to check.

- Lag Data
- GPS Send Time
- Mic Level
- Solar Angle

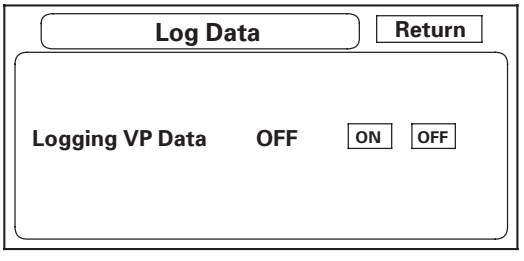


Log Data
This screen allows the factory to collect log data to troubleshoot navigation system issues.

- There is no card in the ''PC Card Slot'', and the PC slot door should always be closed. The screen should appear as shown.



- However, if the factory provides a PC card, insert it into the card slot (label side up), and then slide the PC Card door shut. If instructed by the factory, select ''Gyro. Sensor Logs ON''. Follow the factory procedure for gathering test data and properly ending the test.



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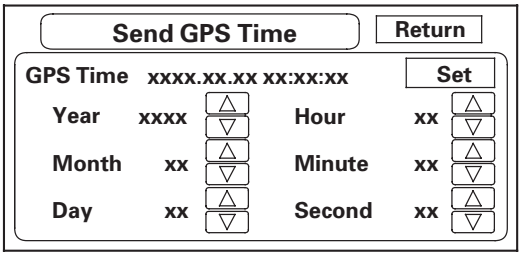
System Diagnostic Mode (cont'd)

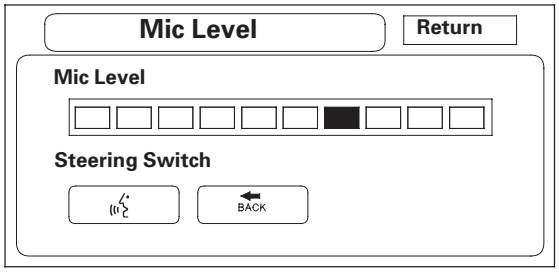
GPS Send Time
This screen is for factory use only. It allows adjustment of the GPS time. This display updates in real time.

- ''GPS Time'' is the time as received from the GPS satellites. It is in Greenwich Mean Time (GMT).
- ''System Time'' is the internal time used by the navigation unit to calculate your position on the map. It is also in Greenwich Mean Time (GMT).
- ''Display Time'' is the time shown on Setup screen 2 ''Adjust Time Zone/Clock'', and reflects any changes due to daylight savings time or time adjustments entered by the customer.
- Date, Hour, Minute, and ''Set'' should not be used.



Mic Level
This diagnostic allows you to independently test the microphone and the TALK and BACK buttons. They are used to activate the voice control system. The microphone is located near the map light in the ceiling. It is directional, and works best if the voice is coming from the drivers seat.

- Press the TALK button on the steering wheel, and in a normal voice say ''testing''. The TALK indicator on the screen should momentarily turn green, and the text ''Now Recording...'' should appear in yellow. If the Mic Level indicator on the screen does not briefly turn green, then check the wiring from the TALK button to the navigation unit. If there is no ''Mic Level'' movement when you speak, then you should check the wire running from the microphone to the control unit.
- Press the BACK button on the steering wheel. This should cause the Cancel indicator on the screen to momentarily turn green. If it does not briefly change to green, then check the wiring from the steering wheel BACK button to the navigation unit.



NOTE:
If the radio is off, and there is movement in the indicator-even without speaking, then ensure that the vents are not blowing on the microphone.
This should resolve voice control complaints such as:

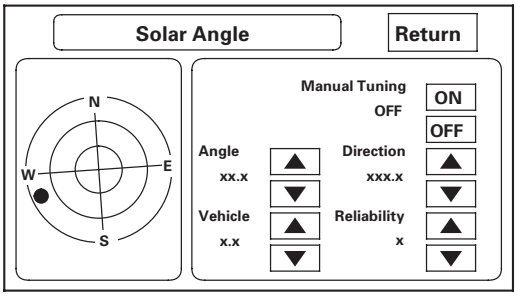
- Sometimes the system does not understand my commands.
- I have to shout at the navi for a command to be recognized.
- The system just says ''pardon''.

Solar angle

This screen graphically displays the sun's position as determined by GPS. The navigation system uses the sun's angle, along with the sunlight sensor to control the driver/passenger A/C air flow. The heat that the A/C unit removes varies, depending on the angle of the sun entering the vehicle.

This screen is for factory use only, and should not be adjusted.

- The screen shows a circular ddiagram of the sky oriented in the direction that the vehicle is pointing. During daylight hours a red dot is shown, representing the direction and elevation of the sun. The outer circle repredents the horizon (0 degrees elevation). The middle circle is 30 degrees, the center circle is 60 degrees, and the very center is directly overhead (90 degrees).
- The Manual Tuning button should always be OFF.
- The Angle is the angle that the sun (shown with red dot) is above the horizon.
- The vehicle value represents the angle, clockwise North, to the direction that the vehicle position (VP) icon is pointing (always points straight up).
- The direction value is the angle, measured clockwise from the VP (straight up) to the suns position.
- The reliability ranges from 1 to 3, and represents the accuracy of the Vehicle Position relative to the sun.



Version

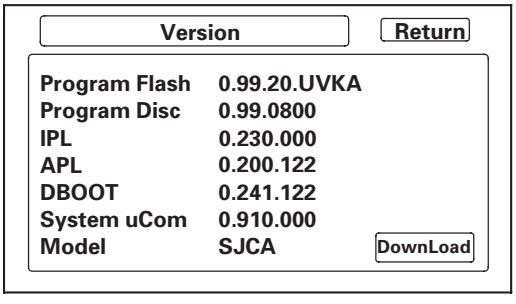
This screen displays the current version of the program, and allows the loading of a new version of the program either from a CD/DVD or from a PC card.

The Program Flash version should always be greater than or equal to the Program Disc version. IPL, APL, DBOOT, and System uCom are for factory use only.

The Model code is SJC, and is for factory use only. This code is stored on a chip in the navigation unit. Therefore, every model has a unique part number for the navigation unit.

NOTE: If any model number other than SJC is displayed, replace the navigation unit with the correct part. The model code tells the navigation unit what software to load off the DVD.

Do not use Download, unless instructed to do so by the factory.



There are two navigation DVDs produced for this model.

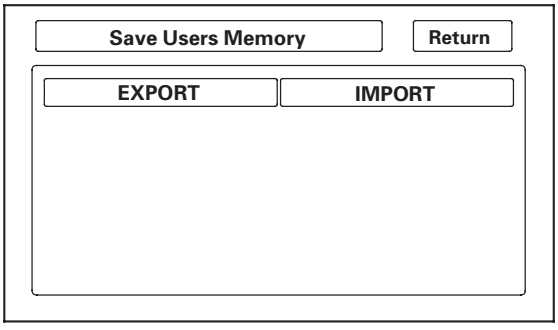
- The white DVD labeled ''United States'' is for the US market and contains maps for the contiguous 48 US states, Hawaii, and some southern portions of Canada.
  Customers wanting additional northern coverage in Canada, can purchase a ''Canada,'' DVD by contacting the DVD fulfillment desk.
- The gray DVD labeled ''Canada,'' is for the Canada market, and contains maps for all of Canada, plus some of the northern US states. If customers with this DVD require full US coverage (including states like Florida and Texas), they may purchase a ''United States'' DVD by contacting the DVD fulfillment desk.

(cont'd)

System Diagnostic Mode (cont'd)

Save Users Memory

When replacing the navigation unit, this function allows the dealer to transfer the customer's personal data to the new navigation unit. The transferred information includes their Setup settings, and personal addresses. The dealer inserts a PC card to the navigation unit, and then selects the ''Save Users Memory'' function. The two functions in this diagnostic screen are EXPORT and IMPORT. EXPORT saves the customer's data to the PC card, and IMPORT moves the PC card files to the new navigation unit.



Before starting this function, see the PC Card FAQs for information regarding PC cards, and the use of this function.

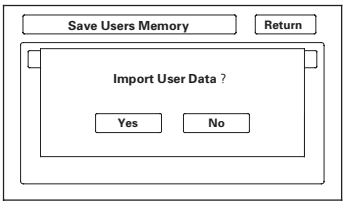
1. Select EXPORT button to move the client's data from the original navigation unit to the PC card. Select ''YES'' on the ''Export User Data'' Confirmation screen. The process takes only a couple of seconds. The system stores two files on the card.

   NOTE: If the EXPORT button is grayed out, check the PC card's edge connector, and the pins inside the navigation unit (with a flashlight) for damage.

2. After installing the customer's original DVD in the new navigation unit, allow the system to boot up. Insert the PC card in the new navigation unit and enter the ''Save Users Memory'' in the navigation system diagnostic mode.

3. Select IMPORT button to move the two files stored by the Export process from the PC card to the new navigation unit. Select ''YES'' on the ''Import User Data'' Confirmation screen. When the transfer is finished (a few seconds) the system will automatically reboot. After the system reboots, remove the PC card from the PC slot.

   NOTE: If the IMPORT button is grayed out, check if the ''Model'' and the ''Program Flash'' shown on the ''Version'' screen are the same.



PC Card FAQs

Question	Answer
Where do we buy the flash memory or adaptors, and what do we ask for?	You need a ''PCMCIA type II'' adaptor and a flash memory chip. They can be purchased at a computer, or office supply store. The card will have the same size and shape as the PC card in the HDS. Adaptors that accept multiple flash types are not recommended.
What memory flash chips will work with what adaptors?	The flash memory devices that have been tested include Compact Flash (CF), and ATA style (like the card in the HDS). Other card types and flash memory chips may work, but have not been tested.
What capacity card do I need for this function?	A memory chip with capacity of 64 MB to 2 GB will work. The two files moved to the PC card during ''export'' are less than a Megabyte in size.
Should the dealer have a dedicated PC card for the Export and Import navigation function?	Yes, treat the PC card as a dedicated ''special tool'' that should be used anytime your '07 or later customer needs their navigation personal files transferred to a new navigation unit.
What device can I use to maintain the PC card, and delete files?	Any computer store sells USB style card readers that accept the PC card, and allow you to perform file maintenance on your PC card. Most laptops will also accept the PC card.
Can we move the customer's data to different models?	No, the files are model specific and will only load into a navigation unit with the same part number.
Can we move the customer's data to the same vehicle with a different software version?	The client's files can only be transferred to a new navigation unit, if the ''Model'' and the ''Program Flash'' shown on the ''Version'' screen are the same. Files cannot be transferred to the different model and different versions.
Will other files on the PC card like images or music files prevent the Export/Import function from working?	No, the system simply adds two small files that are recognized by the new navigation unit when performing the import function. However, it the PC card is full, the ''Export'' function won't work correctly.
Do I have to delete the files on the PC card after each transfer of the customer's data?	After the transfer of customer data to the new navigation unit, the files remain on the PC card. Since this is confidential information, we recommend that you delete these files after each use. Please note that each time you export navigation files of the same model and version, the files are overwritten. If you do not delete the files after use, over time the PC card will accumulate two files for each version of the 8 or so Honda navigation models.
What format should be used if the PC card needs reformatting?	It is unlikely that the PC card will ever need formatting, however the FAT file system should be used.
I can't enter the navigation diagnostic mode to do the Export/Import function. How can I transfer the client's data?	Some internal navigation unit ECU failures may make it impossible to use the Export/Import function.

(cont'd)

System Diagnostic Mode (cont'd)

Question	Answer
Why wont the Export or Import functions work? What do I check as part of troubleshooting?	• The card may not be fully inserted into the slot. Eject the PC card, and inspect for warping or damage to the edge connector. Never use excessive force to insert a PC card. This can result in damage to the pins in the rear of the slot. • The PC card may not contain files that are recognized by the new navigation unit. Navigation data can only be transferred between navigation units with the same ''Model code'', and with the same navigation ''Program flash'' version. • The flash memory chip type may not be accepted by the system. Only Compact Flash and ATA cards have been tested. • The card's PCMCIA adaptor may be preventing a known-good PC card from playing. Avoid multi slot type PCMCIA adaptors that accept several different flash memory types. • The card may be full and as a result the files are stored, but without any data. Export and import appear to function, but move nothing. Delete unused files from the PC card. • There may not be any files on the PC card. If the PC card has a ''write protection'' switch, make sure it is turned off before attempting to use the Export function. • Although flash memory chips are reliable, occasionally they develop bad sectors or other formatting errors that prevents them from accepting files. The PC card should be reformatted using the FAT format. • The PC card may have been formatted using the format ''NTFS''. Only the ''FAT'' format is accepted by the system. • Hard Disc Drive (HDD) cards may not work properly in the system and can overheat or quit functioning, particularly in a hot vehicle. They are not recommended. • Before performing the Import function, ensure that the client's original DVD is loaded into the new navigation unit and working properly.

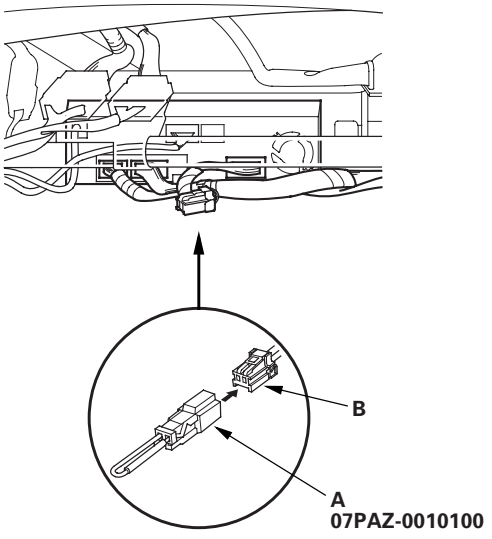
Error Message Table

Screen Error Message	Solution
Navigation system is unable to acquire a proper GPS signal.	Make sure there is nothing on the dashboard blocking the GPS antenna. If not, move the vehicle to an open space away from tall buildings, trees, etc. After-market devices can affect the GPS reception.
Navigation unit door is open or No DVD disc installed. Please check system.	Make sure the correct white-labeled navigation DVD is installed with the label side up and the navigation unit door is snapped fully closed (see page 23-138).
No DVD disc, please check system.	Check that the navigation DVD is installed with the label side up (see page 23-138).
Display temp is too high. System will shut down until display cools down.	This message will appear briefly when the display temperature is too high, and the display will turn off until the temperature cools down. The system will turn back on when the display cools down.
Outside temperature is low, system will take a while to start up.	The temperature is below —30 °C and the navigation ECU has difficulties reading the DVD. The system will start up when the temperature warms up.
DVD disc reading error (unformatted), please consult your dealer.	Check the DVD source for scratches or other damage. Make sure you are using an official Honda navigation DVD (white in color). The system cannot read other mapping databases or video DVDs. If the problem persists, see your dealer. Check any official Honda service website for more service information about prescribing patches for the navigation system.
Route has not been completed. Please try again from a different location.	Routing to or from a place (new area) that is not in the database. Try planning a different route to or from a different location.
No alternate route found. Original route will be guided.	No alternate route method was found. The original route will be used.
This destination cannot be found in database.	The destination was not found in the database. Try another destination nearby, or select the destination with the joystick.
Please operate climate control after starting engine.	The engine needs to be running to operate the climate control system.

Forced Starting of Display

Special Tools Required
SCS service connector 07PAZ-0010100

1. Connect the SCS service connector (A) to the navigation service check connector (B) located behind the navigation unit.



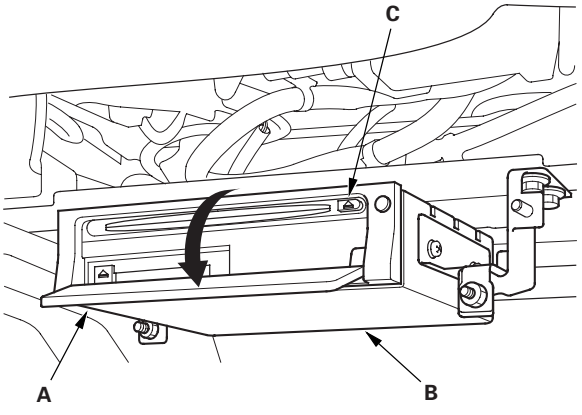
2. Turn the ignition switch ON (II).
3. Check that the system starts up and then changes to the Navi System Link screen.

   NOTE: If the system fails to display the Navi System Link screen, refer to no picture is displayed (see page 23-100).

DVD-ROM Replacement

NOTE: Check any official Honda service website for more service information about the navigation system.

1. Turn the ignition switch ON (II).
2. Open the front cover (A) of the navigation unit (B) located under the driver's seat.



3. Press the EJECT button (C), then remove the DVD-ROM.
4. Insert the new DVD-ROM with the white label facing up.
5. Close the front cover. Do not turn the ignition switch OFF; watch the navigation screen until the data is downloaded to navigation unit.
6. Do the Map Matching (see page 23-68).

   NOTE: After servicing, the front cover must be closed.

Navigation Unit Removal/Installation

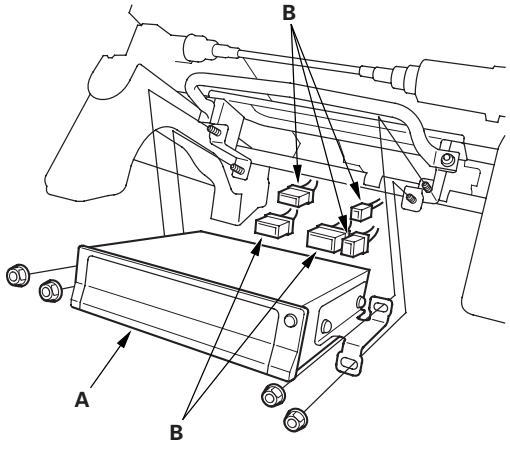
NOTE:
- Before you replace the navigation unit, back-up the customer data using system diagnostic mode ''save users memory'' ('07 and later) under the functional set up (see page 23-134).
- If the navigation unit is replaced or disconnected, a Map Matching must be done (see page 23-68).

1. Turn the ignition switch ON (II).

2. Eject the DVD from the original navigation unit (see page 23-138). To avoid scratching or damaging the DVD, temporarily place the DVD in a jewel case.

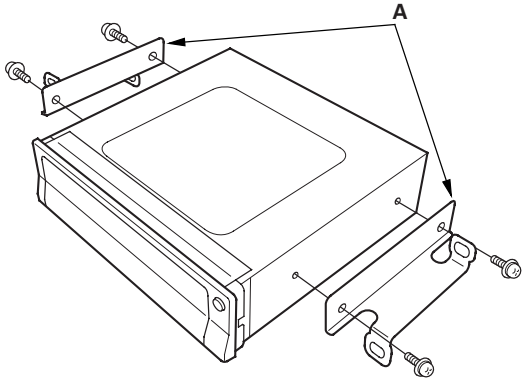
3. Turn the ignition switch OFF.

4. Remove the bolts, then pull out the navigation unit (A).



5. Disconnect the connectors (B), then remove the navigation unit.

6. Remove the screws and the bracket (A).



7. Install the navigation unit in the reverse order of removal.

8. Turn the ignition switch ON (II), then reinstall the customer's original DVD, verifying that the DVD is free of scratches or smudges.

9. Check online for any service publications prescribing patches for the navigation system, and if any should be applied to the new navigation unit.

   NOTE: Simply transferring the DVD from the original navigation unit to the new navigation unit does not assure the correct software for the vehicle will be loaded into the new navigation unit. Doing the DVD transfer without doing software patches may cause the new navigation unit to appear to be malfunctioning.

10. Enter the new navigation anti-theft code.

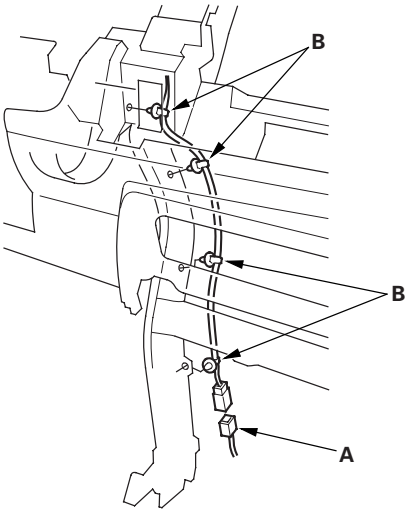
11. Park the vehicle outside, and do the GPS initialization (see page 23-67).

12. Give the new navigation anti-theft code to the customer.

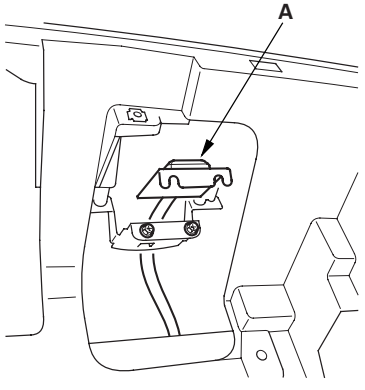
GPS Antenna Removal/Installation

1. Remove the gauge control module (see page 22-263) and the center lower pocket (see page 20-84).

2. Disconnect the connector (A), then remove the wire harness clips (B).



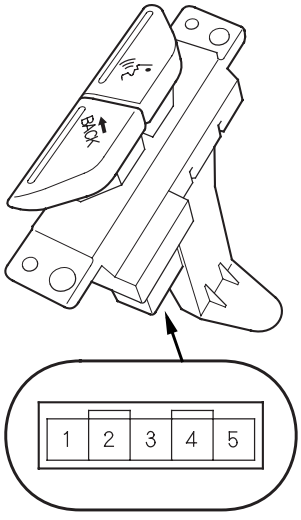
3. Loosen th bolts and the GPS antenna (A).



4. Install the GPS antenna in the reverse order of removal.

Voice Control Switch Test

1. Remove the steering wheel (see page 17-21).
2. Remove the voice control switch (see page 17-22).
3. Measure the resistance between the terminals No. 1 and No. 2 in each switch position according to the table.



Position	Resistance
OFF	About 10 kΩ
TALK	About 2.9 kΩ
BACK	About 680 Ω

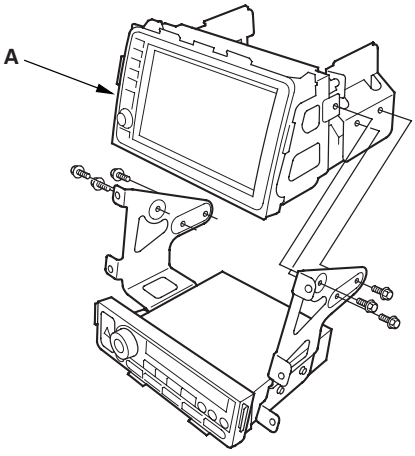
4. If the resistance is not as specified, replace the voice control switch.
5. Check for continuity between the terminals in each switch position according to the table.

Terminal	4		5
	○	⋈	○

6. If the continuity check is not as specified, replace the switch.

Navigation Display Removal/ Installation

1. Remove the CD changer (see page 23-58).
2. Remove the bolts and the navigation display (A).



3. Install the navigation display in the reverse order of removal.

Restraints

Restraints

Special Tools 24-2

Seat Belts

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SRS (Supplemental Restraint System)

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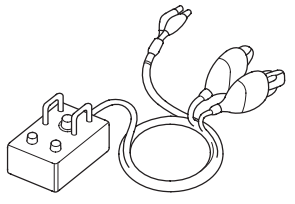
Special Tools

Ref. No.	Tool Number	Description	Qty
① *1	07HAZ-SG00500	Deployment Tool	1
②	07PAZ-001010A	SCS Service Connector	1
③	07SAZ-TB4011A	SRS Inflator Simulator	1
④ *2	07TAZ-001020A	Backprobe Adapter, 17 mm	2
⑤	07XAZ-S1A0200	SRS Simulator Lead E	1
⑥	07XAZ-SZ30100	SRS Simulator Lead F	1
⑦	07YAZ-S3AA100	SRS Simulator Lead H	1
⑧	070AZ-SAA0100	SRS Short Canceller	2

* 1: Included in SRS Tool Set 07MAZ-SM5000B

* 2: Use with the stacking patch cords from T/N 07SAZ-001000A, Backprobe Set.



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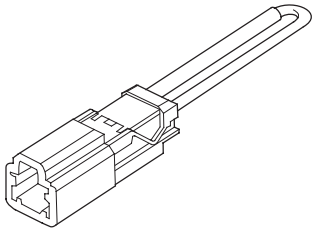

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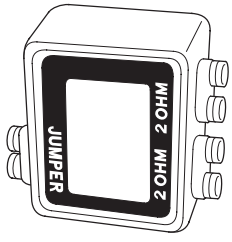

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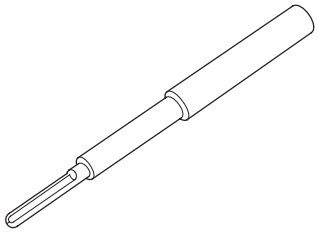

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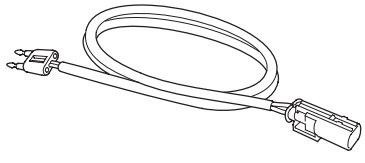

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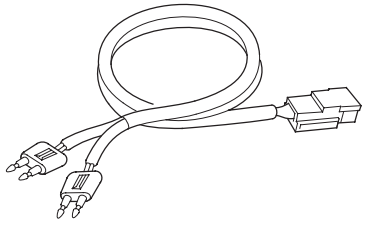

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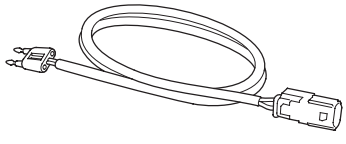

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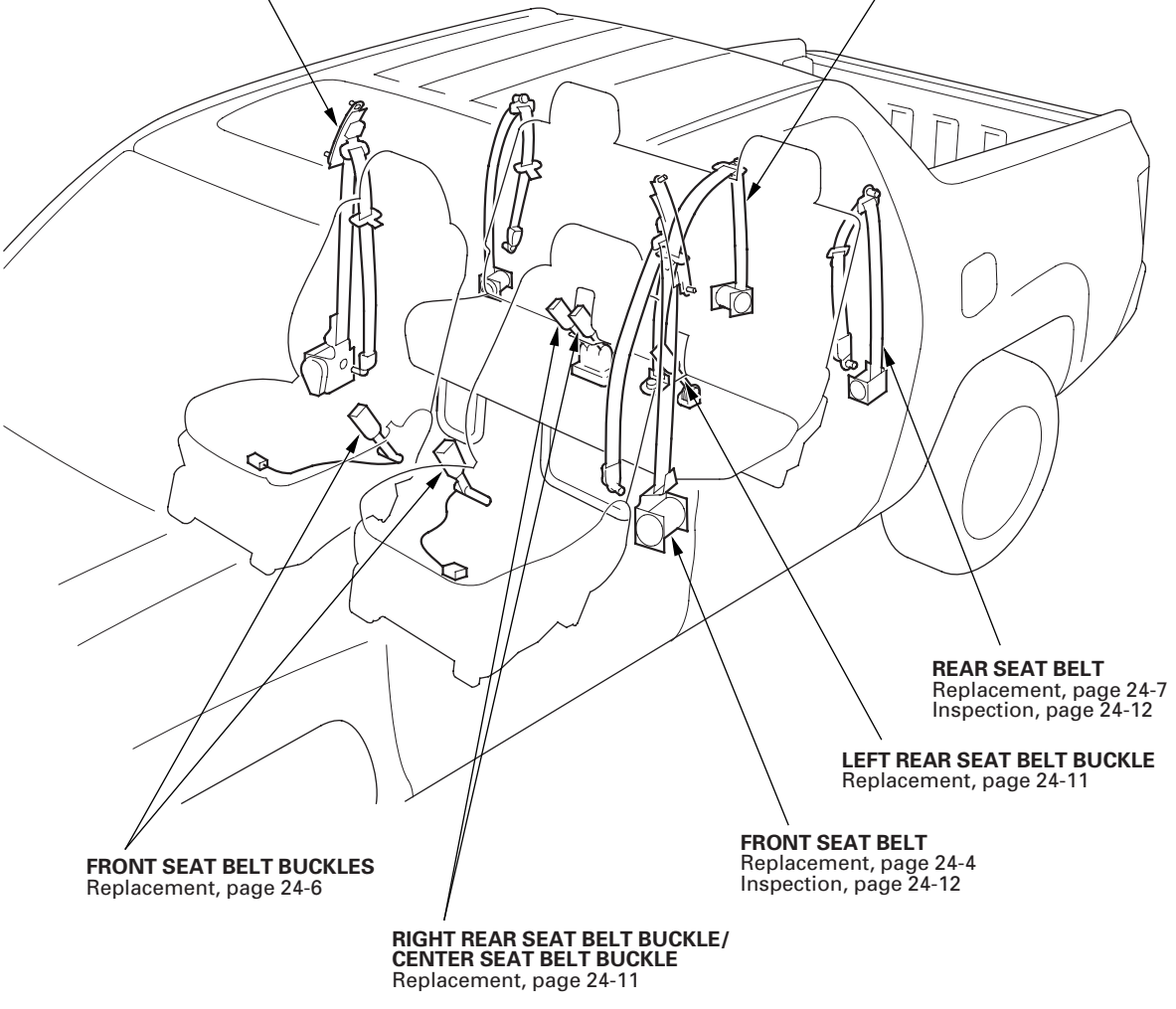
⑧

Component Location Index



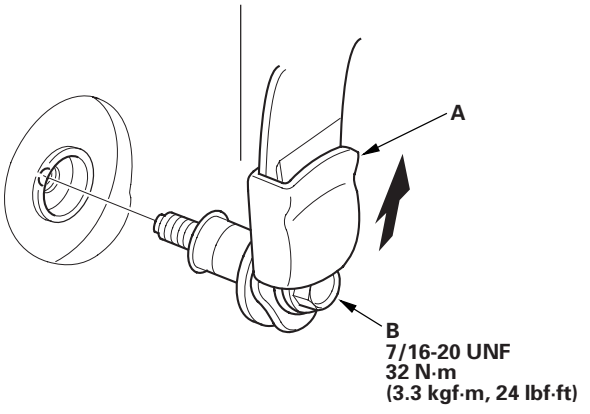
Front Seat Belt Replacement

SRS components are located in this area. Review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before performing repairs or service.

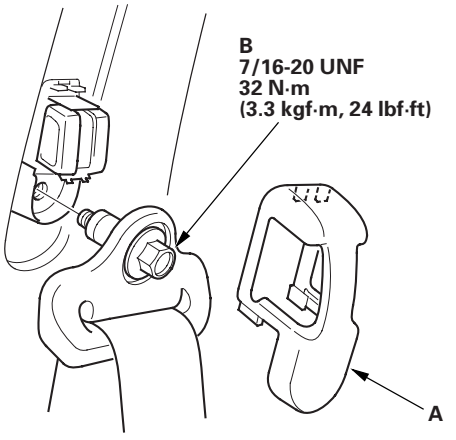
NOTE: Check the front seat belts for damage, and replace them if necessary. Be careful not to damage them during removal and installation.

Front Seat Belt

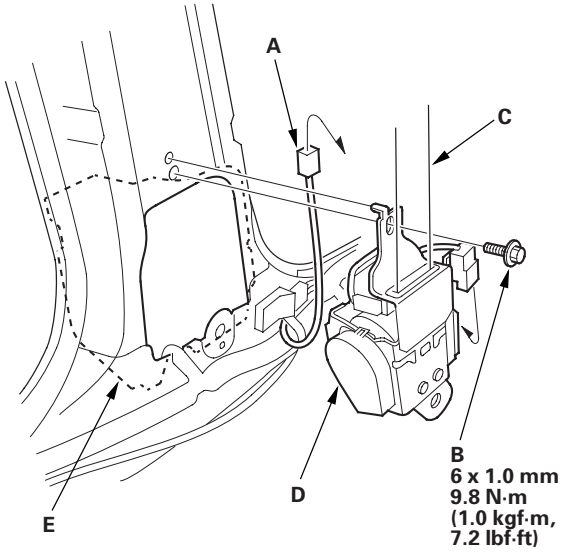
1. Slide the front seat fully forward.
2. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
3. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
4. Pull the lower anchor cover (A) back, and remove the lower anchor bolt (B).



5. Remove these items:
   - Front door sill trim (see page 20-60)
   - Rear door sill trim (see page 20-60)
6. Remove the B-pillar lower trim (see page 20-65).
7. Remove the upper anchor cover (A), and remove the upper anchor bolt (B).



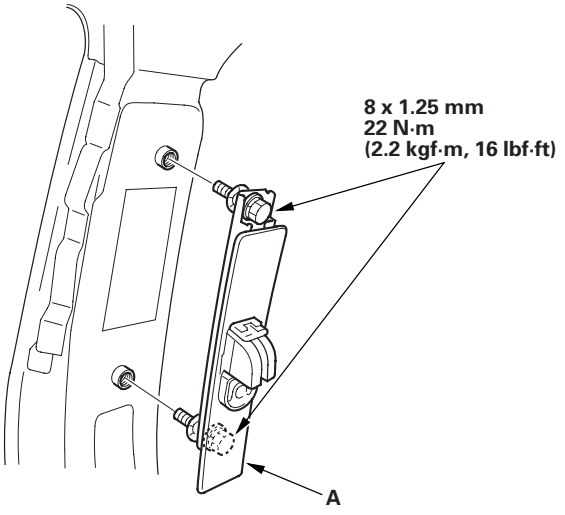
8. Disconnect the seat belt tensioner 2P connector (A). Remove the upper retractor mounting bolt (B), then remove the front seat belt (C) and retractor (D).



9. If necessary, remove the front seat belt protector (E).

10. Remove the B-pillar upper trim (see page 20-65).

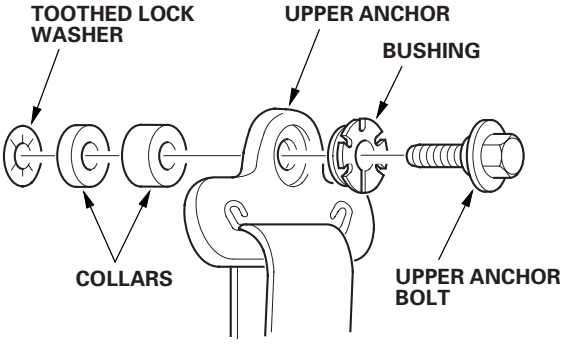
11. Remove the shoulder anchor adjuster (A).



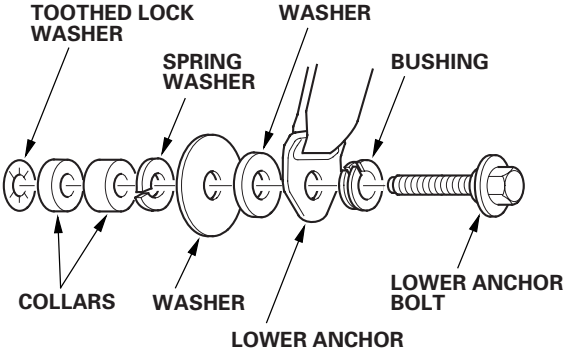
12. Install the seat belt in the reverse order of removal, and note these items:

- Apply medium strength type liquid thread lock to the anchor bolts before reinstallation.
- Check that the retractor locking mechanism functions (see page 24-12).
- Assemble the washers, collars, and bushings on the upper and lower anchor bolts as shown.
- If the seat belt tensioner has been deployed, replace the seat belt protector with a new one.
- Before installing the anchor bolts, make sure there are no twists or kinks in the seat belt.
- Make sure the seat belt tensioner connector is plugged in properly.
- Reconnect the negative cable to the battery.
- Enter the anti-theft codes for the audio system and the navigation system (if equipped).
- Set the clock (on vehicles without navigation).
- Do the power window control unit reset procedure (see page 22-209).

Upper anchor bolt installation



Lower anchor bolt installation



(cont'd)

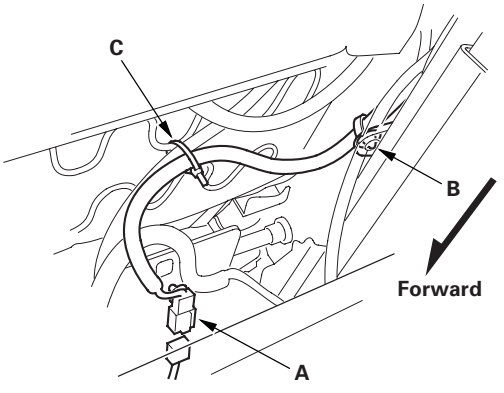
Front Seat Belt Replacement (cont'd)

Seat Belt Buckle

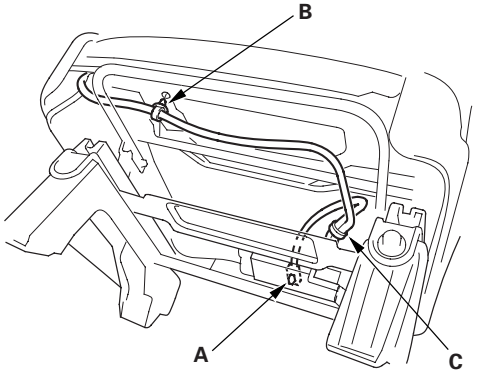
NOTE:
- Take care not to scratch the body or tear the seat covers.
- Put on gloves to protect your hands.
- DTC codes will set if the ignition is turned ON (II) with the seats removed.

1. Remove the front seat (see page 20-97).
2. Remove the center cover (see page 20-99).
3. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
4. Disconnect the seat belt switch connector (A), and detach it, and detach the harness clip (B) and harness band (C).

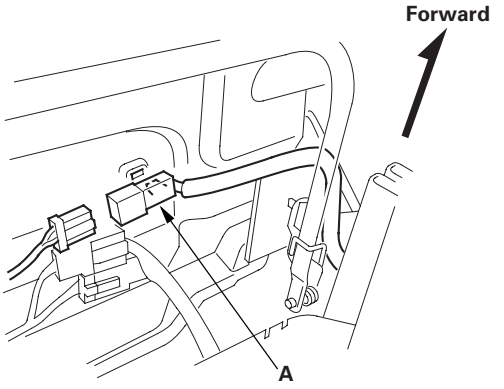
Driver's 10-way power seat



Driver's manual height adjustable seat

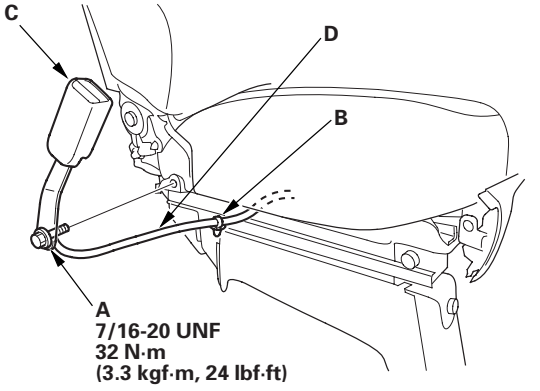


Passenger's manual seat

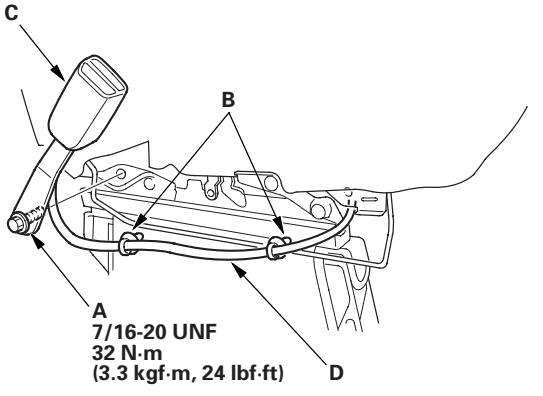


5. Remove the anchor bolt (A), and detach the harness clip (B), then remove the seat belt buckle (C).

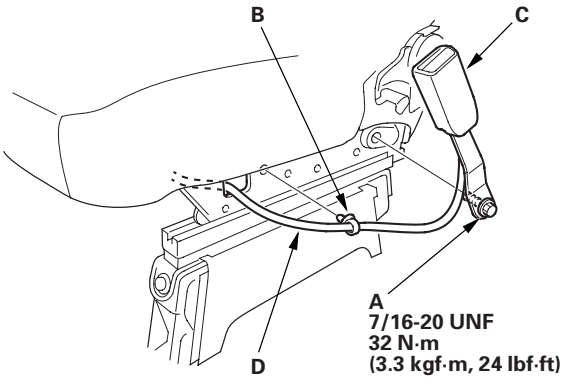
Driver's 10-way power seat



Driver's manual height adjustable seat



Passenger's manual seat

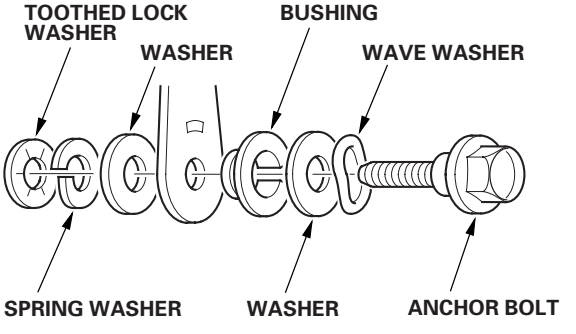


6. Pull the seat belt switch harness (D) out through the space between the seat cushion and the seat linkage, or through the hole in the seat track.

7. Install the buckle in the reverse order of removal, and note these items:

   - Assemble the washers and bushing on the center anchor bolt as shown.
   - Apply medium strength type liquid thread lock to the center anchor bolt before reinstallation.
   - Apply medium strength type liquid thread lock to the seat mounting bolts before reinstallation.
   - Tighten the bolt by hand first, then tighten to specification with a torque wrench.
   - Reconnect the negative cable to the battery.
   - Enter the anti-theft codes for the audio system and the navigation system (if equipped).
   - Set the clock (on vehicle without navigation).
   - Perform the power window control unit reset procedure (see page 22-209).

Center anchor bolt installation



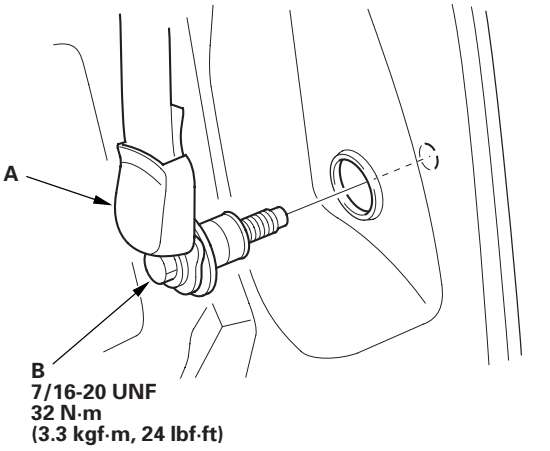
Rear Seat Belt Replacement

NOTE: Check the rear seat belts for damage, and replace them if necessary.

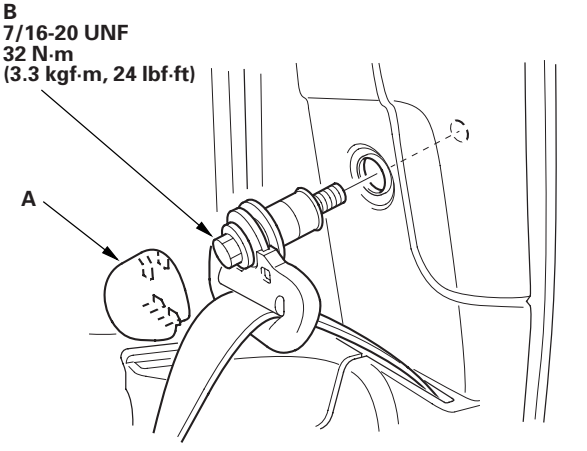
Rear Seat Belt

1. Remove the rear seat assembly (see page 20-117).

2. Pull the lower anchor cover (A) back, and remove the lower anchor bolt (B).



3. Remove the upper anchor cap (A), and remove the upper anchor bolt (B).



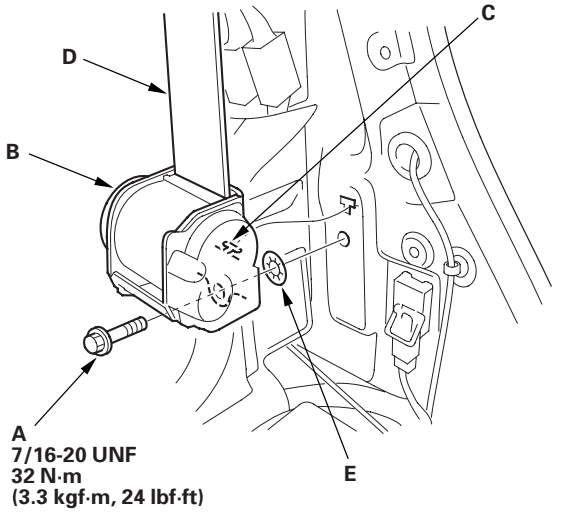
(cont'd)

Rear Seat Belt Replacement (cont'd)

4. Remove these items:

   - C-pillar trim (see page 20-68)
   - Rear seat side trim (see step 9 on page 20-62)

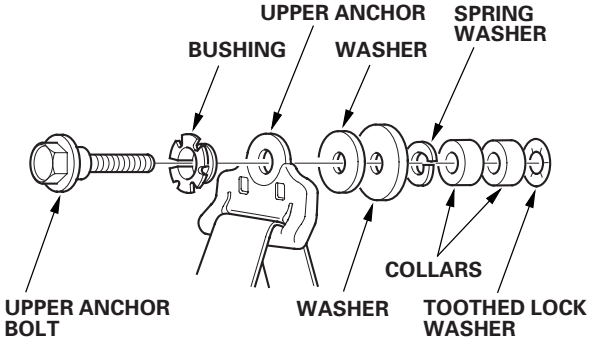
5. Remove the retractor bolt (A), and lift up on the retractor (B) to release the hook (C), then remove the rear seat belt (D) and toothed lock washer (E).



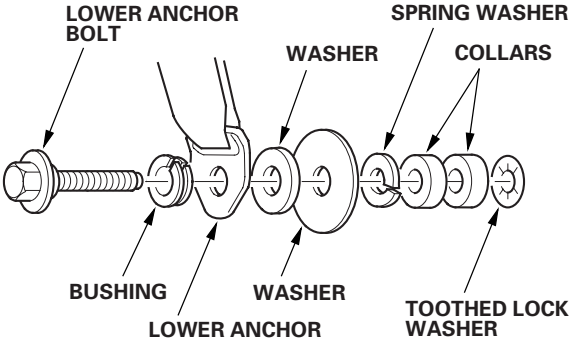
6. Install the seat belt in the reverse order of removal, and note these items:

   - Assemble the washers, collars, and bushings on the upper and lower anchor bolts as shown.
   - Check that the retractor locking mechanism functions as described (see page 24-12).
   - Apply medium strength type liquid thread lock to the anchor bolts before reinstallation.
   - Before installing the anchor bolts, make sure there are no twists or kinks in the seat belt.

Upper anchor bolt installation



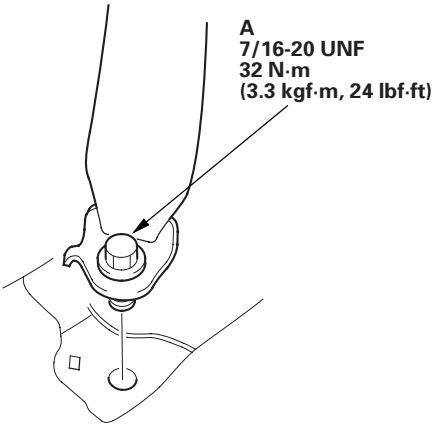
Lower anchor bolt installation



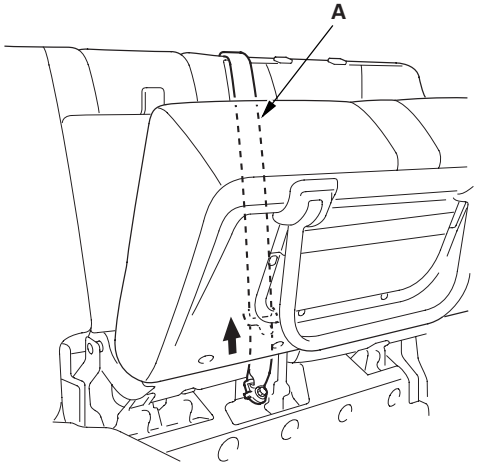
Rear Center Seat Belt

1. Remove the left rear under-seat trim panel (see step 1 on page 20-117).

2. Remove the center seat belt lower anchor bolt (A).



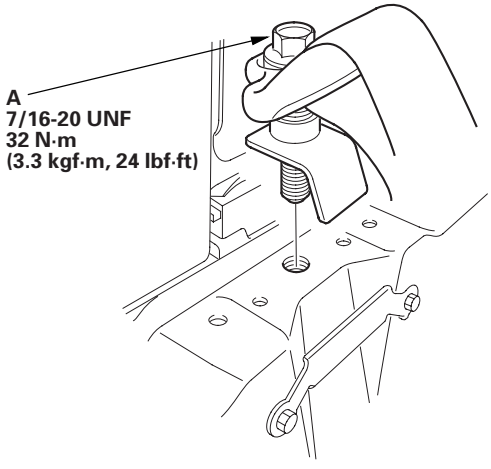
3. Pull out the center seat belt (A) through the gap between the rear seat-back and rear seat cushion.



4. Remove these items:

   - Right rear under-seat trim panel (see step 2 on page 20-117)
   - Lower middle rear seat mount cover (see step 3 on page 20-117)
   - Upper middle rear seat mount cover (see step 2 on page 20-119)
   - Rear seat mount covers, both sides (see step 4 on page 20-118)
   - Right rear seat belt buckle and center seat belt buckle
   - Rear seat assembly (see page 20-117)
   - Rear trim panel (see step 2 on page 20-68)
   - C-pillar trim, both sides (see step 4 on page 20-68)
   - Rear seat side trim, both sides (see step 9 on page 20-62)
   - Rear panel insulator (see page 20-69)

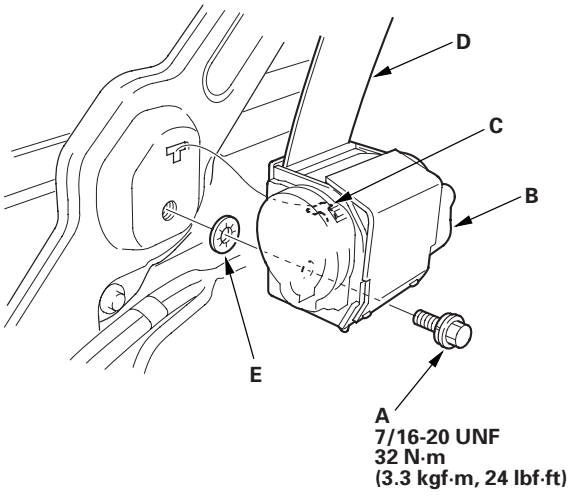
5. Remove the upper anchor bolt (A).



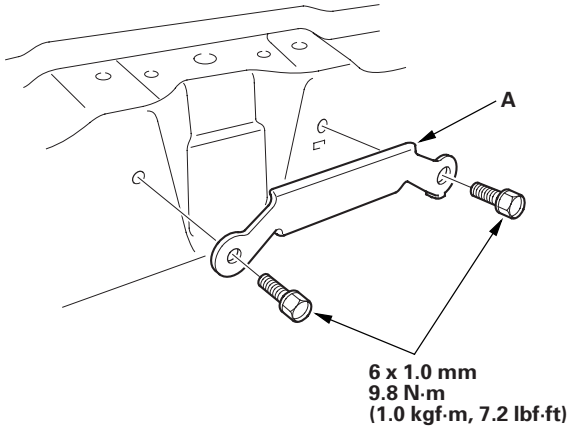
(cont'd)

Rear Seat Belt Replacement (cont'd)

6. Remove the retractor bolt (A), and lift up on the retractor (B) to release the hook (C), then remove the center seat belt (D) and toothed lock washer (E).



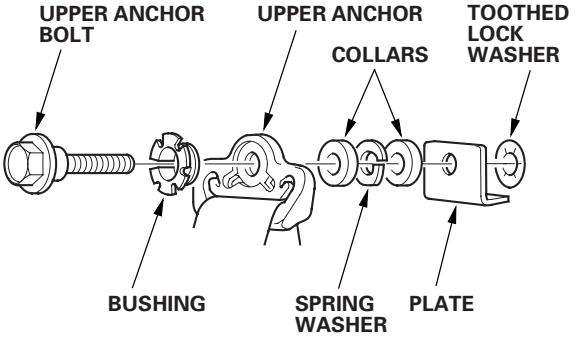
7. Remove the bolts, then remove the seat belt guide (A).



8. Install the seat belt in the reverse order of removal, and note these items:

- Assemble the washers, collars, and bushing on the upper anchor bolt as shown.
- Check that the retractor locking mechanism functions as described (see page 24-12).
- Apply medium strength type liquid thread lock to the anchor bolts before reinstallation.
- Before installing the anchor bolts, make sure there are no twists or kinks in the seat belt.

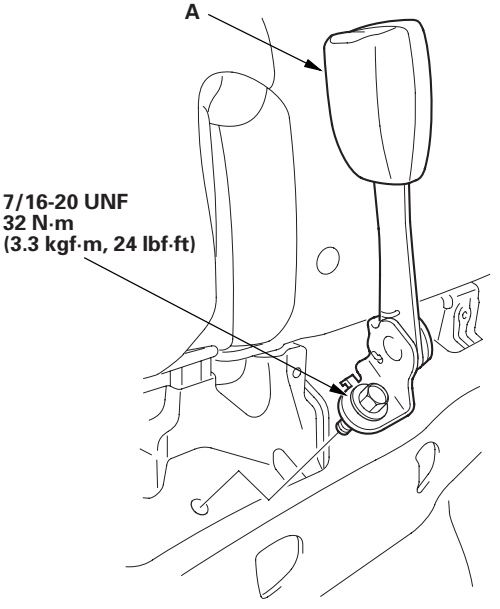
Upper anchor bolt installation



Left Rear Seat Belt Buckle

1. Remove the left rear under-seat trim panel (see step 1 on page 20-117).

2. Remove the center anchor bolt, then remove the left rear seat belt buckle (A).



3. Install the seat belt buckle in the reverse order of removal, and note these items:

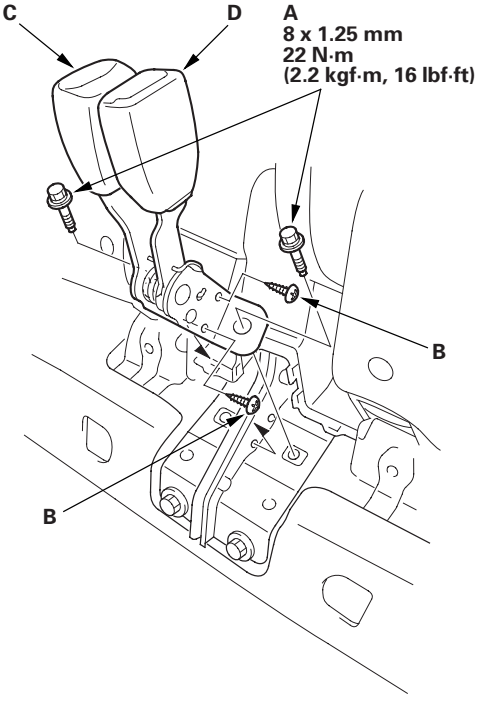
   - Apply medium strength type liquid thread lock to the anchor bolt before reinstallation.
   - Tighten the bolt by hand first, then tighten to specification with a torque wrench.

Right Rear Seat Belt Buckle/Center Seat Belt Buckle

1. Remove these items:

   - Left rear under-seat trim panel (see step 1 on page 20-117)
   - Right rear under-seat trim panel (see step 2 on page 20-117)
   - Lower middle rear seat mount cover (see step 3 on page 20-117)

2. Remove the bolts (A) and screws (B), then remove the right rear seat belt buckle (C)/center seat belt buckle (D).



3. Install the seat belt buckles in the reverse order of removal.

Inspection

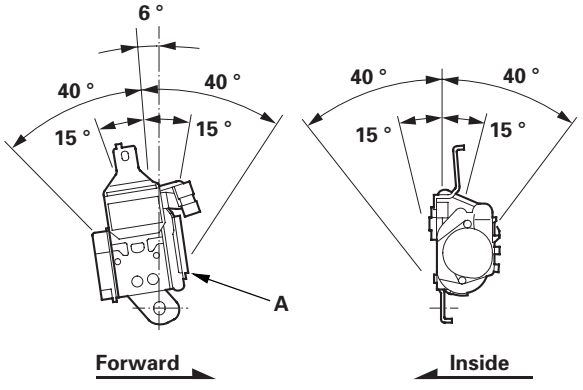
For front seat belt retractor with seat belt tensioner, review the SRS component locations (see page 24-14) and the precautions and procedures (see page 24-16) before performing repairs or service.

Retractor

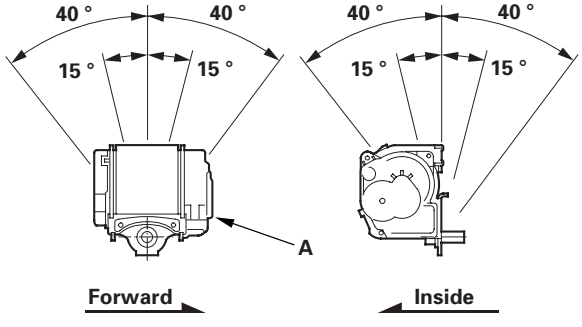
1. Before installing the retractor, check that the seat belt can be pulled out freely.

2. Make sure that the seat belt does not lock when the retractor (A) is leaned slowly up to 15 ° from the mounted position. The seat belt should lock when the retractor is leaned over 40 °. Do not attempt to disassemble the retractor.

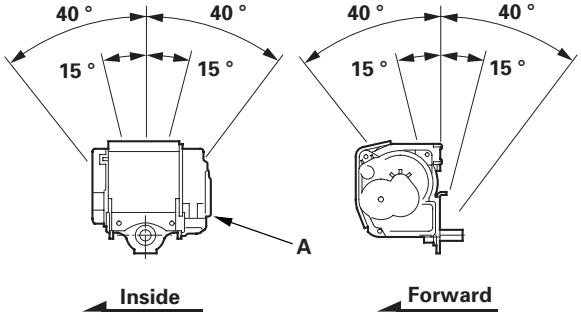
Front



Rear



Rear center



3. Replace the seat belt with a new assembly if there is any abnormality. Do not disassemble any part of the seat belt for any reason.

In-vehicle

1. Check that the seat belt is not twisted or caught on anything.

2. After installing the anchors, check for free movement on the anchor bolts. If necessary, remove the anchor bolts and check that the washers and other parts are not damaged or improperly installed.

3. Check the seat belts for damage or discoloration. Clean with a shop towel if necessary. Use only soap and water to clean.

   NOTE: Dirt buildup in the loops of the upper anchors can cause the seat belts to retract slowly. Wipe the inside of the loops with a clean cloth dampened in isopropyl alcohol.

4. Check that the seat belt does not lock when pulled out slowly. The seat belt is designed to lock only during a sudden stop or impact.

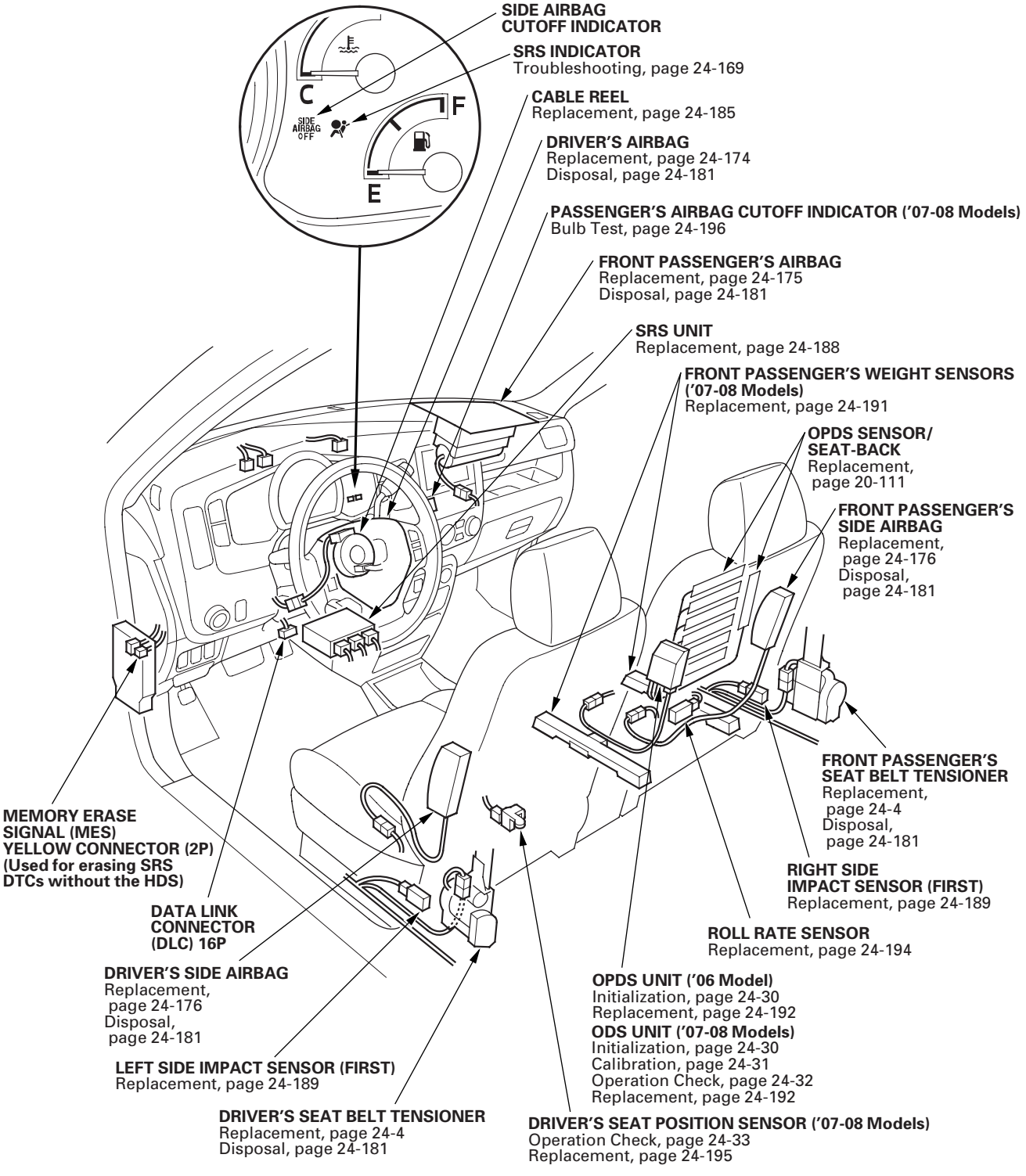
5. Make sure that the seat belt will retract automatically when released.

6. For front and rear passenger's seat belts, check the seat belt retractor locking mechanism ALR (automatic locking retractor). This function is for securing child seats:

   –1 Pull the seat belt all the way out to engage the ALR. The seat belt should retract with a soft, ratcheting sound, but not extend. This is normal.
   –2 To disengage the ALR, release the seat belt and allow it to fully retract, then pull the seat belt out part-way. The seat belt should retract and extend normally.

7. Replace the seat belt with a new assembly if there is any abnormality. Do not disassemble any part of the seat belt for any reason.

Component Location Index



SIDE AIRBAG CUTOFF INDICATOR

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FRONT PASSENGER'S AIRBAG
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OPDS SENSOR/ SEAT-BACK
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FRONT PASSENGER'S SIDE AIRBAG
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FRONT PASSENGER'S SEAT BELT TENSIONER
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MEMORY ERASE SIGNAL (MES) YELLOW CONNECTOR (2P) (Used for erasing SRS DTCs without the HDS)

DATA LINK CONNECTOR (DLC) 16P

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LEFT SIDE IMPACT SENSOR (FIRST)
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DRIVER'S SEAT POSITION SENSOR ('07-08 Models)
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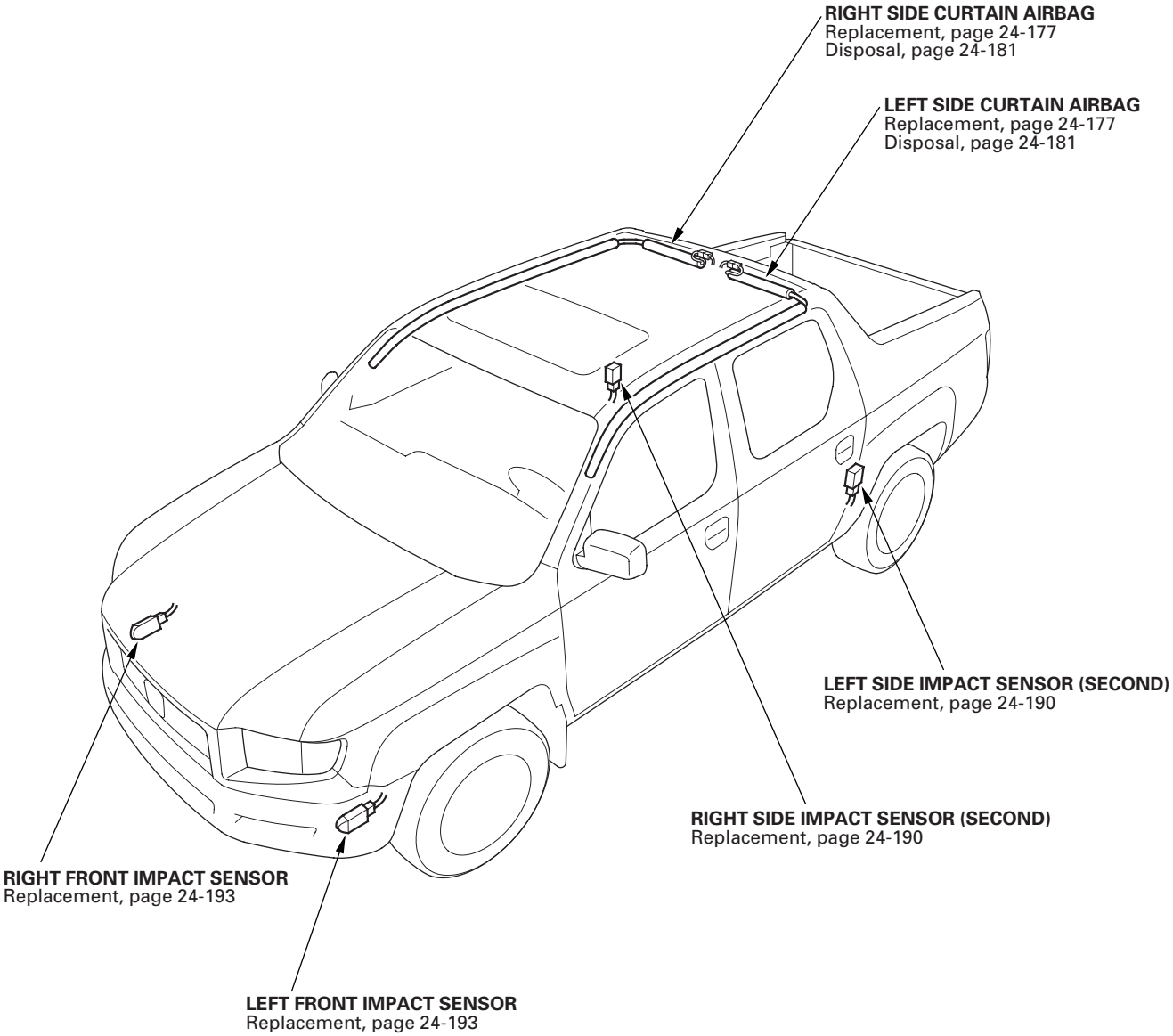
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Precautions and Procedures

General Precautions

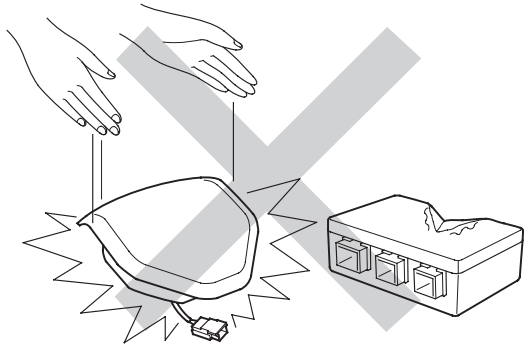
Please read the following precautions carefully before servicing the airbag system. Observe the instructions described in this manual, or the airbags could accidentally deploy and cause damage or injuries.

- Except when doing electrical inspections, always turn the ignition switch OFF, ground the SCS line with the HDS to take the PCM out of active status, disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.

  NOTE: The SRS memory is not cleared even if the ignition switch is turned OFF or the battery cables are disconnected from the battery.

- Use replacement parts which are manufactured to the same standards and quality as the original parts. Do not install used SRS parts. Use only new parts when making SRS repairs.

- Carefully inspect any SRS part before you install it. Do not install any part that shows signs of being dropped or improperly handled, such as dents, cracks or deformation.



- Before removing any of the SRS parts (including the disconnection of the connectors), always disconnect the SRS connector.

- Use only a digital multimeter to check the system. If it is not a Honda multimeter, make sure its output is 10 mA (0.01 A) or less when switched to the lowest value in the ohmmeter range. A tester with a higher output could cause accidental deployment and possible injury.

- Do not put objects on the front passenger's airbag.

- The original audio system and navigation system has a coded theft protection circuit. Be sure to get the anti-theft code and write down the XM audio presets (if equipped) before disconnecting the negative cable from the battery.

- Before returning the vehicle to the customer, enter the audio system and the navigation system code (if equipped), then enter the XM audio presets (if equipped); set the clock on vehicles without navigation.

Steering-related Precautions

Cable Reel Alignment

- Misalignment of the cable reel could cause an open in the wiring, making the SRS system, remote steering wheel controls, and the horn inoperative. Center the cable reel whenever the following is performed (see step 6 on page 24-187).
  – Installation of the steering wheel
  – Installation of the cable reel
  – Installation of the steering column
  – Other steering-related adjustment or installation

- Do not disassemble the cable reel.

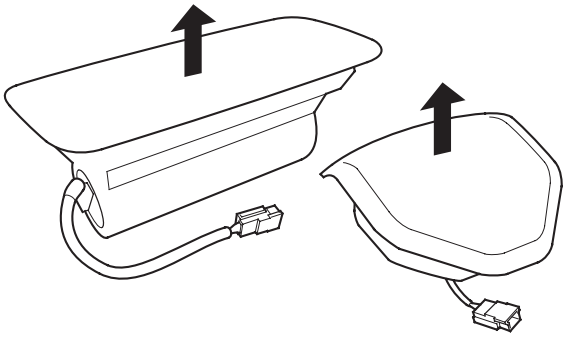
- Do not apply grease to the cable reel.

- If the cable reel shows any signs of damage, replace it with a new one. For example, if it does not rotate smoothly, replace the cable reel.

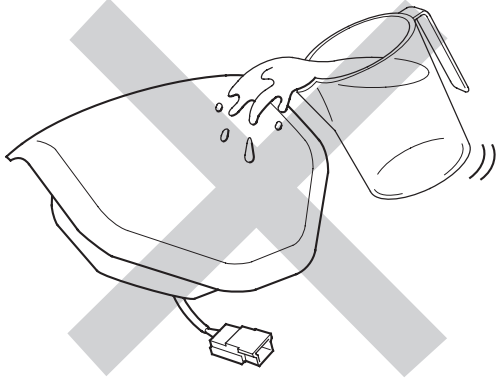
Airbag Handling and Storage

Do not disassemble an airbag. It has no serviceable parts. Once an airbag has been deployed, it cannot be repaired or reused. For temporary storage of the airbag during service, please observe the following precautions.

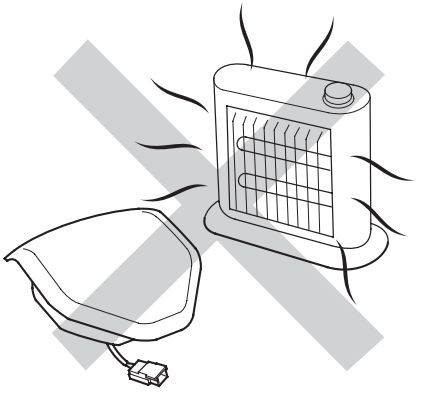
- Store the removed airbag with the deployment surface up. Never put anything on the removed airbag.



- To prevent damage to the airbag, keep it away from any oil, grease, detergent, or water.

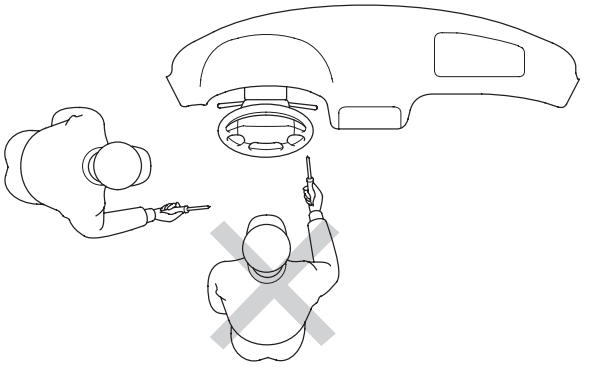


- Store the removed airbag on a secure, flat surface away from any high heat source (exceeding 200 ℉/ 93 ℃).



- Never electrical tests on the airbags, such as measuring resistance.

- Do not position yourself in front of the airbag assembly during removal, inspection, or replacement.

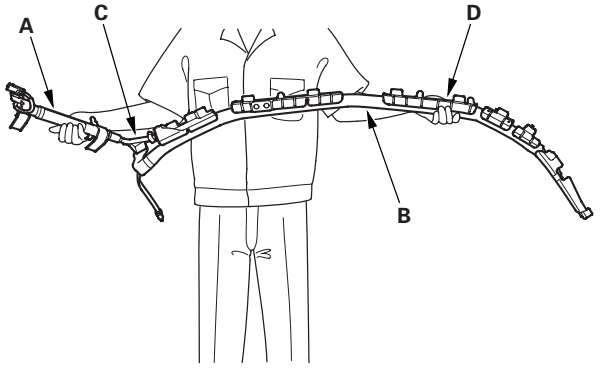


- For proper disposal of a damaged airbag, refer to airbag disposal (see page 24-181).

(cont'd)

Precautions and Procedures (cont'd)

- The side curtain airbag inflator assembly is a long, jointed part containing an inflator (A), a flexible bag (B), an adapter pipe (C), and a center bracket (D).



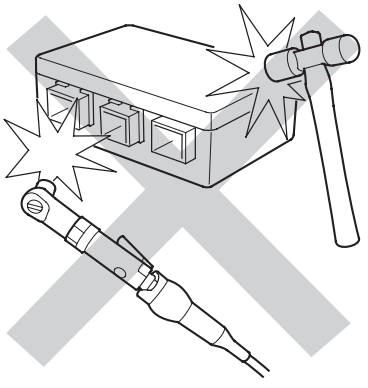
- When removing or installing the side curtain airbag inflator assembly, never handle the flexible bag (B) or the adapter pipe (C).

SRS Unit, Front and Side Impact Sensors, Driver's Seat Position Sensor ('07-08 Models), Front Passenger's Weight Sensor ('07-08 Models), and Roll Rate Sensor

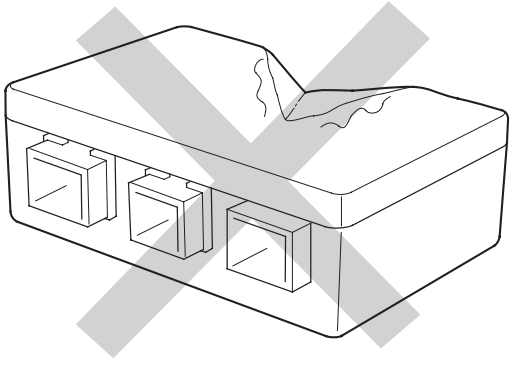
- Turn the ignition switch OFF, disconnect the negative cable from the battery, and wait at least 3 minutes before beginning installation or replacement of the SRS unit or disconnecting the connectors from the SRS unit.

- Be careful not to bump or impact the SRS unit, front impact sensors, roll rate sensor, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF.

- During installation or replacement, be careful not to bump (by impact wrench, hammer, etc.) the area around the SRS unit, front impact sensors, roll rate sensor, or side impact sensors. The airbags could accidentally deploy and cause damage or injury.



- After a collision in where a front airbag, a side airbag, a side curtain airbag, a seat belt tensioner, or seat belt buckle tensioner deployed, go to Component Replacement/Inspection after Deployment (see page 24-171). After a collision in where the airbags or the side airbags did not deploy, inspect for any damage or any deformation on the SRS unit, front impact sensors, roll rate sensor, and side impact sensors. Replace all damaged parts.



- Do not disassemble the SRS unit, front impact sensors, side impact sensors, driver's seat position sensor, front passenger's weight sensors, or roll rate sensor.
- Be sure the SRS unit, front impact sensors, roll rate sensor, and side impact sensors are installed securely with the mounting bolts torqued to 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft).
- Do not spill water or oil on the SRS unit or the side impact sensors and roll rate sensor, and keep them away from dust.
- Store the SRS unit, front impact sensors, roll rate sensor, and side impact sensors in a cool (less than 104 ℉/40 ℃) and dry (less than 80 % relative humidity, no moisture) area.

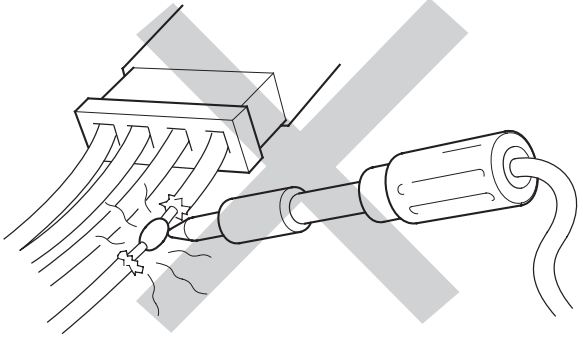
(cont'd)

Precautions and Procedures (cont'd)

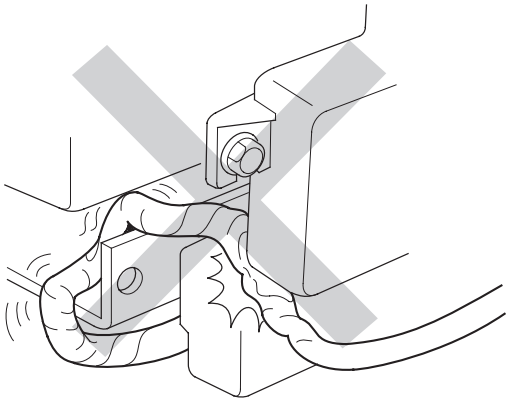
Wiring Precautions

Some of the SRS wiring can be identified by special yellow outer covering, and the SRS connectors can be identified by their yellow color. Observe the following instructions.

- Never attempt to modify, splice, or repair SRS wiring. If there is an open or damage in SRS wiring or terminals, replace the harness.



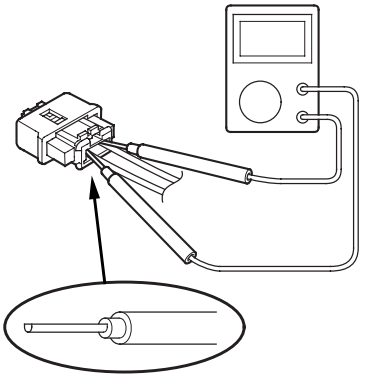
- Be sure to install the harness wires so they do not get pinched or interfere with other parts.



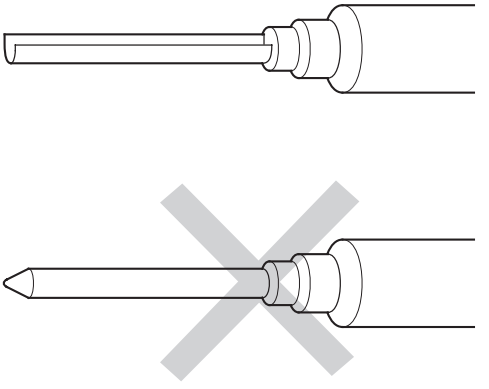
- Make sure all SRS ground locations are clean and securely fastened for optimum metal-to-metal contact. Poor grounding can cause intermittent problems that are difficult to diagnose.
- Do not use any silicone based cleaners or lubricants on any SRS connectors or terminals.

Precautions for Electrical Inspections

- When using electrical test equipment, insert the probe of the tester into the wire side of the connector. Do not insert the probe of the tester into the terminal side of the connector, and do not tamper with the connector.



- Use a U-shaped probe. Do not insert the probe forcibly.



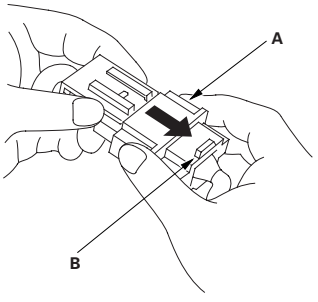
- Use specified service connectors in troubleshooting. Using improper tools could cause an error in inspection due to poor metal-to-metal contact.

Spring-loaded Lock Connector

Some SRS system connectors have a spring-loaded lock.

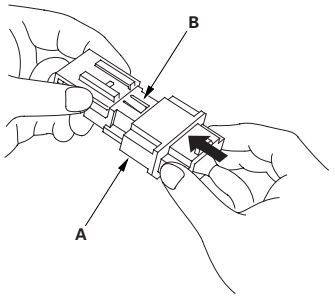
Front Airbag Connectors

Disconnecting
To release the lock, pull the spring-loaded sleeve (A) toward the stop (B) while holding the opposite half of the connector. Then pull the connector halves apart. Be sure to pull on the sleeve and not on the connector.

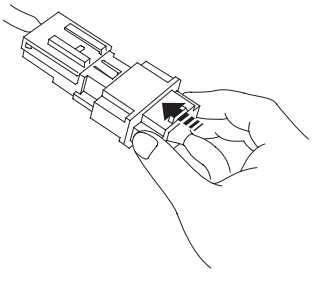


Connecting

1. To reconnect, hold the pawl-side connector, and press on the back of the sleeve-side connector in the direction shown. As the two connector halves are pressed together, the sleeve (A) is pushed back by the pawl (B). Do not touch the sleeve.

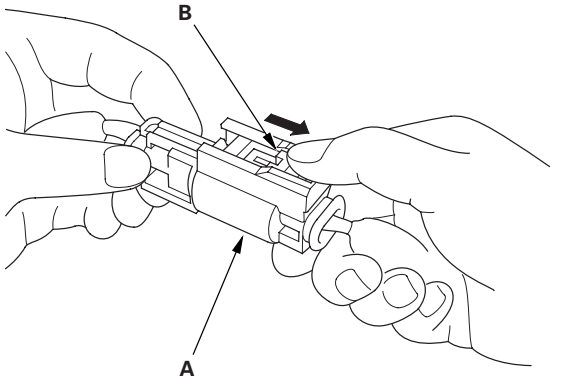


2. When the connector halves are completely connected, the pawl is released, and the spring-loaded sleeve locks the connector.

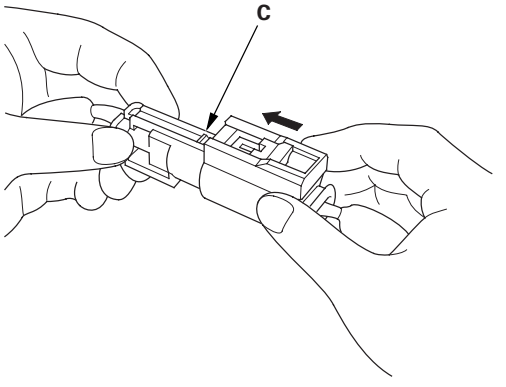


Side Airbag Connector

Disconnecting
To release the lock, pull the spring-loaded sleeve (A) and the slider (B) while holding the opposite half of the connector. Then pull the connector halves apart. Be sure to pull on the sleeve and not on the connector half.



Connecting
Hold both connector halves, and press them firmly together until the projection (C) of the sleeve-side connector clicks.



(cont'd)

Precautions and Procedures (cont'd)

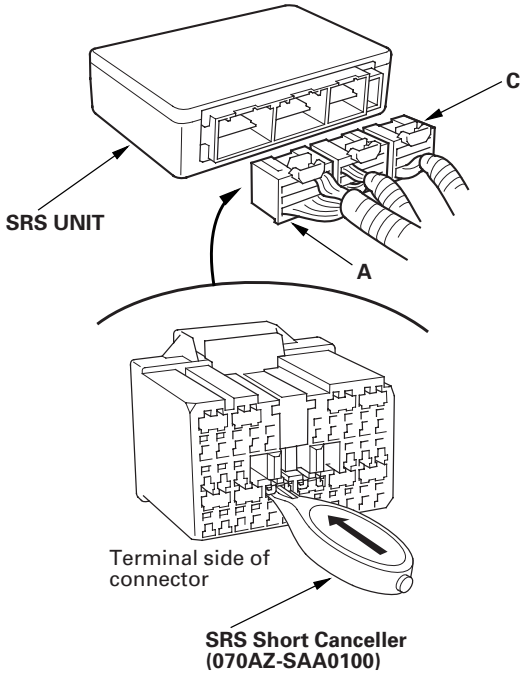
Opening the SRS Unit Shorting Connectors For Diagnosis

Special Tools Required
SRS Short Canceller 070AZ-SAA0100

NOTE:
- To prevent damage of the connector cavity, insert the SRS short canceller straight into the cavity from the terminal side.
- Before installing the short canceller, wash it with electrical contact cleaner, then air blow it dry.
- Do not use the short canceller if it is damaged.
- Make sure to remove the short canceller before re-connecting.

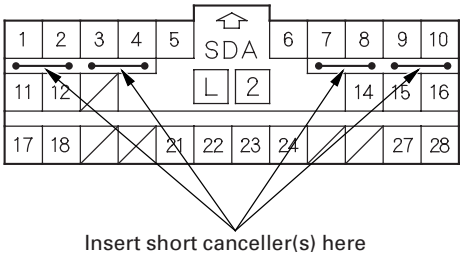
When SRS unit connectors A or C are disconnected, a short circuit is created in the connector by its own function to prevent airbag deployment. The circuit may need to be opened when diagnosis is done on the circuit.

Insert the short canceller (No. 070AZ-SAA0100) in the specified cavities when it is necessary to keep the circuit open for diagnosis.



Terminal numbers are shown from the wire side of the female terminals. Insert the short canceller(s) into the cavities on the terminal side of the connector.

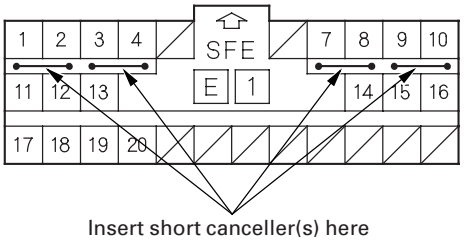
SRS UNIT CONNECTOR A (28P)



Insert short canceller(s) here

Wire side of female terminals

SRS UNIT CONNECTOR C (28P)



Insert short canceller(s) here

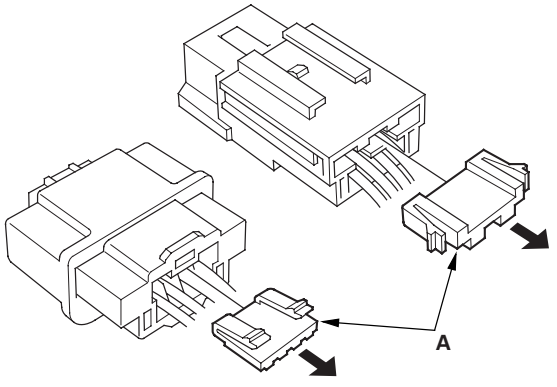
Wire side of female terminals

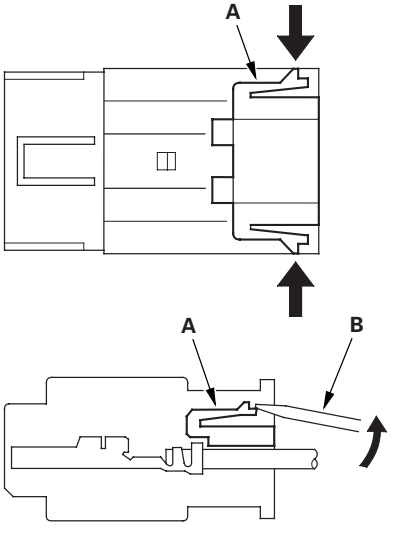
Backprobing Spring-loaded Lock Connectors

When checking voltage or resistance on this type of connector the first time, you must remove the retainer (A) to insert the tester probe from the wire side.

NOTE: It is not necessary to reinstall the removed retainer; the terminals will stay locked in the connector housing.

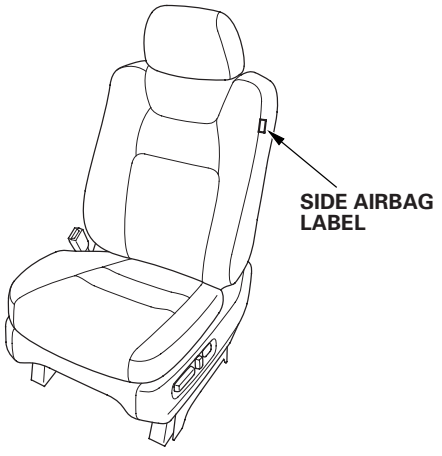
To remove the retainer (A), insert a flat-tip screwdriver (B) between the connector body and the retainer, then carefully pry out the retainer. Take care not to break the connector.





Seats with Side Airbags

Seats with side airbags have a ''SIDE AIRBAG'' label on the seat-back.



- When cleaning, use a damp cloth to clean the seat. Do not soak the seat with liquid.
- Do not spray steam on the seat.
- Do not repair a torn or frayed seat-back cover; replace it.
- After a collision where the side airbag was deployed, replace the seat-back cover and side airbag with new parts. If the seat-back cushion is split, it must be replaced. If the seat-back frame is deformed, it must be replaced.
- Never put aftermarket accessories on the seat (covers, pads, seat heaters, lights, etc.).

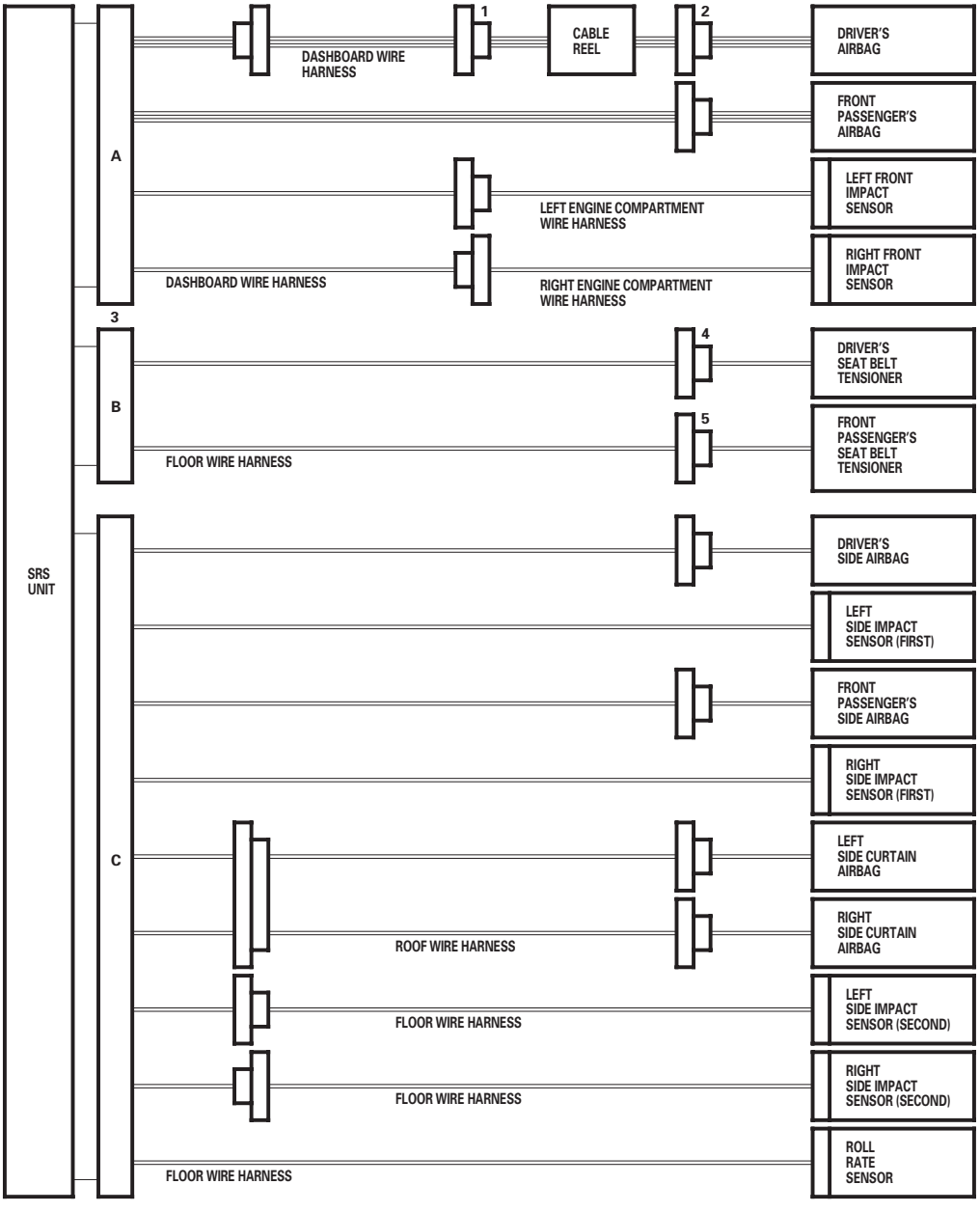
(cont'd)

Precautions and Procedures (cont'd)

Disconnecting System Connectors

Turn the ignition switch OFF, disconnect the negative cable from the battery, and wait at least 3 minutes before beginning the following procedures.

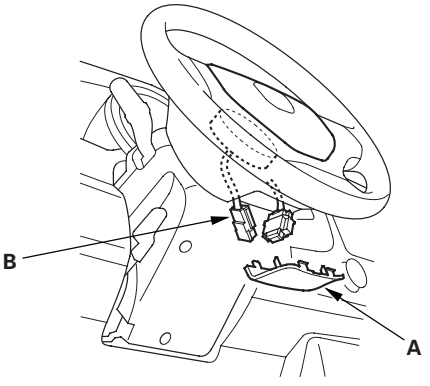
- Before disconnecting the cable reel 4P connector (1), disconnect the driver's airbag 4P connector (2).
- Before disconnecting SRS unit connector B (3) from the SRS unit, disconnect both seat belt tensioner 4P connectors (4, 5).



1. Disconnect the negative cable from the battery, and wait at least 3 minutes.

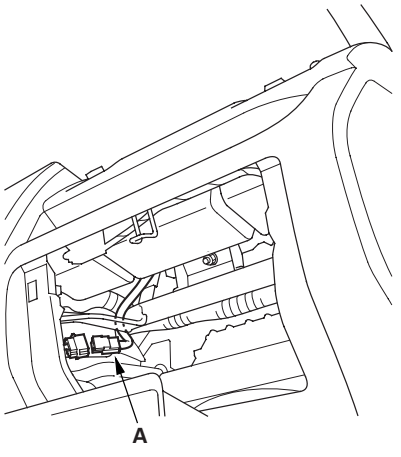
Driver's Airbag

2. Remove the access panel (A) from the steering wheel, then disconnect the driver's airbag 4P connector (B) from the cable reel.



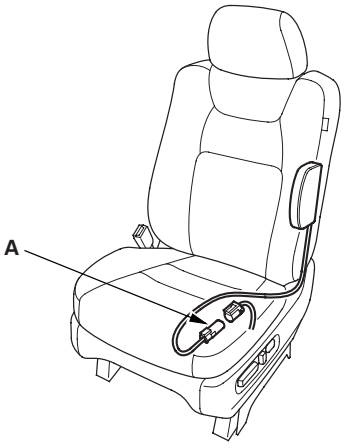
Front Passenger's Airbag

3. Remove the glove box (see page 20-85), then disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



Side Airbag

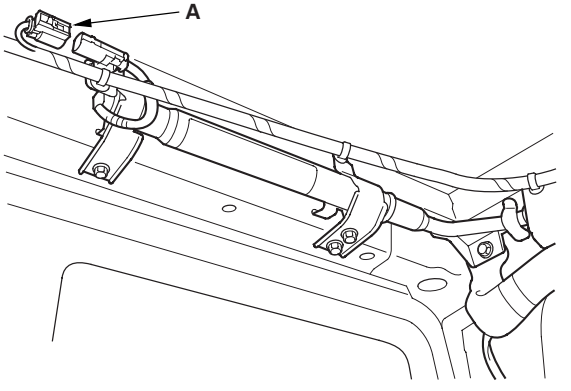
4. Disconnect both side airbag 2P connectors (A) from the floor wire harness.



Driver's seat shown; passenger's seat is similar.

Side Curtain Airbag

5. Remove the headliner (see page 20-70). Disconnect the roof wire harness 2P connector (A) from the side curtain airbag.

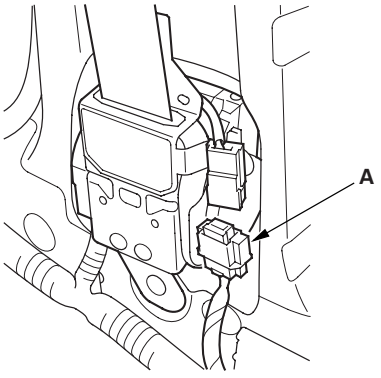


(cont'd)

Precautions and Procedures (cont'd)

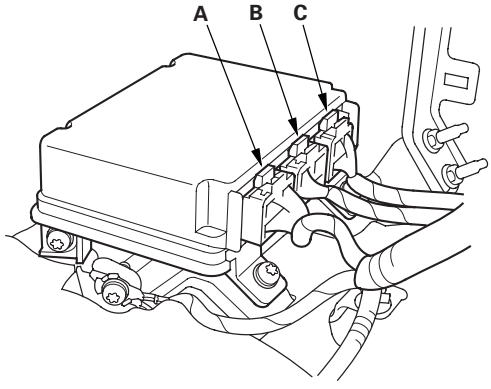
Seat Belt Tensioner

6. Disconnect the floor wire harness 4P connector (A) from the seat belt tensioner.



SRS Unit

7. Disconnect SRS unit connector A (28P), SRS unit connector B (28P), and/or SRS unit connector C (28P) from the SRS unit.



General Troubleshooting Information

DTC (Diagnostic Trouble Codes)

The self-diagnostic function of the SRS system allows it to locate the causes of system problems and then store this information in memory. For easier troubleshooting, this data can be retrieved via a data link circuit.

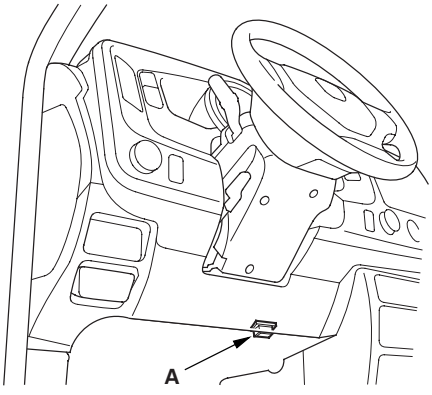
- When you turn the ignition switch ON (II), the SRS indicator comes on. If it goes off after 6 seconds, the system is normal, and is not currently detecting any abnormality.
- If there is an abnormality, the system locates and defines the problem, stores this information in memory, and turns the SRS indicator on. The data remains in memory even when the ignition switch is turned off or if the battery is disconnected.
- The data is stored in memory as a diagnostic trouble code (DTC).
- DTCs are either latching or resetting depending on the malfunction. With resetting DTCs, the SRS indicator goes off the next time the ignition switch is turned ON and the system is normal, but the DTC is still stored. With latching DTCs, the SRS indicator does turn OFF until the malfunction is repaired and the DTC is cleared.
- When you connect the HDS to the data link connector (DLC), you can retrieve a more detailed DTC in the Honda Systems ''SRS'' menu.
- After reading and recording the DTC, proceed with the troubleshooting procedure for that code.

Precautions

- Use only a digital multimeter to check the system. If it's not a Honda multimeter, make sure its output is 10 mA (0.01 A) or less when switched to the smallest value in the ohmmeter range. A tester with a higher output could damage the airbag circuit or cause accidental airbag deployment and possible injury.
- Whenever the ignition switch is ON (II), or has been turned OFF for less than 3 minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.
- Before you remove the dashboard wire harness of floor wire harness, disconnect the driver's airbag connector, the front passenger's airbag connector, both side airbag connectors, both side curtain airbag connectors, and both seat belt tensioner connectors.
- Make sure the battery is sufficiently fully charged. If the battery is dead or low, measured values may not be correct.
- Do not touch a tester probe to the terminals in the SRS unit or harness connectors, and do not connect the SRS unit terminals or the sensor terminals with a jumper wire. Use only the backprobe set and the multimeter. Backprobe spring-loaded lock type connectors correctly.

Reading the DTC

1. Make sure the ignition switch is OFF.
2. Connect the HDS to the data link connector (DLC) (A).



3. Turn the ignition switch ON (II).
4. Use the HDS to check for SRS DTCs.

   NOTE: SWS DTC assists SRS DTC. Therefore, do troubleshoot correspond to SRS DTC.

5. Read and record the DTC.
6. Turn the ignition switch OFF, and wait for 10 seconds.
7. Disconnect the HDS from the DLC.
8. Do the troubleshooting procedure for the DTC.

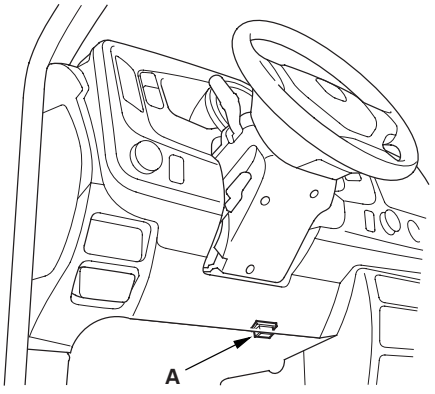
(cont'd)

General Troubleshooting Information (cont'd)

Clear the DTC Memory with the HDS

NOTE: Make sure the battery is fully charged before you begin.

1. Make sure the ignition switch is OFF.
2. Connect the HDS to the data link connector (DLC) (A).



3. Turn the ignition switch ON (II).
4. In the TEST MODE MENU of the HDS, select DTC CLEAR. This clears the DTC(s).
5. Turn the ignition switch OFF, and wait for 10 seconds.
6. Disconnect the HDS from the DLC.

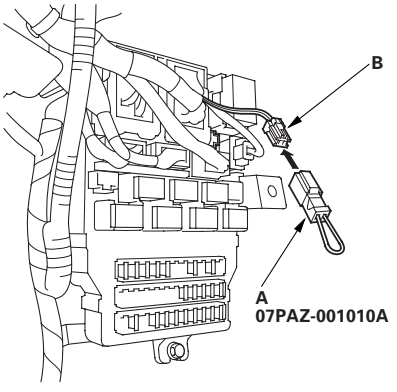
Clear the DTC Memory using Manual Mode

Special Tools Required
SCS Service Connector 07PAZ-001010A

NOTE: Make sure the battery is fully charged before you begin.

To clear the DTC(s) from the SRS unit, use the HDS or the following procedure.

1. Make sure the ignition switch is OFF.
2. Connect the SCS service connector (A) to the yellow MES 2P connector (B). Do not use a jumper wire.



3. Turn the ignition switch ON (II).
4. The SRS indicator will come on for about 6 seconds, and then go off. Remove the SCS service connector from the MES connector (2P) within 4 seconds after the indicator goes off.
5. The SRS indicator will come on again. Reconnect the SCS service connector to the MES connector (2P) within 4 seconds after the indicator comes on.
6. When the SRS indicator goes off, remove the SCS service connector from the MES connector (2P) within 4 seconds.
7. The SRS indicator blinks two times, indicating that the memory has been cleared.
8. Turn the ignition switch OFF, and wait for 10 seconds.
9. Turn the ignition switch ON (II) again. If the SRS indicator comes on for 6 seconds, and then goes off, the system is OK.

Troubleshooting Intermittent Failures

If there was a malfunction that sets a DTC, but it does not recur, it will be stored in the memory as an intermittent failure, and the SRS indicator may come on depending on the malfunction detected.

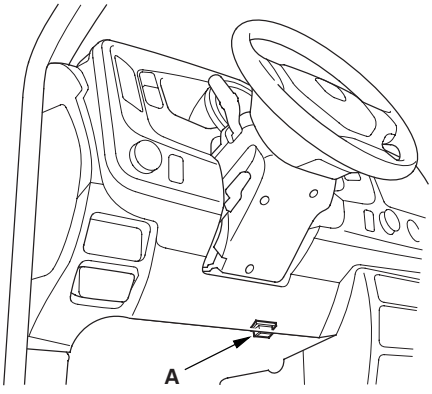
NOTE:
- Check the condition of the battery (see page 22-74), and the charging system (see page 4-28). Low battery voltage may cause some intermittent failures.
- A faulty cable reel can cause intermittent connections related to the driver's airbag inflator DTCs.

After checking the DTC, troubleshoot as follows:

1. Read the DTC (see ''Reading the DTC'').
2. Clear the DTC memory (see ''How to Clear the DTC Memory'').
3. Set the parking brake, then start the engine, and let it idle.
4. The SRS indicator comes on for about 6 seconds and then goes off.
5. Shake the related wire harnesses and the connectors, and look for loose connections, poor pinfits, and poor grounds.
6. Take a test-drive (quick acceleration, quick braking, and cornering), turn the steering wheel fully left and right, and hold it there for 5 to 10 seconds. If the problem recurs, the SRS indicator will come on.
7. If you cannot duplicate the concern, ask the customer about the conditions when it occurred, or ask the customer to demonstrate the concern.
8. If you cannot duplicate the intermittent failure, the system is OK at this time.

Checking seat weight sensors after a vehicle collision ('07-08 Models)

1. Position the front passenger's seat to the rear most position, adjust the recliner to the forwardmost position. Do not move it from this position.
2. Drive the vehicle, accelerate to 20 mph (36 km/h), then stop on level ground.
3. Connect the HDS to the data link connector (DLC) (A).



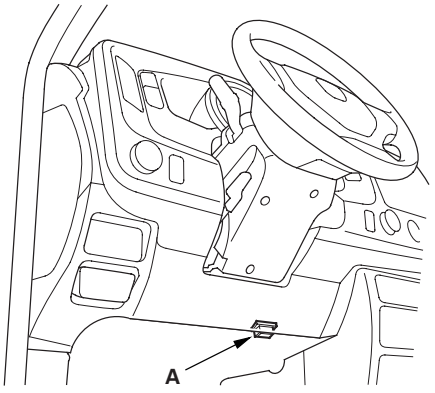
4. From the SRS inspection menu, select Seat Weight Sensor, then Misc test, then ''SEAT OUTPUT CHK'' and follow the prompts until the ODS operation check has been completed.

OPDS/ODS Unit Initialization

When a seat-back cover, seat-back cushion, and/or the OPDS/ODS unit is replaced, initialize the OPDS/ODS unit by following the procedure.

NOTE: A new (uninitialized) OPDS/ODS unit installed with a faulty OPDS sensor can cause DTC 85-71.

1. Clear the DTC memory (see page 24-28),
2. Make sure the front passenger's seat is dry. Set the seat-back in a normal position, and make sure there is nothing on the seat.
3. Make sure the ignition switch is OFF and the MES connector is not shorted.
4. Connect the HDS to the data link connector (DLC) (A).



5. Turn the ignition switch ON (II).
6. From the HDS Main Menu, select SRS, then SRS, then Calibration. In the Calibration Menu, select OPDS/ODS INITIALIZATION. Follow the screen prompts to initialize the OPDS/ODS.
7. Turn the ignition switch OFF.
8. Disconnect the HDS from the DLC.

   NOTE: If the OPDS/ODS system fails to initialize after several attempts, replace the OPDS sensor/seat-back and retry. If the OPDS/ODS system continues to fail to initialize, replace the OPDS/ODS unit (see page 24-192).

ODS Unit Calibration

'07-08 Models

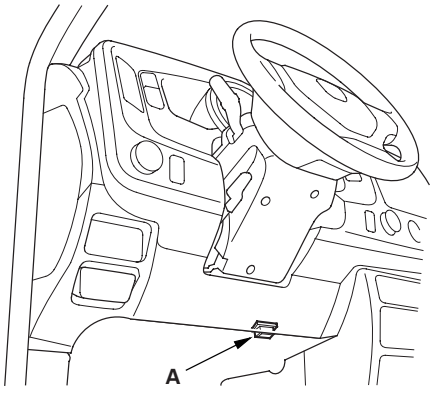
When you replace the SRS unit, front passenger's weight sensors or ODS unit, calibrate the ODS unit.

While calibrating the ODS unit, observe these precautions:

- Make sure all components of the front passenger's seat are correctly installed.
- Make sure nothing is on or under the front passenger's seat.
- Make sure there is nothing in the front passenger's seat-back pocket.
- Keep the windows closed.
- Do all calibration procedures except, test- driving, in the service bay.
- Make sure the vehicle is on level ground.
- Keep the A/C and the heater off.
- Do not touch the front passenger's seat until you are prompted to or when you have completed the calibration.
- Do not expose the front passenger's seat to sudden temperature changes.

1. Position the front passenger's seat to the rearmost position, and adjust the recliner to the forwardmost position. Do not move the seat from this position.

2. Connect the HDS to the data link connector (DLC) (A).



3. Drive the vehicle, and accelerate to 20 mph (36 km/h), then stop on level ground.

4. From the Main Menu, select SRS, then Calibration, then Misc Test, then select ''SWS INITILIZATION,'' and follow the prompts until the calibration has been completed.

ODS Unit Operation Check

'07-08 Models

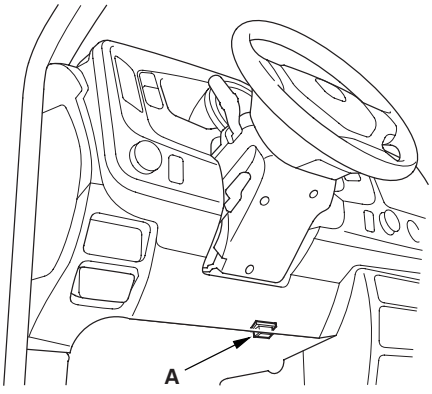
Check the ODS operation after any of these actions.
- Replacement of front passenger's seat component(s) (except ODS unit and/or front passenger's weight sensors)
- After a vehicle collision
- SRS unit replacement

Pre-Operation Check Set-up

- Make sure all the components of the front passenger's seat are correctly installed.
- Position the front passenger's seat to the rearmost position. Adjust the seat recline to the forwardmost position.
- Do not move the seat from this position.
- Make sure nothing is on or under the front passenger's seat.
- Make sure there is nothing in the front passenger's seat-back pocket.
- Keep the windows closed.
- Do all calibration procedures, except test-driving, in the service bay.
- Make sure the vehicle is on level ground.
- Keep the A/C and heater off.
- Do not touch the passenger's seat during the operation check.
- Do not expose the front passenger's seat to sudden temperature changes.
- Make sure all aftermarket devices such as amplifiers, fluorescent lights, air purifiers, CB or HAM radios, etc. are turned off.

After Replacing Front Passenger's Seat Component(s)

1. Connect the HDS to the data link connector (DLC) (A).



2. Drive the vehicle, accelerate to 20 mph (36 km/h), then stop on level ground.

3. From the HDS Main Menu, select SRS, then Inspection. In the HDS Inspection Menu, select ''SEAT OUTPUT CHK'' and follow the prompts until the ODS unit operation check has been completed.

Driver's Seat Position Sensor Operation Check

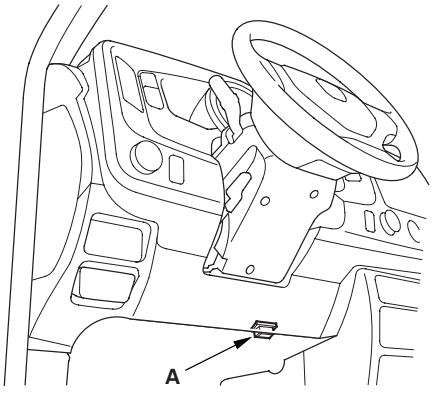
'07-08 Models

Check the driver's seat position after any of these actions.
- Driver's seat position sensor replacement
- Cover plate (front side of driver's seat slide rail) replacement

1. Make sure the driver's seat is at its full forward position.

2. Make sure the ignition switch is OFF (0).

3. Connect the HDS to the data link connector (DLC) (A).

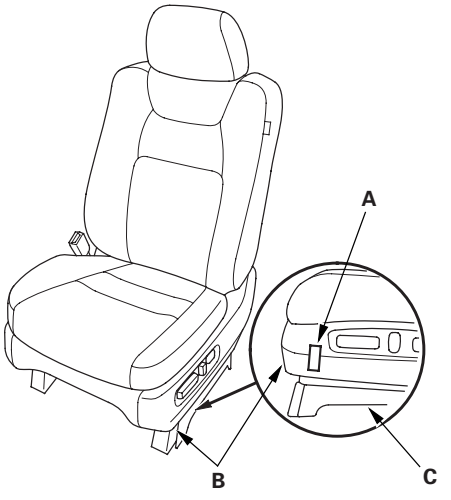


4. Turn the ignition switch ON (II).

5. From the HDS Main Menu, select SRS, then parameter information, then buckle switch, seat position sensor.

6. Move the driver's seat all the way forward.

7. Using a piece of tape (A), mark a line on the seat's outer cover (B) where the front riser cover meets the seat riser (C). The driver's seat position sensor should read ''NEAR.''



8. Move the seat back in small increments (about 0.2 in., 5 mm) until the SPS reads ''NOT NEAR.'' The seat should be about 1 in. (25 mm) from the front.

   NOTE: It takes a few seconds for the HDS to display changes, so wait about 5 seconds between each move.

   If the driver's seat position sensor does not work as described above, check the driver's seat position sensor or the cover plate for damage, and replace parts as needed.

9. Turn the ignition switch OFF, and disconnect the HDS from the DLC.

DTC Troubleshooting Index

DTC	Latch *1	Reset *2	Detection Item	Notes
11-1x		○	Open in driver's airbag first inflator	(see page 24-53)
11-3x			Short to another wire or decreased resistance in driver's airbag first inflator	(see page 24-55)
11-4x			Open in driver's airbag second inflator	(see page 24-53)
11-6x			Short to another wire or decreased resistance in driver's airbag second inflator	(see page 24-55)
11-8x	○		Short to power in driver's airbag first inflator	(see page 24-57)
11-9x			Short to ground in driver's airbag first inflator	(see page 24-59)
11-Ax			Short to power in driver's airbag second inflator	(see page 24-57)
11-Bx			Short to ground in driver's airbag second inflator	(see page 24-59)
12-1x		○	Open in front passenger's airbag first inflator	(see page 24-61)
12-3x			Short to another wire or decreased resistance in front passenger's airbag first inflator	(see page 24-62)
12-4x			Open in front passenger's airbag second inflator	(see page 24-61)
12-6x			Short to another wire or decreased resistance in front passenger's airbag second inflator	(see page 24-62)
12-8x	○		Short to power in front passenger's airbag first inflator	(see page 24-64)
12-9x			Short to ground in front passenger's airbag first inflator	(see page 24-65)
12-Ax			Short to power in front passenger's airbag second inflator	(see page 24-64)
12-Bx			Short to ground in front passenger's airbag second inflator	(see page 24-65)
21-1x		○	Open in driver's seat belt tensioner	(see page 24-67)
21-3x			Short to another wire or decreased resistance in driver's seat belt tensioner	(see page 24-68)
21-8x	○		Short to power in driver's seat belt tensioner	(see page 24-70)
21-9x			Short to ground in driver's seat belt tensioner	(see page 24-71)
22-1x		○	Open in front passenger's seat belt tensioner	(see page 24-73)
22-3x			Short to another wire or decreased resistance in front passenger's seat belt tensioner	(see page 24-74)
22-8x	○		Short to power in front passenger's seat belt tensioner	(see page 24-76)
22-9x			Short to ground in front passenger's seat belt tensioner	(see page 24-77)
31-1x		○	Open in driver's side airbag inflator	(see page 24-79)
31-3x			Short to another wire or decreased resistance in driver's side airbag inflator	(see page 24-80)
31-8x	○		Short to power in driver's side airbag inflator	(see page 24-82)
31-9x			Short to ground in driver's side airbag inflator	(see page 24-83)
32-1x		○	Open in front passenger's side airbag inflator	(see page 24-85)
32-3x			Short to another wire or decreased resistance in front passenger's side airbag inflator	(see page 24-86)
32-8x	○		Short to power in front passenger's side airbag inflator	(see page 24-88)
32-9x			Short to ground in front passenger's side airbag inflator	(see page 24-89)
33-1x		○	Open in left side curtain airbag inflator	(see page 24-91)
33-3x			Short to another wire or decreased resistance in left side curtain airbag inflator	(see page 24-93)
33-8x	○		Short to power in left side curtain airbag inflator	(see page 24-95)
33-9x			Short to ground in left side curtain airbag inflator	(see page 24-97)
34-1x		○	Open in right side curtain airbag inflator	(see page 24-99)
34-3x			Short to another wire or decreased resistance in right side curtain airbag inflator	(see page 24-101)
34-8x	○		Short to power in right side curtain airbag inflator	(see page 24-103)
34-9x			Short to ground in right side curtain airbag inflator	(see page 24-105)

DTC	Latch *1	Reset *2	Detection Item	Notes
41-1x		○	No signal from the left front impact sensor	(see page 24-107)
41-2x			Internal failure of the left front impact sensor	(see page 24-112)
41-3x				
41-Bx	○			
42-1x		○	No signal from the right front impact sensor	(see page 24-110)
42-2x			Internal failure of the right front impact sensor	(see page 24-112)
42-3x				
42-Bx	○			
43-1x		○	No signal from the left side impact sensor (first)	(see page 24-113)
43-2x			Internal failure of the left side impact sensor (first)	(see page 24-118)
43-3x				
43-Bx	○			
44-1x		○	No signal from the right side impact sensor (first)	(see page 24-115)
44-2x			Internal failure of the right side impact sensor (first)	(see page 24-118)
44-3x				
44-Bx	○			
45-1x		○	No signal from the left side impact sensor (second)	(see page 24-118)
45-2x			Internal failure of the left side impact sensor (second)	(see page 24-123)
45-3x				
45-Bx	○			
46-1x		○	No signal from the right side impact sensor (second)	(see page 24-121)
46-2x	○	○	Internal failure of the right side impact sensor (second)	(see page 24-123)
46-3x				
46-Bx	○			
51-xx		○	Internal failure of the SRS unit	(see page 24-124)
52-xx	○			
53-xx		○		
54-xx				
55-xx				
56-xx	○			
61-1x		○	Open in driver's seat belt buckle switch	(see page 24-125)
61-2x			Short in driver's seat belt buckle switch	(see page 24-128)
62-1x			Open in front passenger's seat belt buckle switch	(see page 24-131)
62-2x			Short in front passenger's seat belt buckle switch	(see page 24-134)

NOTE: The ''x'' at the end of each DTC denotes a numeric character (0 thru 9) or an alpha character (A thru F) that you will see on the HDS display. The character is unrelated to your troubleshooting; it designates the SRS unit manufacturer and other details used for product analysis.

* 1: The SRS indicator comes on and stays on whenever the ignition switch is in the ON (II) position, or until the code is cleared.

* 2: The SRS indicator comes on when the DTC is set. The SRS indicator will not come on after the ignition switch is cycled from ON (II) to OFF (0), but the DTC will be stored in the SRS unit.

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC	Latch *1	Reset *2	Detection Item	Notes
71-1x		○	Open in driver's seat position sensor ('07-08 models)	(see page 24-137)
71-2x			Short in driver's seat position sensor ('07-08 models)	(see page 24-138)
81-4x			Internal failure of the ODS unit ('07-08 models)	(see page 24-145)
81-5x				
81-61			No signal from the ODS unit ('07-08 models)	(see page 24-140)
81-62			Response data error from the ODS unit ('07-08 models)	
81-63			Internal failure of the ODS unit ('07-08 models)	(see page 24-145)
81-64				
81-71			ODS unit does not calibrate ('07-08 models)	(see page 24-144)
81-78				
81-79			Front passenger's weight sensors initial check failure ('07-08 models)	(see page 24-145)
82-1x			No signal from the inner side front passenger's weight sensor ('07-08 models)	(see page 24-146)
83-2x			No signal from the outer side front passenger's weight sensor ('07-08 models)	
85-4x		○	Internal failure of the OPDS/ODS unit	(see page 24-151)
85-5x				
85-61			No signal from the OPDS unit ('06 model)	(see page 24-147)
			No signal from the ODS unit ('07-08 models)	(see page 24-140)
85-62			Response data error from the ODS unit ('06 model)	(see page 24-147)
			Response data error from the OPDS unit ('07-08 models)	(see page 24-140)
85-63			Internal failure of the OPDS/ODS unit	(see page 24-151)
85-64				
85-71			OPDS/ODS unit does not initialize	(see page 24-144)
85-78				
85-79			OPDS sensor initial check failure	(see page 24-151)
86-1x			Faulty OPDS sensor	(see page 24-152)
86-2x				
87-31			Side airbag cutoff indicator stays on/off	(see page 24-153)
87-32				
91-1x			Short to ground in the SRS indicator circuit	(see page 24-155)
92-1x		○	Open in the passenger's airbag cutoff indicator ('07-08 models)	(see page 24-156)
92-2x			Open or short to ground in the passenger's airbag cutoff indicator ('07-08 models)	(see page 24-158)
A1-1x			Faulty power supply (VA line)	(see page 24-159)
A2-1x			Faulty power supply (VB line)	(see page 24-160)
B1-1x			No signal from the roll rate sensor	(see page 24-162)
B1-8x	○		Internal failure of the roll rate sensor	(see page 24-165)
B1-9x				
B1-Ax				
B1-Bx				
Ex-xx			Control operation recorded	(see page 24-124)
Fx-xx			Airbags and/or Tensioners deployment recorded	

B-CAN DTCs

DTC	Detection item or Symptom	ECU	DTC type	page
B1032	MICU collision detection signal (CDS) input failure	MICU	Signal error	(see page 24-165)

NOTE: The "x" at the end of each DTC denotes a numeric character (0 thru 9) or an alpha character (A thru F) that you will see on the HDS display. The character is unrelated to your troubleshooting; it designates the SRS unit manufacturer and other details used for product analysis.

* 1: The SRS indicator comes on and stays on whenever the ignition switch is in the ON (II) position, or until the code is cleared.

* 2: The SRS indicator comes on when the DTC is set. The SRS indicator will not come on after the ignition switch is cycled from ON (II) to OFF (0), but the DTC will be stored in the SRS unit.

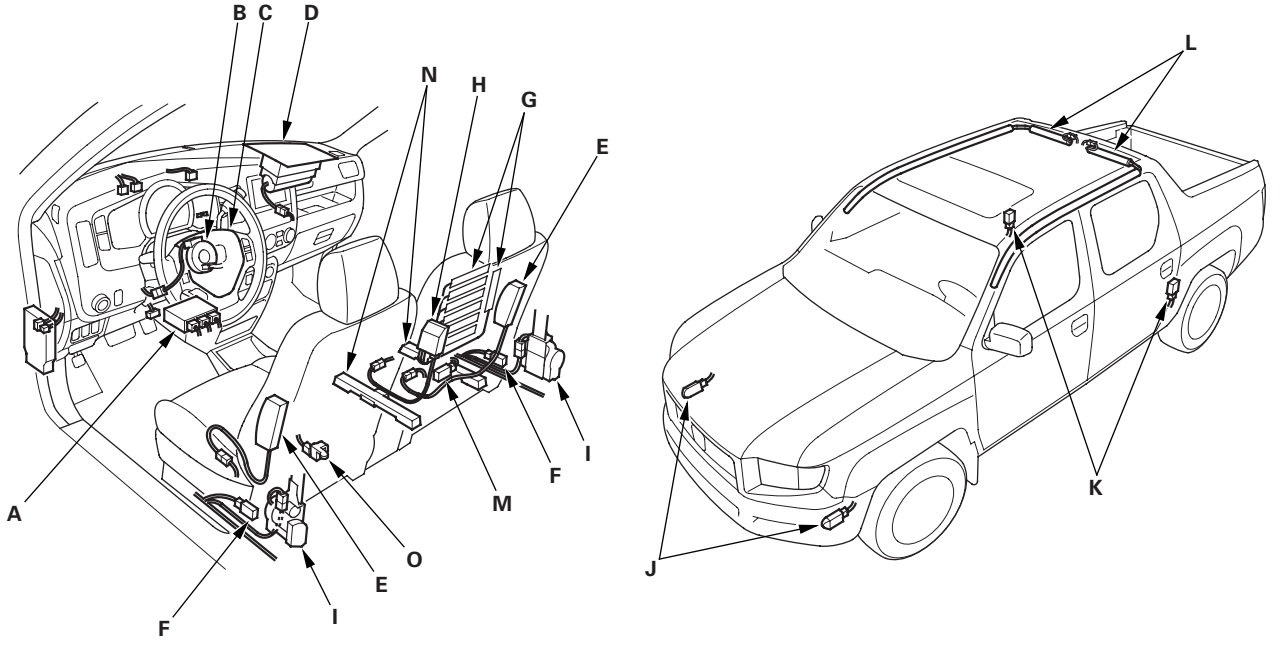
Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
SRS indicator does not come on	Symptom Troubleshooting (see page 24-167)	
SRS indicator stays on, but no DTCs are stored	Symptom Troubleshooting (see page 24-169)	Charging system for under or over charging
Side airbag cutoff indicator stays on after bulb check, and no DTCs are stored, or side airbag cutoff indicator is flashing	• Make sure nothing is on the front passenger's seat. • If the side airbag cutoff indicator stays on after the ignition switch is turned ON (II), initialize the OPDS/ODS unit (see page 24-30). – If the side airbag cutoff indicator operates normally, the system is OK. – If the side airbag cutoff indicator stays on or blinks, replace the OPDS sensor/ seat-back (see page 20-111). The sensor is part of the seat-back pad.	DTC 87-32 troubleshooting

System Description

SRS Components

Airbags
The SRS is a safety device which, when used with the seat belt, is designed to help protect the driver and front passenger in a frontal impact exceeding a certain set limit. The system consists of the SRS unit, including safing sensor and impact sensor (A), the cable reel (B), the driver's airbag (C), the front passenger's airbag (D), side airbags (E), side curtain airbags (L), seat belt tensioners (I), front impact sensors (J), side impact sensors (first) (F) and side impact sensors (second) (K).
Since the driver's and front passenger's airbags use the same sensors, both normally inflate at the same time. However, it is possible for only one airbag to inflate. This can occur when the severity of a collision is at the margin, or threshold, that the SRS unit determines whether or not the airbags will deploy. In such cases, the seat belt will provide sufficient protection, and the supplemental protection offered by the airbag would be minimal.



Front Passenger's Weight Sensors ('07-08 Models)
The ODS unit (H) is in the front passenger's seat-back along with the weight sensors (N). The weight sensors detect the weight on the seat, and send the information to the ODS unit. If the total weight is about 65 lbs (30 kg) or less, the ODS unit sends a signal to the SRS unit to prevent the passenger's airbag from deploying. When the passenger's airbag is disabled, the passenger airbag cutoff indicator on the center panel comes on to alert the driver that the front passenger's airbag will not deploy in a front-end collision.

Driver's Seat Position Sensor ('07-08 Models)
The driver's seat position sensor (O) is under the driver's seat on the left side. When the driver's seat is moved to its full forward position, the deployment of the driver's airbag is moderated to decrease its force of impact during a front-end collision.

Roll Rate Sensor
The roll rate sensor (M) is located under the front passenger's seat. It detects the amount of vehicle roll, and sends the information to the SRS unit. The SRS unit uses this information to determine if a vehicle rollover is imminent. If so, it deploys both side curtain airbags and the front seat belt tensioners.

Side Airbags
The side airbags (E) are in each front seat-back. They help protect the upper torso of the driver or front seat passenger during a moderate to severe side impact. Side impact sensors (first) (F) in each door sill, side impact sensors (second) (K) in each rear door sill, and the SRS unit safing sensor detect such an impact and instantly inflate the driver's or the passenger's side airbag. Only one side airbag will deploy during a side impact. If the impact is on the passenger's side, the passenger's side airbag will deploy even if there is no passenger.

Side Curtain Airbags
The side curtain airbags (L) are in each side of the roof. They help protect the head of the driver, front passenger, and passengers in the rear outer seats during a moderate to severe side impact. Side impact sensors (first) (F) in each front door sill, side impact sensors (second) (K) in each rear door sill, roll rate sensor (M) under the front passenger's seat, and the SRS unit detect such an impact and instantly inflate the driver's or the passenger's side curtain airbag. A side impact causes the side curtain airbag and the side airbag on the impacted side to deploy at the same time.

Seat Belt Tensioners
The seat belt tensioners are linked with the SRS airbags to further increase the effectiveness of the seat belt. In a front-end or side collision, the tensioners instantly retract the belt firmly to secure the driver and front passenger in their seats.

OPDS/ODS
The side airbag system also includes an occupant position detection system (OPDS). This system consists of sensors (G) and a OPDS/ODS unit (H) in the front passenger's seat-back. The OPDS/ODS unit sends occupant height and position data to the SRS unit. If the OPDS/ODS unit determines that the front passenger is of small stature (for example, a child) or the front passenger is leaning into the side airbag deployment path, the SRS unit will automatically disable the passenger's side airbag. The SRS unit will also disable the airbag when the OPDS/ODS detects certain objects on the seat. When the side airbag is disabled, the side airbag cutoff indicator on the instrument panel alerts the driver that the passenger's side airbag will not deploy in a side impact. When the object is removed, or the passenger sits upright, the side airbag cutoff indicator will go off after a few seconds, alerting the driver that the passenger's side airbag will deploy in a side impact.

(cont'd)

System Description (cont'd)

Side Airbag Cutoff Indicator/OPDS/ODS Operation
The indicator comes on if the front passenger's seat is occupied by a small adult or child who is leaning into the deployment path, or an object (grocery bag, briefcase, purse, etc.) is in the seat. This indicates the passenger's side airbag is off and will not deploy; there is no problem with the side airbag. If the passenger sits upright or moves to another seat, or you remove the object from the seat, the light should go off. There will be some delay between the occupant's repositioning and when the indicator will turn on or off.

Passenger Airbag Cutoff Indicator
The indicator comes on if the weight of the front passenger is about 65 lbs (30 kg) or less. This indicates the passenger's front airbag is off and will not deploy. The front airbag is shut off to reduce the chance of airbag-caused injuries.

SRS Operation
The main circuit in the SRS unit senses and judges the force of impact and, if necessary, ignites the inflator charges. If battery voltage is too low or power is disconnected due to the impact, the voltage regulator and the back-up power circuit will keep voltage at a constant level.

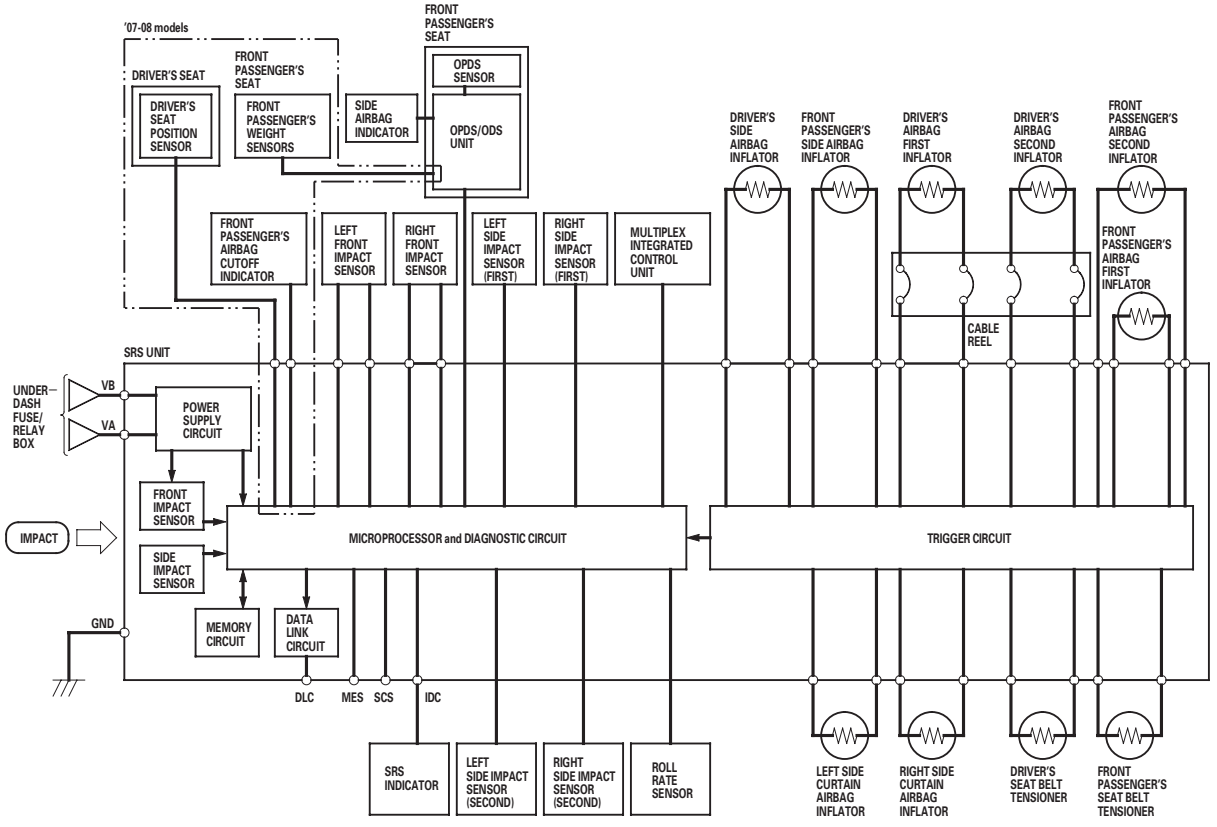
For the SRS to operate:

Seat Belt Tensioners
(1) A front impact sensor, side impact sensor, or the roll rate sensor must activate and send electric signals to the microprocessor.
(2) The microprocessor must compute the signals and send them to the tensioners.
(3) The charges must ignite and deploy the tensioners.

Driver's and Front Passenger's Airbag(s)
(1) A front impact sensor must activate and send electric signals to the microprocessor.
(2) The microprocessor must compute the signals and send them to the airbag inflator(s).
(3) The inflators that receives signals must ignite and deploy the airbags.

Side Airbag(s)
(1) A side impact sensor must activate and send electric signals to the microprocessor.
(2) The microprocessor must compute the signals and send them to the side airbag inflator(s). However, the microprocessor cuts off the signals to the front passenger's side airbag if the OPDS/ODS unit determines if the front passenger's seat is occupied by a small adult or child who is leaning into the deployment path, or an object (grocery bag, briefcase, purse, etc.) is in the deployment path of the side airbag.
(3) The inflator that receives the signal must ignite and deploy the side airbag.

Side Curtain Airbag(s)
(1) Side impact sensors must activate, and send electrical signals to the microprocessor.
(2) The microprocessor must compute the signals and send them to the side curtain airbag and side airbag inflator(s).
(3) The inflator that receives the signals must ignite and deploy the side curtain airbag and side airbag at the same time.



Self-diagnostic System

A self-diagnostic circuit is built into the SRS unit; when the ignition switch is turned ON (II), the SRS indicator comes on and goes off after about 6 seconds if the system is operating normally.

If the indicator does not come on, or does not go off after 6 seconds, or if it comes on while driving, it indicates an abnormality in the system. The system must be inspected and repaired as soon as possible.

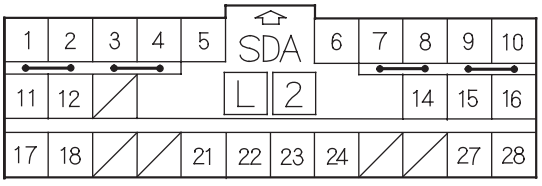
For better serviceability, the SRS unit memory stores a DTC that relates to the cause of the malfunction, and the unit is connected to the data link connector (DLC). This information can be read with the HDS when it is connected to the DLC (16P) (see page 24-27).

NOTE: Before you disconnect the negative cable from the battery for troubleshooting, make sure you have the anti-theft code for the audio system and the navigation system (if equipped). Write down the XM audio presets (if equipped).

(cont'd)

System Description (cont'd)

SRS Unit Inputs and Outputs at Connector A (28P)

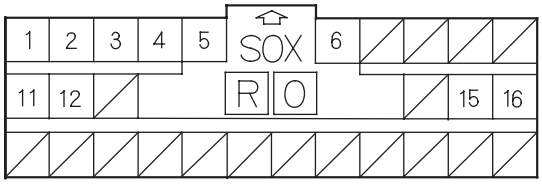


Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description
1	GRN/YEL	LA2+	Power source for driver's airbag second inflator
2	GRN/WHT	LA2−	Ground for driver's airbag second inflator
3	BLU/BLK	RA2+	Power source for passenger's airbag second inflator
4	BLU/RED	RA2−	Ground for passenger's airbag second inflator
5	LT GRN/BLK	MES	Memory erase signal input
6	BRN	SCS	Service check signal input
7	GRN/BLK	LA1+	Power source for driver's airbag first inflator
8	GRN/RED	LA1−	Ground for driver's airbag first inflator
9	YEL	RA1+	Power source for passenger's airbag first inflator
10	BLU/YEL	RA1−	Ground for passenger's airbag first inflator
11	PNK	SRS IND	SRS indicator output line
12	RED/BLU*	PTT*	Passenger's airbag cutoff indicator output line*
14	GRN/ORN	ODS/OPDS	Sends and receives communication signal
15	BRN/YEL	LFS−	Ground for left front impact sensor
16	BRN	RFS−	Ground for right front impact sensor
17	WHT	VA	SRS system sub power (common with ODS)
18	WHT/RED	VB	SRS dedicated power (dedicated booster circuit)
21	YEL	CDS	Crash detection signal
22	BLK	SRS GND A	Ground circuit for the SRS (G405)
23	BLK	SRS GND B	Ground circuit for the SRS (G405)
24	LT BLU	K-LINE	Sends and receives scan tool signal (serial data)
27	RED	LFS+	Power source for left front impact sensor
28	GRN	RFS+	Power source for right front impact sensor

NOTE: BLU or BRN wire may be substituted for the wire colors in this table.
*: '07-08 Models

SRS Unit Inputs and Outputs at Connector B (28P)



Wire side of female terminals

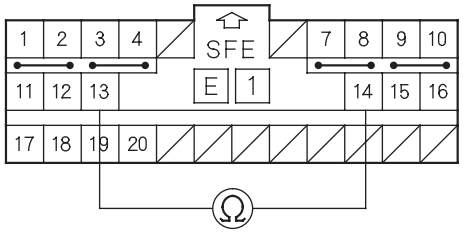
Terminal Number	Wire Color	Terminal Name	Description
1	RED/BLU	LRP+	Power source for driver's side seat belt tensioner
2	RED/WHT	LRP−	Ground for driver's seat belt tensioner
3	RED/BLK	RRP+	Power source for front passenger's seat belt tensioner
4	RED/YEL	RRP−	Ground for front passenger's seat belt tensioner
5	GRN/WHT*	SS−*	Ground for driver's seat position sensor*
6	BLU/RED*	SS+*	Power source for driver's seat position sensor*
11	BLU/RED	LBSC	Driver's seat belt buckle switch un-buckled signal
12	LT GRN	LBSO	Driver's seat belt buckle switch buckled signal
15	BLU	RBSC	Front passenger's seat belt buckle switch un-buckled signal
16	ORN	RBSO	Front passenger's seat belt buckle switch buckled signal

NOTE: BLU or BRN wire may be substituted for the wire colors in this table.
*: '07-08 Models

(cont'd)

System Description (cont'd)

SRS Unit Inputs and Outputs at Connector C (28P)



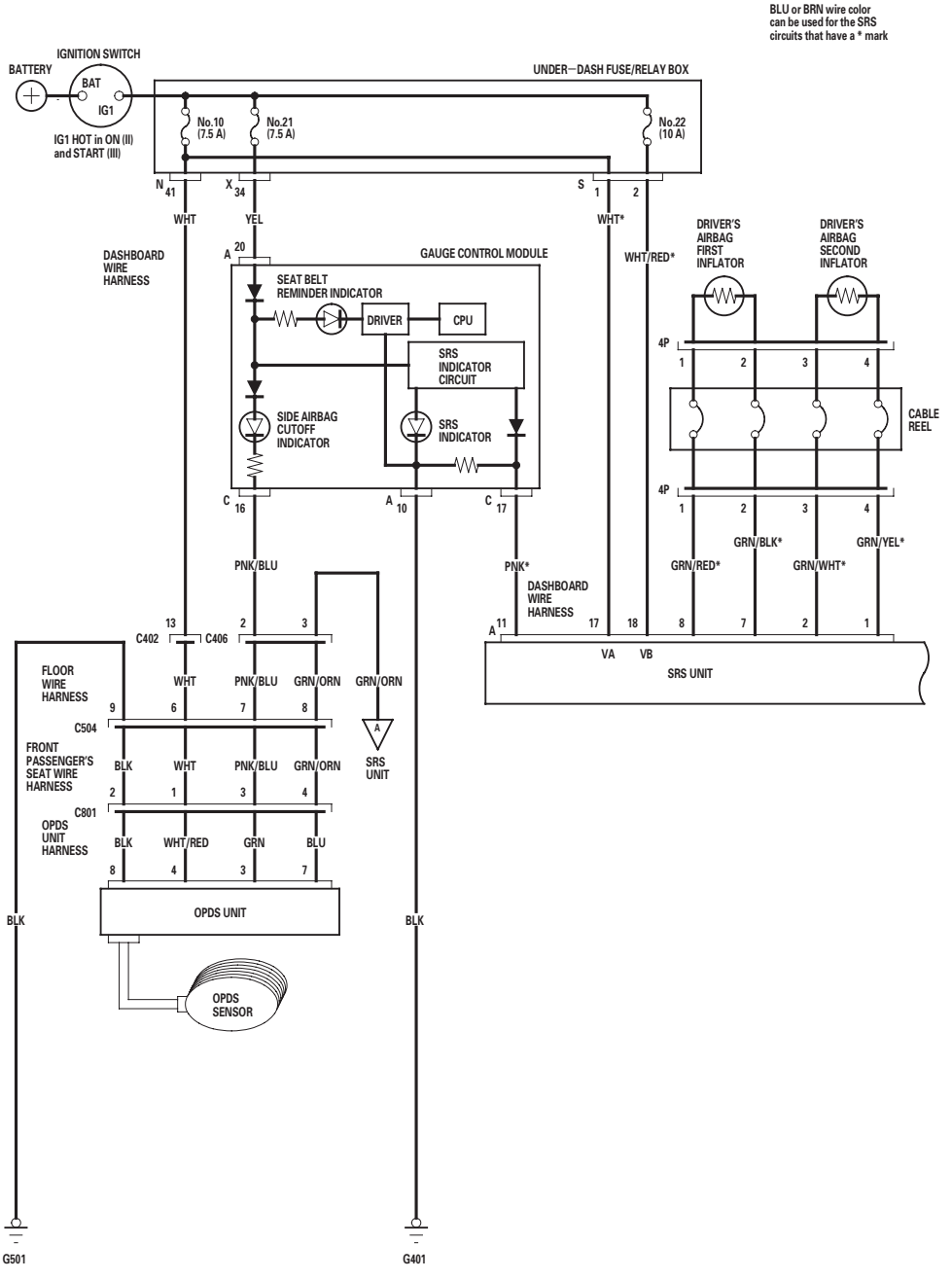
Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description
1	WHT/GRN	LSA+	Power source for driver's side airbag inflator
2	WHT/RED	LSA−	Ground for driver's side airbag inflator
3	WHT/BLK	RSA+	Power source for front passenger's side airbag inflator
4	WHT/BLU	RSA−	Ground for front passenger's side airbag inflator
7	BLU/BLK	LCA+	Power source for left side curtain airbag inflator
8	BLU	LCA−	Ground for left side curtain airbag inflator
9	RED/YEL	RCA+	Power source for right side curtain airbag inflator
10	RED	RCA−	Ground for right side curtain airbag inflator
11	PNK/BLU	LBS1+	Power source for left side impact sensor (first)
12	GRY/RED	LBS1−	Ground for left side impact sensor (first)
13	GRN	RRS+	Power source for roll rate sensor
14	BLU/GRN	RRS−	Ground for roll rate sensor
15	BRN/YEL	RBS1+	Power source for right side impact sensor (first)
16	LT GRN/RED	RBS1−	Ground for right side impact sensor (first)
17	GRN/BLK	LSC1+	Power source for left side impact sensor (second)
18	ORN	LSC1−	Ground for left side impact sensor (second)
19	YEL/BLK	RCS1+	Power source for right side impact sensor (second)
20	YEL	RCS1−	Ground for right side impact sensor (second)

NOTE: BLU or BRN wire may be substituted for the wire colors in this table.

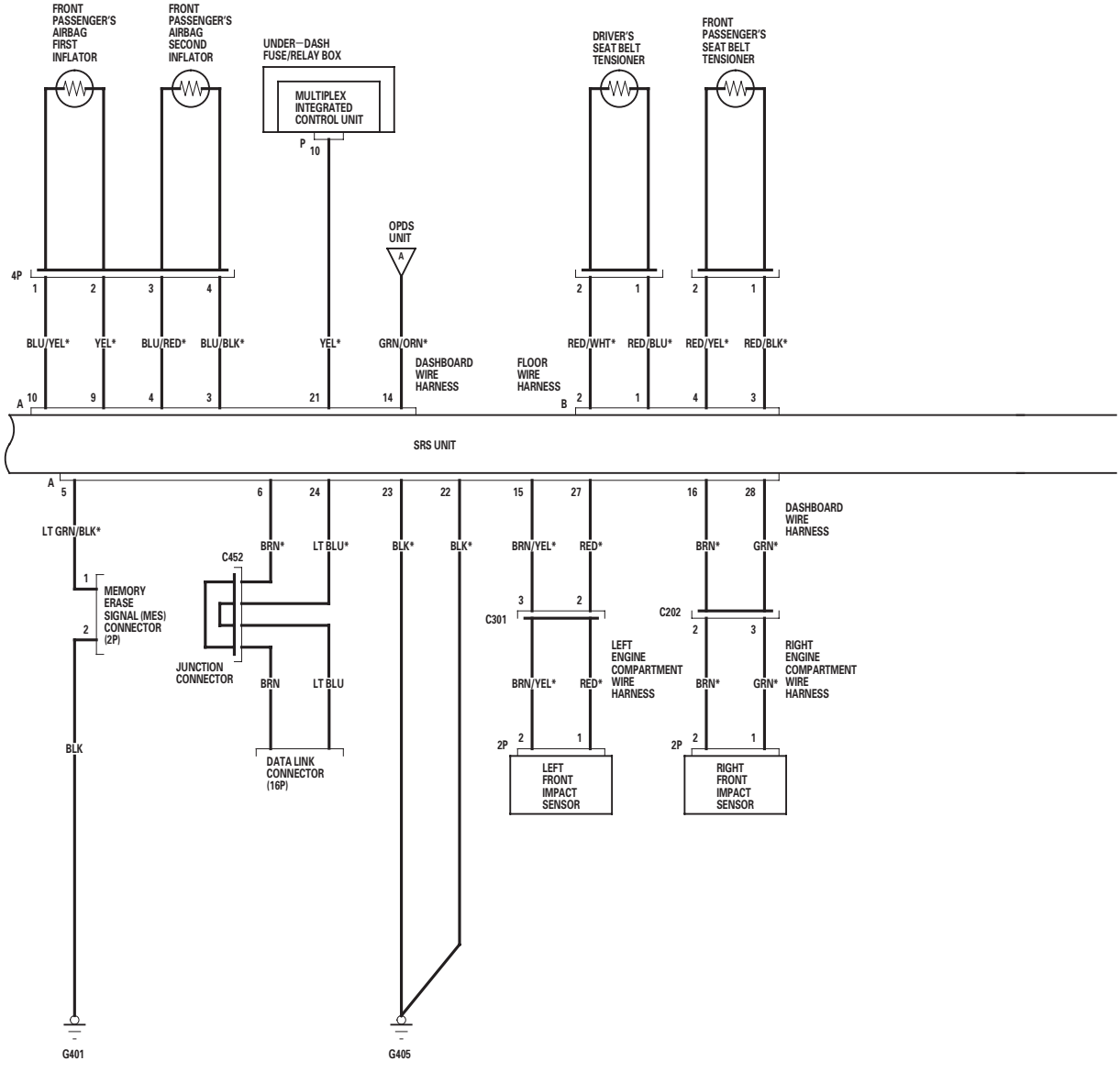
Circuit Diagram

’06 Model



(cont’d)

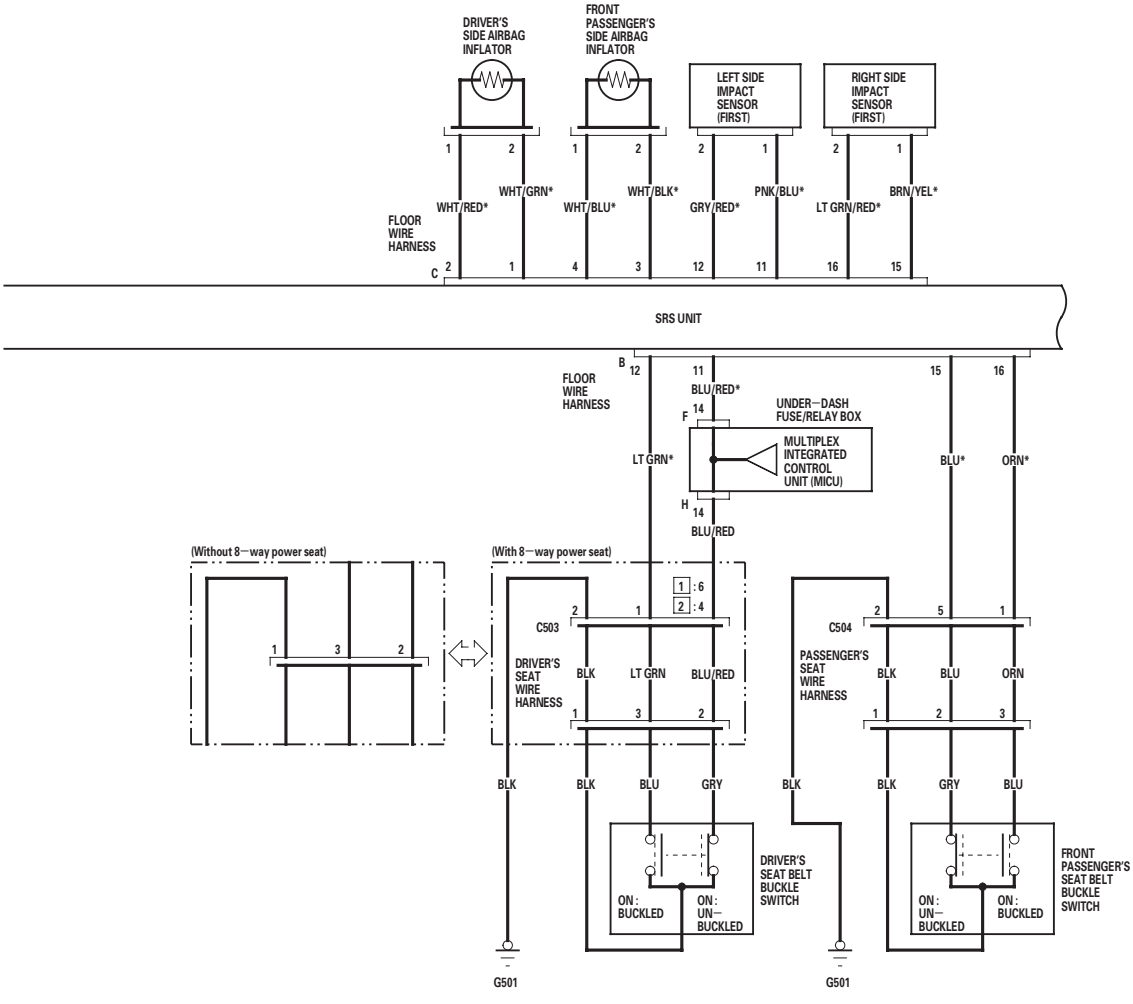
Circuit Diagram (cont'd)



BLU or BRN wire color
can be used for the SRS
circuits that have a * mark

1 : With seat heater

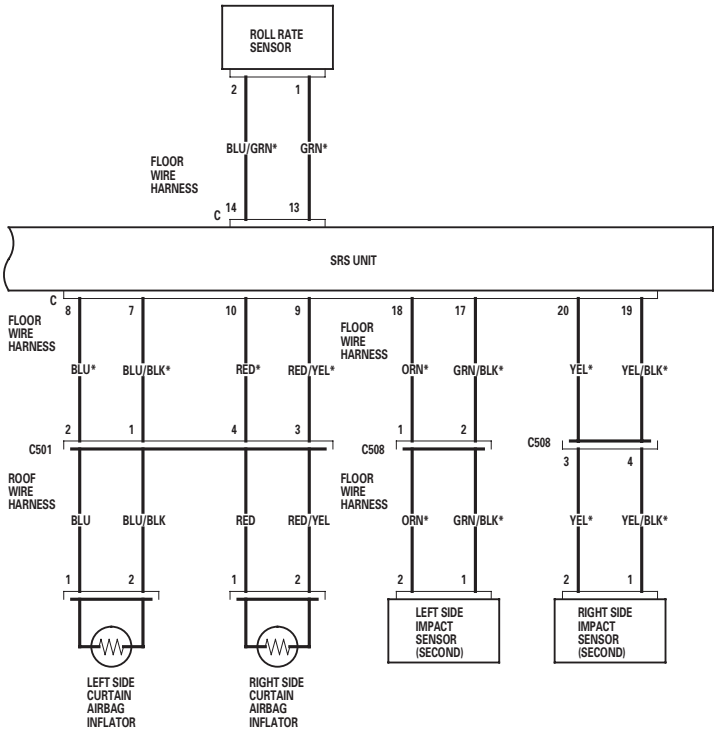
2 : Without seat heater



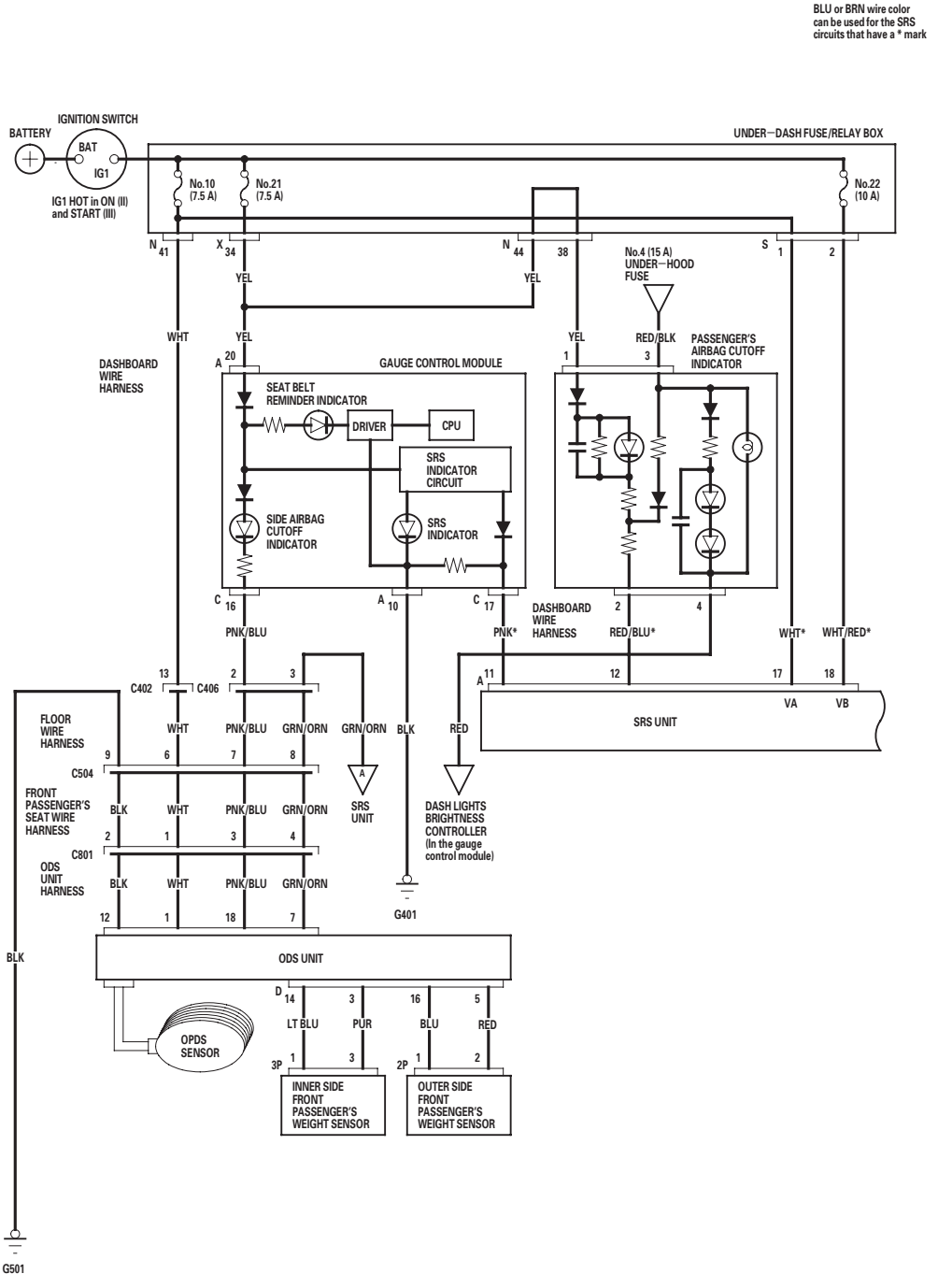
(cont'd)

Circuit Diagram (cont'd)

BLU or BRN wire color
can be used for the SRS
circuits that have a * mark

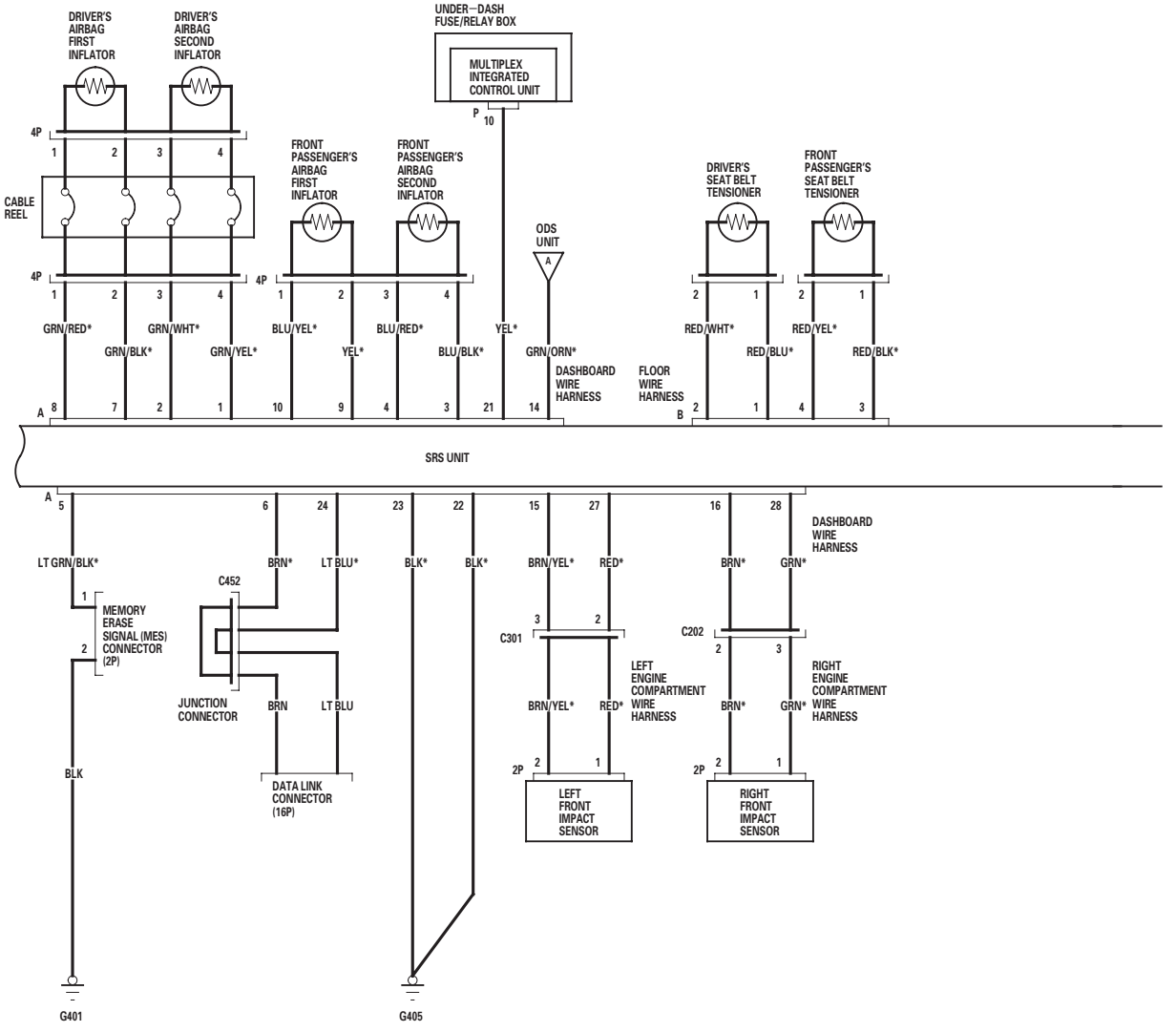


’07-08 Models

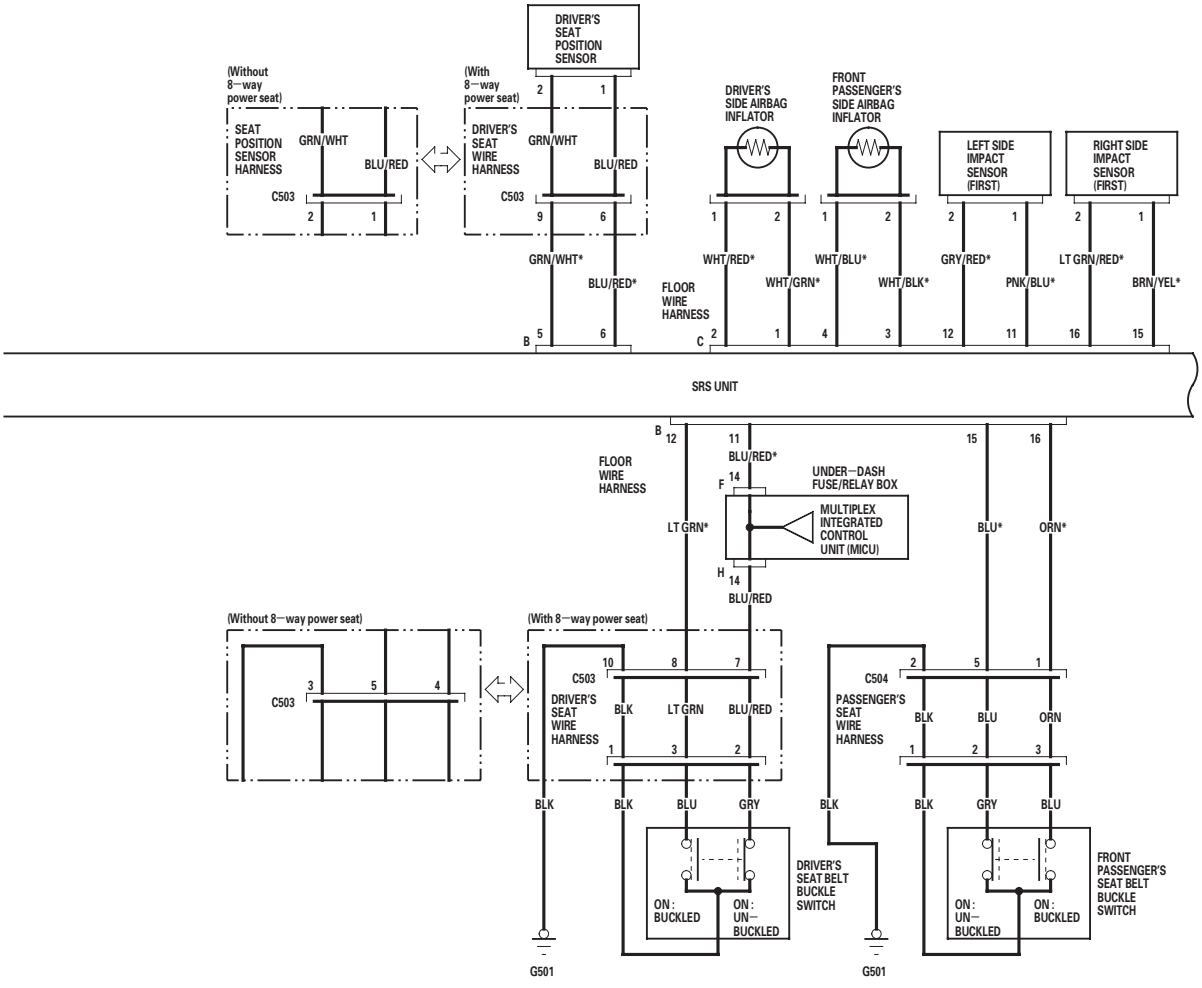


(cont’d)

Circuit Diagram (cont'd)



BLU or BRN wire color
can be used for the SRS
circuits that have a * mark



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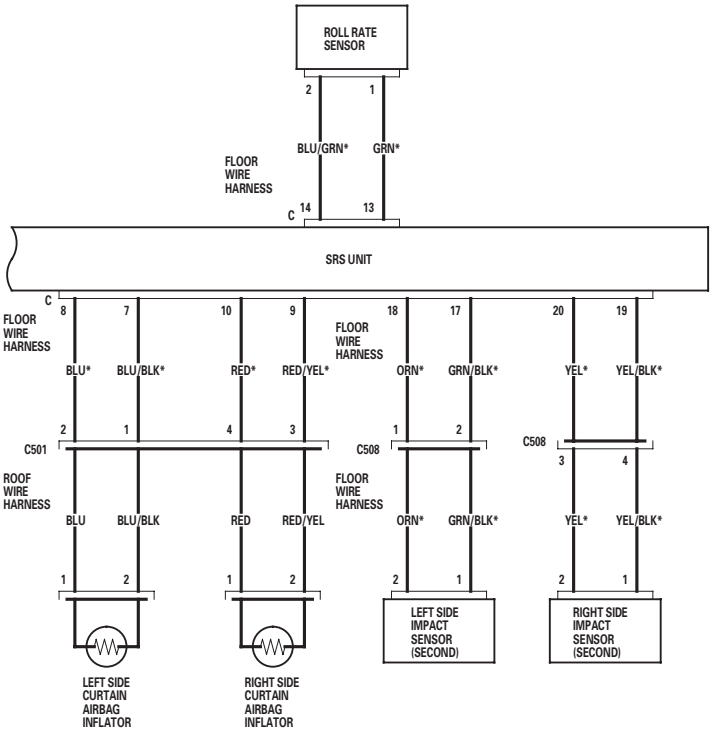
Circuit Diagram (cont'd)

BLU or BRN wire color
can be used for the SRS
circuits that have a * mark



DTC Troubleshooting

DTC 11-1x (''x'' can be 0 thru 9 or A thru F): Open in Driver's Airbag First Inflator

DTC 11-4x (''x'' can be 0 thru 9 or A thru F): Open in Driver's Airbag Second Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

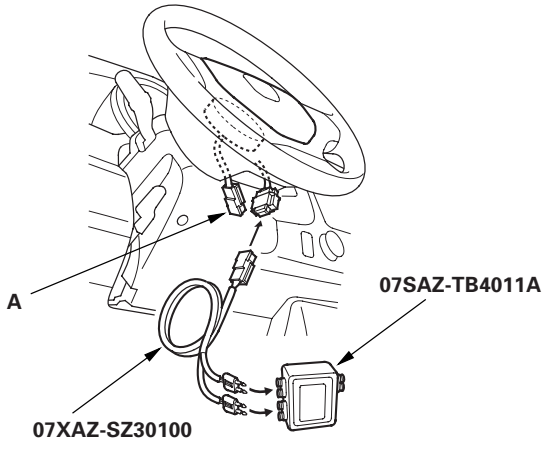
   Does the SRS indicator stay on, and is DTC 11-1x or 11-4x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the driver's airbag 4P connector (A) from the cable reel.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the cable reel.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 11-1x or 11-4x indicated?

   YES—Go to step 9.

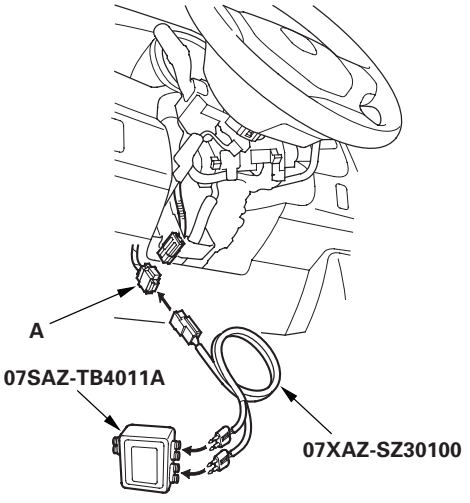
   NO—Open in the driver's airbag first or second inflator; replace the driver's airbag (see page 24-174). ■

(cont'd)

DTC Troubleshooting (cont'd)

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect the dashboard wire harness 4P connector (A) from the cable reel.



11. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead to dashboard wire harness.

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Read the DTC.

    Is DTC 11-1x or 11-4x indicated?

    YES—Go to step 15.

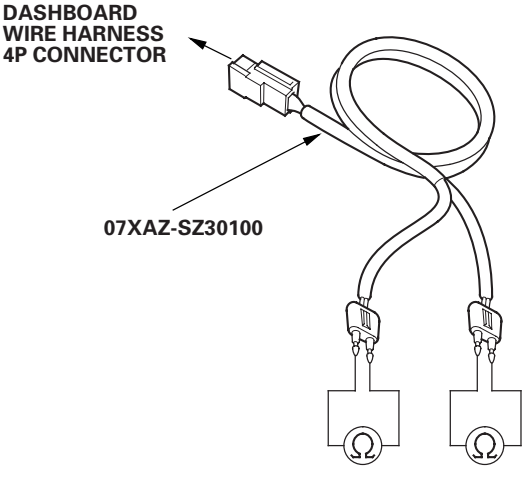
    NO—Open in the cable reel; replace the cable reel (see page 24-185). ■

15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

16. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).

17. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the dashboard wire harness 4P connector.

18. Measure the resistance between the terminals of both SRS simulator leads. There should be 1 Ω or less.



    Is the resistance as specified?

    YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-188). ■

    NO—Open in the dashboard wire harness; replace the dashboard wire harness. ■

DTC 11-3x (''x'' can be 0 thru 9 or A thru F):
Short to Another Wire or Decreased Resistance in Driver's Airbag First Inflator

DTC 11-6x (''x'' can be 0 thru 9 or A thru F):
Short to Another Wire or Decreased Resistance in Driver's Airbag Second Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100
- SRS short canceller 070AZ-SAA0100

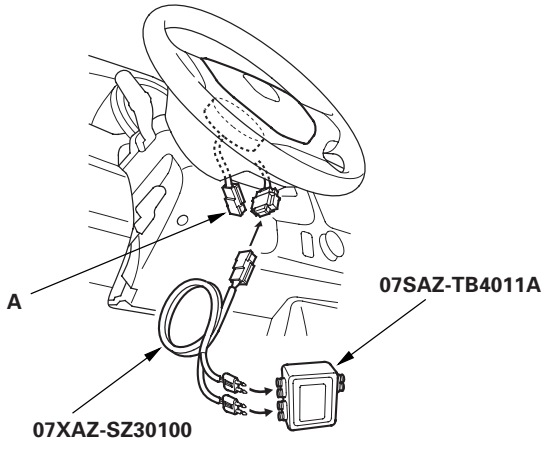
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 11-3x or 11-6x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the driver's airbag 4P connector (A) from the cable reel.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the cable reel.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Read the DTC (see page 24-27).

   Is DTC 11-3x or 11-6x indicated?

   YES—Go to step 9.

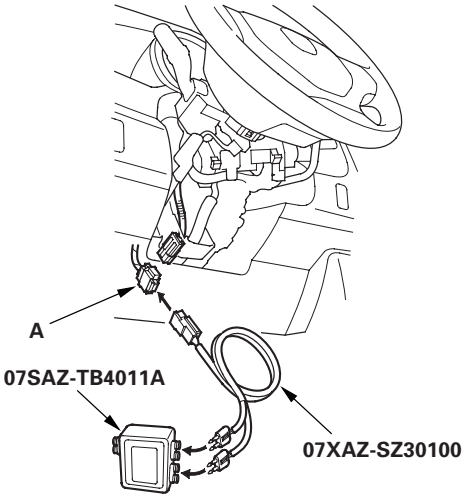
   NO—Short in the driver's airbag first or second inflator; replace the driver's airbag (see page 24-174). ■

(cont'd)

DTC Troubleshooting (cont'd)

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect the dashboard wire harness 4P connector (A) from the cable reel.



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead to the dashboard wire harness.

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Read the DTC.

    Is DTC 11-3x or 11-6x indicated?

    YES—Go to step 15.

    NO—Short in the cable reel; replace the cable reel (see page 24-185).■

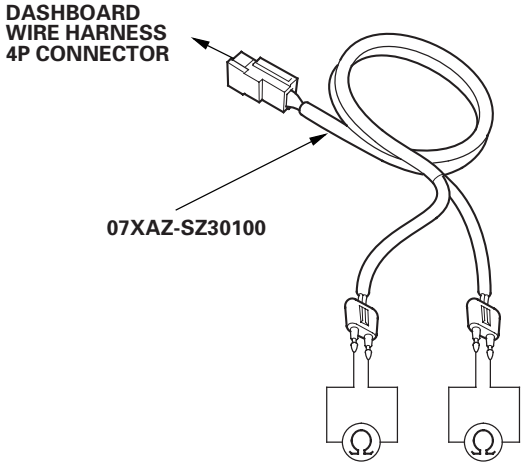
15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

16. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).

17. Disconnect the SRS inflator simulator from the SRS simulator lead.

18. Connect SRS short cancellers (070AZ-SAA0100) to the No. 7 and No. 8 terminals and the No. 1 and No. 2 terminals of SRS unit connector A (28P) (see page 24-22).

19. Measure the resistance between the terminals of both SRS simulator leads. There should be an open circuit or at least 1 MΩ.



Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-188).■

NO—Short in the dashboard wire harness; replace the dashboard wire harness.■

DTC 11-8x (''x'' can be 0 thru 9 or A thru F): Short to Power in Driver's Airbag First Inflator

DTC 11-Ax (''x'' can be 0 thru 9 or A thru F): Short to Power in Driver's Airbag Second Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

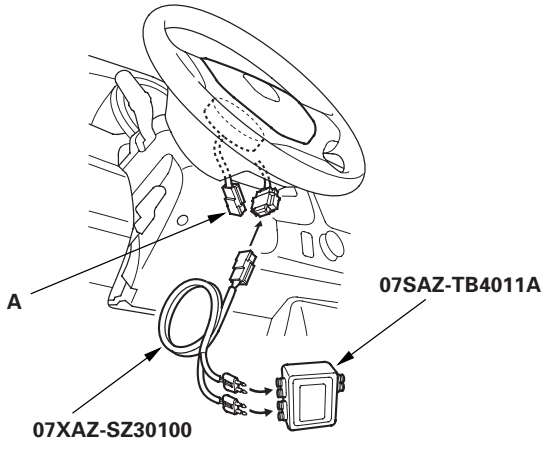
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 11-8x or 11-Ax indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the driver's airbag 4P connector (A) from the cable reel.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the cable reel.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Read the DTC (see page 24-27).

   Is DTC 11-8x or 11-Ax indicated?

   YES—Go to step 9.

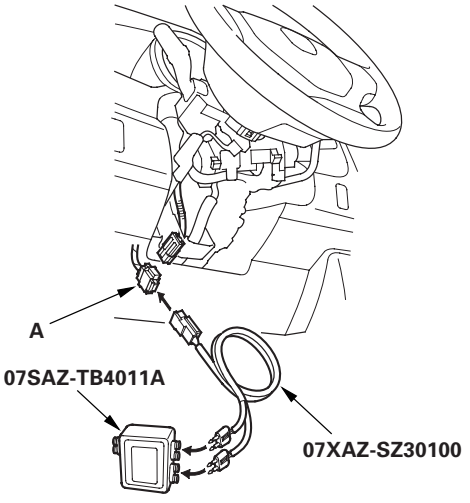
   NO—Short to power in the driver's airbag first or second inflator; replace the driver's airbag (see page 24-174). ■

(cont'd)

DTC Troubleshooting (cont'd)

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect the dashboard wire harness 4P connector (A) from the cable reel.



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead to the dashboard wire harness.

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Read the DTC.

    Is DTC 11-8x or 11-Ax indicated?

    YES—Go to step 15.

    NO—Short to power in the cable reel; replace the cable reel (see page 24-185). ■

15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

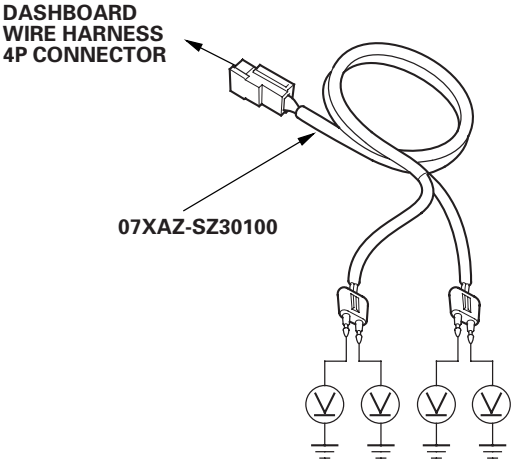
16. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).

17. Disconnect the SRS inflator simulator from the SRS simulator lead.

18. Reconnect the negative cable to the battery.

19. Turn the ignition switch ON (II).

20. Measure the voltage between each terminal of both SRS simulator leads and body ground. There should be 0.2 V or less.



    Is the voltage as specified?

    YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-188). ■

    NO—Short to power in the dashboard wire harness; replace the dashboard wire harness. ■

DTC 11-9x (''x'' can be 0 thru 9 or A thru F): Short to Ground in Driver's Airbag First Inflator

DTC 11-Bx (''x'' can be 0 thru 9 or A thru F): Short to Ground in Driver's Airbag Second Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

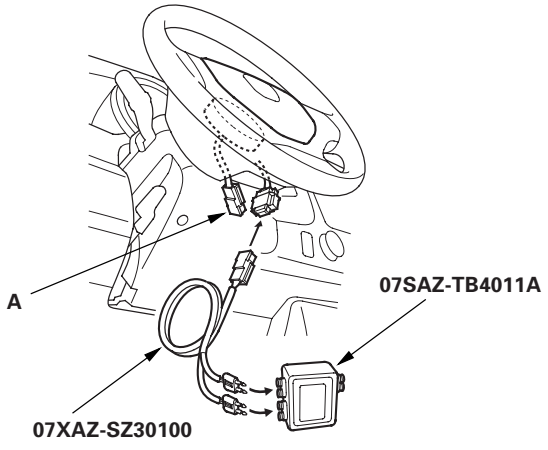
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 11-9x or 11-Bx indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the driver's airbag 4P connector (A) from the cable reel.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the cable reel.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Read the DTC (see page 24-27).

   Is DTC 11-9x or 11-Bx indicated?

   YES—Go to step 9.

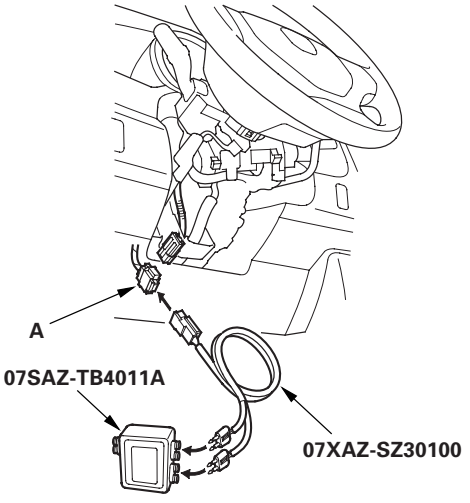
   NO—Short to ground in the driver's airbag first or second inflator; replace the driver's airbag (see page 24-174). ■

(cont'd)

DTC Troubleshooting (cont'd)

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect the dashboard wire harness 4P connector (A) from the cable reel.



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead to the dashboard wire harness.

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Read the DTC.

    Is DTC 11-9x or 11-Bx indicated?

    YES—Go to step 15.

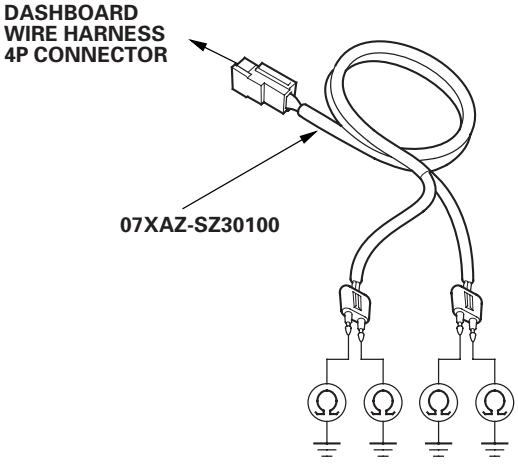
    NO—Short to ground in the cable reel; replace the cable reel (see page 24-185). ■

15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

16. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).

17. Disconnect the SRS inflator simulator from the SRS simulator lead.

18. Measure the resistance between each terminal of both SRS simulator leads and body ground. There should be an open circuit or at least 1 MΩ.



    Is the resistance as specified?

    YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-188). ■

    NO—Short to ground in the dashboard wire harness; replace the dashboard wire harness. ■

DTC 12-1x (''x'' can be 0 thru 9 or A thru F): Open in Front Passenger's Airbag First Inflator

DTC 12-4x (''x'' can be 0 thru 9 or A thru F): Open in Front Passenger's Airbag Second Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

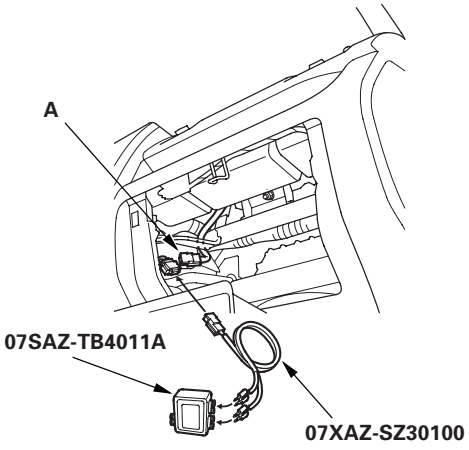
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 12-1x or 12-4x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the dashboard wire harness.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Read the DTC (see page 24-27).

   Is DTC 12-1x or 12-4x indicated?

   YES—Go to step 9.

   NO—Open in the front passenger's airbag first or second inflator; replace the front passenger's airbag (see page 24-175). ■
9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

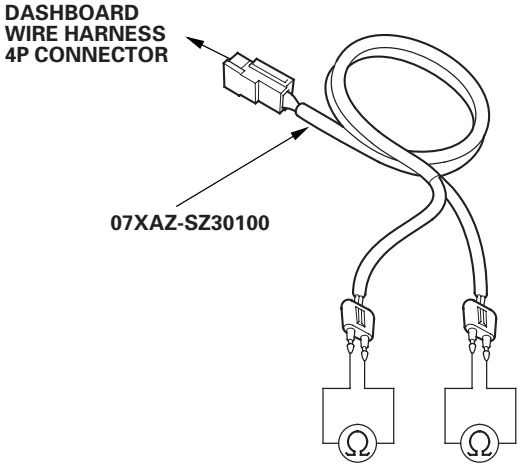
(cont'd)

DTC Troubleshooting (cont'd)

10. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26). Do not disconnect the simulator lead from the dashboard wire harness 4P connector.

11. Disconnect the SRS inflator simulator from the SRS simulator lead.

12. Measure the resistance between the terminals of both SRS simulator leads. There should be 1 Ω or less.



Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector A (28P). Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

NO—Open in the dashboard wire harness; replace the dashboard wire harness. ■

DTC 12-3x (''x'' can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in Front Passenger's Airbag First Inflator

DTC 12-6x (''x'' can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in Front Passenger's Airbag Second Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100
- SRS short canceller 070AZ-SAA0100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

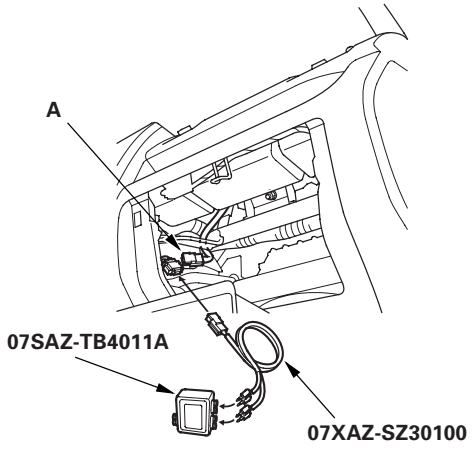
   Does the SRS indicator stay on, and is DTC 12-3x or 12-6x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the dashboard wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 12-3x or 12-6x indicated?

   YES—Go to step 9.

   NO—Short in the front passenger's airbag first or second inflator; replace the front passenger's airbag (see page 24-175). ■

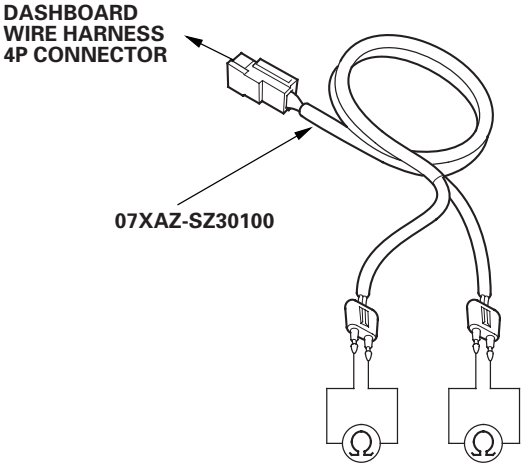
9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).

11. Disconnect the SRS inflator simulator from the SRS simulator lead.

12. Connect SRS short cancellers (070AZ-SAA0100) to the No. 9 and No. 10 terminals, and the No. 3 and No. 4 terminals of SRS unit connector A (28P) (see page 24-22).

13. Measure the resistance between the terminals of both SRS simulator leads. There should be an open circuit or at least 1 MΩ.



   Is the resistance as specified?

   YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-188). ■

   NO—Short in the dashboard wire harness; replace the dashboard wire harness. ■

DTC Troubleshooting (cont'd)

DTC 12-8x (''x'' can be 0 thru 9 or A thru F): Short to Power in Front Passenger's Airbag First Inflator

DTC 12-Ax (''x'' can be 0 thru 9 or A thru F): Short to Power in Front Passenger's Airbag Second Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

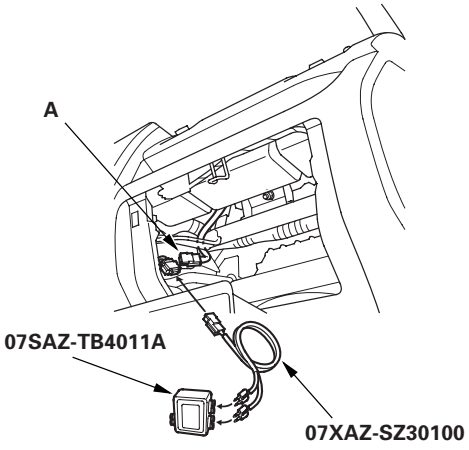
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 12-8x or 12-Ax indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the dashboard wire harness.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Read the DTC (see page 24-27).

   Is DTC 12-8x or 12-Ax indicated?

   YES—Go to step 9.

   NO—Short to power in the front passenger's airbag first or second inflator; replace the front passenger's airbag (see page 24-175). ■
9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

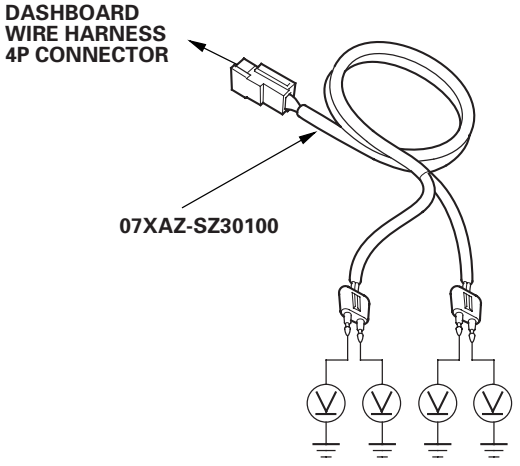
10. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).

11. Disconnect the SRS inflator simulator from the SRS simulator lead.

12. Reconnect the negative cable to the battery.

13. Turn the ignition switch ON (II).

14. Measure the voltage between each terminal of both SRS simulator leads and body ground. There should be 0.5 V or less.



Is the voltage as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-188).■

NO—Short to power in the dashboard wire harness; replace the dashboard wire harness.■

DTC 12-9x (''x'' can be 0 thru 9 or A thru F): Short to Ground in Front Passenger's Airbag First Inflator

DTC 12-Bx (''x'' can be 0 thru 9 or A thru F): Short to Ground in Front Passenger's Airbag Second Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 12-9x or 12-Bx indicated?

   YES—Go to step 3.

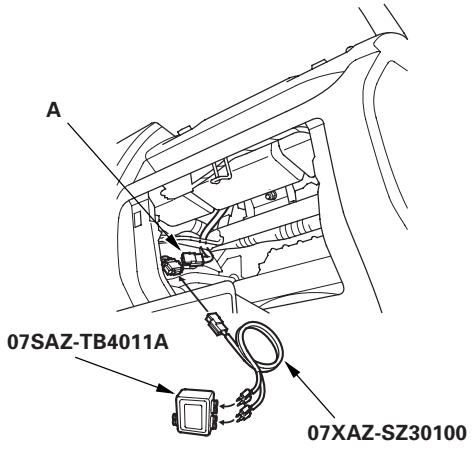
   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

4. Disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the dashboard wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 12-9x or 12-Bx indicated?

   YES—Go to step 9.

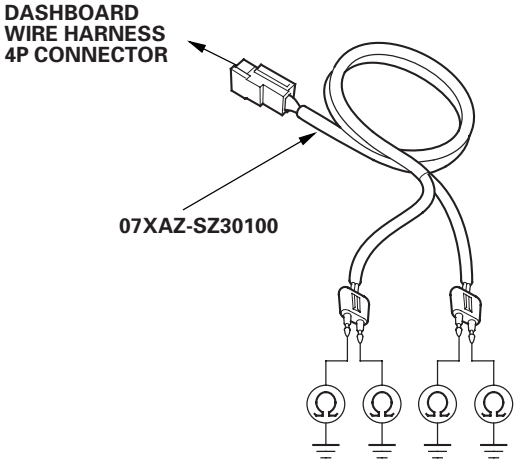
   NO—Short to ground in the front passenger's airbag first or second inflator; replace the front passenger's airbag (see page 24-175). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).

11. Disconnect the SRS inflator simulator from the SRS simulator lead.

12. Measure the resistance between each terminal of both SRS simulator leads and body ground. There should be an open circuit or at least 1 MΩ.



   Is the resistance as specified?

   YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-188). ■

   NO—Short to ground in the dashboard wire harness; replace the dashboard wire harness. ■

DTC 21-1x (''x'' can be 0 thru 9 or A thru F): Open in Driver's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

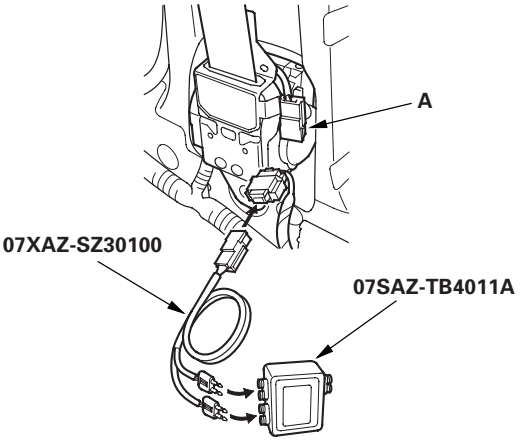
   Does the SRS indicator stay on, and is DTC 21-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the driver's seat belt tensioner 4P connector (A) from the floor wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 21-1x indicated?

   YES—Go to step 9.

   NO—Open in the driver's seat belt tensioner; replace the driver's seat belt (see page 24-4). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

(cont'd)

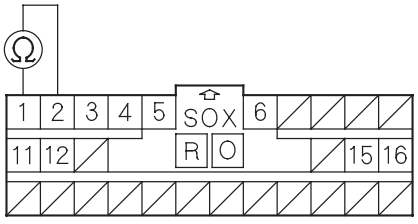
DTC Troubleshooting (cont'd)

10. Disconnect the front passenger's seat belt tensioner connector (see step 6 on page 24-26).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-26).

12. Measure the resistance between the No. 1 and the No. 2 terminals of SRS unit connector B (28P). There should be 2.0—3.0 Ω.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

NO—Open in the floor wire harness; replace the floor wire harness. ■

DTC 21-3x (''x'' can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in Driver's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

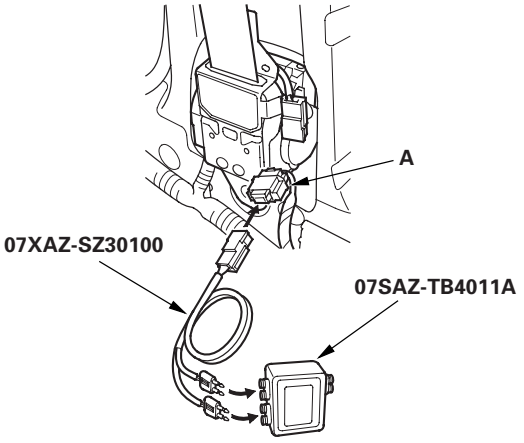
   Does the SRS indicator stay on, and is DTC 21-3x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the floor wire harness 4P connector (A) from the driver's seat belt tensioner.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 21-3x indicated?

   YES—Go to step 9.

   NO—Short in the driver's seat belt tensioner; replace the driver's seat belt (see page 24-4). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

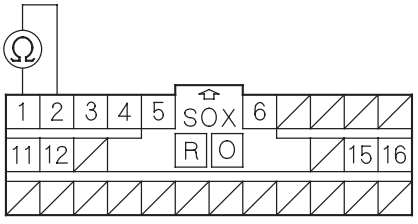
10. Disconnect the front passenger's seat belt tensioner connector (see step 6 on page 24-26).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-26).

12. Disconnect the simulator lead from the floor wire harness.

13. Measure the resistance between the No. 1 and the No. 2 terminals of SRS unit connector B (28P). There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

NO—Short in the floor wire harness; replace the floor wire harness. ■

DTC Troubleshooting (cont'd)

DTC 21-8x (''x'' can be 0 thru 9 or A thru F): Short to Power in Driver's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

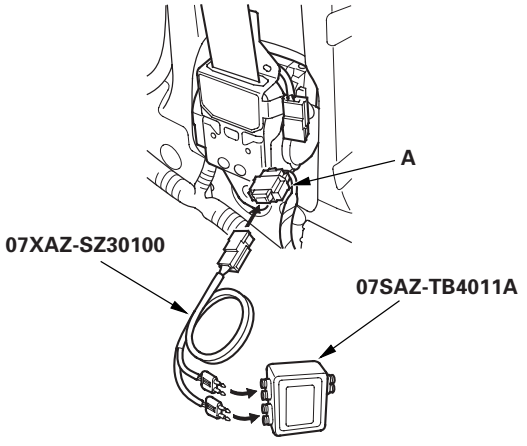
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 21-8x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the floor wire harness 4P connector (A) from the driver's seat belt tensioner.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Read the DTC (see page 24-27).

   Is DTC 21-8x indicated?

   YES—Go to step 9.

   NO—Short to power in the driver's seat belt tensioner; replace the driver's seat belt (see page 24-4). ■
9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect the front passenger's seat belt tensioner connector (see step 6 on page 24-26).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-26).

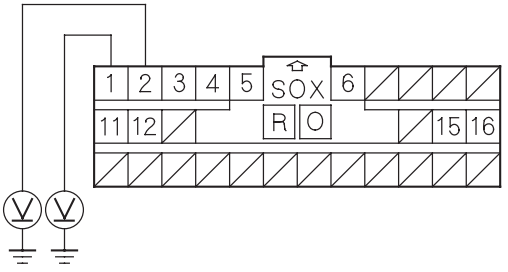
12. Disconnect the simulator lead from the floor wire harness.

13. Reconnect the negative cable to the battery.

14. Turn the ignition switch ON (II).

15. Measure the voltage between the No. 1 terminal of SRS unit connector B (28P) and body ground, and between the No. 2 terminal and body ground. There should be 0.5 V or less.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

NO—Short to power in the floor wire harness; replace the floor wire harness. ■

DTC 21-9x ("x" can be 0 thru 9 or A thru F): Short to Ground in Driver's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 21-9x indicated?

   YES—Go to step 3.

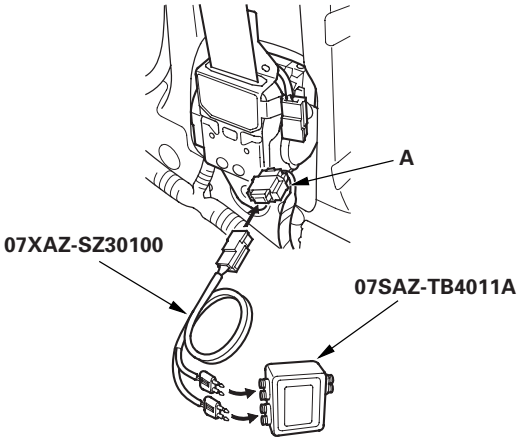
   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

4. Disconnect the floor wire harness 4P connector (A) from the driver's seat belt tensioner.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 21-9x indicated?

   YES—Go to step 9.

   NO—Short to ground in the driver's seat belt tensioner; replace the driver's seat belt (see page 24-4). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

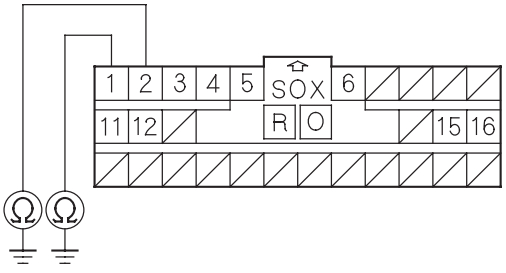
10. Disconnect the front passenger's seat belt tensioner connector (see step 6 on page 24-26).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-26).

12. Disconnect the simulator lead from the floor wire harness.

13. Measure the resistance between the No. 1 terminal of SRS unit connector B (28P) and body ground, and between the No. 2 terminal and body ground. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

NO—Short to ground in the floor wire harness; replace the floor wire harness. ■

DTC 22-1x (''x'' can be 0 thru 9 or A thru F): Open in Front Passenger's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

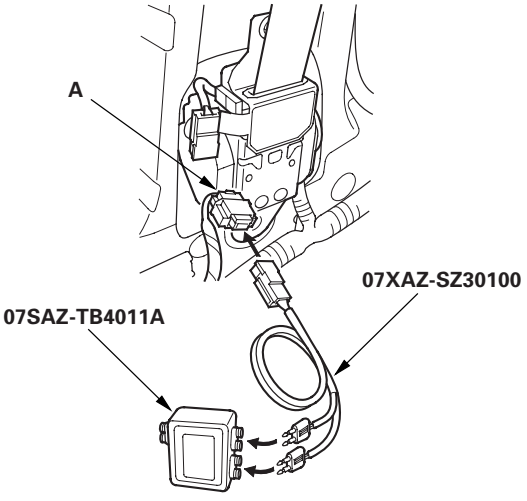
   Does the SRS indicator stay on, and is DTC 22-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the floor wire harness 4P connector (A) from the front passenger's seat belt tensioner.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 22-1x indicated?

   YES—Go to step 9.

   NO—Open in the front passenger's seat belt tensioner; replace the front passenger's seat belt (see page 24-4).■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

(cont'd)

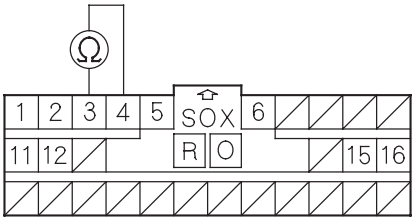
DTC Troubleshooting (cont'd)

10. Disconnect the driver's seat belt tensioner connector (see step 6 on page 24-26).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-26).

12. Measure the resistance between the No. 3 and the No. 4 terminals of SRS unit connector B (28P). There should be 2.0—3.0 Ω.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

NO—Open in the floor wire harness; replace the floor wire harness. ■

DTC 22-3x (''x'' can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in Front Passenger's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

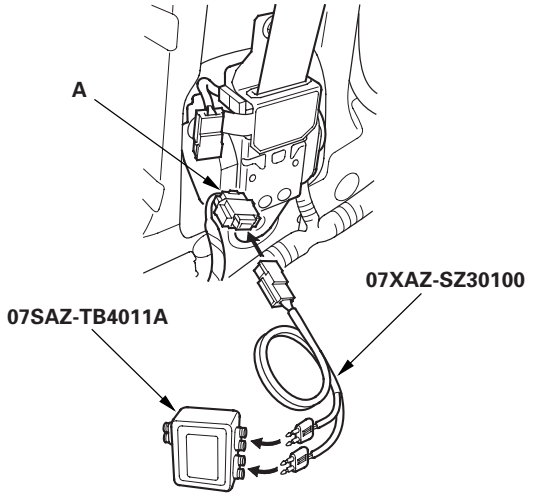
   Does the SRS indicator stay on, and is DTC 22-3x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the floor wire harness 4P connector (A) from the front passenger's seat belt tensioner.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 22-3x indicated?

   YES—Go to step 9.

   NO—Short in the front passenger's seat belt tensioner; replace the front passenger's seat belt (see page 24-4). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

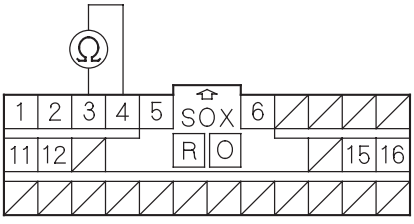
10. Disconnect the driver's seat belt tensioner connector (see step 6 on page 24-26).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-26).

12. Disconnect the simulator lead from the floor wire harness.

13. Measure the resistance between the No. 3 and the No. 4 terminals of SRS unit connector B (28P). There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

NO—Short in the floor wire harness; replace the floor wire harness. ■

DTC Troubleshooting (cont'd)

DTC 22-8x (''x'' can be 0 thru 9 or A thru F): Short to Power in Front Passenger's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

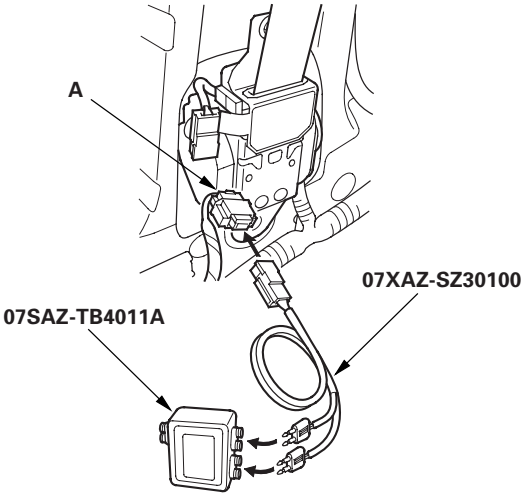
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 22-8x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the floor wire harness 4P connector (A) from the front passenger's seat belt tensioner.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Read the DTC (see page 24-27).

   Is DTC 22-8x indicated?

   YES—Go to step 9.

   NO—Short to power in the front passenger's seat belt tensioner; replace the front passenger's seat belt (see page 24-4). ■
9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect the driver's seat belt tensioner connector (see step 6 on page 24-26).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-26).

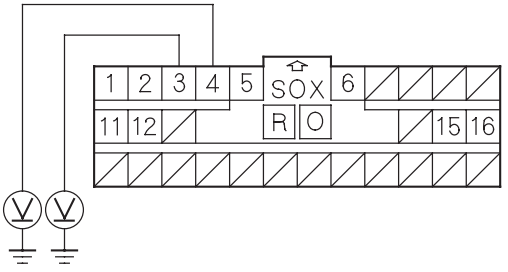
12. Disconnect the simulator lead from the floor wire harness.

13. Reconnect the negative cable to the battery.

14. Turn the ignition switch ON (II).

15. Measure the voltage between the No. 3 terminal of SRS unit connector B (28P) and body ground, and between the No. 4 terminal and body ground. There should be 0.5 V or less.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

NO—Short to power in the floor wire harness; replace the floor wire harness. ■

DTC 22-9x (''x'' can be 0 thru 9 or A thru F): Short to Ground in Front Passenger's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 22-9x indicated?

   YES—Go to step 3.

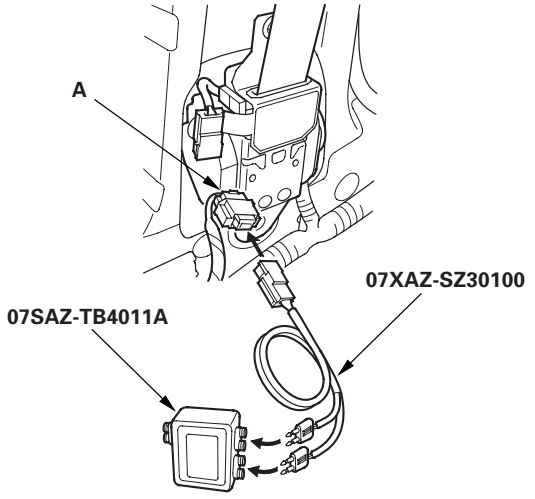
   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

4. Disconnect the floor wire harness 4P connector (A) from the front passenger's seat belt tensioner.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 22-9x indicated?

   YES—Go to step 9.

   NO—Short to ground in the front passenger's seat belt tensioner; replace the front passenger's seat belt (see page 24-4). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

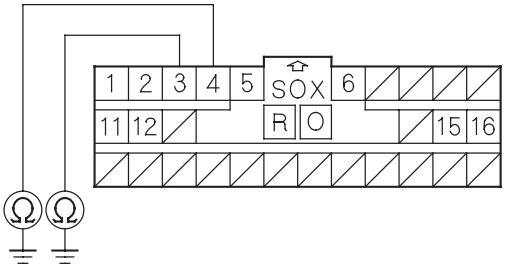
10. Disconnect the driver's seat belt tensioner connector (see step 6 on page 24-26).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-26).

12. Disconnect the simulator lead from the floor wire harness.

13. Measure the resistance between the No. 3 terminal of SRS unit connector B (28P) and body ground, and between the No. 4 terminal and body ground. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

NO—Short to ground in the floor wire harness; replace the floor wire harness. ■

DTC 31-1x (''x'' can be 0 thru 9 or A thru F): Open in Driver's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

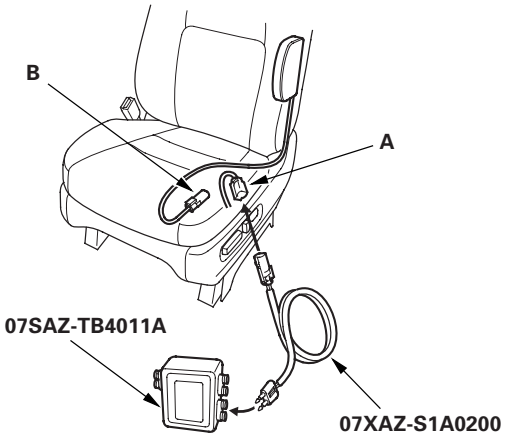
   Does the SRS indicator stay on, and is DTC 31-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the floor wire harness 2P connector (A) from the driver's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 31-1x indicated?

   YES—Go to step 9.

   NO—Open in the driver's side airbag inflator; replace the driver's side airbag (see page 24-176). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

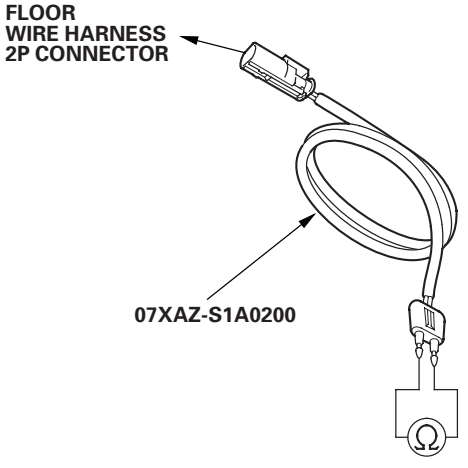
(cont'd)

DTC Troubleshooting (cont'd)

10. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

11. Disconnect the SRS inflator simulator from the SRS simulator lead.

12. Measure the resistance between the terminals of SRS simulator lead. There should be 1.0 Ω or less.



Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

NO—Open in the floor wire harness; replace the floor wire harness. ■

DTC 31-3x ("x" can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in Driver's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS short canceller 070AZ-SAA0100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

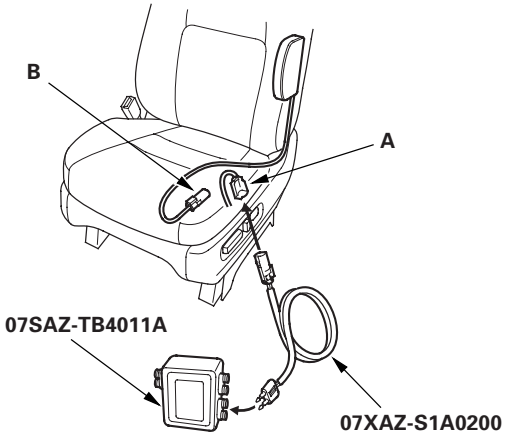
   Does the SRS indicator stay on, and is DTC 31-3x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the floor wire harness 2P connector (A) from the driver's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 31-3x indicated?

   YES—Go to step 9.

   NO—Short to another wire in the driver's side airbag inflator; replace the driver's side airbag (see page 24-176). ■

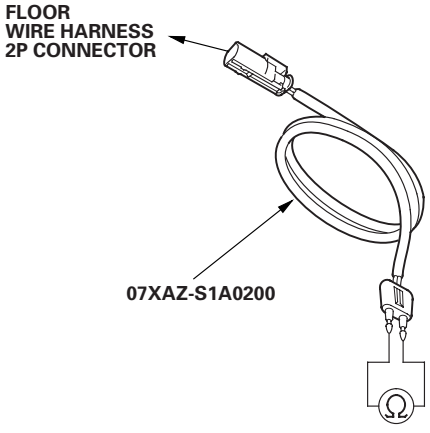
9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

11. Disconnect the SRS inflator simulator from the SRS simulator lead.

12. Connect the SRS short canceller (070AZ-SAA0100) to the No. 1 and No. 2 terminals of SRS unit connector C (28P) (see page 24-22).

13. Measure the resistance between the terminals of the SRS simulator lead. There should be an open circuit or at least 1 MΩ.



   Is the resistance as specified?

   YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

   NO—Short in the floor wire harness; replace the floor wire harness. ■

DTC Troubleshooting (cont'd)

DTC 31-8x (''x'' can be 0 thru 9 or A thru F): Short to Power in Driver's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

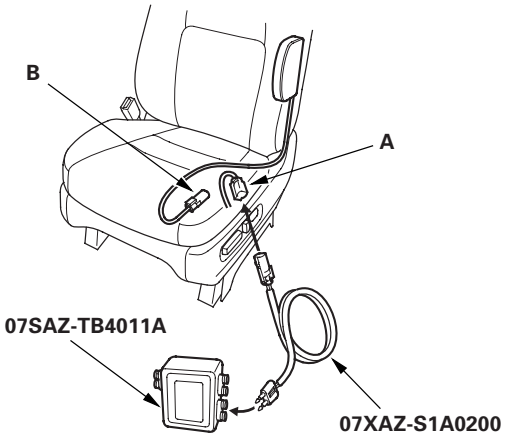
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 31-8x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the floor wire harness 2P connector (A) from the driver's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the floor wire harness.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Read the DTC (see page 24-27).

   Is DTC 31-8x indicated?

   YES—Go to step 9.

   NO—Short to power in the driver's side airbag inflator; replace the driver's side airbag (see page 24-176). ■
9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

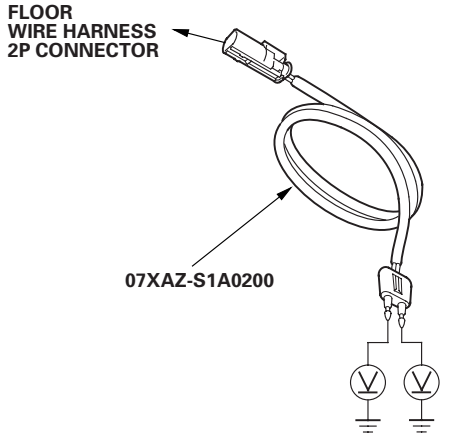
10. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

11. Disconnect the SRS inflator simulator from the SRS simulator lead.

12. Reconnect the negative cable to the battery.

13. Turn the ignition switch ON (II).

14. Measure the voltage between each terminal of the SRS simulator lead and body ground. There should be 0.5 V or less.



Is the voltage as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

NO—Short to power in the floor wire harness; replace the floor wire harness. ■

DTC 31-9x (''x'' can be 0 thru 9 or A thru F): Short to Ground in Driver's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 31-9x indicated?

   YES—Go to step 3.

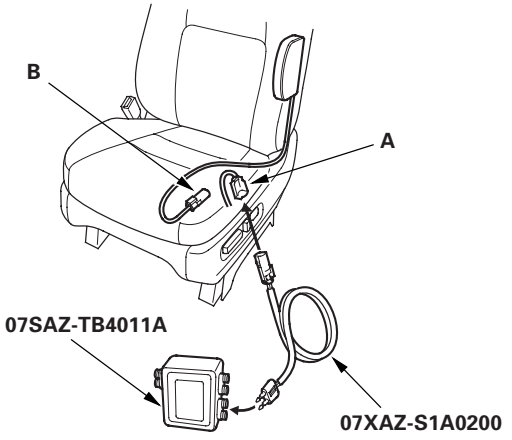
   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

4. Disconnect the floor wire harness 2P connector (A) from the driver's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 31-9x indicated?

   YES—Go to step 9.

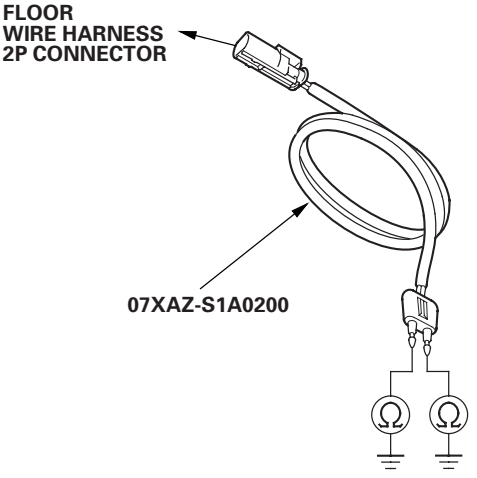
   NO—Short to ground in the driver's side airbag inflator; replace the driver's side airbag (see page 24-176). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

11. Disconnect the SRS inflator simulator from the SRS simulator lead.

12. Measure the resistance between each terminal of the SRS simulator lead and body ground. There should be an open circuit or at least 1 MΩ.



   Is the resistance as specified?

   YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

   NO—Short to ground in the floor wire harness; replace the floor wire harness. ■

DTC 32-1x (''x'' can be 0 thru 9 or A thru F): Open in Front Passenger's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

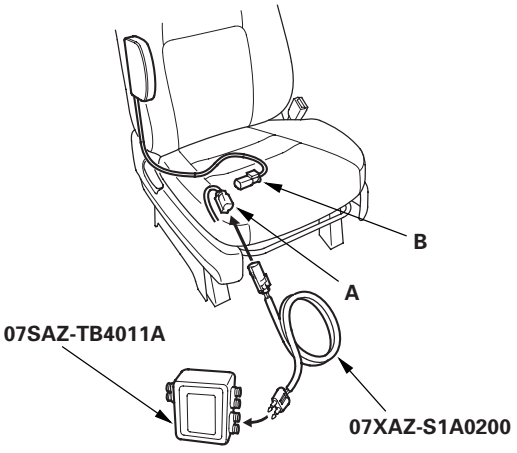
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 32-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the floor wire harness 2P connector (A) from the front passenger's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the floor wire harness.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Read the DTC (see page 24-27).

   Is DTC 32-1x indicated?

   YES—Go to step 9.

   NO—Open in the front passenger's side airbag inflator; replace the front passenger's side airbag (see page 24-176). ■
9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

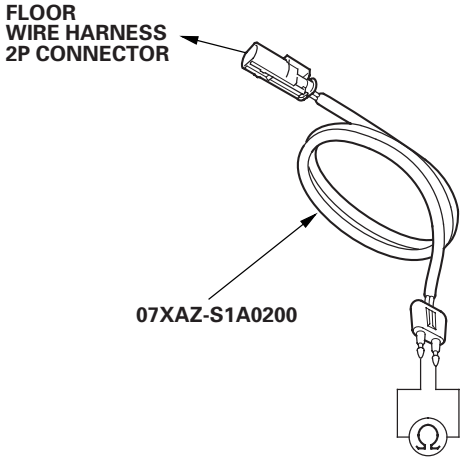
(cont'd)

DTC Troubleshooting (cont'd)

10. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

11. Disconnect the SRS inflator simulator from the SRS simulator lead.

12. Check resistance between the terminals of the SRS simulator lead. There should be 1.0 Ω or less.



Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

NO—Open in the floor wire harness; replace the floor wire harness. ■

DTC 32-3x (''x'' can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in Front Passenger's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS short canceller 070AZ-SAA0100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

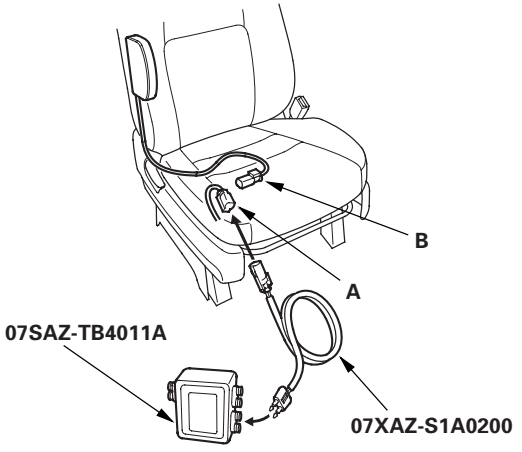
   Does the SRS indicator stay on, and is DTC 32-3x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the floor wire harness 2P connector (A) from the front passenger's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 32-3x indicated?

   YES—Go to step 9.

   NO—Short to another wire in the front passenger's side airbag inflator; replace the front passenger's side airbag (see page 24-176). ■

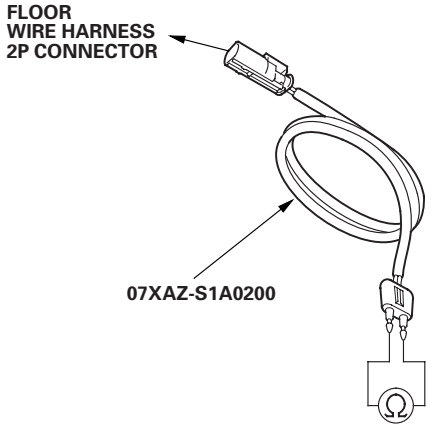
9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

11. Disconnect the SRS inflator simulator from the SRS simulator lead.

12. Connect the SRS short canceller (070AZ-SAA0100) to the No. 3 and No. 4 terminals of SRS unit connector C (28P) (see page 24-22).

13. Measure the resistance between the terminals of the SRS simulator lead. There should be an open circuit or at least 1 MΩ.



   Is the resistance as specified?

   YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

   NO—Short in the floor wire harness; replace the floor wire harness. ■

DTC Troubleshooting (cont'd)

DTC 32-8x (''x'' can be 0 thru 9 or A thru F): Short to Power in Front Passenger's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

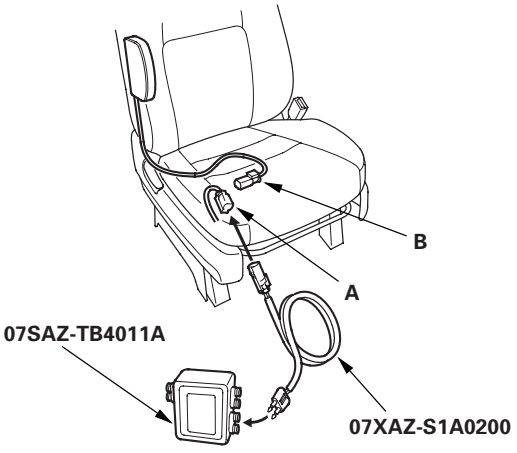
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 32-8x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the floor wire harness 2P connector (A) from the front passenger's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the floor wire harness.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Read the DTC (see page 24-27).

   Is DTC 32-8x indicated?

   YES—Go to step 9.

   NO—Short to power in the front passenger's side airbag inflator; replace the front passenger's side airbag (see page 24-176). ■
9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

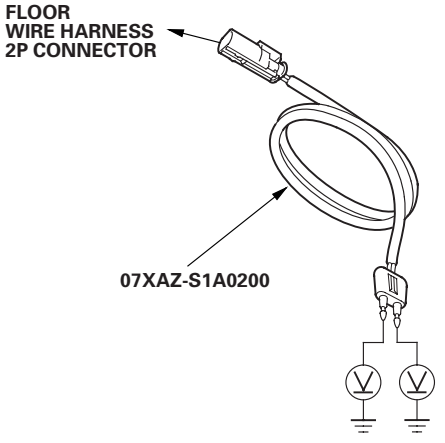
10. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

11. Disconnect the SRS inflator simulator from the SRS simulator lead.

12. Reconnect the negative cable to the battery.

13. Turn the ignition switch ON (II).

14. Measure the voltage between each terminal of the SRS simulator lead and body ground. There should be 0.5 V or less.



Is the voltage as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

NO—Short to power in the floor wire harness; replace the floor wire harness. ■

DTC 32-9x (''x'' can be 0 thru 9 or A thru F): Short to Ground in Front Passenger's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 32-9x indicated?

   YES—Go to step 3.

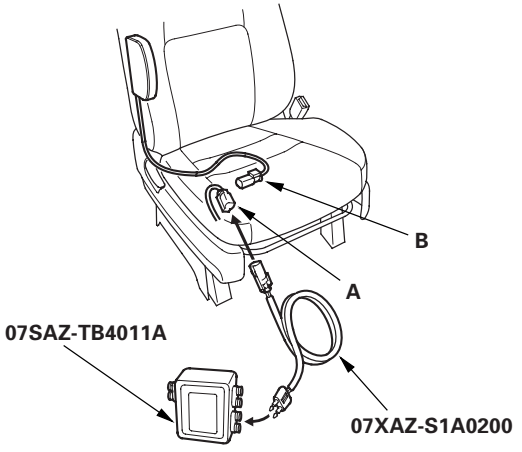
   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

4. Disconnect the floor wire harness 2P connector (A) from the front passenger's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 32-9x indicated?

   YES—Go to step 9.

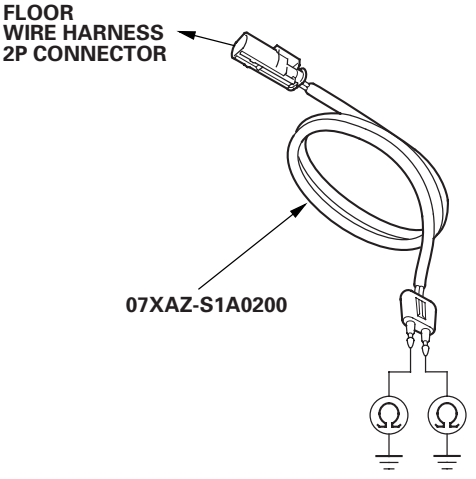
   NO—Short to ground in the front passenger's side airbag inflator; replace the front passenger's side airbag (see page 24-176). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

11. Disconnect the SRS inflator simulator from the SRS simulator lead.

12. Measure the resistance between each terminal of the SRS simulator lead and body ground. There should be an open circuit or at least 1 MΩ.



   Is the resistance as specified?

   YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

   NO—Short to ground in the floor wire harness; replace the floor wire harness. ■

DTC 33-1x (''x'' can be 0 thru 9 or A thru F): Open in Left Side Curtain Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

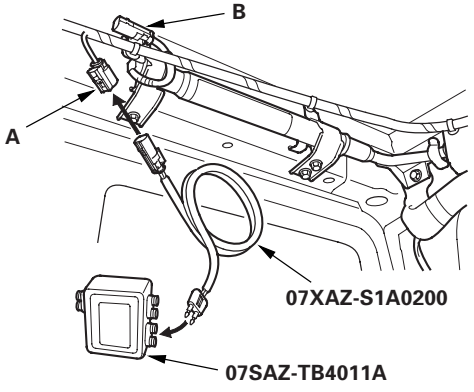
   Does the SRS indicator stay on, and is DTC 33-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the roof wire harness 2P connector (A) from the left side curtain airbag connector (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the roof wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 33-1x indicated?

   YES—Go to step 9.

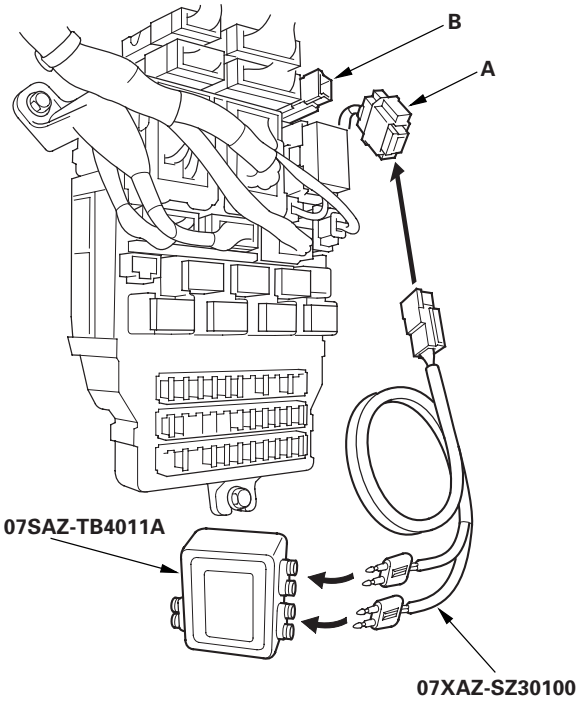
   NO—Open in the left side curtain airbag; replace the left side curtain airbag (see page 24-177). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

10. Disconnect floor wire harness 4P connector C501 (A) from the roof wire harness connector C501 (B).



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Read the DTC (see page 24-27).

    Is DTC 33-1x indicated?

    YES—Go to step 15.

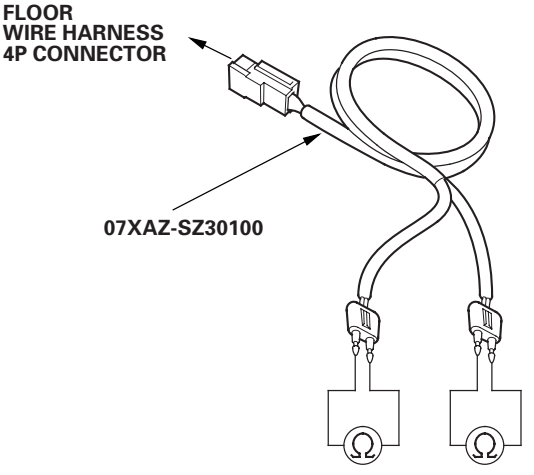
    NO—Open in the roof wire harness; replace the roof wire harness.■

15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

16. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

17. Disconnect the SRS inflator simulator from the SRS simulator lead F.

18. Measure the resistance between the terminals of both SRS simulator leads. There should be 1.0 Ω or less.



    Is the resistance as specified?

    YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188).■

    NO—Open in the floor wire harness; replace the floor wire harness.■

DTC 33-3x (''x'' can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in Left Side Curtain Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS simulator lead F 07XAZ-SZ30100
- SRS short canceller 070AZ-SAA0100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

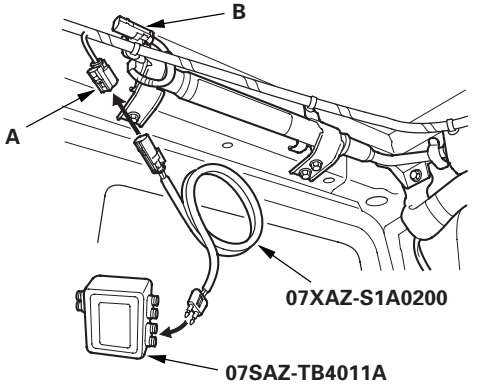
   Does the SRS indicator stay on, and is DTC 33-3x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the roof wire harness 2P connector (A) from the left side curtain airbag connector (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the roof wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 33-3x indicated?

   YES—Go to step 9.

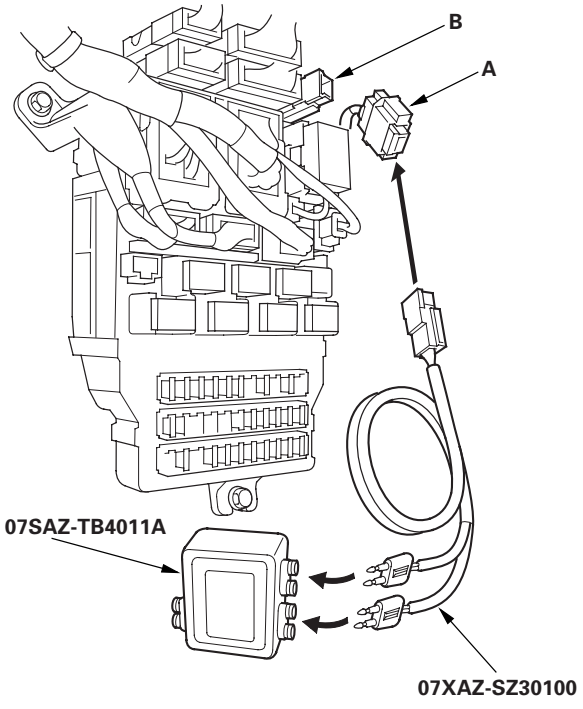
   NO—Short to another wire in the left side curtain airbag inflator; replace the left side curtain airbag (see page 24-177). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

10. Disconnect floor wire harness 4P connector C501 (A) from the roof wire harness connector C501 (B).



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Read the DTC (see page 24-27).

    Is DTC 33-3x indicated?

    YES—Go to step 15.

    NO—Short to another wire in the roof wire harness; replace the roof wire harness. ■

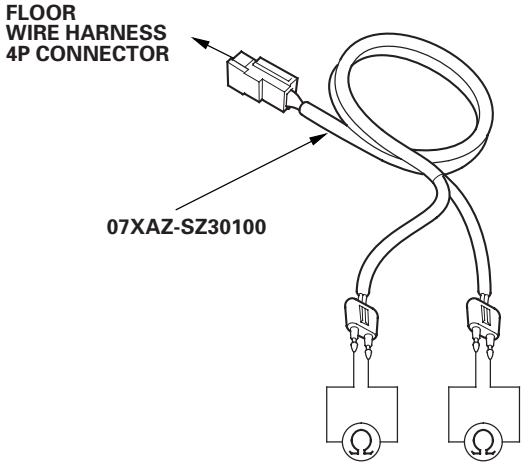
15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

16. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

17. Disconnect the SRS inflator simulator from the SRS simulator lead F.

18. Connect the SRS short canceller (070AZ-SAA0100) to the No. 7 and No. 8 terminals of SRS unit connector C (28P) (see page 24-22).

19. Measure the resistance between the terminals of both SRS simulator leads. There should be an open circuit or at least 1 MΩ.



    Is the resistance as specified?

    YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

    NO—Short to another wire in the floor wire harness; replace the floor wire harness. ■

DTC 33-8x (''x'' can be 0 thru 9 or A thru F): Short to Power in Left Side Curtain Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

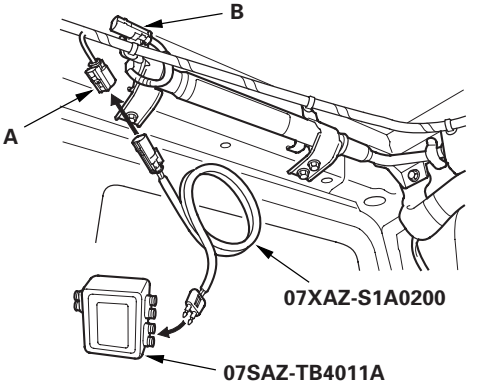
   Does the SRS indicator stay on, and is DTC 33-8x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the roof wire harness 2P connector (A) from the left side curtain airbag connector (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the roof wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 33-8x indicated?

   YES—Go to step 9.

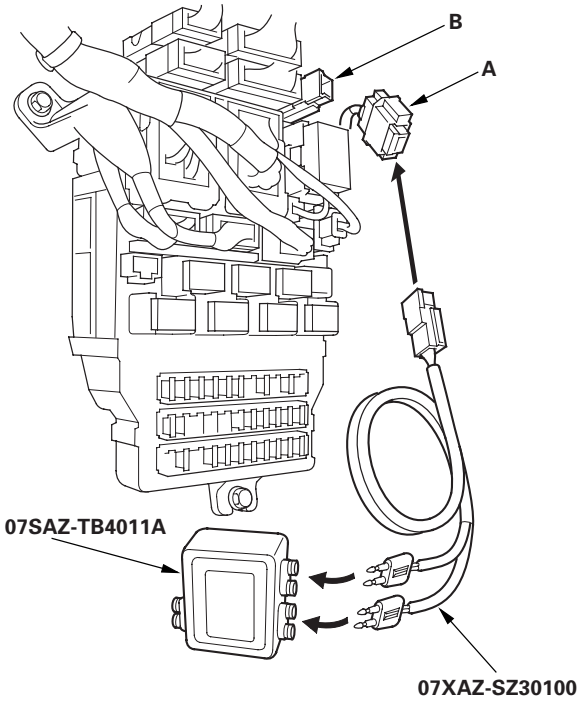
   NO—Short to power in the left side curtain airbag inflator; replace the left side curtain airbag (see page 24-177). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

10. Disconnect floor wire harness 4P connector C501 (A) from the roof wire harness connector C501 (B).



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Read the DTC (see page 24-27).

    Is DTC 33-8x indicated?

    YES—Go to step 15.

    NO—Short to power in the roof wire harness; replace the roof wire harness. ■

15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

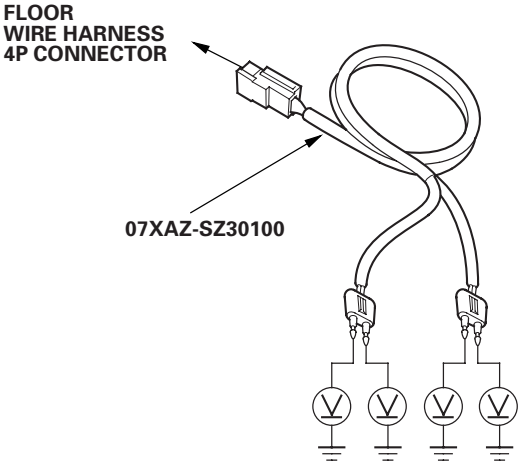
16. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

17. Reconnect the negative cable to the battery.

18. Turn the ignition switch ON (II).

19. Disconnect the SRS inflator simulator from the SRS simulator lead F.

20. Measure the voltage between each terminal of both SRS simulator leads and body ground. There should be 0.5 V or less.



    Is the voltage as specified?

    YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

    NO—Short to power in the floor wire harness; replace the floor wire harness. ■

DTC 33-9x (''x'' can be 0 thru 9 or A thru F): Short to Ground in Left Side Curtain Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

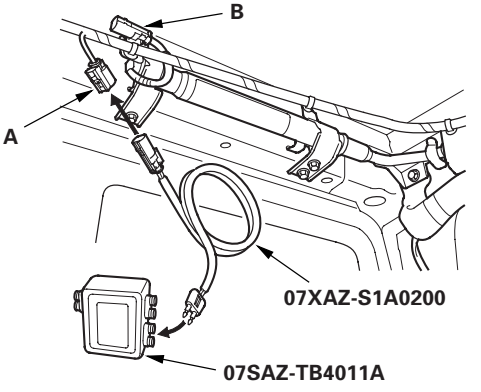
   Does the SRS indicator stay on, and is DTC 33-9x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the roof wire harness 2P connector (A) from the left side curtain airbag connector (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the roof wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 33-9x indicated?

   YES—Go to step 9.

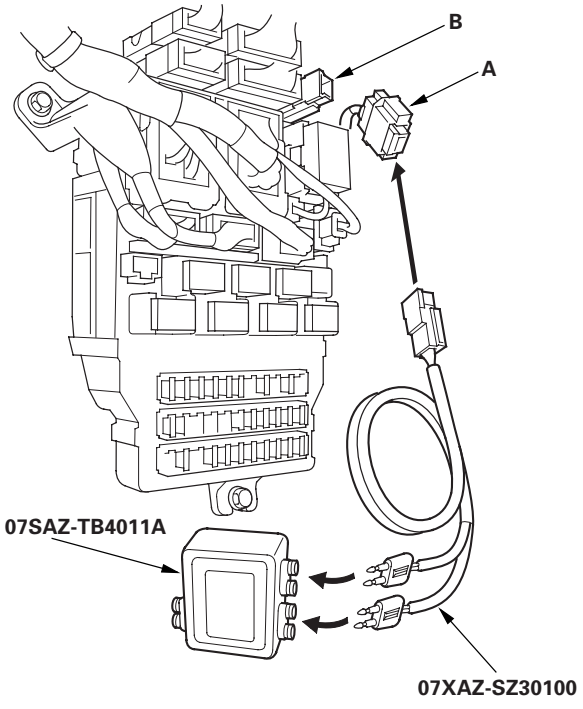
   NO—Short to ground in the left side curtain airbag inflator; replace the left side curtain airbag (see page 24-177). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

10. Disconnect floor wire harness 4P connector C501 (A) from the roof wire harness connector C501 (B).



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Read the DTC (see page 24-27).

    Is DTC 33-9x indicated?

    YES—Go to step 15.

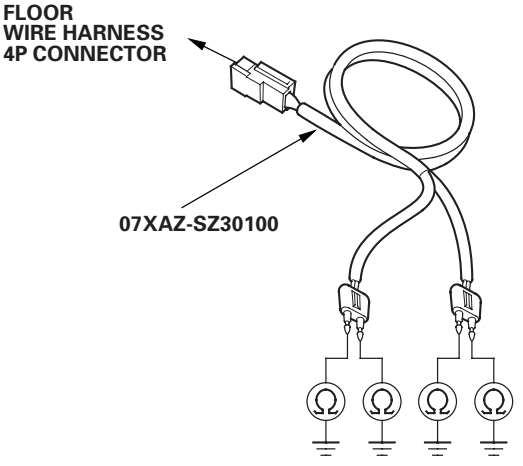
    NO—Short to ground in the roof wire harness; replace the roof wire harness. ■

15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

16. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

17. Disconnect the SRS inflator simulator from the SRS simulator lead F.

18. Measure the resistance between each terminal of both SRS simulator leads and body ground. There should be an open circuit or at least 1 MΩ.



    Is the resistance as specified?

    YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

    NO—Short to ground in the floor wire harness; replace the floor wire harness. ■

DTC 34-1x (''x'' can be 0 thru 9 or A thru F): Open in Right Side Curtain Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

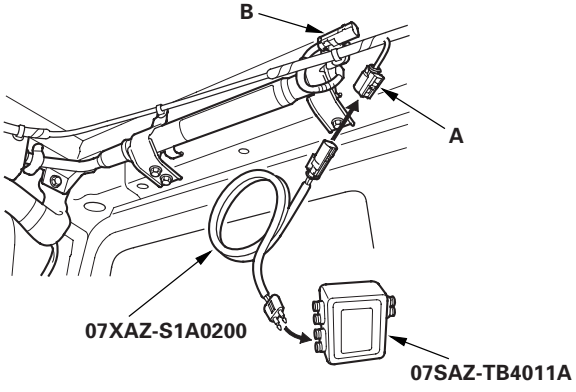
   Does the SRS indicator stay on, and is DTC 34-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the roof wire harness 2P connector (A) from the right side curtain airbag connector (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the roof wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 34-1x indicated?

   YES—Go to step 9.

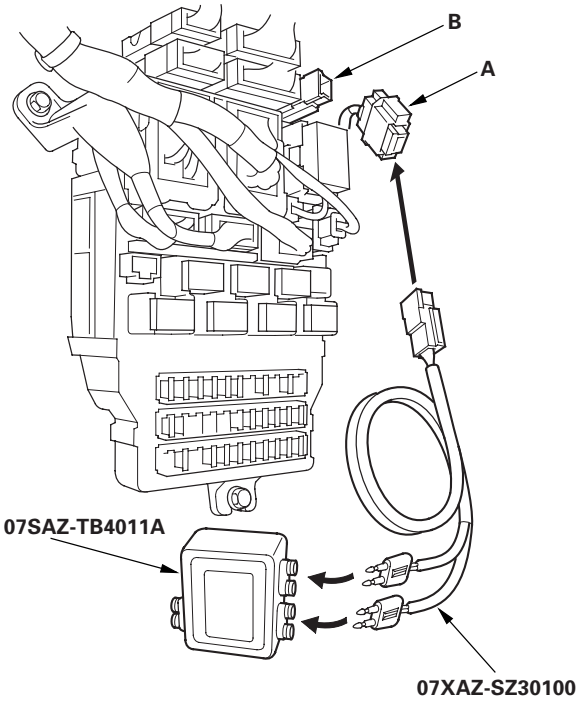
   NO—Open in the right side curtain airbag inflator, replace the right side curtain airbag (see page 24-177). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

10. Disconnect floor wire harness 4P connector C501 (A) from the roof wire harness connector C501 (B).



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Read the DTC (see page 24-27).

    Is DTC 34-1x indicated?

    YES—Go to step 15.

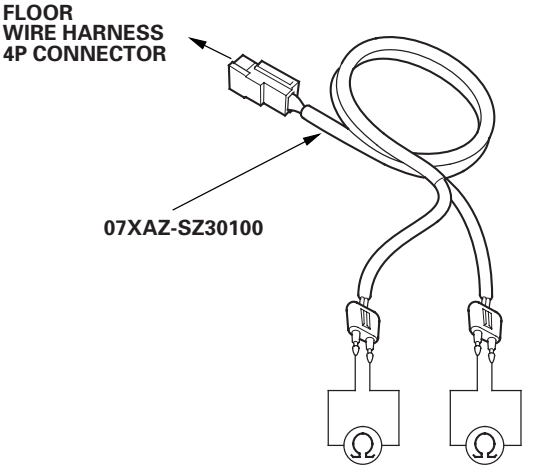
    NO—Open in the roof wire harness; replace the roof wire harness. ■

15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

16. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

17. Disconnect the SRS inflator simulator from the SRS simulator lead F.

18. Measure the resistance between the terminals of both SRS simulator leads. There should be 1.0 Ω or less.



    Is the resistance as specified?

    YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

    NO—Open in the floor wire harness; replace the floor wire harness. ■

DTC 34-3x (''x'' can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in Right Side Curtain Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS simulator lead F 07XAZ-SZ30100
- SRS short canceller 070AZ-SAA0100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

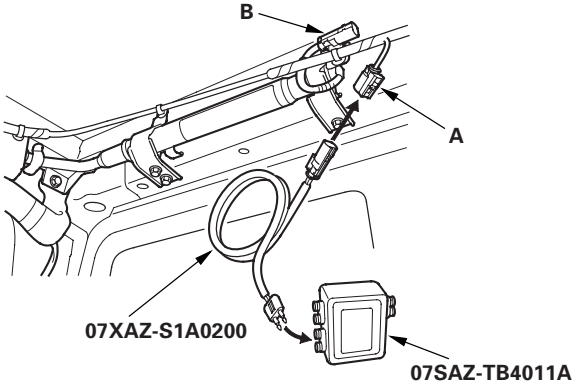
   Does the SRS indicator stay on, and is DTC 34-3x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the roof wire harness 2P connector (A) from the right side curtain airbag connector (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the roof wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 34-3x indicated?

   YES—Go to step 9.

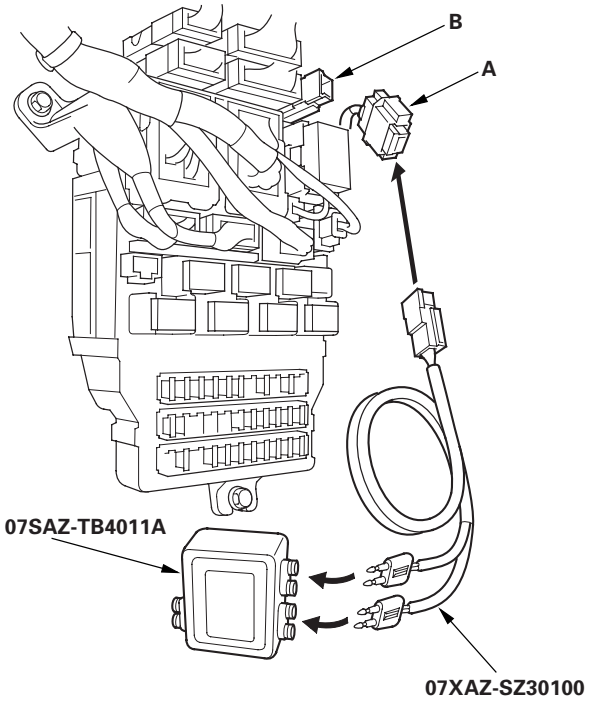
   NO—Short to another wire in the right side curtain airbag inflator; replace the right side curtain airbag (see page 24-177). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

10. Disconnect floor wire harness 4P connector C501 (A) from the roof wire harness connector C501 (B).



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Read the DTC (see page 24-27).

    Is DTC 34-3x indicated?

    YES—Go to step 15.

    NO—Short to another wire in the roof wire harness; replace the roof wire harness. ■

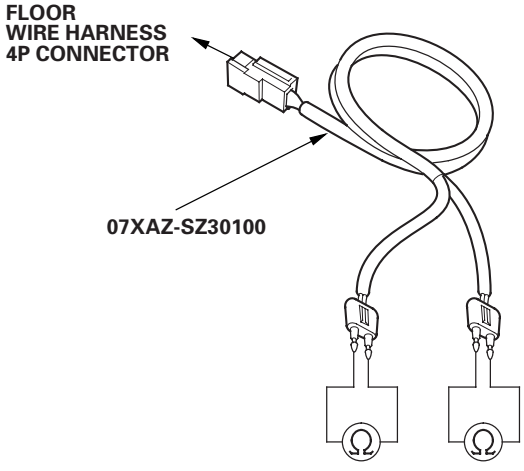
15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

16. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

17. Disconnect the SRS inflator simulator from the SRS simulator lead F.

18. Connect the SRS short canceller (070AZ-SAA0100) to the No. 9 and No. 10 terminals of SRS unit connector C (28P) (see page 24-22).

19. Measure the resistance between the terminals of both SRS simulator leads. There should be an open circuit or at least 1 MΩ.



    Is the resistance as specified?

    YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

    NO—Short to another wire in the floor wire harness; replace the floor wire harness. ■

DTC 34-8x (''x'' can be 0 thru 9 or A thru F): Short to Power in Right Side Curtain Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

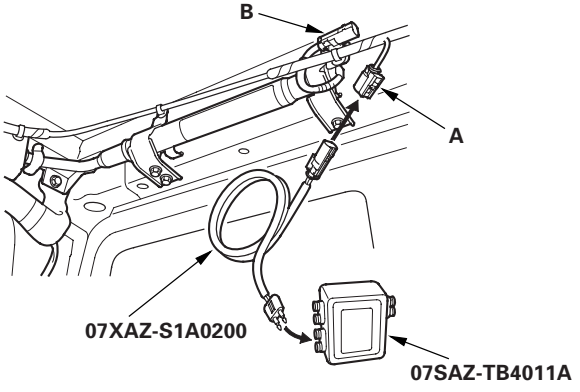
   Does the SRS indicator stay on, and is DTC 34-8x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the roof wire harness 2P connector (A) from the right side curtain airbag connector (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the roof wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 34-8x indicated?

   YES—Go to step 9.

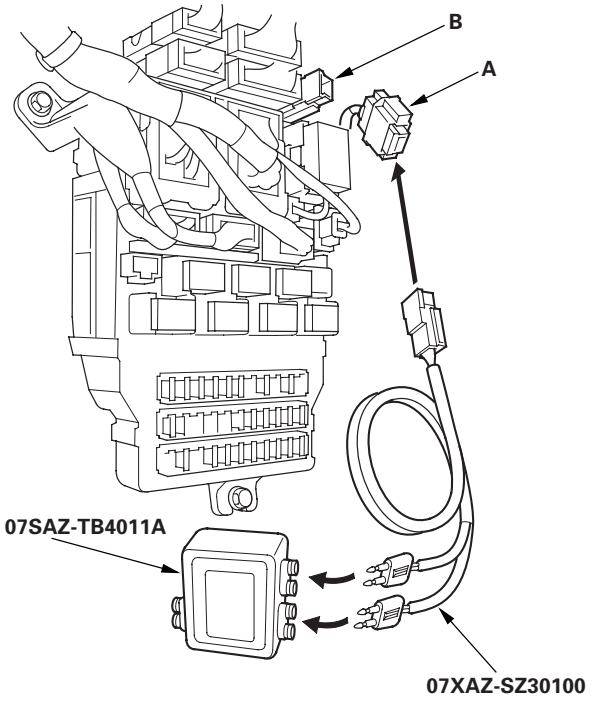
   NO—Short to power in the right side curtain airbag inflator; replace the right side curtain airbag (see page 24-177). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

10. Disconnect floor wire harness 4P connector C501 (A) from the roof wire harness connector C501 (B).



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Read the DTC (see page 24-27).

    Is DTC 34-8x indicated?

    YES—Go to step 15.

    NO—Short to power in the roof wire harness; replace the roof wire harness. ■

15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

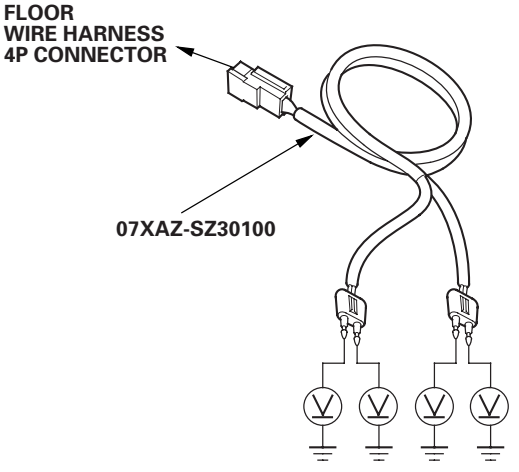
16. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

17. Reconnect the negative cable to the battery.

18. Turn the ignition switch ON (II).

19. Disconnect the SRS inflator simulator from the SRS simulator lead F.

20. Measure the voltage between each terminal of both SRS simulator leads and body ground. There should be 0.5 V or less.



    Is the voltage as specified?

    YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

    NO—Short to power in the floor wire harness; replace the floor wire harness. ■

DTC 34-9x (''x'' can be 0 thru 9 or A thru F): Short to Ground in Right Side Curtain Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

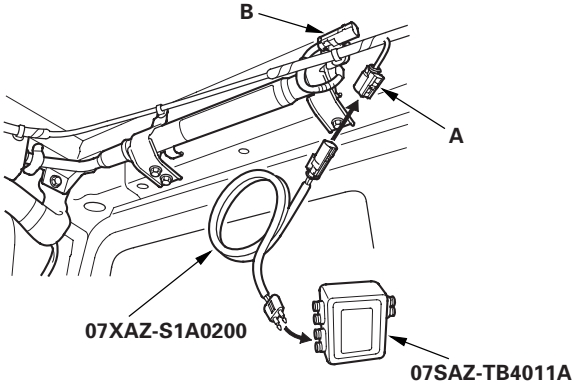
   Does the SRS indicator stay on, and is DTC 34-9x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the roof wire harness 2P connector (A) from the right side curtain airbag connector (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the roof wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-27).

   Is DTC 34-9x indicated?

   YES—Go to step 9.

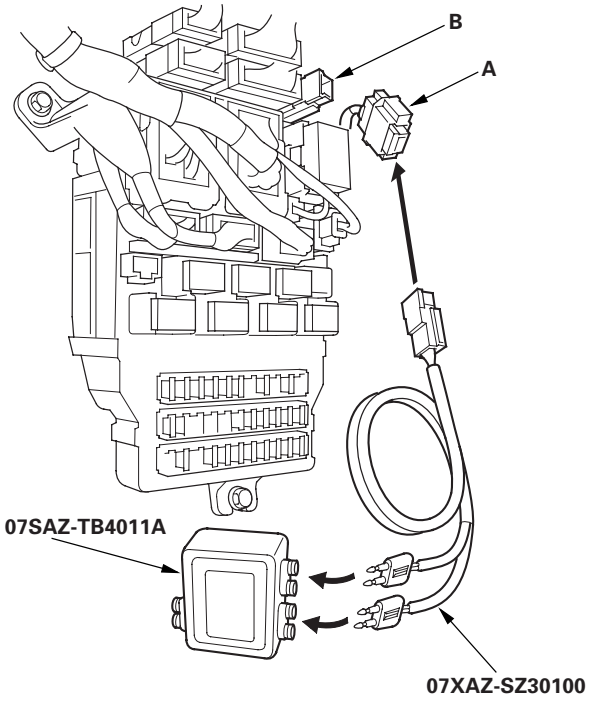
   NO—Short to ground in the right side curtain airbag inflator; replace the right side curtain airbag (see page 24-177). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

10. Disconnect floor wire harness 4P connector C501 (A) from the roof wire harness connector C501 (B).



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Read the DTC (see page 24-27).

    Is DTC 34-9x indicated?

    YES—Go to step 15.

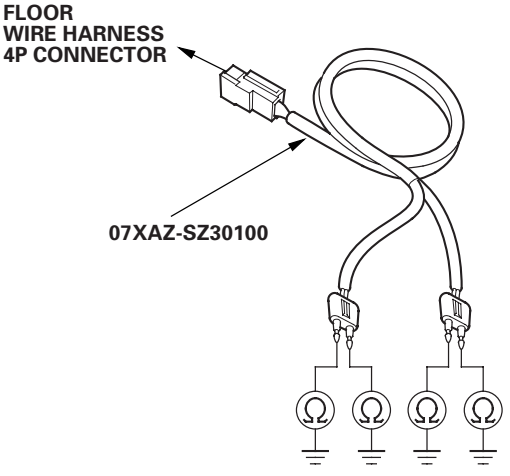
    NO—Short to ground in the roof wire harness; replace the roof wire harness. ■

15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

16. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

17. Disconnect the SRS inflator simulator from the SRS simulator lead F.

18. Measure the resistance between each terminal of both SRS simulator leads and body ground. There should be an open circuit or at least 1 MΩ.



    Is the resistance as specified?

    YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-188). ■

    NO—Short to ground in the floor wire harness; replace the floor wire harness. ■

DTC 41-1x (''x'' can be 0 thru 9 or A thru F): No Signal from the Left Front Impact Sensor

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 41-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Check the connections between SRS unit connector A (28P) and the SRS unit, between the left engine compartment wire harness 2P connector and the left front impact sensor (see page 24-14), and at connector C301 (see page 22-26).

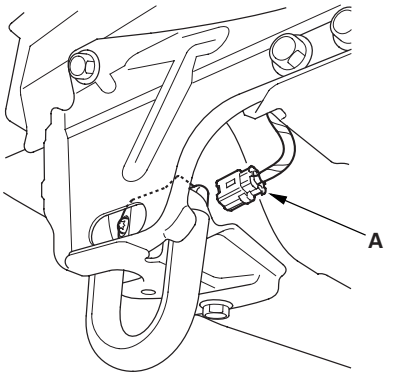
   Are the connections OK?

   YES—Go to step 4.

   NO—Repair the poor connections and retest. If DTC 41-1x is still present, Go to step 4.

4. Disconnect the negative cable from the battery, and wait for 3 minutes.

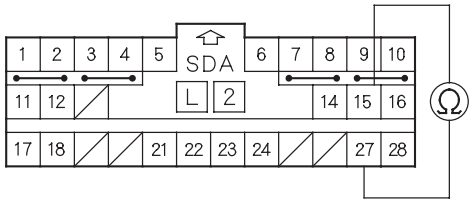
5. Disconnect the left engine compartment wire harness 2P connector (A) from the left front impact sensor.



6. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).

7. Measure the resistance between the No. 15 and No. 27 terminals of SRS unit connector A (28P). There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

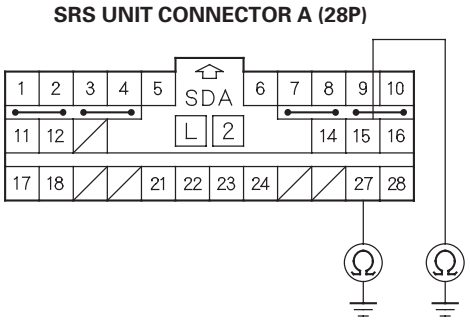
YES—Go to step 8.

NO—Short in the left engine compartment wire harness or dashboard wire harness; replace the faulty harness.■

(cont'd)

DTC Troubleshooting (cont'd)

8. Measure the resistance between the No. 15 terminal of SRS unit connector A (28P) and body ground, and between the No. 27 terminal and body ground. There should be an open circuit or at least 1 MΩ.



Wire side of female terminals

Is the resistance as specified?

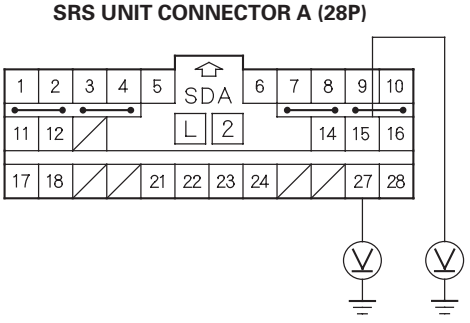
YES—Go to step 9.

NO—Short to ground in the dashboard wire harness or the left engine compartment wire harness; replace the faulty harness. ■

9. Reconnect the negative cable to the battery.

10. Turn the ignition switch ON (II).

11. Measure the voltage between the No. 15 terminal of SRS unit connector A (28P) and body ground, and between the No. 27 terminal and body ground. There should be 1 V or less.



Wire side of female terminals

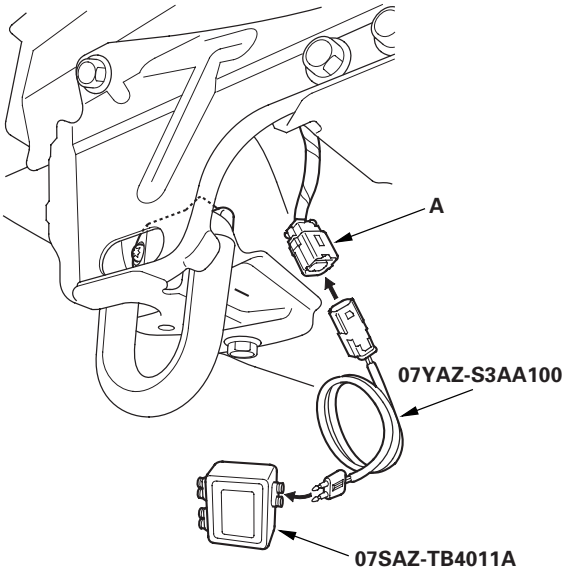
Is the voltage as specified?

YES—Go to step 12.

NO—Short to power in the left engine compartment wire harness or the dashboard wire harness; replace the faulty harness. ■

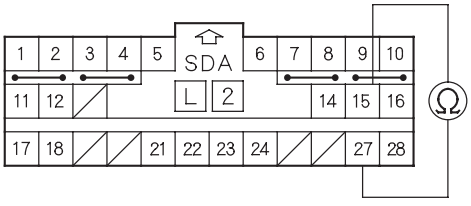
12. Turn the ignition switch OFF.

13. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the left engine compartment wire harness 2P connector (A).



14. Measure the resistance between the No. 15 and No. 27 terminals of SRS unit connector A (28P). There should be 0—1.0 Ω.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty left front impact sensor or SRS unit; replace the left front impact sensor (see page 24-193). If the problem is still present, replace the SRS unit (see page 24-188). ■

NO—Poor connection at C301, open in left engine compartment wire harness, or open in dashboard wire harness. Inspect C301 (see page 22-26). If it is OK, replace the faulty harness. ■

DTC Troubleshooting (cont'd)

DTC 42-1x (''x'' can be 0 thru 9 or A thru F): No Signal from the Right Front Impact Sensor

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 42-1x indicated?

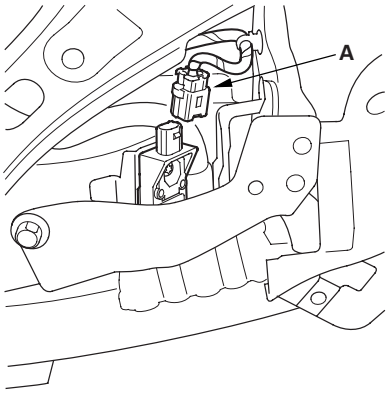
   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Turn the ignition switch OFF. Check the connections between SRS unit connector A (28P) and the SRS unit, between the right engine compartment wire harness 2P connector and the right front impact sensor (see page 24-14), and at connector C202 (see page 22-22).

   Are the connections OK?

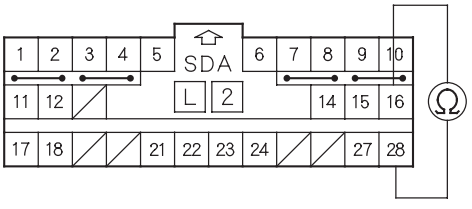
   YES—Go to step 4.

   NO—Repair the poor connections and retest. If DTC 42-1x is still present, go to step 4.
4. Disconnect the negative cable from the battery, and wait for 3 minutes.
5. Disconnect the right engine compartment wire harness 2P connector (A) from the right front impact sensor.



6. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).
7. Measure the resistance between the No. 16 and No. 28 terminals of SRS unit connector A (28P). There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

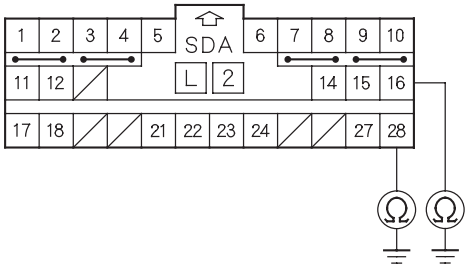
Is the resistance as specified?

YES—Go to step 8.

NO—Short in the right engine compartment wire harness or dashboard wire harness; replace the faulty harness. ■

8. Measure the resistance between the No. 16 terminal of SRS unit connector A (28P) and body ground, and between the No. 28 terminal and body ground. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 9.

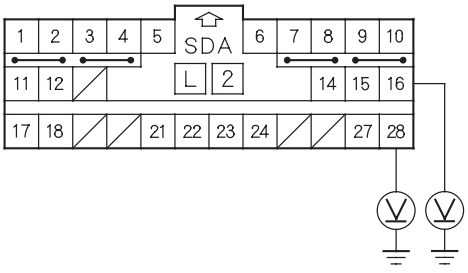
NO—Short to ground in the dashboard wire harness or the right engine compartment wire harness; replace the faulty harness. ■

9. Reconnect the negative cable to the battery.

10. Turn the ignition switch ON (II).

11. Measure the voltage between the No. 16 terminal of SRS unit connector A (28P) and body ground, and between the No. 28 terminal and body ground. There should be 1 V or less.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

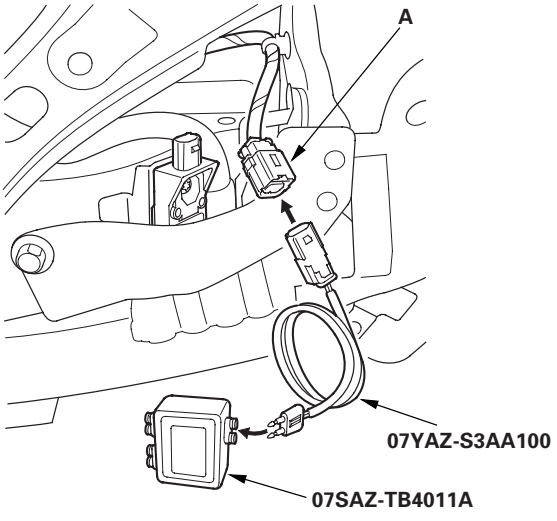
Is the voltage as specified?

YES—Go to step 12.

NO—Short to power in the right engine compartment wire harness or dashboard wire harness; replace the faulty harness. ■

12. Turn the ignition switch OFF.

13. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the right engine compartment wire harness 2P connector (A).

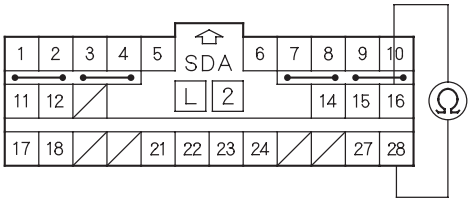


(cont'd)

DTC Troubleshooting (cont'd)

14. Measure the resistance between the No. 16 and No. 28 terminals of SRS unit connector A (28P). There should be 0—1.0 Ω.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty right front impact sensor or SRS unit; replace the right front impact sensor (see page 24-193). If the problem is still present, replace the SRS unit (see page 24-188). ■

NO—Poor connection at C202, open in the right engine compartment wire harness, or open in the dashboard wire harness. Inspect C202 (see page 22-22). If it is OK, replace the faulty harness. ■

DTC 41-2x, 41-3x, 41-Bx ("x" can be 0 thru 9 or A thru F): Internal Failure of the Left Front Impact Sensor

DTC 42-2x, 42-3x, 42-Bx ("x" can be 0 thru 9 or A thru F): Internal Failure of Right Front Impact Sensor

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 41-2x, 41-3x, 41-Bx, 42-2x, 42-3x, or 42-Bx indicated?

   YES—Replace the left or right front impact sensor (see page 24-193). If the DTC returns, replace the SRS unit (see page 24-188). ■

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, go to the DTC Troubleshooting Index.

DTC 43-1x (''x'' can be 0 thru 9 or A thru F): No Signal from the Left Side Impact Sensor (first)

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 43-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

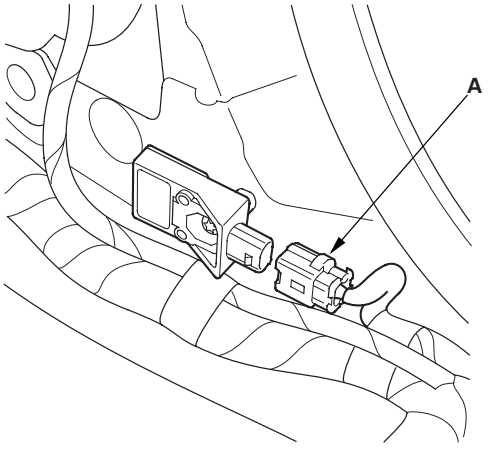
4. Check the connection between the floor wire harness 2P connector and the left side impact sensor (first) (see page 24-189).

   Is the connection OK?

   YES—Go to step 5.

   NO—Repair the poor connection and retest. If DTC 43-1x is still present, go to step 5.

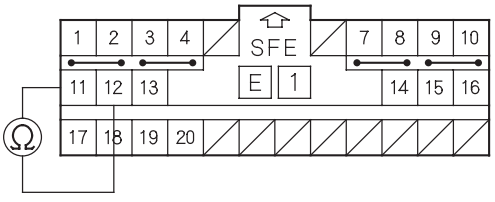
5. Disconnect the floor wire harness 2P connector (A) from the left side impact sensor (first) (see page 24-14).



6. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

7. Measure the resistance between the No. 11 and No. 12 terminals of SRS unit connector C (28P). There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 8.

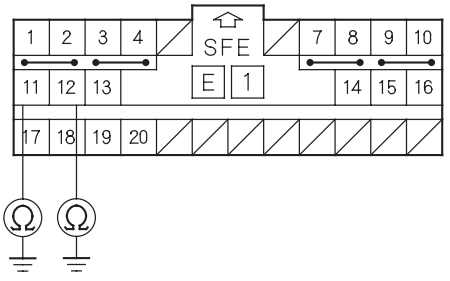
NO—Short in the floor wire harness; replace the floor wire harness. ■

(cont'd)

DTC Troubleshooting (cont'd)

8. Measure the resistance between the No. 11 terminal of SRS unit connector C (28P) and body ground, and between the No. 12 terminal and body ground. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 9.

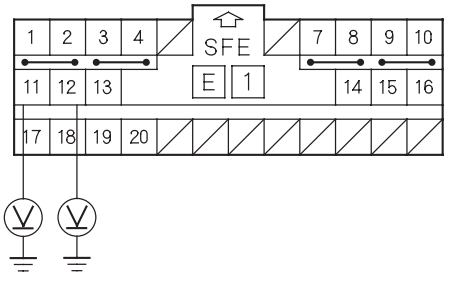
NO—Short to ground in the floor wire harness; replace the floor wire harness. ■

9. Reconnect the negative cable to the battery.

10. Turn the ignition switch ON (II).

11. Measure the voltage between the No. 11 terminal of SRS unit connector C (28P) and body ground, and between the No. 12 terminal and body ground. There should be 1 V or less.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

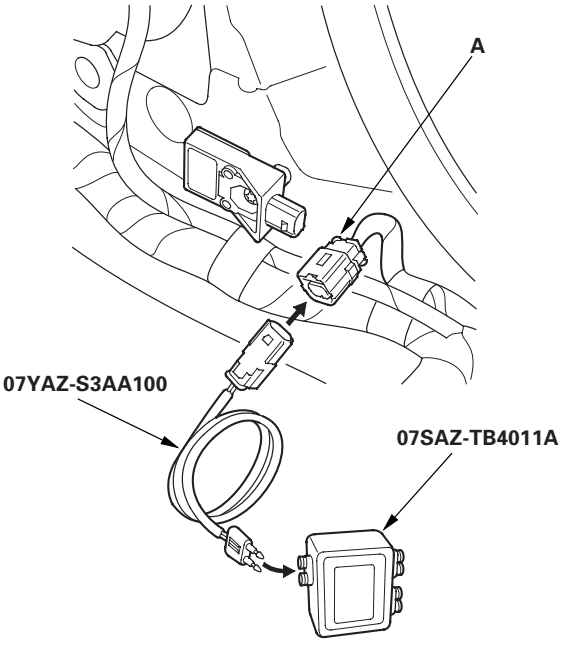
Is the voltage as specified?

YES—Go to step 12.

NO—Short to power in the floor wire harness; replace the floor wire harness. ■

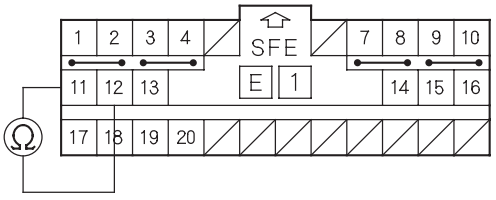
12. Turn the ignition switch OFF.

13. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the floor wire harness 2P connector (A).



14. Measure the resistance between the No. 11 and No. 12 terminals of SRS unit connector C (28P). There should be 1.0 Ω or less.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty left side impact sensor (first) or SRS unit; replace the left side impact sensor (first) (see page 24-189). If the problem is still present, replace the SRS unit (see page 24-188). ■

NO—Open in the floor wire harness; replace the floor wire harness. ■

DTC 44-1x (''x'' can be 0 thru 9 or A thru F): No Signal from the Right Side Impact Sensor (first)

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 44-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Check the connection between the floor wire harness 2P connector and the right side impact sensor (first) (see page 24-189).

   Is the connection OK?

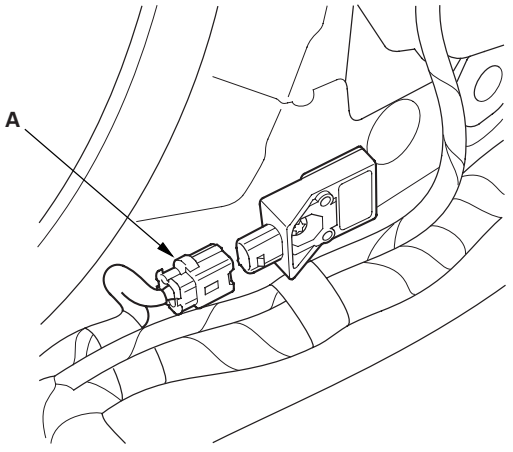
   YES—Go to step 5.

   NO—Repair the poor connection and retest. If the DTC 44-1x is still present, go to step 5.

(cont'd)

DTC Troubleshooting (cont'd)

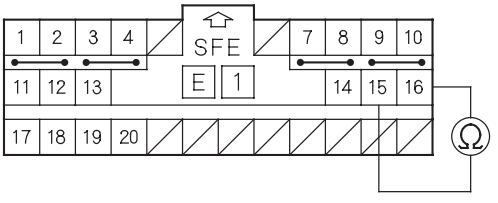
5. Disconnect the floor wire harness 2P connector (A) from the right side impact sensor (first) (see page 24-14).



6. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

7. Measure the resistance between the No. 15 and No. 16 terminals of SRS unit connector C (28P). There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

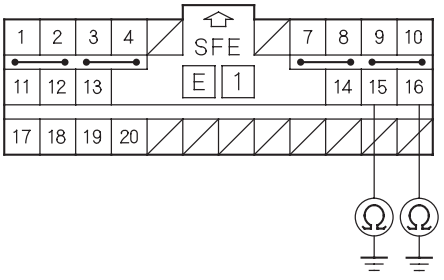
Is the resistance as specified?

YES—Go to step 8.

NO—Short in the floor wire harness; replace the floor wire harness. ■

8. Measure the resistance between the No. 15 terminal of SRS unit connector C (28P) and body ground, and between the No. 16 terminal and body ground. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 9.

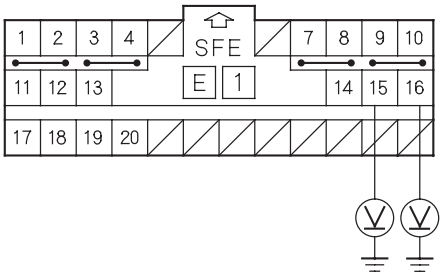
NO—Short to ground in the floor wire harness; replace the floor wire harness. ■

9. Reconnect the negative cable to the battery.

10. Turn the ignition switch ON (II).

11. Measure the voltage between the No. 15 terminal of SRS unit connector C (28P) and body ground, and between the No. 16 terminal and body ground. There should be 1 V or less.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

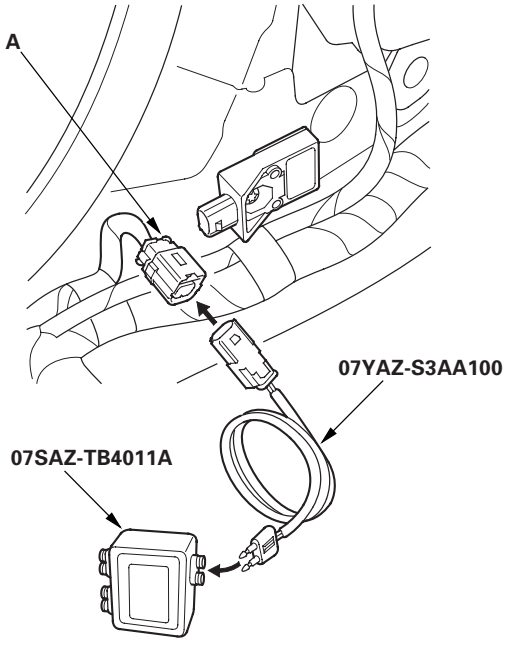
Is the voltage as specified?

YES—Go to step 12.

NO—Short to power in the floor wire harness; replace the floor wire harness. ■

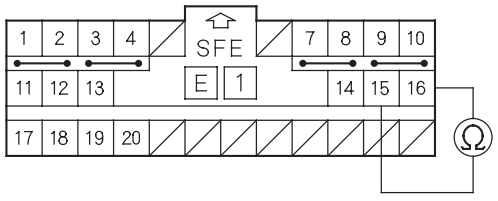
12. Turn the ignition switch OFF.

13. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the floor wire harness 2P connector (A).



14. Measure the resistance between the No. 15 and No. 16 terminals of SRS unit connector C (28P). There should be 1.0 Ω or less.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty right side impact sensor (first) or SRS unit; replace the right side impact sensor (first) (see page 24-189). If the problem is still present, replace the SRS unit (see page 24-188). ■

NO—Open in the floor wire harness; replace the floor wire harness. ■

DTC Troubleshooting (cont'd)

DTC 43-2x 43-3x, 43-Bx (''x'' can be 0 thru 9 or A thru F): Internal Failure of the Left Side Impact Sensor (first)

DTC 44-2x, 44-3x, 44-Bx (''x'' can be 0 thru 9 or A thru F): Internal Failure of Right Side Impact Senor (first)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 43-2x, 43-3x, 43-Bx, 44-2x, 44-3x or 44-Bx indicated?

   YES—Replace the left or right side impact sensor (first) (see page 24-189). If the DTC returns, replace the SRS unit (see page 24-188). ■

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

DTC 45-1x (''x'' can be 0 thru 9 or A thru F): No Signal from the Left Side Impact Sensor (second)

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 45-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

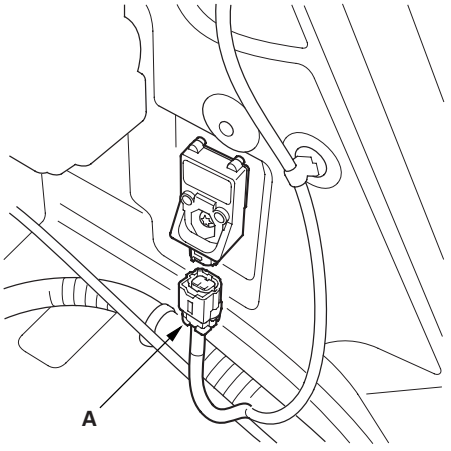
3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Check the connection between the floor wire harness 2P connector and the left side impact sensor (second) (see page 24-190).

   Is the connection OK?

   YES—Go to step 5.

   NO—Repair the poor connection and retest. If the DTC 45-1x is still present, go to step 5.

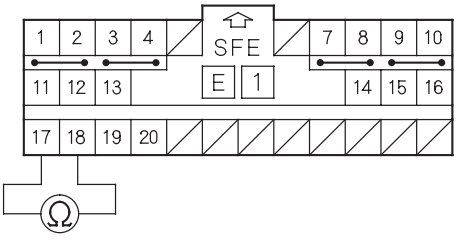
5. Disconnect the floor wire harness 2P connector (A) from the left side impact sensor (second) (see page 24-14).



6. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

7. Measure the resistance between the No. 17 and No. 18 terminals of SRS unit connector C (28P). There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

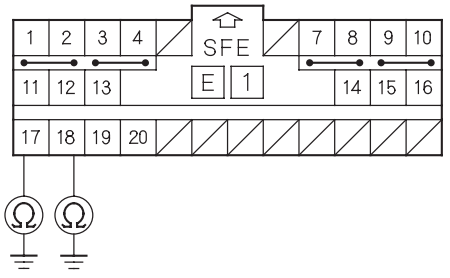
Is the resistance as specified?

YES—Go to step 8.

NO—Short in the floor wire harness; replace the floor wire harness. ■

8. Measure the resistance between the No. 17 terminal of SRS unit connector C (28P) and body ground, and between the No. 18 terminal and body ground. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 9.

NO—Short to ground in the floor wire harness; replace the floor wire harness. ■

9. Reconnect the negative cable to the battery.

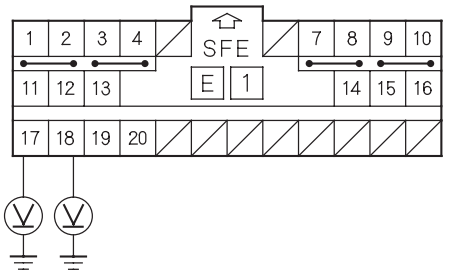
10. Turn the ignition switch ON (II).

(cont'd)

DTC Troubleshooting (cont'd)

11. Measure the voltage between the No. 17 terminal of SRS unit connector C (28P) and body ground, and between the No. 18 terminal and body ground. There should be 1 V or less.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

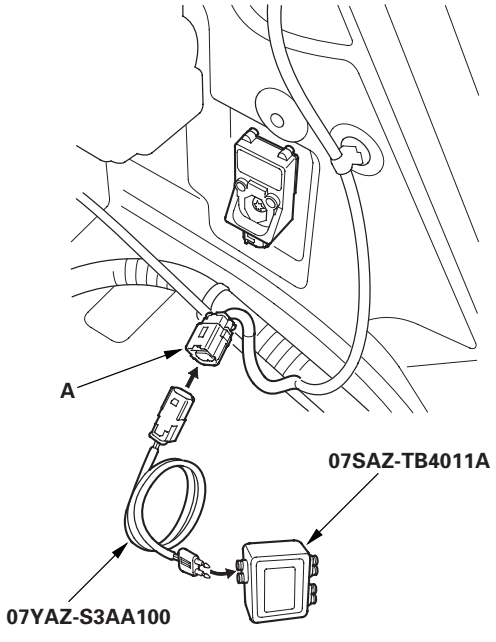
Is the voltage as specified?

YES—Go to step 12.

NO—Short to power in the floor wire harness; replace the floor wire harness. ■

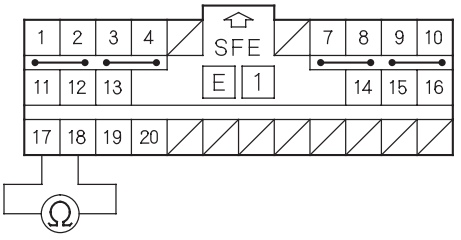
12. Turn the ignition switch OFF.

13. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the floor wire harness 2P connector (A).



14. Measure the resistance between the No. 17 and No. 18 terminals of SRS unit connector C (28P). There should be 1.0 Ω or less.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty left side impact sensor (second) or SRS unit; replace the left side impact sensor (second) (see page 24-190). If the problem is still present, replace the SRS unit (see page 24-188). ■

NO—Open in the floor wire harness; replace the floor wire harness. ■

DTC 46-1x (''x'' can be 0 thru 9 or A thru F): No Signal from the Right Side Impact Sensor (second)

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 46-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

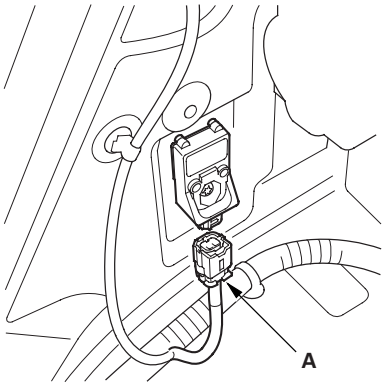
4. Check the connection between the floor wire harness 2P connector and the right side impact sensor (second) (see page 24-190).

   Is the connection OK?

   YES—Go to step 5.

   NO—Repair the poor connection and retest. If the DTC 46-1x is still present, go to step 5.

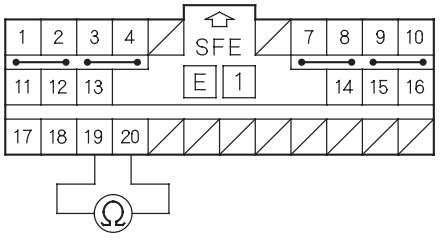
5. Disconnect the floor wire harness 2P connector (A) from the right side impact sensor (second) (see page 24-14).



6. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

7. Measure the resistance between the No. 19 and No. 20 terminals of SRS unit connector C (28P). There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 8.

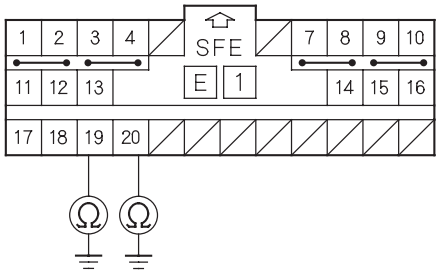
NO—Short in the floor wire harness; replace the floor wire harness. ■

(cont'd)

DTC Troubleshooting (cont'd)

8. Measure the resistance between the No. 19 terminal of SRS unit connector C (28P) and body ground, and between the No. 20 terminal and body ground. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 9.

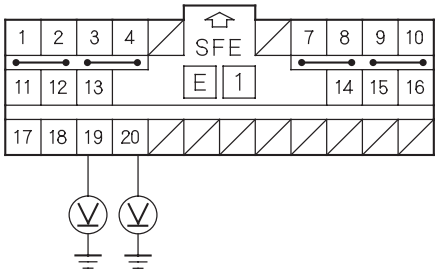
NO—Short to ground in the floor wire harness; replace the floor wire harness. ■

9. Reconnect the negative cable to the battery.

10. Turn the ignition switch ON (II).

11. Measure the voltage between the No. 19 terminal of SRS unit connector C (28P) and body ground, and between the No. 20 terminal and body ground. There should be 1 V or less.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

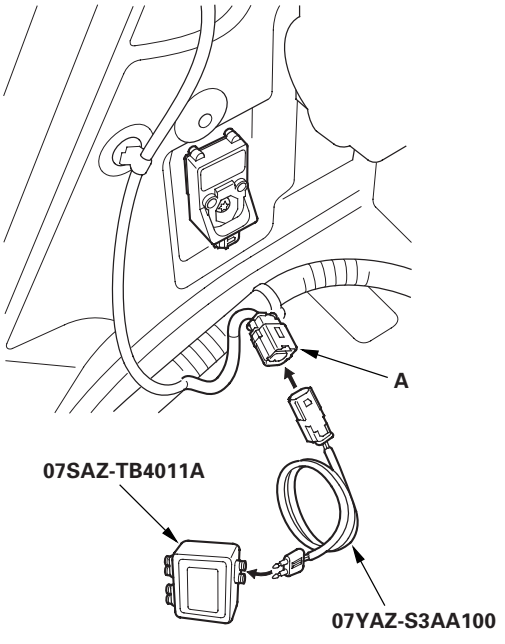
Is the voltage as specified?

YES—Go to step 12.

NO—Short to power in the floor wire harness; replace the floor wire harness. ■

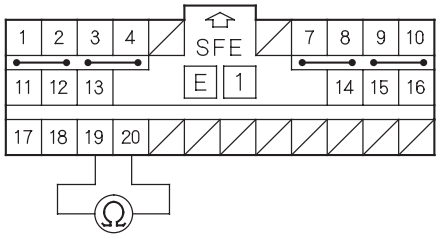
12. Turn the ignition switch OFF.

13. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the floor wire harness 2P connector (A).



14. Measure the resistance between the No. 19 and No. 20 terminals of SRS unit connector C (28P). There should be 1.0 Ω or less.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty right side impact sensor (second) or SRS unit; replace the right side impact sensor (second) (see page 24-190). If the problem is still present, replace the SRS unit (see page 24-188). ■

NO—Open in the floor wire harness; replace the floor wire harness. ■

DTC 45-2x, 45-3x, 45-Bx (''x'' can be 0 thru 9 or A thru F): Internal Failure of the Left Side Impact Sensor (second)

DTC 46-2x, 46-3x, 46-Bx (''x'' can be 0 thru 9 or A thru F): Internal Failure of Right Side Impact Sensor (second)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 45-2x, 45-3x, 45-Bx, 46-2x, 46-3x, or 46-Bx indicated?

   YES—Replace the left or right side impact sensor (second) (see page 24-190). If the DTC returns, replace the SRS unit (see page 24-188). ■

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

DTC Troubleshooting (cont'd)

DTC 51-xx, 52-xx, 53-xx, 54-xx, 55-xx, 56-xx (''x'' can be 0 thru 9 or A thru F): Internal Failure of the SRS Unit

NOTE:
- Before troubleshooting any of these DTCs, check the battery/system voltage and battery cable connections. If the voltage is low, repair the charging system or replace the battery before troubleshooting the SRS. If the battery/system voltage is now OK, ask the customer if the battery ever went dead or if the engine was started and run with the battery in a low state of change. A dead battery may trigger one or more of these DTCs.
- Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 51-xx, 52-xx, 53-xx, 54-xx, 55-xx, or 56-xx indicated?

   YES—Replace the SRS unit (see page 24-188). ■

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

DTC Ex-xx, (''x'' can be 0 thru 9 or A thru F): Control Operation Recorded

DTC Fx-xx, (''x'' can be 0 thru 9 or A thru F): Airbags and/or Tensioners Deployment Recorded

NOTE:
- Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).
- DTC E4-11: Front left side airbag does not deploy by OPDS operation.
- DTC F1-11: Driver's airbag and/or dirver's seat belt tensioner deployed.
- DTC F2-11: Front passenger's airbag and/or front passenger's seat belt tensioner deployed.
- DTC F3-11: Driver's side airbag, left side curtain airbag, and/or dirver's seat belt tensioner deployed.
- DTC F4-11: Front passenger's side airbag, right side curtain airbag, and/or front passenger's seat belt tensioner deployed.
- DTC F5-11: Both or only one side curtain airbag, seat belt tensioner deployed.
- DTC F6-11: Left side curtain airbag or right side curtain airbag deployed.

The SRS unit must be replaced after any airbags and/or tensioners have deployed (see page 24-171). ■

NOTE: DTC E4-11 is set if the system triggered a passenger's side airbag deployment but the airbag was prevented from deploying by the OPDS. Replace the right side impact sensor (first) (see page 24-189).

DTC 61-1x (''x'' can be 0 thru 9 or A thru F): Open in Driver's Seat Belt Buckle Switch

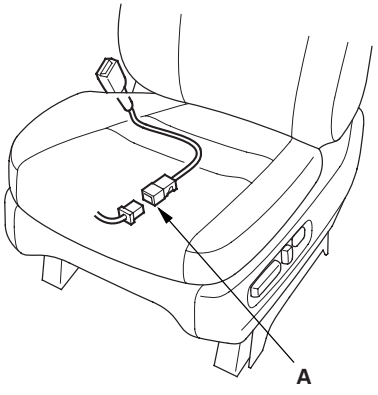
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), then buckle and unbuckle the driver's seat belt several times.
3. Read the DTC (see page 24-27).

   Is DTC 61-1x indicated?

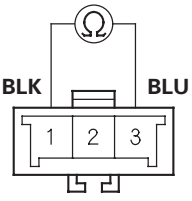
   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
4. Turn the ignition switch OFF.
5. Disconnect the driver's seat wire harness or floor wire harness 3P connector from the driver's seat belt buckle switch 3P connector (A).

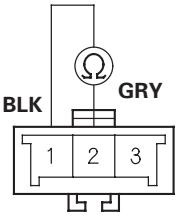


6. Buckle the driver's seat belt.
   - Measure the resistance between the No. 1 and No. 3 terminals of the driver's seat belt buckle switch 3P connector. There should be 0—1 Ω.
   - Measure the resistance between the No. 1 and No. 2 terminals of the same connector. There should be an open circuit or at least 1 MΩ.

DRIVER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

Are the resistances as specified?

YES—Go to step 7.

NO—Replace the driver's seat belt buckle assembly (see page 24-6), then clear the DTC. ■

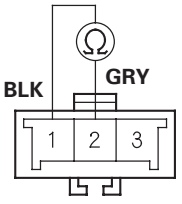
(cont'd)

DTC Troubleshooting (cont'd)

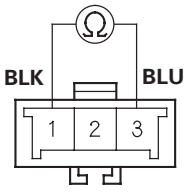
7. Unbuckle the driver's seat belt.

   - Measure the resistance between the No. 1 and No. 2 terminals of the driver's seat belt buckle switch 3P connector. There should be 0—1 Ω.
   - Measure the resistance between the No. 1 and No. 3 terminals of the same connector. There should be an open circuit or at least 1 MΩ.

DRIVER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

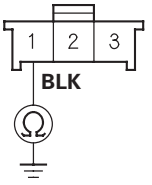
Are the resistances as specified?

YES—Go to step 8.

NO—Replace the driver's seat belt buckle assembly (see page 24-6), then clear the DTC. ■

8. Measure the resistance between the No. 1 terminal of the driver's seat wire harness or floor wire harness 3P connector and body ground. There should be 0—1 Ω.

DRIVER'S SEAT WIRE HARNESS or FLOOR WIRE HARNESS 3P CONNECTOR



Wire side of female terminals

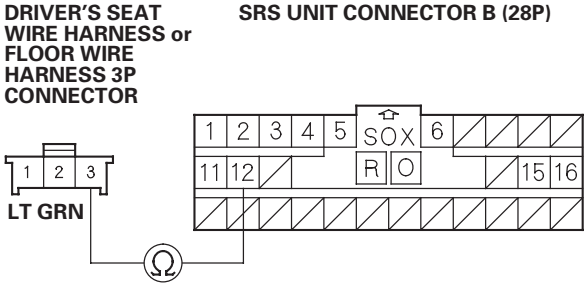
Is the resistance as specified?

YES—Go to step 9.

NO—Open in the driver's seat wire harness or floor wire harness, or poor ground connection at G501 (see page 22-38). If G501 is OK, replace the faulty harness. ■

9. Disconnect the negative cable from the battery.
10. Disconnect both seat belt tensioner 4P connectors from the floor wire harness (see step 6 on page 24-26).
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-26).

12. Measure the resistance between the No. 12 terminal of SRS unit connector B (28P) and the No. 3 terminal of the driver's seat wire harness or floor wire harness 3P connector. There should be 0—1 Ω.



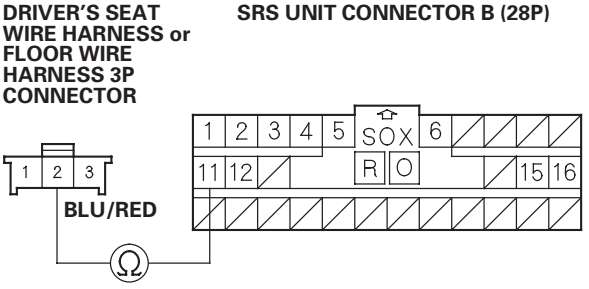
Wire side of female terminals

Is the resistance as specified?

YES—Go to step 13.

NO—Open in the driver's seat wire harness or floor wire harness; replace the faulty harness. ■

13. Measure the resistance between the No. 11 terminal of SRS unit connector B (28P) and the No. 2 terminal of the driver's seat wire harness or floor wire harness 3P connector. There should be 0—1 Ω.



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 24-188). ■

NO—Open in the driver's seat wire harness or floor wire harness, or poor connection at the floor wire harness. Check the connections at floor wire harness, connector F (14P), and connector H (14P) at the under-dash fuse/relay box (see page 22-61). If the connections are OK, replace the faulty harness or part. ■

DTC Troubleshooting (cont'd)

DTC 61-2x (''x'' can be 0 thru 9 or A thru F): Short in Driver's Seat Belt Buckle Switch

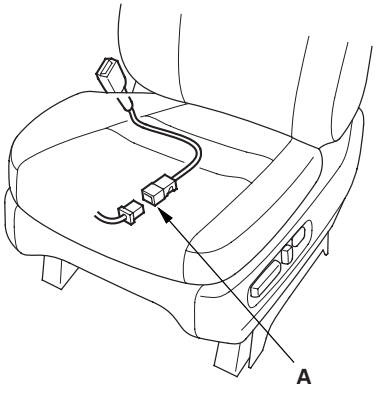
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), then buckle and unbuckle the driver's seat belt several times.
3. Read the DTC (see page 24-27).

   Is DTC 61-2x indicated?

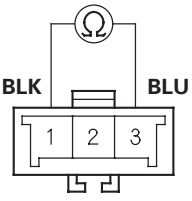
   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
4. Turn the ignition switch OFF.
5. Disconnect the driver's seat wire harness or floor wire harness 3P connector from the driver's seat belt buckle switch 3P connector (A).

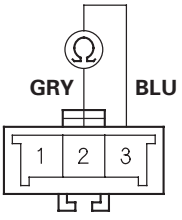


6. Buckle the driver's seat belt.
   - Measure the resistance between the No. 1 and No. 3 terminals of the driver's seat belt buckle switch 3P connector. There should be 0—1 Ω.
   - Measure the resistance between the No. 2 and No. 3 terminals of the same connector. There should be an open circuit or at least 1 MΩ.

DRIVER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

Are the resistances as specified?

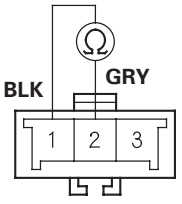
YES—Go to step 7.

NO—Replace the driver's seat belt buckle assembly (see page 24-6), then clear the DTC. ■

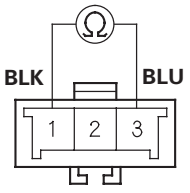
7. Unbuckle the driver's seat belt.

   - Measure the resistance between the No. 1 and No. 2 terminals of the driver's seat belt buckle switch 3P connector. There should be 0—1 Ω.
   - Measure the resistance between the No. 1 and No. 3 terminals of the same connector. There should be an open circuit or at least 1 MΩ.

DRIVER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

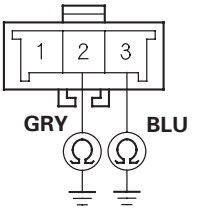
Are the resistances as specified?

YES—Go to step 8.

NO—Replace the driver's seat belt buckle assembly (see page 24-6), then clear the DTC. ■

8. Measure the resistance between the No. 2 terminal of the driver's seat belt buckle switch 3P connector and body ground, and between the No. 3 terminal and body ground. There should an open circuit or at least 1 MΩ.

DRIVER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals

Is the resistance as specified?

YES—Go to step 9.

NO—Replace the driver's seat belt buckle assembly (see page 24-6). ■

9. Disconnect the negative cable from the battery.

10. Disconnect both seat belt tensioner 4P connectors from the floor wire harness (see step 6 on page 24-26).

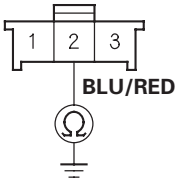
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-26).

(cont'd)

DTC Troubleshooting (cont'd)

12. Measure the resistance between the No. 2 terminal of the driver's seat wire harness or floor wire harness 3P connector and body ground. There should be an open circuit or at least 1 MΩ.

DRIVER'S SEAT WIRE HARNESS or FLOOR WIRE HARNESS 3P CONNECTOR



Wire side of female terminals

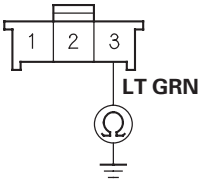
Is the resistance as specified?

YES—Check the connections at the floor wire harness, connector F (14P), and connector H (14P) at the under-dash fuse/relay box (see page 22-61). If the connections are OK, go to step 13.

NO—Short to ground in the driver's seat wire harness, floor wire harness, or the MICU/under-dash fuse/relay box. Replace the faulty harness or part. ■

13. Measure the resistance between the No. 3 terminal of the driver's seat wire harness or floor wire harness 3P connector and body ground. There should be an open circuit or at least 1 MΩ.

DRIVER'S SEAT WIRE HARNESS or FLOOR WIRE HARNESS 3P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 24-188). ■

NO—Short to ground in the driver's seat wire harness or floor wire harness; replace the faulty harness. ■

DTC 62-1x (''x'' can be 0 thru 9 or A thru F): Open in Front Passenger's Seat Belt Buckle Switch

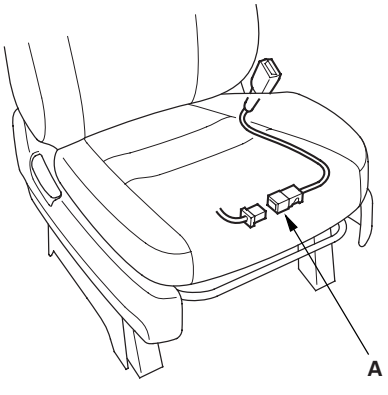
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), then buckle and unbuckle the front passenger's seat belt several times.
3. Read the DTC (see page 24-27).

   Is DTC 62-1x indicated?

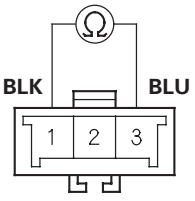
   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
4. Turn the ignition switch OFF.
5. Disconnect the front passenger's seat belt buckle switch 3P connector (A) from the passenger's seat wire harness.

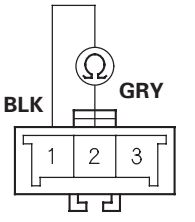


6. Buckle the front passenger's seat belt.
   - Measure the resistance between the No. 1 and No. 3 terminals of the front passenger's seat belt buckle switch 3P connector. There should be 0—1 Ω.
   - Measure the resistance between the No. 1 and No. 2 terminals of the same connector. There should be an open circuit or at least 1 MΩ.

FRONT PASSENGER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

Are the resistances as specified?

YES—Go to step 7.

NO—Replace the front passenger's seat belt buckle assembly (see page 24-6), then clear the DTC. ■

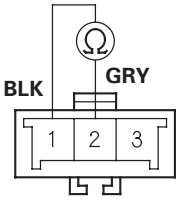
(cont'd)

DTC Troubleshooting (cont'd)

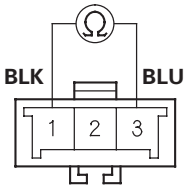
7. Unbuckle the front passenger's seat belt.

   - Measure the resistance between the No. 1 and No. 2 terminals of the front passenger's seat belt buckle switch 3P connector. There should be 0—1 Ω.
   - Measure the resistance between the No. 1 and No. 2 terminals of the front passenger's seat belt buckle switch 3P connector. There should be 0—1 Ω.

FRONT PASSENGER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

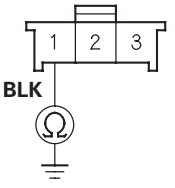
Are the resistances as specified?

YES—Go to step 8.

NO—Replace the front passenger's seat belt buckle assembly (see page 24-6), then clear the DTC. ■

8. Measure the resistance between the No. 1 terminal of the passenger's seat wire harness 3P connector and body ground. There should be 0—1 Ω.

PASSENGER'S SEAT WIRE HARNESS 3P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

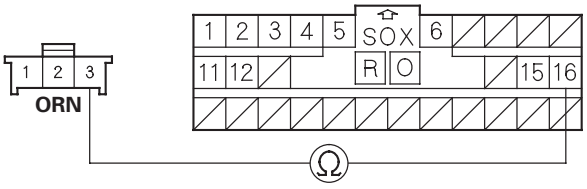
YES—Go to step 9.

NO—Open in the passenger's seat wire harness or floor wire harness, or poor ground connection at G501 (see page 22-38). If G501 is OK, replace the faulty harness. ■

9. Disconnect the negative cable from the battery.
10. Disconnect both seat belt tensioner 4P connectors from the floor wire harness (see step 6 on page 24-26).
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-26).

12. Measure the resistance between the No. 16 terminal of SRS unit connector B (28P) and the No. 3 terminal of the passenger's seat wire harness 3P connector.
There should be 0—1 Ω.

PASSENGER'S SEAT WIRE HARNESS 3P CONNECTOR **SRS UNIT CONNECTOR B (28P)**



Wire side of female terminals

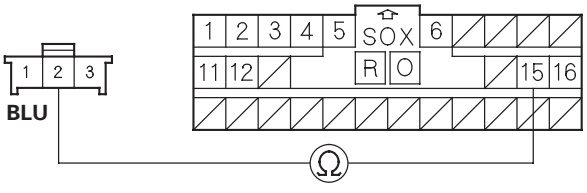
Is the resistance as specified?

YES—Go to step 13.

NO—Open in the passenger's seat wire harness or the floor wire harness; replace the faulty harness. ■

13. Measure the resistance between the No. 15 terminal of SRS unit connector B (28P) and the No. 2 terminal of the passenger's seat wire harness 3P connector.
There should be 0—1 Ω.

PASSENGER'S SEAT WIRE HARNESS 3P CONNECTOR **SRS UNIT CONNECTOR B (28P)**



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 24-188). ■

NO—Open in the passenger's seat wire harness or the floor wire harness; replace the faulty harness. ■

DTC Troubleshooting (cont'd)

DTC 62-2x (''x'' can be 0 thru 9 or A thru F): Short in Front Passenger's Seat Belt Buckle Switch

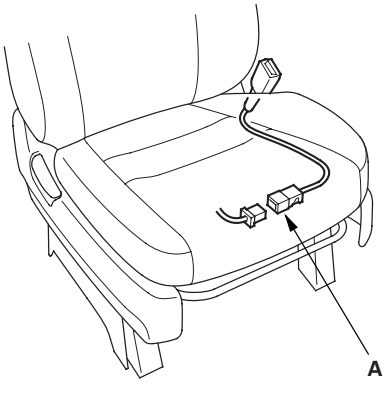
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), then buckle and unbuckle the front passenger's seat belt several times.
3. Read the DTC (see page 24-27).

   Is DTC 62-2x indicated?

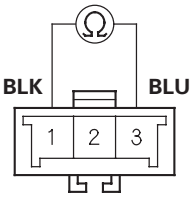
   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
4. Turn the ignition switch OFF.
5. Disconnect the front passenger's seat belt buckle switch 3P connector (A) from the passenger's seat wire harness.

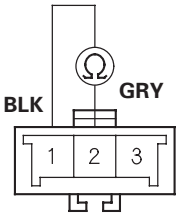


6. Buckle the front passenger's seat belt.
   - Measure the resistance between the No. 1 and No. 3 terminals of the front passenger's seat belt buckle switch 3P connector. There should be 0—1 Ω.
   - Measure the resistance between the No. 1 and No. 2 terminals of the same connector. There should be an open circuit or at least 1 MΩ.

FRONT PASSENGER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

Are the resistances as specified?

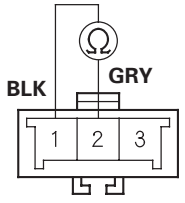
YES—Go to step 7.

NO—Replace the front passenger's seat belt buckle assembly (see page 24-6), then clear the DTC. ■

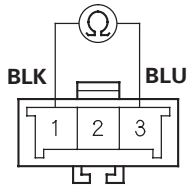
7. Unbuckle the front passenger's seat belt.

   • Measure the resistance between the No. 1 and No. 2 terminals of the front passenger's seat belt buckle switch 3P connector. There should be 0—1 Ω.
   • Measure the resistance between the No. 1 and No. 3 terminals of the same connector. There should be an open circuit or at least 1 MΩ.

FRONT PASSENGER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

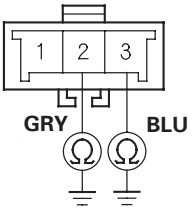
Are the resistances as specified?

YES—Go to step 8.

NO—Replace the front passenger's seat belt buckle assembly (see page 24-6), then clear the DTC. ■

8. Measure the resistance between the No. 2 terminal of the front passenger's seat belt buckle switch 3P connector and body ground, and between the No. 3 terminal and body ground. There should be an open circuit or at least 1 MΩ.

FRONT PASSENGER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals

Is the resistance as specified?

YES—Go to step 9.

NO—Replace the front passenger's seat belt buckle assembly (see page 24-6). ■

9. Disconnect the negative cable from the battery.

10. Disconnect both seat belt tensioner 4P connectors from the floor wire harness (see step 6 on page 24-26).

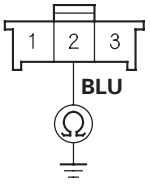
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-26).

(cont'd)

DTC Troubleshooting (cont'd)

12. Measure the resistance between the No. 2 terminal of the passenger's seat wire harness 3P connector and body ground. There should be an open circuit or at least 1 MΩ.

PASSENGER'S SEAT WIRE HARNESS 3P CONNECTOR



Wire side of female terminals

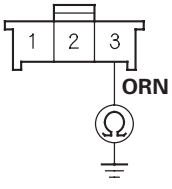
Is the resistance as specified?

YES—Go to step 13.

NO—Short to ground in the passenger's seat wire harness or the floor wire harness; replace the faulty harness. ■

13. Measure the resistance between the No. 3 terminal of the passenger's seat wire harness 3P connector and body ground. There should be an open circuit or at least 1 MΩ.

PASSENGER'S SEAT WIRE HARNESS 3P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 24-188). ■

NO—Short to ground in the passenger's seat wire harness or the floor wire harness; replace the faulty harness. ■

DTC 71-1x (''x'' can be 0 thru 9 or A thru F): Open in Driver's Seat Position Sensor ('07-08 Models)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 71-1x indicated?

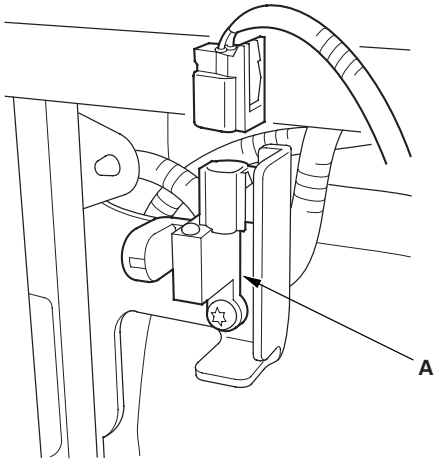
   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Check the connection between the driver's seat wire harness (with 8-way power seat) or seat position sensor harness (without 8-way power seat) 2P connector and the driver's seat position sensor (see page 24-14).
4. Clear the DTC memory.
5. Read the DTC (see page 24-27).

   Is DTC 71-1x indicated?

   YES—Go to step 6.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, go to the DTC Troubleshooting Index.
6. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
7. Disconnect the driver's seat wire harness (with 8-way power seat) or seat position sensor harness (without 8-way power seat) 2P connector from the driver's seat position sensor (A).



8. Connect the No. 1 and No. 2 terminals of the driver's seat wire harness 2P connector with a jumper wire.
9. Disconnect both seat belt tensioner connectors (see step 6 on page 24-26).

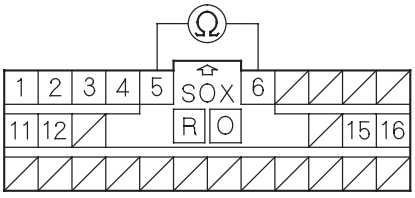
(cont'd)

DTC Troubleshooting (cont'd)

10. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-26).

11. Measure the resistance between the No. 5 and No. 6 terminals of SRS unit connector B (28P). There should be 0—1.0 Ω.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty driver's seat position sensor or SRS unit; replace the driver's seat position sensor (see page 24-195). If the problem is still present, replace the SRS unit (see page 24-188). ■

NO—Open in the floor wire harness, driver's seat wire harness (with 8-way power seat) or the seat position sensor harness (without 8-way power seat); replace the faulty harness. ■

DTC 71-2x ("x" can be 0 thru 9 or A thru F): Short in Driver's Seat Position Sensor ('07-08 Models)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

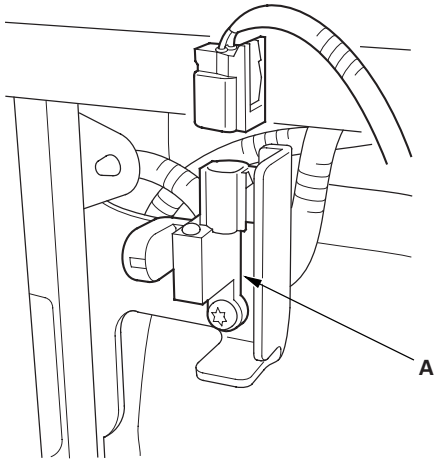
   Does the SRS indicator stay on, and is DTC 71-2x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the driver's seat wire harness (with 8-way power seat) or seat position sensor harness (without 8-way power seat) 2P connector from the driver's seat position sensor (A) (see page 24-14).



5. Reconnect the negative cable to the battery.
6. Clear the DTC memory.
7. Read the DTC (see page 24-27).

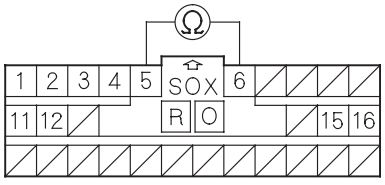
   Is DTC 71-2x indicated?

   YES—Go to step 8.

   NO—Faulty driver's seat position sensor; replace the driver's seat position sensor (see page 24-195). ■

8. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
9. Disconnect both seat belt tensioner connectors (see step 6 on page 24-26).
10. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-26).
11. Measure the resistance between the No. 5 and No. 6 terminals of SRS unit connector B (28P). There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

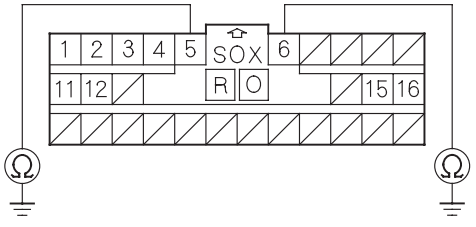
Is the resistance as specified?

YES—Go to step 12.

NO—Short in the floor wire harness, driver's seat wire harness (with 8-way power seat), or the seat position sensor harness (without 8-way power seat); replace the faulty harness. ■

12. Measure the resistance between the No. 5 terminal of SRS unit connector B (28P) and body ground, and between the No. 6 terminal and body ground. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty driver's seat position sensor or the SRS unit; replace the driver's seat position sensor (see page 24-195). If the problem is still present, replace the SRS unit (see page 24-188). ■

NO—Short in the floor wire harness, driver's seat wire harness (with 8-way power seat), or the seat position sensor harness (without 8-way power seat); replace the faulty harness. ■

DTC Troubleshooting (cont'd)

DTC 81-61, 85-61: No Signal from the ODS Unit ('07-08 Models)

DTC 81-62, 85-62: Response Data Error from the ODS Unit ('07-08 Models)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Make sure nothing is on the front passenger's seat.
2. Clear the DTC memory (see page 24-28).
3. Read the DTC (see page 24-27).

   Is DTC 81-61, 85-61, 81-62, or 85-62 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

4. Check the connection between the ODS unit harness 18P connector and the ODS unit (see step 4 on page 24-192).

   Is the connection OK?

   YES—Go to step 5.

   NO—Repair the poor connection and retest. If DTC 81-61, 85-61, 81-62, or 85-62 is still present, go to step 5.

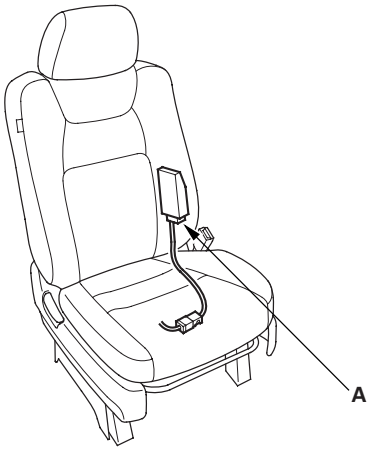
5. Turn the ignition switch OFF.
6. Check the No. 10 (7.5 A) fuse in the driver's under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 7.

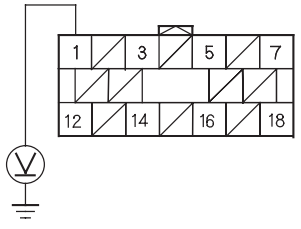
   NO—Replace the fuse, then turn the ignition switch ON (II). If the fuse blows again, check for a short in the No. 10 (7.5 A) fuse circuit (dashboard wire harness, floor wire harness, front passenger's seat wire harness, or ODS unit harness). ■

7. Disconnect the ODS unit harness 18P connector (A) from the ODS unit.



8. Turn the ignition switch ON (II).
9. Measure the voltage between the No. 1 terminal of the ODS unit harness 18P connector and body ground. There should be battery voltage.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

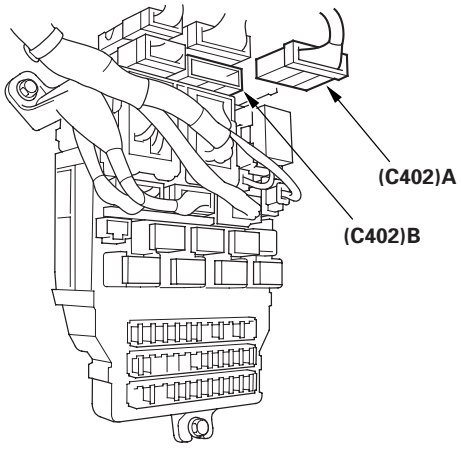
Is there battery voltage?

YES—Go to step 14.

NO—Go to step 10.

10. Turn the ignition switch OFF.

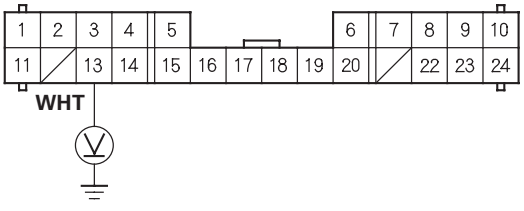
11. Disconnect dashboard wire harness 24P connector C402 (A) from the floor wire harness C402 (B).



12. Turn the ignition switch ON (II).

13. Measure the voltage between the No. 13 terminal of the dashboard wire harness 24P connector C402 and body ground. There should be battery voltage.

DASHBOARD WIRE HARNESS 24P CONNECTOR C402



Wire side of female terminals

Is there battery voltage?

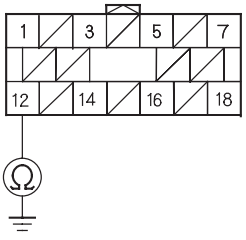
YES—Open in the WHT wire of the floor wire harness, front passenger's seat wire harness or ODS unit harness; replace the faulty harness. ■

NO—Open in the dashboard wire harness, poor connection at connector N (see page 22-61), or faulty under-dash fuse/relay box; replace the dashboard wire harness or faulty part. ■

14. Turn the ignition switch OFF.

15. Measure the resistance between the No. 12 terminal of the ODS unit harness 18P connector D and body ground. There should be 0—1.0 Ω.

ODS UNIT HARNESS 18P CONNECTOR D



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 16.

NO—Open in the ODS unit harness, front passenger's seat wire harness or floor wire harness; check the connection at G501 (see page 22-38). If the connection is OK, replace the faulty harness. ■

16. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

17. Disconnect both seat belt tensioner 4P connectors (see step 6 on page 24-26).

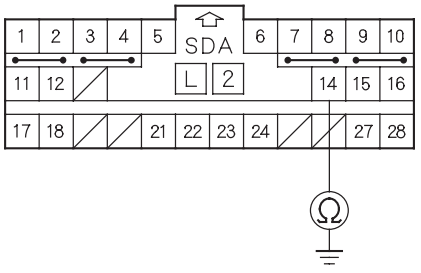
(cont'd)

DTC Troubleshooting (cont'd)

18. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).

19. Measure the resistance between the No. 14 terminal of SRS unit connector A (28P) and body ground. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

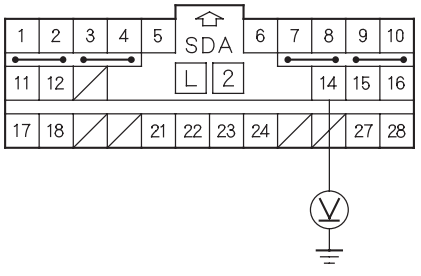
Is the resistance as specified?

YES—Go to step 20.

NO—Go to step 23.

20. Turn the ignition switch ON (II), and measure the voltage between the No. 14 terminal of SRS unit connector A (28P) and body ground. There should be 0.5 V or less.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

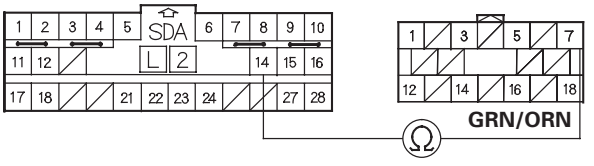
Is the voltage as specified?

YES—Go to step 21.

NO—Short to power in the dashboard wire harness, floor wire harness, front passenger's seat wire harness, or ODS unit harness. ■

21. Measure the resistance between the No. 14 terminal of SRS unit connector A (28P) and the No. 7 terminal of the ODS unit harness 8P connector D. There should be 0—1.0 Ω.

SRS UNIT CONNECTOR A (28P) **ODS UNIT HARNESS 18P CONNECTOR D**



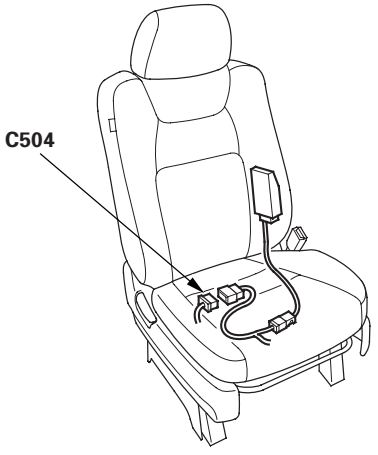
Wire side of female terminals

Is the resistance as specified?

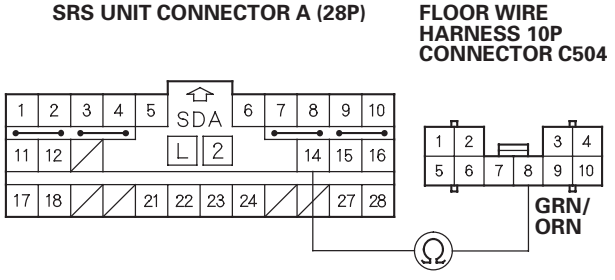
YES—Faulty ODS unit or SRS unit; replace the ODS unit (see page 24-192). If the problem is still present, replace the SRS unit (see page 24-188). ■

NO—Go to step 22.

22. Disconnect the floor wire harness 10P connector C504 from the front passenger's seat wire harness.



23. Measure the resistance between the No. 14 terminal of SRS unit connector A (28P) and the No. 8 terminal of floor wire harness 10P connector C504. There should be 0—1.0 Ω.



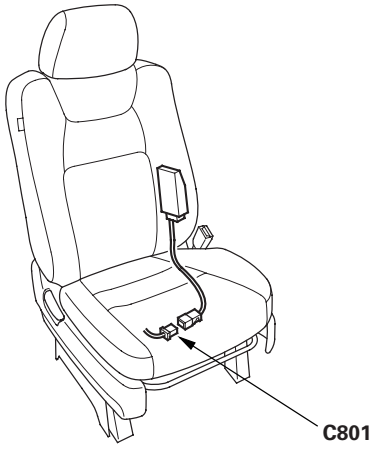
Wire side of female terminals

Is the resistance as specified?

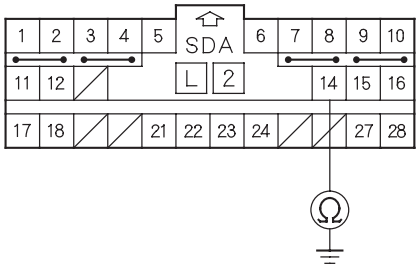
YES—Open in the front passenger's seat wire harness; replace the front passenger's seat wire harness. ■

NO—Open in the dashboard wire harness or the floor wire harness; replace the faulty harness. ■

24. Disconnect front passenger's seat wire harness 4P connector C801 from the ODS unit harness.



25. Measure the resistance between the No. 14 terminal of SRS unit connector A (28P) and body ground. There should be an open circuit or at least 1 MΩ.



Wire side of female terminals

Is the resistance as specified?

YES—Short to ground in the ODS unit harness; replace the ODS unit harness. ■

NO—Short to ground in the dashboard wire harness, front passenger's seat wire harness or floor wire harness; replace the faulty harness. ■

DTC Troubleshooting (cont'd)

DTC 81-71, 81-78: ODS Unit Does Not Calibrate ('07-08 Models)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is 81-71 or 81-78 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Calibrate the ODS unit (see page 24-31).
4. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator go off?

   YES—The system is OK. ■

   NO—Replace the ODS unit (see page 24-192). ■

DTC 85-71, 85-78: OPDS/ODS Unit Does Not Initialize

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is 85-71 or 85-78 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Initialize the OPDS/ODS unit (see page 24-30).
4. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator go off?

   YES—The system is OK. ■

   NO—Replace the ODS unit (see page 24-192). ■

DTC 81-4x, 81-5x (''x'' can be 0 thru 9 or A thru F), 81-63, 81-64: Internal Failure of the ODS Unit ('07-08 Models)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 81-4x, 81-5x, 81-63, or 81-64 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Initialize the ODS unit (see page 24-30).
4. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator go off?

   YES—The system is OK. ■

   NO—Go to step 5.
5. Replace the ODS unit (see page 24-192).
6. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator go off?

   YES—The system is OK. ■

   NO—Replace the SRS unit (see page 24-188). ■

DTC 81-79: Front Passenger's Weight Sensors Initial Check Failure ('07-08 Models)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 81-79 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Turn the ignition switch OFF.
4. Make sure nothing is on the front passenger's seat.
5. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator go off?

   YES—The system is OK. ■

   NO—Remove the front passenger's seat assembly (see page 20-97) and the front passenger's weight sensors (see page 24-191), then reinstall them. Calibrate the ODS unit (see page 24-31). Retry the troubleshooting. If DTC 81-79 is indicated repeatedly, replace the front passenger's weight sensors. ■

DTC Troubleshooting (cont'd)

DTC 82-1x (''x'' can be 0 thru 9 or A thru F):
No Signal from the Inner Side Front Passenger's Weight Sensor ('07-08 Models)

DTC 83-2x (''x'' can be 0 thru 9 or A thru F):
No Signal from the Outer Side Front Passenger's Weight Sensor ('07-08 Models)

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 82-1x or 83-2x indicated?

   YES—Replace the inner or outer side front passenger's weight sensor (see page 24-191). ■

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

DTC 85-61: No Signal from the OPDS Unit ('06 Model)

DTC 85-62: Response Data Error from the OPDS Unit ('06 Model)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Make sure nothing is on the front passenger's seat.
2. Clear the DTC memory (see page 24-28).
3. Read the DTC (see page 24-27).

   Is DTC 85-61 or 85-62 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

4. Check the connection between the OPDS unit harness 8P connector and the OPDS unit.

   Is the connection OK?

   YES—Go to step 5.

   NO—Repair the poor connection and retest. If DTC 85-61 or 85-62 is still present, go to step 5.

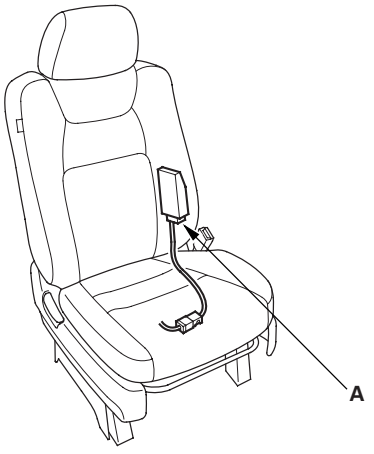
5. Turn the ignition switch OFF.
6. Check the No. 10 (7.5 A) fuse in the driver's under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 7.

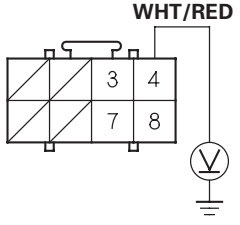
   NO—Replace the fuse, then turn the ignition switch ON (II). If the fuse blows again, check for a short in the No. 10 (7.5 A) fuse circuit (dashboard wire harness, floor wire harness, front passenger's seat wire harness, or OPDS unit harness).■

7. Disconnect the OPDS unit harness 8P connector (A) from the OPDS unit.



8. Turn the ignition switch ON (II).
9. Measure the voltage between the No. 4 terminal of the OPDS unit harness 8P connector and body ground. There should be battery voltage.

OPDS UNIT HARNESS 8P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 14.

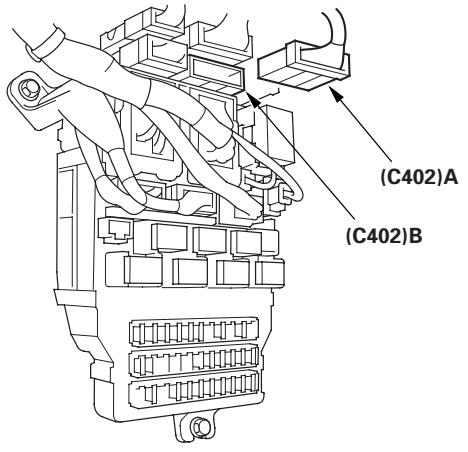
NO—Go to step 10.

10. Turn the ignition switch OFF.

(cont'd)

DTC Troubleshooting (cont'd)

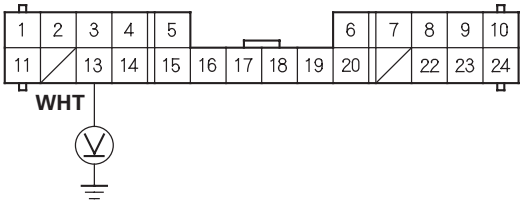
11. Disconnect dashboard wire harness 24P connector C402 (A) from the floor wire harness C402 (B).



12. Turn the ignition switch ON (II).

13. Measure the voltage between the No. 13 terminal of the dashboard wire harness 24P connector C402 and body ground. There should be battery voltage.

DASHBOARD WIRE HARNESS 24P CONNECTOR C402



Wire side of female terminals

Is there battery voltage?

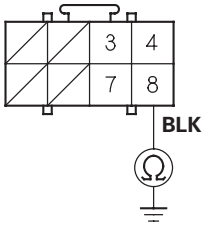
YES—Open in the floor wire harness, front passenger's seat wire harness or OPDS unit harness; replace the faulty harness. ■

NO—Open in the dashboard wire harness, poor connection at connector N (see page 22-61), or faulty under-dash fuse/relay box; replace the dashboard wire harness or faulty part. ■

14. Turn the ignition switch OFF.

15. Measure the resistance between the No. 8 terminal of the OPDS unit harness 8P connector and body ground. There should be 0—1.0 Ω.

OPDS UNIT HARNESS 8P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 16.

NO—Open in the OPDS unit harness, front passenger's seat wire harness or floor wire harness; check the connection at G501 (see page 22-38). If the connection is OK, replace the faulty harness. ■

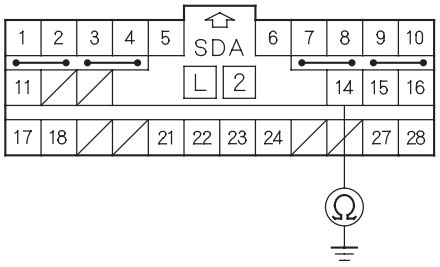
16. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

17. Disconnect both seat belt tensioner 4P connectors (see step 6 on page 24-26).

18. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).

19. Measure the resistance between the No. 14 terminal of SRS unit connector A (28P) and body ground. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

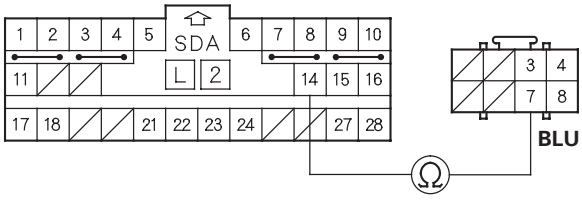
YES—Go to step 20.

NO—Go to step 23.

20. Measure the resistance between the No. 14 terminal of SRS unit connector A (28P) and the No. 7 terminal of the OPDS unit harness 8P connector. There should be 0—1.0 Ω.

SRS UNIT CONNECTOR A (28P)

OPDS UNIT HARNESS 8P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

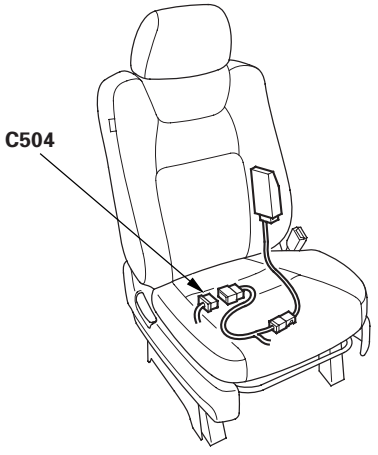
YES—Faulty OPDS unit or SRS unit; replace the OPDS unit (see page 24-192). If the problem is still present, replace the SRS unit (see page 24-188). ■

NO—Go to step 21.

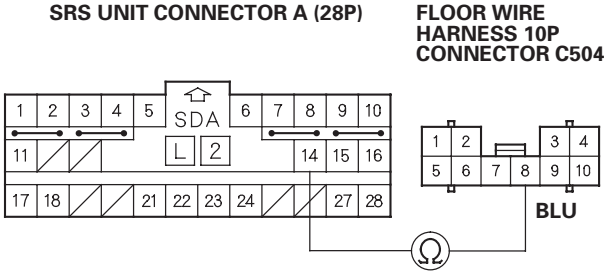
(cont'd)

DTC Troubleshooting (cont'd)

21. Disconnect the floor wire harness 10P connector C504 from the front passenger's seat wire harness.



22. Measure the resistance between the No. 14 terminal of SRS unit connector A (28P) and the No. 8 terminal of floor wire harness 10P connector C504. There should be 0—1.0 Ω.



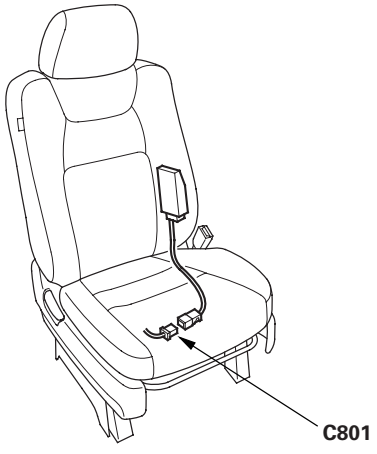
Wire side of female terminals

Is the resistance as specified?

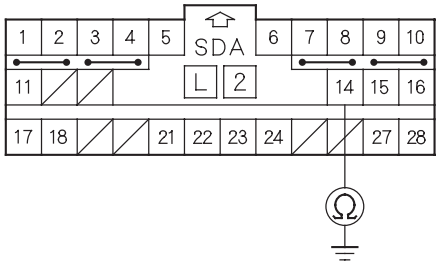
YES—Open in the front passenger's seat wire harness; replace the front passenger's seat wire harness. ■

NO—Open in the dashboard wire harness or the floor wire harness; replace the faulty harness. ■

23. Disconnect front passenger's seat wire harness 4P connector C801 from the OPDS unit harness.



24. Measure the resistance between the No. 14 terminal of SRS unit connector A (28P) and body ground. There should be an open circuit or at least 1 MΩ.



Wire side of female terminals

Is the resistance as specified?

YES—Short to ground in the OPDS unit harness; replace the OPDS unit harness. ■

NO—Short to ground in the dashboard wire harness, front passenger's seat wire harness or floor wire harness; replace the faulty harness. ■

DTC 85-4x, 85-5x (''x'' can be 0 thru 9 or A thru F), 85-63, 85-64: Internal Failure of the OPDS/ODS Unit

NOTE:
- An incorrect OPDS/ODS unit can cause DTC 85-63.
- Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC85-4x, 85-5x, 85-63, or 85-64 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Initialize the OPDS/ODS unit (see page 24-30).
4. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator go off?

   YES—The system is OK. ■

   NO— Go to Step 5.
5. Replace the ODS unit (see page 24-192).
6. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator go off?

   YES—The system is OK. ■

   NO—Replace the SRS unit (see page 24-188). ■

DTC 85-79: OPDS Sensor Initial Check Failure

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 85-79 indicated?

   YES—Turn the ignition switch OFF, and go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Make sure nothing is on the front passenger's seat.
4. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator go off?

   YES—The system is OK. ■

   NO—Go to step 5.
5. Initialize the OPDS/ODS unit (see page 24-30).
6. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator go off?

   YES—The system is OK. ■

   NO—Replace the OPDS/ODS unit (see page 24-192) and retest. If the problem is still present, replace the OPDS sensor/seat-back (see page 20-111). ■

DTC Troubleshooting (cont'd)

DTC 86-1x (''x'' can be 0 thru 9 or A thru F):
Faulty OPDS Seat-back Sensor

DTC 86-2x (''x'' can be 0 thru 9 or A thru F):
Faulty OPDS Seat Support Sensor

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

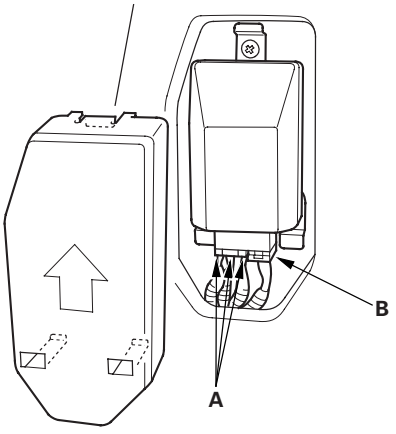
   Does the SRS indicator stay on?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

   NOTE: Aftermarket devices (fluorescent lights, laptop computers, etc.) used near the front passenger's seat-back can interfere with the seat-back sensors and cause a false DTC 86-1x or 86-2x. If one of these devices was used, clear the DTC, operate the device near the seat-back, and recheck for DTCs. If DTC 86-1x or 86-2x is set, clear it, and do not use the device near the seat-back.

3. Check the connection at the OPDS sensor harness connectors (A) and the OPDS/ODS unit connector (B).



   Is the connection OK?

   YES—Go to step 4.

   NO—Reconnect the OPDS sensor harness connector, and clear the DTC. ■

4. Replace the OPDS sensor/seat-back foam (see page 20-111), and initialize the OPDS/ODS unit (see page 24-30).

5. Clear the DTC memory, then check for DTC 86-1x or 86-2x.

   Is DTC 86-1x or 86-2x indicated?

   YES—Replace the OPDS/ODS unit (see page 24-192). ■

   NO—The system is OK. ■

DTC 87-3x (''x'' can be 0 thru 9 or A thru F): Side Airbag Cutoff Indicator Stays On/Off

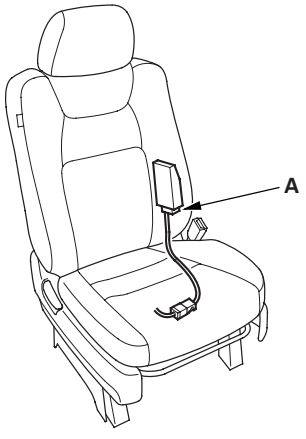
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the side airbag cutoff indicator go off and stay off?

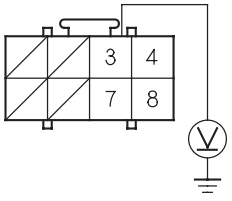
   YES—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

   NO—Check the No. 10 (7.5 A) fuse in the under-dash fuse/relay box, then go to step 3.
3. Turn the ignition switch OFF. Make sure nothing is on the front passenger's seat.
4. Disconnect the OPDS/ODS unit harness 8P [18P] connector (A) from the OPDS/ODS unit.
   [ ] : '07-08 models



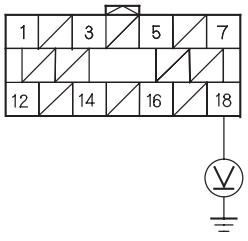
5. Turn the ignition switch ON (II).
6. Measure the voltage between the No. 3 [No. 18] terminal of the OPDS [ODS] unit harness 8P [18P] connector and body ground. There should be battery voltage.
   [ ] : '07-08 models

OPDS UNIT HARNESS 8P CONNECTOR ('06 Model)



Wire side of female terminals

ODS UNIT HARNESS 18P CONNECTOR ('07-08 Models)



Wire side of female terminals

Is there battery voltage?

YES—Faulty OPDS/ODS unit; replace the OPDS/ODS unit (see page 24-192).

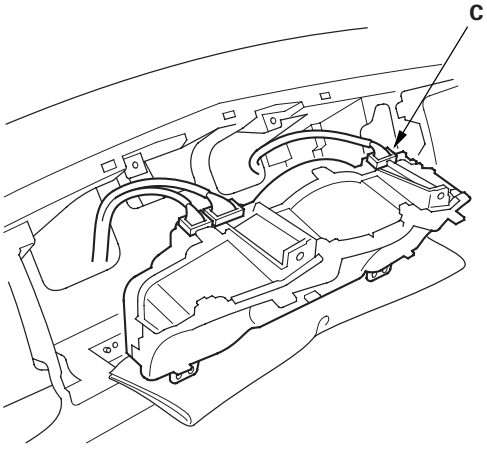
NO—Go to step 7.

(cont'd)

DTC Troubleshooting (cont'd)

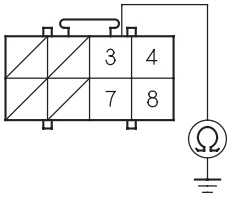
7. Turn the ignition switch OFF.

8. Remove the gauge control module (see page 22-263). Disconnect gauge control module connector C (20P) from the gauge control module.



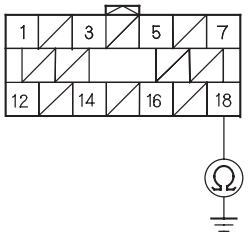
9. Measure the resistance between the No. 3 [No. 18] terminal of the OPDS [ODS] unit harness 8P [18P] connector and body ground. There should be an open circuit or at least 1 MΩ.
[ ] : 2007 model

OPDS UNIT HARNESS 8P CONNECTOR ('06 Model)



Wire side of female terminals

ODS UNIT HARNESS 18P CONNECTOR ('07-08 Models)



Wire side of female terminals

Is the resistance as specified?

YES—Replace the gauge control module (see page 22-263). ■

NO—Short to ground in the OPDS/ODS unit harness, floor wire harness, front passenger's seat wire harness, or dashboard wire harness; replace the faulty harness.

DTC 91-1x (''x'' can be 0 thru 9 or A thru F): Short to Ground in the SRS Indicator Circuit

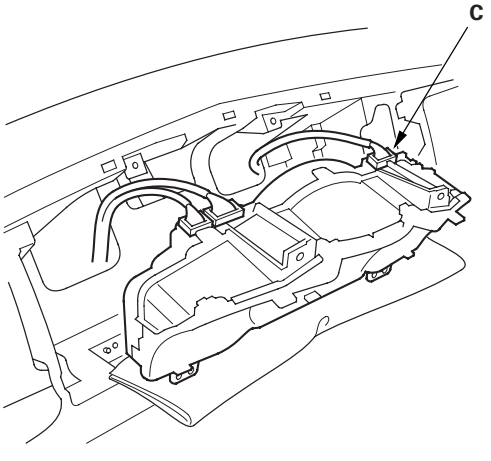
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 91-1x indicated?

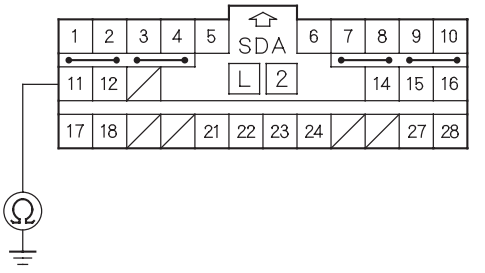
   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).
5. Remove the gauge control module (see page 22-263). Disconnect the gauge control module connector C (20P) from the gauge control module.



6. Measure the resistance between the No. 11 terminal of SRS unit connector A (28P) and body ground. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR A (28P)



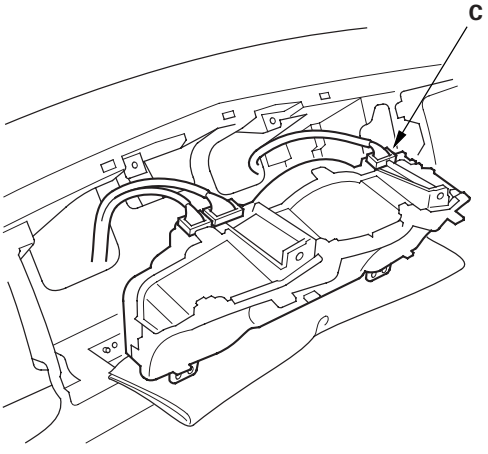
Wire side of female terminals

Is the resistance as specified?

YES—Go to step 7.

NO—Short to ground in the dashboard wire harness; replace the dashboard wire harness. ■

7. Reconnect the gauge control module connector C (20P).

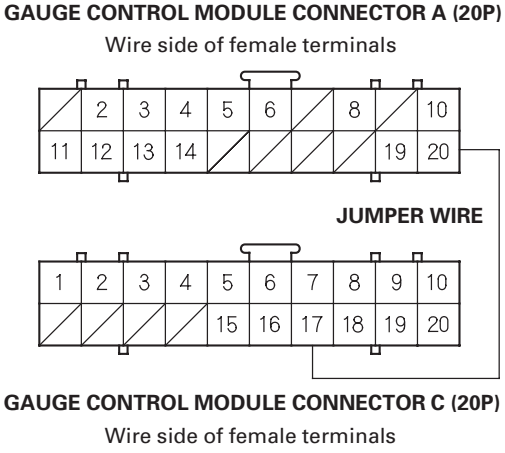


(cont'd)

DTC Troubleshooting (cont'd)

8. Turn the ignition switch ON (II).

9. Install a jumper wire between the No. 20 terminal of gauge control module connector A (20P) and the No. 17 terminal of the gauge control module connector C (20P). The SRS indicator should go off.



Does the SRS indicator go off?

YES—Faulty SRS unit; replace the SRS unit (see page 24-188). ■

NO—Short to ground in the SRS indicator circuit of the gauge control module; replace the gauge control module (see page 22-263). ■

DTC 92-1x ("x" can be 0 thru 9 or A thru F): Open in the Passenger's Airbag Cutoff Indicator ('07-08 Models)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 92-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Disconnect the passenger's airbag cutoff indicator 6P connector (see page 24-196).

4. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

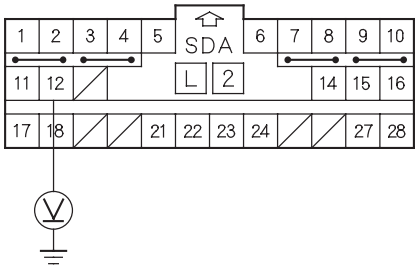
5. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).

6. Reconnect the negative cable to the battery.

7. Turn the ignition switch ON (II).

8. Measure the voltage between the No. 12 terminal of SRS unit connector A (28P) and body ground. There should be 0.5 V or less.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit or passenger's airbag cutoff indicator; replace the passenger's airbag cutoff indicator. If the problem is still present, replace the SRS unit (see page 24-188). ■

NO—Short to power in the dashboard wire harness; replace the dashboard wire harness. ■

DTC Troubleshooting (cont'd)

DTC 92-2x (''x'' can be 0 thru 9 or A thru F): Open or Short to Ground in the Passenger's Airbag Cutoff Indicator ('07-08 Models)

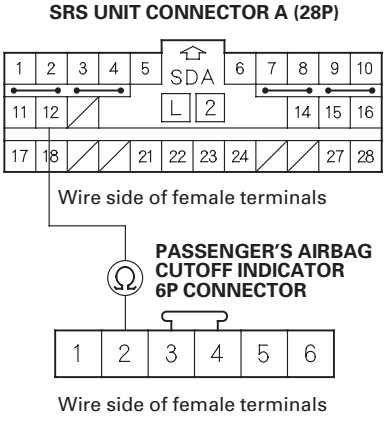
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and DTC 92-2x indicated?

   YES—Go to step 3.

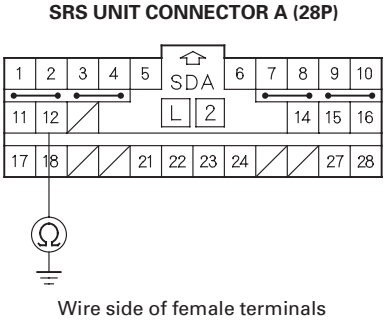
   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
3. Disconnect the passenger's airbag cutoff indicator 6P connector (see page 24-196).
4. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
5. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).
6. Measure the resistance between the No. 2 terminal of the passenger's airbag cutoff indicator 6P connector and the No. 12 terminal of SRS unit connector A (28P). There should be 0—1.0 Ω.



   Is the resistance as specified?

   YES—Go to step 7.

   NO—Open in the dashboard wire harness; replace the dashboard wire harness. ■
7. Measure the resistance between the No. 12 terminal of the SRS unit connector A (28P) and body ground. There should be an open circuit or at least 1 MΩ.



   Is the resistance as specified?

   YES—Replace the passenger's airbag cutoff indicator. If the problem is still present, replace the SRS unit (see page 24-188). ■

   NO—Short to ground in the dashboard wire harness; replace the dashboard wire harness. ■

DTC A1-1x (''x'' can be 0 thru 9 or A thru F):
Faulty Power Supply (VA Line)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Check the No. 10 (7.5 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 2.

   NO—Replace the fuse, then turn the ignition switch ON (II). If the fuse blows again, check for a short in the No. 10 (7.5 A) fuse circuit (dashboard wire harness, floor wire harness, or OPDS/ODS unit harness). ■

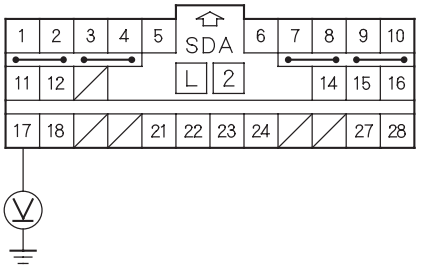
2. Disconnect the negative cable from the battery, and wait for 3 minutes.

3. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).

4. Reconnect the negative cable to the battery.

5. Connect a voltmeter between the No. 17 terminal of SRS unit connector A (28P) and body ground. Turn the ignition switch ON (II), and measure the voltage. There should be battery voltage when the ignition is on.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is there battery voltage?

YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit; check the connection. If the connection is OK, replace the SRS unit (see page 24-188). ■

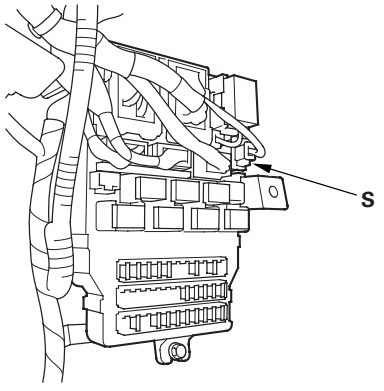
NO—Go to step 6.

(cont'd)

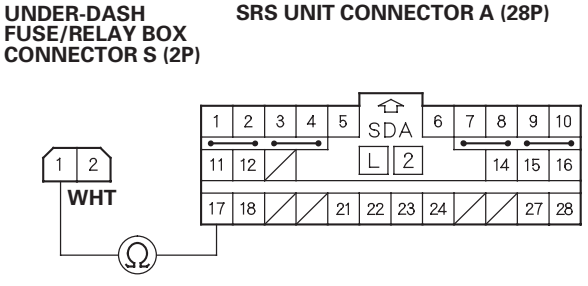
DTC Troubleshooting (cont'd)

6. Turn the ignition switch OFF.

7. Disconnect under-dash fuse/relay box connector S (2P).



8. Measure the resistance between the No. 1 terminal of under-dash fuse/relay box connector S (2P) and the No. 17 terminal of SRS unit connector A (28P). There should be 0—1.0 Ω.



Wire side of female terminals

Is the resistance as specified?

YES—Open in the under-dash fuse/relay box or poor connection between connector S (2P) and the under-dash fuse/relay box; check the connection. If the connection is OK, replace the under-dash fuse/relay box (see page 22-72). ■

NO—Open in the dashboard wire harness; replace the dashboard wire harness. ■

DTC A2-1x (''x'' can be 0 thru 9 or A thru F): Faulty Power Supply (VB Line)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Check the No. 22 (10 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 8.

   NO—Go to step 2.

2. Replace the No. 22 (10 A) fuse.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).

5. Reconnect the negative cable to the battery.

6. Turn the ignition switch ON (II), and wait for 30 seconds. Then turn the ignition switch OFF.

7. Check the No. 22 (10 A) fuse.

   Is the fuse OK?

   YES—Short to ground in the SRS unit; replace the SRS unit (see page 24-188). ■

   NO—Short to ground in the dashboard wire harness or in the under-dash fuse/relay box No. 22 (10 A) fuse circuit; replace the dashboard wire harness. If the problem is still there, replace the under-dash fuse/relay box (see page 22-73). ■

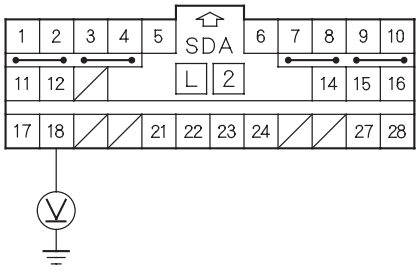
8. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

9. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).

10. Reconnect the negative cable to the battery.

11. Connect a voltmeter between the No. 18 terminal of SRS unit connector A (28P) and body ground. Turn the ignition switch ON (II), and measure the voltage. There should be battery voltage when the ignition on.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

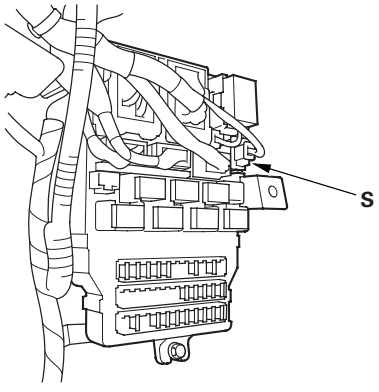
Is there battery voltage?

YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit; check the connection. If the connection is OK, replace the SRS unit (see page 24-188). ■

NO—Go to step 12.

12. Turn the ignition switch OFF.

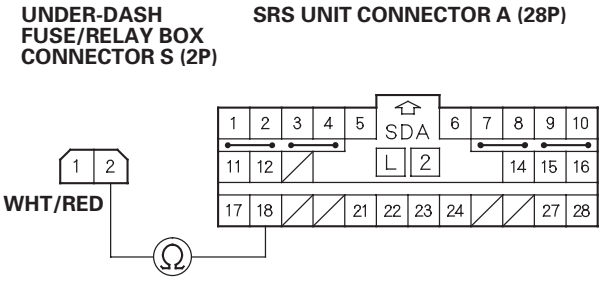
13. Disconnect under-dash fuse/relay box connector S (2P).



(cont'd)

DTC Troubleshooting (cont'd)

14. Measure the resistance between the No. 2 terminal of the under-dash fuse/relay box connector S (2P) and the No. 18 terminal of SRS unit connector A (28P). There should be 0—1.0 Ω.



Wire side of female terminals

Is the resistance as specified?

YES—Open in the under-dash fuse/relay box or poor connection between connector S (2P) and the under-dash fuse/relay box; check the connection. If the connection is OK, replace the under-dash fuse/relay box (see page 22-72). ■

NO—Open in the dashboard wire harness; replace the dashboard wire harness. ■

DTC B1-1x: No Signal from the Roll Rate Sensor

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC B1-11 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

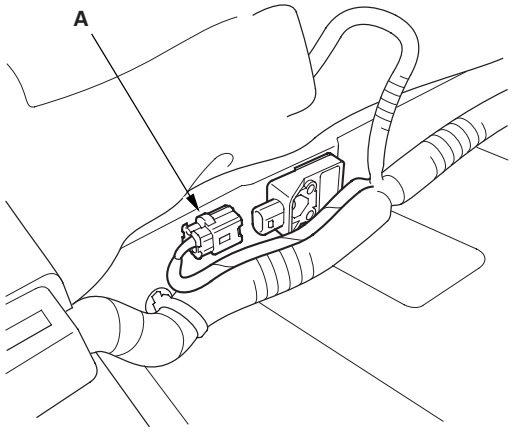
4. Check the connections between the floor wire harness 2P connector and the roll rate sensor (see page 24-14).

   Is the connection OK?

   YES—Go to step 5.

   NO—Repair the poor connection and retest. If the DTC B1-11 is still present, go to step 5.

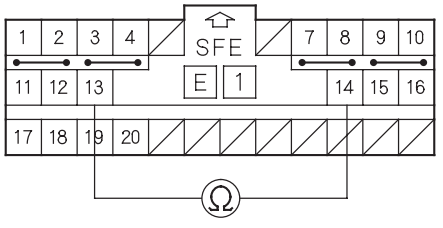
5. Disconnect the floor wire harness 2P connector (A) from the roll rate sensor.



6. Disconnect SRS unit connector C (28P) from the SRS unit (see step 7 on page 24-26).

7. Measure the resistance between the No. 13 and No. 14 terminals of SRS unit connector C (28P). There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

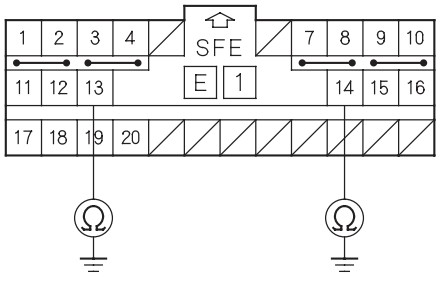
Is the resistance as specified?

YES—Go to step 8.

NO—Short in the floor wire harness; replace the floor wire harness. ■

8. Measure the resistance between the No. 13 terminal of SRS unit connector C (28P) and body ground, and between the No. 14 terminal and body ground. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 9.

NO—Short to ground in the floor wire harness; replace the floor wire harness. ■

9. Reconnect the negative cable to the battery.

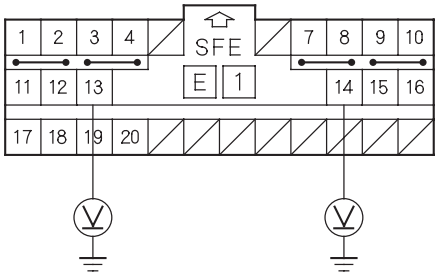
10. Turn the ignition switch ON (II).

(cont'd)

DTC Troubleshooting (cont'd)

11. Measure the voltage between the No. 13 terminal of SRS unit connector C (28P) and body ground, and between the No. 14 terminal and body ground. There should be 1 V or less.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

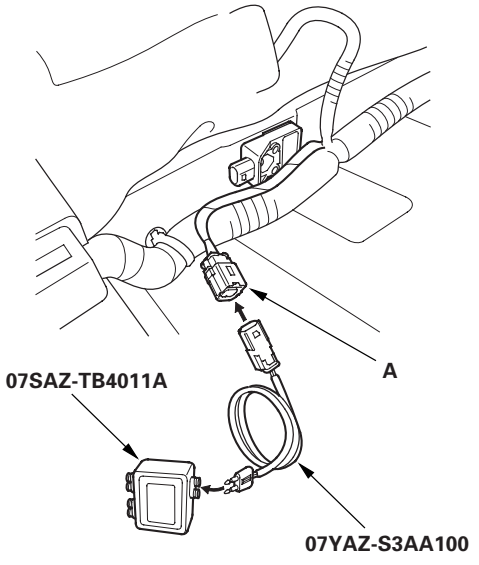
Is the voltage as specified?

YES—Go to step 12.

NO—Short to power in the floor wire harness; replace the floor wire harness. ■

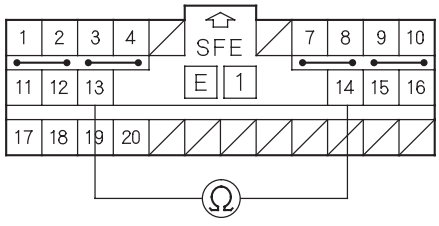
12. Turn the ignition switch OFF.

13. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the floor wire harness 2P connector (A).



14. Measure the resistance between the No. 13 and No. 14 terminals of SRS unit connector C (28P). There should be 0—1.0 Ω or less.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty roll rate sensor or SRS unit; replace the roll rate sensor (see page 24-194). If the problem is still present, replace the SRS unit (see page 24-188). ■

NO—Open in the floor wire harness; replace the floor wire harness. ■

DTC B1-8x, B1-9x, B1-Ax, B1-Bx (''x'' can be 0 thru 9 or A thru F):
Internal Failure of the Roll Rate Sensor

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is B1-8x, B1-9x, B1-Ax, or B1-Bx indicated?

   YES—Replace the roll rate sensor (see page 24-194). If the DTC returns, replace the SRS unit (see page 24-188).■

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.

DTC B1032: MICU Collision Detection Signal (CDS) Input Failure

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-16) and General Troubleshooting Information (see page 24-27).

1. Clear the DTC memory (see page 24-28).
2. Turn the ignition switch OFF, and then back ON (II).
3. Read the DTC (see page 24-27).

   Is DTC B1032 indicated?

   YES—Go to step 4.

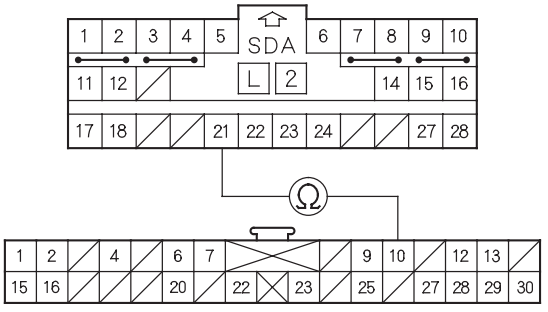
   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-29). If another DTC is indicated, troubleshoot the DTC.
4. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
5. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).
6. Disconnect MICU connector P (30P) from the under-dash fuse/relay box (see page 22-61).

(cont'd)

DTC Troubleshooting (cont'd)

7. Measure the resistance between the No. 21 terminal of SRS unit connector A (28P) and the No. 10 terminal of the multiplex integrated control unit connector P (30P) (see page 22-61). There should be 0—1.0 Ω.

SRS UNIT CONNECTOR A (28P)
Wire side of female terminals



MULTIPLEX INTEGRATED CONTROL UNIT CONNECTOR P (30P)
Wire side of female terminals

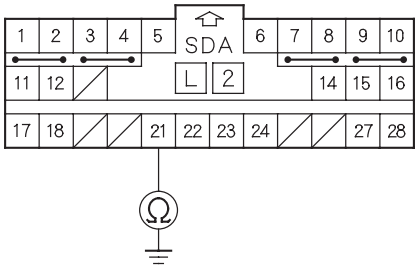
Is the resistance as specified?

YES—Go to step 8.

NO—Open in the dashboard wire harness; replace the dashboard wire harness. ■

8. Check resistance between the No. 21 terminal of SRS unit connector A (28P) and body ground. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

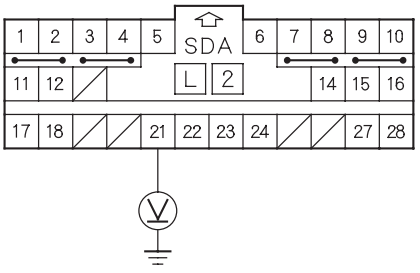
Is the resistance as specified?

YES—Go to step 9.

NO—Short to ground in the dashboard wire harness; replace the dashboard wire harness. ■

9. Check for voltage between the No. 21 terminal of SRS unit connector A (28P) and body ground. There should be 1.0 V or less.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the voltage as specified?

YES—Short to power in the dashboard wire harness; replace the dashboard wire harness. ■

NO—Faulty SRS unit; replace the SRS unit (see page 24-188). ■

Symptom Troubleshooting

SRS indicator does not come on

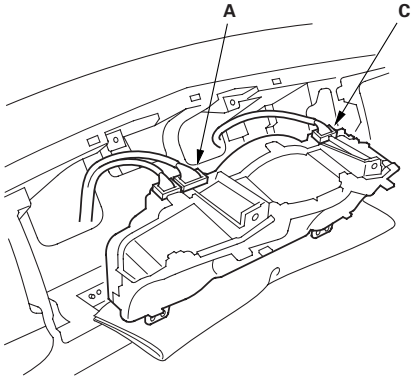
1. Turn the ignition switch ON (II), and see if the other indicators come on (brake system, etc).

   Do the other indicators come on?

   YES—Go to step 2.

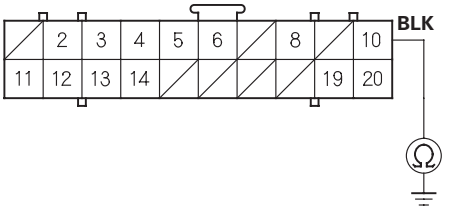
   NO—Go to step 9.

2. Turn the ignition switch OFF, then remove the gauge control module (see page 22-263). Disconnect the gauge control module connector A (20P) and gauge control module connector C (20P) from the gauge control module.



3. Measure the resistance between the No. 10 terminal of gauge control module connector A (20P) and body ground. There should be 0—1.0 Ω.

GAUGE CONTROL MODULE CONNECTOR A (20P)



Wire side of female terminals

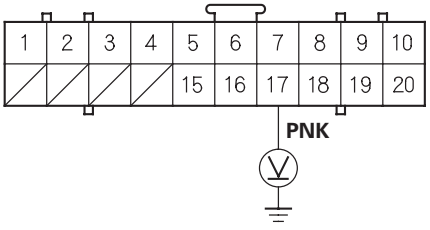
Is the resistance as specified?

YES—Go to step 4.

NO—Open in the BLK wire of the dashboard wire harness, or faulty body ground terminal (G401) (see page 22-28). If the body ground terminal is OK, replace the dashboard wire harness. ■

4. Measure the voltage between the No. 17 terminal of the gauge control module connector C (20P) and body ground within the first 6 seconds after turning the ignition switch ON (II). There should be about 1.0 V for 6 seconds and then about 11 V.

GAUGE CONTROL MODULE CONNECTOR C (20P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS indicator circuit in the gauge control module; replace the gauge control module. ■

NO—Go to step 5.

5. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

(cont'd)

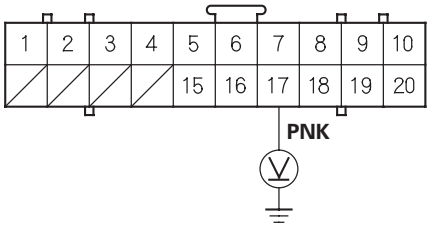
Symptom Troubleshooting (cont'd)

6. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).

7. Reconnect the negative cable to the battery.

8. Measure the voltage between the No. 17 terminal of gauge control module connector C (20P) and body ground. Turn the ignition switch ON (II), and measure voltage. There should be 0.5 V or less.

GAUGE CONTROL MODULE CONNECTOR C (20P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 24-188). ■

NO—Short to power in the PNK wire of the dashboard wire harness; replace the dashboard wire harness. ■

9. Turn the ignition switch OFF. Check the No. 21 (7.5 A) fuse in the under-dash fuse/relay box.

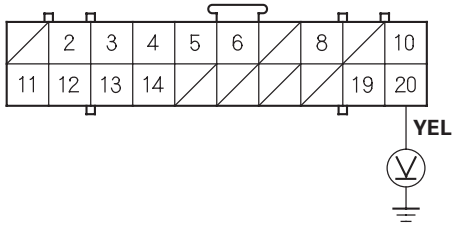
Is the fuse blown?

YES—Go to step 11.

NO—Go to step 10.

10. Measure the voltage between the No. 20 terminal of the gauge control module connector A (20P) and body ground. Turn the ignition switch ON (II), and measure the voltage. There should be battery voltage.

GAUGE CONTROL MODULE CONNECTOR A (20P)



Wire side of female terminals

Is there battery voltage?

YES—Faulty SRS indicator circuit in the gauge control module or poor connection at gauge control module connector A (20P) and the gauge control module; if the connection is OK, replace the gauge control module. ■

NO—Open in the under-dash fuse/relay box No. 21 (7.5 A) fuse circuit, or open in the dashboard wire harness. If the under-dash fuse/relay box is OK, replace the dashboard wire harness. ■

11. Replace the No. 21 (7.5 A) fuse, then check to see if the indicators comes on.

Do the indicators come on?

YES—The system is OK at this time. ■

NO—Repair the short to ground in the under-dash fuse/relay box No. 21 (7.5 A) fuse circuit. ■

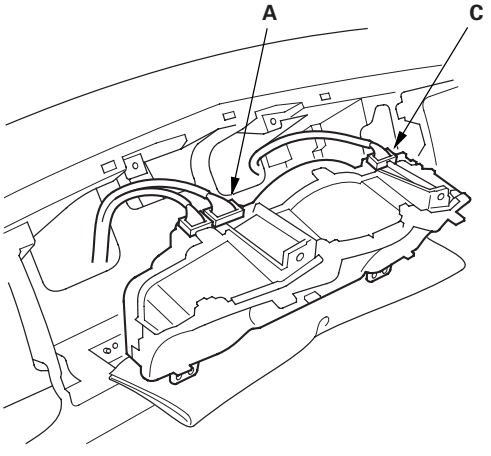
SRS indicator stays on, but no DTCs are stored

NOTE:
- A new SRS unit must sense the entire system is OK before completing its initial self-test. The most common cause of an incomplete self-test is the failure to replace all deployed parts after a collision, in particular seat belt tensioners (see page 24-171).
- A battery/system voltage above 15.2 V can cause the SRS indicator to come on without storing any DTCs.

1. Disconnect the negative cable from the battery, and wait for 3 minutes.

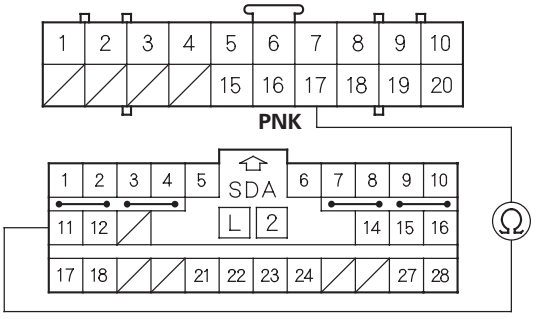
2. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-26).

3. Remove the gauge control module (see page 22-263). Disconnect gauge control module connector A (20P) and gauge control module connector C (20P) from the gauge control module.



4. Measure the resistance between the No. 17 terminal of gauge control module connector C (20P) and the No. 11 terminal of SRS unit connector A (28P). There should be 0—1 Ω.

GAUGE CONTROL MODULE CONNECTOR C (20P)
Wire side of female terminals



SRS UNIT CONNECTOR A (28P)
Wire side of female terminals

Is the resistance as specified?

YES—Go to step 5.

NO—Open in the dashboard wire harness; replace the dashboard wire harness. ■

5. Reconnect the negative cable to the battery.

(cont'd)

Symptom Troubleshooting (cont'd)

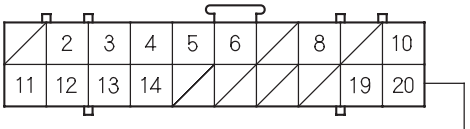
6. Reconnect gauge control module connector A and C (20P) to the gauge control module.

7. Turn the ignition switch ON (II).

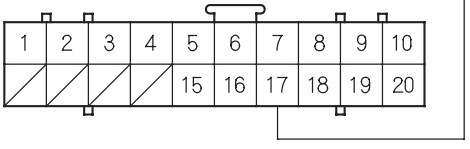
8. Install a jumper wire between the No. 20 terminal of gauge control module connector A (20P) and the No. 17 terminal of the gauge control module connector C (20P). The SRS indicator should go off.

GAUGE CONTROL MODULE CONNECTOR A (20P)

Wire side of female terminals



JUMPER WIRE



GAUGE CONTROL MODULE CONNECTOR C (20P)

Wire side of female terminals

Does the SRS indicator go off?

YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit; check the connection. If the connection is OK, replace the SRS unit (see page 24-188). ■

NO—Faulty SRS indicator circuit in the gauge control module or poor connection at gauge control module connector A and C (20P); check the connection. If the connection is OK, replace the gauge control module. ■

Component Replacement/Inspection After Deployment

NOTE:
- Before doing any SRS repairs, use the HDS SRS Menu Method to check for DTCs; refer to the DTC Troubleshooting Index for the less obvious deployed parts (seat belt tensioners, front impact sensors, side airbag sensors, etc.)
- Do not replace the ODS unit unless it is physically damaged or a specific DTC was found daring troubleshooting.
- After a vehicle collision, do the ODS unit operation check (see page 24-32).

After a collision where the seat belt tensioners deployed, replace these items:
- SRS unit
- Seat belt tensioners
- Front impact sensors

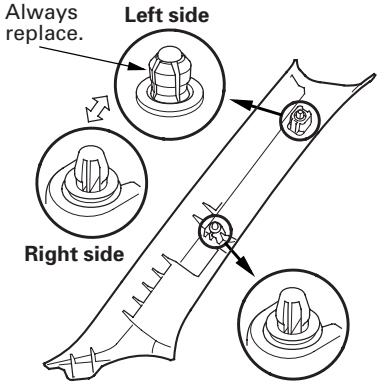
After a collision where the front airbag(s) deployed, replace these items:
- SRS unit
- Deployed airbag(s)
- Seat belt tensioners
- Front impact sensors

After a collision where the side airbag(s) deployed, replace these items:
- SRS unit
- Deployed side airbag(s)
- Side impact sensor(s) (first) for the side(s) that deployed
- Side impact sensor(s) (second) for the side(s) that deployed
- B-pillar lower trim

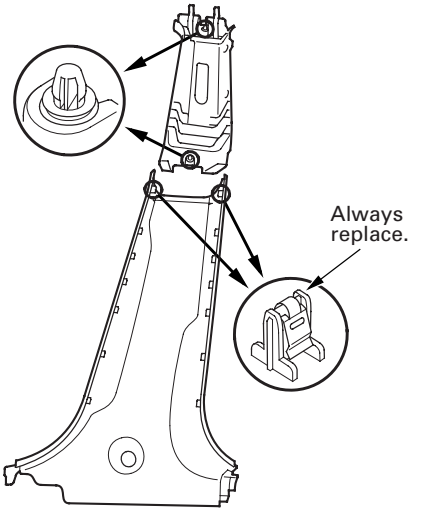
After a collision where a side curtain airbag has deployed, replace the items for the side(s) that deployed:
- SRS unit
- Deployed side curtain airbag(s)
- Seat belt tensioner(s) for the side(s) that deployed
- Side impact sensor(s) (first) for the side(s) that deployed
- Side impact sensor(s) (second) for the side(s) that deployed
- Roll rate sensor
- Roof trim
- A-pillar trim
- B-pillar lower trim
- C-pillar trim
- Front grab handle
- Rear grab handle
- All related trim clips
- Sunvisor
- Coat hooks

After a moderate to severe side or rear collision, inspect for any damage on the side curtain airbag or other related components. Replace components as needed.

A-pillar trim



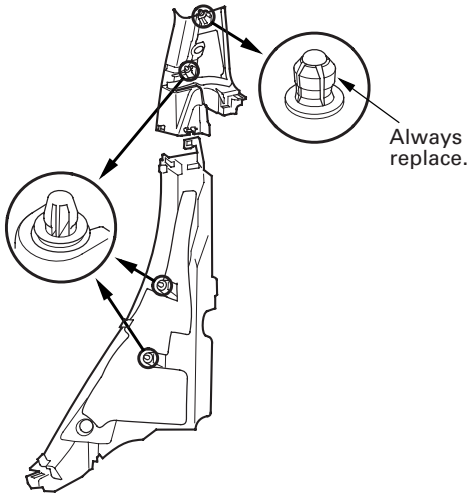
B-pillar trim



(cont'd)

Component Replacement/Inspection After Deployment (cont'd)

C-pillar trim



During the repair process, inspect these areas:

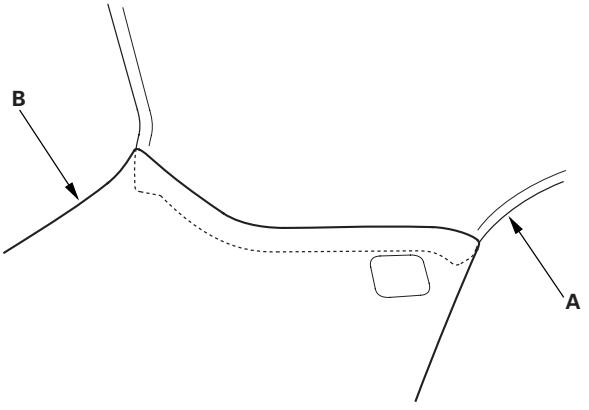
- Inspect all the SRS wire harnesses. Replace, do not repair, any damaged harnesses.
- Inspect the cable reel for heat damage. If there is any damage, replace the cable reel.

After the vehicle is completely repaired, turn the ignition switch ON (II). If the SRS indicator comes on for about 6 seconds and then goes off, the SRS is OK. If the indicator does not function properly, use the HDS SRS Menu Method to read the DTC (see page 24-27).

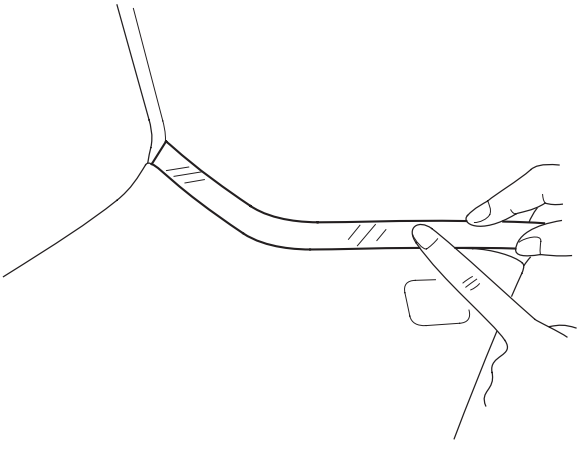
Checking and Adjusting the Headliner/Pillar Trim Overlap

To prevent the side curtain airbag from deploying and damaging the pillar trim, the overlap between the headliner and pillar trim must be less then 15 mm. To check the overlap, do this:

1. Install the headliner (A) and the pillar trim (B).

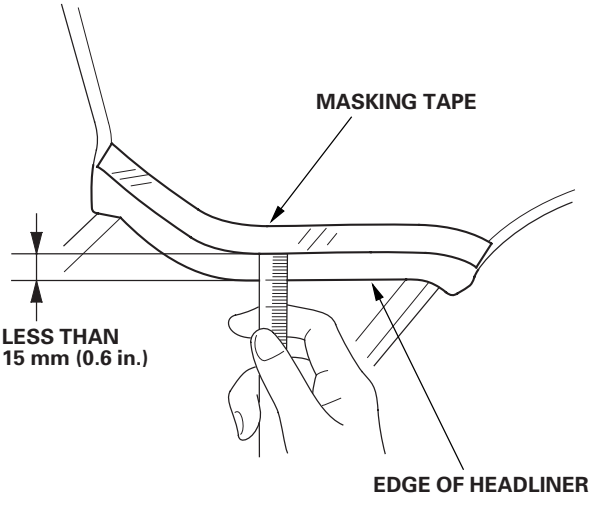


2. Using masking tape on the headliner, mark the upper edge of each pillar trim.

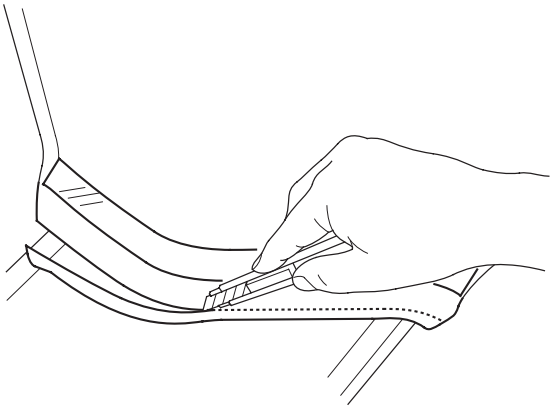


3. Remove the pillar trim, and measure the headliner overlap.

   - If the overlap is less than 15 mm, remove the tape, and install the pillar trim.
   - If the overlap is more than 15 mm, go to step 4.



4. Carefully trim the headliner with a utility knife, reducing the overlap to less than 15 mm.

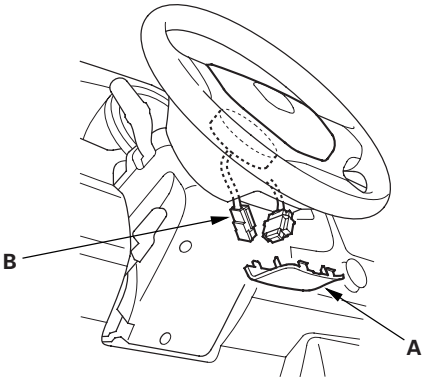


5. Remove the tape, and install the pillar trim.

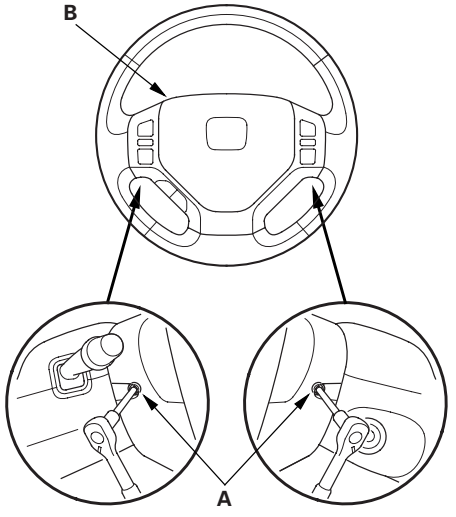
Driver's Airbag Replacement

Removal

1. Disconnect the negative cable from the battery, then wait 3 minutes before starting work.
2. Remove the access panel (A) from the steering wheel, then disconnect the driver's airbag 4P connector (B) from the cable reel.



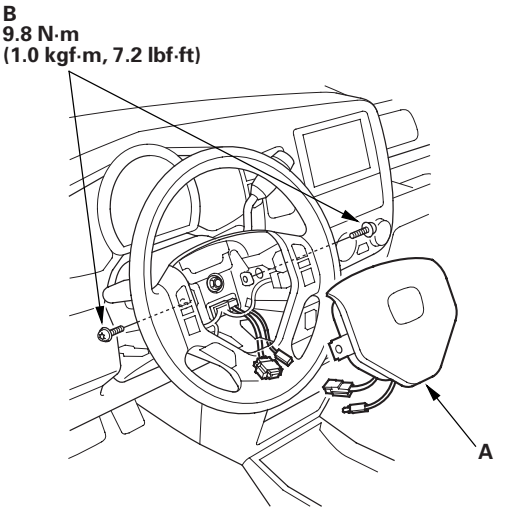
3. Using a TORX T30 bit, remove the two TORX bolts (A).



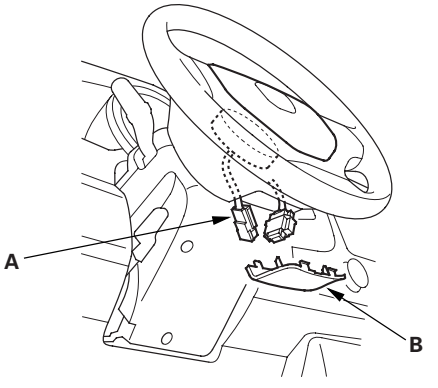
4. Disconnect the horn switch connector (1P), then remove the driver's airbag (B).

Installation

1. Place the new driver's airbag (A) in the steering wheel, and secure it with new TORX bolts (B).



2. Connect the cable reel to the driver's airbag 4P connector (A), then install the access panel (B) on the steering wheel.

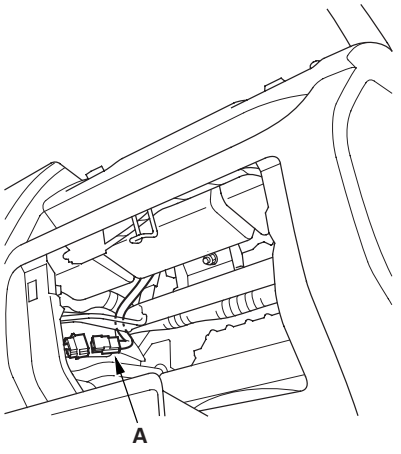


3. Reconnect the negative cable to the battery.
4. After installing the airbag, confirm proper system operation:
   - Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
   - Make sure the horn button works.

Front Passenger's Airbag Replacement

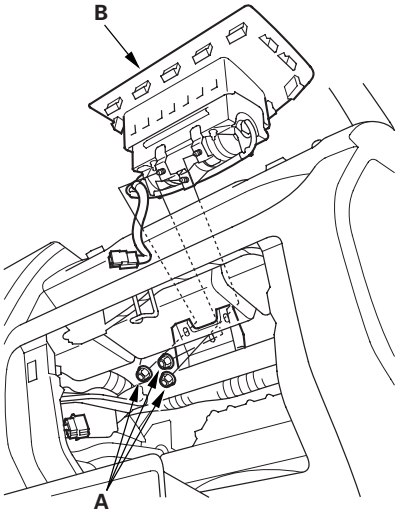
Removal

1. Disconnect the negative cable from the battery, then wait 3 minutes before starting work.
2. Remove the glove box (see page 20-85).
3. Disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



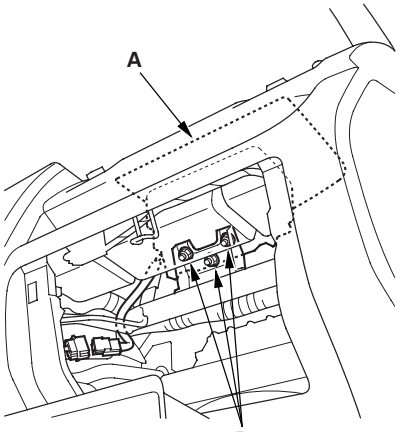
4. Remove the three mounting nuts (A) from the bracket. Cover the lid and dashboard with a cloth, and pry carefully with a screwdriver to lift the front passenger's airbag (B) out of the dashboard.

   NOTE: The airbag lid has pawls on each side which attach it to the dashboard.



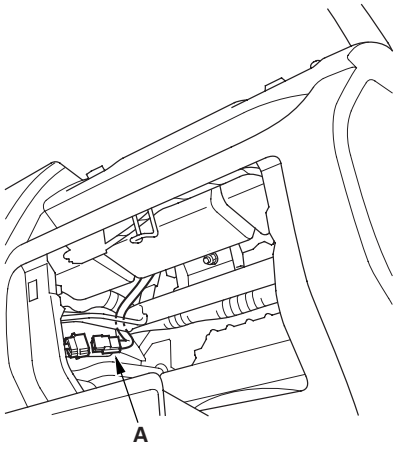
Installation

1. Place the new front passenger's airbag (A) into the dashboard. Tighten the front passenger's airbag mounting nuts (B).



9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)

2. Connect the front passenger's airbag 4P connector (A) to the dashboard wire harness, then reinstall the glove box.



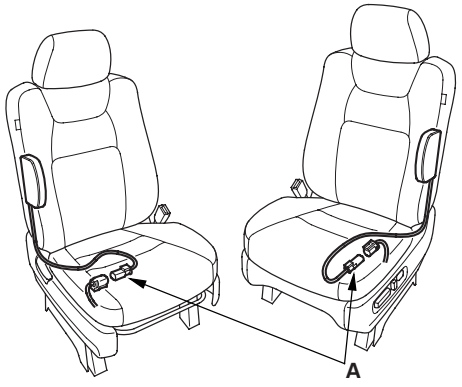
3. Reconnect the negative cable to the battery.
4. After installing the airbag, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Side Airbag Replacement

Removal

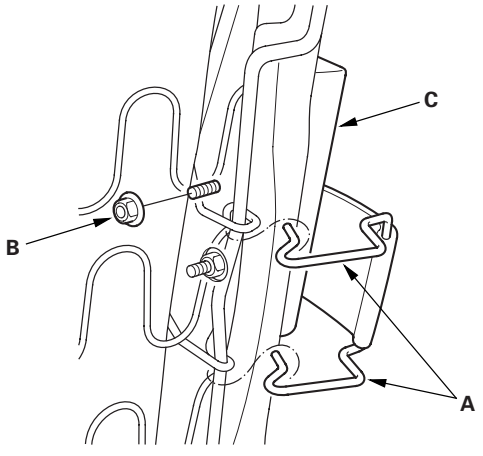
1. Disconnect the negative cable from the battery, then wait 3 minutes before starting work.

2. Disconnect the side airbag harness 2P connector (A).



3. Remove the seat assembly (see page 20-97) and seat-back cover (see page 20-111).

   NOTE: If you are replacing a deployed airbag, replace the reinforcing cloth rear hooks (A).

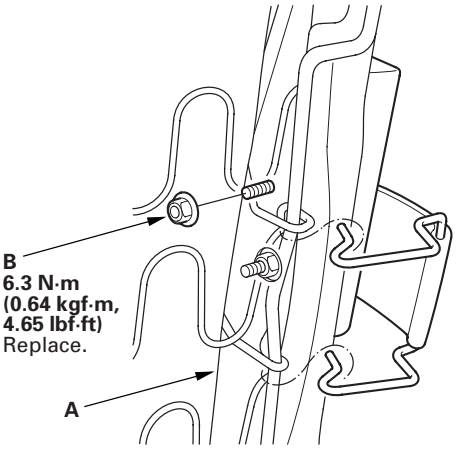


4. Remove the mounting nut (B) and the side airbag (C).

Installation

NOTE:
- If the side airbag lid is secured by a tape, remove the tape.
- Do not open the lid of the side airbag cover.
- Use new mounting nut tightened to the specified torque.
- Make sure that the seat-back cover is installed properly. Improper installation may prevent proper deployment.
- Be sure to install the harness wires so that they are not pinched or interfering with other parts.

1. Place the new side airbag on the seat-back frame (A). Tighten the side airbag mounting nut (B).



2. Install the seat-back cover in the reverse order of removal (see page 20-111).

   NOTE: If you are replacing a deployed airbag, replace the reinforcing cloth rear hooks.

3. Install the seat assembly (see page 20-97), then connect the side airbag harness 2P connector.

4. Reconnect the negative cable to the battery.

5. Move the front seat and the seat-back through their full ranges of movement, making sure the harness wires are not pinched or interfering with other parts.

6. Connect the HDS, and clear the DTCs (see page 24-28).

7. After installing the side airbag, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Side Curtain Airbag Replacement

Removal

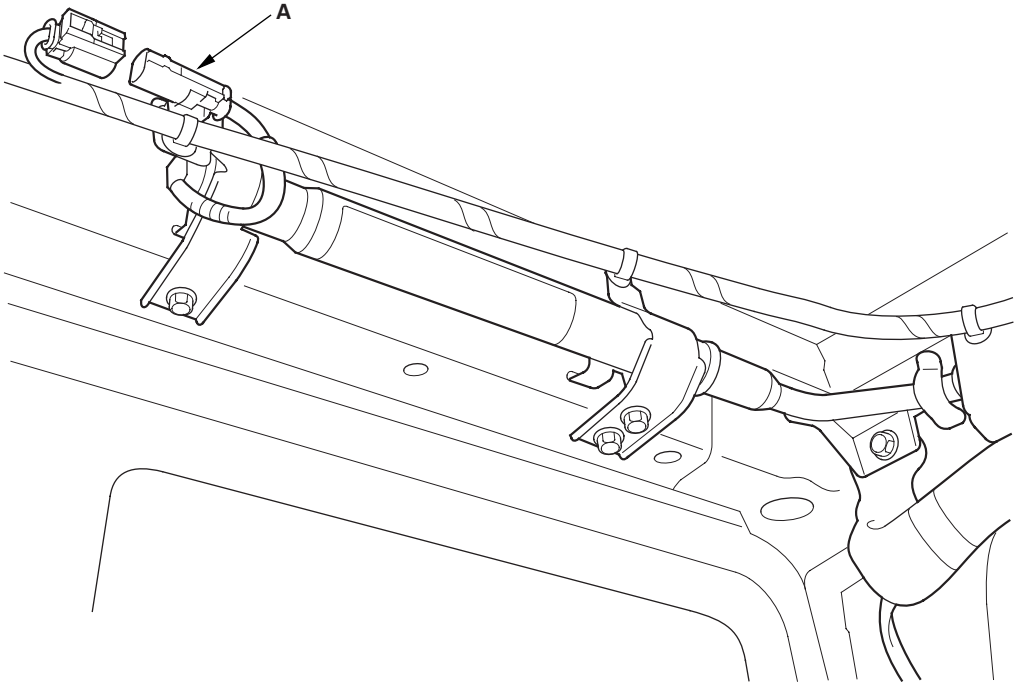
NOTE:
- Removal of the side curtain airbag must be done according to Precaution and Procedures (see page 24-17).
- The side curtain airbag system consists of the side curtain airbag module, including the roof trim, front grab handle, all grab handle brackets, and shielding protector. When the side curtain airbag has been deployed, these parts should be replaced (see page 24-171).

1. Disconnect the negative cable from the battery, then wait 3 minutes before starting work.

2. Remove the headliner (see page 20-70).

3. Disconnect the side curtain airbag 2P connector (A) from the roof wire harness.

Left side shown; right side is similar



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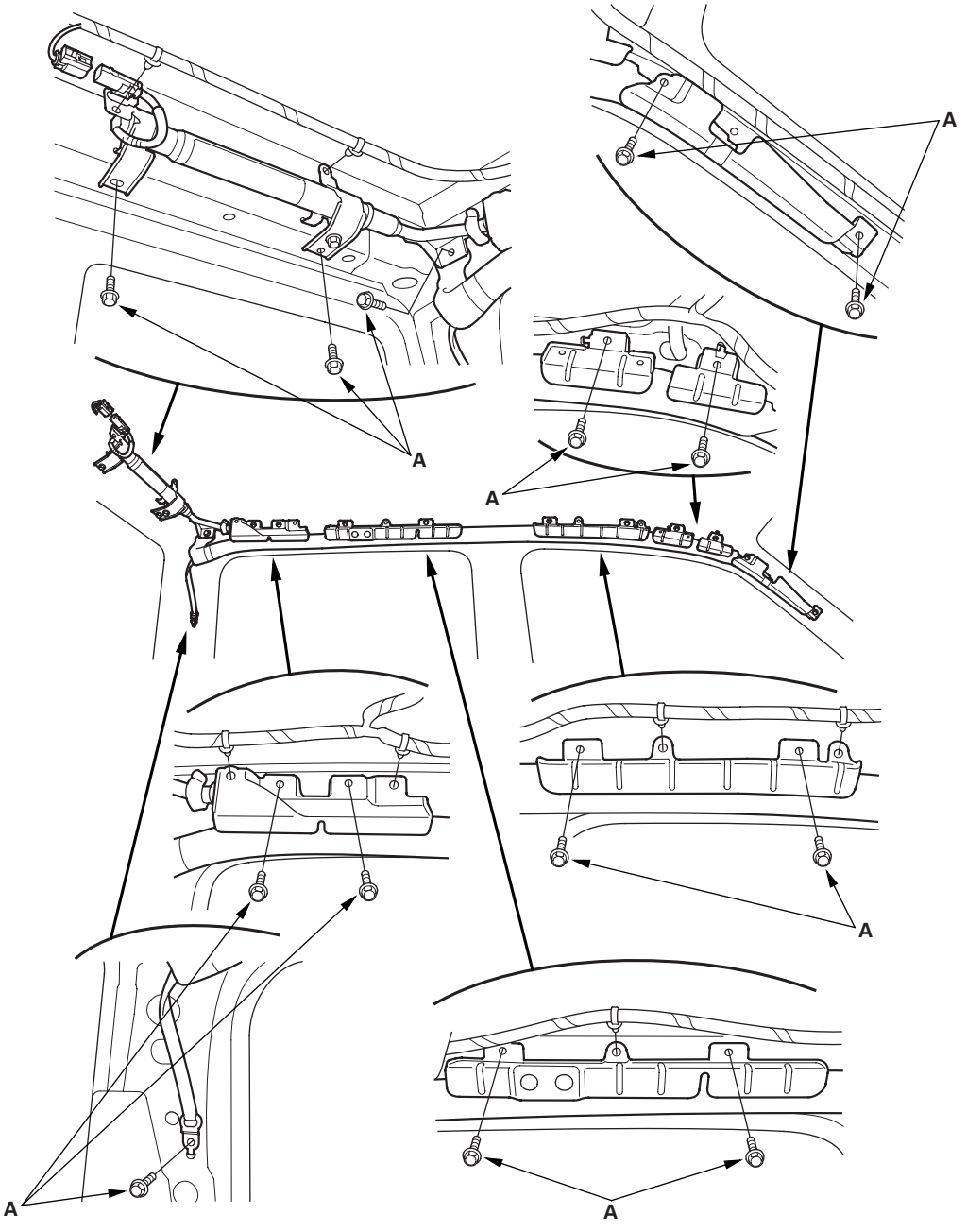
Side Curtain Airbag Replacement (cont'd)

4. Remove the mounting bolts (A) from the bracket.

Left side shown; right side is similar

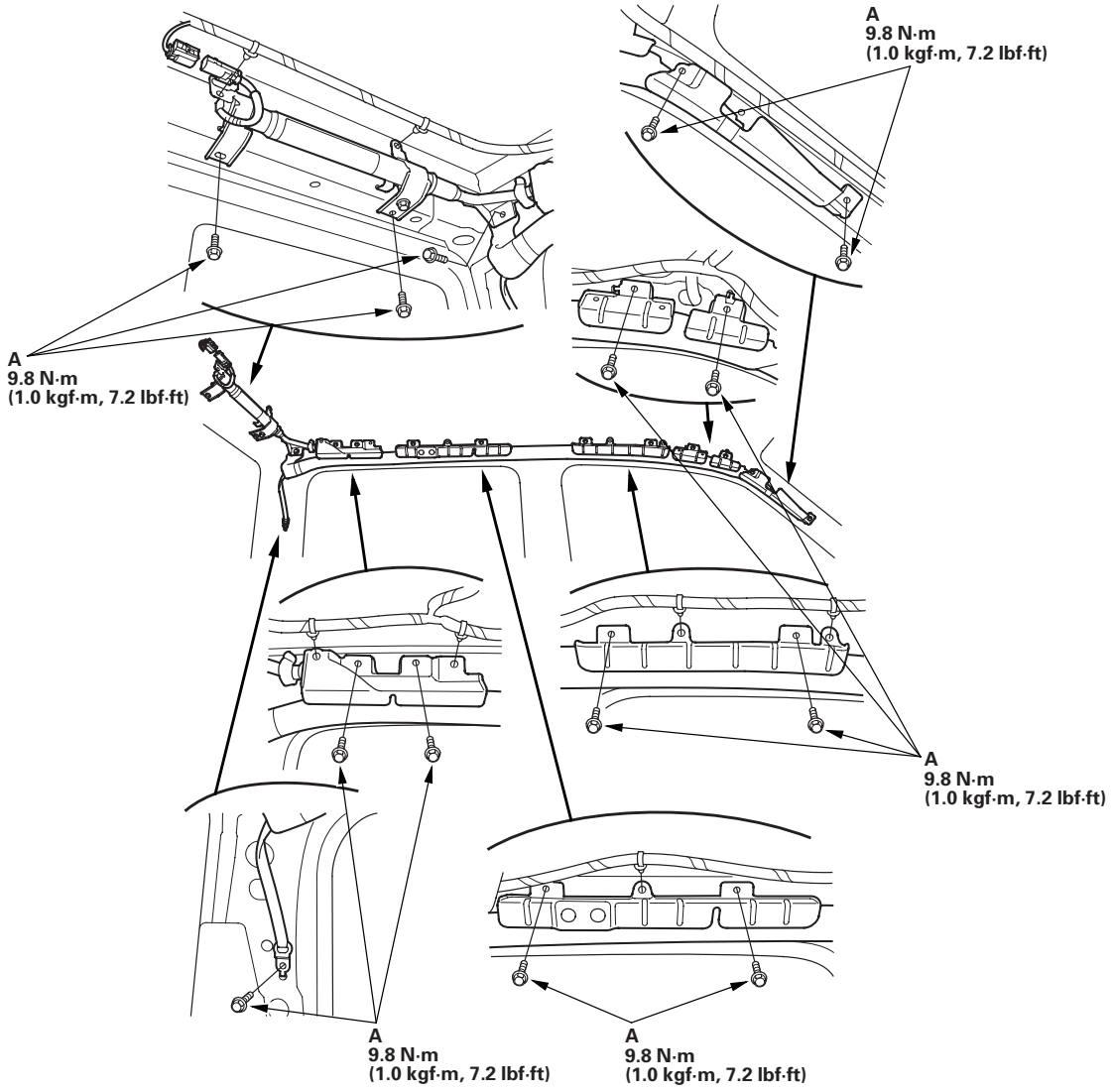


Installation

NOTE:
- Installation of the side curtain airbag must be done according to Precaution and Procedures (see page 24-17).
- If the airbag is frayed, or has only other visible damage, replace it. Do not attempt to repair an airbag.
- When you install the airbag, make sure it is not twisted, and that it is not caught between the inflator bracket by the bracket bolts.
- Make sure that the side curtain airbag inflator retainer is installed properly, otherwise the airbag could incorrectly deploy and cause damage or injuries.
- Check if the clips are damaged or stress-whitened, and if nessessary, replace them with new ones.

1. Place the new side curtain airbag assembly on the side of the roof. Tighten the side curtain airbag mounting bolts (A).

Left side shown; right side is similar



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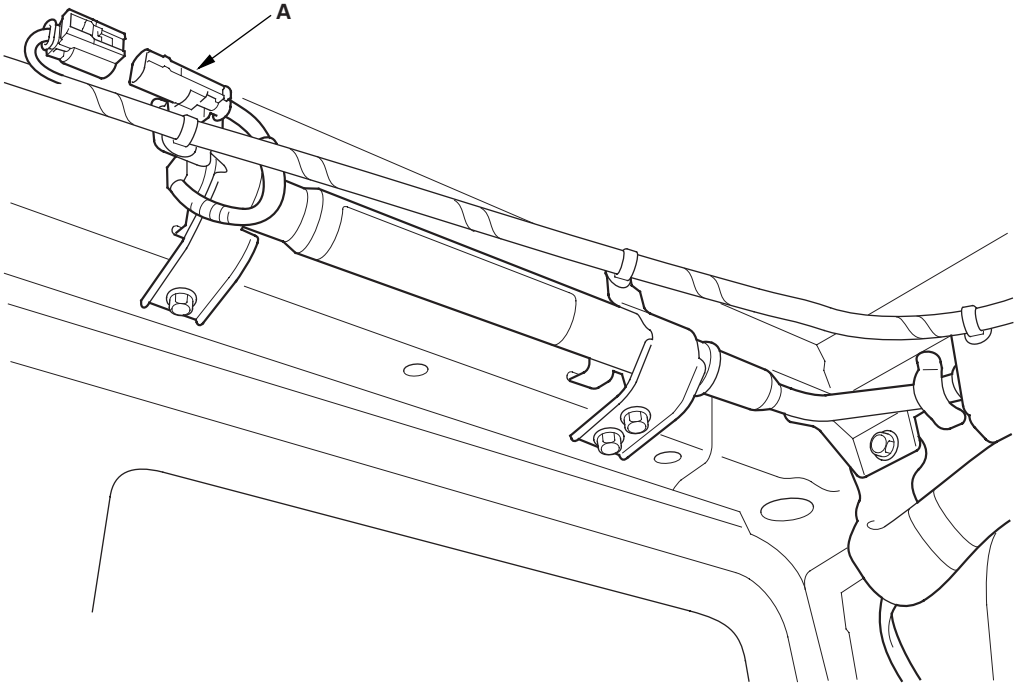
Side Curtain Airbag Replacement (cont'd)

2. Connect the side curtain airbag 2P connector (A) to the roof wire harness.

Left side shown; right side is similar



3. Reconnect the negative cable to the battery.
4. Connect the HDS, and clear the DTCs (see page 24-28).
5. After installing the side curtain airbag, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
6. Install all removed parts.
7. Confirm proper headliner/pillar trim overlap (see page 24-173).

Airbag and Tensioner Disposal

Special Tools Required
Deployment tool 07HAZ-SG00500

Before scrapping any airbags, side airbags, side curtain airbags, or seat belt tensioners (including those in a whole vehicle to be scrapped), the part(s) must be deployed. If the vehicle is still within the warranty period, the Honda District Parts & Service Manager must give approval and/or special instruction before deploying the part(s). Only after the part(s) have been deployed (as the result of vehicle collision, for example), can they be scrapped. If the parts appear intact (not deployed), treat them with extreme caution. Follow this procedure.

Deploying Airbags in the Vehicle

If an SRS equipped vehicle is to be entirely scrapped, its airbags, side airbags, side curtain airbags, and seat belt tensioners should be deployed while still in the vehicle. These parts should not be considered as salvageable parts and should never be installed in another vehicle.

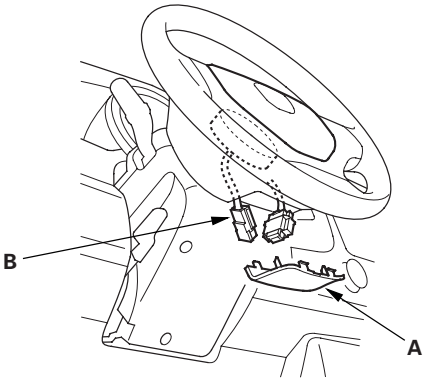
1. Turn the ignition switch OFF, then disconnect the negative cable from the battery, then wait 3 minutes before starting work.

2. Confirm that each airbag, side airbag, side curtain airbag, or seat belt tensioner is securely mounted.

3. Confirm that the special tool is functioning properly by following the check procedure on the tool label.

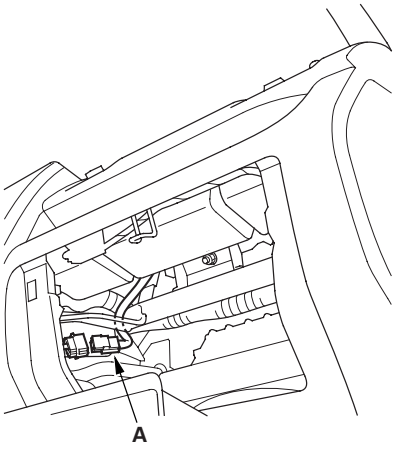
Driver's Airbag

4. Remove the access panel (A) from the steering wheel, then disconnect the driver's airbag 4P connector (B) from the cable reel.



Front Passenger's Airbag

5. Remove the glove box, then disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



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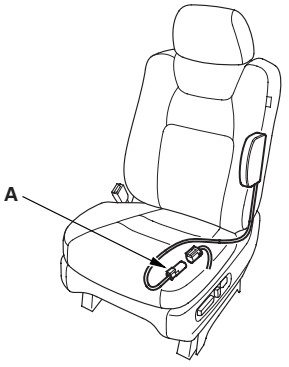
Airbag and Tensioner Disposal (cont'd)

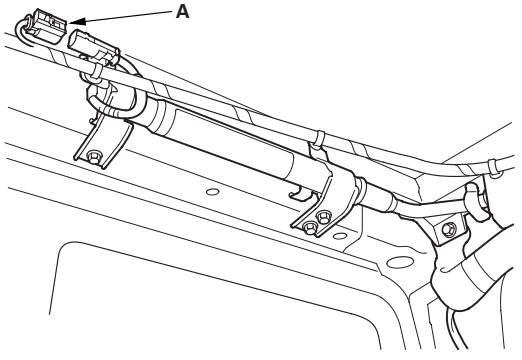
Side Airbag

6. Disconnect the side airbag 2P connector (A) from the floor wire harness.



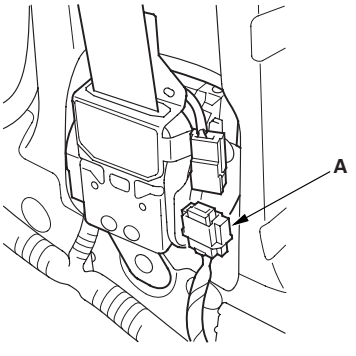
Side curtain airbag

7. Disconnect the roof wire harness 2P connector (A) from the side curtain airbag.



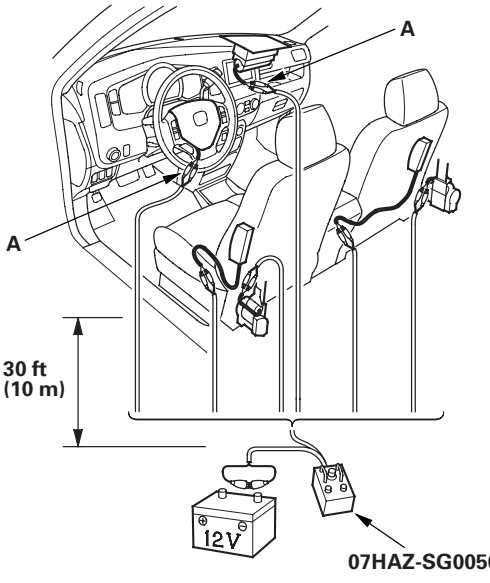
Seat belt tensioner

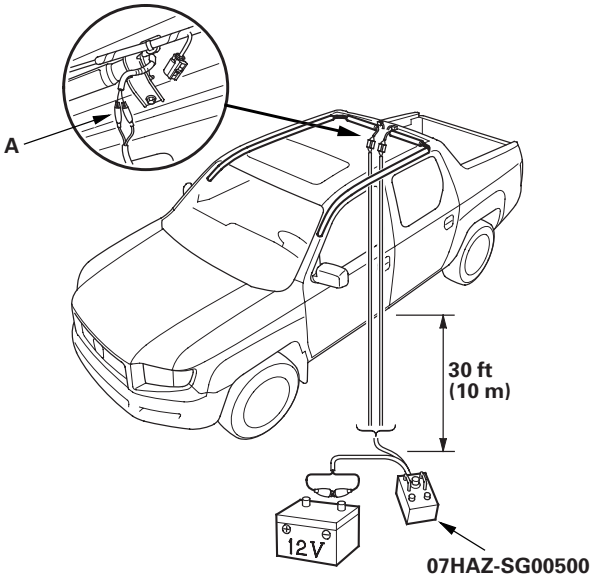
8. Disconnect the floor wire harness 4P connector (A) from the seat belt tensioner. Pull the seat belt out all the way and cut it.



9. Cut off each connector, strip the ends of the wires. Twist each pair of unlike colored wires together, and clip an alligator clip (A) to each pair. Place the deployment tool at least 30 feet (10 meters) away from the vehicle.

   NOTE: The driver's and front passenger's airbags have dual inflators. Twist each pair of unlike colored wires together, and clip an alligator clip to each pair.





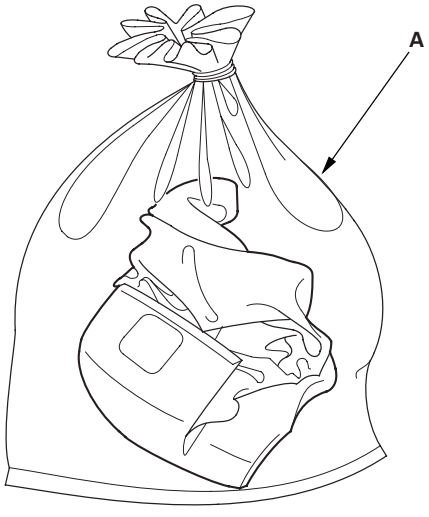
10. Connect a 12 volt battery to the tool.

    - If the green light on the tool comes on, the igniter circuit is defective and cannot deploy the component. Go to Disposal of Damaged Components.
    - If the red light on the tool comes on, the component is ready to be deployed.

11. Push the tool's deployment switch. The airbags and tensioners should deploy (deployment is both highly audible and visible: a loud noise and rapid inflation of the bag, followed by slow deflation).

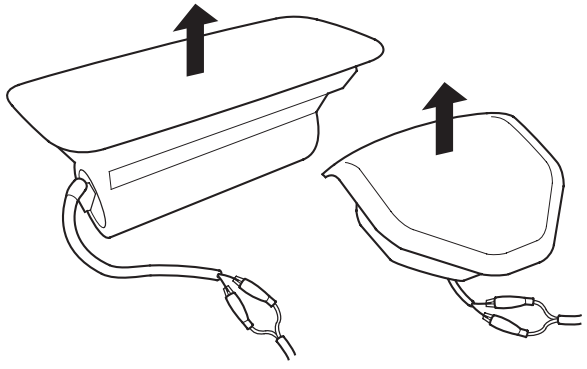
    - If the components deploy and the green light on the tool comes on, continue with this procedure.
    - If a component does not deploy, and the green light comes ON, its igniter is defective. Go to Disposal of Damaged Components.
    - During deployment, the airbags can become hot enough to burn you. Wait 30 minutes after deployment before touching the airbags.

12. Dispose of the complete airbag. No part of it can be reused. Place it in a sturdy plastic bag (A), and seal it securely. Dispose of the deployed airbag according to your local regulations.



Deploying Components Out of the Vehicle

If an intact airbag or tensioner has been removed from a scrapped vehicle, or has been found defective or damaged during transit, storage, or service, it should be deployed as follows:



1. Confirm that the deployment tool is functioning properly by following the check procedure Deploying Airbags in the Vehicle on the tool label.

2. Position the airbag face up, outdoors, on flat ground, at least 30 feet (10 meters) from any obstacles or people.

3. Follow steps 9 through 12 of the in-vehicle deployment procedure.

   NOTE: The driver's and front passenger's airbags have dual inflators. Twist each pair of unlike colored wires together, and clip an alligator clip to each pair.

(cont'd)

Airbag and Tensioner Disposal (cont'd)

Disposal of Damaged Components

1. If installed in a vehicle, follow the removal procedure for the driver's airbag (see page 24-174), front passenger's airbag (see page 24-175), side airbag (see page 24-176), side curtain airbag (see page 24-177), and seat belt tensioner (see page 24-4).

2. In all cases, make a short circuit by cutting, stripping, and twisting together the two inflator wires.

   NOTE: The driver's and front passenger's airbags have dual inflators. The like color wires go to the individual inflators.

3. Package the component in exactly the same packaging that the new replacement part came in.

4. Mark the outside of the box ''DAMAGED AIRBAG NOT DEPLOYED,'' ''DAMAGED SIDE AIRBAG NOT DEPLOYED,'' ''DAMAGED SIDE CURTAIN AIRBAG NOT DEPLOYED,'' ''DAMAGED SEAT BELT TENSIONER NOT DEPLOYED'' so it does not get confused with your parts stock.

5. Contact your Honda District Parts and Service Manager for how and where to return it for disposal.

Deployment Tool Check

1. Connect the yellow clips to both the switch protector handles on the tool.

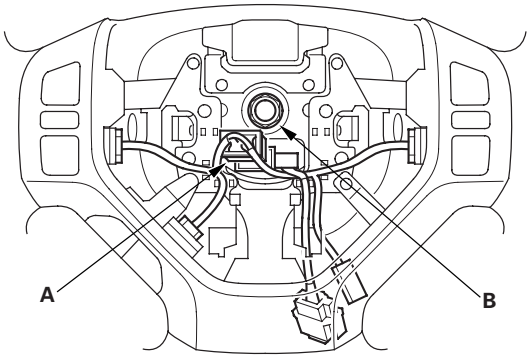
2. Push the operation switch: The green light should come on, indicating that the tool is operating properly and is ready for use. If the red light stays on, the tool is faulty, and another one must be used for the procedure.

3. Disconnect the tool clips and connectors from the protector handles and the battery.

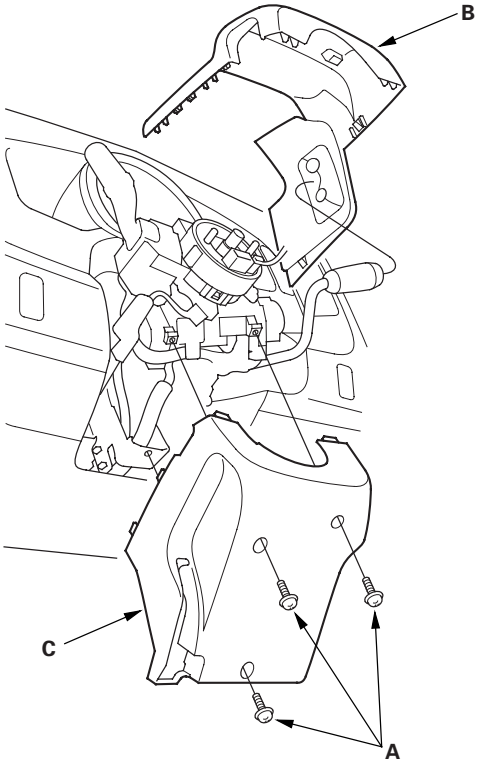
Cable Reel Replacement

Removal

1. Make sure the wheels are aligned straight ahead.
2. Disconnect the negative cable from the battery, then wait 3 minutes before starting work.
3. Remove the driver's airbag (see page 24-174).
4. Disconnect the connector (A) from the cable reel, then remove the steering wheel nut (B).



5. Align the front wheels straight ahead, then remove the steering wheel with a steering wheel puller (see step 5 on page 17-21). Do not tap on the steering wheel or the steering column shaft when removing the steering wheel.
6. Remove the column cover screws (A), then remove the column covers (B, C).



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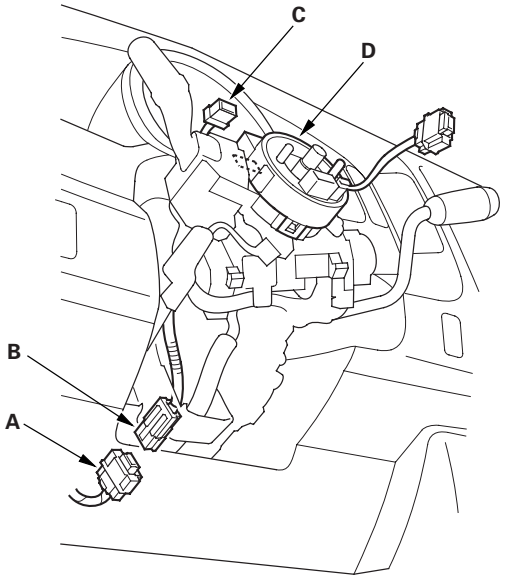
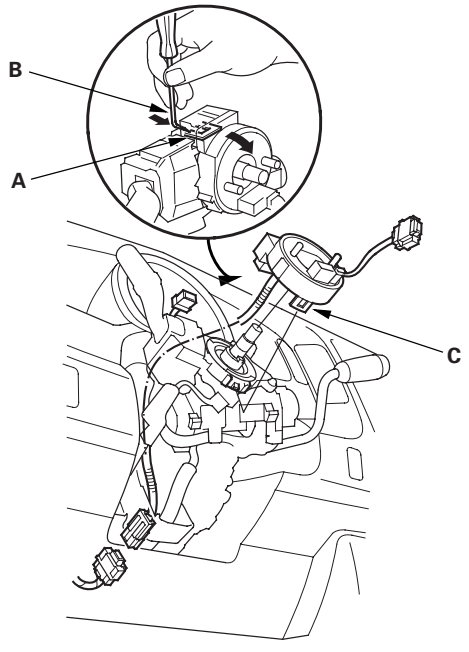
Cable Reel Replacement (cont'd)

7. Disconnect the dashboard wire harness 4P connector (A) from the cable reel 4P connector (B), then disconnect the dashboard wire harness 13P connector (C) from the cable reel (D).



8. Release the lock tab (A) under the cable reel connector with a 90 ° hook shaped tool (B). Slide the tool below the cable reel connector just above the lock tab. Release the lower lock tab (C), and slide the cable reel off the column.

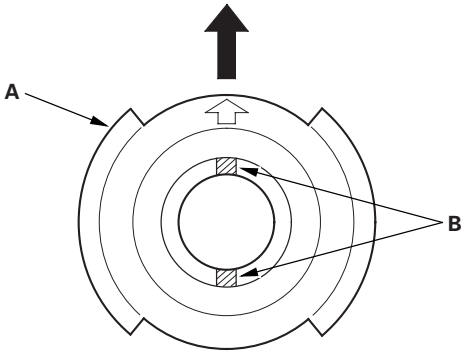


Installation

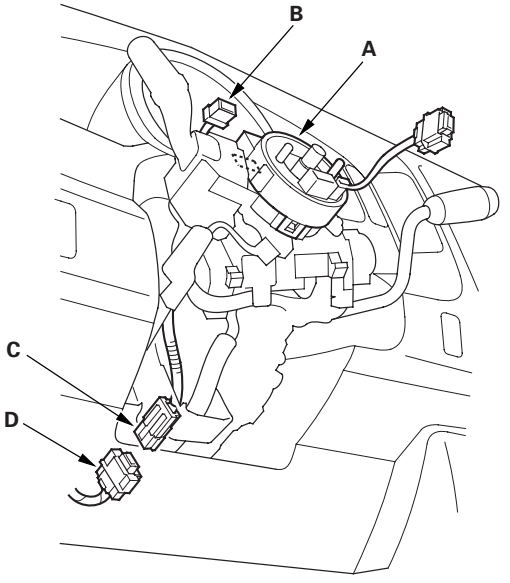
1. Before installing the steering wheel, align the front wheels straight ahead.

2. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.

3. Set the cancel sleeve (A) so that the projections (B) are aligned vertically.

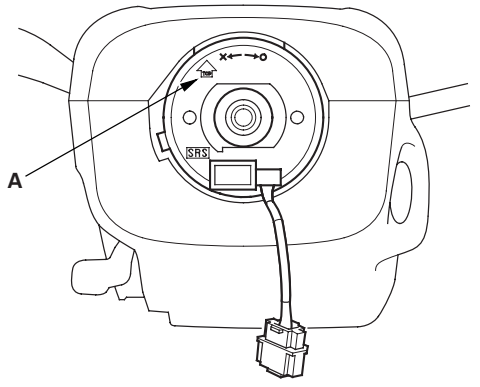


4. Carefully install the cable reel (A) on the steering column shaft. Then connect the 13P connector (B) to the cable reel, and connect the 4P connector (C) to the dashboard wire harness 4P connector (D).

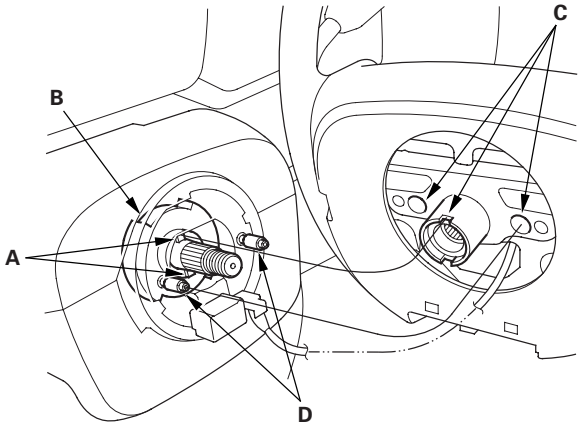


5. Install the steering column covers.

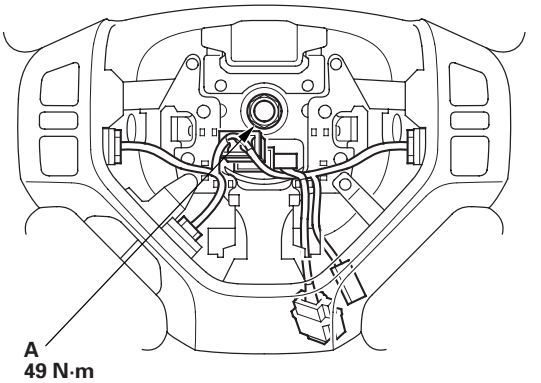
6. If necessary, center the cable reel. (New replacement cable reels come centered.) Do this by first rotating the cable reel clockwise until it stops. Then rotate it counterclockwise (three full turns) until the arrow mark (A) on the cable reel label points straight up.



7. Position the two tabs (A) of the turn signal canceling sleeve (B) as shown, and install the steering wheel on to the steering column shaft, making sure the steering wheel hub (C) engages the pins (D) of the cable reel and tabs of the canceling sleeve. Do not tap on the steering wheel or steering column shaft when installing the steering wheel.



8. Align the projections on the cable reel with the holes on the steering wheel, and install the steering wheel with a new steering wheel nut (A), then reconnect the connector.



9. Install the driver's airbag (see page 24-174).

10. Reconnect the negative cable to the battery.

11. After installing the cable reel, confirm proper system operation:

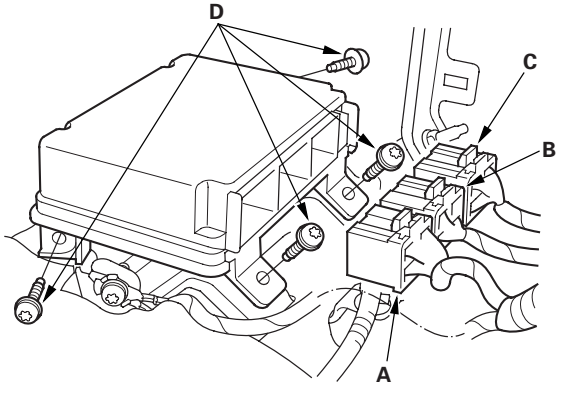
    - Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
    - After the SRS indicator has turned off, turn the steering wheel fully left and right to confirm the indicator does not come on.
    - Make sure the steering wheel switches work properly.
    - Make sure the steering wheel is centered.
    - Make sure the horn and turn signal switches work properly.

SRS Unit Replacement

Removal

NOTE: If you are disconnecting only SRS unit connector A, skip step 2.

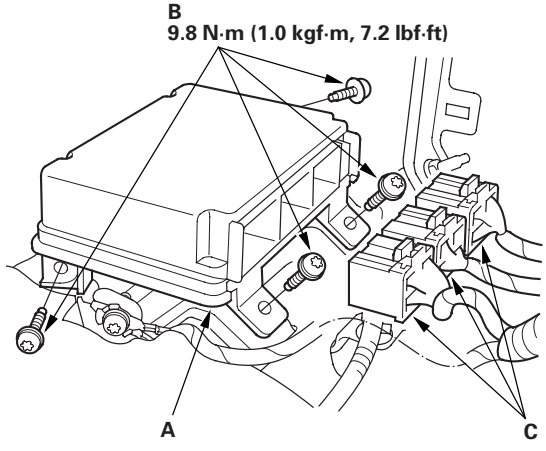
1. Disconnect the negative cable from the battery, then wait 3 minutes before starting work.
2. Disconnect both seat belt tensioner connectors (see step 6 on page 24-26).
3. Remove the driver's and passenger's console side trim (see step 1 on page 20-84).
4. Disconnect SRS unit connector A (28P), SRS unit connector B (28P), SRS unit connector C (28P), and remove the TORX bolts (D), then pull out the SRS unit.



Installation

1. Install the new SRS unit (A) with TORX bolts (B), then connect the connectors (C) to the SRS unit; push them into position until they click.

   NOTE: Be sure the SRS unit is sitting squarely against its bracket before torquing the TORX bolts.

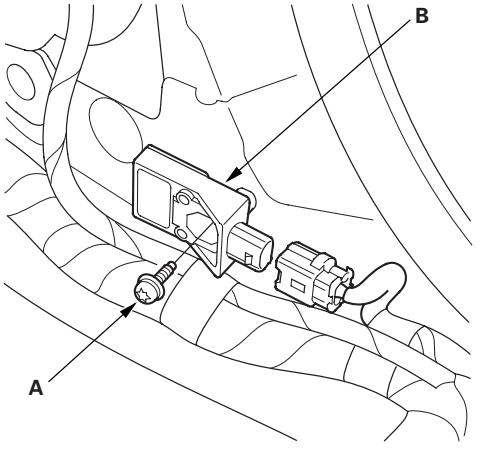


2. Reconnect both seat belt tensioner connectors (see step 6 on page 24-26).
3. Reconnect the negative cable to the battery.
4. Install all removed parts.
5. Calibrate the ODS unit (see page 24-31).
6. Do the ODS unit operation check (see page 24-32).
7. After installing the SRS unit, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Side Impact Sensor (First) Replacement

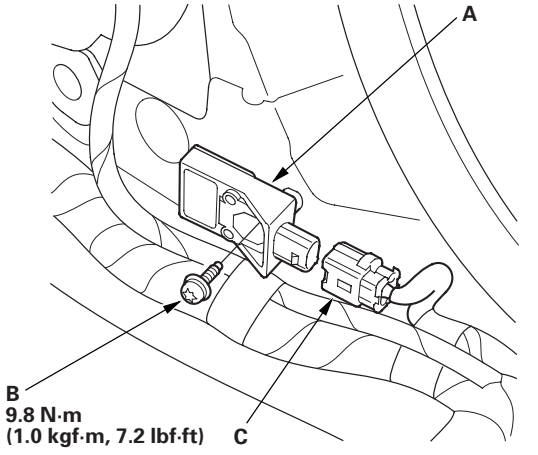
Removal

1. Disconnect the negative cable from the battery, then wait 3 minutes before starting work.
2. Disconnect the appropriate side airbag 2P connector (see step 4 on page 24-25).
3. Remove the seat assembly (see page 20-97).
4. Remove the front door sill trim (see page 20-60) and the B-pillar lower trim (see page 20-65).
5. Disconnect the floor wire harness 2P connector from the side impact sensor (first).
6. Using a TORX T30 bit, remove the TORX bolt (A), then remove the side impact sensor (first) (B).



Installation

1. Install the new side impact sensor (first) (A) with TORX bolt (B), then connect the floor wire harness 2P connector (C) to the side impact sensor (first).

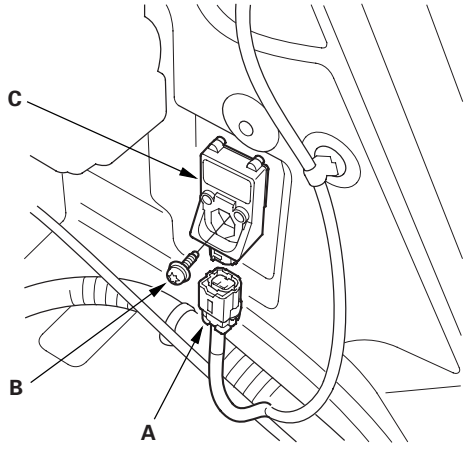


2. Reconnect the negative cable to the battery.
3. Install all removed parts.
4. After installing the side impact sensor (first), confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Side Impact Sensor (Second) Replacement

Removal

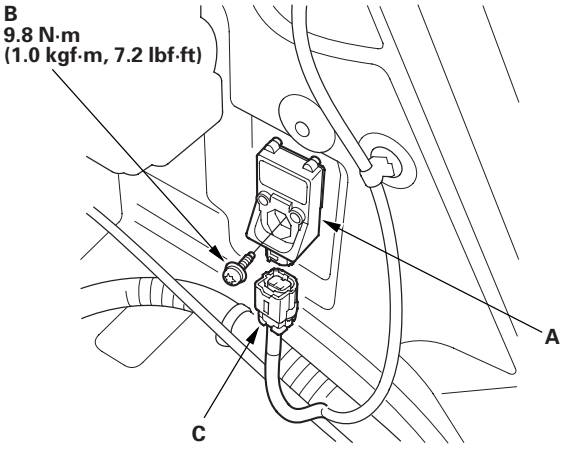
1. Disconnect the negative cable from the battery, then wait 3 minutes before starting work.
2. Disconnect the appropriate side curtain airbag 2P connector (see step 5 on page 24-25).
3. Remove the rear seat assembly (see page 20-117).
4. Remove the rear seat side trim (see step 9 on page 20-62).
5. Disconnect the floor wire harness 2P connector (A) from the side impact sensor (second).



6. Using a TORX T30 bit, remove the TORX bolt (B), then remove the side impact sensor (second) (C).

Installation

1. Install the new side impact sensor (second) (A) with TORX bolt (B), then connect the floor wire harness 2P connector (C) to the side impact sensor (second).



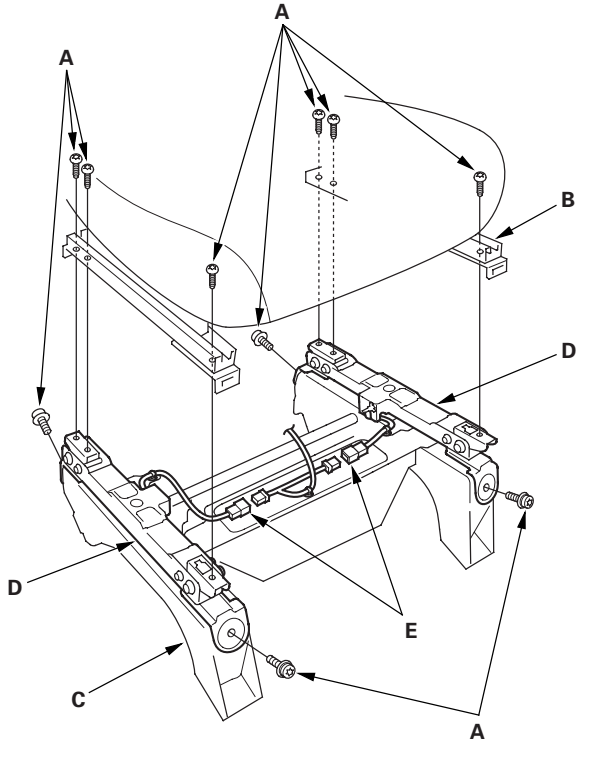
2. Reconnect the negative cable to the battery.
3. Install all removed parts.
4. After installing the side impact sensor (second), confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Front Passenger's Weight Sensor Replacement

Removal

NOTE: Removal of the front passenger's weight sensors must be performed according to the precautions/ procedures described at the beginning of the SRS section (see page 24-17).

1. Disconnect the negative cable from the battery, then wait 3 minutes before starting work.
2. Remove the front passenger's seat assembly (see page 20-97).
3. Remove the tamper-resistant TORX bolts (A) attaching the seat track (B) and seat riser (C) to the weight sensors (D).

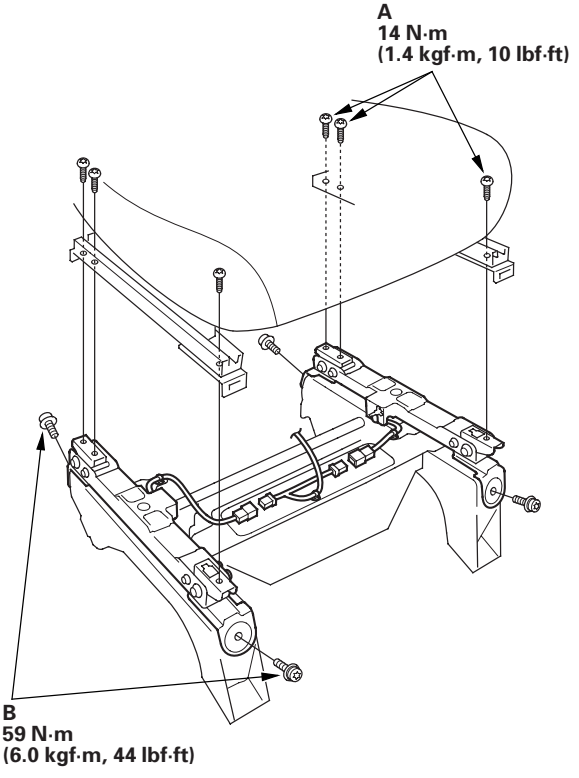


4. Disconnect the sensor connectors (E) from the ODS unit harness connectors, then remove the front passenger's weight sensors.

Installation

NOTE: Be sure to install the harness wires so they are not pinched or interfering with other parts.

1. Install the new front passenger's weight sensors with TORX bolts (A, B) under the seat track.

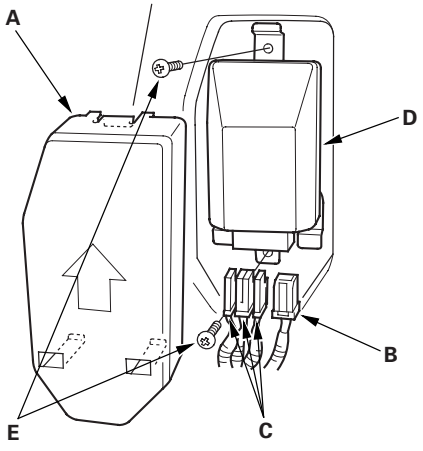


2. Reinstall the front passenger's seat (see page 20-97).
3. Reconnect the negative cable to the battery.
4. Calibrate the ODS unit (see page 24-31).
5. After installing the front passenger's weight sensors, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come for about 6 seconds and then go off.

OPDS/ODS Unit Replacement

Removal

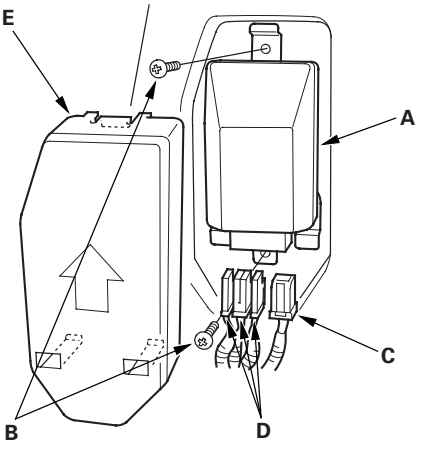
1. Disconnect the negative cable from the battery, then wait 3 minutes before starting work.
2. Disconnect the passenger's side airbag harness 2P connector (see step 4 on page 24-25).
3. Remove the passenger's seat assembly (see page 20-97) and seat-back cover (see page 20-111).
4. Remove the cover (A), then disconnect the OPDS unit 8P/ODS unit 18P connector (B) and sensor connectors (C) from the OPDS/ODS unit (D).



5. Remove the two screws (E) and the OPDS/ODS unit.

Installation

1. Place the new OPDS/ODS unit (A) on the seat-back frame. Tighten the two screws (B), and connect the OPDS unit 8P/ODS unit 18P connector (C) and sensor connectors (D) to the OPDS/ODS unit. Reinstall the cover (E).



2. Install the seat-back cover in the reverse order of removal.
3. Install the seat assembly (see page 20-97), then connect the side airbag harness 2P connector.
4. Reconnect the negative cable to the battery.
5. Set the seat-back in the normal position, and make sure there is nothing on the front passenger's seat.
6. Initialize the OPDS/ODS unit (see page 24-30).
7. After installing the OPDS/ODS unit, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Front Impact Sensor Replacement

Removal

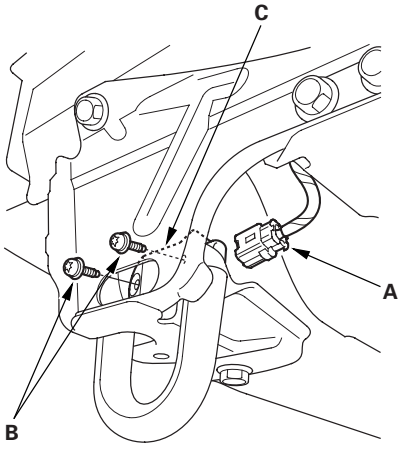
1. Disconnect the negative cable from the battery, then wait 3 minutes before starting work.

2. Disconnect the driver's airbag 4P connector (see step 2 on page 24-25), the front passenger's airbag 4P connector (see step 3 on page 24-25), and both seat belt tensioner 4P connectors (see step 6 on page 24-26).

3. Remove the front bumper (see page 20-132).

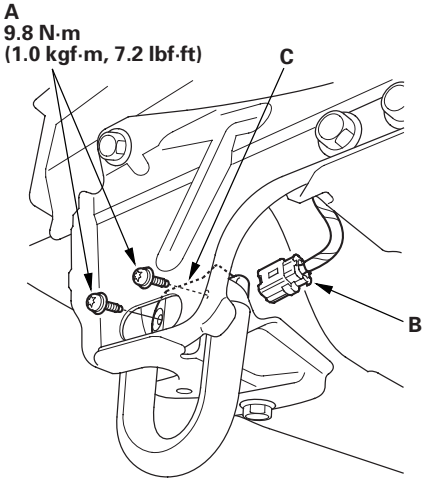
4. Remove the front inner fender (see page 20-178).

5. Disconnect the left engine compartment wire harness or right engine compartment wire harness 2P connector (A), and using a TORX T30 bit, remove the two TORX bolts (B), then remove the front impact sensor (C).



Installation

1. Install the new front impact sensor with TORX bolts (A), then connect the left engine compartment wire harness or right engine compartment wire harness 2P connector (B) to the front impact sensor (C).



2. Reconnect the driver's airbag 4P connector (see page 24-25), the front passenger's airbag 4P connector (see page 24-25), and both seat belt tensioner 4P connectors (see page 24-26).

3. Reconnect the negative cable to the battery.

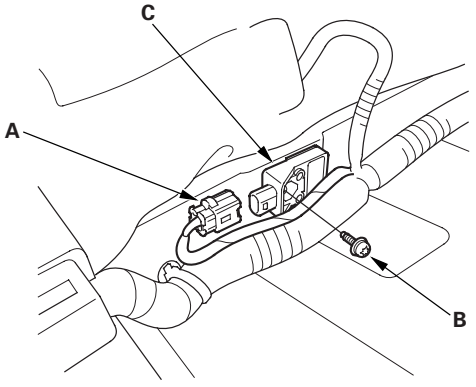
4. Install all removed parts.

5. After installing the front impact sensor, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Roll Rate Sensor Replacement

Removal

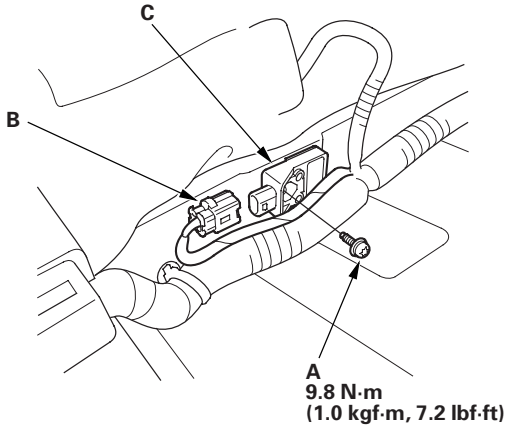
1. Disconnect the negative cable from the battery, then wait 3 minutes before starting work.
2. Remove the front passenger's seat (see page 20-97).
3. Disconnect the floor wire harness 2P connector (A) from the roll rate sensor.



4. Using a TORX T30 bit, remove the TORX bolt (B), then remove the roll rate sensor (C).

Installation

1. Install the new roll rate sensor with a TORX bolt (A), then connect the floor wire harness 2P connector (B) to the roll rate sensor (C).



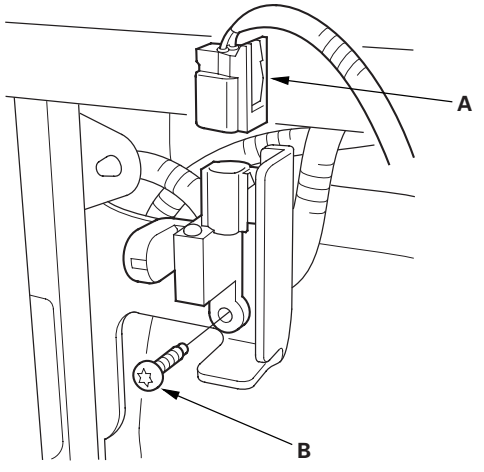
2. Reconnect the negative cable to the battery.
3. Install all removed parts.
4. After installing the roll rate sensor, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Driver's Seat Position Sensor Replacement

Removal

NOTE:
- Removal of the driver's seat position sensor must be performed according to the precautions/procedures described at the beginning of the SRS section (see page 24-17).
- Do not turn the ignition switch ON (II), and do not connect the battery cable while removing the driver's seat position sensor.

1. Disconnect the negative cable from the battery, then wait 3 minutes before starting work.
2. Disconnect the driver's airbag 4P connector (see step 2 on page 24-25).
3. Remove the driver's seat assembly (see page 20-97).
4. Disconnect the driver's seat wire harness (with 8-way power seat) or seat position sensor harness (without 8-way power seat) 2P connector (A) from the driver's seat position sensor.

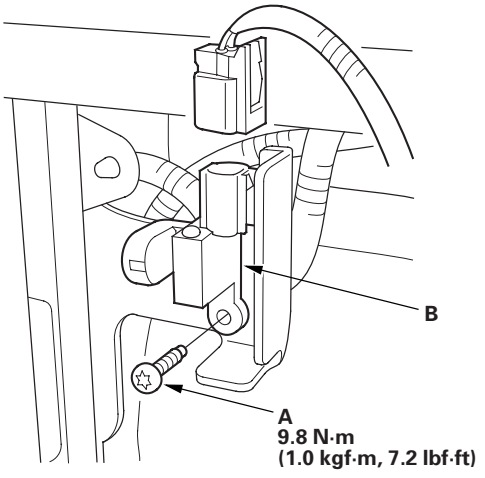


5. Using a TORX T30 bit, remove the TORX bolt (B), then remove the driver's seat position sensor.

Installation

NOTE:
- Be sure to install the harness wires so they are not pinched or interfering with other parts.
- Do not turn the ignition switch ON (II), and do not connect the battery cable while installing the driver's seat position sensor.
- After installing the driver's seat position sensor, make sure it is clean. Keep it away from dust.

1. Install the new driver's seat position sensor with a TORX bolt (A), then connect the driver's seat wire harness (with 8-way power seat) or seat position sensor harness (without 8-way power seat) 2P connector to the driver's seat position sensor (B).

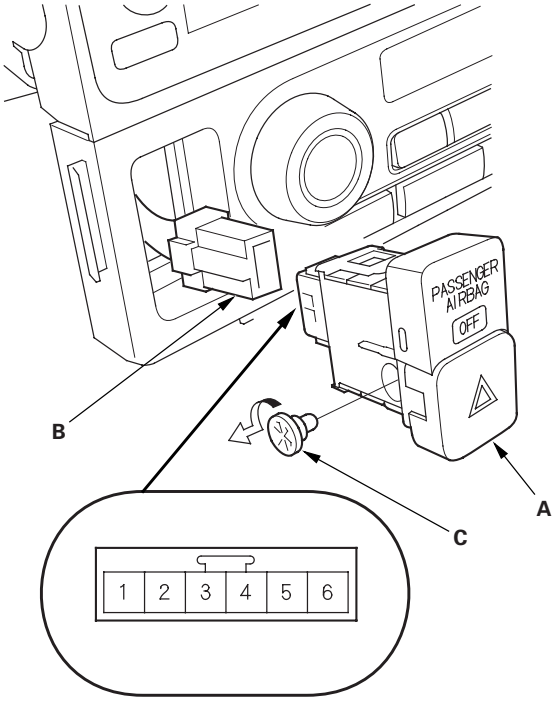


2. Install the driver's seat assembly (see page 20-97).
3. Reconnect the negative cable to the battery.
4. Check the operation of the driver's seat position sensor with the HDS (see page 24-27).

Passenger's Airbag Cutoff Indicator Illumination Bulb Test

'07-08 Models

1. Remove the audio unit (see page 23-57).
2. Push out the passenger's airbag cutoff indicator (A) from behind the audio unit.



3. Disconnect the 6P connector (B) from the passenger's airbag cutoff indicator.
4. Check for continuity between the No. 3 and No. 4 terminals of the indicator. If there is no continuity, replace the bulb (C).
5. Install the parts in the reverse order of removal.